Rockhopper 1

T/18P Offshore Bass Basin
Well Completion Report
Basic Data

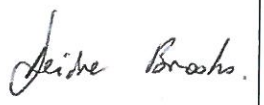
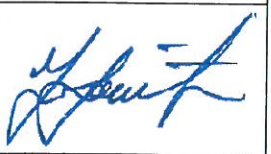
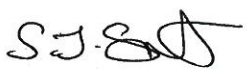


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WELL DATA CARD Rockhopper 1

GENERAL DATA

Surface Location:	Latitude:	39°47'34.18"S
(GDA 94)	Longitude:	145°26'21.47"E
(UTM Zone 55)	Easting:	366 374.031m E
	Northing:	5 594 071.423m N
Elevation:	WD:	74.3 m
	RT:	26.0 m
Spudded:	30/11/2009	23:30 hours
TD reached:	27/12/2009	19:00 hours
Rig release:	22/02/2010	07:30 hours

Status:	Plugged & Abandoned	
Total Depth:	Driller:	3522 m MDRT 3167m TVDSS
	Logger:	TD not tagged
Cement Plugs:	#1: 3010-3460 m MDRT #2: 2775-2925 m MDRT #3: 1896-2068 m MDRT	

Casing:	Size:	Shoe:
(a) Surface	30"	157 m MDRT
(b) Intermediate	13 $^{3}/_{8}$"	961 m MDRT
	9 $^{5}/_{8}$"	1965 m MDRT

LWD LOGS

Hole Size (inches)	Interval (mMDRT)	MWD Services	LWD Services
17 ½	158.0 – 966.0	DWD	DGR—EWR-P4
12 ¼	966.0 – 1972.0	P4M	DDSr-DGR—EWR-P4
8 ½	1972.0 – 1972.0	P4M	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	1972.0 – 2019.0	P4M	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	2019.0 – 2023.0	P4M	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	2023.0 – 3522.0	P4M	DDSr-DGR—EWR-P4—CTN—ALD—BAT

WIRELINE LOGS

Log	Run	Interval (m MDRT)	BHT / Time
SP-HRLA-PEX-HNGS-CMR+	1	1964.9 - 3511.3	131°C / after 16 hrs 37 mins
XPT-GR (ECRD)	2	2134.2 – 2978.4	121°C / after 40 hrs 50 mins
MDT(Quicksilver)-GR	3	3235.0 – 3424.5	133°C / after 23 hrs 43 mins
MDT(Quicksilver)-GR	4	2549.2 – 3202.0	122°C / after 12 hrs 38 mins
VSI-GR	5	294.1 – 2614.6	114°C / after 39 hrs 30 mins
MSCT-GR	6	2832.0 – 3424.7	132°C / after 49 hrs 10 mins
FMI-DSI-GR	7	625.0 – 3481.0	137°C / after 65 hrs 45 mins

PRESSURE TESTING AND FLUID SAMPLING

Suite #	Run #	Type	Interval (mMDRT)	Total Tests	Valid Tests	Super-charged	Tight Tests	Failed Tests	Pump Outs	Samples Collected
1	2	XPT	2134.2 – 2978.4	19	10	0	9	0	0	0
1	3	MDT	3235.0 – 3424.5	66	13	21	20	2	13	7
1	4	MDT	2549.2 – 3202.0	29	10	0	17	2	3	2

CONVENTIONAL CORES

No conventional cores were acquired in Rockhopper 1.

SIDEWALL CORES (MSCT)

No.	Depth (mMDRT)	Lithology	No.	Depth (mMDRT)	Lithology
1	3323.1	Siltstone	17	2874.0	Sandstone
2	3325.0	Sandstone	18	2875.5	Sandstone
3	3333.2	Siltstone	19	2877.0	Sandstone
4	3336.1	Sandstone	20	3287.7	Sandstone
5	3341.5	Siltstone	21	3290.1	Sandstone
6	3343.8	Sandstone	22	3417.0	Sandstone
7	3347.7	Claystone	23	3390.5	Siltstone
8	3424.7	Sandstone	24	3380.5	Sandstone
9	3423.3	Sandstone	25	3374.7	Sandstone
10	3401.2	Sandstone	26	3374.7	Sandstone
11	3402.8	Sandstone	27	3268.9	Siltstone
12	3242.8	Sandstone	28	3235.8	Sandstone
13	3197.3	Sandstone	29	3233.8	Sandstone
14	3198.7	Sandstone	30	3137.1	Sandstone
15	3201.1	Sandstone	31	2895.5	Sandstone
16	2962.5	Sandstone	32	2832.0	Sandstone

1. WELL SUMMARY SHEET

Well Name:	Rockhopper 1		
Permit:	T/18P, Offshore Bass Basin		
Well Path:	Directional (maximum deviation of 43.48^{o})		
Top Hole Location:	Latitude:	39° 47' 34.18" South	
	Longitude:	145° 26' 21.47" East	
	Easting:	366 374.03 metres East	
	Northing:	5 594 071.42 metres North	
	(GDA 94; AMG Zone 55, Central Meridian 147^{o} East)		
Seismic Location:	Inline 1261 and Crossline 2364 on the 2005 Shearwater 3D seismic		
Bottom Hole Location:	Easting:	366 343.3 meters East	
	Northing:	5 594 978.25 meters North	
Elevation:	26m (RT-LAT)		
Water Depth:	74.3 m LAT		
Total Depth Driller:	3522.0 mMDRT		
(TVD) Driller:	3191.9 mTVDRT/3167.9 mTVDSS		
Rig on tow:	01:00 hrs	29/11/2009	
Rig on Location:	05:46 hrs	29/11/2009	
Spud:	23:30 hrs	30/11/2009	
Reached TD:	19:00 hrs	27/12/2009	
Rig released to sidetrack:	17:30 hrs	19/01/2010	
Rig back to Rockhopper 1:	11:30 hrs	17/02/2010	
Rig Released:	07:30 hrs	22/02/2010	
Total Rig Days:	56.52 days		
Well Status:	Plugged and abandoned		
Permit Interests:	Origin Energy Resources Ltd*	39.0%	(*OPERATOR)
	AWE Petroleum Pty Ltd	35.0%	
	ARC (Bass Gas) Pty Ltd	12.5%	
	CalEnergy Gas (Australia) Ltd	8.5%	
	Innamincka Petroleum Ltd	5.0%	
Rig Name:	Kan Tan IV (Semi-submersible Rig)		
Drilling Contractor:	Maersk Contractors Services A/S		
Approx. Well Cost:	A$41.5 million		

2. FINAL DRILLING REPORT

By Mark Nasarczyk, Australian Drilling Associates Pty Ltd (ADA)

2.1 Executive Summary

The Maersk semi-submersible drilling rig "*Kan Tan IV*" came on contract to Origin Energy for the Rockhopper 1 well at 01:00hrs on 29 November 2009 when the rig was under tight tow from the Trefoil 2 location. The rig arrived at the Rockhopper 1 location at 05:46hrs on 29 November 2009 and the well was spudded at 23:30hrs on 30 November 2009 in 74.3m of water with the rotary table being elevated 26m above sea level. The well was drilled to a TD of 3522mMDRT (3165.9mTVDSS). Following wireline logging operations the 8.5in hole section on Rockhopper 1 was plugged and abandoned in accordance with regulatory requirements.

Rockhopper 1 ended at 17:30hrs on 19 January 2010 when a kick off BHA was made-up to drill Rockhopper 1/ST1. The sidetrack ended at 11:30hrs on 17 February 2010 when an abandonment plug was successfully set across the 9.625in shoe. A separate Final Drilling Report has been issued detailing the events on Rockhopper 1/ST1 and is included in the basic data volume of the Rockhopper 1/ST1 Well Completion Report. At this time Rockhopper 1 re-commenced and the upper section of the well was plugged and abandoned. Rockhopper 1 operations were completed at 07:30hrs on 22 February 2010 when the rig was under tight tow to New Zealand.

The total time spent on Rockhopper 1 was 56.52 days compared with the pre-drill estimated time for the well of 36.44 days. The well duration was 20.08 days (55%) over the pre-drill estimate. The final tracked cost for the Rockhopper 1 well is estimated to be US$38.8 million.

The main highlights during Rockhopper 1 were as follows:

- Many lessons from Trefoil 2 were successfully implemented on Rockhopper 1 such as the use of roller blocks to make-up BHA components offline and the revised space-out of the 20/30in cutting BHA to allow a shallower cut on same.
- The well design for Rockhopper 1 was a success as the 9.625in production string was set deep enough to isolate problematic zones of the Demons Bluff Formation but shallow enough to allow conventional wireline logging (as opposed to pipe conveyed logging) to be carried out in the 8.5in hole section.
- The Halliburton FMF3755 PDC bit drilled 1499m of the 8.5in section in a single run.
- When rig equipment downtime is excluded from the overall well time an NPT percentage of 7% was achieved on Rockhopper 1.

The main lowlights during Rockhopper 1 were as follows:

- A total of 13.8 days were lost due to rig equipment downtime on Rockhopper 1.
- Two NCR's were issued during Rockhopper 1.

The following points should be noted in regards to the HSE performance on Rockhopper 1:

- No LTIs occurred during the well.
- No alternate duties injuries occurred during the well.

- No medical treatment injuries occurred during the well.
- No hydrocarbon / chemical spills were recorded during the well.
- No incidents were recorded that breached the performance objective for the Origin T/18P Environment Plan.

2.2 Well Summary and Overview

2.2.1 Well Summary Sheet

Well Name	**Rockhopper 1**
Country	Australia
Designation	Exploration Well
Well Name	Rockhopper 1
License/Permit	T/18P
Rig Name/Type	Kan Tan IV / Semi-Submersible
Well Operator	Origin Energy Resources Ltd
Participants	AWE Petroleum Ltd Cal Energy Gas (Australia) Ltd Arc (Bass Gas) Pty Ltd Innamincka Petroleum Limited
Well Type	Directional
Water Depth	74.3m
RT Above MSL	26m
Rig Heading	316.62°
Geocentric Datum	GDA94
Surface UTM	UTM Zone 55
Surface Latitude	39º 47' 34.18" S
Surface Longitude	145º 26' 21.47" E
Surface Easting	366 374.03m E
Surface Northing	5 594 071.42m N
Rig on Contract (from Trefoil 2)	29 November, 2009 @ 01:00hrs
Rig on Location	29 November, 2009 @ 05:46hrs
Spud Date	30 November, 2009 @ 23:30hrs
TD Reached	27 December, 2009 @ 19:00hrs
Rig off Contract	22 February, 2010 @ 07:30hrs
Total Days on Operations	56.52 days
Total Depth (LAT)	3165.93mTVDSS / 3191.93mTVDRT / 3522.00mMDRT
Maximum Deviation Angle	43.48°
Bottom Hole Location: Easting	366 343.3m E
Bottom Hole Location: Northing	5 594 978.25m N

2.3 Casing and Cementing Summary

2.3.1 Casing Summary

Type	Size (in)	Weight (ppf)	Grade	Thread	Depth (mMDRT)
Conductor	30	1.5” and 1” wall	X-56	D90/MT and D60/MT	157
30in x 20in tapered shoe joint	30 x 20	1” wall	X-56	D60/MT	
Surface Casing	13.375	68	K-55	BTC	961
Production Casing	9.625	47	L-80	Vam Top	1965

Table 1 Casing summary

Additional casing details are included in Appendix 14.

2.3.2 Cementing Summary

String (in) / Plug	Cmt Type	Cement Additives	Mix Water (gal/ sk)	Slurry Vol (bbls)	Slurry Density (ppg)	Cmt to / from (mMDRT)	Test Press (psi)
30x20	Class G	Calcium Chloride NF-6 Seawater + mica	5.2	265	15.9	100.3 – 158	n/a
13.375 Lead	Class G	Econolite Liquid Seawater NF-6	18.96	460	11.5	100.3 – 846	2500
13.375 Tail	Class G	Halad-413L Freshwater NF-6	5.12	66.8	15.8	846 – 966	
9.625inLead	Class G	Gascon-469 SCR-100L Halad-413L Freshwater NF-6	12.29	82	12.5	1372 – 1772	4000
9.625in Tail	Class G	Halad-413L CFR-3L SCR-100L Gascon-469 Freshwater NF-6	5.18	47	15.8	1772 – 1972	
Plug #1A	Class G	SCR 100-L Freshwater NF-6	5.11	38	15.8	3310 - 3460	n/a
Plug #1B	Class G	SCR 100-L Freshwater NF-6	5.11	38	15.8	3160 - 3310	n/a
Plug #1C	Class G	SCR 100-L Freshwater NF-6	5.11	38	15.8	3010 - 3160	n/a
Plug #2	Class G	SCR 100-L Freshwater NF-6	5.11	38	15.8	2723 – 2925 (Tagged)	n/a
Plug* #3A	Class G	SCR 100-L Freshwater NF-6	5.11	40	15.8	1985 – 2068 (Tagged)	n/a
Plug* #3B	Class G	SCR 100-L Freshwater NF-6	5.11	28	15.8	1896 – 1985 (Tagged)	n/a
Plug #3**	Class G	SCR 100-L Freshwater NF-6	5.11	25	15.8	1978 – 2015 (Tagged)	n/a
Plug #3A**	Class G	SCR 100-L Freshwater NF-6	5.11	18.7	15.8	1905 - 1978	2000
Plug #4	Class G	CaCl Seawater NF-6	5.20	122	15.9	100.3 – 205 (Visual via ROV)	n/a

*Suspension and kick-off plug set prior to drilling the sidetrack (ST1).
** Final plug set during the abandonment of the sidetracked portion of the well (ST1).

Table 2 Cementing summary

Additional cementing details are included in Appendix 14.

2.4 Operations Summary

2.4.1 Rig Mobilisation and Rig Up

The Kan Tan IV came on contract to Origin Energy for the Rockhopper 1 well at 01:00hrs on 29 November 2009 when the rig was under tow from Trefoil 2. The rig arrived at the Rockhopper 1 location at 05:46hrs on 29 November 2009. Anchor running operations commenced at 05:22hrs on 29 November 2009 and were completed at 14:00hrs on the same day when all eight anchors had been run. The Kan Tan IV was ballasted down to the drilling draft of 20m and the anchors were cross tensioned. The total time to run anchors, ballast down and cross tension was 18.5hrs.

Conclusions and Recommendations

(i) Overall the rig move and anchoring operations went very well. The time taken to run anchors, ballast down and cross tension anchors was 11hrs quicker than Trefoil 2 (29.5hrs).
(ii) The anchor running performance of the Far Fosna and Far Scimitar was very good considering this was only the second time these boats had run Kan Tan IV anchors.
(iii) Pre-well it was agreed that a 10m target tolerance on the rig location was acceptable. However efforts were made to reduce this error margin as much as possible and the rig was ultimately positioned 4.08m from the intended target. Due to the extra time taken to achieve this more accurate position the Tow Master suggested having an additional Tow Master onboard for future rig moves.

2.4.2 Drilling 26/36" Hole & Cementing 30x20" Casing

The 26/36in BHA was made up and RIH to the seabed. The distance from the rotary table (RT) to sea level (SL) was confirmed as being 26m and the distance from RT to the seabed was confirmed as being 100.3m (74.3m water depth). Rockhopper 1 was spudded at 23:30hrs on 30 November 2009. Whilst drilling the 36in hole at 150mMDRT the saver sub backed out and problems were encountered with the pipe handler when making up the saver sub. A total of 4hrs were lost rectifying these problems. Drilling of the 36in hole section continued to TD at 158mMDRT and the hole was swept with a 100bbl Hi-Vis pill and the well was displaced with 330bbls of 8.8ppg pre-hydrated mud. Anderdrift surveys were taken at the mudline and during each stand drilled. The final survey at section TD gave an inclination reading of 0°. A wiper trip was not conducted as the BHA had been POOH to 110mMDRT during the saver sub and pipe handler downtime incident.

The 30x20in shoe joint was made up and flow was checked through the float valve before running the conductor string inside the PGB in the moonpool. The 30in running tool was then made up to the 30in housing and the conductor string was landed and latched inside the PGB. The guidelines were installed and the PGB and conductor string were RIH on HWDP below sea level allowing the string to fill with water. The ball valve on the wellhead running tool was closed and the conductor string RIH to seabed. The ROV observed the conductor entering the 36in hole and the string was

RIH placing the float shoe at 157mMDRT. The ROV confirmed a PGB bullseye reading of 0.75° fwd/port.

Cementing lines were rigged up and pressure tested to 1000psi (10mins). A 45bbl seawater spacer was pumped with mica being added to the last 20bbls pumped to assist with identifying cement returns at the mudline. The 30in conductor was then cemented with 265bbls of 15.9ppg class G cement and displaced with 107bbls of seawater. The ROV observed cement returns to seabed. After waiting on cement (WOC) for 5hrs the bullseye reading remained 0.75° fwd/port.

Conclusions and Recommendations

(i) No problems were experienced drilling the 36in hole. The hole was stable when filled with gel mud. The 5 joint conductor string proved to be a successful design and is recommended for future wells drilled in this area.
(ii) The use of 8.25in drill collars proved to be successful as crews were able to handle these collars more efficiently than the 9.5in drill collars used on the previous well (Trefoil 2).
(iii) The use of roller blocks proved to be beneficial allowing BHA components to be made up off the critical path.

The 30in conductor hung up on CART in moonpool and the dog securing bolts on the PGB had to be removed to allow passage of same. It is recommended that some form of stabbing guide (lip guide) be added to the CART to avoid future hold-ups when running casing.

2.4.3 Drilling 17.5" Hole & Cementing 13.375" Casing

A Smith XR+VCPS mill tooth bit was made up to a BHA comprising DIR-GR MWD sensors. The BHA was RIH and the 20/30in shoe track was drilled out to the bottom of the rathole at 158mMDRT. The 20/30in shoe was reamed with the bit and stabilisers before drilling ahead to section TD at 966mMDRT (808m section length) in a single bit run in 38.5hrs with an average drilling ROP including connections of 21m/hr. On POOH tight hole was encountered from 909m to 841mMDRT with a maximum hole drag of 30klbs being recorded. The tight spots were wiped and the BHA was run back to TD where a 100bbl Hi-Vis pill was pumped and the hole was displaced to mud (1100bbls). The BHA was POOH with a maximum drag of 20klbs being encountered below the 20in shoe. The inclination at TD was 0.2°.

A two joint shoe track was made up and the float valves checked prior to running the remainder of the 13.375in casing. The Drilquip 18.75in (SS-10C) housing joint with a 20in extension swaged over to 13.375 in casing was made-up. The assembly was run complete with the Halliburton SSR plug launching system. The casing was to 68m on HWDP and the operation was shut down for 1hr due to wind gusts of 30 knots and rig role of 2° being recorded (outside of crane limitation). Casing running operations resumed and the string was run to 854mMDRT at which point the control line on the elevator spider caught on the top drive while making up the wellhead. A total of 1.5hrs were lost removing the bundle. On resumption of operations the cement stand was made up and the casing string was RIH to land out at 961mMDRT. Confirmation of the 18.75in wellhead latching into the housing

joint was obtained via a 50klbs overpull. A bullseye reading of 0.75° fwd/port was recorded via the ROV.

After pressure testing surface lines to 3000psi a total of 460bbls of class G lead slurry at 11.5ppg was mixed and pumped followed by 66.8bbls of class G tail slurry at 15.8ppg. During displacement cement returns were observed at the mudline via the ROV. Following the bump of the top plug the 13.375in casing string was pressure tested to 2500psi (10mins). On releasing the final circulating casing pressure the floats held with no backflow being observed.

Conclusions and Recommendations

(i) The elevator spider control hoses should have been bundled and removed from 15ft bails. The hose got wrapped around the pipe handler as hanger was made up resulting in 1.5hr NPT. This will be highlighted in future pre-phase meetings to ensure rig down of casing handling equipment is carried out correctly in future.
(ii) It is recommended that a hydraulic dog collar be sourced to assist with manual handling when running casing.
(iii) Consider reducing the volume of the kill mud as due to pit volume limitations. By doing this larger volume Hi-Vis pills could be available in the event of problems. It should be noted that the volume of kill mud mixed was equivalent to the 17.5in hole section volume of +/-784bbls.
(iv) Rigid centralisers cannot pass through the 500T elevators. On future wells it is recommended that only bow spring centralisers be used as the 500T elevators could be rigged up from the start therefore saving rig up time.

2.4.4 Running BOP's

Riser handling equipment was rigged up and the rig was skidded off well centre. A riser double was picked up and the BOP was moved under the rotary table. The BOP was unable to be released from the test stump as the H4 connector would not release. The connector eventually released when a pressure of 400psi was applied between the shear rams and the test stump. A total of 8hrs were lost due to this NPT event.

The guidelines were installed on the BOP and the H4 connector was inspected by the Subsea Engineer. Whilst securing the yellow and blue pod umbilical hoses to the BOP a leak was observed on the yellow pod umbilical hose between the outer sheath and the control hoses. The Subsea Engineer removed the hose connector block from the yellow pod and could not detect a leak. The block was reconnected to the yellow pod and the lines were successfully tested. A total of 5hrs of rig time were lost due to this event.

The riser was nippled up and the BOP was run through the splash zone. The rig was skidded back over well centre and attempts were made to lower the BOP onto the guide posts. The PGB had a heading of 308° and the BOP had a heading of 295°. The BOP was rotated to a heading of 308° and landed onto the wellhead. The latch was confirmed with a 50klbs over-pull test on the

connector. The BOP, the connector and the 20in x 13.375in casing were successfully pressure tested against the blind shear rams to 1000psi (5mins).

Following pressure testing operations a rubber segment was recovered on the BOP test tool indicating that the upper annular insert element had been damaged. An unsuccessful pressure test was conducted on the collet connector on the LMRP against the upper annular. As a replacement annular was not available on the rig a decision was made to drill the 12.25in hole section, run 9.625in casing and replace the upper annular insert element prior to drilling the 8.5in hole section. A "Change Proposal and Notification Form" was completed on 8 December 2009 detailing this forward plan. The total time spent running the BOP and marine riser was 59.5hrs.

Conclusions and Recommendations

(i) The use of a single 10ft PGB post assisted with the landing of the BOP.
(ii) When the BOP weight was transferred onto the marine riser tensioners the BOP slowly rotated out of alignment. The BOP and marine riser weight was transferred partly back onto the blocks and the rig tuggers were used to line up the BOP guides with the PGB posts. On future wells the slip joint load ring clamp will be repositioned.
(iii) Ensure spares are available for all BOP components going forward in the event that equipment change out is required as per the upper annular insert element.

2.4.5 Drilling 12.25" Hole & Cementing 9.625" Casing

A Reed Hycalog RSR616M PDC bit was made up to a BHA comprising a mud motor (0.78° bend) and the following Halliburton MWD/LWD tools: RLL, EWR, DGR, HCIM and DIR. The mud motor was included in the BHA to increase ROP and allow hole angle to be built at section TD (2°) to assist with Geopilot kick-off in the subsequent hole section. The BHA was RIH and tagged cement at 946mMDRT. The 13.375in shoe track was drilled out to the bottom of the rathole at 966mMDRT and the well was displaced to 9.0ppg KCl/PHPA/ClaySeal Plus mud. An additional 5m of new hole was drilled to 971mMDRT and a leak off test (LOT) was conducted to 17.5ppg EMW. Refer to Attachment 9 for further details.

The 12.25in hole section was drilled from 971mMDRT to 1427mMDRT at which point it was noticed that the shaker screens were blinding with un-sheared PHPA in the mud system resulting in unsustainable loss of mud over the shakers. Courser screens were installed and the mud was conditioned. A total of 2.5hrs were lost due to this event. Drilling continued to 1860mMDRT in rotary mode. From this depth to section TD at 1972mMDRT the well was drilled in both rotary and sliding mode. The slide mode drilling did not achieve its objectives as the hole inclination at TD was 0.7° as opposed to the planned angle of 2° (see further comments in Conclusions and Recommendations). At section TD the well was circulated until returns over the shakers were clean and the mud weight was raised from 9.4 to 9.5ppg. The BHA was POOH in a problem free operation and the RSR616M PDC bit was graded as 4-4-LT-N-X-I-CT-TD.

In rotary mode the 12.25in hole section was drilled at an average ROP of 22.2m/hr including connections and hole conditioning. In slide mode the hole was drilled at 9.8m/hr. The hole remained in very good condition throughout the drilling phase.

The 9.625in casing string was RIH without incident to 1864mMDRT (155 joints at 10.7 joints/hr) and the casing elevators were rigged down. The casing hanger assembly was made up and the 9.625in casing was RIH on the 5in HWDP landing string to 1934mMDRT. At this depth the hole drag increased from 20 to 60klbs. The top drive was made up and the casing string was washed down to the final shoe depth of 1965mMDRT. The hanger was confirmed on depth against the index line.

After pressure testing surface lines to 4500psi a total of 82bbls of class G lead slurry at 12.5ppg was mixed and pumped followed by 47bbls of class G tail slurry at 15.8ppg. Following the bump of the top plug the 9.625in casing string was pressure tested to 4000psi (10mins). On releasing the final circulating casing pressure the floats held with no backflow being observed. The seal assembly was successfully energised and pressure tested to 5000psi (10mins). On POOH of the casing running tool the tool hung up in the lower pipe rams. The string was worked free with circulation. A total of 1.5hrs of rig time were lost due to this remedial action.

As mentioned in section 4.3.4 drilling operations were suspended at this point to recover the LMRP, change out the upper annular insert element and rerun the LMRP. A total of 61hrs (2.54 days) were lost as a result of this operation.

Conclusions and Recommendations

(i) The bulk density trace on Aroo 1 (nearest offset to Rockhopper 1) showed a lithologically different zone to the homogenous siltstone between the depths of 1860-1900mTVDRT (1850-1890mTVDSS) within the Demons Bluff Formation. Given the instability of the Demons Bluff on offset wells and the existence of soft cuttings through this zone on Aroo 1 the primary aim was to place the 9.625in shoe on Rockhopper 1 below this zone avoid potential hole problems in the subsequent section(s). The aim was also to place the shoe at a depth that allowed the 8.5in hole sections on Rockhopper 1 and Rockhopper 1/ST1 to be drilled and evaluated without the use of pipe conveyed logging equipment. All these objectives were met and it is recommended that on future wells the 9.625in casing be placed at a similar depth if the pre-well objectives are consistent with those on Rockhopper 1.

(ii) The 12.25in hole section could not be kicked off as planned - only achieved a hole inclination of 0.7° at TD. The main reason for this was the inability to hold tool face when attempting to build angle as reactive torque affected the ability to kickoff. It was thought that the RSR616M bit was too aggressive to hold the desired tool face. It is recommended that the bit and BHA combination be reviewed on future wells in the area to ensure directional objectives are met.

2.4.6 Drilling 8.5" Hole

A Halliburton FMF3653Z PDC bit was made up to a BHA comprising the following DD/MWD/LWD tools: Geopilot, RLL, EWR, DGR, ALD, CTN and BAT-Sonic and DIR. The BHA was RIH to the top of cement at 1938mMDRT. Over an 8.5hr period the shoetrack was drilled out from 1938m to 1940mMDRT. Drilling parameters were varied throughout this period and rubber/aluminium returns indicated that progress was being made. However when casing shavings were noticed over the shakers it was decided to POOH and drillout the shoetrack with a milled tooth bit. NCR 006 was issued to Halliburton regarding the inability to drillout the shoetrack. The FMF3653Z bit was graded as 2-3-BT-S-X-I-CT-PR.

A Hughes GT-1 milled tooth bit was made up to a mud motor (1.15° bend) and RIH to 1940mMDRT. The shoetrack and rathole were drilled out to 1972mMDRT and 5m of new hole was drilled to 1977mMDRT. An LOT was conducted to 14.6ppg EMW. Refer to Attachment 9 for further details. Drilling continued in slide mode to 2019mMDRT and an inclination of 4.8° was achieved. The BHA was POOH and the milled tooth bit was graded as 2-2-WT-A-E-1-NO-BHA.

A Halliburton FMF3755 PDC bit was made up to a BHA comprising the following DD/MWD/LWD tools: Geopilot, RLL, EWR, DGR, ALD, CTN and BAT-Sonic and DIR. The BHA was RIH and the previously drilled section of hole was re-logged from 1972m to 2019mMDRT. New hole was drilled from 2019m to 2023mMDRT at which point an attempt was made to set the Geopilot to the required angle without success. The RPM read back was not functioning correctly. A decision was made to POOH and NCR 007 was issued to Halliburton over this incident. A total of 15.5hrs were lost due to this tool failure event.

The FMF3755 PDC bit was rerun on a similar BHA and the 8.5in hole section was drilled from 2023m to 2550mMDRT. At this depth the desired hole angle of 42° was achieved. Drilling continued to 2753mMDRT and a wiper trip was made back to the 9.625in shoe at 1965mMDRT. During the wiper trip a total of 5.5hrs were lost when the BHA became stuck at 2146mMDRT. The pipe could not be rotated although full circulation was maintained. Jarring proved to be unsuccessful so a Radiagreen pill was pumped downhole and the BHA came free.

The BHA was RIH and drilling continued from 2753m to 3199mMDRT. At this depth the temperature alarm on the lube oil pump for the top drive came on. A decision was made to POOH the BHA to the 9.625in shoe while the top drive repairs were made. A broken coupling was repaired on the top drive lube oil pump and the BHA was RIH to TD. A total of 12hrs of rig time were lost due to this rig repair event.

Drilling resumed from 3199m to TD at 3522mMDRT (3165.9mTVDSS) which was 35.5mMD deeper than the planned TD of 3486.5mMDRT. The inclination at TD was 41.35° on an azimuth of 357.89°. The hole was circulated until the returns over the shakers were clean and two 40bbl (hi/low weight) sweeps were pumped. The BHA was POOH without any problems being

encountered and the bit was graded as 6-6-BT-A-X-I-NO-PR. The average ROP including connection and hole conditioning time was 12.5m/hr.

Conclusions and Recommendations

(i) The Halliburton FMF3755 PDC bit performed very well through the highly variable EVCM Formation. A total of 1499m was drilled in a single run.

(ii) The use of the Radiagreen pill (9.2ppg) to free the stuck BHA proved to be successful. The pill formulation was as follows:
- 50bbls of premix
- 7bbls of drillwater
- 2 sacks of PAC-L (filtration control agent)
- 2 Pails of EZ-MUD (PHPA)
- 2 x 55gal drums of Radiagreen salt lubrication agent

Following the stuck-in-hole incident Radiagreen was added to the mud system on an as required basis (1-3%) to enhance the lubricity of the system. It is recommended that on future directional wells in the area this practice continue with this or similar products

(iii) On future wells where the Geopilot tool is required it is recommended that shoetracks be drilled out with milled tooth bits prior to RIH with the RSS BHA. The use of a mud motor in the drill out BHA also allows hole angle to built therefore assisting the subsequent Geopilot run.

(iv) Following the failure of the RPM read back function on the Geopilot tool the tool itself worked well as the remainder of the 8.5in hole section was drilled in a continuous run with all target and real time logging objectives being met.

2.4.7 Rockhopper 1 Wireline Logging

Two wireline logging runs were made with the following tool configurations:
- Run #1: CMR+-PEX-HRLA-HNGS
- Run #2: MDT-GR-LEHQT

When POOH with run #2 sticky and tight hole conditions were encountered at various intervals requiring up to 9klbs overpull to pull through same. A decision was made to test the BOP's and conduct a wiper trip to well TD. During the wiper trip tight spots were washed and reamed and the mud weight was reduced from 9.5+ppg to 9.4ppg. The wiper trip BHA was POOH and wireline logging operations resumed with the rerunning of wireline configuration #2. After 41hrs of continuous logging the wireline tools could not pass 3060mMDRT. It was decided to POOH and conduct another wiper trip. The wiper trip BHA was RIH and tight spots were washed and reamed. At TD the hole was circulated bottoms up several times and 150bbl of new mud was bled into the active system. A maximum of 13% gas was recorded whilst circulating bottoms up with a continuous level of 4-9% gas being recorded throughout the wiper trip operation below 3050mMDRT.

The wiper trip BHA was POOH and wireline logging operations resumed with the following tool configurations:
- Run #4: MDT-GR
- Run #5: VSI-GR

- Run #6: MSCT-GR
- Run #7: FMI-DSI-GR

All runs were successfully completed as programmed.

Conclusions and Recommendations

(i) The mud weight of 9.5+ppg at the commencement of logging operations proved to be too high as signs of differential sticking started to appear. When the mud weight was reduced to 9.4ppg this problem disappeared.
(ii) The mud system and hole conditions remained in very good condition throughout the logging operation when one considers the fact that the 42° hole was open for a total of 11 days.
(iii) On future directional wells include an allowance for wiper trips back to the shoe as was required on Rockhopper 1.

2.4.8 Rockhopper 1 Well Abandonment #1

MWD/LWD and wireline logging data indicated that there were several zones of moveable hydrocarbon below 2825mMDRT. The data also showed that there were no freshwater zones above this depth. Based on this information a 2.875in cement stinger and mule shoe was made up to 5in drill pipe and RIH to 3510mMDRT. A 12bbl H-Vis pill pumped down hole and displaced with 205bbl of mud. Cement plugs were set as per the following sequence:

- Cement plug #1A was pumped from 3460m to 3310mMDT (150m, 38bbls of 15.8ppg Class G cement) and the stinger was POOH to the top of the plug.
- Cement plug #1B was pumped from 3310m to 3160mMDRT (150m, 38bbls of 15.8ppg Class G cement) and the cement stinger was POOH to the top of the plug.
- Cement plug #1C was pumped from 3160m to 3010mMDRT (150m, 38bbls of 15.8ppg Class G cement) and the cement stinger was POOH to the top of the plug.
- The cement stinger was POOH to 2973mMDRT and a 12bbl Hi-Vis pill was pumped down hole and displaced with 173bbl of mud. The stinger was pulled to the top of the pill.
- Cement plug #2 was pumped from 2925m to the theoretical depth of 2775mMDRT (150m, 38bbls of 15.8ppg Class G cement) and the cement stinger was POOH ten stands above the top of cement.
- Whilst waiting on cement 24 joints of 5in drill pipe were made up and racked back in the mast.
- Following wait on cement the stinger was RIH and the top of cement plug #2 was tagged at 2723mMDRT with 5klbs (102mMD above moveable hydrocarbon).
- The cement stinger was POOH to 2118mMDRT and a 50m (12bbl) Hi-Vis pill was spotted.
- The cement stinger was POOH to 2068mMDRT and cement plug #3 (100m, 25bbls of 16.5ppg Class G cement) was set with a theoretical top at 1968mMDRT. This plug was designed to act as both an abandonment plug and a kick off plug for the sidetrack (ST1) – hence the theoretical top below the 9.625in shoe.

The cement stinger was POOH and a kick-off assembly was made comprising a Hughes MXL-1X milled tooth bit, a mud motor set at 1.15° and an MWD tool. The BHA was RIH to 2096mMDRT with no cement tagged. Only traces of cement were detected in the mud system. The BHA was POOH and the 2.875in cement stinger made up and RIH to 2168mMDRT. A 25bbl Hi-Vis pill (100m) was pumped down hole and displaced with 126bbl of mud. The stinger was POOH and cement plug #3A was pumped from 2067m to 1918mMDRT. No losses or cement contamination were observed during the cementing operation. The stinger was POOH and the kick-off BHA made up and RIH. Whilst RIH circulation was not possible as the string had become plugged with cement flaking off the drill pipe walls. The BHA was POOH wet and 5in open ended drill pipe was RIH and top of cement was confirmed at 1985mMDRT via 10klbs down weight. The drill pipe was POOH.

During abandonment operations cracks were noticed on the port and starboard crane wear bands that were attached to the king posts. Even though the plug tagged at 1985mMDRT would have acted as a suitable kick-off plug it was decided that another cement plug was required to extend inside the 9.625in shoe. This would allow the well to be temporarily suspended during crane repair works.

The 2.875in cement stinger was rerun to 1980mMDRT and plug #3B was pumped (28bbl of 15.8ppg Class G cement). Following wait on cement the stinger was washed in hole and the top of cement tagged at 1896mMDRT (69m above shoe) with 10klbs down weight. The stinger was POOH and the cementing equipment was rigged down. A total of 36hrs of additional rig time was spent setting plugs at the 9.625in shoe.

The Rockhopper 1 well was suspended for a total of 238hrs (9.92 days) while remedial works were carried out. During this period general rig maintenance operations were also carried out and on 18 January 2010 a slick BHA was RIH and the cement was drilled down to 1970mMDRT (5m below 9.625in shoe). The BHA was POOH and preparations were made for the commencement of sidetrack operations. Rockhopper 1 ended at 17:30hrs on 19 January 2010. A separate end of well report has been issued for the Rockhopper 1/ST1 well.

Conclusions and Recommendations

(i) On future abandonment operations circulating bottoms up must be a standard practice after each cement plug is pumped to clear the cement string of all debris. Wiper balls should also be used.
(ii) Increase the length of Hi-Vis pills on future cement plugs across shoes from 50m to 100m.

If a kick off plug is required review the requirement to pump 16.5ppg cement. It may be beneficial to pump a 15.8ppg slurry and optimise the formulation to ensure sufficient compressive strength exists at the time of kick-off.

2.4.9 Rockhopper 1 Well Abandonment #2

Following on from Rockhopper 1/ST1 plug and abandonment operations cement plug #3A across the 9.625in shoe was successfully pressure tested to 2500psi (10mins). The 2.875in stinger and 5in drill pipe were then POOH and laid down. The wear bushing was recovered and a bridge plug was set at 205mMDRT. The 9.625in casing cutting assembly was RIH and the casing cut at 153.3mMDRT. A spear assembly was RIH and engaged the 9.625in casing string. Four full joints and one cut joint of casing were recovered to surface and laid down.

The BOP and riser were recovered to surface in a problem free operation and the Smith 20in/30in 2M Single-Trip-Casing-Cutting-Assembly was then made up and run to the wellhead. The assembly was landed out and set with a 20klbs overpull prior to commencing cutting operations. The 20in wellhead extension and 30in casing were cut at 102mMDRT (1.7m below the mudline). After 2hrs of cutting the cutting BHA was POOH to clear a blockage in the assembly. Silver tape was found in the piston nozzle operating the cutter knives. The cutting BHA was rerun and cutting operations recommenced. After 7hrs of cutting there was a clear indication that the 20in extension has been cut (rotation of the 18.75in wellhead). A 400klbs overpull was applied to the 20/30in casing and there was no movement noted in the PGB. The cutting BHA was POOH and upon inspection at surface the knives were very worn. A new set of 52in knives were made up to the cutting BHA and RIH. Following an additional 6hrs of cutting the slope indicator on the PGB began to move indicating the 30in casing had been cut and freed. The PGB, wellhead and cut casing were pulled to the surface along with the guideline cables.

Open ended 5in drill pipe was RIH and the bridge plug was tagged at 205mMDRT. Cement plug #4 was pumped from top of the bridge plug to the seabed at 100.3mMDRT. The drill pipe was POOH and an ROV survey of the seabed was carried out and recorded. A final abandonment schematic is located in section 2.10 as Figure 4.

Conclusions and Recommendations

(i) On future wells consideration should be given to using shorter knives when cutting the 20/30in casing. An option is to use 42in knives.

2.4.10 Rig Down and Move-off

Once all tubulars had been laid down from the mast and equipment on deck sea fastened pennant wires on anchors #1 and #5 were attached to the Far Fosna and Far Scimitar in preparation for anchor pulling operations. Problems were encountered ballasting down and a decision was made to recover all anchors and manually pump off the tanks (deballast the rig) during the tow to New Zealand. The Kan Tan IV was under tight tow to New Zealand at 07:30hrs on 22 February 2010. The total time to rig down equipment, sea fasten the rig and recover the anchors was 35.5hrs.

2.5 Bit Selection

Well: Rockhopper-1

Date In	Date Out	IADC	Bit#	Size (in)	Ser #	Mfr	Type	Jets	TFA	D.In (m)	D.Out (m)	Prog (m)	Hrs	IADC	ROP (ft/hr)	SPP (psi)	Flow (gpm)	WOB (klb)	RPM	MW (ppg)	I	O1	D	L	B	G	O2	R
18 Jan 2010	19 Jan 2010	M424	6 RR1	8.50	11103697	Security	FMF 3755	4 x 16	0.785	3522.0	3522.0	0	0			1700	600	10.00	60	9.36							NO	TD
30 Dec 2009	31 Dec 2009	117	5 RR	8.50	6076381	Baker Huhes C	8 1/2 GT-1	3 x 20	0.92	3522.0	3522.0	0	0			2450	570		60	9.36	2	2	WT	A	E	1	NO	LOG
21 Dec 2009	28 Dec 2009	M424	6 RR	8.50	11103697	Security	FMF 3755	4 x 16	0.785	2023.0	3522.0	1499	124		12.09	2037	598	14.00	127	9.36	6	6	BT	A	X	I	NO	PR
20 Dec 2009	20 Dec 2009	M424	6	8.50	11103697	Security	FMF 3755	4 x 16	0.785	2019.0	2023.0	4	2		2	1589	543	13.00	107	9.21	0	0	NO	A	X	I	NO	DTF
18 Dec 2009	20 Dec 2009	117	5	8.50	6076381	Baker Huhes C	8 1/2 GT-1	3 x 20	0.92	1972.0	2019.0	47	6		7.83	1800	552	20.00	60	9.18	2	2	WT	A	E	1	NO	BHA
17 Dec 2009	18 Dec 2009	M424	4	8.50	11370552	Security	FMF3653Z	6 x 14	0.902	1972.0	1972.0	0	0			1069			388	9.14	2	3	BT	S	X	I	CT	PR
09 Dec 2009	12 Dec 2009	M432	3	12.25	222170	REED	RSR616M	6 x 15	1.035	966.0	1972.0	1006	52		19.35	2431	966	15.20	209	9.02	4	4	LT	N	X	I	CT	TD
02 Dec 2009	04 Dec 2009	115	2	17.50	PN2676	Smith Bits	XR+VCPS	3 x 22 1 x 13	1.243	158.0	966.0	808	38.5		20.99	1911	1006	10.00	982	8.80	1	1	WT	A	E	I	NO	TD
01 Dec 2009	01 Dec 2009	111	1	26.00	6077163	Hughes	CR-1	3 x 18 1 x 16	0.942	100.3	158.0	57.7	3		19.23	320	492		93	8.80	1	1	WT	A	1	I	NO	TD

Table 3 Bit summary

2.6 Health, Safety and Environment

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
SAFETY				
Manhours (ADA / Client / Maersk / TPC onboard Kan Tan IV)	67308	33036	hrs	29th Nov 2009 – 0745 22nd Feb 2010, with the following approvals: • Rockhopper 1 Drilling Program application approval (ADA Letter 21st August 2009) received from MRT, DIER dated 12th October 2009. • Rockhopper 1 Plug and Abandonment Program approval received from MRT, DIER on 17th Feb 2010.
Stop Cards Generated	2292	1424	ea	From 30th Nov 2009 – 22nd Feb 2010 Overall participation from the Crew, Client and TPC's was satisfactory whilst the "quality" of the cards submitted was very high indicating good commitment to the scheme.
Safe Observation	1191	693	ea	51% of safe behaviour cards were deemed safe (Rockhopper 1 and Rockhopper 1/ST1).
Unsafe Observation	1101	731	ea	49% of safe behaviour cards were deemed unsafe (Rockhopper 1 and Rockhopper 1/ST1).
Total MODU Proactive Safety Efforts	6559	2117	ea	Include Work Permits / JSA / Toolbox Meeting / Time Out For Safety / Area Authority Audits / Hazard Hunts / STOP Cards 29th Nov 2009-0745 - 22nd Feb 2010
AUDIT				
Environmental Regulatory Audit	1	0	ea	DPI Auditors attended the rig on 16 – 18 Dec 2009.

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
MODU Mini HSE Audits	8	4	ea	Outstanding efforts by the ADA HSE Advisor in conducting the following audits: **During Rockhopper 1:** • 29th Jan 2010 Environmental Protection and Bulk Hoses; • 1st Dec 2009 Emergency Response • 12th Dec 2009 Safety Observations • 27th Dec 2009 Lifting Equipment Management • 30th Dec 2009 Isolations Process • 2nd Jan 2010 Confined Space Entry • 6th Jan 2010 Hoisting Equipment Safety Devices • 16th Jan 2010 Emergency Equipment • 20th Feb 2010 Leadership & Accountability All identified actions from Action Tracker have been reviewed and closed.
MODU Environmental Inspection / Internal EP Compliance Audit	7	4	ea	Internal environmental inspections carried out by the ADA Offshore HSE Advisor The inspections were held on the following dates; **During Rockhopper 1:** • 29th Nov 2009; • 14th Dec 2009; • 20th Dec 2009 • 3rd Jan 2010;

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
				• 10th Jan 2010; • 17th Jan 2010; • 21st Feb 2010. At the time of the completion all actions identified have been closed.
TRAINING				
ADA ERG Exercise	0	0		A live exercise was held earlier during Trefoil 2 well. No ERG exercise held during Rockhopper 1.
Environment Plan Training	Compliant	Compliant		Communications on campaign's environmental obligations including Environmental Objectives were made by ADA HSE Advisor via MODU Induction.
MODU Emergency Drill	6 6 2 6 0 1	4 4 2 4 0 0		The following drills were held: The following drills were held: • Fire drill • Abandon • MOB • First Aid • ISPS • SOPEP (Shipboard Marine Pollution Emergency Plans) Objectives have been met and there are no outstanding actions required. Objectives have been met and there are no outstanding actions required.
REPORTABLE INCIDENT (NOPSA)				
Lost Time Injury	0	0	ea	Zero LTI occurred during the Rockhopper 1 operation.
Alternate Duties Injury (ADI)	0	0	ea	Zero alternative duties injuries occurred.
Medical Treatment	0	0	ea	Zero medical treatment injuries occurred.

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
Injury (MTI)				
NON REPORTABLE INCIDENT (NOPSA)				
First Aid Case (FAC)	1	1	ea	• 10/12/2009 – Worker received minor cut to thumb from hacksaw blade; and Note: Corrective / preventive actions have been closed out.
Near Miss (NM)	1	2	ea	• 6/12/2009 - Dropped object, torque bar on BOP, Potential FAC; Note: Corrective / preventive actions have been closed out.
Property Damage	2	1	ea	• 12/12/2009 - Bent joint, operator error; • 19/12/2010 - Walkway on starboard crane damaged, dropped object bolts, potential FAC; and Note: Corrective / preventive actions have been closed out.
RECORDABLE INCIDENT (DIER)				
Spills – occurrence	0	0	ea	No hydrocarbon or chemical spills occurred
Spills – quantity	0	0	ea	As above
Sewerage Disposal				
Problems with sewerage plant resulted in discharge of untreated sewage to the marine environment	0	0	ea	No concerns identified.
WASTE				
Hazardous waste	2	2	IBC	All wastes are properly packed, stored and sent onshore to Oil Patch Containers (OPC) and disposed accordingly through an approved waste disposal company, an EPA approved permit holder to transport
	5	0	Drums	
Total	4500	4000	Litres	

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
				various wastes including waste from offshore.
Non-hazardous waste	57	42	skips	Skips of solid waste and scrap metal sent ashore for disposal through Cleanaway.
MARINE USER INTERACTION				
Cetacean sightings	2	0	ea	Two cetacean sightings during this well were reported to DEWHA 27th Dec 2010 – Approx 15 Bottlenose Dolphin within 100m of rig; and 12th Feb 2010 – Two Humpbacks spouting approx 1km away from rig.
Errant vessel interaction	0	0	ea	No interactions recorded
Potential Impacts from Fishing Operations	0	0	ea	No impacts identified. Pre and post seabed survey was made by Fugro Survey, the ROV contractor. Copies of DVD recording & seabed clearance certificates were sent to Tasmania DIER.
Biofouling management activity	1	0	ea	During Rockhopper 1 drilling operations, ROV video recording was again done by Fugro Survey on 8th Dec 2010, to obtain close-up footage of biofouling data. Overall biosecurity considerations were minor. The monitoring actions taken have substantially reduced the biofouling risks associated with the Kan Tan IV.
WATER BASED MUDS (WBM)				
Volume water based drilling fluid dispose into the ocean (m^3) *Note: This number is taken from*	1419.8	688.4	m^3	No recordable incident arising from: • Rockhopper 1 (29th Nov – 19 Jan 2010 & from 17th Feb – 22nd Feb 2010) and drilling

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
the mud report. In a well where drilling occurs in the lost circulation zone, sweeps etc are lost down hole, not to the ocean. This column is for mud lost at the shale shakers or dumped.				activities that breach the performance objective for the ADA Origin Energy T/18P Environment Plan.
Volume of drill cuttings using WBM disposed to the seabed (m^3) Note: *This data is basically the volume of rock excavated from the well. When drilling top hole, cuttings are lost down hole and should not be included.*	243.4	59.4	m^3	
Volume of drill cuttings using WBM injected into the annulus (m^3)	0	0	m^3	
Oil / Chemical spills discharged to the marine environment	0	0	m^3	No hydrocarbon or chemical spills occurred.

Table 4 Health, safety and environment record

2.7 Well Highlights and Lowlights

2.7.1 Highlights

The main highlights during Rockhopper 1 were as follows:

- No LTIs occurred during the well.
- No alternate duties injuries occurred during the well.
- No medical treatment injuries occurred during the well.
- No hydrocarbon / chemical spills were recorded during the well.
- No incidents were recorded that breached the performance objective for the Origin T/18P Environment Plan.
- A total of 2292 Stop cards (1191 safe and 1101 unsafe observations) were submitted during the well.
- A total of 6559 proactive safety efforts were recorded during the well.
- Many lessons from Trefoil 2 were successfully implemented on Rockhopper 1 such as the use of roller blocks to make-up BHA components offline and the revised space-out of the 20/30in cutting BHA to allow a shallower cut on same.
- Whilst at times problematic the use of the rotary steerable tool in the 8.5in section on Rockhopper 1 proved to be successful as all targets were intersected and a smooth wellbore was drilled allowing logging objectives to be met.
- The well design for Rockhopper 1 was a success as the 9.625in production string was set deep enough to isolate problematic zones of the Demons Bluff Formation but shallow enough to allow conventional wireline logging (as opposed to pipe conveyed logging) to be carried out in the 8.5in hole section.
- The KCl/PHPA/ClaySeal Plus mud formulation proved to be successful particularly in the 8.5in hole sections were the wellbores remained stable after several days of drilling and logging.
- The Halliburton FMF3755 PDC bit drilled 1499m of the 8.5in section in a single run.
- The well was successfully plugged and abandoned in accordance with Regulatory requirements.
- When rig equipment downtime is excluded from the overall well time an NPT percentage of 7% was achieved on Rockhopper 1.

2.7.2 Lowlights

The main lowlights during Rockhopper 1 were as follows:

- The inability to set abandonment plugs at/below the 9.625in shoe on the first attempts.
- A total of 13.8 days were lost due to rig equipment downtime on Rockhopper 1.
- Two NCR's were issued during Rockhopper 1. Refer to Table 5 in section 2.8 for further details.
- The lack of a spare upper annular insert element resulted in a delay in the change-out of same.

2.8 Non-conformance Report Summary

A total of 2 NCR's were issued during Rockhopper 1. The total recorded lost time in the daily reports attributed to these NCR's was 15.75hrs. A further 36hrs was classed as unplanned activities. The total cost impact of the NCR events was US$1,552,500 and an overview of these events is summarised in Table 5.

NCR	Description	Recorded NPT	Unplanned Activity	Cost Impact (US$)
006	A Security FMF3653Z PDC bit (8.5in) was RIH on a Geopilot RSS BHA to drillout the 9.625in shoetrack on Rockhopper 1. The plan was then to conduct a LOT and drill ahead to well TD. It took 8.5hrs to drill the top and bottom plugs from 1938m to 1940m. During this period the drilling parameters were varied. Initial drilling on plugs was typical with a nominal torque of 3-4klbs-ft which declined to almost zero. The BHA was regularly picked up off bottom and the WOB gradually increased from 5klbs to 15klbs. Rubber from the plugs over the shakers (with traces of aluminium) indicated progress through the plugs. Erratic torque developed with cycling from 4-10klbs-ft. Metallic shavings over the shakers indicated internal casing wear. As drilling progress was minimal and there was a concern with casing degradation it was decided to POOH the Security FMF3653Z PDC bit and Geopilot RSS BHA. A tricone bit was RIH on a mud motor and the shoetrack was drilled out in 0.25hrs.		36	$ 1,080,000.00
007	A Geopilot RSS BHA was RIH to drill the 8.5in directional section on Rockhopper 1. The section was drilled from 2019m to 2023m. At this point the RPM read back function was not operating correctly. Attempts were made to set the Geopilot to the required steering power/angle without success. It was decided to POOH and replace the Geopilot tool with the back-up tool.	15.75		$ 472,500.00
	Total	**47.5**	**36**	$ 1,552,500

Table 5 Non-conformance report summary

2.9 Time Analysis

2.9.1 Breakdown by Well Phase

Table 6 summarises the planned versus actual time breakdown by operational phase for Rockhopper 1 and Figure 1 is a graphical representation of this data.

Rockhopper 1 Operation Phase	Time (days)				
	Planned	**Actual**	**Programmed**	**Unprogrammed**	**NPT**
Mobilisation (P1)	3.15	0.98	0.98	0.00	0.00
36in Hole (P2)	0.62	1.40	1.23	0.00	0.17
30in Casing (P3)	1.30	0.79	0.79	0.00	0.00
17.5in Hole (P4)	2.46	2.65	2.63	0.00	0.02
13.375in Casing (P5)	1.24	1.38	1.27	0.00	0.10
Run BOP/Riser (P6)	2.95	2.48	1.75	0.21	0.52
12.25in Hole (P11)	4.04	3.94	3.70	0.00	0.24
9.625in Casing (P13)	1.51	4.77	2.17	0.00	2.60
8.5in Hole (P17)	8.30	11.21	7.81	1.96	1.44
Log 8.5in Hole (P17)	1.43	8.65	8.63	0.00	0.02
Abandon Well (P21)	5.10	16.81	5.08	0.02	11.71
Demobilisation (P1)	0.35	1.48	1.48	0.00	0.00
On location WOW Days	2.00				
Mob/Demob WOW Days	2.00				
Total	**36.44**	**56.52**	**37.51**	**2.19**	**16.82**

Table 6 Breakdown by operational phase

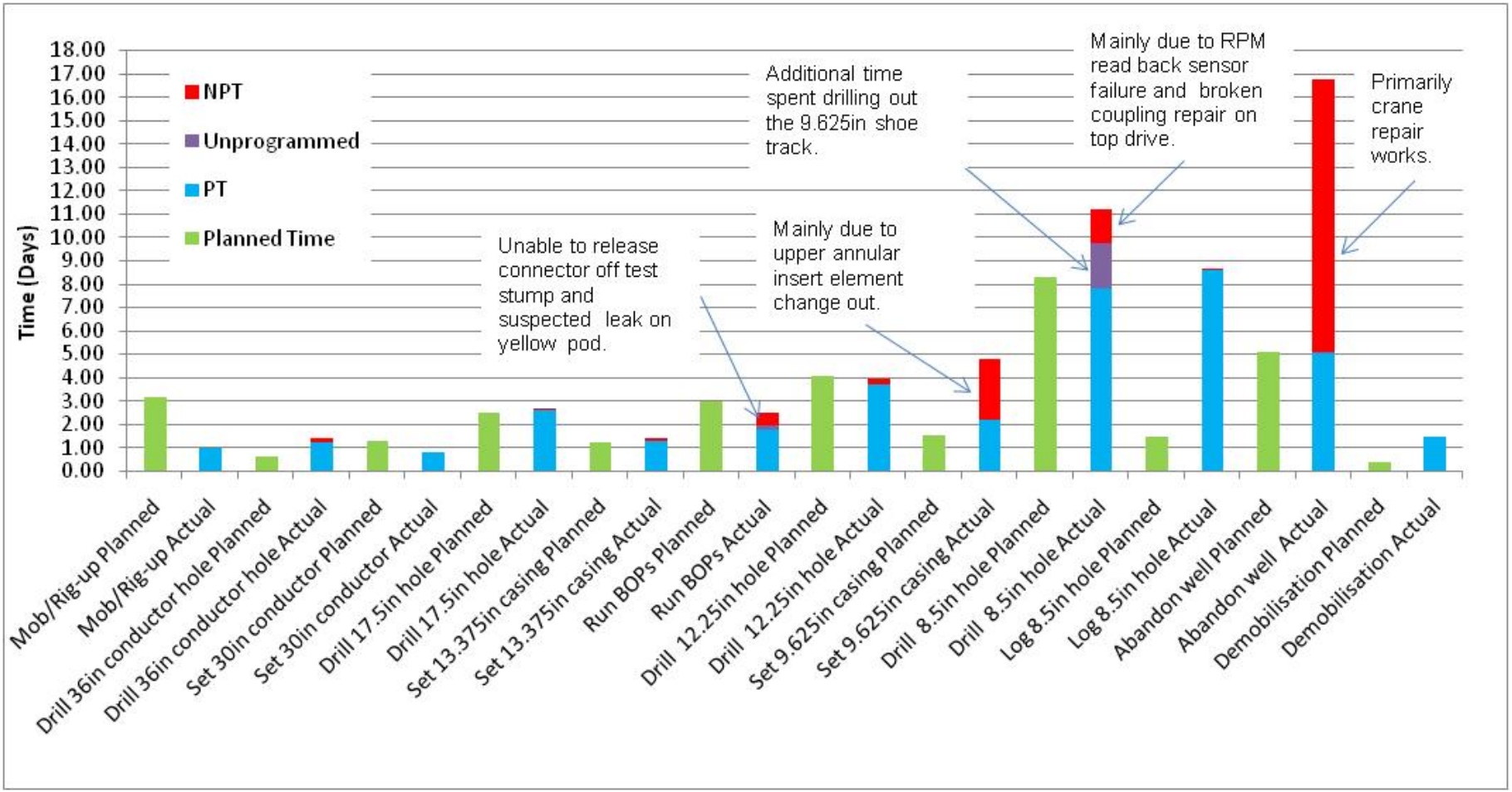


Figure 1 Breakdown by operational phase

2.9.2 Non-productive Time Analysis

Total time spent on Rockhopper 1 was 56.52 days compared with the total pre-drill predicted time for the well of 36.44 days. The well duration was 20.08 days (55%) over the pre-drill estimate. Of the 56.52 days spent on Rockhopper 1 a total of 16.82 days (29.8%) were recorded as non-productive time (NPT) for the well and 2.2 days (3.8%) were recorded as unplanned activities. Figure 1 highlights the main NPT events on Rockhopper 1 and Figure 2 summarises the NPT events by root cause. The following points should be noted in regards to the NPT on Rockhopper 1:

- A total of 9.92 days were lost due to carrying out crane repair works. These repairs contributed to 59% of the total NPT on the well.
- A total of 2.54 days were lost changing out the upper annular insert element.
- In total 13.8 days were lost due to rig equipment downtime events during the well.
- An additional 7.22 days were spent on wireline logging activities (the original pre-drill time estimate was based on a dry hole scenario).
- If the rig equipment downtime was removed from the overall well time a total of 42.72 days would have been spent on the well with an NPT percentage of 7%.
- If the rig equipment downtime and additional logging time are removed from the overall well time at total of 35.5 days would have been spent on the well. This is less than the proposed pre-drill predicted time estimate.

Based on the points above it can be seen that the overall Rockhopper 1 NPT figures are heavily skewed by two rig repair incidents. The overall NPT performance outside of these two NPT events of 7% was well within the 20% allowance in the pre-drill time estimate.

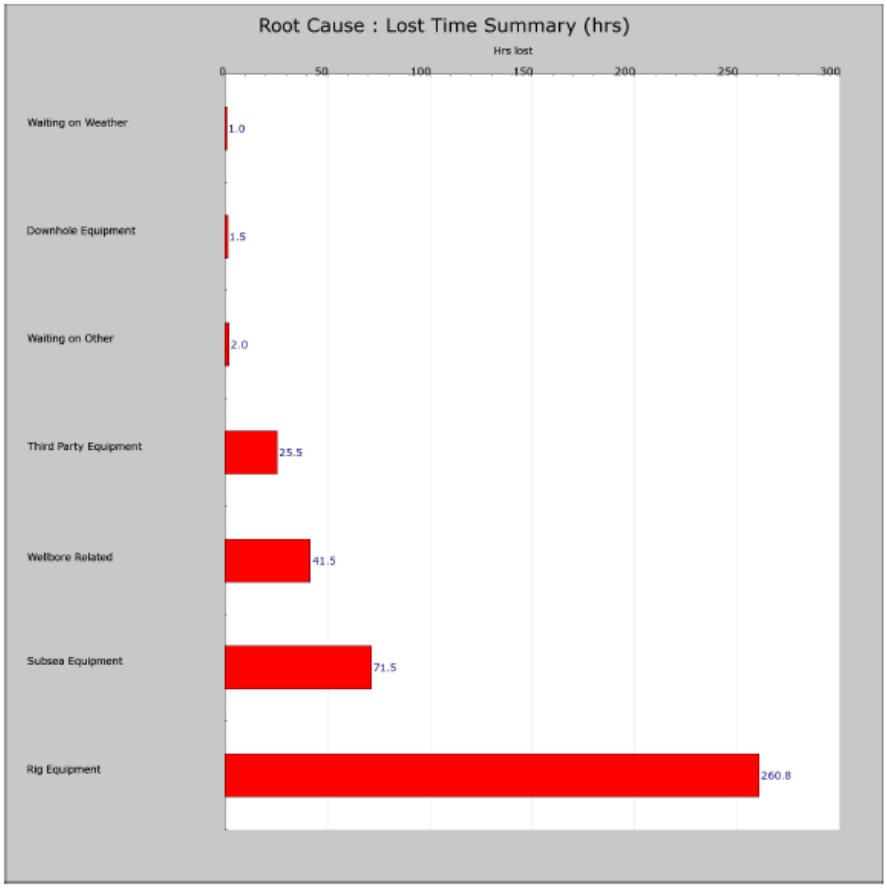


Figure 2 Lost time summary

A complete listing of all the NPT events on Rockhopper 1 is included in Appendix 12.

2.9.3 Time vs. Depth Curve

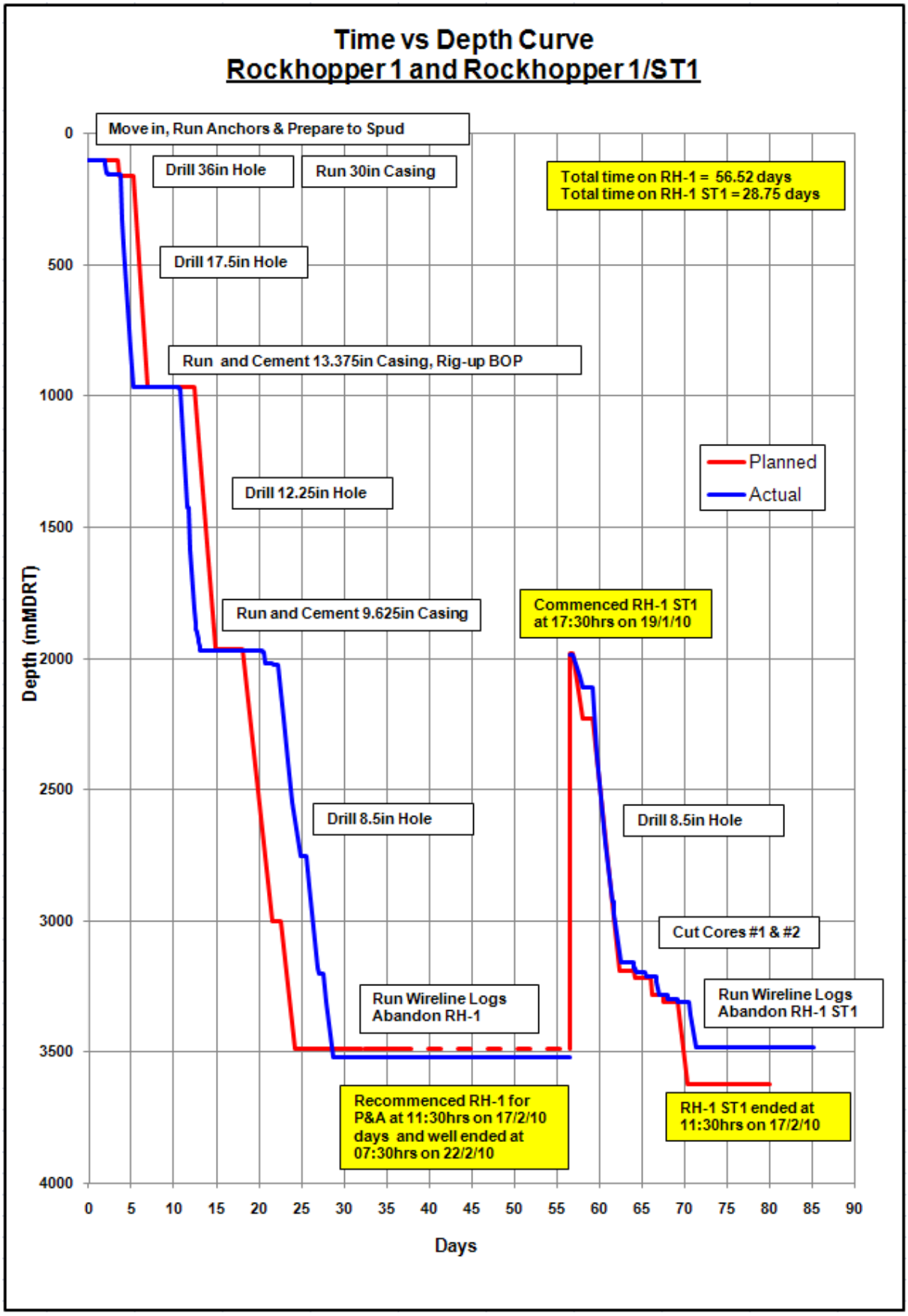


Figure 3 Time vs. Depth Curve

2.10 Plug and Abandonment Well Schematic

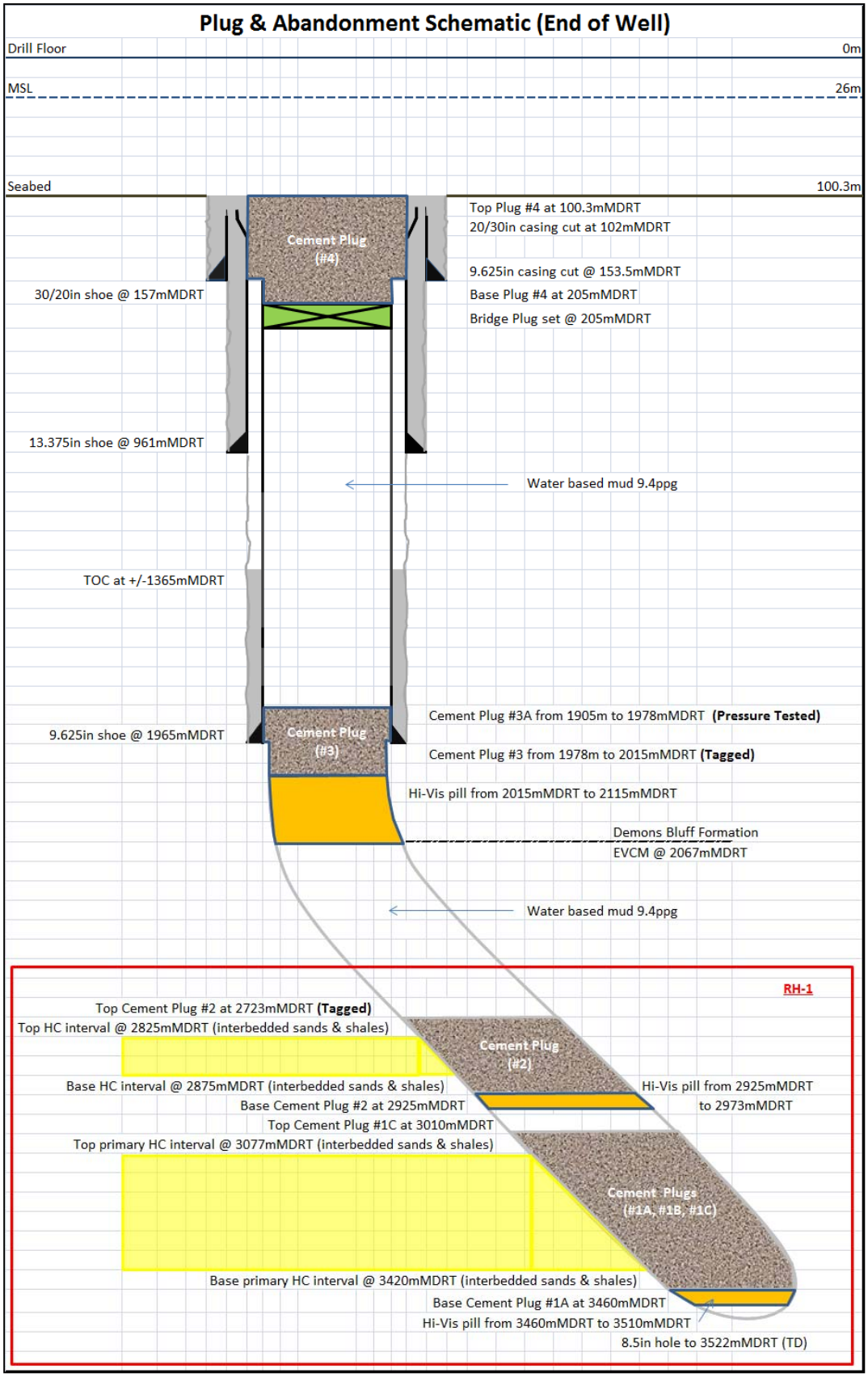


Figure 4 Plug and Abandonment Well Schematic

2.11 Lessons Learnt Register

A total of 64 new lessons were captured during Rockhopper 1 and Rockhopper 1/ST1 operations. The lessons learnt register below (Table 7) lists the most relevant technical and operational lessons captured during Rockhopper 1.

LL #	Lesson Learned / Opportunity	Action Results
111	Rockhopper 1 Well position tolerance was agreed in program to be within 10m. 7m attained however the request was made to get down to 3-4m. Due to extra time taken to achieve closer position the Tow Master recommends having an additional tow master mobilised in future.	Viability of having two tow masters will be considered on future moves.
113	When rigging up for casing run consider placement of bushings – makeup line had to be disconnected and it ended up in the cat head. 0.25hr KILT.	Will add to SJA prompts. Reach Coach to list with other rig floor learnings for STP to add to pre job talks.
115	30in conductor hung up on CART in moonpool. Removed dog securing bolts on PGB to allow passage of 30in.	Suggestion is to put a stabbing guide on the CART.
121	Source a PCS a hydraulic dog collar to help with manual handling. This device would also improve efficiency.	PCS have this in New Zealand ready for despatch once KT4 arrives at first location in same.
123	Given the size of the pits in this area a preference is to reduce size of kill mud and have more Hi Vis available if we encounter problems. Pit space including dead volume is 1577bbls.	The kill mud volume is based on the depth of 17.5in section. Review pit management when drilling riserless.
125	If bow-spring centralisers were used on the 13.375in casing the 500T elevators could be rigged up from the start therefore saving rig up time and building momentum running the casing.	Agreed to use 500T elevators (350T not available) and will source bow spring centralisers on future wells.
128	Elevator spider control hoses should have been bundled and removed from 15ft bails. Hose got wrapped around the pipe handler as hanger was made up (1.5hr NPT).	Reach Coach to list with other rig floor lessons for STP to add to pre job talks.

130	Difficult to latch cement stand as it was too high for derrick hand. Need a 15ft HW pup joint instead of full single on top of the stand. Also look at option to have hose already attached.	Pup joint onboard the rig.
132	When the major part of the BOP Stack weight was transferred onto Marine Riser Tensioners the BOP Stack slowly spun out of alignment. The BOP and marine riser weight was transferred partly back onto blocks and the rig tuggers were used to line up the BOP guides with the PGB posts.	When BOP is retrieved the slip joint load ring clamp will be repositioned.
134	Unable to kick off 12.25in section as planned. Only attained 0.7° by TD. Unable to hold tool face when attempting to build angle as reactive torque affected ability to kickoff. Did not achieve desired deviation.	Review bit design for future wells and consider less aggressive cutter options.
138	Unable to drill out the shoe track with Security FMF3653Z PDC bit and Geopilot assembly. Metal back to shakers. POOH and pickup Tri-cone and motor BHA.	On future wells Geopilot tools will not be used to drill out shoetracks.
141	Suggestion had been made by Mud Engineer to add Barolift to the mud system to aid cuttings removal. There were concerns that the fibres could remain in the system for quite a while.	Barolift added with no adverse effects noted.
142	Opportunity to save time when running in hole with SLB Logging tools by not waiting at the shoe for temperature stabilisation.	This was done and time saved.
144	Observation cards were submitted against Schlumberger regarding their radiation storage containers. These boxes are safe once the sources have been loaded. However personnel walking past these empty containers think there is still a risk.	Schlumberger to explain in SJA and at toolbox talks that the storage boxes have no radiation risk once the radioactive sources have been loaded into the tools.

146	When tensioning up the heave compensator sling the Schlumberger weak link was activated. Time was spent redressing the link with a new pin. Observer in the moonpool was late in notifying driller that the sling was approaching optimal tension	The issue was raised at the toolbox talk for the next rigging up. The job proceeded smoothly with good communication and without problem.
151	Unable to test Geopilot for RPM at surface. If RPM is not recorded then the Geopilot will not function as it assumes it is stationary. Cannot surface test when tool is in vertical position.	This is something that cannot be done on the rig. Halliburton have to send their tools back to the shorebase for testing on a test rig.
155	During logging operations the heave compensator sling had been rubbing against the latch on the elevators wearing a deep groove in same.	Two 80T shackles were attached to each bale in order to lengthen them. The pipe handler was also rotated 45° to starboard. A note was been added to the Performance Prompts and Maersk procedures will be updated.
157	Decision was taken to place a suspension plug 40m into the 9.625in shoe. The cement job was as per program and appeared to go without problem. Chlorides had been checked and were within acceptable range. TOC found TOC at 1985m (below the shoe).	Will increase excess in future if any doubts over hole gauge. Will also increase the length of the Hi-Vis pill.
158	Cement sheath left in drill pipe. It was necessary to lay down 9 stands for backload to town.	Additional wiper balls were sent to rig. Bottoms up must be circulated after each plug is pumped.

Table 7 Lessons learnt register

2.12 Daily Activity Report

The Daily Activity Reports are included as Appendix 11.

3. FORMATION SAMPLING & ANALYSIS

3.1 Cuttings

Cuttings were collected over the interval 970 – 3522mMDRT. The sampling intervals were as follows:

970 – 1700 mMDRT: 10 to 20 metre intervals
1700 – 2050 mMDRT: 5 to 10 metre intervals (plus spot samples)
2050 – 3522 mMDRT: 3 to 6 metre intervals (plus spot samples)

A detailed collection and distribution list for all cutting samples collected from Rockhopper 1 is included in the Geoservices End of Well Report (Appendix 5). Lithological descriptions for the cutting samples are presented in Appendix 1. A complete set of Daily Geological Reports, which include cuttings description summaries, are included in Appendix 17.

3.2 Sidewall Cores

One run of mechanical sidewall cores were acquired in Rockhopper 1. The MSCT was run 6 of logging suite 1. All 32 of the mechanical sidewall cores attempted were accepted, although the recovery factor and condition of each core was variable. Table 8 summarises the cores acquired from the MSCT logging run. Detailed mechanical sidewall core descriptions are supplied in Appendix 2 and RCA data and photographs are included in Appendix 3.

No.	Depth (mMDRT)	Core Acceptance	Recovery (mm)	Lithology
1	3323.1	Accepted	50	Siltstone
2	3325.0	Accepted	27	Sandstone
3	3333.2	Accepted	46	Siltstone
4	3336.1	Accepted	47	Sandstone
5	3341.5	Accepted	46	Siltstone
6	3343.8	Accepted	35	Sandstone
7	3347.7	Accepted	45	Claystone
8	3424.7	Accepted	15	Sandstone
9	3423.3	Accepted	35	Sandstone
10	3401.2	Accepted	40	Sandstone
11	3402.8	Accepted	30	Sandstone
12	3242.8	Accepted	49	Sandstone
13	3197.3	Accepted	46	Sandstone
14	3198.7	Accepted	40	Sandstone
15	3201.1	Accepted	40	Sandstone
16	2962.5	Accepted	45	Sandstone
17	2874.0	Accepted	41	Sandstone
18	2875.5	Accepted	45	Sandstone
19	2877.0	Accepted	42	Sandstone
20	3287.7	Accepted	32	Sandstone
21	3209.1	Accepted	50	Sandstone
22	3417.0	Accepted	39	Sandstone
23	3390.5	Accepted	44	Siltstone
24	3380.5	Accepted	47	Sandstone
25	3374.7	Accepted	27	Sandstone
26	3374.7	Accepted	38	Sandstone
27	3268.9	Accepted	37	Siltstone
28	3235.8	Accepted	25	Sandstone
29	3233.8	Accepted	50	Sandstone
30	3137.1	Accepted	47	Sandstone
31	2895.5	Accepted	39	Sandstone
32	2832.0	Accepted	27	Sandstone

Table 8 Summary of mechanical sidewall cores acquired in Rockhopper 1

3.3 Conventional Cores

No conventional cores were acquired in Rockhopper 1.

3.4 Palynology

Eleven cuttings and two MSCT samples were selected from Rockhopper 1 for palynological analysis. This analysis was conducted by Morgan Palaeo Associates and the basic palynological data is presented in Appendix 9 and a summary of the basic data resulting from this work is presented in Table 9. The complete palynology report is presented in the interpretive volume of the Rockhopper 1 Well Completion Report as Appendix 5.

Depth (mMDRT)	Sample Type	Yield			Preservation	
		kerogen	dinocysts	spore-pollen	dinocysts	spore-pollen
2181-2184	Cuttings	high	trace	low	poor	±poor
2349-2358	Cuttings	high	-	low	-	±poor
2421-2424	Cuttings	high	trace	low	poor	very poor
2511-2514	Cuttings	very high	trace	very low	very poor	±poor
2685-2688	Cuttings	high	trace	low	very poor	poor
2802-2805	Cuttings	high	medium	high	fair	fair
2922-2925	Cuttings	high	trace	high	good	fair
3072-3075	Cuttings	high	trace	high	fair	±poor
3258-3261	Cuttings	very high	-	high	-	very poor
3268.9	MSCT	medium	-	low	-	very poor
3300-3303	Cuttings	very high	-	high	-	poor
3347.7	MSCT	very high	trace	high	fair	poor
3384-3387	Cuttings	high	trace	medium	poor	very poor

Table 9 Basic palynological data summary

3.5 Geochemistry

Thirteen cuttings samples were selected for vitrinite reflectance (Vr) analysis which was conducted by Keiraville Konsultants. The sample type and depths of the samples used for the Vr analysis are listed in Table 10. The results of this work are included in the interpretive volume of the Rockhopper 1 Well Completion Report in Appendix 4.

Eleven cuttings samples and six condensate samples were selected for geochemical analysis. Details of these samples are also listed in Table 10. The condensate samples were sourced from wireline run's 3 and 4 with the MDT-GR toolstring. Results of the geochemical analyses are presented in the

interpretive volume of the Rockhopper 1 Well Completion Report in Appendix 3.

Depth (mMDRT)	Sample Type	Analyses
2040-2045	Cuttings	Vr
2124-2127	Cuttings	Vr
2181-2184	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
2349-2358	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
2421-2424	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
2511-2514	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
2685-2688	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
2802-2805	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
2922-2925	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
3072-3075	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
3202	MDT (condensate)	CSIA, Liquid Chromotography, Whole-oil GC-MS, Saturate-fraction GC-MS, Branched/Cyclic GC-MS, Aromatic GC-MS
3235	MDT (condensate)	Liquid Chromotography, Whole-oil GC-MS, Saturate-fraction GC-MS, Branched/Cyclic GC-MS, Aromatic GC-MS
3245	MDT (condensate)	CSIA, Liquid Chromotography, Whole-oil GC-MS, Saturate-fraction GC-MS
3325	MDT (condensate)	Liquid Chromotography, Whole-oil GC-MS, Saturate-fraction GC-MS, Branched/Cyclic GC-MS
3338.5	MDT (condensate)	CSIA, Liquid Chromotography, Whole-oil GC-MS, Saturate-fraction GC-MS, Branched/Cyclic GC-MS, Aromatic GC-MS
3258-3261	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
3300-3303	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
3384-3387	Cuttings	TOC, Rock-Eval Pyrolysis, Vr
3402.5	MDT (condensate)	CSIA, Liquid Chromotography, Whole-oil GC-MS, Saturate-fraction GC-MS, Branched/Cyclic GC-MS, Aromatic GC-MS

Table 10 Rockhopper 1 geochemical analyses sample summary

3.6 Petrology

Detailed petrological analysis was undertaken on fourteen MSCT samples between the depths of 2877.0 – 3174.1mMDRT by Reservoir Solutions Pty Ltd. Analytical techniques included thin-section analysis, qualitative fine-fraction X-ray diffraction analysis, and scanning electron microscopy. The thin-section analysis undertaken includes modal analysis, grain size analysis and photomicroscopy/energy dispersive spectroscopy. The samples selected for the analyses are summarised in Table 11. The results of the analyses can be found

in the interpretive volume of the Rockhopper 1 Well Completion Report in Appendix 6.

Sample #	Depth (mMDRT)	Sample Type	Petrological Analysis				Core Analysis		
			MA	XRD	SEM	PM	Por. (%)	Perm. (mD)	GD (g/cm^3)
19	2877.0	MSCT	X	X	X	X	22.3	851	2.64
16	2962.5	MSCT	X	X	X	X	12.9	0.57	2.64
30	3137.1	MSCT	X	-	-	X	2.5	<0.01	2.71
14	3198.7	MSCT	X	-	-	X	17.3	28.9	2.67
29	3233.8	*MSCT*	*X*	-	-	*X*	20.0	18.0	2.68
12	3242.3	*MSCT*	*X*	X	X	*X*	20.5	87.0	2.65
20	3287.7	*MSCT*	*X*	-	-	*X*	18.3	1.81	2.66
2	3325.0	MSCT	X	X	X	X	19.8	31.9	2.64
4	3336.1	MSCT	X	X	X	X	18.4	14.1	2.63
6	3343.8	MSCT	X	-	-	X	15.5	4.71	2.70
7	3347.7	*MSCT*	*X*	-	-	*X*	1.7	-	2.84
25	3374.7	*MSCT*	*X*	-	-	*X*	20.9	11.1	2.65
10	3410.2	*MSCT*	*X*	-	-	*X*	14.7	0.65	2.64
8	3424.7	MSCT	X	X	X	X	14.0	41.4	2.64

Table 11 Summary of samples

Samples selected for MA (modal analysis), XRD (fine-fraction X-ray diffraction analysis), SEM (scanning electron microscopy), PM (photomicroscopy) and RCA (core analysis)

3.7 Core Analysis

Routine Core Analysis (RCA) was performed by Weatherford Laboratories Pty Ltd on sidewall core samples obtained from the MSCT wireline logging run. The RCA report is presented in Appendix 3.

4. FORMATION EVALUATION

4.1 Mudlogging

Mudlogging was provided by Geoservices Australasia Pty Ltd over the interval 102.0 – 3522.0 mMDRT. Geoservices End of Well Report can be found in Appendix 5.

4.2 Logging While Drilling

Sperry-Sun Drilling Services provided Logging while drilling (LWD) services for Rockhopper 1. In the 17 ½" hole section a conventional rotary assembly was used, comprised of a Pressure Case Directional (PCDC) for wellbore surveying, Dual Gamma Ray (DGR) and Four Phase Electromagnetic Resistivity (EWR-P4). The 12 ¼" hole section was drilled in one bit run using a SperryDrill Motor assembly. The LWD tool utilised in this section of the well were a Drilling String Dynamic Dual Gamma Ray (DDSr-DGR) for drilling optimisation and EWR-P4. Additionally a PCDC was utilised for wellbore surveying. The 8 ½" hole was drilled in four bit runs using a Geopilot Rotary Steerable System (RSS) Bottom Hole Assembly (BHA) in conjunction with a motor BHA. The LWD tools included in this BHA comprised of a DDSr-DGR, EWR-P4, Compensated Thermal Neutron (CTN) tool, Azimuthal Litho-Density (ALD) tool and Bi-Modal Acoustic (BAT) tool. Additionally an Acoustic Caliper (ACAL) was run in recorded mode to determine hole size and a PCDC was utilised for wellbore surveying. Sperry Drilling Services also provided a Measurement While Drilling (MWD) tool throughout the course of the well in order to collect directional data. A summary of each MWD and LWD run is shown in Table 12. Sperry Drilling Services End of Well Report detailing the LWD and MWD operations is presented in Appendix 6.

Bit #	Hole Size (inches)	Interval (mMDRT)	MWD Services	LWD Services	Trip for MWD
1	17 ½	158.0 – 966.0	DWD	DGR—EWR-P4	No
1	12 ¼	966.0 – 1972.0	P4M	DDSr-DGR—EWR-P4	No
1	8 ½	1972.0 – 1972.0	P4M	DDSr-DGR—EWR-P4—CTN—ALD—BAT	No
2	8 ½	1972.0 – 2019.0	P4M	DDSr-DGR—EWR-P4—CTN—ALD—BAT	No
3	8 ½	2019.0 – 2023.0	P4M	DDSr-DGR—EWR-P4—CTN—ALD—BAT	No
4	8 ½	2023.0 – 3522.0	P4M	DDSr-DGR—EWR-P4—CTN—ALD—BAT	No

Table 12 Summary of LWD & MWD runs in Rockhopper 1

4.3 Wireline Logging

The following wireline logs, shown in Table 13, were run at Rockhopper 1 by Schlumberger Oilfield Australia Pty Ltd. A summary of the logging parameters and the recorded temperature data can be found in tables 14 and 15 respectively. The Wireline Service Quality Report by Schlumberger is presented in Appendix 7.

Suite #	Run #	Log	Interval (mMDRT)
1	1	SP-HRLA-PEX-HNGS-CMR+	1964.9 - 3511.3
1	2	XPT-GR (ECRD)	2134.2 – 2978.4
		WIPER TRIP	
1	3	MDT(Quicksilver)-GR	3235.0 – 3424.5
		WIPER TRIP	
1	4	MDT(Quicksilver)-GR	2549.2 – 3202.0
1	5	VSI-GR	294.1 – 2614.6
1	6	MSCT-GR	2832.0 – 3424.7
1	7	FMI-DSI-GR	625.0 – 3481.0

Table 13 Wireline logs run in Rockhopper 1

Suite #	Run #	Bit Size (inches)	Fluid Type	Density (lbm/gal)	Viscosity (s)	Fluid Loss (cm^3)	pH	RM @ measured Temp (ohm.m@°C)	RMF @ measured Temp (ohm.m@°C)	RMC @ measured Temp (ohm.m@°C)
1	1	8 ½	KCl/Polymer	9.55	55	4.3	9.0	0.0828 @ 20.9	0.092 @ 21.8	0.348 @ 21.8
1	2	8 ½	KCl/Polymer	9.55	55	4.3	9.0	0.0828 @ 20.9	0.092 @ 21.8	0.348 @ 21.9
1	3	8 ½	KCl/Polymer	9.45	61	4.8	9.0	0.1017 @ 23.7	0.091 @ 22.3	0.257 @ 22.8
1	4-7	8 ½	KCl/Polymer	9.45	61	4.8	9.0	0.1217 @ 17.5	0.1078 @ 16.8	0.367 @ 16.7

Table 14 Logging parameters for wireline logging operations in Rockhopper 1

Suite #	Run #	Maximum Recorded Temperature (°C)	Bottom Hole Depth (mDRT)	Time Circulation Stopped	Time Logger On Bottom
1	1	131	3511.3	28/12/09 03:45	28/12/09 20:22
1	2	121	2978.4	28/12/09 03:45	29/12/09 20:35
WIPER TRIP					
1	3	133	3424.5	31/12/09 01:00	01/01/10 00:43
WIPER TRIP					
1	4	122	3202.0	03/01/10 03:00	03/01/10 15:38
1	5	114	2614.6	03/01/10 03:00	04/01/10 18:30
1	6	132	3424.7	03/01/10 03:00	05/01/10 04:10
1	7	137	3481.0	03/01/10 03:00	05/01/10 20:45

Table 15 Temperature data recorded during wireline logging in Rockhopper 1

4.4 Hydrocarbon Indications

Gas shows from cuttings are presented in Appendix 4 and fluorescence shows in cuttings and sidewall cores are detailed in Appendices 1 and 2 respectively.

4.5 Velocity Survey

A rig source VSP survey and checkshot measurements were originally planned to be acquired by Schlumberger Oilfield Australia Pty Ltd in Rockhopper 1 but due to an inability to descend to total depth, the VSP survey was cancelled. The data set was subsequently acquired as a checkshot survey over the interval 294.1-2614.6 mMDRT using the Versatile Seismic Imager (VSI-4) tool and 74 shots were recorded. Checkshot data and VSP charts are included in Appendix 8.

5. FORMATION TESTING

5.1 MDT Formation Pressure Testing & Fluid Sampling

The Rockhopper 1 MDT programme consisted of one logging run utilising the XPT-GR (ECRD) logging assembly and two logging runs with the MDT(Quicksilver)-GR assembly. The first MDT run (logging run #2) was RIH to 2134.2mMDRT and pre-tests were conducted from 2134.2mMDRT to 2978.4mMDRT. The tool encountered tight hole conditions between 3010mMDRT and 3083mMDRT, becoming stuck at 3010mMDRT during an attempt to correlate. The tool was pulled free after 30 minutes and it was decided to POOH to conduct a wiper trip. In total, 19 pre-tests were attempted of which 10 were valid tests and 9 were tight tests.

The second MDT run (logging run #3), utilising the MDT(Quicksilver)-GR logging assembly, was RIH to 3424.5mMDRT and encountered tight hole conditions between 3000mMDRT and 3100mMDRT. Pre-tests were conducted between 3235.0mMDRT and 3424.5mMDRT. Nine samples were collected at 3424.5mMDRT, 3402.5mMDRT, 3325.0 (x 2), 3338.5mMDRT, 3245.0mMDRT (x 2) and 3235.0mMDRT (x 2). Additional pump-outs were recorded at 3402.5mMDRT, 3342.0mMDRT, 3341.0mMDRT, 3346.0mMDRT, 3335.0mMDRT, 3334.0mMDRT and 3345.0mMDRT. The MDT tool encountered tight hole conditions again and became hung up at 3224mMDRT. The tool was pulled free after 30 minutes and as a precaution was POOH to the 9.625" casing shoe at 1965mMDRT. Upon RIH the tool became hung up at 3060mMDRT. The tool was freed after 1 hour and 15 minutes and subsequently POOH to conduct a wiper trip. In total, 53 pre-tests were attempted of which 7 were valid tests, 20 were supercharged, 25 were tight and 1 test failed.

The third MDT run (logging run #4) was RIH to 3250mMDRT. Again, tight hole conditions were encountered between 3020mMDRT and 3060mMDRT. Pre-tests were conducted between 2549.2mMDRT and 3202.0mMDRT and three samples were collected at 3202.0mMDRT. Additional pump-outs were recorded at 3202.0mMDRT, 3201.0mMDRT and 3137.0mMDRT. The MDT sampling program concluded without any more problems related to hole conditions. In total, 29 pre-tests were attempted of which 10 were valid tests, 17 were tight and 2 tests failed.

A summary of the MDT data is shown in Table 16 and more details are included in Appendix 10.

Suite #	Run #	Interval (mMDRT)	Total Tests	Valid Tests	Super-charged	Tight Tests	Failed Tests	Pump Outs	Samples Collected
1	2	2134.2 – 2978.4	19	10	0	9	0	0	0
1	3	3235.0 – 3424.5	53	7	20	25	1	13	9
1	4	2549.2 – 3202.0	29	10	0	17	2	6	3

Table 16 Summary of MDT pre-tests and sampling taken in Rockhopper 1

5.2 Drill Stem Testing

No DST's were conducted at Rockhopper 1.

APPENDIX 1: CUTTINGS DESCRIPTIONS

Depth mRT	% of Rock	Main Lithology	Modifier >20%	Lithological Descriptions
970.0	100			CEMENT
980.0	90	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, 5% very fine quartz grains, trace skeletal fragments, trace corals, rare very fine grained pyrite.
980.0	10	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to sub-blocky, 20% calcareous clay.
990.0	10	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to sub-blocky, 20% calcareous clay.
990.0	90	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, 5% very fine quartz grains, trace skeletal fragments, trace corals.
1000.0	10	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to sub-blocky, 20% calcareous clay.
1000.0	90	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, 5% very fine quartz grains, trace skeletal fragments, trace corals.
1010.0	15	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to sub-blocky, 20% calcareous clay.
1010.0	85	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, trace skeletal fragments, trace corals.
1020.0	15	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to sub-blocky, 20% calcareous clay.
1020.0	85	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, trace skeletal fragments, trace corals.
1030.0	15	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to sub-blocky, 20% calcareous clay.
1030.0	85	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, 5% very fine sand, trace skeletal fragments, trace corals.
1040.0	30	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to

				sub-blocky, 20% calcareous clay.
1040.0	70	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, trace corals, trace skeletal fragments.
1050.0	20	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to sub-blocky, 20% calcareous clay.
1050.0	80	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, trace corals, trace skeletal fragments.
1060.0	20	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to sub-blocky, 20% calcareous clay.
1060.0	80	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, trace corals, trace skeletal fragments.
1070.0	10	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: medium bluish grey, very soft to soft, blocky to sub-blocky, 20% calcareous clay.
1070.0	90	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, soft to firm, blocky to sub-blocky, 5% calcareous silt, rare skeletal fragments, rare very fine grained pyrite.
1080.0	5	CLAYSTONE		CLAYSTONE: medium bluish grey to dark greenish grey, very soft to friable, blocky to sub-blocky, 10% calcareous clay.
1080.0	95	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, trace corals, trace skeletal fragments, rare very fine grained pyrite.
1090.0	5	CLAYSTONE		CLAYSTONE: medium bluish grey to dark greenish grey, very soft to friable, blocky to sub-blocky, 10% calcareous clay.
1090.0	95	CALCILUTITE		CALCILUTITE: medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, trace corals, trace skeletal fragments, rare very fine grained pyrite.
1100.0	20	CLAYSTONE	Calcareous	CALCAREOUS CLAYSTONE: dark greenish grey to dark grey, very soft to friable, blocky to sub-blocky, 20% calcareous clay.
1100.0	80	CALCILUTITE		CALCILUTITE: medium light grey to medium grey, very soft to soft, blocky to sub-blocky, 5% calcareous silt, 5% very fine sand, trace skeletal fragments, rare corals, rare very fine

				grained pyrite.
1110.0	40	SILTSTONE		SILTSTONE: medium grey to medium dark grey, soft to friable, blocky to fissile, 5% calcareous clay, 20% siliceous clay.
1110.0	60	CALCILUTITE		CALCILUTITE: medium light grey to medium grey, very soft to soft, blocky to sub-blocky, 10% calcareous silt, rare skeletal fragments, rare corals.
1120.0	40	SILTSTONE		SILTSTONE: medium grey to medium dark grey, soft to friable, blocky to fissile, 5% calcareous clay, 20% siliceous clay.
1120.0	60	CALCILUTITE		CALCILUTITE: medium light grey to medium grey, very soft to soft, blocky to sub-blocky, 10% calcareous silt, rare skeletal fragments, rare corals.
1130.0	60	SILTSTONE		SILTSTONE: medium grey to medium dark grey, soft to friable, blocky to fissile, 5% calcareous clay, 20% siliceous clay.
1130.0	40	CALCILUTITE		CALCILUTITE: medium light grey to medium grey, very soft to soft, blocky to sub-blocky, 10% calcareous silt, rare skeletal fragments, rare corals.
1140.0	15	CALCILUTITE		CALCILUTITE: medium grey to pale yellowish brown, very soft to soft, blocky, 10% siliceous clay, rare very fine grained pyrite.
1140.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: dark grey to dark greenish grey, soft to friable, blocky to fissile, 20% calcareous clay.
1150.0	15	CALCILUTITE		CALCILUTITE: medium grey to pale yellowish brown, very soft to soft, blocky, 10% siliceous clay, rare very fine grained pyrite.
1150.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: dark grey to dark greenish grey, soft to friable, blocky to fissile, 20% calcareous clay.
1160.0	20	CALCILUTITE		CALCILUTITE: medium grey to pale yellowish brown, very soft to soft, blocky, 10% siliceous clay, rare very fine grained pyrite.
1160.0	80	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: dark grey to dark greenish grey, soft to friable, blocky to fissile, 20% calcareous clay.
1170.0	10	CALCILUTITE		CALCILUTITE: medium grey to pale yellowish brown, very soft to soft, blocky, 10% siliceous clay, rare very fine grained pyrite.
1170.0	90	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: dark grey to dark greenish grey, soft to friable, blocky to fissile, 20% calcareous clay.

1180.0	15	CALCILUTITE		CALCILUTITE: medium grey to pale yellowish brown, very soft to soft, blocky, 10% siliceous clay, rare very fine grained pyrite.
1180.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: dark grey to dark greenish grey, soft to friable, blocky to fissile, 30% calcareous clay.
1190.0	15	CALCILUTITE		CALCILUTITE: medium grey to pale yellowish brown, very soft to soft, blocky, 10% siliceous clay, rare very fine grained pyrite.
1190.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: dark grey to dark greenish grey, soft to friable, blocky to fissile, 30% calcareous clay.
1200.0	15	CALCILUTITE		CALCILUTITE: medium grey to pale yellowish brown, very soft to soft, blocky, 10% siliceous clay, rare very fine grained pyrite.
1200.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: dark grey to dark greenish grey, soft to friable, blocky to fissile, 30% calcareous clay.
1210.0	5	CALCILUTITE		CALCILUTITE: medium grey to pale yellowish brown, soft to firm, blocky to sub-blocky, 15% calcareous silt, 10% siliceous clay, trace shell fragments.
1210.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium dark grey, olive grey, dark greenish grey, soft to firm, blocky to sub-blocky, 20% calcareous clay, 10% siliceous clay, trace carbonaceous material.
1220.0	5	CALCILUTITE		CALCILUTITE: medium grey to pale yellowish brown, soft to firm, blocky to sub-blocky, 15% calcareous silt, 10% siliceous clay, trace shell fragments.
1220.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium dark grey, olive grey, dark greenish grey, soft to firm, blocky to sub-blocky, 20% calcareous clay, 10% siliceous clay, 5% very fine grained quartz, trace carbonaceous material, trace biotite.
1230.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 20% calcareous clay, 5% siliceous clay, 5% very fine grained quartz grains, trace carbonaceous material, trace mica.
1240.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 20% calcareous clay, 5% siliceous clay, 5% very fine grained quartz grains, trace carbonaceous material, trace mica.
1250.0	100	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky,

				15% calcareous clay, 10% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace shell fragments.
1260.0	5	CLAYSTONE		CLAYSTONE: pale yellowish brown, soft to firm, blocky to sub-blocky, 15% calcareous clay, traces shell fragments.
1260.0	95	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 15% calcareous clay, 10% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace shell fragments.
1270.0	100	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 10% calcareous clay, 15% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace shell fragments, trace very fine grained pyrite.
1280.0	20	CLAYSTONE		CLAYSTONE: medium dark grey, soft to firm, blocky to sub-blocky, 10% calcareous clay.
1280.0	80	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 10% calcareous clay, 15% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace shell fragments, trace very fine grained pyrite.
1290.0	100	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 10% calcareous clay, 15% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace glauconite grains, trace lithic fragments.
1300.0	10	CLAYSTONE		CLAYSTONE: medium dark grey, soft to firm, blocky to sub-blocky, 10% calcareous clay, trace mica, trace lithic fragments.
1300.0	90	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 10% calcareous clay, 15% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace glauconite grains, trace mica, trace lithic fragments.
1310.0	10	CLAYSTONE		CLAYSTONE: medium dark grey, dark greenish grey in part, soft to firm, blocky to sub-blocky, 10% calcareous clay, trace mica, trace lithic fragments.

1310.0	90	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 10% calcareous clay, 15% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace glauconite grains, trace mica, trace lithic fragments.
1320.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, soft, sub-blocky, 35% calcareous clay, trace carbonaceous material, trace glauconite grains, trace lithic fragments.
1320.0	10	CLAYSTONE		CLAYSTONE: medium dark grey, dark greenish grey in part, soft to firm, blocky to sub-blocky, 10% calcareous clay, trace mica, trace lithic fragments.
1320.0	80	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 10% calcareous clay, 15% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace glauconite grains, trace lithic fragments, trace mica flakes.
1330.0	20	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, soft, sub-blocky, 35% calcareous clay, trace carbonaceous material, trace glauconite grains, trace lithic fragments.
1330.0	80	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 10% calcareous clay, 15% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace glauconite grains, trace lithic fragments, trace mica flakes.
1340.0	70	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace glauconite grains, trace lithic fragments and very fine grained pyrite.
1340.0	30	SILTSTONE		SILTSTONE: medium dark grey, olive grey, soft to firm, blocky to sub-blocky, 10% calcareous clay, 15% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace glauconite grains, trace lithic fragments, trace mica flakes.
1350.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace

				glauconite grains, trace lithic fragments, trace very fine grained pyrite and shell fragments.
1360.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace glauconite grains, trace lithic fragments, trace very fine grained pyrite and shell fragments.
1370.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace glauconite grains, trace lithic fragments, trace very fine grained pyrite and shell fragments.
1380.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey, dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace glauconite grains, trace lithic fragments and shell fragments.
1390.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey, dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, traces carbonaceous material, trace glauconite grains, trace lithic fragments and foraminifera.
1400.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey, dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, traces carbonaceous material, trace glauconite grains, trace lithic fragments and foraminifera.
1410.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey, dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, traces carbonaceous material, trace glauconite grains, trace lithic fragments and foraminifera.
1430.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey, dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, traces carbonaceous material, trace glauconite grains, trace lithic fragments and foraminifera.
1440.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey,

				dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, traces carbonaceous material, trace glauconite grains, trace lithic fragments and foraminifera.
1450.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey, dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, traces carbonaceous material, trace glauconite grains, trace lithic fragments and foraminifera.
1460.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey, dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, trace glauconite grains, trace lithic fragments, trace shell fragments, trace foraminifera and corals.
1470.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey, dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, trace glauconite grains, trace lithic fragments, trace shell fragments, trace foraminifera and corals.
1480.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: very light grey, medium light grey, olive grey, dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, trace glauconite grains, trace lithic fragments, trace shell fragments, trace foraminifera and corals.
1490.0	100	SILTSTONE		SILTSTONE: medium light grey to medium grey, dark greenish grey and light grey in part, soft, sub-blocky, 10% calcareous clay, trace lithic fragments, trace corals.
1500.0	90	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: light bluish grey and very light grey to medium grey, soft, sub-blocky, 30% calcareous clay, trace lithic fragments, trace shell fragments, trace corals, rare glauconite grains.
1500.0	10	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, friable, sub-blocky.
1510.0	5	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, friable, sub-blocky.
1510.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: light bluish grey and very light grey to medium grey, soft, sub-blocky, 30% calcareous clay, trace lithic fragments, trace shell fragments, trace corals, rare glauconite grains.

1520.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: light grey to medium grey, olive grey to dark greenish grey in part, soft, sub-blocky, 20% calcareous clay, trace glauconite grains, trace lithic fragments and trace corals.
1530.0	5	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, friable, sub-blocky.
1530.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: light grey to medium grey, soft, sub-blocky, 20% calcareous clay, trace lithic fragments, trace skeletal fragments, trace corals and foraminifera.
1540.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 30% calcareous clay, trace carbonaceous material, trace lithic fragments and foraminifera.
1550.0	5	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, friable, sub-blocky.
1550.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace lithic fragments and foraminifera.
1560.0	5	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, friable, sub-blocky.
1560.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace lithic fragments and foraminifera.
1560.0	10	CALCILUTITE		CALCILUTITE: light grey to medium light grey, very soft to soft, blocky to sub-blocky, 10% siliceous clay.
1570.0	100	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace lithic fragments and foraminifera.
1580.0	5	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, friable, sub-blocky.
1580.0	10	CALCILUTITE		CALCILUTITE: light grey to medium light grey, very soft to soft, blocky to sub-blocky, 10% siliceous clay.
1580.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace lithic fragments and

				foraminifera.
1590.0	5	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, friable, sub-blocky.
1590.0	10	CALCILUTITE		CALCILUTITE: light grey to medium light grey, very soft to soft, blocky to sub-blocky, 10% siliceous clay.
1590.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace lithic fragments and foraminifera.
1600.0	5	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, friable, sub-blocky.
1600.0	10	CALCILUTITE		CALCILUTITE: light grey to medium light grey, very soft to soft, blocky to sub-blocky, 10% siliceous clay.
1600.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace lithic fragments and foraminifera.
1610.0	100	SILTSTONE		SILTSTONE: olive grey to olive black, soft to firm, sub-blocky, 10% calcareous clay, 10% siliceous clay, trace carbonaceous material, trace foraminifera, trace skeletal fragments.
1620.0	5	SILTSTONE		SILTSTONE: olive grey to olive black, soft to firm, sub-blocky, 10% calcareous clay, 10% siliceous clay.
1620.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1620.0	90	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace foraminifera, trace skeletal fragments.
1630.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1630.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace foraminifera, trace skeletal fragments, trace very fine grained pyrite.
1640.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.

1640.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace foraminifera, trace skeletal fragments, trace very fine grained pyrite.
1650.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1650.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: medium grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace foraminifera, trace skeletal fragments, trace very fine grained pyrite.
1660.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1660.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1670.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1670.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1680.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1680.0	95	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1690.0	80	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1690.0	15	SILTSTONE		SILTSTONE: brownish grey to medium dark grey, soft, sub-blocky to blocky, 10% calcareous clay, 10% siliceous clay.

1690.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1700.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1700.0	15	SILTSTONE		SILTSTONE: brownish grey to medium dark grey, soft, sub-blocky to blocky, 10% calcareous clay, 10% siliceous clay.
1700.0	80	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1705.0	20	SILTSTONE		SILTSTONE: brownish grey to medium dark grey, soft, sub-blocky to blocky, 10% calcareous clay, 10% siliceous clay.
1705.0	80	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1710.0	20	SILTSTONE		SILTSTONE: brownish grey to medium dark grey, soft, sub-blocky to blocky, 10% calcareous clay, 10% siliceous clay.
1710.0	80	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1715.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1715.0	15	SILTSTONE		SILTSTONE: brownish grey to medium dark grey, soft, sub-blocky to blocky, 10% calcareous clay, 10% siliceous clay.
1715.0	80	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1720.0	10	SILTSTONE		SILTSTONE: brownish grey to medium dark grey, soft, sub-blocky to blocky, 10% calcareous clay, 10% siliceous clay.

1720.0	85	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% siliceous clay, trace lithic fragments.
1720.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1725.0	5	CALCILUTITE		CALCILUTITE: very light grey to light grey, very soft to soft, blocky to sub-blocky, 10% siliceous silt.
1725.0	15	SILTSTONE		SILTSTONE: brownish grey to medium dark grey, soft, sub-blocky to blocky, 10% calcareous clay, 10% siliceous clay.
1725.0	80	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1730.0	30	SILTSTONE		SILTSTONE: brownish grey to medium dark grey, soft, sub-blocky to blocky, 10% calcareous clay, 10% siliceous clay.
1730.0	70	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% clay, trace feldspar, trace lithic fragments.
1740.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: dark grey, brownish black, soft, sub-blocky to blocky, 30% siliceous clay, 5% calcareous clay, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace very fine grained pyrite.
1740.0	30	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: brownish grey to medium dark grey, occasionally olive grey to dark greenish grey, soft to firm, sub-blocky to angular in part, 20% calcareous clay, 10% siliceous clay, trace lithic fragments.
1745.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace feldspar, trace reworked crystalline calcilutite.
1745.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: dark grey, brownish black, soft, sub-blocky to blocky, 30% siliceous clay, 5%

				calcareous clay, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace very fine grained pyrite.
1750.0	20	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace feldspar, trace reworked crystalline calcilutite.
1750.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: dark grey, brownish black, soft, sub-blocky to blocky, 30% siliceous clay, 5% calcareous clay, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace very fine grained pyrite.
1755.0	15	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace reworked crystalline calcilutite.
1755.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: dark grey, brownish black, soft, sub-blocky to blocky, 30% siliceous clay, 5% calcareous clay, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace very fine grained pyrite.
1760.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace reworked crystalline calcilutite.
1760.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, soft, sub-blocky to blocky, 5% calcareous clay, 25% siliceous clay, trace lithic fragments, trace carbonaceous material, trace very fine grained replacement pyrite.
1765.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace reworked crystalline calcilutite.
1765.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, soft, sub-blocky to blocky, 5% calcareous clay, 25% siliceous clay, trace lithic fragments, trace carbonaceous material, trace very fine grained replacement pyrite.

1770.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1770.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, soft, sub-blocky to blocky, 5% calcareous clay, 25% siliceous clay, trace lithic fragments, trace carbonaceous material, trace glauconite grains, trace very fine grained pyrite.
1780.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1780.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, soft, sub-blocky to blocky, 5% calcareous clay, 25% siliceous clay, trace lithic fragments, trace carbonaceous material, trace glauconite grains, trace very fine grained pyrite.
1785.0	20	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace reworked crystalline CALCILUTITE.
1785.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, soft, sub-blocky to blocky, 5% calcareous clay, 25% siliceous clay, trace lithic fragments, trace carbonaceous material, trace glauconite grains, trace very fine grained pyrite.
1795.0	5	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace reworked crystalline CALCILUTITE.
1795.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace glauconite grains, trace very fine grained pyrite.
1800.0	5	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous

				clay, 10% siliceous clay, trace reworked crystalline CALCILUTITE.
1800.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace glauconite grains, trace very fine grained pyrite.
1805.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace reworked crystalline CALCILUTITE.
1805.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace glauconite grains, trace very fine grained pyrite.
1810.0	20	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1810.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, amorphous to very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, trace lithic fragments, trace carbonaceous material.
1815.0	20	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: white, yellowish grey, brownish grey, trace greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1815.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, amorphous to very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, trace lithic fragments, trace carbonaceous material.
1820.0	40	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: yellowish grey, brownish grey, greenish black, very soft to firm, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1820.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, trace lithic fragments, trace carbonaceous

				material.
1825.0	30	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: yellowish grey, brownish grey, greenish black, very soft to soft, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1825.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, trace lithic fragments, trace carbonaceous material.
1830.0	25	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: yellowish grey, brownish grey, greenish black, very soft to soft, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace very fine grained pyrite.
1830.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, trace lithic fragments, trace carbonaceous material.
1830.0	5	CALCILUTITE		CALCILUTITE: brownish grey, firm to moderately hard, sub-fissile to conchoidal fracture, trace calcite crystals.
1835.0	5	CALCILUTITE		CALCILUTITE: brownish grey, firm to moderately hard, sub-fissile to conchoidal fracture, trace calcite crystals.
1835.0	15	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: yellowish grey, brownish grey, greenish black, very soft to soft, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay, trace very fine grained pyrite.
1835.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, brownish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material.
1840.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: yellowish grey, brownish grey, greenish black, very soft to soft, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1840.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, brownish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, 5% very fine quartz grains, trace lithic fragments, trace

				carbonaceous material.
1845.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: yellowish grey, brownish grey, greenish black, very soft to soft, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1845.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, brownish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material.
1850.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: yellowish grey, brownish grey, greenish black, very soft to soft, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1850.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, brownish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material.
1855.0	5	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: yellowish grey, brownish grey, greenish black, very soft to soft, sub-blocky to sub-fissile, 20% calcareous clay, 10% siliceous clay.
1855.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% clay, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace very fine grained pyrite.
1860.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to soft, sub-blocky to blocky, 25% siliceous clay, trace lithic fragments, trace carbonaceous material, trace very fine grained pyrite, trace micromica.
1865.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to soft, sub-blocky to blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace very fine grained pyrite, trace micromica.
1870.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to soft, sub-blocky to blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace very fine grained pyrite, trace micromica.

1875.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to soft, sub-blocky to blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material.
1880.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay in dark greenish grey component, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace mica.
1885.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay in dark greenish grey component, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace mica, trace very fine grained pyrite.
1890.0	5	CALCILUTITE		CALCILUTITE: white, brownish grey, soft to firm, blocky to sub-blocky, traces calcite crystals.
1890.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay in dark greenish grey component, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace mica.
1895.0	5	CALCILUTITE		CALCILUTITE: white, brownish grey, soft to firm, blocky to sub-blocky, traces calcite crystals.
1895.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay in dark greenish grey component, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace mica.
1900.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay in dark greenish grey component, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace mica, trace foraminifera, trace very fine grained pyrite.
1905.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to

				soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay in dark greenish grey component, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace mica, trace foraminifera, trace feldspar.
1910.0	5	CALCILUTITE		CALCILUTITE: brownish grey, soft to firm, blocky to sub-blocky, crystalline in part.
1910.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay in dark greenish grey component, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace mica, trace very fine grained pyrite, traces calcite crystals. Some cuttings show laminations of CALCILUTITE.
1915.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay in dark greenish grey component, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace foraminifera.
1920.0				NO SAMPLE COLLECTED DUE TO POWER OUTAGE
1925.0	5	CALCILUTITE		CALCILUTITE: brownish grey, soft to firm, blocky to sub-blocky, crystalline in part.
1925.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay in dark greenish grey component, 5% very fine quartz grains, trace lithic fragments, trace carbonaceous material, trace mica, trace very fine grained pyrite, traces calcite crystals.
1930.0	100	SILTSTONE		SILTSTONE: brownish black, dark greenish grey, greenish grey, very soft to soft, sub-blocky to blocky, 15% siliceous clay, 5% calcareous clay, 5% very fine quartz grains, trace mica, trace very fine grained pyrite.
1935.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 10% calcareous clay, 5% very fine quartz grains, trace mica, trace very fine

				grained pyrite.
1940.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 10% calcareous clay, 5% very fine quartz grains, trace mica, trace very fine grained pyrite.
1945.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 10% calcareous clay, 5% very fine quartz grains, trace mica, trace very fine grained pyrite.
1950.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay, 5% very fine quartz grains, trace mica, trace pyrite, trace carbonaceous material, trace skeletal fragments.
1955.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 20% siliceous clay, 5% calcareous clay, 5% very fine quartz grains, trace mica, trace pyrite, trace carbonaceous material, trace skeletal fragments.
1960.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, 5% very fine quartz grains, trace mica, trace pyrite, trace carbonaceous material.
1965.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, 5% very fine quartz grains, trace mica, trace carbonaceous material.
1970.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey to greenish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, 5% very fine quartz grains, trace mica, trace carbonaceous material.
1972.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, dark greenish grey to greenish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% siliceous clay, 5% very fine quartz

				grains, trace mica, trace carbonaceous material.
1975.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, in part olive grey, in part greenish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 25% siliceous clay, trace carbonaceous material, trace mica, trace foraminifera.
1980.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, greenish black, very soft to firm, sub-blocky, 5% calcareous clay, 25% siliceous clay, trace carbonaceous material, trace mica, trace foraminifera, trace shell fragments, trace lithic fragments.
1985.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: predominantly brownish black, greenish black in part, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
1990.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: predominantly brownish black, greenish black and medium grey to light grey in part, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
1995.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, greenish black, very soft to firm, sub-blocky, 5% calcareous clay, 25% siliceous clay, trace lithic fragments, trace mica, trace pyrite, trace carbonaceous material and dolomite.
2000.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, greenish black, very soft to firm, sub-blocky, 5% calcareous clay, 30% siliceous clay, trace lithic fragments, trace carbonaceous material and dolomite.
2005.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, greenish black, very soft to firm, sub-blocky, 5% calcareous clay, 30% siliceous clay, trace lithic fragments, trace pyrite, trace carbonaceous material and dolomite.
2010.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, greenish black, very soft to firm, sub-blocky to blocky, 25% siliceous clay, trace lithic fragments, trace carbonaceous material, trace mica and dolomite.

2015.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, greenish black, very soft to firm, sub-blocky to blocky, 25% siliceous clay, trace lithic fragments, trace carbonaceous material, trace mica.
2020.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, in part greenish black, in part olive grey, very soft to firm, 25% siliceous clay, trace carbonaceous material, trace lithic fragments, trace foraminifera.
2025.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, in part greenish black, in part olive grey, very soft to firm, 25% siliceous clay, trace carbonaceous material, trace lithic fragments, trace foraminifera, trace pyrite aggregates.
2030.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, in part greenish black, trace medium grey, very soft to firm, 10% calcareous clay, 20% siliceous clay, 10% very fine quartz grains, trace carbonaceous material, trace lithic fragments, trace mica.
2035.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, in part greenish black, trace medium grey, very soft to firm, 10% calcareous clay, 20% siliceous clay, 10% very fine quartz grains, trace carbonaceous material, trace lithic fragments, trace pyrite aggregates, trace mica.
2035.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, firm, sub-blocky, 25% calcareous clay, trace carbonaceous material, trace glauconite grains.
2040.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, firm, sub-blocky, 25% calcareous clay, trace carbonaceous material, trace glauconite grains.
2040.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, in part greenish black, trace medium grey, very soft to firm, 10% calcareous clay, 20% siliceous clay, 10% very fine quartz grains, trace carbonaceous material, trace lithic fragments, trace pyrite aggregates, trace mica.
2045.0	15	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, firm to soft, sub-blocky, 25% calcareous clay, trace carbonaceous material.
2045.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky,

				25% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica, trace pyrite aggregates.
2050.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, firm to soft, sub-blocky, 25% calcareous clay, trace carbonaceous material.
2050.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica, trace pyrite aggregates.
2052.0	5	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, firm to soft, sub-blocky, 25% calcareous clay, trace carbonaceous material.
2052.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica, trace pyrite aggregates.
2055.0	5	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, firm to soft, sub-blocky, 20% calcareous clay, trace carbonaceous material.
2055.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, 10% very fine quartz grains, trace carbonaceous material, trace lithic fragments, trace pyrite aggregates.
2058.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, firm to soft, sub-blocky, 20% calcareous clay, trace carbonaceous material.
2058.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, 10% very fine quartz grains, trace carbonaceous material, trace lithic fragments, trace glauconite grains.
2058.0	5	CALCILUTITE		CALCILUTITE: white, soft, sub-blocky, chalky.
2061.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, brownish grey, firm to soft, sub-blocky, 20% calcareous clay, trace carbonaceous material.
2061.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, 10% very fine quartz grains, trace carbonaceous material, trace lithic fragments, trace glauconite grains.
2064.0	10	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, brownish grey, firm to soft, sub-blocky, 20% calcareous clay, trace carbonaceous material, trace very fine pyrite, trace altered feldspars.

2064.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, 10% very fine quartz grains, trace rounded coarse quartz grains, trace carbonaceous material, trace lithic fragments, trace glauconite grains.
2067.0	5	SILTSTONE	Calcareous	CALCAREOUS SILTSTONE: olive grey, brownish grey, firm to soft, sub-blocky, 20% calcareous clay, trace carbonaceous material.
2067.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, 10% very fine quartz grains, trace rounded coarse quartz grains, trace carbonaceous material, trace lithic fragments, trace glauconite grains, trace pyrite.
2070.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, 10% very fine quartz grains, trace rounded coarse quartz grains, trace carbonaceous material, trace lithic fragments, trace glauconite grains, trace pyrite.
2070.0	10	SANDSTONE		SANDSTONE, greenish grey, soft to friable, rounded, well sorted, sub-spherical to spherical, 100% fine grained, 10% glauconite grains, good inferred visual porosity, no hydrocarbon fluorescence.
2070.0	20	CLAYSTONE	Sandy	CLAYSTONE: greenish grey, soft, amorphous to sub-blocky, 20% very fine to fine grained quartz, 5% glauconite grains.
2073.0	70	SANDSTONE		SANDSTONE: greenish grey, brownish grey, soft to friable, rounded, well sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, 10% glauconite grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2073.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, 10% very fine quartz grains, trace rounded coarse quartz grains, trace carbonaceous material, trace lithic fragments, trace glauconite grains, trace pyrite.
2076.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, very soft to firm, in part sticky, 25% siliceous clay, 10% very fine quartz grains, trace rounded coarse quartz grains, trace carbonaceous material,

				trace lithic fragments, trace glauconite grains, trace pyrite.
2076.0	5	SANDSTONE	Calcareous	CALCAREOUS SANDSTONE: dark greenish grey, very fine grained, moderate to well sorted, sub-rounded to rounded, sub-spherical to spherical, hard, conchoidal fracture, 5% glauconite grains, trace carbonaceous material, 30% cemented by calcite, fair inferred visual porosity, no shows.
2076.0	90	SANDSTONE		SANDSTONE: greenish grey, brownish grey, soft to friable, rounded, well sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, 10% glauconite grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2079.0	70	CLAYSTONE		CLAYSTONE: greenish grey, olive grey, soft, amorphous to sub-blocky, 10% very fine to fine grained quartz, trace glauconite grains.
2079.0	30	SANDSTONE		SANDSTONE: greenish grey, brownish grey, soft to friable, rounded, well sorted, sub-spherical to spherical, 15% siliceous clay, 85% siliceous sand, 20% very fine grained, 80% fine grained, 10% glauconite grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2082.0	80	SANDSTONE		SANDSTONE: greenish grey, brownish grey, loose to friable, rounded to sub-rounded, moderately to well sorted, sub-spherical to spherical, 15% siliceous clay, 85% siliceous sand, 20% very fine grained, 80% fine grained, 10% glauconite grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2082.0	20	CLAYSTONE		CLAYSTONE: greenish grey, olive grey, soft, amorphous to sub-blocky, 10% very fine to fine grained quartz, trace glauconite grains.
2085.0	40	CLAYSTONE		CLAYSTONE: greenish grey, olive grey, soft, amorphous to sub-blocky, 10% very fine to fine grained quartz, trace glauconite grains.
2085.0	60	SANDSTONE		SANDSTONE: greenish grey, brownish grey, loose to friable, rounded to sub-rounded, moderately to well sorted, sub-spherical to spherical, 15% siliceous clay, 85% siliceous sand, 20% very fine grained, 80% fine grained, 10% glauconite grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2088.0	30	CLAYSTONE		CLAYSTONE: greenish grey, olive grey, brownish grey, soft, amorphous to sub-

				blocky, 10% very fine to fine grained quartz, trace glauconite grains.
2088.0	70	SANDSTONE		SANDSTONE: greenish grey, brownish grey, loose to friable, rounded to sub-rounded, moderately to well sorted, sub-spherical to spherical, 15% siliceous clay, 85% siliceous sand, 20% very fine grained, 80% fine grained, 10% glauconite grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2091.0	80	CLAYSTONE		CLAYSTONE: greenish grey, olive grey, brownish grey, soft, amorphous to sub-blocky, 10% very fine to fine grained quartz, trace glauconite grains.
2091.0	20	SANDSTONE		SANDSTONE: greenish grey, brownish grey, loose to friable, rounded to sub-rounded, moderately to well sorted, sub-spherical to spherical, 15% siliceous clay, 85% siliceous sand, 20% very fine grained, 80% fine grained, 10% glauconite grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2094.0	30	SANDSTONE		SANDSTONE: greenish grey, brownish grey, loose to friable, rounded to sub-rounded, moderately to well sorted, sub-spherical to spherical, 15% siliceous clay, 85% siliceous sand, 20% very fine grained, 80% fine grained, 10% glauconite grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2094.0	70	CLAYSTONE		CLAYSTONE: greenish grey, olive grey, brownish grey, soft, amorphous to sub-blocky, 10% very fine to fine grained quartz, trace glauconite grains.
2097.0	80	SANDSTONE		SANDSTONE: clear, light grey, opaque, yellowish grey in part, loose, angular to sub-rounded, very poorly to poorly sorted, sub-spherical to sub-elongate, 100% siliceous sand, 10% very fine grained, 10% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse grained, 10% granular, fair inferred visual porosity, no hydrocarbon fluorescence.
2097.0	20	CALCILUTITE		CALCILUTITE: olive grey, mottled, friable to very hard, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material.
2100.0	60	SANDSTONE		SANDSTONE: greenish grey, brownish grey, loose to friable, rounded to sub-rounded, moderately to well sorted, sub-spherical to spherical, 15% siliceous clay, 85% siliceous sand, 20% very fine grained, 80% fine grained, 10%

				glauconite, fair inferred visual porosity, no hydrocarbon fluorescence.
2100.0	30	CLAYSTONE		CLAYSTONE: greenish grey, olive grey, soft, amorphous to sub-blocky, 10% very fine to fine grained quartz, trace glauconite grains.
2100.0	10	CALCILUTITE		CALCILUTITE: olive grey, mottled, friable to very hard, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material.
2103.0	10	CALCILUTITE		CALCILUTITE: olive grey, mottled, friable to very hard, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material.
2103.0	90	SANDSTONE		SANDSTONE: clear, light grey, opaque, trace yellowish grey, loose, angular to sub-rounded, very poorly to poorly sorted, sub-spherical to sub-elongate, 100% siliceous sand, 10% very fine grained, 10% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse grained, 10% granular, fair inferred visual porosity, no hydrocarbon fluorescence.
2109.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, soft to firm, sub-blocky, 25% siliceous clay, 10% very fine grained quartz, trace carbonaceous material, trace mica.
2109.0	10	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, soft to firm, sub-blocky, trace glauconite grains.
2109.0	60	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-angular to sub-rounded, poorly to moderately sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% coarse grained, trace lithic fragments, trace altered feldspar, fair inferred visual porosity, no hydrocarbon fluorescence.
2112.0	90	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, trace brownish black, amorphous to firm, sub-blocky, trace glauconite.
2112.0	10	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-angular to sub-rounded, poorly to moderately sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% coarse grained, trace lithic fragments, trace altered feldspar, fair inferred visual porosity, no hydrocarbon fluorescence.

2118.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, soft to firm, sub-blocky, trace carbonaceous material, trace mica, trace very fine grained aggregates. Some cuttings show laminations of SANDSTONE and CLAYSTONE.
2118.0	10	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-angular to sub-rounded, poorly to moderately sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% coarse grained, trace lithic fragments, trace altered feldspar, fair inferred visual porosity, no hydrocarbon fluorescence.
2118.0	10	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, trace brownish black, amorphous to firm, sub-blocky, trace glauconite.
2121.0	20	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-angular to sub-rounded, poorly to moderately sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% coarse grained, trace lithic fragments, trace altered feldspar, fair inferred visual porosity, no hydrocarbon fluorescence.
2121.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, soft to firm, sub-blocky, trace carbonaceous material, trace mica, trace very fine grained aggregates. Some cuttings show laminations of SANDSTONE.
2124.0	80	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, trace brownish black, amorphous to firm, sub-blocky, trace glauconite.
2124.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, soft to firm, sub-blocky, trace carbonaceous material, trace mica, trace very fine grained aggregates.
2127.0	20	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-angular to sub-rounded, poorly to moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% coarse grained, trace lithic fragments, trace altered feldspar, fair inferred visual porosity, no hydrocarbon fluorescence.
2127.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, soft to firm, sub-blocky, trace carbonaceous material, trace mica. Some cuttings show laminations of SANDSTONE.

2130.0	20	SANDSTONE		SANDSTONE: clear, light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 25% very fine grained, 60% fine grained, 10% coarse grained, 5% very coarse grained, trace of lithic fragments, trace calcite crystals, fair inferred visual porosity, no hydrocarbon fluorescence.
2130.0	80	SILTSTONE		SILTSTONE: brownish black, olive grey, firm, sub-blocky to blocky, 15% siliceous clay, 10% very fine grained sand, trace pyrite aggregates, trace carbonaceous material, trace lithic fragments.
2133.0	90	SANDSTONE		SANDSTONE: clear, light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 10% fine grained, 40% medium grained, 40% coarse grained, 10% very coarse grained, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2133.0	10	SILTSTONE		SILTSTONE: brownish black, olive grey, firm, sub-blocky to blocky, 15% siliceous clay, 10% very fine grained sand, trace pyrite aggregates, trace carbonaceous material, trace lithic fragments.
2136.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine sand, trace carbonaceous material, trace lithic fragments.
2136.0	10	SANDSTONE		SANDSTONE: clear, light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 10% fine grained, 40% medium grained, 40% coarse grained, 10% very coarse grained, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2139.0	80	SANDSTONE	Silty	SILTY SANDSTONE: brownish grey, light olive grey, in part clear, soft to firm, sub-blocky, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical, 10% siliceous clay, 30% siliceous silt, 60% siliceous sand, 80% fine grained, 10% medium grained, 10%

				coarse grained, trace lithic fragments, poor inferred visual porosity, no hydrocarbon fluorescence.
2139.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace carbonaceous material, trace pyrite aggregates, trace glauconite grains.
2142.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace carbonaceous material, trace pyrite aggregates, trace glauconite grains.
2142.0	40	SANDSTONE	Silty	SILTY SANDSTONE: brownish grey, light olive grey, in part clear, soft to firm, sub-blocky, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical, 10% siliceous clay, 30% siliceous silt, 60% siliceous sand, 70% fine grained, 20% medium grained, 10% coarse grained, trace lithic fragments, poor inferred visual porosity, no hydrocarbon fluorescence.
2145.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: medium grey, greenish grey, soft, amorphous to sub-blocky, trace glauconite grains.
2145.0	20	SANDSTONE	Silty	SILTY SANDSTONE: brownish grey, light olive grey, in part clear, soft to firm, sub-blocky, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical, 10% siliceous clay, 30% siliceous silt, 60% siliceous sand, 70% fine grained, 20% medium grained, 10% coarse grained, trace lithic fragments, 5% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2145.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace carbonaceous material, trace pyrite aggregates, trace glauconite grains.
2148.0	30	CLAYSTONE		CLAYSTONE: medium grey, greenish grey, very soft to soft, amorphous to sub-blocky, trace glauconite.
2148.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace pyrite aggregates, carbonaceous material, lithic fragments.
2151.0	70	CLAYSTONE		CLAYSTONE: medium grey, greenish grey, very soft to soft, amorphous to sub-blocky, trace glauconite, trace lithic fragments

2151.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace pyrite aggregates, carbonaceous material, lithic fragments, trace mica. Some cuttings show fine laminations of SANDSTONE and CLAYSTONE.
2151.0	10	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 100% siliceous sand, 10% very fine grained, 50% fine grained, 30% medium grained, 10% coarse grained, 5% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2154.0	60	CLAYSTONE		CLAYSTONE: medium grey, greenish grey, very soft to soft, amorphous to sub-blocky, trace glauconite grains, trace carbonaceous material, trace lithic fragments, trace pyrite.
2154.0	40	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-elongate, 100% siliceous sand, 10% very fine grained, 50% fine grained, 30% medium grained, 10% coarse grained, 5% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2157.0	50	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-elongate, 100% siliceous sand, 10% very fine grained, 50% fine grained, 30% medium grained, 10% coarse grained, fair inferred visual porosity, no hydrocarbon fluorescence.
2157.0	50	CLAYSTONE		CLAYSTONE: medium grey, greenish grey, very soft to soft, amorphous to sub-blocky, trace glauconite grains, trace carbonaceous material, trace lithic fragments, trace pyrite.
2160.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, olive black in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, 10% very fine grained sand occurring as laminations, trace pyrite aggregates, trace carbonaceous material, trace lithic fragments, trace mica.
2160.0	40	SANDSTONE		SANDSTONE: clear, medium grey, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted , sub-spherical to sub-elongate, 100% siliceous sand, 30% very fine grained,

				50% fine grained, 10% medium grained, 10% coarse grained, trace mica, trace pyrite, 5% rock flour, fair inferred visual porosity, no hydrocarbon show.
2163.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky to blocky, 30% siliceous clay, 10% very fine grained sand occurring as laminations and loose shattered coarse quartz grains, trace pyrite aggregates, trace carbonaceous material, trace lithic fragments, trace mica.
2166.0	20	SANDSTONE		SANDSTONE: medium grey, light grey, white, translucent, loose to friable, sub-rounded to sub-angular and shattered, poorly sorted, sub-spherical to sub-elongate, 100% siliceous sand, 50% fine grained, 10% medium grained, 20% coarse grained, 20% very coarse grained, trace lithic fragments, good inferred visual porosity, no hydrocarbon show. Some cuttings show laminations of SILTSTONE.
2166.0	80	SILTSTONE		SILTSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous clay, 10% very fine grained sand occurring as laminations, trace pyrite aggregates, carbonaceous material, lithic fragments, mica.
2169.0	10	SANDSTONE		SANDSTONE: medium grey, light grey, white, translucent, loose to friable, sub-rounded to sub-angular and shattered, poorly sorted, sub-spherical to sub-elongate, 100% siliceous sand, 50% fine grained, 10% medium grained, 20% coarse grained, 20% very coarse grained, trace lithic fragments, good inferred visual porosity, no hydrocarbon show. Some cuttings show laminations of SILTSTONE.
2169.0	90	SILTSTONE		SILTSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous clay, 10% very fine grained sand occurring as laminations, trace pyrite aggregates, carbonaceous material, lithic fragments, mica.
2172.0	100	SILTSTONE		SILTSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous clay, 15% very fine sand occurring as laminations and rare shattered clear coarse quartz crystals, trace carbonaceous material, trace lithic fragments, trace mica.

2175.0	100	SILTSTONE		SILTSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous clay, 15% very fine sand occurring as laminations and rare shattered clear coarse quartz crystals, trace carbonaceous material, trace lithic fragments, trace mica.
2178.0	100	SILTSTONE		SILTSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous clay, 15% very fine sand occurring as laminations and rare shattered clear coarse quartz crystals, trace carbonaceous material, trace lithic fragments, trace mica.
2181.0	100	SILTSTONE		SILTSTONE: brownish grey, olive grey, in part brownish black, soft to firm, sub-blocky to blocky, 10% siliceous clay, 10% very fine grained sand occurring as laminations, trace carbonaceous material, trace lithic fragments, trace mica.
2184.0	100	SILTSTONE		SILTSTONE: brownish grey, olive grey, in part brownish black, soft to firm, sub-blocky to blocky, 10% siliceous clay, 10% very fine grained sand occurring as laminations, trace carbonaceous material, trace lithic fragments, trace mica.
2187.0	70	SILTSTONE		SILTSTONE: brownish grey, olive grey, in part brownish black, soft to firm, sub-blocky to blocky, 5% siliceous clay, 10% very fine grained sand, trace carbonaceous material, trace lithic fragments, trace mica. Some cuttings show laminations of SANDSTONE.
2187.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, soft, sub-blocky, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 70% very fine grained, 30% fine grained, trace altered feldspar, trace lithic fragments, poor inferred visual porosity, no hydrocarbon fluorescence.
2190.0	20	SANDSTONE		SANDSTONE: light grey, light olive grey, soft, sub-blocky, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 70% very fine grained, 30% fine grained, trace altered feldspar, trace lithic fragments, poor inferred visual porosity, no hydrocarbon fluorescence.

2190.0	80	SILTSTONE		SILTSTONE: brownish grey, olive grey, in part brownish black, soft to firm, sub-blocky to blocky, 5% siliceous clay, 10% very fine grained sand, trace carbonaceous material, trace lithic fragments, trace mica. Some cuttings show laminations of SANDSTONE.
2193.0	15	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, soft to loose, sub-blocky, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 40% very fine grained, 30% fine grained, 10% medium grained, 20% coarse grained, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2193.0	85	SILTSTONE		SILTSTONE: brownish grey, olive grey, soft to firm, sub-blocky, 5% siliceous clay, 10% very fine grained sand occurring as laminations, trace mica, trace lithic fragments.
2196.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, soft to loose, sub-blocky, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 40% very fine grained, 30% fine grained, 10% medium grained, 20% coarse grained, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2196.0	70	SILTSTONE		SILTSTONE: brownish grey, olive grey, soft to firm, sub-blocky, 5% siliceous clay, 10% very fine grained sand occurring as laminations, trace mica, trace lithic fragments.
2199.0	20	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, soft to loose, sub-blocky, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 40% very fine grained, 30% fine grained, 10% medium grained, 20% coarse grained, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2199.0	80	SILTSTONE		SILTSTONE: brownish grey, olive grey, soft to firm, sub-blocky, 5% siliceous clay, 10% very fine grained sand occurring as laminations, trace mica, trace lithic fragments.
2202.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, soft to loose, sub-blocky, sub-

				rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 5% siliceous clay, 15% siliceous silt, 80% siliceous sand, 70% very fine grained, 20% fine grained, 10% coarse grained, trace lithic fragments, 10% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2202.0	60	SILTSTONE		SILTSTONE: brownish grey, olive grey, brownish black, soft to firm, sub-blocky to blocky, 5% siliceous clay, 5% very fine sand occurring in laminations, trace mica, trace lithic fragments, trace carbonaceous material.
2205.0	60	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, soft to loose, sub-blocky, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 5% siliceous clay, 15% siliceous silt, 80% siliceous sand, 75% very fine grained, 20% fine grained, 5% coarse grained, trace lithic fragments, trace pyrite, 5% rock flour, fair inferred visual porosity, no hydrocarbon show.
2205.0	40	SILTSTONE		SILTSTONE: brownish grey, olive grey, brownish black, soft to firm, sub-blocky to blocky, 5% siliceous clay, 5% very fine grained sand occurring as laminations, trace mica, trace lithic fragments, trace carbonaceous material.
2208.0	20	SILTSTONE		SILTSTONE: brownish grey, olive grey, brownish black, soft to firm, sub-blocky to blocky, 5% siliceous clay, 5% very fine grained sand occurring as laminations, trace mica, trace lithic fragments, trace carbonaceous material.
2208.0	60	SANDSTONE		SANDSTONE: light olive grey, clear, loose to friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 80% very fine grained, 15% fine grained, 5% coarse grained, trace lithic fragments, trace pyrite, trace glauconite grains, 80% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2211.0	15	SILTSTONE		SILTSTONE: brownish grey, olive grey, brownish black, soft to firm, sub-blocky to blocky, trace mica, trace lithic fragments, trace carbonaceous material.
2211.0	85	SANDSTONE		SANDSTONE: light olive grey, clear, loose to friable, sub-rounded to sub-

				angular, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 80% very fine grained, 15% fine grained, 5% coarse grained, trace lithic fragments, trace pyrite, trace glauconite grains, 90% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2214.0	60	SANDSTONE		SANDSTONE: light olive grey, clear, loose to friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 80% very fine grained, 15% fine grained, 5% coarse grained, trace lithic fragments, trace pyrite, trace glauconite grains, 95% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2214.0	20	SILTSTONE		SILTSTONE: brownish grey, olive grey, brownish black, soft to firm, sub-blocky to blocky, trace mica, trace lithic fragments, trace carbonaceous material, trace pyrite.
2217.0	20	SILTSTONE		SILTSTONE: brownish grey, olive grey, brownish black, soft to firm, sub-blocky to blocky, trace mica, trace lithic fragments, trace carbonaceous material, trace pyrite.
2217.0	80	SANDSTONE		SANDSTONE: light olive grey, clear, loose to friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 80% very fine grained, 15% fine grained, 5% coarse grained, trace lithic fragments, trace pyrite, trace glauconite grains, 95% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2223.0	30	SILTSTONE		SILTSTONE: brownish grey, olive grey, brownish black, soft to firm, sub-blocky to blocky, trace mica, trace lithic fragments, trace carbonaceous material, trace pyrite.
2223.0	70	SANDSTONE		SANDSTONE: light olive grey, clear, loose to friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 80% very fine grained, 15% fine grained, 5% coarse grained, trace lithic fragments, trace pyrite, trace glauconite grains, 95% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2226.0	90	SANDSTONE		SANDSTONE: light grey, olive grey, light olive grey, very soft to friable, amorphous to sub-blocky, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90%

				siliceous sand, 100% very fine grained, trace glauconite, trace lithic fragments, 95% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2226.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft, sub-blocky, 20% siliceous clay, trace carbonaceous material, trace pyrite aggregates, trace mica.
2229.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft, sub-blocky, 20% siliceous clay, trace carbonaceous material, trace pyrite aggregates, trace mica.
2229.0	60	SANDSTONE		SANDSTONE: light grey, olive grey, light olive grey, very soft to friable, amorphous to sub-blocky, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 100% very fine grained, trace glauconite, trace lithic fragments, 95% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2232.0	90	SANDSTONE		SANDSTONE: light grey, olive grey, light olive grey, clear, very soft to friable, amorphous to sub-blocky, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 90% very fine grained, 10% coarse grained, trace lithic fragments, 90% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2232.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft, sub-blocky, 20% siliceous clay, trace carbonaceous material, trace pyrite aggregates, trace mica.
2235.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft, sub-blocky, 20% clay, trace carbonaceous material, trace mica.
2235.0	60	SANDSTONE		SANDSTONE: light grey, olive grey, light olive grey, clear, very soft to friable, amorphous to sub-blocky, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 90% very fine grained, 10% coarse grained, trace lithic fragments, 90% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.

2238.0	90	SANDSTONE		SANDSTONE: light grey, olive grey, light olive grey, clear, very soft to friable, amorphous to sub-blocky, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 90% very fine grained, 10% coarse grained, trace lithic fragments, trace pyrite, trace glauconite grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2238.0	10	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive grey, firm, sub-blocky to blocky, 10% clay, trace carbonaceous material, trace mica, trace lithic fragments.
2241.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft, sub-blocky, 20% clay, trace carbonaceous material, trace pyrite aggregates, trace mica.
2241.0	90	SANDSTONE		SANDSTONE: light grey, olive grey, light olive grey, clear, very soft to friable, amorphous to sub-blocky, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 90% very fine grained, 10% coarse grained, trace lithic fragments, 95% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2244.0	35	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft, sub-blocky, 20% clay, trace carbonaceous material, trace pyrite aggregates, trace mica.
2244.0	65	SANDSTONE		SANDSTONE: light grey, olive grey, light olive grey, clear, very soft to friable, amorphous to sub-blocky, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 90% very fine grained, 10% coarse grained, trace lithic fragments, trace glauconite grains, 95% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2247.0	25	SILTSTONE		SILTSTONE: brownish black, brownish grey, firm, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, mica, lithic fragments.
2247.0	75	SANDSTONE		SANDSTONE: light grey, light olive grey, translucent, loose to firm, sub-blocky to blocky, sub-rounded to sub-angular, poor sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 15% very fine grained,

				40% fine grained, 20% medium grained, 20% coarse grained, 5% very coarse grained, trace of lithic fragments, trace of mica, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2250.0	20	SILTSTONE		SILTSTONE: brownish black, brownish grey, firm, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, mica, lithic fragments.
2250.0	80	SANDSTONE		SANDSTONE: light grey, light olive grey, translucent, loose to firm, sub-blocky to blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 15% very fine grained, 40% fine grained, 20% medium grained, 20% coarse grained, 5% very coarse grained, trace of lithic fragments, trace of mica, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2256.0	60	SILTSTONE		SILTSTONE: brownish black, brownish grey, firm, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments, locally argillaceous.
2256.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, translucent, loose to firm, sub-blocky to blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 30% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse grained, trace lithic fragments, trace mica, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2259.0	70	SANDSTONE		SANDSTONE: light grey, light olive grey, translucent, loose to firm, sub-blocky to blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 30% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse grained, trace lithic fragments, trace mica, 60% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2259.0	30	SILTSTONE		SILTSTONE: brownish black, brownish grey, firm, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments, locally argillaceous.

2262.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, firm, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments, locally argillaceous.
2262.0	60	SANDSTONE		SANDSTONE: light grey, light olive grey, translucent, loose to firm, sub-blocky to blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 30% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse grained, trace lithic fragments, trace mica, trace glauconite grains, 60% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2265.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, firm, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments, trace pyrite, locally argillaceous.
2265.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, translucent, loose to firm, sub-blocky to blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 30% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse grained, trace lithic fragments, trace mica, trace glauconite grains, 60% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2268.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 20% siliceous clay, trace pyrite aggregates, trace carbonaceous material, trace mica.
2268.0	30	SANDSTONE		SANDSTONE: light olive grey, yellowish grey, clear, loose to firm, sub-blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 80% fine grained, 20% coarse grained, trace of glauconite, fair inferred visual porosity, no hydrocarbon fluorescence.
2271.0	30	SANDSTONE		SANDSTONE: light olive grey, yellowish grey, clear, loose to firm, sub-blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 80% fine grained, 20% coarse grained, trace of

				glauconite, fair inferred visual porosity, no hydrocarbon fluorescence.
2271.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 20% siliceous clay, trace pyrite aggregates, trace carbonaceous material, trace mica.
2274.0	5	COAL		COAL: brownish black, black, soft to firm, sub-blocky to blocky, trace finely disseminated pyrite.
2274.0	95	SANDSTONE		SANDSTONE: light olive grey, light grey, clear, loose to firm, sub-blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 95% fine grained, 5% coarse grained, trace glauconite grains, trace lithic fragments, 95% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2277.0	5	COAL		COAL: brownish black, black, soft to firm, sub-blocky to blocky, trace finely disseminated pyrite.
2277.0	85	SANDSTONE		SANDSTONE: light olive grey, light grey, clear, loose to firm, sub-blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 95% fine grained, 5% coarse grained, trace glauconite grains, trace lithic fragments, 95% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2277.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 20% siliceous clay, trace mica.
2280.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 20% siliceous clay, trace mica.
2280.0	80	SANDSTONE		SANDSTONE: light olive grey, light grey, clear, loose to firm, sub-blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 95% fine grained, 5% coarse grained, trace glauconite grains, trace lithic fragments, 95% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2283.0	90	SANDSTONE		SANDSTONE: light olive grey, light grey, clear, loose to firm, sub-blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 95% fine grained, 5% coarse grained, trace lithic fragments, trace carbonaceous material, 95% rock flour, poor inferred visual porosity, no

				hydrocarbon fluorescence.
2283.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 20% siliceous clay, trace mica, carbonaceous material.
2286.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 20% siliceous clay, trace mica, carbonaceous material.
2286.0	90	SANDSTONE		SANDSTONE: light olive grey, light grey, clear, loose to firm, sub-blocky, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 95% fine grained, 5% coarse grained, trace lithic fragments, trace carbonaceous material, 95% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2289.0	90	SANDSTONE		SANDSTONE: very light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 100% siliceous sand, 10% medium grained, 40% coarse grained, 40% very coarse grained, 10% granular, very good inferred visual porosity, no hydrocarbon fluorescence.
2289.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 20% siliceous clay, trace mica, trace coaly laminations.
2292.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 20% siliceous clay, trace mica, trace coaly laminations.
2292.0	90	SANDSTONE		SANDSTONE: very light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 100% siliceous sand, 10% medium grained, 40% coarse grained, 40% very coarse grained, 10% granular, very good inferred visual porosity, no hydrocarbon fluorescence.
2295.0	10	COAL		COAL: black, brownish black, soft to firm, sub-blocky to blocky, trace finely disseminated pyrite.
2295.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 20% siliceous clay, trace mica.
2295.0	80	SANDSTONE		SANDSTONE: very light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to

				sub-elongate, 100% siliceous sand, 20% fine grained, 30% medium grained, 30% coarse grained, 20% very coarse grained, good inferred visual porosity, no hydrocarbon fluorescence.
2298.0	60	SILTSTONE		SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 10% siliceous clay, trace mica, trace lithic fragments.
2298.0	40	SANDSTONE		SANDSTONE: very light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 100% siliceous sand, 20% fine grained, 30% medium grained, 30% coarse grained, 20% very coarse grained, good inferred visual porosity, no hydrocarbon fluorescence.
2301.0	30	SANDSTONE		SANDSTONE: very light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 40% fine grained, 30% medium grained, 30% coarse grained, trace of mica, 30% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2301.0	70	SILTSTONE		SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 10% siliceous clay, trace mica, trace lithic fragments. Some cuttings show laminations of SANDSTONE.
2304.0	90	SANDSTONE		SANDSTONE: very light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 40% fine grained, 30% medium grained, 30% coarse grained, trace of mica, 95% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2304.0	10	SILTSTONE		SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 10% siliceous clay, trace mica, trace lithic fragments. Some cuttings show laminations of SANDSTONE.
2307.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 30% siliceous clay, trace mica, coaly laminations.
2307.0	10	SANDSTONE		SANDSTONE: very light grey, translucent, loose to friable, sub-

				rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 40% fine grained, 30% medium grained, 30% coarse grained, trace of mica, 95% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2310.0	5	COAL		COAL: black, brownish black, soft to firm, sub-blocky to blocky, trace finely disseminated pyrite.
2310.0	20	SANDSTONE		SANDSTONE: very light grey, translucent, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 50% fine grained, 20% medium grained, 30% coarse grained, trace mica, 30% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2310.0	75	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, coaly laminations.
2313.0	10	CLAYSTONE		CLAYSTONE: greyish black, firm, sub-fissile.
2313.0	5	SANDSTONE		SANDSTONE: clear, opaque, loose, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 100% siliceous sand, 30% medium grained, 50% coarse grained, 20% very coarse grained, 30% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2313.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, coaly laminations.
2316.0	10	SANDSTONE		SANDSTONE: clear, opaque, loose, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 100% siliceous sand, 30% medium grained, 50% coarse grained, 20% very coarse grained, 30% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2316.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, coaly laminations.
2319.0	5	COAL		COAL: black, brownish black, soft to firm, sub-blocky to blocky.

2319.0	80	SANDSTONE		SANDSTONE: clear, opaque, light grey, loose to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 60% fine grained, 10% medium grained, 20% coarse grained, 10% very coarse grained, trace carbonaceous laminations, good inferred visual porosity, no hydrocarbon fluorescence.
2319.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, coaly laminations.
2322.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, coaly laminations.
2322.0	90	SANDSTONE		SANDSTONE: clear, opaque, light grey, loose to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 60% fine grained, 10% medium grained, 20% coarse grained, 10% very coarse grained, trace carbonaceous laminations, good inferred visual porosity, no hydrocarbon fluorescence.
2325.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2325.0	10	COAL		COAL: black, brownish black, firm to moderately hard, cleated, sub-fissile to sub-blocky in part, conchoidal fracture, bright.
2325.0	40	SANDSTONE		SANDSTONE: clear, opaque, light grey, loose to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 60% fine grained, 10% medium grained, 20% coarse grained, 10% very coarse grained, trace carbonaceous material, good inferred visual porosity, no hydrocarbon fluorescence.
2328.0	20	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: very light grey, very soft to friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 25% siliceous clay, 75% siliceous sand, 60% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.

2328.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous material.
2334.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous material.
2340.0	5	COAL		COAL: black, brownish black, soft to firm, sub-blocky, conchoidal fracture, bright.
2340.0	65	SANDSTONE		SANDSTONE: clear, opaque, light grey, loose to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% fine grained, 40% medium grained, good inferred visual porosity, no hydrocarbon fluorescence.
2340.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous material.
2343.0	100	COAL		COAL: black, brownish black, firm to moderately hard, cleated, sub-fissile to sub-blocky, conchoidal fracture, bright.
2346.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2346.0	10	COAL		COAL: black, brownish black, firm to moderately hard, cleated, sub-fissile to sub-blocky in part, conchoidal fracture, bright.
2349.0	80	SANDSTONE		SANDSTONE: clear, opaque, light grey, loose to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 60% fine grained, 10% medium grained, 20% coarse grained, 10% very coarse grained, trace carbonaceous and coaly laminations, good inferred visual porosity, no hydrocarbon fluorescence.
2349.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.

2352.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2352.0	10	SANDSTONE		SANDSTONE: clear, opaque, light grey, loose to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 60% fine grained, 10% medium grained, 20% coarse grained, 10% very coarse grained, trace carbonaceous and coaly laminations, good inferred visual porosity, no hydrocarbon fluorescence.
2352.0	80	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, soft and sticky, amorphous.
2358.0	80	SANDSTONE		SANDSTONE: clear, opaque, light grey, loose to friable, angular to sub-rounded, poorly sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 50% fine grained, 30% medium grained, 20% coarse grained, trace carbonaceous material, fair inferred visual porosity, no hydrocarbon fluorescence.
2358.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2358.0	10	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, soft and sticky, amorphous.
2370.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2370.0	20	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, soft and sticky, amorphous.
2376.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2376.0	90	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, soft and sticky, amorphous.
2379.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2379.0	30	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, soft and sticky, amorphous.

2379.0	30	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: very light grey, very soft to friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 25% siliceous clay, 75% siliceous sand, 60% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2385.0	20	SANDSTONE		SANDSTONE: clear, opaque, light grey, loose to friable, angular to sub-rounded, poorly sorted, sub-spherical to sub-elongate, 15% siliceous clay, 85% siliceous sand, 50% fine grained, 30% medium grained, 20% coarse grained, fair inferred visual porosity, no hydrocarbon fluorescence.
2385.0	80	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, soft and sticky to firm, amorphous to sub-blocky, trace carbonaceous material as material and thin laminations, trace mica.
2388.0	10	SANDSTONE		SANDSTONE: clear, opaque, light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 100% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2388.0	90	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, firm, sub-fissile to sub-blocky, trace carbonaceous material as laminations, trace mica and micaceous laminations.
2394.0	10	SANDSTONE		SANDSTONE: clear, opaque, light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 100% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2394.0	90	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, firm, sub-fissile to sub-blocky, trace carbonaceous material as laminations, trace mica and micaceous laminations.
2397.0	10	SANDSTONE		SANDSTONE: clear, opaque, light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 100% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2397.0	90	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, firm, sub-fissile to sub-blocky, trace carbonaceous material as laminations, trace mica and micaceous laminations.
2400.0	5	SANDSTONE		SANDSTONE: clear, opaque, light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 100%

				fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2400.0	95	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, firm, sub-fissile to sub-blocky, trace carbonaceous material as laminations, trace mica and micaceous laminations.
2403.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly material as laminations.
2403.0	20	SANDSTONE		SANDSTONE: light grey, friable to loose, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2403.0	40	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, firm, sub-fissile to sub-blocky, trace carbonaceous material as laminations, trace mica and micaceous laminations.
2406.0	10	SANDSTONE		SANDSTONE: light grey, friable to loose, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2406.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly material as laminations.
2406.0	60	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, firm, sub-fissile to sub-blocky, trace carbonaceous material as laminations, trace mica and micaceous laminations.
2409.0	10	SANDSTONE		SANDSTONE: light grey, friable to loose, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2409.0	90	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, pale yellowish brown, firm, sub-blocky, trace carbonaceous material, trace mica.
2412.0	20	SANDSTONE		SANDSTONE: light grey, friable to loose, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, good

				inferred visual porosity, no hydrocarbon fluorescence.
2412.0	80	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, pale yellowish brown, firm, sub-blocky, trace carbonaceous material, trace mica.
2418.0	20	SANDSTONE		SANDSTONE: light grey, friable to loose, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2418.0	80	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, pale yellowish brown, firm, sub-blocky, trace carbonaceous material, trace mica.
2421.0	40	SANDSTONE		SANDSTONE: light grey, friable to loose, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2421.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2421.0	20	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, pale yellowish brown, firm, sub-blocky, trace carbonaceous material, traces mica.
2424.0	40	SANDSTONE		SANDSTONE: light grey, friable to loose, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2424.0	60	CLAYSTONE		ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material.
2427.0	10	SANDSTONE		SANDSTONE: light grey, friable to loose, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2427.0	90	CLAYSTONE		ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, trace

				carbonaceous material.
2430.0	10	SANDSTONE		SANDSTONE: light grey, friable to loose, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2430.0	90	CLAYSTONE		ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material.
2433.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2433.0	20	CLAYSTONE		ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations.
2436.0	40	SANDSTONE		SANDSTONE: light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, 10% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence. Seen as interlaminations in SILTSTONE.
2436.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations.
2439.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations.
2439.0	20	SANDSTONE		SANDSTONE: light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, 10% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence. Seen as interlaminations in SILTSTONE.
2445.0	10	SANDSTONE		SANDSTONE: light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained,

				40% fine grained, 10% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence. Seen as interlaminations in SILTSTONE.
2445.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations.
2448.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations, 30% rock flour.
2451.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations, 30% rock flour.
2454.0	40	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material, traces mica.
2454.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations, 30% rock flour.
2457.0	20	SANDSTONE		SANDSTONE: light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, fair inferred visual porosity, no hydrocarbon fluorescence.
2457.0	30	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material, traces mica.
2457.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations.
2460.0	50	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material, traces mica.
2460.0	1	COAL		COAL: black, firm, sub-fissile to conchoidal, occurring as thin

				laminations in SILTSTONE.
2460.0	19	SANDSTONE		SANDSTONE: light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, 40% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2460.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations.
2463.0	40	SANDSTONE		SANDSTONE: light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, 40% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2463.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations.
2463.0	30	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material, traces mica.
2466.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous and coaly laminations, trace micaceous laminations.
2466.0	40	CLAYSTONE		CLAYSTONE: olive grey, brownish grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material, traces mica.
2466.0	10	SANDSTONE		SANDSTONE: light grey, friable, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 60% very fine grained, 40% fine grained, 40% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2469.0	20	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-angular to sub-rounded, moderately sorted to well sorted, sub-spherical, 100% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium grained, trace lithic

				fragments, trace carbonaceous material, good inferred visual porosity, no hydrocarbon fluorescence.
2469.0	30	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, light grey, very soft to soft, amorphous to sub-blocky, trace mica.
2469.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous laminations, trace mica.
2472.0	5	COAL		COAL: brownish black, black, firm, sub-fissile to conchoidal, trace finely disseminated pyrite.
2472.0	45	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, light grey, very soft to soft, amorphous to sub-blocky, trace mica, trace carbonaceous material.
2472.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous laminations, trace mica.
2475.0	40	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, light grey, very soft to soft, amorphous to sub-blocky, trace mica, trace carbonaceous material.
2475.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous laminations, trace mica.
2475.0	10	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical, 100% siliceous sand, 70% very fine grained, 30% fine grained, trace lithic fragments, 50% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2478.0	5	COAL		COAL: brownish black, black, firm, sub-fissile to conchoidal.
2478.0	10	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical, 100% siliceous sand, 70% very fine grained, 30% fine grained, trace lithic fragments, 80% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2478.0	40	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, light grey, very soft to soft, amorphous to sub-blocky, trace mica, trace carbonaceous material.
2478.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% clay, trace carbonaceous laminations, trace micaceous

				laminations.
2481.0	10	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical, 100% siliceous sand, 70% very fine grained, 30% fine grained, trace lithic fragments, 80% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2481.0	50	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, light grey, very soft to soft, amorphous to sub-blocky, trace mica, trace carbonaceous material.
2481.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% clay, trace carbonaceous laminations, trace micaceous laminations.
2484.0	50	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-angular to sub-rounded, moderately to well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 30% very fine grained, 50% fine grained, 15% medium grained, 5% coarse grained, trace lithic fragments, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2484.0	20	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, in part light grey, in part yellowish grey, very soft to soft, amorphous to sub-blocky, trace mica.
2484.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous laminations, trace mica.
2487.0	30	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, in part light grey, in part yellowish grey, very soft to soft, amorphous to sub-blocky, trace mica.
2487.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous laminations, trace mica.
2487.0	60	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-angular to sub-rounded, moderately to well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 30% very fine grained, 50% fine grained, 15% medium grained, 5% coarse grained, trace lithic fragments, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.

2490.0	20	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical, 100% siliceous sand, 70% very fine grained, 30% fine grained, trace of lithic fragments, 80% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2490.0	70	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, very soft to soft, sub-blocky, trace mica, trace lithic fragments.
2490.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous material, trace mica.
2493.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace carbonaceous material, trace mica.
2493.0	70	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical, 100% siliceous sand, 70% very fine grained, 30% fine grained, trace of lithic fragments, 95% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2493.0	20	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, very soft to soft, sub-blocky, trace mica, trace lithic fragments.
2496.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 10% very fine siliceous sand, trace mica, trace lithic fragments, trace carbonaceous laminations.
2496.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, translucent, friable, sub-rounded, moderately sorted to well sorted, sub-spherical, 5% siliceous clay, 95% siliceous sand, 75% fine grained, 15% medium grained, 10% coarse grained, 40% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2499.0	60	CLAYSTONE		CLAYSTONE: light olive grey, light brownish grey, very soft to soft, sub-blocky, trace mica.
2499.0	10	SANDSTONE		SANDSTONE: light grey, light olive grey, translucent, friable, sub-rounded, moderately sorted to well sorted, sub-spherical, 5% siliceous clay, 95% siliceous sand, 75% fine grained, 15% medium grained, 10% coarse grained,

				40% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2499.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 10% very fine siliceous sand, trace mica, trace lithic fragments, trace carbonaceous laminations.
2502.0	30	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 70% very fine grained, 20% fine grained, 10% medium grained, 80% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2502.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous material.
2505.0	10	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 70% very fine grained, 20% fine grained, 10% medium grained, 80% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2505.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous material.
2505.0	10	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material, trace lithic fragments.
2508.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous laminations.
2508.0	80	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, in part light grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material, trace lithic fragments, trace mica.
2511.0	10	SANDSTONE		SANDSTONE: light grey, light brownish grey, translucent, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 80% very fine grained,

				20% fine grained, trace lithic fragments, 60% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2511.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace pyrite aggregates, trace carbonaceous laminations.
2511.0	30	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, in part light grey, very soft to soft, amorphous to sub-blocky, trace carbonaceous material, trace lithic fragments, trace mica.
2514.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous material.
2514.0	40	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, very soft to soft, amorphous to sub-blocky, trace mica, trace carbonaceous material.
2514.0	10	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 80% very fine grained, 20% fine grained, 60% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2517.0	10	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 80% very fine grained, 20% fine grained, 60% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2517.0	60	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, very soft to soft, amorphous to sub-blocky, trace mica, trace carbonaceous material.
2517.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous material.
2520.0	20	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 80% very fine grained, 20% fine grained, 60% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.

2520.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous material.
2520.0	50	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, very soft to soft, amorphous to sub-blocky, trace mica, trace carbonaceous material.
2523.0	5	COAL		COAL: black, brownish black, firm, sub-fissile to conchoidal, bright.
2523.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous laminations.
2523.0	30	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 80% very fine grained, 20% fine grained, 60% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2526.0	20	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, very soft to soft, amorphous to sub-blocky, trace mica, trace carbonaceous material.
2526.0	50	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 80% very fine grained, 20% fine grained, 60% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2526.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous laminations.
2529.0	30	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, very soft to soft, amorphous to sub-blocky, trace mica, trace carbonaceous material.
2529.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous laminations.
2529.0	20	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-

				elongate, 100% siliceous sand, 80% very fine grained, 20% fine grained, 60% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2532.0	20	CLAYSTONE		CLAYSTONE: light grey, brownish grey, olive grey, very soft to soft, amorphous, trace carbonaceous material.
2532.0	50	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded, well sorted, sub-spherical, 100% siliceous sand, 80% very fine grained, 20% fine grained, 80% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2532.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 30% siliceous clay, trace mica, trace lithic fragments, trace carbonaceous laminations.
2535.0	30	CLAYSTONE		CLAYSTONE: light grey, brownish grey, olive grey, very soft to soft, amorphous, trace carbonaceous material, trace lithic fragments.
2535.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 30% siliceous clay, 10% very fine sand occurring as laminations, trace mica, trace lithic fragments, trace carbonaceous laminations.
2535.0	20	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded, well sorted, sub-spherical, 100% siliceous sand, 80% very fine grained, 20% fine grained, trace carbonaceous material, 80% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2538.0	10	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded, well sorted, sub-spherical, 100% siliceous sand, 80% very fine grained, 20% fine grained, 80% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2538.0	70	CLAYSTONE		CLAYSTONE: light grey, brownish grey, olive grey, very soft to soft, amorphous, trace carbonaceous material, trace lithic fragments.
2538.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky, 30% siliceous clay, 10% very fine sand occurring as laminations, trace mica, trace lithic fragments, trace carbonaceous laminations.

2541.0	20	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded, well sorted, sub-spherical, 100% siliceous sand, 60% very fine grained, 40% fine grained, trace carbonaceous fragments, trace lithic fragments, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2541.0	50	CLAYSTONE		CLAYSTONE: light grey, olive grey, brownish grey, very soft to soft, amorphous, trace carbonaceous material, trace lithic fragments, trace glauconite grains.
2541.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace carbonaceous laminations, trace finely disseminated pyrite.
2544.0	50	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 20% very fine grained, 50% fine grained, 20% medium grained, 10% coarse grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2544.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace carbonaceous laminations.
2544.0	20	CLAYSTONE		CLAYSTONE: light grey, olive grey, brownish grey, very soft to soft, amorphous, trace carbonaceous material, trace lithic fragments.
2547.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace bright carbonaceous laminations.
2547.0	90	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 20% very fine grained, 70% fine grained, 5% medium grained, 5% coarse grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2550.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay,

				trace mica, trace bright carbonaceous laminations.
2550.0	80	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical to sub-elongate, 100% siliceous sand, 20% very fine grained, 70% fine grained, 5% medium grained, 5% coarse grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2553.0	25	CLAYSTONE		CLAYSTONE: brownish grey, light grey, olive grey, very soft to soft, amorphous to sub-blocky, trace lithic fragments.
2553.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace bright carbonaceous laminae.
2553.0	60	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded, well sorted, sub-spherical to spherical, 100% siliceous sand, 20% very fine grained, 70% fine grained, 5% medium grained, 5% coarse grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2556.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace bright carbonaceous laminae.
2556.0	10	CLAYSTONE		CLAYSTONE: brownish grey, light grey, olive grey, very soft to soft, amorphous to sub-blocky, trace lithic fragments.
2556.0	50	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded, well sorted, sub-spherical to spherical, 100% siliceous sand, 20% very fine grained, 70% fine grained, 5% medium grained, 5% coarse grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2559.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky, 25% siliceous clay, trace mica, trace bright carbonaceous laminae.
2559.0	20	CLAYSTONE		CLAYSTONE: brownish grey, light grey, olive grey, very soft to soft, amorphous to sub-blocky, trace lithic fragments.
2559.0	40	SANDSTONE		SANDSTONE: light grey, translucent, friable, sub-rounded, well sorted, sub-spherical to spherical, 100% siliceous

				sand, 20% very fine grained, 70% fine grained, 5% medium grained, 5% coarse grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2562.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, in part light grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace carbonaceous material, trace mica.
2562.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, friable, sub-rounded to rounded, well sorted, sub-spherical to spherical, 5% siliceous clay, 95% siliceous sand, 60% very fine grained, 30% fine grained, 10% medium grained, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2562.0	40	CLAYSTONE		CLAYSTONE: brownish grey, light olive grey, in part light grey, very soft to soft, amorphous, trace carbonaceous material.
2565.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, in part light grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace carbonaceous material, trace mica.
2565.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, friable, sub-rounded to rounded, well sorted, sub-spherical to spherical, 5% siliceous clay, 95% siliceous sand, 60% very fine grained, 30% fine grained, 10% medium grained, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2565.0	20	CLAYSTONE		CLAYSTONE: brownish grey, light olive grey, in part light grey, very soft to soft, amorphous, trace carbonaceous material.
2568.0	90	SILTSTONE		SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 15% siliceous clay, 80% siliceous silt, trace carbonaceous laminations, trace mica, trace lithic fragments.
2568.0	10	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 60% fine grained, 10% medium grained, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2571.0	10	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, moderately sorted, sub-

				spherical, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 60% fine grained, 10% medium grained, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2571.0	90	SILTSTONE		SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 10% very fine sand occurring as laminations, trace carbonaceous laminations, trace mica, trace lithic fragments.
2574.0	10	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 60% fine grained, 10% medium grained, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2574.0	90	SILTSTONE		SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 10% very fine sand occurring as laminations, trace carbonaceous laminations, trace mica, trace lithic fragments.
2577.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, opaque, friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 35% very fine grained, 50% fine grained, 10% medium grained, 5% coarse grained, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2577.0	60	SILTSTONE		SILTSTONE: brownish grey, brownish black, olive grey, sub-blocky to blocky, 20% siliceous clay, 10% very fine sand occurring as laminations, trace carbonaceous laminations, trace mica, trace lithic fragments.
2580.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, opaque, friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 35% very fine grained, 50% fine grained, 10% medium grained, 5% coarse grained, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2580.0	60	SILTSTONE		SILTSTONE: brownish grey, brownish black, olive grey, sub-blocky to blocky, 20% siliceous clay, 10% very fine sand occurring as laminations, trace

				carbonaceous laminations, trace mica, trace lithic fragments.
2583.0	30	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, in part brownish black, very soft to soft, amorphous, trace carbonaceous material, trace lithic fragments.
2583.0	10	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, opaque, friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 35% very fine grained, 60% fine grained, 5% medium grained, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2583.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine sand occurring as laminations, trace carbonaceous laminations, mica, trace lithic fragments.
2586.0	60	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, loose to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 40% very fine grained, 50% fine grained, 10% medium grained, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2586.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine sand occurring as laminations, trace carbonaceous laminations, mica, trace lithic fragments.
2589.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine sand occurring as laminations, trace carbonaceous laminations, mica, trace lithic fragments.
2589.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, loose to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 40% very fine grained, 50% fine grained, 10% medium grained, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2592.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to

				firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine sand occurring as laminations, trace carbonaceous laminations, trace mica.
2592.0	20	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, friable, sub-rounded, well sorted to very well sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 50% very fine grained, 50% fine grained, 50% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2595.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, clear, friable, sub-rounded, well sorted to very well sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 50% very fine grained, 50% fine grained, 50% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2595.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine sand occurring as laminations, trace carbonaceous laminations, trace mica.
2598.0	19	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 50% very fine grained, 50% fine grained, 50% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2598.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine grained sand occurring as laminations, trace carbonaceous material, trace mica.
2598.0	1	COAL		COAL: black, brownish black, firm, sub-fissile to conchoidal, bright.
2601.0	10	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 50% very fine grained, 50% fine grained, 50% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2601.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine grained sand occurring as laminations, trace carbonaceous material, trace mica.

2604.0	5	COAL		COAL: black, brownish black, firm, sub-fissile to conchoidal, bright.
2604.0	20	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical10% siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2604.0	75	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine sand occurring in laminations, trace carbonaceous laminations, trace mica.
2607.0	1	COAL		COAL: black, brownish black, firm, sub-fissile to conchoidal, bright.
2607.0	19	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical10% siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2607.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, 5% very fine sand occurring in laminations, trace carbonaceous laminations, trace mica.
2610.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, firm, sub-blocky to blocky, 20% siliceous clay, trace carbonaceous laminations, trace mica.
2610.0	30	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, trace lithic fragments.
2610.0	10	SANDSTONE		SANDSTONE: light grey, friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2613.0	80	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, trace lithic fragments, 20% rock flour.
2613.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, firm, sub-blocky to blocky, 20% siliceous clay, trace carbonaceous laminations,

				trace mica.
2616.0	5	COAL		COAL: black, brownish black, firm, blocky and cleated to sub-fissile, earthy to bright.
2616.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, firm, sub-blocky to blocky, 20% siliceous clay, trace carbonaceous laminations, trace mica.
2616.0	85	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, trace lithic fragments, 20% rock flour.
2619.0	5	COAL		COAL: black, brownish black, firm, blocky and cleated to sub-fissile, earthy to bright.
2619.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, firm, sub-blocky to blocky, 20% siliceous clay, trace carbonaceous laminations, trace mica.
2619.0	90	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material.
2622.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, firm, sub-blocky to blocky, 20% siliceous clay, trace carbonaceous laminations, trace mica.
2622.0	80	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material.
2625.0	5	COAL		COAL: black, brownish black, firm, blocky and cleated to sub-fissile, conchoidal fracture in part, earthy to bright.
2625.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, firm, sub-blocky to blocky, 20% siliceous clay, trace carbonaceous laminations, trace mica.
2625.0	80	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, 10% rock flour.
2625.0	75	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, 10% rock flour.
2628.0	10	SANDSTONE		SANDSTONE: light grey, friable, sub-rounded to sub-angular, well sorted,

				sub-spherical, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2628.0	5	COAL		COAL: black, brownish black, firm, blocky and cleated to sub-fissile, earthy to bright.
2628.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, brownish black, olive grey, firm, sub-blocky to blocky, 20% siliceous clay, trace carbonaceous laminations, trace mica.
2628.0	75	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, 10% rock flour.
2631.0	20	SANDSTONE		SANDSTONE: light grey, friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 100% fine grained, good inferred visual porosity, no hydrocarbon fluorescence.
2631.0	80	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, 10% rock flour.
2634.0	20	SANDSTONE		SANDSTONE: clear, polished, loose, rounded to sub-angular, well sorted, sub-spherical, 100% siliceous sand, 100% fine grained, 10% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2634.0	80	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, 10% rock flour.
2637.0	20	SANDSTONE		SANDSTONE: light grey, loose to friable, sub-rounded to sub-angular, well sorted, sub-spherical, 100% siliceous sand, 100% very fine grained, 10% silica cement, 10% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2637.0	80	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material.
2640.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, friable to firm, sub-rounded to sub-angular, well sorted, sub-spherical, 100% siliceous sand, 100% very fine grained, 10% calcite cement, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.

2640.0	60	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material.
2643.0	10	SANDSTONE		SANDSTONE: light grey, light olive grey, friable to firm, sub-rounded to sub-angular, well sorted, sub-spherical, 100% siliceous sand, 100% very fine grained, 10% calcite cement, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2643.0	90	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material.
2646.0	100	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material.
2649.0	100	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material.
2652.0	10	COAL		COAL: black, brownish black, firm, blocky and cleated to sub-fissile, conchoidal fracture in part, earthy to bright.
2652.0	5	SANDSTONE		SANDSTONE: light grey, light olive grey, friable to firm, sub-rounded to sub-angular, well sorted, sub-spherical, 100% siliceous sand, 100% very fine grained, 10% calcite cement, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2652.0	85	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material.
2655.0	5	COAL		COAL: black, brownish black, firm, blocky and cleated to sub-fissile, conchoidal fracture in part, earthy to bright, trave very fine grained disseminated pyrite.
2655.0	90	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material.
2658.0	5	COAL		COAL: black, brownish black, firm, blocky and cleated to sub-fissile, conchoidal fracture in part, earthy to bright, trave very fine grained disseminated pyrite.
2658.0	90	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, trace replacement pyrite.
2658.0	5	DOLOMITE		DOLOMITE: mottled olive grey, firm, splintery to sub-fissile, earthy, 90% dolomitic clay, 10% siliceous clay.

2661.0	100	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, trace replacement pyrite.
2664.0	100	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, trace replacement pyrite.
2667.0	5	SANDSTONE		SANDSTONE: light grey, olive grey, firm to loose, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% calcareous clay, 90% siliceous sand, 40% very fine grained, 60% fine grained, 10% silica cement, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2667.0	95	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous material, trace replacement pyrite.
2670.0	5	SANDSTONE		SANDSTONE: light grey, olive grey, firm to loose, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% calcareous clay, 90% siliceous sand, 40% very fine grained, 60% fine grained, 10% silica cement, trace of lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2670.0	95	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky.
2673.0	5	SANDSTONE		SANDSTONE: light grey, olive grey, firm to loose, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% calcareous clay, 90% siliceous sand, 40% very fine grained, 60% fine grained, 10% silica cement, trace of lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2673.0	95	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky.
2676.0	100	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky.
2679.0	100	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky.
2682.0	100	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations.

2685.0	100	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations.
2688.0	5	SANDSTONE		SANDSTONE: light grey, olive grey, firm, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% calcareous clay, 90% siliceous sand, 40% very fine grained, 60% fine grained, 10% silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2688.0	95	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations.
2691.0	10	SANDSTONE		SANDSTONE: light grey, olive grey, firm, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% calcareous clay, 90% siliceous sand, 40% very fine grained, 60% fine grained, 10% silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2691.0	90	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations.
2694.0	20	SANDSTONE		SANDSTONE: clear, opaque, light grey, moderate yellowish brown, medium dark grey, loose to friable, rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 100% siliceous sand, 20% very fine grained, 30% fine grained, 20% medium grained, 30% coarse grained, fair inferred visual porosity, no hydrocarbon fluorescence.
2694.0	80	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky, traces carbonaceous material and laminations.
2697.0	60	SANDSTONE		SANDSTONE: clear, opaque, light grey, moderate yellowish brown, medium dark grey, loose to friable, rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 100% siliceous sand, 20% very fine grained, 30% fine grained, 20% medium grained, 30% coarse grained, fair inferred visual porosity, no hydrocarbon fluorescence.
2697.0	40	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-

				blocky, traces carbonaceous material and laminations, trace mica
2700.0	90	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, amorphous to soft, sub-fissile to sub-blocky, traces carbonaceous material and laminations, trace mica
2700.0	10	SANDSTONE		SANDSTONE: clear, opaque, light grey, moderate yellowish brown, medium dark grey, loose to friable, rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 100% siliceous sand, 20% very fine grained, 30% fine grained, 20% medium grained, 30% coarse grained, 10% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2703.0	100	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, amorphous to soft, sub-fissile to sub-blocky, traces carbonaceous material and laminations, trace mica
2706.0	60	SILTSTONE		SILTSTONE: olive grey, light olive grey, soft to firm, sub-blocky to blocky, 10% clay, trace carbonaceous material, trace pyrite.
2706.0	10	SANDSTONE		SANDSTONE: clear, opaque, light grey, moderate yellowish brown, medium dark grey, loose, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 100% siliceous sand, 40% very fine grained, 30% fine grained, 10% medium grained, 20% coarse grained, fair inferred visual porosity, no hydrocarbon fluorescence.
2706.0	30	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations.
2709.0	5	COAL		COAL: black, brownish black, firm to brittle, blocky to sub-fissile, conchoidal fracture in part, earthy to bright.
2709.0	75	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations.
2709.0	20	SILTSTONE		SILTSTONE: olive grey, light olive grey, soft to firm, sub-blocky to blocky, 10% clay, trace carbonaceous material, trace pyrite.
2712.0	20	SILTSTONE		SILTSTONE: olive grey, light olive grey, soft to firm, sub-blocky to blocky, 10% clay, trace carbonaceous material, trace pyrite, 30% rock flour.
2712.0	80	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-

				blocky, trace carbonaceous laminations.
2715.0	30	SILTSTONE		SILTSTONE: olive grey, light olive grey, soft to firm, sub-blocky to blocky, 10% clay, trace carbonaceous material, trace pyrite, 30% rock flour.
2715.0	70	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations, trace mica.
2718.0	10	SILTSTONE		SILTSTONE: olive grey, light olive grey, soft to firm, sub-blocky to blocky, 10% clay, trace carbonaceous material, trace pyrite, 30% rock flour.
2718.0	90	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations, trace mica.
2721.0	100	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, light brownish grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations, trace mica.
2724.0	20	SANDSTONE		SANDSTONE: light grey, olive grey, firm, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 40% very fine grained, 60% fine grained, 10% silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2724.0	80	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, light brownish grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations, trace mica.
2727.0	60	SANDSTONE		SANDSTONE: light grey, olive grey, clear, opaque, firm to loose, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 55% fine grained, 10% coarse grained, 5% very coarse grained, 10% silica cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2727.0	40	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, light brownish grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations, trace mica.
2730.0	70	CLAYSTONE		CLAYSTONE: brownish grey, brownish black, light brownish grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous laminations, trace mica.

2730.0	30	SANDSTONE		SANDSTONE: light grey, olive grey, clear, opaque, firm to loose, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 55% fine grained, 10% coarse grained, 5% very coarse grained, 10% silica cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2733.0	20	SANDSTONE		SANDSTONE: light grey, clear, firm to loose, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 5% coarse grained, 5% very coarse grained, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2733.0	10	SILTSTONE		SILTSTONE: light olive grey, light brownish grey, soft to firm, sub-blocky to blocky, 10% clay, 10% very fine grained sand occurring as laminations, trace carbonaceous laminations.
2733.0	70	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material laminations, trace mica.
2736.0	10	SANDSTONE		SANDSTONE: light grey, clear, firm to loose, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 5% coarse grained, 5% very coarse grained, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2736.0	90	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material laminations, trace mica.
2739.0	10	SILTSTONE		SILTSTONE: light olive grey, light brownish grey, soft to firm, sub-blocky to blocky, 10% clay, 10% very fine grained sand occurring as laminations, trace carbonaceous laminations.
2739.0	30	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 70% very fine grained, 30% fine grained, trace lithic fragments, fair inferred visual porosity,

				no hydrocarbon fluorescence.
2739.0	60	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, in part light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material as and laminations, trace mica, trace lithic fragments
2742.0	20	SANDSTONE		SANDSTONE: light grey, clear, friable, sub-rounded, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 70% very fine grained, 30% fine grained, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2742.0	80	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, amorphous to sub-fissile, trace carbonaceous laminations, trace mica, trace lithic fragments.
2745.0	60	SANDSTONE		SANDSTONE: light grey, olive grey, clear, friable to firm, sub-rounded, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 70% very fine grained, 30% fine grained, trace lithic fragments, 70% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2745.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, amorphous to sub-fissile, trace carbonaceous laminations, trace mica, trace lithic fragments.
2748.0	80	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica, lithic fragments.
2748.0	20	SANDSTONE		SANDSTONE: light grey, olive grey, clear, friable to firm, sub-rounded, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 70% very fine grained, 30% fine grained, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2751.0	100	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% very fine sand occurring as laminations, trace carbonaceous laminations, trace mica, trace lithic fragments.
2754.0	20	SANDSTONE		SANDSTONE: light grey, olive grey, friable to firm, sub-rounded, well sorted, sub-spherical, 10% white

				siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, trace of altered feldspars, trace carbonaceous material, 10% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
2754.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
2757.0	60	SANDSTONE		SANDSTONE: light grey, olive grey, clear, opaque, loose to firm, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix when aggregated, 90% siliceous sand, 10% very fine grained, 40% fine grained, 20% medium grained, 30% coarse grained, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2757.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
2760.0	60	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
2760.0	40	SANDSTONE		SANDSTONE: light grey, olive grey, clear, opaque, loose to firm, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix when aggregated, 90% siliceous sand, 10% very fine grained, 40% fine grained, 20% medium grained, 30% coarse grained, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2766.0	20	SANDSTONE		SANDSTONE: light grey, olive grey, soft to firm, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2766.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately

				hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
2769.0	60	SANDSTONE		SANDSTONE: light grey, olive grey, soft to firm, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2769.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
2772.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
2772.0	60	SANDSTONE		SANDSTONE: light grey, olive grey, soft to firm, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2775.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2775.0	30	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
2775.0	40	SANDSTONE		SANDSTONE: light grey, olive grey, soft to firm, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2778.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.

2778.0	45	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
2778.0	30	SANDSTONE		SANDSTONE: light grey, olive grey, soft to firm, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2778.0	5	COAL		COAL: black, greenish black, soft to firm, splintery to sub-fissile, bright.
2781.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2781.0	20	SANDSTONE		SANDSTONE: light grey, olive grey, soft to firm, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, 10% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2781.0	50	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2784.0	20	SANDSTONE		SANDSTONE: light grey, olive grey, trace greenish grey, soft to firm, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 100% very fine grained, 10% silica cement, trace lithic fragments, 10% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2784.0	60	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, olive black in part, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2784.0	20	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous

				laminations, trace mica.
2787.0	5	SANDSTONE	Glauconite	SANDSTONE: greenish grey, light greenish grey, light olive grey, friable, sub-rounded to rounded, well sorted, sub-spherical to spherical, 30% glauconite grains, 70% siliceous sand, 40% very fine grained, 60% fine grained, poor inferred visual porosity, no hydrocarbon fluorescence.
2787.0	20	SANDSTONE		SANDSTONE: light grey, olive grey, clear, friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 25% very fine grained, 70% fine grained, 5% medium grained, 10% silica cement, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2787.0	25	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2787.0	50	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 1% carbonaceous laminations, trace mica, trace lithic fragments.
2790.0	10	SANDSTONE		SANDSTONE: light grey, olive grey, clear, friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, 5% silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2790.0	60	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace glauconite.
2790.0	30	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2793.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2793.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to

				firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace glauconite, trace lithic fragments.
2796.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace, trace lithic fragments.
2796.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2799.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 90% siliceous silt, trace carbonaceous material, trace mica.
2799.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2802.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2802.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 90% siliceous silt, trace carbonaceous material, trace mica.
2805.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2805.0	60	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 90% siliceous silt, trace carbonaceous material, trace mica.
2808.0	5	SANDSTONE		SANDSTONE: light grey, olive grey, firm to moderately hard, sub-rounded, moderately sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 15% silica cement, fair inferred visual porosity, no hydrocarbon fluorescence.
2808.0	25	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft, sub-blocky to sub-fissile, 10% siliceous silt

				laminations, trace carbonaceous material.
2808.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica.
2811.0	100	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica.
2814.0	100	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica.
2817.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous material, trace lithic fragments.
2817.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica.
2820.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous material, trace lithic fragments.
2820.0	90	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica.
2823.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, light grey, soft, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous material, trace lithic fragments.
2823.0	60	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica.

2826.0	10	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, moderately sorted to well sorted, sub-spherical to spherical, 10% white siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, 10% silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2826.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2826.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2829.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, moderately to well sorted, sub-spherical to spherical, 10% white siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium grained, 10% silica cement, trace lithic fragments, trace bright coaly laminations, fair inferred visual porosity, no hydrocarbon show.
2829.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2829.0	50	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica, trace pyrite aggregates.
2832.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, well sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium quartz grains, 10% silica cement, trace lithic fragments, trace bright coaly laminations, fair inferred visual porosity, poor hydrocarbon fluorescence.

2832.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica, trace pyrite aggregates.
2835.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, 10% silt in laminae, trace carbonaceous material and fine laminae.
2835.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, well sorted, sub-spherical to spherical, 10% white siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium quartz grains, 10% silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2835.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2838.0	10	COAL		COAL: black, firm, sub-fissile to conchoidal, trace finely disseminated pyrite, trace lithic fragments.
2838.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2838.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, well sorted, sub-spherical to spherical, 10% white siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium quartz grains, 10% silica cement, trace of lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2838.0	50	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2841.0	5	COAL		COAL: black, firm, sub-fissile to conchoidal, trace finely disseminated pyrite, trace lithic fragments.

2841.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2841.0	20	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, well sorted, sub-spherical to spherical, 10% white siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium quartz grains, 10% silica cement, trace of lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2841.0	65	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2844.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous material and fine laminae.
2844.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded, well sorted, sub-spherical, 10% white siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium quartz grains, 10% silica cement, trace lithic fragments, trace coal laminations, fair inferred visual porosity, no hydrocarbon fluorescence.
2844.0	30	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2847.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous material and fine laminae.
2847.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.

2847.0	10	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded, well sorted, sub-spherical, 10% white siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium quartz grains, 10% silica cement, trace lithic fragments, trace coal laminations, fair inferred visual porosity, no hydrocarbon fluorescence.
2850.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2850.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 5% siliceous sand laminations, trace carbonaceous material, trace mica.
2853.0	10	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded, well sorted, sub-spherical, 10% white siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium quartz grains, 10% silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2853.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2853.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 5% siliceous sand laminations, trace carbonaceous material, trace mica.
2856.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium quartz grains, 10% silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
2856.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2856.0	60	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately

				hard, sub-blocky to sub-fissile, 10% siliceous clay, 5% siliceous sand laminations, trace carbonaceous material, trace mica.
2859.0	50	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, well sorted, sub-spherical to spherical, 10% white siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2859.0	50	SILTSTONE	Sandy	SANDY SILTSTONE: brownish black, olive grey, brownish grey, firm to moderately hard, sub-blocky to sub-fissile, 10% clay, 20% very fine sand, trace carbonaceous laminations, trace mica.
2862.0	60	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, well sorted, sub-spherical to spherical, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace glauconite grains, trace bright coal laminations, good inferred visual porosity, no hydrocarbon fluorescence.
2862.0	40	SILTSTONE	Sandy	SANDY SILTSTONE: brownish black, olive grey, brownish grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 20% very fine sand, trace carbonaceous lamiantions, trace mica.
2865.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2865.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 5% very fine grained sand laminations, trace carbonaceous laminations, trace mica.
2865.0	20	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, well sorted, sub-spherical to spherical, 10% white siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace bight coal laminations, good

				inferred visual porosity, no hydrocarbon fluorescence.
2868.0	60	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2868.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 5% very fine grained sand laminations, trace carbonaceous laminations, trace mica.
2871.0	40	SILTSTONE	Sandy	SANDY SILTSTONE: brownish black, olive grey, brownish grey, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2871.0	50	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, well sorted, sub-spherical to spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace glauconite grains, trace bright coal laminations, good inferred visual porosity, no hydrocarbon fluorescence.
2871.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, in part light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2874.0	30	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 5% very fine grained sandstone laminations, trace carbonaceous laminations, trace mica.
2874.0	70	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded, moderately sorted , sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 10% very fine grained, 65% fine grained, 20% medium grained, 5% coarse grained, 10% silica cement, trace lithic fragments, trace of glauconite, trace of coal/lignite, 15% porosity, no hydrocarbon show.
2877.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 5% very fine grained

				sandstone laminations, trace carbonaceous laminations, trace mica.
2877.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded, moderately sorted , sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 10% very fine grained, 65% fine grained, 20% medium grained, 5% coarse grained, 10% silica cement, trace lithic fragments, trace of glauconite, trace of coal/lignite, 15% porosity, no hydrocarbon show.
2877.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, light grey, soft to firm, sub-blocky, trace carbonaceous laminations, trace lithic fragments.
2880.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 5% very fine grained sandstone laminations, trace carbonaceous laminations, trace mica.
2880.0	30	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded, moderately sorted , sub-spherical, 10% white siliceous clay, 90% siliceous sand, 10% very fine grained, 65% fine grained, 20% medium grained, 5% coarse quartz grains, 10% silica cement, trace lithic fragments, trace glauconite grains, trace bright coal laminations, good inferred visual porosity, no hydrocarbon fluorescence.
2880.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, light grey, soft to firm, sub-blocky, trace carbonaceous laminations, trace lithic fragments.
2883.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, light grey, soft to firm, sub-blocky, trace carbonaceous laminations, trace lithic fragments.
2883.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2886.0	25	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, light grey, soft to firm, sub-blocky, trace carbonaceous laminations, trace lithic fragments.
2886.0	75	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10%

				siliceous clay, trace carbonaceous laminations, trace mica.
2889.0	5	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, moderately sorted to well sorted, sub-spherical to spherical, 10% white siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2889.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky, trace carbonaceous laminations, trace lithic fragments.
2889.0	75	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2892.0	10	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, moderately sorted to well sorted, sub-spherical to spherical, 10% white siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2892.0	25	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky, trace carbonaceous laminations, trace lithic fragments.
2892.0	65	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2895.0	40	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, moderately to well sorted, sub-spherical to spherical, 10% white siliceous clay, 10% siliceous silt occurring in laminations, 80% siliceous sand, 10% very fine grained, 65% fine grained, 20% medium grained, 5% clear coarse quartz grains, 10% silica cement, trace lithic fragments, trace glauconite grains, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.

2895.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky, trace carbonaceous laminations, trace lithic fragments.
2895.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2898.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky, trace carbonaceous laminations, trace lithic fragments.
2898.0	20	SANDSTONE		SANDSTONE: light grey, light olive grey, firm to moderately hard, sub-blocky, sub-rounded to rounded, moderately to well sorted, sub-spherical to spherical, 10% white siliceous clay, 10% siliceous silt occurring in laminations, 80% siliceous sand, 10% very fine grained, 65% fine grained, 20% medium grained, 5% clear coarse quartz grains, 10% silica cement, trace lithic fragments, trace glauconite grains, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2898.0	40	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
2901.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations, trace lithic fragments.
2901.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
2904.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2904.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
2907.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-

				fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2907.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
2910.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2910.0	60	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
2913.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations, trace lithic fragments.
2913.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous material, trace mica, trace finely disseminated pyrite.
2916.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2916.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous material, trace mica.
2919.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.
2919.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous material, trace mica.
2922.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt laminations, trace carbonaceous laminations.

2922.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous material, trace mica.
2925.0	15	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace lithic fragments.
2925.0	85	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica, trace pyrite aggregates.
2928.0	15	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace lithic fragments.
2928.0	85	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2931.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace lithic fragments.
2931.0	90	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2934.0	15	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace lithic fragments.
2934.0	85	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2937.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace lithic fragments.
2937.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2940.0	90	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately

				hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2940.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace lithic fragments.
2946.0	15	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace lithic fragments.
2946.0	85	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
2949.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2949.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2955.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2955.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2958.0	15	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material.
2958.0	80	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2958.0	5	SANDSTONE		SANDSTONE: olive grey, light grey, friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2961.0	15	SANDSTONE		SANDSTONE: olive grey, light grey, friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained,

				80% fine grained, trace lithic fragments, trace pyrite nodules, good inferred visual porosity, no hydrocarbon fluorescence.
2961.0	85	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2964.0	15	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material.
2964.0	15	SANDSTONE		SANDSTONE: olive grey, light grey, friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, trace pyrite nodules, good inferred visual porosity, no hydrocarbon fluorescence.
2964.0	70	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2967.0	65	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material.
2967.0	5	SANDSTONE		SANDSTONE: olive grey, light grey, friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, trace pyrite nodules, good inferred visual porosity, no hydrocarbon fluorescence.
2967.0	30	SILTSTONE		SILTSTONE: brownish black, brownish grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material, trace mica.
2970.0	10	SANDSTONE		SANDSTONE: olive grey, light grey, medium light grey, friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, trace pyrite, good inferred visual porosity, no hydrocarbon fluorescence.
2970.0	20	SILTSTONE		SILTSTONE: medium dark grey, olive black, firm to moderately hard, sub-

				blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica.
2970.0	70	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2973.0	40	SANDSTONE		SANDSTONE: olive grey, light grey, medium light grey, friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, trace pyrite, good inferred visual porosity, no hydrocarbon fluorescence.
2973.0	20	SILTSTONE		SILTSTONE: medium dark grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica.
2973.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2976.0	30	SILTSTONE		SILTSTONE: medium dark grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica.
2976.0	60	SANDSTONE		SANDSTONE: olive grey, light grey, medium light grey, friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, trace pyrite, good inferred visual porosity, aggregates with moderate bright yellow overall fluorescence, bright blue white slow streaming to blooming crush cut, yellow film to dull yellow thick ring residue.
2976.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2979.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2979.0	40	SILTSTONE		SILTSTONE: medium dark grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica.
2979.0	20	SANDSTONE		SANDSTONE: olive grey, light grey, medium light grey, friable, sub-

				rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, trace pyrite, good inferred visual porosity, 20% hydrocarbon fluorescence.
2982.0	20	SANDSTONE		SANDSTONE: olive grey, light grey, medium light grey, friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, trace pyrite, good inferred visual porosity, 10% hydrocarbon fluorescence.
2982.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2982.0	40	SILTSTONE		SILTSTONE: medium dark grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica.
2988.0	5	SANDSTONE		SANDSTONE: olive grey, light grey, medium light grey, friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, trace pyrite, good inferred visual porosity, 5% hydrocarbon fluorescence.
2988.0	70	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2988.0	25	SILTSTONE		SILTSTONE: medium dark grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica.
2991.0	5	SANDSTONE		SANDSTONE: olive grey, light grey, medium light grey, friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, trace lithic fragments, good inferred visual porosity, trace hydrocarbon show.
2991.0	60	SILTSTONE		SILTSTONE: medium dark grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 15% siliceous clay,

				trace carbonaceous material, trace mica.
2991.0	35	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2997.0	80	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations.
2997.0	20	SILTSTONE		SILTSTONE: medium dark grey, olive black, firm to moderately hard, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica.
3000.0	10	SILTSTONE		SILTSTONE: brownish grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3000.0	90	CLAYSTONE		CLAYSTONE: olive black, firm to moderately hard, sub-blocky to sub-fissile, trace carbonaceous material, trace pyrite nodules, trace mica.
3003.0	10	SILTSTONE		SILTSTONE: brownish grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3003.0	90	CLAYSTONE		CLAYSTONE: olive black, firm to moderately hard, sub-blocky to sub-fissile, trace carbonaceous material, trace pyrite nodules, trace mica.
3006.0	100	CLAYSTONE		CLAYSTONE: olive black, firm to moderately hard, sub-blocky to sub-fissile, trace carbonaceous material, trace pyrite nodules, trace mica.
3009.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3012.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3015.0	10	SILTSTONE		SILTSTONE: brownish grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3015.0	90	CLAYSTONE		CLAYSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3018.0	5	SILTSTONE		SILTSTONE: brownish grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.

3018.0	95	CLAYSTONE		CLAYSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3021.0	10	SILTSTONE		SILTSTONE: brownish grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3021.0	90	CLAYSTONE		CLAYSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3024.0	15	SILTSTONE		SILTSTONE: brownish grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3024.0	85	CLAYSTONE		CLAYSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3027.0	5	SILTSTONE		SILTSTONE: brownish grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3027.0	95	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3030.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3033.0	20	SILTSTONE		SILTSTONE: brownish grey, olive grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3033.0	80	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3036.0	5	SILTSTONE		SILTSTONE: brownish grey, olive grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3036.0	95	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3039.0	100	CLAYSTONE		SILTSTONE: brownish grey, olive grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic

				fragments.
3042.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3048.0	10	SILTSTONE		SILTSTONE: brownish grey, olive grey, firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3048.0	90	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3051.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3054.0	10	SILTSTONE		SILTSTONE: brownish grey, olive grey, firm, sub-blocky to sub-fissile, 15% clay, trace carbonaceous material, trace micromica, trace lithic fragments.
3054.0	90	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3057.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3060.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3063.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace mica.
3066.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace mica.
3069.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace mica.
3072.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace mica.
3075.0	100	CLAYSTONE		CLAYSTONE: brownish black, olive black, olive grey, firm, sub-blocky to sub-fissile, 10% siliceous silt, trace

				mica.
3078.0	100	CLAYSTONE		CLAYSTONE: olive black, brownish black, olive grey, firm, soft in part, sub-blocky to blocky, 10% siliceous silt, trace mica.
3081.0	100	CLAYSTONE		CLAYSTONE: olive black, brownish black, olive grey, firm, soft in part, sub-blocky to blocky, 10% siliceous silt, trace mica.
3084.0	5	SANDSTONE		SANDSTONE: medium light grey, friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 100% fine grained, 5% silica cement, trace lithic fragments, trace of coal/lignite, good inferred visual porosity, no hydrocarbon fluorescence.
3084.0	30	SILTSTONE		SILTSTONE: olive grey, soft, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3084.0	65	CLAYSTONE		CLAYSTONE: olive black, brownish black, olive grey, firm, soft in part, sub-blocky to blocky, 10% siliceous silt, trace mica.
3087.0	10	SANDSTONE		SANDSTONE: medium light grey, friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 100% fine grained, 5% silica cement, trace lithic fragments, trace of coal/lignite, good inferred visual porosity, no hydrocarbon fluorescence.
3087.0	80	SILTSTONE		SILTSTONE: olive grey, soft, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3087.0	10	CLAYSTONE		CLAYSTONE: olive black, brownish black, olive grey, firm, soft in part, sub-blocky to blocky, 10% siliceous silt, trace mica.
3090.0	1	COAL		COAL: black, soft to brittle, conchoidal fracture in part, bright, interlaminated in SANDSTONE.
3090.0	10	SANDSTONE		SANDSTONE: medium light grey, opaque, clear, yellowish grey, friable to loose, sub-rounded to sub-angular, well sorted , sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% very coarse grained, 5% silica cement, trace lithic fragments, trace carbonaceous material, good inferred visual porosity,

				trace hydrocarbon fluorescence.
3090.0	4	CLAYSTONE		CLAYSTONE: olive black, brownish black, olive grey, firm, soft in part, sub-blocky to blocky, 10% siliceous silt, trace mica.
3090.0	85	SILTSTONE		SILTSTONE: olive grey, soft, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3093.0	90	SANDSTONE		SANDSTONE: medium light grey, opaque, clear, yellowish grey, friable to loose, sub-rounded to sub-angular, well sorted , sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% very coarse grained, 5% silica cement, trace lithic fragments, trace carbonaceous material, good inferred visual porosity, trace hydrocarbon fluorescence.
3093.0	10	SILTSTONE		SILTSTONE: olive grey, soft, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3096.0	20	SILTSTONE		SILTSTONE: olive grey, soft, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3096.0	80	SANDSTONE		SANDSTONE: medium light grey, opaque, clear, yellowish grey, friable to loose, sub-rounded to sub-angular, moderately to poorly sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 60% fine grained, 5% medium grained, 5% coarse grained, 5% very coarse grained, 5% silica cement, trace lithic fragments, trace carbonaceous material, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3099.0	30	SILTSTONE		SILTSTONE: olive grey, soft, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3099.0	70	SANDSTONE		SANDSTONE: medium light grey, opaque, clear, yellowish grey, friable to loose, sub-rounded to sub-angular, moderately to poorly sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 10% very fine grained, 70% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, 5% silica cement, trace lithic fragments, trace of

				carbonaceous material, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3102.0	40	SILTSTONE		SILTSTONE: olive grey, soft, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3102.0	60	SANDSTONE		SANDSTONE: medium light grey, opaque, clear, yellowish grey, friable to loose, sub-rounded to sub-angular, moderately sorted to poor sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 10% very fine grained, 70% fine grained, 15% medium grained, 5% coarse grained, 5% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3105.0	15	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous silt laminations, trace mica, trace carbonaceous laminations.
3105.0	65	SILTSTONE		SILTSTONE: olive grey, brownish black, in part olive black, soft to firm, sub-blocky to sub-fissile, 15% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3105.0	20	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, friable to moderately hard, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 10% very fine grained, 75% fine grained, 10% medium grained, 5% coarse grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3108.0	20	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous silt laminations, trace mica, trace carbonaceous laminations.
3108.0	10	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, friable to moderately hard, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace carbonaceous

				material, good inferred visual porosity, no hydrocarbon fluorescence.
3108.0	70	SILTSTONE		SILTSTONE: olive grey, brownish black, in part olive black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3111.0	10	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, friable to moderately hard, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, good inferred visual porosity, no hydrocarbon fluorescence.
3111.0	30	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous silt laminations, trace mica, trace carbonaceous laminations.
3111.0	60	SILTSTONE		SILTSTONE: olive grey, brownish black, in part olive black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3114.0	40	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, friable to moderately hard, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3114.0	10	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous silt laminations, trace mica, trace carbonaceous laminations.
3114.0	50	SILTSTONE		SILTSTONE: olive grey, brownish black, in part olive black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, 10% fine siliceous sandstone laminations, trace carbonaceous laminations, trace mica, trace lithic fragments.
3117.0	10	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% siliceous silt laminations, trace mica, trace carbonaceous laminations.

3117.0	50	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, friable to moderately hard, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3117.0	40	SILTSTONE		SILTSTONE: olive grey, brownish black, in part olive black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, 10% fine siliceous sandstone laminations, trace carbonaceous laminations, trace mica, trace lithic fragments.
3120.0	5	COAL		COAL: black, firm, sub-fissile to conchoidal, bright.
3120.0	20	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3120.0	15	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to moderately hard, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine grained, 15% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3120.0	60	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, 10% fine grained sandstone laminations, trace carbonaceous laminations, trace mica, trace lithic fragments.
3123.0	5	COAL		COAL: black, firm, sub-fissile to conchoidal, bright.
3123.0	15	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to moderately hard, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 40% very fine grained, 60% fine grained, 15% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, fair to good inferred visual porosity, no

				hydrocarbon fluorescence.
3123.0	10	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3123.0	70	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, 10% fine grained sandstone laminations, trace carbonaceous laminations, trace mica, trace lithic fragments, 30% rock flour.
3126.0	15	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3126.0	15	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to moderately hard, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine grained, 15% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3126.0	70	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments, 30% rock flour.
3129.0	40	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3129.0	20	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to moderately hard, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine grained, 15% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3129.0	40	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments, 30% rock flour.
3132.0	30	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular,

				moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, 5% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, aggregates with moderate bright yellow overall fluorescence, bright blue white slow streaming to blooming crush cut, yellow film to dull yellow thick ring residue.
3132.0	70	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments, 30% rock flour.
3135.0	60	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, 5% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, aggregates with moderate bright yellow overall fluorescence, bright blue white slow streaming to blooming crush cut, yellow film to dull yellow thick ring residue, trace lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, trace hydrocarbon fluorescence.
3135.0	40	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments, trace pyrite aggregates, 30% rock flour.
3138.0	80	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments, trace pyrite aggregates, 30% rock flour.
3138.0	20	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular,

				moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse quartz grains, 5% silica cement, trace lithic fragments, trace carbonaceous material, good inferred visual porosity, no hydrocarbon fluorescence.
3141.0	20	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse quartz grains, 5% silica cement, trace lithic fragments, trace carbonaceous material, good inferred visual porosity, no hydrocarbon fluorescence.
3141.0	80	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments, trace pyrite aggregates, 30% rock flour.
3144.0	60	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse quartz grains, 5% silica cement, trace lithic fragments, trace carbonaceous material, good inferred visual porosity, no hydrocarbon fluorescence.
3144.0	40	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica, trace lithic fragments.
3147.0	20	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3147.0	40	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous

				laminations, trace mica.
3147.0	40	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, 5% silica cement, trace lithic fragments, trace carbonaceous material, 40% rock flour, good inferred visual porosity, aggregates with moderate bright yellow overall fluorescence, bright blue white slow streaming to blooming crush cut, yellow film to dull yellow thick ring residue.
3150.0	20	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% silt, trace carbonaceous laminations, trace mica.
3150.0	60	SILTSTONE		SILTSTONE: olive grey, brownish black, soft to firm, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
3150.0	20	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse quartz grains, 5% silica cement, trace lithic fragments, trace carbonaceous material, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3153.0	30	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical10% siliceous clay, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, 40% rock flour, good inferred visual porosity, aggregates with dull to moderate bright yellow overall fluorescence, dull blue white slow streaming crush cut, dull pale yellow thick ring residue.

3153.0	70	SILTSTONE		SILTSTONE: olive grey, brownish black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
3156.0	60	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, 40% rock flour, fair to good inferred visual porosity, aggregates with dull to moderate bright yellow overall fluorescence, dull blue white slow streaming crush cut, dull pale yellow thick ring residue.
3156.0	40	SILTSTONE		SILTSTONE: olive grey, brownish black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous laminations, trace mica.
3159.0	50	SILTSTONE		SILTSTONE: olive grey, brownish black, firm to moderately hard, sub-blocky to sub-fissile, 10% siliceous clay, trace carbonaceous material laminations, trace mica.
3159.0	50	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine grained, 10% silica cement, trace red, green and black lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3162.0	50	SILTSTONE		SILTSTONE: olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous laminations, trace mica.
3162.0	50	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine quartz grains, 10% silica cement, trace lithic fragments, trace carbonaceous

				material, 20% rock flour, good inferred visual porosity, aggregates with dull to moderate bright yellow overall fluorescence, dull blue white slow streaming crush cut, dull pale yellow thick ring residue.
3165.0	5	COAL		COAL: black, firm, sub-fissile to conchoidal, bright.
3165.0	55	SILTSTONE		SILTSTONE: olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3165.0	40	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine quartz grains, 10% silica cement, trace red, green and black lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, aggregates with dull to moderate bright yellow overall fluorescence, dull blue white slow streaming crush cut, dull pale yellow thick ring residue.
3168.0	5	COAL		COAL: black, brownish black, firm, sub-fissile to conchoidal, bright.
3168.0	35	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine quartz grains, 10% silica cement, trace red, green and black lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, aggregates with dull to moderate bright yellow overall fluorescence, dull blue white slow streaming crush cut, dull pale yellow thick ring residue.
3168.0	60	SILTSTONE		SILTSTONE: olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous laminations, trace mica.
3171.0	60	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very

				fine grained, 60% fine quartz grains, 10% silica cement, trace red, green and black lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3171.0	40	SILTSTONE		SILTSTONE: olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous laminations, trace mica.
3174.0	20	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3174.0	40	SILTSTONE		SILTSTONE: olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous laminations, trace mica.
3174.0	40	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine quartz grains, 10% silica cement, trace red, green and black lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3177.0	30	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 50% fine grained, 10% medium grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3177.0	40	SILTSTONE		SILTSTONE: olive grey, brownish black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3177.0	30	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3180.0	30	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace

				carbonaceous material, trace mica.
3180.0	70	SILTSTONE		SILTSTONE: olive grey, brownish black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, 15% very fine sandstone laminations, trace carbonaceous material, trace mica.
3183.0	10	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3183.0	35	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3183.0	55	SILTSTONE		SILTSTONE: olive grey, brownish black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, 15% very fine sandstone laminations, trace carbonaceous material, trace mica.
3186.0	10	SANDSTONE		SANDSTONE: light grey, opaque, clear, yellowish grey, light olive grey, firm to friable, sub-rounded to sub-angular, moderately to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3186.0	30	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous material, trace mica.
3186.0	60	SILTSTONE		SILTSTONE: olive grey, brownish black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, 15% very fine sandstone laminations, trace carbonaceous material, trace mica.
3189.0	60	SANDSTONE		SANDSTONE: light grey, opaque, clear, light olive grey, firm to friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90%

				siliceous sand, 30% very fine grained, 70% fine grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3189.0	40	SILTSTONE		SILTSTONE: light grey, olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, 15% very fine grained sandstone laminations, trace carbonaceous material, trace mica.
3192.0	10	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3192.0	30	SILTSTONE		SILTSTONE: brownish black, olive grey, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3192.0	60	SANDSTONE		SANDSTONE: light grey, yellowish grey, light olive grey, clear, firm to friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine grained, 10% silica cement, trace lithic fragments, trace carbonaceous material, fair inferred visual porosity, no hydrocarbon fluorescence.
3195.0	5	COAL		COAL: black, firm, sub-fissile to conchoidal, bright.
3195.0	20	SILTSTONE		SILTSTONE: brownish black, olive grey, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3195.0	65	SANDSTONE		SANDSTONE: light grey, yellowish grey, light olive grey, clear, firm to friable, sub-rounded to sub-angular, well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 40% very fine grained, 60% fine quartz grains, 10% silica cement, trace lithic fragments, trace carbonaceous material, fair inferred visual porosity, no hydrocarbon fluorescence.
3195.0	10	CLAYSTONE		CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.

3198.0	5	COAL		COAL: black, brownish black, firm, sub-fissile to conchoidal, bright.
3198.0	15	SILTSTONE		SILTSTONE: light grey, olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace of mica.
3198.0	80	SANDSTONE		SANDSTONE: light grey, yellowish grey, light olive grey, clear, firm to friable, sub-rounded to sub-angular, moderately sorted to well sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 10% very fine grained, 60% fine grained, 20% medium grained, 10% coarse quartz grains, 5% silica cement, trace lithic fragments, trace carbonaceous material, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3201.0	20	CLAYSTONE		CLAYSTONE: brownish black, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3201.0	20	SILTSTONE		SILTSTONE: light grey, mottled, olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered feldspars.
3201.0	60	SANDSTONE		SANDSTONE: light grey, light olive grey, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 100% fine grained, 5% silica cement, trace lithic fragments, trace carbonaceous laminations, 10% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3204.0	5	COAL		COAL: black, brownish black, soft to firm, in part brittle, sub-blocky to conchoidal, bright to earthy.
3204.0	5	CLAYSTONE		CLAYSTONE: brownish black, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3204.0	5	SILTSTONE		SILTSTONE: light grey, mottled, olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered feldspars.

3204.0	85	SANDSTONE		SANDSTONE: light grey, light olive grey, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 100% fine grained, 5% silica cement, trace lithic fragments, trace carbonaceous laminations, 10% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3207.0	10	CLAYSTONE		CLAYSTONE: brownish black, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3207.0	10	SILTSTONE		SILTSTONE: light grey, mottled, olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered feldspars.
3207.0	80	SANDSTONE		SANDSTONE: light grey, light olive grey, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 100% fine grained, 5% silica cement, trace lithic fragments, trace carbonaceous laminations, 10% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3210.0	10	CLAYSTONE		CLAYSTONE: brownish black, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3210.0	20	SILTSTONE		SILTSTONE: light grey, mottled, olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered feldspars.
3210.0	70	SANDSTONE		SANDSTONE: light grey, light olive grey, friable, sub-rounded to sub-angular, well sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 100% fine grained, 5% silica cement, trace lithic fragments, trace carbonaceous laminations, 50% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3213.0	10	CLAYSTONE		CLAYSTONE: brownish black, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.

3213.0	20	SILTSTONE		SILTSTONE: light grey, mottled, olive grey, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered feldspars.
3213.0	70	SANDSTONE		SANDSTONE: light grey, light olive grey, friable, sub-rounded to sub-angular, well to poorly sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 90% fine grained, 10% coarse quartz grains, 5% silica cement, trace lithic fragments, trace carbonaceous material, 50% rock flour, good inferred visual porosity, aggregates with overall dull yellow fluorescence, slow streaming blue white crush cut, dull yellow green film to ring residue.
3216.0	10	CLAYSTONE		CLAYSTONE: brownish black, olive grey, soft to firm, sub-blocky to sub-fissile, 10% siliceous silt, trace carbonaceous laminations, trace mica.
3216.0	40	SILTSTONE		SILTSTONE: light grey, mottled, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered feldspars.
3216.0	50	SANDSTONE		SANDSTONE: light grey, light olive grey, friable, sub-rounded to sub-angular, well to poorly sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 90% fine grained, 10% coarse quartz grains, 5% silica cement, trace lithic fragments, trace carbonaceous material, 10% rock flour, good inferred visual porosity, aggregates with overall dull yellow fluorescence, slow streaming blue white crush cut, dull yellow green film to ring residue.
3219.0	90	SILTSTONE		SILTSTONE: light grey, mottled, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered feldspars.
3219.0	10	SANDSTONE		SANDTSONE: light grey, light olive grey, clear, friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 70% fine grained, 10% medium grained, 10% coarse grained, 10% very coarse grained, 5% silica cement, trace lithic

				fragments, trace carbonaceous material, 5% rock flour, fair inferred visual porosity, aggregates with overall dull yellow fluorescence, slow streaming blue white crush cut, dull yellow green film to ring residue.
3222.0	5	SANDSTONE		SANDTSONE: light grey, light olive grey, clear, friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 70% fine grained, 10% medium grained, 10% coarse grained, 10% very coarse grained, 5% silica cement, trace lithic fragments, trace carbonaceous material, 5% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
3222.0	95	SILTSTONE		SILTSTONE: light grey, mottled, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered feldspars.
3225.0	10	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 70% fine grained, 10% medium grained, 10% coarse grained, 10% very coarse grained, trace carbonaceous laminations, trace lithic fragments, 10% rock flour, fair inferred visual porosity, no hydrocarbon show.
3225.0	90	SILTSTONE		SILTSTONE: light grey, mottled, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered feldspars.
3228.0	20	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 70% fine grained, 10% medium grained, 10% coarse grained, 10% very coarse grained, trace carbonaceous laminations, trace lithic fragments, 10% rock flour, fair inferred visual porosity, no hydrocarbon show.
3228.0	80	SILTSTONE		SILTSTONE: light grey, mottled, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, trace altered

				feldspars.
3231.0	40	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 70% fine grained, 10% medium grained, 10% coarse grained, 10% very coarse grained, trace carbonaceous material, 30% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
3231.0	60	SILTSTONE		SILTSTONE: light grey, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material.
3234.0	80	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 30% fine grained, 10% medium grained, 30% coarse grained, 30% very coarse grained, 10% silica cement, trace carbonaceous material, fair inferred visual porosity, no hydrocarbon fluorescence.
3234.0	20	SILTSTONE		SILTSTONE: light grey, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material.
3237.0	40	SILTSTONE		SILTSTONE: light grey, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material.
3237.0	60	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 30% fine grained, 10% medium grained, 30% coarse grained, 30% very coarse grained, 10% silica cement, trace carbonaceous material, fair inferred visual porosity, no hydrocarbon fluorescence.
3240.0	70	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material.
3240.0	30	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 30% fine

				grained, 10% medium grained, 30% coarse grained, 30% very coarse grained, 10% silica cement, trace carbonaceous material, fair inferred visual porosity, no hydrocarbon fluorescence.
3243.0	70	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 30% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse grained, 5% silica cement, trace carbonaceous material, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
3243.0	30	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material.
3246.0	80	SANDSTONE		SILTSTONE: light grey, mottled, brownish black, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material.
3246.0	20	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material.
3249.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3249.0	40	SANDSTONE		SANDSONE: light grey, clear, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 50% fine grained, 30% medium grained, 15% coarse grained, 5% very coarse grained, 5% silica cement, trace carbonaceous material, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3249.0	30	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3252.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.

3252.0	40	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3252.0	20	SANDSTONE		SANDSONE: light grey, clear, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 50% fine grained, 30% medium grained, 15% coarse grained, 5% very coarse grained, 5% silica cement, trace carbonaceous material, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3255.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3255.0	70	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica.
3255.0	10	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 50% fine grained, 30% medium grained, 15% coarse grained, 5% very coarse grained, 5% silica cement, trace carbonaceous material, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3258.0	30	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 60% fine grained, 30% medium grained, 5% coarse grained, 5% very coarse grained, 10% silica cement, trace carbonaceous material, trace lithic fragments, good inferred visual porosity, aggregates with overall dull yellow fluorescence, slow streaming blue white crush cut, dull yellow green film to ring residue.
3258.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.

3258.0	60	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3261.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3261.0	50	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 60% fine grained, 30% medium grained, 5% coarse grained, 5% very coarse grained, 10% silica cement, trace carbonaceous material, trace lithic fragments, 40% rock flour, fair to good inferred visual porosity, aggregates with overall dull yellow fluorescence, slow streaming blue white crush cut, dull yellow green film to ring residue.
3261.0	30	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace pyrite aggregates, trace mica.
3264.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3264.0	70	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3264.0	10	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium grained, 10% silica cement, trace carbonaceous material, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3267.0	20	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly to moderately sorted, sub-spherical to sub-elongate, 10% white

				siliceous clay matrix, 90% siliceous sand, 15% very fine grained, 70% fine grained, 10% medium grained, 5% coarse grained, 10% silica cement, trace carbonaceous material, trace lithic fragments, 40% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3267.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3267.0	60	SILTSTONE		SILTSTONE: light grey, mottled, brownish black, firm to moderately hard, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3270.0	50	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 50% fine grained, 25% medium grained, 15% coarse grained, 10% very coarse grained, 5% silica cement, trace carbonaceous material, trace lithic fragments, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3270.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3270.0	40	SILTSTONE		SILTSTONE: brownish black, olive black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3273.0	15	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3273.0	35	SILTSTONE		SILTSTONE: brownish black, olive black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3273.0	50	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 50% fine grained, 25% medium grained, 15% coarse grained, 10% very coarse

				grained, 10% silica cement, trace carbonaceous laminations, trace lithic fragments, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3276.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3276.0	80	SILTSTONE		SILTSTONE: brownish black, olive black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous material, trace mica, trace lithic fragments.
3276.0	10	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 50% fine grained, 25% medium grained, 15% coarse grained, 10% very coarse grained, 10% silica cement, trace carbonaceous laminations, trace lithic fragments, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3279.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3279.0	80	SILTSTONE		SILTSTONE: brownish black, olive black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% white siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous material, trace mica, trace lithic fragments.
3282.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3282.0	70	SILTSTONE		SILTSTONE: brownish black, olive black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% white siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous material, trace mica, trace lithic fragments.
3285.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.

3285.0	70	SILTSTONE		SILTSTONE: brownish black, olive black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% white siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous material, trace mica, trace lithic fragments.
3285.0	10	SANDSTONE		SANDSTONE: clear, light grey, firm to moderately hard, sub-rounded, well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, 10% silica cement, trace carbonaceous material, trace lithic fragments, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3288.0	40	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 60% fine grained, 15% medium grained, 20% coarse grained, 5% very coarse grained, 5% silica cement, trace lithic fragments, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3288.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3288.0	40	SILTSTONE		SILTSTONE: brownish black, olive black, in part light grey, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous laminations, trace mica, trace lithic fragments.
3291.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3291.0	70	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 30% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse grained, 5% silica cement, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3291.0	20	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-

				blocky to blocky, 10% siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous laminations, trace mica.
3294.0	15	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3294.0	60	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous laminations, trace mica.
3294.0	25	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 30% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse grained, 5% silica cement, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3297.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3297.0	10	SANDSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, 10% very fine grained sandstone laminations, trace carbonaceous laminations, trace mica.
3297.0	70	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous laminations, trace mica.
3300.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3300.0	60	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous laminations, trace mica.
3303.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3303.0	70	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-

				blocky to blocky, 10% siliceous clay, trace carbonaceous laminations, trace mica.
3306.0	60	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3306.0	40	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3309.0	30	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3309.0	70	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material and laminations, trace mica.
3312.0	60	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3312.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3315.0	70	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3315.0	30	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3318.0	10	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 50% fine grained, 20% medium grained, 20% coarse grained, 10% very coarse grained, 5% silica cement, 40% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3318.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.

3318.0	70	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica, trace lithic fragments.
3321.0	70	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 50% fine grained, 20% medium grained, 20% coarse grained, 10% very coarse shattered quartz grains, 5% silica cement, 40% rock flour, good inferred visual porosity, aggregates with overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.
3321.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3321.0	20	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3324.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3324.0	30	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3324.0	60	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 50% fine grained, 20% medium grained, 20% coarse grained, 10% very coarse shattered quartz grains, 5% silica cement, 40% rock flour, good inferred visual porosity, aggregates with overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.
3327.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-

				blocky to sub-fissile, trace carbonaceous material, trace mica.
3327.0	30	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3327.0	30	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 50% fine grained, 20% medium grained, 20% coarse grained, 10% very coarse shattered quartz grains, 5% silica cement, 40% rock flour, good inferred visual porosity, aggregates with overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.
3330.0	30	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3330.0	30	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 50% fine grained, 20% medium grained, 20% coarse grained, 10% very coarse shattered quartz grains, 5% silica cement, 40% rock flour, good inferred visual porosity, aggregates with overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.
3330.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3333.0	40	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3333.0	50	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-

				elongate, 10% white siliceous clay matrix, 90% siliceous sand, 30% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse shattered quartz grains, 5% silica cement, 40% rock flour, good inferred visual porosity, aggregates with overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.
3333.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3336.0	30	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3336.0	50	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 30% fine grained, 20% medium grained, 30% coarse grained, 20% very coarse shattered quartz grains, 5% silica cement, 40% rock flour, good inferred visual porosity, aggregates with overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.
3336.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3339.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3339.0	20	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3339.0	70	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% fine

				grained, 20% medium grained, 30% coarse grained, 30% very coarse grained, 5% silica cement, 40% rock flour, good inferred visual porosity, 5% hydrocarbon fluorescence.
3342.0	5	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3342.0	10	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3342.0	85	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 15% fine grained, 10% medium grained, 45% coarse grained, 30% very coarse grained, 5% silica cement, 40% rock flour, good inferred visual porosity, aggregates with overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.
3345.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3345.0	20	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3345.0	70	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% fine grained, 20% medium grained, 30% coarse grained, 30% predominantly loose shattered very coarse quartz grains, 5% silica cement, 40% rock flour, good inferred visual porosity, 5% hydrocarbon fluorescence.
3348.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3348.0	30	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-

				blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3348.0	60	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 20% fine grained, 20% medium grained, 30% coarse grained, 30% predominantly loose shattered very coarse quartz grains, 5% silica cement, 40% rock flour, good inferred visual porosity, aggregates with overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.
3351.0	5	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3351.0	10	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3351.0	85	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% predominantly loose shattered very coarse quartz grains, 5% silica cement, 60% rock flour, good inferred visual porosity, hydrocarbon show.
3354.0	5	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3354.0	10	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3354.0	85	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% predominantly

				loose shattered very coarse quartz grains, 5% silica cement, 60% rock flour, good inferred visual porosity, 5% hydrocarbon fluorescence.
3357.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3357.0	20	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3357.0	70	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical to sub-elongate, 10% siliceous clay, 90% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% predominantly loose shattered very coarse quartz grains, 5% silica cement, 60% rock flour, good inferred visual porosity, aggregates with overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.
3360.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3360.0	40	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3360.0	30	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% predominantly loose shattered very coarse quartz grains, 5% silica cement, 60% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3363.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica.
3363.0	30	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted to moderately sorted, sub-

				spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 50% fine grained, 10% medium grained, 5% coarse grained, 5% predominantly loose shattered very coarse quartz grains, 10% silica cement, 60% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3363.0	40	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3366.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, in part light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica, trace lithic fragments.
3366.0	20	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poor sorted , sub-spherical, 10% siliceous clay, 90% siliceous sand, 35% very fine grained, 50% fine grained, 10% medium grained, 5% predominantly loose shattered coarse quartz grains, 10% silica cement, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3366.0	50	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3369.0	20	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% siliceous clay, 90% siliceous sand, 35% very fine grained, 50% fine grained, 10% medium grained, 5% predominantly loose shattered coarse quartz grains, 10% silica cement, 20% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3369.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, in part light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous material, trace mica, trace lithic fragments.
3369.0	50	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.

3372.0	30	SANDSTONE		SANDSTONE: clear, light grey, loose to friable, sub-rounded to sub-angular, poorly sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 35% very fine grained, 50% fine grained, 10% medium grained, 5% predominantly loose shattered coarse quartz grains, 10% silica cement, 10% porosity, no hydrocarbon show.
3372.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, in part mottled light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica, trace lithic fragments.
3372.0	40	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3375.0	30	SANDSTONE		SANDSTONE: clear, light grey, firm to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 35% very fine grained, 50% fine grained, 10% medium grained, 5% predominantly loose shattered coarse quartz grains, 10% silica cement, carbonaceous material, trace lithic fragments, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3375.0	40	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, in part mottled light grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica, trace lithic fragments.
3375.0	30	SILTSTONE		SILTSTONE: brownish black, olive black, firm to moderately hard, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3378.0	20	SANDSTONE		SANDSTONE: clear, light grey, firm to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 15% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 60% fine grained, 10% predominantly loose shattered coarse quartz grains, 10% silica cement, carbonaceous material, trace lithic fragments, 20% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3378.0	30	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, firm, sub-blocky to blocky,

				10% siliceous clay, trace carbonaceous material, trace mica.
3378.0	50	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3381.0	50	SANDSTONE		SANDSTONE: clear, light grey, firm to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 15% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 60% fine grained, 10% predominantly loose shattered coarse quartz grains, 10% silica cement, carbonaceous material, trace lithic fragments, 10% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3381.0	30	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, firm, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3381.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3384.0	60	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3384.0	30	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, firm, sub-blocky to blocky, 10% siliceous clay, trace carbonaceous material, trace mica.
3384.0	10	SANDSTONE		SANDSTONE: clear, light grey, firm to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 15% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 60% fine grained, 10% predominantly loose shattered coarse quartz grains, 10% silica cement, carbonaceous material, trace lithic fragments, trace rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3387.0	10	SANDSTONE		SANDSTONE: clear, light grey, firm to friable, sub-rounded to sub-angular, moderately sorted, sub-spherical, 15% white siliceous clay matrix, 90% siliceous sand, 30% very fine grained, 60% fine grained, 10% predominantly loose shattered coarse quartz grains, 10% silica cement, carbonaceous material, trace lithic fragments, trace rock flour, fair to good inferred visual

				porosity, no hydrocarbon fluorescence.
3387.0	60	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3387.0	30	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3390.0	10	SANDSTONE		SANDSTONE: light olive grey, friable to loose, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, 5% silica cement, 10% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3390.0	5	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3390.0	85	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3393.0	20	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3393.0	30	SANDSTONE		SANDSTONE: light olive grey, friable to loose, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, 5% silica cement, trace altered feldspars, 10% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3393.0	50	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3396.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3396.0	10	SANDSTONE		SANDSTONE: light olive grey, friable to loose, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, 5% silica cement, trace altered feldspars, 10% rock flour, good inferred visual porosity, no hydrocarbon

				fluorescence.
3396.0	80	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3399.0	10	CLAYSTONE		CLAYSTONE: brownish black, brownish grey, olive grey, soft to firm, sub-blocky to sub-fissile, trace carbonaceous laminations, trace mica.
3399.0	60	SANDSTONE		SANDSTONE: light olive grey, friable to loose, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, 5% silica cement, trace carbonaceous material, good inferred visual porosity, no hydrocarbon fluorescence.
3399.0	30	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3402.0	30	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3402.0	70	SANDSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica, 40% rock flour.
3405.0	60	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3405.0	40	SANDSTONE		SANDSTONE: light olive grey, friable to loose, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, 5% silica cement, trace carbonaceous material, good inferred visual porosity, no hydrocarbon fluorescence.
3408.0	70	SANDSTONE		SANDSTONE: light olive grey, friable to loose, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, 5% silica cement, trace carbonaceous material, good inferred visual porosity, no hydrocarbon fluorescence.

3408.0	30	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3411.0	10	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3411.0	85	SANDSTONE		SANDSTONE: light olive grey, friable to loose, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, 5% silica cement, trace carbonaceous material, 60% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3411.0	5	COAL		COAL: black, brownish black, sub-fissile, bright to earthy
3417.0	5	COAL		COAL: black, brownish black, sub-fissile, bright to earthy
3417.0	85	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3417.0	10	SANDSTONE		SANDSTONE: light olive grey, friable to loose, sub-rounded, moderately sorted to well sorted, sub-spherical, 10% white siliceous clay matrix, 90% siliceous sand, 20% very fine grained, 80% fine grained, 5% silica cement, trace carbonaceous material, 80% rock flour, good inferred visual porosity, no hydrocarbon fluorescence.
3420.0	70	SANDSTONE		SANDSTONE: light olive grey, opaque, clear, firm to moderately hard, sub-rounded to angular, poor sorted , sub-spherical to sub-elongate, 5% white siliceous clay matrix, 95% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% very coarse grained, 20% silica cement, trace carbonaceous material, poor inferred visual porosity, no hydrocarbon fluorescence.
3420.0	30	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3423.0	20	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.

3423.0	80	SANDSTONE		SANDSTONE: light olive grey, opaque, clear , firm to moderately hard, sub-rounded to angular, poor sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% very coarse grained, 20% silica cement, trace carbonaceous material, 10% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
3426.0	2	METAMORPHIC		METAMORPHICS: black, brownish black, hard, blocky, siliceous.
3426.0	38	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3426.0	60	SANDSTONE		SANDSTONE: light olive grey, opaque, clear , firm to moderately hard, sub-rounded to angular, poor sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% very coarse grained, 20% silica cement, trace carbonaceous material, 10% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
3429.0	60	METAMORPHIC		METAMORPHICS: multicoloured, black, brownish black, light greenish grey, greenish grey, light grey, hard, blocky, siliceous and calcareous.
3429.0	20	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3429.0	20	SANDSTONE		SANDSTONE: light olive grey, opaque, clear , firm to moderately hard, sub-rounded to angular, poor sorted , sub-spherical to sub-elongate, 10% white siliceous clay matrix, 90% siliceous sand, 40% fine grained, 20% medium grained, 20% coarse grained, 20% very coarse grained, 20% silica cement, trace carbonaceous material, 10% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
3432.0	10	SILTSTONE		SILTSTONE: olive grey, olive, black, mottled, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace carbonaceous material, trace mica.
3432.0	90	METAMORPHIC		METAMORPHICS: multicoloured, very dusky red, light greenish grey, greenish grey, light grey, hard, blocky, siliceous

				and calcareous, altered siltstones and claystones, micro flow patterns and inter bedding evident.
3435.0	100	METAMORPHIC		METAMORPHICS: multicoloured, very dusky red, light greenish grey, greenish grey, light grey, hard, blocky, siliceous and calcareous, altered siltstones and claystones, micro flow patterns and inter bedding evident.
3438.0	90	METAMORPHIC		METAMORPHICS: multicoloured, very dusky red, light greenish grey, greenish grey, light grey, hard, blocky, siliceous and calcareous, altered siltstones and claystones, micro flow patterns and inter bedding evident.
3438.0	10	VOLCANIC		VOLCANICS: greyish green, mottled, soft to moderately hard, blocky.
3441.0	90	VOLCANIC		VOLCANICS: greyish green, mottled, soft to moderately hard, blocky.
3441.0	10	METAMORPHIC		METAMORPHICS: multicoloured, very dusky red, light greenish grey, greenish grey, light grey, hard, blocky, siliceous and calcareous, altered siltstones and claystones, micro flow patterns and inter bedding evident.
3444.0	100	VOLCANIC		VOLCANICS: multicoloured, greyish green, mottled, greyish purple, firm to hard, blocky.
3447.0	100	VOLCANIC		VOLCANICS: multicoloured, greyish green, mottled, greyish purple, firm to hard, blocky.
3450.0	100	VOLCANIC		VOLCANICS: multicoloured, greyish green, mottled, greyish purple, firm to hard, blocky, trace pure white calcite veins.
3453.0	100	VOLCANIC		VOLCANICS: multicoloured, greyish green, mottled, greyish purple, firm to hard, blocky, trace pure white calcite veins.
3453.0	100	VOLCANIC		VOLCANICS: mottled greyish green, greyish purple, mottled dusky blue green, firm to hard, blocky, calcite veining.
3456.0	100	VOLCANIC		VOLCANICS: mottled greyish green, greyish purple, mottled dusky blue green, firm to hard, blocky, calcite veining, chloritic mottling.
3459.0	100	VOLCANIC		VOLCANICS: mottled greyish green, greyish purple, mottled dusky blue green, firm to hard, blocky, calcite veining, chloritic mottling.
3462.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, firm to hard, calcite veined,

				chloritic mottling.
3465.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, firm to hard, calcite veined, chloritic mottling.
3468.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, firm to hard, calcite veined, chloritic mottling.
3471.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, chloritic mottling.
3474.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, chloritic mottling.
3477.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, chloritic mottling.
3480.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, chloritic mottling.
3483.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, chloritic mottling.
3486.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, 1% calcite veining, trace chloritic mottling.
3489.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, trace chloritic mottling.
3492.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, trace chloritic mottling.
3498.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, trace chloritic mottling.

3501.0	100	VOLCANIC		VOLCANICS: medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, trace chloritic mottling.
3504.0	100	VOLCANIC		VOLCANICS: medium bluish grey, mottled dusky blue green, soft to firm to hard, blocky, trace calcite veining, trace chloritic mottling, traces schistose grains.
3507.0	100	VOLCANIC		VOLCANICS: medium bluish grey, mottled dusky blue green, soft to firm to hard, blocky, trace calcite veining, trace chloritic mottling, traces schistose grains.
3510.0	100	VOLCANIC		VOLCANICS: medium bluish grey, mottled dusky blue green, soft to firm to hard, blocky, trace calcite veining, trace chloritic mottling, traces schistose grains.
3513.0	100	VOLCANIC		VOLCANICS: medium bluish grey, mottled dusky blue green, dark greenish grey, soft to firm to hard, blocky, trace calcite veining, trace chloritic mottling.
3516.0	100	VOLCANIC		VOLCANICS: medium bluish grey, mottled dusky blue green, dark greenish grey, soft to firm to hard, blocky, trace calcite veining, trace chloritic mottling.
3519.0	100	VOLCANIC		VOLCANICS: medium bluish grey, mottled dusky blue green, dark greenish grey, soft to firm to hard, blocky, trace calcite veining, trace chloritic mottling.
3522.0	100	VOLCANIC		VOLCANICS: medium bluish grey, mottled dusky blue green, dark greenish grey, soft to firm to hard, blocky, trace calcite veining, trace chloritic mottling.

APPENDIX 2: MSCT DESCRIPTIONS

Core #	Depth (mMDRT)	Recovery (mm)	Formation	Hydrocarbon Fluorescence	Lithological Description
32	2832	27	Eastern View Coal Measures	Fair	SANDSTONE: very light grey, light grey, brownish grey, firm to friable, 90% very fine, 10% fine quartz grains, well sorted, sub-rounded, sub-spherical, trace lithic fragments, 5% carbonaceous laminae, poor siliceous cement (5%), 10% clay matrix, poor inferred visual porosity, 30% bright yellow even fluorescence on fresh surfaces of core, bright yellow to dull bluish white slow streaming to blooming crush cut, thick greenish yellow to bluish white ring.
17	2874	41	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, opaque, firm to moderately hard, 80% fine, 15% medium, 5% coarse clear to opaque quartz grains, moderately to well sorted, sub-rounded, sub-spherical, 5% lithic fragments, trace carbonaceous specks, glauconite, poorly siliceous cemented (5%), 10% clay matrix, moderate inferred visual porosity, no hydrocarbon fluorescence.
18	2875.5	45	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, firm to friable, 85% fine, 15% medium clear quartz grains, moderately sorted, sub-rounded, sub-spherical to sub-elongate, 1% carbonaceous specks and laminae, trace glauconite, lithic fragments, 10% clay matrix, moderate inferred visual porosity, no hydrocarbon fluorescence.
19	2877	42	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, firm to friable, 85% fine, 15% medium clear quartz grains, moderately sorted, sub-rounded, sub-spherical to sub-elongate, trace carbonaceous specks and laminae, glauconite, lithic fragments, 10% clay matrix, moderate inferred visual porosity, no hydrocarbon fluorescence.
31	2895.5	39	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, brownish grey, firm to moderately hard, 90% very fine, 10% fine quartz grains, well sorted, sub-rounded, sub-spherical, trace lithic fragments, carbonaceous specks, 10% silt as laminae, moderate siliceous cement (10%), 5% clay matrix, poor inferred visual porosity, no hydrocarbon fluorescence.
16	2962.5	45	Eastern View Coal Measures	Poor	SANDSTONE: very light grey, light grey, clear, opaque, firm to moderately hard, 100% fine clear to opaque quartz grains,

					well to very well sorted, sub-rounded, sub-spherical, 5% lithic fragments, 10% carbonaceous laminae, poorly siliceous cemented (5%), 10% clay matrix, poor inferred visual porosity, 5% dull to moderate yellow patchy to spotty fluorescence, slow dull greenish yellow streaming crush cut.
30	3137.1	47	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, brownish grey, firm to moderately hard, 90% very fine, 10% fine quartz grains, well to very well sorted, sub-rounded to rounded, sub-spherical, 1% lithic fragments, trace carbonaceous specks, moderate siliceous cement (10%), 5% clay matrix, poor inferred visual porosity, no hydrocarbon fluorescence.
13	3197.3	46	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, opaque, firm to moderately hard, 90% fine, 10% medium clear to opaque quartz grains, well to very well sorted, sub-rounded, sub-spherical to spherical, 5% lithic fragments, moderately siliceous cemented (10-15%), poor to moderate inferred visual porosity, no hydrocarbon fluorescence.
14	3198.7	40	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, opaque, firm to moderately hard, 85% fine, 15% medium, clear to opaque quartz grains, well sorted, sub-rounded, sub-spherical, 5% lithic fragments, trace carbonaceous specks, poorly siliceous cemented (5%), 15% clay matrix, moderate inferred visual porosity, no hydrocarbon fluorescence.
15	3201.1	40	Eastern View Coal Measures	Poor	SANDSTONE: very light grey, light grey, clear, opaque, firm to moderately hard, 85% fine, 15% medium, clear to opaque quartz grains, well sorted, sub-rounded, sub-spherical, 5% lithic fragments, trace carbonaceous specks, poorly siliceous cemented (5%), 15% clay matrix, moderate inferred visual porosity, 5% dull yellow patchy to spotty fluorescence, very slow dull yellow streaming crush cut.
29	3233.8	50	Eastern View Coal Measures	Fair	SANDSTONE: very light grey, light grey, clear, friable, 75% fine, 15% medium, 10% coarse clear quartz grains, moderately sorted, sub-rounded, sub-spherical, trace lithic fragments, carbonaceous specks, poor siliceous cement (5%), 15% clay matrix, moderate inferred visual porosity, 10% moderate

					greenish yellow patchy fluorescence, moderate bluish white slow to moderate streaming to blooming crush cut, thick greenish yellow to bluish white ring.
28	3235.8	25	Eastern View Coal Measures	Fair	SANDSTONE: very light grey, light grey, clear, friable, 75% fine, 15% medium, 10% coarse clear quartz grains, moderately sorted, sub-rounded, sub-spherical, trace lithic fragments, carbonaceous specks, poor siliceous cement (5%), 15% clay matrix, moderate inferred visual porosity, 15% moderate greenish yellow pinpoint to patchy fluorescence, moderate bluish white slow to moderate streaming to blooming crush cut, thick greenish yellow to bluish white ring.
12	3242.8	49	Eastern View Coal Measures		SANDSTONE: white to very light grey, clear quartz grains, very fine to medium grains, well sorted, sub-rounded to sub-rounded, friable to firm, sub-spherical to spherical, 10% calcareous cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
27	3268.9	37	Eastern View Coal Measures		SILTSTONE (40%): brownish black, olive black, firm to moderately hard, 10% very fine discontinuous sand laminae, trace mica, lithic fragments, carbonaceous specks. SANDSTONE (60%): very light grey, light grey, clear, firm, 100% fine clear quartz grains, well sorted, sub-rounded, sub-spherical, 5% carbonaceous laminae, trace lithic fragments, moderate siliceous cement (10%), 10% clay matrix, poor inferred visual porosity, no hydrocarbon fluorescence.
20	3287.7	32	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, opaque, friable, 50% fine, 20% medium, 20% coarse, 10% very coarse clear and opaque quartz grains, poorly to moderately sorted, sub-rounded, sub-spherical to sub-elongate, trace lithic fragments, 15% clay matrix, moderate inferred visual porosity, no hydrocarbon fluorescence.
21	3290.1	50	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, opaque, friable, 65% fine, 20% medium, 10% coarse, 5% very coarse clear and opaque quartz grains, poorly to moderately sorted, sub-rounded, sub-spherical to sub-elongate, trace lithic fragments, 15% clay matrix, moderate inferred visual porosity, no hydrocarbon fluorescence.

1	3323.1	50	Eastern View Coal Measures		SILTSTONE: greyish black to dark grey, olive black, moderately hard to hard.
2	3325	27	Eastern View Coal Measures	Poor	SANDSTONE: very light grey to light grey, light brownish grey, common clear quartz grains, fine to coarse grained, moderately sorted, sub-rounded to rounded, firm to moderately hard, spherical to sub-spherical, trace lithic fragments, fair visual porosity, dull yellow overall fluorescence, no cut.
3	3333.2	46	Eastern View Coal Measures		SILTSTONE: greyish black to dark grey, moderately hard to hard.
4	3336.1	47	Eastern View Coal Measures	Poor	SANDSTONE: very light grey to light grey, yellowish grey, abundant clear quartz grains, fine to coarse grains, poorly sorted, angular to sub-rounded, friable to firm, spherical to sub-spherical, trace silica cement, trace lithic fragments, fair inferred visual porosity, trace dull yellow overall fluorescence, no cut.
5	3341.5	46	Eastern View Coal Measures		SILTSTONE: greyish black to dark grey, moderately hard to hard.
6	3343.8	35	Eastern View Coal Measures		SANDSTONE: very light grey to medium light grey, light brownish grey, abundant clear quartz grains, fine to very coarse grains, poorly sorted, angular to sub-rounded, moderately hard to hard, spherical to sub-spherical, trace silica cement, trace lithic fragments, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
7	3347.7	45	Eastern View Coal Measures	Fair	CLAYSTONE (90%): greyish black to dark grey, olive black, firm to moderately hard. SANDSTONE (10%): white to very light grey, abundant coarse clear quartz grains, coarse to very coarse, moderately sorted, angular to sub-rounded, moderately hard to hard, spherical to sub-spherical, trace lithic fragments, fair to good inferred visual porosity, bright yellow general fluorescence, bright yellow slow cut, pale yellow white residue ring.
26	3374.7	38	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, firm to friable, 80% fine, 15% medium, 5% coarse clear quartz grains, poorly to moderately sorted, sub-rounded, sub-spherical, trace lithic fragments, carbonaceous specks, poor siliceous cement (5%), 15% clay matrix, poor to moderate inferred visual

					porosity, no hydrocarbon fluorescence.
25	3374.7	27	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, firm to friable, 80% fine, 15% medium, 5% coarse clear quartz grains, poorly to moderately sorted, sub-rounded, sub-spherical, trace lithic fragments, carbonaceous specks, poor siliceous cement (5%), 15% clay matrix, poor to moderate inferred visual porosity, no hydrocarbon fluorescence.
24	3380.5	47	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, opaque, firm to friable, 60% fine, 25% medium, 10% coarse, 5% very coarse clear and opaque quartz grains, poorly to moderately sorted, sub-rounded to sub-angular, sub-spherical, trace lithic fragments, carbonaceous specks, poor siliceous cement (5%), 15% clay matrix, poor to moderate inferred visual porosity, no hydrocarbon fluorescence.
23	3390.5	44	Eastern View Coal Measures		SILTSTONE (60%): brownish black, olive black, firm to moderately hard, trace mica, lithic fragments, carbonaceous specks. SANDSTONE (40%): very light grey, light grey, clear, opaque, friable, 60% fine, 25% medium, 10% coarse, 5% very coarse clear and opaque quartz grains, poorly to moderately sorted, sub-rounded, sub-spherical, trace lithic fragments, 15% clay matrix, moderate inferred visual porosity, no hydrocarbon fluorescence.
10	3401.2	40	Eastern View Coal Measures		SANDSTONE: light grey to medium light grey, abundant clear quartz grains, fine to medium grains, moderately to well sorted, sub-angular to sub-rounded, friable to moderately hard, spherical to sub-spherical, trace silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
11	3402.8	30	Eastern View Coal Measures		SANDSTONE: very light grey to light grey, light brownish grey, abundant clear quartz grains, fine grains, well sorted, sub-rounded to rounded, firm to moderately hard, spherical to sub-spherical, trace silica cement, trace lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence.
22	3417	39	Eastern View Coal Measures		SANDSTONE: very light grey, light grey, clear, opaque, firm to moderately hard, 90% fine, 10% medium clear to opaque quartz grains, well sorted, sub-rounded, sub-spherical, 5% lithic fragments, trace

					carbonaceous specks, glauconite, poor siliceous cement (5%), poor inferred visual porosity, no hydrocarbon fluorescence.
9	3423.3	35	Eastern View Coal Measures		SANDSTONE: very light grey to light grey, abundant clear quartz grains, coarse to very coarse grains, moderately sorted, angular to sub-angular, moderately hard to hard, spherical to sub-spherical, fair to good inferred visual porosity, no hydrocarbon fluorescence.
8	3424.7	15	Eastern View Coal Measures		SANDSTONE: very light grey to light grey, abundant clear quartz grains, coarse to very coarse grains, moderately sorted, angular to sub-angular, moderately hard to hard, spherical to sub-spherical, fair to good inferred visual porosity, no hydrocarbon fluorescence.

APPENDIX 3: MSCT RCA DATA & PHOTOGRAPHS

Weatherford®
LABORATORIES

ROUTINE CORE ANALYSIS FINAL REPORT

of

ROCKHOPPER-1 MSCT

for

ORIGIN ENERGY RESOURCES LIMITED

by

WEATHERFORD LABORATORIES (AUSTRALIA) PTY LTD

Weatherford®
LABORATORIES

7th April, 2010

Origin Energy Resources Limited
Ground Floor
John Oxley Centre, North Tower
339 Coronation Drive
MILTON QLD 4064

Attention: Deidre Brooks
Ted Surka

FINAL REPORT: 0470-02

CLIENT REFERENCE: Purchase Order # 16023586

MATERIAL: MSCT

LOCALITY: Rockhopper-1

WORK REQUIRED: Routine Core Analysis

Please direct technical inquiries regarding this work to the signatory below under whose supervision the work was carried out.

KEVIN H FLYNN
General Manager
SCAL Technical Director

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CHAPTER 1

INTRODUCTION

1. INTRODUCTION

The Rockhopper-1 MSCT core samples were received at Weatherford Laboratories' Brisbane facility on 11th January, 2010.

Following sample inspection a routine core analysis study, including sample preparation was undertaken as per instructions received from Origin Energy Resources Limited.

The study included the following analyses:

- MSCT core samples photography
- Sample preparation
- Dean-Stark fluid saturation analyses
- Ambient porosity, permeability & grain density
- Pentane Extraction

The following report details the methods and procedures utilised in these analyses. Results are presented in both tabular and graphical formats.

CHAPTER 2

CORE ANALYSIS

2.1 Test and Calculation Procedures

2. CORE ANALYSIS

2.1 Test and Calculation Procedures

2.1.1 Sample Preparation

Samples were initially inspected for analysis suitability and fluorescence. On completion all samples were photographed under white light with a Nikon D100 6.1 megapixel digital SLR camera. Only samples with visible fluorescence were photographed under ultra-violet light. All images are presented here in a standard format and are stored digitally.

Samples were trimmed to right cylinders of maximum length using a diamond impregnated cutting blade. All samples were stored in refrigerated conditions to avoid pore fluid loss.

2.1.2 Dean-Stark Residual Fluid Saturation

Selected samples underwent fluid saturation analysis. Each fresh state sample was placed in the Dean-Stark fluid extraction apparatus, where it is suspended above a reservoir of boiling toluene. The solvent vapours, together with the extracted pore fluids, are condensed at the top of the glassware and the water collected in a calibrated side arm. Oil and toluene are collected in the reservoir and continue boiling so that clean toluene vapour continues extracting pore fluids. The process is continued until the water production ceases.

From the collected water volume and the latter determined helium injection pore volume of the sample, water saturation is calculated as follows.

$$Sw = (\text{Pore Water Volume} / \text{Pore Volume}) \times 100\%$$

Oil saturations were calculated from the weight loss of sample during analysis and assumptions of 30,000 ppm brine composition and 0.8g/cm^3 oil density.

2.1.3 Cleaning and Drying

Cleaning was performed in a modified soxhlet system (Appendix I) using a 3:1 chloroform:methanol azeotrope. Cleaning continued until tests for oil (fluorescence under UV lights) and salt (silver nitrate precipitation) showed negative. The clean samples were dried to constant weight in a humidity oven at 60°C and 40% relative humidity. Once dry, the samples were cooled to room temperature in an airtight chamber.

2.1.4 Porosity

The plugs were sealed in a matrix cup and a known volume of helium at 100 psi reference pressure was introduced to the cup. From the resultant pressure, the unknown volume, i.e. the grain volume, was calculated using Boyles Law.

The bulk volume of each plug was determined by mercury immersion. The porosity is calculated as the volume percentage of pore space with respect to the bulk volume.

$$P_1 V_1 = P_2 V_2$$

$$\Rightarrow \quad P_1 Vr = P_2 (Vr + Vc - Vg)$$

$$Vp = Vb - Vg$$

$$\text{Ambient Porosity \%} = \frac{Vp}{Vb} \times 100\%$$

where

P_1 = initial pressure (psig)
P_2 = final pressure (psig)
Vr = reference cell volume (cm^3)
Vc = matrix cup volume (cm^3)
Vg = grain volume (cm^3)
Vp = pore volume (cm^3)
Vb = bulk volume (cm^3)

2.1.5 Permeability to Air

The samples were placed into a hydrostatic cell (Appendix I) with an ambient confining pressure of 400 psi applied. The confining pressure was used to prevent bypassing of air around the sample when the measurement was made. In order to determine permeability, a known air pressure was applied to the upstream face of each sample, creating a flow of air through the core plug. Air permeability for each core sample was calculated using Darcy's Law through knowledge of the upstream pressure, flow rate, viscosity of air and sample dimensions.

$$Ka = \frac{2000.BP.\mu.q.L}{(P_1^2 - P_2^2).A}$$

where

Ka = air permeability (milliDarcy's)
BP = barometric pressure (atmospheres)
μ = gas viscosity (cP)
q = flow rate (cm^3/s) at barometric pressure
L = sample length (cm)
P_1 = upstream pressure (atmospheres)
P_2 = downstream pressure (atmospheres)
A = sample cross sectional area (cm^2)

2.1.6 Grain Density

The apparent grain density is calculated by dividing the weight of the plug by the grain volume, determined from the helium injection porosity measurement.

$$\rho = \frac{Wt}{Vg}$$

where ρ = *grain density (g/cm^3)*
Wt = *weight of sample (g)*
Vg = *grain volume (cm^3)*

2.1.7 Pentane Extraction

Sample off-cuts were initially crushed and immersed in a solution of n-pentane. The solution was agitated and after a minimum of 2 hours (for the residual crude oil to dissolve) the solution was filtered. The liquid was then evaporated to a residual sample before injection into a Gas Chromotograph. All concentrations were determined as mol %.

CHAPTER 2

CORE ANALYSIS

2.2 Test Results

CORE ANALYSIS FINAL REPORT

Client : Origin Energy Resources Limited
Well : Rockhopper-1
Field : Rockhopper

Date : 26/03/2010
File : 0470-02
Location :
Analysts : kw, cm, al, as

Sample Number	Depth (m)	Dir	Porosity Helium (percent)	Grain Density (g/cm^3)	Permeability to Air (mD)	Fluid Saturation So (percent)	Fluid Saturation Sw (percent)	Remarks
1	3323.10	MSCT	1.2	3.02	< 0.01			Slt
2	3325.00	MSCT	19.8	2.64	31.9	3.2	68.2	S.P.
3	3333.20	MSCT	0.2	2.66	< 0.01			Slt
4	3336.10	MSCT	18.4	2.63	14.1			
5	3341.50	MSCT	0.1	2.67	0.01			Slt
6	3343.80	MSCT	15.5	2.70	4.71			S.P.
7	3347.70	MSCT	1.7	2.84		1.5	96.2	Lam, Irr
8	3424.70	MSCT	14.0	2.64	41.4			S.P. H Fracs
9	3423.30	MSCT						
10	3401.20	MSCT	14.7	2.64	0.65			S.P.
11	3402.80	MSCT	17.0	2.65				H Fracs, Irr, S.P.
12	3242.80	MSCT	20.5	2.65	87.0			
13	3197.30	MSCT	5.1	2.66	0.02			Lam
14	3198.70	MSCT	17.3	2.67	28.9			
15	3201.10	MSCT	21.0	2.77	132	1.1	71.3	
16	2962.50	MSCT	12.9	2.64	0.57			Lam
17	2874.00	MSCT						
18	2875.50	MSCT	20.1	2.64	576			Lam
19	2877.00	MSCT	22.3	2.64	851			Lam
20	3287.70	MSCT	18.3	2.66	1.81			Lam
21	3290.10	MSCT	21.4	2.66	11.1			Lam
22	3417.00	MSCT	15.7	2.67	1.56			S.P.
23	3390.50	MSCT						
24	3380.50	MSCT	18.4	2.66	29.8			Irr
25	3374.70	MSCT	20.9	2.65	11.1			
26	3374.70	MSCT	20.2	2.64				Irr
27	3268.90	MSCT	6.9	2.68	0.56			Lam, S.P.
28	3235.80	MSCT	22.5	2.68		1.4	91.2	Irr, S.P.
29	3233.80	MSCT	20.0	2.68	18.0	1.2	79.3	S.P.
30	3137.10	MSCT	2.5	2.71	< 0.01			Slt
31	2895.50	MSCT	8.6	2.68	0.17			Lam
32	2832.00	MSCT	15.9	2.63		2.6	67.6	Irr, Lam, S.P.

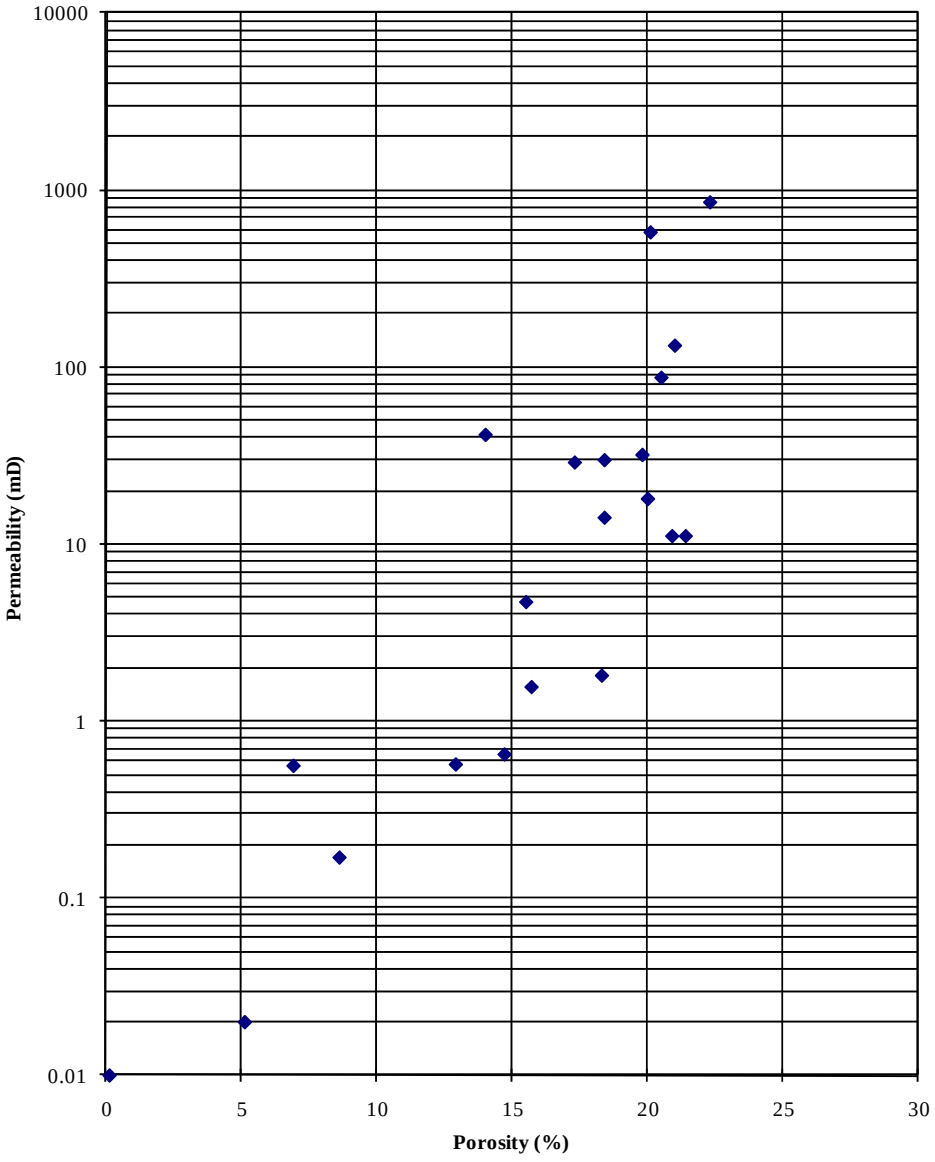
Slt	Silt
S.P.	Short Plug Sample
Lam	Laminations
H Fracs	Horiozontal Fractures
Irr	Irregular Shape

POROSITY vs PERMEABILITY
Ambient

Client: **Origin Energy Resources Limited**

Well: **Rockhopper-1**

Samples: **MSCT**

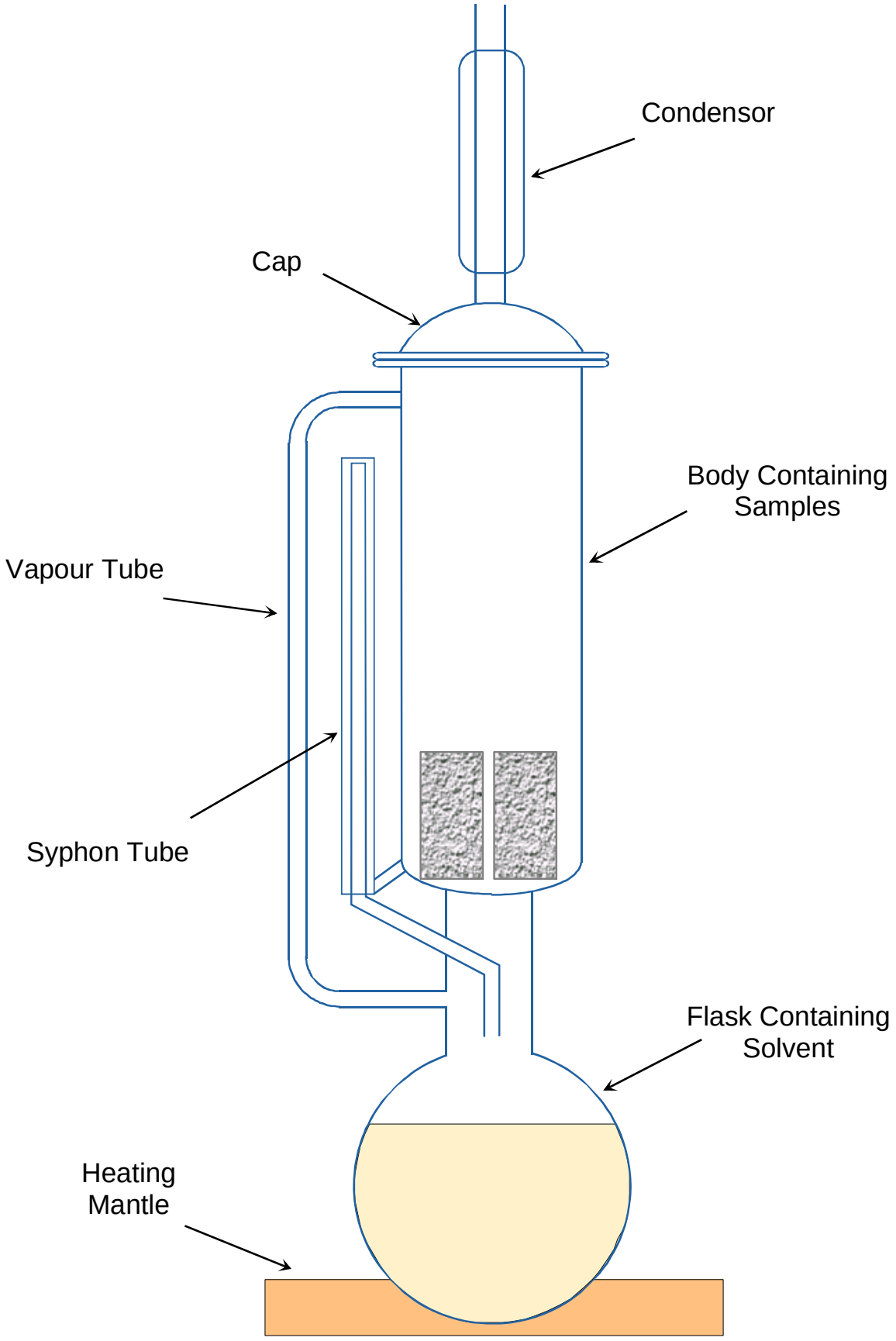


APPENDIX I

EQUIPMENT SCHEMATICS

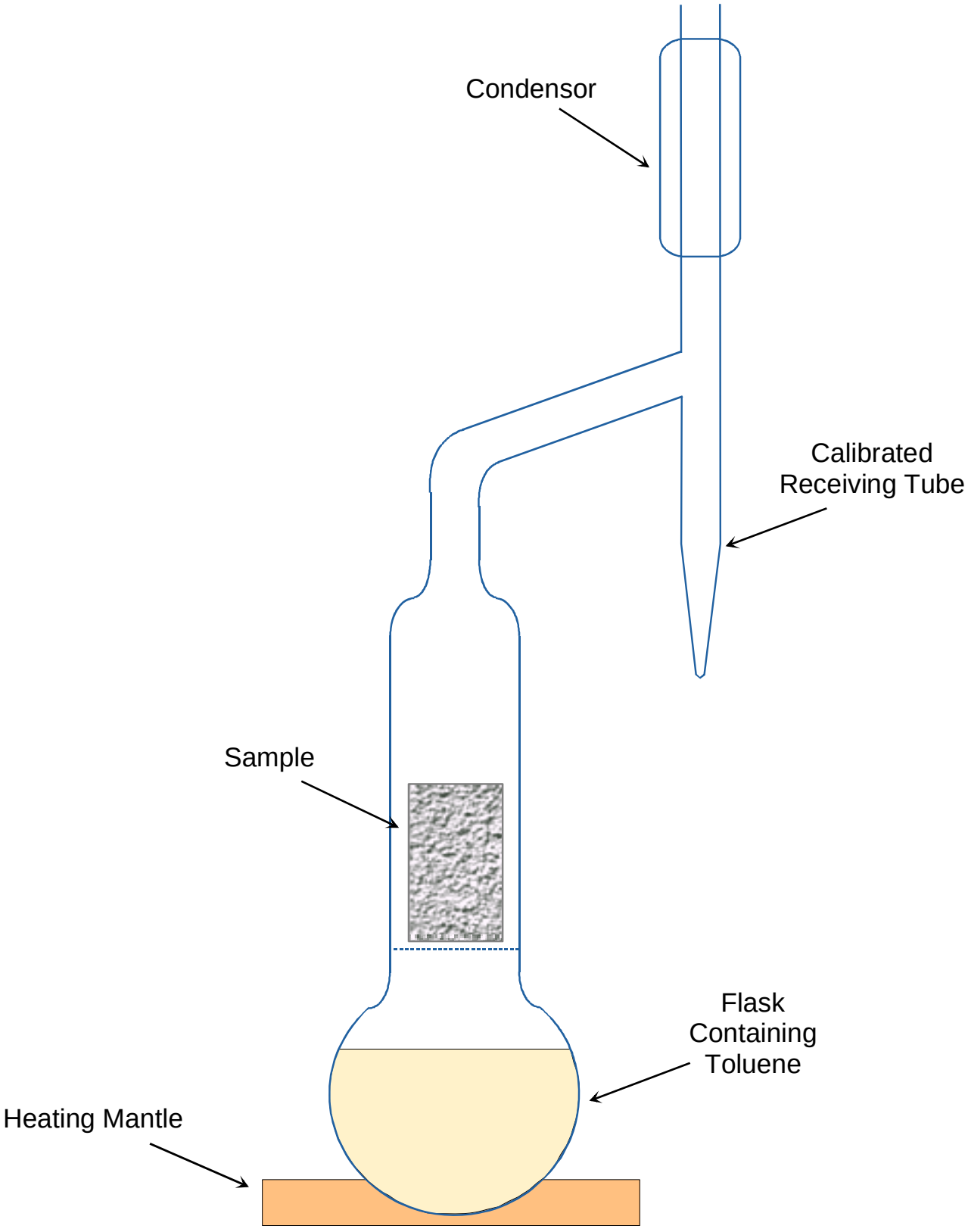
SOXHLET CLEANING APPARATUS

Weatherford LABORATORIES

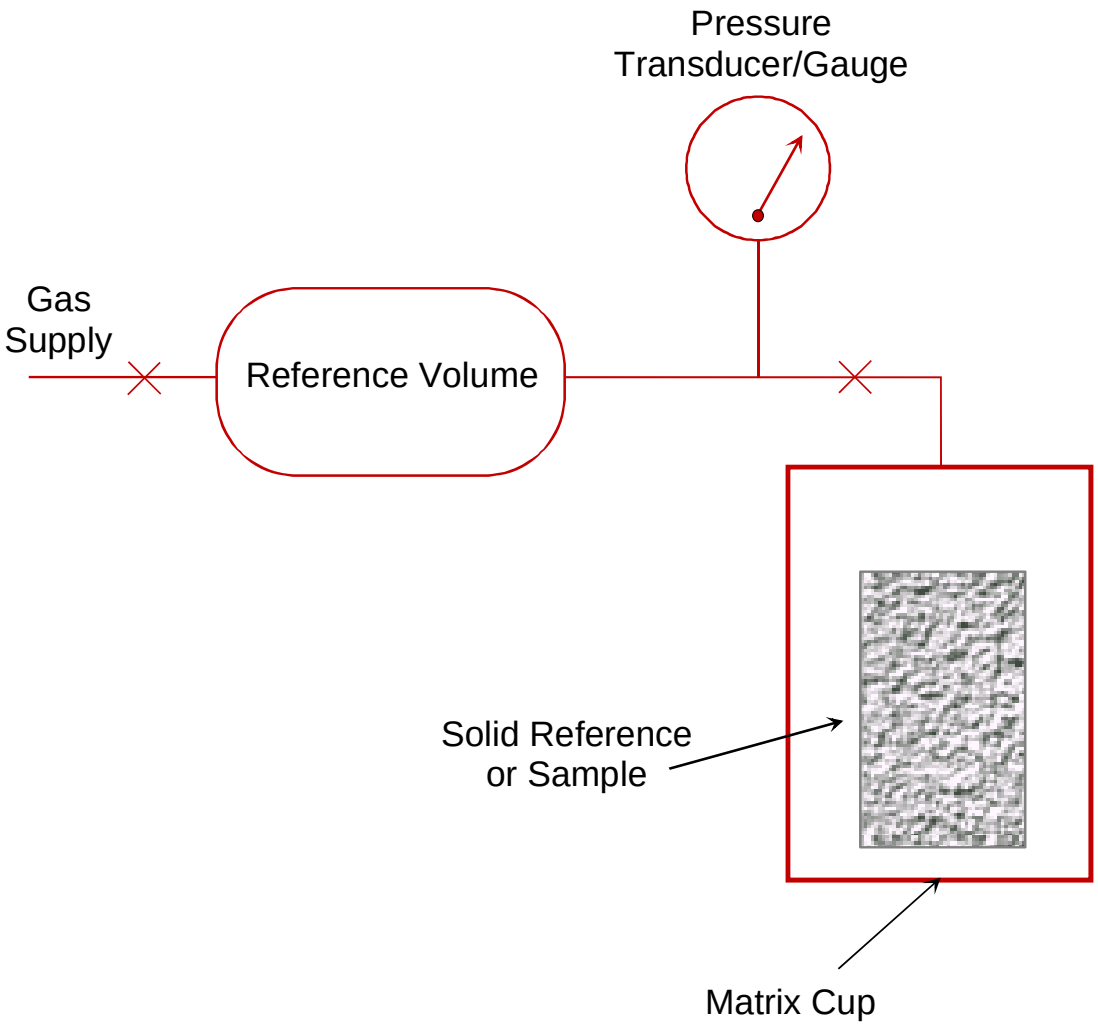


DEAN-STARK APPARATUS

Weatherford LABORATORIES



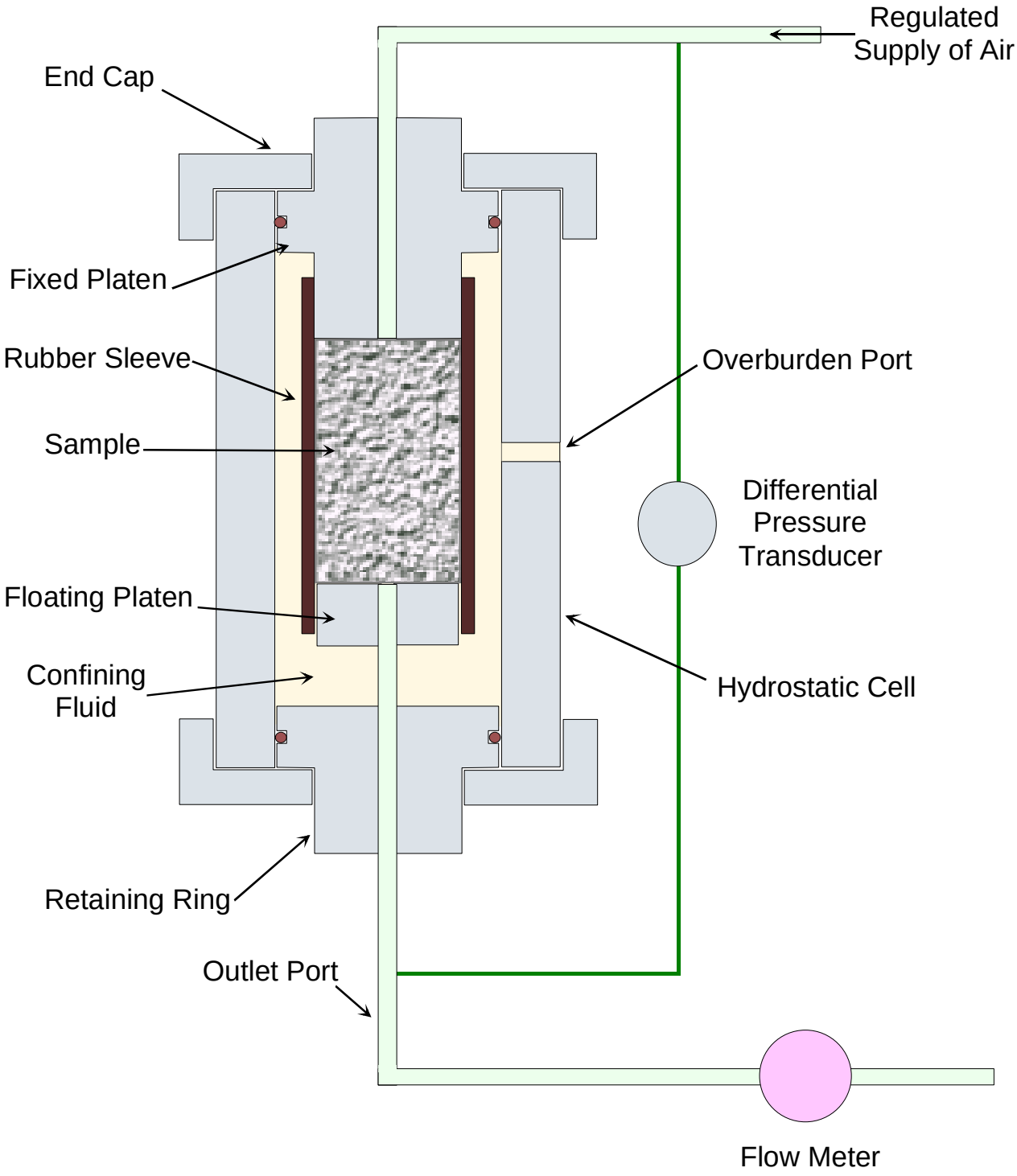
POROSIMETER SCHEMATIC



P1.V1 (reference) = P2.V2 (sample)

GAS PERMEAMETER SCHEMATIC (Hydrostatic)

Weatherford LABORATORIES



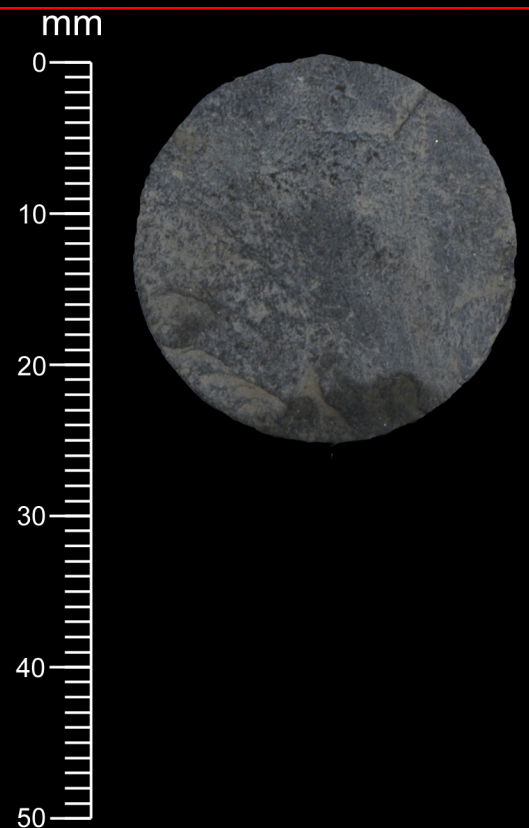
APPENDIX II

MSCT PHOTOGRAPHY

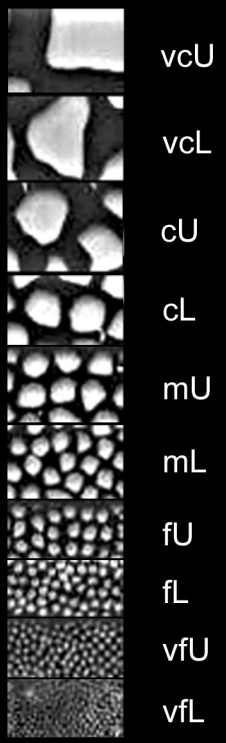
SWC Photography
ROCKHOPPER-1

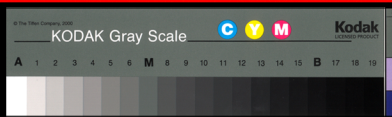
SWC 1 3323.10m

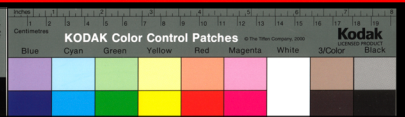








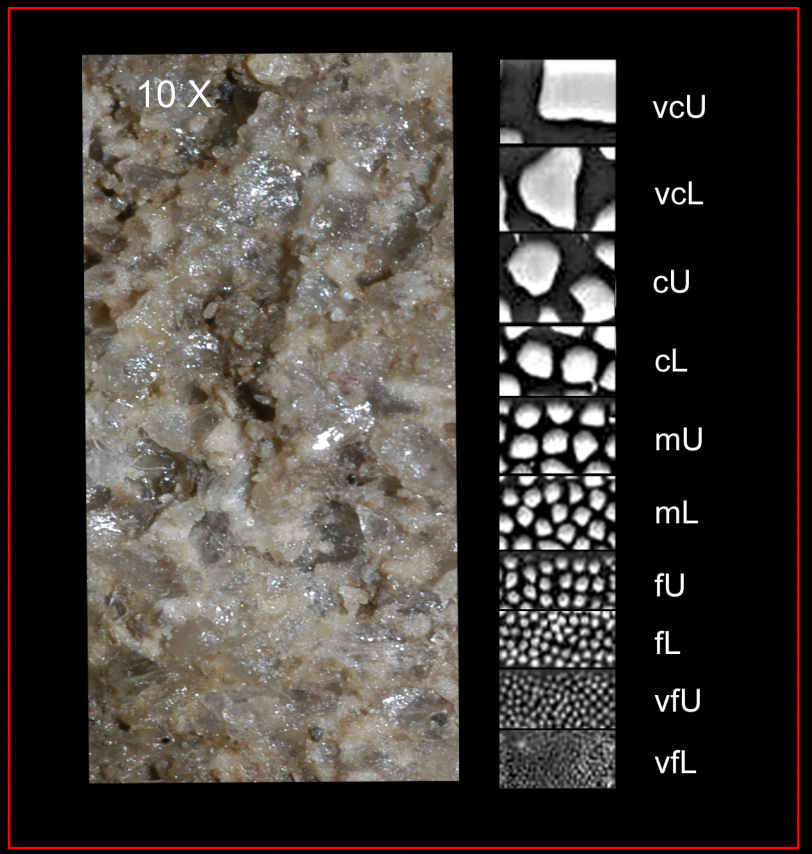


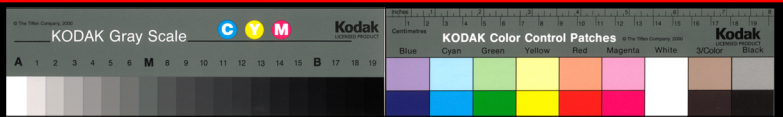


SWC Photography
ROCKHOPPER-1

SWC 2 3325.00m

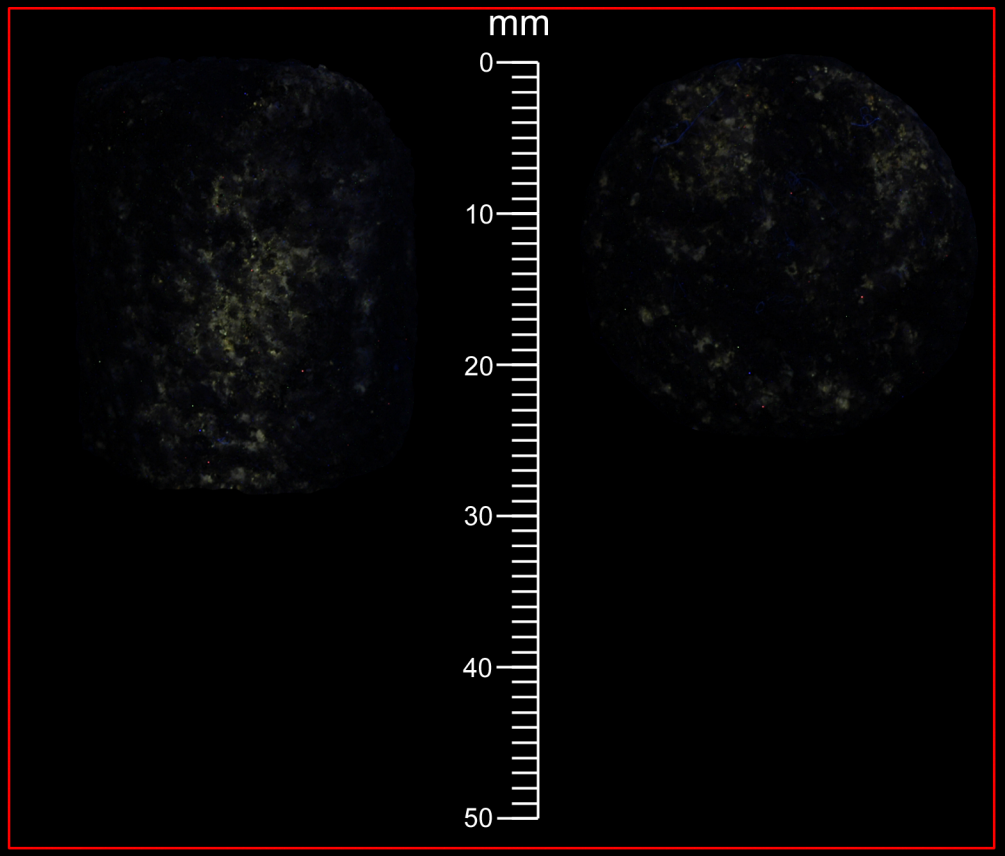




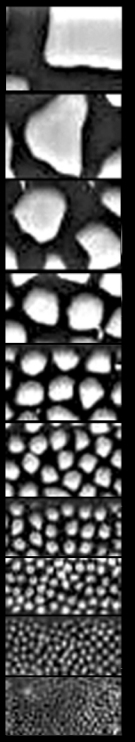


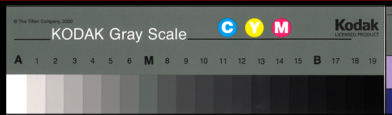
SWC Photography
ROCKHOPPER-1

SWC 2 3325.00m
Ultra Violet



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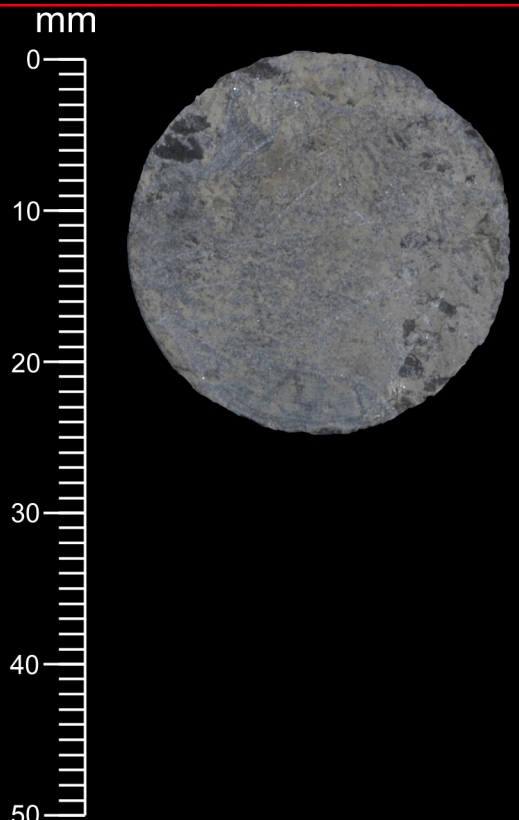




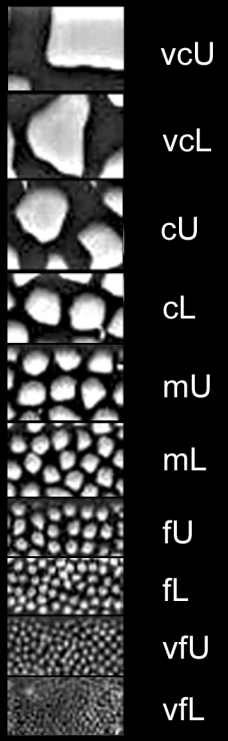
SWC Photography
ROCKHOPPER-1

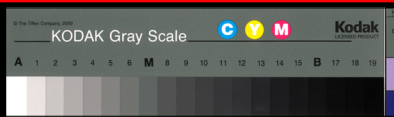
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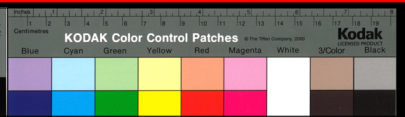












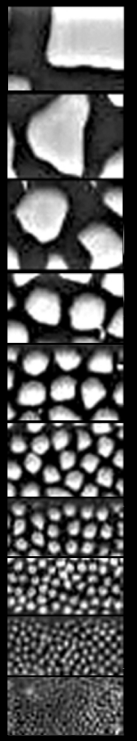
SWC Photography
ROCKHOPPER-1

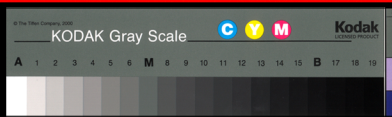
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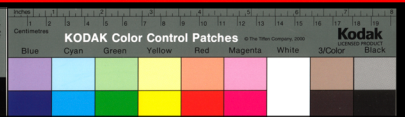








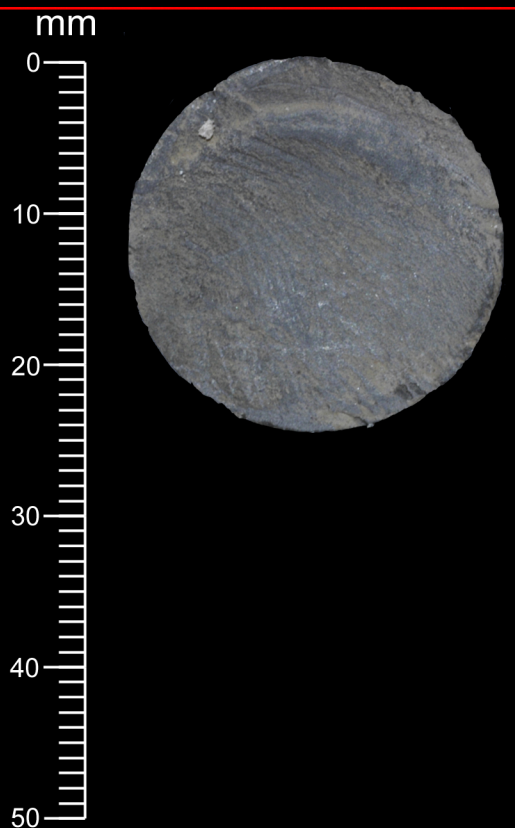




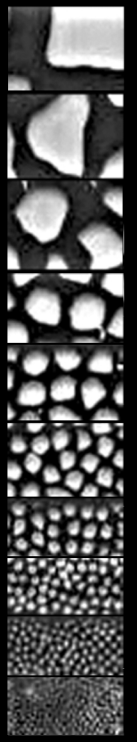
SWC Photography
ROCKHOPPER-1

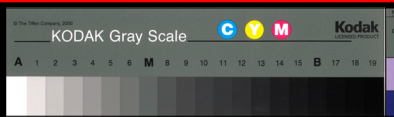
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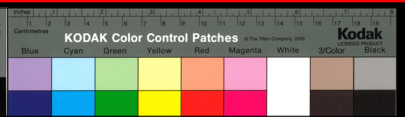






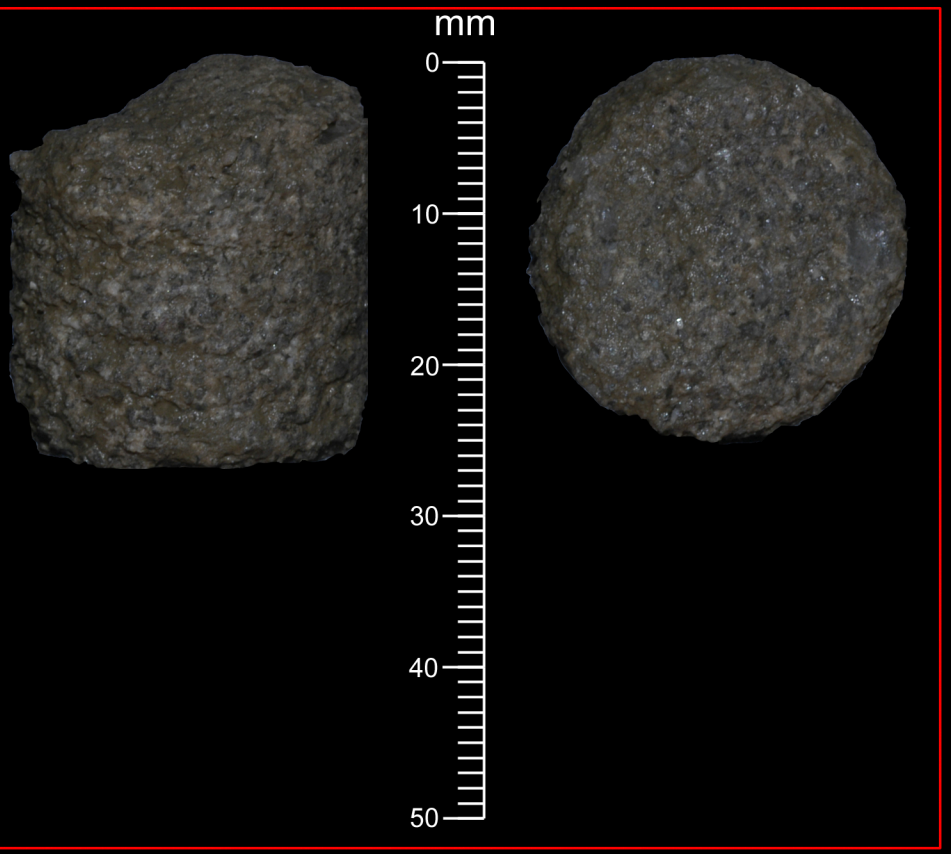


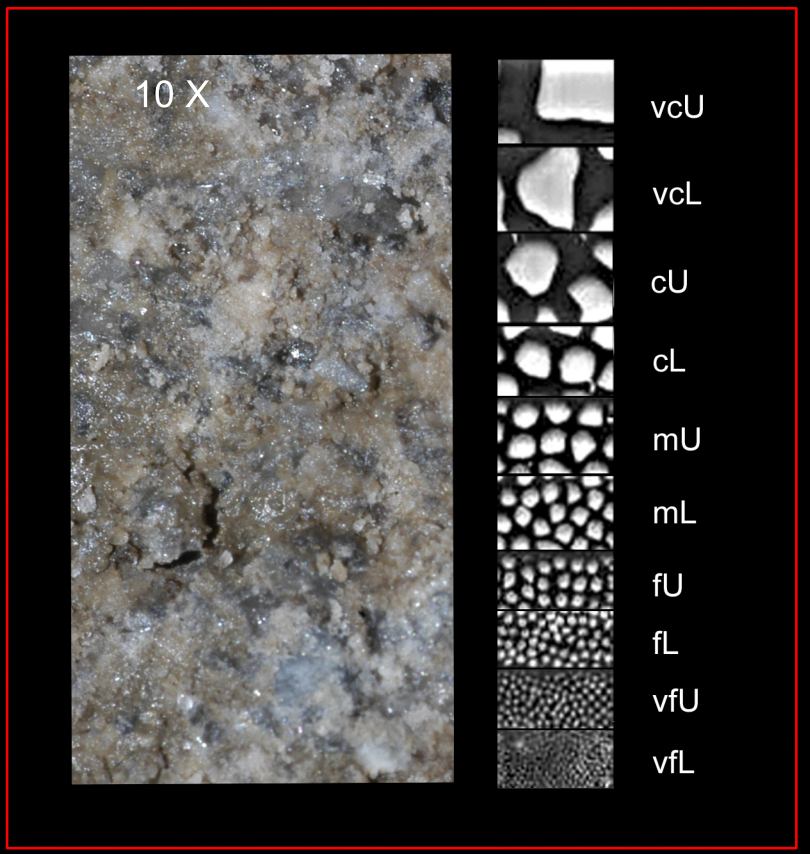


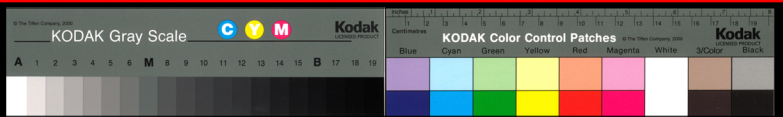


SWC Photography
ROCKHOPPER-1

SWC 6 3343.80m



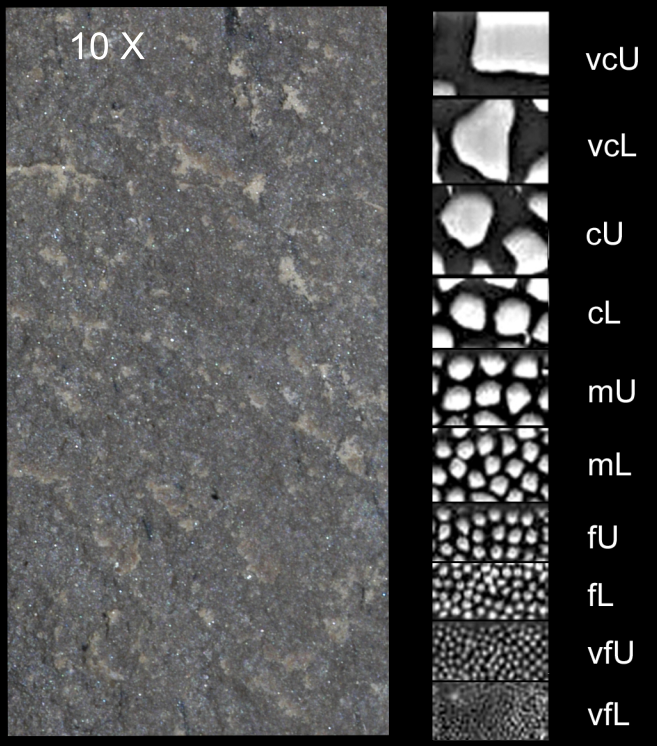


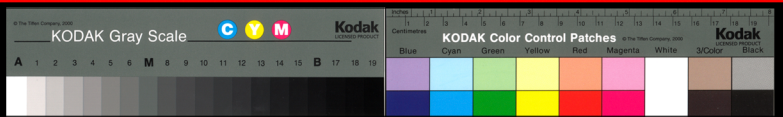


SWC Photography
ROCKHOPPER-1

SWC 7 3347.70m

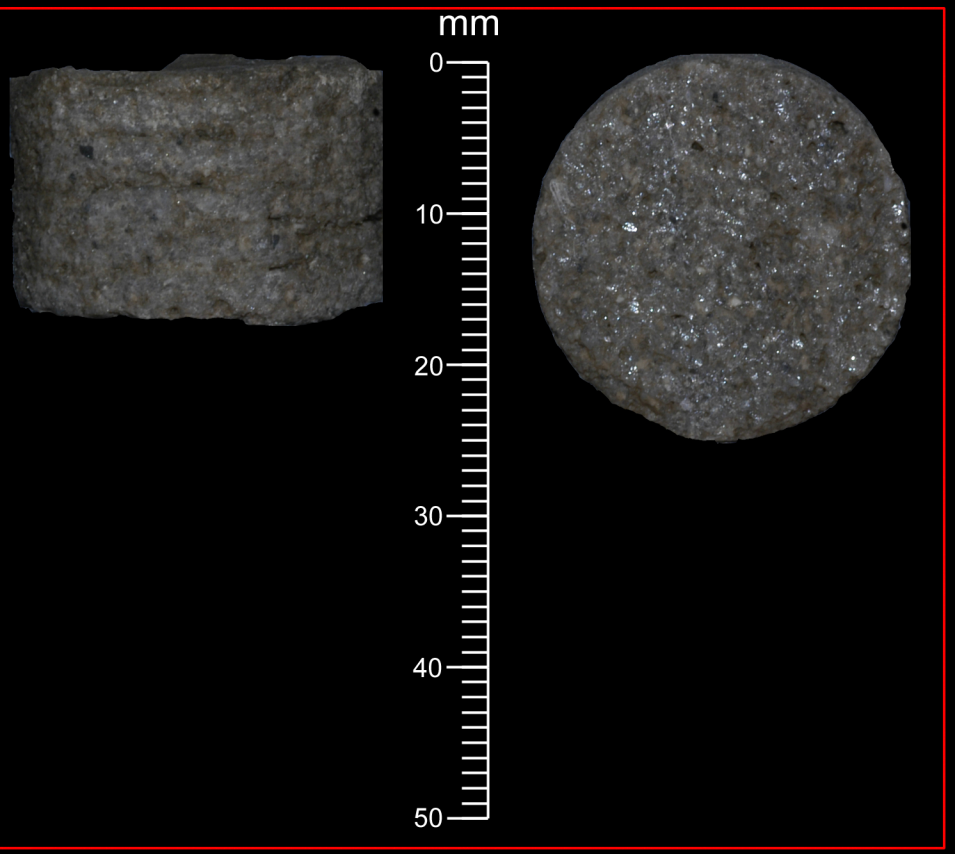


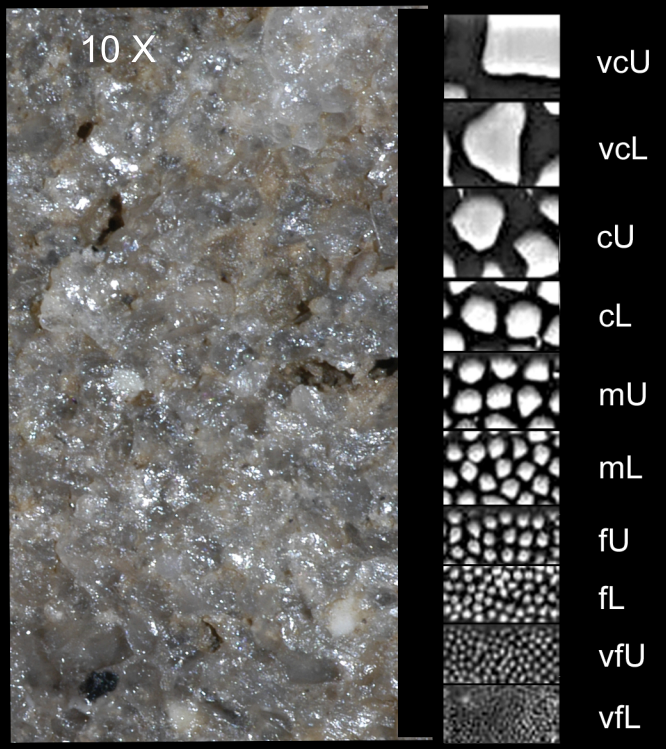


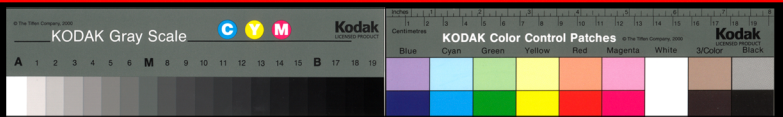


SWC Photography
ROCKHOPPER-1

SWC 8 3424.70m



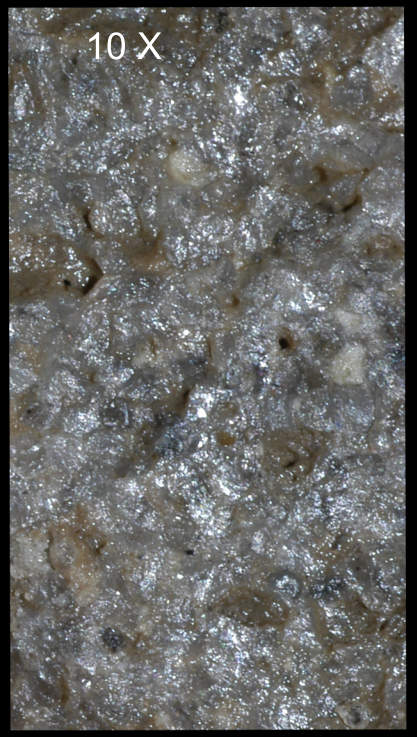


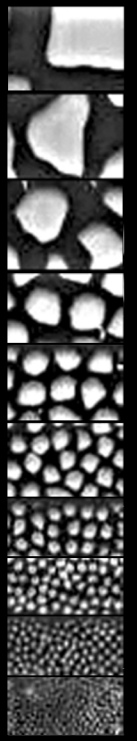


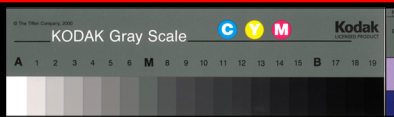
SWC Photography
ROCKHOPPER-1

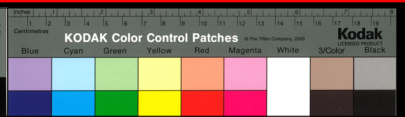
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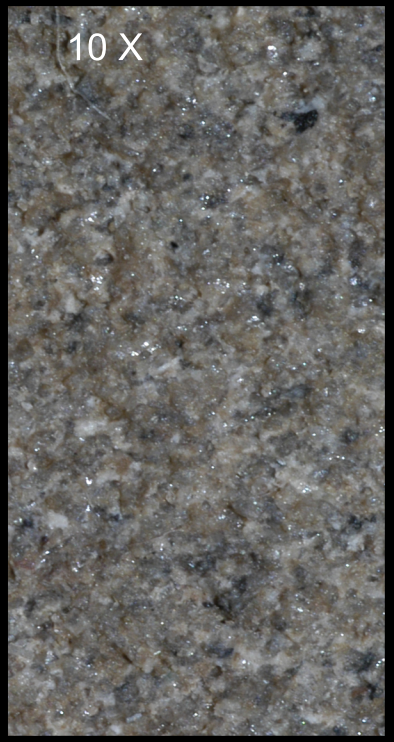


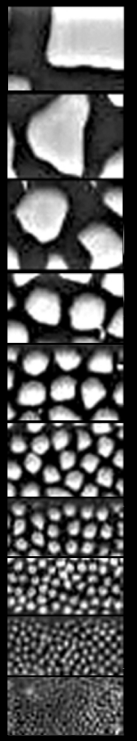


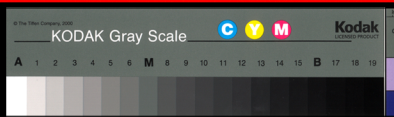
SWC Photography
ROCKHOPPER-1

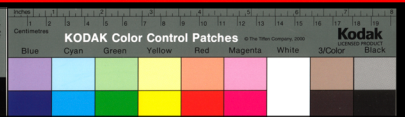
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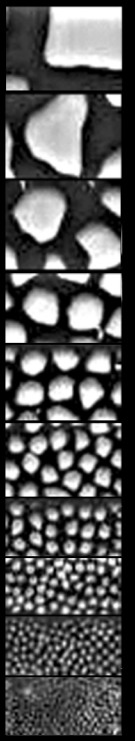


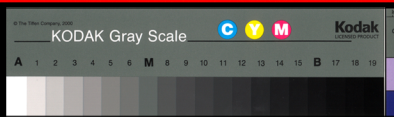
SWC Photography
ROCKHOPPER-1

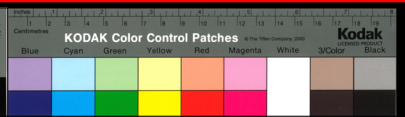
SWC 11 3402.80m









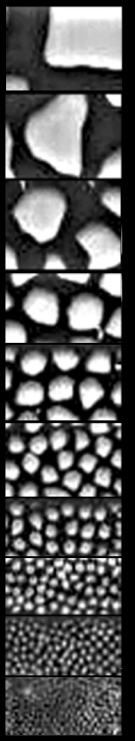


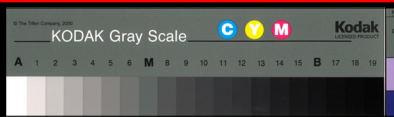
SWC Photography
ROCKHOPPER-1

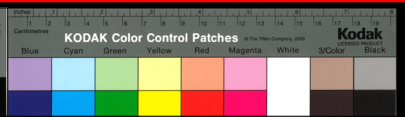
SWC 12 3242.80m











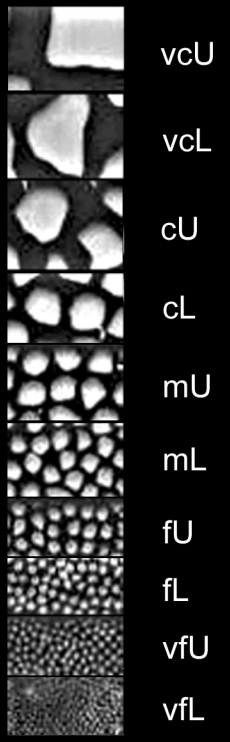
SWC Photography
ROCKHOPPER-1

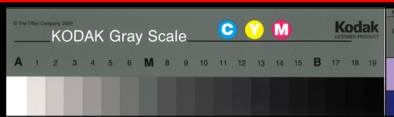
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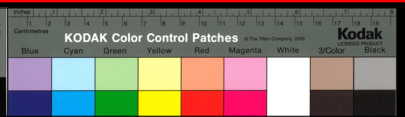








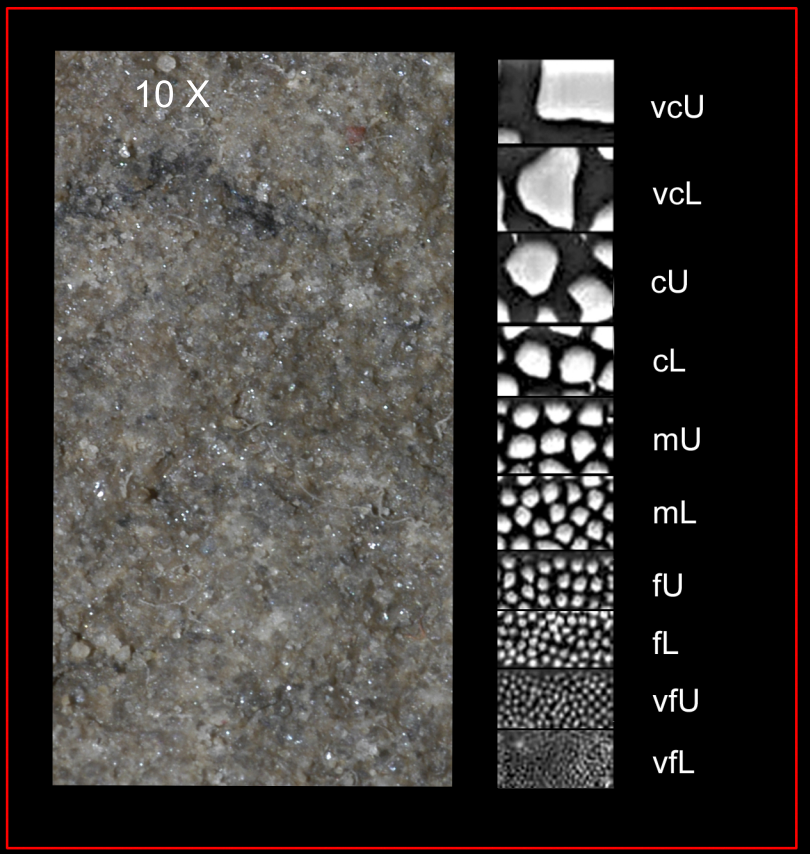


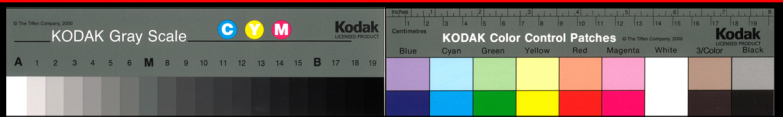


SWC Photography
ROCKHOPPER-1

SWC 14 3198.70m

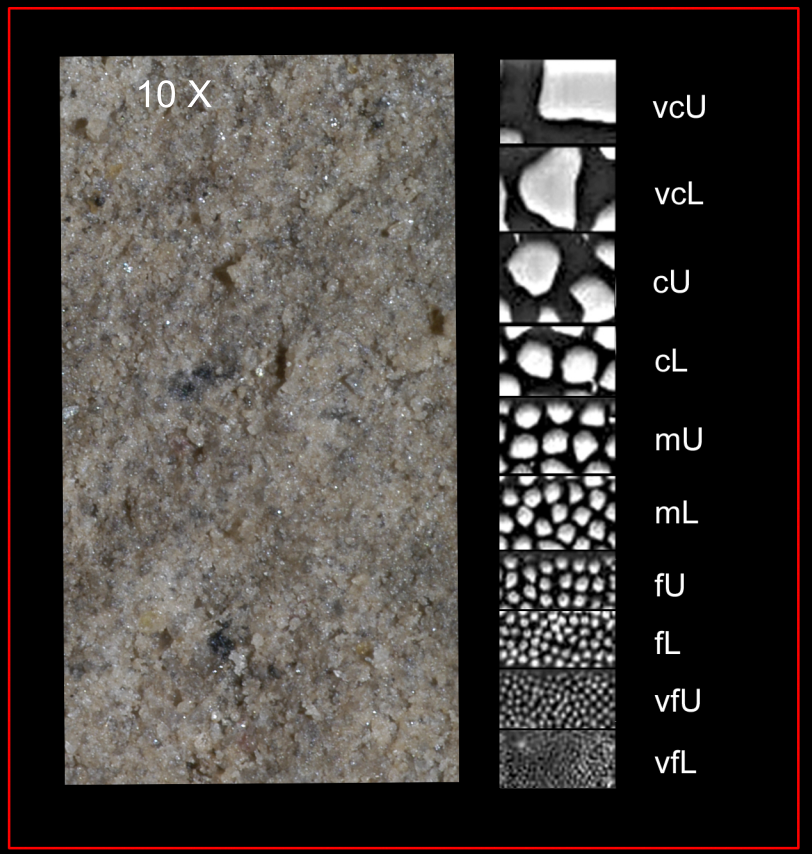


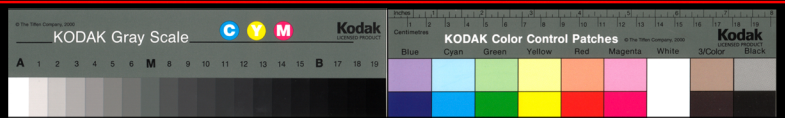




SWC Photography
ROCKHOPPER-1
SWC 15 3201.10m



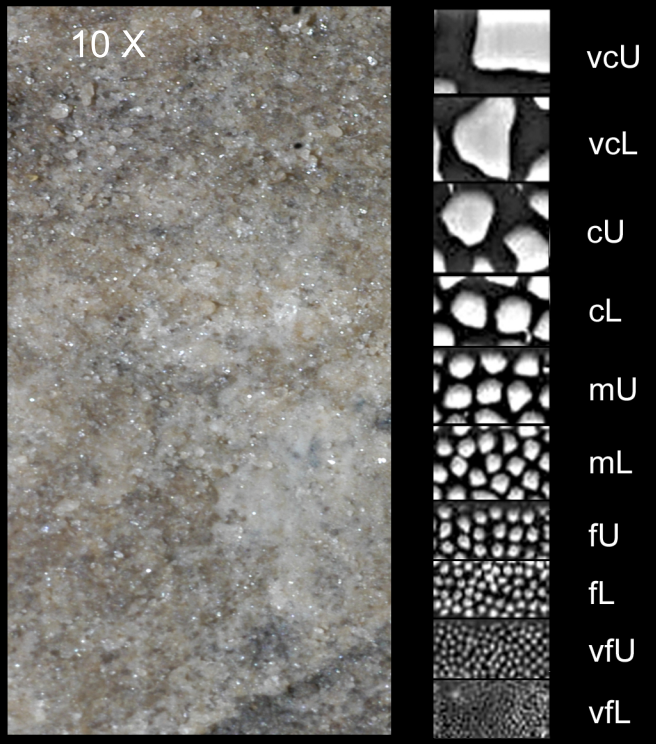


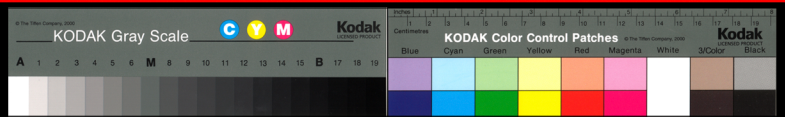


SWC Photography
ROCKHOPPER-1

SWC 16 2962.50m

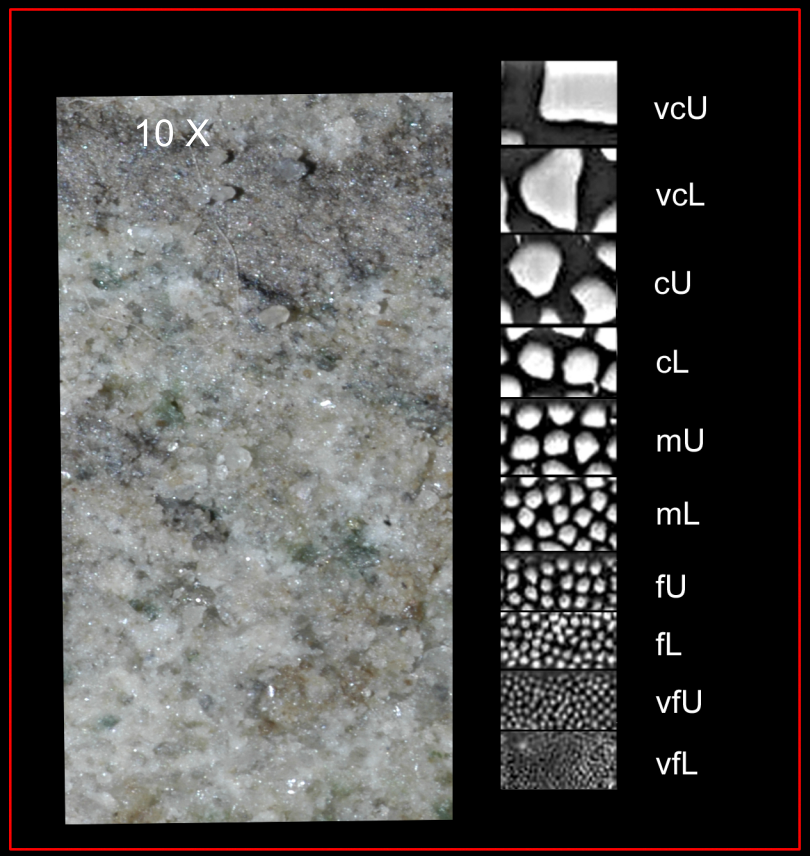


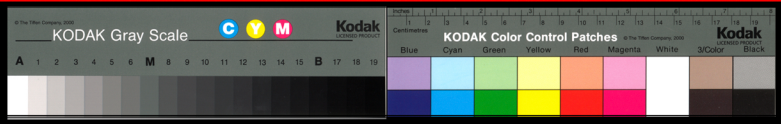




SWC Photography
ROCKHOPPER-1
SWC 17 2874.00m







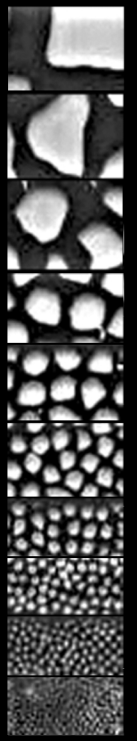
SWC Photography
ROCKHOPPER-1

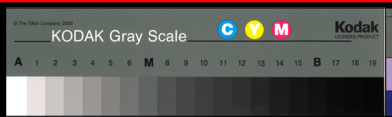
SWC 18 2875.50m

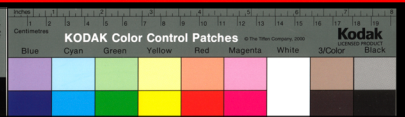






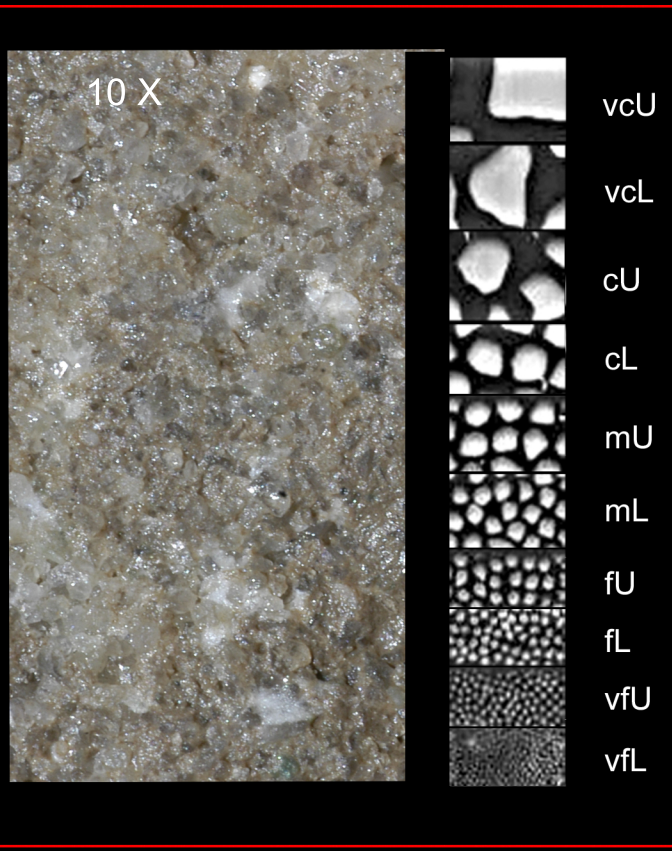


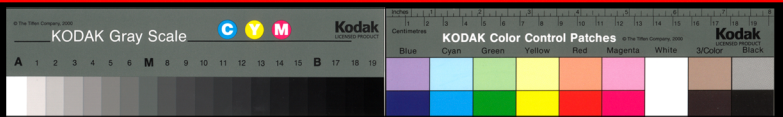




SWC Photography
ROCKHOPPER-1
SWC 19 2877.00m







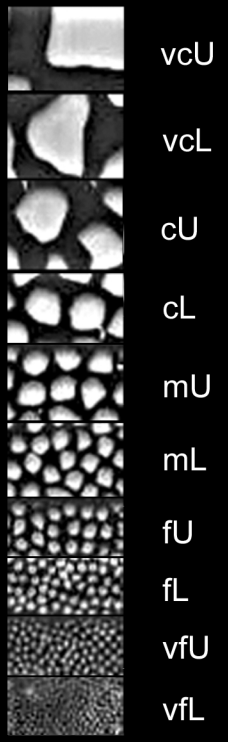
SWC Photography
ROCKHOPPER-1

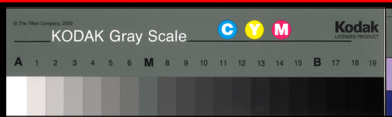
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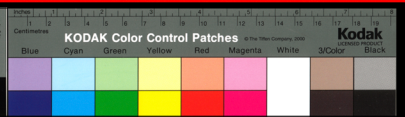












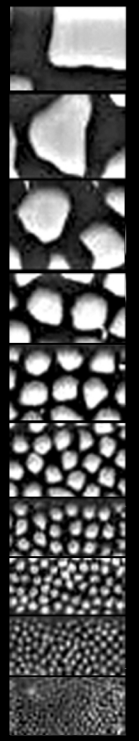
SWC Photography
ROCKHOPPER-1

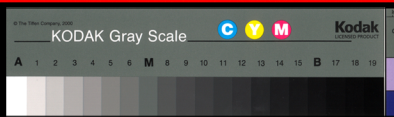
SWC 21 3290.10m

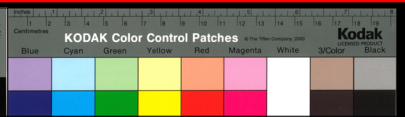






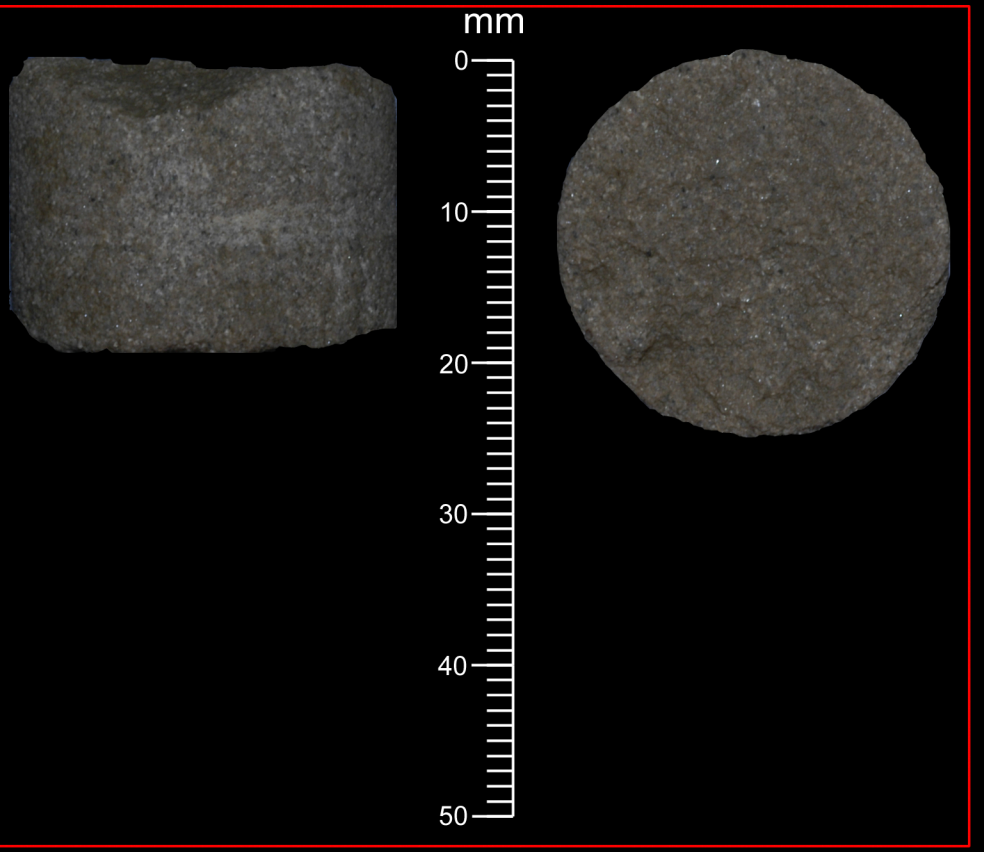


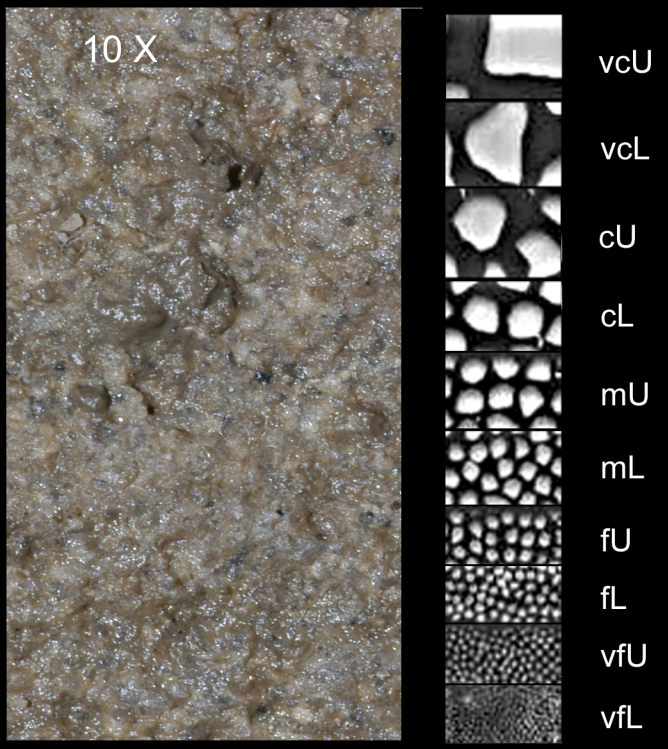


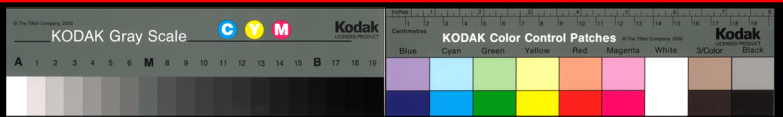


SWC Photography
ROCKHOPPER-1

SWC 22 3417.00m



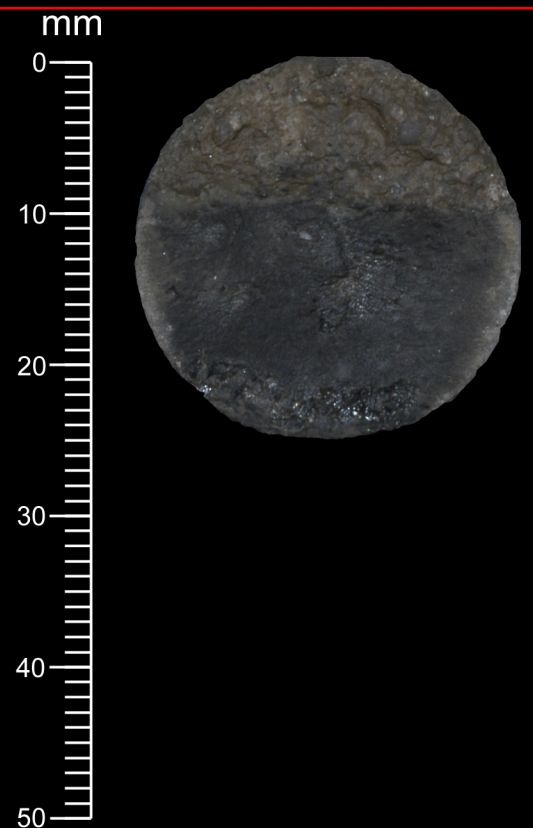




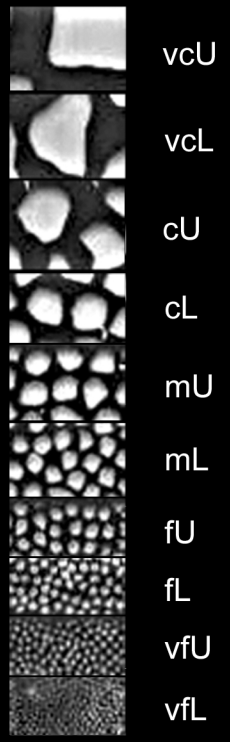
SWC Photography
ROCKHOPPER-1

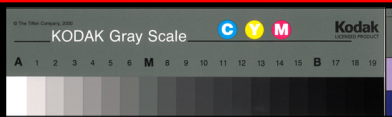
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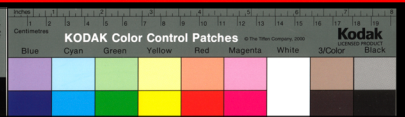












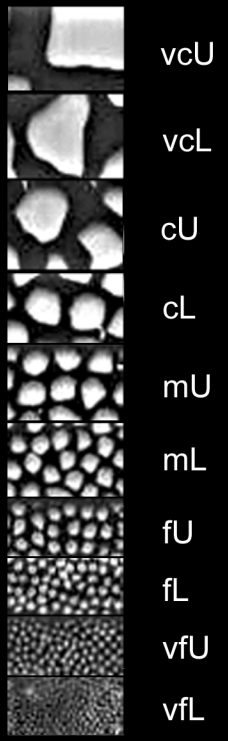
SWC Photography
ROCKHOPPER-1

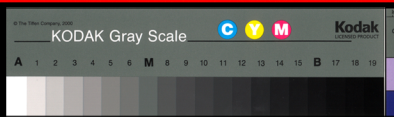
SWC 24 3380.50m

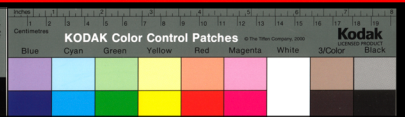












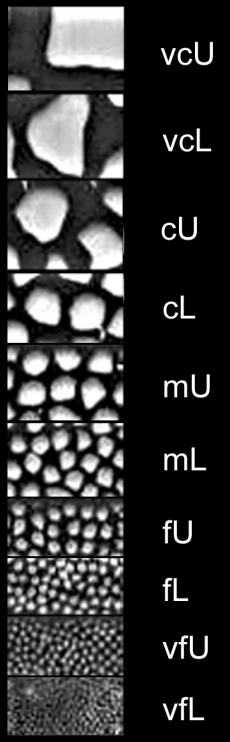
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ROCKHOPPER-1

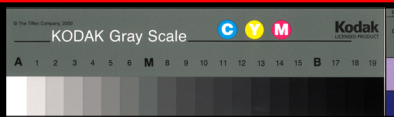
SWC 25 3374.70m

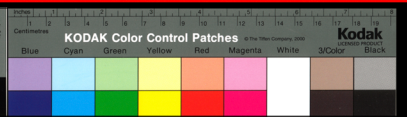








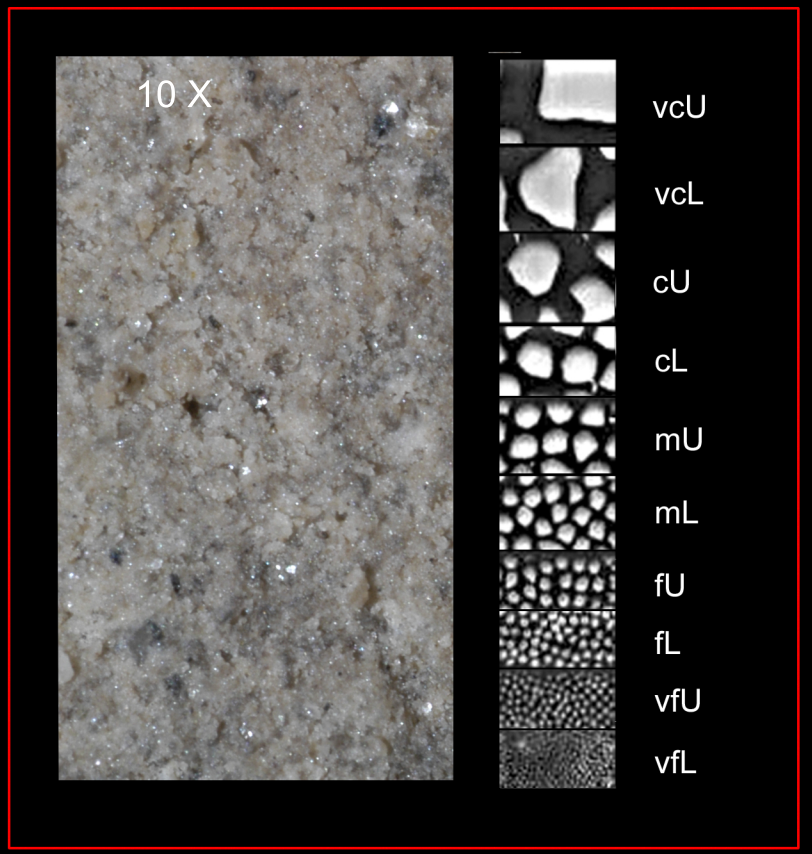


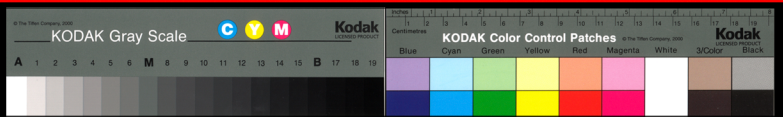


SWC Photography
ROCKHOPPER-1

SWC 26 3374.70m

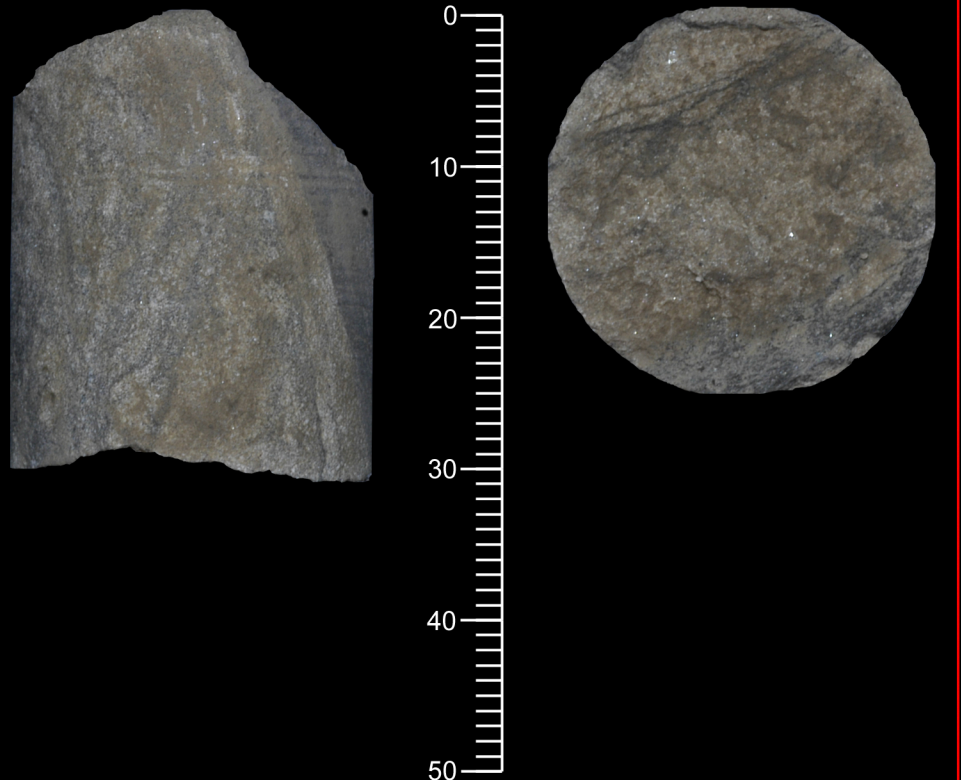


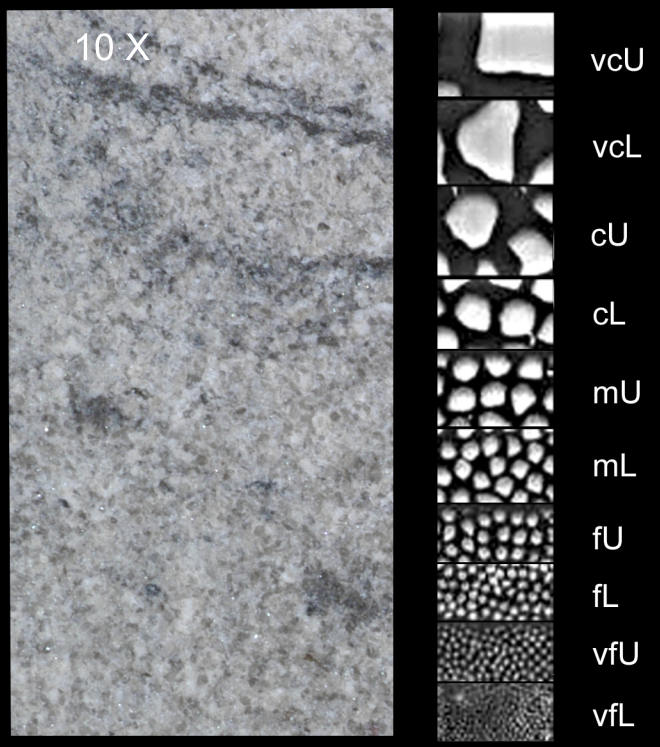


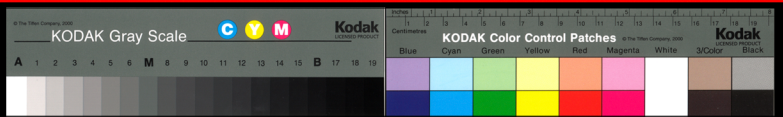


SWC Photography
ROCKHOPPER-1

SWC 27 3268.90m



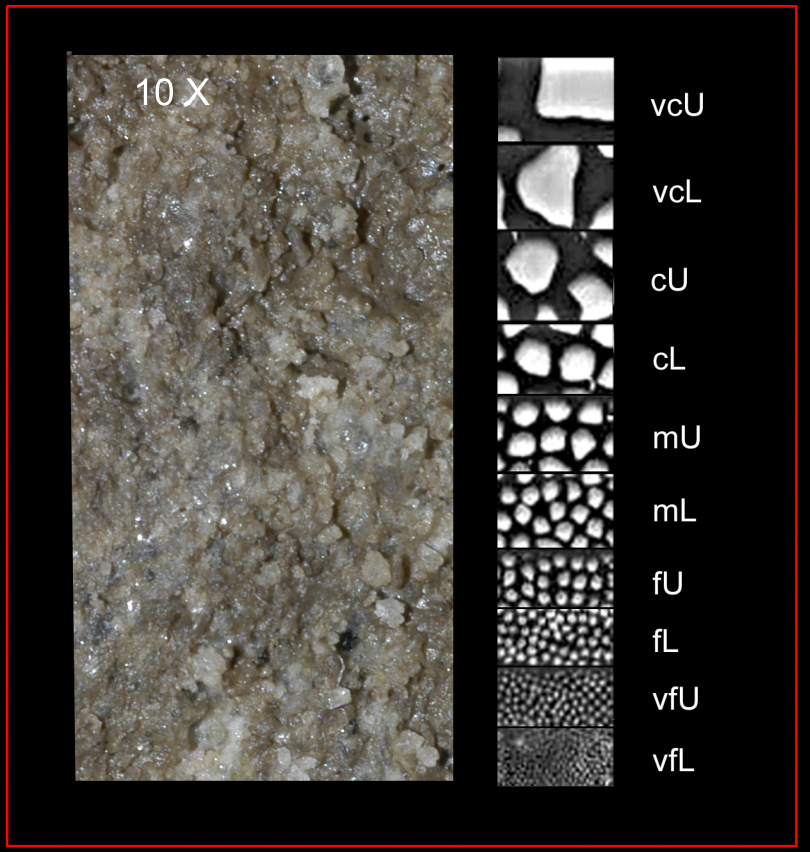


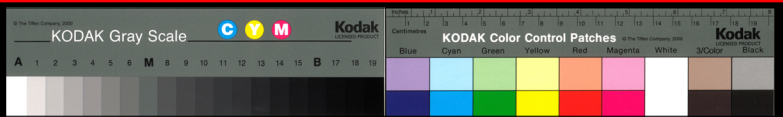


SWC Photography
ROCKHOPPER-1

SWC 28 3235.80m



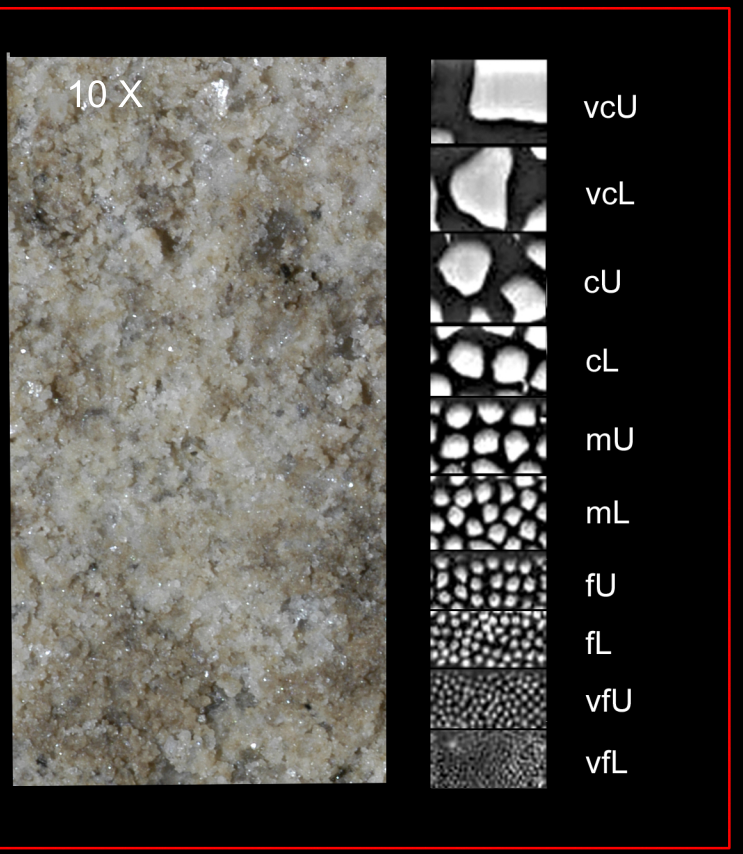


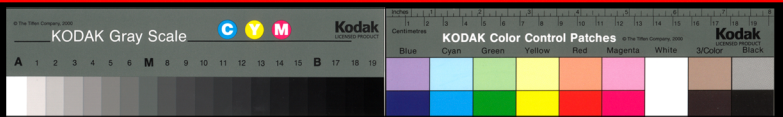


SWC Photography
ROCKHOPPER-1

SWC 29 3233.80m





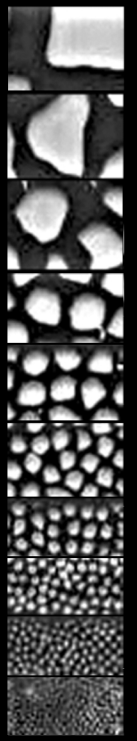


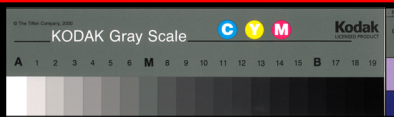
SWC Photography
ROCKHOPPER-1
SWC 30 3137.10m

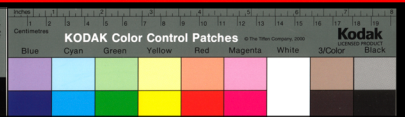








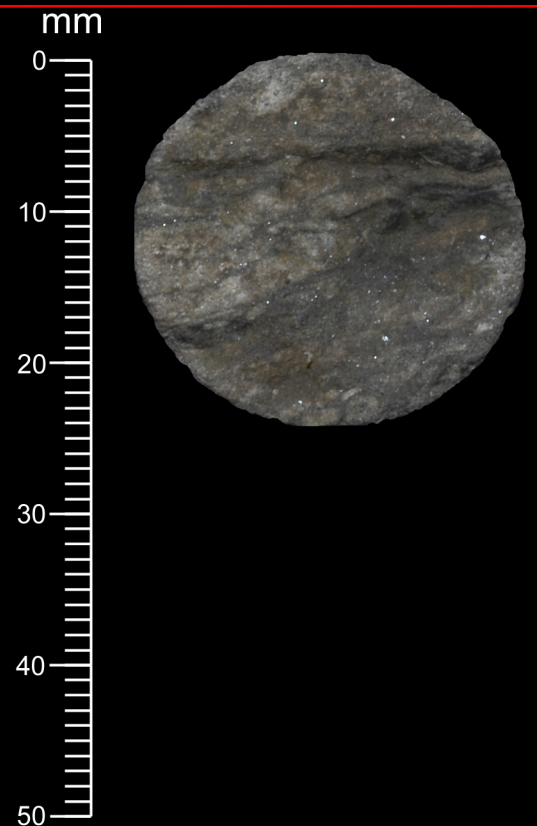




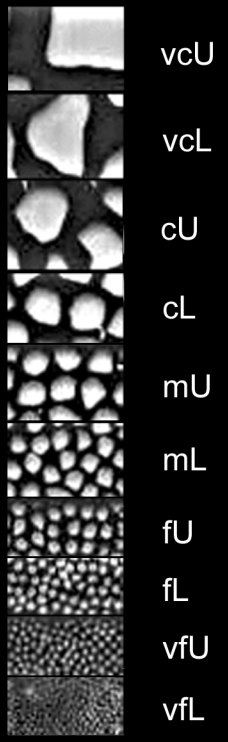
SWC Photography
ROCKHOPPER-1

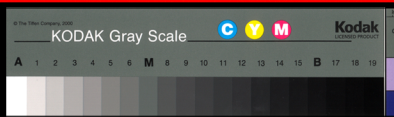
SWC 31 2895.50m

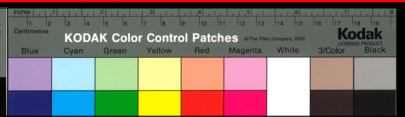






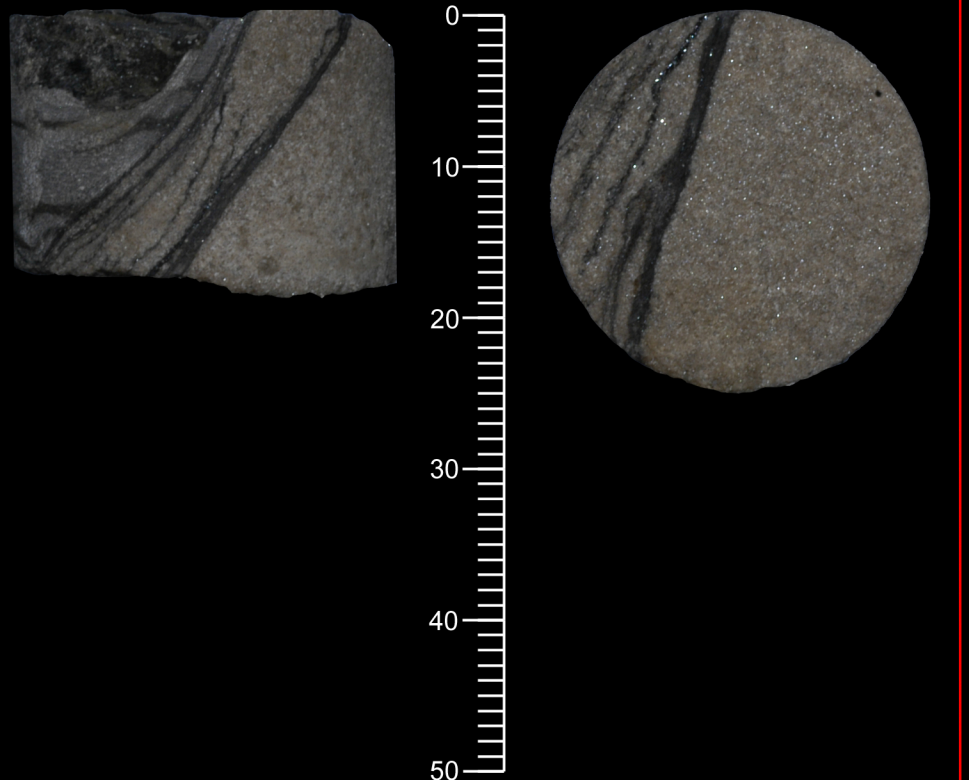


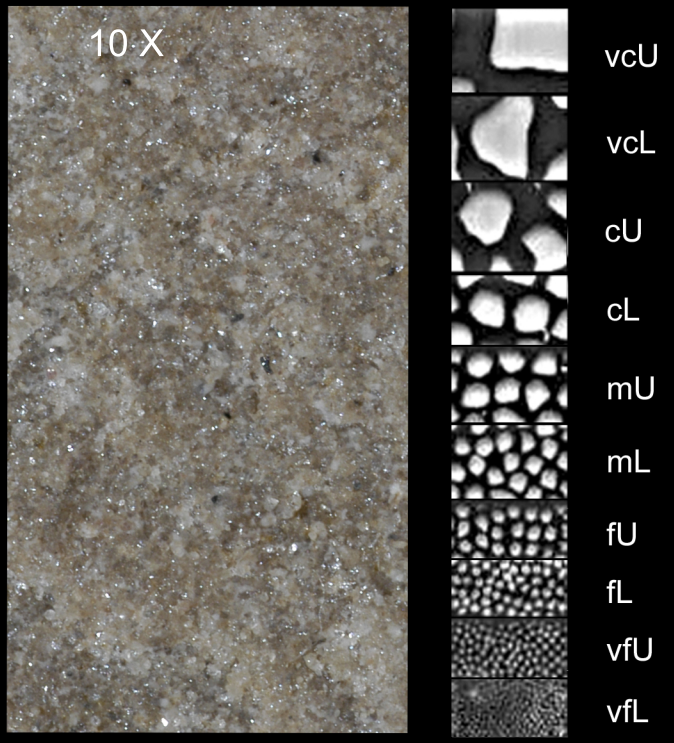


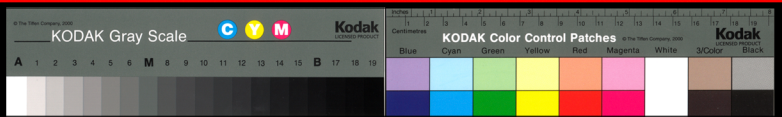


SWC Photography
ROCKHOPPER-1

SWC 32 2832.00m







APPENDIX III

PENTANE EXTRACTION

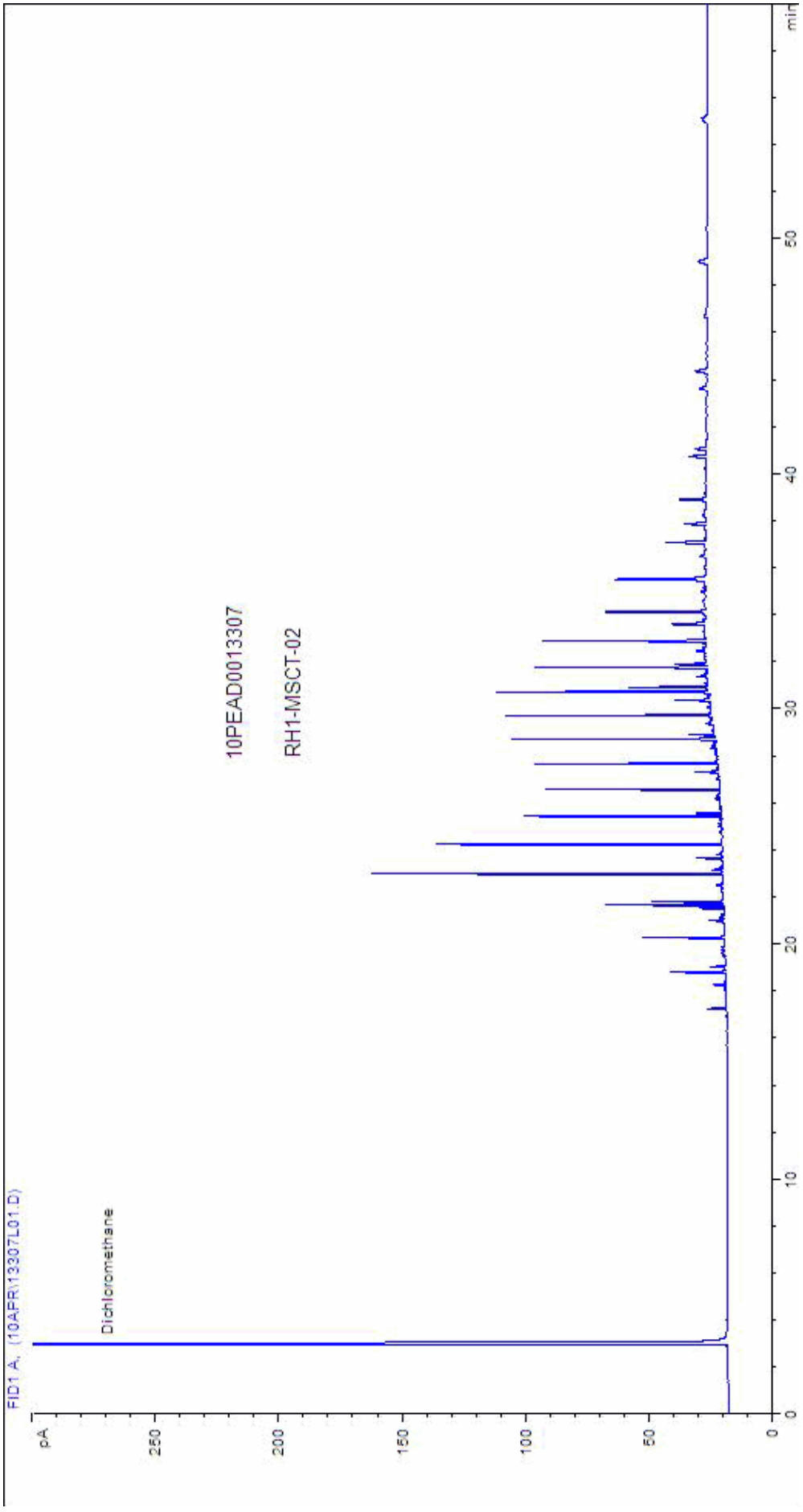
VOLATILE AND SEMI-VOLATILE TPH RESULTS

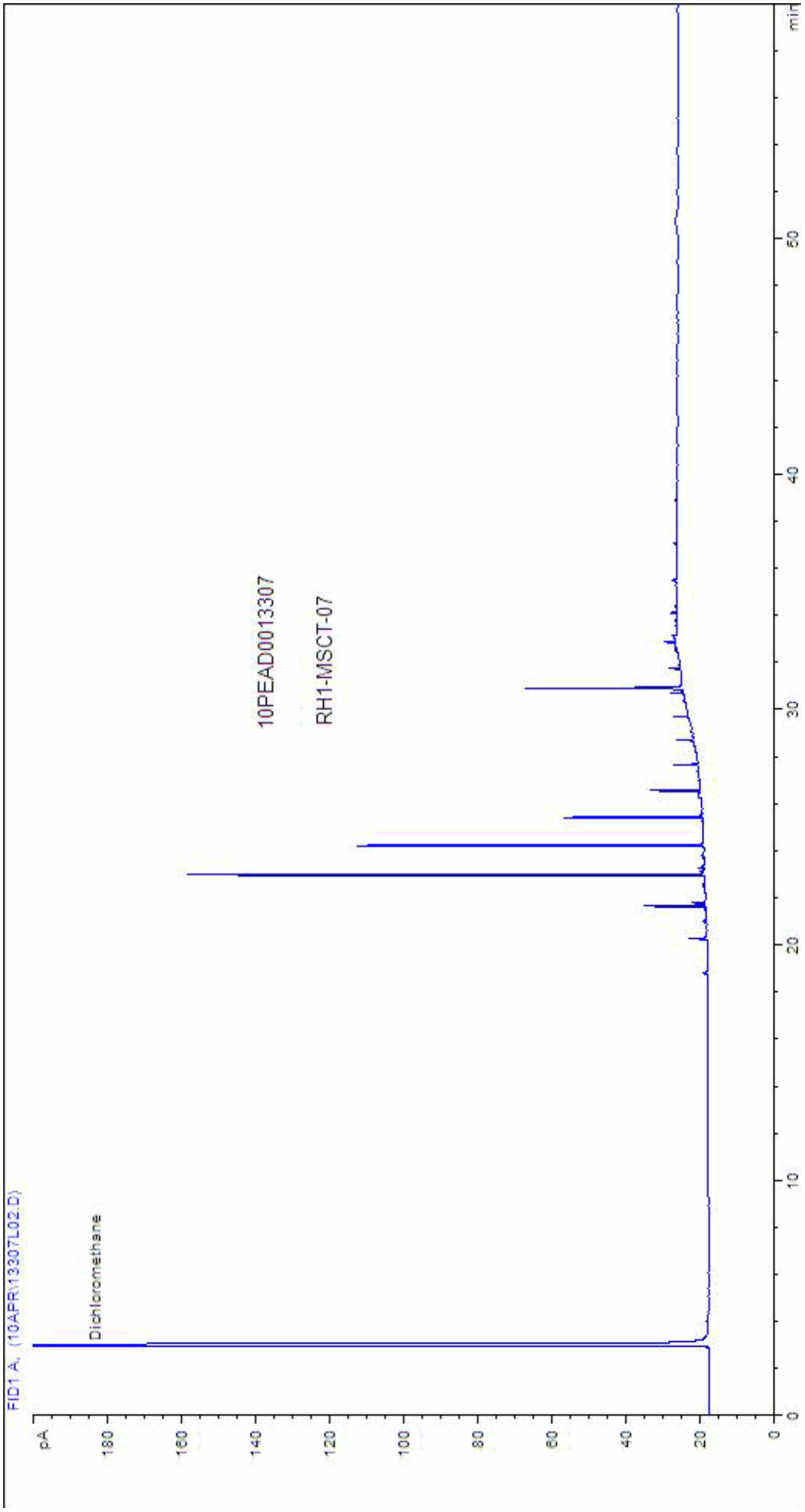
Client Origin Energy Resources Limited
Well Rockhopper-1

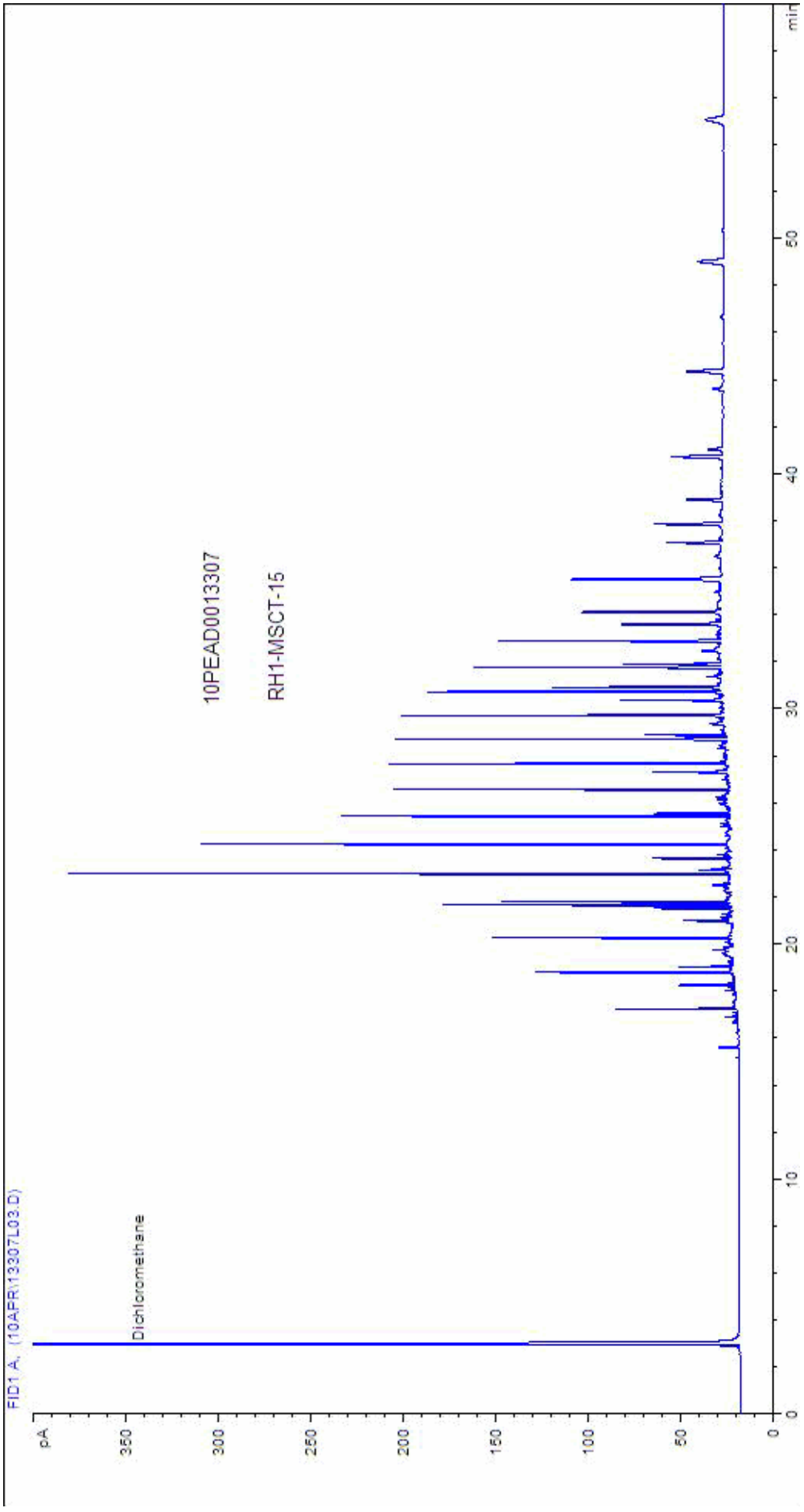
	MSCT-02	MSCT-07	MSCT-15	MSCT-28	MSCT-29	MSCT-32
Depth (Metres)	3325.00	3347.70	3201.10	3235.80	3233.80	2832.00
Dean-Stark So (%)	3.2	1.5	1.1	1.4	1.2	2.6

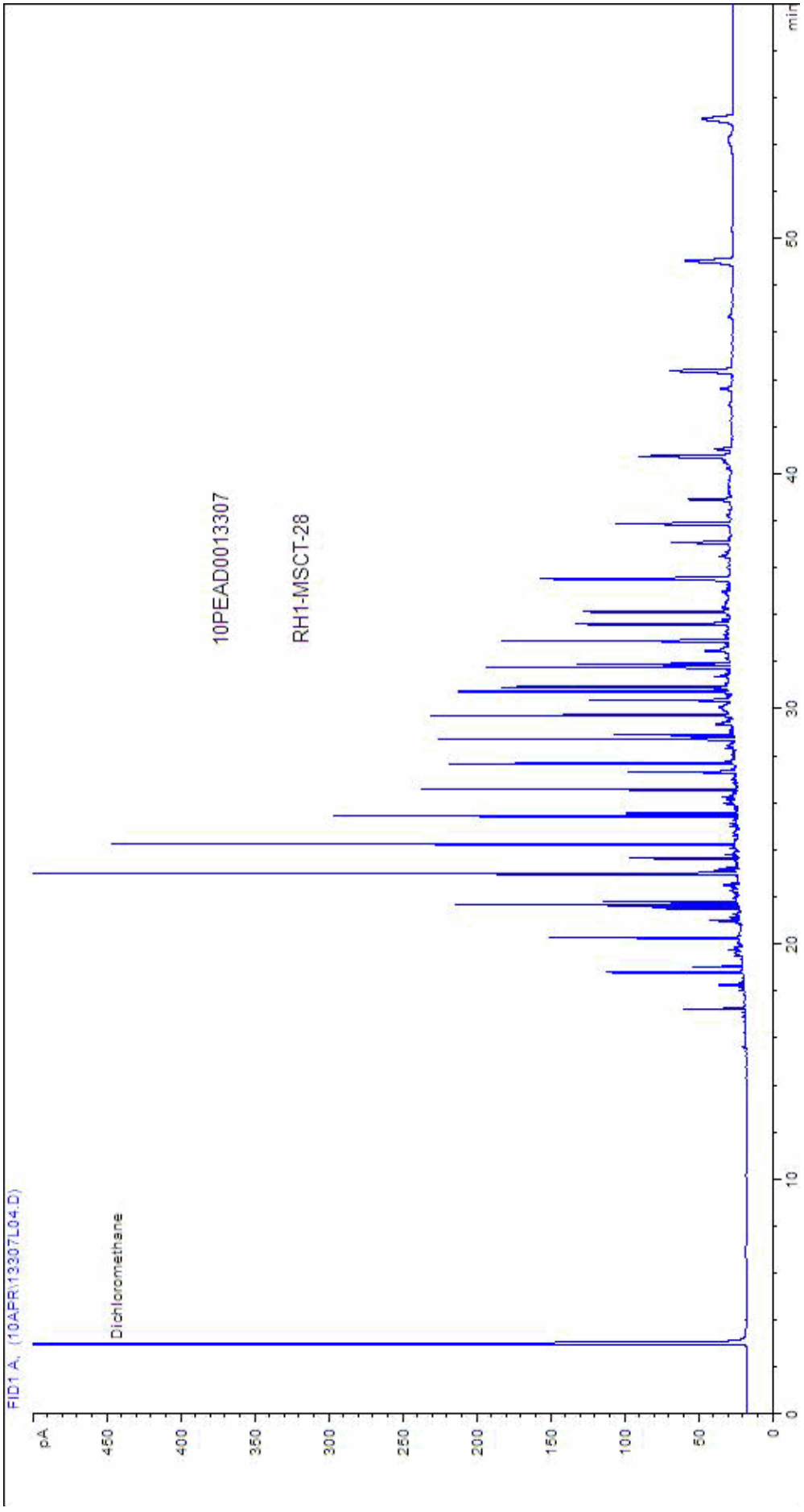
Ethane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Propane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
I-Butane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-Butane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
I-Pentane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-Pentane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cyclohexane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heptane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MCH	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Octane	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylebenzene & Xylenes	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
C_9	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
C_{10}	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
C_{11}	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02
C_{12}	< 0.01	< 0.01	0.03	< 0.01	0.01	0.02
C_{13}	0.33	< 0.01	0.27	0.07	0.07	0.05
C_{14}	0.85	0.13	2.52	1.00	0.87	0.41
C_{15}	2.64	0.81	6.47	3.24	2.93	1.97
C_{16}	3.54	1.78	6.26	3.74	4.08	3.39
C_{17}	5.36	5.27	6.82	5.45	5.14	5.90
C_{18}	13.06	36.11	13.55	13.69	11.34	16.31
C_{19}	9.16	22.95	9.30	10.07	7.53	10.81
C_{20}	6.46	8.97	6.18	6.26	5.55	6.89
C_{21}	5.02	3.79	4.57	4.14	4.90	4.91
C_{22}	5.67	1.67	4.92	4.72	5.14	4.83
C_{23}	5.92	1.24	4.95	4.77	5.61	5.13
C_{24}	5.42	0.94	4.52	4.92	6.55	5.74
C_{25}	8.68	10.13	6.70	7.12	8.01	7.22
C_{26}	5.61	0.86	4.92	5.28	5.94	5.11
C_{27}	5.03	2.80	3.84	4.26	5.49	4.77
C_{28}+	17.25	2.55	14.18	21.27	20.84	16.52

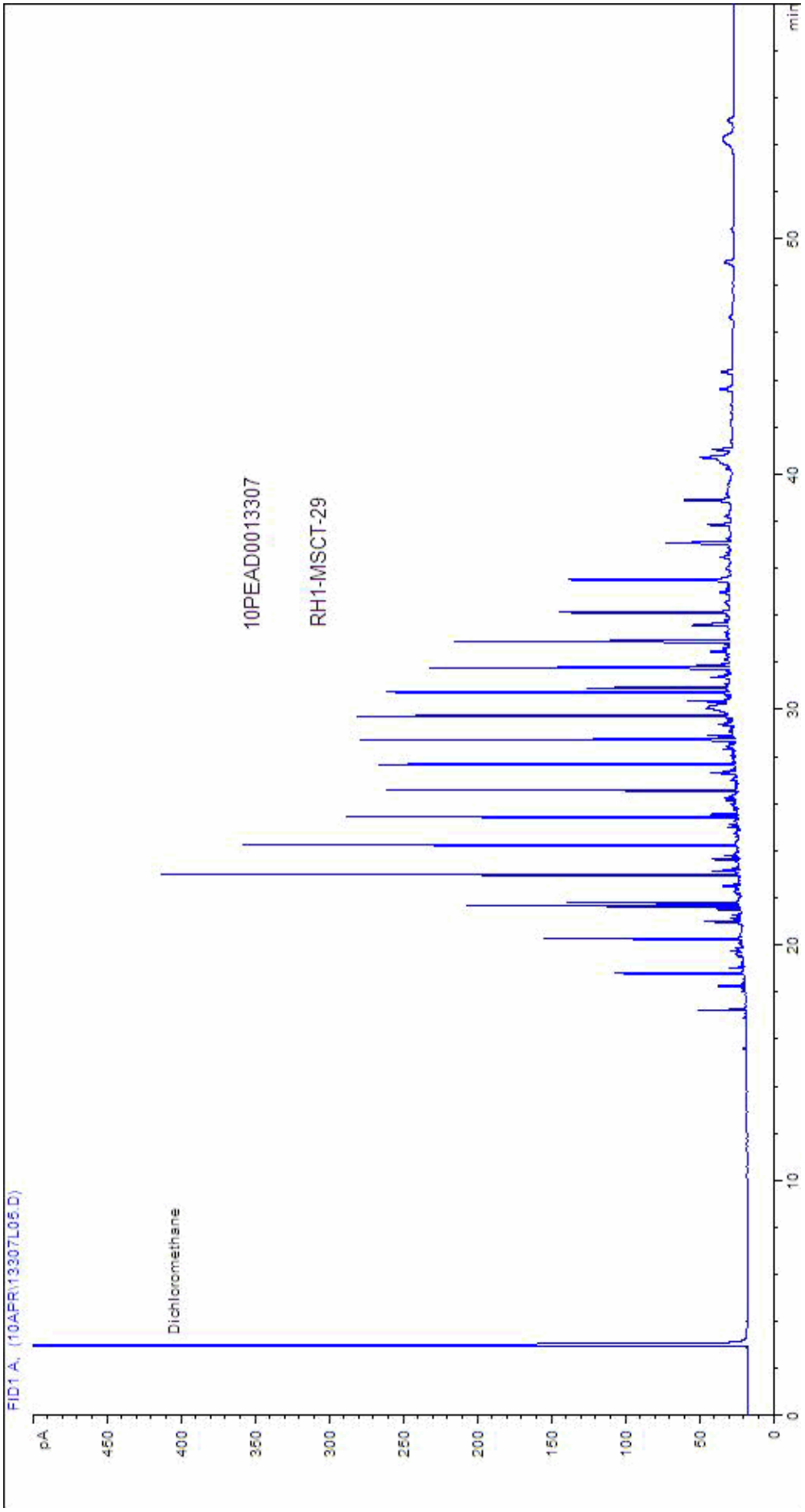
NB: All results are in Mol % unless otherwise specified.

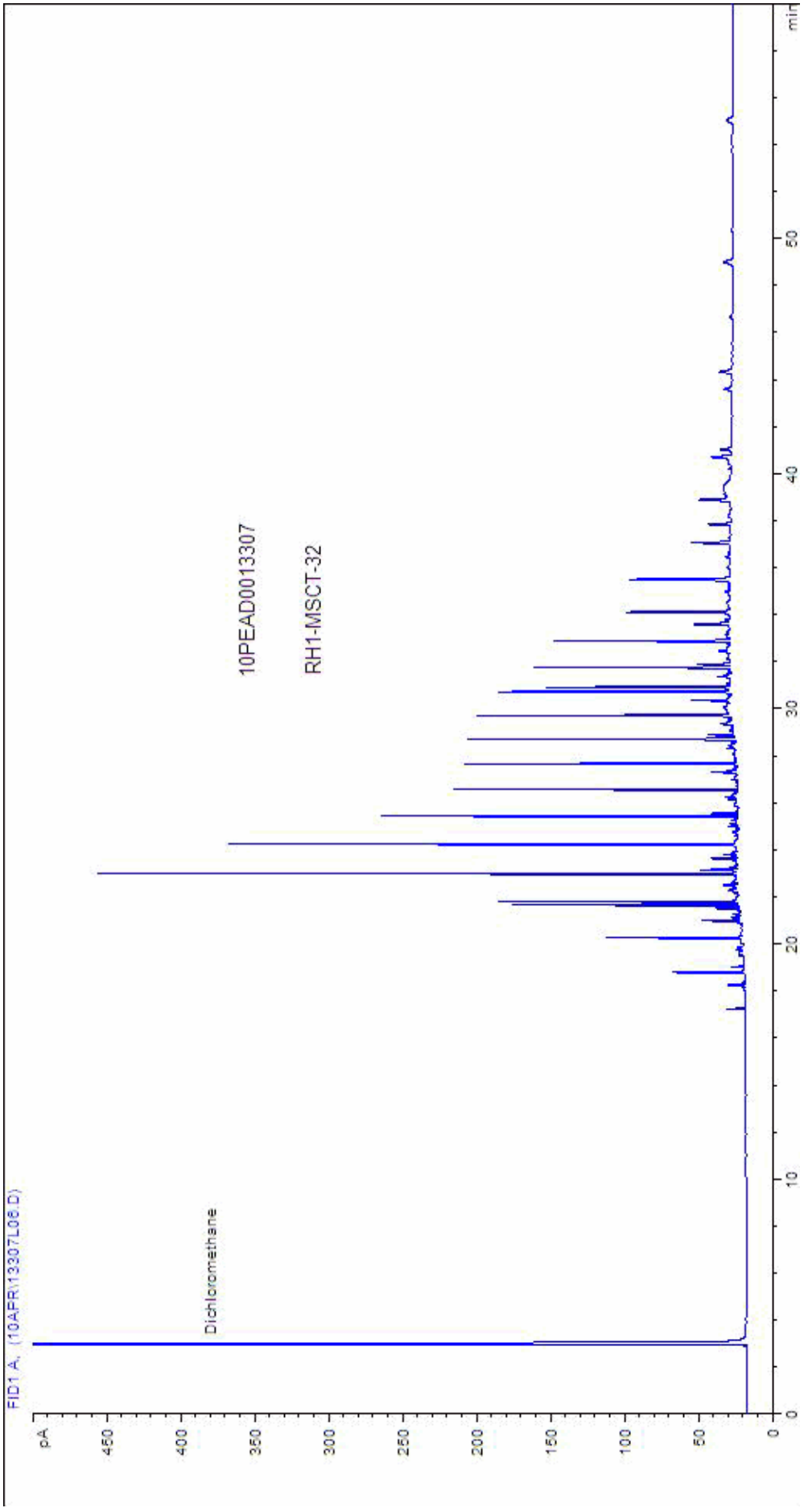

FID1 A, (10APR\13307L01.D)
pA
250
200
150
100
50
0
Dichloromethane
10PEAD0013307
RH1-MSCT-02
0
10
20
30
40
50
min


FID1 A, (10APR13307L02.D)
Dichloromethane
10PEAD0013307
RH1-MSCT-07
pA
min


FID1 A, (10APR\13307L03.D)
Dichloromethane
10PEAD0013307
RH1-MSCT-15
pA
350
300
250
200
150
100
50
0
0
10
20
30
40
50
min


FID1 A, (10APR\13307L04.D)
pA
Dichloromethane
10PEAD0013307
RH1-MSCT-28
min


FID1 A, (10AFR\13307L05.D)
pA
450
400
350
300
250
200
150
100
50
0
Dichloromethane
10PEAD0013307
RH1-MSCT-29
0
10
20
30
40
50
min


FID1 A, (10AFR\13307L06.D)
pA
450
400
350
300
250
200
150
100
50
0
Dichloromethane
10PEAD0013307
RH1-MSCT-32
0
10
20
30
40
50
min

APPENDIX 4: CUTTINGS GAS SUMMARY

Sourced from Daily Geological Reports

Depth (mMDRT)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO_2 (%)
970.0 -	Trip	0.130	0.1300	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
970.0 - 1060.0	Drilled	0.161	0.1403	0.0001	0.0002	0.0001	0.0001	0.0001	0.000
1060.0 -	Peak	0.327	0.2956	0.0012	0.0007	0.0004	0.0001	0.0001	0.000
1108.0 -	Peak	0.613	0.4282	0.0001	0.0006	0.0002	0.0001	0.0000	0.000
1162.0 -	Peak	0.744	0.6128	0.0000	0.0007	0.0002	0.0001	0.0001	0.000
1060.0 - 1141.0	Drilled	0.350	0.3008	0.0004	0.0005	0.0002	0.0001	0.0004	0.000
1108.0 -	Peak	0.613	0.4282	0.0001	0.0006	0.0002	0.0001	0.0000	0.000
1141.0 - 1240.0	Drilled	0.361	0.3081	0.0014	0.0009	0.0003	0.0002	0.0005	0.000
1162.0 -	Peak	0.744	0.6128	0.0000	0.0007	0.0002	0.0001	0.0001	0.000
1220.0 -	Peak	0.644	0.5587	0.0017	0.0009	0.0003	0.0001	0.0003	0.000
1240.0 - 1295.0	Drilled	0.340	0.3036	0.0028	0.0013	0.0004	0.0002	0.0007	0.000
1249.0 -	Peak	0.738	0.6536	0.0028	0.0013	0.0004	0.0002	0.0006	0.000
1295.0 - 1539.0	Drilled	0.379	0.3250	0.0019	0.0009	0.0004	0.0002	0.0004	0.000
1368.0 -	Peak	0.470	0.3478	0.0018	0.0009	0.0004	0.0002	0.0004	0.000
1420.0 -	Peak	0.688	0.6108	0.0032	0.0014	0.0005	0.0003	0.0005	0.000
1450.0 -	Peak	0.824	0.5736	0.0029	0.0013	0.0005	0.0002	0.0004	0.000
1539.0 - 1587.0	Drilled	0.418	0.3569	0.0017	0.0014	0.0006	0.0003	0.0005	0.000
1566.0 -	Peak	1.085	1.0084	0.0023	0.0036	0.0013	0.0007	0.0007	0.000
1587.0 - 1735.0	Drilled	0.328	0.2793	0.0020	0.0011	0.0010	0.0004	0.0005	0.000
1675.0 -	Peak	0.747	0.6700	0.0065	0.0027	0.0010	0.0004	0.0005	0.000
1735.0 - 1825.0	Drilled	0.444	0.3918	0.0018	0.0018	0.0007	0.0002	0.0003	0.000

1825.0 - 1946.0	Drilled	0.495	0.3739	0.0089	0.0045	0.0023	0.0007	0.0010	0.000
1829.0 -	Peak	1.050	0.8165	0.0161	0.0069	0.0029	0.0009	0.0012	0.000
1858.0 -	Peak	1.211	0.8048	0.0164	0.0075	0.0035	0.0010	0.0014	0.000
1946.0 - 1972.0	Drilled	0.353	0.2782	0.0074	0.0038	0.0019	0.0005	0.0008	0.000
1951.0 -	Peak	0.583	0.4375	0.0107	0.0049	0.0023	0.0006	0.0080	0.000
1972.0 -	Trip	0.160	0.1327	0.0041	0.0027	0.0016	0.0004	0.0012	0.000
1972.0 - 2019.0	Drilled	0.269	0.1996	0.0061	0.0044	0.0025	0.0008	0.0015	0.000
1997.0 -	Peak	0.445	0.3876	0.0114	0.0072	0.0032	0.0010	0.0015	0.000
2007.0 -	Peak	0.482	0.3289	0.0104	0.0076	0.0040	0.0012	0.0018	0.000
2019.0 - 2023.0	Not circulated out								
2019.0 -	Trip	0.371	0.2805	0.0093	0.0079	0.0046	0.0016	0.0022	0.000
2023.0 -	Trip	0.199	0.1282	0.0032	0.0029	0.0021	0.0015	0.0016	0.000
2023.0 - 2067.0	Drilled	0.223	0.2043	0.0067	0.0056	0.0042	0.0020	0.0034	0.200
2067.0 - 2230.0	Drilled	0.284	0.1363	0.0046	0.0037	0.0031	0.0034	0.0036	0.080
2082.0 -	Peak	0.314	0.1857	0.0048	0.0039	0.0030	0.0014	0.0028	0.000
2139.0 -	Peak	0.302	0.1247	0.0056	0.0053	0.0049	0.0025	0.0057	0.000
2167.0 -	Peak	0.342	0.1661	0.0068	0.0050	0.0041	0.0022	0.0049	0.000
2184.0 -	Peak	0.377	0.1171	0.0064	0.0061	0.0058	0.0035	0.0074	0.100
2203.0 -	Peak	0.227	0.0873	0.0048	0.0044	0.0045	0.0025	0.0061	0.070
2230.0 - 2305.0	Drilled	0.166	0.0297	0.0021	0.0019	0.0020	0.0010	0.0035	0.003
2275.0 -	Peak	0.209	0.0843	0.0067	0.0053	0.0040	0.0016	0.0045	0.000
2305.0 - 2550.0	Drilled	0.402	0.1875	0.0112	0.0094	0.0060	0.0026	0.0048	0.003
2342.0 -	Peak	0.713	0.5113	0.0250	0.0155	0.0080	0.0042	0.0054	0.000

2434.0 -	Peak	0.632	0.4047	0.0219	0.0169	0.0080	0.0038	0.0055	0.080
2456.0 -	Peak	0.672	0.4410	0.0226	0.0164	0.0083	0.0039	0.0083	0.000
2472.5 -	Peak	1.125	0.8527	0.0412	0.0275	0.0118	0.0052	0.0100	0.000
2522.0 -	Peak	0.800	0.4612	0.0229	0.0154	0.0086	0.0035	0.0055	0.040
2550.0 - 2667.0	Drilled	0.615	0.3371	0.0206	0.0132	0.0068	0.0028	0.0051	0.000
2571.5 -	Peak	0.606	0.3115	0.0176	0.0116	0.0070	0.0024	0.0049	0.000
2592.0 -	Peak	0.760	0.4459	0.0251	0.0155	0.0076	0.0027	0.0049	0.000
2606.0 -	Peak	1.074	0.7417	0.0385	0.0177	0.0069	0.0027	0.0047	0.000
2610.0 -	Peak	0.961	0.6128	0.0387	0.0221	0.0091	0.0038	0.0058	0.000
2626.0 -	Peak	1.105	0.7492	0.0478	0.0251	0.0095	0.0043	0.0057	0.000
2653.0 -	Peak	1.886	1.5717	0.0843	0.0375	0.0107	0.0060	0.0071	0.000
2667.0 - 2690.0	Drilled	1.267	0.8094	0.0590	0.0364	0.0112	0.0063	0.0079	0.020
2690.0 - 2753.0	Drilled	0.804	0.3717	0.0305	0.0307	0.0107	0.0076	0.0086	0.011
2709.0 -	Peak	1.107	0.6047	0.0477	0.0425	0.0134	0.0095	0.0128	0.003
2732.5 -	Peak	1.088	0.5278	0.0335	0.0341	0.0118	0.0088	0.0093	0.100
2751.0 -	Peak	1.376	0.7220	0.0607	0.0543	0.0154	0.0122	0.0115	0.130
2753.0 -	Trip	0.924	0.4278	0.0375	0.0356	0.0114	0.0089	0.0094	0.040
2753.0 - 2865.0	Drilled	1.009	0.5817	0.0601	0.0491	0.0104	0.0127	0.0110	0.316
2777.0 -	Other	1.604	1.1157	0.0774	0.0484	0.0097	0.0086	0.0075	0.240
2805.0 -	Peak	1.051	0.6578	0.0656	0.0497	0.0110	0.0117	0.0098	0.340
2831.0 -	Peak	5.497	3.5007	0.4204	0.3683	0.0664	0.0946	0.0560	0.420
2838.0 -	Peak	2.258	1.7693	0.1593	0.0912	0.0138	0.0193	0.0127	0.330
2853.5 -	Peak	1.519	1.0651	0.1060	0.0764	0.0152	0.0194	0.0138	0.460
2865.0 - 2895.0	Drilled	0.756	0.3848	0.0347	0.0363	0.0099	0.0141	0.0124	0.505

2895.0 - 2958.0	Drilled	0.914	0.4508	0.0527	0.0502	0.0102	0.0152	0.0113	0.616
2958.0 - 2995.0	Drilled	2.513	1.5057	0.2001	0.1888	0.0302	0.0497	0.0274	0.680
2962.0 -	Peak	8.997	6.5979	0.7537	0.6803	0.1039	0.1511	0.0776	0.650
2978.0 -	Peak	6.415	3.7839	0.5668	0.5708	0.0906	0.1558	0.0820	0.790
2995.0 - 3082.0	Drilled	1.159	0.4619	0.0724	0.0819	0.0185	0.0298	0.0207	0.660
3077.0 -	Peak	1.172	0.5087	0.0694	0.0655	0.0154	0.0229	0.0179	0.880
3082.0 - 3105.0	Drilled	2.155	0.1967	0.1620	0.1548	0.0348	0.0446	0.0331	0.427
3083.0 -	Peak	1.937	1.0500	0.1436	0.1357	0.0300	0.0396	0.0277	0.300
3091.0 -	Peak	3.564	2.0935	0.2818	0.2703	0.0602	0.0731	0.0522	0.570
3096.0 -	Peak	3.000	1.7414	0.2323	0.2251	0.0512	0.0617	0.0368	0.770
3104.5 -	Peak	3.011	1.7911	0.2479	0.2469	0.0550	0.0702	0.0470	0.007
3105.0 - 3199.0	Drilled	2.535	1.4037	0.1938	0.1823	0.0402	0.0549	0.0384	0.318
3117.5 -	Peak	2.078	1.2577	0.1459	0.1196	0.0236	0.0347	0.0252	0.370
3125.0 -	Peak	3.037	1.8783	0.2068	0.1612	0.0307	0.0424	0.0269	0.210
3135.5 -	Peak	5.961	3.4943	0.5063	0.5267	0.1232	0.1499	0.0953	0.370
3144.5 -	Peak	2.813	1.5534	0.2207	0.2201	0.0478	0.0661	0.0450	0.380
3156.5 -	Peak	4.780	2.7552	0.4077	0.3741	0.0784	0.1011	0.0627	0.490
3167.0 -	Peak	4.116	2.6888	0.3433	0.2864	0.0588	0.0815	0.0533	0.071
3191.5 -	Peak	6.003	4.2339	0.5452	0.3938	0.0705	0.1054	0.0638	0.470
3196.5 -	Peak	13.810	9.1156	1.2606	0.9544	0.1636	0.2447	0.1296	0.490
3199.0 -	Trip	1.405	0.5492	0.0712	0.0898	0.0283	0.0454	0.0397	0.420
3199.0 - 3311.0	Drilled	3.217	1.5578	0.2421	0.2060	0.0444	0.0716	0.0540	0.400
3209.0 -	Peak	3.663	2.2436	0.3186	0.2539	0.0520	0.0810	0.0570	0.510

3213.0 -	Peak	4.778	2.8389	0.4273	0.3612	0.0741	0.0810	0.0625	0.650
3219.0 -	Peak	3.105	1.5959	0.2415	0.2235	0.0507	0.0758	0.0554	0.350
3233.0 -	Peak	6.587	3.7082	0.6155	0.5075	0.0983	0.1547	0.0985	0.660
3240.0 -	Peak	10.326	6.9497	0.9305	0.6932	0.1229	0.1821	0.1031	0.280
3260.5 -	Peak	9.395	4.7302	0.6785	0.6219	0.1250	0.1893	0.1146	0.550
3269.5 -	Peak	13.538	8.4755	1.2250	0.7620	0.1159	0.1838	0.1004	0.140
3285.5 -	Peak	4.809	2.6282	0.3560	0.2428	0.0516	0.0777	0.0597	0.370
3321.0 -	Peak	9.698	4.5441	0.7593	0.6649	0.1399	0.2071	0.1371	0.620
3331.0 -	Peak	11.024	7.0004	0.8955	0.4977	0.0898	0.1264	0.0808	0.800
3338.5 -	Peak	13.890	8.9630	1.3091	0.6550	0.1170	0.1678	0.1059	0.810
3344.5 -	Peak	11.432	7.2305	1.0667	0.4948	0.0914	0.1299	0.0865	0.850
3350.0 -	Peak	9.449	5.8834	0.8484	0.3750	0.0673	0.0973	0.0675	0.230
3360.0 -	Peak	4.608	2.4229	0.3915	0.2254	0.0471	0.0747	0.0589	0.800
3311.0 - 3425.0	Drilled	5.360	3.0148	0.4425	0.2389	0.0480	0.0741	0.0574	0.750
3321.0 -	Peak	9.698	4.5441	0.7593	0.6649	0.1399	0.2071	0.1371	0.620
3331.0 -	Peak	11.024	7.0004	0.8955	0.4977	0.0898	0.1264	0.0808	0.800
3338.5 -	Peak	13.890	8.9630	1.3091	0.6550	0.1170	0.1678	0.1059	0.810
3344.5 -	Peak	11.432	7.2305	1.0667	0.4948	0.0914	0.1299	0.0865	0.850
3350.0 -	Peak	9.449	5.8834	0.8484	0.3750	0.0673	0.0973	0.0675	0.230
3360.0 -	Peak	4.608	2.4229	0.3915	0.2254	0.0471	0.0747	0.0589	0.800
3373.5 -	Peak	10.923	6.7404	0.9400	0.4773	0.0917	0.1336	0.0901	0.860
3379.0 -	Peak	7.967	4.8559	0.6810	0.3494	0.0671	0.1058	0.0751	0.850
3387.0 -	Peak	5.016	2.9914	0.4312	0.2134	0.0405	0.0665	0.0522	0.840
3393.5 -	Peak	3.789	2.0445	0.3233	0.1694	0.0342	0.0579	0.0485	0.870

3401.5 -	Peak	13.451	8.8921	1.2266	0.5519	0.0947	0.1517	0.0960	0.940
3425.0 - 3438.0	Drilled	2.055	0.8858	0.1406	0.0885	0.0229	0.0396	0.0397	0.840
3438.0 - 3522.0	Drilled	0.875	0.3323	0.0287	0.0226	0.0100	0.0180	0.0260	0.690
3443.0 -	Peak	1.705	0.4792	0.0920	0.0700	0.0214	0.0369	0.0396	0.840
3470.0 -	Peak	1.356	0.5712	0.0377	0.0279	0.0123	0.0222	0.0301	0.680
3513.0 -	Peak	0.720	0.4757	0.0214	0.0066	0.0044	0.0079	0.0168	0.720

APPENDIX 5: MUDLOGGERS REPORT

Rockhopper-1

FINAL WELL REPORT

Prepared by

Geoservices Australasia Pty Ltd

Geoservices Australasia Pty Ltd
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Att: Trinetta Herdy

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1.0 WELL DATA SUMMARY

Operator	: Origin Energy Resources Ltd
Well name	: Rockhopper-1
Basin	: Bass
Permit	: T / 18P
Operator	: Origin Energy Resources Ltd
Surface location	: Latitude: 39° 47' 34.1828" S
	: Longitude: 145° 26' 21.4660" E
Bottom Hole Location	: 907.5m North of Surface Location
	: 30.5m West of Surface Location
Total depth	: 3522.0 mMDRT
Rotary Table Elevation	: 26 m above MSL
Sea-water depth	: 76 m
Rig Arrived	: 01:00 hr 29 November, 2009
Spud Well	: 23:30 hr 30 November, 2009
Bit Reached TD	: 19:00 hr 27 December, 2009
Well Status	: Plugged and Abandoned
Rig name	: Kan Tan IV (semi-sub)
Drilling Contractor	: Maersk

Drilling Phases

Diameter (inch)	From (m)	To (m)	Mud Type
914(36")	76.0	158.0	Seawater / Bentonite sweeps
445(17½")	158.0	956.0	Seawater / Bentonite sweeps
31(12¼")	956.0	1972.0	KCl / Polymer
216(8½")	1972.0	3522.0	KCl / Polymer

Cased Hole

Casing Diameter (inch)	Casing Type	Shoe Depth (m)
762(30")	Conductor	157.0 MDRT
340(13⅜")	Surface	961.0 MDRT
244(9⅝")	Intermediate	1965.0MDRT

2.0 GENERAL INFORMATION

The Rockhopper-1 exploration well is located in T/18P in the Bass Basin. The location is approximately 0.8km NE from Aroo-1 and 9.5km north from Trefoil-1. The nearest population bases are Melbourne (223km NNW) and Port Latta (117km to the south). The Yolla A platform is 34km ESE from the Rockhopper-1 well location. Rockhopper-1 it was designed to test the crest of the Rockhopper structure and was drilled as a deviated well in the 8.5in hole section in order to parallel the main bounding fault and intersect all possible reservoirs that lie within the mapped closure in a near crestal position.

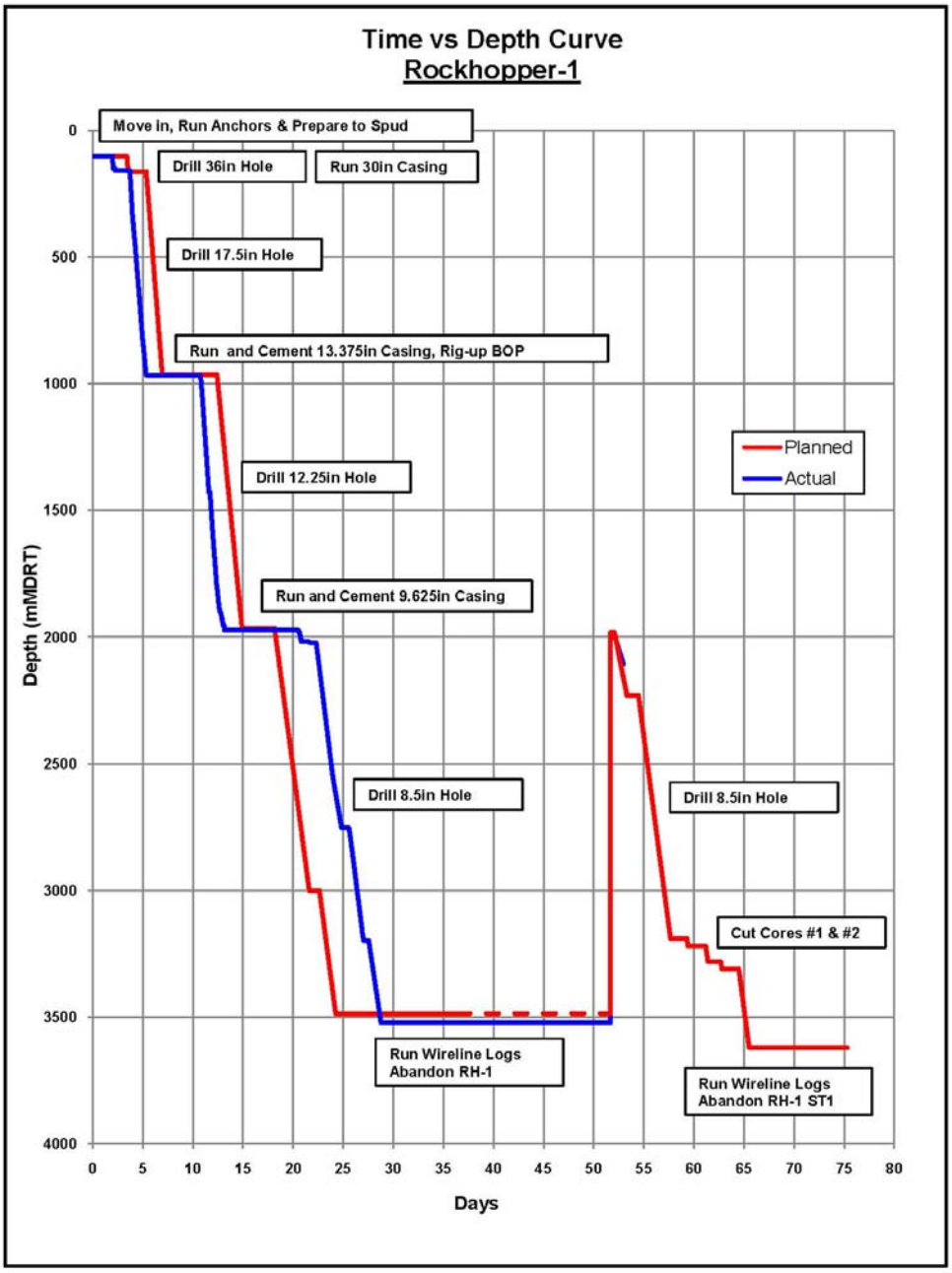
2.1 Geoservices Personnel

ALS Engineers	: Dmitriy Ilyin
	: Gopesh Gopi
	: Leigh Sack
	: Lawrence Hannon
Mudloggers	: Klaudyna Brzozowska
	: Paul Currie
	: Anthony Raimondo
Sample Catchers	: Eugene Miro
	: Anthony Raimondo
	: Aaron Heugh

2.2 Contractor Information

Drilling	: Maersk Drilling Property
Rig name	: Kan Tan 4
Rig type	: Semi-submersible
Mud logging	: Geoservices Australasia
Mud engineering	: Halliburton -Baroid
MWD	: Halliburton- Sperry Sun
Wireline logging	: Schlumberger Wireline
Cementing	: Halliburton Cementing
Well head completion	: Dril-Quip
ROV	: Fugro
Casing	: Premium Casing Services
Helicopters	: Bristows

2.3 Days vs. Depth Progress Chart



2.4 Sample Collection Summary

Sample Type	Number of sets	Quantity per set	Sampling interval	From (m)	To (m)
Unwashed	1	500 grams	10 meters	940.0	1700.0
Washed and Dried	1	300 grams	5 meters	1700.0	2050.0
Samplex Trays	2		3-6 meters	940.0	3522.0

Cuttings Distribution

Company	Unwashed and Dried Samples
Origin Australia	1

Company	Washed and Dried Samples
Origin Australia	1
Mineral Resources Tasmania	1
Geoscience Australia	1

Company	Set of Samplex Trays
Origin Australia	2

3.0 GEOLOGICAL INFORMATION

3.1 Lithological Summary

All returns to the seabed prior to 966.0 mMDRT. Drilled 12¼" hole with a Riser from 966.0 mMDRT. Drilled 8½" hole from 1972.0 mMDRT.

INTERVAL: 102.0 to 390.0 mMDRT
ROP (Range): 11 to 85 m/h
Av. ROP: 48 m/h

No samples recovered returns at to sea through ported conductor

INTERVAL: 390.0 to 795.0 mMDRT
ROP (Range): 4 to 144 m/h
Av. ROP: 74 m/h

No samples recovered returns at to sea through ported conductor. Below 630m a notable increase in average ROP is observed after increasing the WOB.

INTERVAL: 795.0 to 965.0 mMDRT
ROP (Range): 3 to 80 m/h
Av. ROP: 42 m/h

No samples recovered returns to sea through ported conductor. Below 812m a notable decrease in average ROP is observed after decreasing the RPM.

INTERVAL: 965.0 to 1060.0 mMDRT
ROP (Range): 7 to 104 m/h
Av. ROP: 25 m/h

CALCILUTITE and interbedded CALCAREOUS CLAYSTONE
CALCILUTITE (80-95%): medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, occasional
minor very fine sand, trace to minor corals, trace skeletal fragments, trace very fine grained pyrite.
CALCAREOUS CLAYSTONE (5-20%): medium bluish grey, very soft to soft, blocky to sub-blocky, 20-30% calcareous clay.
Show Details: No Hydrocarbon Shows

INTERVAL: 1060.0 to 1141.0 mMDRT
ROP (Range): 9 to 137 m/h
Av. ROP: 70 m/h

Interbedded CALCILUTITE, CALCAREOUS CLAYSTONE, CLAYSTONE and CALCAREOUS SILTSTONE
CALCILUTITE (15-100%): medium grey to medium dark grey and pale yellowish brown, very soft to soft, blocky to
sub-blocky, trace skeletal fragments, trace very fine grained pyrite.
CALCAREOUS CLAYSTONE (0-20%): medium bluish grey to dark grey and dark greenish grey, very soft to soft,
blocky to sub-blocky, 20-30% calcareous clay.

CLAYSTONE (0-5%): medium bluish grey to dark greenish grey, very soft to friable, blocky to sub-blocky, 10%
calcareous clay.
CALCAREOUS SILTSTONE (0-85%): dark grey to dark greenish grey, soft to friable, blocky to fissile, 20% calcareous clay.
Show Details: No Hydrocarbon Shows

INTERVAL: 1141.0 to 1295.0 mMDRT
ROP (Range): 16 to 115 m/h
Av. ROP: 65 m/h

CALCAREOUS SILTSTONE with minor CALCILUTITE and occasional SILTSTONE Interbeds
CALCAREOUS SILTSTONE (80-100%): dark grey to dark greenish grey, soft to friable, blocky to fissile, 30%
calcareous clay.
CALCILUTITE (0-15%): medium grey to pale yellowish brown, very soft to soft, blocky, rare very fine grained pyrite.
SILTSTONE (0-5%): dark grey to dark greenish grey, soft to friable, blocky to fissile, 20% calcareous clay.
Show Details: No Hydrocarbon Shows

INTERVAL: 1295.0 to 1539.0 mMDRT
ROP (Range): 8 to 124 m/h
Av. ROP: 66 m/h

CALCAREOUS SILTSTONE interbedded with SILTSTONE and occasional CLAYSTONE
CALCAREOUS SILTSTONE (0-100%): very light grey, medium light grey, medium dark grey, olive grey and dark
greenish grey in part, 20-30% calcareous clay, trace carbonaceous specks, trace to 3% glauconite grains, trace lithic fragments, trace shell fragments and forams, trace very fine grained pyrite.
SILTSTONE (0-100%): medium light grey to dark grey, olive grey and greenish grey in parts, soft to firm, friable in
part, blocky to subblocky, 0-10% calcareous clay, 0-15% clay, 0-5% very fine quartz grains, trace carbonaceous
material, trace glauconite grains, trace lithic fragments, trace mica flakes, trace corals, grading more arenaceous
with depth.
CLAYSTONE (0-10%): medium dark grey, soft to firm, blocky to subblocky, 10% calcareous clay, trace mica flakes, trace lithic fragments.
Show Details: No Hydrocarbon Shows

INTERVAL: 1539.0 to 1587.0 mMDRT
ROP (Range): 6 to 170 m/h
Av. ROP: 66 m/h

CALCAREOUS SILTSTONE interbedded with occasional CALCILUTITE and SILTSTONE
CALCAREOUS SILTSTONE (85-100%): medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous specks, trace lithic fragments and foraminifera.

CALCILUTITE (0-10%): light grey to medium light grey, very soft to soft, blocky to sub-blocky, 10% clay.
SILTSTONE (0-5%): olive grey to dark greenish grey, friable, sub-blocky.
Show Details: No Hydrocarbon Shows

INTERVAL: 1587.0 to 1735.0 mMDRT
ROP (Range): 10 to 143 m/h
Av. ROP: 75 m/h

CALCAREOUS SILTSTONE interbedded with occasional CALCILUTITE and SILTSTONE
CALCAREOUS SILTSTONE (85-100%): medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous specks, trace lithic fragments and foraminifera.
CALCILUTITE (0-10%): light grey to medium light grey, very soft to soft, blocky to sub-blocky, 10% clay.
SILTSTONE (0-5%): olive grey to dark greenish grey, friable, sub-blocky.
Show Details: No Hydrocarbon Shows

INTERVAL: 1735.0 to 1825.0mMDRT
ROP (Range): 7 to 72 m/h
Av. ROP: 40 m/h

ARGILLACEOUS SILSTONE, thin interbeds of CALCAREOUS SILTSTONE
ARGILLACEOUS SILTSTONE (80-95%): brownish grey, soft, subblocky to blocky, 5% calcareous clay, 20% clay, trace lithic fragments, trace carbonaceous specks, trace glauconite grains, trace very fine grained pyrite.
CALCAREOUS SILTSTONE (5-20%): white, yellowish grey, brownish grey, trace greenish black, very soft to firm,
subblocky to subfissile, 20% calcareous clay, 10% clay, traces reworked crystalline CALCILUTITE.
Show Details: No Hydrocarbon Shows

INTERVAL: 1785.0 to 1946.0 mMDRT
ROP (Range): 4 to 104 m/h
Av. ROP: 54 m/h

ARGILLACEOUS SILTSTONE, minor interbeds of CALCAREOUS SILTSTONE and CALCILUTITE at top of section, minor interbeds of SILTSTONE at bottom of section.
ARGILLACEOUS SILTSTONE (0-100%): brownish black, dark greenish grey, very soft to soft, subblocky to blocky, 20% clay, 10-23% calcareous clay, 2-5% very fine quartz grains, trace lithic fragments, trace carbonaceous specks, trace micas, trace forams, trace feldspar, traces calcite crystals, grains sometimes show fine laminations.
CALCAREOUS SILTSTONE (0-25%): yellowish grey, brownish grey, greenish black, very soft to soft, subblocky to
subfissile, 20% calcareous clay, 10% clay.
CALCILUTITE (0-5%): brownish grey, soft to firm, blocky to subblocky, in part crystalline, traces calcite crystals.
SILTSTONE (0-100%): brownish black, dark greenish grey, greenish grey, very soft to soft, subblocky to blocky, 15% clay, 5% calcareous clay, 5% very fine quartz grains, trace micas, trace very fine grained pyrite.
Show Details: No Hydrocarbon Shows

INTERVAL: 1946.0 to 2064.0 mMDRT
ROP (Range): 3 to 165 m/h
Av. ROP: 18 m/h

ARGILLACEOUS SILTSTONE
ARGILLACEOUS SILTSTONE (100%): brownish black, dark greenish grey to greenish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% clay, 5% very fine quartz grains, trace micas, trace carbonaceous
specks.
Show Details: No Hydrocarbon Shows

INTERVAL: 2064.0 to 2116.0 mMDRT
ROP (Range): 6 to 54 m/h
Av. ROP: 25 m/h

SANDSTONE interbedded with CLAYSTONE and occasional LIMESTONE
SANDSTONE (80%): clear, light grey, opaque, trace yellowish grey, loose quartz, 10% very fine, 10% fine, 20% medium, 30% coarse, 20% very coarse, 10% granular, angular (shattered) to sub-rounded, poorly sorted, sub spherical to sub-elongate, inferred fair visual porosity.
CLAYSTONE (10%): olive grey, brownish grey, soft to firm, sub-blocky, trace glauconitic.
LIMESTONE (20%): olive grey, mottled, friable to very hard, subblocky to subfissile, 15% clay, trace carbonaceous material.
Show Details: No Hydrocarbon Shows

INTERVAL: 2116.0 to 2160.0 mMDRT
ROP (Range): 7.5 to 56 m/h
Av. ROP: 24 m/h

ARGILLACEOUS SILTSTONE interbedded with occasional SANDSTONE and CLAYSTONE.
ARGILLACEOUS SILTSTONE (80%): brownish black, soft to firm, sub-blocky to finely interbedded, trace carbonaceous specks, trace mica.
SANDSTONE (90%): clear, light grey, translucent, 10% fine, 40% medium, 40% coarse, 10% very coarse loose quartz grains, 10% clay matrix, sub-rounded to sub-angular (shattered), poorly sorted, sub-spherical to spherical, trace lithics fragments, good inferred visual porosity.
CLAYSTONE (60%): medium grey, greenish grey, very soft to soft, amorphous to sub-blocky, trace glauconitic, carbonaceous specks, lithics fragments, pyrite
Show Details: No Hydrocarbon Shows.

INTERVAL: 2160.0 to 2307.0 mMDRT
ROP (Range): 5 to 71 m/h
Av. ROP: 25 m/h

SILTSTONE and SANDSTONE.
SILTSTONE (100%): brownish grey, olive grey, soft to firm, sub-blocky to blocky, 10% clay, 15% very fine sand occurring as laminations and rare shattered coarse clear quartz crystals, trace carbonaceous specks, lithics fragments, micromicaceous.
SANDSTONE (80%): light olive grey, clear, loose to friable, 80% very fine, 15% fine, 5% coarse quartz grains, coarse fraction occurs as loose clear quartz crystals, 10% white clay

matrix, sub-rounded to sub-angular (shattered), well sorted, sub-spherical, trace lithics fragments, pyrite, glauconitic, dolomite, 80% rock flour, poor inferred visual porosity.
Show Details: No Hydrocarbon Shows

INTERVAL: 2307.0 to 2381.0 mMDRT
ROP (Range): 11 to 32 m/h
Av. ROP: 19 m/h

ARGILLACEOUS SILTSTONE interbedded with SANDSTONE and minor CLAYSTONE.
ARGILLACEOUS SILTSTONE (90%): brownish black, olive grey, soft to firm, sub-blocky, 30% clay, trace micromicaceous, thin coaly laminations.
SANDSTONE: light grey, clear, opaque, predominantly loose, in part friable, fine to medium grained, sub-angular to sub-rounded, well sorted, sub-spherical to sub-rounded, clay matrix washing out, good inferred visual porosity.
CLAYSTONE: olive grey, brownish grey, soft and sticky to firm, amorphous to sub-blocky, traces carbonaceous material as specks and thin laminas, trace micro micas.
Show Details: No Hydrocarbon Shows.

INTERVAL: 2381.0 to 2430.0 mMDRT
ROP (Range): 9 to 115 m/h
Av. ROP: 25 m/h

CLAYSTONE. Interbedded with minor SANDSTONE.
CLAYSTONE: olive grey, brownish grey, firm, sub-fissile to sub-blocky, traces carbonaceous material as specks and thin laminas, trace micro micas, in part as laminas.
SANDSTONE: light grey, friable to disaggregate in part, very fine to fine grained, sub-angular to sub-rounded, well sorted, sub-spherical to sub-elongate, no visible matrix, good inferred visual porosity.
Show Details: No Hydrocarbon Shows

INTERVAL: 2430.0 to 2565.0 mMDRT
ROP (Range): 5 to 36m/h
Av. ROP: 20 m/h

ARGILLACEOUS SILTSTONE interbedded with CLAYSTONE and occasional SANDSTONE.

ARGILLACEOUS SILTSTONE (80%): light brownish grey, light grey, brownish black, very soft to firm, sub-blocky, 25% clay, trace carbonaceous and coaly material as laminas.
CLAYSTONE (40%): olive grey, brownish grey, very soft to soft, amorphous to sub-blocky, traces carbonaceous material, traces micro micas.
SANDSTONE (20%): light grey, translucent, friable, 60% very fine, 40% fine grained quartz crystals, sub-rounded, well sorted, sub-spherical, trace carbonaceous fragments, 2% dark lithics fragments, 20% rock flour, poor inferred visual porosity.
Show Details: No Hydrocarbon Shows

INTERVAL: 2565.0 to 2606.0 mMDRT
ROP (Range): 6 to 106 m/h
Av. ROP: 25 m/h

SILTSTONE and ARGILLACEOUS SILTSTONE interbedded with minor of COAL.

SILTSTONE (60%): brownish grey, brownish black, olive grey, soft to firm, sub-blocky to blocky, 20% clay, 10% very fine sand occurring in laminas, trace carbonaceous laminas, micro micas, lithics fragments, locally argillaceous.
ARGILLACEOUS SILTSTONE (30%): brownish grey, brownish black, olive grey, in part light grey, soft to firm, sub-blocky to blocky, 20% clay, trace carbonaceous specks, micro micas.
COAL: black, brownish black, firm, sub-fissile to conchoidal, bright.
Show Details: No Hydrocarbon Shows

INTERVAL: 2606.0 to 2751.0mMDRT
ROP (Range): 2 to 43 m/h
Av. ROP: 17 m/h

Massive CLAYSTONE, minor interbeds of SANDSTONE at top of section, minor interbeds of SILTSTONE at bottom of section.
CLAYSTONE: brownish grey, olive grey, light grey, soft to firm, sub-fissile to sub-blocky, trace carbonaceous specks.
SANDSTONE: clear, polished, loose, clay matrix washing out, fine grained, rounded to sub-angular, well sorted, sub-spherical, good inferred visual porosity, 10% rock flour masking.
SILTSTONE: olive grey, light olive grey, soft to firm, sub-blocky to blocky, 10% clay, traces carbonaceous material, traces pyrite.
Show Details: No Hydrocarbon Shows

INTERVAL: 2751.0 to 2865.0 mMDRT
ROP (Range): 5 to 59 m/h
Av. ROP: 17 m/h

SILTSTONE, interbedded CLAYSTONE, SANDSTONE and COAL
SILTSTONE (20-80%): brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately
hard, subblocky to subfissile, 10% clay, trace carbonaceous specks, micas, pyrite aggregates.
CLAYSTONE (20-40%): brownish black, brownish grey, in part light grey, soft to firm, subblocky to subfissile, 10%
silt in laminae, trace carbonaceous specks and fine laminae.
SANDSTONE (0-40%): light grey, light olive grey, firm to moderately hard, 10% white clay, 30% very fine, 70%
fine grained quartz crystals, subrounded, moderately sorted, subspherical, moderate siliceous cement, trace lithic
fragments, bright coaly laminae, fair inferred visual porosity, except for thin sand from 2828-2830 mMDRT, no
hydrocarbon fluorescence.
COAL (0-5%): black, firm, subfissile to conchoidal, trace finely disseminated pyrite, lithic fragments.

INTERVAL: 2865.0 to 2895.0mMDRT
ROP (Range): 9 to 32 m/h
Av. ROP: 18 m/h

Interbedded SILTSTONE, CLAYSTONE and SANDSTONE, minor SANDY SILTSTONE
SILTSTONE (30-80%): brownish black, brownish grey, olive black, firm to moderately hard, subblocky to
subfissile, 10% clay, 5% very fine sand in laminae, trace carbonaceous laminae, micas.
CLAYSTONE (20-60%): brownish black, brownish grey, light grey, soft to firm, subblocky, trace fine carbonaceous
laminae, lithic fragments.
SANDSTONE (0-40%): light grey, light olive grey, firm to moderately hard, 10% white clay, 10% very fine, 65%
fine, 20% medium, 5% coarse clear quartz grains, subrounded, moderately sorted, subspherical, moderate
siliceous cement, trace lithic fragments, thin coaly laminae, glauconite, good inferred visual porosity, no
hydrocarbon fluorescence.
SANDY SILTSTONE (0-40%): brownish black, olive grey, brownish grey, firm to moderately hard, subblocky to
subfissile, 10% clay, trace carbonaceous specks and laminae, micas.

INTERVAL: 2895.0 to 2958.0mMDRT
ROP (Range): 7 to 34 m/h
Av. ROP: 19 m/h

Interbedded SILTSTONE and CLAYSTONE, minor thin SANDSTONE interbeds
SILTSTONE (40-90%): brownish black, brownish grey, olive black, firm to moderately hard, subblocky to
subfissile, 10% clay, 10% very fine sand in laminae, trace carbonaceous specks, micas, finely disseminated
pyrite.
CLAYSTONE (10-40%): brownish black, brownish grey, soft to firm, subblocky to subfissile, 10% silt occurring as
laminae, trace fine carbonaceous laminae, lithic fragments.
SANDSTONE (0-40%): olive grey, light grey, friable, fine grained, 20% very fine, 10% white clay matrix, poor
siliceous cement, subangular to subrounded, moderate to well sorted, subspherical, trace lithic grains, good visual
porosity, no hydrocarbon fluorescence.

INTERVAL: 2958.0 to 2995.0 mMDRT
ROP (Range): 9 to 67 m/h
Av. ROP: 24 m/h

Interbedded CLAYSTONE, SILTSTONE and SANDSTONES
CLAYSTONE (10-70%): brownish black, brownish grey, soft to firm, subblocky to subfissile, trace carbonaceous
material as specks and occasional laminae.
SILTSTONE (20-85%): medium dark grey, olive black, firm to moderately hard, subblocky to subfissile, 15% clay,
trace carbonaceous specks, trace to 1% micromicas, occasional pyrite.

SANDSTONE (5-60%): olive grey, light grey, medium light grey, friable, fine grained, 20% very fine, 10% white
clay matrix, poor siliceous cement, subangular to subrounded, moderate to well sorted, subspherical, trace lithic
grains, good visual porosity, nil to 40% hydrocarbon fluorescence.

INTERVAL: 2995.0 to 3082.0 mMDRT
ROP (Range): 5 to 69 m/h
Av. ROP: 23 m/h

CLAYSTONE, minor SILTSTONE interbeds
CLAYSTONE (80-100%): brownish black, olive black, olive grey, firm subblocky to subfissile, 10% silt, trace
carbonaceous specks, trace micromicas.
SILTSTONE (0-20%): brownish grey, olive grey, firm, subblocky to subfissile, 15% clay, trace carbonaceous
specks, trace micromicas, trace lithic fragments.

INTERVAL: 3082.0 to 3105.0 mMDRT
ROP (Range): 8 to 58 m/h
Av. ROP: 19 m/h

SILTSTONE with interbedded CLAYSTONE and SANDSTONE.
SILTSTONE (20-40%): olive grey, soft, subblocky to subfissile, 15% clay, 1% carbonaceous material as laminae,
trace micromicas, trace lithic fragments.
CLAYSTONE (0-20%): brownish grey, olive grey, olive black, soft to firm, subblocky to blocky, 10% silt occurring
as laminae, trace micromica, fine carbonaceous laminae.
SANDSTONE (40-80%): medium light grey, opaque, clear, yellowish grey, friable to loose, 10% white clay matrix,
40% fine, 20% medium, 20% coarse, 20% very coarse, angular (shattered) to subangular to subrounded, poor to
moderately sorted, poor to fair siliceous cement, trace lithic fragments, 1% carbonaceous material/coal, good
visual porosity, trace hydrocarbon fluorescence at 3090-3093mMDRT.

INTERVAL: 3105.0 to 3199.0 mMDRT
ROP (Range): 8 to 76 m/h
Av. ROP: 17 m/h

Interbedded SANDSTONE, SILTSTONE and CLAYSTONE, minor COAL
SANDSTONE (30-70%): light grey, opaque, clear, yellowish grey, light olive grey, friable to moderately hard, 10%
white clay matrix, 10% very fine, 75% fine, 10% medium, 5% coarse, subrounded to subangular (shattered), poor
to moderately sorted, subspherical, poor to moderate siliceous cement, trace lithic fragments, 2% carbonaceous
material/coal, good visual porosity, hydrocarbon fluorescence from 3132-3135,3144-3147,3153-3156,3162-3168mMDRT. Masked by 20-40% rock flour.
SILTSTONE (40-70%): olive grey, brownish black, in part olive black, in part light grey, soft to firm, subblocky to

subfissile, 15% clay, 1% carbonaceous material as laminae, trace micromicas, trace lithic fragments.
CLAYSTONE (0-30%): brownish grey, olive grey, soft to firm, subblocky to blocky, 10% silt occurring as laminae,
trace micromica, fine carbonaceous laminae.
COAL (0-5%): black, firm, subfissile to conchoidal, bright.

INTERVAL: 3199.0 to 3311.0 mMDRT
ROP (Range): 4 to 55 m/h
Av. ROP: 15 m/h

Interbedded SANDSTONE, SILTSTONE, CLAYSTONE, minor COAL beds.
SANDSTONE (10-70%): light grey, yellowish grey, light olive grey, clear, firm to friable, 10% white clay matrix,
0-20% very fine, 30-60% fine, 10-30% medium, 0-30% coarse, 0-20% very coarse quartz grains, mostly
subrounded in part subangular to angular and shattered, poor to moderately to well sorted, subspherical to
subelongate, poor to fair siliceous cement, trace carbonaceous specks, nil to trace to 2% lithic fragments, good to
fair inferred visual porosity, trace hydrocarbon fluorescence from 3210-3216 and 3255-3261, masked by 10-40%
rock flour.
SILTSTONE (20-60%): light grey, olive grey, brownish black, olive black, firm to moderately hard, subblocky to
blocky, 10-15% clay, trace - 1%carbonaceous specks and laminae, fine pyrite aggregates, micromicas.
CLAYSTONE (10-30%): brownish grey, olive grey, light grey, soft to firm, subblocky to subfissile, 10% silt, trace
carbonaceous specks and laminae, micromicas.
COAL (0-5%): black, brownish black, firm, subfissile to conchoidal, bright.

INTERVAL: 3311.0 to 3425.0mMDRT
ROP (Range): 3 to 50 m/h
Av. ROP: 19 m/h

Interbedded SANDSTONE, CLAYSTONE and SILTSTONE, thin COAL at 3411 mMDRT
SANDSTONE (10-85%): light grey, clear when disaggregated, 10-15% white clay matrix, 35% very fine, 80% fine
grained, 10% medium, 5% coarse quartz grains, coarse fraction occurs as loose quartz grains, subrounded to
subangular (shattered), poorly sorted, subspherical, poor to moderate siliceous cement, good inferred visual
porosity, no hydrocarbon fluorescence, masked by 20-40% rock flour.
CLAYSTONE(0-70%: brownish black, brownish grey, olive grey, in part light grey, soft to firm, subblocky to
subfissile, trace carbonaceous specks, micromicas, lithic fragments.
SILTSTONE (10-85%): brownish black, olive black, firm to moderately hard, subblocky to blocky, 10% clay, trace
carbonaceous specks, micromicas.
COAL (0-5%): black, brownish black, subfissile, bright to earthy

INTERVAL: 3425.0 to 3438.0mMDRT
ROP (Range): 8 to 57 m/h
Av. ROP: 24 m/h

METAMORPHICS
METAMORPHICS (100%): multicoloured, very dusky red, light greenish grey, greenish grey, light grey, hard,
blocky, siliceous and calcareous, altered siltstones and claystones, micro flow patterns and inter bedding evident.

INTERVAL: 3438.0 to 3522.0mMDRT
ROP (Range): 4 to 31 m/h
Av. ROP: 13 m/h

VOLCANICS
VOLCANICS (100%): medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard,
blocky, calcite veining, chloritic mottling.

3.2 Gas Ratio Interpretation – Introduction Lithological Summary

Gas composition and total gas in mud at the possum belly were measured using the Geoservices Reserval™ that utilises a GZG degasser to extract gas from mud. The Reserval™ also measures the Gas-In values from active pits utilising a GZG degasser installed in the active pit. The Gas-Out/Gas-In was monitored at an 80:20 ratio in the chromatograph cycle. The GFF (coupled with a GZ11degasser) was used as a backup gas detection system. Both use the FID technique of measuring ions released when hydrocarbons are burnt in a pure hydrogen flame.

Gas is extracted from the mud at the shale shakers by a degasser that is essentially an agitator inside a chamber through which the mud continually passes. The gas is then drawn back to the unit through tubing to the gas analysis equipment. Independent sensors in the unit also measure H_2S and CO_2.

The composition of the gas in mud from the formation is significant in determining the geochemical origin and value of a show. There are several methods that can be used to determine whether the hydrocarbon gas in mud comes from a potential gas or oil zone. Amongst these methods are the Triangle Diagram (also known as the gas composition diagram), Pixler Diagram (also known as the gas ratios method), and the gas Wetness/Balance/Character plots.

3.3 Explanation of Gas Composition Diagrams

The Triangle or Gas Composition Diagram is used to graphically represent the hydrocarbon distribution in the gas and to determine whether it corresponds to a gas or oil reservoir. The triangular diagram is obtained by tracing lines on three scales at 120° to each other, corresponding respectively to the ratios of ethane, propane and normal butane to the total gas. The scales are arranged in such a way that if the apex of the triangle is upward, the diagram represents the analysis of gas from a gas zone, while if the apex points downwards, the diagram represents the analysis of gas from an oil zone. A large triangle diagram

represents dry gas or low GOR oil, while small triangles represent wet gases or high GOR oils. The centre of the triangle should fall inside the area delineated by the dotted line, which encircles compositions that are regarded as 'normal'. If the triangle area is outside this area the gas indicates that the reservoir is not exploitable and that the heavier hydrocarbon composition is 'abnormal' i.e. hydrocarbons that are chemically altered or gases with special compositions which are not associated with oil.

The Gas Ratio Analysis Diagram is a plot of the ratio of C1 to the other gas elements. The magnitude of the methane to ethane ratio determines if the reservoir contains gas or oil or if it is non-productive. The following conclusions are possible:

Ratio C1/C2:	< 2	non-productive zone
	2 – 15	oil present
	15 – 65	gas present
	> 65	non-productive zone

The slope of the line of the ratio plot of C1/C2, C1/C3, C1/C4 and C1/C5 indicates whether the reservoir will produce hydrocarbons or hydrocarbons and water. Positive line slopes indicate production; negative line slopes indicate water-bearing formations. When using the Gas Ratio Diagram, the following points should be borne in mind:

1. Productive dry gas zones may show only C1, but abnormally high shows of C1 are usually indicative of saltwater zones.
2. If the ratio C1/C2 is low in the oil section and the ratio C1/C4 is high in the gas section, the zone is probably non-productive.
3. If any ratio (C1/C5 except in an oil based mud) is lower than the preceding ratio then the zone is probably non-productive.
4. The ratios may not be definitive for zones of low permeability.
5. Steep gas ratio plots may be indicative of tight zones.

3.4 Explanation of Wetness/Balance/Character Curves

Another method for evaluating gas zones plots against depth three ratios: hydrocarbon Wetness (W_h), hydrocarbon Balance (B_h) and hydrocarbon Character (C_h), where:

$$W_h = \frac{(C2 + C3 + C4 + C5)}{(C1+C2+C3+C4+C5)} \times 100\ (\%)$$

$$B_h = \frac{(C1 + C2)}{(C3 + C4 + C5)}$$

$$C_h = \frac{(C4 + C5)}{C3}$$

Wetness (W_h) is the primary zone indicator and provides a measure of the relative proportion of heavier gases in the overall gas show as follows:

$W_h < 0.5$ Light non-associated gas with low productivity potential or only geo-pressured methane.

$0.5 < W_h < 17.5$	Potentially productive gas with gas density increasing with W_h.
$17.5 < W_h < 40.0$	Potentially productive oil with gravity decreasing as W_h increases.
$W_h > 40.0$	Heavy or residual oil with low productivity potential.

As reservoir hydrocarbons become denser in the transition from gas to oil, Balance (B_h) and Wetness (W_h) values move closer together and eventually intersect. The zone guidelines for B_h combine with those for W_h to improve reliability of show evaluation as follows:

$W_h < 0.5$ And $B_h > 100$	Very light, dry gas that is almost certainly non-productive.
$0.5 < W_h < 17.5$ and $W_h < B_h < 100$	Productive gas with gas increasing in wetness and density as the two curves converge.
$0.5 < W_h < 17.5$ And $B_h < W_h$	Productive gas condensate or a high gravity gas/oil ratio.
$17.5 < W_h < 40$ and $B_h < W_h$	Productive oil with oil gravity decreasing – density increasing as the curves diverge.
$17.5 < W_h < 40$ And $B_h > W_h$	Non-productive residual oil.

Character (C_h) values serve to resolve ambiguities between oil or gas indications by defining the following:

$0.5 < W_h < 17.5$ And $B_h < W_h$ and $C_h < 0.5$	Productive wet gas or condensate.
$0.5 < W_h < 17.5$ And $B_h < W_h$ and $C_h > 0.5$	Productive high gravity and/or high GOR oil.

It is important to note that in the conclusion to each of the interpretive tools, the terms ‘productive’ and ‘non-productive’ are used in a geochemical sense. Ultimate production of a zone is dependent upon reservoir thickness and extent as well as other physical and economic factors that are not taken into account when analysing gas compositions. The methods discussed here are intended to assist the interpretive skills of the geologist or log analyst.

3.5 Gas Composition Discussion

Gas monitoring while drilling Rockhopper-1 commenced using the Geoservices Reserval™ and GFF gas systems from 966.0 mMDRT. Background gas was first observed from a depth of 967.0 mMDRT, where it was present in low concentrations of around 0.10 % solely as methane (C1), it remained at this low concentration until around 1050.0 mMDRT where the gas concentrations began to increase. Background gas increased to around 0.3% to end of the 12¼" hole with peaks reaching as high as 1.21%. There was no CO_2 or H_2S gas recorded in 12¼" hole .A trip gas peak of 0.39% was observed at 2019.0m after a bit trip. During the 8½" section background gas between 0.1% to 1.8% was observed. CO_2 background gas was first observed from a depth of 2034.0m MDRT,where it was present in very low concentrations of around 0.02% and gradually increased the level to 0.18%. There was no H_2S gas recorded in 8 ½" hole .Gas Peaks listed below are from the Reserval gas equipment. A GFF backup gas system was run as well and plotted the same trends. The Reserval gas is more analytical of gas readings and picks up more background gases and has a constant mud flow. The Backup GZ11 degasser has a higher mud flow through it and liberates more gas from the mud to the chamber and during gas zones. The calibrations of both gas equipment were checked during the well and were very accurate.

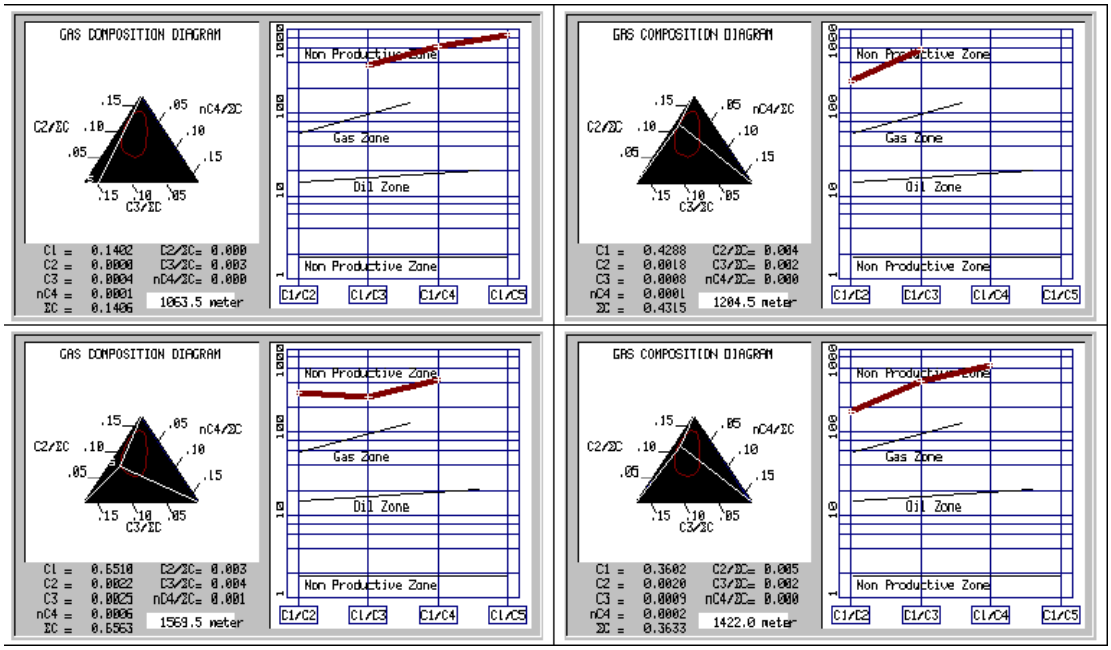
3.6 Gas Peaks (From Reserval™ Gas Detection System)

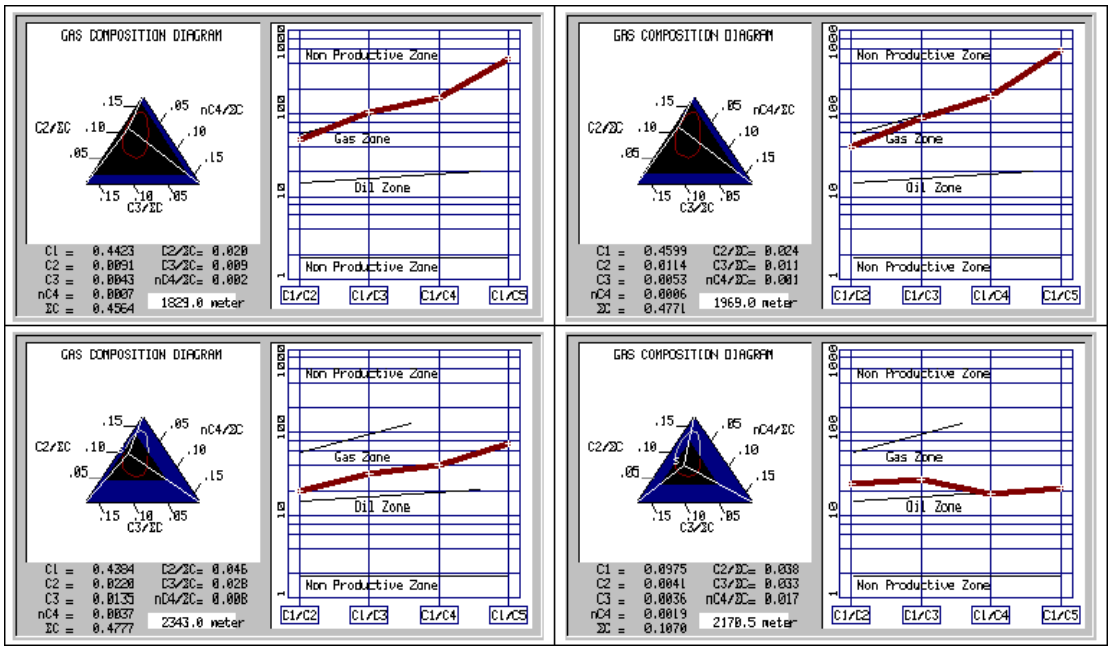
The following gas peaks were recorded while drilling Rockhopper-1

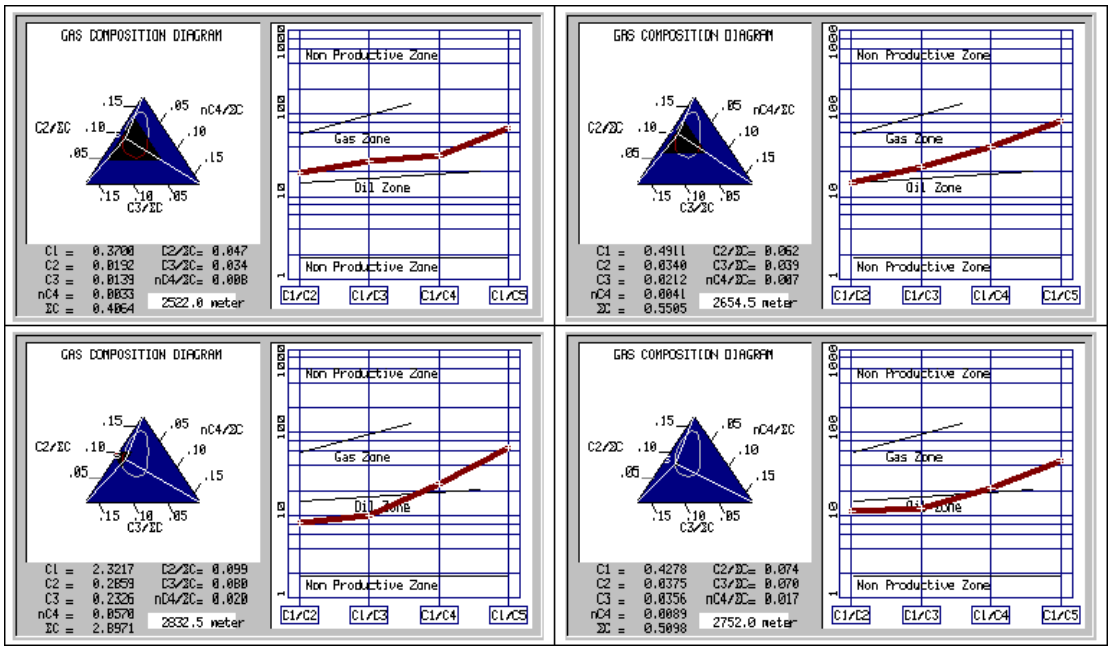
DEPTH METRES	TOTAL GAS PEAK / TRIP %	C1 %	C2 %	C3 %	IC4 %	NC4 %	IC5 %	NC5 %
1060.0	0.3012	0.2800	0.0012	0.0008	0.0004	0.0001	0.0002	0.0000
1108.0	0.6000	0.4282	0.0001	0.0007	0.0002	0.0001	0.0002	0.0001
1162.0	0.7010	0.6128	0.000	0.0007	0.0002	0.0001	0.0002	0.0001
1220.0	0.6401	0.5587	0.0017	0.0009	0.0003	0.0003	0.0002	0.0000
1368.0	0.4720	0.3478	0.0018	0.0009	0.0004	0.0002	0.0002	0.0001
1450.0	0.8203	05736	0.0029	0.0013	0.0005	0.0002	0.0003	0.0001
1566.0	1.1000	1.0084	0.0023	0.0036	0.0013	0.0007	0.0006	0.000
1675.0	0.7302	0.6700	0.0065	0.0027	0.0010	0.0004	0.0004	0.0001
1829.0	1.0502	0.8165	0.0611	0.0069	0.0029	0.0009	0.0009	0.0003
1951.0	0.5828	0.4375	0.0107	0.0049	0.0023	0.0006	0.0006	0.0002
1972.0	0.1600	0.1327	0.0041	0.0027	0.0016	0.0004	0.0011	0.0001
1997.0	0.4450	0.3876	0.0114	0.0072	0.0032	0.0010	0.0014	0.0001
2007.0	0.4815	0.3289	0.0104	0.0076	0.0040	0.0012	0.0016	0.0002
2023.0	0.1988	0.1282	0.0032	0.0029	0.0021	0.0015	0.0013	0.0003
2082.0	0.3141	0.1857	0.0048	0.0039	0.0030	0.0014	0.0022	0.0006
2167.0	0.3417	0.1661	0.0068	0.0050	0.0041	0.0022	0.0035	0.0014
2275.0	0.2086	0.0843	0.0067	0.0053	0.0040	0.0016	0.0032	0.0013
2342.0	0.7129	0.5113	0.0250	0.0155	0.0080	0.0042	0.0039	0.0015
2434.0	0.6317	0.4047	0.0219	0.0169	0.0082	0.0038	0.0042	0.0015
2522.0	0.7996	0.4612	0.0229	0.0154	0.0086	0.0035	0.0043	0.0012
2592.0	0.7602	0.4459	0.0251	0.0155	0.0076	0.0027	0.0039	0.0010
2653.0	1.8858	1.5717	0.0843	0.0375	0.0107	0.0060	0.0050	0.0016
2732.5	1.0878	0.5278	0.0335	0.0341	0.0118	0.0088	0.0070	0.0023
2751.0	1.3762	0.7220	0.0607	0.0543	0.0154	0.0122	0.0084	0.0031

2805.0	1.0506	0.6578	0.0656	0.0497	0.0110	0.0117	0.0067	0.0031
2831.0	5.4967	3.5007	0.4204	0.3683	0.0664	0.0946	0.0306	0.0254
2838.0	2.2576	1.7693	0.1593	0.0912	0.0138	0.0193	0.0078	0.0049
2853.5	1.5185	1.0651	0.1060	0.0764	0.0152	0.0194	0.0084	0.0054
2893.0	0.9931	0.4504	0.0378	0.0372	0.0095	0.0143	0.0071	0.0051
2962.0	8.6809	5.8736	0.6898	0.6341	0.0970	0.1511	0.0371	0.0342
2978.0	6.4136	3.7269	0.5631	0.5708	0.0906	0.1558	0.0414	0.0406
3077.0	1.1654	0.4998	0.0694	0.0655	0.0154	0.0229	0.0094	0.0087
3083.0	1.9049	1.0500	0.1436	0.1357	0.0300	0.0396	0.0149	0.0127
3091.0	3.4679	1.9764	0.2694	0.2586	0.0580	0.0708	0.0256	0.0213
3096.0	2.9112	1.6601	0.2290	0.2229	0.0511	0.0612	0.0231	0.0186
3104.5	3.0106	1.7911	0.2479	0.2469	0.0550	0.0702	0.0257	0.0213
3117.0	2.0525	1.2334	0.1441	0.1183	0.0235	0.0343	0.0133	0.0116
3125.5	3.0254	2.1619	0.2370	0.1854	0.0354	0.0503	0.0184	0.0151
3135.0	5.9254	3.3894	0.4978	0.5267	0.1232	0.1499	0.0550	0.0395
3144.0	2.7713	1.5050	0.2135	0.2152	0.0471	0.0651	0.0243	0.0203
3156.0	4.7373	2.7373	0.4058	0.3741	0.0784	0.1011	0.0342	0.0285
3167.0	4.1155	2.6888	0.3433	0.2864	0.0588	0.0815	0.0286	0.0247
3191.0	4.6420	2.8778	0.4041	0.3213	0.0619	0.0937	0.0317	0.0289
3196.0	13.6171	9.0374	1.2482	0.9513	0.1636	0.2447	0.0674	0.0622
3199.0	6.8964	4.5624	0.6342	0.4747	0.0850	0.1296	0.0399	0.0372
3209.0	3.6625	2.2436	0.3186	0.2539	0.0520	0.0810	0.0294	0.0276
3213.0	4.7775	2.8389	0.4273	0.3612	0.0741	0.1093	0.0374	0.0346
3225.0	2.4188	1.0993	0.1508	0.1096	0.0215	0.0368	0.0135	0.0132
3232.0	6.3466	3.4051	0.6059	0.5161	0.1039	0.1629	0.0534	0.0511
3240.0	7.5200	4.2962	0.6289	0.5109	0.0972	0.1456	0.0450	0.0428
3260.0	8.6292	4.1055	0.6072	0.5770	0.1189	0.1816	0.0584	0.0562
3269.0	11.3385	4.8447	0.7929	0.5648	0.0959	0.1588	0.0472	0.0486
3285.0	2.8468	1.0888	0.1688	0.1389	0.0334	0.0557	0.0235	0.0243
3321.0	9.6978	4.5441	0.7593	0.6649	0.1399	0.2071	0.0698	0.0673
3321.0	9.6978	4.5441	0.7593	0.6649	0.1399	0.2071	0.0698	0.0673
3331.0	11.0241	7.0004	0.8955	0.4977	0.0898	0.1264	0.0414	0.0394
3338.0	13.2976	8.3069	1.2492	0.6398	0.1165	0.1673	0.0547	0.0512
3344.0	11.0344	6.5798	0.9812	0.4805	0.0889	0.1265	0.0438	0.0411
3350.0	9.4488	5.8834	0.8484	0.3750	0.0673	0.0973	0.0341	0.0334
3360.0	4.6078	2.4229	0.3915	0.2254	0.0471	0.0747	0.0294	0.0295
3373.0	10.8787	6.5656	0.9400	0.4773	0.0917	0.1336	0.0471	0.0430
3379.0	7.9667	4.8559	0.6810	0.3494	0.0675	0.1058	0.0382	0.0369
3387.0	5.0156	2.9914	0.4312	0.2134	0.0405	0.0665	0.0261	0.0264
3393.5	3.7894	2.0445	0.3233	0.1694	0.0342	0.0579	0.0239	0.0246
3401.0	13.2133	8.6586	1.1946	0.5519	0.0953	0.1493	0.0489	0.0458
3401.5	13.4509	8.8921	1.2266	0.5625	0.0967	0.1517	0.0495	0.0465
3422.5	11.8634	7.7527	1.0272	0.4640	0.0888	0.1318	0.0467	0.0433
3443.0	1.7046	0.4792	0.0920	0.0700	0.0214	0.0369	0.0194	0.0202
3470.0	1.1162	0.4104	0.0296	0.0237	0.0111	0.0205	0.0137	0.0152
3513.0	0.7198	0.4757	0.0214	0.0066	0.0044	0.0079	0.0078	0.0090

3.7 Gas Ratio Diagram







Revision	Date	Issued by	Approved by	Remarks
1	December 2009	Geoservices Unit 174	Operations Assistant	

4.0 PRESSURE ANALYSIS

4.1 Pressure Summary

Formation pressures were monitored throughout this well by recording a range of indicators. These indicators vary from direct observations of background gas and cuttings to drilling characteristics such as torque and tight hole, as well as quantitative methods like the D'exponent.

D'exponent: This is a normalized rate of penetration that takes into account mud weight, bit wear and hydraulics. It can be reliably used in shales and clean claystones; and as an indicator in siltstones, silty shales and calcareous claystones. A normal trend line is established through normally pressured shale points, representing a normal compaction trend, and any leftward deviation of subsequent shale points from this trend, representing relative under-compaction, indicates overpressure (plotted relative to depth) or increased porosity due to changes in the lithology.

The D'exponent calculation was not ideally suited for the detection of overpressure in this particular instance due to the fact that PDC bits were used. However Geoservices used both qualitative and quantitative techniques to monitor for abnormal pressure. The D-exponent plus close monitoring of gas levels, pit volumes, hole conditions and mud weights ensured that the well was drilled safely. Continuous consultation with well site Geologist and MWD/LWD operators ensured that Geoservices data was cross-referenced for accuracy and reliability.

Overpressure: The trend line was set for the Rockhopper-1 well from 1130.0 mMDRT to 2060.0 mMDRT in the 311mm (12¼") hole section, which drilled through formation dominantly consisted of a suitable Silt stone ,Claystone & Sandy Siltstone. The slope of the trend line is
a coeff = 0.001304
b coeff = -0.107314
The trend through this well follows a gradual increasing trend from 1900.0 mMDRT to TD o the well at 3522.0 mMDRT. The D'exponent trend seen was one of general compaction with occasional leftward shifts, due to formation changes. A slight leftward shift was noted in places with increasing amounts of Sand and Silt in the formations drilled. No overpressure was encountered in the Rockhopper-1 well.

Formation pressure evaluation using D'exponent was done using the Eaton method. The Eaton method states the relationship between the formation pressure and the Dcs/Dcn ratio depending on changes in the overburden gradient.

$$P = S - (S-Pn) * (Dcs/Dcn)^{1.2}$$

Where: P : formation pressure gradient
S : overburden gradient
Pn: normal pressure gradient
Dcs: observed d'exponent
Dcn: normalised d'exponent

D'exponent:

Coefficients used for this well, results plotted in Geoservices Pressure Log.

Poisson : a = 0.26600 b = -2.66700
source : Santa Barbara (Soft)

Overburden : a = 0.01304 b = -0.17314 c = 1.43350
source : Santa Barbara (Soft)

The Rockhopper-1 well was drilled with water based mud.

Gas: No abnormality in gas ratios was observed.

Flow-line Temperature: There were no indications of abnormal pressures from temperature measurements of Rockhopper-1

Cuttings: There were no cuttings observed at the shakers that may have indicated an abnormally pressured zone in this well.

5.0 DRILLING INFORMATION

5.1 Bit Records

BIT	Size	Type	Jets	In (m)	Out	Hour	Condition
1	26/36	Hughes CR-1	N/A	100.3	158.0	2.8	1-1-WT- A-1-I-NO-TD.
2	17½	Smith XR+VCPS	1 x 13/32, 3x22/32	158.0	966.0	30.2	1-1-WT-A-E-I-NO-TD
3	12¼	Reed RSR616M	6 x 15/32	966.0	1972.0	35.2	4-4-LT-N-X-I-CT-TD
4	8½	PDC	6 x14	1972.0	1972.0	6.5	2-3-BT-S-X-I-CT -PR
5 RR	8½	Hughes-Tricone	3 x 20	1972.0	2019.0	4.7	2-2-WT-A-1-NO-BHA
6	8½	Reed-PDC	4 X 16	2019.0	2023.0	0.8	0-0-NO-A-X-I-NO-DTF
6RR	8½	Reed-PDC	4 X 16	2023.0	3522.0	89.4	6-6-BT-A-X-I-NO-PR

5.2 Mud Records

The 914 (36") section was drilled to 158.0 mMDRT with seawater and bentonite sweeps with returns to the seabed.

The 445 (17½") section from 158.0 to 966.0 mMDRT was also drilled with seawater and bentonite sweeps with returns on seabed.

The 311(12¼") section was drilled with KCL/Polymer mud from 966.0 to 1972.0 mMDRT with mud weight 9.0ppg to 9.5 ppg.

The 216(8½") hole section was drilled with KCL/Polymer mud from 1972.0 to TD of 3522.0 mMDRT with mud weight of 9.4 ppg to 9.6 ppg.

5.3 Drilling Phase Summary

5.3.1 *914* mm *(36")* Hole *Section*

Date : 30th November to 1st December 2009
Measured depth : 100.3 mMDRT to 158.0 mMDRT
Vertical depth : 100.3 mMDRT to 158.0 mMDRT
Number of bits used : 1
Mud type : Seawater with bentonite sweeps

Rockhopper-1 was spudded at 23:30hrs, on the 30th of November, 2009. A Hughes CR1 Tri-cone 26" Bit was used in conjunction with a 36" hole opener to drill the 36" Phase. The seabed was tagged at 100.3mMDRT and the 36" Phase was drilled to a depth of 158.0 mMDRT, in 2.8 on bottom hours, with no problems. The hole was displaced to 8.8ppg mud, and the 30" conductor pipe was run, and cemented.

5.3.2 *445* mm *(17½")* Hole Section

Dates	: 2nd December to 4th December 2009
Measured depth	: 158.0 mMDRT to 966.0 mMDRT
Vertical depth	: 158.0 mMDRT to 965.9 mMDRT
Number of bits used	: 1
Mud type	: Seawater with bentonite sweeps

A Smith17½", XR+VCPS, was made up to the BHA, run in the hole, and the conductor cement drilled out. The 17½" phase was drilled to a depth of 966m, with no hole problems encountered. The phase was drilled in 30.2 on bottom hours, giving an average ROP of 26.7m/hr. A wiper trip was performed with no problems encountered. The drillstring was then pulled out of the hole. The 13 3/8" casing was run, and cemented, to a shoe depth of 961m.

5.3.3 *311* mm *(12¼")* Hole Section

Dates	: 9th December to 12th December 2009
Measured depth	: 966.0 mMDRT to 1972.0 mMDRT
Vertical depth	: 965.9 mMDRT to 1971.9 mMDRT
Number of bits used	: 1
Mud type	: KCL/Polymer

A Reed RSR616M-A21, 12¼" bit, in conjunction with the $9^5/_8$" Sperry Drill lobe 6/7-5.0,PDM bent housing (0.78°) with ported float installed, was run in the hole to drill out the shoe track, casing shoe and 12¼" rat hole to 971.0 m. A successful Formation Integrity test of 1400psi (17.5 ppg equivalent mud weight) with 9.0 ppg mud was performed at 961 m, prior to drilling ahead. Drilling continued from 971 m to 1972m. The drill string was pulled out of the hole for $9^5/_8$" casing. The $9^5/_8$" casing was run and cemented to a shoe depth of 1965.0m

5.3.4 *216* mm *(8½")* Hole Section

Dates	: 19th December to 27th December 2009
Measured depth	: 1972.0 mMDRT to 3522 mMDRT
Vertical depth	: 1971.9 mMDRT to 3192 mMDRT
Number of bits used	: 3, 6 RR
Mud type	: KCL/Polymer

Bit #4, a Security FMF36532 8½" PDC bit was made up to RIH and encountered cement at 1938m. Attempted to drill out the shoe track from 1938m to 1940m with various drilling parameters. Bit #4 drilled 0m in 6.5hrs. The drill string was pulled to surface and Bit #5RR, a Hughes Christensen, 8½" Milltooth bit was made up and drilled out remaining shoe track from 1940m to 1965m and clean out rat hole. New hole was drilled from 1972m to 1977m where the hole was circulated clean and the mud was conditioned. A successful leak off test was performed at 1977m, with 9.5ppg mud, achieving 1710psi, giving a mud weight equivalent of 14.6ppg. Continued drilling and sliding to 2019m. Bit #5RR drilled 47m in 4.7hrs, giving an average rate of penetration of 10 m/hr. The drill string was pulled to surface and Bit #6, a Reed 8½" PDC bit was made up to RIH and drilled from 2019m to 2023m. The rotary steerable tool GeoPilot failed to operate so the drill string was pulled to surface. Bit #6 drilled 4m in 0.3hrs, giving an average rate of penetration of 13.3 m/hr. Bit #6RR1 was RIH and drilled to 2753m, building to and holding inclination angle at 42°, where a wiper trip was

preformed. While POOH to the $9^5/_8$" casing shoe, tight spots were washed along the way. At 1946m it was not possible to move the pipe up, down or rotate, although circulation was possible. The drill pipe was freed with the use of light and slick pill combined with the use of Jars. 8½" Hole was drilled to 3199m where a problem with the top drive system was encountered. A decision was made to POOH to the previous casing shoe to repair. Once the top drive system was fixed, drill pipe was RIH and Rockhopper-1 was drilled to a total depth of 3522m where the following wireline logs were run;

Run #1: PEX-HRLA-HNGS-CMR-GR
Run #2: MDT-GR
Wiper Trip
Run #3: MDT-GR continued
Wiper Trip
Run #4: MDT-GR continued
Run #5: VIS(Checkshots) HUD2555M
Run #6: MSCT-GR
Run #7: FMI-DSI-GR

Rockhopper-1 was Plugged and Abandoned after three attempts to set a plug at the casing shoe.

6.0 ENCLOSURES

A.	Formation Evaluation Log (Masterlog Measured Depth)	1:500
B.	Drilling Data Log	1:500
C.	Pressure Evaluation Log	1:500
D.	Gas Evaluation Log	1:500

FORMATION EVALUATION LOG

WELL : ROCKHOPPER-1

FROM (m): 0 TO (m): 3570 SCALE: 1/ 500

Country :	: AUSTRALIA
Region	: TASMANIA
Field	: ROCKHOPPER
Permit	: T/18P
Well Type	: EXPLORATION
Rig Name	: KAN TAN 4

POSITION

Latitude	: 39 47' 34.1828" S
Longitude	: 145 26' 21.4660" E
X (m)	: 366376.031
Y (m)	: 5594075.423
RT-Sealevel (m MSL)	: 26
RT-Seabed (m)	: 100.3

CASING SHOE SIZE / DEPTH

762mm (30") at (m MDRT)	: 157.00
340mm (13 3/8") at (m MDRT)	: 961.00
245mm (9 5/8") at (m MDRT)	: 1965.00

Spud Date	: 30-11-2009
Total Depth Date	: 27-12-2009
Total Depth (m MDRT)	: 3522.0
Total Depth (m TVSS)	: 3191.97
Status	: P & A

ABBREVIATIONS

MW MUD WEIGHT
FV FUNNEL VISCOSITY
PV PLASTIC VISCOSITY
YP YIELD POINT
FC FILTER CAKE
SOL SOLIDS
CR CIRCULATE RETURNS
SD SAND - %
S SALINITY - PPM
RM MUD RESISTIVITY
RMF MUD FILTRATE
C CARBIDE TEST
LAT LOGGED AFTER TRIP
DS DEVIATION SURVEY

NB NEW BIT
RR RERUN BIT
CB CORE BIT
WOB WEIGHT ON BIT
RPM REVS PER MINUTE
FLC FLOW CHECK
WL FILTRATE
PR POOR RETURNS
NR NO RETURNS
BG BACKGROUND GAS
TG TRIP GAS
STG SHORT TRIP GAS
CG CONNECTION GAS
SG SWAB GAS
SVG SURVEY GAS

LITHOLOGY LEGEND

Dolomite
Calcirudite
Calcarenite
Calcisiltite
Calcilutite
Sandy Claystone
Silty Claystone
Calcareous Claystone
Argil Calcilutite
Claystone
Silstone
Sandstone
Coal
Intrusive Volcanics
Volcaniclastics
Tuff
Cement
Argil Siltstone
Sandy Siltstone
Calcareous Siltstone
Argil Sandstone
Calcareous Sandstone
Dolomitic Sandstone
Silty Sandstone
Calcareous
Dolomitic
Fossils
Foraminiferae
Carbonaceous
Chert
Pyrite
Glauconite
Mica

ENGINEERING

Test
FIT or LOT
Mud loss
Mud gain
Deviation survey
Core
Shoe
Calcimetry

MWD Gamma Ray (api) 0 100 200
WOB (Klbs) 0 50 100
ROP Backup (m/h) 400 300 200
ROP (m/h) 200 100 0
CORES
DEPTH mMDRT
CUTTINGS LITHOLOGY %
INTERPRETED LITHOLOGY

TOTAL GAS & RESISTIVITY
Resistivity (Deep) Ohm.m .2 2 20 200
Resistivity (Shallow) Ohm.m .2 2 20 200
Total Gas (%) .01 .1 1 10

CHROMATOGRAPH %
C1
C2
C3
iC4
nC4
iC5
nC5
.001 .01 .1 1 10

DIRECT FLUOR.
POOR FAIR GOOD
CALC (%) 0 100
DOLO (%) 100 0

LITHOLOGICAL DESCRIPTIONS AND REMARKS

30-11-2009

BIT # 1: 914mm (36")
HUGHES CR-1
JETS: N/A
IN:100.3m OUT:158m
RUN:57.7m HRS:2.8
COND: 1-1-WT-A-1-I-NO-TD

01-12-2009

SPUD ROCKHOPPER-1 @ 23:30
914mm (36") SECTION
ON THE 30TH NOV 2009

SEABED @ 100.3m

SURVEY @ 100.30m
Incl: 0.00° AZI: 0.0°
TVD: 100.3m

DRILL WITH SEA WATER AND GEL SWEEPS

120

130

RETURNS TO SEABED

140

914mm (36") SECTION TD @ 158m MDRT @ 0700hrs ON 01st DEC 2009

WOB: 2-5 klbs
RPM: 80
GPM: 800
SPP: 145-665 psi

150

762mm(30") CONDUCTOR @ 157m

02-12-2009

160

DRILL AHEAD 445mm(17.5") HOLE SECTION FROM 157mMDRT @ 1800 hrs ON 02nd DEC 2009

BIT # 2: 445mm (17.5")
SMITH MILL TOOTH XR+VCPS
JETS: 1x13, 3x22
IN:157m OUT:966m
RUN:809m HRS:30.2
COND:1-1-WT-A-E-I-NO-TD

170

180

190

200

210

DRILL WITH SEA WATER AND GEL SWEEPS

220

230

SURVEY @ 242.36m
Incl: 0.22° AZI: 278.1°
TVD: 242.36m

240

250

WOB: 2-4 klbs
RPM: 75-80
GPM: 990-1010
SPP: 1450-1700 psi

260

270

280

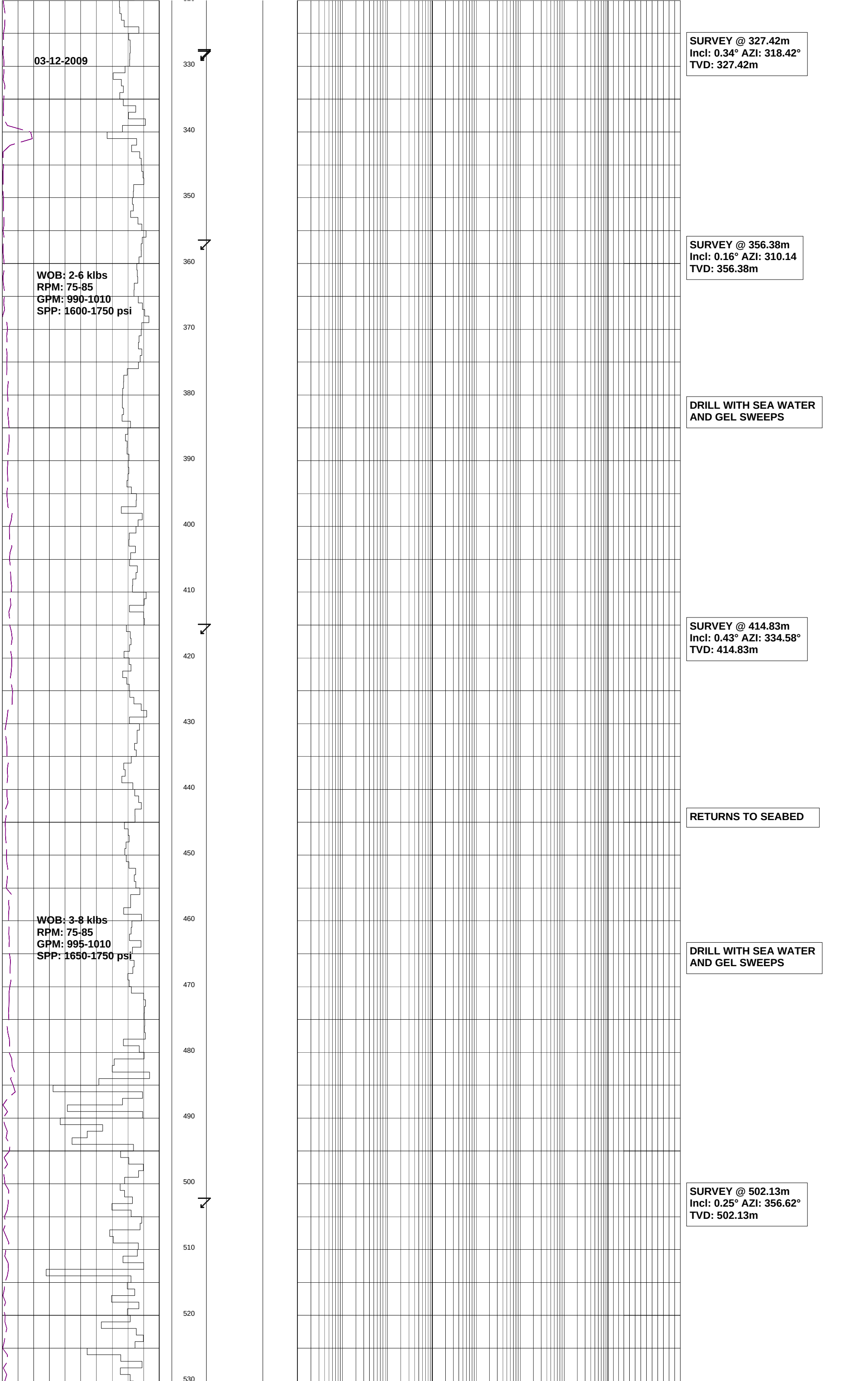
290

300

RETURNS TO SEA BED

310

320


03-12-2009
WOB: 2-6 klbs
RPM: 75-85
GPM: 990-1010
SPP: 1600-1750 psi
WOB: 3-8 klbs
RPM: 75-85
GPM: 995-1010
SPP: 1650-1750 psi
330
340
350
360
370
380
390
400
410
420
430
440
450
460
470
480
490
500
510
520
530
SURVEY @ 327.42m
Incl: 0.34° AZI: 318.42°
TVD: 327.42m
SURVEY @ 356.38m
Incl: 0.16° AZI: 310.14
TVD: 356.38m
DRILL WITH SEA WATER
AND GEL SWEEPS
SURVEY @ 414.83m
Incl: 0.43° AZI: 334.58°
TVD: 414.83m
RETURNS TO SEABED
DRILL WITH SEA WATER
AND GEL SWEEPS
SURVEY @ 502.13m
Incl: 0.25° AZI: 356.62°
TVD: 502.13m

WOB: 3-6 klbs
RPM: 70-80
GPM: 1000-1020
SPP: 1730-1820 psi

540
550
560
570
580
590
600
610
620
630
640

SURVEY @ 559.33m
Incl: 0.33° AZI: 356.35°
TVD: 559.33m

RETURNS TO SEABED

DRILL WITH SEA WATER
AND GEL SWEEPS

WOB: 1-8 klbs
RPM: 70-80
GPM: 1000-1010
SPP: 1625-1830 psi

650
660
670
680
690
700
710
720
730
740

SURVEY @ 645.93m
Incl: 0.22° AZI: 77.08°
TVD: 645.92m

RETURNS TO SEABED

DRILL WITH SEA WATER
AND GEL SWEEPS

SURVEY @ 733.40m
Incl: 0.10° AZI: 264.51°
TVD: 733.39m

WOB: 3-10 klbs
RPM: 65-80
GPM: 1000-1010
SPP: 1800-1950 psi

750
760
770
780
790
800
810
820
830
840

RETURNS TO SEABED

SURVEY @ 819.33m
Incl: 0.13° AZI: 204.11°
TVD: 819.32m

WOB: 2-12 klbs
RPM: 70-85
GPM: 1000-1020
SPP: 1900-1990 psi

850
860
870
880
890
900
910
920
930
940
950

DRILL WITH SEA WATER
AND GEL SWEEPS

SURVEY @ 907.20m
Incl:0.22° AZI :337.40°
TVD:907.19m

RETURNS TO SEABED

WOB: 7-22 klbs
RPM: 60-90
GPM: 756-1006
SPP: 1094-1940 psi

SURVEY @ 956.77m
Incl:0.15° AZI :112.45°

MW:9 FV:47
PV/YP: 9/15
FC: 1/2
SOL: 1.5% SAND: 0.1
CL: 42000 mg/l

04-12-2009

09-12-2009

BIT # 3: 311mm (12.25")
REED
JETS: 6x15
IN:966m OUT:1972m
RUN:1006m HRS:35.14
COND: 4-4-LT-N-X-I-CT-TD

MW:9 FV:42
PV/YP: 9/16
FC: 1/2
SOL: 1.6% SAND: 0.1
CL: 41000 mg/l

WOB: 5-18 klbs
RPM: 70-85
GPM: 880-930
SPP: 1780-1910 psi

WOB: 13-19 klbs

960
970
980
990
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160

GAS VALUES FROM BACKUP GAS EQUIPTMENT, RESERVAL AFFECTED BY AERATED MUD, 972m to 1040m.

1060m: 0.30% TG PEAK

1108m: 0.61% TG PEAK

TVD:956.76m

340mm (13.375") CASING SHOE SET @ 961m MDRT

445mm (17.5") SECTION TD @ 966m MDRT @ 0900hrs ON 04th DEC 2009

DRILL AHEAD 311mm(12.25") HOLE SECTION FROM 966mMDRT @ 1630 hrs ON 09th DEC 2009

CONDUCT LOT @ 961m 17.5ppg EMW

SURVEY @ 980.53m
Incl:0° AZI:258.48°
TVD:980.34m

CALCILUTITE:med gry-med dk gry,v sft-sft,blky-sbblky, 3% skeletal frags,2% corals, 5% vf qrtz grns,tr vf grs pyr.

CALCAREOUS CLAYSTONE: med blu gry,v sft-sft,blky-sbblky, 20% calc CLY.

CALCILUTITE:med gry-med dk gry,v sft-sft,blky-sbblky, 3% skeletal frags,2% corals.

SURVEY @ 1009.96m
Incl:0.20° AZI :60.48°
TVD:980.34m

CALCILUTITE:med gry-med dk gry, v sft-sft,blky-sbblky,5% corals 3% skl frags.

SURVEY @ 1039m
Incl:0.22° AZI :57.43°
TVD:1039m

CALCAREOUS CLAYSTONE:med blu gry,v sft-sft,blky-sblky, 30% calc CLY.

SURVEY @ 1068.02m
Incl:0.25° AZI :56.72°
TVD:1039m

CALCILUTITE:med gry-med dk gry,v sft-sft,blky-sbblky, 1% skl frags,rr vf grs pyr.

CALCAREOUS CLAYSTONE:med blu gry,v sft-sft,blky-sbblky, 30% calc CLY.

CALCILUTITE:med gry-med dk gry,v sft-sft,blky-sbblky,2% corals,3% skl frags,rr vf grs pyr.

SURVEY @ 1096.61m
Incl:0.09° AZI :334.71°
TVD:1096.68m

CALCAREOUS CLAYSTONE:dk grn gry-dk gry,vf sft-fri, blky-sbblky,20% calc CLY.

SILTSTONE:med gry-med dk gry, sft-fri,blky-fiss,5% calc CLY.

SURVEY @ 1125.20m
Incl:0.25° AZI:23.41°
TVD: 1125.19

CALCILUTITE:med lt gry-med gry,v sft-sft,blky-sbblky,1% skl frags,1% corals.

CALCILUTITE:med gry-pl yel brn, v sft-sft,rr vf grs pyr.

CALCACEROUS SILTSTONE:dk gry,dk grn gry,sft-fri,blky-fiss 20% calc CLY.

SURVEY @ 1153.52m
Incl:0.31° AZI :18.55°

RPM: 50-63
GPM: 712-868
SPP: 1678-1996 psi

MW:9 FV:46
PV/YP: 10/9
FC: 1/2
SOL: 1.7% SAND: 0.1
CL: 40000 mg/l

WOB: 2-7 klbs
RPM: 75-84
GPM: 850-920
SPP: 1600-1960 psi

1170
1180
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370

1162m: 0.70% TG PEAK

1220m: 0.64% TG PEAK

1249m: 0.73% TG PEAK

1368m: 0.47% TG PEAK

TVD:1153.51m

CALCILUTILE:med gry-pl yel brn,v sft-blky,rr vf grs pyr.

SURVEY @ 1182.12m
Incl:0.26° AZI :64.52°
TVD:1182.11m

CALCAREOUS SILTSTONE:dk gry,dk grn gry,sft-fri,blky-fiss 30% calc CLY.

CALCILUTITE:med gry-pl yel brn, v sft-sft,blky,rr vf grs pyr.

SURVEY @ 11210.69m
Incl:0.31° AZI :28.33°
TVD:1210.68m

CALCAREOUS SILTSTONE:med dk gry,olv gry,dk grnsh gry, sft-frm,blky-sbblky,20% calc cly,10% CLY,tr carb spks.

CALCAREOUS SILTSTONE: med dk gry,olv gry,sft-frm,blky-sbblky, 20% calc CLY,5% CLY,5% vf grs qtz grs,tr carb spks,tr mic flks,

SURVEY @ 1239.34m
Incl:0.36° AZI :49.88°
TVD:1239.33m

CLAYSTONE:pl yelsh brn,sft-frm, blky-sbblky,15% calc CLY,tr shl frags.

CLAYSTONE:med dk gry,sft-frm, blky-sbblky,10% calc CLY.

SILTSTONE:med dk gry,olv gry, sft-frm,bly-sbblky,10% calc CLY, 15% CLY,5% vf qtz grs,tr carb mat,tr glauc grs,tr lith frags.

SURVEY @ 1298.15m
Incl:0.40° AZI :29.51°
TVD:1298.14m

CLAYSTONE:med dk gry,sft-frm, blky-sbblky,1-% calc CLY,tr mic flks,tr lith frags.

SILTSTONE:med dk gry,olv gry, sft-frm,blky-sbblky,10% calc CLY, 5% vf qtz grs,tr carb mat,tr glauc grs,tr lith frags,tr mic flks,grd to aren w/ depth.

SURVEY @ 1327.53m
Incl:0.39° AZI :32.18°
TVD:1327.52m

CALCAREOUS SILTSTONE:v lt gry,med lt gry,sft,sbblky,20% calc CLY,tr carb spks,glauc grs,lith frags,vf grs pyr.

CALCAREOUS SILTSTONE:v lt gry,med lt gry,sft,sbblky,20% calc CLY,tr carb spks,glauc grs,lith frags,vf grs pyr & shl frags.

SURVEY @ 1356.77m
Incl:0.31° AZI :47.29°
TVD:1356.76m

CALCAREOUS SILTSTONE:v lt

gry,med lt gry,olv gry,sft, sbblky,20% calc CLY,tr carb spks,glauc grs,lith frags & shl frags.

1380

SURVEY @ 1385.60m
Incl:0.44° AZI :56.10°
TVD:1385.59m

1390

CALCAREOUS SILTSTONE: v lt gry,med lt gry,olv gry,sft,sub blky,20% calc cly,tr carb spks glauc grs,lith frag & forams.

1400

1410

SURVEY @ 1412.81m
Incl:0.48° AZI :46.30°
TVD:1441.65m

1420

1420m: 0.68%
TG PEAK

WOB: 1-7 klbs
RPM: 78-86
GPM: 840-927
SPP: 1639-1988 psi

CALCAREOUS SILTSTONE: v lt gry,med lt gry,olv gry,sft, sbblky,20% calc cly,tr carb spks,glauc grs,lith frags & foram.

1430

1440

SURVEY @ 1441.66m
Incl:0.57° AZI :57.51°
TVD:1441.65m

1450

1450m: 0.82%
TG PEAK

MW:9.3 FV:63
PV/YP: 11/22
FC: 1/2
SOL: 3.5% SAND: 0.25%
CL: 39000 mg/l

CALCAREOUS SILTSTONE:v lt gry,med lt gry,olv gry,dk grn gry i/p,sft,sbblky-blky,20% calc cly,tr glauc grs,tr lith frags, tr shell frags & forams,tr corals.

1460

1470

SURVEY @ 1470.69m
Incl:0.57° AZI :43.73°
TVD:1470.68m

1480

SILTSTONE:med lt gry-med gry,dk grnsh gry,lt gry i/p, sft,sbblky-blky,10% calc CLY, tr lith frags,tr corals.

1490

1500

SURVEY @ 1499.95m
Incl:0.59° AZI :47.75°
TVD:1499.93m

1510

SILTSTONE:olv gry-dk grnsh gry,fri,sbblky-blky.

1520

CALCAREOUS SILTSTONE:lt blu gry,v lt gry-med gry,sft,sbblky-blky,30% calc cly,2% glauc grs, tr lith frags,tr shell frags & tr corals.

1530

1540

WOB: 2-7 klbs
RPM: 83-94
GPM: 919-959
SPP: 2059-2752 psi

CALCAREOUS SILTSTONE:med lt gry-med dk gry i/p,sft,sbblky-blky,30% calc CLY,tr carb spks, tr lith frags & forams.

1550

CARBIDE LAG CHECK @ 1551m
THEO STKS: 6372
ACTUAL STKS: 6953
HOLE O.G: 8.6%

1560

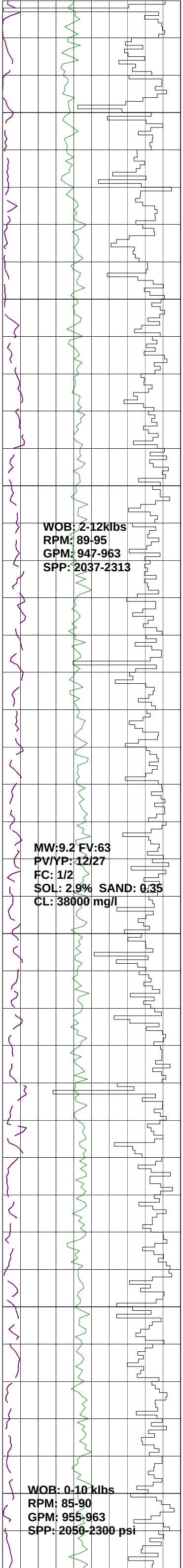
1566m: 1.10%
TG PEAK

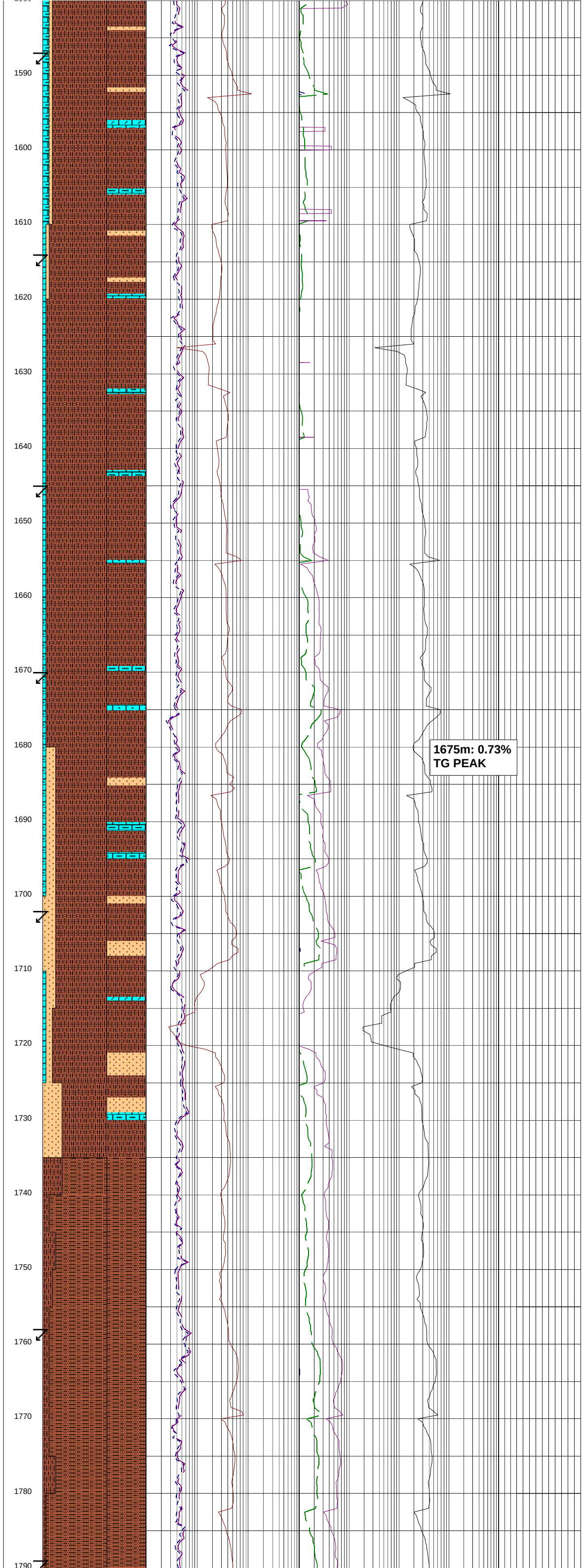
SURVEY @ 1558.73m
Incl:0.62° AZI :46.69°
TVD:1558.71m

1570

CALCILUTITE:lt gry-med lt gry,v sft-sft,blky-sbblky, 10% CLY.

1580





SURVEY @ 1587.90m
Incl:0.64° AZI :49.02°
TVD:1587.88m

SILTSTONE:olv gry-olv blk, sft-frm,sbblky-blky,10% calc CLY,tr carb spks,tr forams,tr skl frags.

SURVEY @ 1616.89m
Incl:0.68° AZI :52.55°
TVD:1616.87m

CALCAREOUS SILTSTONE: med gry-med dk gry,olv gry i/p, sbblky-blky,20% calc CLY,tr carb spks,tr forams,tr skl frags.

CALCILUTITE:v lt gry-lt gry, v sft-sft,blky-sbblky,10% SILT.

SURVEY @ 1645.39m
Incl:0.64° AZI:67.47°
TVD:11645.39m

CALCAREOUS SILTSTONE:med gry-med dk gry,olv gry i/p,sfr, sbblky-blky,20% calc CLY,tr carb specs,tr forams,tr slk frags,tr vf grs pyr.

CALCILUTITE:v lt gry-lt gry, v sft-sft,blky-sbblky,10% SILT.

SURVEY @ 1673.84m
Incl:0.66° AZI :56.91°
TVD:1673.81m

1675m: 0.73% TG PEAK

SILTSTONE:brn gry-med dk gry, sft,sbblky-blky,10% calc CLY, 10% CLY.

CALCAREOUS SILTSTONE:brn gry-med dk gry,occ olv gry,drk grn gry,sft-frm,sbblky-blky, ang i/p,20 calc CLY,10% CLY, tr feld,tr lith frags.

SURVEY @ 1702.24m
Incl:0.64° AZI :57.55°
TVD:1702.21m

CALCILUTITE:v lt gry-lt gry,v sft-sft,blky-sbblky.

SILTSTONE:brnsh gry-med dk gry, sft,sbblky-blky,10% calc CLY,10% CLY.

CALCAREOUS SILTSTONE:brnsh gry-med dk gry,occ olv gry dk grnsh gry,sft-frm,sbblky-ang i/p,20% calc CLY,10% CLY,tr felds,tr lith frags.

ARGILLACEOUS SILTSTONE:dk gry,brnsh blk,sft,sbblky-blky,5% calcCLY,30% CLY,5% vf qtz grs,tr lith frags,tr carb spks,tr vf grs pyr.

CALCAREOUS SILTSTONE:wh, yelsh gry,brnsh gry,tr grnsh blk,v sft frm,sbblky-sbfiss,20% calc CLY,10% CLY,tr rewk xln CLLT.

SURVEY @ 1758.92m
Incl:0.72° AZI :70.24°
TVD:1758.89m

ARGILLACEOUS SILTSTONE: brnsh gry,sft,sbblky-blky,5% calc CLY,25% CLY,tr lith frags,tr carb spks,tr glauc grs,tr vf grs pyr.

SURVEY @ 1789.63m
Incl:0.84° AZI :75.16°

Incl:0.84° AZI :79.16
TVD:1789.59m

1800

CALCAREOUS SILTSTONE:wh, yelsh gry,brnsh gry,tr grnsh blk,v sft-frm,sbblky-sbfiss,20% calc CLY,10% CLY, tr rewk xln CLLT.

1810

1820

CALCILUTITE:brnsh gry,frm-mod hd,sbfiss-conch frac,tr calcite crystals.

1829m: 1.05% TG PEAK

1830

CALCAREOUS SILTSTONE:yelsh gry,brnsh gry,v sft-sft,sbblky-sbfiss,20% calc CLY,10% CLY, tr vf grs pyr.

1840

MW:9.4 FV:57
PV/YP: 14/24
FC: 1/2
SOL: 3.7% SAND: 0.25
CL: 40000 mg/l

1850

SURVEY @ 1848.62m
Incl:0.80° AZI :79.00°
TVD:1848.58m

1858m: 1.21% TG PEAK

1860

ARGILLACEOUS SILTSTONE:olv blk brn blk,v sft-sft,sbblky-blky,2% CLY,calc 23% CLY,vf qtz grns,tr carb spks.

1870

SLIDING FROM 1870m - 1887m

1880

SURVEY @ 1876.78m
Incl:0.90° AZI :76.73°
TVD:1876.74m

1890

ARGILLACECOUS SILTSTONE: brn blk,dk grn gry,v sft-sft,sbblky-blky,5% calc CLY in dk grnsh component,5% vf grtz grs,tr lith frags,tr carb spks,tr mica, tr forams,tr felds.

1900

SLIDING FROM 1898m - 1977 m

WOB: 1-7 klbs
MM RPM: 120-130
GPM: 922-1002
SPP: 2214-2676 psi

CALCILUTITE:brnsh gry,sft-frm, blky-sbblky,xln i/p,tr calcite crystals.

1910

SURVEY @ 1905.3m
Incl:0.76° AZI :78.61°
TVD:1905.25m

1920

ARGILLACECOUS SILTSTONE: brn blk,dk grn gry,v sft-sft,sbblky-blky,20% CLY in dk grnsh component,5% vf qrt grs,tr lithic frags,tr carb spks,tr forams.

1922.5m-1926.0m DATA MISSING DUE TO POWER FAILURE IN UNIT

1930

SURVEY @ 1934.75m
Incl:0.91° AZI :50.85°
TVD:1934.71m

SILTSTONE:brnish blk,drk grnsh gry,grnsh gry,v sft-sft,sbblky-blky,15% CLY,5% calc CLY,5% vf qrtz grs,tr mica,tr vf grs pyr.

1940

12-12-2009

1950

1951m: 0.58% TG PEAK

SURVEY @ 1951.76m
Incl:0.68° AZI :51.65°
TVD:1951.71m

1960

ARGILLACEOUS SILTSTONE:brn blk,dk grn gry,grnsh gry,v sft-sft,sbblky-blky,20% CLY,10% CLY,5% vf qrtz grs,tr mica,tr vf grs pyr.

MW:9.5 FV:56
PV/YP: 18/21
FC: 1/2
SOL: 3.9% SAND: 0.25
CL: 40000 mg/l

1970

311mm (12.25") SECTION TD @ 1972mMDRT @ 0430hrs on 12-DEC-09

18-12-2009

19-12-2009

1980

244mm (9.625") CASING SHOE SET @ 1965m MDRT

BIT # 4 : 216mm (8.5")
Security FMF3653Z PDC
JETS :6 X 14
IN :1972m OUT : 1972
RUN : HRS : 6.5
COND : 2-3-BT-S-X-I-CT-PR
DRILL PLUGS ONLY

DRILL AHEAD 216mm (8.5") HOLE SECTION FROM 1972m MDRT @ 1200 hrs, 19 DEC 09

1990

Sliding From 1981m - 1994m

CONDUCT LOT @ 1977m MDRT
EMW : 14.6 ppg

1997m: 0.44% TG PEAK

2000

BIT # 5RR: 216mm (8.5')

HUGHES CHRISTENSEN
JETS: 3X20
IN: 1972m OUT:2019
RUN:47m HRS:4.7
COND:2-2-WT-A-1-NO-BHA

20-12-2009

21-12-2009

BIT # 6: 216mm (8.5')
REED
JETS: 4X16
IN: 2019m OUT:2023m
RUN:4m HRS:0.3hrs
COND:0-0-NO-A-X-I-NO-DTF

BIT # 6RR1: 216mm 98.5")
REED
JETS: 4 X 16
IN: 2023 OUT:3522
RUN:1499 HRS:89.4
COND:6-6-BT-A-X-I-NO-PR

MW:9.65 FV:50
PV/YP: 12/26
FC: 1/2
SOL: 4.0% SAND: 0.20
CL: 41000 mg/l

WOB: 2.7-21.0 klbs
RPM: 64-126
GPM: 453-569
SPP: 1350-1870 psi

WOB: 6-15 klbs
RPM: 98-145
GPM: 525-560
SPP: 1591-1770 psi

MW:9.55 FV:51
PV/YP: 13/26
FC: 1/2
SOL: 4.4% SAND: 0.20
CL: 41000 mg/l

2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210

SURVEY @ 1992.64m
Incl:3.64° AZI :23.88°
TVD:1992.567m

2007m: 0.48%
TG PEAK

SURVEY @ 2006.90m
Incl:4.8° AZI:23.88°
TVD:2006.78m

2019m: 0.37%
TRIP GAS PEAK

2019m-2023m:NO GAS DATA DUE TO SAMPLES
NOT CIRCULATED OUT PRIOR TO BIT TRIP

ARGILLACEOUS SILTSTONE:brn blk,dk grn gry,v sft-sft, sbblky-blky,5% calc CLY,20% CLY,5% vf qrtz grs,tr mica,tr carb spks.

CALCAREOUS SILTSTONE:olv gry,frm sbblky,25% calc CLY,tr carb mat,tr glauc grns.

ARGILLACEOUS SILTSTONE:brn blk,i/p grn blk,v sft-frm,10% calc CLY,10% vf qrtz grs,tr carb spks,tr lith frags,tr mica flks.

2044m: 0.48%
TG PEAK

SURVEY @ 2047.71m
Incl:7.43° AZI:22.9°
TVD:2047.36m

SANDSTONE:grnish gry,sft-fri, f grs,rnd,wl srt,sbrnd-rnd, mod-wl srt,sbsph-sph,10% glauc,gd vis por,no fluor.

SURVEY @ 2076.22m
Incl:10.04° AZI:18.43°
TVD:2075.54m

SANDSTONE:grn gry,lse-fri, 20% vf-f grs,rnd-sbrnd,mod-wl srt,sbsph-sph,10% clay mtx, 10% glauc,fr vis por,no fluor.

2088m: 0.35%
TG PEAK

SANDSTONE:clr,lt gry,opq,tr yel gry,lse qrtz,10% vf, 10% f,20% med,30% crs,20% v crs,10% gran,ang(shttd)-sbrnd,pr srt,sbsph-sbelg,inf fr vis por,no fluor.

SURVEY @ 2104.97m
Incl:12.80° AZI:14.68°
TVD:2103.72m

LIMESTONE:olv gry,mott,fri-v hd,sbblky-sbfiss,15% CLY, tr carb mat.

CLAYSTONE:grn gry,olv gry, sft,amorph-sbblky,10% vf-f qrtz grs,tr glauc.

ARGILLACEOUS SILTSTONE:brn blk,tr brn blk,amorph-sft to frm,sbblky,tr glauc.

SURVEY @ 2134.78m
Incl:14.54° AZI:10.50°
TVD:2132.72m

2139m: 0.30%
TG PEAK

SANDSTONE:clr,lt gry,trnsl, 25% vf,60% f,10% crs,5% v crs lse qrtz grs,10% clay mtx,sbrnd-sbang(shttd),pr srt,sbsph-sph,tr lith frag & calcite cryst,fr inf por,no flour.

CLAYSTONE:med gry,grn gry, v sft-sft,amorph-sbblky, tr glauc,carb spks,lith frags, pyr.

2164m: 0.34%
TG PEAK

SURVEY @ 2164.31m
Incl:17.43° AZI:9.42°
TVD:2161.07m

SILTSTONE:brn gry,olv gry, sft-frm,sbblky-blky,10% CLY,15% vf sand occur as lams & rr shttd crs clr qrtz crsytals, tr carb spks,lith frags.micmic.

2184m: 0.37%
TG PEAK

SANDSTONE:lt gry,lt olv gry, sft,sbblky,70% vf,30% f qrtz grs,sbrnd,mod-wl srt,sbsph, tr weathered out felds,lith frags,lams,5% rock flour, pr inf vis por,no fluor.

SURVEY @ 2193.36m
Incl:20.15° AZI:7.83°
TVD:2188.54m

2203m: 0.24%
TG PEAK

SILTSTONE:brn gry,olv gry,brn blk,sft-frm,sbblky-blky,5% CLY,5% vf sand occ in lams,tr

micmic,lith frags,carb spks, f lams.

SANDSTONE:lt olv gry,clr, lse-fri,80% vf,15% f,5% crs qrtz grs,crs frac occurs as lse clr qrtz crystals,10% wh cly mtx,sbrnd-sbang(shttd),wl srt,sbsph,tr lith frags,pyr, glauc,dol,80% rock flour,pr inf vis por,no fluor.

ARGILLACEOUS SILTSTONE: brn blk,olv gry,sft,sbblky,20% cly,tr carb spks,pyr aggs, micmic.

SANDSTONE:lt gry,lt olv gry,clr, v sft-fri,amorph-sbblky,10% wh cly mtx,90% vf,10% crs grns, crs frac occurs lse trans qrtz grs,sbrnd-sbang(shttd),pr-mod srt,sbsph,tr lith frags,95% rock flour,pr-fr inf vis por no show.

SURVEY @ 2250.02m
Incl:26.59° AZI:5.77°
TVD:2240.45m

SILTSTONE:brn blk,brn gry,frm sbblky-blky,10% CLY,tr carb spks,micmic,lith frags,loc arg.

ARGILLACEOUS SILTSTONE: brn blk,olv gry,sft-frm,sbblky 20% cly,carb spks,tr pyr aggs micmic.

2275m: 0.26%
TG PEAK

SURVEY @ 2278.27m
Incl:29.06° AZI:6.68°
TVD:2265.44m

SANDSTONE:lt gry,lt olv gry,clr, lse-frm,sbblky,10% wh cly mtx 95% f,5% crs grtz grns,crs frac occurs lse clr qrtz grs sbrnd-sbang(shttd),pr srt sbsph,tr glauc,lith frags,95% rock flour,fr inf vis por no flour.

SURVEY @ 2307.32m
Incl:31.70° AZI:6.12°
TVD:2290.50m

2309m: 0.24%
TG PEAK

SILTSTONE:brn blk,olv gry, sft-frm,sbblky,10% CLY tr micmic,lith frag,f lams.

ARGILLACEOUS SILTSTONE: brn blk,olv gry,sft-frm sbblky,20% cly,tr micmic thin coal lams.

SURVEY @ 2336.99m
Incl:34.05° AZI:2.98°
TVD:2315.41m

2342m: 0.71%
TG PEAK

SANDSTONE:lt gry,clr,opq,pred lse,i/p fri,50% f-30% med to 20% crs grs,ang(shttd)-sbrnd, pr srt,sbsph-sbelg,cly mtx washing out,fr inf vis por, no fluor.

SURVEY @ 2366m
Incl:36.34° AZI:359.97°
TVD:2339.59m

ARGILLACEOUS SILTSTONE:lt brn gry,lt gry,v sft-frm, amorph-sbblky,25% cly,tr carb & coal mat as lam.

CLAYSTONE:olv gry,brn gry, sft-stky to frm,amorph-sbblky,25% cly,tr carb mat as spks & coal mat as lam.

SANDSTONE:lt gry,fri,f grs, sbang-sbrnd,wl srt,sbsph-sbelg,no vis mtx,gd inf vis por,no fluor.

SURVEY @ 2395.13m
Incl:37.77° AZI:356.94°
TVD:2362.38m

CLAYSTONE:olv gry,brn gry, frm,sbfiss-sbblky,mnr carb mat as spks & thn lam,tr micmic, i/p as lam.

SANDSTONE:lt gry,fri-disagg i/p,vf-f grs,sbang-sbrnd,wl srt,sbsph-sbelg,no vis mtx, go inf vis por, no fluor.

CLAYSTONE:olv gry,brn gry,pl

22-12-2009

WOB: 7-20 klbs
RPM: 81-137
GPM: 525-560
SPP: 1577-1760 psi

MW:9.55 FV:51
PV/YP: 15/30
FC: 1/2
SOL: 4.5% SAND: 0.20
CL: 40000 mg/l

WOB: 11-18klbs
RPM: 106-122
FLW: 568-581
SPP: 1936-2060 psi

2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
2400
2410
2420

MW:9.55 FV:52
PV/YP: 14/31
FC: 1/2
SOL: 4.5% SAND: 0.25
CL: 38000 mg/l

WOB: 6-21 klbs
RPM: 89-131
GPM: 571-593
SPP: 1848-2065 psi

23-12-2009

2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630

yellsh brn,frm,sbblky,tr carb mat,tr micmic.

SURVEY @ 2423.37m
Incl:39.84° AZI:355.17°
TVD:2384.39m

2434m: 0.61% TG PEAK

ARGILLACEOUS SILTSTONE:lt brn gry,lt gry,brn blk,v sft-frm,sbblky,25% cly,tr carb & coal mat as lam.

SANDSTONE:lt gry,fri,vf-f grs, sbang-sbrnd,wl srt,sbsph-sbelg no vis mtx,go inf vis por,no fluor, thn beds in SILTSTONE 10% rock flour.

SURVEY @ 2452.17m
Incl:42.32° AZI:354.45°
TVD:2406.10m

CLAYSTONE:olv gry,brn gry, v sft-sft,amorph-sbblky,tr carb mat,tr micmic.

ARGILLACEOUS SILTSTONE:lt brn gry,lt gry,brn blk,v sft-frm,sbblky,25% cly,tr carb & coal mat as lam.

2472.5m: 1.12% TG PEAK

COAL:brn blk,olv gry,sft-frm sbfiss-conch,tr f dissem pyr.

SURVEY @ 2481.68m
Incl:43.11° AZI:354.88°
TVD:2427.78m

CARBIDE LAG CHECK @ 2494M
THEOR STKS: 5187
ACT STKS: 5202
OPEN HOLE OG: 0.75%

SANDSTONE:lt gry,clr,fri 70% vf-30%,10% f gr qtz, sbrnd,wl srt,sbsph,tr lith frag,pr inf vis por,no fluor, 80% rock flour.

SURVEY @ 2511.39m
Incl:42.92° AZI:354.47°
TVD:2449.50m

CLAYSTONE:lt olv gry,lt brn gry,vsft-sft,sbblky,tr micmic lith frags.

2522m: 0.80% TG PEAK

ARGILLACEOUS SILTSTONE: brn gry,olv gry,brn blk,v sft-frm,sbblky,2% cly,tr micmic,f carb lam,f dissem pyr.

SURVEY @ 2540.16m
Incl:43.10° AZI:354.54°
TVD:2470.54m

SANDSTONE:lt gry,trans,fri 20% vf,70% f,5% med,5% crs gr qtz,sbrnd-sbang (shttd) mod-wl srt,sbsph-sbelg 20% rock flour,gd inf vis por no fluor.

CLAYSTONE:lt olv gry,lt brn gry,i/p vl gry,v sft-sft,carb spks,amorph,tr carb.

SURVEY @ 2568.35m
Incl:43.01° AZI:353.48°
TVD:2491.14m

2571.5m: 0.67% TG PEAK

ARGILLACEOUS SILTSTONE: brn gry,olv gry,brn blk,v lt gry i/p,sft-frm,sbblky-blky, 20% cly,tr carb spks,micmic.

SILTSTONE:olv gry,brn gry brn blk,sft-frm,sbblky-blky 20% cly,tr carb lam,micmic lith frag,loc arg.

2592m: 0.76% TG PEAK

SANDSTONE:lt gry,lt olv gry,lse-fri,10% wh cly mtx,40% vf,50% f 10% med clr-opq qtz grn,sbrnd-sbang(shttd),mod srt,sbsph,20% rock flour,pr inf vis por, no fluor.

SURVEY @ 2596.31m
Incl:42.88° AZI:354.12°
TVD:2511.60m

2606m: 1.07% TG PEAK

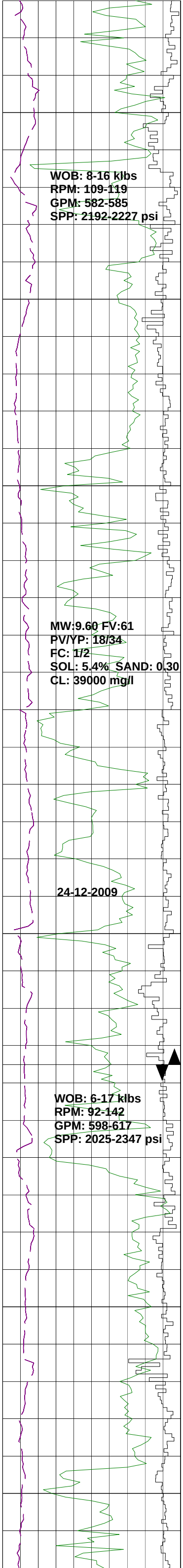
2610m: 0.96% CG PEAK

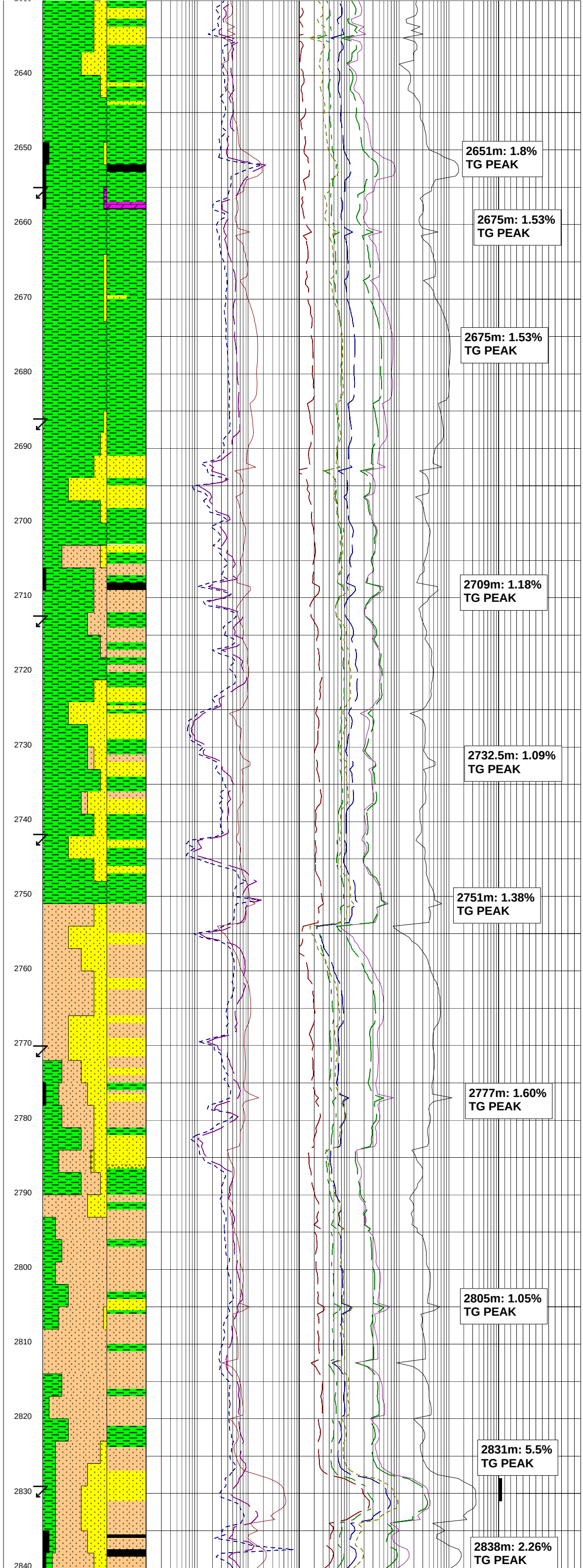
COAL:blk,brn blk,frm, sbfiss-conch,brt.

CLAYSTONE:brn gry,olv gry, lt gry,sft-frm,sbfiss-sbblky,tr carb spks.

2625m: 1.10% TG PEAK

SURVEY @ 2626.30m
Incl:43.28° AZI:355.27°
TVD:2533.51m





SANDSTONE:lt gry,fri,10% wh clay mtx,f grs,sbrnd-sbang,wl srt,sbsph,gd inf vis por,no fluor,10% rock flour masking.

CLAYSTONE:brn gry,olv gry, lt gry,sft-frm,sbfiss-sbblky, tr carb mat.

COAL:blk,brn blk,frm,splntry-sbfiss,ea.

DOLOMITE:mott olv gry,frm splntry-sbfiss,ea.

CLAYSTONE:brn gry,olv gry,sft-frm,sbfiss-sbblky,tr carb mat,rr pyr as replacement.

SURVEY @ 2655.72m
Incl:43.09° AZI:355.70°
TVD:2554.96m

SANDSTONE:lt gry,olv gry,frm-lse(dissagg)30% vf-f grs, sbang-sbrnd,mod-wl srt,sbsph, 10% calc CLY,mod wl sil cmt, tr red brn & grn lith frags, fr-gd inf vis por,no fluor.

SURVEY @ 2686.98m
Incl:42.76° AZI:356.30°
TVD:2575.68m

SANDSTONE:clr,opq,lt gry,mod yel brn,med dk gry,lse,i/p fri aggs when finer fracs,20% vf, 30% f,20% med,30% crs grs, sbang-sbrnd to i/p rnd,pr srt, sbsph-sbelg,fr vis & inf por, no fluor.

COAL:blk,brn blk,sft-frm, blky-sbfiss,conch frac i/p, ea-brt.

SURVEY @ 2712.30m
Incl:43.19° AZI:356.38°
TVD:2596.37m

SILTSTONE:olv gry,lt olv gry, sft-frm,sbblky-blky,10% clay, tr carb mat,tr pyr.

CLAYSTONE:brn gry,brnish blk, sft-frm,sbfiss-sbblky,tr carb mat,i/p as lam.

SANDSTONE:clr,opq,lt gry frm-lse,30% vf,55% f,5% v crs qtz grns,crs frac occ lse clr & opq qtz grns sbang-sbrnd (shttd),mod srt,sbsph-sbelg,10% cly,mod wl sil cmt,tr lith frag, gd vis & inf por,no fluor.

SURVEY @ 2741.97m
Incl:43.47° AZI:355.92°
TVD:2617.96m

CLAYSTONE:brn gry,brnish blk, olv gry,lt gry,sft-frm,sbblky-sbfiss,10% vf sand as lam,2% carb mat as spks & f lam,tr mic,lith frags.

WIPER TRIP @ 2753mMDRT
to 340mm(9.625") CSG shoe

SILTSTONE:brn blk,brn gry, olv blk,frm-mod hd,sbblky-sbfiss,10% cly,1% carb mat as spks & lam,tr mica.

SURVEY @ 2770.22m
Incl:42.94° AZI:365.2°
TVD:2638.55m

CLAYSTONE:brn blk,brn gry, lt gry,sft-frm,sbblky-sbfiss, tr carb mat as spks & f lam.

GLAUCONITIC SANDSTONE: grn gry,lt grn gry,lt olv gry,fri 30% glauc,40% vf,60% f qtz grs,sbrnd-rnd,wl srt,sbshp-shp,pr inf vis por,no fluor.

CLAYSTONE:brn blk,brn gry, olv gry,lt gry,sft-frm, sbblky-sbfiss,tr carb mat as spks & f lam.

SURVEY @ 2828.79m
Incl:42.74° AZI:355.8°
TVD:2681.39m

SANDSTONE:lt gry,lt olv gry, frm-mod hd,10% wh cly,20% wh cly,20% vf,70% f,10% med grs qrtz crystals,sbrnd,mod srt, sbsph,fr inf vis por,tr lith frgs, brt coal lam,mod sil cmt,fluor.

FLUOR:2828m-2830m, 40% dll-mod yel agg fluor, slw strmg dll yel-bluish wh cut fluor,dll yel r/r fluor.

25-12-2009

WOB: 7-17 klbs
RPM: 74-146
GPM: 558-601
SPP: 1900-2345 psi

2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040
3050

2853.5m: 1.52% TG PEAK

2893m: 0.99% TG PEAK

2962m: 8.99% TG PEAK

2978m: 6.41% TG PEAK

SILTSTONE:brn blk,brn gry olv blk,i/p med dk gry frm-mod hrd,sbblky-sbfiss 10% CLY,tr carb spks,mic pyr,agg.

SANDSTONE:lt gry,lt olv gry,frm-mod hrd,10% wh CLY,20% vf,80% f qtz,sbrnd,mod srt,sbsph,f inf vis por,tr lith frags,br coal lam,mod sil cmt,no fluor.

COAL:blk,frm,sbfiss-conch,tr f dissem pyr,lith frags.

SURVEY @ 2857.71m
Incl:43.48° AZI:356.2°
TVD:2702.5m

SANDSTONE:lt gry,lt olv gry,frm-mod hrd,10% wh CLY,10% vf,65% f 20% med,5% crs clr qtz grns sbrnd,mod srt,sbsph,mod sil cmt tr lith frags,thn coal lam glauc,gd inf vis por,no fluor.

SANDY SILTSTONE:br blk,olv gry brn gry,frm-mod hrd,sbblky-sbfiss,10% CLY,,20% vf sand,tr carb spks & lam,mic.

CLAYSTONE:brn blk,brn gry sft-frm,sbblky,tr f carb lam lith frags.

SURVEY @ 2886.29m
Incl:43.02° AZI:355.1°
TVD:2723.32m

SILTSTONE:br blk,brn gry,olv blk,frm-mod hd,sbblky-sbfiss,10% cly,10% vf sand in lam,tr carb spks,mic,f dissem pyr.

SURVEY @ 2914.35m
Incl:43.18° AZI:355.6°
TVD:2743.81m

CLAYSTONE:brn blk,brn gry,sft-frm,sbblky-sbfiss,10% slt in lam,tr f carb lam,lith frags.

SILTSTONE:br blk,brn gry,olv blk,frm-mod hrd,sbblky-sbfiss,10% CLY,10% vf sand in lam,tr carb spks,mic.

CLAYSTONE:brn blk,brn gry,sft-frm,sbblky-sbfiss,10% slt in lam,tr f carb lam.

SURVEY @ 2942.96m
Incl:43.00° AZI:355.8°
TVD:2764.70m

SANDSTONE:olv gry,lt gry, fri,f grs,20% vf,10% wh cly mtx,pr sil cmt,sbang-sbrnd, mod-wl srt,sbsph,tr lith grs,gd vis por,no fluor.

SURVEY @ 2972.3m
Incl:43.13° AZI:356.1°
TVD:2786.13m

FLUOR:2973m-2979m, Aggs w/ mod brt yel overall fluor,c/c:brt blu wh slw strmg-blmg,yel flm to dll yel thk r/r.

SANDSTONE:olv gry,lt gry, med lt gry,f grs,20% vf,10% wh cly mtx,pr sil cmt,sbang-sbrnd,mod-wl srt,sbsph,tr lith grs,gd vis por,fluor.

SILTSTONE:med dk gry,olv blk,frm-mod hd,sbblky-sbfiss,15% CLY,tr carb spks, 1% micmic.

CLAYSTONE:brnish blk,brnish gry,sft-frm,sbblky-sbfiss, tr carb mat & occ lams.

SILTSTONE:brn gry,frm, sbblky-sbfiss,15% CLY,tr carb spks,tr micmic,tr lith frags.

CLAYSTONE:brnish blk,olv blk,olv gry,frm sbblky-sbfiss,tr carb spks,tr micmic,tr lith frags.

SURVEY @ 3031.32m
Incl:43.35° AZI:358.1°
TVD:2829.13m

SILTSTONE:brnish gry,olv frey,frm,sbblky-sbfiss, 15% CLY,tr carb spks,tr micmic,tr lithic frags.

CLAYSTONE:brnish blk,olv blk,olv gry,frm sbblky-

WOB: 8-23 klbs
RPM: 54-128
GPM: 573-602
SPP: 2018-2546 psi

MW:9.50 FV:51
PV/YP: 17/33
FC: 1/2
SOL: 4.2% SAND: 0.30
CL: 35000 mg/l

26-12-2009

WOB: 7-18 klbs
RPM: 34-91
GPM: 589-601
SPP: 2413-2610 psi

3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260

CLAYSTONE:brnish blk,olv blk,olv gry,frm sbblky-sbfiss,10% SLT,tr carb spks, tr micmic.

SURVEY @ 3059.74m
Incl:43.12° AZI:357.4°
TVD:2849.84m

CLAYSTONE:brn blk,olv blk,olv gry,frm,sbblky-sbfiss,10% slt tr mic.

COAL:blk,sft-brit,conch i/p brt,inbed SANDSTONE.

SANDSTONE:med lt gry,opq,clr yel gry,fri-lse,10% wh cly 40% f,20% med,20% crs,20% v crs,ang (shttd)-sbang-sbrnd pr-mod srt,pr-fr sil cmt,tr lith frags,1% carb/coal, gd vis por,tr fluor.

SILTSTONE:olv gry,brn blk,sft-frm,sbblky-sbfiss,15% cly,1% carb lam,tr micmic,tr lith frags.

SANDSTONE:lt gry,opq,clr,yel gry,lt olv gry,fri-mod hd,10% wh cly mtx,10% vf,75% f,10% med 5% crs,sbrnd-sbang (shttd),pr-mod srt,sbsph,pr-mod sil cmt tr lith frags,2% carb/coal, gd vis por,no fluor,20% rck flr.

CLAYSTONE:brn gry,olv gry sft-frm,sbblky-blky,10% slt lam,tr micmic,f carb lam.

SURVEY @ 3116.75m
Incl:42.91° AZI:356.5°
TVD:2891.52m

FLUOR:3132m-3135m, 3144m-3147m,Aggs w/ mod brt yel overall fluor,c/c:brt blu wh slw strmg-blmg,yel flm to dll yel thk r/r.

SANDSTONE:lt gry,opq,clr,yelsh gry,lt olv gry,frm-fri,10% wh cly mtx,20% vf,60% f,10% med,5% crs,5% v crs qtz grs msty sbang (shttd)-sbrnd mod-wl srt,sbsph-sbelg,pr-mod sil cmt,tr lith frags,tr carb spks,gd inf vis por,tr fluor,20% rck flr.

FLUOR:3153m-3156m, 3162m-3168m,aggs w/ dll-mod brt yel overall fluor,c/c:dll blu wh slw strmg, dll pl yel thk r/r

SILTSTONE:olv gry,brnsh blk,sft-frm,sbblky-sbfiss,10% cly,1% carb lam & spks,tr micmic,tr lith frags pyr agg,30% rck flr.

SURVEY @ 3175.85m
Incl:42.94° AZI:355.9°
TVD:2934.80m

CLAYSTONE:brnsh blk,olv gry,sft-frm,sbblky-sbfiss,10% slt,1% carb spks & lam,tr micmic.

COAL:blk,sft-brit,conch i/p brt,inbed SANDSTONE.

SANDSTONE:lt gry,yelsh gry,lt olv gry,clr,frm-fri,10% wh cly mtx,10% vf,60% f,20% med 10% crs qtz grs,mstly sbrnd i/p, sbang(shttd),mod-wl srt,sbsph-sbelg,pr sil cmt,tr carb spks,lith frags,gd inf vis por, no fluor,40% rck flr.

SILTSTONE:lt gry,olv gry,brnsh blk,frm-mod hrd,sbblky-blky 15% cly,tr carb spks,tr micmic.

SANDSTONE:pred lse qrtz, lt gry,lt olv gry,clr,10% cly mtx,10% f grs,30% med, 30% crs,30% v crs grs,sbrnd-sbang to ang(shttd),pr srt, sbsph-sbelg,fr sil cmt,tr carb spks,fr vis inf por, no fluor,10% rck flour.

SURVEY @ 3232.85m
Incl:42.61° AZI:354.9°
TVD:2976.64m

FLUOR:3255m-3261m;aggs ovrll dll yel fluor,slw strmg dll yel-blsh wh c/c dll yel-blsh wh flm r/r.

3077m: 1.17% TG PEAK
3083m: 1.93% TG PEAK
3091m: 3.56% TG PEAK
3096m: 3.00% TG PEAK
3104.50m: 3.01% TG PEAK
3117.50m: 2.08% TG PEAK
3125m: 3.04% TG PEAK
3135m:5.96% TG PEAK
3144m:2.8% TG PEAK
3156m: 4.7% TG PEAK
3167m:4.18% TG PEAK
3191m:6.0% TG PEAK
3196m:13.8% TG PEAK
3199m:1.40% TRIP GAS PEAK
3209m:3.66% TG PEAK
3213m:4.77% TG PEAK
3225m:2.5% TG PEAK
3232m:6.58% TG PEAK
3240m:10.32% TG PEAK

MW:9.50 FV:52
PV/YP: 18/32
FC: 1/2
SOL: 5.4% SAND: 0.20
CL: 32000 mg/l

27-12-2009

WOB:7-19 klbs
RPM:44-63
GPM:588-594
SPP:2666-2724 psi

WOB:9-21 klbs

3260m:9.4%
TG PEAK

3269m:13.5%
TG PEAK

3285m:4.8%
TG PEAK

3321m:9.7%
TG PEAK

3331m:11.0%
TG PEAK

3338m:13.9%
TG PEAK

3344m:11.4%
TG PEAK

3350m:9.4%
TG PEAK

3360m:4.6%
TG PEAK

3373m:10.9%
TG PEAK

3379m:8.0%
TG PEAK

3387m:5.01%
TG PEAK

3393.5m:3.78%
TG PEAK

3401.5m:13.45%
TG PEAK

3422.5m:11.86%
TG PEAK

3443m:1.70%
TG PEAK

3470m:1.35%

SURVEY @ 3261.40m
Incl:42.02° AZI:354.70°
TVD:2997.75m

SANDSTONE:lt gry,clr,10% wh cly mtx,60% f grs,30% med,5% crs,5% v crs grs pred lse qtz grs,sbrnd-sbang (shttd),pr-mod srt,sbsph-sbelg,pr-mod sil cmt,2% lith frags,1% carb coal frags,fr-gd inf vis por 5% fluor,40% rck flr.

CLAYSTONE:brnsh blk,brnsh gry olv gry,sft-frm,sbblky-sbfiss tr carb spks,tr micmic.

SILTSTONE:lt gry,mott,brnsh blk,sft-frm,sbblky-blky,15% cly,tr carb spks,micmic.

SURVEY @ 3290.95m
Incl:42.18° AZI:356.00°
TVD:3019.67m

SANDSTONE:lt gry,clr,10% wh cly mtx,50% f,20% med,20% crs 10% v crs qtz grs,crs & v crs predom lse shttd qtz grs, sbrnd-sbang-ang (shttd),pr srt sbsph-sbelg,pr sil cmt,gd inf vis por,fluor,40% rck flr.

SILTSTONE:brns blk,olv blk frm-mod hrd,sbblky-blky,10% cly,tr carb spks,micmic.

CLAYSTONE:brns blk,brnsh gry olv gry,sft-frm,sbblky-sbfiss tr carb spks,micmic.

SANDSTONE:lt gry,clr,10% wh cly mtx,20% f,20% med,30% crs 30% v crs qtz grs,predom lse sbrnd-sbang-ang (shttd),pr srt sbsph-sbelg,pr sil cmt,gd inf vis por,fluor,40% rck flr.

FLUOR:3318m-3357m;aggs ovrll dll-mod yel fluor slw strmg dll yel-blsh wh c/c dll yelsh grn-blsh wh flm-thk r/r.

SURVEY @ 3348.87m
Incl:42.01° AZI:356.20°
TVD:3062.65m

CLAYSTONE:brn blk,brn gry, olv gry,sft-frm,sbblky-sbfiss,tr carb spks,micmic.

SURVEY @ 3377.12m
Incl:41.91° AZI:356.10°
TVD:3083.66m

SANDSTONE:lt gry,clr,10% wh cly mtx,35% vf,50% f grs,10% med,5% crs qrtz grs,crs frac occurs as lse clr qrtz grs, sbrnd-sbang(shttd),mod srt, sbsph,pr-mod sil cmt,tr lith frags,carb spks,fr-gd inf vis por,no fluor,20% rock flour.

SANDSTONE:lt gry,fri-lse,20% vf,80% f grs,sbrnd,mod-wl srt, sbsph,10% wh cly mtx,pr sil cmt, gd inf vis por,no fluor,10% rck flour.

SURVEY @ 3405.96m
Incl:41.76° AZI:356.1°
TVD:3105.15m

COAL:blk,brnish blk,sbfiss,brt-ea.

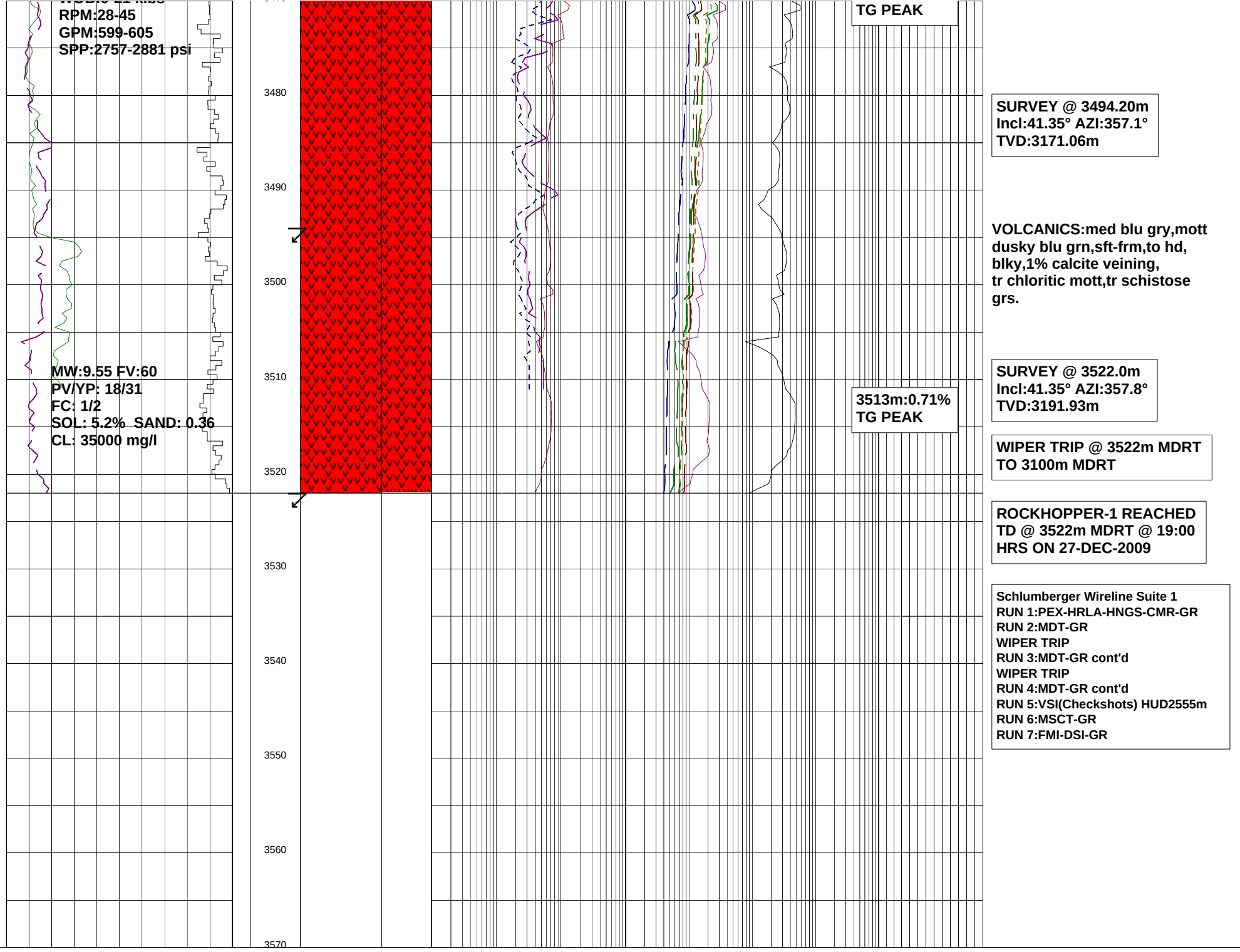
SILTSTONE:olv gry,olv,blk, mott,sft-frm,sbblky-blky,15% cly,tr carb spks,micmics.

SURVEY @ 3435.8m
Incl:41.85° AZI:357.1°
TVD:3127.41m

METAMORPHICS:multicolour,v dusky rd,lt grnish gry,lt gry, blky,sil & calc,alt SILTS & CLYST,micro flow patterns & intre beding evident.

VOLCANICS:mott gryish grn, gryish purple,mott dusky blu grn,frm-hd,blky,calcite veining,chloritic mott.

VOLCANICS:med blu gry,gryish purple,mott dusky bly gry, blkish rd,frm-hd,blky,1% calcite veining,tr chloritic mott.


RPM:28-45
GPM:599-605
SPP:2757-2881 psi
MW:9.55 FV:60
PV/YP: 18/31
FC: 1/2
SOL: 5.2% SAND: 0.36
CL: 35000 mg/l
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
TG PEAK
3513m:0.71%
TG PEAK
SURVEY @ 3494.20m
Incl:41.35° AZI:357.1°
TVD:3171.06m
VOLCANICS:med blu gry,mott dusky blu grn,sft-frm,to hd, blky,1% calcite veining, tr chloritic mott,tr schistose grs.
SURVEY @ 3522.0m
Incl:41.35° AZI:357.8°
TVD:3191.93m
WIPER TRIP @ 3522m MDRT TO 3100m MDRT
ROCKHOPPER-1 REACHED TD @ 3522m MDRT @ 19:00 HRS ON 27-DEC-2009
Schlumberger Wireline Suite 1
RUN 1:PEX-HRLA-HNGS-CMR-GR
RUN 2:MDT-GR
WIPER TRIP
RUN 3:MDT-GR cont'd
WIPER TRIP
RUN 4:MDT-GR cont'd
RUN 5:VSI(Checkshots) HUD2555m
RUN 6:MSCT-GR
RUN 7:FMI-DSI-GR

DRILLING DATA LOG

WELL : ROCKHOPPER-1

FROM (m): 0 | TO (m): 3570 | SCALE: 1/ 500

		POSITION		CASING SHOE SIZE / DEPTH			
Country	: AUSTRALIA	Latitude	: 39 47' 34.1828" S	762mm (30") at (m MDRT)	: 157.00	Spud Date	: 30-11-2009
Region	: TASMANIA	Longitude	: 145 26' 21.4660" E	340mm (13 3/8") at (m MDRT)	: 961.00	Total Depth Date	: 27-12-2009
Field	: ROCKHOPPER	X (m)	: 366376.031	245mm (9 5/8") at (m MDRT)	: 1965.00	Total Depth (m MDRT)	: 3522.0
Permit	: T/18P	Y (m)	: 5594075.423			Total Depth (m TVSS)	: 3191.97
Well Type	: EXPLORATION	RT-Sealevel (m MSL)	: 26			Status	: P & A
Rig Name	: KAN TAN 4	RT-Seabed (m)	: 100.3				

ABBREVIATIONS

MW MUD WEIGHT
FV FUNNEL VISCOSITY
PV PLASTIC VISCOSITY
YP YIELD POINT
FC FILTER CAKE
SOL SOLIDS
CR CIRCULATE RETURNS
SD SAND - %
S SALINITY - PPM
RM MUD RESISTIVITY
RMF MUD FILTRATE
C CARBIDE TEST
LAT LOGGED AFTER TRIP
DS DEVIATION SURVEY

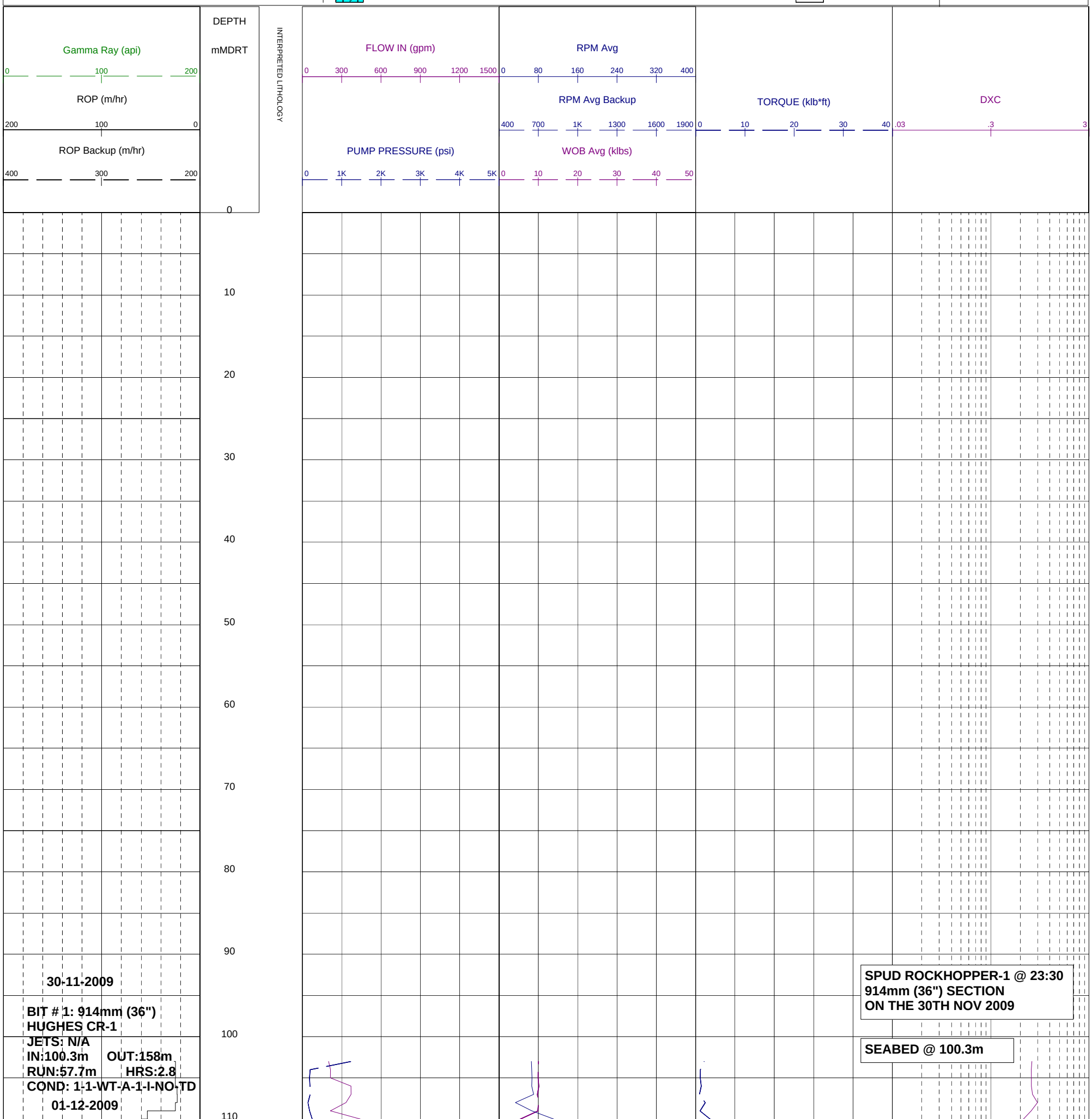
NB NEW BIT
RR RERUN BIT
CB CORE BIT
WOB WEIGHT ON BIT
RPM REVS PER MINUTE
FLC FLOW CHECK
WL FILTRATE
PR POOR RETURNS
NR NO RETURNS
BG BACKGROUND GAS
TG TRIP GAS
STG SHORT TRIP GAS
CG CONNECTION GAS
SG SWAB GAS
SVG SURVEY GAS

LITHOLOGY LEGEND

Dolomite
Calcirudite
Calcarenite
Calcisiltite
Calcilutite
Sandy Claystone
Silty Claystone
Calcareous Claystone
Argil Calcilutite
Claystone
Silstone
Sandstone
Coal
Intrusive Volcanics
Volcaniclastics
Tuff
Cement
Argil Siltstone
Sandy Siltstone
Calcareous Siltstone
Argil Sandstone
Calcareous Sandstone
Dolomitic Sandstone
Silty Sandstone
Calcareous
Dolomitic
Fossils
Foraminiferae
Carbonaceous
Chert
Pyrite
Glauconite
Mica

ENGINEERING

Test
FIT or LOT
Mud loss
Mud gain
Deviation survey
Core
Shoe
Calcimetry



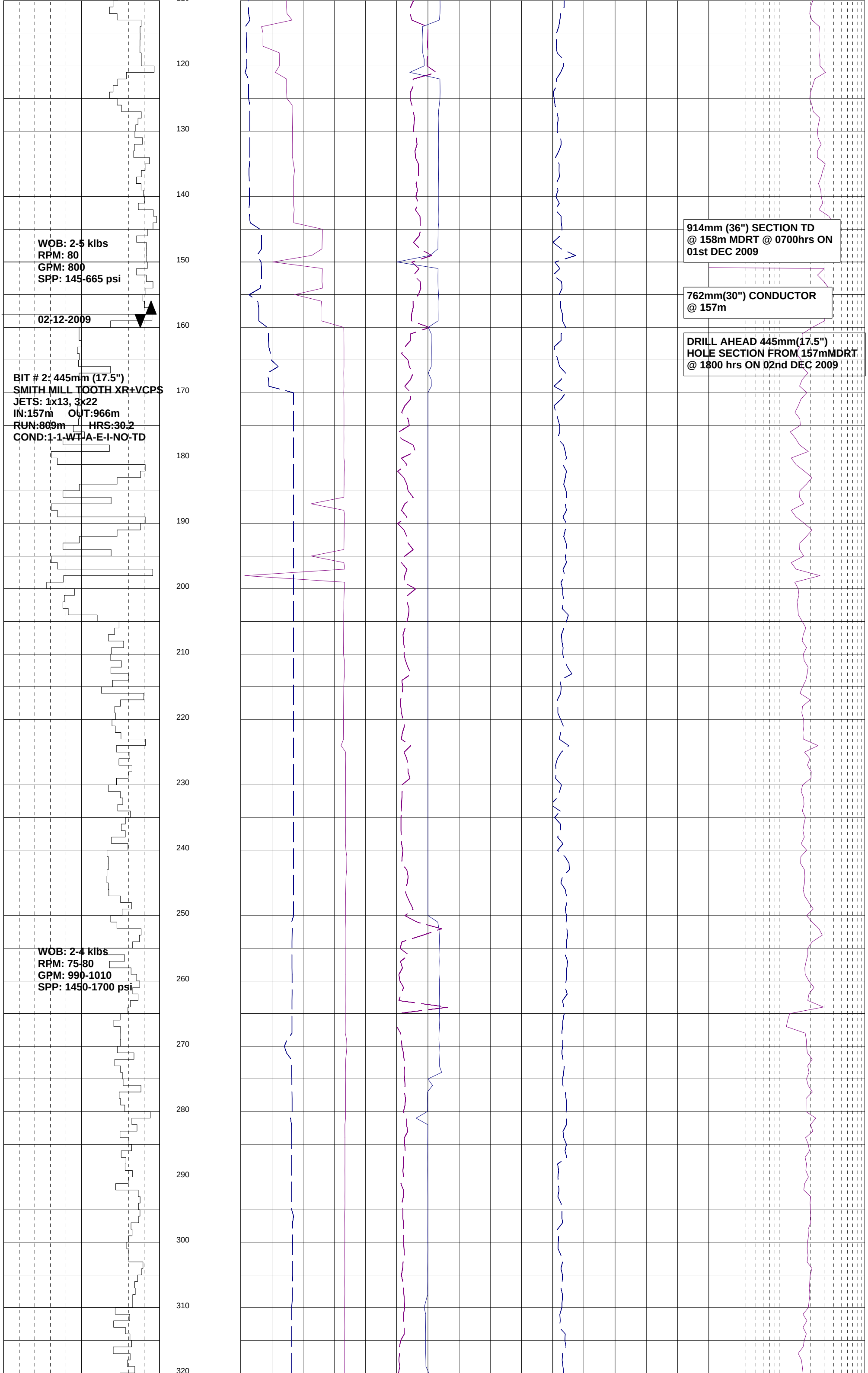
30-11-2009

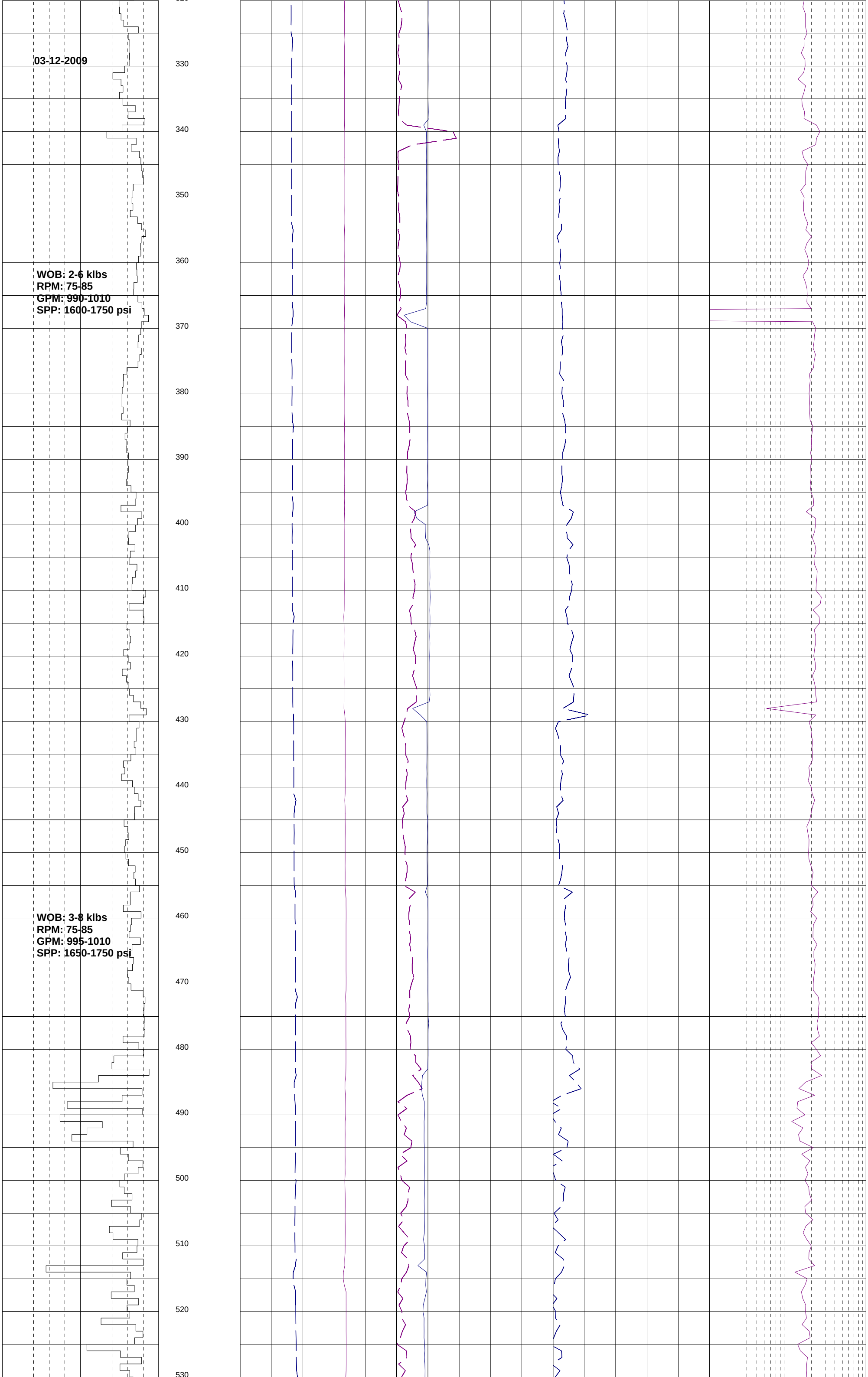
BIT # 1: 914mm (36")
HUGHES CR-1
JETS: N/A
IN:100.3m OUT:158m
RUN:57.7m HRS:2.8
COND: 1-1-WT-A-1-I-NO-TD

01-12-2009

SPUD ROCKHOPPER-1 @ 23:30
914mm (36") SECTION
ON THE 30TH NOV 2009

SEABED @ 100.3m

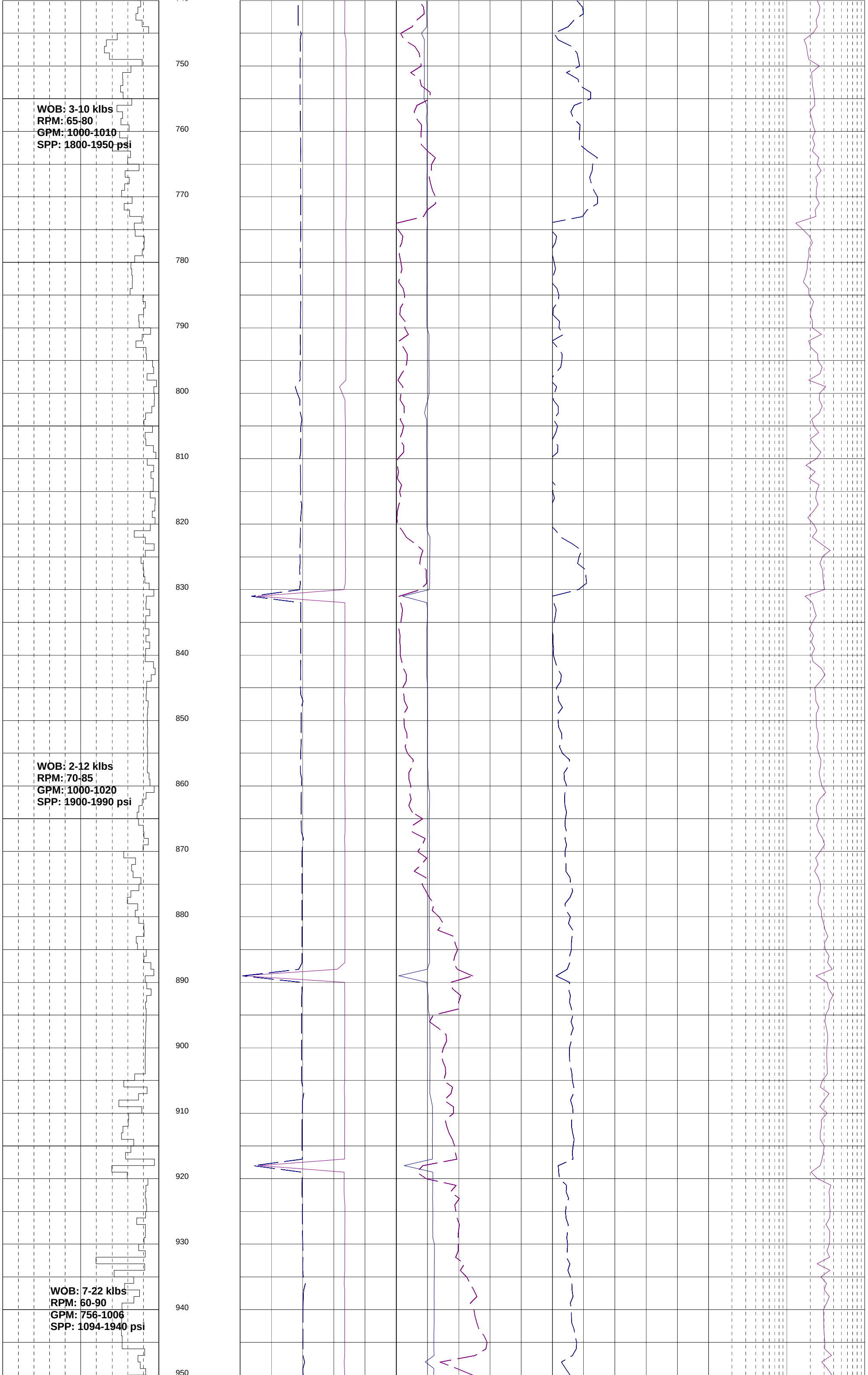

120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
WOB: 2-5 klbs
RPM: 80
GPM: 800
SPP: 145-665 psi
02-12-2009
BIT # 2: 445mm (17.5")
SMITH MILL TOOTH XR+VCPS
JETS: 1x13, 3x22
IN:157m OUT:966m
RUN:809m HRS:30.2
COND:1-1-WT-A-E-I-NO-TD
914mm (36") SECTION TD
@ 158m MDRT @ 0700hrs ON
01st DEC 2009
762mm(30") CONDUCTOR
@ 157m
DRILL AHEAD 445mm(17.5")
HOLE SECTION FROM 157mMDRT
@ 1800 hrs ON 02nd DEC 2009
WOB: 2-4 klbs
RPM: 75-80
GPM: 990-1010
SPP: 1450-1700 psi


03-12-2009
WOB: 2-6 klbs
RPM: 75-85
GPM: 990-1010
SPP: 1600-1750 psi
WOB: 3-8 klbs
RPM: 75-85
GPM: 995-1010
SPP: 1650-1750 psi
330
340
350
360
370
380
390
400
410
420
430
440
450
460
470
480
490
500
510
520
530

WOB: 3-6 klbs
RPM: 70-80
GPM: 1000-1020
SPP: 1730-1820 psi

WOB: 1-8 klbs
RPM: 70-80
GPM: 1000-1010
SPP: 1625-1830 psi

540
550
560
570
580
590
600
610
620
630
640
650
660
670
680
690
700
710
720
730
740


WOB: 3-10 klbs
RPM: 65-80
GPM: 1000-1010
SPP: 1800-1950 psi
WOB: 2-12 klbs
RPM: 70-85
GPM: 1000-1020
SPP: 1900-1990 psi
WOB: 7-22 klbs
RPM: 60-90
GPM: 756-1006
SPP: 1094-1940 psi
750
760
770
780
790
800
810
820
830
840
850
860
870
880
890
900
910
920
930
940
950

340mm (13.375") CASING SHOE SET @ 961m MDRT

445mm (17.5") SECTION TD @ 966m MDRT @ 0900hrs ON 04th DECEMBER 2009

DRILL AHEAD 311mm(12.25") HOLE SECTION FROM 966mMDRT @ 1630 hrs ON 09th DEC 2009

CONDUCT LOT @ 961m 17.5ppg EMW

04-12-2009

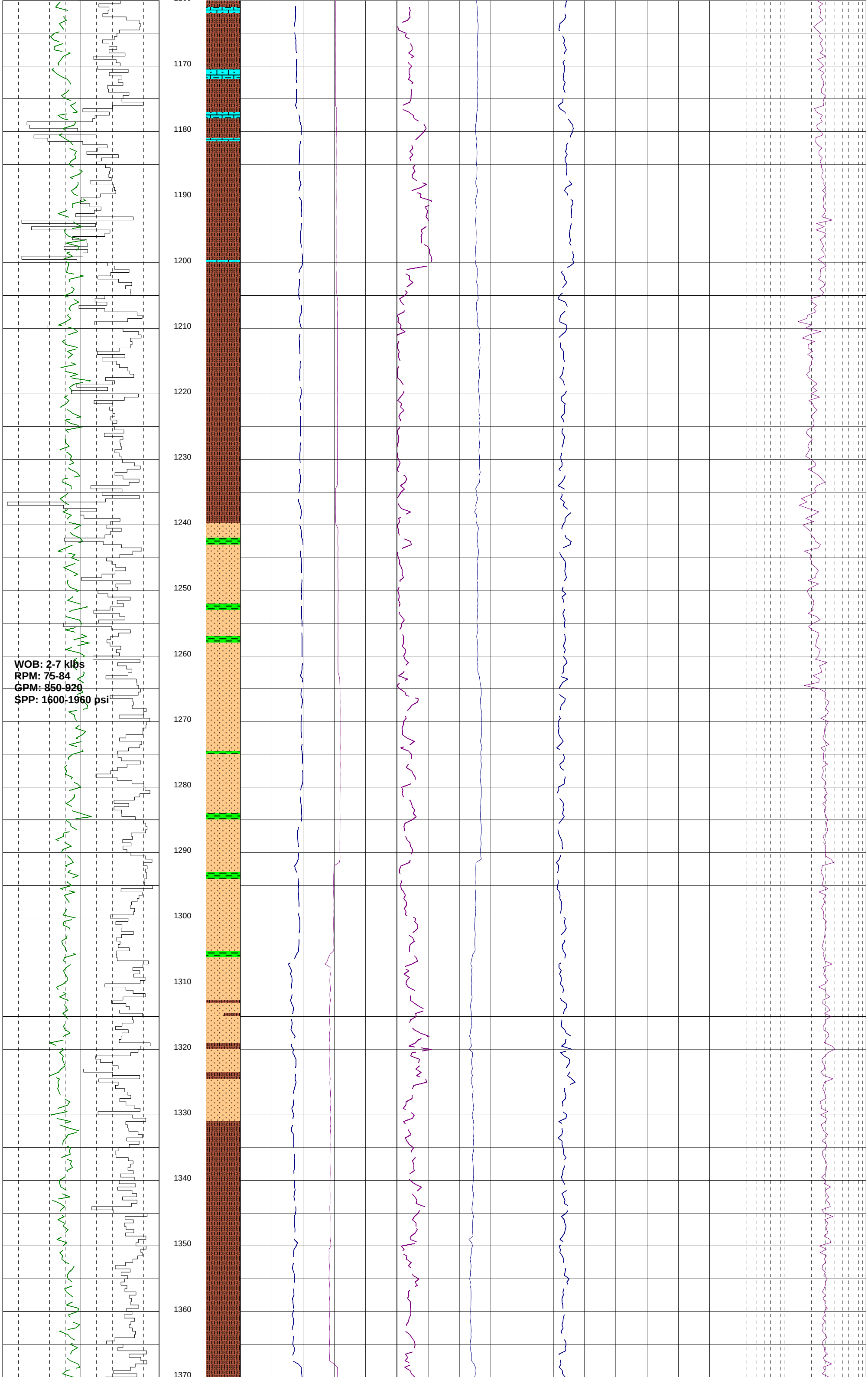
09-12-2009

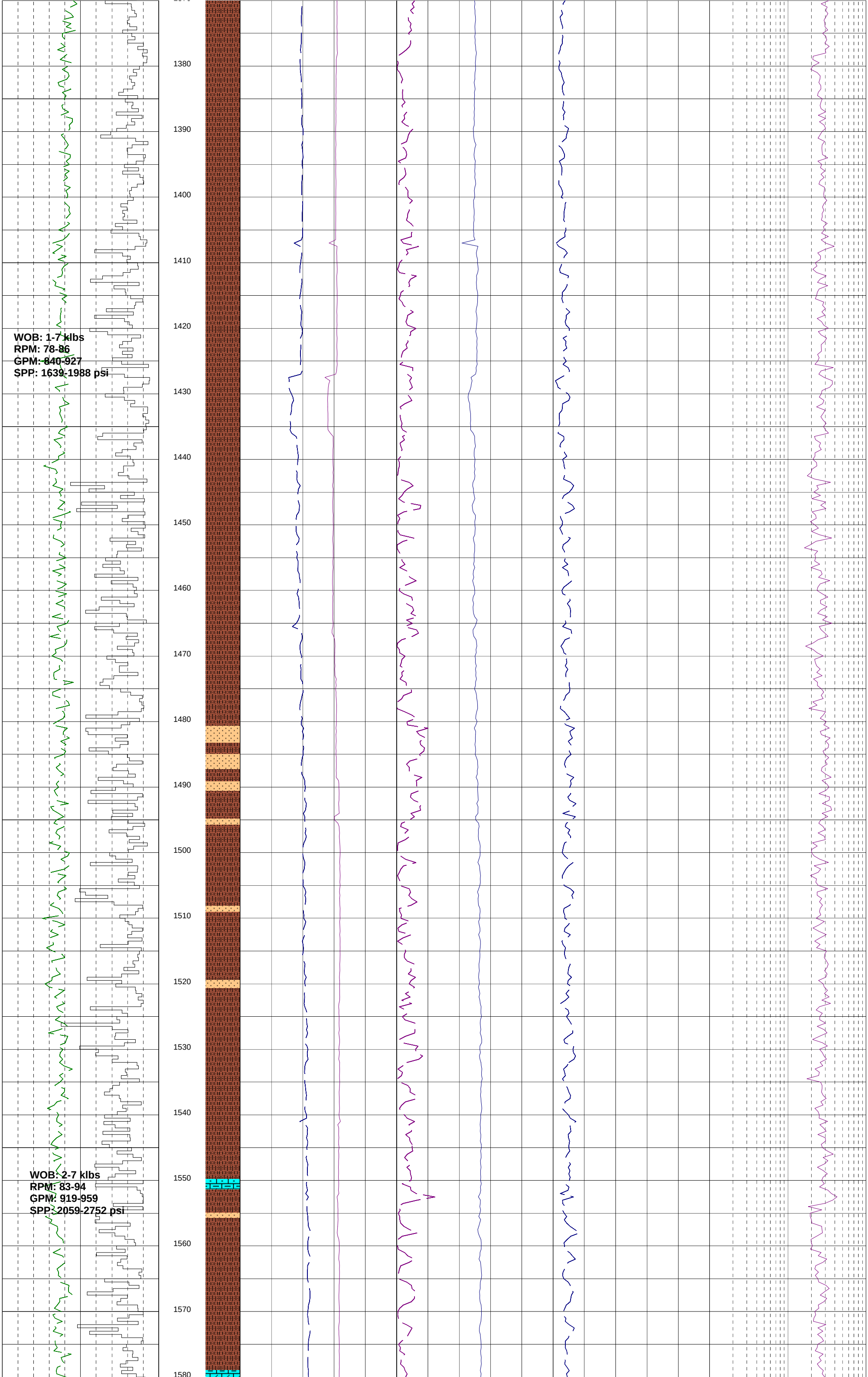
BIT # 3: 311mm (12.25")
REED
JETS: 6x15
IN:966m OUT:1972m
RUN:1006m HRS:35.14
COND: 4-4-LT-N-X-I-CT-TD

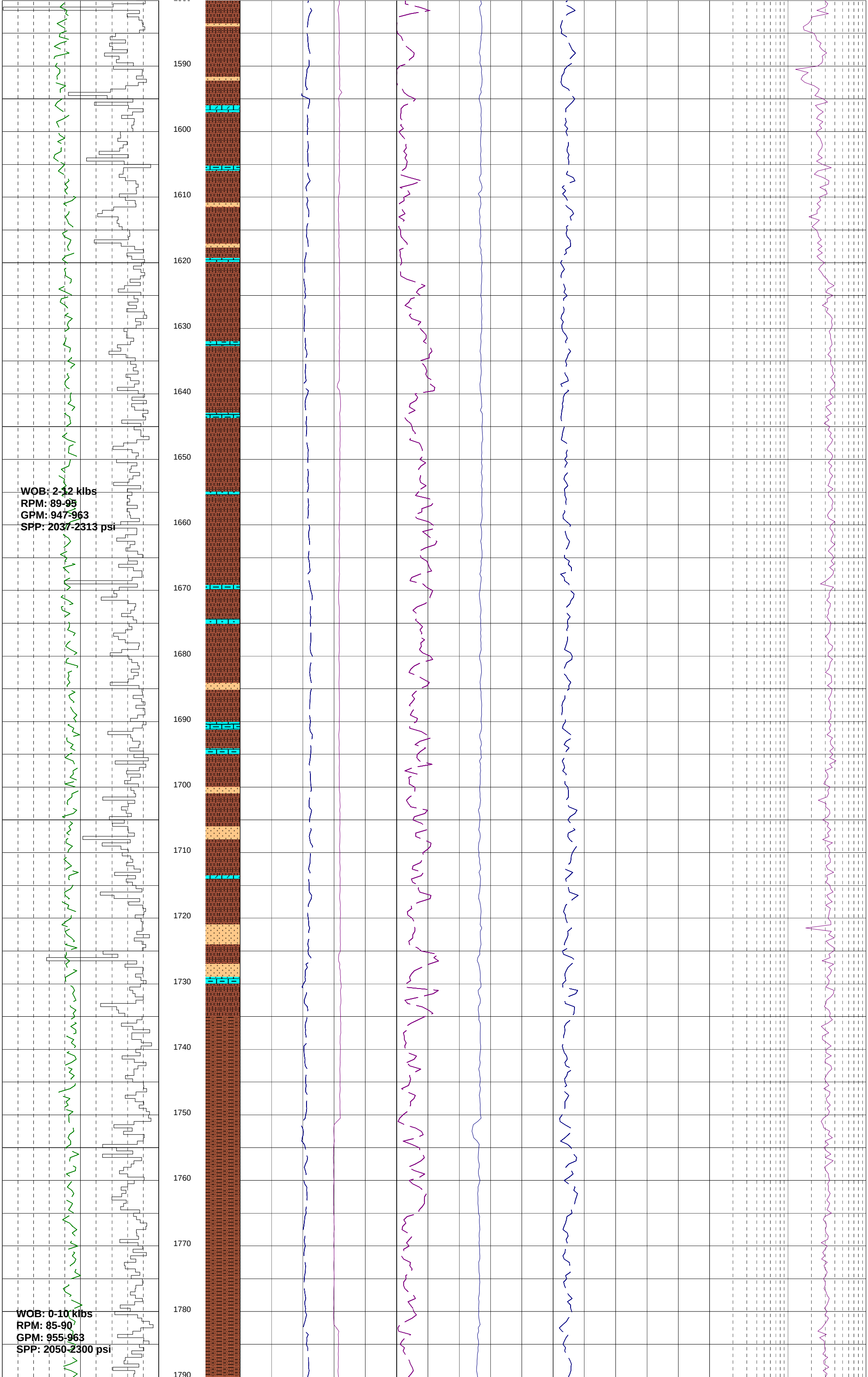
WOB: 5-18 klbs
RPM: 70-85
GPM: 890-910
SPP: 1780-1910 psi

WOB: 13-19 klbs
RPM: 50-63
GPM: 712-868
SPP: 1678-1996 psi

960
970
980
990
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160


1170
1180
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
WOB: 2-7 klbs
RPM: 75-84
GPM: 850-920
SPP: 1600-1960 psi


1380
1390
1400
1410
1420
1430
1440
1450
1460
1470
1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
WOB: 1-7 klbs
RPM: 78-86
GPM: 840-927
SPP: 1639-1988 psi
WOB: 2-7 klbs
RPM: 83-94
GPM: 919-959
SPP: 2059-2752 psi


1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
WOB: 2-12 klbs
RPM: 89-95
GPM: 947-963
SPP: 2037-2313 psi
WOB: 0-10 klbs
RPM: 85-90
GPM: 955-963
SPP: 2050-2300 psi

1800
1810
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

SLIDING FROM
1870m-1887m

WOB: 1-7 klbs
MM RPM: 120-130
GPM: 922-1002
SPP: 2214-1977 psi

SLIDING FROM
1898m-1977m

1922.5m-1926.0m DATA MISSING
DUE TO SYSTEM DOWN

18-12-2009

19-12-2009

BIT # 4 : 216mm (8.5")
Security FME3653Z PDC
JETS :6 X 14
IN :1972m OUT : 1972
RUN : HRS : 6.5
COND : 2-3-BT-S-X-I-CT-PR
DRILL PLUGS ONLY

SLIDING FROM
1981m - 1994m

BIT # 5RR: 216mm (8.5')
HUGHES CHRISTENSEN

244mm (9.625") CASING SHOE
SET @ 1965m MDRT

311mm (12.25") SECTION TD
@ 1972mMDRT @ 0430hrs on
12-DEC-09

CONDUCT LOT @ 1977m MDRT
EMW : 14.6 ppg

DRILL AHEAD 216mm (8.5")
HOLE SECTION FROM
1972m MDRT @ 1200 hrs,
19 DEC 09

JETS: 3X20
IN: 1972m OUT:2019
RUN:47m HRS:4.7
COND:2-2-WT-A-1-NO-BHA

20-12-2009

21-12-2009

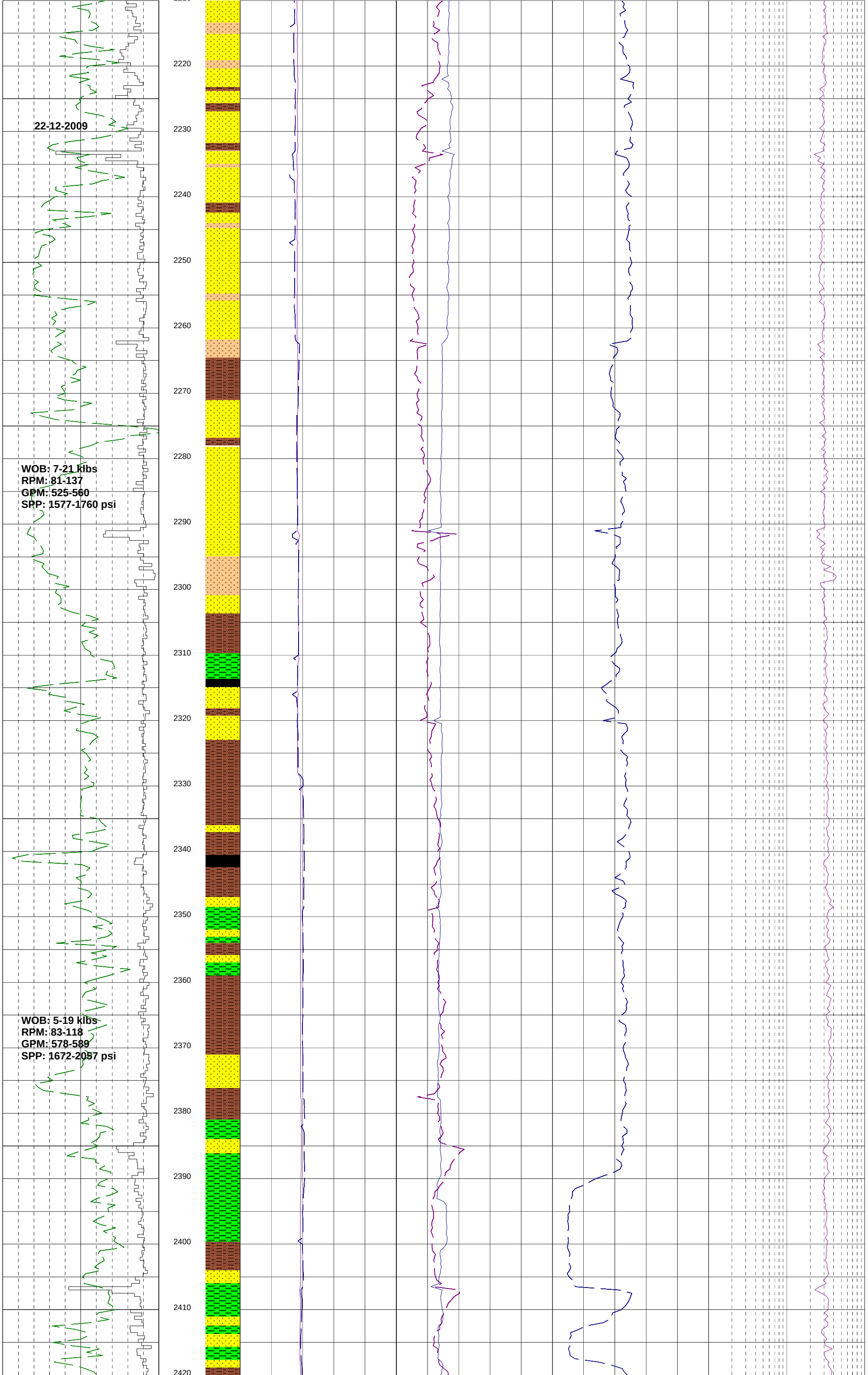
BIT # 6: 216mm 98.5")
REED
JETS: 4 X 16
IN: 2019 OUT: 2023m
RUN: 4m HRS: 0.3hrs
COND: 0-0-NO-A-X-I-NO-DTF

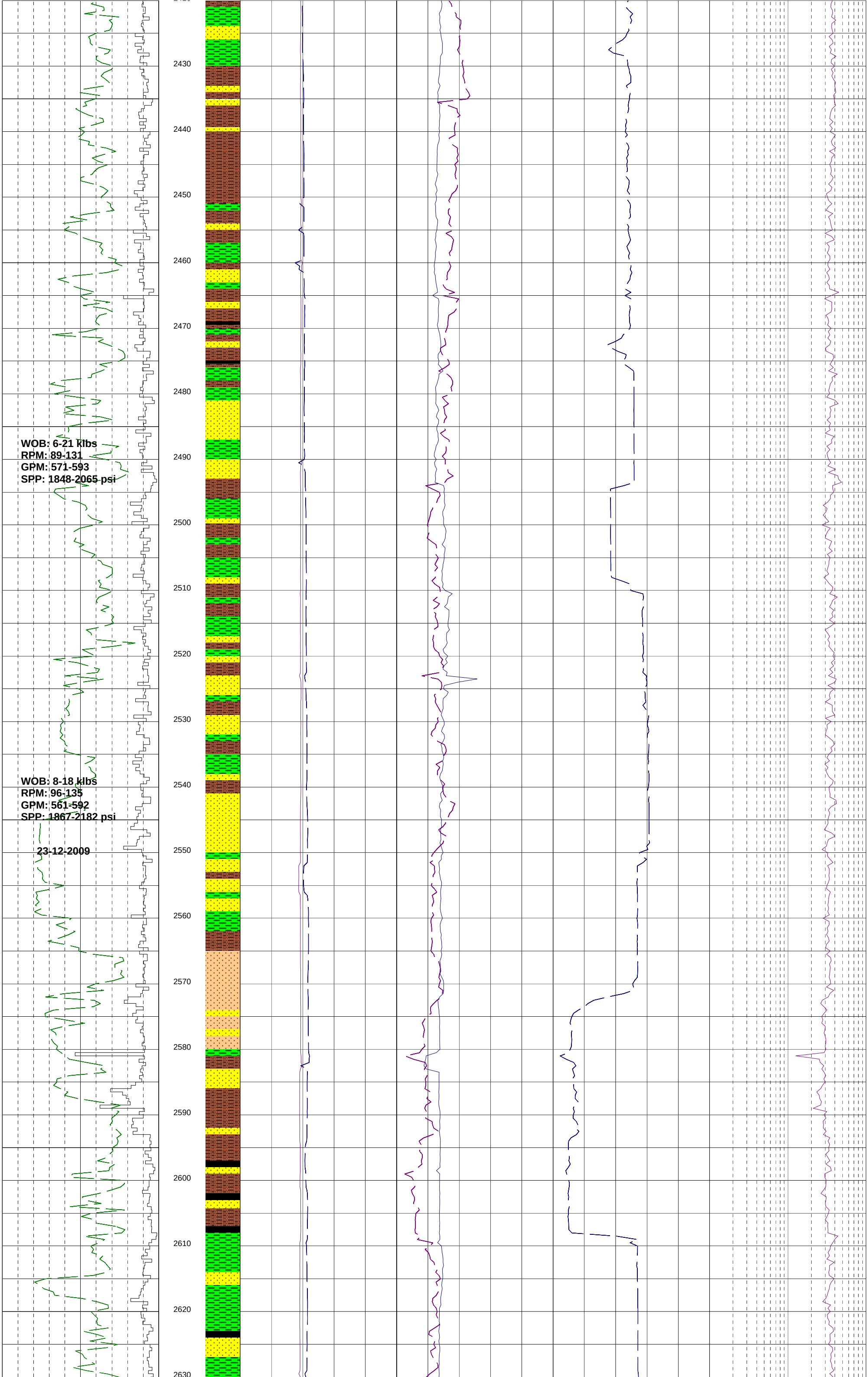
BIT # 6RR1: 216mm 98.5")
REED
JETS: 4 X 16
IN:2023m OUT:3522m
RUN:1499m HRS:89.4
COND:6-6-BT-A-X-I-NO-PR

WOB: 2.7-21.0 klbs
RPM: 64-126
GPM: 453-569
SPP: 1350-1870 psi

WOB: 6-15 klbs
RPM: 80-135
GPM: 525-560
SPP: 1591-1770 psi

2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210


22-12-2009
WOB: 7-21 klbs
RPM: 81-137
GPM: 525-560
SPP: 1577-1760 psi
WOB: 5-19 klbs
RPM: 83-118
GPM: 578-589
SPP: 1672-2057 psi
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
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2430
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2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
WOB: 6-21 klbs
RPM: 89-131
GPM: 571-593
SPP: 1848-2065 psi
WOB: 8-18 klbs
RPM: 96-135
GPM: 561-592
SPP: 1867-2182 psi
23-12-2009

2640
2650
2660
2670
2680
2690
2700
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2790
2800
2810
2820
2830
2840

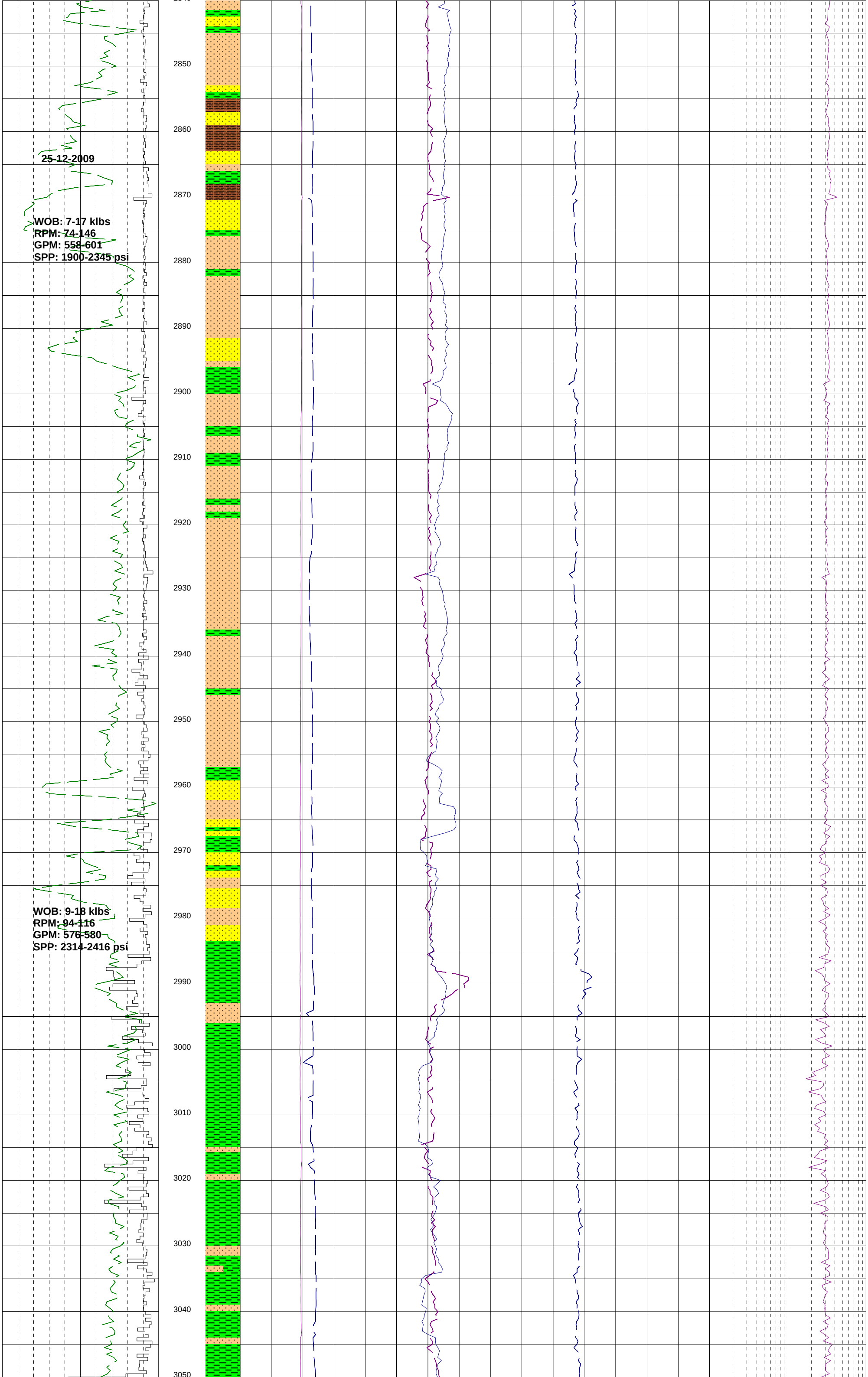
WOB: 8-16 klbs
RPM: 109-119
GPM: 582-585
SPP: 2192-2227 psi

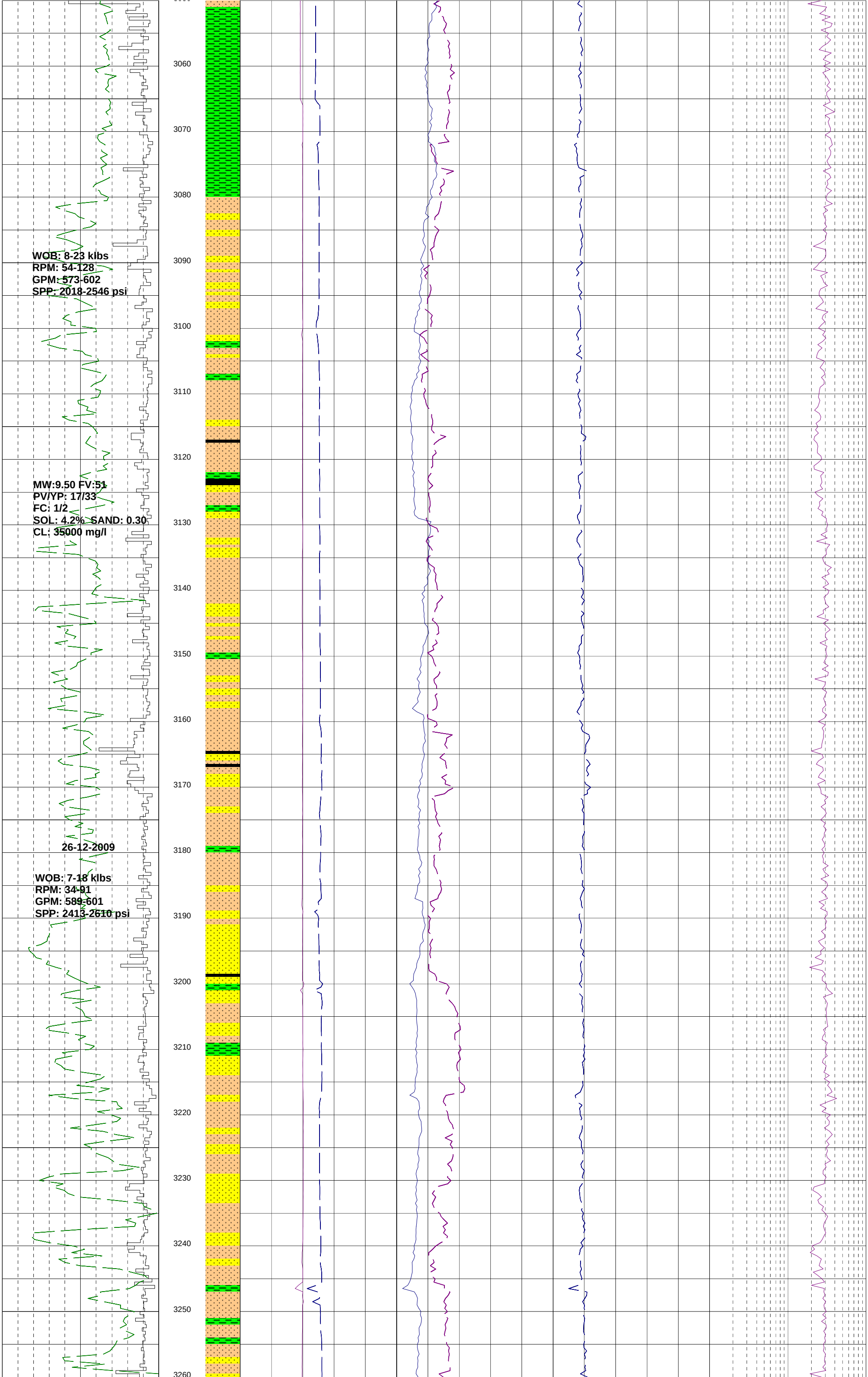
24-12-2009

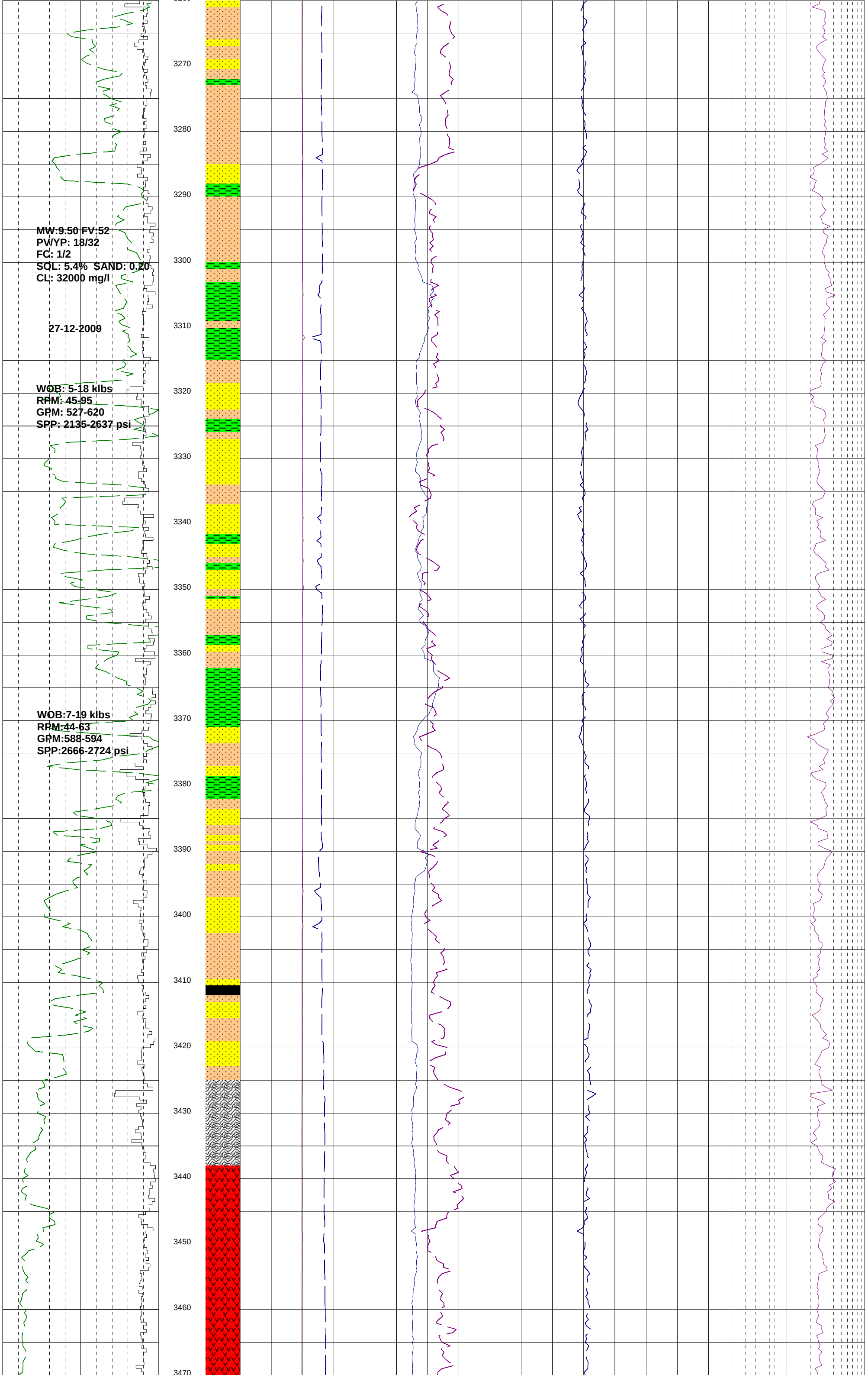
WOB: 6-17 klbs
RPM: 92-142
GPM: 598-617
SPP: 2025-2347 psi

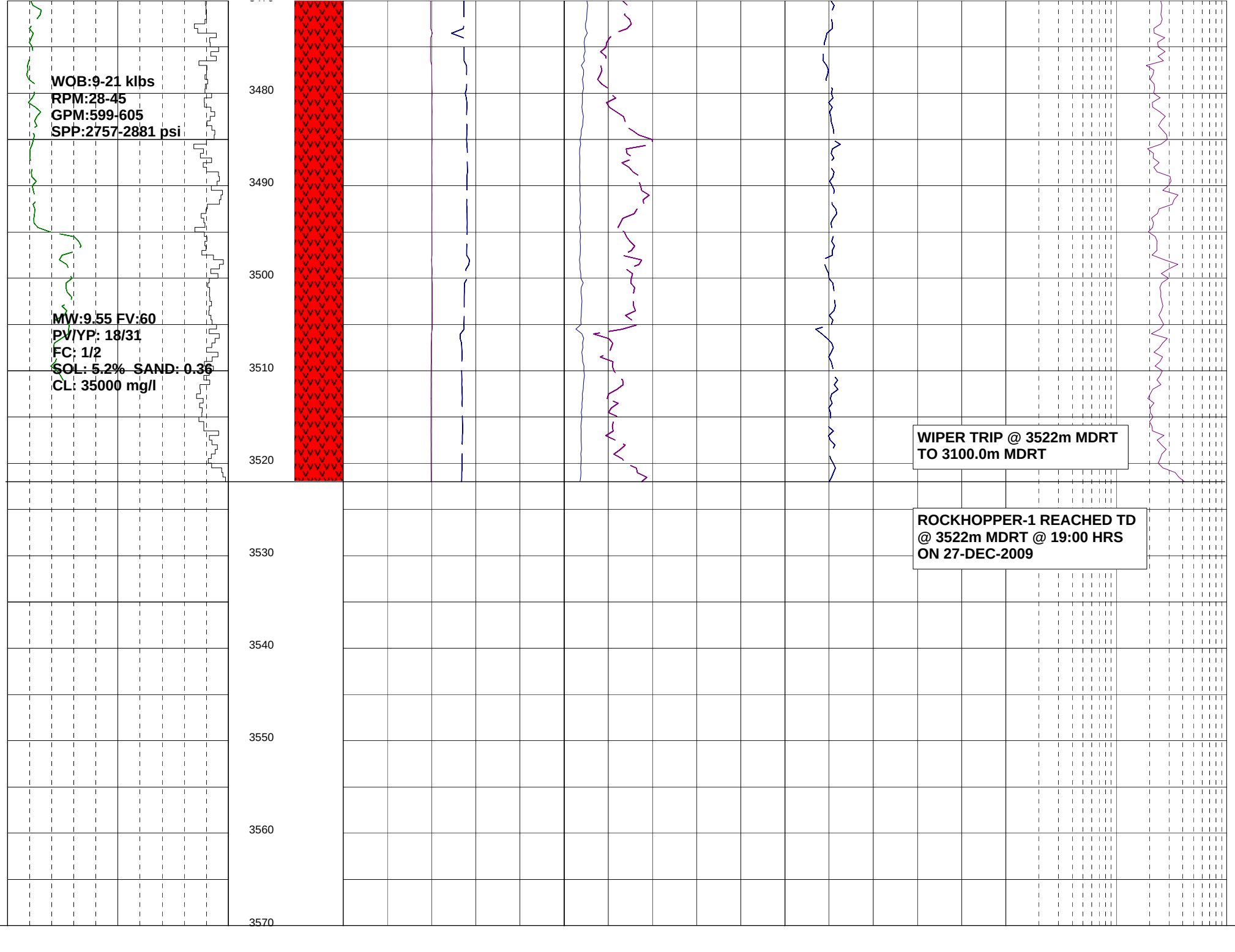
MW:9.55 FV:49
PV/YP: 49/31
FC: 1/2
SOL: 4.1% SAND: 0.30
CL: 36000 mg/l

WIPER TRIP @ 2753mMDRT
to 340mm(9.625") CSG shoe


25-12-2009
WOB: 7-17 klbs
RPM: 74-146
GPM: 558-601
SPP: 1900-2345 psi
WOB: 9-18 klbs
RPM: 94-116
GPM: 576-580
SPP: 2314-2416 psi
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040
3050


3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260
WOB: 8-23 klbs
RPM: 54-128
GPM: 573-602
SPP: 2018-2546 psi
MW:9.50 FV:51
PV/YP: 17/33
FC: 1/2
SOL: 4.2% SAND: 0.30
CL: 35000 mg/l
26-12-2009
WOB: 7-18 klbs
RPM: 34-91
GPM: 589-601
SPP: 2413-2610 psi


MW:9.50 FV:52
PV/YP: 18/32
FC: 1/2
SOL: 5.4% SAND: 0.20
CL: 32000 mg/l
27-12-2009
WOB: 5-18 klbs
RPM: 45-95
GPM: 527-620
SPP: 2135-2637 psi
WOB:7-19 klbs
RPM:44-63
GPM:588-594
SPP:2666-2724 psi
3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
3470


WOB:9-21 klbs
RPM:28-45
GPM:599-605
SPP:2757-2881 psi
MW:9.55 FV:60
PV/YP: 18/31
FC: 1/2
SOL: 5.2% SAND: 0.36
CL: 35000 mg/l
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
WIPER TRIP @ 3522m MDRT
TO 3100.0m MDRT
ROCKHOPPER-1 REACHED TD
@ 3522m MDRT @ 19:00 HRS
ON 27-DEC-2009

PRESSURE EVALUATION LOG

WELL : ROCKHOPPER-1

FROM (m): 0 | TO (m): 3570 | SCALE: 1/ 500

		POSITION		CASING SHOE SIZE / DEPTH			
Country	: AUSTRALIA	Latitude	: 39 47' 34.1828" S	762mm (30") at (m MDRT)	: 157.00	Spud Date	: 30-11-2009
Region	: TASMANIA	Longitude	: 145 26' 21.4660" E	340mm (13 3/8") at (m MDRT)	: 961.00	Total Depth Date	: 27-12-2009
Field	: ROCKHOPPER	X (m)	: 366376.031	245mm (9 5/8") at (m MDRT)	: 1965.00	Total Depth (m MDRT)	: 3522.0
Permit	: T/18P	Y (m)	: 5594075.423			Total Depth (m TVSS)	: 3191.97
Well Type	: EXPLORATION	RT-Sealevel (m MSL)	: 26			Status	: P & A
Rig Name	: KAN TAN 4	RT-Seabed (m)	: 100.3				

ABBREVIATIONS

MW MUD WEIGHT
FV FUNNEL VISCOSITY
PV PLASTIC VISCOSITY
YP YIELD POINT
FC FILTER CAKE
SOL SOLIDS
CR CIRCULATE RETURNS
SD SAND - %
S SALINITY - PPM
RM MUD RESISTIVITY
RMF MUD FILTRATE
C CARBIDE TEST
LAT LOGGED AFTER TRIP
DS DEVIATION SURVEY
NB NEW BIT
RR RERUN BIT
CB CORE BIT
WOB WEIGHT ON BIT
RPM REVS PER MINUTE
FLC FLOW CHECK
WL FILTRATE
PR POOR RETURNS
NR NO RETURNS
BG BACKGROUND GAS
TG TRIP GAS
STG SHORT TRIP GAS
CG CONNECTION GAS
SG SWAB GAS
SVG SURVEY GAS

LITHOLOGY LEGEND

Dolomite
Calcirudite
Calcarenite
Calcisiltite
Calcilutite
Sandy Claystone
Silty Claystone
Calcareous Claystone
Argil Calcilutite
Claystone
Silstone
Sandstone
Coal
Intrusive Volcanics
Volcaniclastics
Tuff
Cement
Argil Siltstone
Sandy Siltstone
Calcareous Siltstone
Argil Sandstone
Calcareous Sandstone
Dolomitic Sandstone
Silty Sandstone
Calcareous
Dolomitic
Fossils
Foraminiferae
Carbonaceous
Chert
Pyrite
Glauconite
Mica

ENGINEERING

Test
FIT or LOT
Mud loss
Mud gain
Deviation survey
Core
Shoe
Calcimetry

Gamma Ray (api) 0 100 200
ROP (m/hr) 200 100 0
DEPTH mMDRT
CORES
INTERPRETED LITHOLOGY
Resistivity (Deep) .2 2 20 200
Resistivity (Shallow) .2 2 20 200
DXC .01 .1 1 10
Temperature In (deg C) 0 20 40 60 80 100
Temperature Out (deg C) 0 20 40 60 80 100
Connection Gas (%) X
Trip Gas (%) *
Total Gas % .01 .1 1 10 100
MW In (spc_grv) 1 2 3
ECD (spc_grv) 1 2 3
EST PP (SG) 1 2 3
FRAC PRESS (SG) 1 2 3
LOT, FIT *

0 10 20 30 40 50 60 70 80 90 100 110

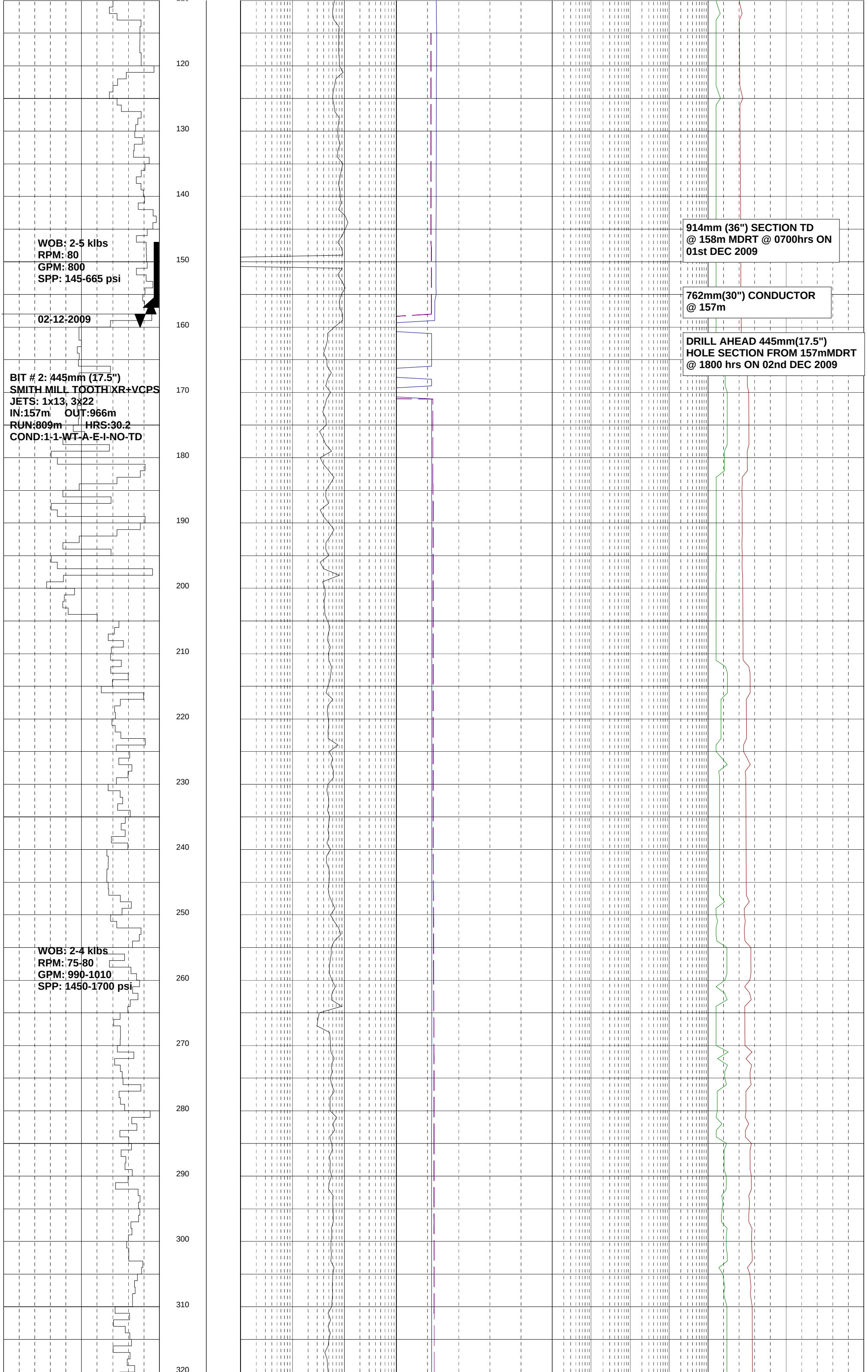
30-11-2009

BIT # 1: 914mm (36")
HUGHES CR-1
JETS: N/A
IN:100.3m OUT:158m
RUN:57.7m HRS:2.8
COND: 1-1-WT-A-1-I-NO-TD

01-12-2009

SPUD ROCKHOPPER-1 @ 23:30
914mm (36") SECTION
ON THE 30TH NOV 2009

SEABED @ 100.3m

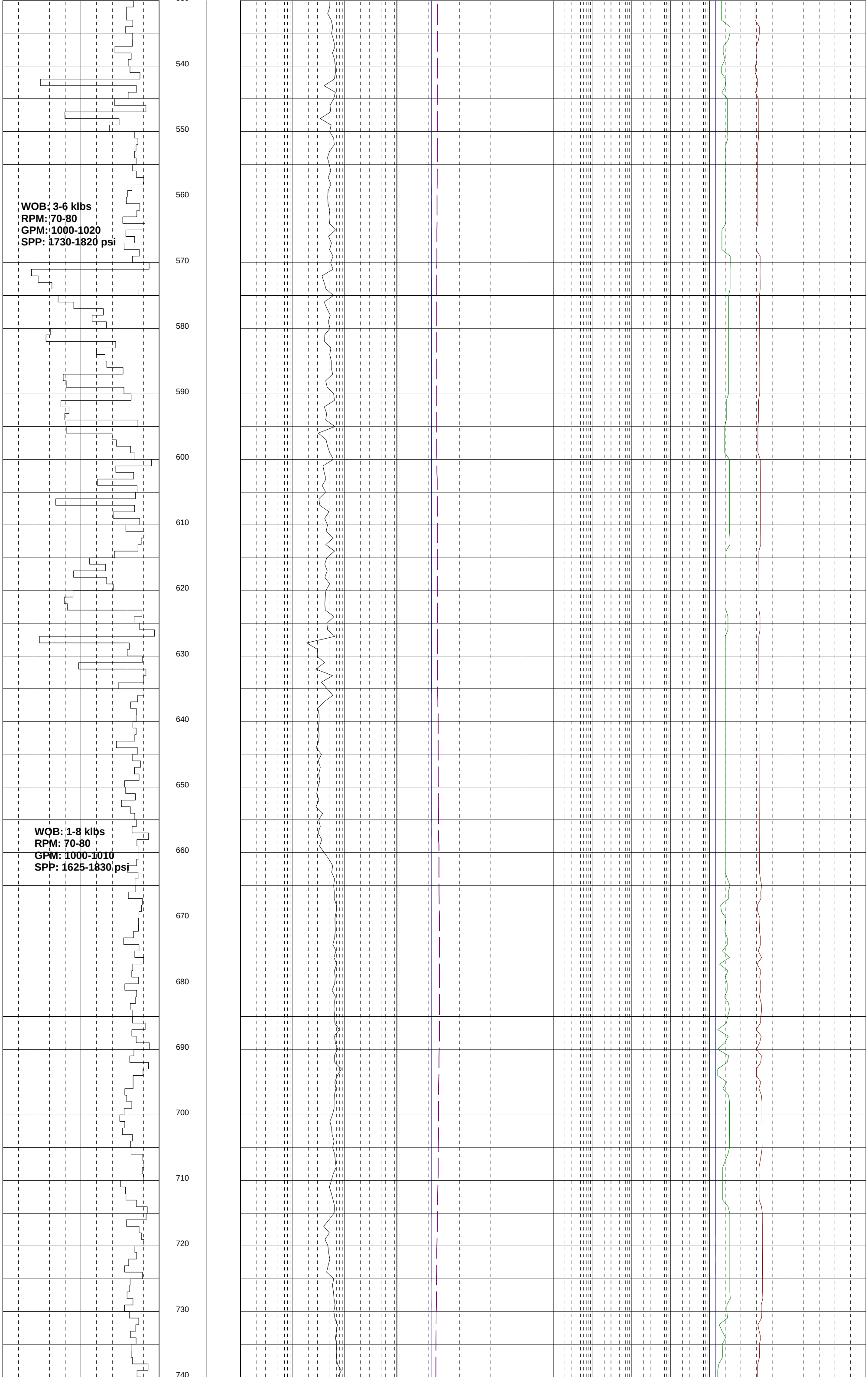

120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
WOB: 2-5 klbs
RPM: 80
GPM: 800
SPP: 145-665 psi
02-12-2009
BIT # 2: 445mm (17.5")
SMITH MILL TOOTH XR+VCPS
JETS: 1x13, 3x22
IN:157m OUT:966m
RUN:809m HRS:30.2
COND:1-1-WT-A-E-I-NO-TD
WOB: 2-4 klbs
RPM: 75-80
GPM: 990-1010
SPP: 1450-1700 psi
914mm (36") SECTION TD
@ 158m MDRT @ 0700hrs ON
01st DEC 2009
762mm(30") CONDUCTOR
@ 157m
DRILL AHEAD 445mm(17.5")
HOLE SECTION FROM 157mMDRT
@ 1800 hrs ON 02nd DEC 2009

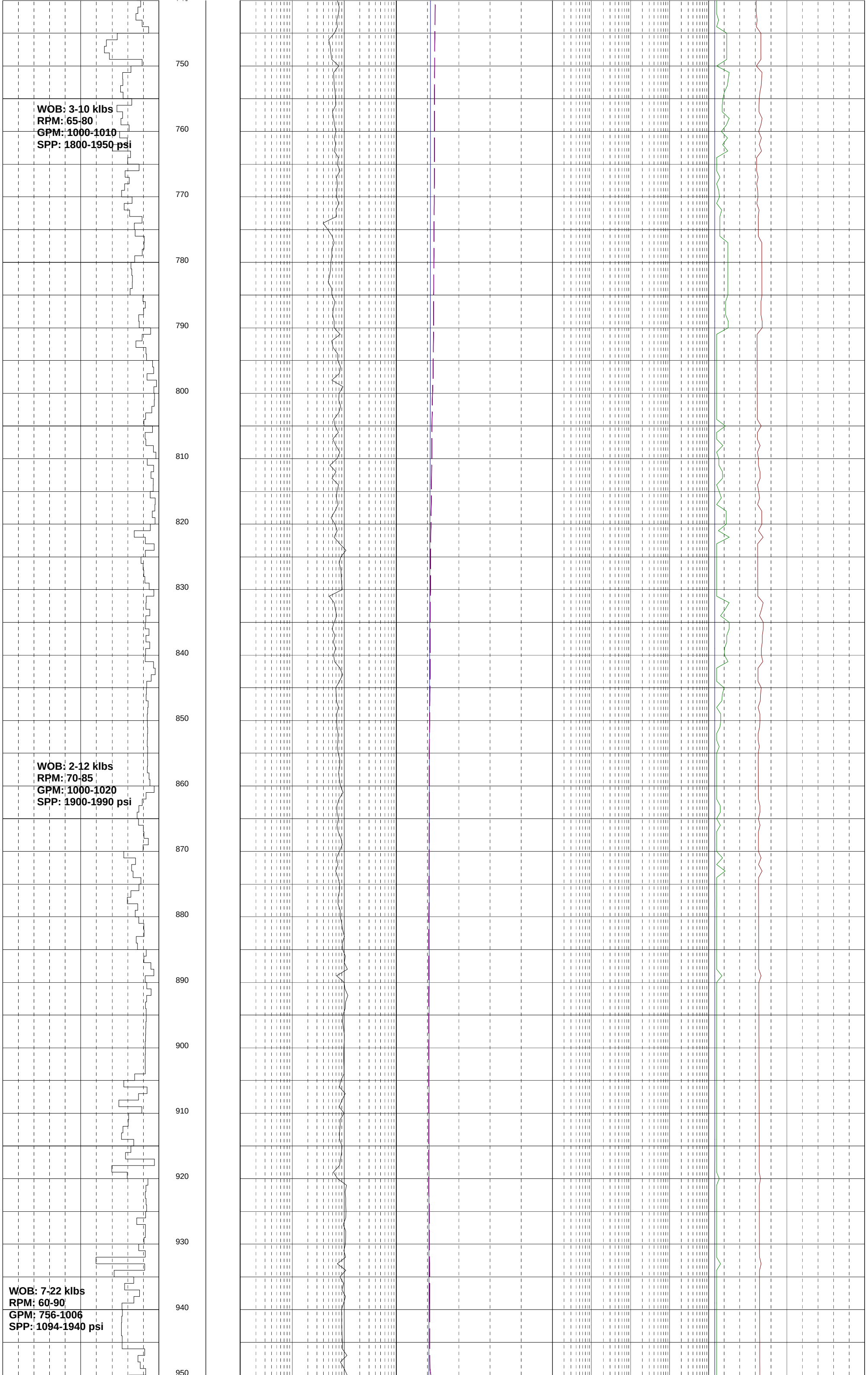
03-12-2009

WOB: 2-6 klbs
RPM: 75-85
GPM: 990-1010
SPP: 1600-1750 psi

WOB: 3-8 klbs
RPM: 75-85
GPM: 995-1010
SPP: 1650-1750 psi

330
340
350
360
370
380
390
400
410
420
430
440
450
460
470
480
490
500
510
520
530


WOB: 3-6 klbs
RPM: 70-80
GPM: 1000-1020
SPP: 1730-1820 psi
WOB: 1-8 klbs
RPM: 70-80
GPM: 1000-1010
SPP: 1625-1830 psi
540
550
560
570
580
590
600
610
620
630
640
650
660
670
680
690
700
710
720
730
740


WOB: 3-10 klbs
RPM: 65-80
GPM: 1000-1010
SPP: 1800-1950 psi
WOB: 2-12 klbs
RPM: 70-85
GPM: 1000-1020
SPP: 1900-1990 psi
WOB: 7-22 klbs
RPM: 60-90
GPM: 756-1006
SPP: 1094-1940 psi
750
760
770
780
790
800
810
820
830
840
850
860
870
880
890
900
910
920
930
940
950

MW:9 FV:47
PV/YP: 9/15
FC: 1/2
SOL: 1.5% SAND: 0.1
CL: 42000 mg/l

04-12-2009

09-12-2009

BIT # 3: 311mm (12.25")
REED
JETS: 6x15
IN:966m OUT:1972m
RUN:1006m HRS:35.14
COND: 4-4-LT-N-X-I-CT-TD

MW:9 FV:42
PV/YP: 9/16
FC: 1/2
SOL: 1.6% SAND: 0.1
CL: 41000 mg/l

WOB: 5-18 klbs
RPM: 70-85
GPM: 890-910
SPP: 1780-1910 psi

WOB: 13-19 klbs
RPM: 50-63
GPM: 712-868
SPP: 1678-1996 psi

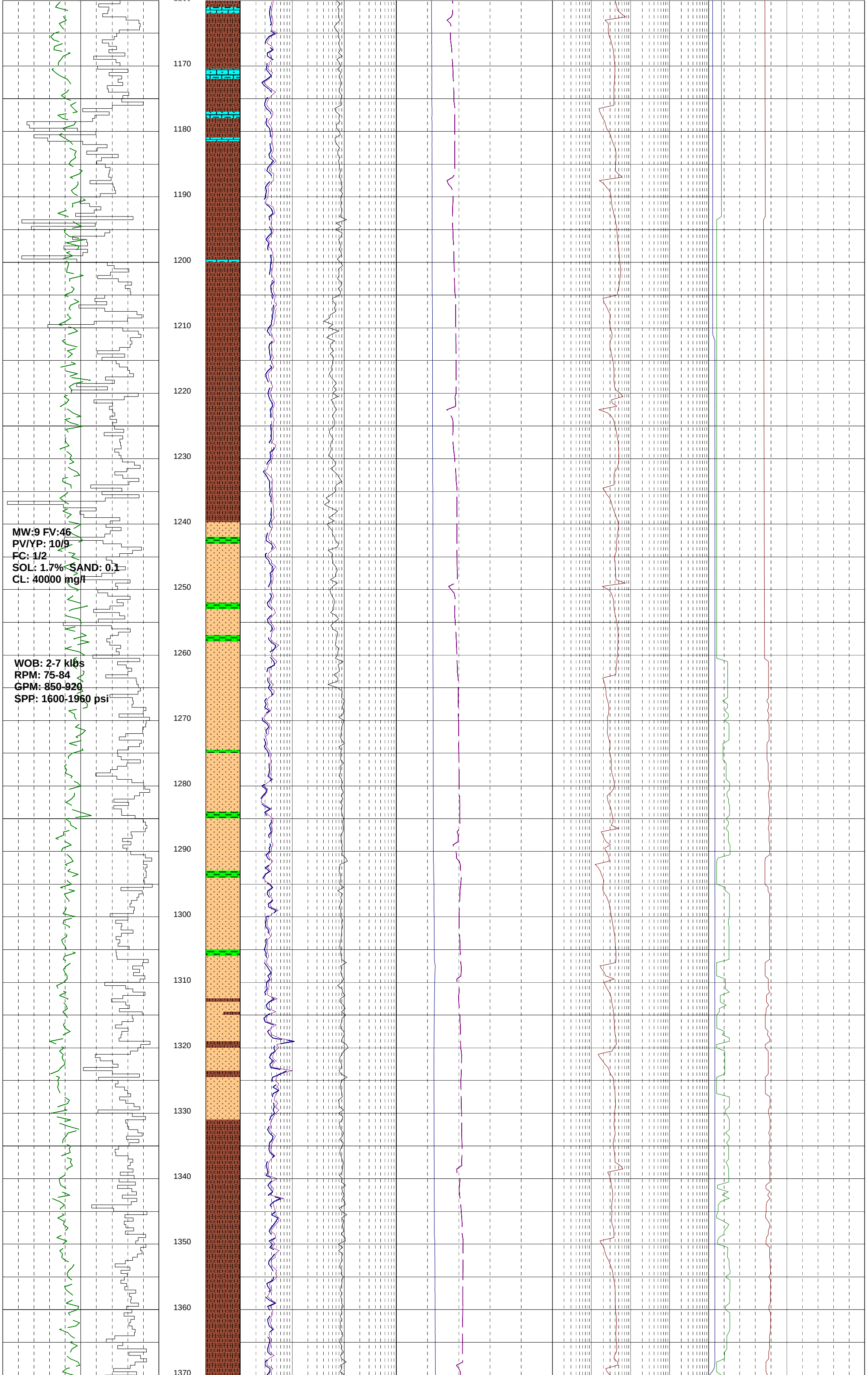
340mm (13.375") CASING SHOE SET @ 961m MDRT

445mm (17.5") SECTION TD @ 966m MDRT @ 0900hrs ON 04th DECEMBER 2009

DRILL AHEAD 311mm(12.25") HOLE SECTION FROM 966mMDRT @ 1630 hrs ON 09th DEC 2009

CONDUCT LOT @ 961m 17.5ppg EMW

960
970
980
990
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160


1170
1180
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
MW:9 FV:46
PV/YP: 10/9
FC: 1/2
SOL: 1.7% SAND: 0.1
CL: 40000 mg/l
WOB: 2-7 klbs
RPM: 75-84
GPM: 850-920
SPP: 1600-1960 psi

1380
1390
1400
1410
1420

WOB: 1-7 klbs
RPM: 78-86
GPM: 840-927
SPP: 1639-1988 psi

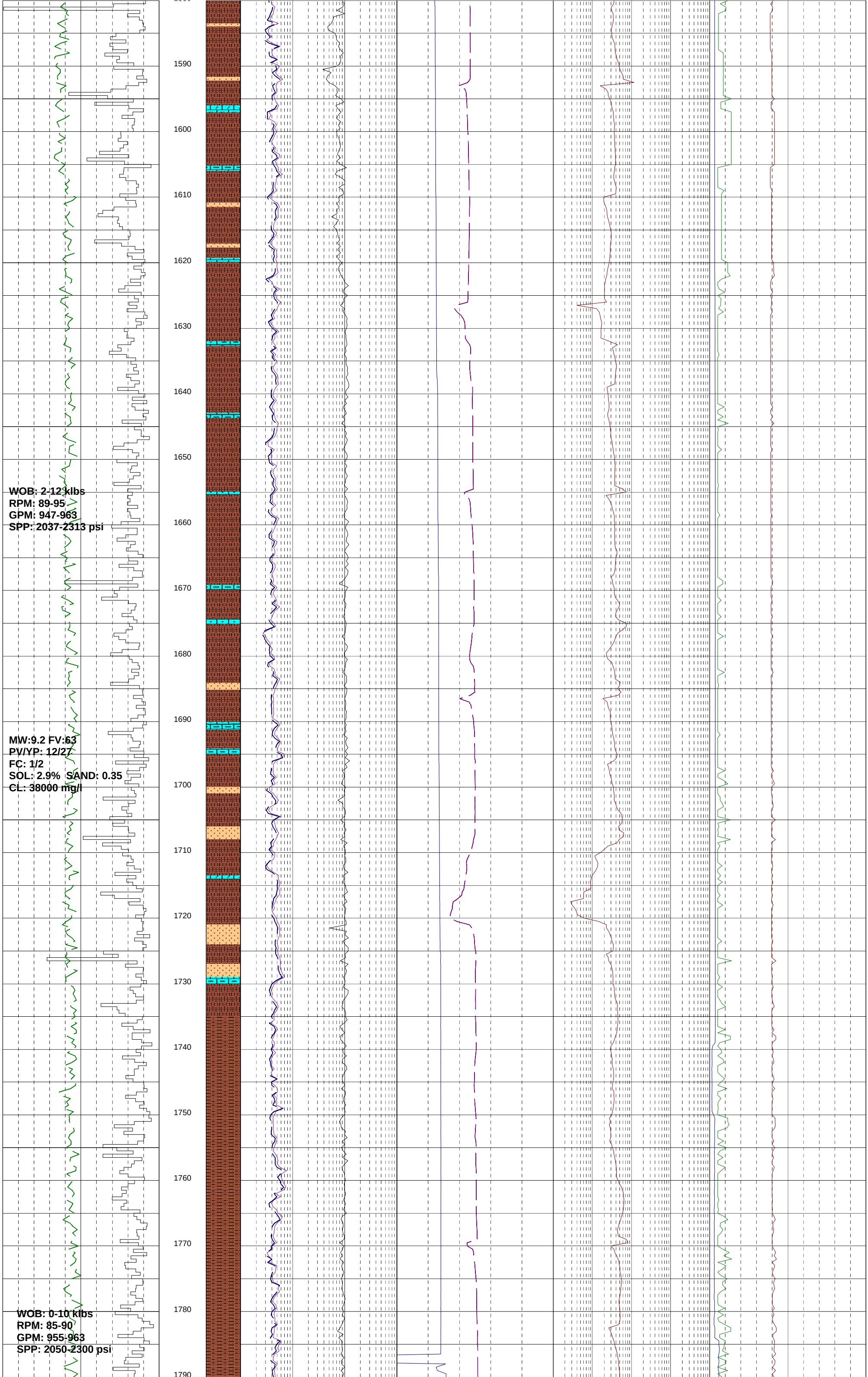
1430
1440

MW:9.3 FV:63
PV/YP: 11/22
FC: 1/2
SOL: 3.5% SAND: 0.25%
CL: 39000 mg/l

1450
1460
1470
1480
1490
1500
1510
1520
1530
1540

WOB: 2-7 klbs
RPM: 83-94
GPM: 919-959
SPP: 2059-2752 psi

1550
1560
1570
1580


1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
WOB: 2-12 klbs
RPM: 89-95
GPM: 947-963
SPP: 2037-2313 psi
MW:9.2 FV:63
PV/YP: 12/27
FC: 1/2
SOL: 2.9% SAND: 0.35
CL: 38000 mg/l
WOB: 0-10 klbs
RPM: 85-90
GPM: 955-963
SPP: 2050-2300 psi

1800
1810
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

MW:9.4 FV:57
PV/YP: 14/24
FC: 1/2
SOL: 3.7% SAND: 0.25
CL: 40000 mg/l

SLIDING FROM
1870m-1887m

WOB: 1-7 klbs
MM RPM: 120-130
GPM: 922-1002
SPP: 2214-1977 psi

SLIDING FROM
1898m-1977m

1922.5m-1926.0m DATA MISSING
DUE TO SYSTEM DOWN

MW:9.5 FV:56
PV/YP: 18/21
FC: 1/2
SOL: 3.9% SAND: 0.25
CL: 40000 mg/l

18-12-2009

19-12-2009

BIT # 4 : 216mm (8.5")
Security FMF3653Z PDC
JETS :6 X 14
IN :1972m OUT : 1972
RUN : HRS : 6.5
COND : 2-3-BT-S-X-I-CT-PR
DRILL PLUGS ONLY

SLIDING FROM
1981m - 1994m

BIT # 5RR: 216mm (8.5')
HUGHES CHRISTENSEN

244mm (9.625") CASING SHOE
SET @ 1965m MDRT

311mm (12.25") SECTION TD
@ 1972mMDRT @ 0430hrs on
12-DEC-09

CONDUCT LOT @ 1977m MDRT
EMW : 14.6 ppg

DRILL AHEAD 216mm (8.5")
HOLE SECTION FROM
1972m MDRT @ 1200 hrs,
19 DEC 09

JETS: 3X20
IN: 1972m OUT:2019
RUN:47m HRS:4.7
COND:2-2-WT-A-1-NO-BHA

20-12-2009

21-12-2009

BIT # 6: 216mm 98.5")
REED
JETS: 4 X 16
IN: 2019 OUT: 2023m
RUN: 4m HRS: 0.3hrs
COND: 0-0-NO-A-X-I-NO-DTF

BIT # 6RR1: 216mm 98.5")
REED
JETS: 4 X 16
IN:2023m OUT:3522m
RUN:1499m HRS:89.4
COND:6-6-BT-A-X-I-NO-PR

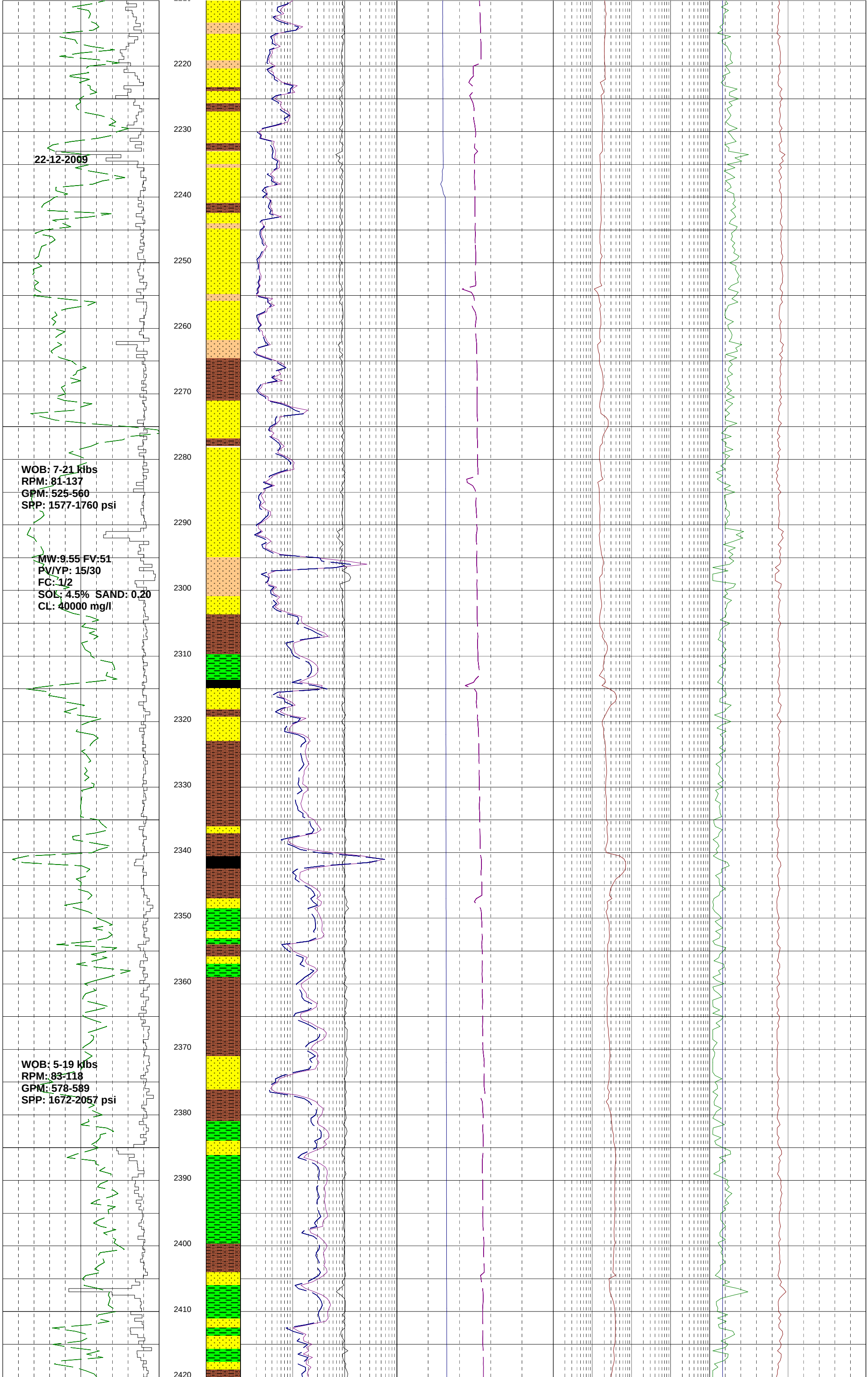
MW:9.65 FV:50
PV/YP: 12/26
FC: 1/2
SOL: 4.0% SAND: 0.20
CL: 41000 mg/l

WOB: 2.7-21.0 klbs
RPM: 64-126
GPM: 453-569
SPP: 1350-1870 psi

MW:9.55 FV:51
PV/YP: 13/26
FC: 1/2
SOL: 4.4% SAND: 0.20
CL: 41000 mg/l

WOB: 6-15 klbs
RPM: 80-135
GPM: 525-560
SPP: 1591-1770 psi

2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210


22-12-2009
WOB: 7-21 klbs
RPM: 81-137
GPM: 525-560
SPP: 1577-1760 psi
MW:9.55 FV:51
PV/YP: 15/30
FC: 1/2
SOL: 4.5% SAND: 0.20
CL: 40000 mg/l
WOB: 5-19 klbs
RPM: 83-118
GPM: 578-589
SPP: 1672-2057 psi
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
2400
2410
2420

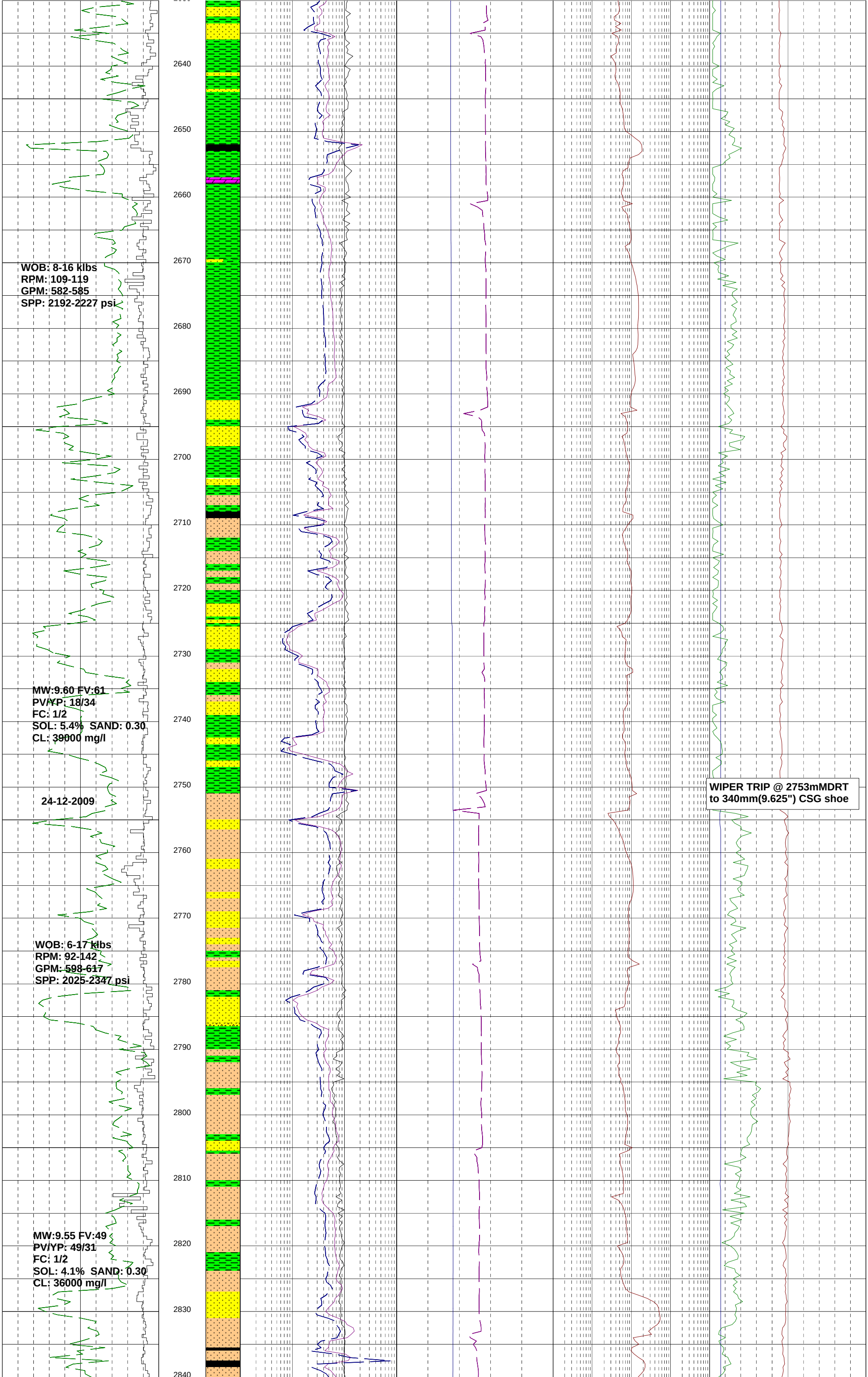
MW:9.55 FV:52
PV/YP: 14/31
FC: 1/2
SOL: 4.5% SAND: 0.25
CL: 38000 mg/l

WOB: 6-21 klbs
RPM: 89-131
GPM: 571-593
SPP: 1848-2065 psi

23-12-2009

WOB: 8-18 klbs
RPM: 96-135
GPM: 561-592
SPP: 1867-2182 psi

2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630


2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840
WOB: 8-16 klbs
RPM: 109-119
GPM: 582-585
SPP: 2192-2227 psi
MW:9.60 FV:61
PV/YP: 18/34
FC: 1/2
SOL: 5.4% SAND: 0.30
CL: 39000 mg/l
24-12-2009
WOB: 6-17 klbs
RPM: 92-142
GPM: 598-617
SPP: 2025-2347 psi
MW:9.55 FV:49
PV/YP: 49/31
FC: 1/2
SOL: 4.1% SAND: 0.30
CL: 36000 mg/l
WIPER TRIP @ 2753mMDRT
to 340mm(9.625") CSG shoe

25-12-2009

WOB: 7-17 klbs
RPM: 74-146
GPM: 558-601
SPP: 1900-2345 psi

WOB: 9-18 klbs
RPM: 94-116
GPM: 576-580
SPP: 2314-2416 psi

2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040
3050

WOB: 8-23 klbs
RPM: 54-128
GPM: 573-602
SPP: 2018-2546 psi

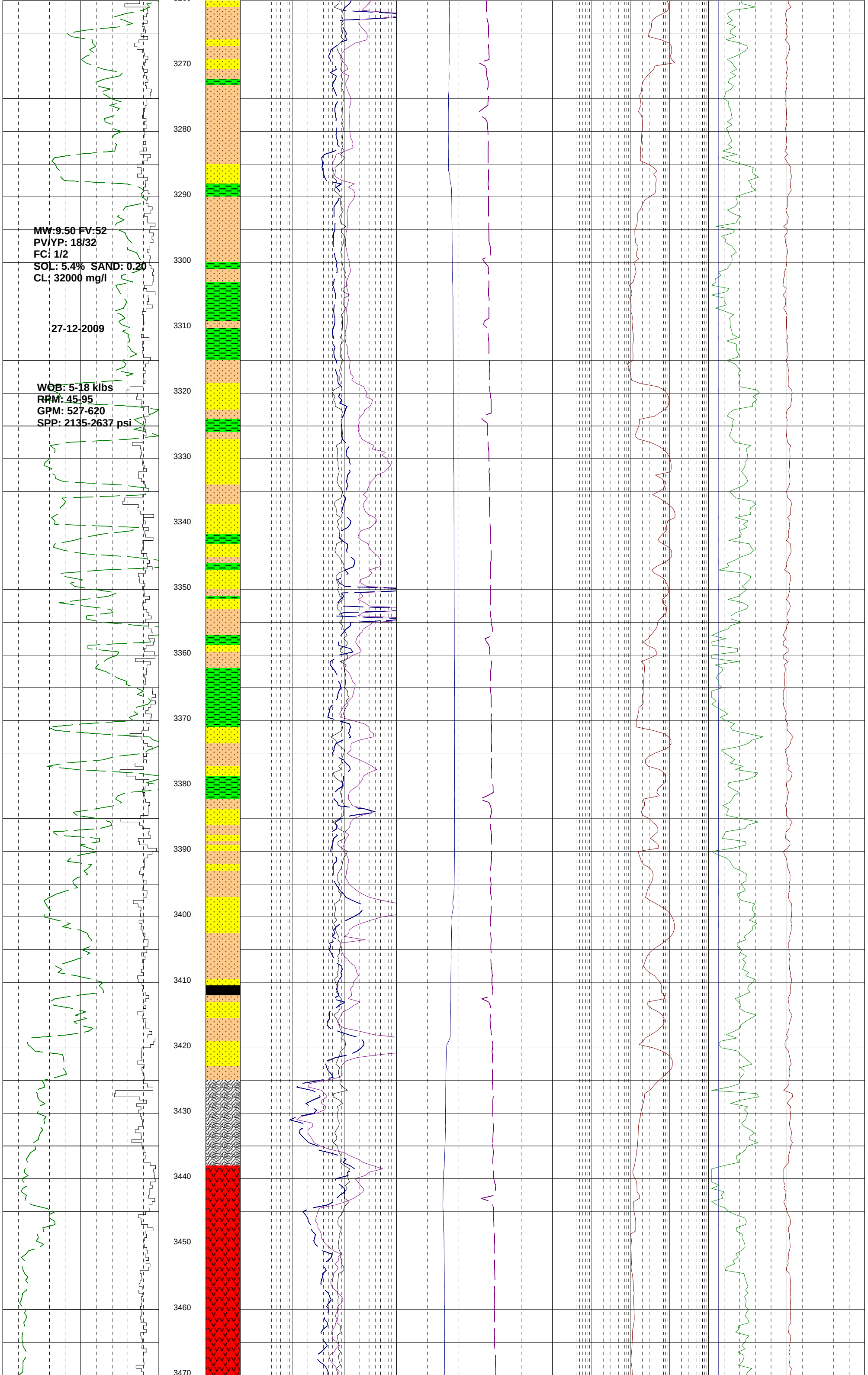
MW:9.50 FV:51
PV/YP: 17/33
FC: 1/2
SOL: 4.2% SAND: 0.30
CL: 35000 mg/l

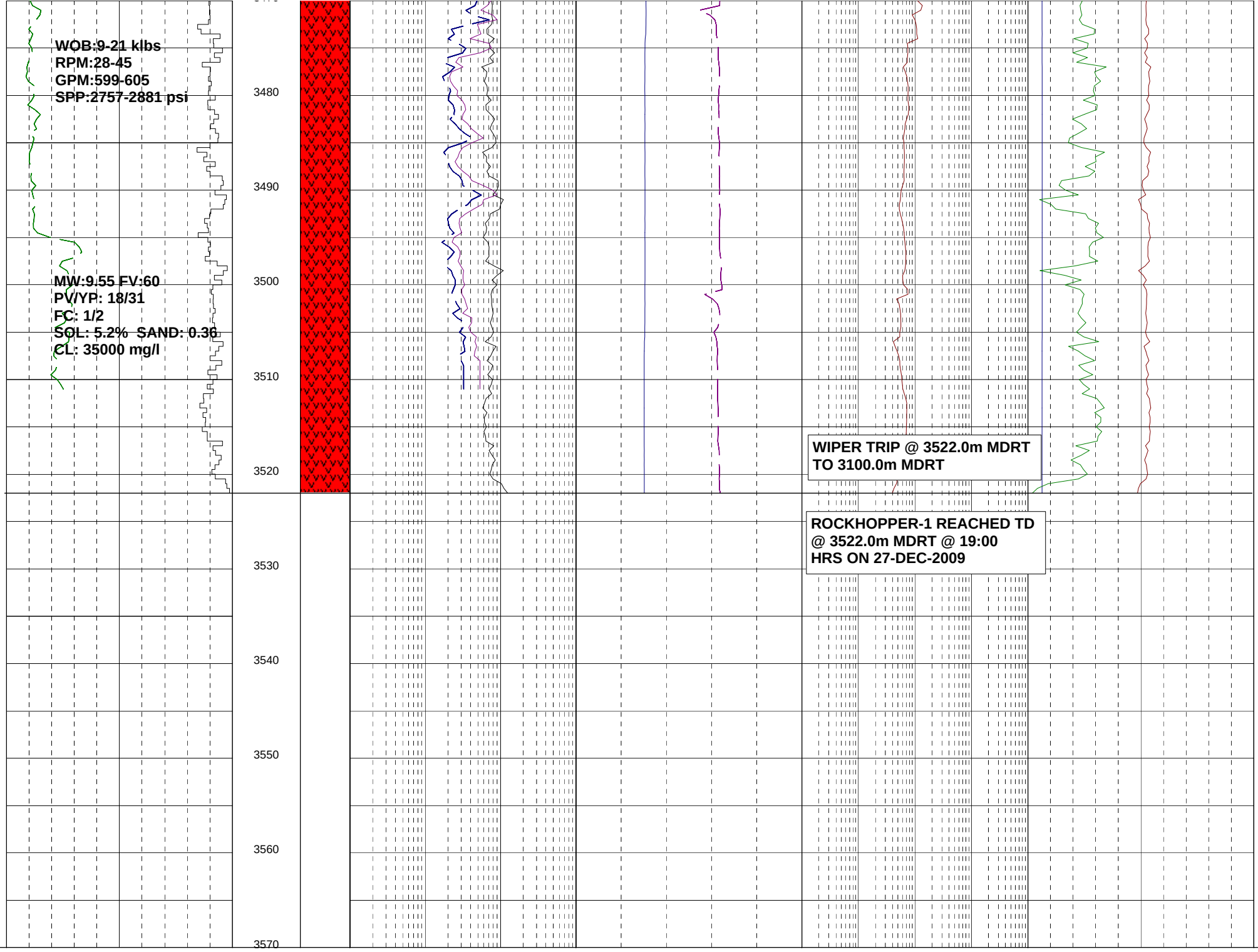
26-12-2009

WOB: 7-18 klbs
RPM: 34-91
GPM: 589-601
SPP: 2413-2610 psi

WOB: 7-18 klbs
RPM: 34-91
GPM: 589-601
SPP: 2413-2610 psi

3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260


3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
3470
MW:9.50 FV:52
PV/YP: 18/32
FC: 1/2
SOL: 5.4% SAND: 0.20
CL: 32000 mg/l
27-12-2009
WOB: 5-18 klbs
RPM: 45-95
GPM: 527-620
SPP: 2135-2637 psi


WOB:9-21 klbs
RPM:28-45
GPM:599-605
SPP:2757-2881 psi
MW:9.55 FV:60
PV/YP: 18/31
FC: 1/2
SOL: 5.2% SAND: 0.30
CL: 35000 mg/l
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
WIPER TRIP @ 3522.0m MDRT
TO 3100.0m MDRT
ROCKHOPPER-1 REACHED TD
@ 3522.0m MDRT @ 19:00
HRS ON 27-DEC-2009

RESERVAL GAS RATIO LOG

WELL : ROCKHOPPER-1

FROM (m): 0 TO (m): 3570 SCALE: 1/ 500

		POSITION		CASING SHOE SIZE / DEPTH			
Country	: AUSTRALIA	Latitude	: 39 47' 34.1828" S	762mm (30") at (m MDRT)	: 157.00	Spud Date	: 30-11-2009
Region	: TASMANIA	Longitude	: 145 26' 21.4660" E	340mm (13 3/8") at (m MDRT)	: 961.00	Total Depth Date	: 27-12-2009
Field	: ROCKHOPPER	X (m)	: 366376.031	245mm (9 5/8") at (m MDRT)	: 1965.00	Total Depth (m MDRT)	: 3522.0
Permit	: T/18P	Y (m)	: 5594075.423			Total Depth (m TVSS)	: 3191.97
Well Type	: EXPLORATION	RT-Sealevel (m MSL)	: 26			Status	: P & A
Rig Name	: KAN TAN 4	RT-Seabed (m)	: 100.3				

GAS RATIOS FORMULAE

GAS WETNESS RATIO (Wh)

GWR = (C2 + C3 + C4 + C5)/ (C1 + C2 + C3 + C4 + C5)*100

LIGHT TO HEAVY RATIO (Bh)

LHR = (C1 + C2)/(C3 + C4 + C5)

OIL CHARACTER QUALIFIER (Ch)

OCQ = (C4 + C5)/(C3)

Dolomite, Calcirudite, Calcarenite, Calcisiltite, Calcilutite, Sandy Claystone, Silty Claystone, Calcareous Claystone, Argil Calcilutite

Claystone, Silstone, Sandstone, Coal, Intrusive Volcanics, Volcaniclastics, Tuff, Cement

Argil Siltstone, Sandy Siltstone, Calcareous Siltstone, Argil Sandstone, Calcareous Sandstone, Dolomitic Sandstone, Silty Sandstone

Calcareous, Dolomitic, Fossils, Foraminiferae, Carbonaceous, Chert, Pyrite, Glauconite, Mica

GEOSERVICES CREW

ALS ENGINEERS

G. Gopi

L. Hannon

D.Ilyin

MUDLOGGERS

P. Currie

K.Brzozowska

DEPTH mMDRT

ROP (m/hr) 200 20 2 .2

(TVD) 0 10 20 30 40 50 60 70 80 90 100 103 110

CUTTINGS (%)

CHROMATOLOG (%)

C1 C2 C3 iC4 nC4 iC5 nC5

TOTAL GAS (%) .001 .01 .1 1 10 100

OIL CHARACTER QUALIFIER .1 1 10

GAS WETNESS RATIO

LIGHT TO HEAVY RATIO .1 1 10 100

30-11-2009

BIT # 1: 914mm (36")
HUGHES CR-1
JETS: N/A
IN:100.3m OUT:158m
RUN:57.7m HRS:2.8
COND: 1-1-WT-A-1-I-NO-TD

01-12-2009

SPUD ROCKHOPPER-1 @ 23:30
914mm (36") SECTION
ON THE 30TH NOV 2009

SEABED @ 100.3m

120
123.05
130
140
143.01
150
160
172.05
170
180
183.02
190
200
203.02
210
220
223.01
230
240
142.7
250
260
162.7
270
280
182.7
290
300
202.7
310
320

WOB: 2-5 klbs
RPM: 80
GPM: 800
SPP: 145-665 psi

02-12-2009

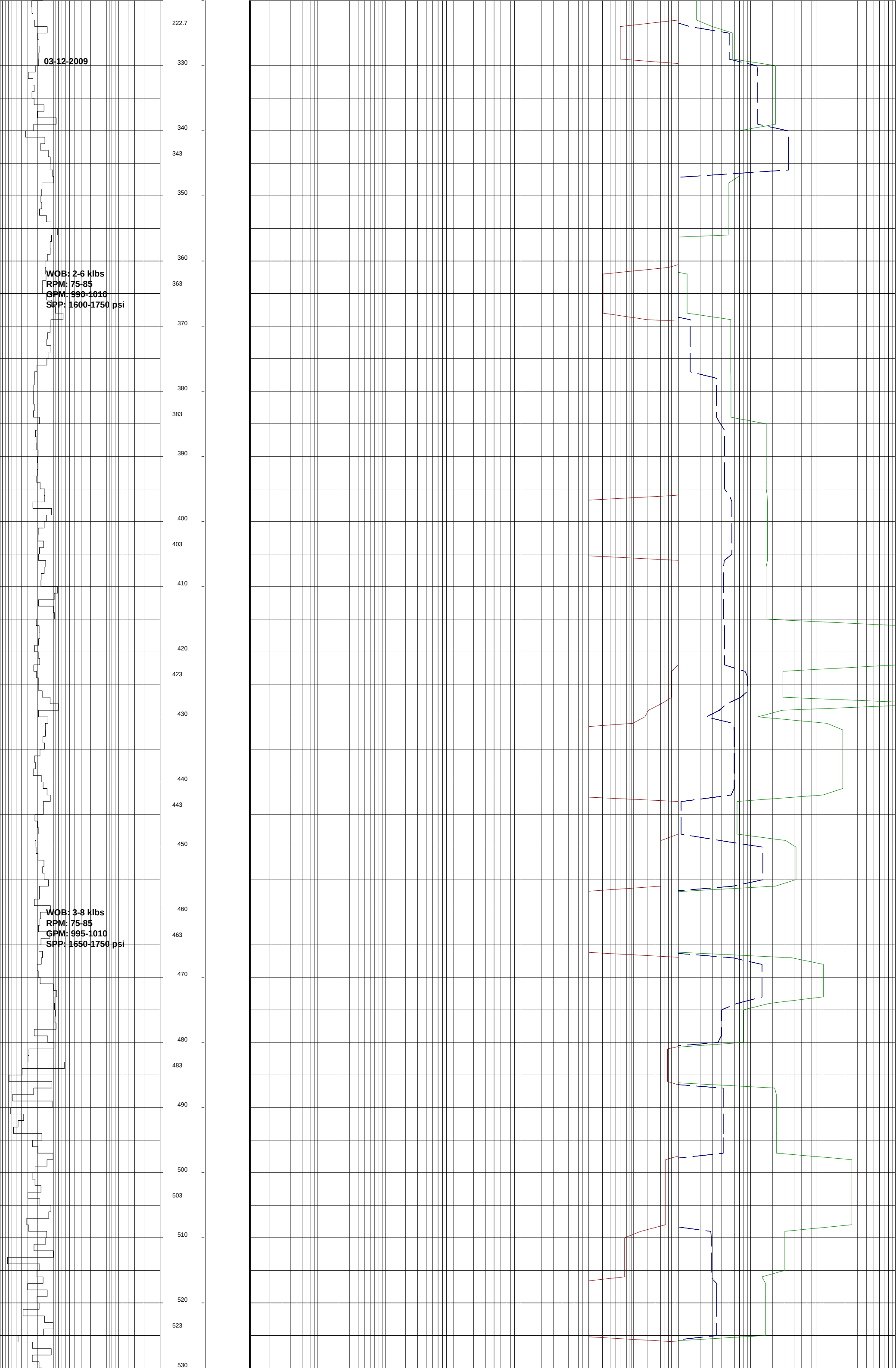
BIT # 2: 445mm (17.5")
SMITH MILL TOOTH XR+VCPS
JETS: 1x13, 3x22
IN:157m OUT:966m
RUN:809m HRS:30.2
COND:1-1-WT-A-E-I-NO-TD

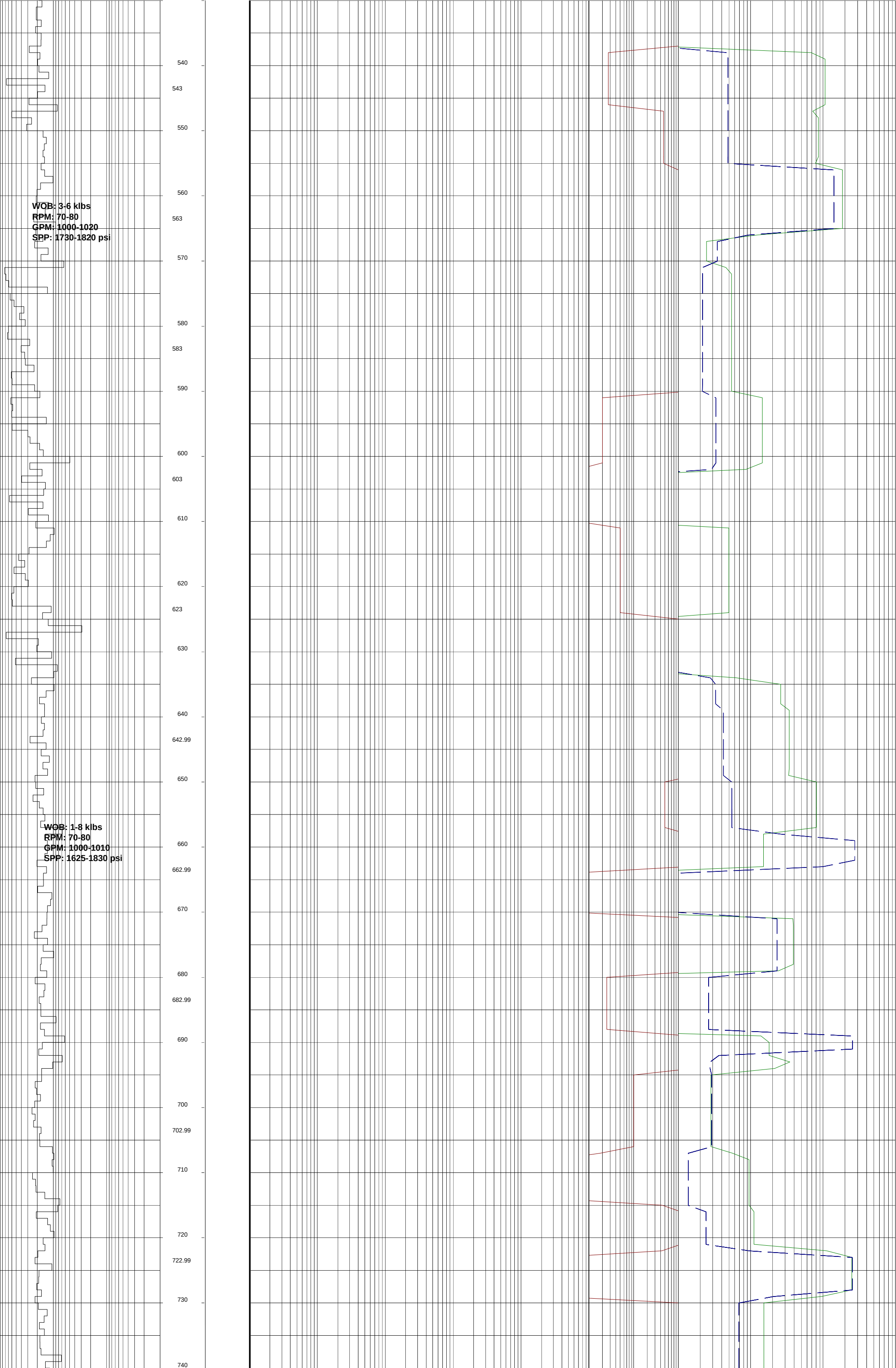
WOB: 2-4 klbs
RPM: 75-80
GPM: 990-1010
SPP: 1450-1700 psi

914mm (36") SECTION TD
@ 158m MDRT @ 0700hrs ON
01st DEC 2009

762mm(30") CONDUCTOR
@ 157m

DRILL AHEAD 445mm(17.5")
HOLE SECTION FROM 157mMDRT
@ 1800 hrs ON 02nd DEC 2009


222.7
03-12-2009
330
340
343
350
360
WOB: 2-6 klbs
RPM: 75-85
GPM: 990-1010
SPP: 1600-1750 psi
363
370
380
383
390
400
403
410
420
423
430
440
443
450
460
WOB: 3-8 klbs
RPM: 75-85
GPM: 995-1010
SPP: 1650-1750 psi
463
470
480
483
490
500
503
510
520
523
530


540
543
550
560
563
570
580
583
590
600
603
610
620
623
630
WOB: 3-6 klbs
RPM: 70-80
GPM: 1000-1020
SPP: 1730-1820 psi
640
642.99
650
660
662.99
670
680
682.99
690
700
702.99
710
720
722.99
730
740
WOB: 1-8 klbs
RPM: 70-80
GPM: 1000-1010
SPP: 1625-1830 psi

742.99

750

WOB: 3-10 klbs
RPM: 65-80
GPM: 1000-1010
SPP: 1800-1950 psi

760

762.99

770

780

782.99

790

800

802.99

810

820

822.99

830

840

842.99

850

860

WOB: 2-12 klbs
RPM: 70-85
GPM: 1000-1020
SPP: 1900-1990 psi

862.99

870

880

882.99

890

900

902.99

910

920

922.99

930

940

WOB: 7-22 klbs
RPM: 60-90
GPM: 756-1006
SPP: 1094-1940 psi

942.99

950

340mm (13.375") CASING SHOE
SET @ 961m MDRT

445mm (17.5") SECTION TD
@ 966m MDRT @ 0900hrs ON
04th DECEMBER 2009

DRILL AHEAD 311mm(12.25")
HOLE SECTION FROM 966mMDRT
@ 1630 hrs ON 09th DEC 2009

CONDUCT LOT @ 961m
17.5ppg EMW

04-12-2009

09-12-2009

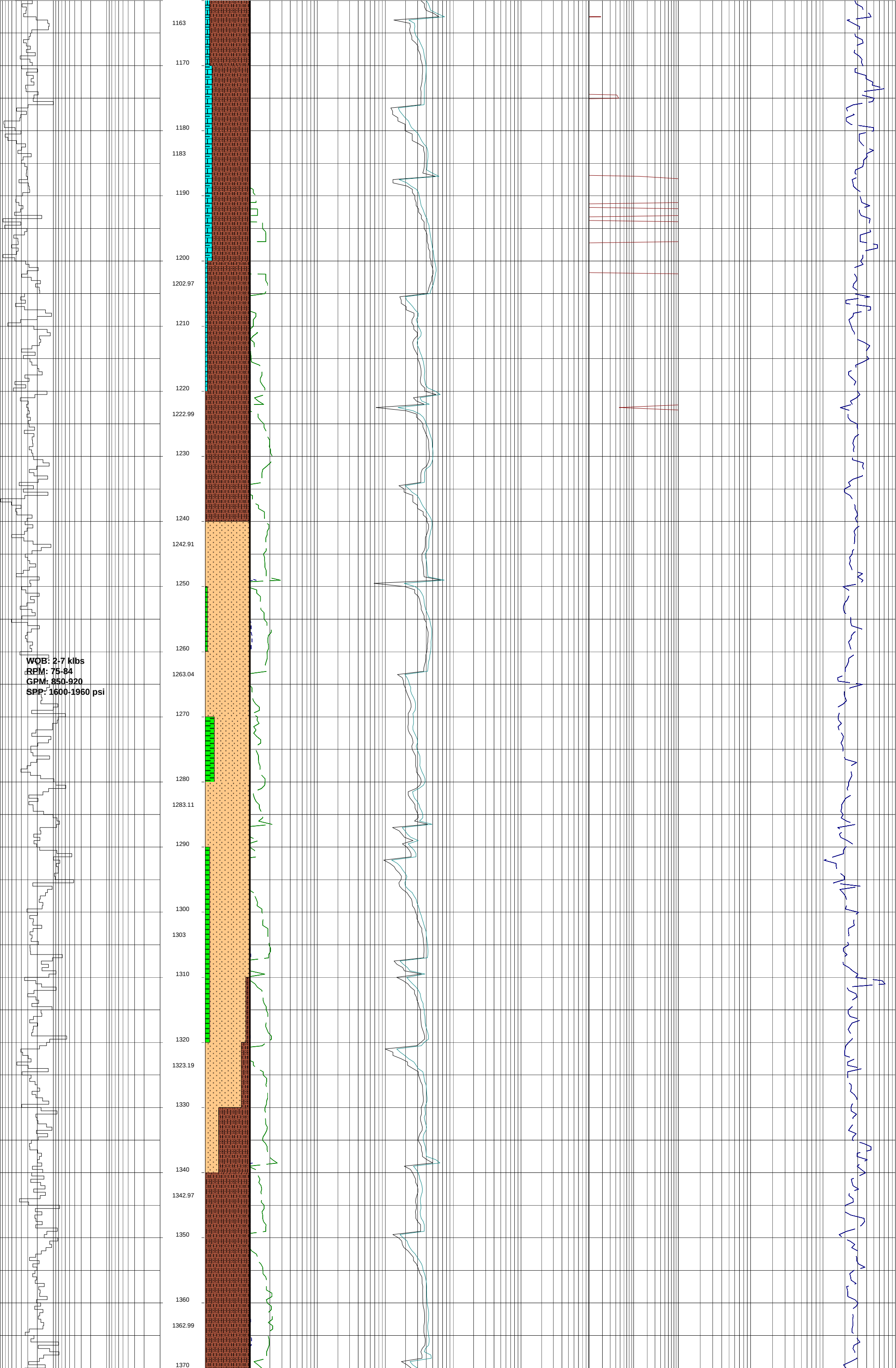
BIT # 3: 311mm (12.25")
REED
JETS: 6x15
IN:966m OUT:1972m
RUN:1006m HRS:35.14
COND: 4-4-LT-N-X-I-CT-TD

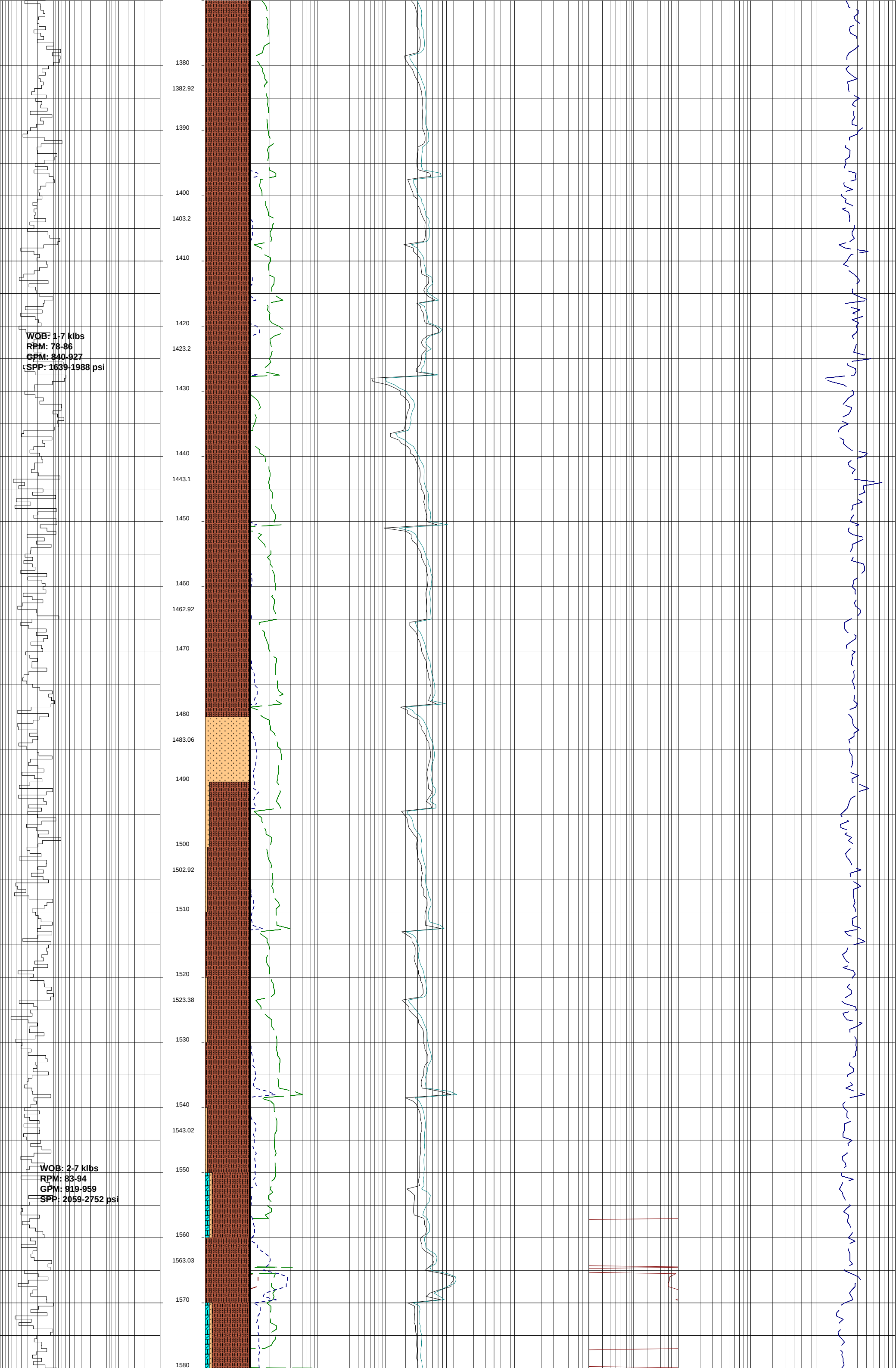
960
962.99
970
980
982.99
990
1000
1003.03
1010
1020
1022.97
1030
1040
1043.08
1050

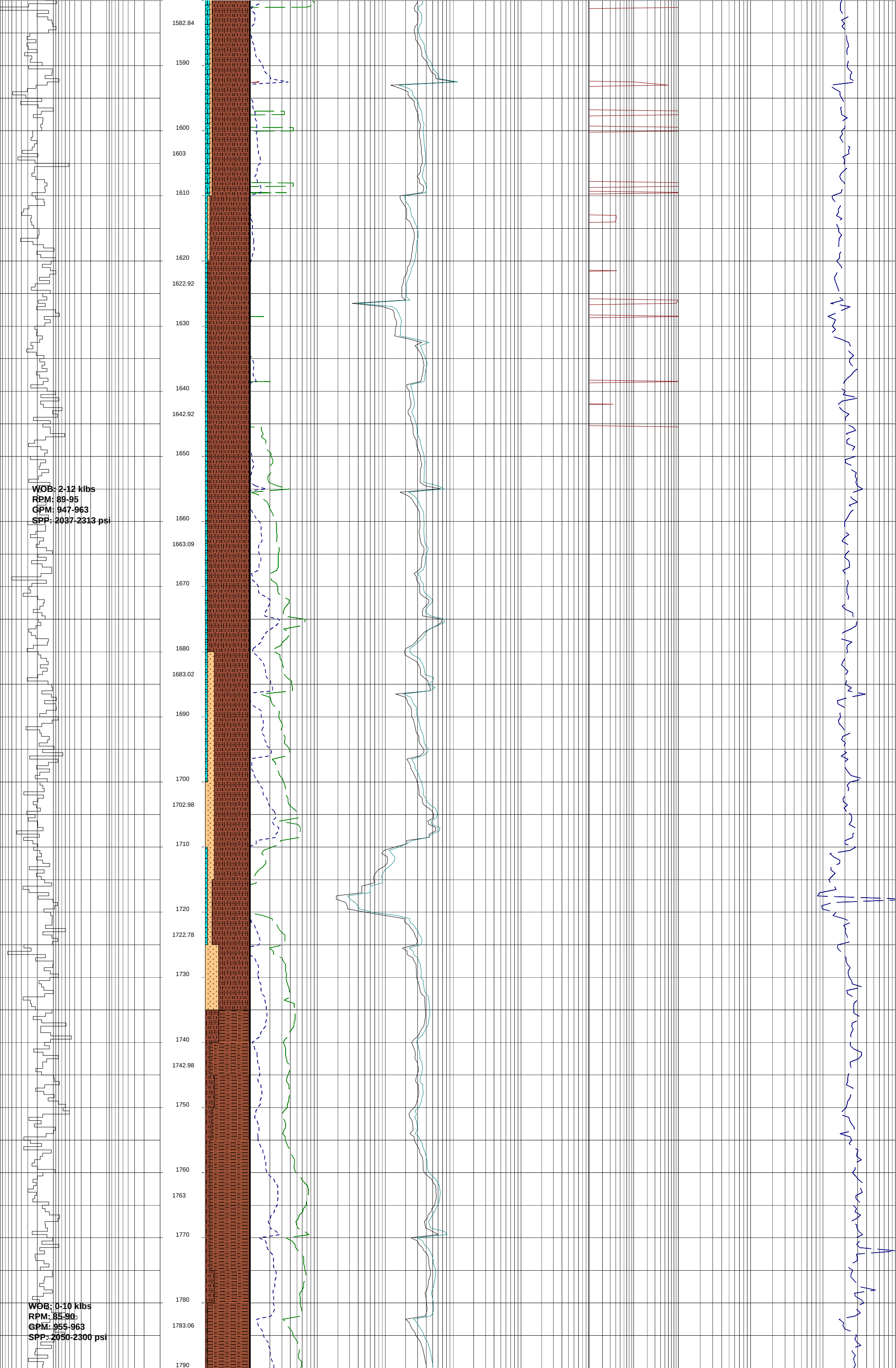
WOB: 5-18 klbs
RPM: 70-85
GPM: 890-910
SPP: 1780-1910 psi

1060
1062.93
1070
1080
1083
1090
1100
1103.01
1110
1120
1122.89
1130
1140
1143.11
1150
1160

WOB: 13-19 klbs
RPM: 50-63
GPM: 712-868
SPP: 1678-1996 psi


1163
1170
1180
1183
1190
1200
1202.97
1210
1220
1222.99
1230
1240
1242.91
1250
1260
1263.04
1270
1280
1283.11
1290
1300
1303
1310
1320
1323.19
1330
1340
1342.97
1350
1360
1362.99
1370
WOB: 2-7 klbs
RPM: 75-84
GPM: 850-920
SPP: 1600-1960 psi


1380
1382.92
1390
1400
1403.2
1410
1420
1423.2
1430
1440
1443.1
1450
1460
1462.92
1470
1480
1483.06
1490
1500
1502.92
1510
1520
1523.38
1530
1540
1543.02
1550
1560
1563.03
1570
1580
WOB: 1-7 klbs
RPM: 78-86
GPM: 840-927
SPP: 1639-1988 psi
WOB: 2-7 klbs
RPM: 83-94
GPM: 919-959
SPP: 2059-2752 psi


1582.84
1590
1600
1603
1610
1620
1622.92
1630
1640
1642.92
1650
1660
1663.09
1670
1680
1683.02
1690
1700
1702.98
1710
1720
1722.78
1730
1740
1742.98
1750
1760
1763
1770
1780
1783.06
1790
WOB: 2-12 klbs
RPM: 89-95
GPM: 947-963
SPP: 2037-2313 psi
WOB: 0-10 klbs
RPM: 85-90
GPM: 955-963
SPP: 2050-2300 psi

1800

1803.02

1810

1820

1822.92

1830

1840

1842.92

1850

1860

1863

1870

1880

1882.99

1890

1900

1903.3

1910

1920

1923.19

1930

1940

1943

1950

1960

1962.95

1970

1980

1982.93

1990

2000

SLIDING FROM 1870m-1887m

WOB: 1-7 klbs
MM RPM: 120-130
GPM: 922-1002
SPP: 2214-1977 psi

SLIDING FROM 1898m-1977m

1922.5m-1926.0m DATA MISSING DUE TO SYSTEM DOWN

18-12-2009

19-12-2009

BIT # 4 : 216mm (8.5")
Security FMF3653Z PDC
JETS :6 X 14
IN :1972m OUT : 1972
RUN : HRS : 6.5
COND : 2-3-BT-S-X-I-CT-PR
DRILL PLUGS ONLY

SLIDING FROM 1981m - 1994m

BIT # 5RR: 216mm (8.5')
HUGHES CHRISTENSEN

244mm (9.625") CASING SHOE SET @ 1965m MDRT

311mm (12.25") SECTION TD @ 1972mMDRT @ 0430hrs on 12-DEC-09

CONDUCT LOT @ 1977m MDRT EMW : 14.6 ppg

DRILL AHEAD 216mm (8.5") HOLE SECTION FROM 1972m MDRT @ 1200 hrs, 19 DEC 09

JETS: 3X20
IN: 1972m OUT:2019
RUN:47m HRS:4.7
COND:2-2-WT-A-1-NO-BHA

20-12-2009

21-12-2009

BIT # 6: 216mm 98.5")
REED
JETS: 4 X 16
IN: 2019 OUT: 2023m
RUN: 4m HRS: 0.3hrs
COND: 0-0-NO-A-X-I-NO-DTF

BIT # 6RR1: 216mm 98.5")
REED
JETS: 4 X 16
IN:2023m OUT:3522m
RUN:1499m HRS:89.4
COND:6-6-BT-A-X-I-NO-PR

WOB: 2.7-21.0 klbs
RPM: 64-126
GPM: 453-569
SPP: 1350-1870 psi

WOB: 6-15 klbs
RPM: 80-135
GPM: 525-560
SPP: 1591-1770 psi

2002.92
2010
2020
2022.83
2030
2040
2042.74
2050
2060
2062.49
2070
2080
2082.5
2090
2100
2101.87
2110
2120
2121.4
2130
2140
2140.68
2150
2160
2159.77
2170
2180
2178.72
2190
2200
2197.64
2210

22-12-2009

2220
2215.98
2230
2240
2234.21
2250
2260
2252.02
2270
2280
2269.57
2290
2300
2286.82
2310
2320
2303.83
2330
2340
2320.43
2350
2360
2336.64
2370
2380
2352.77
2390
2400
2368.67
2410
2420

WOB: 7-21 klbs
RPM: 81-137
GPM: 525-560
SPP: 1577-1760 psi

WOB: 5-19 klbs
RPM: 83-118
GPM: 578-589
SPP: 1672-2057 psi

2384.05
2430
2440
2399.25
2450
2460
2413.94
2470
2480
2428.75
2490
2500
2443.35
2510
2520
2457.95
2530
2540
2472.62
2550
2560
2487.24
2570
2580
2501.86
2590
2600
2516.58
2610
2620
2531.08
2630

WOB: 6-21 klbs
RPM: 89-131
GPM: 571-593
SPP: 1848-2065 psi

WOB: 8-18 klbs
RPM: 96-135
GPM: 561-592
SPP: 1867-2182 psi

22-12-2009

2640
2545.78
2650
2660
2560.19
2670
2680
2574.94
2690
2700
2589.56
2710
2720
2604.14
2730
2740
2618.7
2750
2760
2633.29
2770
2780
2647.87
2790
2800
2662.52
2810
2820
2677.09
2830
2840

WOB: 8-16 klbs
RPM: 109-119
GPM: 582-585
SPP: 2192-2227 psi

24-12-2009

WOB: 6-17 klbs
RPM: 92-142
GPM: 598-617
SPP: 2025-2347 psi

MW:9.55 FV:49
PV/YP: 49/31
FC: 1/2
SOL: 4.1% SAND: 0.30
CL: 35000 mg/l

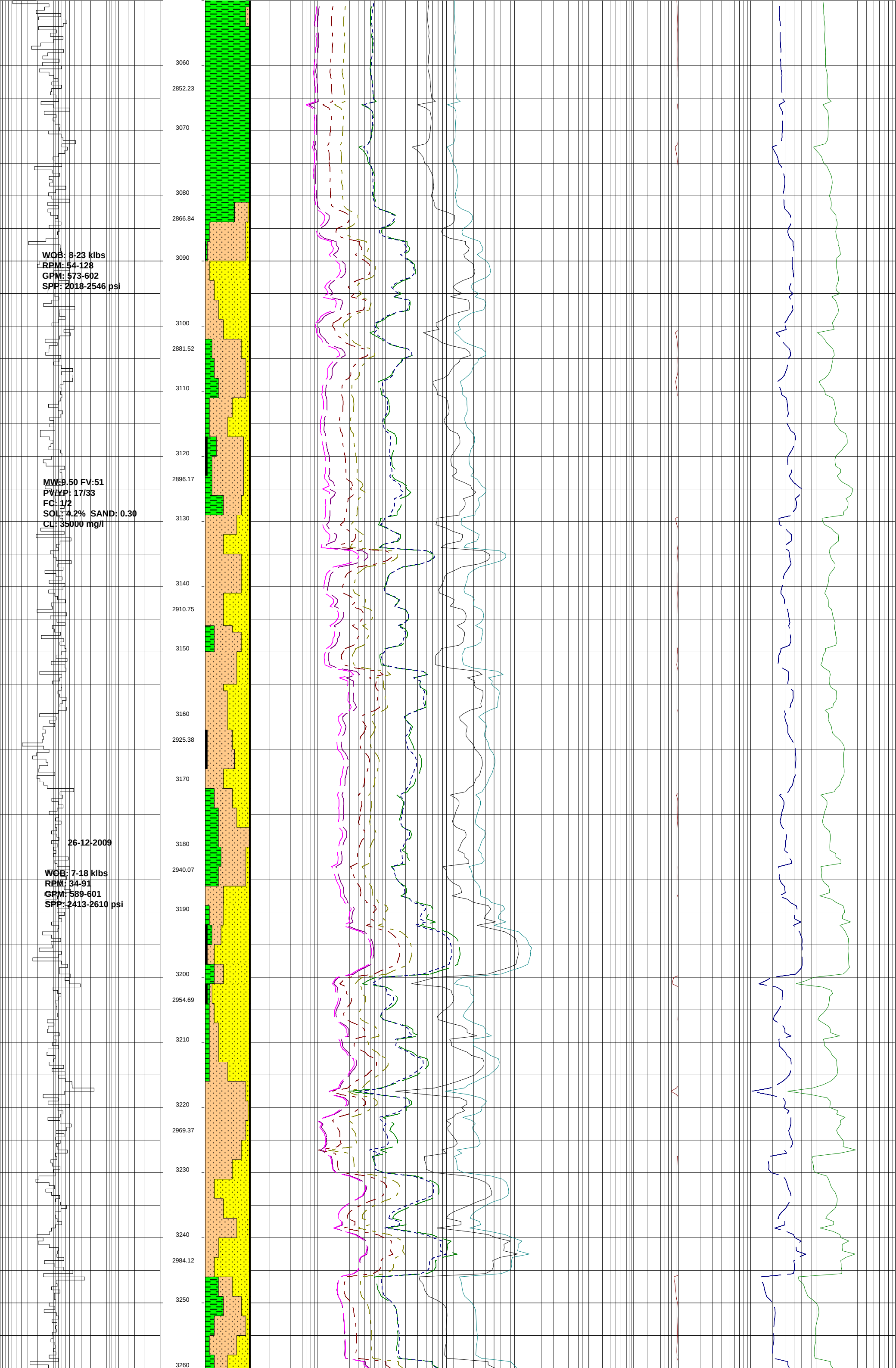
WIPER TRIP @ 2753mMDRT
to 340mm(9.625") CSG shoe

25-12-2009

WOB: 7-17 klbs
RPM: 74-146
GPM: 558-601
SPP: 1900-2345 psi

2691.79
2850
2860
2706.34
2870
2880
2720.93
2890
2900
2735.53
2910
2920
2750.14
2930
2940
2764.73
2950
2960
2779.45
2970
2980
2793.97
2990
3000
2808.53
3010
3020
2823.12
3030
3040
2837.58
3050

WOB: 9-18 klbs
RPM: 94-116
GPM: 576-580
SPP: 2314-2416 psi


3060
2852.23
3070
3080
2866.84
3090
3100
2881.52
3110
3120
2896.17
3130
3140
2910.75
3150
3160
2925.38
3170
3180
2940.07
3190
3200
2954.69
3210
3220
2969.37
3230
3240
2984.12
3250
3260
WOB: 8-23 klbs
RPM: 54-128
GPM: 573-602
SPP: 2018-2546 psi
MW:9.50 FV:51
PV/YP: 17/33
FC: 1/2
SOL: 4.2% SAND: 0.30
CL: 35000 mg/l
26-12-2009
WOB: 7-18 klbs
RPM: 34-91
GPM: 589-601
SPP: 2413-2610 psi

2998.94

3270

3280

3013.63

3290

MW:9.50 FV:52
PV/YP: 18/32
FC: 1/2
SOL: 5.4% SAND: 0.20
CL: 32000 mg/l

3300

3028.56

3310

27-12-2009

WOB: 5-18 klbs
RPM: 45-95
GPM: 527-620
SPP: 2135-2637 psi

3320

3043.4

3330

3340

3058.22

3350

3360

3073.17

WOB:7-19 klbs
RPM:44-63
GPM:588-594
SPP:2666-2724 psi

3370

3380

3088.06

3390

3400

3102.94

3410

3420

3117.87

3430

3440

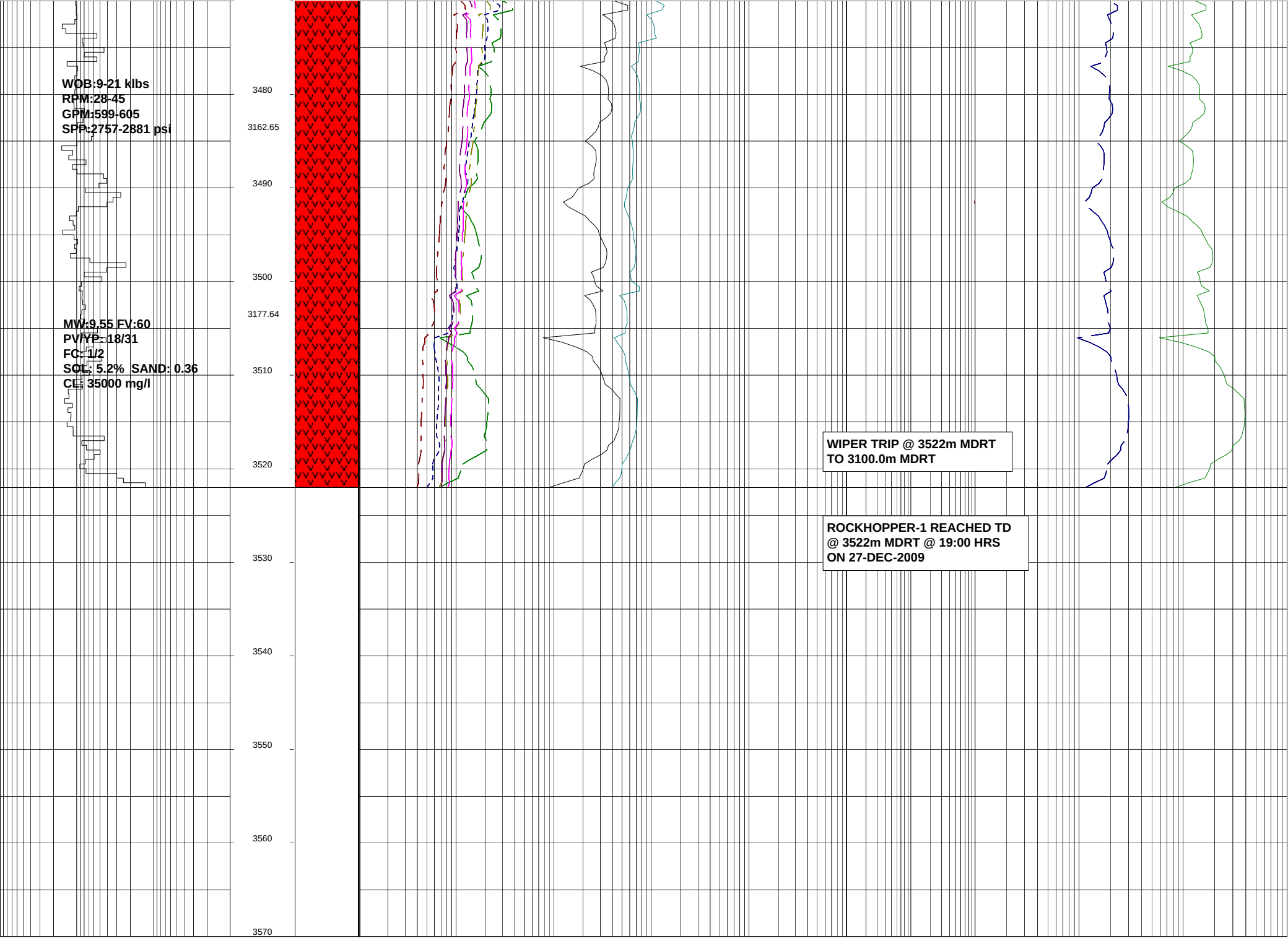
3132.78

3450

3460

3147.67

3470


WOB:9-21 klbs
RPM:28-45
GPM:599-605
SPP:2757-2881 psi
MW:9.55 FV:60
PV/YP:-18/31
FC:-1/2
SOL: 5.2% SAND: 0.36
CL: 35000 mg/l
3480
3162.65
3490
3500
3177.64
3510
3520
3530
3540
3550
3560
3570
WIPER TRIP @ 3522m MDRT
TO 3100.0m MDRT
ROCKHOPPER-1 REACHED TD
@ 3522m MDRT @ 19:00 HRS
ON 27-DEC-2009

APPENDIX 6: LWD & DIRECTIONAL DRILLING REPORT

HALLIBURTON

Sperry Drilling Services

LWD End of Well Report

For

Origin Energy Resources Ltd

Rockhopper-1

Rig:	**Kan Tan IV**
Field:	**Rockhopper-1**
Country:	**Australia**
Job No:	**AU-FE-0006714150**
Date:	**2 DEC 2009**

HALLIBURTON

Table of Contents

1. General Information
2. Operational Overview
3. Summary of MWD Runs
4. Bitrun Summary
5. Directional Survey Data

General Information

Company:	Origin Energy Resources Ltd
Rig:	Kan Tan IV
Well:	Rockhopper-1
Field:	Rockhopper
Lease Name:	
State:	Tasmania
County:	
Country:	Australia
API Number:	
Sperry Job Number:	AU-FE-0006714150
Job start date:	02-Dec-09
Job end date:	28-Dec-09
North reference:	Grid
Declination:	12.495 deg
Dip angle:	-70.395 deg
Total magnetic field:	60970 nT
Date of magnetic data:	01 December, 2009
Wellhead coordinates N:	39 deg. 47 min 34.18 sec South
Wellhead coordinates E:	145 deg. 26 min 21.47 sec East
Vertical section direction:	358.07 deg
Unit Number:	SSH-40
MWD Engineers:	J. Lau, A. Nijhof, M. Dillon, M. Ward, J. Ma,
Company Representatives:	B. Houston, M. Lanzer
Company Geologist:	D. Archer, D. Archer

Operational Overview

Sperry Drilling was contracted by Origin Energy Resources Ltd to provide Logging While Drilling (LWD) services for the drilling of Rockhopper-1. The well was drilled in permit T/18P by the Maersk MODU Kan Tan IV.

17 1/2" (445mm) Hole Section:

This section was drilled in one bit run using a conventional rotary assembly.
A Pressure Case Directional (PCDC) was run for wellbore surveying.
The section was drilled from 158.0 mMDRT to section TD at 966.0 mMDRT. Pulled out of hole to run 340mm casing.

12 1/4" (311mm) Hole Section:

This section was drilled one bit run using a SperryDrill Motor assembly. LWD tools comprised of the following :
Drilling String Dynamics (DDSr-DGR) for drilling optimisation, Dual Gamma Ray (DGR) and Electromagnetic Wave Resistivity (EWR-P4) for formation evaluation. Additionally a Pressure Case Directional (PCDC) was utilised for wellbore surveying.

The whole section was drilled from 966.0 mMDRT to section TD at 1972.0 mMDRT. Pulled out of hole to run 244mm casing.

8 1/2" (216mm) Hole Section:

This section was drilled in four bit runs using a Geopilot rotary steerable system (RSS) BHA together with a motor BHA.

LWD tools used in the RSS BHA was comprised of the following :
DDS for drilling optimisation, DGR, EWR-P4, Compensated Thermal Neutron (CTN), Azimuthal Litho-Density (ALD) and Bi-Modal Acoustic (BAT) for formation evaluation. Acoustic Caliper (ACAL) was run in recorded mode to determine hole size. Additionally a PCDC for wellbore surveying.

LWD in the Motor BHA was directional only configuration and was comprised mainly of PCDC for directional control

The first run was RSS BHA with PDC bit. It was pulled out of hole after failing to drill out the cement float.
In the second run the motor BHA was pick up and drilled to 2019.0 mMDRT. POOH to pickup the RSS BHA.
In the third run, the same RSS BHA was picked up and run in hole, drilled to 2123.0 mMDRT, pull out for GP failure.
The fourth run was RSS BHA with backup GP tool. It was drilled from 2023.0 mMDRT to section TD at 3522.0 mMDRT. POOH to run wireline.

Summary of MWD runs

Run No.	Bit No.	Hole Size (mm)	MWD Service	Start Depth (m)	End Depth (m)	Drill/Wipe Distance (m)	Run Start Date Time	Run End Date Time	BRT Hrs.	Oper. Hrs.	Circ. Hrs.	Max Temp. (degC)	Serv. Int.	Trip for MWD	Failure Type
100	2	445.00	DWD	158.000	966.000	808.000	02-Dec-09 06:40	04-Dec-09 17:00	58.33	37.260	37.260	25.60	No	No	
200	3	311.00	P4M	966.000	1972.000	1006.000	09-Dec-09 00:53	12-Dec-09 14:47	85.90	85.900	58.230	59.20	No	No	
300	4	216.00	P4M	1972.000	1972.000	0.000	17-Dec-09 21:52	18-Dec-09 23:20	25.46	25.460	9.360	94.60	No	No	
400	5	216.00	P4M	1972.000	2019.000	47.000	19-Dec-09 02:00	20-Dec-09 02:20	24.33	7.800	7.800	53.70	No	No	
500	6	216.00	P4M	2019.000	2023.000	4.000	20-Dec-09 05:35	20-Dec-09 22:35	17.00	17.000	2.820	80.00	No	No	
600	6rr	216.00	P4M	2023.000	3522.000	1499.000	21-Dec-09 02:23	28-Dec-09 12:07	177.72	177.720	135.750	111.80	No	No	

Bitrun Summary

RUN TIME DATA

MWD Run	: 100	**Run Start**	: 02-Dec-09 06:40	**BRT Hrs**	: 58.33 hr	**Circ. Hrs**	: 37.26 hr
Rig Bit No	: 2	**Run End**	: 04-Dec-09 17:00	**Hole Size**	: 445.00 mm	**Oper. Hrs**	: 37.26 hr

DRILLING DATA

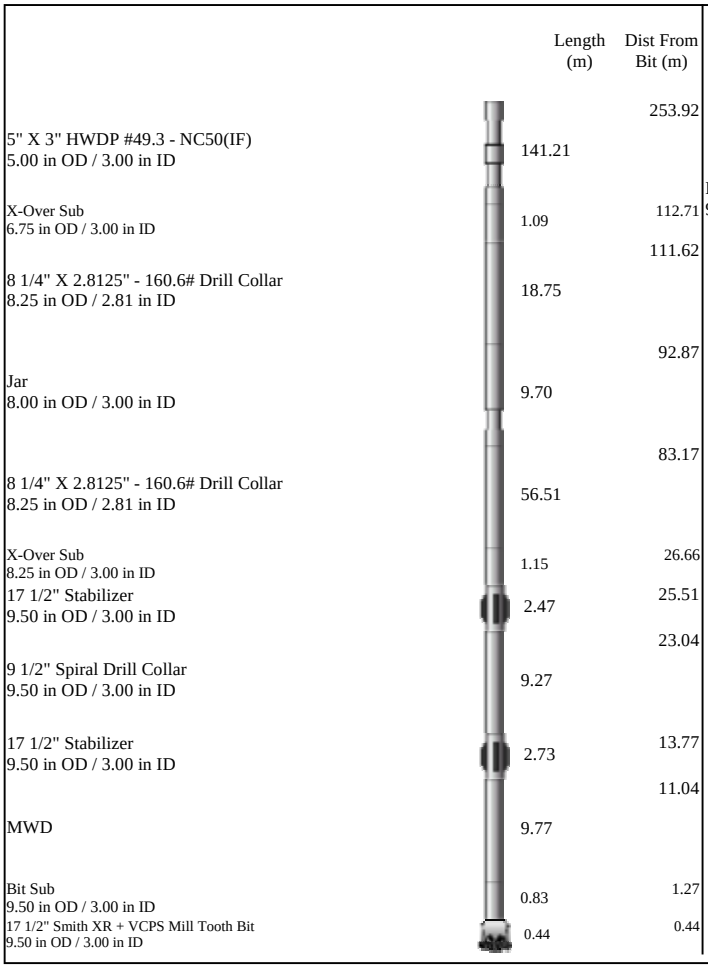
Start Depth	: 158.00 m	**Footage**	: 808.00 m	**Avg RPM**	: 79 rpm	**Avg ROP**	: 40.00 m/hr
End Depth	: 966.00 m	**Avg Flow Rate**	: 996.00 gpm	**Avg WOB**	: 5.0 klb	**Avg SPP**	: 1761 psig
Drilling Hours	: 29.900 hr						

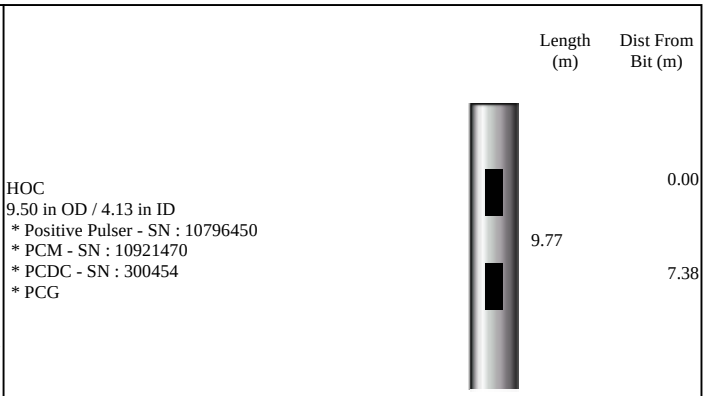
MUD DATA

Mud Type	: Sea Water						
Weight	: 8.76 ppg	**Viscosity**	: 0.00 spqt	**PV**	: 0 cP	**YP**	: 0.00 lhf2
Chlorides	: 0.00 ppm	**Max Temp.**	: 25.60 degC	**% Solids**	: 0.00 %	**% Sand**	: 0.00 %
pH	: 0.00 pH	**Fluid Loss**	: 0 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:100

MWD PERFORMANCE

Tool OD	: 9.50 in	**Type**	: DWD	**Min. Inc.**	: 0.10 deg	**Min. Inc. Depth**	: 733.400 m
Final Az.	: 112.45 deg	**Max Op. Press.**	: 0 psig	**Max Inc.**	: 0.43 deg	**Max Inc. Depth**	: 414.830 m
	MWD Real-time %	: 95 %		**MWD Recorded %**	: 0 %		





COMMENTS

Drill 445mm hole from 158.0 mMDRT to section TD at 966.0 mMDRT. POOH to run 340mm casing.

Bitrun Summary

RUN TIME DATA

MWD Run	: 200	**Run Start**	: 09-Dec-09 00:53	**BRT Hrs**	: 85.90 hr	**Circ. Hrs**	: 58.23 hr
Rig Bit No	: 3	**Run End**	: 12-Dec-09 14:47	**Hole Size**	: 311.00 mm	**Oper. Hrs**	: 85.90 hr

DRILLING DATA

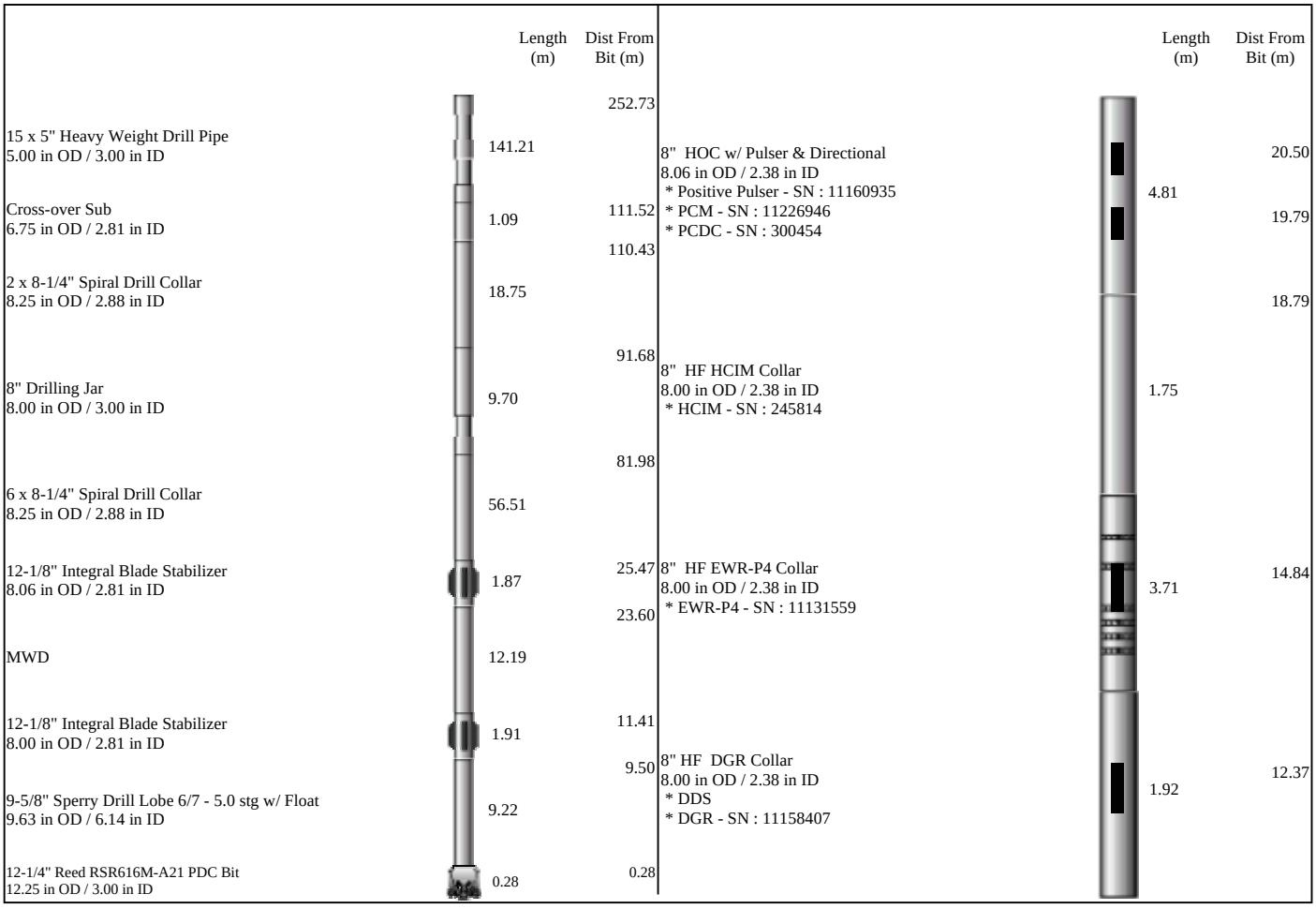
Start Depth	: 966.00 m	**Footage**	: 1006.00 m	**Avg RPM**	: 77 rpm	**Avg ROP**	: 28.62 m/hr
End Depth	: 1972.00 m	**Avg Flow Rate**	: 917.00 gpm	**Avg WOB**	: 5.4 klb	**Avg SPP**	: 1965 psig
Drilling Hours	: 35.140 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.20 ppg	**Viscosity**	: 63.00 spqt	**PV**	: 11 cP	**YP**	: 22.00 lhf2
Chlorides	: 35500.00 ppm	**Max Temp.**	: 59.20 degC	**% Solids**	: 3.50 %	**% Sand**	: 0.25 %
pH	: 9.00 pH	**Fluid Loss**	: 6 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:100

MWD PERFORMANCE

Tool OD	: 8.00 in	**Type**	: P4M	**Min. Inc.**	: 0.00 deg	**Min. Inc. Depth**	: 980.350 m
Final Az.	: 51.65 deg	**Max Op. Press.**	: 2813 psig	**Max Inc.**	: 0.91 deg	**Max Inc. Depth**	: 1934.760 m
	MWD Real-time % : 100 %			**MWD Recorded %**	: 100 %		



COMMENTS

Drill 311mm holefrom 966.0 to 1972.0mMDRT. POOH to run 9 5/8" casing. All recorded data recovered on surface.

Bitrun Summary

RUN TIME DATA

MWD Run	: 300	**Run Start**	: 17-Dec-09 21:52	**BRT Hrs**	: 25.46 hr	**Circ. Hrs**	: 9.36 hr
Rig Bit No	: 4	**Run End**	: 18-Dec-09 23:20	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 25.46 hr

DRILLING DATA

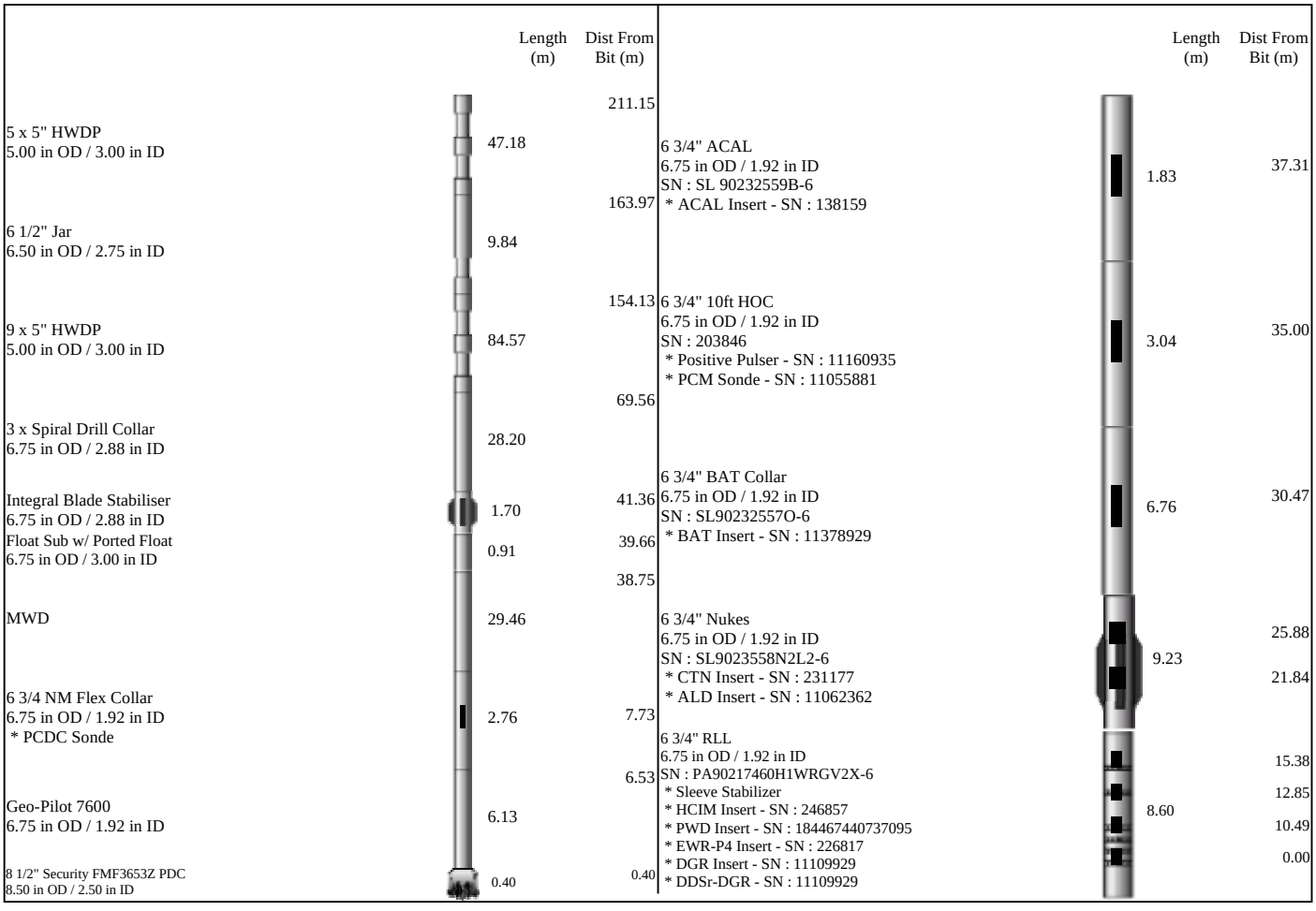
Start Depth	: 1972.00 m	**Footage**	: 0.00 m	**Avg RPM**	: 40 rpm	**Avg ROP**	: 0.00 m/hr
End Depth	: 1972.00 m	**Avg Flow Rate**	: 513.00 gpm	**Avg WOB**	: 8.0 klb	**Avg SPP**	: 1597 psig
Drilling Hours	: 6.500 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.55 ppg	**Viscosity**	: 55.00 spqt	**PV**	: 11 cP	**YP**	: 21.00 lhf2
Chlorides	: 35000.00 ppm	**Max Temp.**	: 94.60 degC	**% Solids**	: 4.10 %	**% Sand**	: 0.15 %
pH	: 9.00 pH	**Fluid Loss**	: 4 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:100

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: P4M	**Min. Inc.**	: 0.68 deg	**Min. Inc. Depth**	: 1951.760 m
Final Az.	: 51.65 deg	**Max Op. Press.**	: 3140 psig	**Max Inc.**	: 0.68 deg	**Max Inc. Depth**	: 1951.760 m
	MWD Real-time %	: 96 %		**MWD Recorded %**	: 100 %		



COMMENTS

RIH with Quad Combo and GP string. Tag cement at 1938mMDRT.
Attempt to drill out shoe track. POOH to change bit at 1940mMDRT.

Bitrun Summary

RUN TIME DATA

MWD Run	: 400	**Run Start**	: 19-Dec-09 02:00	**BRT Hrs**	: 24.33 hr	**Circ. Hrs**	: 7.80 hr
Rig Bit No	: 5	**Run End**	: 20-Dec-09 02:20	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 7.80 hr

DRILLING DATA

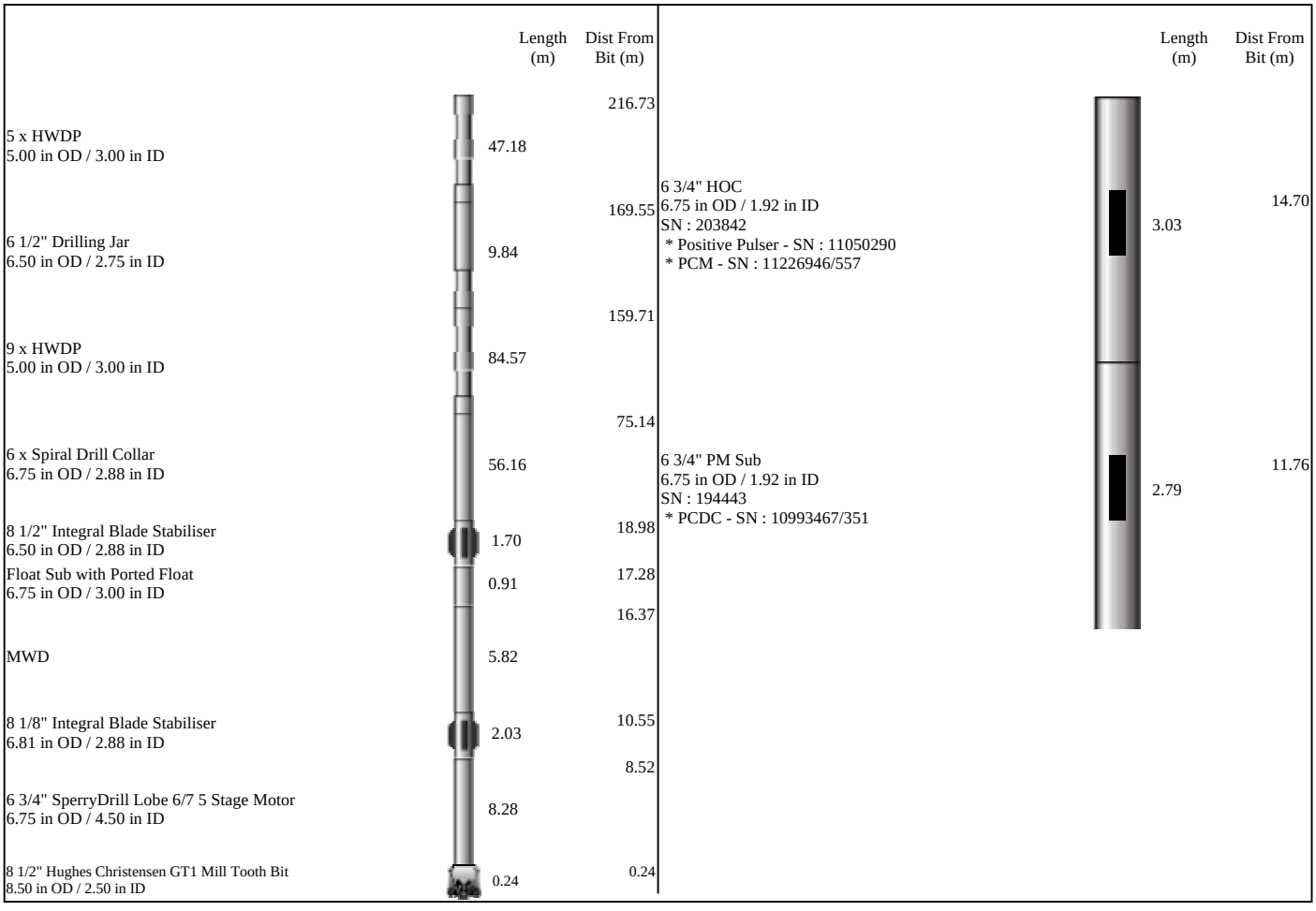
Start Depth	: 1972.00 m	**Footage**	: 47.00 m	**Avg RPM**	: 70 rpm	**Avg ROP**	: 10.00 m/hr
End Depth	: 2019.00 m	**Avg Flow Rate**	: 552.00 gpm	**Avg WOB**	: 17.7 klb	**Avg SPP**	: 1766 psig
Drilling Hours	: 4.700 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.55 ppg	**Viscosity**	: 64.00 spqt	**PV**	: 12 cP	**YP**	: 19.00 lhf2
Chlorides	: 35000.00 ppm	**Max Temp.**	: 53.70 degC	**% Solids**	: 4.10 %	**% Sand**	: 0.15 %
pH	: 9.50 pH	**Fluid Loss**	: 4 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:100

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: P4M	**Min. Inc.**	: 0.69 deg	**Min. Inc. Depth**	: 1968.420 m
Final Az.	: 20.69 deg	**Max Op. Press.**	: 3270 psig	**Max Inc.**	: 4.80 deg	**Max Inc. Depth**	: 2006.900 m
	MWD Real-time %	: 100 %		**MWD Recorded %**	: 0 %		



COMMENTS

RIH with Motor and DWD assembly. Drill out shoe from 1940mMDRT. Drill new formation from 1972m to 2019mMDRT.
POOH to change bit and BHA.

Bitrun Summary

RUN TIME DATA

MWD Run	: 500	**Run Start**	: 20-Dec-09 05:35	**BRT Hrs**	: 17.00 hr	**Circ. Hrs**	: 2.82 hr
Rig Bit No	: 6	**Run End**	: 20-Dec-09 22:35	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 17.00 hr

DRILLING DATA

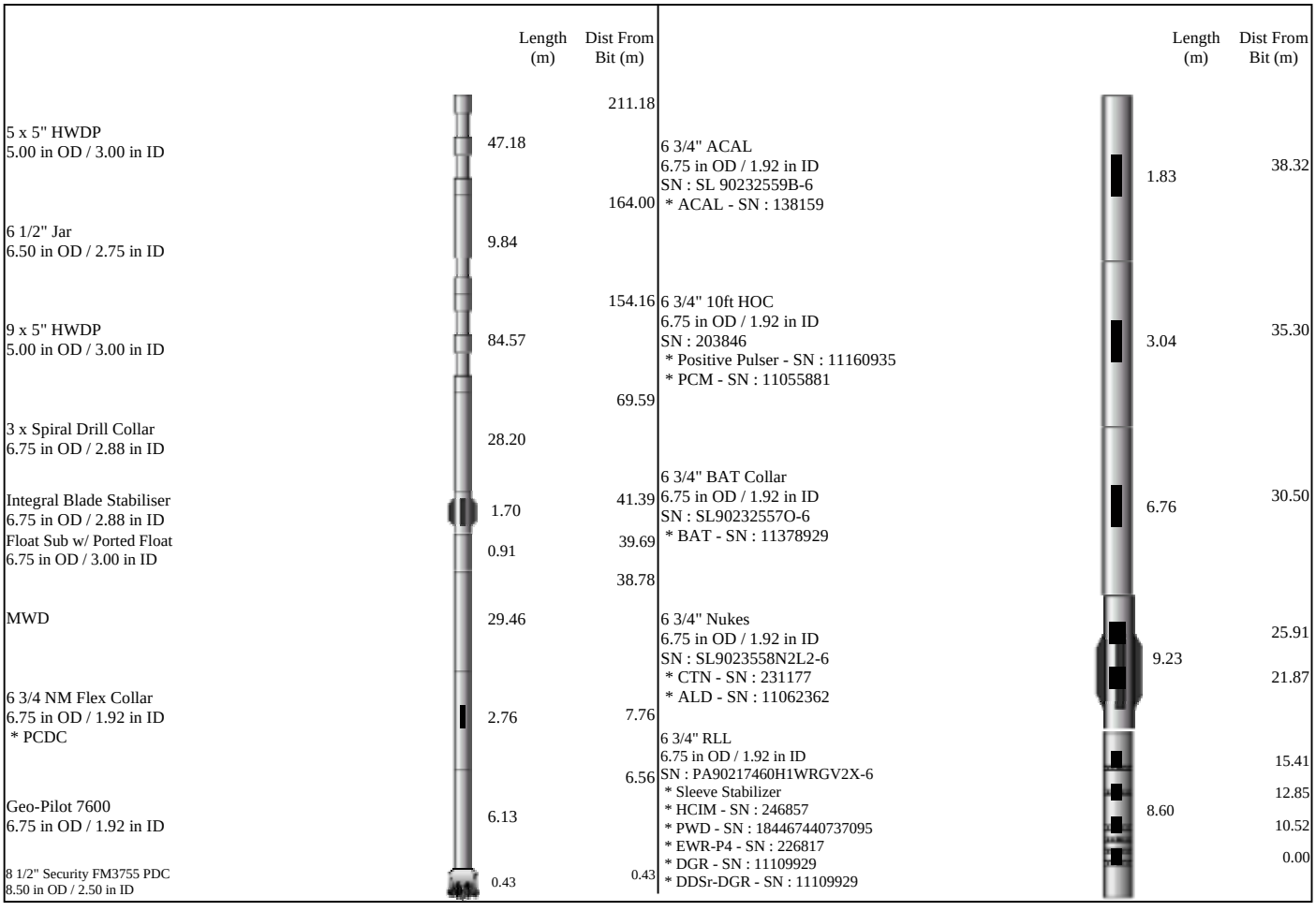
Start Depth	: 2019.00 m	**Footage**	: 4.00 m	**Avg RPM**	: 107 rpm	**Avg ROP**	: 29.50 m/hr
End Depth	: 2023.00 m	**Avg Flow Rate**	: 543.00 gpm	**Avg WOB**	: 13.4 klb	**Avg SPP**	: 1589 psig
Drilling Hours	: 0.300 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.60 ppg	**Viscosity**	: 53.00 spqt	**PV**	: 12 cP	**YP**	: 20.00 lhf2
Chlorides	: 35000.00 ppm	**Max Temp.**	: 80.00 degC	**% Solids**	: 4.20 %	**% Sand**	: 0.20 %
pH	: 9.00 pH	**Fluid Loss**	: 4 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:100

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: P4M	**Min. Inc.**	: 4.80 deg	**Min. Inc. Depth**	: 2006.900 m
Final Az.	: 20.69 deg	**Max Op. Press.**	: 3313 psig	**Max Inc.**	: 4.80 deg	**Max Inc. Depth**	: 2006.900 m
	MWD Real-time % : 100 %			**MWD Recorded %**	: 100 %		



COMMENTS

RIH with Quad Combo and GP assembly. Wipe previously drilled directional only section from 1972m to 2019mMDRT.
Drill new formation to 2023mMDRT. POOH for GP failure.

Bitrun Summary

RUN TIME DATA

MWD Run	: 600	**Run Start**	: 21-Dec-09 02:23	**BRT Hrs**	: 177.72 hr	**Circ. Hrs**	: 135.75 hr
Rig Bit No	: 6rr	**Run End**	: 28-Dec-09 12:07	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 177.72 hr

DRILLING DATA

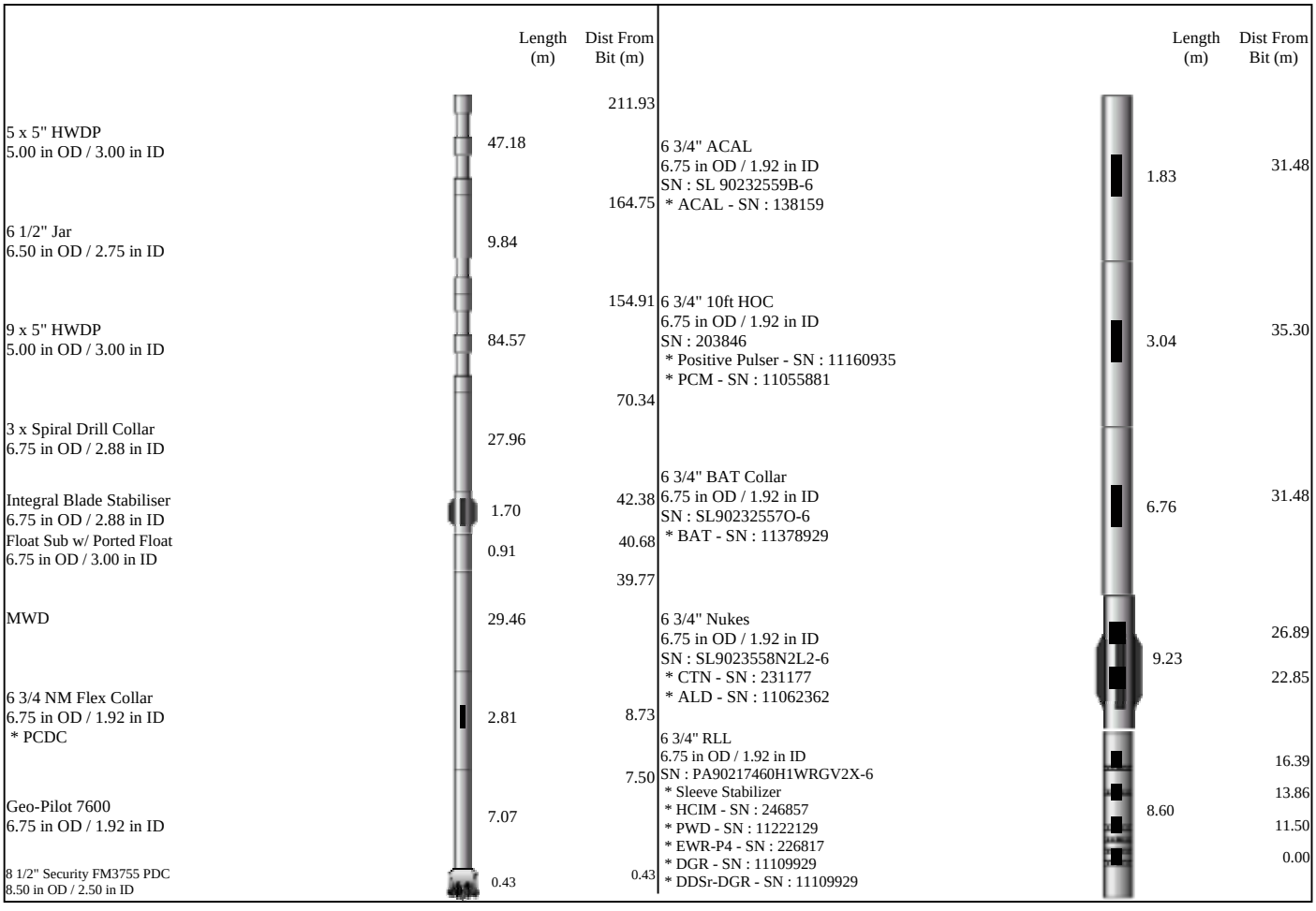
Start Depth	: 2023.00 m	**Footage**	: 1499.00 m	**Avg RPM**	: 140 rpm	**Avg ROP**	: 15.00 m/hr
End Depth	: 3522.00 m	**Avg Flow Rate**	: 580.00 gpm	**Avg WOB**	: 10.0 klb	**Avg SPP**	: 2650 psig
Drilling Hours	: 89.400 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.55 ppg	**Viscosity**	: 55.00 spqt	**PV**	: 18 cP	**YP**	: 37.00 lhf2
Chlorides	: 29000.00 ppm	**Max Temp.**	: 111.80 degC	**% Solids**	: 4.70 %	**% Sand**	: 0.30 %
pH	: 9.00 pH	**Fluid Loss**	: 5 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:100

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: P4M	**Min. Inc.**	: 7.43 deg	**Min. Inc. Depth**	: 2047.710 m
Final Az.	: 357.89 deg	**Max Op. Press.**	: 5228 psig	**Max Inc.**	: 43.48 deg	**Max Inc. Depth**	: 2857.710 m
	MWD Real-time % : 99 %			**MWD Recorded %**	: 0 %		



COMMENTS

Continued to drill 216mm hole section to well TD at 3522.0 mMDRT. POOH and all recorded data was recovered at surface.

Directional Survey Data

RT-LAT=26.0 m
Final survey is a projection to TD

Tie-in

0.000	0.00	0.00	0.000	0.000 N	0.000 E		***

Measured Depth (m)	Inclination (deg)	Direction (deg)	Vertical Depth (m)	Latitude (m)	Departure (m)	Vertical Section (m)	Dogleg (°/30m)
100.300	0.00	0.00	100.300	0.000 N	0.000 E	0.000	0.00
242.360	0.22	278.10	242.360	0.040 N	0.270 W	0.050	0.05
327.420	0.34	318.42	327.420	0.250 N	0.600 W	0.270	0.08
356.380	0.16	310.14	356.380	0.340 N	0.690 W	0.360	0.19
414.830	0.43	334.58	414.830	0.590 N	0.840 W	0.620	0.15
502.130	0.25	356.62	502.130	1.080 N	1.000 W	1.110	0.08
559.330	0.33	356.35	559.330	1.370 N	1.010 W	1.400	0.04
645.930	0.22	77.08	645.920	1.650 N	0.870 W	1.680	0.13
733.400	0.10	264.51	733.390	1.680 N	0.780 W	1.710	0.11
819.330	0.13	204.11	819.320	1.590 N	0.890 W	1.620	0.04
907.200	0.22	337.40	907.190	1.650 N	1.000 W	1.680	0.11
956.770	0.15	112.45	956.760	1.710 N	0.980 W	1.750	0.21
980.350	0.00	258.48	980.340	1.700 N	0.950 W	1.730	0.19
1009.960	0.20	60.48	1009.950	1.730 N	0.900 W	1.760	0.20
1039.180	0.22	57.43	1039.170	1.780 N	0.810 W	1.810	0.02
1068.020	0.25	56.38	1068.010	1.850 N	0.710 W	1.870	0.03
1096.690	0.09	334.71	1096.680	1.900 N	0.670 W	1.920	0.26
1125.200	0.25	23.41	1125.190	1.980 N	0.650 W	2.000	0.21
1153.520	0.31	18.55	1153.510	2.110 N	0.610 W	2.130	0.07
1182.120	0.26	64.52	1182.110	2.210 N	0.520 W	2.230	0.24
1210.690	0.31	28.33	1210.680	2.310 N	0.430 W	2.320	0.19
1239.340	0.36	49.88	1239.330	2.430 N	0.320 W	2.440	0.14
1298.150	0.40	29.51	1298.140	2.730 N	0.080 W	2.730	0.07
1327.530	0.39	32.18	1327.520	2.900 N	0.020 E	2.900	0.02
1356.770	0.31	47.29	1356.760	3.040 N	0.140 E	3.040	0.12
1385.600	0.44	56.10	1385.590	3.160 N	0.290 E	3.150	0.15
1412.810	0.48	46.30	1412.800	3.290 N	0.450 E	3.280	0.10
1441.660	0.57	57.51	1441.650	3.450 N	0.660 E	3.430	0.14
1470.690	0.57	43.73	1470.680	3.640 N	0.880 E	3.600	0.14
1499.950	0.59	47.75	1499.930	3.840 N	1.100 E	3.800	0.05
1529.470	0.61	56.99	1529.450	4.030 N	1.340 E	3.980	0.10
1558.730	0.62	46.69	1558.710	4.220 N	1.590 E	4.170	0.11
1587.900	0.64	49.02	1587.880	4.440 N	1.820 E	4.380	0.03
1616.890	0.68	52.55	1616.870	4.650 N	2.080 E	4.580	0.06
1645.390	0.64	67.47	1645.360	4.810 N	2.360 E	4.730	0.19
1673.840	0.66	56.91	1673.810	4.960 N	2.650 E	4.870	0.13
1702.240	0.67	57.55	1702.210	5.140 N	2.930 E	5.040	0.01
1759.920	0.72	70.24	1759.890	5.450 N	3.550 E	5.320	0.08
1789.630	0.84	75.16	1789.590	5.570 N	3.940 E	5.430	0.14
1848.620	0.80	79.00	1848.580	5.750 N	4.760 E	5.590	0.03
1876.780	0.90	76.63	1876.730	5.840 N	5.170 E	5.670	0.11
1905.300	0.76	78.61	1905.250	5.930 N	5.570 E	5.740	0.15
1934.760	0.91	50.85	1934.710	6.120 N	5.940 E	5.910	0.43

Directional Survey Data

Measured Depth (m)	Inclination (deg)	Direction (deg)	Vertical Depth (m)	Latitude (m)	Departure (m)	Vertical Section (m)	Dogleg (°/30m)
1951.760	0.68	51.65	1951.710	6.270 N	6.130 E	6.060	0.41
1968.420	0.69	57.75	1968.370	6.380 N	6.290 E	6.170	0.13
1992.640	3.64	23.88	1992.570	7.160 N	6.720 E	6.930	3.83
2006.900	4.80	20.69	2006.790	8.130 N	7.120 E	7.890	2.49
2047.710	7.43	22.90	2047.360	12.160 N	8.750 E	11.860	1.94
2076.220	10.04	18.43	2075.540	16.220 N	10.250 E	15.870	2.84
2104.970	12.80	14.68	2103.720	21.680 N	11.850 E	21.270	2.98
2134.780	14.54	10.50	2132.680	28.550 N	13.370 E	28.090	2.01
2164.310	17.43	9.42	2161.070	36.560 N	14.770 E	36.050	2.95
2193.360	20.51	7.83	2188.540	45.900 N	16.180 E	45.330	3.22
2250.020	26.59	5.77	2240.450	68.370 N	18.810 E	67.700	3.25
2278.270	29.06	6.68	2265.440	81.480 N	20.240 E	80.750	2.66
2307.320	31.70	6.12	2290.500	96.080 N	21.870 E	95.290	2.74
2336.990	34.05	2.98	2315.410	112.130 N	23.140 E	111.280	2.93
2366.570	36.34	359.97	2339.590	129.160 N	23.560 E	128.300	2.91
2395.130	37.77	356.94	2362.380	146.360 N	23.090 E	145.500	2.44
2423.370	39.84	355.17	2384.390	164.010 N	21.870 E	163.180	2.49
2452.170	42.32	354.45	2406.090	182.860 N	20.150 E	182.080	2.63
2481.680	43.11	354.88	2427.780	202.790 N	18.290 E	202.060	0.86
2511.390	42.92	354.47	2449.500	222.970 N	16.410 E	222.290	0.34
2540.160	43.10	354.54	2470.540	242.510 N	14.530 E	241.880	0.19
2568.350	43.01	353.48	2491.140	261.650 N	12.520 E	261.070	0.78
2596.310	42.88	354.12	2511.600	280.580 N	10.460 E	280.070	0.49
2626.300	43.28	355.27	2533.510	300.980 N	8.570 E	300.520	0.88
2655.720	43.09	355.77	2554.960	321.050 N	7.000 E	320.630	0.40
2683.980	42.76	356.30	2575.650	340.250 N	5.670 E	339.870	0.52
2712.300	43.19	356.38	2596.370	359.520 N	4.430 E	359.160	0.46
2741.970	43.47	355.92	2617.960	379.830 N	3.070 E	379.510	0.43
2770.220	42.94	356.20	2638.550	399.120 N	1.740 E	398.840	0.60
2799.070	43.15	356.27	2659.630	418.770 N	0.440 E	418.520	0.22
2828.790	42.74	355.82	2681.390	438.970 N	0.950 W	438.760	0.52
2857.710	43.48	356.21	2702.500	458.690 N	2.330 W	458.510	0.82
2886.290	43.02	355.19	2723.320	478.220 N	3.800 W	478.070	0.88
2914.350	43.18	355.63	2743.810	497.330 N	5.330 W	497.220	0.36
2942.960	43.00	355.89	2764.700	516.820 N	6.780 W	516.750	0.27
2972.300	43.13	356.10	2786.130	536.800 N	8.180 W	536.770	0.20
3031.320	43.35	358.13	2829.130	577.180 N	10.210 W	577.200	0.72
3059.740	43.12	357.42	2849.840	596.630 N	10.960 W	596.660	0.57
3116.750	42.91	356.52	2891.520	635.470 N	13.020 W	635.550	0.34
3175.850	42.94	355.93	2934.800	675.630 N	15.670 W	675.770	0.20
3232.850	42.61	354.97	2976.640	714.220 N	18.740 W	714.440	0.38
3261.400	42.02	354.71	2997.750	733.360 N	20.470 W	733.630	0.65
3290.950	42.18	356.09	3019.670	753.110 N	22.060 W	753.420	0.95
3348.870	42.01	356.27	3062.650	791.850 N	24.650 W	792.230	0.11
3377.120	41.91	356.10	3083.660	810.690 N	25.900 W	811.110	0.16
3405.960	41.76	356.10	3105.150	829.880 N	27.210 W	830.330	0.16
3435.820	41.85	357.17	3127.410	849.750 N	28.380 W	850.230	0.72
3494.200	41.35	357.89	3171.060	888.480 N	30.050 W	888.990	0.36

Directional Survey Data

Measured Depth (m)	Inclination (deg)	Direction (deg)	Vertical Depth (m)	Latitude (m)	Departure (m)	Vertical Section (m)	Dogleg (°/30m)
3522.000	41.35	357.89	3191.930	906.830 N	30.730 W	907.350	0.00

CALCULATION BASED ON MINIMUM CURVATURE METHOD

SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT

VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 358.07 DEGREES(GRID)
A TOTAL CORRECTION OF 11.50 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD
HORIZONTAL DISPLACEMENT(CLOSURE) AT 3522.00 METRES
IS 907.35 METRES ALONG 358.06 DEGREES (GRID)

Sperry Drilling - HALLIBURTON

Directional Drilling
End of Well Report

Origin energy

Australian Drilling Associates Pty Ltd ADA

Well: Rockhopper-1
Rig: Kan Tan IV
Location: Bass Basin, Australia



Contents

Section 1:	Well Data
Section 2:	Drilling Parameters
Section 3:	Definitive Survey Data
Section 4:	Actual Vs Proposed A4 Plot
Section 5:	Drilling Survey
Section 6:	BHA Data

SECTION 1

Well Report

Operator : Origin Energy Resources Ltd

Well : Rockhopper-1

Job Objectives:

Rockhopper-1 will test the crest of the Rockhopper-1 prospect. It is designed as a deviated well in the 8.5in hole section, drilled directionally parallel to the bounding fault in order to intersect all possible reservoirs that lie within the mapped closure in a near crestal position. The top of the primary target sands within the lower L. balmei are mapped as the P3 seismic marker or age equivalent to the Yolla Field top 2973 sand. Water depth is expected to be 76m.

Summary of Results:

The 26/36" and 17 1/2" hole sections were drilled with no directional hand on board the rig.

26/36" Hole Section from 102m to 156m.
Drilled 54m in 3.5 hrs, average 15.4m/hr. 20" casing was run without any dramas.

17 1/2" Hole Section from 156m to 966m.
Drilled 810m in 38.5hrs, average 21m/hr. Section was drilled using sea water with gel sweeps. MWD was set up for 1200 GPM, surveys were taken on the fly. While in the hole, decision to reduce flow rate to 1000 GPM which was too low for the MWD. The procedure to survey with the reduced flow rate, stop drilling and up the flow rate to 1200 for the survey, then back to 1000 GPM and continue drilling. A short dummy trip was conducted prior to POOH to run casing. BHA came out of the hole ok, casing was run, and cemented in place without incident.

12 1/4" Hole Section from 966m to 1972m.
Drilled 1006m in 50.25hr, average 20m/hr. Section was drilled with a closed mud system. Numerous occasions flow rate had to be reduce, at times stopped because of losses at the shakers. Started the nudge 3 stands early, rotary drilled to that point. Unable to build angle because of erratic torque generated from the bit. Pulled 15 stands wet, pumped slug and continue POOH. Last 2 joints of casing were circulated to bottom, from 1945m to 1964m, shoe setting depth. Casing was cemented in place without further incident.

8 1/2" Hole Section from 1972m to 3522m.
The Geo-Pilot assembly was run to drill out the shoe track in a time saving effort which failed. Drilled the plugs, unable to drill through the float shoe. After 8 1/2 hours, large quantities of metal at surface, POOH. Next a motor assembly with a tooth bit was used to finish drilling out, conducted the LOT and kicked the well off in a northerly direction prior to running the Geo-Pilot back in the hole. Back to bottom with the same GP assembly, which failed. Appeared that the RPM sensor was faulty. Tripped yet again, replacing the GP with the back up tool, which was utilized to drill the complete hole section. TD was initially call at 3475m then decided to drill ahead an additional +/- 180. After drilling 47m of basement, bit played out, TD at 3522m.

Extensive wireline logging program put into place. Second run, MDT unable to get to bottom. Made up a clean out assembly, one tight spot while RIH. Once on bottom, circulated and conditioned mud, reducing the mud weight to 9.4, POOH to run MDT and other wire line logs. No tight hole on the trip out.
During the second MDT run the tool became stuck so another wiper trip was performed allowing the MDT to be completed, followed by three additional logging runs.

2 7/8" tubing stinger on drill pipe was run to bottom to abandon the well, cement program as directed by the client.

Discussion:

BHA #	Bit #	Motor Run #	Hole Size (in)	MD In (m)	MD Out (m)	TVD In (m)	TVD Out (m)	Inc In (deg)	Inc Out (deg)	Azi In (deg)	Azi Out (deg)	Drlg hrs	Circ hrs
1	1		36.000	100	158	100	158	0.0	0.1	0	278	4	1
2	2		0.000	158	966	158	966	0.1	0.1	278	112	39	4
3	3	1	12.250	966	1972	966	1972	0.1	1.1	112	42	50	14
4	4	2	8.500	1972	1972	1972	1972	1.1	1.1	42	42	0	11
5	5	3	8.500	1972	2019	1972	2019	1.1	5.6	42	22	6	5
6	6	4	8.500	2019	2023	2019	2023	5.6	5.8	22	22	2	2
7	6rr1	5	8.500	2023	3522	2023	3192	5.8	41.3	22	358	124	14
8	5rr1		8.500	3522	3522	3192	3192	41.3	41.3	358	358	0	9
9	5rr2		8.500	3522	3522	3192	3192	41.3	41.3	358	358	0	14
10	?		2.875	3522	3522	3192	3192	41.3	41.3	358	358	0	2

Table 1 - BHA Summary

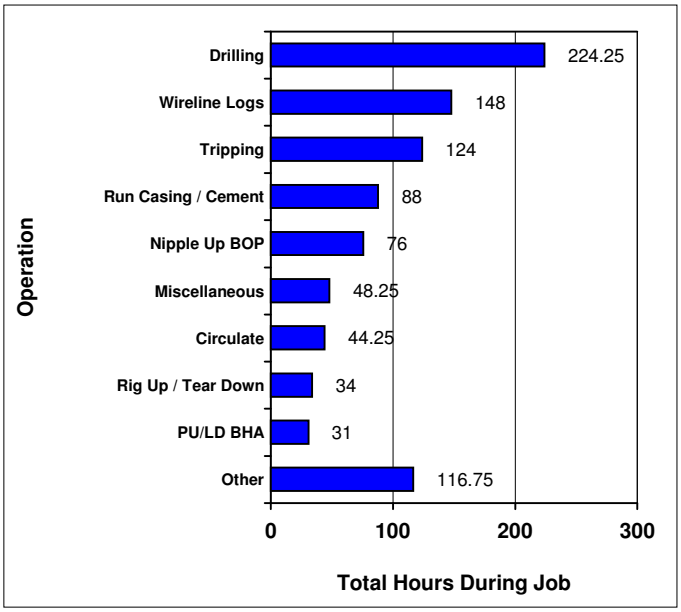
Motor Run #	Manufacturer	Type	Lobe	OD (in)	Gauge (in)	Bend (deg)	Adj	DLS (Ori) (°/30m)	ROP (Ori) (m/hr)	ROP (Rot) (m/hr)
1	SSDS	SperryDrill	6/7	9.625	12.125	0.78	Y	0.00	6	21
2	SSDS	Geo Pilot	6/7	6.750	8.375	0.00	N	0.00		
3	SSDS	SperryDrill	6/7	6.750	8.375	1.15	Y	3.00	6	9
4	SSDS	Geo Pilot	6/7	6.750	8.375	0.00	N	0.00	0	2
5	SSDS	Geo Pilot	6/7	6.750	8.375	0.00	N	3.00	0	12

Table 2 - Motor Run Summary

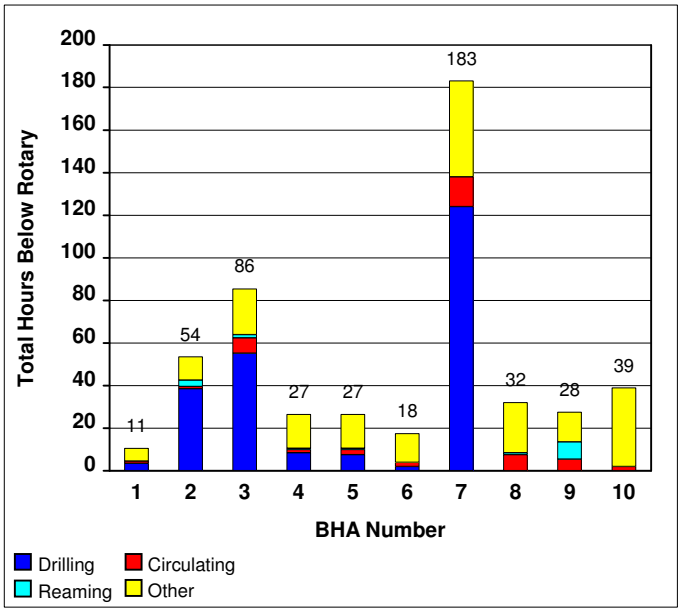
Bit #	Manufacturer	Style	OD (in)	Gge Len (in)	Nozzles (/32's)	TFA (in²)	Dull Grades I O D L B G O R	Ftge (m)	Drlg hrs	ROP (m/hr)
1	Baker-Hughes	CR-1	26.000		3x18, 1x16	0.942	1-1-WT-A -1-I-NO-TD	58	3.50	16
2	Smith	XR+VCPS	17.500	0.000	3x22, 1x13	1.243	1-1-WT-A -E-I-NO-TD	808	38.50	21
3	Reed	RSX 616m	12.250	2.000	6x15	1.035	4-4-LT-N -X-I-CT-TD	1006	50.25	20
4	Security	FMF 3653Z	8.500	2.000	6x14	0.902	4-4-BT-A -X-I-CT-PR	0	0.00	
5	Hughes Christensen	GT 1	8.500	3.000	3x20	0.920	2-2-WT-A -E-1-NO-BHA	47	6.00	8
6	Security DBS	FMF 3755	8.500	7.000	4x16	0.785	0-0-NO-A -X-I-NO-DTF	4	2.00	2
6rr1	Security DBS	FMF3755	8.500	7.000	4x16	0.785	6-6-BT-A -X-I-NR-PR	1499	124.00	12
5rr1	Hughes Christensen	GT-1	8.500	3.000	3x20	0.920	2-2-WT-A -E-1-NO-LOG	0	0.00	
5rr2	Hughes Christensen	GT-1	8.500	3.000	3x20	0.920	2-2-WT-A -E-1-NO-LOG	0	0.00	

Table 3 - Bit Run Summary

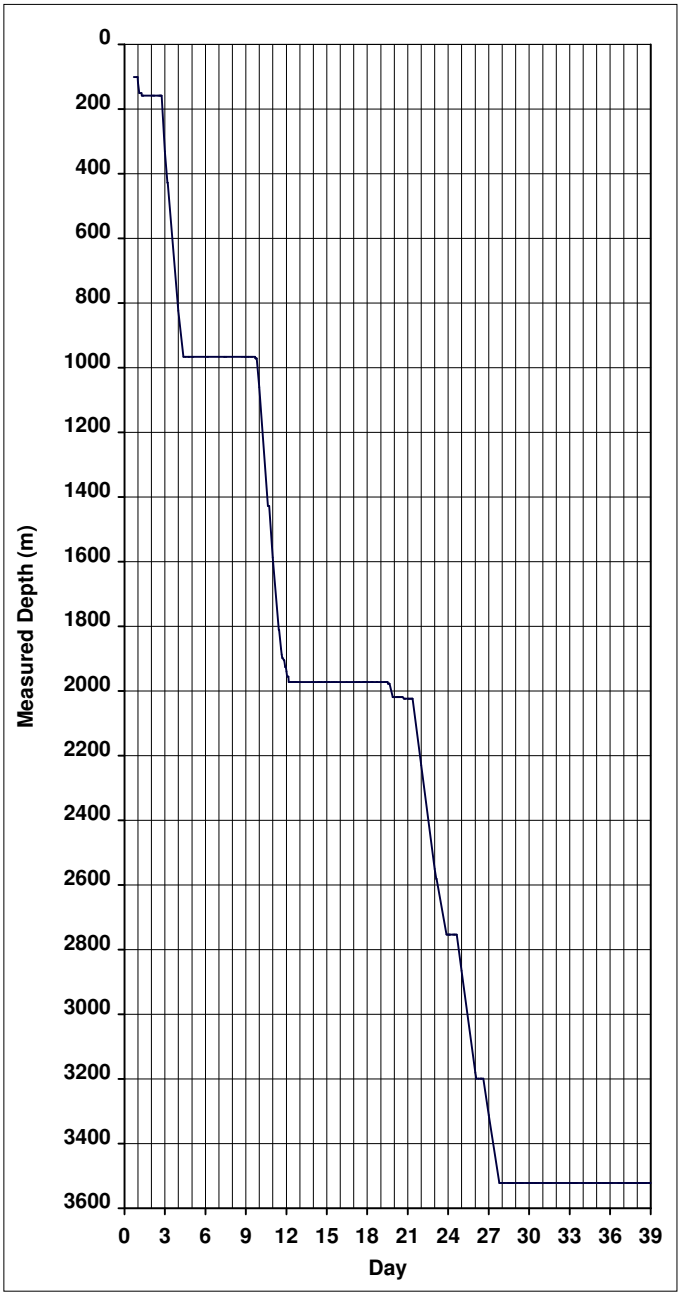
Hours by Operation Summary



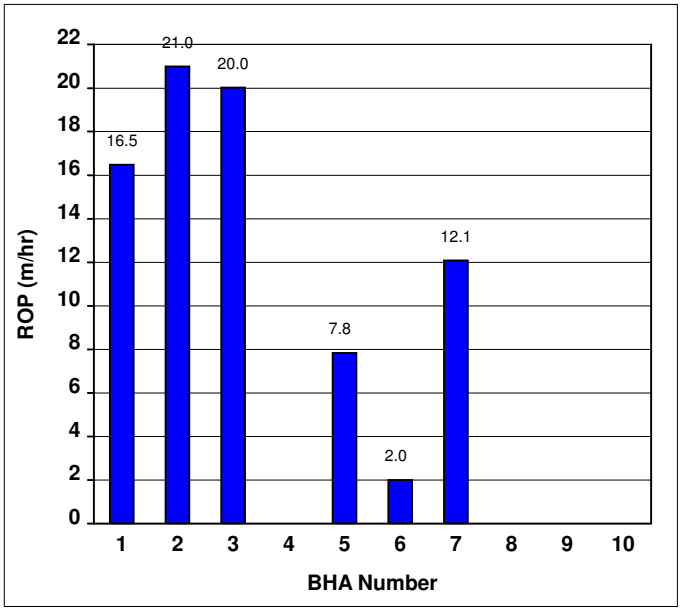
Hours per BHA Breakdown



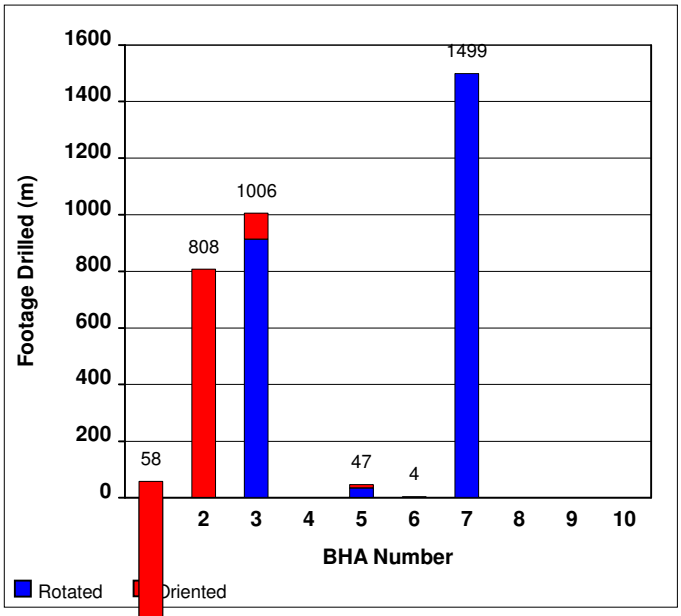
Days vs. Depth



Average Rate of Penetration per BHA



Footage per BHA



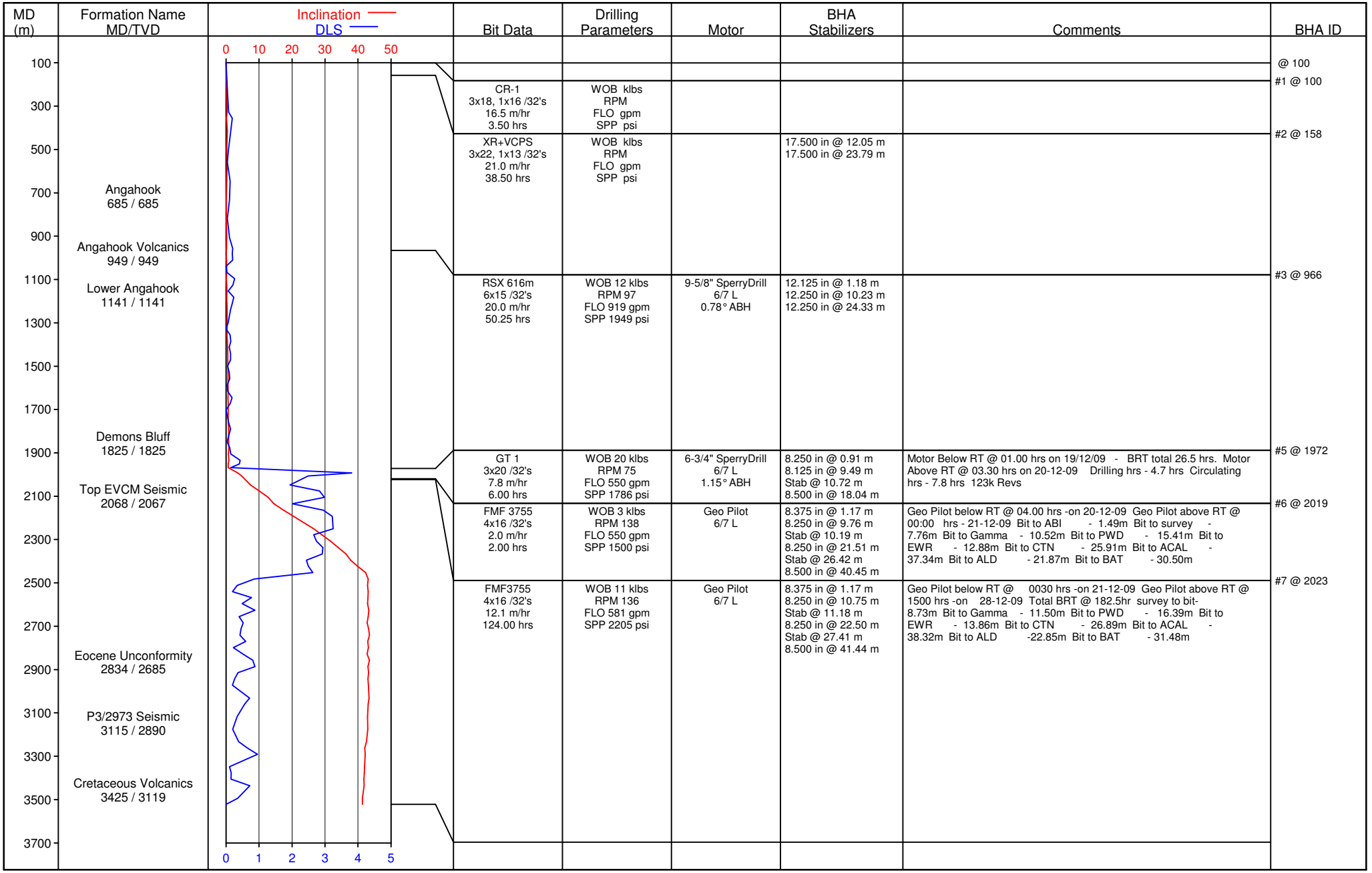
SECTION 2

Drilling Parameters

Sperry-Sun Drilling Services

Origin Energy Resources Ltd
Rockhopper-1
Kan Tan IV

Australia
Bass Basin
AU-DD-0006714150



SECTION 3

Definitive Survey Report

Origin Energy Resources LTD

Rockhopper-1
Rockhopper-1
Rockhopper-1

Rockhopper-1

Design: Rockhopper-1 Definitive Survey

Sperry Drilling Services

Combo Report

21 January, 2010

Well Coordinates: 5,594,071.42 N, 366,374.03 E (39° 47' 34.18" S, 145° 26' 21.47" E)
Water Depth: 74.30 m

Local Coordinate Origin:	Centered on Well Rockhopper-1
Viewing Datum:	Rotary Table @ 26.00m (Above MSL)
TVDs to System:	N
North Reference:	Grid
Unit System:	Modified SI

Version: 2003.21 Build: 43

HALLIBURTON

Design Report for Rockhopper-1 - Rockhopper-1 Definitive Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	TVD below System (m)	Vertical Depth (m)	Local Coordinates Northing (m)	Local Coordinates Easting (m)	Map Coordinates Northing (m)	Map Coordinates Easting (m)	Dogleg Rate (°/30m)	Vertical Section (m)	Comments
0.00	0.00	0.00	26.00	0.00	0.00 N	0.00 E	5,594,071.42	366,374.03	0.000	0.00	
100.30	0.00	0.00	-74.30	100.30	0.00 N	0.00 E	5,594,071.42	366,374.03	0.000	0.00	Torquay Group
242.36	0.22	278.10	-216.36	242.36	0.04 N	0.27 W	5,594,071.46	366,373.76	0.046	0.05	
327.42	0.34	318.42	-301.42	327.42	0.25 N	0.60 W	5,594,071.67	366,373.43	0.079	0.27	
356.38	0.16	310.14	-330.38	356.38	0.34 N	0.69 W	5,594,071.76	366,373.34	0.190	0.36	
414.83	0.43	334.58	-388.83	414.83	0.59 N	0.84 W	5,594,072.01	366,373.19	0.150	0.62	
502.13	0.25	356.62	-476.13	502.13	1.08 N	1.00 W	5,594,072.50	366,373.04	0.075	1.11	
559.33	0.33	356.35	-533.33	559.33	1.37 N	1.01 W	5,594,072.79	366,373.02	0.042	1.40	
645.93	0.22	77.08	-619.92	645.92	1.65 N	0.87 W	5,594,073.08	366,373.16	0.127	1.68	
733.40	0.10	264.51	-707.39	733.39	1.68 N	0.78 W	5,594,073.11	366,373.25	0.110	1.71	
819.33	0.13	204.11	-793.32	819.32	1.59 N	0.89 W	5,594,073.01	366,373.14	0.041	1.62	
907.20	0.22	337.40	-881.19	907.19	1.65 N	1.00 W	5,594,073.07	366,373.03	0.110	1.68	
956.77	0.15	112.45	-930.76	956.76	1.71 N	0.98 W	5,594,073.14	366,373.05	0.208	1.75	
961.00	0.12	112.45	-934.99	960.99	1.71 N	0.97 W	5,594,073.13	366,373.06	0.191	1.74	13 3/8" Casing
980.35	0.00	258.48	-954.34	980.34	1.70 N	0.95 W	5,594,073.13	366,373.08	0.191	1.73	
1,009.96	0.20	60.48	-983.95	1,009.95	1.73 N	0.90 W	5,594,073.15	366,373.13	0.203	1.76	
1,039.18	0.22	57.43	-1,013.17	1,039.17	1.78 N	0.81 W	5,594,073.21	366,373.22	0.024	1.81	
1,068.02	0.25	56.38	-1,042.01	1,068.01	1.85 N	0.71 W	5,594,073.27	366,373.32	0.032	1.87	
1,096.69	0.09	334.71	-1,070.68	1,096.68	1.90 N	0.67 W	5,594,073.33	366,373.36	0.265	1.92	
1,125.20	0.25	23.41	-1,099.19	1,125.19	1.98 N	0.65 W	5,594,073.40	366,373.38	0.213	2.00	
1,140.80	0.28	20.48	-1,114.79	1,140.79	2.05 N	0.63 W	5,594,073.47	366,373.40	0.068	2.07	Anga Group
1,153.52	0.31	18.55	-1,127.51	1,153.51	2.11 N	0.61 W	5,594,073.53	366,373.43	0.068	2.13	
1,182.12	0.26	64.52	-1,156.11	1,182.11	2.21 N	0.52 W	5,594,073.63	366,373.51	0.238	2.23	
1,210.69	0.31	28.33	-1,184.68	1,210.68	2.31 N	0.43 W	5,594,073.73	366,373.60	0.192	2.32	
1,239.34	0.36	49.88	-1,213.33	1,239.33	2.43 N	0.32 W	5,594,073.86	366,373.71	0.141	2.44	
1,298.15	0.40	29.51	-1,272.14	1,298.14	2.73 N	0.08 W	5,594,074.15	366,373.95	0.071	2.73	
1,327.53	0.39	32.18	-1,301.52	1,327.52	2.90 N	0.02 E	5,594,074.33	366,374.06	0.021	2.90	
1,356.77	0.31	47.29	-1,330.76	1,356.76	3.04 N	0.14 E	5,594,074.47	366,374.17	0.125	3.04	
1,385.60	0.44	56.10	-1,359.59	1,385.59	3.16 N	0.29 E	5,594,074.58	366,374.32	0.148	3.15	
1,412.81	0.48	46.30	-1,386.80	1,412.80	3.29 N	0.45 E	5,594,074.72	366,374.49	0.097	3.28	
1,441.66	0.57	57.51	-1,415.65	1,441.65	3.45 N	0.66 E	5,594,074.88	366,374.69	0.142	3.43	
1,470.69	0.57	43.73	-1,444.68	1,470.68	3.64 N	0.88 E	5,594,075.06	366,374.92	0.141	3.60	
1,499.95	0.59	47.75	-1,473.93	1,499.93	3.84 N	1.10 E	5,594,075.27	366,375.13	0.046	3.80	
1,529.47	0.61	56.99	-1,503.45	1,529.45	4.03 N	1.34 E	5,594,075.45	366,375.37	0.100	3.98	
1,558.73	0.62	46.69	-1,532.71	1,558.71	4.22 N	1.59 E	5,594,075.65	366,375.62	0.114	4.17	
1,587.90	0.64	49.02	-1,561.88	1,587.88	4.44 N	1.82 E	5,594,075.86	366,375.86	0.033	4.38	
1,616.89	0.68	52.55	-1,590.87	1,616.87	4.65 N	2.08 E	5,594,076.07	366,376.11	0.059	4.58	
1,645.39	0.64	67.47	-1,619.36	1,645.36	4.81 N	2.36 E	5,594,076.24	366,376.40	0.185	4.73	
1,673.84	0.66	56.91	-1,647.81	1,673.81	4.96 N	2.65 E	5,594,076.39	366,376.68	0.128	4.87	

Design Report for Rockhopper-1 - Rockhopper-1 Definitive Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	TVD below System (m)	Vertical Depth (m)	Local Coordinates Northing (m)	Local Coordinates Easting (m)	Map Coordinates Northing (m)	Map Coordinates Easting (m)	Dogleg Rate (°/30m)	Vertical Section (m)	Comments
1,702.24	0.67	57.55	-1,676.21	1,702.21	5.14 N	2.93 E	5,594,076.57	366,376.96	0.013	5.04	
1,759.92	0.72	70.24	-1,733.89	1,759.89	5.45 N	3.55 E	5,594,076.87	366,377.58	0.084	5.32	
1,789.63	0.84	75.16	-1,763.59	1,789.59	5.57 N	3.94 E	5,594,076.99	366,377.97	0.139	5.43	
1,825.30	0.82	77.44	-1,799.26	1,825.26	5.69 N	4.44 E	5,594,077.11	366,378.47	0.035	5.53	Demons Bluff
1,848.62	0.80	79.00	-1,822.58	1,848.58	5.75 N	4.76 E	5,594,077.18	366,378.79	0.035	5.59	
1,876.78	0.90	76.63	-1,850.73	1,876.73	5.84 N	5.17 E	5,594,077.27	366,379.20	0.113	5.67	
1,905.30	0.76	78.61	-1,879.25	1,905.25	5.93 N	5.57 E	5,594,077.36	366,379.60	0.150	5.74	
1,934.76	0.91	50.85	-1,908.71	1,934.71	6.12 N	5.94 E	5,594,077.54	366,379.97	0.434	5.91	
1,951.76	0.68	51.65	-1,925.71	1,951.71	6.27 N	6.13 E	5,594,077.69	366,380.16	0.406	6.06	
1,964.00	0.69	56.15	-1,937.95	1,963.95	6.35 N	6.25 E	5,594,077.78	366,380.28	0.132	6.14	9 5/8" Casing
1,968.42	0.69	57.75	-1,942.37	1,968.37	6.38 N	6.29 E	5,594,077.80	366,380.32	0.132	6.17	
1,992.64	3.64	23.88	-1,966.57	1,992.57	7.16 N	6.72 E	5,594,078.59	366,380.76	3.829	6.93	
2,006.90	4.80	20.69	-1,980.79	2,006.79	8.13 N	7.12 E	5,594,079.56	366,381.15	2.489	7.89	
2,047.71	7.43	22.90	-2,021.36	2,047.36	12.16 N	8.75 E	5,594,083.59	366,382.78	1.941	11.86	
2,067.50	9.24	19.53	-2,040.94	2,066.94	14.84 N	9.78 E	5,594,086.26	366,383.81	2.836	14.50	Eastern View Coal Measures
2,076.22	10.04	18.43	-2,049.54	2,075.54	16.22 N	10.25 E	5,594,087.64	366,384.28	2.836	15.87	
2,104.97	12.80	14.68	-2,077.72	2,103.72	21.68 N	11.85 E	5,594,093.10	366,385.88	2.981	21.27	
2,134.78	14.54	10.50	-2,106.68	2,132.68	28.55 N	13.37 E	5,594,099.98	366,387.40	2.013	28.09	
2,164.31	17.43	9.42	-2,135.07	2,161.07	36.56 N	14.77 E	5,594,107.99	366,388.80	2.951	36.05	
2,193.36	20.51	7.83	-2,162.54	2,188.54	45.90 N	16.18 E	5,594,117.32	366,390.21	3.225	45.33	
2,250.02	26.59	5.77	-2,214.45	2,240.45	68.37 N	18.81 E	5,594,139.79	366,392.84	3.248	67.70	
2,278.27	29.06	6.68	-2,239.44	2,265.44	81.48 N	20.24 E	5,594,152.90	366,394.27	2.661	80.75	
2,307.32	31.70	6.12	-2,264.50	2,290.50	96.08 N	21.87 E	5,594,167.50	366,395.90	2.742	95.29	
2,336.99	34.05	2.98	-2,289.41	2,315.41	112.13 N	23.14 E	5,594,183.55	366,397.17	2.935	111.28	
2,366.57	36.34	359.97	-2,313.59	2,339.59	129.16 N	23.56 E	5,594,200.59	366,397.59	2.913	128.30	
2,395.13	37.77	356.94	-2,336.38	2,362.38	146.36 N	23.09 E	5,594,217.78	366,397.12	2.436	145.50	
2,423.37	39.84	355.17	-2,358.39	2,384.39	164.01 N	21.87 E	5,594,235.44	366,395.90	2.495	163.18	
2,452.17	42.32	354.45	-2,380.09	2,406.09	182.86 N	20.15 E	5,594,254.28	366,394.18	2.630	182.08	
2,481.68	43.11	354.88	-2,401.78	2,427.78	202.79 N	18.29 E	5,594,274.21	366,392.32	0.856	202.06	
2,511.39	42.92	354.47	-2,423.50	2,449.50	222.97 N	16.41 E	5,594,294.39	366,390.44	0.341	222.29	
2,540.16	43.10	354.54	-2,444.54	2,470.54	242.51 N	14.53 E	5,594,313.93	366,388.56	0.194	241.88	
2,568.35	43.01	353.48	-2,465.14	2,491.14	261.65 N	12.52 E	5,594,333.07	366,386.55	0.776	261.07	
2,596.31	42.88	354.12	-2,485.60	2,511.60	280.58 N	10.46 E	5,594,352.01	366,384.49	0.488	280.07	
2,626.30	43.28	355.27	-2,507.51	2,533.51	300.98 N	8.57 E	5,594,372.40	366,382.60	0.882	300.52	
2,655.72	43.09	355.77	-2,528.96	2,554.96	321.05 N	7.00 E	5,594,392.47	366,381.03	0.399	320.63	
2,683.98	42.76	356.30	-2,549.65	2,575.65	340.25 N	5.67 E	5,594,411.67	366,379.70	0.519	339.87	
2,712.30	43.19	356.38	-2,570.37	2,596.37	359.52 N	4.43 E	5,594,430.94	366,378.46	0.459	359.16	
2,741.97	43.47	355.92	-2,591.96	2,617.96	379.83 N	3.07 E	5,594,451.25	366,377.10	0.427	379.51	
2,770.22	42.94	356.20	-2,612.55	2,638.55	399.12 N	1.74 E	5,594,470.55	366,375.77	0.599	398.84	

Design Report for Rockhopper-1 - Rockhopper-1 Definitive Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	TVD below System (m)	Vertical Depth (m)	Local Coordinates Northing (m)	Local Coordinates Easting (m)	Map Coordinates Northing (m)	Map Coordinates Easting (m)	Dogleg Rate (°/30m)	Vertical Section (m)	Comments
2,799.07	43.15	356.27	-2,633.63	2,659.63	418.77 N	0.44 E	5,594,490.20	366,374.47	0.224	418.52	
2,828.79	42.74	355.82	-2,655.39	2,681.39	438.97 N	0.95 W	5,594,510.40	366,373.08	0.517	438.76	
2,857.71	43.48	356.21	-2,676.50	2,702.50	458.69 N	2.33 W	5,594,530.11	366,371.70	0.816	458.51	
2,886.29	43.02	355.19	-2,697.32	2,723.32	478.22 N	3.80 W	5,594,549.64	366,370.24	0.878	478.07	
2,914.35	43.18	355.63	-2,717.81	2,743.81	497.33 N	5.33 W	5,594,568.75	366,368.70	0.364	497.22	
2,942.96	43.00	355.89	-2,738.70	2,764.70	516.82 N	6.78 W	5,594,588.24	366,367.26	0.265	516.75	
2,972.30	43.13	356.10	-2,760.13	2,786.13	536.80 N	8.18 W	5,594,608.23	366,365.86	0.198	536.77	
3,031.32	43.35	358.13	-2,803.13	2,829.13	577.18 N	10.21 W	5,594,648.60	366,363.82	0.716	577.20	
3,059.74	43.12	357.42	-2,823.84	2,849.84	596.63 N	10.96 W	5,594,668.05	366,363.07	0.568	596.66	
3,116.75	42.91	356.52	-2,865.52	2,891.52	635.47 N	13.02 W	5,594,706.89	366,361.01	0.341	635.55	
3,126.54	42.91	356.42	-2,872.69	2,898.69	642.12 N	13.43 W	5,594,713.55	366,360.60	0.205	642.21	RH-1 Top Reservoir Target (Rev 2.00)
3,175.85	42.94	355.93	-2,908.80	2,934.80	675.63 N	15.67 W	5,594,747.05	366,358.36	0.205	675.77	
3,232.85	42.61	354.97	-2,950.64	2,976.64	714.22 N	18.74 W	5,594,785.64	366,355.29	0.385	714.44	
3,261.40	42.02	354.71	-2,971.75	2,997.75	733.36 N	20.47 W	5,594,804.78	366,353.56	0.647	733.63	
3,290.95	42.18	356.09	-2,993.67	3,019.67	753.11 N	22.06 W	5,594,824.53	366,351.97	0.953	753.42	
3,348.87	42.01	356.27	-3,036.65	3,062.65	791.85 N	24.65 W	5,594,863.27	366,349.38	0.108	792.23	
3,377.12	41.91	356.10	-3,057.66	3,083.66	810.69 N	25.90 W	5,594,882.12	366,348.13	0.161	811.11	
3,405.96	41.76	356.10	-3,079.15	3,105.15	829.88 N	27.21 W	5,594,901.31	366,346.82	0.156	830.33	
3,425.00	41.82	356.78	-3,093.34	3,119.34	842.55 N	28.00 W	5,594,913.97	366,346.03	0.722	843.01	Seabed Volcanics
3,435.82	41.85	357.17	-3,101.41	3,127.41	849.75 N	28.38 W	5,594,921.18	366,345.65	0.722	850.23	
3,494.20	41.35	357.89	-3,145.06	3,171.06	888.48 N	30.05 W	5,594,959.90	366,343.98	0.355	888.99	RH-1 TD Target (Rev 2.00)
3,522.00	41.35	357.89	-3,165.93	3,191.93	906.83 N	30.73 W	5,594,978.25	366,343.30	0.000	907.35	Projected to TD

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3,522.00	3,191.93	906.83	-30.73	Projected to TD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (m)	Origin +E/-W (m)	Start TVD (m)
User	No Target (Freehand)	358.07	Slot	0.00	0.00	0.00

Design Report for Rockhopper-1 - Rockhopper-1 Definitive Survey

Survey tool program

From (m)	To (m)	Survey/Plan	Survey Tool
100.30	100.30	Rockhopper-1 - 36" MWD Survey	MWD+SAG+SC
242.36	956.77	Rockhopper-1 - 17 1/2" MWD Survey	MWD+SAG+SC
980.35	1,951.76	Rockhopper-1 - 12 1/4" MWD Survey	MWD+SAG+SC
1,968.42	3,522.00	Rockhopper-1 - 8 1/2" MWD Survey	MWD+SAG+SC

Casing Details

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
961.00	960.99	13 3/8" Casing	13.375	17.500
1,964.00	1,963.95	9 5/8" Casing	9.625	12.250

Formation Details

Measured Depth (m)	Vertical Depth (m)	TVDSS (m)	Name	Lithology	Dip (°)	Dip Direction (°)
100.30	100.30	74.30	Torquay Group		0.00	
1,140.80	1,140.79	1,114.79	Anga Group		0.00	
1,825.30	1,825.26	1,799.26	Demons Bluff		0.00	
2,067.50	2,066.94	2,040.94	Eastern View Coal Measures		0.00	
3,425.00	3,119.34	3,093.34	Seabed Volcanics		0.00	

Design Targets

Target Name - hit/miss target - Shape	Dip Angle ()	Dip Dir. ()	TVD ()	+N/-S ()	+E/-W ()	Northing ()	Easting ()	Latitude	Longitude

North Reference Sheet for Rockhopper-1 - Rockhopper-1 - Rockhopper-1

All data is in Meters unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to Rotary Table @ 26.00m (Above MSL). Northing and Easting are relative to Rockhopper-1

Coordinate System is Universal Transverse Mercator, Zone 55S (144 E to 150 E) using datum GDA94, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is 147° 0' 0.0000 E°, Longitude Origin:0° 0' 0.0000 E°, Latitude Origin:0° 0' 0.0000 N°

False Easting: 500,000.00m, False Northing: 10,000,000.00m, Scale Reduction: 0.99981987

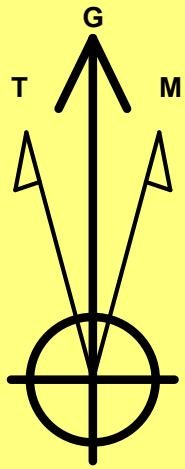
Grid Coordinates of Well: 5,594,071.42 m N, 366,374.03 m E

Geographical Coordinates of Well: 39° 47' 34.18" S, 145° 26' 21.47" E

Grid Convergence at Surface is: 1.00°

Based upon Minimum Curvature type calculations, at a Measured Depth of 3,522.00m
the Bottom Hole Displacement is 907.35m in the Direction of 358.06° (Grid).

Magnetic Convergence at surface is: -11.50° (4 December 2009, , BGGM2009)



Magnetic Model:	BGGM2009
Date:	04-Dec-09
Declination:	12.49°
Inclination/Dip:	-70.39°
Field Strength:	60969

Grid North is 1.00° East of True North (Grid Convergence)
Magnetic North is 12.49° East of True North (Magnetic Declination)
Magnetic North is 11.50° East of Grid North (Magnetic Convergence)

To convert a True Direction to a Grid Direction, Subtract 1.00°
To convert a Magnetic Direction to a True Direction, Add 12.49° East
To convert a Magnetic Direction to a Grid Direction, Add 11.50°

SECTION 4

A4 Plot

Sperry Drilling

Project: Rockhopper-1
Site: Rockhopper-1
Well: Rockhopper-1
Wellbore: Rockhopper-1
Design: Rockhopper-1 Definitive Survey

Origin energy

WELL DETAILS: Rockhopper-1

Water Depth: 74.30

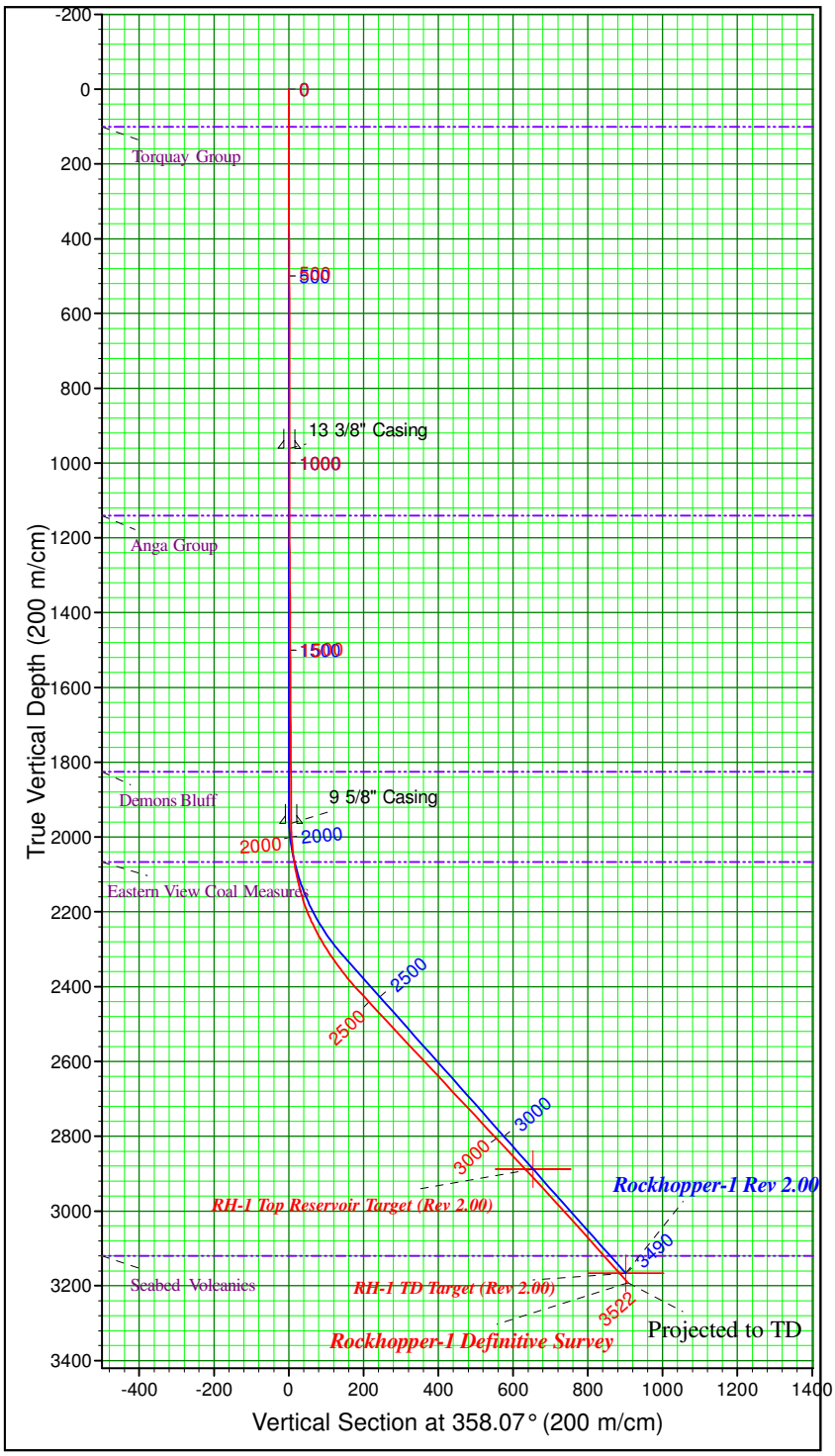
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	5594071.42	366374.03	39° 47' 34.1828 S	145° 26' 21.4660 E

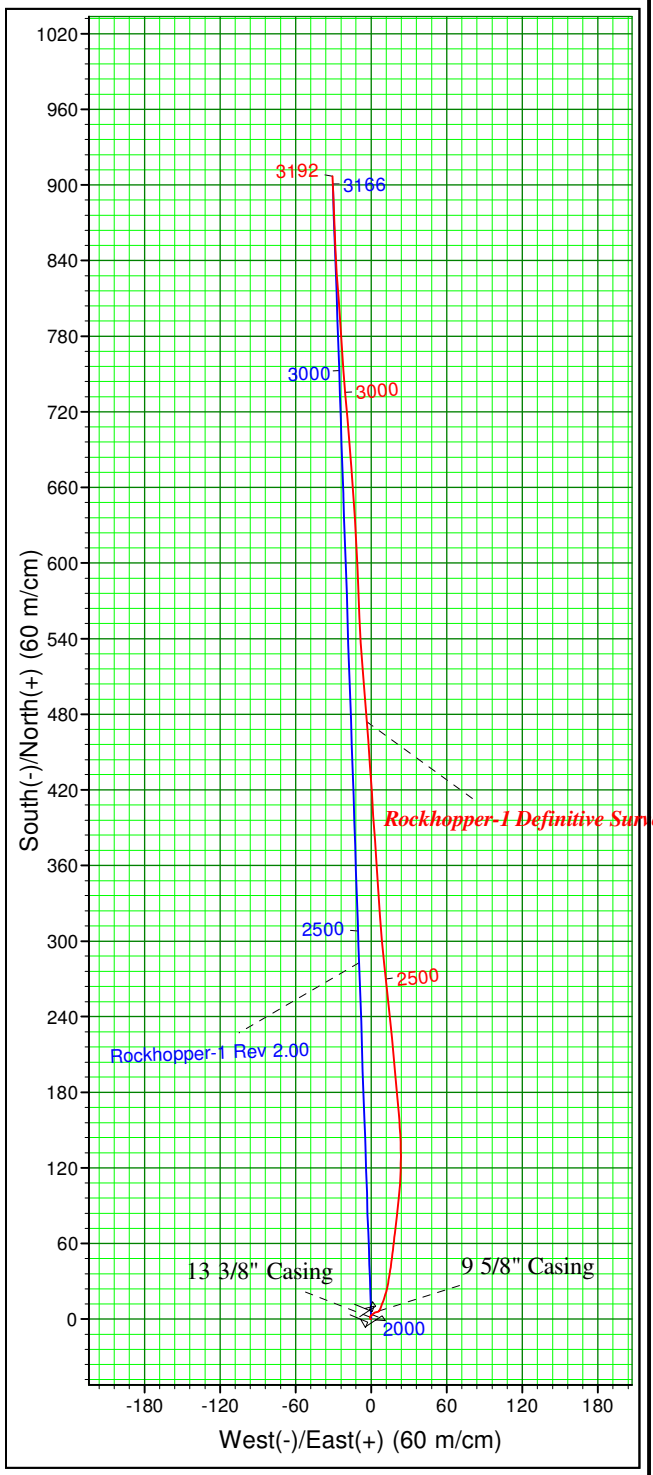
REFERENCE INFORMATION

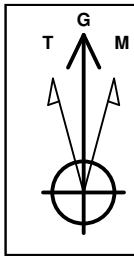
Co-ordinate (N/E) Reference: Well Rockhopper-1, Grid North
Vertical (TVD) Reference: Rotary Table @ 26.00m (Above MSL)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: Rotary Table @ 26.00m (Above MSL)
Calculation Method: Minimum Curvature

CASING DETAILS

TVD	MD	Name	Size
960.99	961.00	13 3/8" Casing	13.375
1963.95	1964.00	9 5/8" Casing	9.625







Azimuths to Grid North
True North: -1.00°
Magnetic North: 11.50°

Magnetic Field
Strength: 60968.9snT
Dip Angle: -70.39°
Date: 4/12/2009
Model: BGGM2009

PROJECT DETAILS: Rockhopper-1

Geodetic System: Universal Transverse Mercator
Datum: GDA94
Ellipsoid: GRS 1980
Zone: Zone 55S (144 E to 150 E)

System Datum: Mean Sea Level

SECTION 5

Drilling Surveys

sperry-sun
DRILLING SERVICES

Survey and Drilling Parameters

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Rig : Kan Tan IV

Country : Australia
Location : Bass Basin
Job # : AU-DD-0006714150

North Ref : Grid **Declination :** ° **VS Dir :** 358.07° (from Wellhead)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S (m)	Coordinates E/W (m)	DLS (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	WOB (klbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m)	Orientation To (m)	Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00										Tieon
100.30	0.00	0.00	100.3	0.0	0.0	0.0	0.00	0.00	0.00									1	
242.36	0.22	278.10	242.4	0.0	0.0	-0.3	0.05	0.05	0.00									2	
327.42	0.34	318.42	327.4	0.3	0.3	-0.6	0.08	0.04	0.00									2	
356.38	0.16	310.14	356.4	0.4	0.3	-0.7	0.19	-0.19	0.00									2	
414.83	0.43	334.58	414.8	0.6	0.6	-0.8	0.15	0.14	0.00									2	
502.13	0.25	356.62	502.1	1.1	1.1	-1.0	0.08	-0.06	0.00									2	
559.33	0.33	356.35	559.3	1.4	1.4	-1.0	0.04	0.04	0.00									2	
645.93	0.22	77.08	645.9	1.7	1.7	-0.9	0.13	-0.04	0.00									2	
733.40	0.10	264.51	733.4	1.7	1.7	-0.8	0.11	-0.04	0.00									2	
819.33	0.13	204.11	819.3	1.6	1.6	-0.9	0.04	0.01	0.00									2	
907.20	0.22	337.40	907.2	1.7	1.7	-1.0	0.11	0.03	0.00									2	
956.77	0.15	112.45	956.8	1.7	1.7	-1.0	0.21	-0.04	0.00									2	
980.35	0.00	258.48	980.3	1.7	1.7	-0.9	0.19	-0.19	0.00	13	80	800	1300				19	3	
1009.96	0.20	60.48	1010.0	1.8	1.7	-0.9	0.20	0.20	0.00	17	70	780	1350				23	3	
1039.18	0.22	57.43	1039.2	1.8	1.8	-0.8	0.00	0.02	0.00	16	80	850	1420				29	3	
1068.02	0.25	56.38	1068.0	1.9	1.8	-0.7	0.03	0.03	0.00	17	100	880	1550				29	3	
1096.69	0.09	334.71	1096.7	1.9	1.9	-0.7	0.26	-0.17	0.00	17	100	900	1675				35	3	
1125.20	0.25	23.41	1125.2	2.0	2.0	-0.7	0.21	0.17	0.00	10	100	950	1825				29	3	
1153.52	0.31	18.55	1153.5	2.1	2.1	-0.6	0.07	0.06	0.00	15	100	900	1775				44	3	
1182.12	0.26	64.52	1182.1	2.2	2.2	-0.5	0.24	-0.05	0.00	17	100	925	1875				54	3	
1210.69	0.31	28.33	1210.7	2.3	2.3	-0.4	0.19	0.05	0.00	16	100	925	1900				39	3	
1239.34	0.36	49.88	1239.3	2.4	2.4	-0.3	0.14	0.05	0.00	7	100	925	1950				44	3	
1298.15	0.40	29.51	1298.1	2.7	2.7	-0.1	0.07	0.02	0.00									3	
1327.53	0.39	32.18	1327.5	2.9	2.9	0.0	0.00	-0.01	0.00	7	100	850	1630				39	3	
1356.77	0.31	47.29	1356.8	3.0	3.0	0.1	0.12	-0.08	0.00	8	100	850	1650				35	3	
1385.60	0.44	56.10	1385.6	3.1	3.2	0.3	0.15	0.14	0.00	10	100	930	1900				29	3	
1412.81	0.48	46.30	1412.8	3.3	3.3	0.5	0.10	0.04	0.00	10	100	930	1900				25	3	
1441.66	0.57	57.51	1441.6	3.4	3.5	0.7	0.14	0.09	0.00	10	100	900	1800				35	3	
1470.69	0.57	43.73	1470.7	3.6	3.6	0.9	0.14	0.00	0.00	20	100	900	1980				39	3	

sperry-sun
DRILLING SERVICES

Survey and Drilling Parameters

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Rig : Kan Tan IV

Country : Australia
Location : Bass Basin
Job # : AU-DD-0006714150

North Ref : Grid **Declination :** ° **VS Dir :** 358.07° (from Wellhead)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S (m)	Coordinates E/W (m)	DLS (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	WOB (klbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m)	Orientation To (m)	Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
1499.95	0.59	47.75	1499.9	3.8	3.8	1.1	0.05	0.02	0.00	17	100	950	2000				35	3	
1529.47	0.61	56.99	1529.5	4.0	4.0	1.3	0.10	0.02	0.00	13	100	950	2050				43	3	
1558.73	0.62	46.69	1558.7	4.2	4.2	1.6	0.11	0.01	0.00	12	100	950	2150				40	3	
1587.90	0.64	49.02	1587.9	4.4	4.4	1.8	0.03	0.02	0.00	10	100	950	2060				42	3	
1616.89	0.68	52.55	1616.9	4.6	4.7	2.1	0.06	0.04	0.00	10	100	950	2150				35	3	
1645.39	0.64	67.47	1645.4	4.7	4.8	2.4	0.19	-0.04	0.00	12	100	950	2060				35	3	
1673.84	0.66	56.91	1673.8	4.9	5.0	2.6	0.13	0.02	0.00	14	100	950	2190				35	3	
1702.24	0.67	57.55	1702.2	5.0	5.1	2.9	0.00	0.01	0.00	14	100	950	2230				40	3	
1759.92	0.72	70.24	1759.9	5.3	5.4	3.6	0.08	0.03	0.00	13	100	900	2100				32	3	
1789.63	0.84	75.16	1789.6	5.4	5.6	3.9	0.14	0.12	0.00	13	100	950	2140				30	3	
1848.62	0.80	79.00	1848.6	5.6	5.8	4.8	0.03	-0.02	0.00	12	100	950	2240				20	3	
1876.78	0.90	76.63	1876.7	5.7	5.8	5.2	0.11	0.11	0.00	5		950	2275	1869	1877	30R	10	3	
1905.30	0.76	78.61	1905.3	5.7	5.9	5.6	0.15	-0.15	0.00	5		950	2300	1877	1887	30R	3	3	
														1897	1905	30R		3	
1934.76	0.91	50.85	1934.7	5.9	6.1	5.9	0.43	0.15	0.00	10		1000	2600	1905	1929	30R	15	3	
														1929	1935	30R		3	
1951.76	0.68	51.65	1951.7	6.1	6.3	6.1	0.41	-0.41	0.00	10		1000	2600	1935	1952	30R	15	3	
1968.42	0.71	57.75	1968.4	6.2	6.4	6.3	0.14	0.05	0.00	10		965	2550	1952	1956	30R	10	3	
														1956	1968	30R		3	
1992.64	3.64	23.88	1992.6	6.9	7.2	6.7	3.81	3.63	0.00	24		550	1750	1968	1972	30R	8	5	
														1981	1993	5L		5	
2006.90	4.80	20.69	2006.8	7.9	8.1	7.1	2.49	2.44	-6.71	18	75	550	1820	1993	1994	5L	13	5	
2047.71	7.43	22.90	2047.4	11.9	12.2	8.8	1.94	1.93	1.62	15	140	530	1540				15	7	
2076.22	10.04	18.43	2075.5	15.9	16.2	10.3	2.84	2.75	-4.70	10	100	565	1800				15	7	
2104.97	12.80	14.68	2103.7	21.3	21.7	11.9	2.98	2.88	-3.91	13	125	550	1600				15	7	
2134.78	14.54	10.50	2132.7	28.1	28.6	13.4	2.01	1.75	-4.21	15	125	550	1600				15	7	
2164.31	17.43	9.42	2161.1	36.0	36.6	14.8	2.95	2.94	-1.10	15	130	550	1650				22	7	
2193.36	20.51	7.83	2188.5	45.3	45.9	16.2	3.22	3.18	-1.64	12	130	550	1680				23	7	
2250.02	26.59	5.77	2240.5	67.7	68.4	18.8	3.25	3.22	-1.09	10	140	550	1715				30	7	
2278.27	29.06	6.68	2265.4	80.8	81.5	20.2	2.66	2.62	0.97	8	120	550	1745				18	7	
2307.32	31.70	6.12	2290.5	95.3	96.1	21.9	2.74	2.73	-0.58	8	120	550	1810				20	7	

sperry-sun DRILLING SERVICES

Survey and Drilling Parameters

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Rig : Kan Tan IV

Country : Australia
Location : Bass Basin
Job # : AU-DD-0006714150

North Ref : Grid **Declination :** ° **VS Dir :** 358.07° (from Wellhead)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S (m)	Coordinates E/W (m)	DLS (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	WOB (klbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m)	Orientation To (m)	Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
2336.99	34.05	2.98	2315.4	111.3	112.1	23.1	2.93	2.38	-3.17	8	120	580	2020				18	7	
2366.57	36.34	359.97	2339.6	128.3	129.2	23.6	2.91	2.32	-3.05	8	120	580	2000				16	7	
2395.13	37.77	356.94	2362.4	145.5	146.4	23.1	2.44	1.50	-3.18	10	120	580	2000				19	7	
2423.37	39.84	355.17	2384.4	163.2	164.0	21.9	2.49	2.20	-1.88	10	120	580	2000				18	7	
2452.17	42.32	354.45	2406.1	182.1	182.9	20.2	2.63	2.58	-0.75	10	120	580	2000				17	7	
2481.68	43.11	354.88	2427.8	202.1	202.8	18.3	0.86	0.80	0.44	10	120	580	2000				14	7	
2511.39	42.92	354.47	2449.5	222.3	223.0	16.4	0.34	-0.19	-0.41	14	130	580	2055				19	7	
2540.16	43.10	354.54	2470.5	241.9	242.5	14.5	0.19	0.19	0.07	14	120	580	2060				17	7	
2568.35	43.01	353.48	2491.1	261.1	261.6	12.5	0.78	-0.10	-1.13	14	120	580	2100				22	7	
2596.31	42.88	354.12	2511.6	280.1	280.6	10.5	0.49	-0.14	0.69	5	120	580	2100				12	7	
2626.30	43.28	355.27	2533.5	300.5	301.0	8.6	0.88	0.40	1.15	12	120	580	2150				11	7	
2655.72	43.09	355.77	2555.0	320.6	321.1	7.0	0.40	-0.19	0.51	12	120	580	2150				12	7	
2683.98	42.76	356.30	2575.7	339.9	340.3	5.7	0.52	-0.35	0.56	12	115	580	2150				19	7	
2712.30	43.19	356.38	2596.4	359.2	359.5	4.4	0.46	0.46	0.08	12	130	580	2190				14	7	
2741.97	43.47	355.92	2618.0	379.5	379.8	3.1	0.43	0.28	-0.47	12	130	580	2190				20	7	
2770.22	42.94	356.20	2638.5	398.8	399.1	1.7	0.60	-0.56	0.30	10	130	580	2200				15	7	
2799.07	43.15	356.27	2659.6	418.5	418.8	0.5	0.22	0.22	0.07	10	130	580	2200				14	7	
2828.79	42.74	355.82	2681.4	438.8	439.0	-0.9	0.52	-0.41	-0.45	10	150	580	2210				15	7	
2857.71	43.48	356.21	2702.5	458.5	458.7	-2.3	0.82	0.77	0.40	10	150	580	2210				14	7	
2886.29	43.02	355.19	2723.3	478.1	478.2	-3.8	0.88	-0.48	-1.07	12	150	585	2235				15	7	
2914.35	43.18	355.63	2743.8	497.2	497.3	-5.3	0.36	0.17	0.47	12	155	585	2235				18	7	
2942.96	43.00	355.89	2764.7	516.8	516.8	-6.8	0.27	-0.19	0.27	12	155	585	2230				18	7	
2972.30	43.13	356.10	2786.1	536.8	536.8	-8.2	0.20	0.13	0.21	10	165	580	2245				16	7	
3031.32	43.35	358.13	2829.1	577.2	577.2	-10.2	0.72	0.11	1.03	10	140	580	2450				14	7	
3059.74	43.12	357.42	2849.8	596.7	596.6	-10.9	0.57	-0.24	-0.75	10	140	600	2600				17	7	
3116.75	42.91	356.52	2891.5	635.5	635.5	-13.0	0.34	-0.11	-0.47	10	140	600	2560				17	7	
3175.85	42.94	355.93	2934.8	675.8	675.6	-15.7	0.20	0.02	-0.30	11	150	600	2570				18	7	
3232.85	42.61	354.97	2976.6	714.4	714.2	-18.7	0.38	-0.17	-0.51	10	140	600	2600				14	7	
3261.40	42.02	354.71	2997.7	733.6	733.4	-20.5	0.65	-0.62	-0.27	10	140	600	2600				22	7	
3290.95	42.18	356.09	3019.7	753.4	753.1	-22.0	0.95	0.16	1.40	10	150	600	2610				12	7	
3348.87	42.01	356.27	3062.7	792.2	791.9	-24.6	0.11	-0.09	0.09	10	160	600	2625				13	7	

sperry-sun DRILLING SERVICES

Survey and Drilling Parameters

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Rig : Kan Tan IV

Country : Australia
Location : Bass Basin
Job # : AU-DD-0006714150

North Ref : Grid **Declination :** ° **VS Dir :** 358.07° (from Wellhead)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S (m)	Coordinates E/W (m)	DLS (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	WOB (klbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m)	Orientation To (m)	Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
3377.12	41.91	356.10	3083.7	811.1	810.7	-25.9	0.16	-0.11	-0.18	10	160	600	2650				13	7	
3405.96	41.76	356.10	3105.1	830.3	829.9	-27.2	0.16	-0.16	0.00	10	160	600	2520				17	7	
3435.82	41.85	357.17	3127.4	850.2	849.8	-28.4	0.72	0.09	1.08	10	150	600	2730				13	7	
3494.20	41.35	357.89	3171.1	889.0	888.5	-30.0	0.36	-0.26	0.37	13	140	600	2700				15	7	
3522.00	41.35	357.89	3191.9	907.4	906.8	-30.7	0.00	0.00	0.00									10	

SECTION 6

BHA Data

Sperry-Sun DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 1**

BHA# 1 : **Date In** 30/11/200 **MD In (m) :** 100 **TVD In (m) :** 100 **Date Out** 1/12/2009 **MD Out (m):** 158 **TVD Out (m):** 158

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
1	26.000	Baker-Hughes	CR-1	6077163	3x18, 1x16	0.942	1-1-WT-A -1-I-NO-TD

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Hughes CR-1 26" Mill Tooth Bit	6077163	26.000	4.000	17.500		P 7-5/8" Reg	0.54	
2	36" Hole Opener	703394	36.000	4.000	36.000		B 7-5/8" Reg	2.27	
3	9-1/2" Bit Sub w/Float	W'ford	9.500	3.000		217.48	B 7-5/8" Reg	1.20	
4	9-1/2" Ander-Drift Inc sub	Reed	9.500	3.000		217.48	B 7-5/8" Reg	3.07	
5	X-over Sub 7-5/8" R <>6-5/8" R	Rig	8.500	3.000		169.30	B 6-5/8" Reg	1.15	
6	6x 8" Spiral Drill collar	Rig	8.000	2.810		150.00	B 6-5/8" Reg	56.51	
7	X-over Sub 6-5/8" R<>4-1/2"IF	Rig	6.750	2.813		100.77	B 4-1/2" IF	1.09	
8	9x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.75	
								150.58	

Parameter	Min	Max	Ave
WOB (klbs) :			
RPM (rpm) :			
Flow (gpm) :			
SPP (psi) :			

Activity	Hrs
Drilling :	3.50
Reaming :	0.00
Circ-Other :	1.00
Total :	4.50

BHA Weight	(lb)
in Air (Total) :	74209
in Mud (Total) :	68352
in Air (Bel Jars) :	0
in Mud (Bel Jars) :	0

Drill String	OD(in)	Len (m)
DP(S)-NC50(XH)-19.50#	5.000	7

PERFORMANCE

	In	Out
Inclination (deg)	0.00	0.09
Azimuth (deg)	0.00	278.10

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	865.70	0			0.00
Rotated :	-808.00	0	0.00	0.00	
Total :	57.70	16	0.05	0.00	0.05

COMMENTS

OBJECTIVES:

Spud well, drill 26" hole and open to 36" in one operation to section TD.

RESULTS:

Drilled to TD, 100.3m to 158m, 41m @ 14.7m/hr.

RECOMMENDATIONS:

No changes required.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 2**

BHA# 2 : **Date In** 2/12/2009 **MD In (m) :** 158 **TVD In (m) :** 158 **Date Out** 4/12/2009 **MD Out (m):** 966 **TVD Out (m):** 966

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
2	17.500	Smith	XR+VCPS	PN2676	3x22, 1x13	1.243	1-1-WT-A -E-I-NO-TD

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
2								

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Smith XR+VCPS 17-1/2" Mill Tooth Bit	PN2676	17.500	3.000	17.500	795.63	B 7-5/8" Reg	0.44	
2	9-1/2" Bit Sub w/Float	711621	9.500	3.000		217.48	B 7-5/8" Reg	0.84	
3	9-1/2" Non Mag HOC - 1200 DGWD w/Dir	46811	9.500	3.000		217.48	B 7-5/8" Reg	9.77	
4	17-1/2" Integral Blade Stabilizer	SBD2709	9.000	3.000	17.500	192.72	B 7-5/8" Reg	2.47	12.05
5	1x 9-1/2" Spiral Drill collar	Rig	9.500	3.000		217.00	B 7-5/8" Reg	9.27	
6	17-1/2" Integral Blade Stabilizer	207A97	9.500	3.000	17.500	217.48	B 7-5/8" Reg	2.73	23.79
7	X-over Sub 7-5/8"R<>6-5/8"R	95	9.500	3.000		217.48	B 6-5/8" Reg	1.15	
8	9x 8" Spiral Drill collar	Rig	8.000	2.810		150.00	B 6-5/8" Reg	84.96	
9	8" Drilling Jar	17625074	8.000	3.000		147.22	B 6-5/8" Reg	9.70	
10	2x 8" Spiral Drill collar	Rig	8.000	2.810		150.00	B 6-5/8" Reg	18.75	
11	X-over Sub 6-5/8" <>4-1/2"IF	1783	6.750	2.813		100.77	B 4-1/2" IF	1.09	
12	15x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	141.21	
								282.38	

Parameter	Min	Max	Ave
WOB (klbs) :			
RPM (rpm) :			
Flow (gpm) :			
SPP (psi) :			

Activity	Hrs
Drilling :	38.50
Reaming :	3.00
Circ-Other :	1.00
Total :	42.50

BHA Weight	(lb)
in Air (Total) :	98573
in Mud (Total) :	73373
in Air (Bel Jars) :	61460
in Mud (Bel Jars) :	41139

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	0.09	0.09
Azimuth (deg)	278.10	112.45

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	808.00	0			
Rotated :	0.00	0			
Total :	808.00	21	0.00	0.00	0.01

COMMENTS

OBJECTIVES:

Drill out 20" shoe, drill ahead to 13 3/8" casing point at 966ms.

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DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 3**

BHA# 3 : **Date In** 9/12/2009 **MD In (m) :** 966 **TVD In (m) :** 966 **Date Out** 12/12/2009 **MD Out (m):** 1972 **TVD Out (m):** 1972

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
3	12.250	Reed	RSX 616m	222170	6x15	1.035	4-4-LT-N -X-I-CT-TD

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
1	9.625	SSDS	SperryDrill	963448	0.78°		91	64.00

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	PDC Reed RSX 616m	222170	12.250	3.000	12.250	377.57	P 6-5/8" Reg	0.28	
2	9-5/8" SperryDrill Lobe 6/7- 5.0 stg w/Float	963448	9.625	6.135	12.125	147.21	B 6-5/8" Reg	9.22	1.18
3	12-1/4" Integral Blade Stabilizer	231191	8.000	2.813	12.250	150.12	B 6-5/8" Reg	1.91	10.23
4	8" RLL w/ EWR + DGR +HCIM	PA90231607	8.000	2.375		156.21	B 6-5/8" Reg	7.38	
5	8" Non Mag HOC w/TM + Dir	246907	8.000	1.920		161.44	B 6-5/8" Reg	4.81	
6	12.-1/4" Integral Blade Stabilizer	701049	8.000	2.813	12.250	150.12	B 6-5/8" Reg	1.87	24.33
7	6 x 8" Spiral Drill collar	Rig	8.000	2.810		150.00	B 6-5/8" Reg	56.51	
8	8" Drilling Jar	W'ford	8.000	3.000		147.22	B 6-5/8" Reg	9.70	
9	2 x 8" Spiral Drill collar	Rig	8.000	2.810		150.00	B 6-5/8" Reg	18.75	
10	XO Sub	Rig	6.750	2.813		100.77	B 4-1/2" IF	1.09	
11	15 x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	141.21	
								252.73	

Parameter	Min	Max	Ave
WOB (klbs) :	4	20	12
RPM (rpm) :	70	100	97
Flow (gpm) :	780	1000	919
SPP (psi) :	850	2600	1949

Activity	Hrs
Drilling :	50.25
Reaming :	1.50
Circ-Other :	12.25
Total :	64.00

BHA Weight	(lb)
in Air (Total) :	77914
in Mud (Total) :	66870
in Air (Bel Jars) :	40801
in Mud (Bel Jars) :	35018

Drill String	OD(in)	Len (m)
DP(S)-NC50(XH)-19.50#	5.000	1719

PERFORMANCE

	In	Out
Inclination (deg)	0.09	1.09
Azimuth (deg)	112.45	41.84

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	93.00	6			0.00
Rotated :	913.00	21	0.00	0.00	
Total :	1006.00	20	0.03	0.00	0.03

COMMENTS

OBJECTIVES:

Drill cement, float and shoe. Clean out rat hole and drill 5m of new hole prior to conducting LOT. Rotate ahead to a planned kick off depth of +/- 1926m. Build 2 degrees prior to section TD.

RESULTS:

Drilled out cement and float equipment, cleaned out rat hole and performed LOT. Took 3 1/2 hrs to drill the plugs. Good LOT. Bit performed well, out drilled the surface equipment's ability to handle the cuttings generated, with the mud system in place. Considerable time was spent control drilling for various reasons.

The nudge was started at 1869m, slid a total of 93m with no positive results. Unable to control tool face, aggressive style PDC. MWD detection was 100 %. All recorded surveys were taken on the fly, with no additional cost to the client.

RECOMMENDATIONS:

Utilize a less aggressive PDC bit, such as a Steering Wheel type, one that is more motor friendly. Throughout the bit run, ROP controls were in place for one reason or another.

Set up MWD equipment for maximum allowable flow rate for expected mud weight. Had we been able to handle more flow at the shakers and down hole, might of aided the tool face control issue.

Optimise data transmission of tool face for the section drilled while oriented, decrease the time between updates.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 4**

BHA# 4 : **Date In** 17/12/200 **MD In (m) :** 1972 **TVD In (m) :** 1972 **Date Out** 19/12/2009 **MD Out (m):** 1972 **TVD Out (m):** 1972

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
4	8.500	Security	FMF 3653Z	11370552	6x14	0.902	4-4-BT-A -X-I-CT-PR

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
2	6.750	SSDS	Geo Pilot	GP850TL280	0.00°			10.50

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Security FMF3653Z 8-1/2" PDC	11370552	8.500	2.500	8.500	176.66	P 4-1/2" IF	0.40	
2	7600 GeoPilot Stabilized Housing	GP850TL280	6.750	1.920	8.375	112.09	B 4-1/2" IF	6.13	1.14
3	Non-Mag 6-3/4" NM Flex with PCDC	CP919968	6.740	1.920		111.73	B 4-1/2" IF	2.76	
4	6 3/4" RLL Stabilizer	9999999	6.750	1.920	8.250	112.09	B 4-1/2" IF	0.67	9.73
5	6-3/4" RLL + DGR + EWR + PWD + HCIM	90217460	6.750	1.920		106.76	B 4-1/2" IF	7.93	
6	6 3/4" ALD with Stabilizer	9999999	6.750	1.920	8.250	112.09	B 4-1/2" IF	4.50	21.48
7	6-3/4" CTN	90232558	6.750	1.920		106.95	B 4-1/2" IF	4.73	
8	6-3/4" BAT-Sonic	90232557	6.750	1.920		112.09	B 4-1/2" IF	6.76	
9	6-3/4" HOC	203846	6.750	1.920		112.09	B 4-1/2" IF	3.04	
10	6-3/4" ACAL	90232559	6.625	1.920		107.61	B 4-1/2" IF	1.83	
11	6-3/4" Float Sub with ported float	11029122	6.750	3.000		97.86	B 4-1/2" IF	0.91	
12	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	40.42
13	3x Spiral Drill collar	Rig	6.750	2.875		99.83	B 4-1/2" IF	28.20	
14	9x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
15	6-1/2" Drilling Jar	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
16	5x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	47.18	
								211.15	

Parameter	Min	Max	Ave
WOB (klbs) :			
RPM (rpm) :			
Flow (gpm) :			
SPP (psi) :			

Activity	Hrs
Drilling :	0.00
Reaming :	0.50
Circ-Other :	10.00
Total :	10.50

BHA Weight	(lb)
in Air (Total) :	47427
in Mud (Total) :	40704
in Air (Bel Jars) :	37801
in Mud (Bel Jars) :	32443

Drill String	OD(in)	Len (m)
DP(S)-NC50(XH)-19.50#	5.000	1761

PERFORMANCE

	In	Out
Inclination (deg)	1.09	1.09
Azimuth (deg)	41.84	41.84

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :					0.00
Rotated :			0.00	0.00	
Total :					

COMMENTS

GeoPilot below RT @ 19:45 hrs on 17th Dec-2009
GeoPilot above RT @ 00.30 hrs on 19th Dec-2009
Circulating hrs = 9.3
Drilling hrs = 6.5
Bit to ABI - 1.46m
Bit to survey - 7.73m
Bit to PWD - 15.38m
Bit to Gamma - 10.49m

OBJECTIVES:

To directionally drill 8 ½" hole section to TD building inclination and turning azimuth with an average dogleg of 3 degree/30m. TD is expected to be +/- 3166.4mTVDRT or 3486.5mMDRT. The well TD must allow sufficient rat hole for logging below the deepest potential hydrocarbon bearing sand

RESULTS:

The six bladed Security FMF3653Z PDC bit with Geo-Pilot and MWD/LWD tools were made up, the Geo-Pilot seals were broken in and successfully shallow pulse tested at 211m. 150 joints of 5" drill pipe was picked up on the trip in hole to facilitate drilling to Td. The last stand was washed down from 1917m and TOC was tagged at 1938m with 5K.

Spent 8 1/2 hrs drilling the cement plugs and float collar, from 1938m to 1940m. Once large volume of metal cuttings came to surface, POOH.

Over the 8 1/2 hr period, various parameters were attempted without limited success. Varing flow rate, WOB, and RPM. The method of putting weight on bit without rotary, then rotating was also tried. Working the string up and down to clear the BHA was done. Appeared there was something stuck on the bit that was preventing the cutters from making contact with the formation.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 5**

BHA# 5 : **Date In** 19/12/200 **MD In (m) :** 1972 **TVD In (m) :** 1972 **Date Out** 20/12/2009 **MD Out (m):** 2019 **TVD Out (m):** 2019

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
5	8.500	Hughes Christensen	GT 1	6076381	3x20	0.920	2-2-WT-A -E-1-NO-BHA

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
3	6.750	SSDS	SperryDrill	675400	1.15°		126	10.50

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	8-1/2" Mill Tooth Bit	6076381	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.24	
2	6-3/4" SperryDrill Lobe 6/7 - 5.0 stg	675400	6.750	4.498	8.250	67.81	B 4-1/2" IF	8.28	0.91
3	8-1/8" Integral Blade Stab	10988869	6.812	2.875	8.125	102.08	B 4-1/2" IF	2.03	9.49
4	6-3/4" PM Sub	194443	6.750	1.920		106.76	B 4-1/2" IF	2.79	
5	6-3/4" HOC	203842	6.750	1.920		106.76	B 4-1/2" IF	3.03	
6	Float Sub with ported float	11029122	6.750	3.000		97.86	B 4-1/2" IF	0.91	
7	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	18.04
8	3x Spiral Drill collar	Rig	6.750	2.875		99.83	B 4-1/2" IF	27.96	
9	3 x Spiral Drill collar	Rig	6.750	2.875		99.83	B 4-1/2" IF	28.20	
10	9 x HWDP		5.000	3.000		42.83	B 4-1/2" IF	84.57	
11	6-1/2" Drilling Jar	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
12	5x HWDP		5.000	3.000		49.30	B 4-1/2" IF	47.18	
								216.73	

Parameter	Min	Max	Ave
WOB (klbs) :	18	24	20
RPM (rpm) :	75	75	75
Flow (gpm) :	550	550	550
SPP (psi) :	1745	1820	1786

Activity	Hrs
Drilling :	6.00
Reaming :	0.50
Circ-Other :	4.00
Total :	10.50

BHA Weight	(lb)
in Air (Total) :	46404
in Mud (Total) :	39685
in Air (Bel Jars) :	35776
in Mud (Bel Jars) :	30595

Drill String	OD(in)	Len (m)
DP(S)-NC50(XH)-19.50#	5.000	1802

PERFORMANCE

	In	Out
Inclination (deg)	1.09	5.58
Azimuth (deg)	41.84	21.56

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	13.00	6			3.00
Rotated :	34.00	9			
Total :	47.00	8	2.86	-12.94	2.92

COMMENTS

Motor Below RT @ 01.00 hrs on 19/12/09 - BRT total 26.5 hrs.
Motor Above RT @ 03.30 hrs on 20-12-09

Drilling hrs - 4.7 hrs
Circulating hrs - 7.8 hrs
123k Revs

OBJECTIVES:

To drill shoe track, clean out rat hole and drill 5m of new formation before performing a LOT. Then build hole angle to 4 deg before POOH to pick up Geo Pilot.

RESULTS:

This BHA was picked up and motor was scribed to MWD then shallow tested ok. The bottom was tagged at 1940m. The bit was fanned off bottom at 550gpm to try and clear away any debris left in hole from the previous run. drilled out cement and float equipment, cleaned out rat hole and performed LOT. Took 2 hrs to drill the shoe track drilled from 1977m to 2019m one 13m slide was utilised to build inclination up to 4.8 deg by 2006m and turn direction from 57 to 20 deg azimuth which was deemed sufficient enough by client to POOH and pick up Geo Pilot to drill to TD.

RECOMMENDATIONS:

No changes required.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 6**

BHA# 6 : **Date In** 20/12/200 **MD In (m) :** 2019 **TVD In (m) :** 2019 **Date Out** 20/12/2009 **MD Out (m):** 2023 **TVD Out (m):** 2023

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
6	8.500	Security DBS	FMF 3755	11103697	4x16	0.785	0-0-NO-A -X-I-NO-DTF

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
4	6.750	SSDS	Geo Pilot	GP850TL280	0.00°		0	14.50

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Security FMF3755 8-1/2" PDC	11103697	8.500	2.500	8.500	176.66	P 4-1/2" IF	0.43	
2	7600 GeoPilot Stabilized Housing	GP850TL280	6.750	1.920	8.375	112.09	B 4-1/2" IF	6.13	1.17
3	Non-Mag 6-3/4" NM Flex with PCDC	CP919968	6.740	1.920		111.73	B 4-1/2" IF	2.76	
4	6 3/4" RLL Stabilizer	9999999	6.750	1.920	8.250	112.09	B 4-1/2" IF	0.67	9.76
5	6-3/4" RLL + DGR + EWR + PWD + HCIM	90217460	6.750	1.920		106.76	B 4-1/2" IF	7.93	
6	6 3/4" ALD with Stabilizer	9999999	6.750	1.920	8.250	112.09	B 4-1/2" IF	4.50	21.51
7	6-3/4" CTN	90232558	6.750	1.920		106.95	B 4-1/2" IF	4.73	
8	6-3/4" BAT-Sonic	90232557	6.750	1.920		112.09	B 4-1/2" IF	6.76	
9	6-3/4" HOC	203846	6.750	1.920		112.09	B 4-1/2" IF	3.04	
10	6-3/4" ACAL	90232559	6.625	1.920		107.61	B 4-1/2" IF	1.83	
11	6-3/4" Float Sub with ported float	11029122	6.750	3.000		97.86	B 4-1/2" IF	0.91	
12	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	40.45
13	3x Spiral Drill collar	Rig	6.750	2.875		99.83	B 4-1/2" IF	27.96	
14	9x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
15	6-1/2" Drilling Jar	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
16	5x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	47.18	
								210.94	

Parameter	Min	Max	Ave
WOB (klbs) :	3	3	3
RPM (rpm) :	100	150	138
Flow (gpm) :	550	550	550
SPP (psi) :	1500	1500	1500

Activity	Hrs
Drilling :	2.00
Reaming :	0.00
Circ-Other :	2.00
Total :	4.00

BHA Weight	(lb)
in Air (Total) :	47366
in Mud (Total) :	40435
in Air (Bel Jars) :	37740
in Mud (Bel Jars) :	32217

Drill String	OD(in)	Len (m)
DP(S)-NC50(XH)-19.50#	5.000	1812

PERFORMANCE

	In	Out
Inclination (deg)	5.58	5.84
Azimuth (deg)	21.56	21.80

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			0.00
Rotated :	4.00	2	0.00	0.00	
Total :	4.00	2	1.93	1.78	1.94

COMMENTS

Geo Pilot below RT @ 04.00 hrs -on 20-12-09
Geo Pilot above RT @ 00:00 hrs - 21-12-09
Bit to ABI - 1.49m
Bit to survey - 7.76m
Bit to Gamma - 10.52m
Bit to PWD - 15.41m
Bit to EWR - 12.88m
Bit to CTN - 25.91m

OBJECTIVES:

Continue directionally drilling 8 ½" hole section to TD building inclination and turning azimuth with an average dogleg of 3 degree/30m.

RESULTS:

Washed and reamed, from 1972m to 2019m to clean out motor run footage, and a MAD run to acquire the missed data. Some resistance initially, after a few meters, no torque or weight required to wash and ream down. Several attempts were made to keep the GP in the home mode, without success. As the BHA was following the old hole without effort, and the ABI's confirmed this, continued washing and reaming without being certain what the Geo-Pilot was actually doing.

Once on bottom, unable to get Geo-Pilot to respond to commands. Drilled a total of six meters, GP not responding to commands. Appears RPM sensor is faulty. POOH for failed Geo-Pilot.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 7**

BHA# 7 : **Date In** 21/12/200 **MD In (m) :** 2023 **TVD In (m) :** 2023 **Date Out** 28/12/2009 **MD Out (m):** 3522 **TVD Out (m):** 3192

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
6rr1	8.500	Security DBS	FMF3755	11103697	4x16	0.785	6-6-BT-A -X-I-NR-PR

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
5	6.750	SSDS	Geo Pilot	GP850TL085	0.00°		-1	138.00

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Security FMF 3755 8 1/2" PDC	11103697	8.500	2.500	8.500	176.66	B 4-1/2" IF	0.43	
2	7600 GeoPilot Stabilized Housing	GP850TL085	6.750	1.920	8.375	112.09	B 4-1/2" IF	7.07	1.17
3	Non-Mag 6-3/4" NM Flex with PCDC	CP1005711	6.750	1.920		112.09	B 4-1/2" IF	2.81	
4	6 3/4" RLL Stabilizer	9999999	6.750	1.920	8.250	112.09	B 4-1/2" IF	0.67	10.75
5	6-3/4" RLL + DGR + EWR + PWD + HCIM	90217460	6.750	1.920		106.76	B 4-1/2" IF	7.93	
6	6 3/4" ALD with Stabilizer	9999999	6.750	1.920	8.250	112.09	B 4-1/2" IF	4.50	22.50
7	6-3/4" CTN	90232558	6.750	1.920		106.95	B 4-1/2" IF	4.73	
8	6-3/4" BAT-Sonic	90232557	6.750	1.920		112.09	B 4-1/2" IF	6.76	
9	6-3/4" HOC	203846	6.750	1.920		112.09	B 4-1/2" IF	3.04	
10	6-3/4" ACAL	90232559	6.625	1.920		107.61	B 4-1/2" IF	1.83	
11	6-3/4" Float Sub with ported float	11029122	6.750	3.000		97.86	B 4-1/2" IF	0.91	
12	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	41.44
13	3x Spiral Drill collar	Rig	6.750	2.875		99.83	B 4-1/2" IF	27.96	
14	9x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
15	6-1/2" Drilling Jar	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
16	5x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	47.18	
								211.93	

Parameter	Min	Max	Ave
WOB (klbs) :	5	15	11
RPM (rpm) :	100	165	136
Flow (gpm) :	530	600	581
SPP (psi) :	1500	2740	2205

Activity	Hrs
Drilling :	124.00
Reaming :	0.00
Circ-Other :	14.00
Total :	138.00

BHA Weight	(lb)
in Air (Total) :	47733
in Mud (Total) :	40822
in Air (Bel Jars) :	38107
in Mud (Bel Jars) :	32589

Drill String	OD(in)	Len (m)
DP(S)-NC50(XH)-19.50#	5.000	3310

PERFORMANCE

	In	Out
Inclination (deg)	5.84	41.35
Azimuth (deg)	21.80	357.89

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			3.00
Rotated :	1499.00	12	3.00	0.40	
Total :	1499.00	12	0.71	-0.48	0.72

COMMENTS

Geo Pilot below RT @ 0030 hrs -on 21-12-09
Geo Pilot above RT @ 1500 hrs -on 28-12-09
Total BRT @ 182.5hr
survey to bit- 8.73m
Bit to Gamma - 11.50m
Bit to PWD - 16.39m
Bit to EWR - 13.86m
Bit to CTN - 26.89m

OBJECTIVES:

Continue directionally drilling 8 ½" hole section to TD building inclination and turning azimuth with an average dogleg of 3 degree/30m.

RESULTS:

Geo-Pilot performed 100 % during the run, all objectives were achieved.

The BHA was run to bottom, no hole problems. Response was very good throughout the run. Utilized steering mode for the build up section, from 2023m to 2409m, then switched to cruise mode for the remainder of the well. Effective dog leg produced was only 3+ degrees per 30m.

During the run high stick slip and torsional vibration exposed all tools to extremely high levels of shock. Every possible effort was endeavoured to mitigate stick slip and torsional vibration with limited success. Appeared the bit was generating the down hole torque which was causing all the drama.

Frequent false downlinks were received by Geo-Pilot believed to be initiated by the vibration down hole. To minimize false downlinks the PWD threshold was raised three times during the late stages of the run. Also, in the later section of the well, down linking while drilling became an issue. Modified procedure to down link while circulating and reaming each stand prior to making connections sorted that issue.

RECOMMENDATIONS:

No changes required.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 8**

BHA# 8 : **Date In** 30/12/200 **MD In (m) :** 3522 **TVD In (m) :** 3192 **Date Out** 31/12/2009 **MD Out (m):** 3522 **TVD Out (m):** 3192

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
5rr1	8.500	Hughes Christensen	GT-1	6076381	3x20	0.920	2-2-WT-A -E-1-NO-LOG

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	8 1/2" Milled Tooth Bit	6076381	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.24	
2	Bit Sub with ported float	0087	6.750	3.000		97.86	B 4-1/2" IF	1.18	
3	8-1/8" Integral Blade Stab	10988869	6.812	2.875	8.125	102.08	B 4-1/2" IF	2.02	2.39
4	6-3/4" PM Sub	194443	6.750	1.920		112.09	B 4-1/2" IF	2.78	
5	6-3/4" HOC	203842	6.750	1.920		112.09	B 4-1/2" IF	3.03	
6	1x Spiral Drill collar		6.750	2.813		101.00	B 4-1/2" IF	9.48	
7	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	19.49
8	2x Spiral Drill collar	Rig	6.750	2.875		99.83	B 4-1/2" IF	18.48	
9	9x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
10	6-1/2" Drilling Jar	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
11	5x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	47.18	
								180.50	

Parameter	Min	Max	Ave
WOB (klbs) :			
RPM (rpm) :			
Flow (gpm) :			
SPP (psi) :			

Activity	Hrs
Drilling :	0.00
Reaming :	1.00
Circ-Other :	7.50
Total :	8.50

BHA Weight	(lb)
in Air (Total) :	36338
in Mud (Total) :	31076
in Air (Bel Jars) :	26711
in Mud (Bel Jars) :	22844

Drill String	OD(in)	Len (m)
DP(S)-NC50(XH)-19.50#	5.000	3341

PERFORMANCE

	In	Out
Inclination (deg)	41.35	41.35
Azimuth (deg)	357.89	357.89

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :					
Rotated :					
Total :					

COMMENTS

Below RT 02:00 30/12/09
Above RT 08:00 31/12/09

SPT at 100m, 850psi @ 520gpm

OBJECTIVES:

To be used as a clean out assembly prior to continuation of wireline logging

RESULTS:

Tight spots were encountered at 2427m, which was worked through and 2482m where the top drive was made up and the hole washed from 2475m to 2490m. Another tight spot at 2510m was worked through. At 3417m the top drive was made up and the hole was washed to bottom (3522m) as a precaution. The hole was circulated and the mud conditioned before POOH. No problems were encountered on the way out.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 9**

BHA# 9 : **Date In** 2/01/2010 **MD In (m) :** 3522 **TVD In (m) :** 3192 **Date Out** 3/01/2010 **MD Out (m):** 3522 **TVD Out (m):** 3192

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
5rr2	8.500	Hughes Christensen	GT-1	6076381	3x20	0.920	2-2-WT-A -E-1-NO-LOG

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	8 1/2" Milled Tooth Bit	6076381	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.24	
2	Bit Sub with ported float	0087	6.750	3.000		97.86	B 4-1/2" IF	1.18	
3	8-1/2" Integral Blade Stab	650454	6.500	2.750	8.500	92.85	B 4-1/2" IF	1.35	2.05
4	6-3/4" PM Sub	194443	6.750	1.920		112.09	B 4-1/2" IF	2.78	
5	6-3/4" HOC	203842	6.750	1.920		112.09	B 4-1/2" IF	3.03	
6	1x Spiral Drill collar		6.750	2.813		101.00	B 4-1/2" IF	9.48	
7	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	18.82
8	2x Spiral Drill collar	Rig	6.750	2.875		99.83	B 4-1/2" IF	18.48	
9	9x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
10	6-1/2" Drilling Jar	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
11	5x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	47.18	
								179.83	

Parameter	Min	Max	Ave
WOB (klbs) :			
RPM (rpm) :			
Flow (gpm) :			
SPP (psi) :			

Activity	Hrs
Drilling :	0.00
Reaming :	8.00
Circ-Other :	5.50
Total :	13.50

BHA Weight (lb)	
in Air (Total) :	36072
in Mud (Total) :	30849
in Air (Bel Jars) :	26446
in Mud (Bel Jars) :	22617

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	41.35	41.35
Azimuth (deg)	357.89	357.89

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :					
Rotated :					
Total :					

COMMENTS

Below Rotary Table @ 0650 2 Jan 10.
Above Rotary Table @ 0945 3 Jan 10.

OBJECTIVES:

To be used as a clean out assembly prior to continuation of wireline logging

RESULTS:

The hole wash washed and reamed from 2150m to TD at 3522m, no tight spots were encountered except near to TD, this was worked through easily enough. The hole was circulated and the mud conditioned before POOH. No problems were encountered on the way out.

RECOMMENDATIONS:

No changes required.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006714150 **BHA# 10**

BHA# 10 : **Date In** 6/01/2010 **MD In (m) :** 3522 **TVD In (m) :** 3192 **Date Cur** 7/01/2010 **MD Cur (m):** 3522 **TVD Cur (m):** 3192

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	DP (S) - NC31(IF) - 10.40#		2.875	2.151		11.38		9.14	
2	Cross Over Sub		5.000	2.000		56.21		0.68	
3	365x DP (S) - NC50(XH) - 19.50#		5.000	4.276		22.60		3341.21	
								3351.03	

Parameter	Min	Max	Ave
WOB (klbs) :			
RPM (rpm) :			
Flow (gpm) :			
SPP (psi) :			

Activity	Hrs
Drilling :	0.00
Reaming :	0.00
Circ-Other :	2.00
Total :	2.00

BHA Weight	(lb)
in Air (Total)	: 248207
in Mud (Total)	: 212268
in Air (Bel Jars)	: 0
in Mud (Bel Jars)	: 0

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	41.35	41.35
Azimuth (deg)	357.89	357.89

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :					
Rotated :					
Total :					

COMMENTS

RECOMMENDATIONS:

No changes required

APPENDIX 7: WIRELINE LOGGING REPORT

Rockhopper-1
END OF WELL REPORT

Client: **Origin Energy Resources Ltd.**

Rig: **Kan Tan IV**

Engineers: **P. Jara Guzman, O. Mazharullah**

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Remarks: *8*
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Objectives: *9*
Summary of operation: *9*
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RUN 1: MDT (Quicksilver)-GR **11**
Objectives: *11*
Summary of operation: *11*
Remarks: *11*
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Objectives: *13*
Summary of operation: *13*
Remarks: *13*

Tool String *14*
RUN 4: MSCT-GR **15**
Objectives: *15*
Summary of operation: *15*
Remarks: *15*
Tool String *16*
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Objectives: *17*
Summary of operation: *17*
Remarks: *17*
Tool String *18*
SAFETY AND SERVICE QUALITY COMMENTS **19**

HIGHLIGHTS

- Zero HSE incidents during the entire logging operation.
- Good communication between rig and Schlumberger crew leading to a safe and efficient rig up/rig down; JSA and Risk assessments were performed prior to rig up and rig down. All safety hazards (radiation, pressure, and manual handling) were discussed with the rig crews and Origin representatives.
- Successfully obtained good quality real time data.
- 12 samples recovered over reservoir and desired stations, identifying hydrocarbons contents and formation pressure.
- MSCT core recovery of 100%.
- ECRD (fusible weakpoint) used for all the logging runs to allow increased pulling capacity.
- Real Time Support in data monitoring during all logging runs.

LOWLIGHTS

- WMC system presented occasional pressure drops affecting depth accuracy, increasing the number of correlation passes required to compensate for depth changes.
- Sticking issues were encountered during the logging operation, particularly during the MDT run. As a result of this, two wiper trips were performed in between MDT runs to improve hole conditions.
- Seismic program was not completed due to toolstring being held up. A "Check Shots" run was performed from deepest from depth reached.

LOGGING SUMMARY

Open Hole Operations (8.5")	Operating Time (hrs)
Suite 1	
Run 1: SP-HRLA-PEX-HNGS-CMR+-GR	18.58
Run 2: MDT(Quicksilver)-GR	15.25
Suite 2 (Following Wiper Trip)	
Run 1: MDT(Quicksilver)-GR	45.41
Suite 3 (Following Wiper Trip)	
Run 1: MDT(Quicksilver)-GR	19.13
Run 2&3: ZVSI-GR	18.5
Run 4: MSCT-GR	15.83
Run 5: MSIP-FMI-GR	14.67
TOTAL	147.37

CREW DETAILS

POSITION	FIRST CREW	SECOND CREW
Engineer	Omar Mazharullah	Patricia Guzman
Crew Chief	Brad Mackinlay	Owen Duncan
Operator	Robin Oliver	Mark Armstrong
Specialists	Zeb Casey	
Field Quality Coach	Wichien Nimmolrat	

SUITE 1: OPEN HOLE OPERATIONS

RUN 1: SP-HRLA-PEX-HNGS-CMR+-GR (ECRD)

Objectives:

- **Acquire good quality basic log data for petrophysical evaluation (GR, SP, density, neutron, and resistivity) to aid tops picking and correlation, estimate lithology, N/G, porosity and fluid type.**
- **To obtain a Spectral GR log for the mineral composition of formation and determination of shale content.**
- **Acquire CMR to evaluate fixed and moveable fluid volumes in the reservoir.**

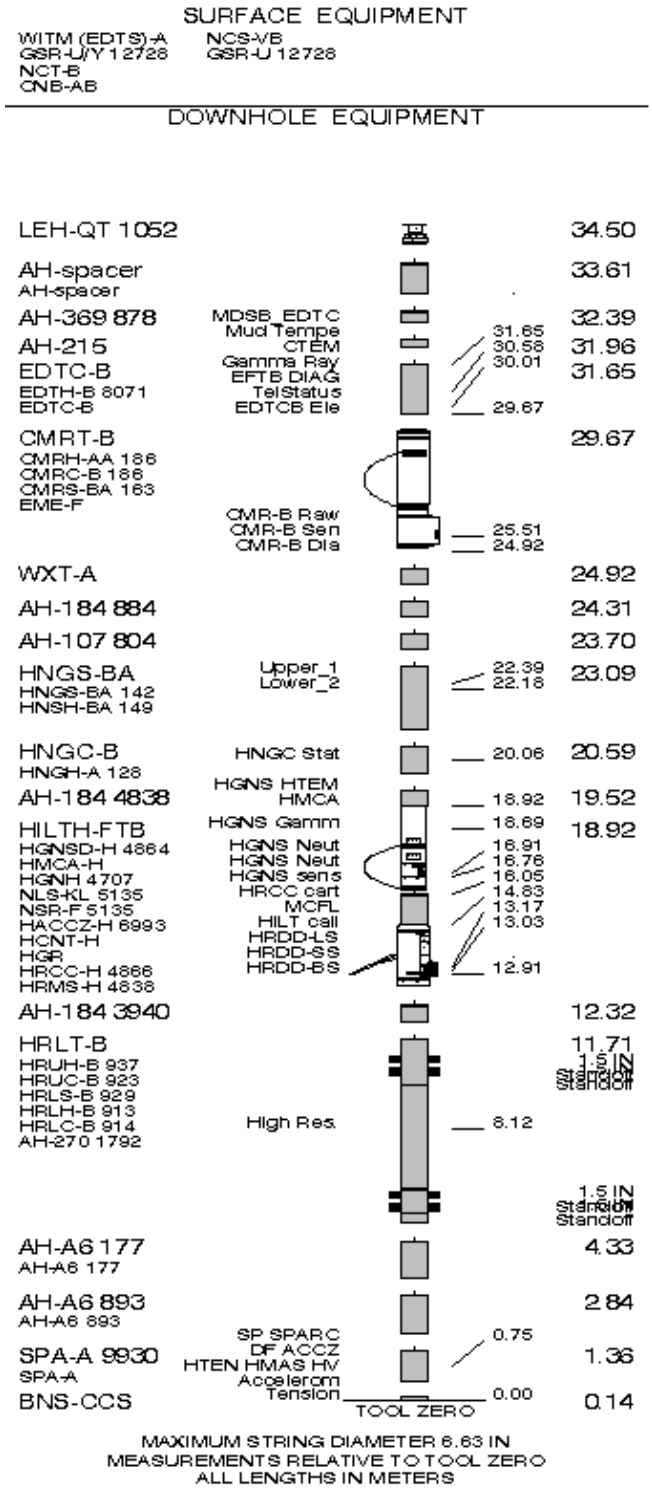
Summary of operation:

Rigged up @	**15:10 (28-Dec-09)**
Rigged down @	**09:45 (29-Dec-09)**
Total time:	**18.58 hours**

Remarks:

- CMR, HNGS and PEX eccentered by bowsprings. HRLA run with 4 X 1.5" standoffs.
- **CMR+AT run in a separate pass with a switch.**
- Neutron corrected for borehole salinity, hole size, mud cake, mud weight, pressure/temperature, standoff.
- Density corrected for hole size and mud weight.
- Resistivity corrected for tool position, hole size and mud resistivity.
- HNGS corrected for potassium and barite.
- Main pass logged from 3511.3mMD to 9.625" casing shoe, as per client request.
- Repeat pass logged from 3305m to 3405m, as per client request.
- High resolution data presented from 3511.3mMD to 2800mMD as per logging program.
- Maximum deviation of 43.47deg @ 2741.97mMD. Deviation data taken from directional drilling.
- Maximum recorded temperature from logging head thermometers was 131 degC @ 3515.9mMD.
- CMR run in EPM mode, Standard Sequence. 1 LFST station was conducted @ 2872mMD, as per client request.
- CMR main pass logged from 3457mMD to 2800mMD; no repeat pass recorded as per client request.

Tool String


SURFACE EQUIPMENT
WITM (EDTS)-A
GSR-J/Y 12728
NCT-B
CNB-AB
NCS-VB
GSR-U 12728
DOWNHOLE EQUIPMENT
LEH-QT 1052
34.50
AH-spacer
AH-spacer
33.61
AH-369 878
32.39
AH-215
31.96
EDTC-B
EDTH-B 8071
EDTC-B
31.65
MDSB_EDTC
Mud Tempe
CTEM
Gamma Ray
EFTB DIAG
TelStatus
EDTCB Ele
31.65
30.58
30.01
29.67
CMRT-B
CMRH-AA 186
CMRC-B 186
CMRS-BA 163
EME-F
29.67
CMR-B Raw
CMR-B Sen
CMR-B Dia
25.51
24.92
WXT-A
24.92
AH-184 884
24.31
AH-107 804
23.70
HNGS-BA
HNGS-BA 142
HNSH-BA 149
23.09
Upper_1
Lower_2
22.39
22.18
HNGC-B
HNGH-A 128
20.59
HNGC Stat
20.06
AH-184 4838
19.52
HGNS HTEM
HMCA
18.92
18.69
HILTH-FTB
HGNSD-H 4864
HMCA-H
HGNH 4707
NLS-KL 5135
NSR-F 5135
HACCZ-H 6993
HCNT-H
HGR
HRCC-H 4866
HRMS-H 4838
HGNS Gamm
HGNS Neut
HGNS Neut
HGNS sens
HRCC cart
MCFL
HILT call
HRDD-LS
HRDD-SS
HRDD-BS
16.91
16.76
16.05
14.83
13.17
13.03
12.91
AH-184 3940
12.32
HRLT-B
HRUH-B 937
HRUC-B 923
HRLS-B 929
HRLH-B 913
HRLC-B 914
AH-270 1792
11.71
1.5 IN
Standoff
High Res
8.12
1.5 IN
Standoff
AH-A6 177
AH-A6 177
4.33
AH-A6 893
AH-A6 893
2.84
SPA-A 9930
SPA-A
0.75
SP SPARC
DF ACCZ
HTEN HMAS HV
Acceleram
Tension
1.36
BNS-CCS
0.14
0.00
TOOL ZERO
MAXIMUM STRING DIAMETER 6.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

RUN 2: MDT (Quicksilver)-GR (ECRD)

Objectives:

- **Acquire high quality pressure data to quantify reservoir pressures and fluid gradients.**
- **Recover samples at different stations to determine fluid composition.**

Summary of operation:

Rigged up @ **09:45 (29-Dec-09)**
Rigged down @ **01:00 (30-Dec-09)**
Total time: **15.25 hours**

Remarks:

- Electrical Control Release Device run as per client request.
- Subsequent run in hole. Log correlated to Schlumberger SP-HRLA-PEX-HNGS-CMR+-GR dated on 28-Dec-09.
- Maximum recorded temperature from LEH-QT logging head thermometers was 121degC.
- Pressure tests recorded from MRPS.
- MRPS run with LD probe, as per client request.
- Total of 19 pressure tests were attempted: 10 valid, 6 tight, 1 Dry, 2 lost seal.
- No samples were taken during this run.
- WMC presented occasional pressure drops.
- Several correlation passes were performed to correct for WMC pressure adjustments.
- Tool held up and high tension experienced due to hole condition; MDT Pressure Tests were stopped

SUITE 2: OPEN HOLE OPERATIONS (Following Wiper trip)

RUN 1: MDT (Quicksilver)-GR

Objectives:

- **Acquire high quality pressure data to quantify reservoir pressures and fluid gradients.**
- **Recover samples at different stations to determine fluid composition.**

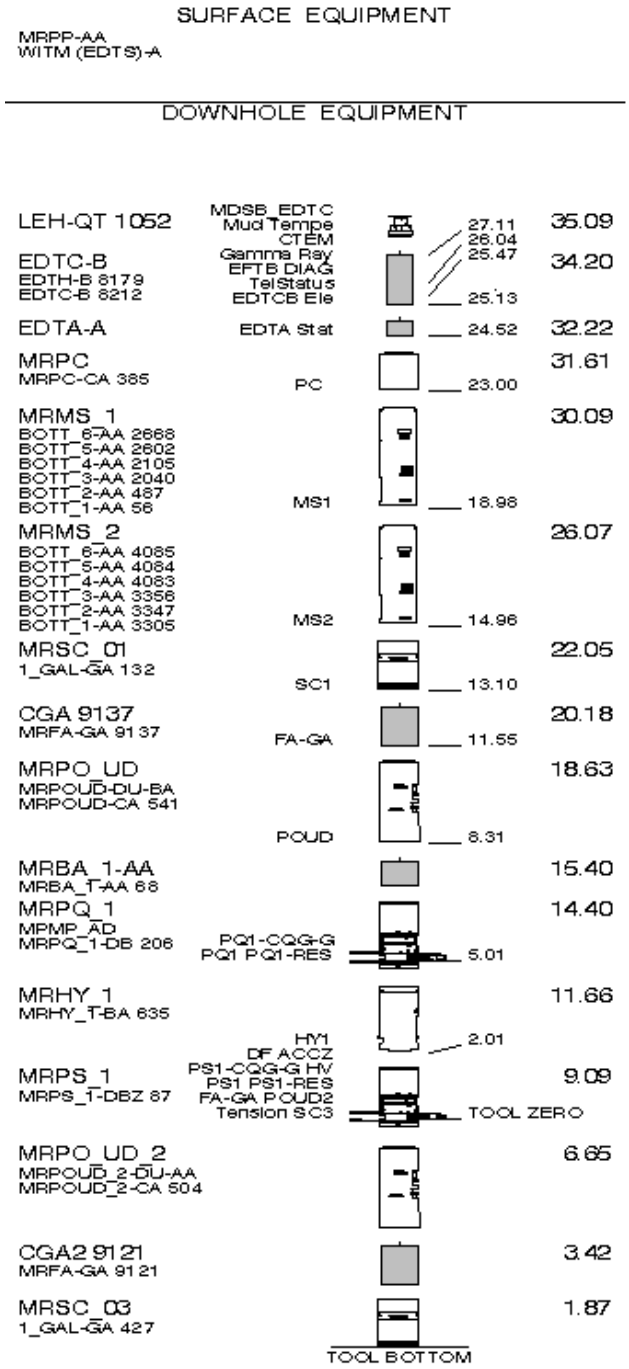
Summary of operation:

Rigged up @ **08:35 (31-Dec-09)**
Rigged down @ **06:00 (02-Jan-10)**
Total time: **45.41 hours**

Remarks:

- Electrical Control Release Device run as per client request.
- Subsequent trip in hole (Suite 2/Run 1). Wiper trip was performed previous the run.
- Log correlated to Schlumberger SP-HRLA-PEX-HNGS-CMR+-GR dated on 28-Dec-09.
- Maximum recorded temperature from LEH-QT logging head thermometers was 132.78degC.
- Pressure tests recorded from MRPS and MRPQ.
- MRPS run with LD probe, as per client request.
- Total of 59 pressure tests were attempted: 13 valid, 42 tight,2 lost seal.
- Samples taken with Single probe and Quicksilver probe (with split flow using dual pump-outs); CFAs used for fluid analysis.
- Total of 9 samples recovered: 5 using Quicksilver probe @3424.5, 3402.5, 3325mMD; 4 using Single Probe @3245, 3235mMD.
- Several correlation passes were required to correct for WMC pressure adjustments.
- Cable key-seated @3235mMD after taking samples using Single Probe at this depth. Tool pulled out to casing shoe as per client request.
- Tool held up and high tension experienced while running back in hole. Highest tensions recorded over 3050-3010mMD interval.
- MDT Pressure Tests and Sampling stopped as per client request. Run was followed by a wiper trip.

Tool String


SURFACE EQUIPMENT
MRPP-AA
WITM (EDTS)-A
DOWNHOLE EQUIPMENT
LEH-QT 1052
MDSB_EDTC
Mud Tempe
CTEM
27.11
26.04
35.09
EDTC-B
EDTH-B 8179
EDTC-B 8212
Gamma Ray
EFTB DIAG
TelStatus
EDTCB Ele
25.47
25.13
34.20
EDTA-A
EDTA Stat
24.52
32.22
MRPC
MRPC-CA 385
PC
23.00
31.61
MRMS_1
BOTT_6-AA 2668
BOTT_5-AA 2602
BOTT_4-AA 2105
BOTT_3-AA 2040
BOTT_2-AA 487
BOTT_1-AA 56
MS1
18.98
30.09
MRMS_2
BOTT_6-AA 4085
BOTT_5-AA 4084
BOTT_4-AA 4083
BOTT_3-AA 3356
BOTT_2-AA 3347
BOTT_1-AA 3305
MS2
14.96
26.07
MRSC_01
1_GAL-GA 132
SC1
13.10
22.05
CGA 9137
MRFA-GA 9137
FA-GA
11.55
20.18
MRPO_UD
MRPOUD-DU-BA
MRPOUD-CA 541
POUD
8.31
18.63
MRBA_1-AA
MRBA_T-AA 68
15.40
MRPQ_1
MPMP_AD
MRPQ_1-DB 206
PQ1-CQG-G
PQ1 PQ1-RES
5.01
14.40
MRHY_1
MRHY_T-BA 635
HY1
DF ACCZ
2.01
11.66
MRPS_1
MRPS_1-DBZ 87
PS1-CQG-G HV
PS1 PS1-RES
FA-GA POUD2
Tension SC3
TOOL ZERO
9.09
MRPO_UD_2
MRPOUD_2-DU-AA
MRPOUD_2-CA 504
6.65
CGA2 9121
MRFA-GA 9121
3.42
MRSC_03
1_GAL-GA 427
1.87
TOOL BOTTOM
MAXIMUM STRING DIAMETER 5.00 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

SUITE 3: OPEN HOLE OPERATIONS (Following Wiper trip)

RUN 1: MDT (Quicksilver)-GR

Objectives:

- **Acquire high quality pressure data to quantify reservoir pressures and fluid gradients.**
- **Recover samples at different stations to determine fluid composition.**

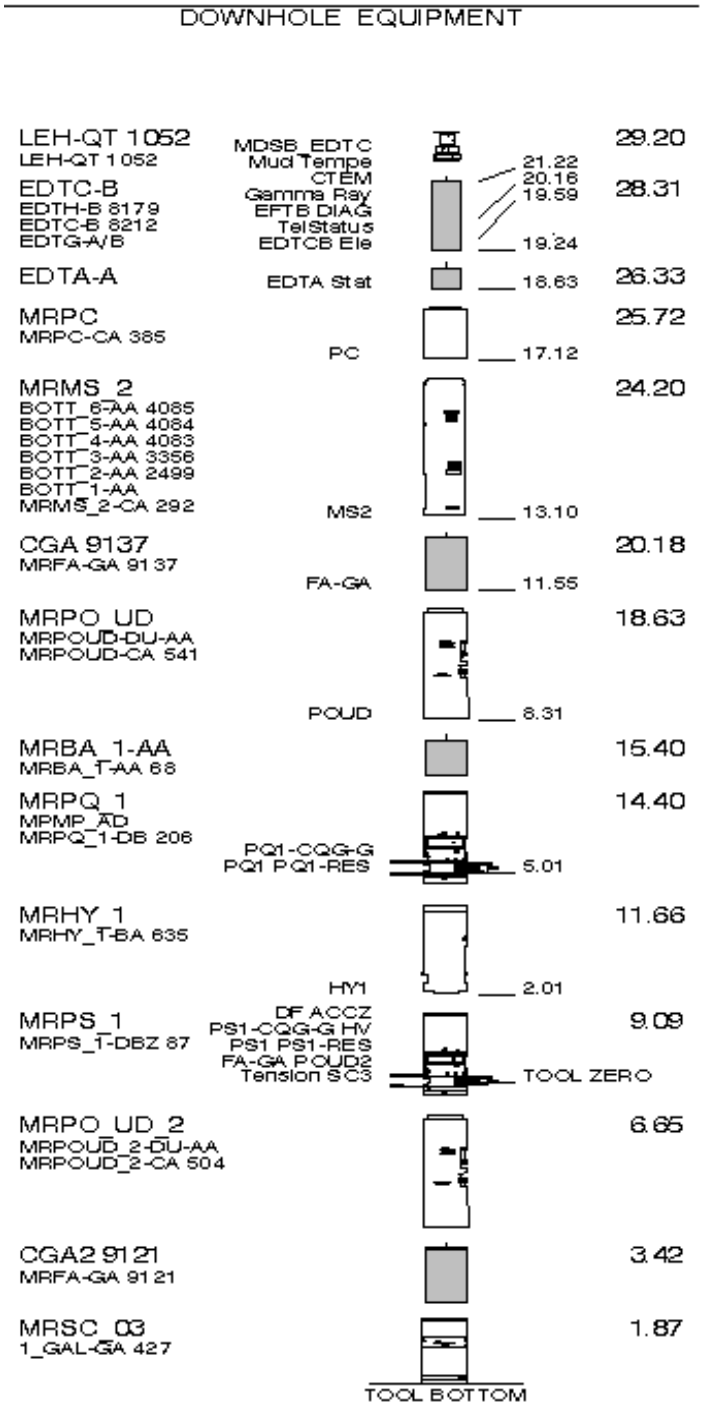
Summary of operation:

Rigged up @ **10:20 (03-Jan-10)**
Rigged down @ **05:30 (04-Jan-10)**
Total time: **19.13 hours**

Remarks:

- Electrical Control Release Device run as per client request.
- Subsequent trip in hole (Suite 3/Run 1). Wiper trip was performed prior to the run.
- Log correlated to Schlumberger SP-HRLA-PEX-HNGS-CMR+-GR dated on 28-Dec-09.
- Maximum recorded temperature from LEH-QT logging head thermometers was 122.2degC.
- Pressure tests recorded from MRPS and MRPQ.
- MRPS run with LD probe, as per client request.
- Total of 26 pressure tests were attempted: 9 valid, 17 tight.
- Samples taken with Quicksilver probe, with split flow using dual pump-outs; CFAs used for fluid analysis.
- Total of 3 samples recovered @ 3202mMD.
- 2 pump-out stations were performed (no samples recovered) @ 3201, 3137mMD.
- Last pressure test depth @ 2549.2mMD was evaluated using Single and Quicksilver probes as per client request.

Tool String


DOWNHOLE EQUIPMENT
LEH-QT 1052
LEH-QT 1052
MDSB_EDTC
Mud Tempe
CTEM
Gamma Ray
EFTB DIAG
TelStatus
EDTCB Ele
21.22
20.16
19.59
19.24
29.20
EDTC-B
EDTH-B 8179
EDTC-B 8212
EDTG-A/B
28.31
EDTA-A
EDTA Stat
16.63
26.33
MRPC
MRPC-CA 385
PC
17.12
25.72
MRMS_2
BOTT_6-AA 4085
BOTT_5-AA 4084
BOTT_4-AA 4083
BOTT_3-AA 3356
BOTT_2-AA 2499
BOTT_1-AA
MRMS_2-CA 292
MS2
13.10
24.20
CGA 9137
MRFA-GA 9137
FA-GA
11.55
20.18
MRPO_UD
MRPOUD-DU-AA
MRPOUD-CA 541
POUD
8.31
18.63
MRBA_1-AA
MRBA_T-AA 68
15.40
MRPQ_1
MPMP_AD
MRPQ_1-DB 206
PQ1-CQG-G
PQ1 PQ1-RES
5.01
14.40
MRHY_1
MRHY_T-BA 635
HY1
2.01
11.66
MRPS_1
MRPS_T-DBZ 87
DF ACCZ
PS1-CQG-G HV
PS1 PS1-RES
FA-GA POUD2
Tension SC3
TOOL ZERO
9.09
MRPO_UD_2
MRPOUD_2-DU-AA
MRPOUD_2-CA 504
6.65
CGA2 9121
MRFA-GA 9121
3.42
MRSC_03
1_GAL-GA 427
1.87
TOOL BOTTOM
MAXIMUM STRING DIAMETER 5.00 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

RUN 2 & RUN 3: ZVSI-GR

Objectives:

- Provide a confidence in seismic-to-well calibration.
- Calibration of the velocity model
- Seismic to well-tie with sonic log calibration and synthetic seismogram generation

Summary of operation:

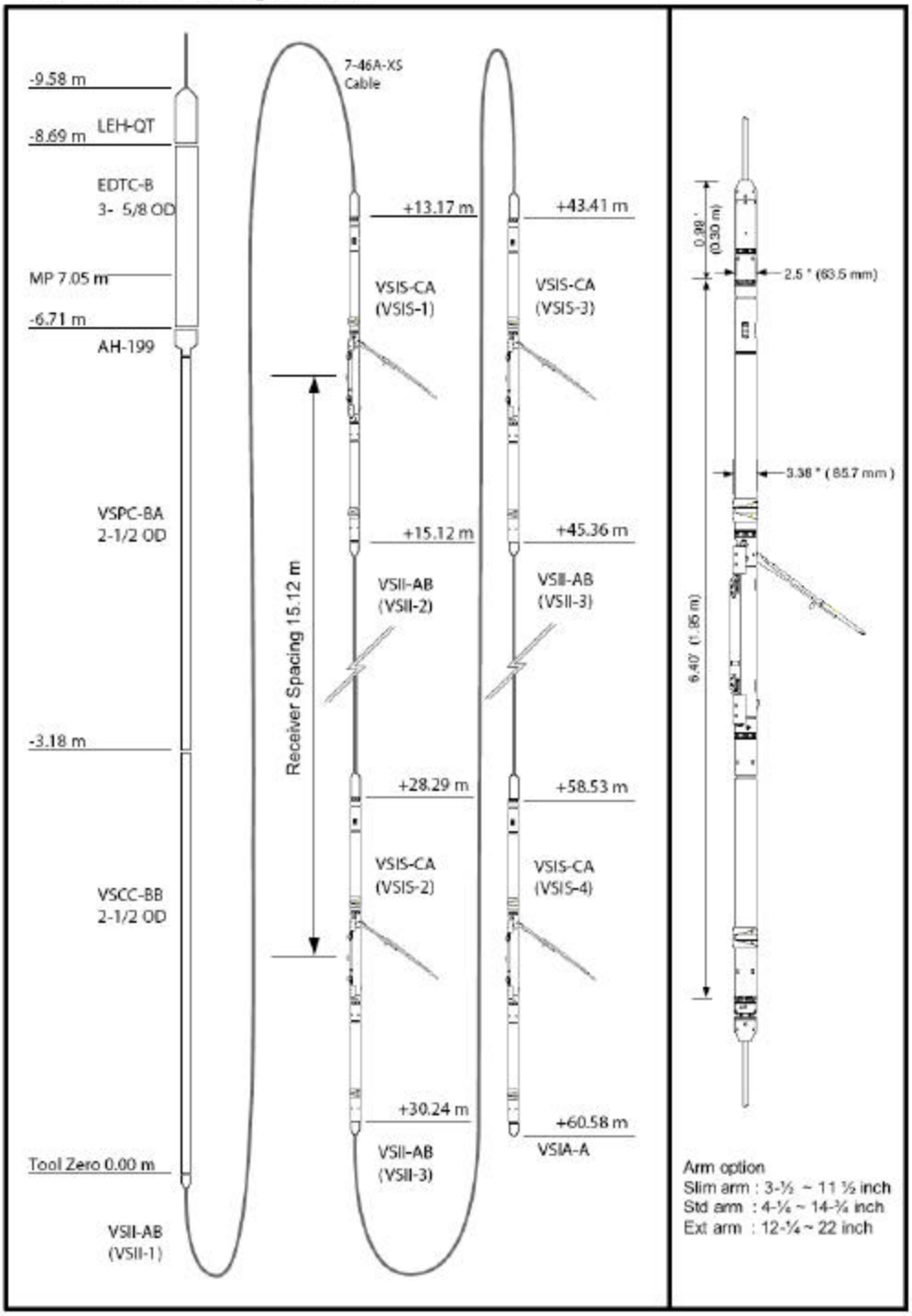
Rigged up @ **05:30 (04-Jan-10)**
Rigged down @ **00:00 (05-Jan-10)**
Total time: **18.5 hours**

Remarks:

- Borehole seismic survey was recorded in Suite 3 Run 2 and 3.
- This survey included rig source checkshot measurements from 294.1m MD to 2614.6m MD.
- Data was acquired using 4 levels VSIT-C (15.12 m spacing) downhole tool with a clustered airgun source deployed from the rig.
- The first run was held up at 2450m. The tool was pulled out of hole and additional weights were added.
- No data was acquired in the first run, except for QC shots on the way down.
- The second run was held up at 2700m. The planned VSP survey was cancelled due to tools being held up and being unable to reach TD.
- A checkshot survey was completed instead, as per client request.
- A minimum of 3 good shots was recorded for check-shot survey.
- Log correlated to Schlumberger SP-HRLA-PEX-HNGS-CMR+-GR dated on 28-Dec-09.

Tool String

VSI-4 Tool Configuration



RUN 4: MSCT-GR

Objectives:

- Acquire up to 35 good quality side-wall cores to provide biostratigraphic, geochemistry or Palynology and lithological control for field scale development as well as regional assessments.

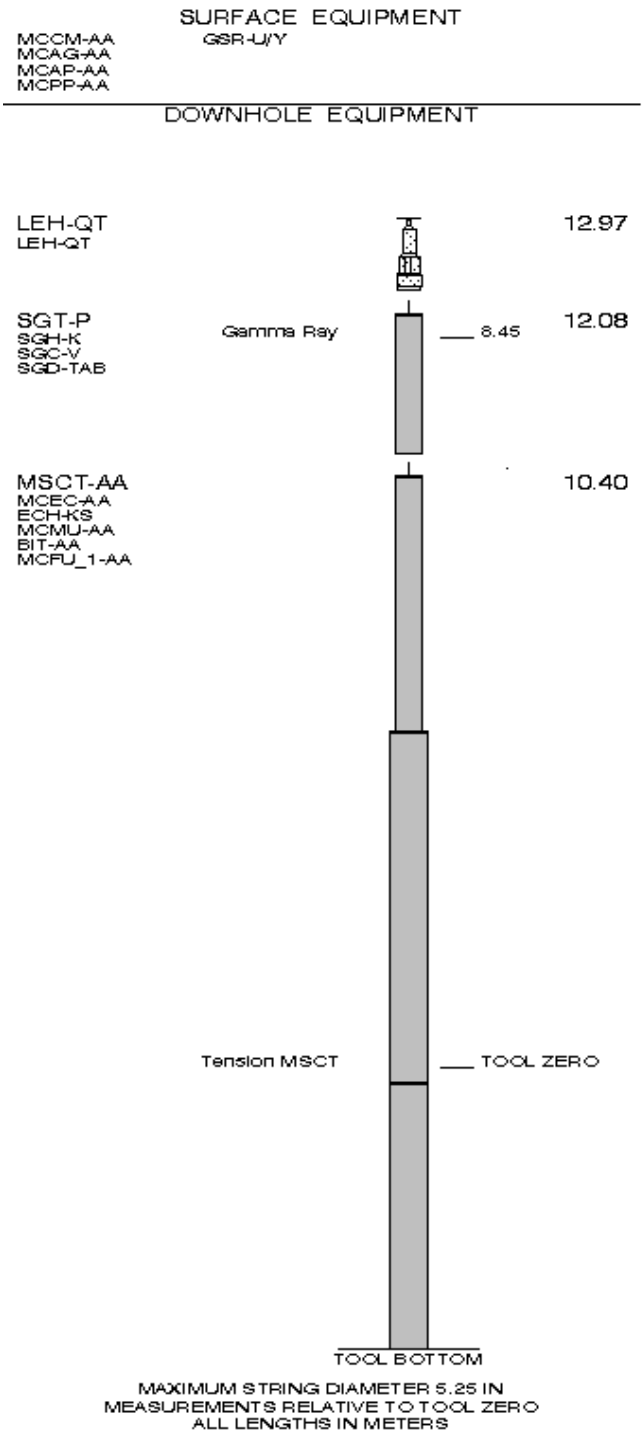
Summary of operation:

Rigged up @ **00:00 (05-Jan-10)**
Rigged down @ **15:50 (05-Jan-10)**
Total time: **15.83 hours**

Remarks:

-Rockhopper- 1 is a deviated exploration well located in T/18P in the Bass Basin.
-Toolstring run as per toolsketch.
-MSCT run with standard arm for 8.5" borehole.
-MSCT surface test performed. Marble block core inspected by wellsite geologist.
-Core @ 3374.7m was repeated due the engineer suspecting that the core had broken off early.
-Double markers placed after every 10 cores, as per client request.
-Cores were attempted in an order determined by client; with the most important cores being taken first.
-Maximum recorded temperature was 132degC from LEH- QT thermometers.

Tool String


SURFACE EQUIPMENT
MCCM-AA
MCAG-AA
MCAP-AA
MCPP-AA
GSR-U/Y
DOWNHOLE EQUIPMENT
LEH-QT
LEH-QT
12.97
SGT-P
SGH-K
SGC-V
SGD-TAB
Gamma Ray
8.45
12.08
MSCT-AA
MCEC-AA
ECH-KS
MCMU-AA
BIT-AA
MCFU_1-AA
10.40
Tension MSCT
TOOL ZERO
TOOL BOTTOM
MAXIMUM STRING DIAMETER 5.25 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

RUN 5: MSIP-FMI-GR

Objectives:

- **DSI run to acquire P&S, Dipole and Cross Dipole.**
- **Acquire high resolution, high quality borehole image log to provide sedimentological/structural information for reservoir modelling, volumetrics and develop geological understanding of the field.**

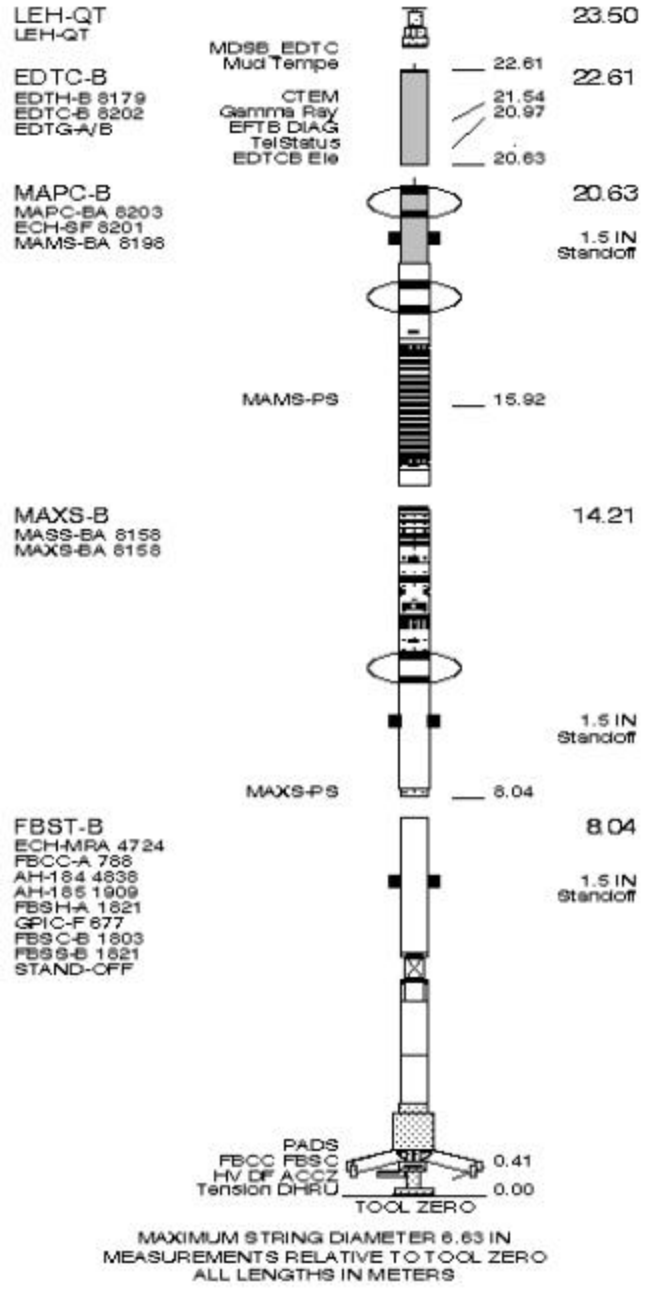
Summary of operation:

Rigged up @	**15:50 (05-Jan-10)**
Rigged down @	**06:30 (06-Jan-10)**
Total time:	**14.67 hours**

Remarks:

- Rockhopper- 1 is a deviated exploration well located in T/18P in the Bass Basin.
- Toolstring run as per toolsketch.
- 1.5" standoffs used on FMI cartridge, Sonic Scanner cartridge, receiver section and dipole section.
- Sonic Scanner centralized with 3*CMEZ slip on centralizers.
- Sonic Scanner run in "Standard Mode".
- FMI logged in EMEX manual (175V) Autogain low mode.
  - -Magnetic Field Declination: 12.4799 deg.
  - -Magnetic Field Inclination: - 70.3931 deg
  - -Magnetic Field Intensity: 48.5236 A/M
- FMI logs have static equalization and dead button patching applied.
- FMI logged from 3497m to 2800m, as per client request. Sonic Scanner logged from 3481m to 625m as per client request.
- FMI Image logs and Sonic Scanner dipole, monopole logs are presented in separate prints.
- Electrical Control Release Device run as per client request.
- Maximum recorded temperature from LEH- QT logging head thermometers was 137degC.

Tool String


LEH-QT
LEH-QT
MDSB_EDTC
Mud Tempe
22.61
23.50
EDTC-B
EDTH-B 8179
EDTC-B 8202
EDTG-A/B
CTEM
Gamma Ray
EFTB DIAG
TelStatus
EDTCB Ele
21.54
20.97
20.63
22.61
MAPC-B
MAPC-BA 8203
ECH-SF 8201
MAMS-BA 8196
20.63
1.5 IN
Standoff
MAMS-PS
15.92
MAXS-B
MASS-BA 8158
MAXS-BA 8158
14.21
1.5 IN
Standoff
MAXS-PS
8.04
FBST-B
ECH-MRA 4724
FBCC-A 768
AH-184 4838
AH-185 1909
FBSH-A 1821
GPIC-F 677
FBSC-B 1803
FBSS-B 1821
STAND-OFF
8.04
1.5 IN
Standoff
PADS
FBCC FBSC
HV DF ACCZ
Tension DHRU
0.41
0.00
TOOL ZERO
MAXIMUM STRING DIAMETER 6.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

SAFETY AND SERVICE QUALITY COMMENTS

- All SLB crew members on board actively participated in the STOP card safety program by submitting a minimum of one card per day per person for the entire duration of being on the rig.
- Each SLB crew member attended the daily pre-tower before coming on each shift and at least one supervisor attended the third party contractor meeting.
- All safety concerns encountered by both the rig crew and SLB crew were thoroughly discussed prior to the job. All concerns from both parties were resolved and plans made to make the operation as safe as possible.
- All activities whether or not requiring permits were preceded by a JSA conducted with crew involved and the use of the toolbox technique staying the main concerns and safety points to be discussed prior the execution of the task.
- JSA and Risk assessments were performed prior to rig up and rig down. All safety hazards (Radioactive Sources and manual handling) were discussed with the rig crews and Origin representatives. All relevant personnel were present during hazards review. Procedures for Radioactive Sources handling were reviewed prior to logging run.

APPENDIX 8: VSP REPORT

Schlumberger

Origin Energy Resources Ltd

Rockhopper-1 / Rockhopper-1 ST1

WELL SEISMIC PROCESSING REPORT

VSP-D / WSC / GEOGRAM

[See also Q-Borehole & QC VSP Reports]

BOREHOLE

origin

FIELD:	Rockhopper (T /18P)
COUNTRY:	Australia
COORDINATES:	Latitude: 39° 47' 34.18" S
:	Longitude: 145° 26' 21.47" E
RIG:	Kan Tan IV
DATE OF SURVEY:	04-Jan-2010 & 09-Feb-2010
SURVEY TYPE:	Rig VSP, Offshore, Airgun, Deviated Well, 2x
REFERENCE NO:	DS 0110-04

Prepared by: L. Dahlhaus
Reviewed by: K. Galybin Date: 30-April-2010

Schlumberger Oilfield Australia Pty Ltd
Level 5, 256 St. Georges Terrace, Perth
WA 6000 Australia

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1 Introduction

Two borehole seismic surveys for VSP processing were recorded in Rockhopper-1 and Rockhopper-1 ST1, both deviated offshore exploration wells (max. 43.5° and 36.7° well deviation) on the 4th of January 2010 and the 9th February 2010 respectively from the rig Kan Tan IV.

The main goals of the surveys, obtaining Time/Depth relations as well as a VSP corridor stacks, have been achieved. Furthermore images underneath the well trajectories were also obtained. Complete field results are reported in the separate "Q-Borehole Survey Reports". Initial QC VSP processing results are reported in the separate "VSP QC Reports". It is important to realize that these initial QC results used single component processing and simple geometry correction only and that, due to the significant well deviation in combination with a rig source, further processing was required to obtain more accurate vertical times and images underneath the well trajectories.

This report describes the 3-C processing of both surveys to obtain combined VSP results with sonic calibration, synthetic seismogram generation and surface seismic to establish a three way tie.

It documents the quality of the acquired data and presents the corrected time-depth-velocity listing as well as VSP processing. Additionally it contains the results of sonic calibration and synthetic seismogram generation using compressional depth-time relationship of compressional velocity logs. It describes the processing techniques used, the parameters chosen and presents the results of the data processing. A comparison is made between the surface seismic, VSP and the synthetics seismograms.

The source signature for both surveys is stable producing reliable and consistent downhole signals. Quality of the data is good and the resultant corridor stacks and images match with the synthetic seismograms produced using the available log data and the surface seismic provided by Origin. Tying of the surface seismic data to the Synthetic/VSP data shows that a good overall match is achieved without any time shift of the surface seismic to match the VSP and Synthetic data.

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2 Data Acquisition

The data were acquired in single logging runs in both open and cased hole, using a four level three component Versatile Seismic Imager Tool (VSI-4 with 15.12 m spacing) fitted with GAC accelerometers. A G-Gun delta cluster (3×150 cui) was used as the source suspended below a buoy. The geometry of the surveys is shown in Figures 1a/b.

Rockhopper-1
This survey included Rig Source VSP / Checkshot measurements from 2614.6 m MD DF to 294.1 m MD DF. It was not possible to descend to the planned TD of 3489 m MD DF.

The source cluster was deployed from the rig with an azimuth of 048 degrees with reference to North. The offset of gun was fixed 51 m from the wellhead. The guns were submerged from a buoy 5 meters below the tide level and fired at 1910 psi using N2 bottles.

Seismic Reference Datum (SRD) for the vertical Time-Depth information in this report is LAT. The average tide level during the VSP survey was 0.3 m above LAT and a bulk correction has been applied to the data. Survey geometry corrections and a static shift to correct the data to SRD were applied. This correction was done with a surface velocity of 1524 m/s.

Rockhopper-1 ST1

This survey included Rig Source VSP measurements from 3431.7 m MD DF to 1615.2 m MD DF.

The source cluster was deployed from the rig with an azimuth of 029 degrees with reference to North. The offset of gun was fixed 46 m from the wellhead. The guns were submerged from a buoy 4.8 meters below the tide level and fired at 1850 psi using N2 bottles.

Seismic Reference Datum (SRD) for the vertical Time-Depth information in this report is LAT. The average tide level during the VSP survey was 2.1 m above LAT and a bulk correction has been applied to the data. Survey geometry corrections and a static shift to correct the data to SRD were applied. This correction was done with a surface velocity of 1524 m/s.

For both surveys a calibrated Near Field (NF) reference hydrophone was deployed 1.25 meters below the center of the gun cluster. Schlumberger's Trisor Gun controller was used for the tuning and firing of the gun cluster, hence no source to hydrophone time correction is required. This new generation of Schlumberger proprietary borehole seismic system provides automated source control and enhanced QC functionality such as Gun depth and pressure measurements. Recording was made on the Schlumberger Maxis Unit using LDF format. The acquired gun source signatures are shown in Figures 2a/b.

Well	Rockhopper-1	Rockhopper-1 ST1
Elevation of DF	26 m above LAT	
Elevation of GL	74.3 m below LAT	
Elevation of SRD	0 m (LAT)	
Well Deviation	max 43.5°	max 36.7°
Energy Sources	3×150 cu in G-Gun cluster	
Time Reference	FTB Signal from TrisorOFS	
Source Offset / Azimuth	51 m / 048°	46 m / 029°
Source / Sensor Depth	5 m / 6.25 m below tide	4.8 m / 6.05 m below tide
Reference Velocity	1524 m/s	
Downhole Tool	VSIT-C (4 shuttles)	
Sensor Type	3-C GAC	

Table 1: Survey Parameters



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3 Well Seismic Edit

The initial preparation of the data is called Well Seismic Edit and consists of:

- Load Data
- Edit bad records & Sort Data
- Median stack
- Geophone Transform
- Pick Break time on Stacked Data

Each shot of the raw GAC data was evaluated and edited to remove bad traces. The hydrophone data were also evaluated for signature changes and timing shifts. The data were stacked at each level using a median stacking technique, to increase the signal to noise ratio of the data. For better comparison with geophone data, a transform to a 10 Hz/70% damped geophone is applied to the GAC data. After stacking the transit time of each trace was re-computed.

The following subsections describe the main aspects of the well seismic edit phase.

3.1 Data Quality

Rockhopper-1

Data quality is considered to be good. This dataset was acquired as a checkshot survey with 3 shots per tool setting and variable level spacing (45.36 m long VSI-4 array moving up 100 m). The top levels of the survey (above 1059.5 m MD DF) are affected by casing ringing noise. The Time-Depth relationship up to 1014.1 m MD DF is estimated using the X, Y and rotated 3C component data, above this no accurate Time-Depth information can be picked. A Gamma Ray log was run for depth correlation and the VSP is within 1 m on depth with the reference GR log. The NF hydrophone sensor and Trisor QC displays indicate that the source signature / Gun pressure were stable.

Even though the checkshot spacing is variable and only 3 shots per level were acquired, the good data quality combined with the fact that a VSI-4 was used allows this data to be processed as a VSP dataset to obtain a Corridor Stack and even a migrated Image. Due to the look-ahead capability of borehole seismic deeper reflectors well below the deepest recorded checkshot level can be distinguished on this data.

Rockhopper-1 ST1

Data quality is considered to be excellent. The VSP levels were acquired with at least 5 good repeatable shots per level. A Gamma Ray log was run for depth correlation and the VSP was shifted down 1.2 m to be on depth with the Run 1 reference log. The NF hydrophone sensor and Trisor QC displays show that the source signature / Gun depth were stable.

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Full 3C VSP processing is required for this borehole seismic dataset due to the 2D geometry. Also the time-depth information needed to be further calibrated using a model-based approach and was used to calibrate sonic slowness and other log curves and subsequently to generate time-indexed calibrated logs and synthetic seismogram traces.

3.2 Stacking

After reordering and selecting the best traces, a median stack was performed on the three component source signature deconvolved data. In this method of stacking, at each sample time, the amplitudes of the input traces are read and sorted in ascending order. The output is the median amplitude value from this ordering. The TRISOR-OFS zero time reference is used as the zero time for stacking. The break time of each trace is recomputed after stacking. The X, Y and Z component stacks for both Rockhopper-1 and Rockhopper-1 ST1 surveys are presented in Figures 3a/c and 4a/c respectively. Figures 3d and 4d show the vertical component aligned with a –TT shift, whilst the amplitude spectrum of the downhole data is shown in Figures 5a and 6a,and the Frequency-Wavenumber (F-K) spectrum is shown in Figures 5b and 6b.

3.3 Transit Time Measurement

The measured compressional transit time corresponds to the difference between arrivals recorded by surface and downhole sensors. The reference time (zero time) for the VSP is the Predicted Fire time determined in a closed feedback system of the TRISOR-OFS shooting system and the measured transit time is from the source and not the reference hydrophone. Hence only static corrections from source to datum are required. An inflection point tangent first break picking algorithm was used on the geophone transformed GAC data.

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4 VSP Processing

This pre-processed VSP data can now be used to derive VSP down going and reflected wavefields, VSP Corridor Stacks and Images for surface seismic matching. The following subsections describe the main aspects of the VSP processing chain:

Rockhopper-1

• Datum and geometry correction	:	Survey Geometry Headers
• 3C Rotations to TRY and V,H	:	Data and Geometry based
• Bandpass Filter	:	Butterworth Zero Phase, 5-200 Hz
• Wavefield Separation Down P (V)	:	Velocity Filter, 7x1 Median, TT
• Wavefield Separation Up P	:	Velocity Filter, 5x1 tri-mean, -TT
• Waveshaping Deconvolution	:	5-100 Hz Zero Phase, Window 2 s
• Spherical Divergence Correction	:	Time Varying Gain, Exponent 1.8
• Wavefield Enhancement Up P	:	Velocity Filter, 7x3 tri-mean, Model Based
• NMO Correction	:	Model Based for Corridor Stack
• Corridor Stack	:	100 ms , 8 deepest traces
• Imaging	:	GRT Migration, TWT

Rockhopper-1 ST1

• Datum and geometry correction	:	Survey Geometry Headers
• 3C Rotations to TRY and V,H	:	Data and Geometry based
• Bandpass Filter	:	Butterworth Zero Phase, 5-200 Hz
• Parametric Wavefield Decomposition	:	WavanaPro, 5-100 Hz, Inverted Model
• Wavefield Separation DP from Up P	:	Velocity Filter, 15x3 Median, TT
• Waveshaping Deconvolution	:	5-80 Hz Zero Phase, Window 2 s
• Spherical Divergence Correction	:	Time Varying Gain, Exponent 1.8
• Wavefield Enhancement Up P	:	Velocity Filter, 7x3 tri-mean, Model Based
• NMO Correction	:	Model Based for Corridor Stack
• Corridor Stack	:	100 ms , 8 deepest traces
• Imaging	:	GRTMigration, TWT

4.1 Correction to Datum

Seismic Reference Datum (SRD) is at LAT (Lowest Astronomical Tide). This is approximately 1.6 m below MSL for this location.

The source was positioned approximately 5 m below local tide levels. Tide corrections were estimated as bulk shifts for each survey and applied to the data. Transit time correction to SRD was initially applied using straight ray geometry to calculate corrected vertical transit time and surface velocity of 1524 m/s. Due to the 2D nature of the survey, a model-based approach was adopted here as described in section 4.4. The time-depth-velocity results of the VSP survey are presented in Attachment 2a (Rockhopper-1) and 2b (Rockhopper-1 ST1).

4.2 Rotation of 3C components

The VSI-4 is equipped with non-gimballed GAC receivers. This means that the Z component is along the tool i.e. wellbore axis. The X and Y components are orthogonal to that with the X component in line with the tool caliper arm. In a vertical well, energy recorded on horizontal components either has traveled along a non vertical path e.g. due to structural dip or faults or has non-vertical particle motion e.g. mode converted shear.

When processing a rig source VSP in a deviated well the 3 component data need to be rotated to the 2D plane containing Source, Receiver and Reflection points. This can be done by first taking the two tool horizontal components X and Y and determining via energy hodograms in a small window around the picked transit time the orientation of the maximum (in-line) component (HMX) and orthogonal to that the minimum (cross-line) component (HMN). Figures 7a/b present examples of the rotated downhole 3C data for both surveys including derived rotation angles and quality control curves.

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The Z and HMX components are then rotated to maximize the first arriving energy in the TRY (Tangent to RaY) direction. The borehole deviation was subsequently used to rotate the Z and HMX components to true vertical (V) and true inline horizontal (H) components. Figures 8a/d and 9a/d show the following rotated components: TRY, HMX, V and H.

4.3 Bandpass Filter

The effective bandwidth of the recorded data is evaluated by examining the amplitude spectrum of the stacked vertical component presented in Figures 5 and 6. A wide zero phase Butterworth Band pass filter was applied to the data limiting the bandwidth to 5-200 Hz.

4.4 Velocity Model building

It was necessary to build a model of the subsurface for the following reasons:

- VSP ray tracing modeling to help understand various ray modes in the subsurface
- Advanced processing techniques require a model to guide the algorithms (wavefield separation, amplitude corrections, etc)
- The GRT migration processes require a background velocity model

A mildly dipping layered model was build from the depth converted surface seismic time section along the well trajectory provided by Origin using the VSP time-depth information of both VSP surveys. This initial model was subsequently adjusted to match the borehole seismic data using ray-tracing and travel time inversion. Figure 10a/b show the seismic, the model, the source-receiver geometry as well as the inverted Vp velocities and direct ray paths and reflection points for some reflectors. The model has been inverted for P velocity using Down P arrival times. The overall RMS residual travel time difference between modeled and measured times is less than 1 ms. Figure 10c shows the simulated Vertical Incidence VSP that provides a QC of the NMO corrected vertical time-depth information for listings and sonic calibration processing This analysis is shown in the attached Time Analysis spreadsheet.. Note that no lateral velocity profile information was provided; constant velocity layers were used in the inversion and diverging residuals of both surveys in the deeper layers indicate that these effects may have an influence here.

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4.5 Wavefield Separation

Two different flows were used to obtain separated down and up going P wavefields for Rockhopper-1 and Rockhopper-1 ST1. Due to the more vertical angles in the Rockhopper-1 survey, down going P wavefields are estimated and removed from the true Vertical component only as there is not sufficient shear energy present to apply parametric wavefield decomposition techniques. These were used on Rockhopper-1 ST1 Vertical and Horizontal component data.

Flow Rockhopper-1

As the maximum up-going P energy is mostly concentrated on the vertical component, this component was used. Firstly a velocity filter (coherency) method is applied to estimate the down going compressional wavefield. Temporary trace equalization was applied by normalizing the RMS amplitude of the first break to correct for transmission losses of the direct wave. A normalization window of 200 milliseconds was used.

The down going coherent compressional energy is estimated using a 7x1 level Median velocity filter parallel to the direct arrival curve. The filter array is moved down one level after each computation and the process is repeated level by level over the entire dataset. The down going P wavefield is displayed in one-way time in Figure 11a.

The residual wavefield is obtained by subtracting the estimated down going coherent energy from the total wavefield. The resulting up going wavefield is shown in Figure 11b.

Next a 5x1 level Tuckey tri-mean velocity filter enhancement was applied to this residual wavefield and the resulting up going P wavefield is shown in Figure 11c.

Flow Rockhopper-1 ST1

A data-driven parametric wavefield decomposition technique (Wavanapro) was used to separate the up going and down going compressional and shear wavefields. This method decomposes downhole multi-component recordings into scalar wavefields using a parametric least-squares minimization where the data are modeled in a given time window as a superposition of several plane wave events. Each wave is defined by its local velocity, its angle of incidence and its waveform. Initial parameters were obtained from the 2D model and used to guide the processing as well as an initial direction guess based on the survey geometry.

The frequency range used is 5-80 Hz (constrained by special aliasing of shear energy) and processing was done in a single time window. The results of the initial pass were inverted and the final stage of separation is QC of inversion results. Figures 12 a/d show the obtained down and up going compressional (P) and converted shear (PS) wavefields.

To clean up the up going P wavefield from some residual down P this down going coherent compressional energy is estimated using a 15x3 level Median velocity filter parallel to the direct arrival curve. Figure 12e shows the separated up going P wavefield.

4.6 Zero Phase Waveshaping Deconvolution

The waveshaping process shortens the seismic pulse within traces and centers their amplitude peak on the reflector. This improves the resolution of the seismic data and helps to clarify the correlation of the seismic events. It is also applied to collapse the recorded multiples.

The waveshaping deconvolution operator is a double-sided Wiener-Levinson waveshaping filter. The operator is computed for each level of the down going wavefield using a window length of 1 s starting 5 ms before the picked break times in order to include the wavelet precisely. The designed outputs were chosen to be zero-phase with a bandwidth of 5-100 Hz for Rockhopper-1 and 5-80 Hz for Rockhopper-1 ST1. Once the design is made upon the down going wavefield, it is applied to the both down going and up going wavefields at the same level as displayed in Figures 13a/b and 14a/b for both surveys respectively.

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4.7 Spherical Divergence Correction

To correct the recorded amplitudes for the loss of energy due to the spherical divergence of the wave front, a time varying gain function of the exponential form:

$$Gain(T) = \left(T / T_0\right)^{\alpha}$$

where T_0 is the recorded transit time. The exponent used here is 1.8.

4.8 Upgoing Enhancement

A velocity filter (coherency) technique was used to enhance the zero phase upgoing wavefield.

The up going coherent compressional energy is estimated using a model-based 7x3 level Tuckey tri-mean velocity filter. This enhanced up going wavefield is displayed in one way time (OWT) in Figures 13c and 14c.

4.9 NMO correction and Corridor Stack

A corridor stack in two way time (TWT) was computed on the enhanced zero phase upgoing wavefield after model-based NMO correction by designing a constant 100 ms timing window along the two-way time depth curve and stacking the data onto a single trace. The deepest 8 traces are stacked entirely. The resulting trace provides the seismic representation of the borehole in vertical two-way time.

This corridor stack is displayed in Figures 15a/b along with the NMO corrected up going wavefield in two way time.

4.10 Migration

Final images were produced using the GRT migration technique.

The Generalized Radon Transform (GRT) migration approach (Miller et al. 1987) based on exact two-point ray-tracing through a 2D medium is used where the theory is similar to that of Kirchhoff migration. In this scheme, each point in the offset-depth (x, z) domain can be regarded as a potential velocity anomaly, capable of scattering seismic energy. Similarly, each point in the data domain (x,t) is based on the contribution of scattered energy from points along an isochron in the (x,z) domain. In a constant velocity medium the isochrones are ellipses with source and receiver points as foci. In a realistic medium with laterally varying parameters, the shapes of the isochrones are distorted. The migration can be carried out either by redistributing the amplitudes of points in the data domain to reproduce points in the (x,z) domain, or by summing along diffraction hyperbolae in the data domain to reproduce points in the (x,z) domain. The former process is known as back projection and the later, used here, is a diffraction stack. The spatial resolution that can be obtained

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for given source-receiver configurations is directly related to the distribution of isochrones in the (x,z) domain. The best resolution is achieved in a direction perpendicular to the isochrones. A point can be only imaged perfectly when isochrones cross it in all directions, similar to the imaging concept in tomography.

Conceptually the method is based on Huygens principle, where the subsurface can be thought of as a grid of diffraction points. The principle implementation of GRT migration consists of summing along diffraction hyperbola in the data domain (T,Z) defined by the ray-traced time, T1, to propagate from the sources to one particular point (x,z) of the subsurface and the time, T2, to propagate from the point (x,z) to the receiver. Wherever a hyperbola is tangent to a seismic event, the data will be summed constructively, whereas amplitudes along the remaining portions will cancel out. A series of possible isochron surfaces, or dip, can be defined at the image point (x,z) by adjusting the aperture.

The data input are the zero phase deconvolved up going compressional scalar wavefields.
Parameters for this processing step are:

Velocity model	2D, Structure from Surface Seismic, Velocities from VSP TT inversion
Input wavefield:	Scalar, Deconvolved upgoing PP VSP
Aperture:	3 Degrees, Dip interpolated from model
CDP/trace spacing:	10 m
Sampling rate:	1 ms
Corrections:	No geometrical spreading

The resulting migrated sections are displayed in TWT in Figures 16a/b for each survey individually and in Figure 16c after combining both migrated images into a single final Image including an extension using the derived corridor stack. To improve the lateral continuity of this image, a 5x3 tri-mean velocity filter was used.

4.11 Composite Displays of Results

Figures 17a/b show composite displays of the provided surface seismic section along the Rockhopper-1 and Rockhopper-1 ST1 well direction (N-S) and the combined VSP migrated image. The composite displays show a good correlation between the surface seismic and the VSP Image without shifting the surface seismic data.

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5 Sonic Calibration Processing

5.1 Sonic Calibration

A 'drift' curve is obtained using the sonic log and the vertical check level times. The term 'drift' is defined as the seismic time (from check shots) minus the sonic time (from integration of edited sonic). Commonly the word 'drift' is used to identify the above difference, or to identify the gradient of drift versus increasing depth, or to identify a difference of drift between two levels.

The gradient of drift, that is the slope of the drift curve, can be negative or positive.

- For a negative drift (Δdrift/Δdepth < 0) the sonic time is greater than the seismic time over a certain section of the log.
- For a positive drift (Δdrift/Δdepth > 0), the sonic time is less than the seismic time over a certain section of the log.

The drift curve, between two levels, is then an indication of the error on the integrated sonic or an indication of the amount of correction required on the sonic to have the TTI of the corrected sonic match the check shot times. Two methods of correction to the sonic log are used.

1. Uniform or block shift. This method applies a uniform correction to all the sonic values over the interval. This uniform correction is applied in the case of positive drift and is the average correction represented by the drift curve gradient expressed in µsec/m .

2. ΔT Minimum. In the case of negative drift a second method is used, called Δ minimum. This applies a differential correction to the sonic log, where it is assumed that the greatest amount of transit time error is caused by the lower velocity sections of the log. Over a given interval the method will correct only Δt values which are higher than a threshold, the Δt_{min} . Values of Δwhich are lower than the threshold are not corrected. The correction is a reduction of the excess of Δt over Δt_{min}, $\Delta t - \Delta t_{min}$.

$\Delta t - \Delta t_{min}$ is reduced through multiplication by a reduction coefficient which remains constant over the interval. This reduction coefficient, named G, can be defined as:

$$G = 1 + \frac{drift}{(\Delta t - \Delta t_{min})\partial z}$$

Where *drift* is the drift over the interval to be corrected and the value $(\Delta t - \Delta t_{min})\partial z$ is the time difference between the integrals of the two curves Δt and Δt_{min} only over the intervals where $\Delta t > \Delta t_{min}$. Hence the corrected sonic:

$$\Delta t = G(\Delta t - \Delta t_{min}) + \Delta t_{min}$$

The resultant drift curve, knee points and calibrated velocity plot are shown in Figure 18a/b and the attached 36" plots.

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5.2 Open Hole Logs

The sonic DTCO curves were used for drift computation. The RHOB, CALI, RT and GR logs were provided by Origin and used as companion curves. The density log was extended to the seabed using Gardner relation.

5.3 Correction to Datum

The sonic calibration processing has been referenced to LAT, which is the seismic reference datum. The calibrated model based NMO results are presented in the listings.

5.4 Sonic Calibration Results

The sonic log was tied to a station (1318.4 m TVDSS) in the seismic log. This station was chosen as the origin for the calibration drift curve as shown in velocity cross plot. The compressional sonic log was extended using the VSP data.

The drift curve is the correction imposed upon the sonic log. The adjusted sonic curve is considered to be the best result using the available data. A mostly positive drift is visible in both VSP section.

One 2D model based synthetic time-depth point was added to the Rockhopper-1 dataset to allow use of logs to TD of this borehole; OWT 1.1436 s at TVDSS 3149 m.

The VSP section residual drift is less than +/-1ms and the calibration process introduced no significant artificial slowness jumps. A list of shifts used on the sonic data is given in A2 Listing (supplied in digital form on Final Results CD-ROM). The Velocity Cross plot is presented in Figures 18a/b and as a separate plot.

6 Synthetic Seismogram Processing

GEOGRAM processing produces synthetic seismic traces based on reflection coefficients generated form sonic and density measurements in the wellbore. The steps in the processing chain are the following:

- Depth to time conversion
- Reflection coefficient generation
- Attenuation coefficient calculation
- Convolution
- Output

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6.1 Depth to Time Conversion

Open hole logs are recorded from the bottom to top with a depth index. This data are converted to two-way time index. Rockhopper-1 ST1 formation tops were provided by Origin Energy Resources Ltd. in MD DF and have been converted to calibrated VSP/Geo two-way time (Table 2):

Marker	Measured Depth (m)	TVDSS (m)	Two-Way Time (s)
EVCM	2068.1	2041.5	1.696
Top 2809	2844.0	2711.0	2.078
P3 (2952)	3058.0	2886.9	2.173
Base Low AI	3238.0	3033.0	2.247
TL60	3350.0	3124.0	2.292
Cret Volcanics	3435.0	3193.4	2.327

Table 2: TWT Formation Markers Rockhopper-1 ST1

6.2 Primary Reflection Coefficients

Sonic and density data are averaged over chosen time intervals (normally 1 ms). Reflection coefficients are then computed using:

$$R = \frac{r_2 v_2 - r_1 v_1}{r_2 v_2 + r_1 v_1}$$

where:

r_1 = density of the layer above the reflection interface
r_2 = density of the layer below the reflection interface
v_1 = compressional wave velocity of the layer above the reflection interface
v_2 = compressional wave velocity of the layer below the reflection interface

This computation is done for each time interval to generate a set of primary reflection coefficients without transmission losses.

6.3 Primaries with Transmission Losses

Transmission loss on two-way attenuation coefficients is computed using:

$$A_n = (1 - R_1^2)(1 - R_2^2)\ldots(1 - R_n^2)$$

A set of primary reflection coefficients with transmission loss is generated using:

$$Primary_n = R_n A_{n-1}$$

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6.4 Primaries plus Multiples

Multiples are computed from these input reflection coefficients using the transform technique from the top of the well to obtain the impulse response of the earth. The transform outputs primaries plus multiples.

6.5 Multiples Only

By subtracting previously calculated primaries form the above result we obtain multiples only.

6.6 Wavelet

A theoretical wavelet is chosen to use for convolution with the reflection coefficients previously generated. Choices available include: Klauder wavelet, Ricker zero phase wavelet, Ricker minimum phase wavelet, Butterworth wavelet, or User defined wavelet. Here 25, 35 and 45 Hz Ricker zero phase wavelets have been selected for computation of the synthetics.

6.7 Polarity Convention

An increase in acoustic impedance gives a positive reflection coefficient, is written to tape as a negative number and is displayed as a white trough under normal polarity. Polarity conventions are displayed in Figure 19.

6.8 Convolution

The standard procedure of convolving the wavelet with reflection coefficients; the output is the synthetic seismogram.

6.9 Results of Synthetic Seismogram Processing

A snapshot of the 40 cm/s composite displays (PLOT-1A/B and PLOT-2A/B) of VSP calibrated logs, VSP and Synthetic and Surface Seismic data is shown in Figures 20a/b and 21a/b respectively.

The 25 Hz, 35 Hz and 45 Hz Ricker wavelets were used to compute the synthetics shown in Figures 22a/b and 23a/b. The computed synthetics were compared to the corridor stack generated from the VSP data and the surface seismic well trace extracted along the well path in time. Overall, there is a good match between the VSP, synthetics and the surface seismic data.

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7 Conclusion

A VSP survey was carried out in the deviated Rockhopper-1 and Rockhopper-1 ST1 wells. The main objectives of the survey were acquisition of a vertical checkshot velocity profile (Time/Depth relation) and a VSP dataset for generation of a corridor stack and a VSP Image. These objectives were achieved.

7.1 VSP and Surface Seismic

Acquisition was carried out using a four shuttle VSI tool by Schlumberger Oilfield Australia Ltd. The quality of the acquired data is excellent. Both Rockhopper-1 and Rockhopper-1 ST1 datasets were processed as VSP data sets. The processed data are used to generate corridor stack and migrated VSP Images. Comparing the VSP results and the PSTM surface seismic along the well trajectory it was found that an overall match is achieved without shifting the surface seismic.

7.2 Synthetics

The synthetics were generated using the compressional velocity log, and density logs. The final calibrated log curves are presented in the attached data CD. The synthetics were generated using 25 Hz, 35 Hz, 45 Hz zero-phase Ricker wavelets. The character match between the 45 Hz synthetic and the VSP generated corridor stack and the surface seismic is good, as seen on Plot-1 and Plot-2. Formation tops provided by Origin in MD DF have been converted to calibrated VSP NMO two-way time (Table 2) and are presented in section 6.1.

7.3 Recommendations

Finally it should be noted that for true vertical time-depth information a Vertical Incidence (or Walk-above) VSP would have been the best survey type. This report describes calibrated model-based results. The model-based approach certainly is a step in the right direction, but it cannot guarantee the correct vertical time-depth answer.

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8 Figures

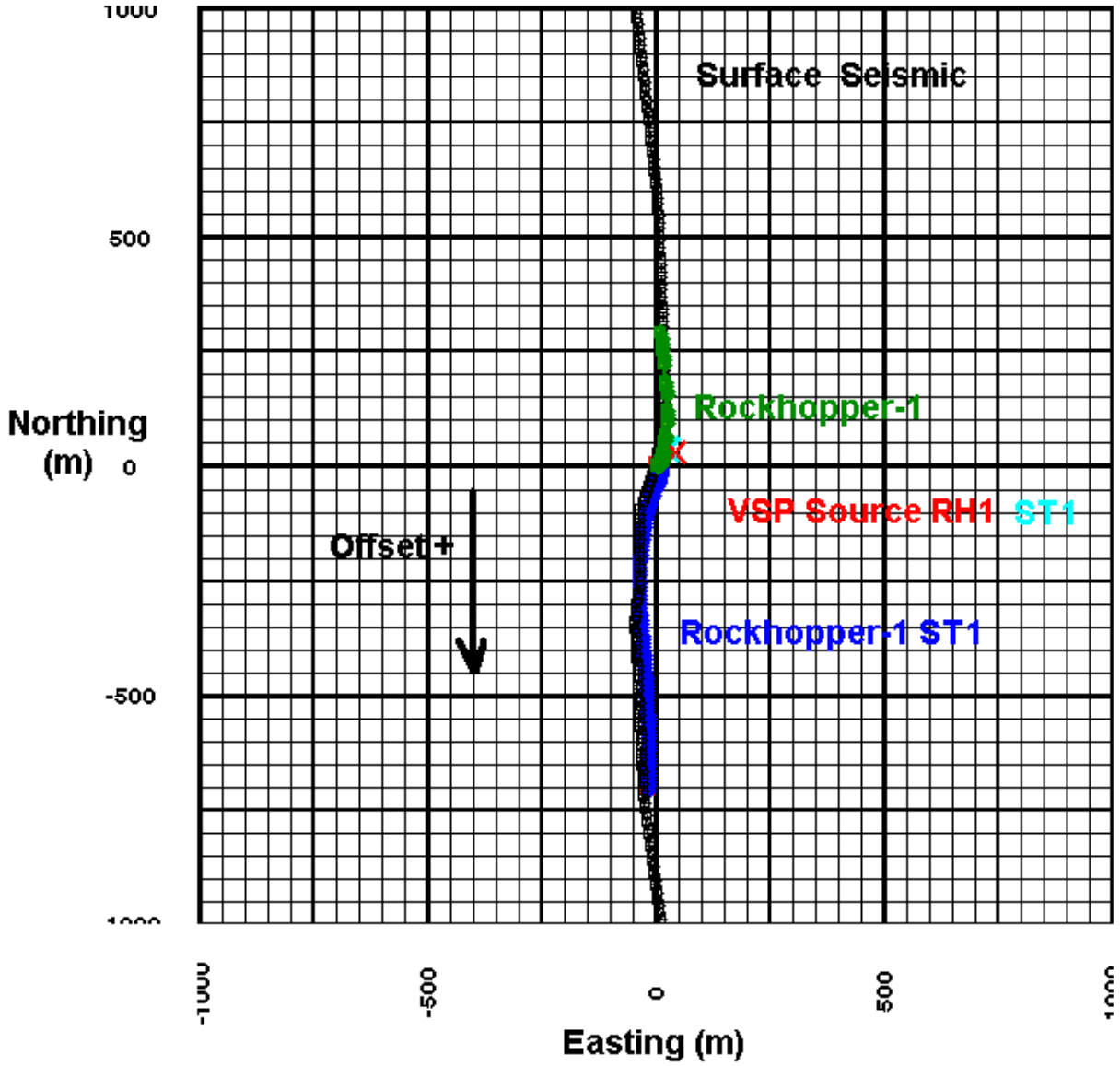


Figure 1a. Top view of both VSP Surveys

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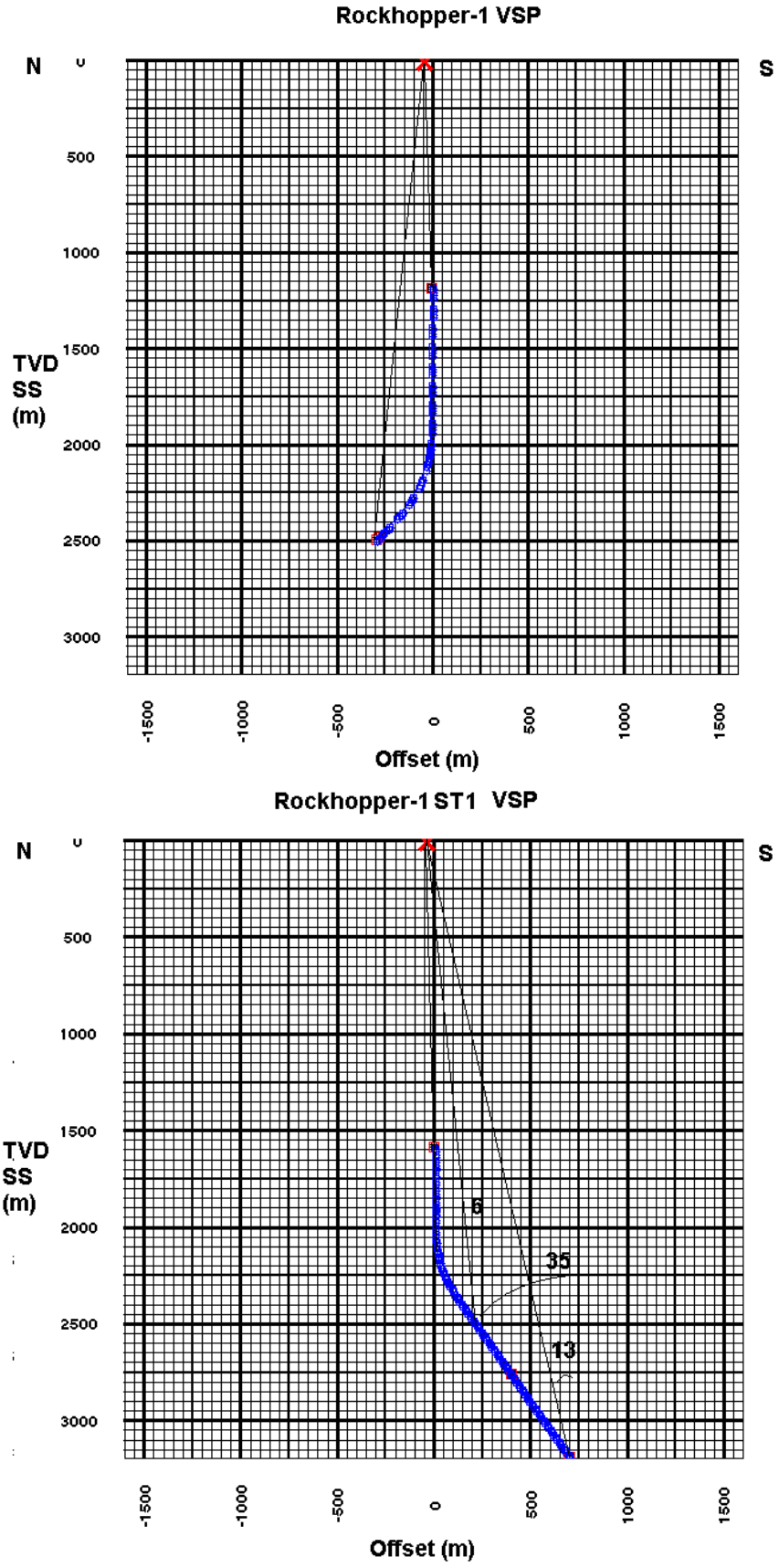


Figure 1b. Side view of both VSP Surveys

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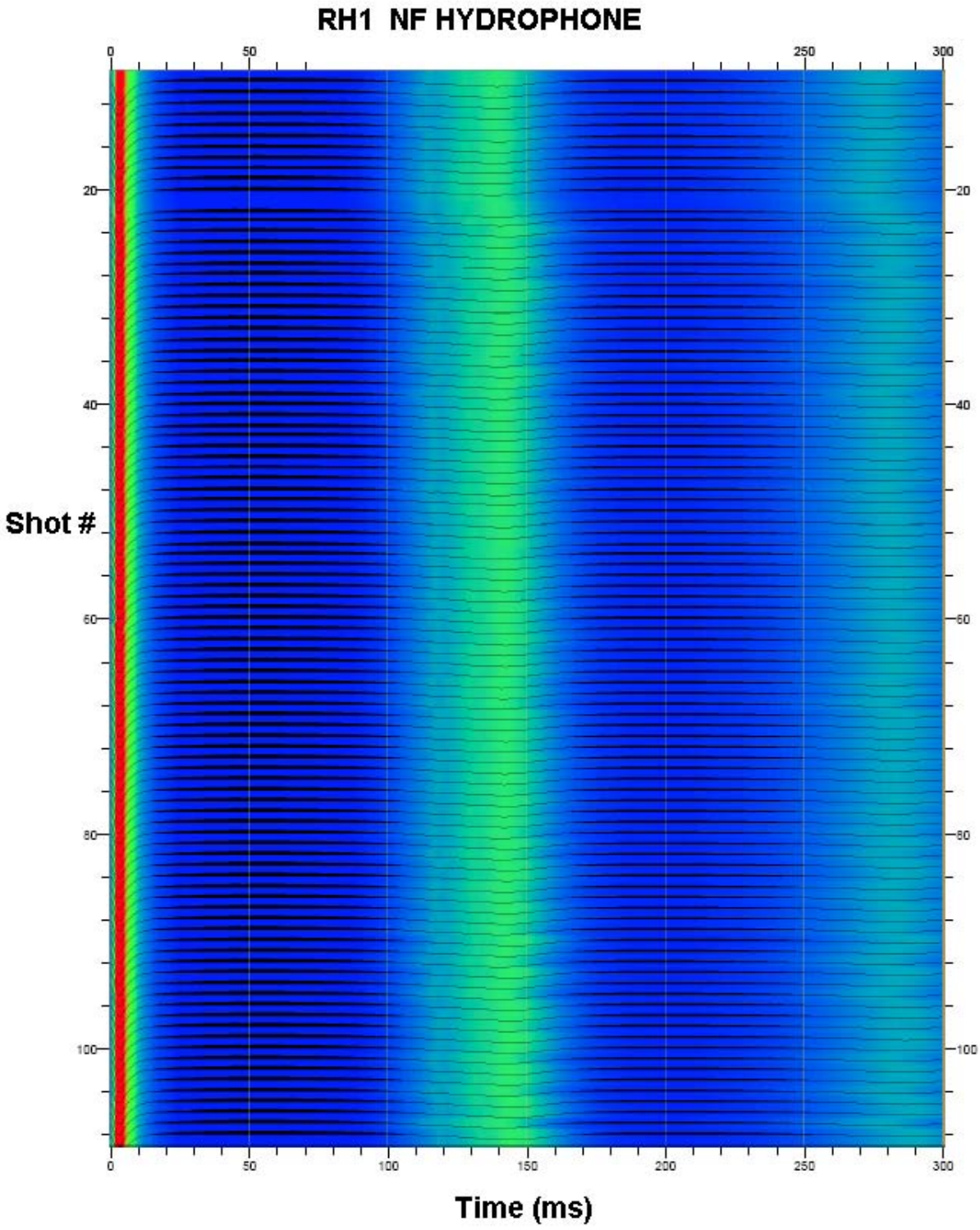


Figure 2a. Near Field Hydrophone QC display of Rockhopper-1 VSP

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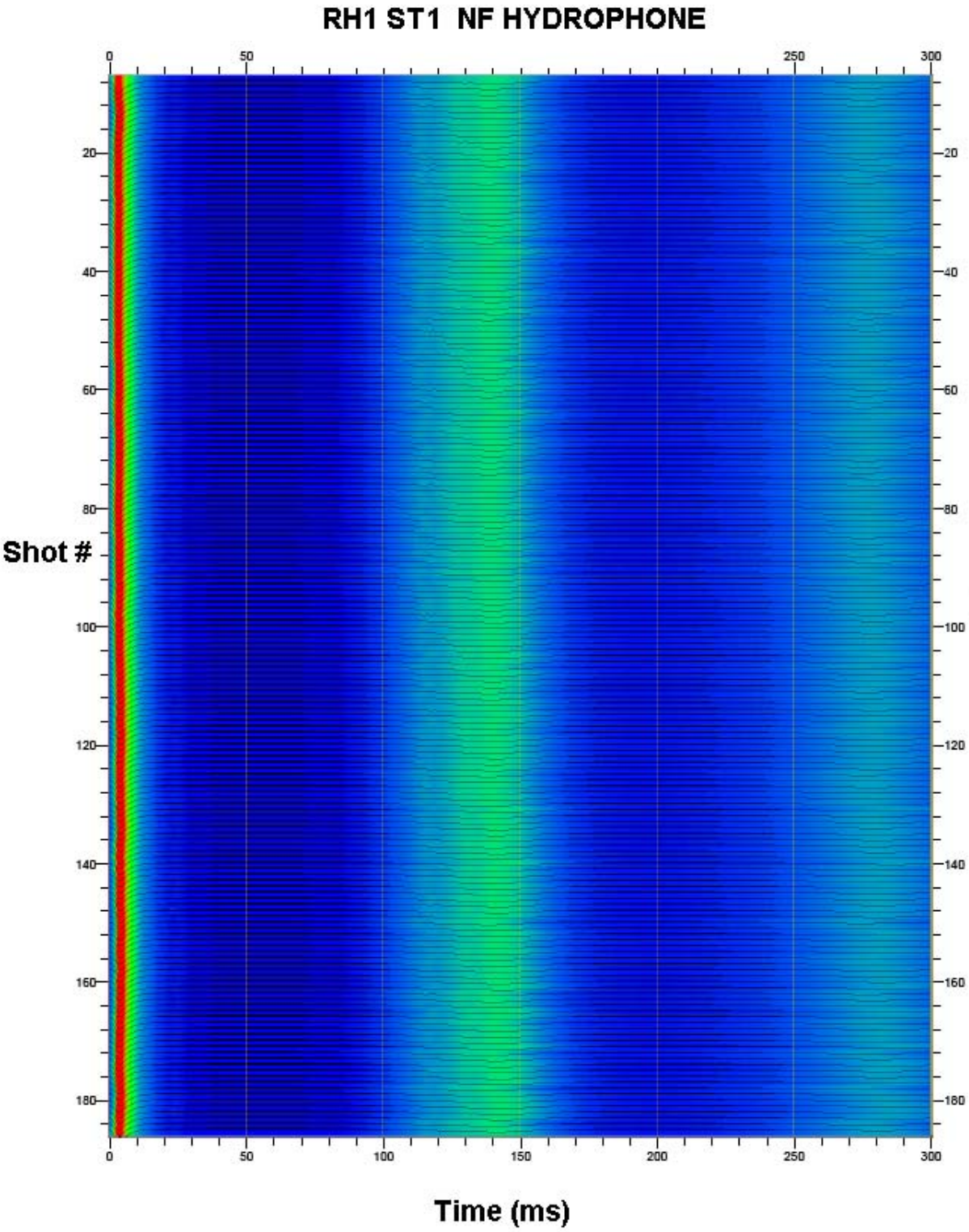


Figure 2b. Near Field Hydrophone QC display of Rockhopper-1 ST1 VSP

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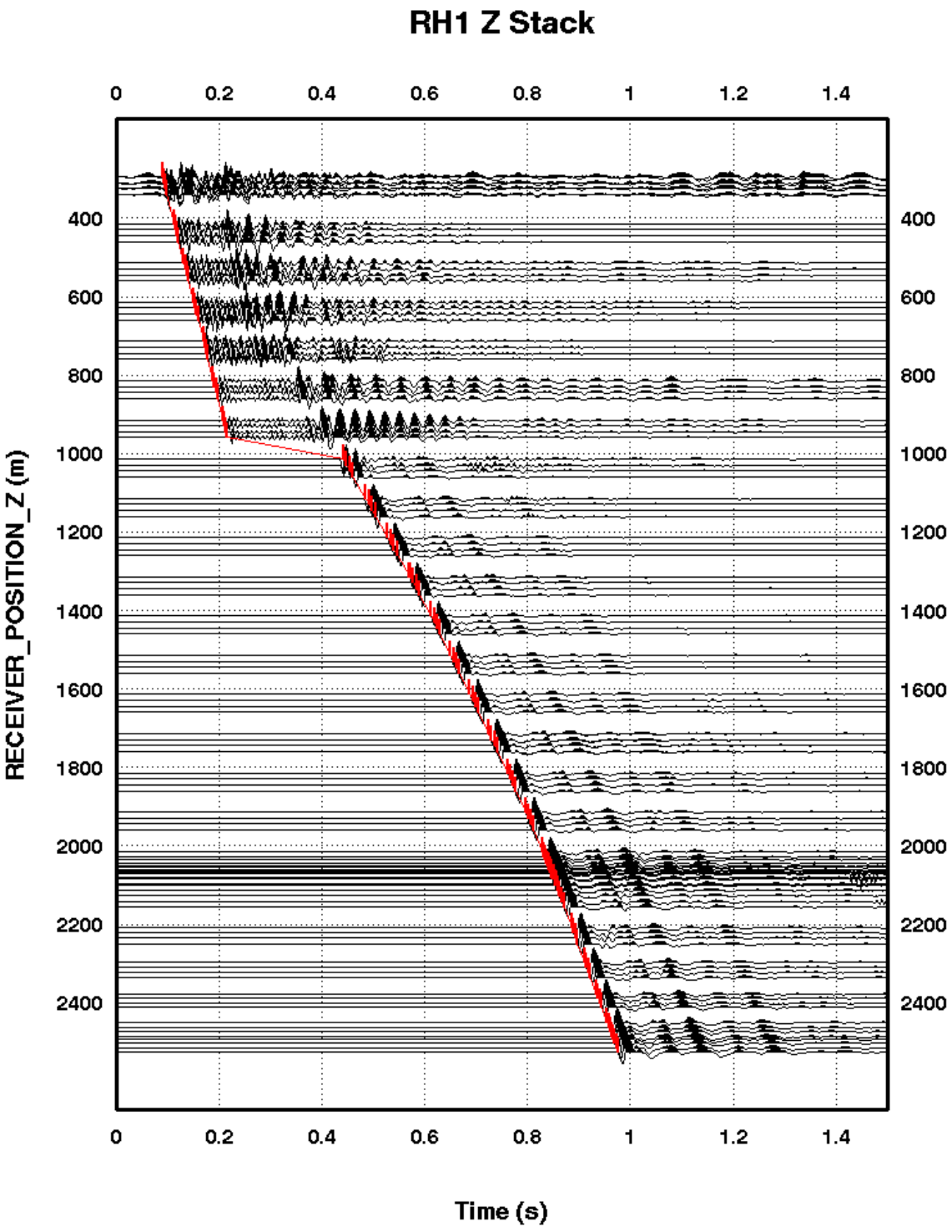


Figure 3a. Rockhopper-1 VSP: Z Component Stack

(Trace Normalised)

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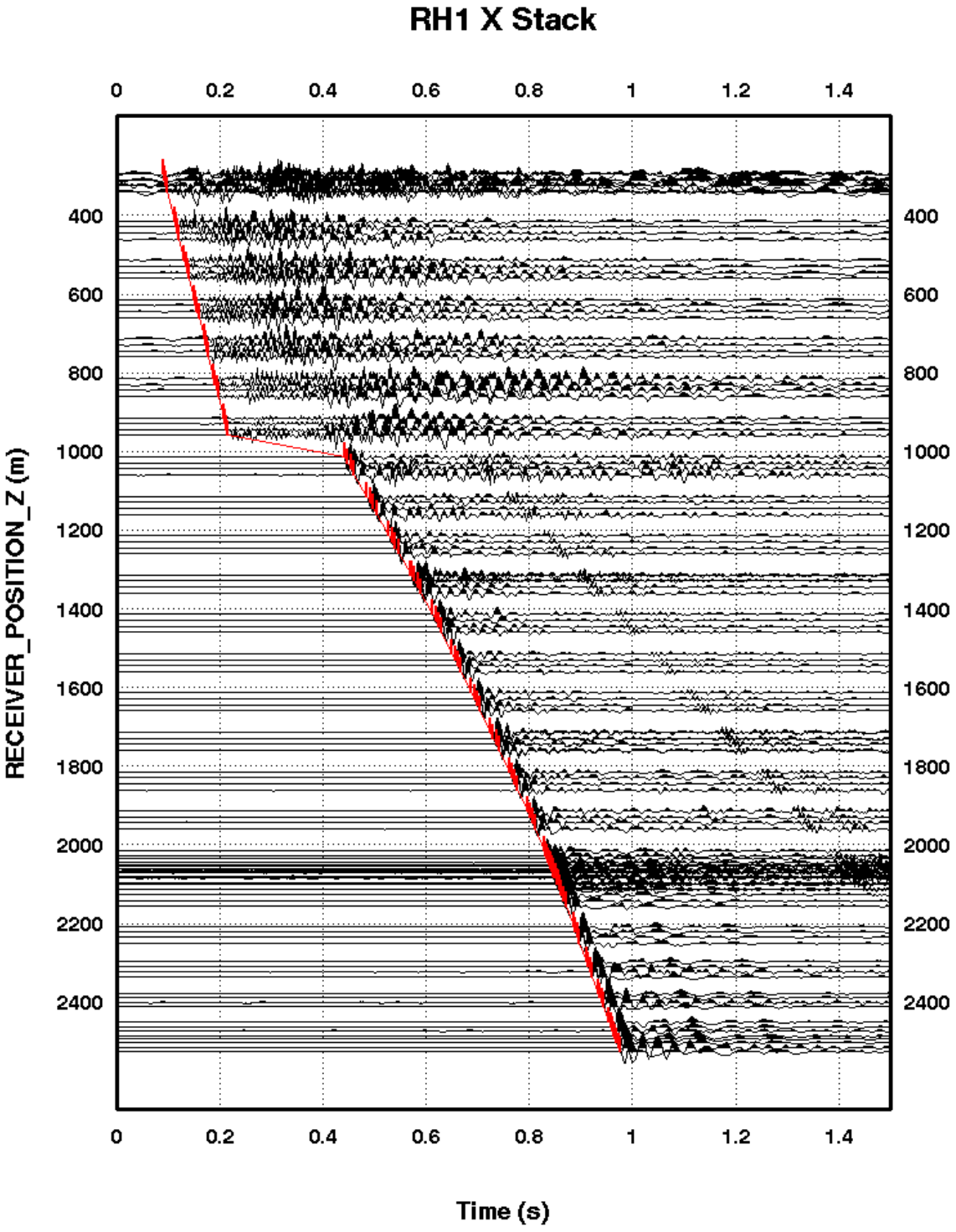


Figure 3b. Rockhopper-1 VSP: X Component Stack

(Trace Normalised)

Schlumberger Public

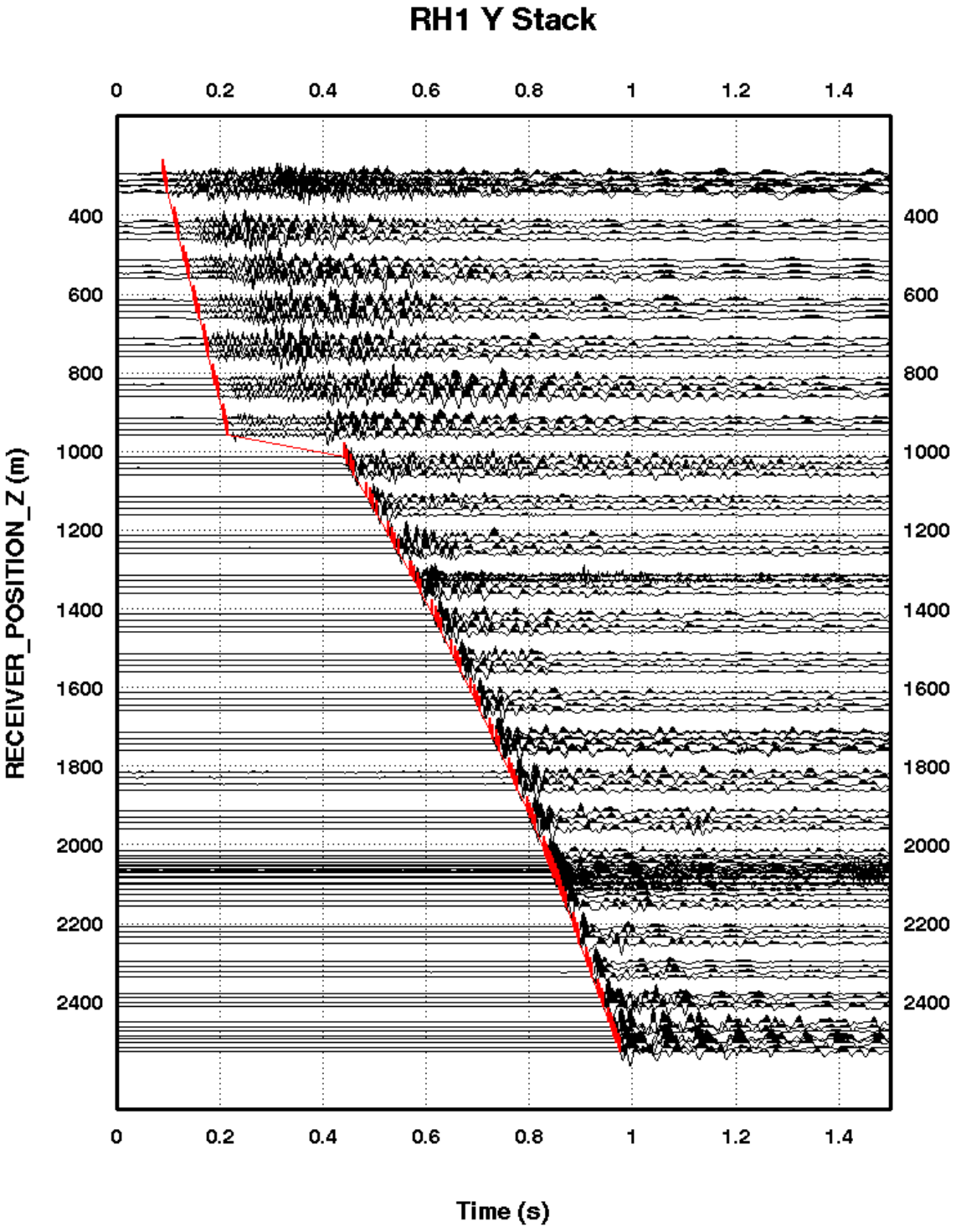


Figure 3c. Rockhopper-1 VSP: Y Component Stack

(Trace Normalised)

Schlumberger Public

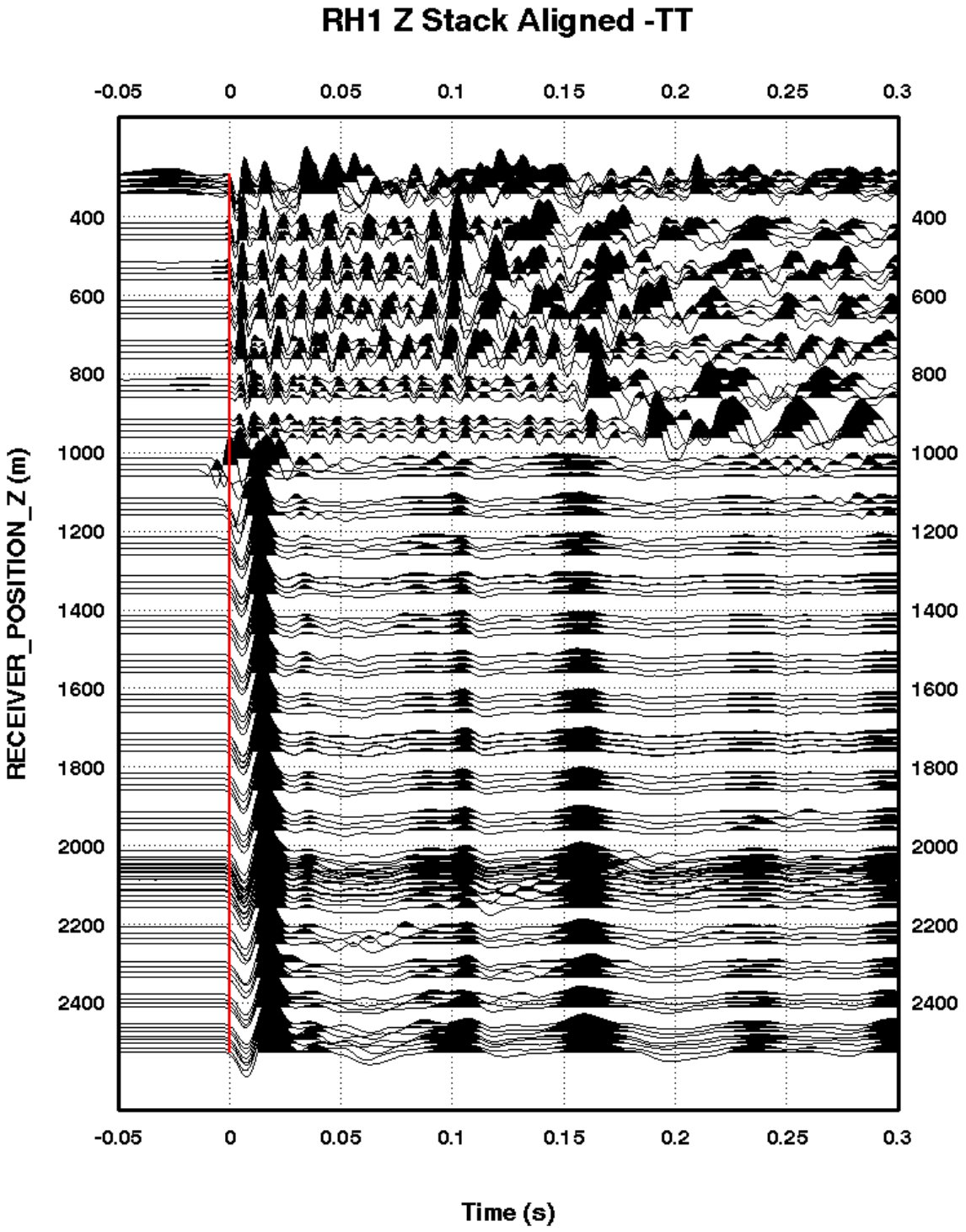


Figure 3d. Rockhopper-1 VSP: Z Component Stack Aligned -TT

(Trace Normalised)

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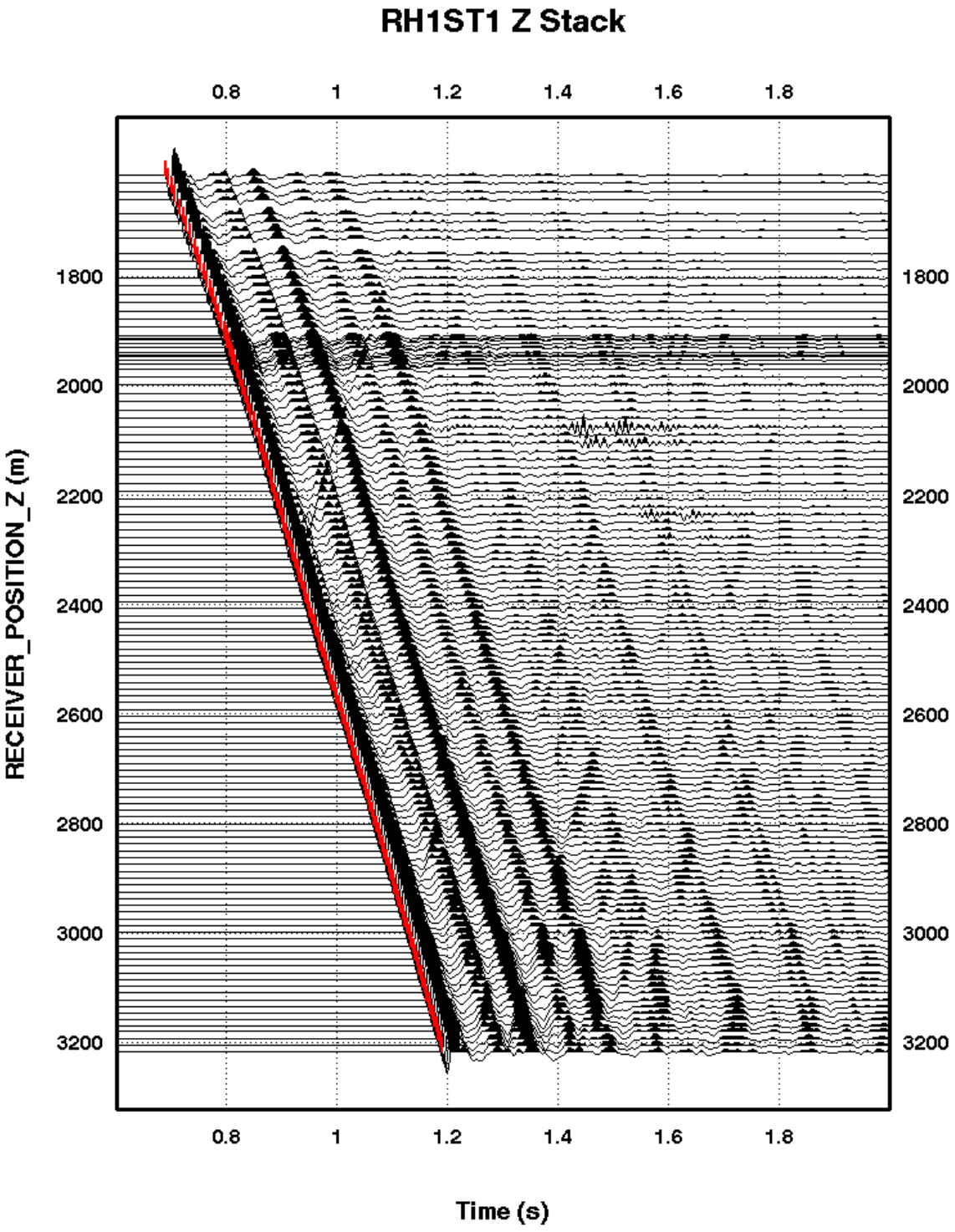


Figure 4a. Rockhopper-1 ST1 VSP: Z Component Stack

(Trace Normalised)

Schlumberger Public

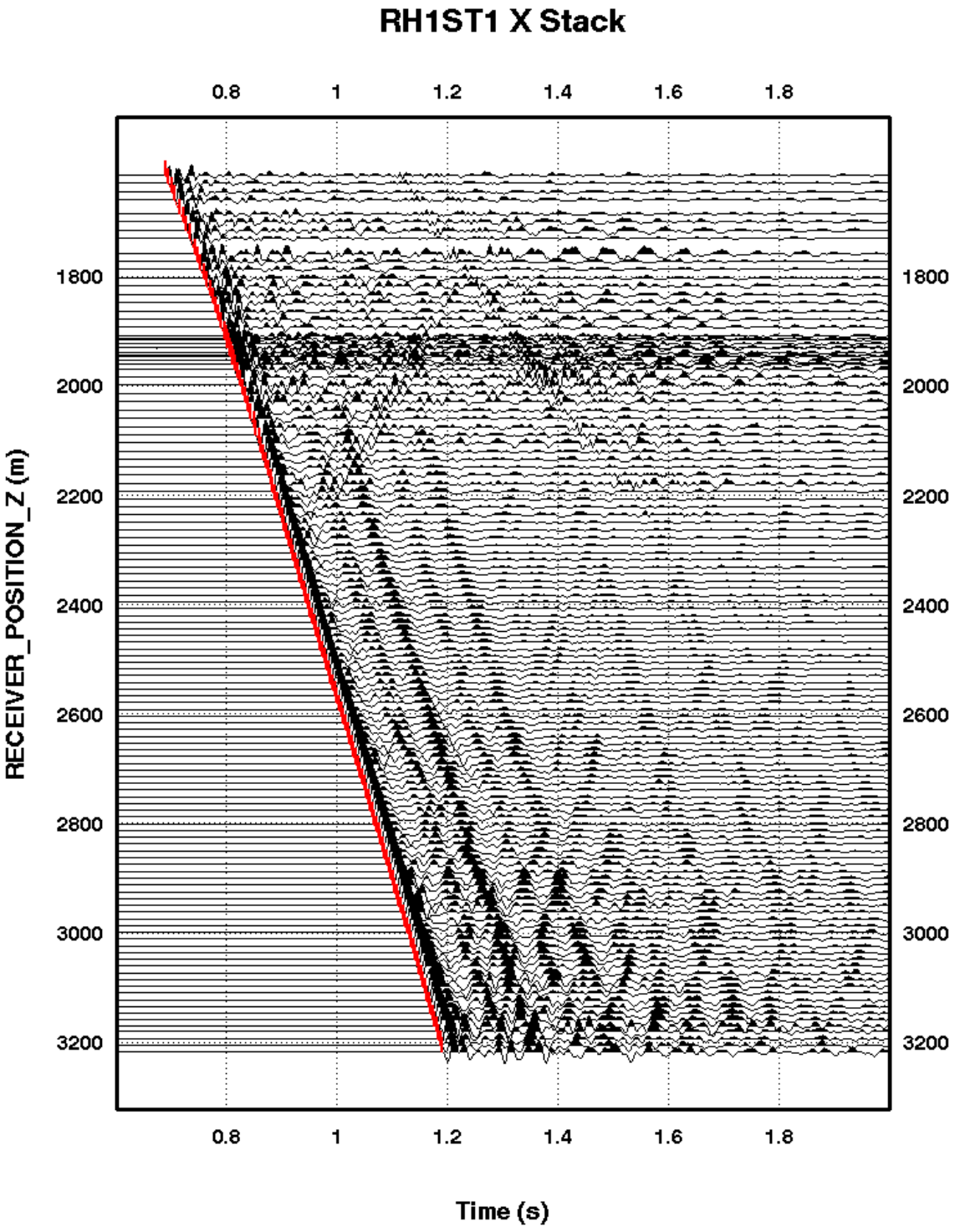


Figure 4b. Rockhopper-1 ST1 VSP: X Component Stack

(Trace Normalised)

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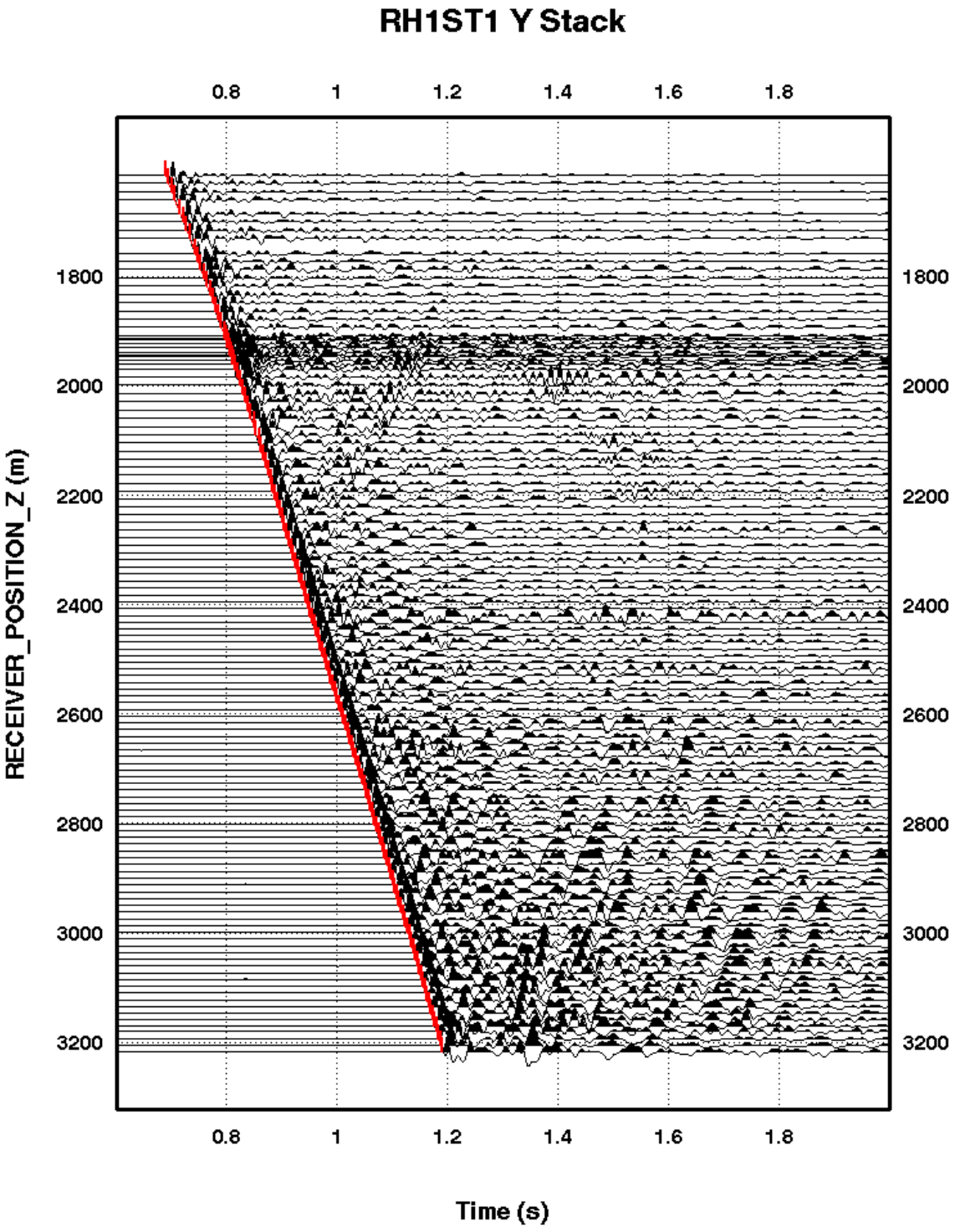


Figure 4c. Rockhopper-1 ST1 VSP: Y Component Stack

(Trace Normalised)

Schlumberger Public

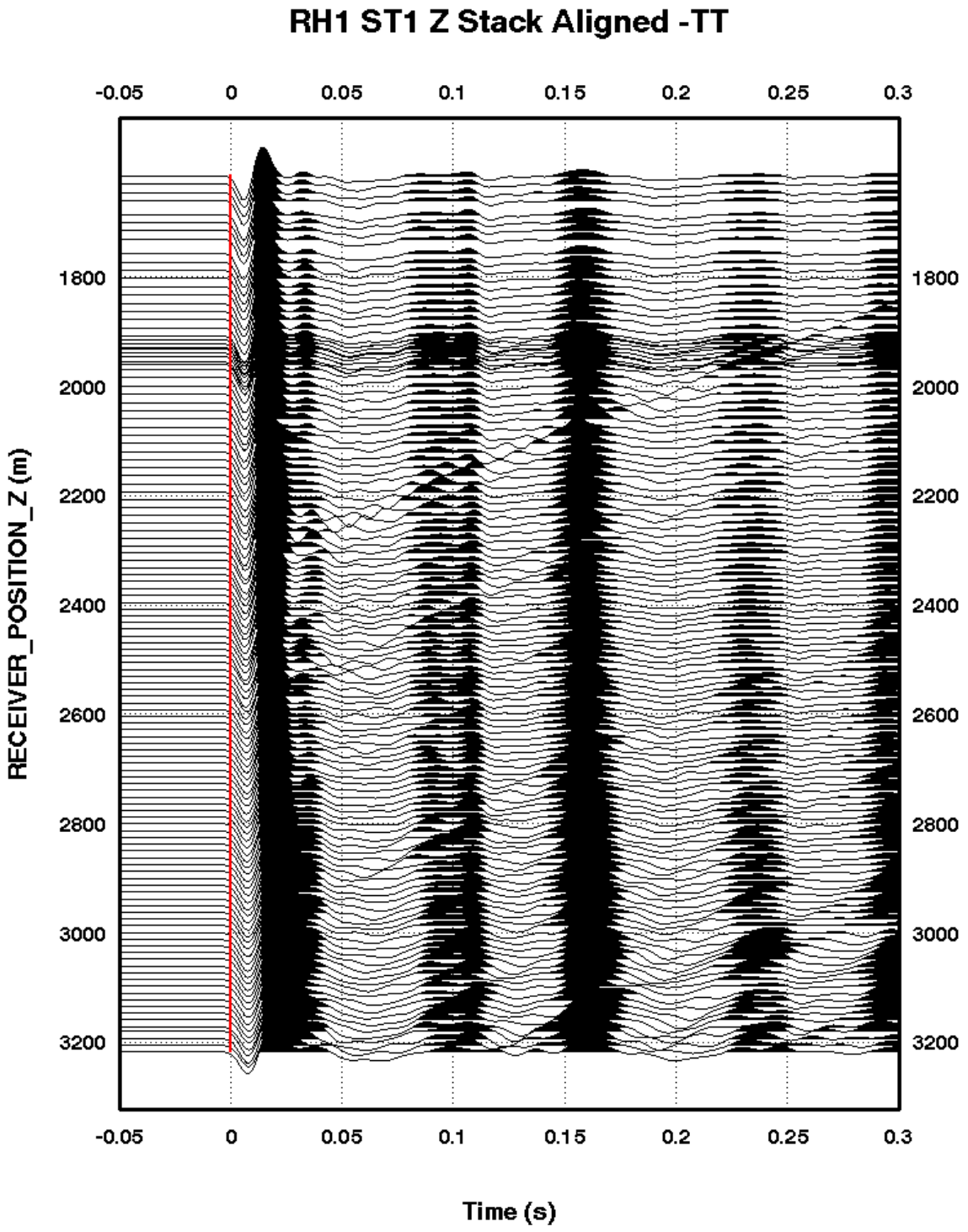


Figure 4d. Rockhopper-1 ST1 VSP: Z Component Stack Aligned -TT

(Trace Normalised)

Schlumberger Public

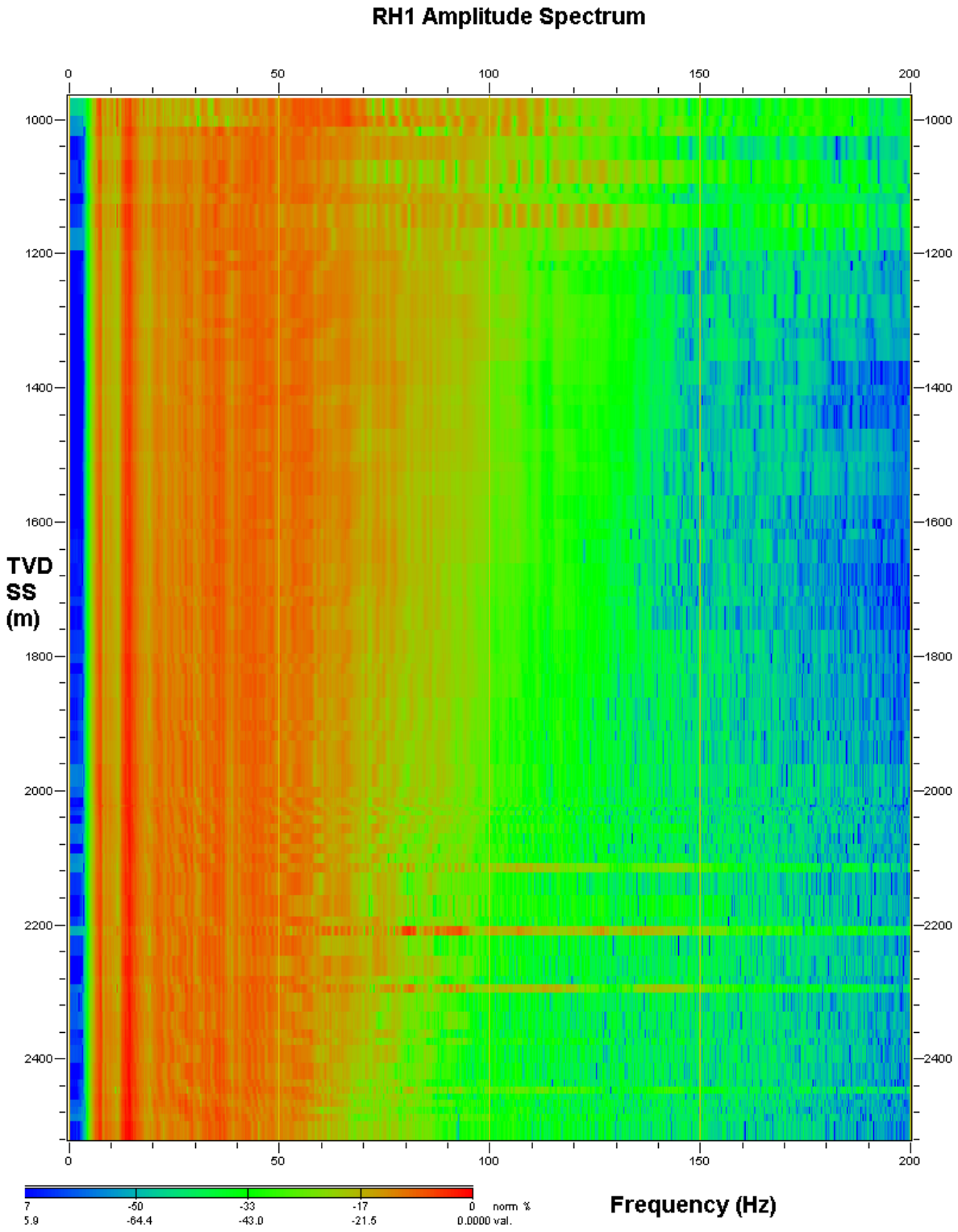


Figure 5a. Rockhopper-1 VSP: Amplitude Spectrum of Downhole Data

(Amplitude in dB)

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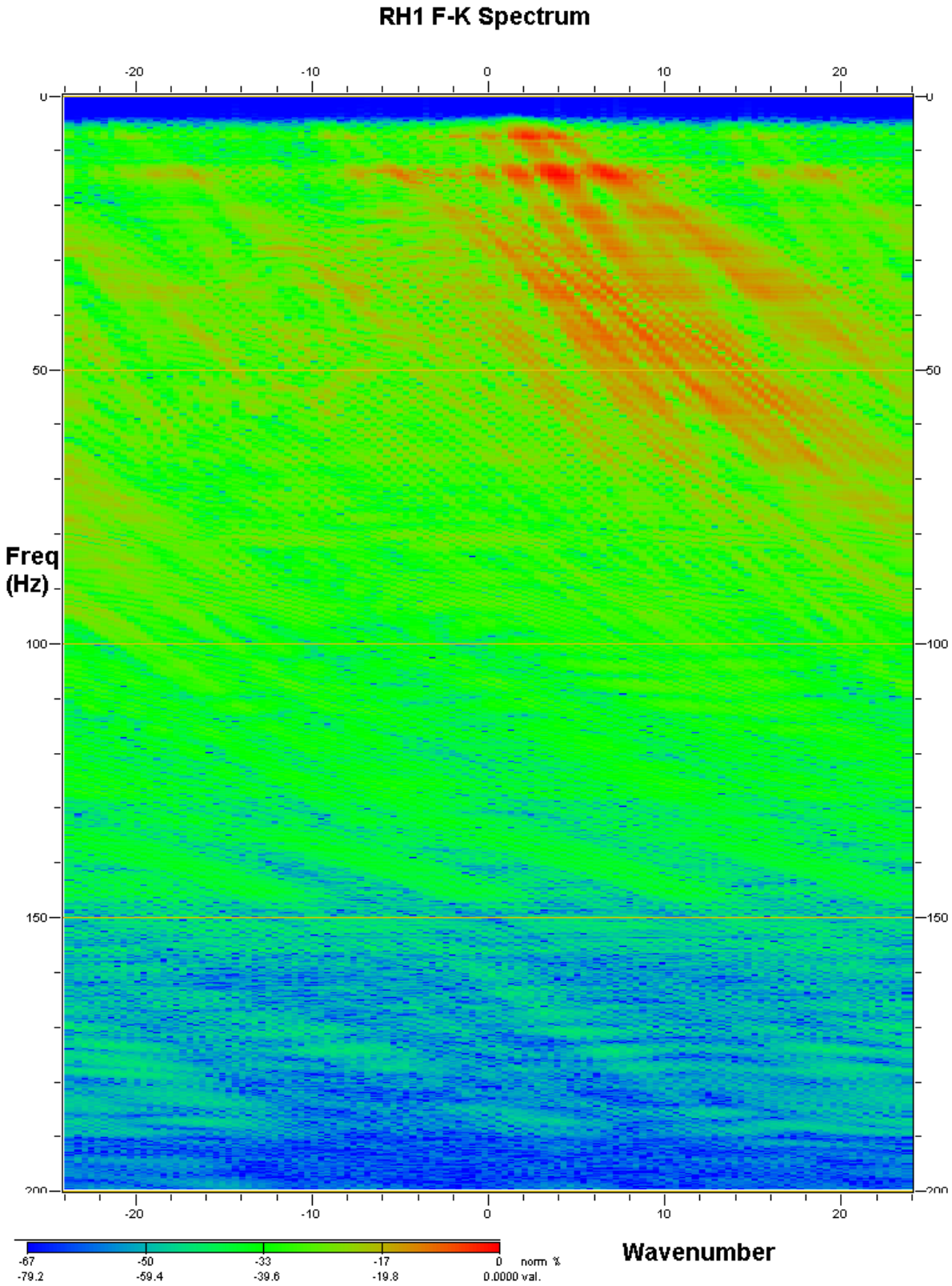


Figure 5b. Rockhopper-1 VSP: F-K Spectrum of Downhole Data

(Amplitude in dB)

Schlumberger Public

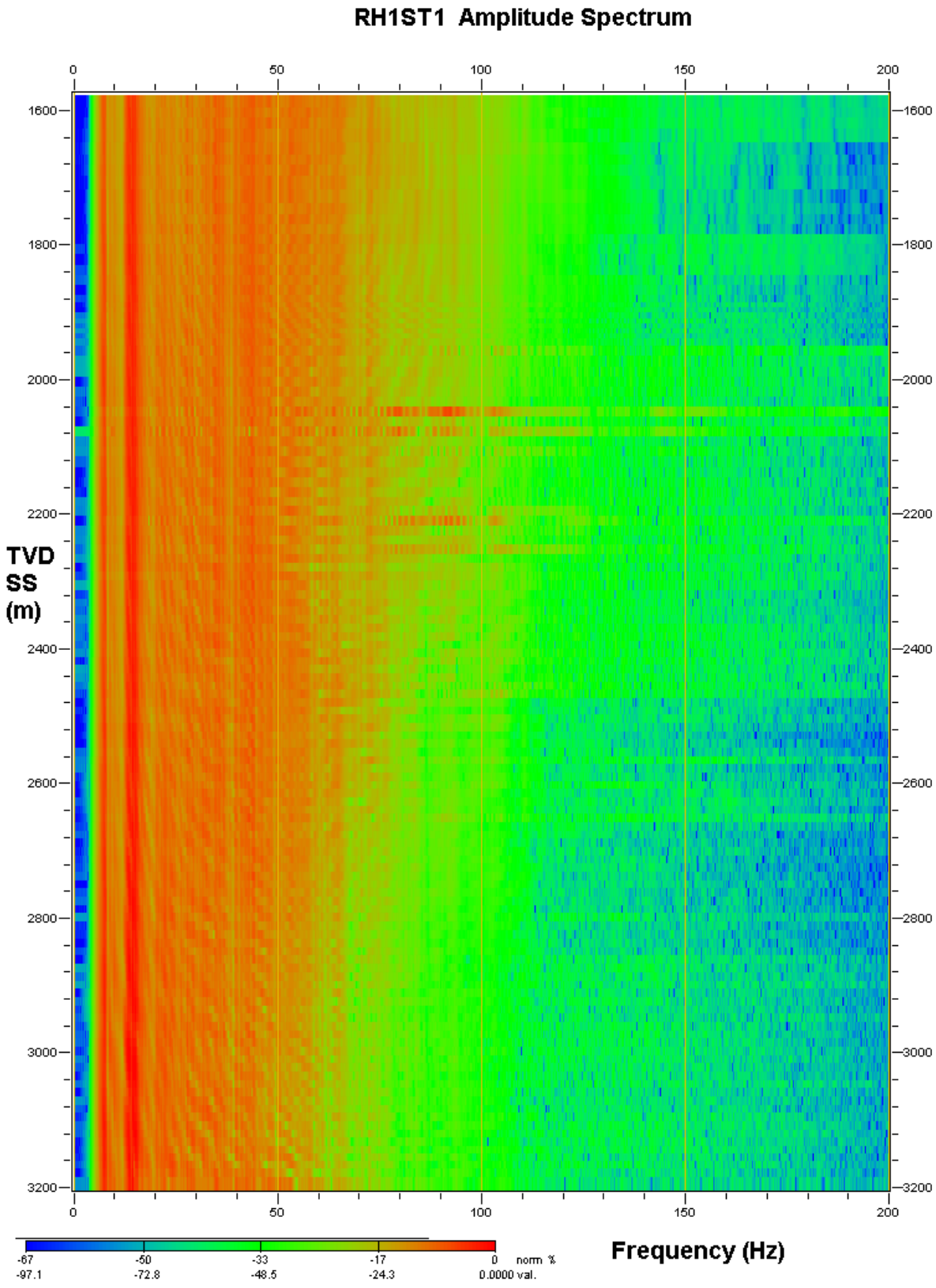


Figure 6a. Rockhopper-1 ST1 VSP: Amplitude Spectrum of Downhole Data

(Amplitude in dB)

Schlumberger Public

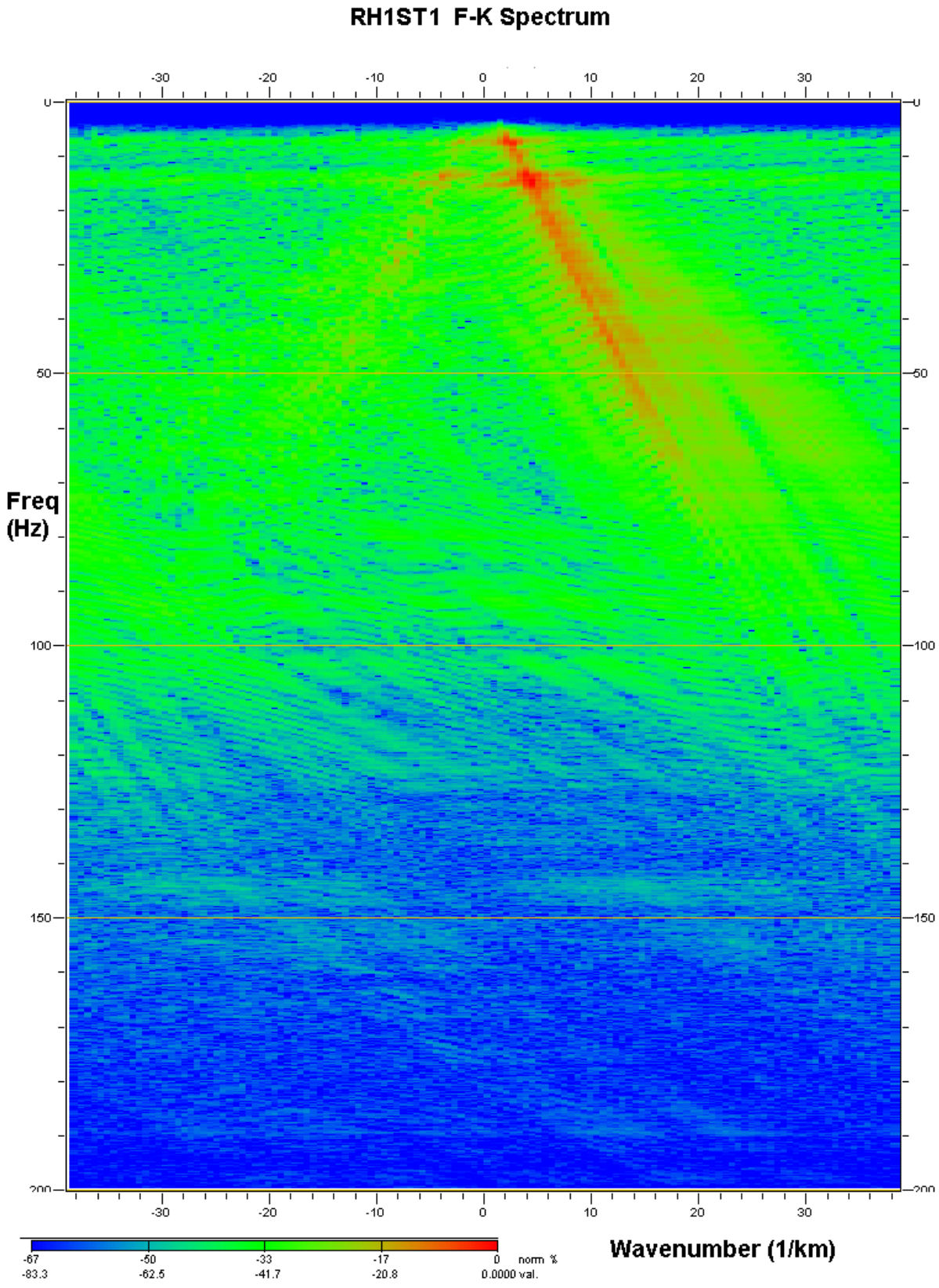


Figure 6b. Rockhopper-1 ST1 VSP: F-K Spectrum of Downhole Data

(Amplitude in dB)

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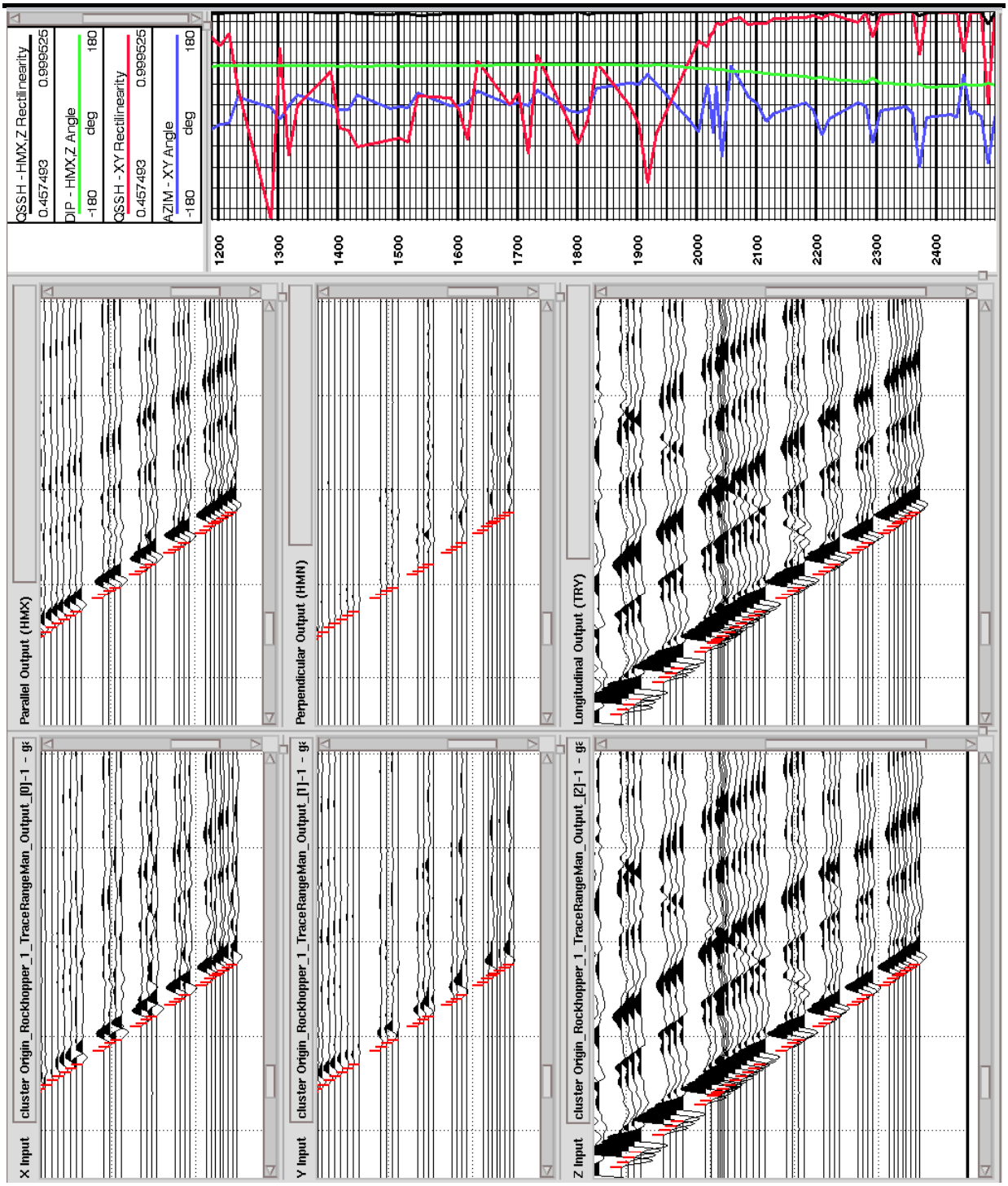


Figure 7a. Rockhopper-1 VSP: Example 3C Rotation

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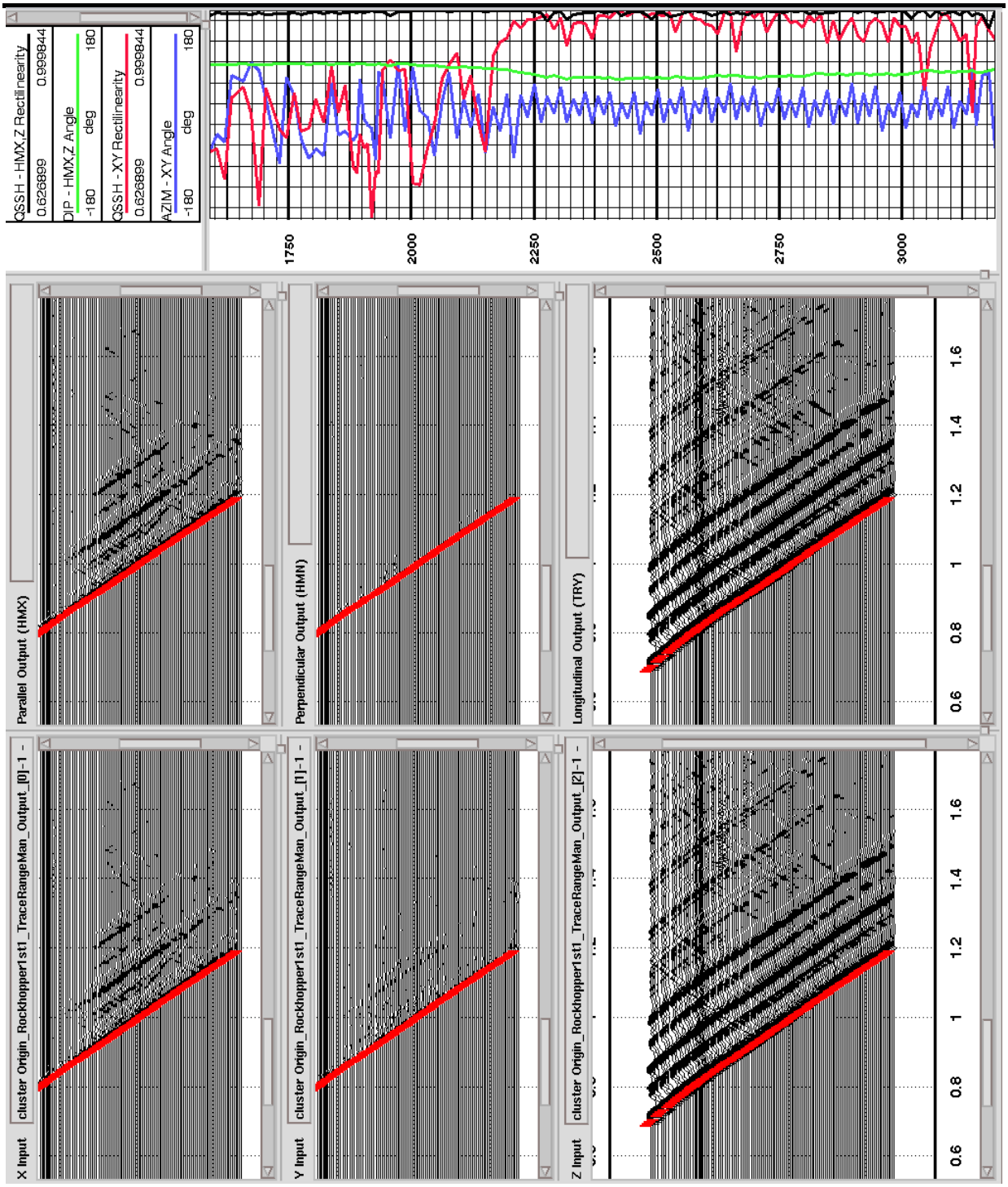


Figure 7b. Rockhopper-1 ST1 VSP: Example 3C Rotation

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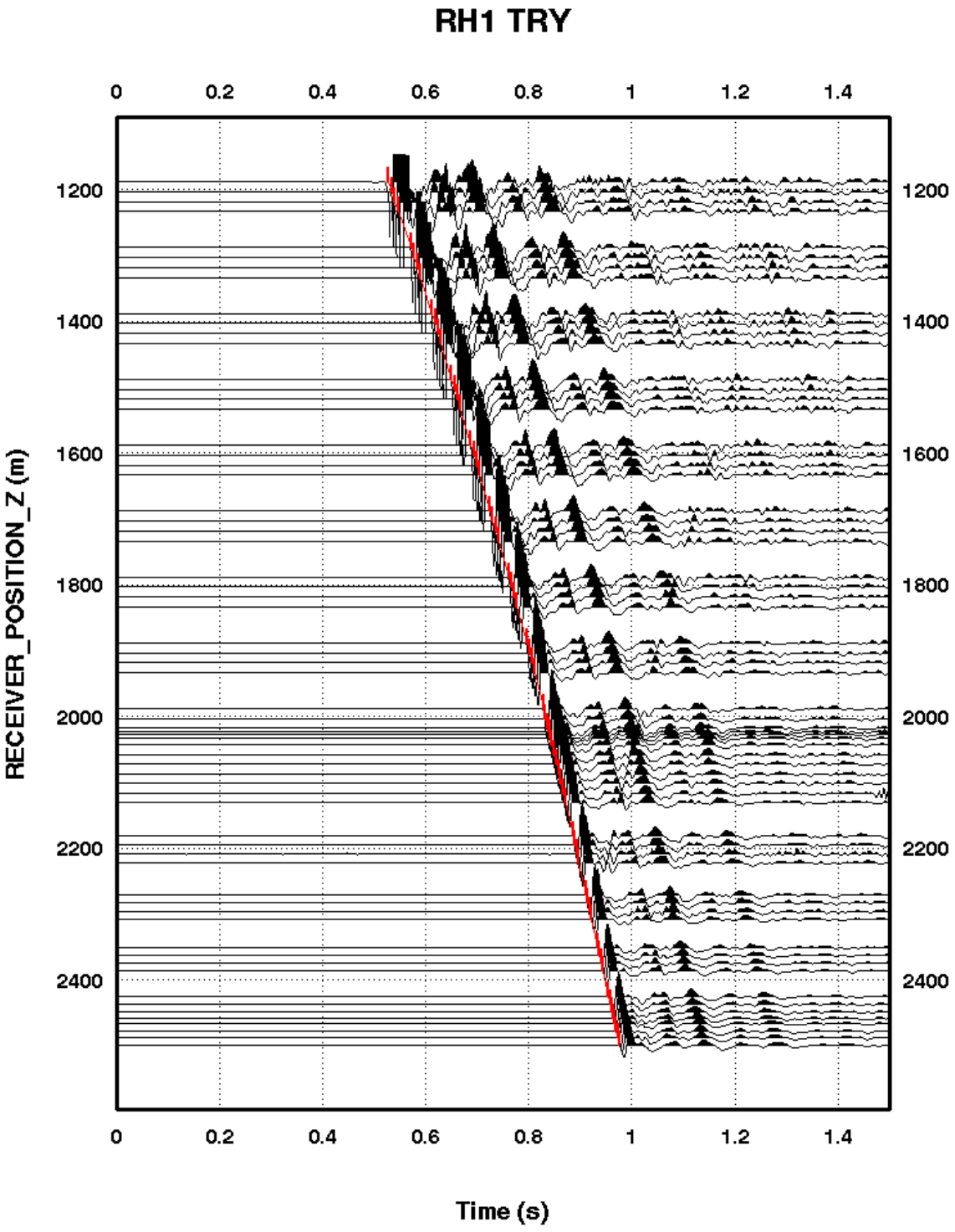


Figure 8a. Rockhopper-1 VSP: TRY Rotated Component

(Gather Normalised)

Schlumberger Public

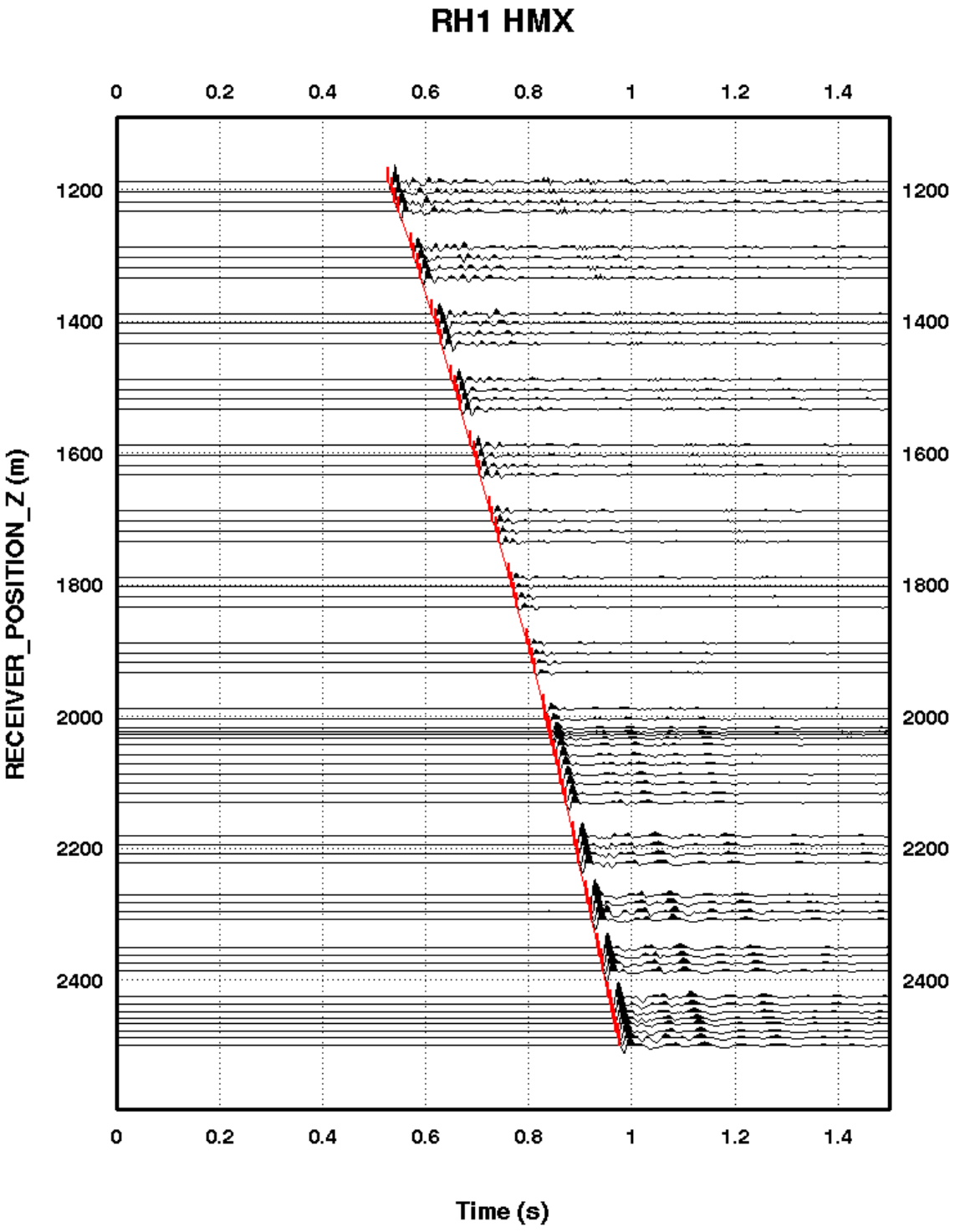


Figure 8b. Rockhopper-1 VSP: HMX Rotated Component

(Gather Normalised)

Schlumberger Public

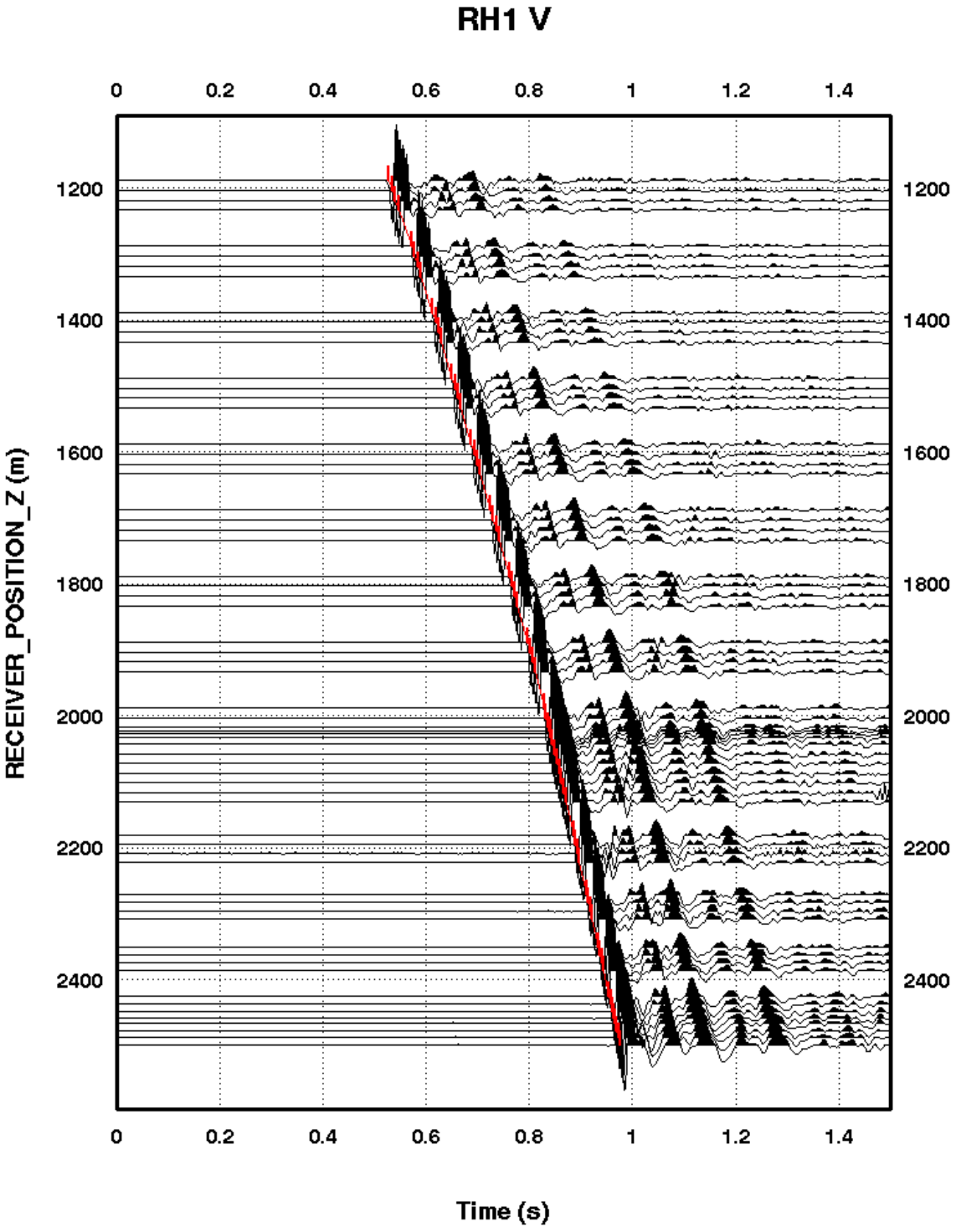


Figure 8c. Rockhopper-1 VSP: V, Rotated True Vertical Component

(Trace Normalised)

Schlumberger Public

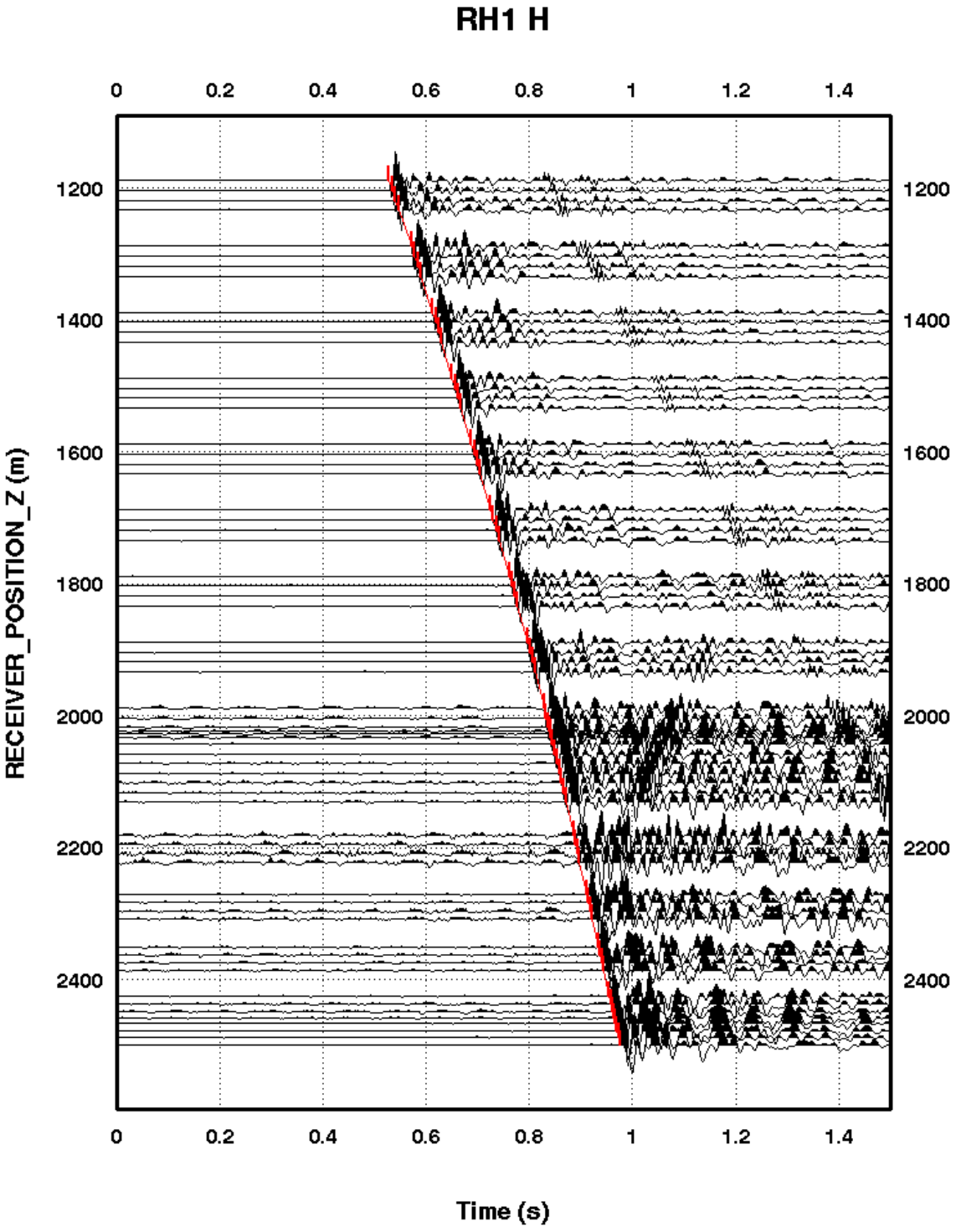


Figure 8d. Rockhopper-1 VSP: H, Rotated True Inline Horizontal Component

(Trace Normalised)

Schlumberger Public

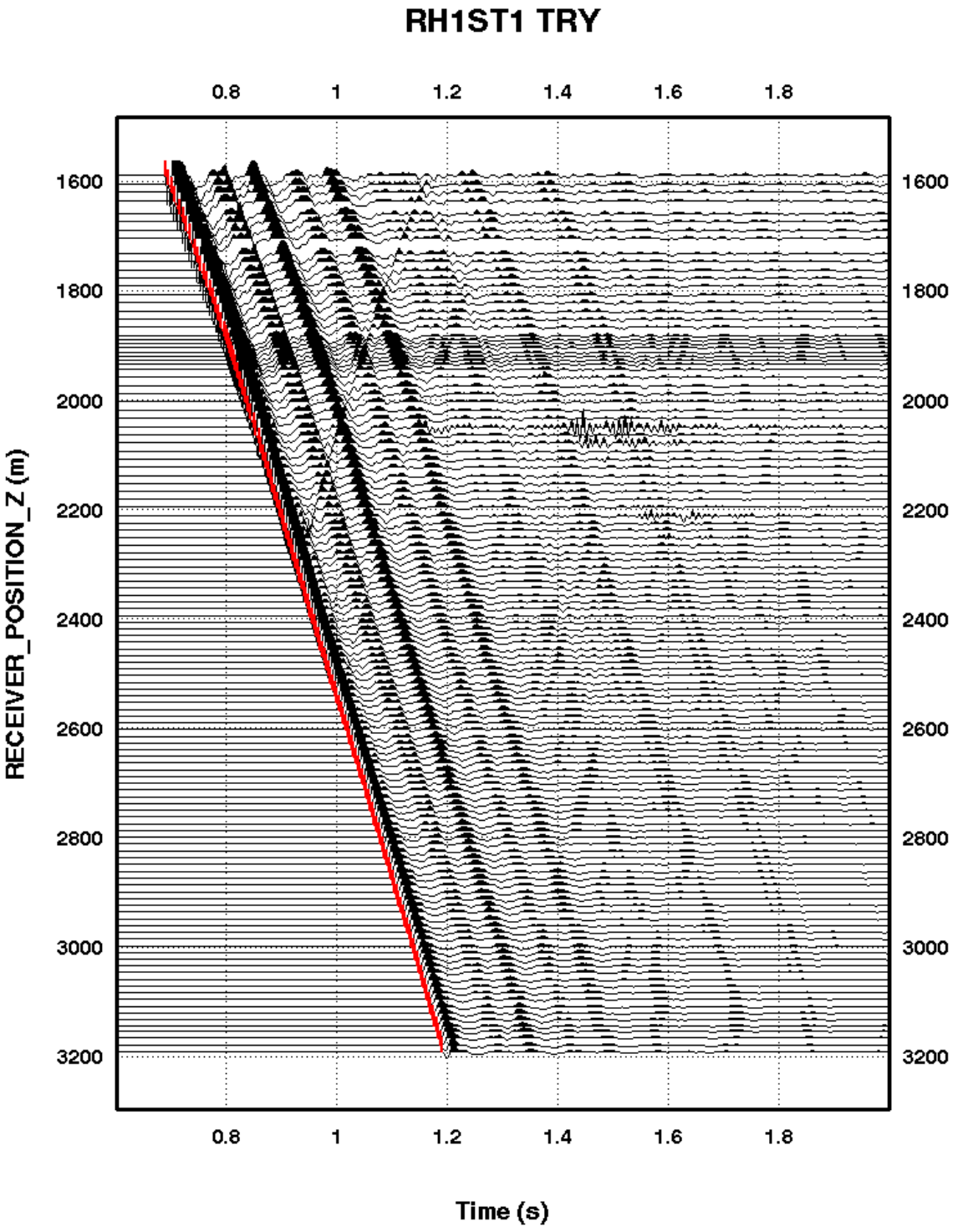


Figure 9a. Rockhopper-1 ST1 VSP: TRY Rotated Component

(Gather Normalised)

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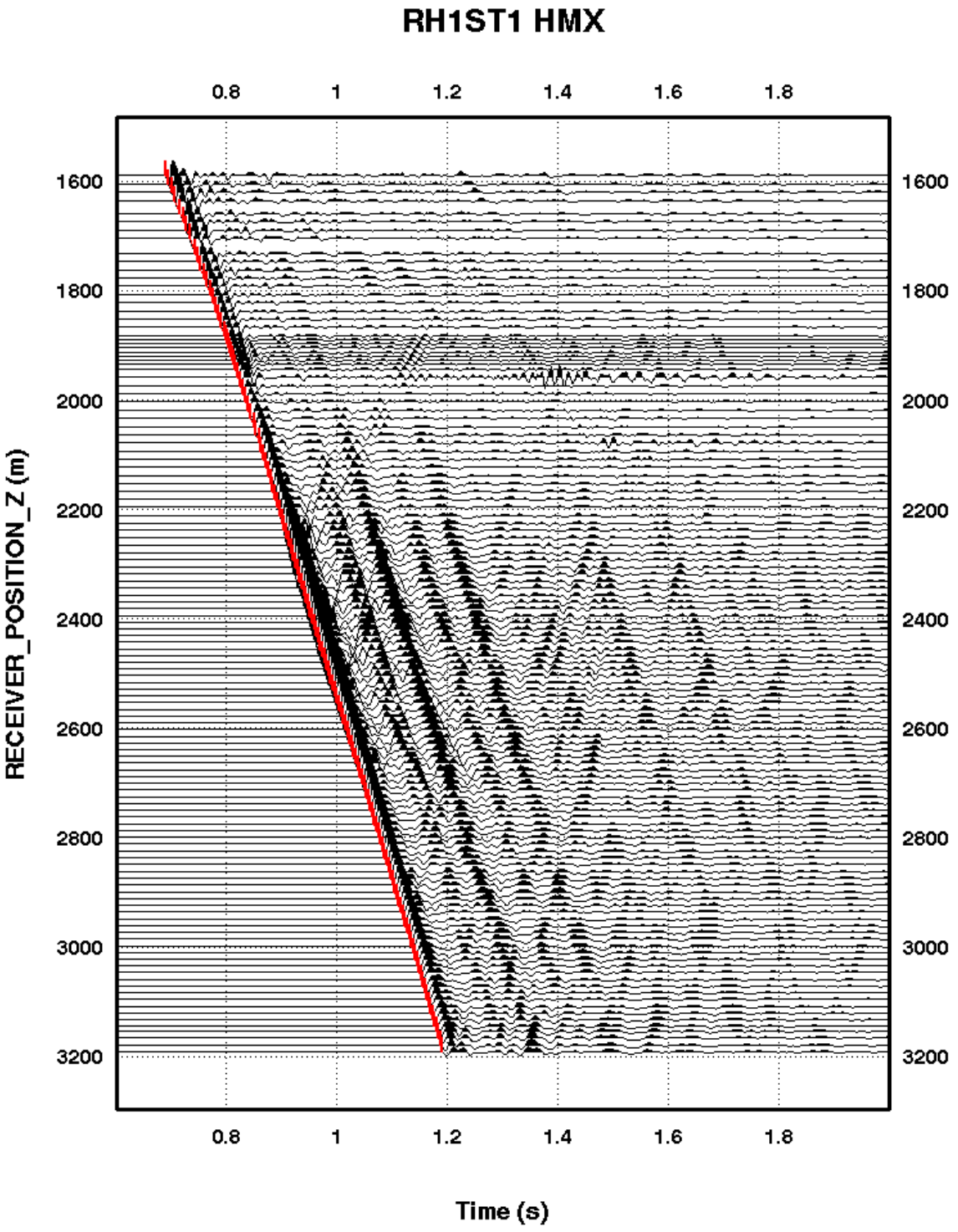


Figure 9b. Rockhopper-1 ST1 VSP: HMX Rotated Component

(Gather Normalised)

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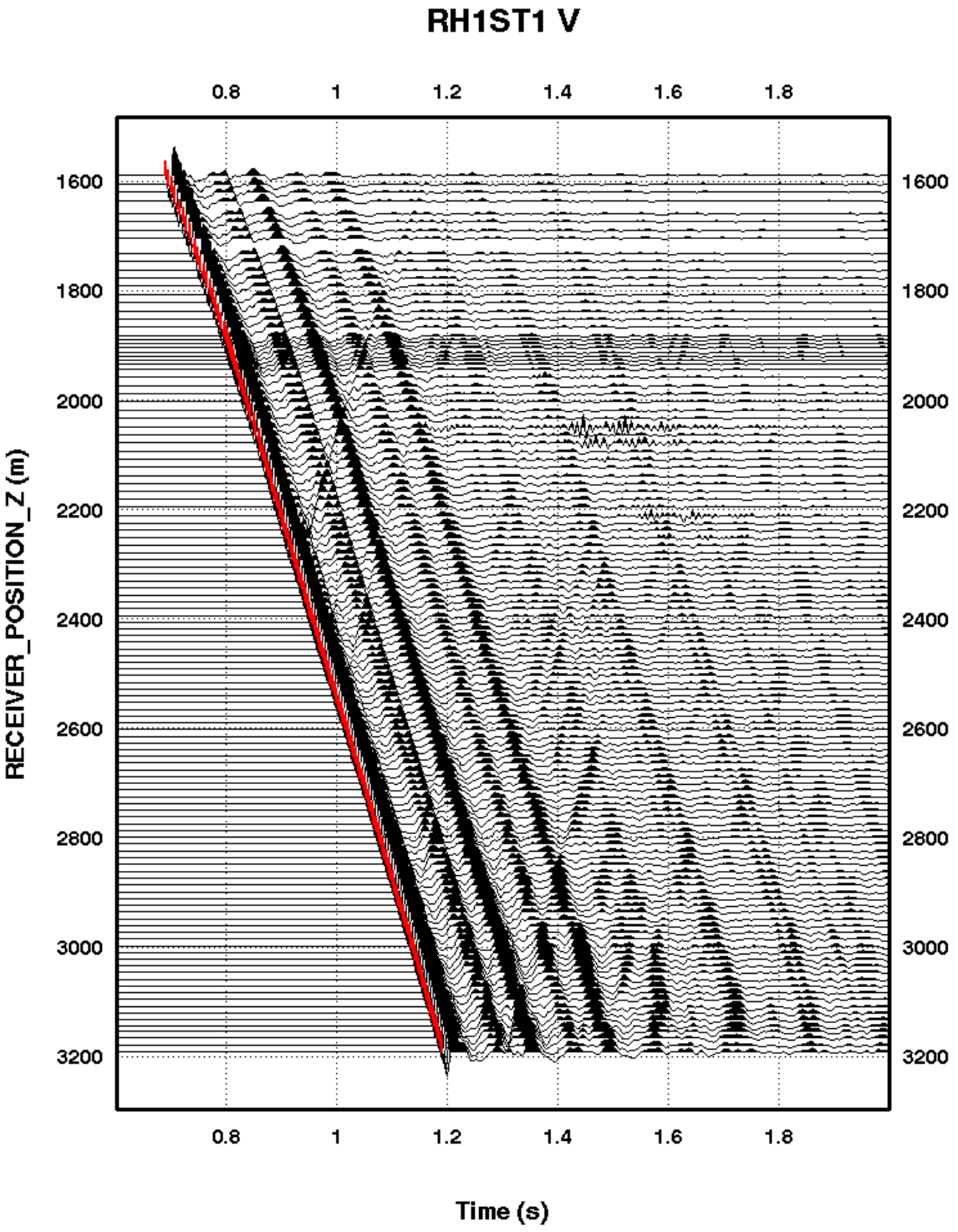


Figure 9c. Rockhopper-1 ST1 VSP: V, Rotated True Vertical Component

(Trace Normalised)

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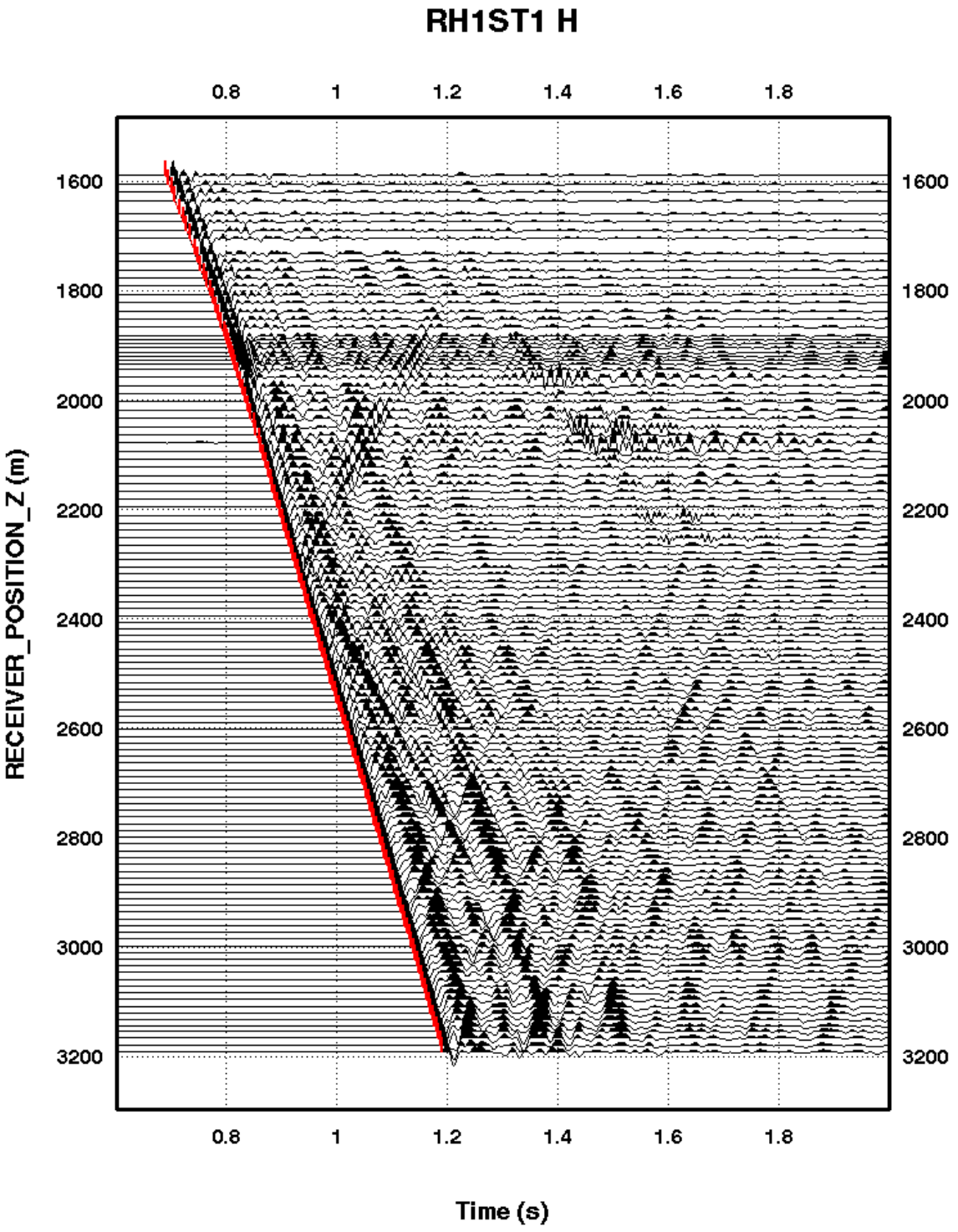
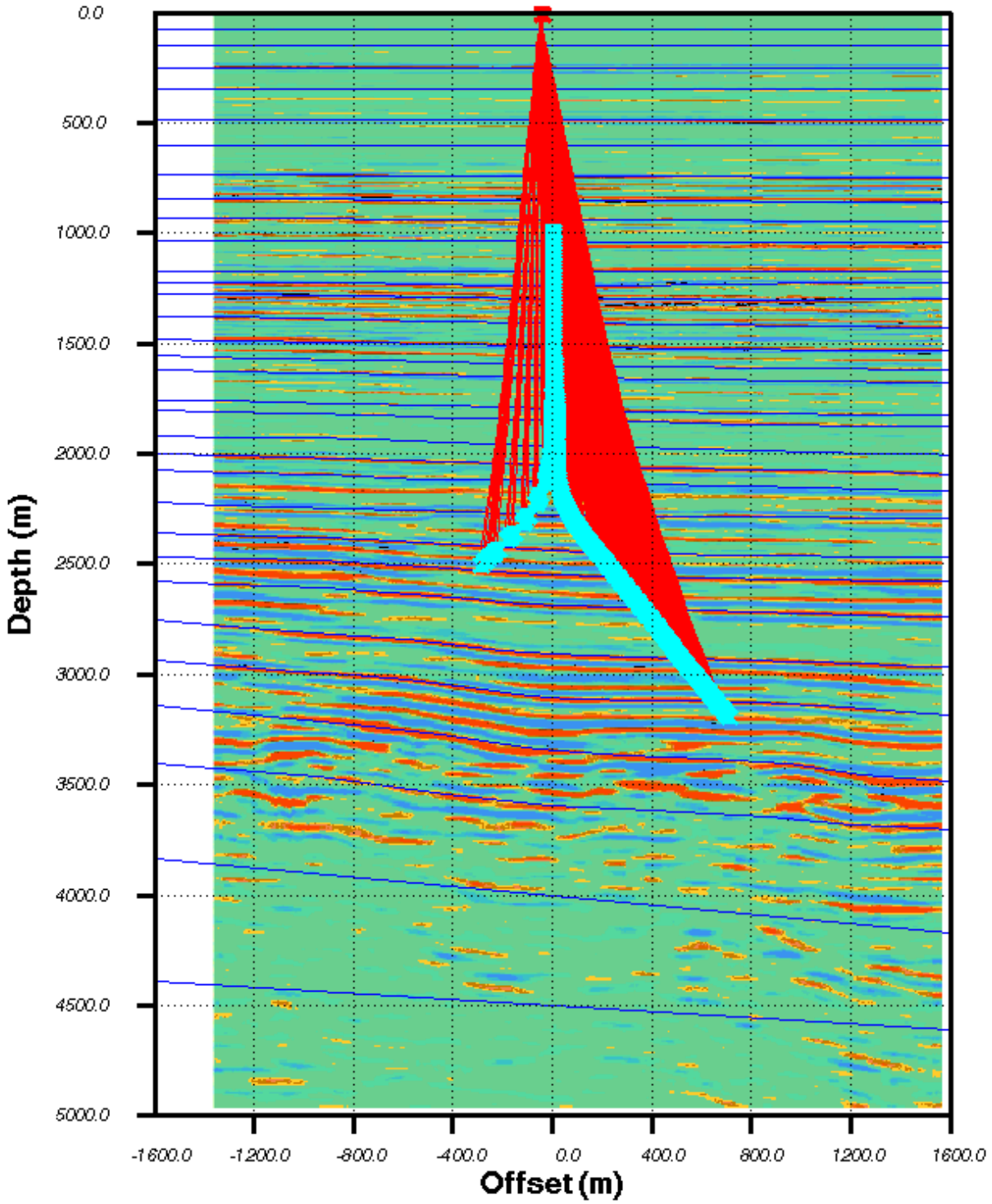


Figure 9d. Rockhopper-1 ST1 VSP: H, Rotated True Inline Horizontal Component

(Trace Normalised)

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Figure 10a. 2D Model Building: Surface Seismic Line

RH1 and RH1ST1 Receivers (cyan)
Down P Rays (red)

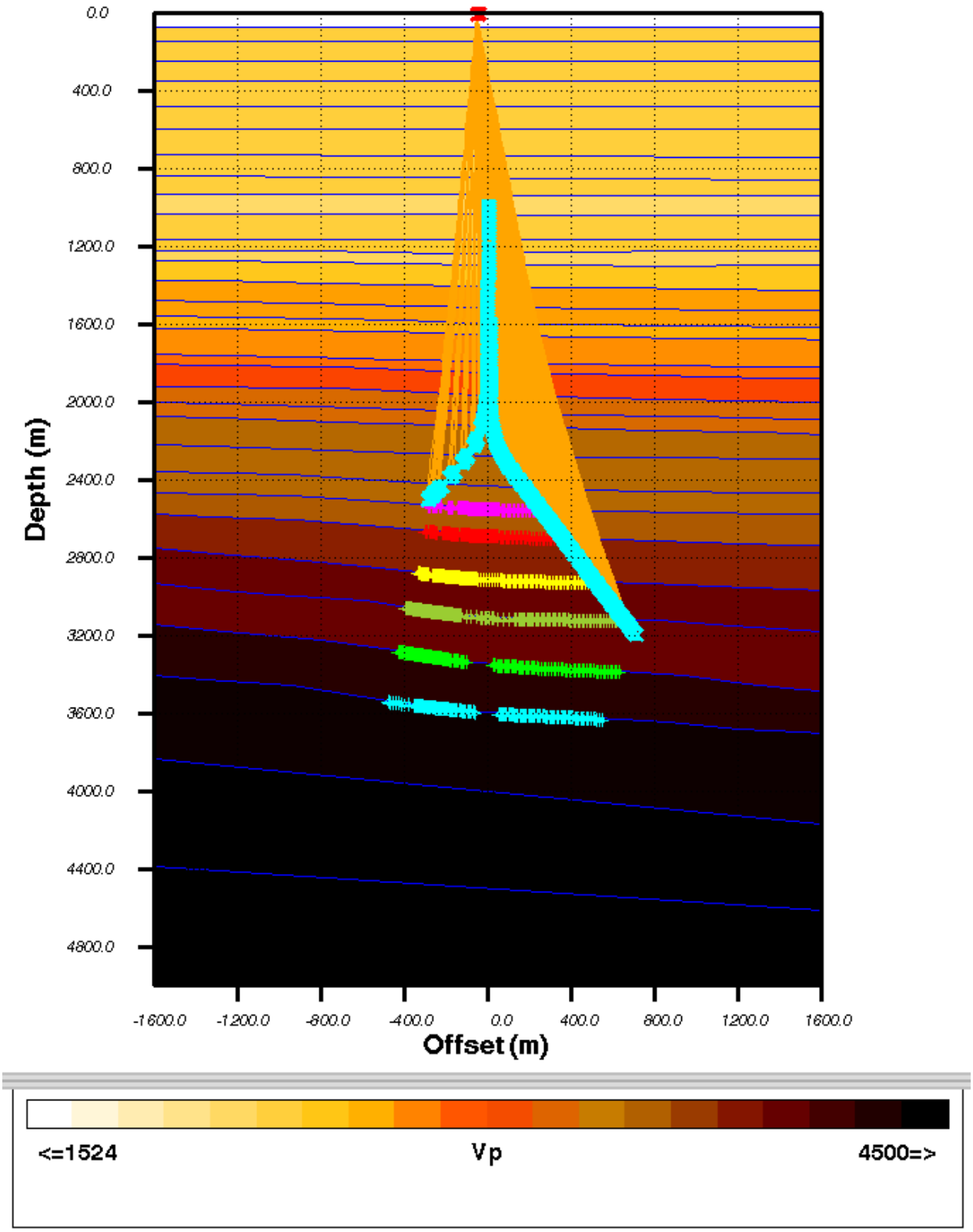


Figure 10b. 2D Model Building: Inverted Velocities

RH1 and RH1ST1 Receivers (cyan)
Down P Rays (orange)
Reflection Points (x)

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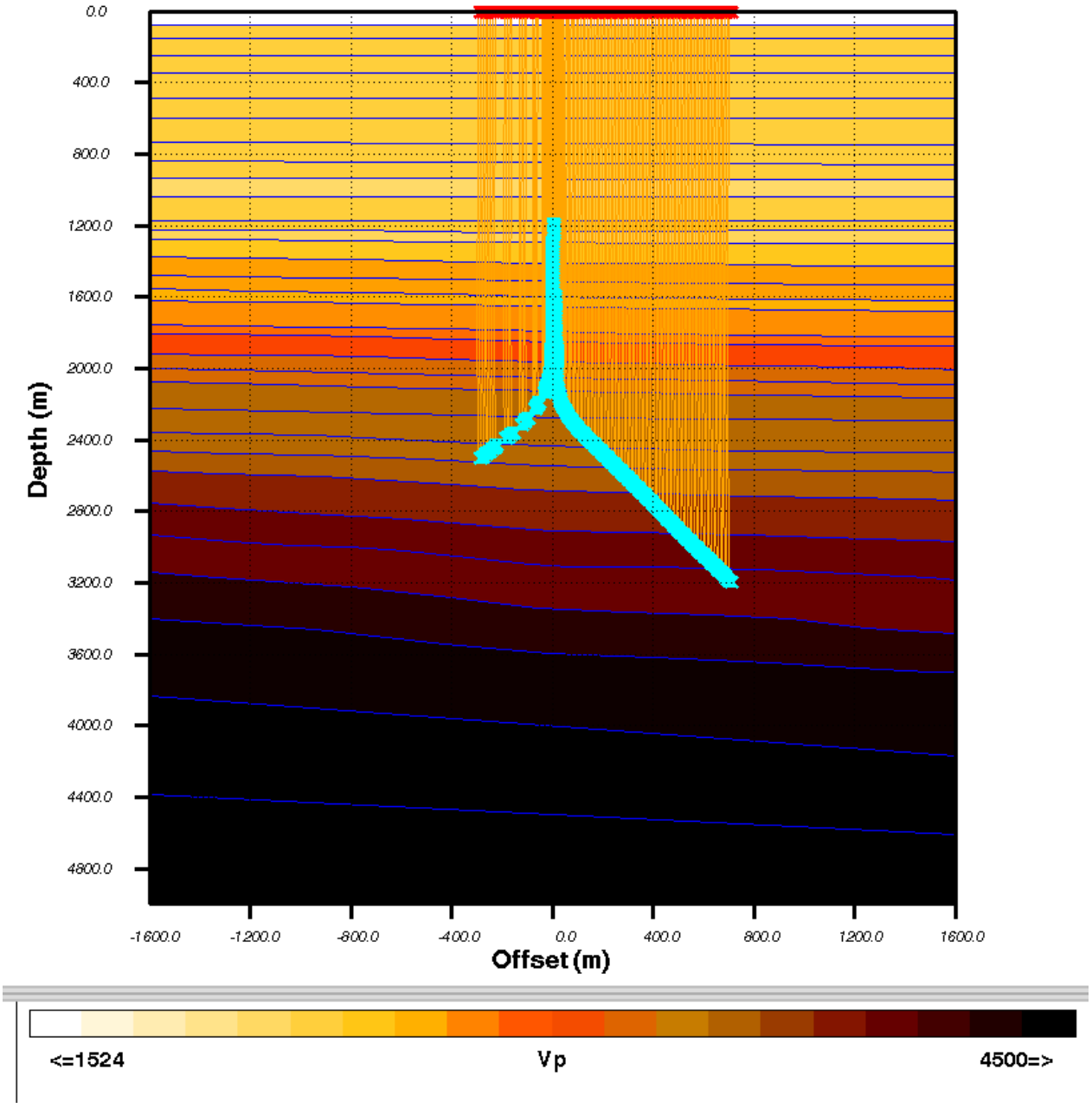


Figure 10c. 2D Model Building: Pseudo VIVSP

RH1 and RH1ST1 Receivers (cyan)
Down VIVSP P Rays (orange)

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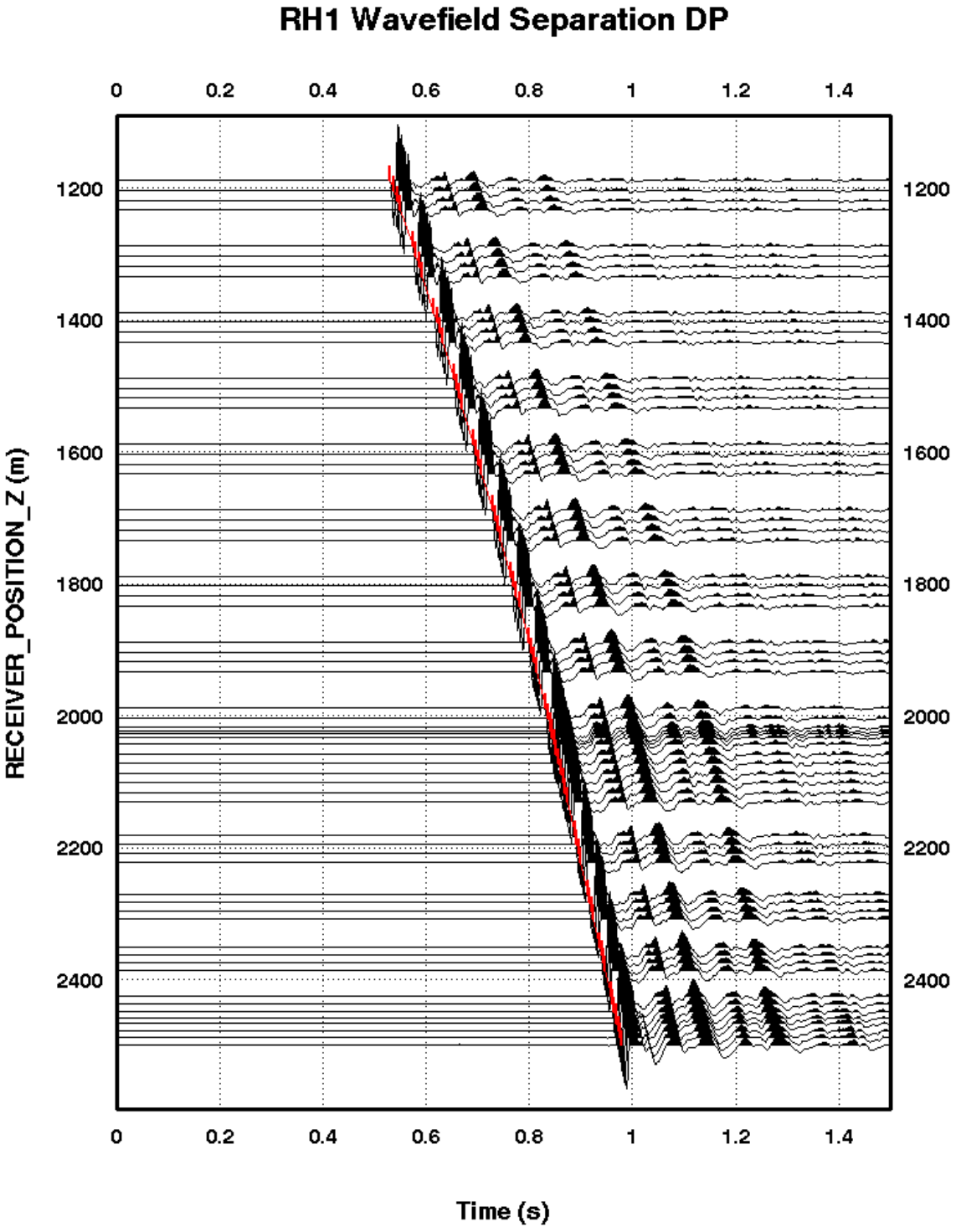


Figure 11a. Rockhopper-1 VSP: Down going P Wavefield after Wavefield Separation

(Trace Normalised)

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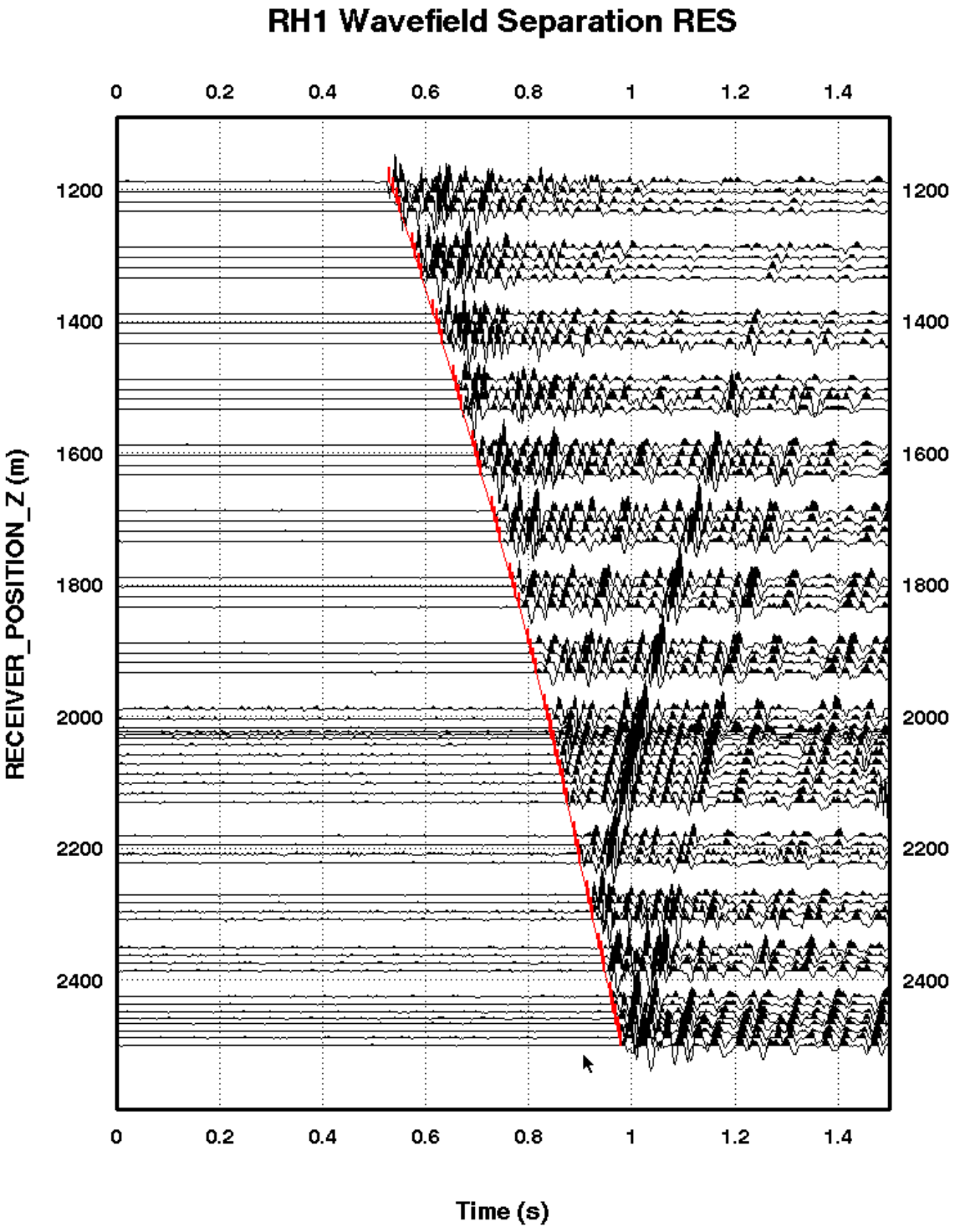


Figure 11b. Rockhopper-1 VSP: Up going P Wavefield after Wavefield Separation

(Trace Normalised)

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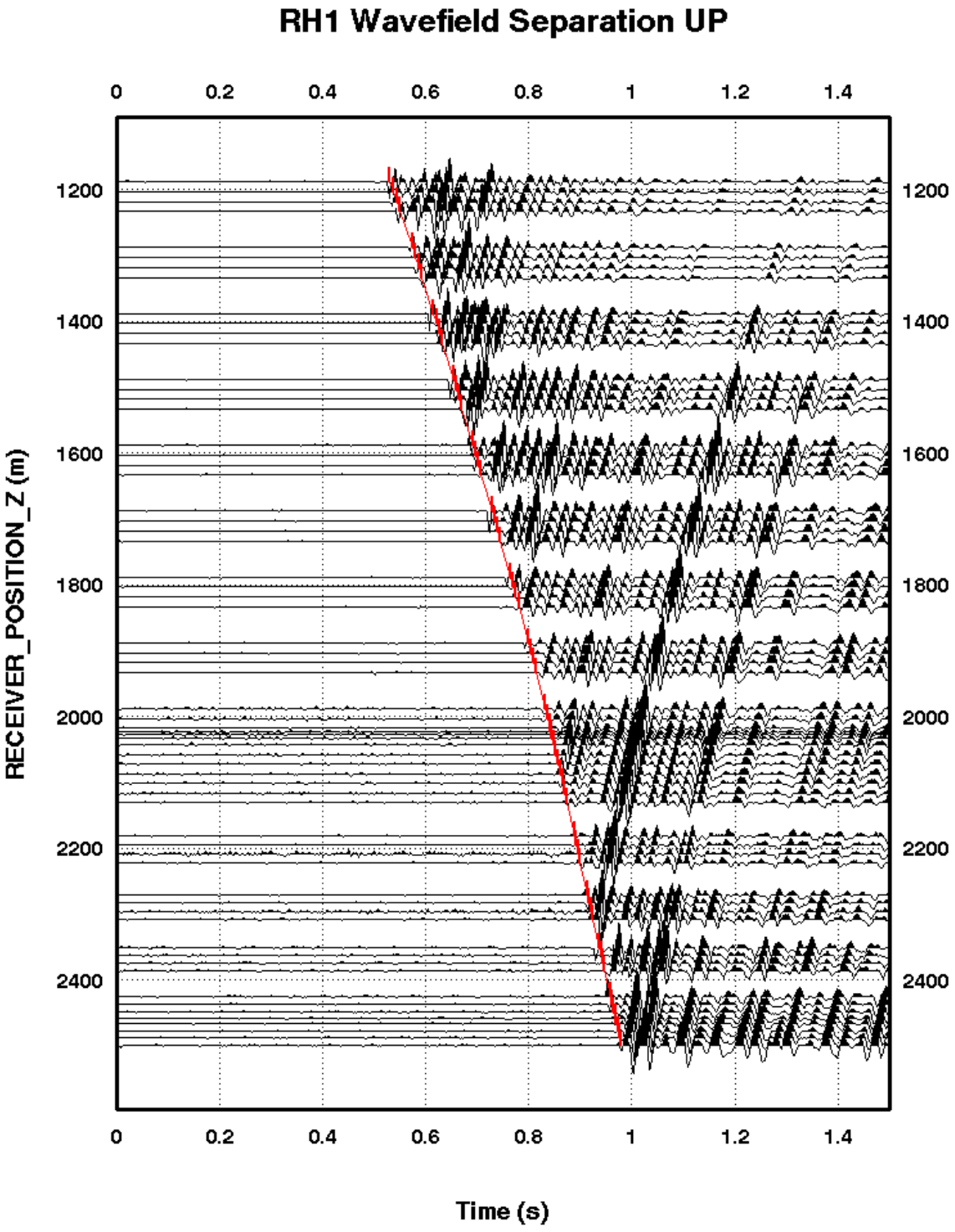


Figure 11d. Rockhopper-1 VSP: Enhanced Up going P Wavefield after Wavefield Separation

(Trace Normalised)

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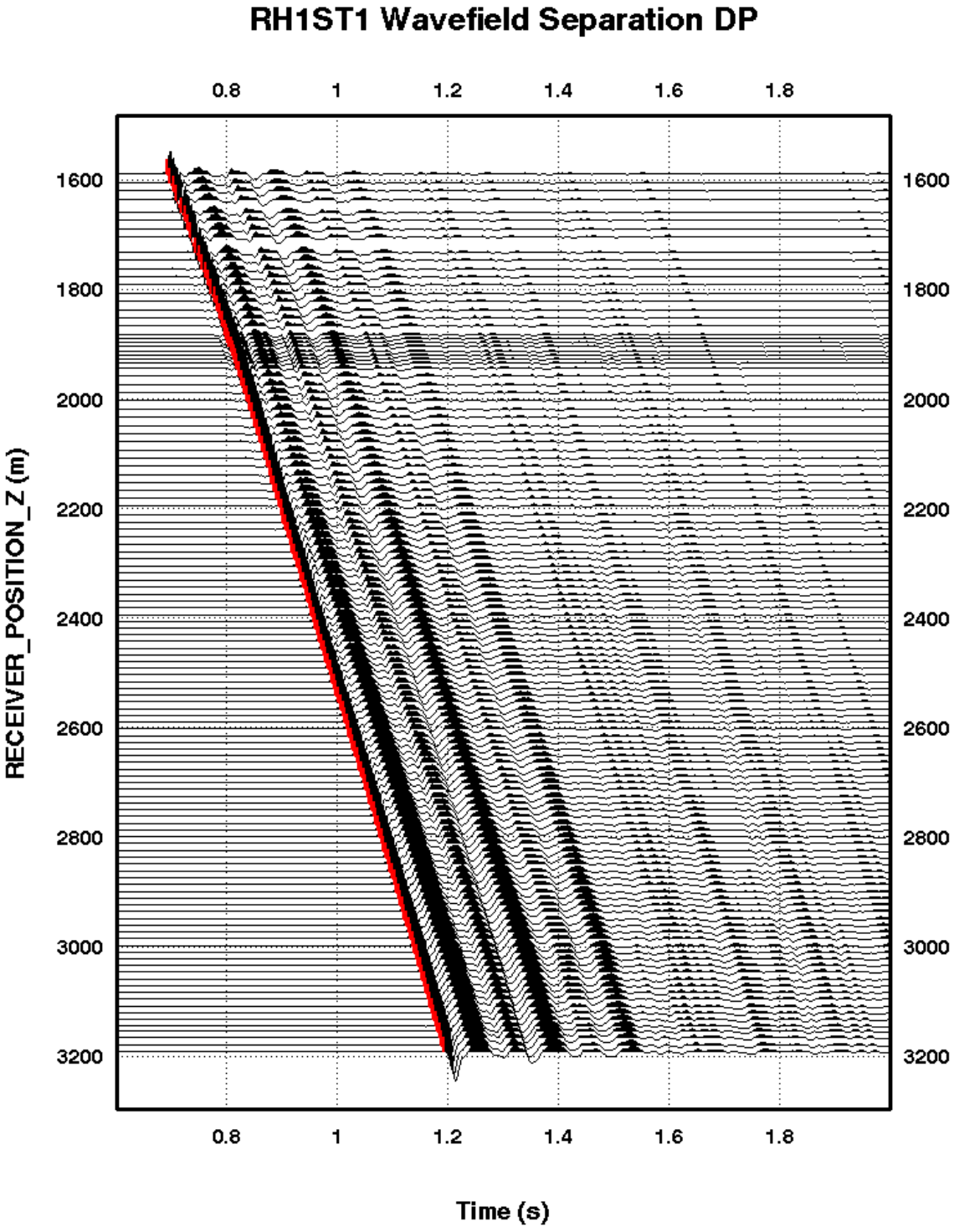


Figure 12a. Rockhopper-1 ST1 VSP: Down going P Wavefield after Wavefield Separation

(Trace Normalised)

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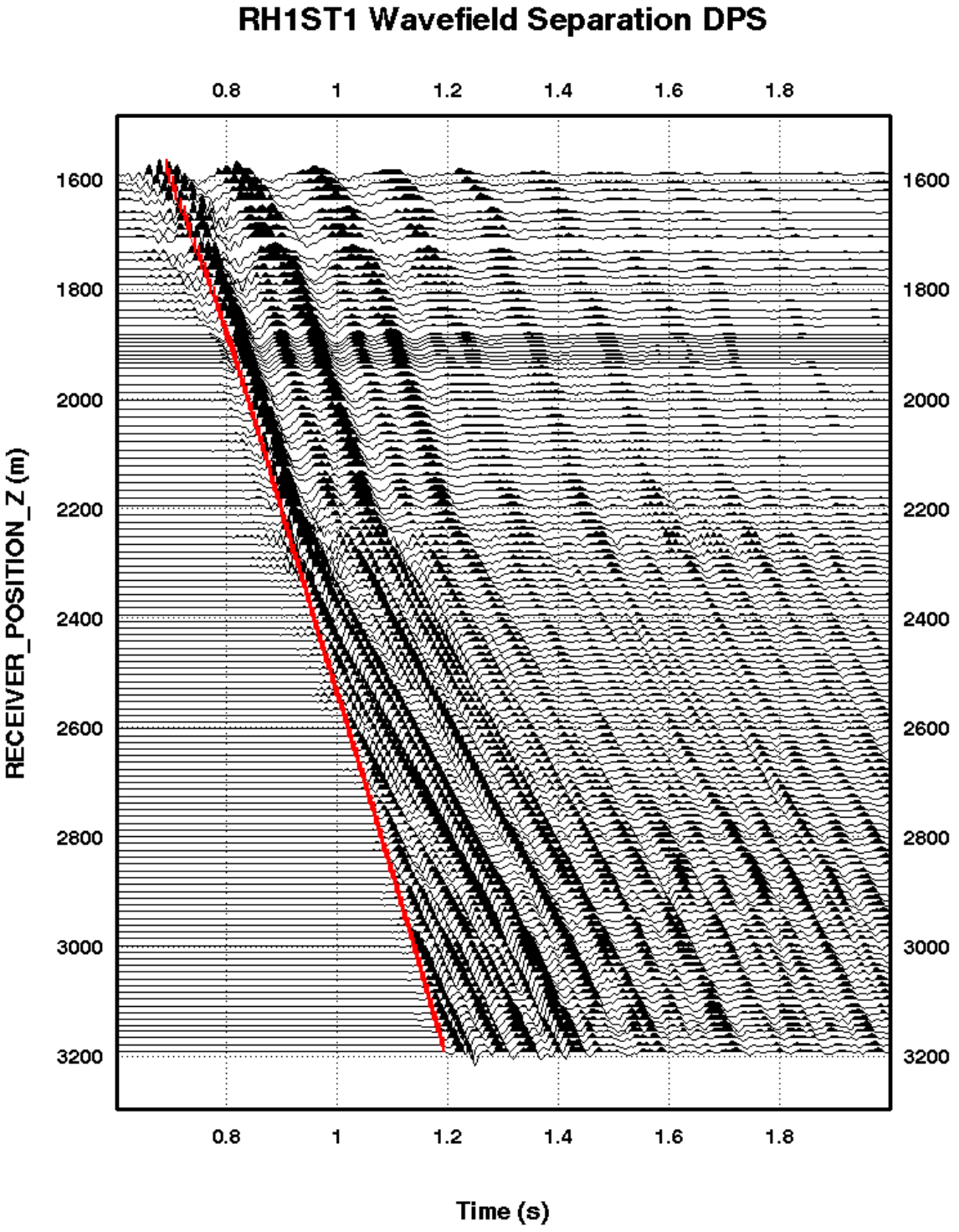


Figure 12b. Rockhopper-1 ST1 VSP: Down going PS Wavefield after Wavefield Separation

(Trace Normalised)

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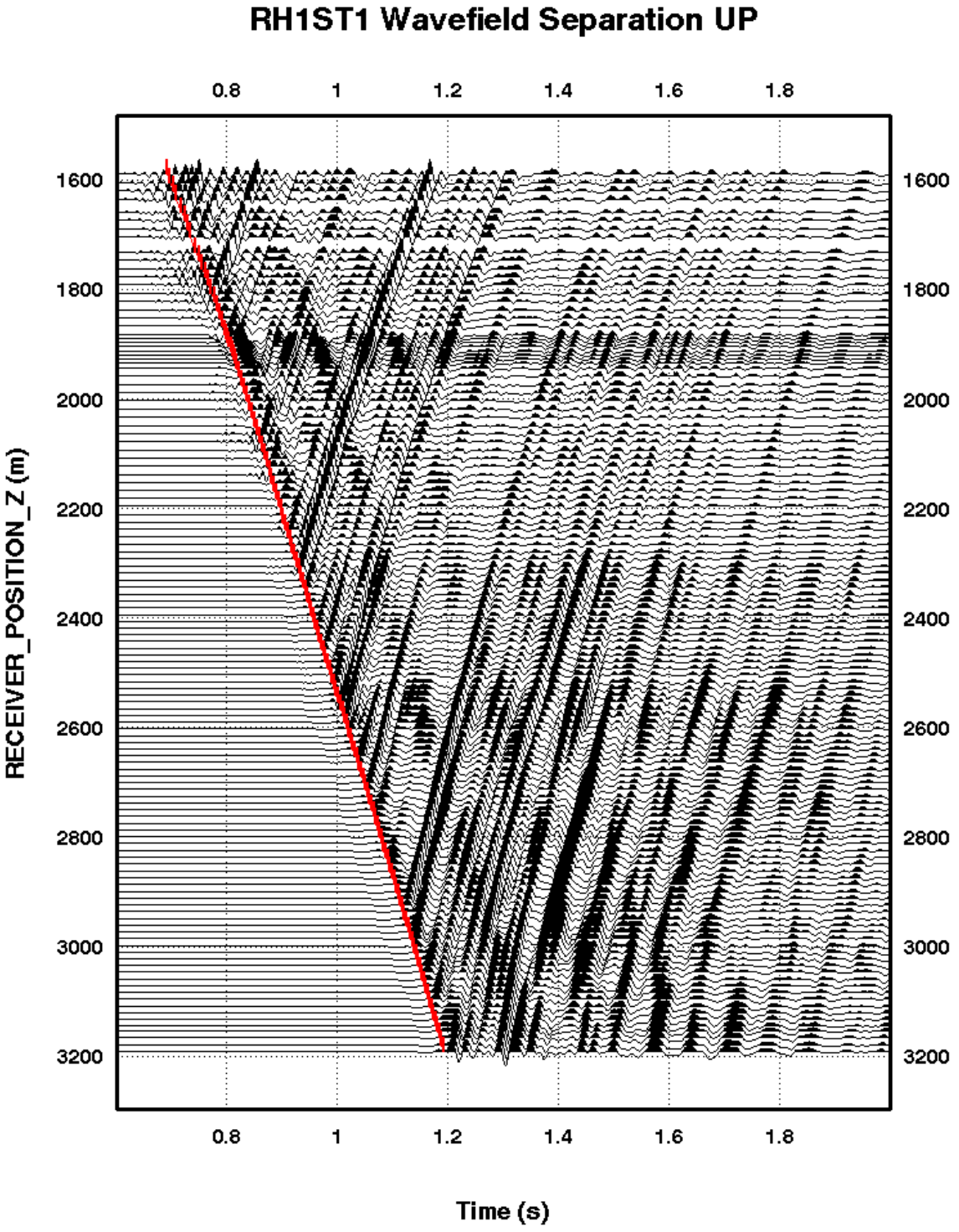


Figure 12c. Rockhopper-1 ST1 VSP: Up going P Wavefield after Wavefield Separation

(Trace Normalised)

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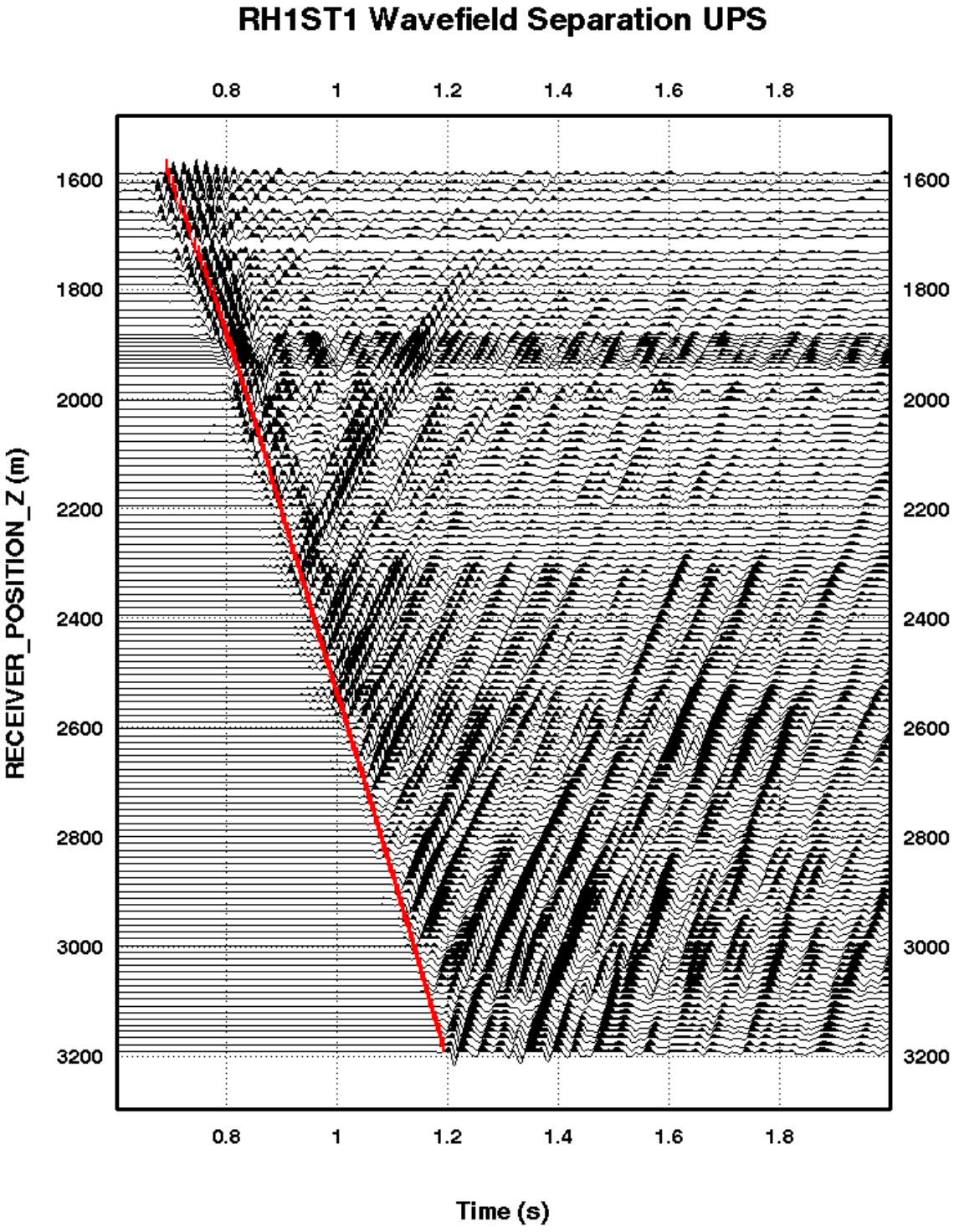


Figure 12d. Rockhopper-1 ST1 VSP: Up going PS Wavefield after Wavefield Separation

(Trace Normalised)

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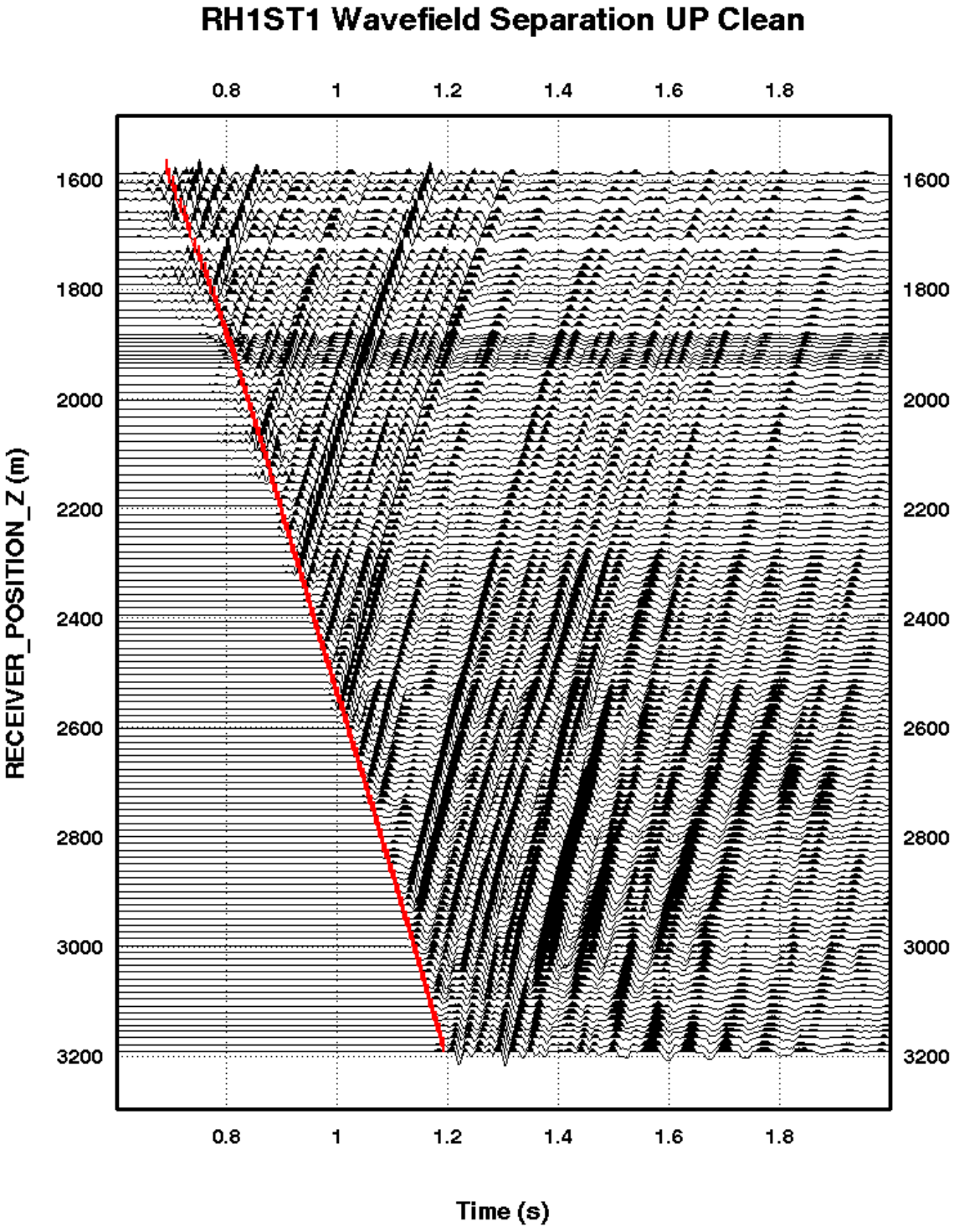


Figure 12e. Rockhopper-1 ST1 VSP: Cleaned Up going P Wavefield after Wavefield Separation

(Trace Normalised)

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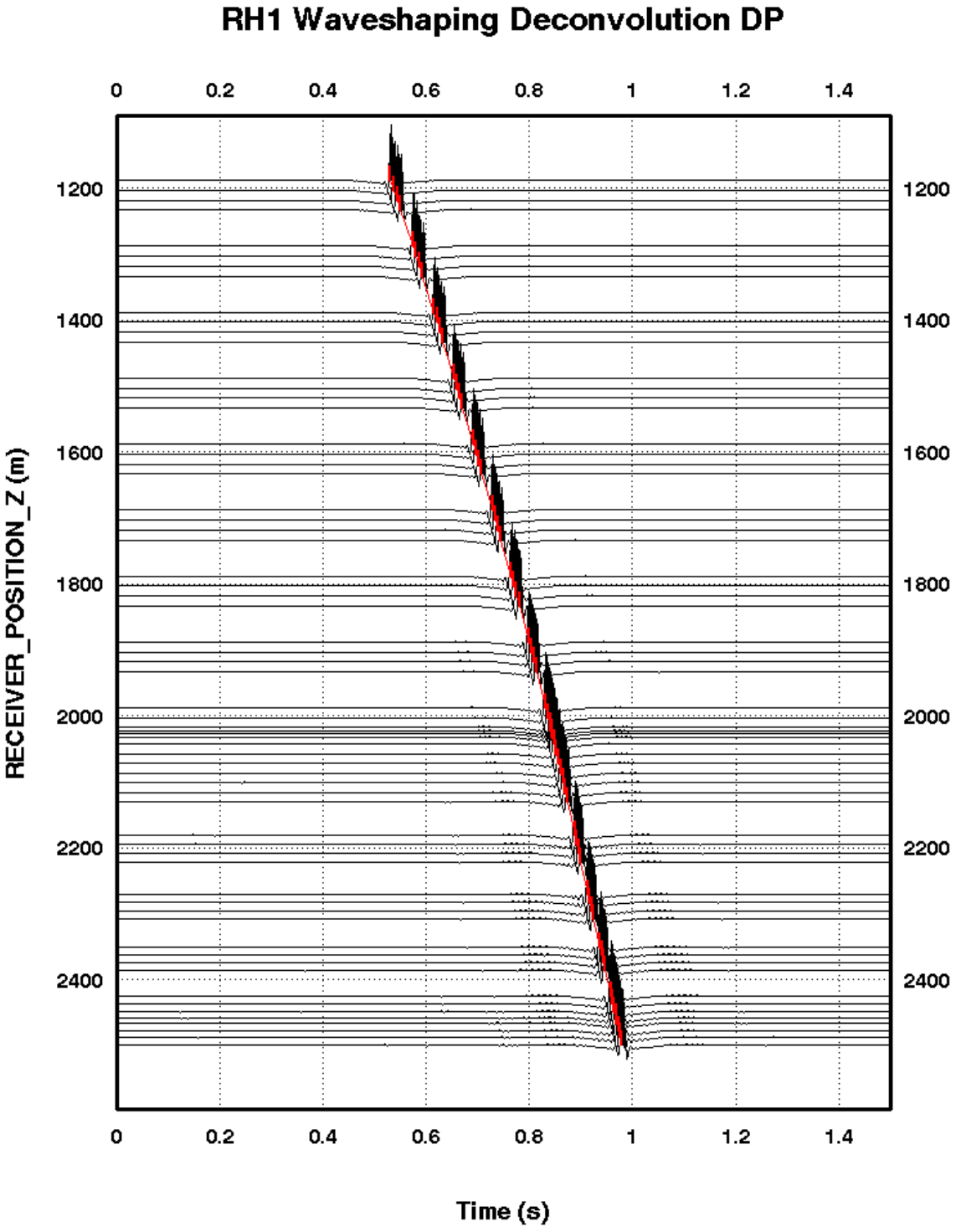


Figure 13a. Rockhopper-1 VSP: Down going P Wavefield after Waveshaping Deconvolution

(Gather Normalised)

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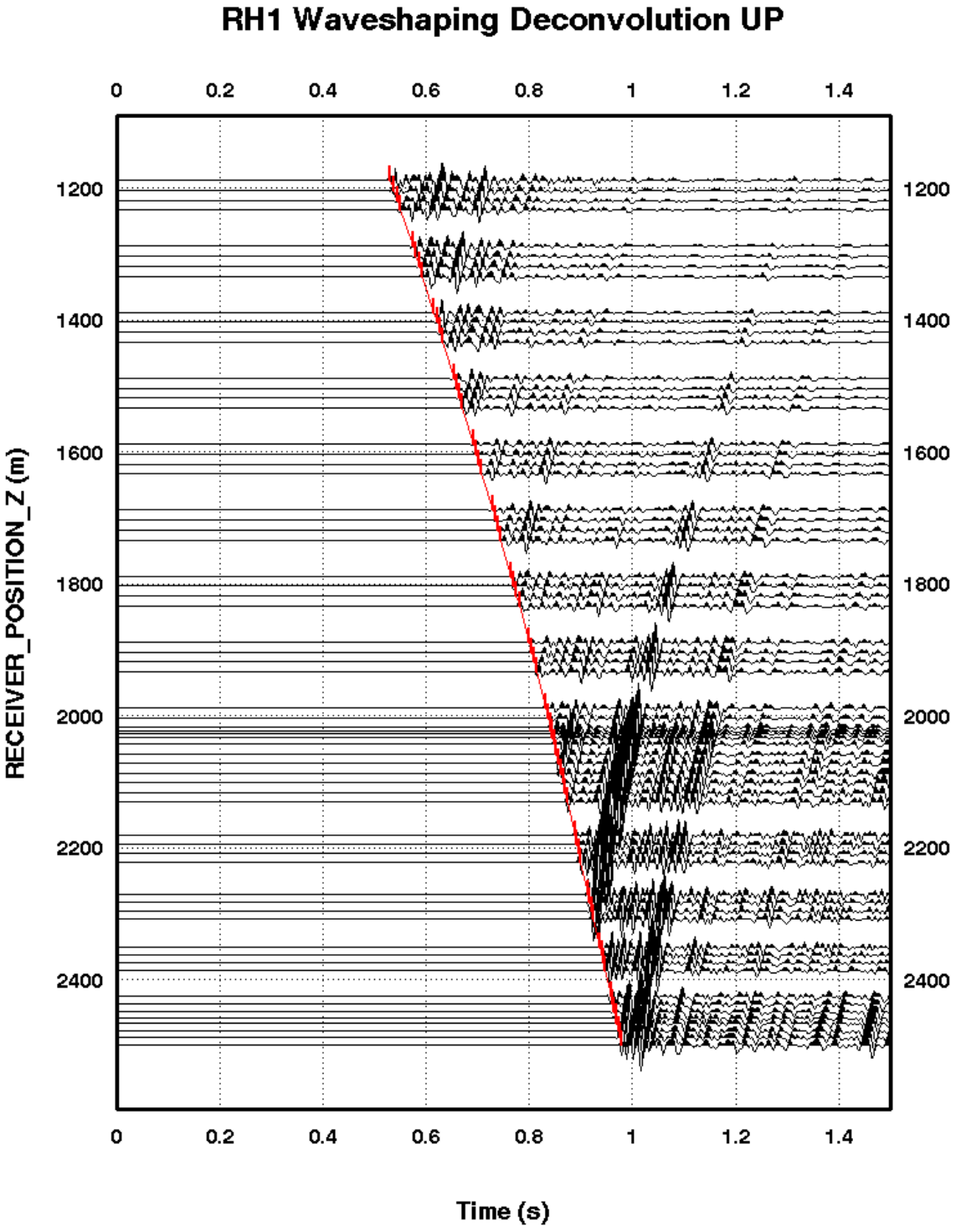


Figure 13b. Rockhopper-1 VSP: Up going P Wavefield after Waveshaping Deconvolution

(Gather Normalised)

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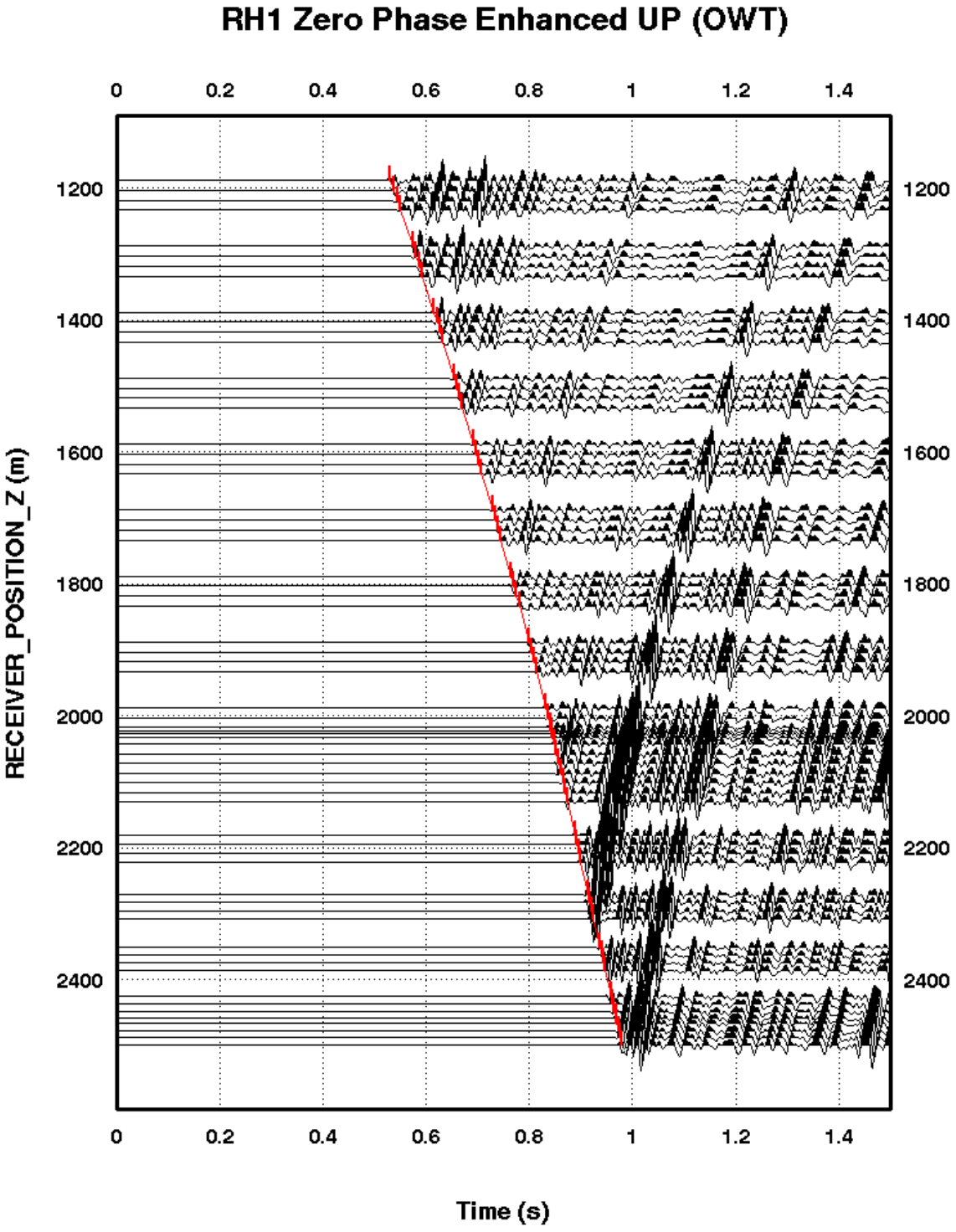


Figure 13c. Rockhopper-1 VSP: Enhanced Zero Phase Up going P Wavefield (OWT)

(Gather Normalised)

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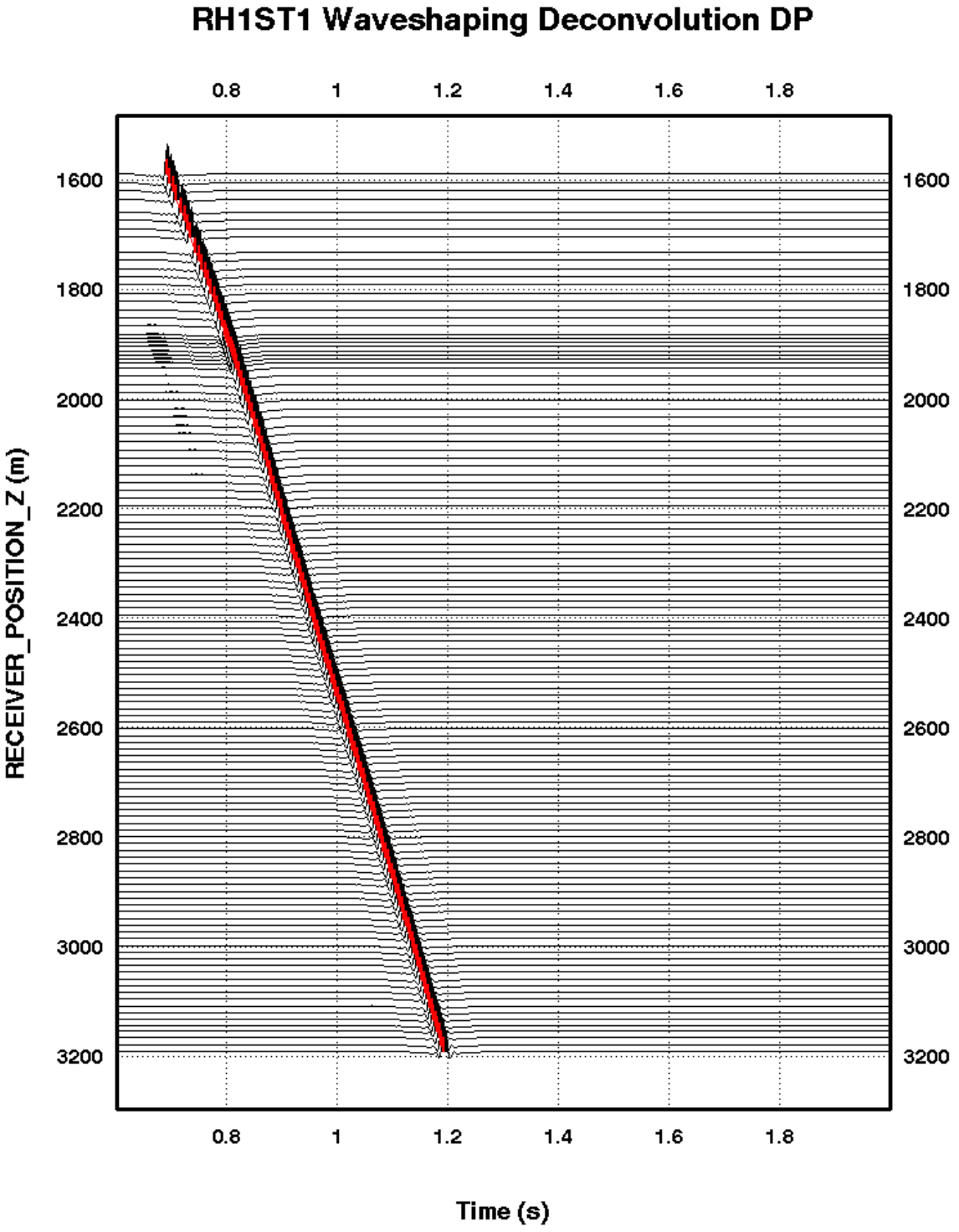


Figure 14a. Rockhopper-1 ST1 VSP: Down going P Wavefield after Waveshaping Deconvolution

(Gather Normalised)

Schlumberger Public

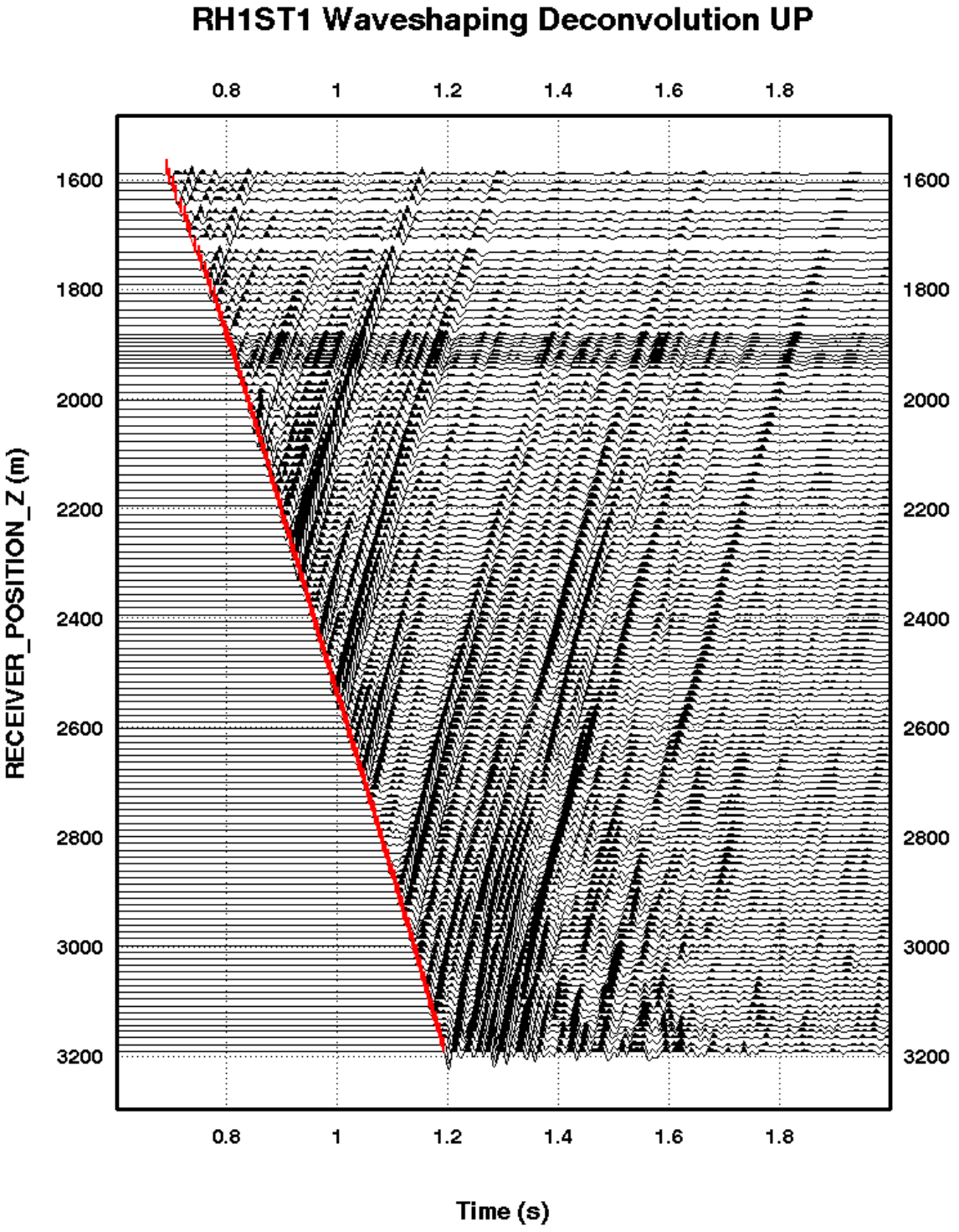


Figure 14b . Rockhopper-1 ST1 VSP: Up going P Wavefield after Waveshaping Deconvolution

(Gather Normalised)

Schlumberger Public

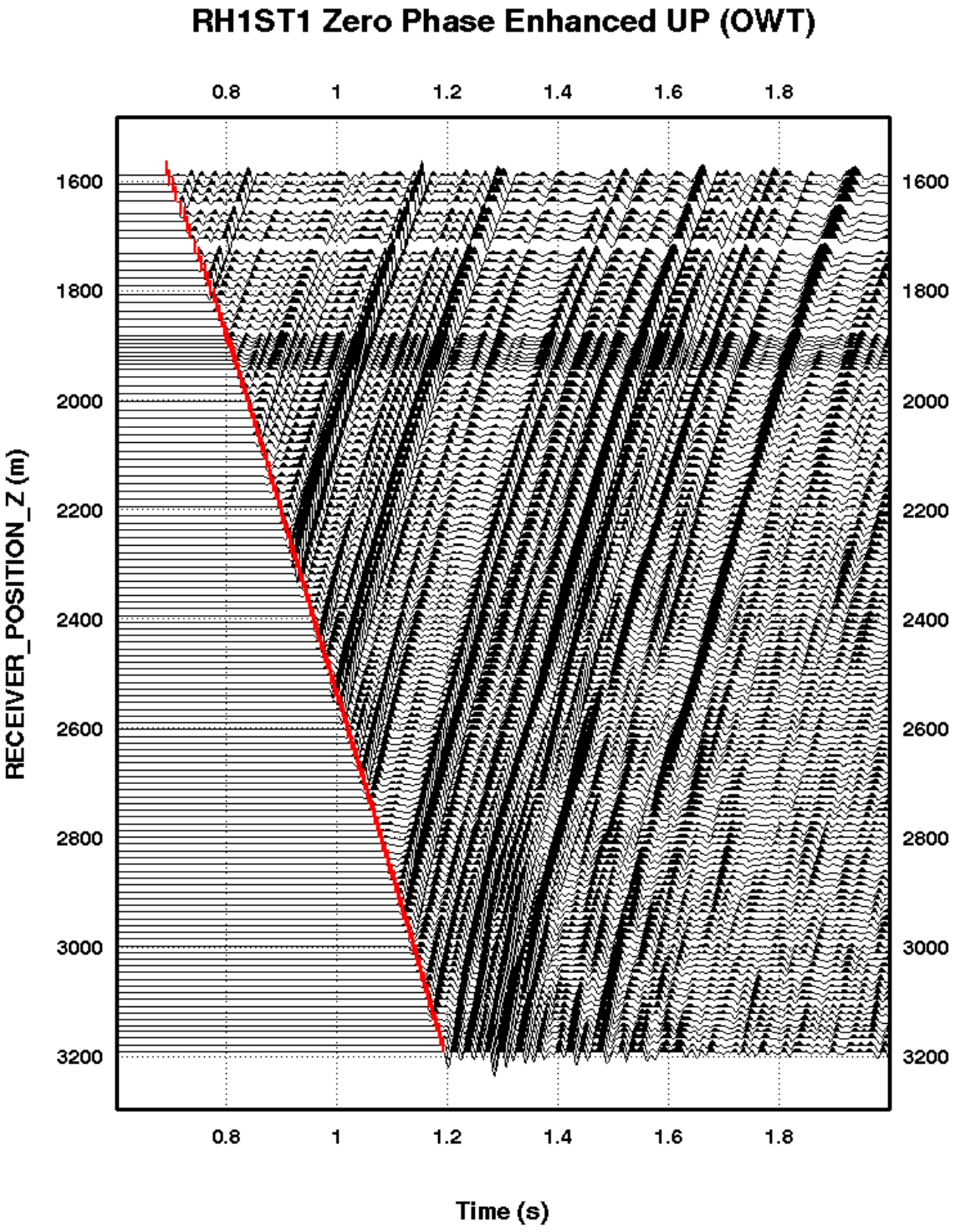


Figure 14c. Rockhopper-1 ST1 VSP: Enhanced Zero Phase Up going P Wavefield (OWT)

(Gather Normalised)

Schlumberger Public

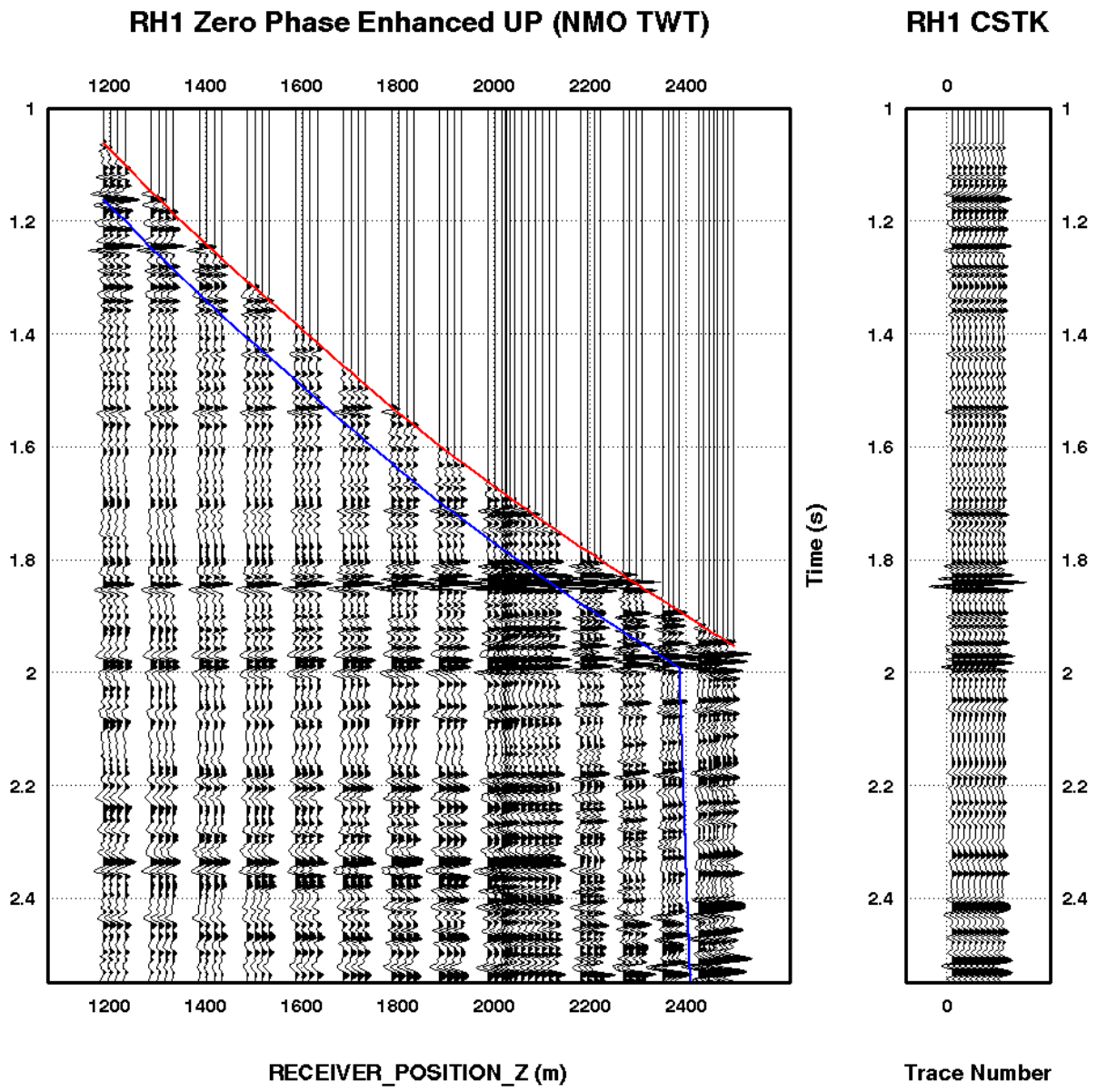


Figure 15a . Rockhopper-1 VSP: Enhanced Zero Phase Up going P Wavefield after NMO correction and Corridor Stack

(Gather Normalised)

The blue line on this plot of the Enhanced Upgoing Wavefield indicates the limit of the corridor stack.

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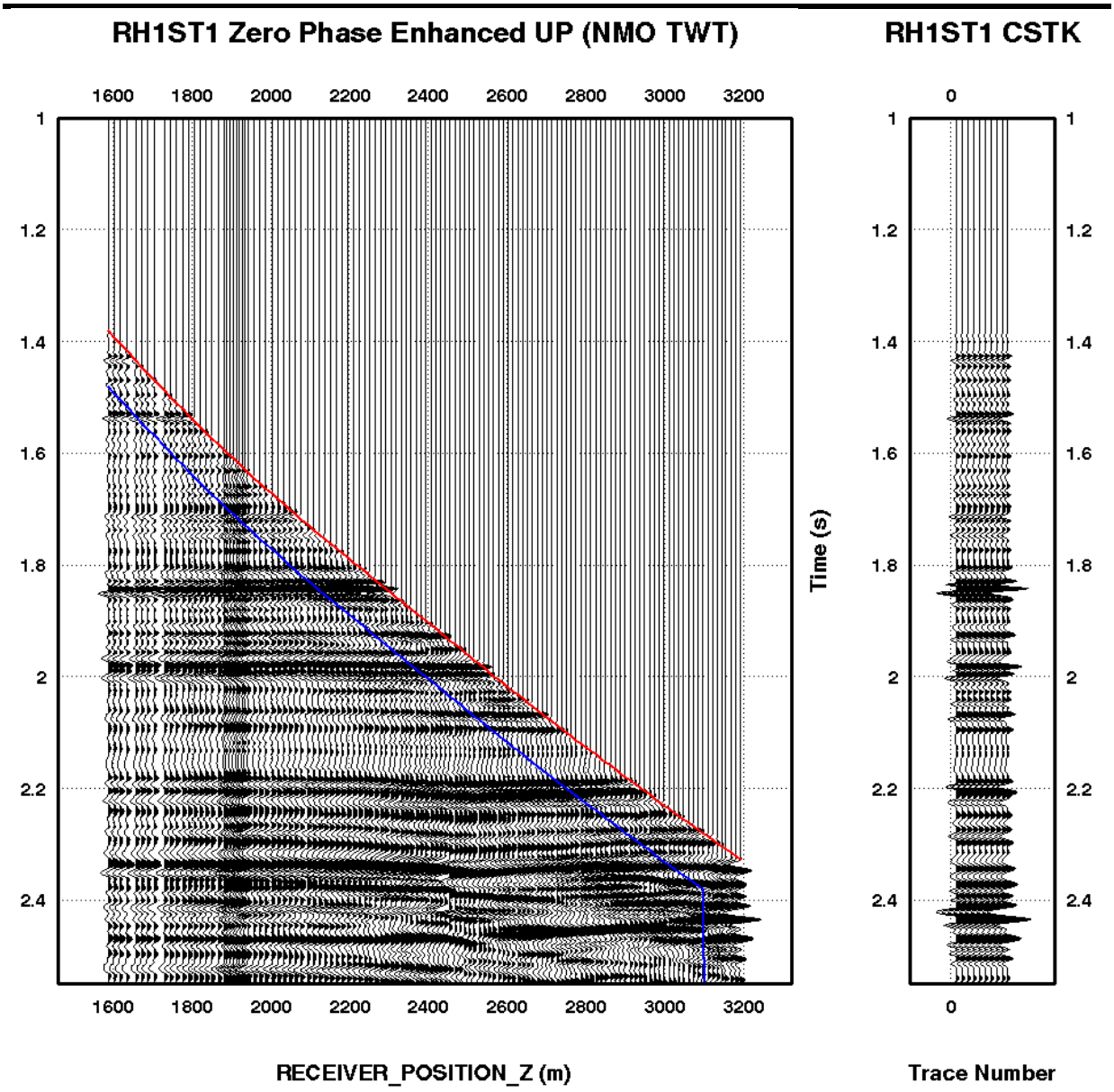


Figure 15b . Rockhopper-1 ST1 VSP: Enhanced Zero Phase Up going P Wavefield after NMO correction and Corridor Stack

(Gather Normalised)

The blue line on this plot of the Enhanced Upgoing Wavefield indicates the limit of the corridor stack.

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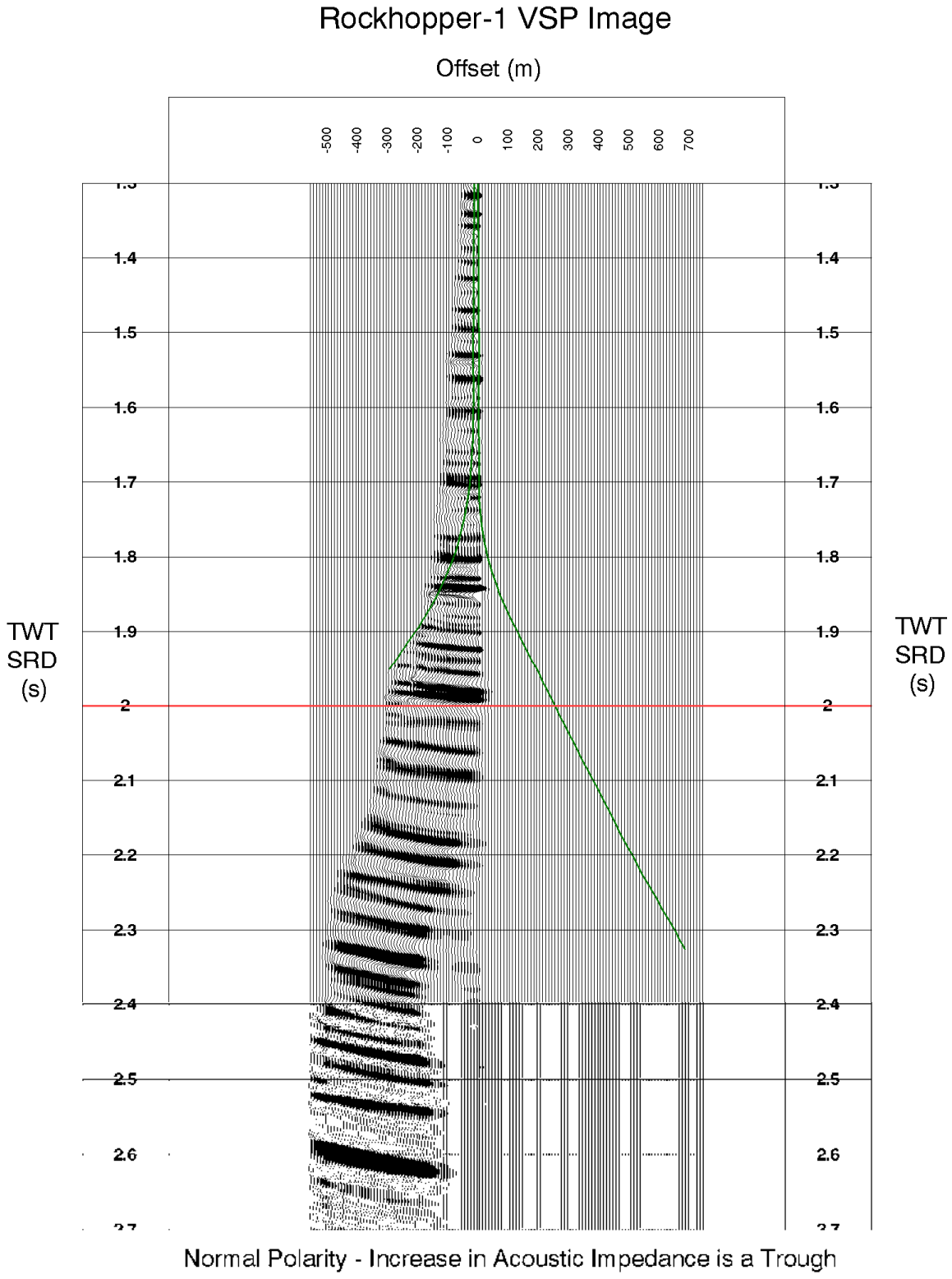


Figure 16a. Rockhopper-1 VSP: VSP GRT Migration Image

Schlumberger Public

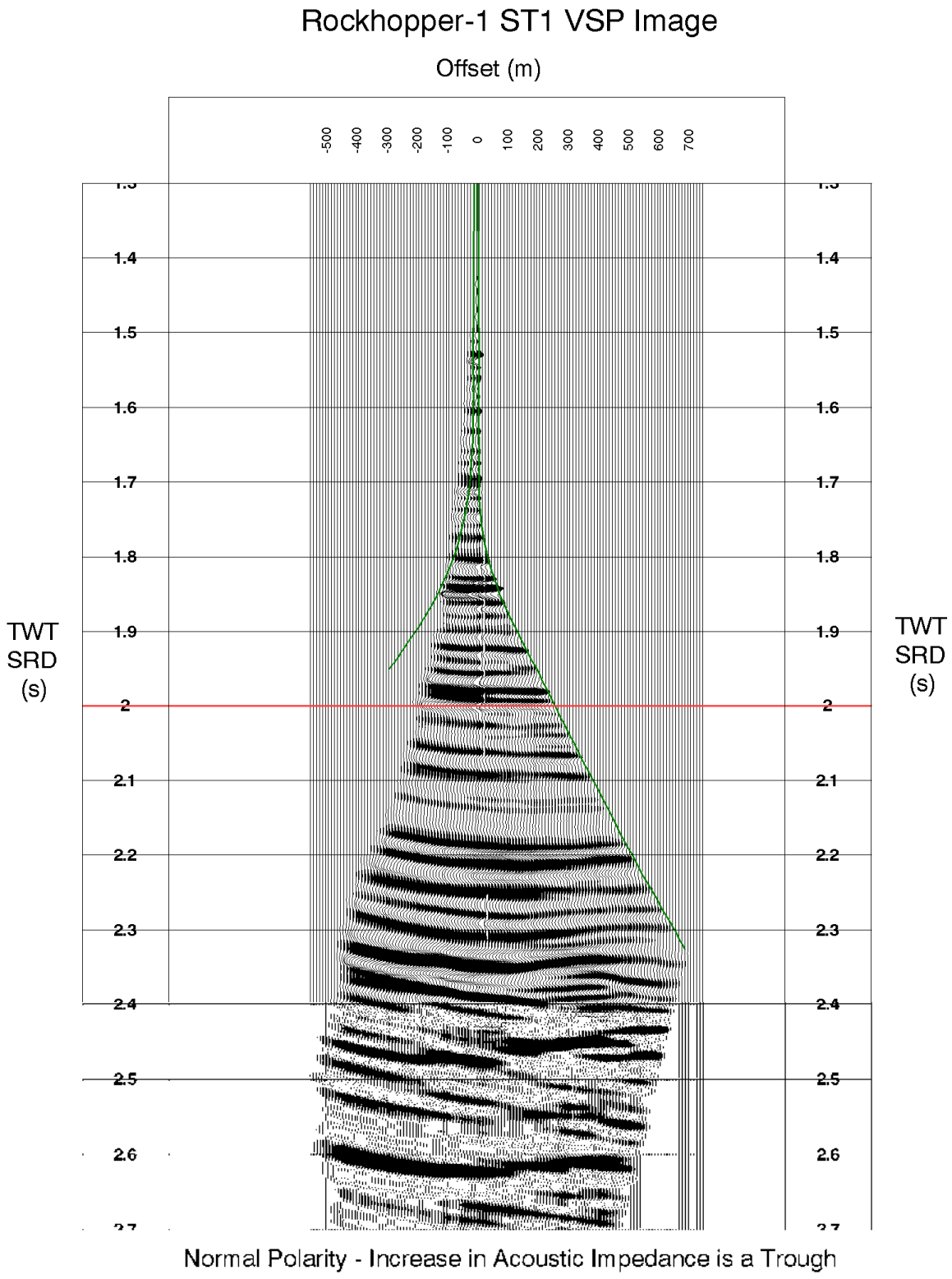


Figure 16b. Rockhopper-1 ST1 VSP: VSP GRT Migration Image

Schlumberger Public

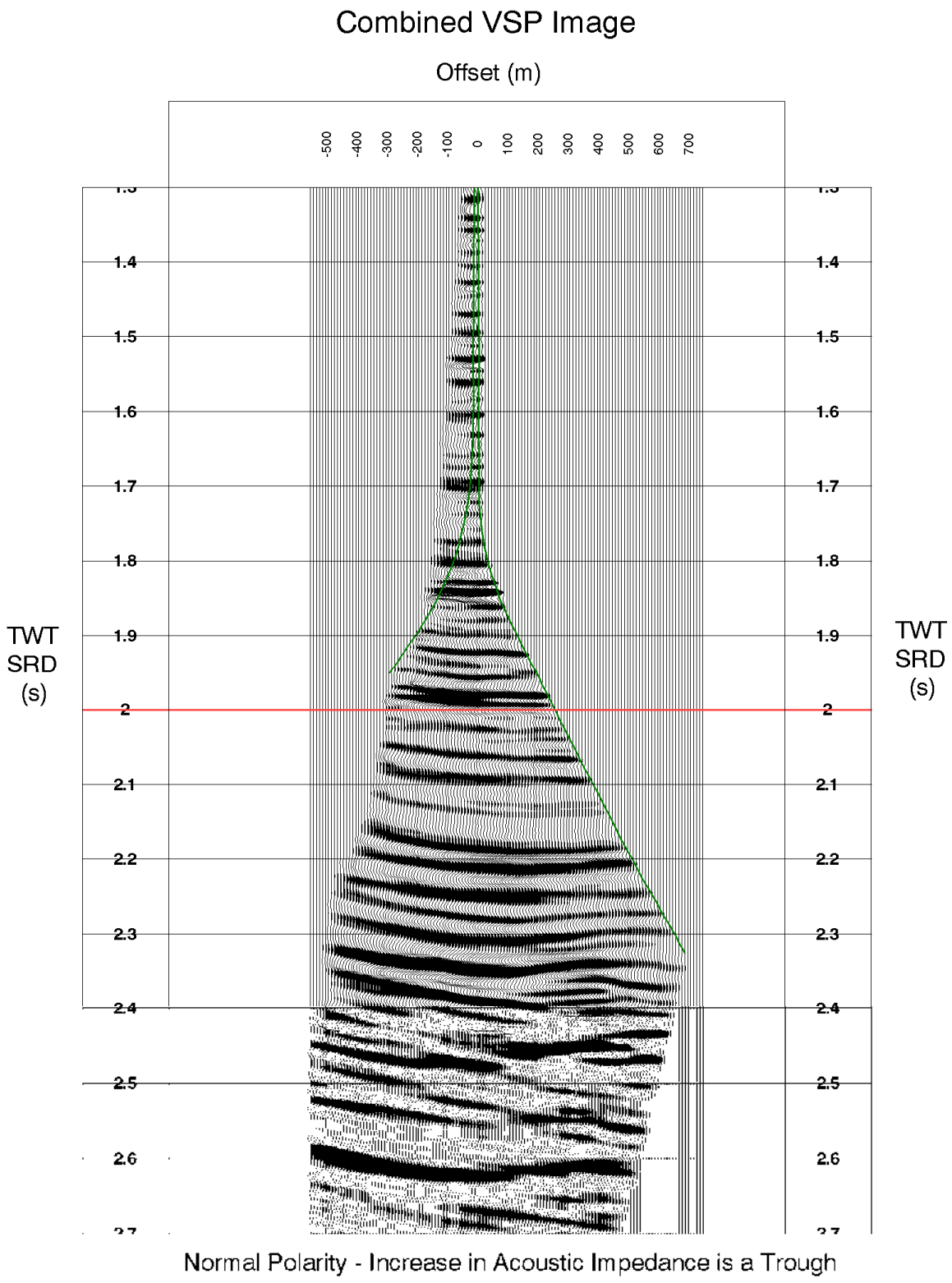


Figure 16c. Rockhopper-1 and ST1 VSP: Combined VSP GRT Migration Image

Schlumberger Public

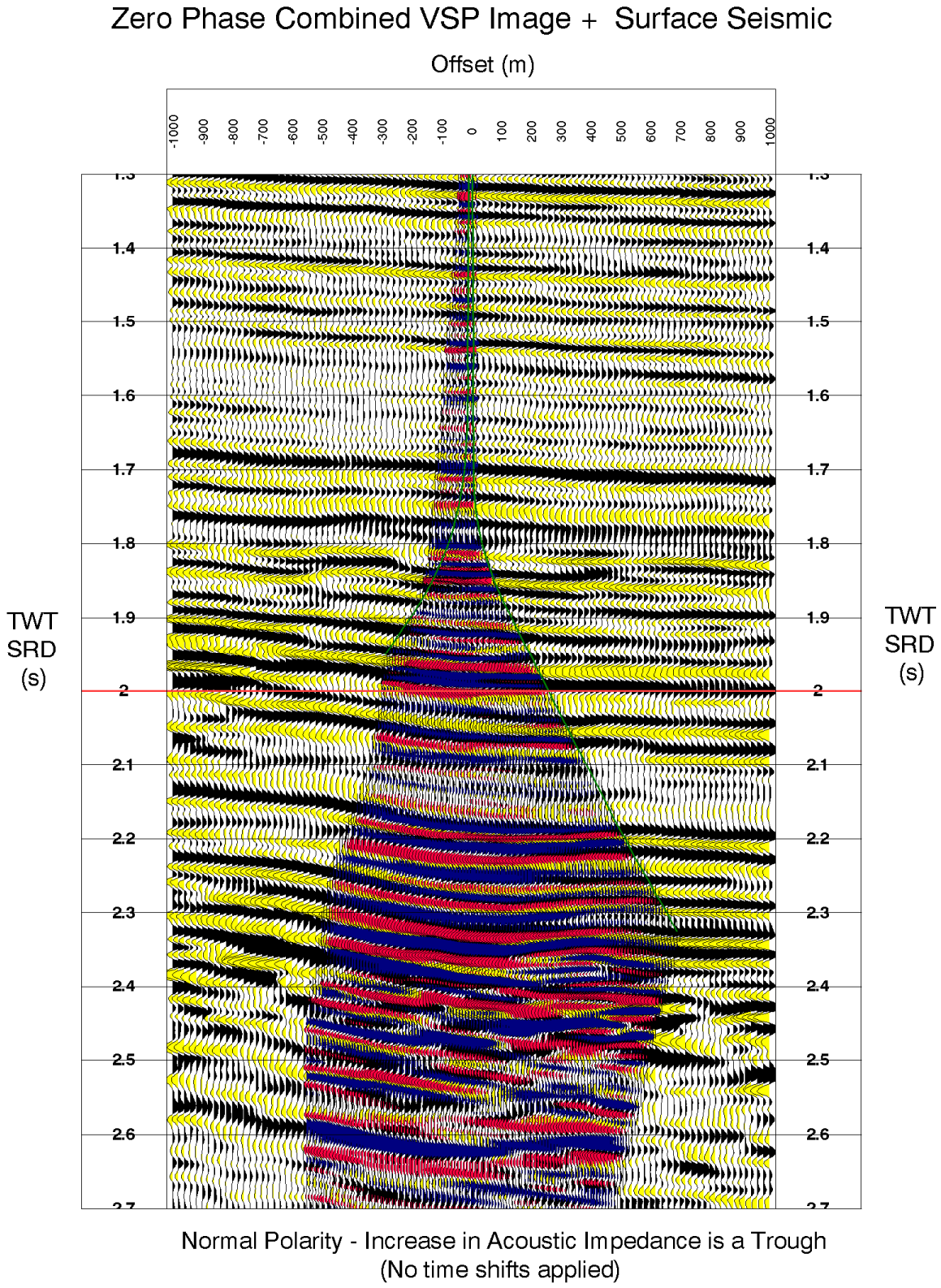


Figure 17a. Combined VSP Image and Surface Seismic (Normal Polarity)

Schlumberger Public

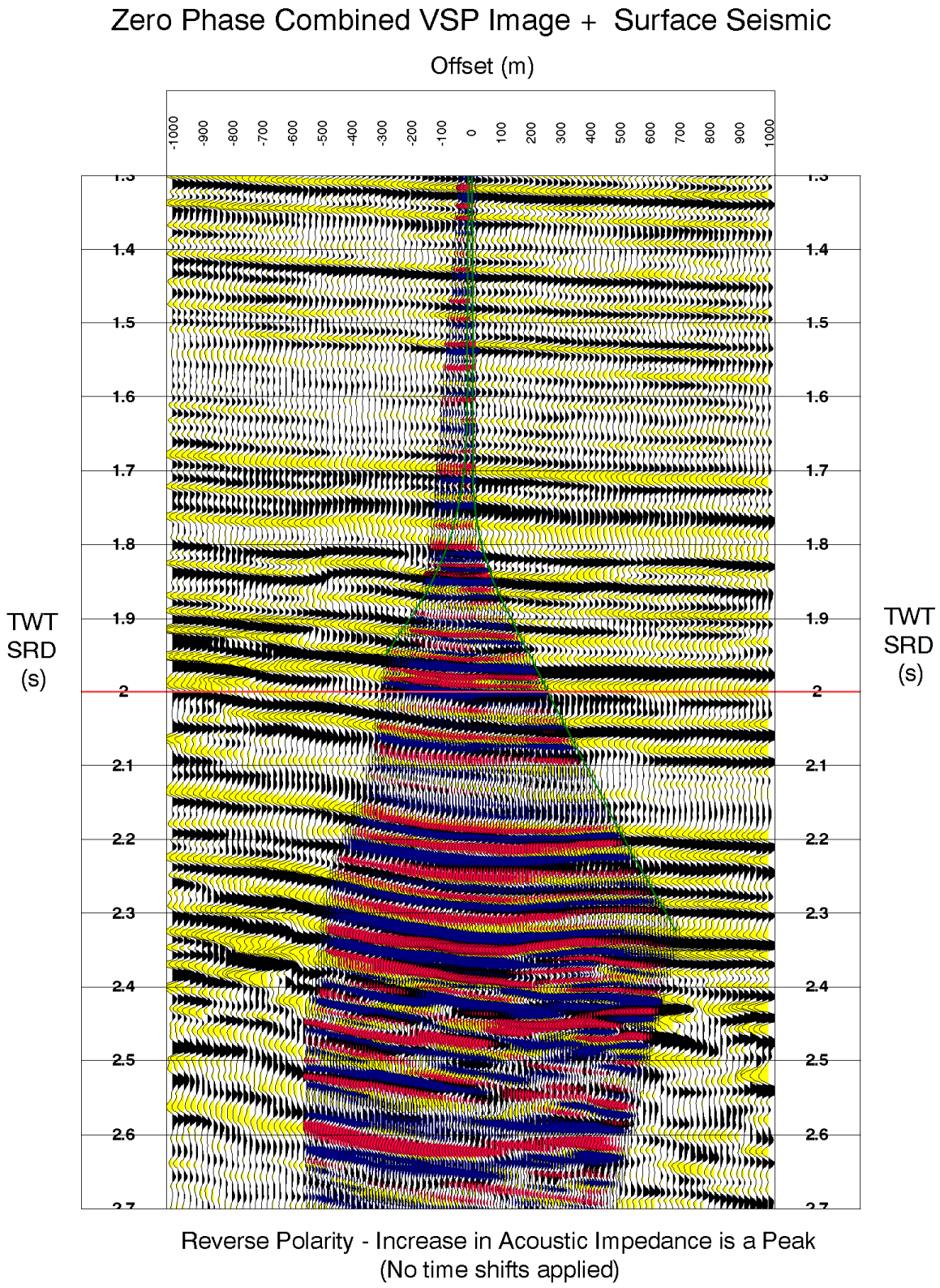


Figure 17b. Combined VSP Image and Surface Seismic (Reverse Polarity)

Schlumberger Public

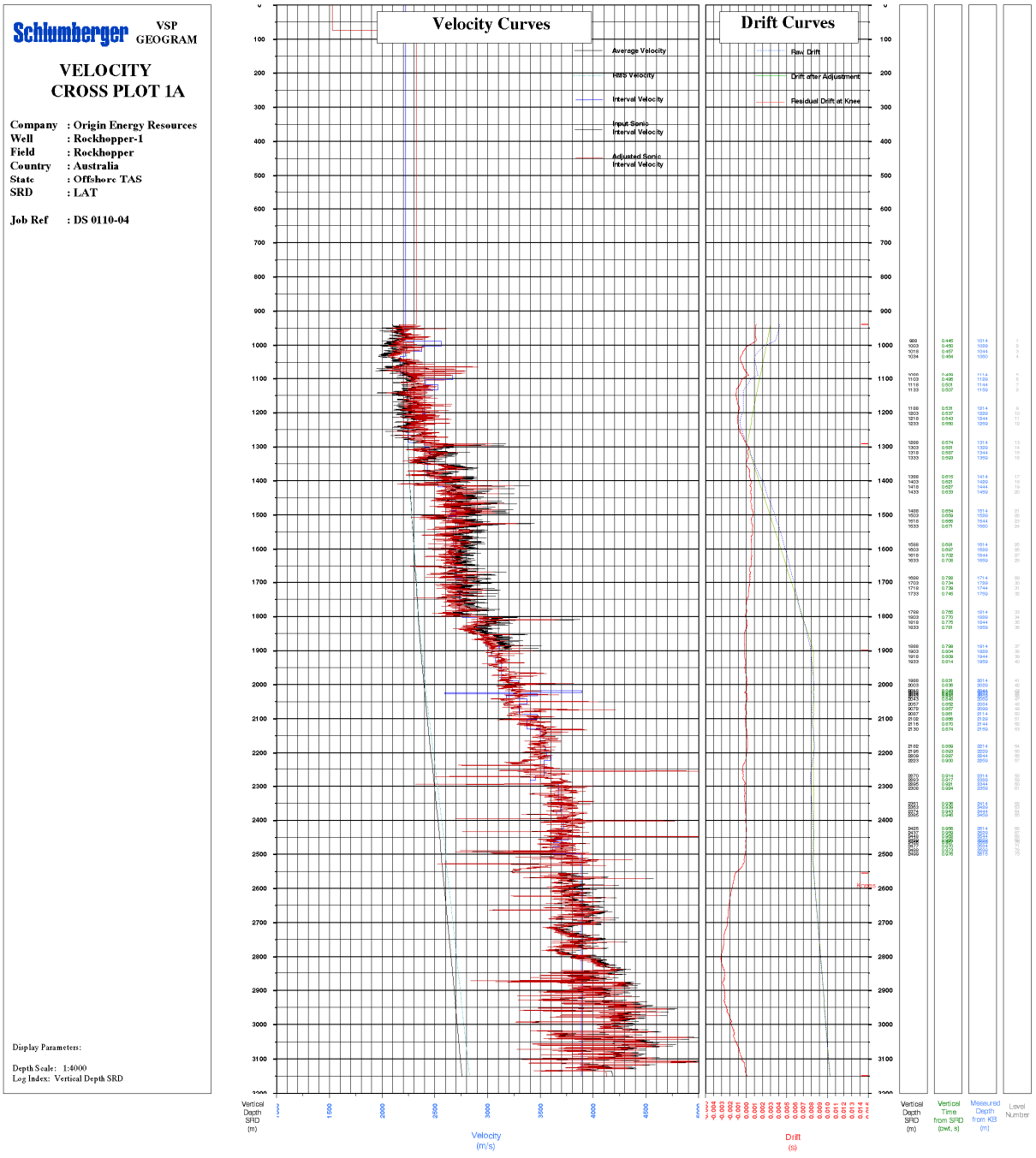


Figure 18a. Time-Depth relation and velocities vs TVD SS and drift curves (RH1)

Note that this plot is provided on the 36" plot with this report.

Schlumberger Public

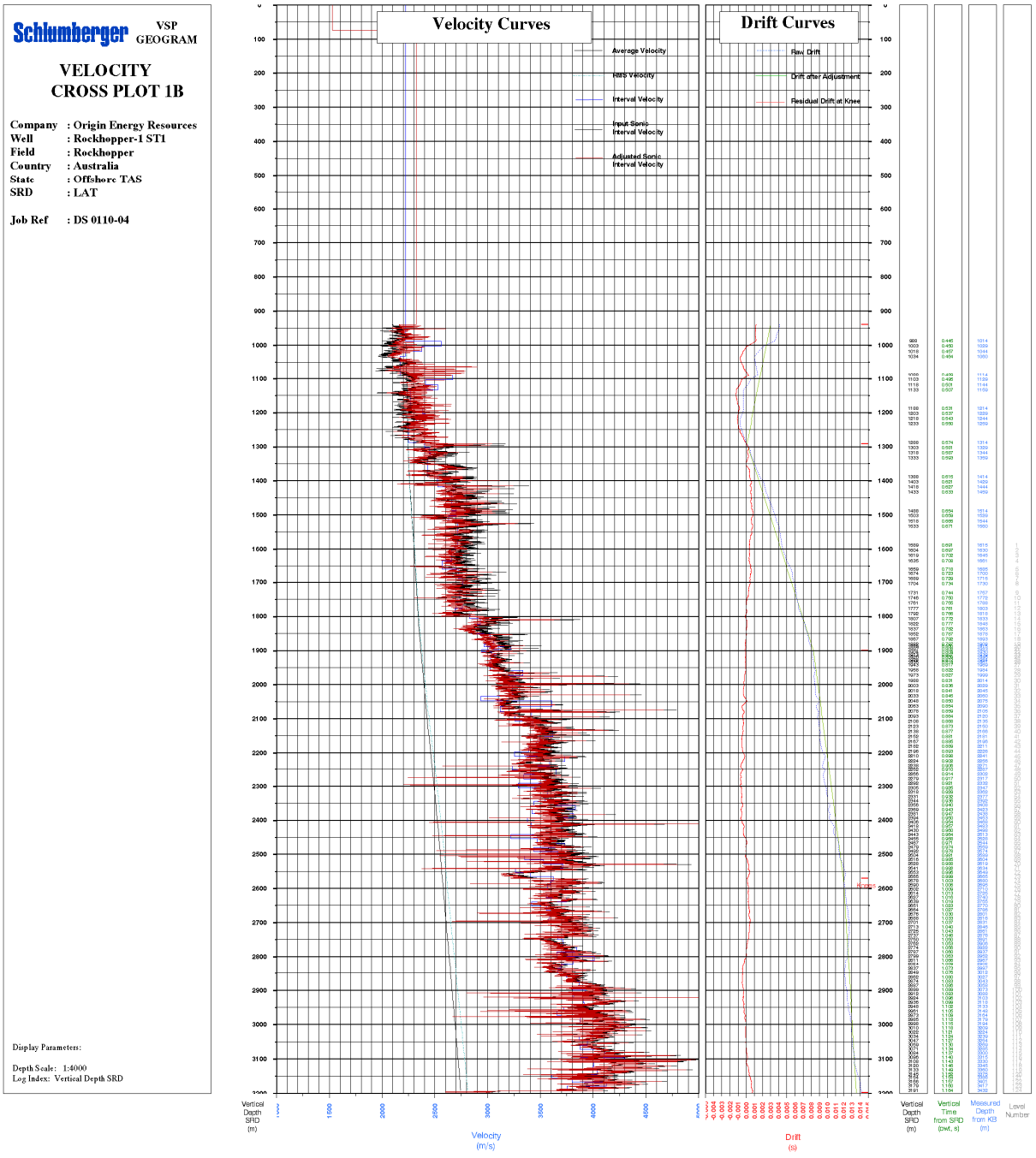


Figure 18b. Time-Depth relation and velocities vs TVD SS and drift curves (RH1 ST1)

Note that this plot is provided on the 36" plot with this report.

Schlumberger Public

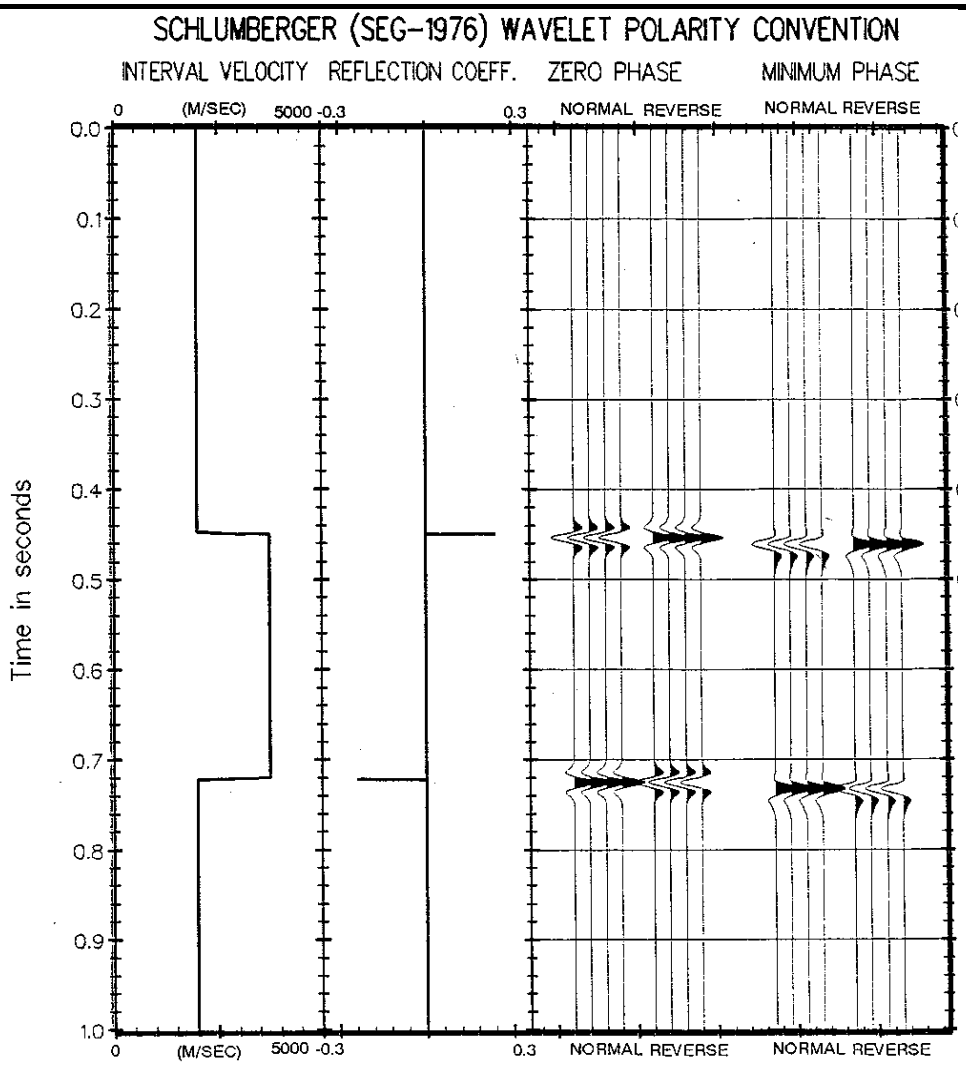


Figure 19. Schlumberger Wavelet Polarity Convention

Schlumberger Public

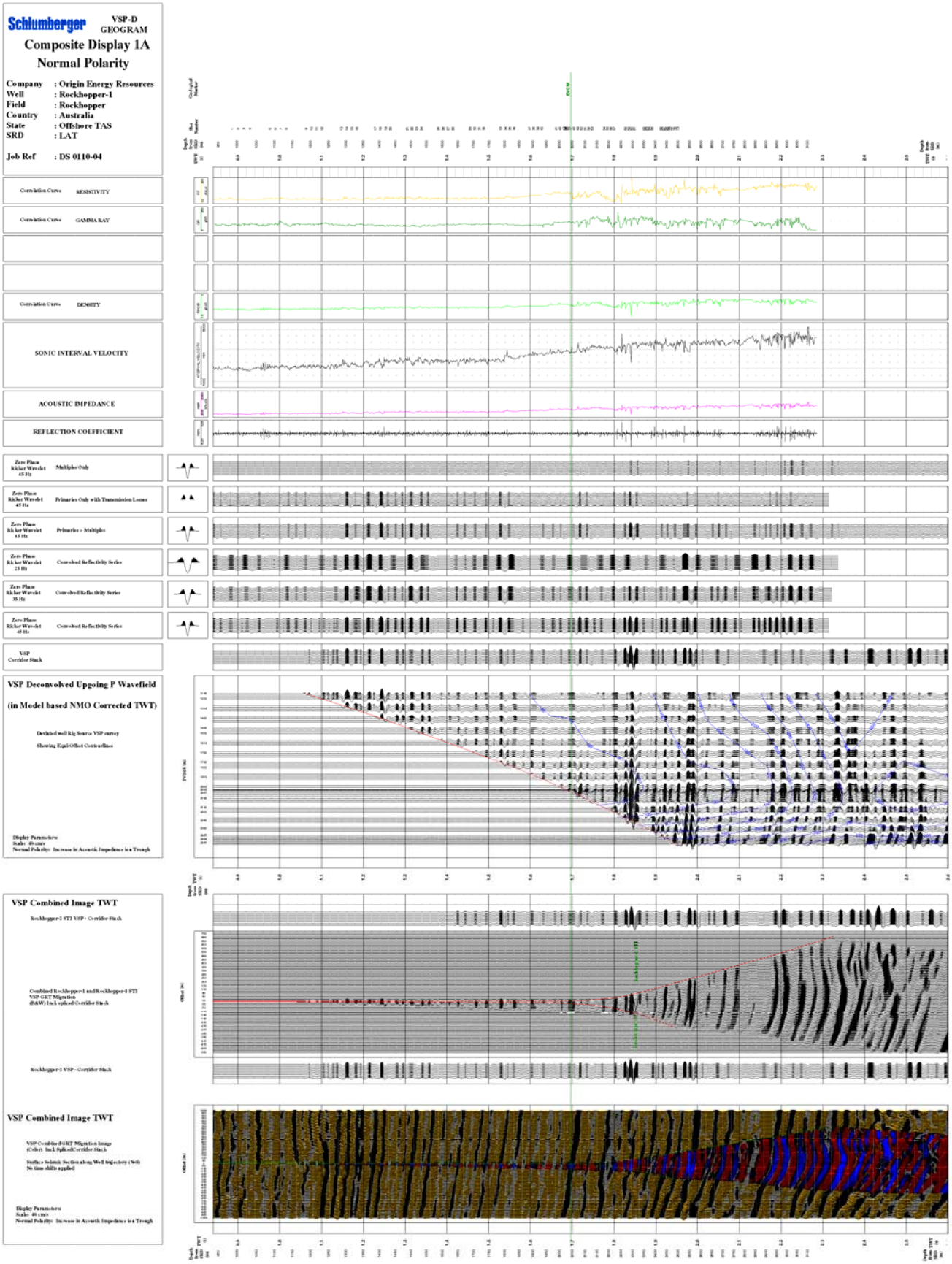


Figure 20a. Rockhopper-1 Composite Display – Normal Polarity (See Plot 1A)

Schlumberger Public

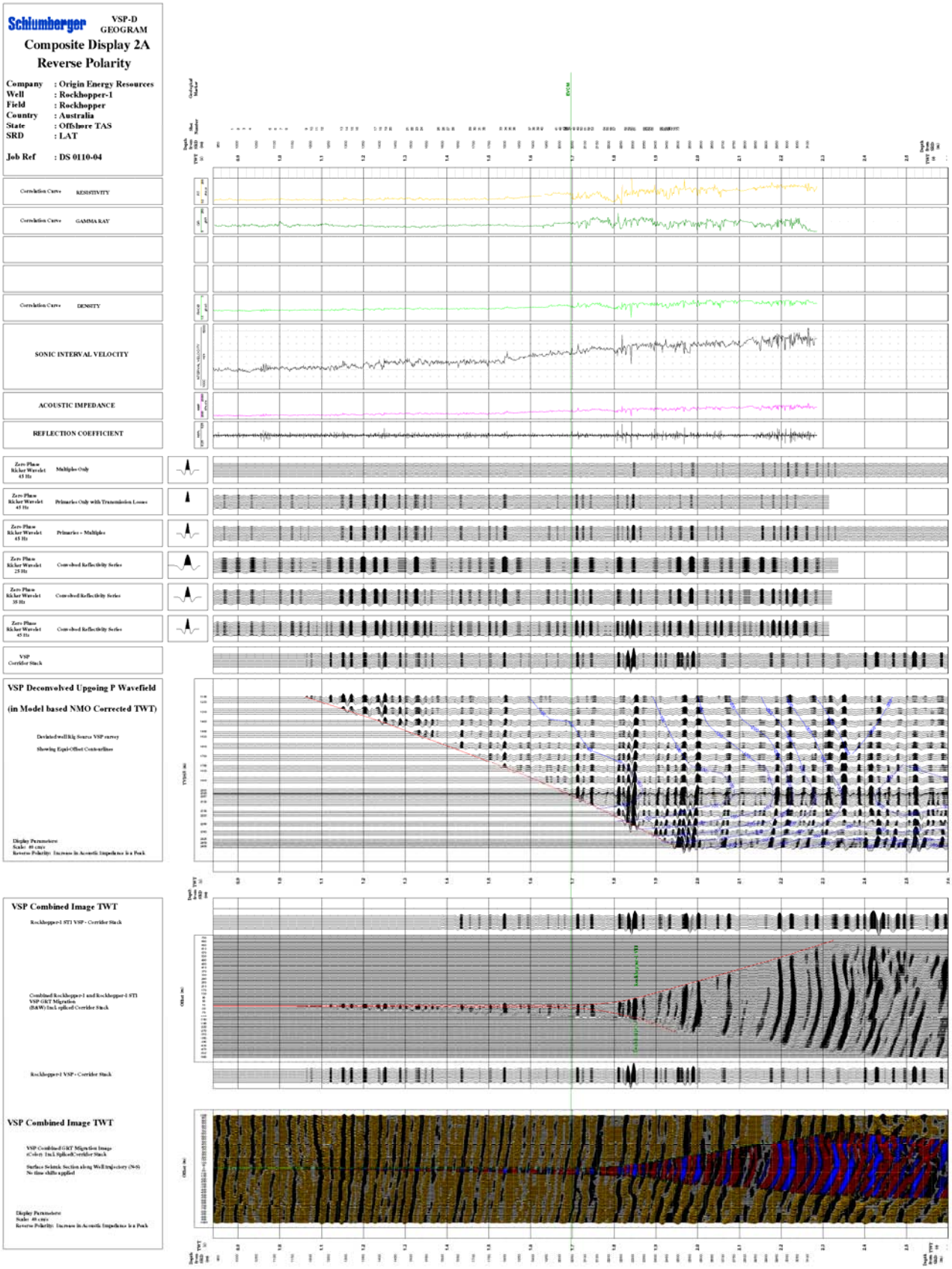


Figure 20b. Rockhopper-1 Composite Display – Reverse Polarity (See Plot 2A).

Schlumberger Public

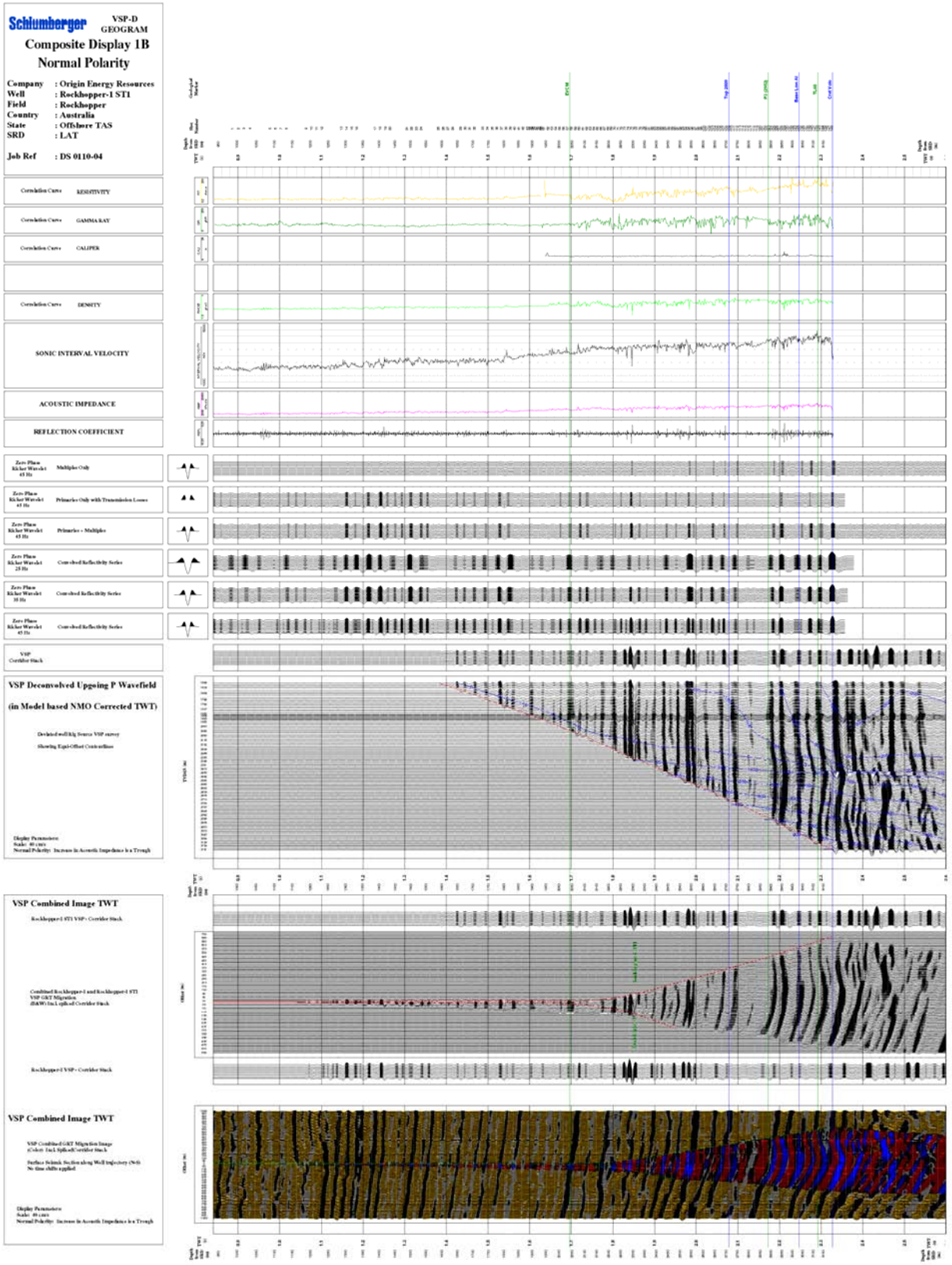


Figure 21a. Rockhopper-1 ST1 Composite Display – Normal Polarity (See Plot 1B)

Schlumberger Public

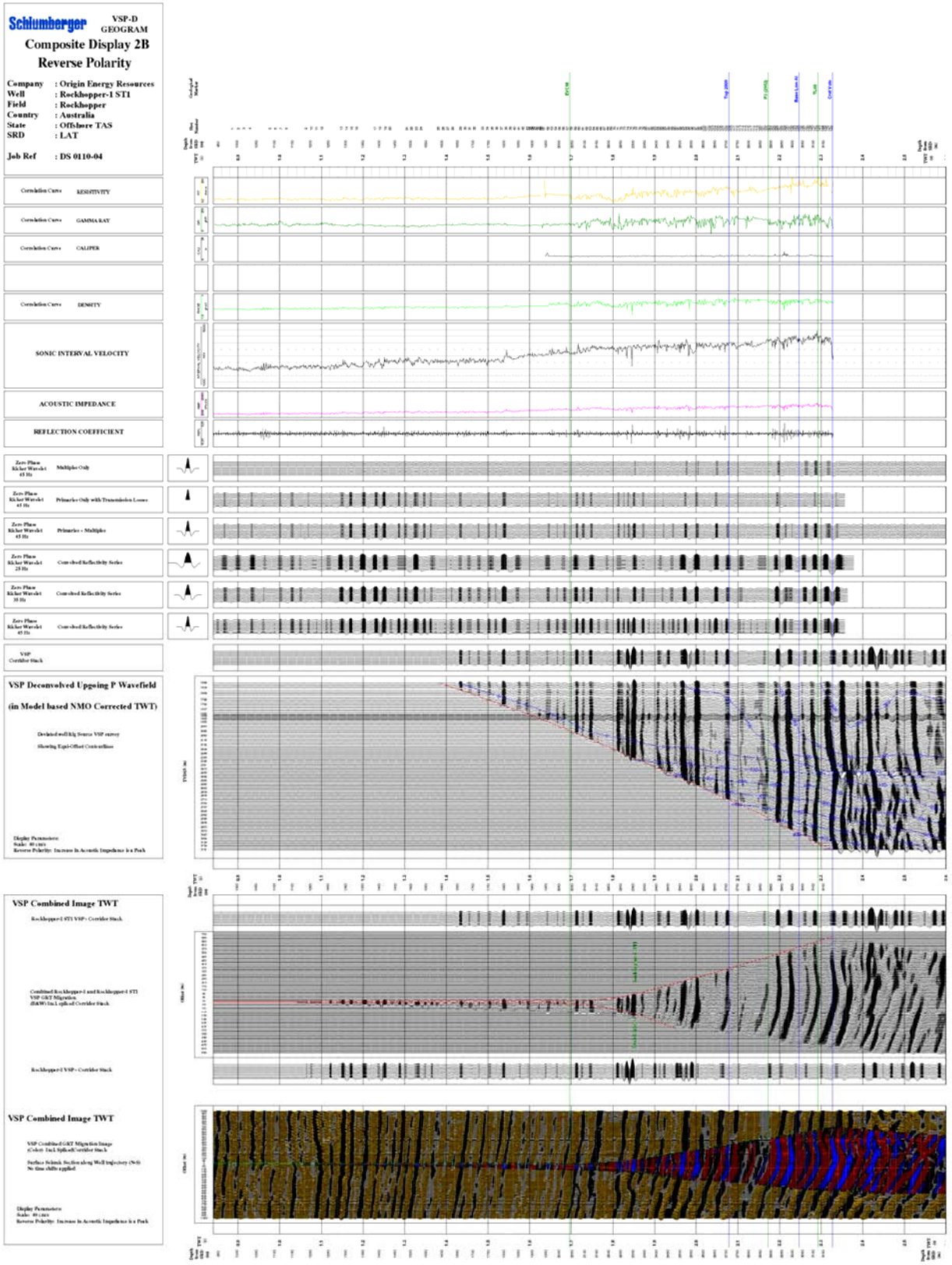


Figure 21b. Rockhopper-1 Composite Display – Reverse Polarity (See Plot 2B)

Schlumberger Public

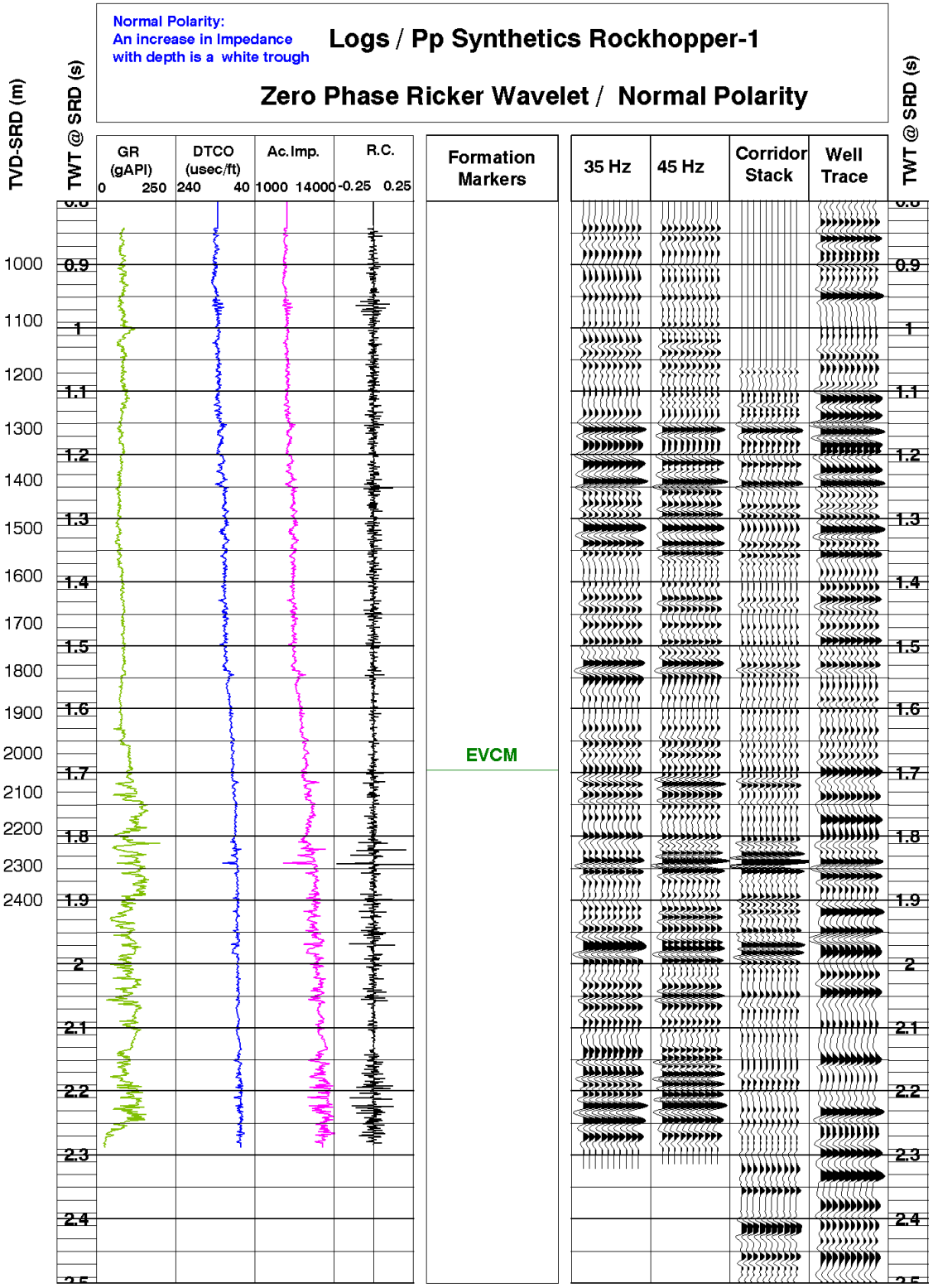


Figure 22a. RH1 Surface Seismic Well trace, Corridor Stack, Synthetics and Logs (Normal polarity)

Schlumberger Public

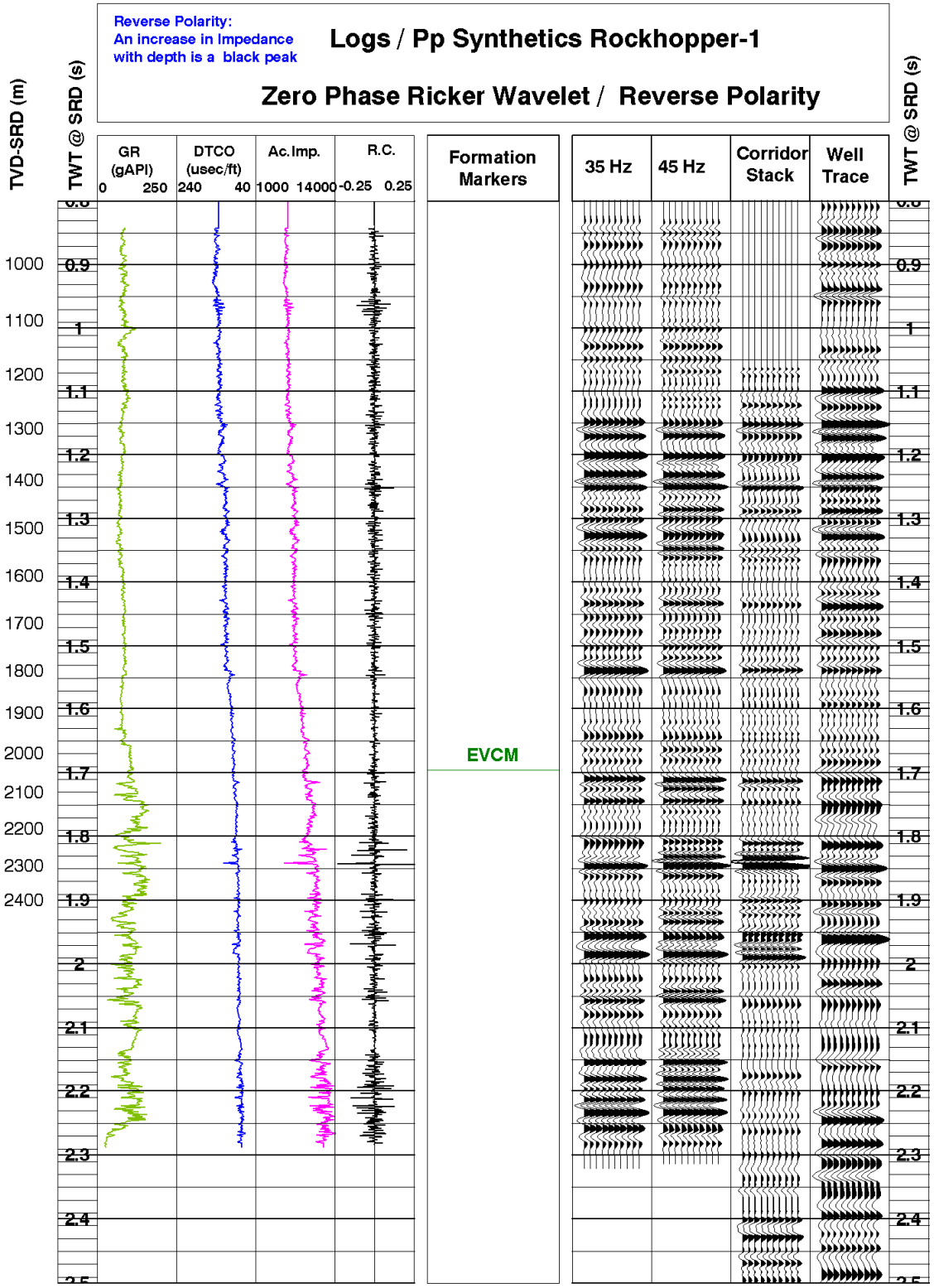


Figure 22b. RH1 Surface Seismic Well trace, Corridor Stack, Synthetics and Logs (Reverse polarity)

Schlumberger Public

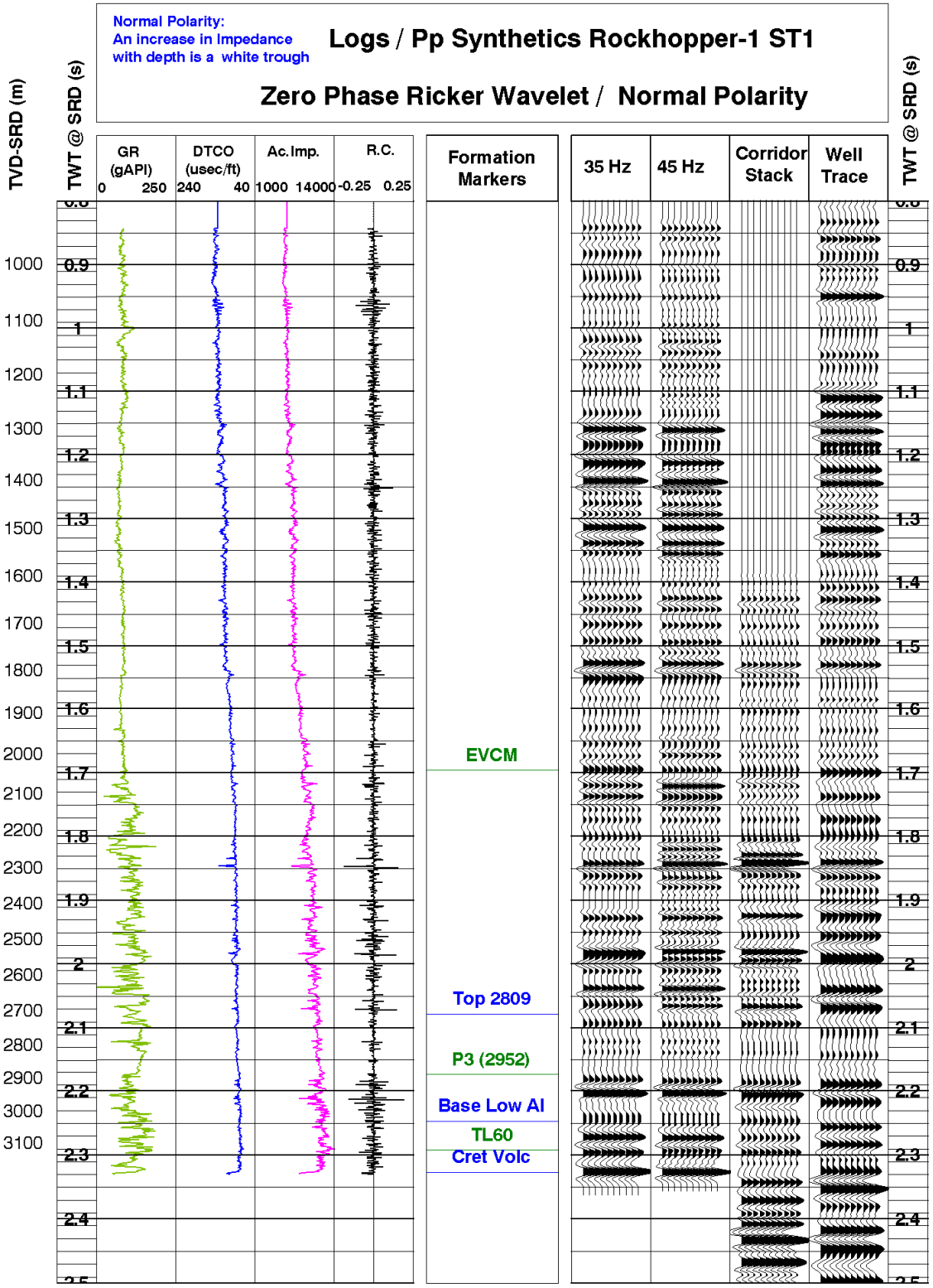


Figure 23a. RH1 ST1 Surface Seismic Well trace, Corridor Stack, Synthetics, Logs (Normal polarity)

Schlumberger Public

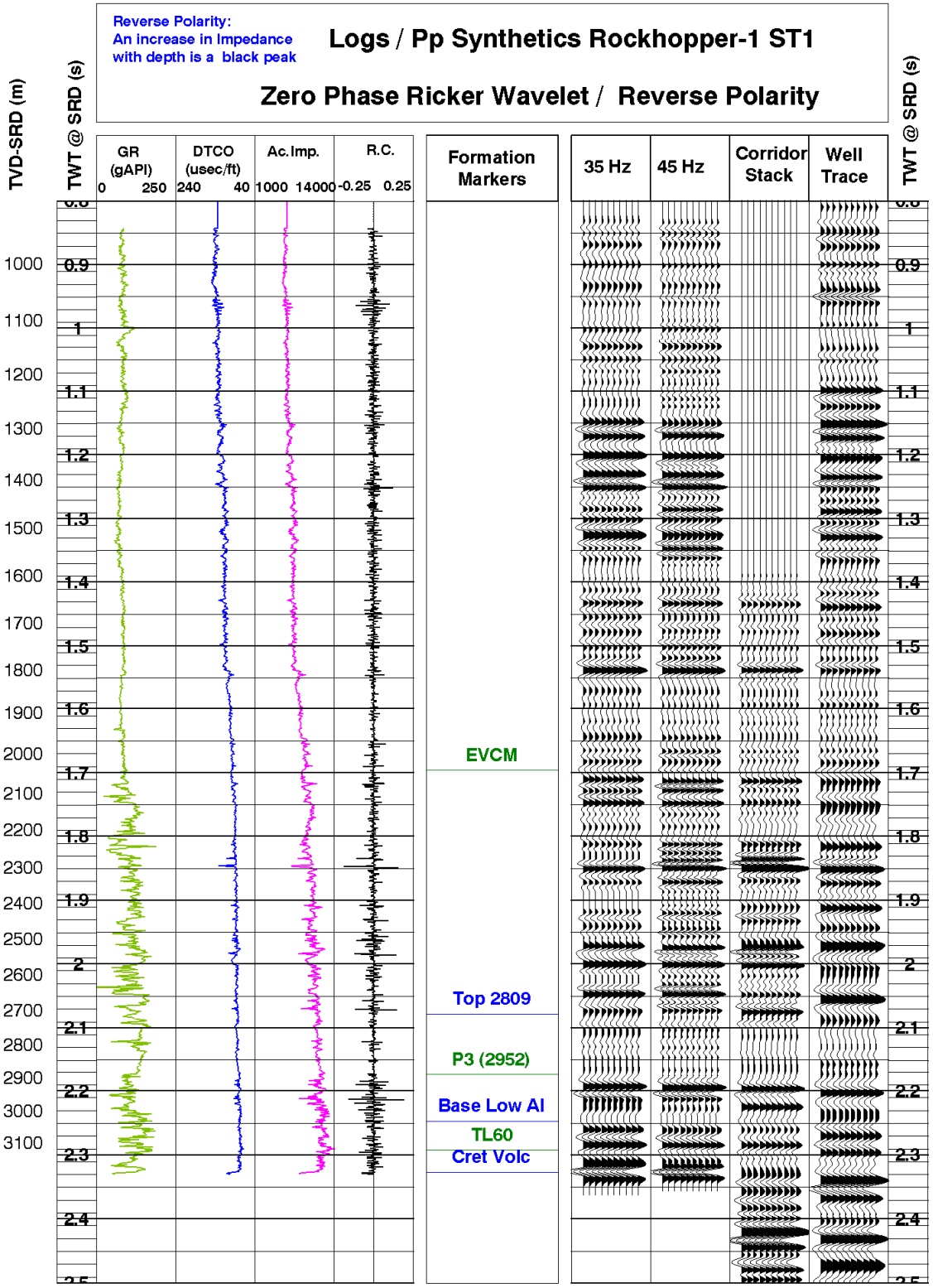


Figure 23b. RH1 ST1 Surface Seismic Well trace, Corridor Stack, Synthetics, Logs (Reverse polarity)

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Attachment 1: Summary of Geophysical Listings

Four geophysical data listings are provided for each survey. A1 is included in the report; A2, A3 and A4 are provided in electronic form on the CD-ROM. Following is a brief description of the format.

A1 Check Shot Data

1. Level number: the level number starting from the top level (includes any imposed shots).
2. Vertical depth form SRD: *dsrd*, the depth in meters from seismic reference datum (LAT).
3. Measured depth from DF: *dkb*, the depth in meters from DF.
4. Observed travel time HYD to GEO: *tim*0, the transit time picked form the stacked data by subtracting the surface sensor first break time from the downhole sensor first break time.
5. Vertical travel time SRD to GEO: *shtm*, is *timv* – vertical time, corrected for the vertical distance between source and datum. Here calculated using model based NMO correction.
6. Delta depth between shots: Δ*depth*, the vertical distance between each level.
7. Delta time between shots: Δ*time*, difference in vertical travel time (*shtm*) between each level.
8. Interval velocity between shots: average velocity between each level, Δ*depth*/Δ*time*
9. Average velocity SRD to GEO: average velocity from datum to checkshot level, shtm/dsrd
10. RMS velocity SRD to GEO: RMS velocity from datum to the checkshot level

A2 Drift & Sonic Adjustment

Zone Set Data

1. Knee number: the knee number starting from the highest knee. (The first knees listed will generally be at SRD and the top of sonic. The drift imposed at the knees will normally be zero.)
2. Measured depth from DF: the depth in meters from DF
3. Vertical depth from SRD: the depth in meters from seismic reference datum.
4. Selected Drift at knee: the value of drift imposed at each knee.
5. Shift: the change in drift divided by the change in depth between any two levels.
6. Delta-T: see section 5 of report for an explanation of Δt_{min}.
7. Reduction factor G: see section 5 of report.
8. Selected Drift Gradient: the gradient of the imposed drift curve.

Sonic Adjustment Data

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1. Measured depth from DF: the depth in meters from DF
2. Vertical depth from SRD: the depth in meters from seismic reference datum.
3. Vertical shot time SRD to GEO: the calculated vertical travel time from datum to geophone.
4. Adjusted Sonic Time.
5. Computed drift at level: the checkshot time minus the integrated raw sonic time.
6. Residual Shot Time - Adjusted Sonic Time.
7. Adjusted Interval Velocity.
8. Adjusted RMS Velocity.
9. Adjusted Average Velocity.

A3 Velocity Report

1. The data in this listing has been resampled in time.
2. Two way travel time from SRD: this is the index for the data in this listing. The first value is at SRD (0 ms) and is reported every 10 ms.
3. Measured depth from DF: the depth from DF at each corresponding value of two way time.
4. Vertical depth from SRD: the vertical depth from SRD at each corresponding value of two way time.
5. Average velocity SRD to GEO: the vertical depth from SRD divided by half the two way time.
6. RMS velocity: the root mean square velocity from datum to the corresponding value of two way time.

$$V_{rms} = \sqrt{\sum v_i^2 t_i / \sum t_i}$$

where v_i is the velocity between each 2 ms interval.

7. Interval velocity: the velocity between each sampled depth.

A4 Time to Depth

1. Two Way Sonic Time from SRD

2-11. Depth at Time, ms: times every 1 ms

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Attachment 2a: A1 Well Seismic Report (Rockhopper-1)

Client and Well Information

Country	**Australia**
Logging Date	**4 Jan 2010**
Company	Origin Energy Resources Ltd
Field	Rockhopper
Well	Rockhopper-1

Seismic Reference Datum : LAT Reference Velocity : 1524 m/s

DF Elevation above SRD : 26 m Time Picking on Geophone Transformed GAC Stacks

Table 4. VSP Data (Model based NMO Vertical Times)

LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
1	0.0			0.0000					
							2223		
2	988.1	1014.1	0.4420	0.4446				2223	2223
					15.1	0.0059	2560		
3	1003.3	1029.3	0.4479	0.4505				2227	2228
					15.1	0.0064	2373		
4	1018.4	1044.4	0.4542	0.4568				2229	2230
					15.1	0.0068	2216		
5	1033.5	1059.5	0.4611	0.4637				2229	2229
					54.6	0.0252	2168		
6	1088.1	1114.1	0.4862	0.4888				2226	2226
					15.1	0.0057	2666		
7	1103.2	1129.2	0.4919	0.4945				2231	2232
					15.1	0.0063	2408		
8	1118.3	1144.4	0.4982	0.5008				2233	2234
					15.1	0.0060	2528		
9	1133.5	1159.5	0.5041	0.5068				2237	2238
					54.6	0.0240	2268		
10	1188.1	1214.1	0.5281	0.5309				2238	2239
					15.1	0.0064	2384		
11	1203.2	1229.2	0.5344	0.5372				2240	2241
					15.1	0.0063	2408		
12	1218.3	1244.4	0.5407	0.5435				2242	2243
					15.1	0.0067	2325		
13	1233.5	1259.5	0.5474	0.5500				2243	2244
					54.7	0.0243	2247		
14	1288.1	1314.1	0.5717	0.5743				2243	2244
					15.1	0.0061	2402		
15	1303.2	1329.3	0.5778	0.5806				2245	2246
					15.1	0.0062	2444		
16	1318.4	1344.4	0.5840	0.5868				2247	2248
					15.1	0.0061	2456		
17	1333.5	1359.5	0.5901	0.5930				2249	2250
					54.6	0.0227	2429		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
18	1388.1	1414.1	0.6128	0.6155				2255	2257
					15.1	0.0058	2523		
19	1403.2	1429.2	0.6186	0.6214				2258	2260
					15.1	0.0061	2527		
20	1418.4	1444.4	0.6246	0.6274				2261	2262
					15.1	0.0056	2675		
21	1433.5	1459.5	0.6302	0.6331				2264	2266
					54.7	0.0206	2659		
22	1488.1	1514.1	0.6508	0.6536				2277	2280
					15.1	0.0055	2702		
23	1503.2	1529.3	0.6563	0.6592				2280	2284
					15.1	0.0059	2627		
24	1518.4	1544.4	0.6621	0.6650				2283	2287
					15.1	0.0055	2715		
25	1533.5	1559.5	0.6677	0.6706				2287	2291
					54.5	0.0205	2678		
26	1588.0	1614.0	0.6881	0.6909				2298	2303
					15.1	0.0056	2681		
27	1603.1	1629.1	0.6937	0.6965				2302	2306
					15.1	0.0057	2656		
28	1618.2	1644.3	0.6994	0.7022				2304	2310
					15.1	0.0056	2665		
29	1633.4	1659.4	0.7050	0.7079				2307	2313
					54.7	0.0204	2685		
30	1688.1	1714.1	0.7254	0.7283				2318	2324
					15.1	0.0054	2771		
31	1703.2	1729.2	0.7308	0.7338				2321	2327
					15.1	0.0056	2718		
32	1718.3	1744.3	0.7364	0.7393				2324	2331
					15.1	0.0055	2743		
33	1733.4	1759.5	0.7419	0.7448				2327	2334
					54.6	0.0200	2730		
34	1788.1	1814.1	0.7619	0.7648				2338	2345
					15.1	0.0056	2761		
35	1803.2	1829.2	0.7674	0.7703				2341	2348
					15.1	0.0051	2927		
36	1818.3	1844.4	0.7725	0.7755				2345	2353
					15.1	0.0052	2894		
37	1833.4	1859.5	0.7777	0.7807				2348	2357
					54.6	0.0184	2981		
38	1888.1	1914.1	0.7961	0.7990				2363	2373
					15.1	0.0048	3115		
39	1903.2	1929.2	0.8008	0.8039				2367	2378
					15.1	0.0050	3035		
40	1918.3	1944.4	0.8058	0.8089				2372	2383
					15.1	0.0049	3074		
41	1933.4	1959.5	0.8107	0.8138				2376	2387
					54.5	0.0175	3130		
42	1988.0	2014.1	0.8282	0.8312				2392	2405
					15.0	0.0046	3286		
43	2003.0	2029.2	0.8328	0.8358				2397	2411

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
					15.0	0.0048	3231		
44	2018.0	2044.4	0.8375	0.8404				2401	2416
					5.4	0.0011	3894		
45	2023.4	2049.8	0.8387	0.8418				2404	2420
					4.3	0.0020	2592		
46	2027.7	2054.2	0.8407	0.8435				2404	2420
					5.3	0.0014	3474		
47	2033.0	2059.5	0.8421	0.8450				2406	2422
					9.7	0.0032	3175		
48	2042.7	2069.3	0.8453	0.8480				2409	2425
					14.6	0.0043	3371		
49	2057.3	2084.1	0.8495	0.8524				2414	2431
					14.8	0.0045	3295		
50	2072.1	2099.2	0.8540	0.8569				2418	2436
					14.5	0.0044	3298		
51	2086.6	2114.1	0.8584	0.8613				2423	2442
					14.9	0.0041	3467		
52	2101.5	2129.5	0.8625	0.8656				2428	2448
					14.4	0.0042	3370		
53	2115.9	2144.4	0.8667	0.8698				2432	2453
					14.5	0.0043	3373		
54	2130.4	2159.5	0.8710	0.8742				2437	2458
					51.1	0.0147	3498		
55	2181.6	2214.1	0.8857	0.8888				2455	2479
					13.9	0.0039	3548		
56	2195.4	2229.2	0.8896	0.8927				2459	2485
					13.9	0.0038	3559		
57	2209.3	2244.4	0.8934	0.8966				2464	2490
					13.6	0.0037	3594		
58	2222.8	2259.5	0.8971	0.9003				2469	2496
					47.4	0.0134	3534		
59	2270.2	2314.1	0.9108	0.9138				2484	2514
					12.7	0.0038	3451		
60	2282.9	2329.2	0.9147	0.9174				2488	2519
					12.5	0.0039	3401		
61	2295.4	2344.4	0.9186	0.9211				2492	2523
					12.4	0.0033	3672		
62	2307.8	2359.5	0.9220	0.9245				2496	2528
					43.4	0.0115	3668		
63	2351.2	2414.1	0.9342	0.9363				2511	2546
					11.6	0.0030	3696		
64	2362.8	2429.2	0.9374	0.9395				2515	2550
					11.4	0.0030	3689		
65	2374.2	2444.4	0.9407	0.9425				2519	2555
					11.3	0.0030	3651		
66	2385.5	2459.5	0.9439	0.9456				2523	2559
					40.0	0.0103	3718		
67	2425.5	2514.1	0.9552	0.9564				2536	2575
					11.1	0.0029	3667		
68	2436.5	2529.2	0.9584	0.9594				2540	2579
					11.1	0.0029	3680		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
69	2447.6	2544.3	0.9616	0.9624				2543	2584
					11.0	0.0027	3763		
70	2458.6	2559.4	0.9646	0.9653				2547	2588
					7.2	0.0019	3622		
71	2465.8	2569.2	0.9668	0.9673				2549	2591
					11.1	0.0028	3718		
72	2476.9	2584.4	0.9699	0.9703				2553	2595
					11.1	0.0030	3618		
73	2487.9	2599.5	0.9733	0.9734				2556	2599
					11.0	0.0030	3613		
74	2499.0	2614.6	0.9766	0.9764				2559	2602

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Attachment 2b: A1 Well Seismic Report (Rockhopper-1 ST1)

Client and Well Information

Country	Australia
Logging Date	9 Feb 2010
Company	Origin Energy Resources Ltd
Field	Rockhopper
Well	Rockhopper-1 ST1

Seismic Reference Datum : LAT Reference Velocity : 1524 m/s

DF Elevation above SRD : 26 m Time Picking on Geophone Transformed GAC Stacks

Table 5. VSP Data (Model based NMO Vertical Times / merged with RH1)

LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
1	0.0			0.0000					
							2223		
2	988.1	1014.1	0.4420	0.4446				2223	2223
					15.1	0.0059	2560		
3	1003.3	1029.3	0.4479	0.4505				2227	2228
					15.1	0.0064	2373		
4	1018.4	1044.4	0.4542	0.4568				2229	2230
					15.1	0.0068	2216		
5	1033.5	1059.5	0.4611	0.4637				2229	2229
					54.6	0.0252	2168		
6	1088.1	1114.1	0.4862	0.4888				2226	2226
					15.1	0.0057	2666		
7	1103.2	1129.2	0.4919	0.4945				2231	2232
					15.1	0.0063	2408		
8	1118.3	1144.4	0.4982	0.5008				2233	2234
					15.1	0.0060	2528		
9	1133.5	1159.5	0.5041	0.5068				2237	2238
					54.6	0.0240	2268		
10	1188.1	1214.1	0.5281	0.5309				2238	2239
					15.1	0.0064	2384		
11	1203.2	1229.2	0.5344	0.5372				2240	2241
					15.1	0.0063	2408		
12	1218.3	1244.4	0.5407	0.5435				2242	2243
					15.1	0.0067	2325		
13	1233.5	1259.5	0.5474	0.5500				2243	2244
					54.7	0.0243	2247		
14	1288.1	1314.1	0.5717	0.5743				2243	2244
					15.1	0.0061	2402		
15	1303.2	1329.3	0.5778	0.5806				2245	2246
					15.1	0.0062	2445		
16	1318.4	1344.4	0.5840	0.5868				2247	2248
					15.1	0.0061	2456		
17	1333.5	1359.5	0.5901	0.5930				2249	2250
					54.6	0.0227	2429		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
18	1388.1	1414.1	0.6128	0.6155				2255	2257
					15.1	0.0058	2523		
19	1403.2	1429.2	0.6186	0.6214				2258	2260
					15.1	0.0061	2527		
20	1418.4	1444.4	0.6246	0.6274				2261	2262
					15.1	0.0056	2676		
21	1433.5	1459.5	0.6302	0.6331				2264	2266
					54.7	0.0206	2659		
22	1488.1	1514.1	0.6508	0.6536				2277	2280
					15.1	0.0055	2702		
23	1503.2	1529.3	0.6563	0.6592				2280	2284
					15.1	0.0059	2627		
24	1518.4	1544.4	0.6621	0.6650				2283	2287
					15.1	0.0055	2715		
25	1533.5	1559.5	0.6677	0.6705				2287	2291
					54.5	0.0205	2715		
26	1589.2	1615.2	0.6894	0.6911				2300	2305
					15.1	0.0056	2683		
27	1604.3	1630.4	0.6950	0.6967				2303	2308
					15.1	0.0057	2657		
28	1619.5	1645.5	0.7007	0.7024				2306	2311
					15.1	0.0056	2658		
29	1634.6	1660.6	0.7063	0.7081				2308	2314
					24.5	0.0098	2568		
30	1659.1	1685.1	0.7162	0.7176				2312	2317
					15.1	0.0056	2718		
31	1674.2	1700.2	0.7217	0.7232				2315	2321
					15.1	0.0056	2721		
32	1689.3	1715.3	0.7273	0.7287				2318	2324
					15.1	0.0054	2766		
33	1704.4	1730.4	0.7327	0.7342				2321	2328
					26.8	0.0097	2743		
34	1731.3	1757.3	0.7425	0.7440				2327	2334
					15.1	0.0055	2730		
35	1746.4	1772.4	0.7480	0.7495				2330	2337
					15.1	0.0056	2712		
36	1761.5	1787.5	0.7536	0.7551				2333	2340
					15.1	0.0054	2761		
37	1776.6	1802.7	0.7590	0.7606				2336	2343
					15.2	0.0058	2690		
38	1791.9	1817.9	0.7648	0.7663				2338	2346
					15.1	0.0054	2831		
39	1807.0	1833.0	0.7701	0.7716				2342	2350
					15.1	0.0050	2932		
40	1822.1	1848.1	0.7752	0.7767				2346	2354
					15.1	0.0052	2873		
41	1837.2	1863.3	0.7804	0.7820				2349	2358
					14.4	0.0052	2847		
42	1851.6	1877.7	0.7856	0.7871				2353	2361
					15.1	0.0051	3020		
43	1866.8	1892.8	0.7906	0.7921				2357	2366

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
					15.1	0.0049	3054		
44	1881.9	1907.9	0.7956	0.7970				2361	2371
					7.4	0.0026	2964		
45	1889.3	1915.3	0.7981	0.7995				2363	2373
					7.7	0.0023	3217		
46	1897.0	1923.0	0.8004	0.8019				2366	2376
					7.4	0.0026	2944		
47	1904.4	1930.5	0.8030	0.8044				2367	2378
					8.4	0.0028	3038		
48	1912.8	1938.8	0.8058	0.8072				2370	2381
					6.7	0.0022	3075		
49	1919.5	1945.6	0.8080	0.8094				2372	2383
					8.4	0.0028	3027		
50	1927.9	1954.0	0.8108	0.8122				2374	2385
					6.7	0.0021	3119		
51	1934.6	1960.7	0.8129	0.8143				2376	2387
					8.4	0.0028	3023		
52	1943.0	1969.1	0.8157	0.8171				2378	2390
					15.1	0.0050	3022		
53	1958.2	1984.2	0.8207	0.8221				2382	2394
					15.0	0.0042	3333		
54	1973.1	1999.2	0.8249	0.8266				2387	2400
					15.1	0.0049	3197		
55	1988.2	2014.3	0.8298	0.8313				2392	2406
					15.1	0.0047	3254		
56	2003.3	2029.4	0.8345	0.8359				2396	2411
					15.0	0.0047	3233		
57	2018.3	2044.5	0.8392	0.8406				2401	2416
					15.0	0.0047	3233		
58	2033.3	2059.6	0.8439	0.8452				2406	2422
					15.0	0.0057	2937		
59	2048.3	2074.8	0.8496	0.8503				2409	2425
					14.9	0.0037	3606		
60	2063.2	2089.9	0.8534	0.8545				2415	2432
					14.9	0.0050	3118		
61	2078.1	2105.0	0.8584	0.8593				2419	2437
					14.9	0.0042	3413		
62	2093.1	2120.2	0.8626	0.8636				2424	2442
					14.9	0.0046	3259		
63	2107.9	2135.3	0.8673	0.8682				2428	2447
					14.8	0.0041	3423		
64	2122.7	2150.4	0.8714	0.8725				2433	2453
					14.8	0.0041	3520		
65	2137.5	2165.5	0.8756	0.8767				2438	2459
					14.8	0.0039	3617		
66	2152.3	2180.8	0.8795	0.8808				2444	2466
					14.7	0.0042	3493		
67	2167.0	2195.9	0.8838	0.8850				2449	2472
					14.6	0.0042	3462		
68	2181.6	2211.0	0.8880	0.8892				2453	2478
					14.5	0.0044	3389		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
69	2196.0	2226.1	0.8925	0.8935				2458	2483
					14.3	0.0047	3252		
70	2210.3	2241.2	0.8972	0.8979				2462	2487
					14.1	0.0035	3728		
71	2224.4	2256.3	0.9008	0.9017				2467	2494
					13.9	0.0037	3583		
72	2238.3	2271.4	0.9046	0.9055				2472	2499
					13.7	0.0045	3233		
73	2252.0	2286.6	0.9092	0.9098				2475	2503
					13.5	0.0035	3646		
74	2265.6	2301.7	0.9128	0.9135				2480	2509
					13.3	0.0041	3341		
75	2278.9	2316.8	0.9171	0.9175				2484	2513
					13.3	0.0037	3547		
76	2292.2	2331.9	0.9209	0.9212				2488	2518
					13.1	0.0042	3287		
77	2305.3	2347.1	0.9253	0.9252				2492	2522
					13.0	0.0036	3566		
78	2318.3	2362.2	0.9291	0.9289				2496	2527
					12.8	0.0035	3562		
79	2331.1	2377.3	0.9328	0.9325				2500	2532
					12.8	0.0036	3540		
80	2343.8	2392.4	0.9366	0.9361				2504	2536
					12.6	0.0037	3436		
81	2356.4	2407.5	0.9405	0.9397				2508	2540
					12.6	0.0030	3831		
82	2369.0	2422.7	0.9437	0.9430				2512	2546
					12.4	0.0037	3420		
83	2381.4	2437.8	0.9476	0.9466				2516	2550
					12.4	0.0030	3813		
84	2393.8	2452.9	0.9508	0.9499				2520	2555
					12.2	0.0037	3377		
85	2406.0	2468.0	0.9548	0.9535				2523	2559
					12.2	0.0037	3411		
86	2418.2	2483.1	0.9588	0.9571				2527	2563
					12.2	0.0031	3698		
87	2430.4	2498.2	0.9622	0.9604				2531	2568
					12.2	0.0033	3594		
88	2442.6	2513.3	0.9657	0.9638				2534	2572
					12.3	0.0041	3217		
89	2454.9	2528.4	0.9701	0.9676				2537	2575
					12.3	0.0035	3469		
90	2467.2	2543.6	0.9740	0.9711				2541	2579
					12.2	0.0030	3731		
91	2479.4	2558.8	0.9773	0.9744				2545	2583
					12.2	0.0036	3438		
92	2491.7	2573.9	0.9812	0.9780				2548	2587
					12.2	0.0032	3662		
93	2503.9	2589.0	0.9847	0.9813				2552	2591
					12.2	0.0038	3349		
94	2516.1	2604.1	0.9887	0.9850				2555	2595

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
					12.3	0.0034	3528		
95	2528.4	2619.2	0.9925	0.9884				2558	2598
					12.3	0.0031	3713		
96	2540.7	2634.3	0.9959	0.9918				2562	2603
					12.3	0.0040	3261		
97	2553.0	2649.4	1.0002	0.9955				2564	2606
					12.3	0.0038	3404		
98	2565.4	2664.5	1.0043	0.9992				2568	2609
					12.3	0.0033	3622		
99	2577.7	2679.7	1.0080	1.0026				2571	2613
					12.3	0.0034	3594		
100	2589.9	2694.8	1.0118	1.0060				2575	2617
					12.2	0.0034	3568		
101	2602.2	2709.9	1.0155	1.0094				2578	2621
					12.3	0.0031	3735		
102	2614.5	2725.1	1.0190	1.0127				2582	2625
					12.3	0.0034	3556		
103	2626.8	2740.2	1.0229	1.0162				2585	2629
					12.3	0.0031	3747		
104	2639.1	2755.3	1.0264	1.0194				2589	2633
					12.3	0.0037	3417		
105	2651.4	2770.4	1.0305	1.0230				2592	2637
					12.3	0.0035	3554		
106	2663.7	2785.6	1.0343	1.0265				2595	2640
					12.3	0.0034	3591		
107	2676.0	2800.7	1.0381	1.0299				2598	2644
					12.3	0.0034	3583		
108	2688.3	2815.8	1.0419	1.0334				2601	2648
					12.3	0.0034	3575		
109	2700.5	2830.9	1.0458	1.0368				2605	2651
					12.3	0.0031	3840		
110	2712.8	2846.0	1.0493	1.0400				2609	2656
					12.3	0.0032	3815		
111	2725.1	2861.1	1.0529	1.0432				2612	2660
					12.3	0.0032	3817		
112	2737.5	2876.3	1.0565	1.0464				2616	2664
					12.3	0.0034	3664		
113	2749.8	2891.4	1.0603	1.0498				2619	2668
					12.2	0.0033	3711		
114	2762.0	2906.4	1.0641	1.0531				2623	2672
					12.3	0.0033	3715		
115	2774.3	2921.6	1.0678	1.0564				2626	2676
					12.3	0.0031	3842		
116	2786.6	2936.7	1.0714	1.0596				2630	2680
					12.3	0.0034	3656		
117	2798.9	2951.8	1.0753	1.0630				2633	2684
					12.5	0.0029	4010		
118	2811.4	2967.0	1.0786	1.0661				2637	2689
					12.6	0.0032	3810		
119	2823.9	2982.1	1.0823	1.0694				2641	2693
					12.6	0.0034	3697		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
120	2836.5	2997.2	1.0862	1.0728				2644	2697
					12.6	0.0035	3663		
121	2849.2	3012.3	1.0901	1.0762				2647	2700
					12.6	0.0034	3745		
122	2861.8	3027.4	1.0939	1.0796				2651	2704
					12.5	0.0032	3834		
123	2874.3	3042.6	1.0976	1.0829				2654	2708
					12.5	0.0031	3864		
124	2886.8	3057.7	1.1012	1.0861				2658	2713
					12.4	0.0032	3804		
125	2899.2	3072.8	1.1048	1.0894				2661	2716
					12.4	0.0030	3925		
126	2911.5	3087.9	1.1083	1.0925				2665	2721
					12.3	0.0032	3814		
127	2923.8	3103.0	1.1120	1.0957				2668	2725
					12.3	0.0031	3905		
128	2936.1	3118.2	1.1156	1.0989				2672	2729
					12.3	0.0031	3911		
129	2948.4	3133.3	1.1192	1.1020				2675	2733
					12.3	0.0034	3721		
130	2960.8	3148.4	1.1232	1.1053				2679	2736
					12.3	0.0035	3656		
131	2973.1	3163.6	1.1272	1.1087				2682	2740
					12.3	0.0032	3881		
132	2985.4	3178.7	1.1309	1.1119				2685	2743
					12.3	0.0032	3872		
133	2997.7	3193.8	1.1346	1.1151				2688	2747
					12.3	0.0026	4260		
134	3009.9	3208.9	1.1378	1.1179				2692	2752
					12.3	0.0029	4043		
135	3022.2	3224.0	1.1412	1.1210				2696	2757
					12.3	0.0030	3987		
136	3034.5	3239.1	1.1447	1.1240				2700	2761
					12.3	0.0032	3865		
137	3046.7	3254.3	1.1484	1.1272				2703	2764
					12.3	0.0031	3942		
138	3059.0	3269.4	1.1520	1.1303				2706	2768
					12.3	0.0032	3872		
139	3071.3	3284.5	1.1558	1.1335				2710	2772
					12.3	0.0028	4111		
140	3083.7	3299.6	1.1591	1.1365				2713	2776
					12.3	0.0032	3878		
141	3096.0	3314.7	1.1628	1.1397				2717	2780
					12.2	0.0026	4293		
142	3108.1	3329.7	1.1659	1.1425				2720	2785
					12.3	0.0030	4007		
143	3120.4	3344.8	1.1695	1.1456				2724	2789
					12.3	0.0030	3996		
144	3132.7	3360.0	1.1730	1.1487				2727	2793
					12.3	0.0029	4034		
145	3145.0	3375.1	1.1765	1.1517				2731	2797

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
					9.1	0.0027	3608		
146	3154.1	3386.3	1.1796	1.1542				2733	2799
					12.3	0.0033	3799		
147	3166.4	3401.4	1.1835	1.1575				2736	2802
					12.2	0.0028	4124		
148	3178.6	3416.5	1.1869	1.1604				2739	2806
					12.2	0.0034	3751		
149	3190.9	3431.7	1.1908	1.1637				2742	2809

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Attachment 3: Transit Time Picking Algorithms

The time picking can be broken down into several tasks:

First of all focus on the relevant parts of a data trace by selecting time intervals in form of constraints. To this end the user can select velocity, time header and/or initial guess constraints.

Detect a signal or a first break using a detection algorithm.

Tune on a particular phase of the event (e.g. zero-crossing, peak, trough, etc). It should be clear that tuning is only happening if a pick was either detected by an algorithm or retrieved from a header as initial guess.

Despike the picked transit time curve in order to eliminate mispicks either by median filtering or by cross-correlation. The cross-correlation option does not only have filtering features but also allows picking correlated events within a section after having picked only one event.

Detection algorithm

Energy break: the algorithm determines the maximum of the so-called energy function, which is the integrated signal energy within a sliding time window normalized by the total energy accumulated since the first time of data.

For a trace S(t) an energy function F(□) is calculated with algorithm proposed by (Coppens, 1985)

Geophone break: finds the first break of a downhole sensor. The algorithm compares amplitudes and slopes in consecutive arches. Input parameters are the center frequency of the data to be picked, a linear fit gate time which should be about half a wavelet period, and a detection threshold between 0.0 and 0.5.

Hydrophone break: provides the first break of a downhole sensor. The routine finds the global minimum and maximum amplitude along a trace, takes the smaller one of the corresponding sample indices and outputs the time of the preceding zero-crossing as the first break. The zero-crossing time is determined by linear regression over a selected length (linear fit gate time).

Tuning:

Peak: finds the time of the closest local maximum amplitude in the vicinity of an input break time.
Trough: finds the time of closest local minimum amplitude in the vicinity of an input break time.

Zero-crossing: finds the time of the closest zero-crossing in the vicinity of an input break time. The routine stores the sign of the derivative at the zero crossing that can be passed on for the tuning of the following trace. Thus artifacts created by cycle skipping can be reduced.

Inflection: finds the time of the closest inflection point in the vicinity of an input break time. The routine stores the sign of the derivative at the inflection point, which can be passed on for the tuning of the following trace. Thus artifacts created by cycle skipping can be reduced.

Inflection point tangent: finds the time of the closest inflection point in the vicinity of an input break time. The tuned break time is the zero-crossing time of the corresponding tangent at this inflection point. The routine stores the sign of the derivative at the inflection point which can be passed on for the tuning of the following trace. Thus artifacts created by cycle skipping can be reduced.

Cross-correlation

This option allows to tune transit times by considering the picked phase of a selected reference trace. The cross-correlation gate in time or length units can be specified in the Motif parameter panel of this option. The default value for the gate is three times the estimated center frequency of the first five traces of the seismic section to be picked. The window is put symmetrically around the transit times of the two traces to be cross-correlated if the option Use Existing Picks for the Gate Center Time is enabled and the

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transit times are not absent.

If the option Use Existing Picks for the Gate Center Time is disabled then the cross-correlation is started with the ambient traces around the reference trace. Those two traces, in turn, will be taken to set the time gates for the following ones, and so on. Thus an automatic picking can be provided after having picked only the reference trace.

Retuning can be selected to follow the cross-correlation. In this case the cross-correlation serves as a transit time curve despiker.

The cross correlation process can be stopped automatically if the picking quality degrades. This happens if the time difference between the break of the current and the previous trace exceeds a threshold value derived from a user-specified apparent velocity.

A polynomial amplitude interpolation is proposed in order provide "real" extreme values instead of extreme values at the nearest sample. The algorithm works as follows: the global extreme values are detected with the gate together with the corresponding sample indices. A minimum and maximum amplitude tuning provides an exact time estimate of these amplitudes. Polynomial interpolation determines the amplitudes at these times, which generally fall in between samples.

There are a variety of selectable and non-exclusive constraints available in order to stabilize the time picking process . The objective is to extract only the relevant part of the trace for the detection, tuning and/or cross-correlation process using.

Reference:

Coppens, F., 1985, First arrival picking on common offset trace collections for automatic estimation of static corrections, Geophys. Prosp. 33, 1212-1231.

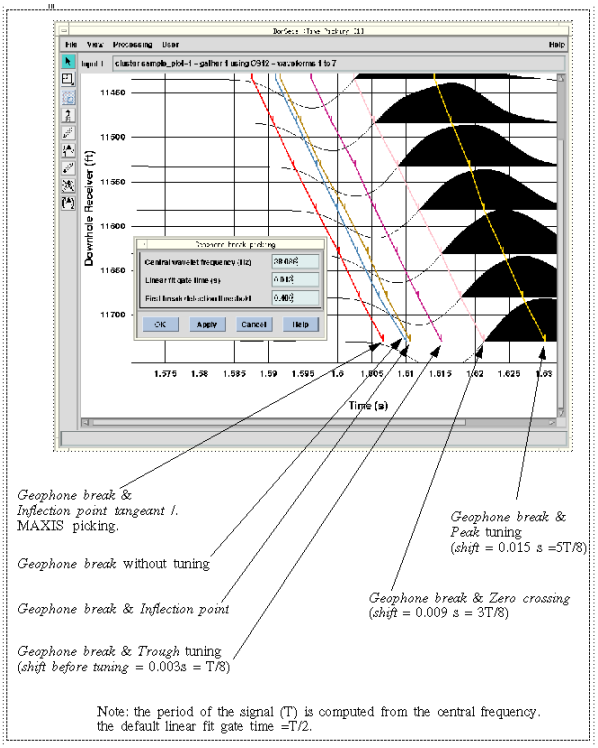


Figure A1 . Time Picking Options

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Attachment 4: Listing of Deliverables (CD-ROM)

Report:

VSP_report	VSP/Geogram Processing Report	PDF
QC_VSP_report	VSP Level 1 QC Report	PDF
QBH_report	Q-Borehole Field Survey Report	PDF

Graphics Displays:

comp1A/B	Plot 1. Composite Display 1 – Normal Polarity	TIF / PDF / PDS / CGM
comp2A/B	Plot 2. Composite Display 2 – Reverse Polarity	TIF / PDF / PDS / CGM
vel1A/B	Plot 3. Velocity Crossplot	TIF / PDF / PDS / CGM

Data files plus Verification (.txt) listings:

Raw data is provided in nascent LDF format		LDF
xstk.sgy	stacked x axis data	SEGY
ystk.sgy	stacked y axis data	SEGY
zstk.sgy	stacked z axis data	SEGY
upp1.sgy	VSP enhanced upgoing wavefield (OWT)	SEGY
upp2.sgy	VSP enhanced upgoing wavefield (NMO Corrected TWT)	SEGY
corstk.sgy	VSP corridor stack	SEGY
Image.sgy	VSP GRT Migration Image (Time)	SEGY
R25.sgy	Zero Phase Synthetic Seismograms – Ricker 25Hz	SEGY
R35.sgy	Zero Phase Synthetic Seismograms – Ricker 35Hz	SEGY
R45.sgy	Zero Phase Synthetic Seismograms – Ricker 45Hz	SEGY
logs_depth.las	Depth indexed Logs	ASCII (LAS)
logs_time.las	Time indexed Logs	ASCII (LAS)
synthetics.las	Synthetic Compressional Seismograms and Corridor Stack	ASCII (LAS)

Listings:

A1	Well_Seismic_Report	EXCEL
A2	Drift_and_Sonic_Adjustment_Report	EXCEL
A3	Velocity_Report	EXCEL
A4	Time_to_Depth_Report	EXCEL
	Time_Analysis_All	EXCEL

NOTE: The filename pre-fix indicates if the data is for Rockhopper-1 (**RH1**) Rockhopper-1 ST1 (**RH1ST1**) or combined results (**RH1andST1**).

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APPENDIX 9: PALYNOLOGICAL BASIC DATA REPORT

MORGAN PALAEO ASSOCIATES

PALYNOLOGICAL/PETROLEUM GEOLOGICAL CONSULTANTS

POSTAL ADDRESS: Box 161, Maitland, South Australia 5573
DELIVERIES: 1 Shannon Tce, Maitland, South Australia 5573
Phone (08) 8832 2795 Fax (08) 8832 2798



Palynostratigraphic age determinations,

ORIGIN ENERGY ROCKHOPPER-1 BASIC

T/18P, Bass Basin, Tasmania

Mike Macphail & Roger Morgan

Palaeontological report prepared 24 July 2010 for *Origin Energy Resources* Ltd.
John Oxley Centre, 339 Coronation Drive, Milton, Qld. 4064

Consultant Palynological Services/Morgan Palaeo Associates,
PO Box 166, Maitland, SA 5573
mike.macphail@anu.edu.au / rmorgan@netyp.com.au

REF: BAS.ROCKHOPPER-1 BASIC REPORT

1 Basic data

Basic data are presented in Table 2. Yields and preservation were variable depending on the degree of downhole contamination.

Table 2 Basic data

Well	Depth (mRT)	Type	Yield			Preservation	
			kerogen	dinocysts	spore-pollen	dinocysts	spore-pollen
Rockhopper-1	2181-2184	cuttings	high	trace	low	poor	±poor
	2349-2358	cuttings	high	-	low	-	±poor
	2421-2424	cuttings	high	trace	low	poor	very poor
	2511-2514	cuttings	very high	trace	very low	very poor	±poor
	2685	cuttings	high	trace	low	very poor	poor
	2802	cuttings	high	medium	high	fair	fair
	2922	cuttings	high	trace	high	good	fair
	3072	cuttings	high	trace	high	fair	±poor
	3258	cuttings	very high	-	high	-	very poor
	3268.9	msct	medium	-	low	-	very poor
	3300	cuttings	very high	-	high	-	poor
	3347.7	msct	very high	trace	high	fair	poor
	3384	cuttings	high	trace	medium	poor	very poor

TABLE 3A: QUANTITATIVE DATA ROCKHOPPER-1

	ROCKHOPPER-1												
	cuttings	cuttings	cuttings	cuttings	cuttings	cuttings	cuttings	cuttings	cuttings	msct	cuttings	msct	cuttings
Depth mRT	2181-2184	2349-2358	2421-2424	2511-2514	2685	2802	2922	3072	3258	3268.9	3300	3347.7	3384
Australopollis obscurus									1		1		
Forcipites longus													
Gambierina spp.									1		1	2	1
Haloragacidites harrisii	4	3	17	19	10	2		1			1		
Malvacipollis spp.			1	8	1								
Milfordia spp.				1									
Myrtaceidites spp.				2									
Nothofagidites emarcidus-heterus	2												
Nothofagidites endurus/senectus						1			1			1	
Nothofagidites flemingii	2			1	3								
Nothofagidites (unassigned spp.).	3	4	3	6	3								
Peninsulpollis gillii							1		1		2	1	3
Periporopollenites spp.				4	1	1	3						1
Polycolpites langstonii							1						
Proteacidites pachypolus	1												
Proteacidites spp.	6	5	7	4	4	2	4		1		1	1	
Tricolpites spp.		2				2	1		1				
Tricolporites/Rhoipites spp.	2	1	1		5							1	
unassigned angiosperms	2	1	4	2	1	1							
TOTAL ANGIOSPERMS	**22**	**16**	**33**	**47**	**28**	**9**	**10**	**1**	**6**		**6**	**6**	**5**
Aracuariacites australis	8	19	12	9	8	23	17	14	12		12	18	25
Dilwynites spp.	5	5	6	6	15	36	33	58	31	4	37	13	12
Lygistepollenites balmei									1				
Lygistepollenites florinii			1		1								
Microcachrydites antarcticus	1		1										
Phyllocladidites mawsonii	2	11	2	1	1		2	1	2	2	9	6	6
Phyllocladiidtes reticulosaccatus/verrucosus													
Podosporites/Trichotomosaccites	1	1	4	1	6	3	8	3	5		1	25	2
Podocarpidites (*sensu lato*)	16	8	10	7	14	7	9	8	24	8	24	19	14
TOTAL GYMNOSPERMS	**33**	**44**	**36**	**24**	**45**	**69**	**69**	**84**	**75**	**14**	**83**	**81**	**59**
Aequitriradites													
Baculatisporites spp.	2	1				2	3	1	5		4	2	
Clavifera triplex						1	2						
Cyathidites splendens		3	1	2									2
Cyathidites (> 45 microns)	25	12	8	8	4	3	1		3	10		2	4
Gleicheniidites spp.	1		1	2	4	5	3				1		
Herkosporites/Neoraistrickia									1	1			4
Latrobosporites spp.	1		1										1
Laevigatosporites spp.				1	1			1					
Peromonolites spp.			2				2						
Perotrilites spp.													
Polypodiisporites spp.								1					
Retitriletes spp.								1					2
Stereisporites spp.												1	
Trilites/Ischyosporites	2		1		1								
Verrucosisporites	2	3											
psilate trilete spores incl.*Cyathidites* (< 45 microns)	9	18	13	15	14	9	6	9	9	26	5	5	18
Unassigned trilete spores	3	3	4	1	3	2	4	2	1	49	1	3	5
TOTAL CRYPTOGAMS	**45**	**40**	**31**	**29**	**27**	**22**	**21**	**15**	**19**	**86**	**11**	**13**	**36**
FUNGAL SPORES	**0**	**3**	**1**	**9**	**37**	**6**	**5**	**0**	**4**	**4**	**4**	**1**	**6**
Botryococcus		1		1									
Morkallacysta pyramidalis						8	12	1				2	
Saeptodinium												1	
unassigned cysts	1		1			24	45	1		1		1	3
TOTAL FRESH- & BRACKISHWATER ALGAE	**1**	**1**	**1**	**1**	**0**	**32**	**57**	**2**	**0**	**1**	**0**	**4**	**3**
Paracaniella					1								
Spiniferites spp.					1								
Tectatodinium													1
unassigned dinoflagellates			4	1	1								
TOTAL DINOCYSTS	**0**	**0**	**4**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Palaeozoic-Mesozoic spores				1		1		1					1
Palaeozoic-Mesozoic gymnosperm pollen							2	10	2				
TOTAL RECYCLED	**0**	**0**	**0**	**1**	**0**	**1**	**2**	**11**	**2**	**0**	**0**	**0**	**1**
Angiosperm pollen				1			1						
Gymnosperm pollen													
TOTAL CONTAMINANTS	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**

TABLE 3B: DISTRIBUTION DATA ROCKHOPPER-1

WELL	**ROCKHOPPER-1**												
Sample Type	cuttings	cuttings	cuttings	cuttings	cuttings	cuttings	cuttings	cuttings	cuttings	msct	cuttings	msct	cuttings
DEPTH (mRT)	2181-2184	2349-2358	2421-2424	2551-2514	2685	2802	2922	3072	3258	3268.9	3300	3347.7	3384
Amosopollis cruciformis									?				X
Apectodinium hyperacanthum							X						
Ap[ectodinium reburrus							X						
Botryococcus		X		X			X						
Ceratopsis obliquipes						X							
Cordosphaeridinium inodes						?							
Fibrocysat bipolare													
Homotryblium tasmaniense					?	?							
Hystrichosphaeridium tubiferum													
Impagidinium sp.													
Kenleyia					?								
Morkallacysta pyramidalis					X	X	X	X				X	X
Operculodinium													
Paralacaniella indentata						X	X						
Polysphaeridium zoharyi													?
Saeptodinium						X						X	
Spiniferites spp.					X	X							
Tectatodinium													X
Thallasiphora													
trabeculate sp. cf. *Glaphyracysta*			X	X	X								
unassigned dinoflagellates	X					X							
Pesavis [fungal spore]						X		X	X				
Aequitriradites spinulosus													
Alisporites grandis									X				
Alisporites similis													
Alisporites/Falcisporites								X					
Annulispora folliculosa									X			X	X
Araucariacites australis	X	X	X	X	X	X	X	X		X	X	X	X
Australopollis obscurus						?			X		X		
Baculatisporites spp.	X	X	X		X	X	X	X	X	X	X		
Battenipollis sectilis													
Beaupreaidites orbiculatus											X		
Bluffopollis scabratus	X		X										
Callialiasporites dampieri								?		X			
Camarozonosporites apiculata ms							X					X	X
Camarozonosporites australiaens													
Camarozonosporites bullatus										cf.			X
Cingutriletes congruens						X	X				X		
Clavifera triplex					X	X		X	X			X	
Concacavissimisporites/Converrucosisporites													
Contignisporites glebulentus										X			
Cooksonites													
Corollinia simplex													X
Corollinia torosa													
Cranwellia palisadus													
Crassiretitriletes vanraadshoovenii						X							
Cupanieidites orthoteichus			X										
Cyathidites australis/minor	X	X	X	X	X	X	X	X	X	X	X	X	X
Cyathidites splendens	X	X	X	X	X	X	X	X			X	X	X
Cycadopites spp.						X							
Dacrycarpites australiensis												X	
Densoisporites vellatus													
Dicotetradites clavatus					X								
Dilwynites granulatus	X	X	X	X	X	X	X	X	X	X	X		X
Dilywnites pusillus						X							
Dilwynites tuberculatus	X	X	X	X	X		X						
Evansispora senonica													X
Fischeripollis sp.		X											
Foraminisporis asymmetricus								?			?		
Forcipites longus													X
Forcipites sabulosus													
Forcipites stipulatus													
Forcipites spp.													
Foveogleicheniidites sp.													
Foveosporites pseudoalveolatus											X		
Gambierina edwardsii							X	X	X		X		?
Gambierina bulbosa ms												X	
Gambierina rudata							X	X	X	X	X	X	X
Gleicheniidites ancorus						X	X	X			X		X
Gleicheniidites spp.	X	X	X	X	X	X	X	X			X	X	X
Grapnelispora evansii													
Haloragacidites harrisii	X	X	X	X	X	X		X	X		X		X
Herkosporites elliotii								X	X	X	X	X	X
Ilexpollenites spp.													
Ischyosporites gremius	X	X											
Kuylisporites waterbolkii	X												
Laevigaptosporites major						X						X	X
Laevigatosporites ovatus		X		X		X	X	X			X	X	X
Latrobosporites amplus complex									X		X	X	X
Latrobosporites marginis	X	X											
Latrobosporites crassus	?		X		X	?							
Leptolepidites verrucatus								X			X	X	X
Liliacidites peroreticulosus													
Liliacidites spp.													
Lygistepollenites balmei							X		X		X		X
Lygistepollenites florinii			X	X	X						X		
Malvacipollis diversus		X	X	X	X	X							
Malvacipollis robustus	X		X	X	cf.								
Malvacipollis subtilis	X	X	X	X	X	X							
Margocolporites vanwijhi	X												
Matonisporites gigantis							X						
Microcachrydites antarcticus complex	X	X						X	X		X		X
Milfordia homeopunctata				X									
Myrtaceoipollenites australis					X								
Myrtaceidites parvus-mesonesus				X									
Myrtaceidites tenuis				X									

Neoraistrickia equalis										X	X	X	X	X	
Neoraistrickia truncata											cf.				
Neoraistrickia spp.												X			
Nevesisporites dailyii															
Nothofagidites asperus								X							
Nothofafgidites brachyspinulosus		X	X	X		X		X							
Nothofagidites emarcidus-heterus												X			
Nothofagiidtes endurus/kaitangataensis						X	X	X	X	X			X		
Nothofagidites flemingii	X	X	X	X	X	X	X	X	X						
Nothofagidites senectus complex														X	
Nothofagidites (unassigned spp.)	X	X	X	X	X				X			X		X	
Ornamentifera sentosa															
Penisulapollis askinae												?		X	
Peninsulapollis gillii						X	X		X	X	X	X	X		
Periporopollenites demarcatus		X													
Periporopollenites polyoratus		X		X	X	X	X								
Peromonolites densus						X	X	X							
Peromonolites digitabulum ms						X		X	X						
Perotriletes majus complex														X	
Perotrilites spp.								X							
Phimopollenites pannosus															
Phyllocladites mawsonii	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Phyllocladidites reticulosaccatus									X		X				
Plicatipollenites spp.	X					X									
Podocarpidites spp.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Podosporites microsaccatus complex			X	X	X	X	X	X	X		X	X	X		
Polycolpites langstonii							X	X							
Polypodiisporites spp.			X			X	X	X							
Propylipollis annularis			X												
Propylipollis amolosexinus												X	cf.		
Proteaciidtes adenanthoides			X		X	X									
Proteacidites angulatus					?							?		X	
Proteaciidtes asperopolus		X		X											
Proteacidites crassus						X									
Proteacidites crotonoides														X	
Proteacidites grandis	X	X	X	X	X	X		X				X			
Proteacidites cf. *grandis*											X				
Proteacidites incurvatus						X	X							X	
Proteaciidtes kopiensis		X													
Proteacidites latrobensis															
Proteaciidtes leightonii		X													
Proteaciidtes obesolabrus				X											
Proteacidites obscurus					X	X									
Proteaciidtes ornatus		X			?										
Proteacidites pachypolus	X		X	X		X		X							
Proteacidites prepolus ms															
Proteacidites recavus	?														
Proteaciidtes rectus	X	X	X	X	X		X	X	cf.			X		X	
Proteaciidtes reticuloconcavus ms													?		
Proteacidites tuberculiformis			X		X										
Proteacidites wahooensis ms															
Proteacidites spp.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Protohaploxypinus amplus								X							
Protohaploxypinus limpidus						X									
Pseodoreticulatispora pseudoreticulatus						X									
Pseudowinterapollis wahooensis															
Quadraplanus brossus															
Retitriletes australoclavatidites complex							X	X	X	X	X	X	X		
Retitriletes circolumenus											X				
Retitriletes facetus								X							
Retitriletes spp.	X	X		X		X	X							X	
Rhoipites spp.	X		X		X				X						
Rosannia (al. *Lactoripollenites*) *sp.*															
Rotverrusporites stellatus															
Rouseisporites															
Ruffordiaspora australiensis						X									
Rugulatisporites mallatus complex		X				X		X					X		
Sellaspora asperata complex								X	cf.			X		X	
Spinizonocolpites prominatus							X								
Stereisporites antiquisporites						X	X	X				X		X	
Stereisporites australis	X		X			X	X	X			X	X	X	X	
Stereisporites maastrichtensis ms						X	X	X	X			X	X	X	
Stereisporites regium													X		
Striatella spp.												X			
Tensucolpites lilliei															
Tetracolporites multistrixus ms						X									
Tetracolporites textus ms						X									
Tetracolporites verrucosus									X						
Tetradopollis spp.															
Tricolpites adelaidensis		X	X												
Tricolpites spp. s.l.		X	X		X	X	X				X		X	X	
Tricolporites leuros	X														
Tricolporites moultonii ms					X										
Tricolporites spp. s.l.			X		X	X						X	X		
Trilites tuberculiformis complex	X	X	X		X	X	X	X							
Triporoletes reticulatus															
Triporopollenites spp.			X	X			X							X	
Verrucosisporites kopukuensis	X	X	X	X	X	X									
Acacia						X									
Casuarinaceae				X							X				
Chenopodiaceae		X			X	X	X							X	
Eucalyptus															
Liliaceae											X				
Pinus															
Poaceae															

Well Name : ROCKHOPPER-1 QUANTITATIVE

Operator : ORIGIN ENERGY
Interval : 2164m - 3404m — **Palynological Data Chart : BASIC DATA**
Scale : 1:10000 — **% Abundance histogram : Highest occurrence**
Chart date: 02 August 2010 — **Mike Macphail**

Morgan Palaeo Associates
Maitland, South Australia

Enclosure 2

Sampling
- Cutting
- Core
- Sidewall core

Text Keys
*1 % within discipline (40mm=100%)
*2 In-Situ,'?' occurrences
*3 ALBO

Depth	Samples	DC	Algae	?	Spores And Pollen	Fungi	Samples	Total Count	% Category
	Samples in Discipline(s) : Paly	*1 In-Situ,'?' occurrences	*1 *2	*1 *2	% within discipline (40mm=100%) In-Situ,'?' occurrences	*1 *2	Samples in Discipline(s) : Paly	In-Situ,'?' occurrences	In-Situ,'?' occurrences
		Dinocysts indet *Paralecaniella indentata* *Spiniferites* spp. *Morkallacysta pyramidalis* *Saeptodinium* spp. *Tectatodinium* . *unassigned cysts*		*Botryococcus* . *angiosperms unassigned* *Araucariacites australis* *Baculatisporites* spp. *Cyathidites (> 45 microns)* *Cyathidites* spp.% *Dilwynites* spp. *Gleicheniidites* spp. *Haloragacidites harrisii* *Latrobosporites* spp. *Microcachryidites antarcticus* *Nothofagidites (unassigned spp.).* *Nothofagidites emarcidus-heterus* *Nothofagidites flemingii* *Phyllocladidites mawsonii* *Podocarpidites (sensu lato)* *Podosporites/Trichotomosaccite* . *Proteacidites pachypolus* *Proteacidites* spp. *spore% trilete%* *Tricolporites/Rhoipites* spp. *Trilites/Ischyosporites* . *Verrucosisporites* . *Cyathidites splendens* *Tricolpites* spp. *Lygistepollenites florinii* *Malvacipollis* spp. *Peromonolites* spp. *Laevigatosporites* spp. *Milfordia* spp. *Myrtaceidites* spp. *Palaeozoic-Mesozoic* spp. *Periporopollenites* spp. *Clavifera triplex* *Nothofagidites endurus/senectus* *Palaeozoic-Mesozoic gymnosperm pollen* *Peninsulapollis gillii* *Polycolpites langstonii* *Polypodiisporites* sp. *Retitriletes* spp. *Australopollis obscurus* *Gambierina* spp. *Herkosporites/Neoraistrickia* . *Lygistepollenites balmei* *Stereisporites* spp.	*Fungal spores*			
2200m	2181.00-2184.00m CU	99		1 7 1 24 8 4 99 3 99 99 2 1 1 1 15 99 99 5 2 1 1 1 94 94 94 94 1 94 94 94 94

Well Name : ROCKHOPPER-1 OCCURENCE

Operator : ORIGIN ENERGY

Interval : 2161m - 3404m **Palynological Data Chart : BASIC DATA**

Scale : 1:10000 **% Abundance histogram : Highest occurrence**

Chart date: 02 August 2010 **Mike Macphail**

ROCKHOPPER-1 OCCURENCE

Morgan Palaeo Associates
Maitland, South Australia

Enclosure 1

Sampling
Cutting
Core
Sidewall core

Text Keys
*1 % within discipline (40mm=100%)
*2 In-Situ,'?' occurrences
*3 ALBO

Depth | **Samples** (Samples in Discipline(s) : Paly)

Dinoflagellate Cysts | *3 | alb

% within discipline (40mm=100%) | *1
In-Situ,'?' occurrences | *2

Dinocysts indet
Glaphyrocysta sp.
Homotryblium tasmaniense
Kenleyia spp.
Morkallacysta pyramidalis
Spiniferites spp.
Ceratiopsis obliquipes
Cordosphaeridium inodes
Paralecaniella indentata
Saeptodinium spp.
Apectodinium hyperacanthum
Apectodinium reburrus
Polysphaeridium zoharyi
Tectatodinium .
Botryococcus .

Spores And Pollen | FU

% within discipline (40mm=100%) | *1
In-Situ,'?' occurrences | *2

Amosopollis cruciformis
Araucariacites australis
Baculatisporites spp.
Bluffopollis scabratus
Cyathidites splendens
Cyathidites spp.
Dilwynites granulatus
Dilwynites tuberculatus
Gleicheniidites spp.
Haloragacidites harrisii
Ischyosporites gremius
Kuylisporites waterbolkii
Latrobosporites crassus
Latrobosporites marginis
Malvacipollis robustus ms
Malvacipollis subtilis
Margocolporites vanwijhei
Microcachryidites antarcticus
Nothofagidites flemingii
Nothofagidites sp.
Phyllocladidites mawsonii
Plicatipollenites spp.
Podocarpidites spp.
Proteacidites grandis
Proteacidites pachyglous
Proteacidites recavus
Proteacidites rectus
Proteacidites spp.
Retitriletes spp.
Rhoipites spp.
Stereisporites australis
Tricolporites leuros
Trilites tuberculiformis
Verrucosisporites kopukuensis
Chenopodiaceae spp.
Fischeripollis sp.
Laevigatosporites ovatus
Malvacipollis diversus
Nothofagidites brachyspinulosus
Periporopollenites demarcatus
Periporopollenites polyoratus
Proteacidites asperopolus
Proteacidites kopiensis
Proteacidites leightonii
Proteacidites ornatus
Rugulatisporites mallatus
Tricolpites adelaidensis
Tricolpites spp.
Cupanieidites orthoteichus
Lygistepollenites florinii
Podosporites microsaccatus
Polypodiisporites sp.
Propylipollis annularis
Proteacidites adenanthoides
Proteacidites tuberculiformis
Tricolporites spp.
Triporopollenites spp.
Casuarinaceae .
Milfordia homeopunctata
Myrtaceidites parvus/mesonesus
Myrtaceidites tenuis
Proteacidites obesolabrus
Clavifera triplex
Dicotetradites clavatus
Myrtaceoipollenites australis
Proteacidites angulatus
Tricolpites obscurus
Tricolporites moultonii ms
Acacia spp.
Australopollis obscurus
Cingutriletes congruens
Crassiretitriletes vanraadshooveniii
Cycadopites spp.
Dilwynites pusillus ms
Gleicheniidites ancorus
Laevigatosporites major
Nothofagidites endurus/kaitangataensis
Peninsulapollis gillii
Peromonolites densus
Peromonolites digitabulum ms
Proteacidites crassus
Proteacidites incurvatus
Protohaploxypinus limpidus
Pseudoreticulatispora pseudoreticulatus
Ruffordiaspora australiensis
Stereisporites antiquasporites
Stereisporites maastrichtiensis ms
Tetracolporites multistrixus ms
Tetracolporites textus ms
Camarozonosporites apiculata ms
Gambierina edwardsii
Gambierina rudata
Lygistepollenites balmei
Matonisporites gigantis
Polycolpites langstonii
Retitriletes australoclavatidites complex
Spinizonocolpites prominatus
Callialasporites dampieri
Falcisporites spp.
Foraminisporis asymmetricus
Herkosporites elliottii
Leptolepidites verrucatus
Nothofagidites asperus
Perotriletes spp.
Protoleptoxypinus amplus
Retitriletes facetus
Selaginella asperata
Alisporites grandis
Annulispora folliculosa
Latrobosporites amplus
Neoraistrickia equalis
Phyllocladidites reticulosaccatus
Tetracolporites verrucosus
Camarozonosporites bullatus
Contignisporites glebulentus
Liliacaeae .
Neoraistrickia truncata
Retitriletes circulumenus
Beaupreaidites orbiculatus
Foveosporites pseudoalveolatus
Neoraistrickia spp.
Nothofagidites emarcidus-heterus
Peninsulapollis askinae
Propylipollis amoloseximus
Striatella spp.
Dacrycarpites australiensis
Gambierina bulbosa ms
Proteacidites reticuloconcavus ms
Stereisporites regium
Corollina simplex
Evansispora senonica
Forcipites longus
Nothofagidites senectus
Perotriletes majus
Proteacidites crotonoides
Fungal spore

Samples (Samples in Discipline(s) : Paly)

2200m
2181.00m CU
2349.00m CU
2400m
2421.00m CU
2511.00-2514.00m CU
2600m
2685.00m CU
2800m
2802.00m CU
2922.00m CU
3000m
3072.00m CU
3200m
3258.00m CU
3268.90m SC
3300.00m CU
3347.70m SC
3384.00m CU
3400m

APPENDIX 10: MDT PRESSURE DATA

Sample No.	Depth mMDRT	Depth mTVDRT	Depth mTVDSS	Date	Total Test Time (hh:mm)	SAPPHIRE GAUGE (PSIA)		QUARTZ GAUGE (PSIA)		SAPPHIRE GAUGE (PSIA)	QUARTZ GAUGE (PSIA)	Temp°C	Mobility	Pump Out (Yes/No)	Sample Taken (Yes/No)	Comments
						Hydrostatic pressure BEFORE	Formation pressure	Hydrostatic Pressure BEFORE	Formation pressure	Hydrostatic Pressure AFTER	Hydrostatic Pressure AFTER					
1	2134.2	2132.1	2106.1	29/12/2009	0:08	3565.50	3101.64	3557.14	3096.17	3565.3	3556.72	98.1	531.6	No	No	Valid
2	2253.7	2243.7	2217.7	29/12/2009	0:08	3750.90	3261.65	3741.70	3255.50	3750.70	3741.14	99.1	819.6	No	No	Valid
3	2287.0	2273.0	2247.0	29/12/2009	0:09	3799.17	3302.96	3789.77	3296.60	3798.96	3789.36	100.3	85.2	No	No	Valid
4	2549.2	2477.1	2451.1	29/12/2009	0:07	4139.88	3599.25	4125.72	3588.69	4139.79	4125.11	107.5	343.5	No	No	Valid
5	2559.5	2484.7	2458.7	29/12/2009	0:09	4150.40	3608.26	4137.02	3598.44	4150.08	4136.42	107.6	797	No	No	Valid
6	2730.3	2609.5	2583.5	29/12/2009	0:09	4357.99	3747.31	4341.94	3735.48	4357.34	4341.32	112.9	167.7	No	No	Valid
7	2785.7	2649.9	2623.9	29/12/2009	0:10	4424.80	3793.55	4409.03	3781.81	4424.57	4408.37	113.5	20.8	No	No	Valid
8	2832.2	2683.9	2657.9	29/12/2009	0:07	4482.88		4463.84		4482.30	4464.00	116.5	0.1	No	No	Tight
9	2832.6	2684.2	2658.2	29/12/2009	0:09	4483.79	3843.01	4465.30	3829.05	4483.01	4464.60	116.4	9.1	No	No	Valid
10	2867.0	2709.2	2683.2	29/12/2009	0:09	4524.37	3896.12	4505.78	3881.85	4523.94	4505.44	116.5	84.6	No	No	Valid
11	2875.5	2715.4	2689.4	29/12/2009	0:07	4533.68	3904.18	4515.38	3890.05	4533.54	4515.17	116.8	1775.7	No	No	Valid
12	2895.4	2730.0	2704.0	29/12/2009	0:05	4558.13		4539.63		4558.05	4539.59	116.8		No	No	Tight
13	2962.3	2778.8	2752.8	29/12/2009	0:04	4638.41		4619.61		4638.23	4619.23	118.7		No	No	Tight
14	2962.7	2779.1	2753.1	29/12/2009	0:04	4638.81		4619.61		4638.83	4619.43	119.2		No	No	Tight
15	2961.9	2778.5	2752.5	29/12/2009	0:03	4638.13		4618.89		4638.11	4618.67	119.8		No	No	Tight
16	2962.3	2778.8	2752.8	29/12/2009	0:04	4639.00		4619.69		4638.68	4619.33	120.5		No	No	Tight
17	2962.7	2779.1	2753.1	29/12/2009	0:04	4639.33		4620.13		4639.45	4620.17	119.8		No	No	Tight
18	2978.7	2790.8	2764.8	29/12/2009	0:07	4659.38		4639.77		4658.85	4639.32	120.7		No	No	Tight
19	2978.3	2790.5	2764.5	29/12/2009	0:04	4658.72		4639.47		4658.73	4639.38	120.8		No	No	Tight
20	3424.5	3119.0	3093.0	31/12/2009	0:05	5103.67		5085.38		5103.40	5084.35	124		No	No	Tight
21	3424.0	3118.6	3092.6	31/12/2009	0:04	5102.60		5084.77		5102.68	5084.30	124.4		No	No	Tight
22	3425.0	3119.3	3093.3	31/12/2009	0:10	5103.27	4905.44	5085.62	4888.82	5102.68	5084.73	124.9	0.9	No	No	Supercharged
23	3425.0	3119.3	3093.3	31/12/2009	0:08	5104.39		5085.11		5103.86	5084.12	125		No	No	Tight
24	3423.5	3118.2	3092.2	31/12/2009	0:04	5102.93		5083.87		5102.89	5083.50	125.6		No	No	Tight
25	3423.0	3117.8	3091.8	31/12/2009	0:05	5102.35		5083.46		5102.28	5083.08	125.8		No	No	Tight
26	3426.0	3120.1	3094.1	31/12/2009	0:14	5104.28	4899.11	5086.11	4882.03	5104.06	5085.45	126.3	31.3	No	No	Valid
27	3403.0	3102.9	3076.9	31/12/2009	0:13	5078.08	4880.84	5059.62	4863.47	5077.91	5059.21	126.7	19	No	No	Valid
28	3402.0	3102.2	3076.2	31/12/2009	0:08	5076.94		5058.57		5076.63	5058.20	126.9		No	No	Tight
29	3405.0	3104.4	3078.4	31/12/2009	0:11	5079.25	4884.88	5060.79	4867.61	5078.84	5060.28	127.3	4.8	No	No	Supercharged
30	3404.5	3104.1	3078.1	31/12/2009	0:12	5078.21	4899.21	5059.74	4881.72	5078.27	5059.50	127.6	0.5	No	No	Supercharged
31	3344.5	3059.4	3033.4	31/12/2009	0:07	5007.91	4619.06	4989.01	4601.85	5007.79	4989.00	126.5	0.8	No	No	Supercharged
32	3343.5	3058.7	3032.7	31/12/2009	0:05	5006.48		4987.89		5006.47	4987.77	126.6		No	No	Tight
33	3342.0	3057.5	3031.5	31/12/2009	0:21	5007.04	4656.61	4988.27	4640.08	5006.97	4988.05	127.0	0.5	No	No	Supercharged
34	3346.0	3060.5	3034.5	31/12/2009	0:15	5010.65	4580.38	4991.93	4564.40	5010.53	4991.83	127.3	4.4	No	No	Supercharged
35	3343.5	3058.7	3032.7	31/12/2009	0:15	5007.82	4634.64	4989.62	4618.78	5007.83	4989.66	128	0.5	No	No	Supercharged
36	3338.0	3054.6	3028.6	31/12/2009	0:10	5002.22	4565.99	4983.06	4549.51	5002.44	4983.28	128.2	11.5	No	No	Valid
37	3337.0	3053.8	3027.8	31/12/2009	0:13	5000.69	4566.15	4982.01	4549.92	5001.01	4982.18	128.4	11.2	No	No	Valid
38	3336.0	3053.1	3027.1	31/12/2009	0:10	5000.85	4563.90	4981.75	4547.59	5000.72	4981.63	128.5	3.2	No	No	Supercharged?
39	3334.0	3051.6	3025.6	31/12/2009	0:12	4998.98	4568.65	4979.73	4552.04	4999.12	4979.80	128.7	5.8	No	No	Supercharged?
40	3324.4	3044.5	3018.5	31/12/2009	0:10	4990.07	4570.43	4970.02	4553.01	4989.67	4969.77	128.6	30.7	No	No	Valid
41	3324.8	3044.8	3018.8	31/12/2009	0:08	4991.58	4571.57	4970.38	4553.05	4991.39	4970.10	128.6	18	No	No	Valid
42	3291.0	3019.7	2993.7	31/12/2009	0:12	4951.65	4570.36	4930.74	4551.74	4951.35	4930.36	128.2	0.5	No	No	Supercharged
43	3290.0	3019.0	2993.0	31/12/2009	0:12	4950.39	4571.72	4930.26	4554.30	4949.92	4930.05	128	0.5	No	No	Supercharged
44	3289.0	3018.2	2992.2	31/12/2009	0:11	4949.82	4572.44	4929.78	4554.59	4949.23	4929.18	128.1	2.1	No	No	Supercharged
45	3288.5	3017.9	2991.9	31/12/2009	0:12	4949.26	4592.25	4929.17	4574.34	4948.50	4928.46	128.2	1.4	No	No	Supercharged
46	3288.0	3017.5	2991.5	31/12/2009	0:13	4947.73	4611.32	4927.78	4593.43	4947.80	4927.88	128.3	1	No	No	Supercharged
47	3268.7	3003.2	2977.2	1/01/2010	0:10	4924.79		4905.03		4924.49	4904.84	127.6		No	No	Tight
48	3424.5	3119.0	3093.0	1/01/2010	0:55	5062.87	4854.58	5090.48	4882.15	5060.75	5088.92	128.6	129.2	Yes	Yes	Valid
49	3419.0	3114.8	3088.8	1/01/2010	0:05	5103.87		5082.33		5104.03	5082.70	130.6		No	No	Tight
50	3418.0	3114.1	3088.1	1/01/2010	0:06	5103.61		5082.19		5103.69	5082.44	130.9		No	No	Tight
51	3403.0	3102.9	3076.9	1/01/2010	0:05	5037.34		5065.93		5037.01	5065.51	130.6	0.4	No	No	Tight
52	3403.0	3102.9	3076.9	1/01/2010	0:17	5034.75		5063.55		5034.28	5063.01	130.8	0.5	No	No	Tight
53	3402.5	3102.6	3076.6	1/01/2010	0:53	5033.81	4835.00	5062.61	4863.80			131	6.6	Yes	No	Valid
54	3402.5	3102.6	3076.6	1/01/2010	0:48	5032.20		5061.19		5031.02	5060.28	131.5		Yes	Yes	Valid
55	3380.5	3086.2	3060.2	1/01/2010	0:05	5055.81		5032.70		5055.66	5033.08	132.2		No	No	Tight
56	3374.5	3081.7	3055.7	1/01/2010	0:05	5049.66		5026.36		5049.66	5026.55	132.3		No	No	Tight
57	3374.0	3081.3	3055.3	1/01/2010	0:05	5049.59		5026.31		5049.86	5026.80	132.4		No	No	Tight
58	3358.0	3069.4	3043.4	1/01/2010	0:04	5029.13		5006.06		5029.32	5006.26	132.3		No	No	Tight
59	3357.0	3068.7	3042.7	1/01/2010	0:05	5028.35		5005.01		5028.51	5005.26	132.2		No	No	Tight
60	3352.0	3065.0	3039.0	1/01/2010	0:05	5022.98		4999.47		5023.18	4999.83	132.1		No	No	Tight
61	3350.5	3063.9	3037.9	1/01/2010	0:04	5020.92		4997.94		5020.98	4998.21	132.1		No	No	Tight
62	3348.5	3062.4	3036.4	1/01/2010	0:05	5018.10		4994.74		5017.98	4994.79	132.1		No	No	Tight
63	3347.5	3061.6	3035.6	1/01/2010	0:05	5017.12		4993.94		5017.12	4993.90	132		No	No	Seal Fail
64	3347.0	3061.3	3035.3	1/01/2010	0:14	5016.45	4585.89	4993.38	4565.72	5016.30	4993.36	132	1.2	No	No	Supercharged
65	3343.4	3058.6	3032.6	1/01/2010	0:07	4961.59		4990.51		4961.56	4990.38	133.6		No	No	Tight

66	3343.0	3058.3	3032.3	1/01/2010	0:08	4960.82		4989.81		4960.78	4989.78	130.2	1.7	No	No	Tight
67	3342.0	3057.5	3031.5	1/01/2010	0:11	4961.54		4990.57		4961.84	4990.59	130.6	1.2	Yes	No	Tight
68	3341.0	3056.8	3030.8	1/01/2010	0:18	4960.05		4988.94		4960.18	4988.33	130.7		Yes	No	Tight
69	3346.0	3060.5	3034.5	1/01/2010	0:09	4966.65		4995.14		4966.86	4995.24	131.4		Yes	No	Seal Fail
70	3342.5	3057.9	3031.9	1/01/2010	0:07	5015.34		4991.86		5015.23	4991.81	132.4		No	No	Tight
71	3334.3	3051.8	3025.8	1/01/2010	0:11	5006.10	4574.55	4982.38	4553.61	5006.06	4982.22	132.5	3.1	No	No	Supercharged
72	3335.0	3052.4	3026.4	1/01/2010	0:20	5006.97	4576.36	4982.93	4555.54	5006.59	4982.90	132.1	1.1	Yes	No	Tight
73	3334.0	3051.6	3025.6	1/01/2010	0:16	4954.06		4982.32		4954.14	4982.23	131.2		Yes	No	Tight
74	3325.0	3044.9	3018.9	1/01/2010	2:36	4944.65	4525.79	4972.78	4553.59	4942.78	4971.57	132.8	31.6	Yes	Yes	Valid
75	3338.0	3054.6	3028.6	1/01/2010	0:06	4958.46	4555.34	4987.19	4583.93	4958.26	4987.17	132.3	6.3	No	No	Supercharged
76	3337.5	3054.2	3028.2	1/01/2010	0:06	4957.47		4986.51		4957.53	4986.50	132.3		No	No	Tight
77	3338.5	3054.9	3028.9	1/01/2010	2:52	4973.30	4559.93	4987.62	4588.68	4970.40	4984.63	133.2	5.5	Yes	Yes	Supercharged
78	3345.0	3059.8	3033.8	1/01/2010	0:12	4979.20		4993.44		4979.30	4993.23	133.8		Yes	No	Tight
79	3290.5	3019.3	2993.3	1/01/2010	0:20	4899.05	4556.20	4926.96	4583.68	4898.96	4926.67	131	2.6	No	No	Supercharged
80	3289.0	3018.2	2992.2	1/01/2010	0:17	4947.96	4631.06	4926.01	4611.11	4947.69	4925.59	132.6	0.1	No	No	Supercharged
81	3270.0	3004.1	2978.1	1/01/2010	0:07	4925.13		4903.48		4925.18	4903.66	132.6		No	No	Tight
82	3245.0	2985.6	2959.6	1/01/2010	1:58	4895.14	4465.11	4873.34	4445.94	4894.73	4873.58	131.9	42.1	Yes	Yes	Valid
83	3244.5	2985.2	2959.2	1/01/2010	0:08	4894.11	4463.55	4873.49	4445.65	4894.49	4873.77	131.7	94.9	No	No	Valid
84	3236.0	2979.0	2953.0	1/01/2010	0:09	4885.52		4864.39		4885.71	4864.41	131.9	0.8	No	No	Supercharged
85	3235.0	2978.2	2952.2	1/01/2010	3:00	4885.11	4481.49	4863.62	4463.22	4886.10	4865.20	133	22.4	Yes	Yes	Valid
86	3202.0	2954.0	2928.0	3/01/2010	2:44	4740.94	4431.32	4762.96	4453.15	4735.52	4758.31	124	48.9	Yes	Yes	Valid
87	3201.0	2953.2	2927.2	3/01/2010	0:46	4732.96	4427.82	4756.28	4451.21	4731.75	4755.37	123.7	201.6	Yes	No	Valid
88	3200.0	2952.5	2926.5	3/01/2010	0:13	4730.72	4427.74	4754.36	4451.52	4730.43	4754.29	123.3	186.4	No	No	Valid
89	3158.0	2921.7	2895.7	3/01/2010	0:09	4683.80		4707.10		4684.01	4707.02	122.1	0.5	No	No	Tight
90	3157.0	2921.0	2895.0	3/01/2010	0:09	4682.26		4705.52		4681.84	4705.09	121.4	0.3	No	No	Tight
91	3156.0	2920.3	2894.3	3/01/2010	0:08	4681.07		4704.65		4681.26	4704.43	121.3	0.3	No	No	Tight
92	3149.0	2915.1	2889.1	3/01/2010	0:07	4732.44		4696.02		4732.62	4696.41	122		No	No	Tight
93	3148.0	2914.4	2888.4	3/01/2010	0:08	4731.94		4695.34		4731.88	4695.46	122.1		No	No	Tight
94	3147.0	2913.7	2887.7	3/01/2010	0:09	4730.32	4454.74	4694.28	4421.23	4730.39	4694.29	122.8	40.4	No	No	Valid
95	3146.5	2913.3	2887.3	3/01/2010	0:08	4669.76		4693.42		4669.97	4693.07	121.2	0.2	No	No	Tight
96	3147.0	2913.7	2887.7	3/01/2010	0:10	4670.97	4397.99	4694.69	4422.00	4670.89	4694.30	121.9	17.7	No	No	Valid
97	3138.9	2907.7	2881.7	3/01/2010	0:13	4662.02	4424.79	4685.72	4447.91	4662.50	4685.61	122.1	3.5	No	No	Supercharged
98	3137.9	2907.0	2881.0	3/01/2010	0:13	4661.71	4424.62	4685.39	4448.14	4661.98	4685.26	122	15.9	No	No	Valid?
99	3137.0	2906.4	2880.4	3/01/2010	0:57	4661.52	4421.32	4685.13	4445.37	4662.24	4685.69	122.2	23.6	Yes	No	Valid?
100	3136.5	2906.0	2880.0	3/01/2010	0:08	4660.39		4683.63		4660.81	4683.76	122.4	0.3	No	No	Tight
101	3137.5	2906.7	2880.7	3/01/2010	0:12	4662.48		4685.72	4370.00	4662.10	4685.87	121.6	7.2	No	No	Tight
102	3108.0	2885.1	2859.1	4/01/2010	0:07	4693.60		4650.93		4693.11	4651.11	120.7		No	No	Tight
103	3107.0	2884.4	2858.4	4/01/2010	0:08	4692.04		4650.52		4690.45	4649.27	121.5	0.8	No	No	Tight
104	3106.0	2883.6	2857.6	4/01/2010	0:06	4690.88		4649.27		4690.49	4648.81	122.1	0.7	No	No	Tight
105	3105.5	2883.3	2857.3	4/01/2010	0:06	4689.92		4648.36		4690.28	4648.43	122.3	0.04	No	No	Tight
106	3099.0	2878.5	2852.5	4/01/2010	0:07	4682.77		4641.76		4682.54	4641.38	122.5	0.1	No	No	Tight
107	3098.0	2877.8	2851.8	4/01/2010	0:10	4681.94	4427.32	4640.44	4388.69	4681.64	4640.33	122.7	3	No	No	Supercharged
108	3094.0	2874.9	2848.9	4/01/2010	0:08	4677.28		4636.26		4676.56	4635.69	122.8	0.8	No	No	Tight
109	3093.0	2874.1	2848.1	4/01/2010	0:10	4676.13	4410.88	4634.99	4372.75	4675.72	4634.81	122.6	25.6	No	No	Valid
110	2963.0	2779.3	2753.3	4/01/2010	0:08	4525.38		4484.48		4524.79	4484.51	120.3	0.04	No	No	Tight
111	2962.0	2778.6	2752.6	4/01/2010	0:07	4460.72		4483.71		4460.98	4483.88	117.8	0.3	No	No	Tight
112	2961.0	2777.9	2751.9	4/01/2010	0:07	4459.88		4482.98		4460.04	4483.08	117.7	0.4	No	No	Tight
113	2549.2	2477.1	2451.1	4/01/2010	0:09	4038.55	3615.46	4007.03	3589.14	4037.45	4007.13	111.3	370	No	No	Valid
114	2549.2	2477.1	2451.1	4/01/2010	0:08	3985.11	3567.54	4007.06	3589.27	3985.03	4007.24	109.2	298.4	No	No	Valid

APPENDIX 11: DAILY ACTIVITY REPORT

DFE above MSL : 26.0m	Lat : 39 Deg 47 Min 34.1828 Sec	Spud Date : 30 Nov 2009	Release Date : 07 Jan 2010
Water Depth : 74.3m	Long : 145 Deg 26 Min 21.466 Sec	Spud Time : 23:30	Release Time : 22:30

Activity Report For Rockhopper-1

Date : 29 Nov 2009 **Daily Cost : US$ 2043391** **Report Number : 1**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0.0	P1	P	M1		4	Rig under tight tow from Trefoil-2. Rockhopper-1 well commenced at 01:00hrs
0.0	P1	P	M1		1	Rig commenced run in to Rockhopper-1. Anchor #6 dropped and on bottom at 05:22hrs. Rig on location at 05:46hrs
0.0	P1	P	M4		8	Deployed anchors on Rockhopper-1 location #2 anchor: 05:59 PCC to Far Scimitar - 07:00 anchor on bottom - 07:30 PCC back to rig #7 anchor: 07:52 PCC to Far Scimitar - 08:49 anchor on bottom - 09:17 PCC back to rig #3 anchor: 09:33 PCC to Far Scimitar - 10:19 anchor on bottom - 10:53 PCC back to rig #8 anchor: 10:38 PCC to Far Fosna - 11:17 anchor on bottom - 11:45 PCC back to rig #4 anchor: 11:06 PCC to Far Scimitar - 11:19 anchor on bottom - 12:20 PCC back to rig #1 anchor: 11:55 PCC to Far Fosna - 12:40 anchor on bottom - 13:24 PCC back to rig #5 anchor: 12:27 PCC to Far Scimitar - 13:18 anchor on bottom - 13:45 PCC back to rig
0.0	P1	P	M3		4.5	Ballasted rig to drilling draft of 65ft.
0.0	P1	P	M5		5.5	Cross tensioned anchors. #7 anchor not holding. 21:25-23:15 Far Scimitar relaid #7 anchor. 23:51 Cross tensioned completed.

Date : 30 Nov 2009 **Daily Cost : US$ 681290** **Report Number : 2**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0.0	P1	P	M2		0.5	Adjusted rig position to 4m radius. Rig position accepted by ADA NDSV at 00:25 (Far Fosna unable to transfer mud to rig due to weather conditions).
0.0	P2	P	G1		1.5	PGB skidded under drill floor and #3 guide post (8ft) changed out for 10ft guide post.
0.0	P2	P	G5		1	Made up a stand of 5" HWDP to 30" RT and stood back in mast.
0.0	P2	P	G5		2	Made up 18 3/4" WHRT assembly and laid out same (all components drifted to 2 5/8").
0.0	P2	P	G2		2	Made up 5" HWDP and racked back in mast.
0.0	P2	P	G5		2	Held JSA. Picked up 18 3/4" wellhead and set in rotary. Picked up WHRT, installed cement wiper plugs, made up to 18 3/4" wellhead and laid out from drill floor.
0.0	P2	P	G2		7.5	Held JSA. Picked up 30 stands of 5" DP and racked back in mast.
0.0	P2	P	G6		6	Held JSA and made up 26" bit x 36" hole opener. RIH BHA to 94m.
0.0	P2	P	G8		0.5	Tagged bottom at 100.3m tide corrected. Offline held pre spud and shallow gas meeting while ROV reposition markers on seabed.
0.0	P2	P	F4		0.5	Pulled up 10m. Broke circulation and function tested Anderdrift tool. 10 pulses counted 0.5deg.
117.0	P2	P	D2		0.5	Spud Rockhopper-1. Drilled 36" hole from 100.3m to 117m. Started drilling with 30rpm, 250gpm, 0-5k WOB using PHG for first 5m. Gradually increased parameters to 80rpm, 800gpm, 2-5k WOB. Pumped 50bbl hi vis every single and spotted Hi Vis around BHA on connections.

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Activity Report For Rockhopper-1

Date : 01 Dec 2009 **Daily Cost : US$ 709926** **Report Number : 3**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
150.0	P2	P	D2		2.5	Drilled 26" x 36" hole from 117m to 150m. 80rpm, 800gpm, 2-5k WOB. Pumped 50bbl PBG hi vis every single and spotted PBG hi vis around BHA on connections.
150.0	P2	TP	G11	RE	3.5	Saver sub backed out on connection. Laid out single with saver sub and pulled back to 110m. Re installed saver sub to TDS. Encountered problems with pipe handler when making up saver sub. Troubleshoot pipehandler problem.
150.0	P2	TP	G8	RE	0.5	RIH from 110m to 150m.
158.0	P2	P	D2		0.5	Drilled 26" x 36" hole from 150m to 158m (36" hole to 157m). Anderdrift survey at TD 0 deg.
158.0	P2	P	F4		1	Circulated 100bls Guar gum hi vis pill and displaced well with 330bbl 8.8ppg PHG mud.
158.0	P2	P	G8		2	POOH to mudline. No drag. POOH to surface and racked back BHA.
158.0	P3	P	G5		1	Made up cement stand and racked in mast.
158.0	P3	P	G1		1	Held JSA and rigged up to run 30" conductor.
158.0	P3	P	G9		6	Made up x5 joints of 30" conductor. Picked up 30" RT and filled conductor with seawater. Made up RT to 30" housing. Landed 30" housing in PGB and latched same. RIH with 30" conductor and PGB on HWDP landing string to 157m. No drag. Bullseye on PGB showed 3/4 deg port of forward.
158.0	P3	P	F4		0.75	Rigged up surface lines. Broke circulation with rig pumps in stages and circulated casing contents at 300gpm, 150psi.
158.0	P3	P	P1		0.25	Haliburton cementer pumped 5bbls seawater. Pressure tested surface lines to 1000psi - ok.
158.0	P3	P	F3		2	Haliburton cementer pumped 25bbls of seawater followed by 20bbl seawater/mica pill. Haliburton mixed and pumped 265bbls 15.9ppg class G cement slurry (used: 1271sx of G cement, 160bbl of FW mix). Halliburton displaced cement with 107bbl of seawater and checked for back flow. No back flow.
158.0	P3	P	G24		3	WOC. Maintain weight of 30" conductor while wait on cement to harden.

Date : 02 Dec 2009 **Daily Cost : US$ 673742** **Report Number : 4**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
158.0	P3	P	G24		2	WOC. Held JSA on releasing 30" RT. Inspected seabed with ROV. Observed grey cement streaks around conductor - possible evidence of returns to surface.
158.0	P3	P	G10		0.5	Reduced block weight to 175 klbs. Observed conductor and PGB for 10mins. Bullseye steady on 3/4deg slightly port of forward. Released 30" RT with 4 1/2 turns to right and pulled clear of well head. Racked back cement stand.
158.0	P3	P	G8		1.5	POOH with 30" RT. Laid out same.
158.0	P3	P	G6		1	Laid out 26" bit, 36" hole opener and Anderdrift tool.
158.0	P4	P	G6		3	Held JSA. Made up 9 1/2" NMHOC, float sub, bit and 17 1/2" string stabiliser.
158.0	P4	P	G6		2	Picked up 8" jar and 2 x 8 1/4" drill collars and set back in mast.
158.0	P4	P	G6		2	Re arranged stands in mast to allow access to BHA for correct space out when stabbing into well.
158.0	P4	P	G6		2.5	Made up 8 1/4" drill collars and 17 1/2" stabliser to 9 1/2" drill collars and run in BHA to 90 m.
158.0	P4	P	G8		0.5	Stabbed into well head with ROV assistance.
158.0	P4	P	G8		0.5	Washed down and tagged TOC at 147 m with 5 klbs weight down.
158.0	P4	P	D1		2.5	Drilled out cement and shoe from 147 m to 157 m (shoe depth).
330.0	P4	P	D2		6	Drilled 17 1/2" hole from 158 m to 330 m. Pumped 40bbl hi vis sweeps on half stand and 50 bbl hi vis pill prior to connection (0-5K WOB, 1000gpm, 1630psi, 80rpm, 2-5k ft-lbs with torque limit set at 10klbs while drilling out with stabs in casing).

Date : 03 Dec 2009 **Daily Cost : US$ 640232** **Report Number : 5**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
427.0	P4	P	D2		4.5	Drilled 17 1/2" hole from 330m to 427m. Pumped 40bbl Hi-Vis sweeps on half stand and 50bbl Hi-Vis

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Date : 03 Dec 2009 **Daily Cost : US$ 640232** **Report Number : 5**

						pill prior to connection. MWD survey taken every 3 stands (0-5klbs WOB, 1000gpm, 1650psi, 80rpm, 2-5 kft-lbs).
427.0	P4	TP	G11	RE	0.5	Circulated well while changing oil filter on top frive in attempt to rectify slow cycling pipe handler (pipe handler cycling extremely slowly when breaking tool joint on connection).
823.0	P4	P	D2		19	Drilled 17-1/2" hole from 427m to 823m. Pumped 40bbl Hi-Vis sweeps on half stand and 50bbl Hi-Vis pill prior to connection. MWD survey taken every 3 stands (WOB 5-20klbs, 1000gpm, 1900psi, 90 rpm, 4-5 kft-lbs).

Date : 04 Dec 2009 **Daily Cost : US$ 642862** **Report Number : 6**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
966.0	P4	P	D2		9	Drilled 17 1/2" hole from 823m to section TD at 966m (tide Corrected). Pumped 40bbl Hi-Vis sweeps on half stand and 50bbl Hi-Vis pill prior to connection. MWD survey taken every 3 stands (WOB 5-20klbs, 1000 gpm, 1900 psi, 90 rpm, 4-5 kft-lbs). Spotted 80bbl Hi Vis mud on bottom.
966.0	P4	P	G8		2	POOH 5 stands. Tight spots from 909m to 841m with maximum hole drag of 30klbs. Wiped tight spots clean.
966.0	P4	P	G8		1	RIH from 841m to 941m and washed last stand to TD at 966 m.
966.0	P4	P	F4		1	Pumped 100bbl Hi Vis mud directly followed by 1100bbl consisting of 500bbl Pad Mud and 620bbl PHG (total hole displacement 1.5x hole volume).
966.0	P4	P	G8		5.5	POOH to 30" conductor shoe at 157m. Maximum hole drag of 20klbs in marl section of the hole (last 50m of the hole). Continued to POOH with BHA. Laid out 17-1/2" stabiliser and 17-1/2" bit.
966.0	P4	P	G8		1	Made up jet sub. RIH and stabbed into 30" wellhead housing.
966.0	P4	P	G8		1	Jetted 30" wellhead housing from 102m with 770 GPM, 1200 psi for 10 mins. Pulled clear of wellhead housing (97m). POOH and laid out jet sub.
966.0	P5	P	G5		0.5	Made up HALCO cement head into a stand of HWDP and racked back in mast.
966.0	P5	P	G1		2	Held JSA for the rig-up of 13-3/8" casing. Rigged up to run 13-3/8" casing.
966.0	P5	P	G9		1	Held JSA on running 13-3/8" Casing. Made up shoetrack backerlocking first 2 connections. Confirmed the float valve on shoe and Ffoat joint are working.

Date : 05 Dec 2009 **Daily Cost : US$ 867546** **Report Number : 7**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
966.0	P5	P	G9		1.5	Centralised shoe joint to well on guide wires with soft slings and ran 6 joints of 13-3/8" casing to 68m.
966.0	P5	TP	G25	WOW	1	Shut down casing running operations due to wind gust over 30Kts and rig roll of +/-2° (crane limititation). WOW.
966.0	P5	P	G9		1.5	Continued to run 13-3/8" casing from 68m to 9 m. Stabbed into 30" wellhead housing with ROV in situ. Continued to run 13-3/8" casing to 123m filling every joint with 6bbl of seawater (total of 11 joints of casing run).
966.0	P5	P	G1		2	Rigged up 500 T elevators and FMS Slips. Rigged up FACL circulating tool to topdrive.
966.0	P5	P	G9		7.5	Ran 13-3/8" casing from 123m to 854m. Filled every joint with 6bbl of seawater (74 jts run).
966.0	P5	P	G9		0.5	Laid out 500 T elvators. Changed handling equipment to 5" DP elevators and installed 18-3/4" wellhead with 13-3/8" extension. Laid out FMS casing slips and changed out bales. Ran 18-3/4" hanger below table. Total 13-3/8" Csg + wellhead weight on MD 320klbs - hole good.
966.0	P5	TP	G1	TP	1.5	Control line for the elevator spider caught on TDS whilst making up the wellhead and approximately 1-1/2 hrs was lost due to removing the bundle.
966.0	P5	P	G9		0.5	Ran 13-3/8" casing in on 5" HWDP landing string to 954m.
966.0	P5	P	G9		1	Picked up cement head stand out of mast and made up to running string. Connected circulating hose to cement head. RIH and opened heave compensator. Landed 18-3/4" hanger in 30" Wellhead Housing. Total up weight of casing plus running string 350klbs on MD. Slacked off 50klbs down. Confirmed latch with 50klbs overpull to 400klbs MD. Reduced weight to 190klbs. Checked slope indicator - 3/4 deg fwd port - no change.
966.0	P5	P	G1		1	Rigged up Haliburton control hoses to cement head.
966.0	P5	P	F3		0.5	Held JSA on cementing operation. Haliburton pumped 10bbls seawater. Pressure tested surface lines to 3000psi for 5mins - ok. Halliburton pumped 30bbl seawater and dropped the ball. Displaced at 1 bbl/min. Bottom plug sheared after 1.8 bbl with 1000 psi.

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966.0	P5	P	F3		3	Haliburton mixed and pumped 460bbl of 11.5 ppg lead cement slurry (Used: 387bbl seawater mix fluid, 858 sx class G cement. Yield: 18.96 gal/sk - 3.01 Ft3/sk) Halliburton mixed and pumped 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323 sx class G cement. Yield: 5.12 gal/sk - 1.16 ft3/sk). Halliburton dropped top dart and displaced with 20bbl seawater. Top plug sheared with 250 psi after 3.8bbl pumped.
966.0	P5	P	F3		1	Displaced cement with rig pumps at 7 bbl/min slowing down to 2 bbl/min for the last 100 strokes. Plug bumped after 3280 strokes pumped (calculated 3324 strokes). FCP before bump - 430psi. Pressured up to 900psi on bump. Visual indication of cement returns to mudline via ROV.
966.0	P5	P	P1		1	Bled pressure off at cement unit to check for back flow. No flow. Lined up cement unit and pressure tested 13-3/8" casing to 2500 psi 10 mins. Bled off pressure. Pumped 4.5bbl and 4.5 BBL returned.
966.0	P5	P	G1		0.5	Haliburton reset valves in cement head and removed control hoses. Rigged down surface line to cement head. Adjusted MD weight to 180klbs to compensate for blocks plus running string weight and released 18-3/4" RT with 4-1/2 turns to the right and picked up clear of well head.

Date : 06 Dec 2009 **Daily Cost : US$ 634191** **Report Number : 8**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
966.0	P5	P	G8		0.5	Racked back cement head in mast. POOH with 18-3/8" WHRT.
966.0	P5	P	G15		0.5	Laid out 18-3/4" WHRT assembly (ROV inspected 18-3/4" Wellhead / PGB and seabed).
966.0	P5	P	G15		2	Laid out Halliburton cement head and racked back drillpipe stand in mast.
966.0	P5	P	G6		2	Laid out 9-1/2" DC, NMHOC and 17-1/2" stabiliser from mast.
966.0	P5	P	G1		0.5	Cleared excess equipment from drillfloor.
966.0	P6	P	G13		2.5	Rigged up to run riser and BOPs.
966.0	P6	P	G13		2.5	Made up 2 x 50ft riser lengths.
966.0	P6	P	G13		2.5	Skidded BOP to moonpool and made up double riser section to LMRP.
966.0	P6	TP	G13	SS	7.5	Attempted to release BOP from Test Stump on carrier. Unable to release H4 connector from Test Stump. Troubleshot H4 connector while continuing to work at separating BOP from test stump on carrier. Confirmed the open/close displacement volumes correct. Disconnected riser double from LMRP and attempted to release H4 connector by "rocking" the Test Stump with tuggers - no go. Pressured up below shear rams and test stump - H4 connector released and separated with 400 psi.
966.0	P6	TP	G13	SS	0.5	Reconnected riser double to LMRP.
966.0	P6	P	G13		3	Installed guide lines to BOP. Prepared umbilical lines and installed BOP beacon. Subsea engineer checked and functioned H4 connector.

Date : 07 Dec 2009 **Daily Cost : US$ 663822** **Report Number : 9**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
966.0	P6	P	G13		1	Prepared BOP on carrier. Secured yellow and blue pod umbilical hoses to BOP.
966.0	P6	U	G13		5	Leak observed on yellow pod umbilical hose between outer sheath and control hoses. Subsea Engineer removed hose connector block from yellow POD and investigated same. Hoses live at time of leak were tested. No leak found. Connector block reconnected to Yellow POD and lines functioned - no leak.
966.0	P6	P	G13		3	Held JSA. Lifted BOP off carrier and ran through splash zone. Made up flotation riser joint and 25ft riser pup joint. Total No of marine riser joints run - 3 x 50ft joints + 1 pup joint.
966.0	P6	TP	G13	WO	1	Waited on helicopter #1. Unable to use crane. Note: Helicopter arrival warning too early prior to actual arrival.
966.0	P6	P	G13		2	Held JSA. Made up slip joint.
966.0	P6	TP	G13	WO	1	Waited on helicopter #2. Unable to use crane. Note: Helicopter arrival warning too early prior to actual arrival.
966.0	P6	P	G13		3	Made up landing joint and ran slip joint to moonpool. Installed C&K goosenecks to slip joint.
966.0	P6	P	G13		1	Pressure tested C&K lines to 250psi/5000psi for 5/10 mins with cement unit - ok.
966.0	P6	P	G13		4	Installed pod umbilcal storm saddles. Connected MRT wires to slip joint.
966.0	P6	P	M2		1	Moved rig over well center on anchor chains.

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Date : 07 Dec 2009 **Daily Cost : US$ 663822** **Report Number : 9**

966.0	P6	P	G13		2	Attempted to lower BOP stack onto guide posts. PGB on heading of 308°, BOP stack heading 295°. Turned BOP to 308°

Date : 08 Dec 2009 **Daily Cost : US$ 629477** **Report Number : 10**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
966.0	P6	P	G13		1	Engaged PGB guide posts with BOP guides. Landed BOP Stack on 18-3/4" wellhead and set 50klbs down weight. Latched H4 connector and confirmed with 50klbs overpull on connector.
966.0	P6	P	G13		0.5	Reduced DSC pressure while trasferring the weight onto MRTs. Connected RBQ plates to Yellow and Blue Pod reels. Slope indicator readings after landing: PGB: 0.6° Port LBOP: 0.5° Fwd (Change from 0° before landing) UBOP: 1.5° Port / Aft LMRP: 1.5° Aft Flex Jt: 1.5° Stbd /Aft
966.0	P6	P	P1		0.5	Pumped 9bbl of seawater with cement unit to fill choke line. Closed shear rams and pressure tested BOP connector against 13-3/8" casing to 1000psi for 5min.
966.0	P6	P	G13		2	Connected hoses to slip joint. Stroked open slip joint and laid out riser landing joint.
966.0	P6	P	G13		1.5	Installed diverter system in diverter housing.
966.0	P6	P	G1		2	Rigged down marine riser handling equipment and rigged up to handle drill pipe.
966.0	P6	P	G8		1.5	Made up Dril-Quip test plug with 3 stands of HWDP below. Ran test tool in on DP and landed in 18-3/4" wellhead with 20klbs down weight.
966.0	P6	P	P1		1.5	Pressure tested H4 BOP Stack/wellhead connector to 5000psi for 10min against UPR - good test. Pressure tested Cameron collet connector LMRP/BOP against upper Annular to 500psi - ok. Increased pressure test to 3500 psi - test failed.
966.0	P6	TP	G8	SS	1.5	POOH with test Tool. Rubber segment recovered from hole with test tool. Appearance consistent with that originating from the upper annular insert Element. Note: Observed +/-20klbs overpull when pulling the test tool through the BOP stack.
966.0	P6	TP	G8	SS	0.5	Redressed test tool with new "O" ring seal and RIH. Landed out test tool in 18-3/4" wellhead with 20klbs down weight. Note: No indication of drag on RIH with full bore tool.
966.0	P6	TP	P1	SS	0.5	Pressure tested collet connector on LMRP against upper annular to 650psi - ok. Increased pressure test to 3500 psi - test failed.
966.0	P6	P	G8		1.5	POOH with test tool and laid out same. Racked back HWDP.
966.0	P6	P	P1		2	Rigged up surface lines and pressure tested TDS UIBOP, LIBOP, standpipe and rotary mud hose to 250/4000psi for 5/10 min. Rigged down surface lines
966.0	P6	P	G10		0.5	Installed and function tested diverter.
966.0	P11	P	G2		4	Picked up 54 joints of 5" drill pipe from deck and racked back in mast.
966.0	P11	P	G5		2	Picked up 9-5/8" casing hanger to drill floor. Installed cement plugs onto runing tool/seal assembly and made up running tool assembly to 9-5/8" hanger. Laid out hanger assembly.
966.0	P11	P	G6		1	Held JSA. Picked up Sperry mud motor with ported float installed. Made up bit, stabiliser and Sperry RLL tool to mud motor.

Date : 09 Dec 2009 **Daily Cost : US$ 747737** **Report Number : 11**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
966.0	P11	P	G6		0.5	Made up Sperry RLL tool.
966.0	P11	P	G6		1	Sperry programed RLL tool and checked alignment of RLL to PDM bent housing (0.78 Deg) .
966.0	P11	P	G6		2.5	Made up NMDC and remaining BHA from mast to 252m.
966.0	P11	P	G6		1	Shallow tested RLL tool and PDM. Installed diverter element.
966.0	P11	P	G2		3	Held JSA. RIH BHA from 252m to 773m on DP picked up from pipe deck (54 joints of 5" DP).
966.0	P11	P	F1		3.5	RIH with stands from 773m to 923m. Washed and reamed cement stringers in from 923m to TOC at 946m. Tagged TOC with 5klbs.
966.0	P11	P	D1		4	Drilled out shoetrack, plugs and float shoe from 946m to 954m with seawater. Pumped 2x 30bbls

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Date : 09 Dec 2009 **Daily Cost : US$ 747737** **Report Number : 11**

						PAD mud Hi-Vis sweeps.
966.0	P11	P	D1		1	Continued to drill shoetrack from 954m to shoe at 961m. Pumped 60bbl Hi-Vis ahead of new mud and converted to 9.0 ppg PHPA/KCL mud. Cleaned out rathole to 17-1/2" hole TD at 966m and reamed shoe 3x. Note: Firm/hard cement in the shoetrack.
971.0	P11	P	D2		0.5	Drilled 5m of new 12-1/4" hole 966m to 971m.
971.0	P11	P	F4		0.5	Circulated and conditioned mud prior to LOT. Circulated 2x bottoms up before shaker screens cleaned up.
971.0	P11	P	E1		0.5	Pulled back inside the shoe. Made up surface lines for LOT.
971.0	P11	P	E1		0.5	Lined up Halliburton and flushed lines until returns to trip tank. Closed lower annular BOP and performed LOT with 9.0 ppg mud. Leak of pressure of 1400psi corresponding to EMW of 17.5 ppg.
971.0	P11	P	E1		1	Rigged down surface lines. Opened lower annular BOP. Displaced C&K lines to 9.0ppg mud and recorded CLFL. Picked up stand and washed to bottom.
1060.0	P11	P	D2		4.5	Drilled 12¼" hole from 971m to 1060m (850gpm, 1350psi, WOB 10-20klbs, RPM 100, 3klbs-ft torque)

Date : 10 Dec 2009 **Daily Cost : US$ 794960** **Report Number : 12**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1427.0	P11	P	D2		15	Drilled 12¼" hole from 1060m to 1427m. Drilling parameters: GPM 925; SPP 1870psi, WOB 10-20klbs, RPM 100, Torque 3-5klbs-ft.
1427.0	P11	TP	F4	TP	2.5	Shaker screens blinding with unsheared PHPA in mud system resulting in unsustainable loss of of mud over the shakers. Changed screens to course and circulated and conditioned mud. Lined up shearing and mixing hopper onto active pit and assisted PHPA shearing.
1587.0	P11	P	D2		6.5	Drilled 12¼" hole from 1427m to 1587m. Drilling parameters: GPM 950; SPP 2000psi, WOB 10klbs, RPM 100, 3-5klbs-ft.

Date : 11 Dec 2009 **Daily Cost : US$ 683287** **Report Number : 13**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1811.0	P11	P	D2		10.5	Drilled 12¼" hole from 1587m to 1811m. Drilling parameters: GPM 960gpm; SPP 2150psi; WOB 10klbs; RPM 100; Torque 3-5 klbs-ft Hole and connections good.
1811.0	P11	P	P3		0.5	Took SCRs and CLF losses.
1869.0	P11	P	D2		3.5	Drilled 12¼" hole from 1811m to 1869m. Drilling parameters: GPM 960gpm; SPP 2150psi; WOB 10klbs; RPM 100; Torque 3-5 klbs-ft. Hole and connections good.
1887.0	P11	P	D3		1.5	Orientated toolface on bit and drilled 12¼" hole in sliding mode from 1869m to 1887m.
1898.0	P11	P	D2		1	Rotary drilled 12¼" hole from 1887m to 1898m. Hole and connections good.
1898.0	P11	TP	G11	RE	0.5	Removed broken DSC LP air line from mast. Damage to the hose caused by hose caught on mast structure due to high winds.
1905.0	P11	P	D3		2	Orientated and drilled in sliding mode 12¼" hole from 1898m to 1905m.
1905.0	P11	P	P3		0.75	Flow checked on unexplained 20bbl gain to active system. Well static - no flow.
1926.0	P11	P	D3		1.75	Orientated and drilled 12¼" hole in sliding mode from 1905m to 1926m. Hole and connections good.
1926.0	P11	TP	G11	RE	0.75	Replaced DSC Low Pressure oil/air hose to compensator. Secured to hose bundle in mast.
1926.0	P11	P	F3		0.25	Displaced choke and kill lines to fresh 9.4 ppg mud.
1940.0	P11	P	D3		1	Orientated and drilled 12¼" hole in sliding mode from 1926m to 1940m. Drilling parameters: GPM 973; SPP 2490psi; WOB 10klbs. Hole and connections good.

Date : 12 Dec 2009 **Daily Cost : US$ 657034** **Report Number : 14**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1955.0	P11	P	D3		1.5	Orientated and drilled 12¼" hole in sliding mode from 1946m to 1955m. Hole and connections good.
1955.0	P11	TP	G2	RE	1.5	Topdrive sat down on drill pipe stand causing 2x drill pipe singles to be bend. Laid out 2x bent joints

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Date : 12 Dec 2009 **Daily Cost : US$ 657034** **Report Number : 14**

						of 5" drill pipe.
1955.0	P11	TP	G2	RE	0.5	Established circulation and wiped stand. Laid out extra drill pipe single for space out. Made up stand and washed back to bottom.
1972.0	P11	P	D3		1	Orientated and drilled 12¼" hole in sliding mode from 1955m to 1972m. Drilling parameters: WOB 10klbs, Flow 960gpm, SPP 2350psi. Hole and connections good.
1972.0	P11	P	F4		3	Circulated well until returns over the shaker screens clean. Raised mud weight from 9.4ppg to 9.5ppg.
1972.0	P11	P	G8		2	Flow checked well. POOH wet on elevators from 1972m to 1553m.
1972.0	P11	P	G8		2	Pumped slug and continued to POOH from 1553m to inside 9-5/8" casing shoe at 946m.
1972.0	P11	P	G11		0.5	Flow checked at shoe. Serviced travelling block.
1972.0	P11	P	G8		1.5	POOH from 946m to 252m.
1972.0	P11	P	G6		1	Racked back BHA.
1972.0	P11	P	G7		0.5	Haliburton downloaded MWD/LWD data from RLL tool.
1972.0	P11	P	G6		0.5	Broke off bit and racked back stand.
1972.0	P13	P	G15		1.5	Made up Haliburton cement head assembly and laid out same.
1972.0	P13	P	G15		1	Picked up 9 5/8" casing hanger and running tool and installed 10ft pup joint on running tool. Laid out assembly.
1972.0	P13	P	G12		1	Released wearbushing from wellhead with 70klbs-ft overpull. POOH, laid out wearbushing and WBRT.
1972.0	P13	P	G12		1	Made up Dril-Quip wearbushing running tool and RIH. Landed running tool in wearbushing in the 18-3/4" wellhead. Marked landing string and set up index line.
1972.0	P13	P	G1		3	Held JSA. Rigged up to run 9-5/8" casing. Rigged up 500 T elevators, bails, slips, FACL circulating tool and PCS equipment.
1972.0	P13	P	G9		1	Held JSA. Made up shoe and intermediate joint. Backerlocked connections. Checked float valve in shoe joint - valve holding.

Date : 13 Dec 2009 **Daily Cost : US$ 1202148** **Report Number : 15**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1972.0	P13	P	G9		1	Picked up float shoe joint to drillfloor. Confirmed float operating and holding pressure from below. Picked up intermediate joint and bakerlocked same. Installed float collar joint and checked the float operating - ok. Completed bakerlocking the first 3x joints.
1972.0	P13	P	G9		14.5	Ran 9-5/8" casing from 37m to 1864m - total of 155 joints ran. Filled every joint on the run with mud.
1972.0	P13	P	G1		1	Rigged down casing elevators and FACL circulating tool. Rigged up drill pipe elevators and running equipment.
1972.0	P13	P	G9		2	Made up 9-5/8" casing hanger on running tool and RIH to 1925m. Picked up 9-5/8" casing string on drill pipe elevators and took casing weight - 420klbs up/410klbs down - hole good.
1972.0	P13	P	G9		1	Continued to RIH with 9-5/8" casing on drill pipe to 1934m. Hole drag increased from +/- 20klbs to 60klbs weight while RIH last part of 2nd stand. Connected TDS and washed casing down from 1945m to 1957m (150 GPM, 250psi).
1972.0	P13	P	G2		1	Picked up cement head assembly from deck. Made up onto a single of drill pipe and pup of 5" drill pipe below the cement head and made up to landing string.
1972.0	P13	P	G9		1.5	Washed and worked casing down from 1957m with 200 GPM (300psi) and landed 9-5/8" casing hanger off in 18-3/4" wellhead. Set down casing weight of 220klbs placing shoe at depth of 1965m. Confirmed hanger on depth against index line.
1972.0	P13	P	G1		0.5	Connected cement head control lines and held pre cementing JSA while continuing to circulate at 200 GPM, 300psi.
1972.0	P13	P	F3		1.5	Halliburton pumped 10bbl seawater and pressure tested surface lines to 4500psi. Halliburton pumped 50bbl seawater spacer. Dropped ball and sheared bottom plug with 1500psi after 0.18bbl pumped. Halliburton mixed and pumped 82bbl of 12.5ppg lead cement slurry. Used: 215sx class G cement, 63bbl drill/mix water.

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Date : 14 Dec 2009 **Daily Cost : US$ 659367** **Report Number : 16**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1972.0	P13	P	F3		0.5	Halliburton mixed and pumped 47bbl of 15.8ppg tail cement slurry. Used: 223sx class G cement, 28bbl of drill/mix water. Halliburton released dart and sheared the top plug after 3.6bbl with 2200 psi. Displacement - Halliburton displaced cement with a total of 20bbl of mud.
1972.0	P13	P	F3		1	Lined up to rig pumps and continued to displace cement with mud. Bottom plug landed in float collar and held 500psi above circulating pressure. Circulating pressure 280psi. Pressure on bottom plug holding at 770psi. Increased pressure to burst lower plug diaphragm with 1500psi. Continued to displace cement. Plug bumped at 3608 strokes (theoretical 3652 strokes). Final circulating pressure 550psi at 2bbl/min. Pressured up to 1050psi to confirm bump.
1972.0	P13	P	P1		1	Bled off pressure at cement unit and checked for back flow - floats holding. Pressure tested 9-5/8" casing to 4000psi for 10 mins - ok.
1972.0	P13	P	G1		0.5	Removed control lines and cement hose from cement head.
1972.0	P13	P	P1		1	Set down landing string weight of 15klbs on casing running tool. Energised seal assembly by turning 6 turns to right. Observed 10" drop in drillstring to indicate seal assembly set. Lined up to Halliburton cement unit down Kill line. Closed LPR and pressured tested seal assembly to intial 2500psi with final test pressure of 5000psi for 10 mins. Opened LPR. Released CHSRT running tool from casing hanger and seal assembly with 65klbs overpull. Set down 10klbs onto seal assembly. Closed LPR and confirmed seal assembly integrity with 5000psi for 3mins. Opened LPR.
1972.0	P13	TP	F4	DH	1.5	Picked up with 9-5/8" casing running tool. Running tool hanging up at LPR. Worked landing string to pass LPR. String worked free with circulation.
1972.0	P13	P	G2		3	Racked back cement stand to clear BOP. Laid out cement head.
1972.0	P13	P	G12		2.5	Made up wearbushing on wear bushing running tool and RIH. Attempted to set wearbushing in 18-3/4" wellhead. Unsuccessful. POOH
1972.0	P13	P	G12		0.5	Made up jetting sub on 2 stands of HWDP below wear bushing running tool and wear bushing. RIH and jetted wellhead and BOPs. RIH and set wearbushing in 18-3/4" wellhead with 20klbs down weight. Released wear bushing running tool from wearbushing with 50klbs overpull. POOH and laid out running tool.
1972.0	P13	P	G6		9	Laid out 12¼" BHA from mast. Laid out Sperry mud motor, Sperry RLL tools, 2 x 12¼" stabilsers, 8" jar and 8 x 8¼" DCs.
1972.0	P13	TP	G8	SS	0.5	Made up jetting sub and RIH to 96m.
1972.0	P13	TP	F4	SS	1	Pumped 90bbl Hi-Vis pill to flush BOPs. Displaced choke and kill and riser to seawater.
1972.0	P13	TP	G8	SS	0.5	POOH and laid out jetting sub.
1972.0	P13	TP	G1	SS	1.5	Held JSA. Rigged up riser handling equipment on drill floor and connected diverter handling tool to diverter.

Date : 15 Dec 2009 **Daily Cost : US$ 657912** **Report Number : 17**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1972.0	P13	TP	G13	SS	1	Laid out diverter.
1972.0	P13	TP	G13	SS	2.5	Made up landing joint to slipjoint. Removed service hoses from slip joint. Collapsed slip joint inner barrel and bolted to slip joint outer barrel.
1972.0	P13	TP	G13	SS	0.5	With blind/shear rams and failsafe valves confirmed closed, unlatched LMRP connector (unlatched at 03:35). Picked up LMRP clear of BOP guide posts.
1972.0	P13	TP	G13	SS	0.5	Slacked off on guidelines and moved rig on anchor chains 15m port forward (ROV completed inspection of LMRP connector and BOP upper flange).
1972.0	P13	TP	G13	SS	4.5	Removed MRT lines, choke and kill goosenecks from slip joint. Removed storm saddles from pod lines.
1972.0	P13	TP	G13	SS	3	Laid out landing joint, slipjoint, riser pup and buoyancy joints.
1972.0	P13	TP	G13	SS	2	Pulled LMRP into moonpool on riser double and landed on transporter. Disconnected handling riser double.
1972.0	P13	TP	G13	SS	3.5	Skidded LMRP to starboard setback
1972.0	P13	TP	G13	SS	6.5	Changed out upper annular element in LMRP.

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Date : 16 Dec 2009 **Daily Cost : US$ 650982** **Report Number : 18**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1972.0	P13	TP	G11	SS	4	Installed new element in upper annular.
1972.0	P13	TP	G13	SS	6.5	Skidded LMRP to transporter and installed pod lines to LMRP. Installed test joint and adjusted test stump height.
1972.0	P13	TP	P1	SS	1	Pressure tested upper annular to 250 psi/5min and 3500 psi/10mins.
1972.0	P13	TP	G13	SS	0.5	Skidded LMRP to well centre.
1972.0	P13	TP	G13	SS	2.5	Made up a double of marine riser to LMRP.
1972.0	P13	TP	G13	SS	4	Ran LMRP on a double slick joints, 1x bouyant joint and 1x pup joint. Installed slip joint. Freed up MRT tension ring.
1972.0	P13	TP	G13	SS	0.5	Picked up landing joint and ran same.
1972.0	P13	TP	G13	SS	4	Made up C&K lines to the slip joint and connected MRT lines and umbilical storm saddles.
1972.0	P13	TP	G13	SS	1	Positioned rig over wellhead. Landed and latched LMRP to BOPs.

Date : 17 Dec 2009 **Daily Cost : US$ 767136** **Report Number : 19**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1972.0	P13	TP	G13	SS	2.5	Stroked out slip joint. Disconnected and laid out landing joint.
1972.0	P13	TP	G13	SS	0.5	Set pipe handler sequencing.
1972.0	P13	TP	G13	SS	0.5	Picked up diverter and installed same.
1972.0	P13	TP	G13	SS	1	Changed out damaged lock down dog inserts between diverter and slip joint.
1972.0	P13	TP	G1	SS	0.5	Laid down diverter running tool.
1972.0	P13	TP	G1	SS	0.5	Rigged down riser running equipment and rigged up 5" pipe handling equipment.
1972.0	P13	TP	G1	SS	1.5	Ran 2x stands of HWDP and made up BOP test tool. RIH and landed the test tool.
1972.0	P13	TP	P1	SS	1	Tested upper annular and connector to 250/3500psi - ok. Tested C&K lines to 250/5000psi - ok.
1972.0	P13	TP	G8	SS	1.5	POOH to 100m and displaced riser and C&K lines to 9.5ppg mud. Continued to POOH to surface and laid down BOP test tool.
1972.0	P13	P	G15		0.5	Broke down casing hanger running tool and laid out same.
1972.0	P17	P	G1		1.5	Rigged up and pressure tested stand pipe manifold and GeoSpan unit.
1972.0	P17	P	P1		5	Pressure tested stand pipe manifold, GeoSpan unit and top drive - 250/4000psi for 5/10min - ok.
1972.0	P17	TP	G11	RE	0.5	Unable to break out saver sub. Troubleshot torque wrench hydraulic system.
1972.0	P17	P	G5		0.5	Changed out saver sub.
1972.0	P17	P	G2		2	Picked up 15 joint of 5" drill pipe from deck and rack in the mast.
1972.0	P17	P	G7		1.5	Held PJSM. Picked up and made up directional BHA.
1972.0	P17	P	G7		1	Halliburton MWD loaded and programmed tools.
1972.0	P17	P	G7		0.5	Halliburton MWD installed radio active sources.
1972.0	P17	P	G6		1.5	Continued to pick up BHA and RIH to 211.15 m.

Date : 18 Dec 2009 **Daily Cost : US$ 771438** **Report Number : 20**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1972.0	P17	P	G7		1	Performed shallow test on MWD tools.
1972.0	P17	P	G8		5.5	Held PJSM. Picked up 5" drill pipe from the deck and RIH to 1657m.
1972.0	P17	P	G8		1.5	Continued to RIH with stands form the mast from 1657m to 1917m.
1972.0	P17	P	G8		0.5	Washed from 1917m to top of cement at 1938m. Tagged with 5klbs down weight.
1972.0	P17	P	G8		8.5	Drilled out shoe track from 1938m to 1940m with varying the drilling parameters: Initial WOB = 5-10klbs; Final WOB 15-20klbs. RPM = 35-70; GPM 450-600. Initial drilling on plugs typical with nominal Torque 3-4klbs-ft which declined to negligible. Regularly picked up off bottom and gradually increased the WOB to 15klbs. Rubber from plugs over the shakers

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Date : 18 Dec 2009 **Daily Cost : US$ 771438** **Report Number : 20**

					with traces of alluminium indicated progress through the plugs. Erratic torque developed with cycling from 4-10klbs. Shavings of the casing in returns over the shakers with increasing trend with no drilling progress.
1972.0	P17	U	F3	0.5	Pumped slug and rigged down Geoservice and MWD geolograph lines.
1972.0	P17	U	G8	0.5	Attempted to install power slips. Slips jammed on drill pipe. Removed power slips. Secured compensator and top drive hoses due to hoses hanging up in the mast.
1972.0	P17	U	G8	3.5	Continued to POOH from 1940m to 211m.
1972.0	P17	U	G6	1	POOH with BHA and racked in mast. Laid down 1x stabiliser and float sub.
1972.0	P17	U	G7	0.5	Removed radio active sources from MWD tools.
1972.0	P17	U	G7	0.5	Downloaded MWD tools.
1972.0	P17	U	G7	0.5	Service broke MWD tools ACAL, HOC and BAT sonic tools and laid out same.

Date : 19 Dec 2009 **Daily Cost : US$ 666520** **Report Number : 21**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1972.0	P17	U	G7		1	Broke off bit and racked back GeoPilot in the mast. Bit dull Grading 2-3-BT-S-X-I-CT-PR.
1972.0	P17	U	G7		2.5	Picked up mud motor, PM sub and HOC. Made up 8-1/2" GT-1 mill tooth Bit. Set bent sub on PDM to 1.15° and scribed MWD.
1972.0	P17	U	G6		1	Picked up stabiliser and float sub + 3x 6-3/4" drillcollars from the deck.
1972.0	P17	U	G6		1	Continued to RIH BHA from the mast to 216m.
1972.0	P17	U	G7		1	Shallow tested MWD tools. 500gpm / 950psi.
1972.0	P17	U	G8		3	Continued to RIH from 216m to 1922m.
1972.0	P17	U	G11		0.5	Serviced travelling block and top drive.
1972.0	P17	U	F1		0.5	Washed down from 1922m to 1940m (60spm / 550gpm /1650psi/ 60 RPM).
1972.0	P17	P	D1		1.5	Drilled out shoetrack from 1940m to 1965m. Cleaned out rathole and reamed through float and shoe 3 times (60spm / 550gpm /1650 psi / 60 RPM).
1977.0	P17	P	D2		0.5	Drilled New 8-1/2" hole from 1972m to 1977m (60 spm / 550gpm / 1650 psi / 80 RPM / 3-5klbs-ft torque).
1977.0	P17	P	F4		1	Circulated and conditioned mud (60 spm/ 550gpm /1650psi / 80 RPM).
1977.0	P17	P	G1		0.5	Made up side entry sub rigged up for LOT.
1977.0	P17	P	P1		1	Held PJSM. Performed LOT as per program with 9.5ppg mud to leak-off @ 1710psi = equivelent MW of 14.6ppg.
1977.0	P17	P	G1		0.5	Rigged down LOT assembly.
1981.0	P17	P	D3		0.5	Drilled 8-1/2" hole from 1977m to 1981m (60 spm / 550gpm / 1650psi / 80 RPM / 3-5klbs-ft torque). Final inclination angle 4.8°.
1994.0	P17	P	D3		2.5	Slide drilled from 1981m to 1994m (60spm / 550gpm / 1650psi).
2019.0	P17	P	D3		2	Continued to drill 8-1/2" hole from 1994m to 2019m (60spm / 550 gpm / 1650psi / 80 RPM / 3-5klbs-ft torque).
2019.0	P17	U	F4		1	Took survey. Circulated bottoms up @ 550gpm / 1640psi.
2019.0	P17	U	G8		0.5	Pumped slug. POOH from 2019m to 1965m (9-5/8" shoe depth).
2019.0	P17	U	G8		2	Flow checked. Installed wiper rubber and POOH 1965m to 700m.

Date : 20 Dec 2009 **Daily Cost : US$ 669541** **Report Number : 22**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2019.0	P17	U	G8		1.5	Continued to POOH from 700m to 216m. Flow checked before BHA entered the BOP Stack.
2019.0	P17	U	G6		2	POOH BHA from 216m to surface. Laid out mud motor and MWD tools. Bit grading = 2-2-WT-A-E-1-NO-BHA.
2019.0	P17	U	G7		1.5	Picked up BHA #6. Made up PDC bit type FMF3755 dressed with 3x 16/32 jets and RIH.

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Date : 20 Dec 2009 **Daily Cost : US$ 669541** **Report Number : 22**

2019.0	P17	U	G7		1	Halliburton uploaded MWD tools.
2019.0	P17	U	G7		0.5	Halliburton installed radio active sources.
2019.0	P17	U	G6		1.5	RIH with 8-1/2" Geopilot assembly to 210m.
2019.0	P17	U	G7		0.5	Shallow tested MWD Tools with 500gpm / 920psi.
2019.0	P17	U	G8		1.5	RIH 5" drill pipe from 210m to 1252m.
2019.0	P17	U	G11		2	Slipped and cut drill line.
2019.0	P17	U	G8		1.5	Continued to RIH from 1252m to 1972m.
2019.0	P17	U	D6		1.5	Washed and reamed re-logged new hole from 1972m to 2019m.
2023.0	P17	P	D2		2	Drilled 8-1/2" hole from 2019m to 2023m (tide corrected). Attempted to set the GeoPilot to required steering power/ angle without success. The RPM readback not functioning correctly. Unable to drill ahead in directional hole.
2023.0	P17	TP	G8	TP	2	Pumped a slug. POOH from 2023m to 1281m.
2023.0	P17	TP	G11	TP	0.5	Serviced travelling block and topdrive.
2023.0	P17	TP	G8	TP	2.5	Continued to POOH from 1281m to 210m. Performed 10min flow check prior to pulling BHA through the BOP Stack.
2023.0	P17	TP	G6	TP	2	POOH BHA from 210m to surface. Halliburton downloaded MWD tools and removed radio active sources. Laid out GeoPilot. Bit Grading = 0-0-NO-A-X-1-NO-DTF.

Date : 21 Dec 2009 **Daily Cost : US$ 698962** **Report Number : 23**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2023.0	P17	TP	G6	TP	1	Picked up GeoPilot from the deck. Installed PDC Bit RR#6 and RIH picking up Bat, Sonic, HOC and ACAL from the mast.
2023.0	P17	TP	G7	TP	1.5	Halliburton uploaded MWD tools and installed radioactive sources.
2023.0	P17	TP	G6	TP	1.5	Continued to RIH with Geopilot BHA to 210m.
2023.0	P17	TP	G7	TP	0.5	Halliburton shallow tested MWD tools (550gpm / 1000psi).
2023.0	P17	TP	G8	TP	2.5	Contiued to RIH BHA #7 on 5" drill pipe from 210m to 1350m.
2023.0	P17	TP	G13	TP	0.5	Performed weekly function test of BOP stack on yellow pod.
2023.0	P17	TP	G8	TP	0.5	Continued to RIH to from 1350m to 1981m.
2023.0	P17	TP	G8	TP	0.5	Washed and reamed from 1981m to 2023m.
2230.0	P17	P	D4		15.5	Set up the GeoPlot tool and drilled 8-1/2" hole from 2023m to 2230m. Built-up angle to 24° inclination. Drilling parameters: 545 gpm / 110spm / 1710psi. WOB 5 to 10klbs Torque 3 to 20klbs-ft ROP - Initial 5-20 m/mr (with formation change @ 2067m ROP increased to 25-30m/hr). Magnet contents 105 grams.

Date : 22 Dec 2009 **Daily Cost : US$ 694016** **Report Number : 24**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2389.0	P17	P	D4		12	Drilled 8-1/2" hole from 2230m to 2389m with the hole inclination angle built to 37°. Drilling parameters: 545gpm / 1870psi WOB 5 to 15kLbs Torque 3 to 20kLbs-ft ROP 5 to 30 m/hr Hole and connections good.
2550.0	P17	P	D4		12	Drilled ahead in 8-1/2" hole from 2389m to 2550m with the hole angle built to 42° inclination. Drilling parameters: 561gpm / 2025psi WOB 5 to 20klbs Torque 15 to 24klbs-ft ROP 5 to 30m/hr Ditch Magnet Contents = 115 grams.

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Date : 22 Dec 2009 **Daily Cost : US$ 694016** **Report Number : 24**

Hole and connections good.

Date : 23 Dec 2009 **Daily Cost : US$ 706408** **Report Number : 25**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2581.0	P17	P	D4		2.5	Drilled ahead 8-1/2" hole from 2550m to 2581m with inclination angle held at 42°. Drilling parameters: 561gpm / 2025 psi WOB 5 to 20klbs Torque 15 to 24klbs-ft ROP 5 to 30m/hr At 2572 m the torque dropped off to between 4-6klbs-ft. Stick slip and vibration increased. Adjusted parameters to reduce this. At 2608m high torque returned.
2581.0	P17	P	G11		0.5	Top up oil on top drive gearbox.
2753.0	P17	P	D4		18	Drilled ahead 8-1/2" hole from 2581m to 2753m with inclination angle held at 42°. Drilling parameters: 561gpm / 2025 psi WOB 5 to 20klbs Torque 15 to 24klbs-ft ROP 5 to 30m/hr
2753.0	P17	U	F4		1.5	Added 3 ltrs of PHPA into the drill string. Circulated 2 x bottoms up untill shakers were clean. Flow checked 10min.
2753.0	P17	U	G8		1.5	POOH on elevators from 2753m to 2520m. Tight spots from 2620m to 2600m. Maximum 30klbs overpull. Tight spots from 2575m to 2515m. Maximum 40klbs overpull.

Date : 24 Dec 2009 **Daily Cost : US$ 715952** **Report Number : 26**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2753.0	P17	U	G8		1	Continued to POOH from 2520m to 2303m.
2753.0	P17	U	G8		0.5	Made up top drive and washed through tight spots from 2303m to 2265m. Hole good, hole drag 30-40klbs.
2753.0	P17	U	G8		0.5	Continued to POOH from 2265m to 2165m. Made up top drive and attempted to wash through tight spot @ 2185m. Unable to move drill pipe up or down. Fired jars once up unintentionally - pipe came free.
2753.0	P17	U	G8		0.5	Pumped out of hole from 2165m to 2175m.
2753.0	P17	TP	G22	WB	5.5	Made up top drive and pumped out of hole from 2175m to 2146m. Worked tight hole - unable to move drill pipe up or down at 2146m. Jarred up x 3 times to make a working window. No drill pipe rotation although retained full circulation with no SPP change. Jarred down from 320klbs neutral point and slacked off down to 180klbs installing right hand torque into drill string. Pumped 60bbl of light weight lubricating mud @ 9.2ppg and displaced same around BHA. Recipe of Radiagreen pill as follows. 50 bbls of premix (concentrations as per fluids program) 7 bbls of drillwater 2 sacks of PAC-L (Filtration control agent) 2 Pails of EZ-MUD (PHPA) 2 X 55 Gallon drums of RADIAGREEN SALT Lubrication agent Mixed pill mud weight 9.2 ppg.
2753.0	P17	U	G8		2	Washed and light back-reamed from 2146m to 2129m. Continued to POOH on elevators from 2129m to casing shoe at 1946m - hole good (maximum drag +/-15klbs). Circulated bottoms up at the shoe.
2753.0	P17	P	G11		0.5	Serviced TDS and dolly rollers.
2753.0	P17	TP	G11	RE	1	Investigated oil leak on top drive gearbox. Checked TDS motor ground fault.
2753.0	P17	U	G8		1.5	RIH from 1946m to 2539m - hole good with 10 - 15klbs drag.
2753.0	P17	U	D6		2	Took 30klbs WOB at 2539m. Precautionary washed and light reamed from 2539m to 2753m.
2865.0	P17	P	D4		9	Drilled 8-1/2" hole from 2753m to 2865m (584gpm / 117spm / 2265psi / 120 RPM / 4 - 7 klbs-ft torque). ROP: 25 to 30 m/hr Ditch Magnet Contents = 135 grams.

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Date : 25 Dec 2009 **Daily Cost : US$ 666517** **Report Number : 27**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3180.0	P17	P	D4		24	Drilled 8-1/2" hole from 2865 m to 3180 m. Drilling parameters: 584gpm @ 117spm / 2265 psi / 120 RPM / Torque 4 - 7klbs-ft / WOB 5-10klbs. ROP: 20 to 30 m/hr. Hole and conenctions good. Frequent indication of high slip-stick recorded downhole on bit/BHA. Attempted to reduce the slip-stick by changing drilling parameters (RPM and WOB) with little effect.

Date : 26 Dec 2009 **Daily Cost : US$ 665020** **Report Number : 28**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3199.0	P17	P	D4		2	Drilled 8-1/2" hole from 3180m to 3199m. Drilling parameters: 584gpm @ 117 SPM / 2550 psi / 120 RPM / Torque 4 - 7 KLbs-Ft / WOB 5-15 KLbs. ROP 20 to 30 m/Hr. Hole and connections good.
3199.0	P17	TP	G11	RE	3	Temperature alarm on the lube oil pump for the top drive came on. Racked back 1x drillpipe stand. Mechanics inspected TDS - probable lube oil pump failure and coupling damage. Conferred with ADA office and decision made to POOH to 9-5/8" casing shoe for repairs. Continued to circulate and reciprocate drill pipe. Pumped Hi-Vis sweep followed by 2 x bottoms up.
3199.0	P17	TP	G8	RE	2	POOH on elevators at from 3199m to 2900m. Tight hole @ 2929m to 2900m. Washed and back reamed through this section with 50spm / 750 psi / 40 RPM.
3199.0	P17	TP	G8	RE	2	Continued to POOH on elevators from 2900m to 1946m. Hole in good shape.
3199.0	P17	TP	G11	RE	2	Repaired broken coupling on the top drive lube oil pump. Serviced traveling blocks and dollys.
3199.0	P17	TP	G8	RE	3	RIH from 1946m to 3199m. Performed trip drill (36 sec). Hole in good condition.
3311.0	P17	P	D4		10	Established drilling parameters and drilled Ahead 8-1/2" hole from 3199m to 3311mMDRT / 2681mTVD. Drilling parameters: 607gpm / 120spm / 2600 psi. Torque 4 - 15 klbs-ft / WOB 5-15klbs. ROP 10 to 25m/hr Ditch Magnet contents = 45 grams. Max Gas 11 percent.

Date : 27 Dec 2009 **Daily Cost : US$ 668388** **Report Number : 29**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3447.0	P17	P	D4		12	Drilled 8-1/2" hole from 3311m to 3447mMDRT (3117mTVDRT). Drilling parameters: 600gpm / 120spm / 2600 psi / Torque 4 - 15klbs-ft / WOB 5-15klbs. ROP 10 to 25 m/hr. Hole and connections good.
3522.0	P17	P	D4		7	Continued to drill 8-1/2" hole from 3447m to well TD at 3522mMDRT (3192mTVDRT). Drilling parameters: 600gpm / 120spm / 2650psi / Torque 4 - 15klbs-ft / WOB 5-20klbs. ROP 10 to 25m/hr. Hole and connections good. Rapid decline in ROP from 10+ m/hr to 1+ m/hr in 1hr. The torque flattened and pressure spikes appeared indicating bit failure. Total steel recovered from ditch magnets 103g.
3522.0	P17	P	F4		2.5	Circulated hole until returns over shale shakers cleaned up. Last pill pumped 30bbl of low weight sweep followed by 30bbl of high weight sweep. Circulated out sweeps.
3522.0	P17	P	G8		1.5	Flow checked - ok. POOH on elevators from 3522m to 3100m. Hole in good condition. No tight spots.
3522.0	P17	P	G8		1	RIH from 3100m to 3522m. No drag observed. Hole in good condition.

Date : 28 Dec 2009 **Daily Cost : US$ 821582** **Report Number : 30**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	F4		3.5	Circulated 1x bottoms up. Pumped 40bbl of low-weight followed by 40bbl of high- weight pill and continued to circulate and condition mud with 2 x bottoms up untill returns over the shale shakers were clean.
3522.0	P17	P	G8		7	Flow checked and pumped slug and POOH from 3522m to 211m. No tight spots over the hole drag of 10-15klbs.
3522.0	P17	P	G6		1	POOH with BHA from 211m to 40m.
3522.0	P17	P	G7		1.5	Removed radioactive sources and down loaded MWD tools.

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3522.0	P17	P	G7	2	Continued to POOH MWD tools and GeoPilot BHA and laid out same.
3522.0	P17	P	G1	2	Held TBT and rigged up to run electric wireline logs.
3522.0	P17	P	C1	1	Made up Schlumberger tools for the run #1 - CMR-HNGS-PEX-HRLA and calibrated same.
3522.0	P17	P	C1	0.5	Zeroed tools and installed radioactive sources in wireline tools.
3522.0	P17	P	C2	5.5	RIH with electric tools Run #1: CMR - HNGS - PEX - HRLA Log down 18:25hrs Held up 3192m 19:40hrs HRLT before Cal Repeat Pass 19:53 - 20:12hrs Logger at bottom 20:22hrs Logged up from 3517m 20:24 - 23:30hrs Playing back PEX-HRLA (at 9-5/8" Casing Shoe) 23:30hrs Hole good with one "sticky point" @ 3182m to 3190m. Confirmed 9-5/8" casing shoe @ 1965 m.

Date : 29 Dec 2009 **Daily Cost : US$ 827993** **Report Number : 31**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	C2		6.5	Continued to run electric wireline logs. Run #1 CMR-HNGS-PEX-HRLA. Depth matched, QC and uploaded run #1. SP-HRLA-PEX-HNGS-LEHQT data before CMR run. RIH for CMR main pass. Downhole fluid loss 18 BBL over 16 Hr period.
3522.0	P17	P	C2		1.5	POOH with wireline run #1.
3522.0	P17	P	C1		0.5	Removed radioactive sources from the tools.
3522.0	P17	P	C1		1	Laid out wireline tools from run #1.
3522.0	P17	P	C1		1	Picked up tools for wireline run #2 MDT-GR-LEHQT.
3522.0	P17	P	C2		2	Calibrated and RIH with wireline tools run #2.
3522.0	P17	P	C2		8.5	Commenced wireline logging run #2. RIH to 2250m and correlated on depth. From 12:52 - 13:15hrs @ 2134.0m moved to first station for drop off tests: 0,2,5 mins - all OK. 13:15 - 14:00hrs @ 2134.2m - Commenced pre-tests, completed 3 points. 14:00 - 14:25hrs @ 2400.0m - Moved down for correlation. 14:25 - 14:40hrs @ 2640.0m - Correlated up, variably sticky from 2500-2650m 14:40 - 14:50hrs @ 2550.0m - Go to 2550m for check drop off test - OK. 14:50 - 15:12hrs @ 2550.0m - Continued pretests. 15:12 - 16:10hrs @ 2560.0m - Down and correlated +1.3m. Changed to low gear, hole sticky (2846m) add 1 m, speed very erratic, changed to low - low. 16:10 - 16:52hrs @ 2730.0m - Continued pretests. Problems with toolstring moving. Adjusted/raised heave compensator pressure. 16:52 - 17:40hrs @ 2785.0m - Correlated on depth but indication of deteriorating hole condition. Hung up at 2933m, 2927m and 2945m. 17:40 - 18:45hrs @ 2832.0m - Continued with pretests. Hole tight at 2896m. 18:45 - 19:20hrs @ 3000.0m. Correlated on depth. 19:20 - 19:45hrs @ 2962.0m. Continued with pretests. 20:40 - 21:00hrs @ 3145.0m. Went down to correlate with various tight spots at 3022 m, 3070 m and 3083 m. 21:00 - 21:30hrs @ 3010.0 m. Stuck between 3050-3010m with maximum overpull (9000 lbs) reached and tool pulled free.
3522.0	P17	P	C2		1.5	POOH with wireline run #2. Hole sticky and deteriorating condition. Below is a summary of the tight spot areas where the tool experienced high tension or got held up during the MDT-pretest run: 2846m, 2933m (tight and held up), 2927m, 2945m, 2896m, 2993m (held up), 3010m. Tool stuck. Worked wireline free with up/down with maximum pull up 9000 lbs.
3522.0	P17	P	C1		1.5	Tools at surface. Broke down and laid out wireline tools from run #2.

Date : 30 Dec 2009 **Daily Cost : US$ 1167715** **Report Number : 32**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	G1		0.5	Continued to rig down electric wireline equipment.

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3522.0	P17	P	G6		2.5	Picked up and made up wiper trip BHA and RIH to 97m.
3522.0	P17	P	G13		0.5	Flushed BOP stack and wellhead area with 550gpm.
3522.0	P17	P	G6		0.5	Continued to RIH picking up BHA from 97m to 180m.
3522.0	P17	P	G2		1	Removed diverter bag insert. Picked up and installed BOP test tool into the drill string.
3522.0	P17	P	G8		0.5	RIH with BOP test tool and landed out on 9-5/8" wearbushing in wellhead.
3522.0	P17	P	P1		3.5	Pressure tested of BOP stack as follows: Pipe Rams: 250psi / 5min ; 5000psi / 10min Annular BOP: 250psi / 5min ; 3500psi / 10min C&K failsafe valves: 250psi / 5min ; 5000psi / 10min
3522.0	P17	P	P1		0.5	Function tested BOP stack on both pods.
3522.0	P17	P	G8		0.5	Unseated test tool with 5klbs overpull. POOH and laid out same.
3522.0	P17	P	G8		1	RIH on 5" drill pipe from 180m to 758m.
3522.0	P17	TP	G11	RE	0.5	Troubleshot problem with iron roughneck switches.
3522.0	P17	P	G8		1.5	Continued to RIH on 5" drill pipe to 1965m (9-5/8" casing shoe).
3522.0	P17	P	G11		0.5	Serviced TDS and greased dolly rollers.
3522.0	P17	P	G8		4	Continued to RIH in open hole from 1944m to 3522m. Worked pipe through tight spots @ 2427m (20klbs) and 2482m (40klbs). Made up topdrive and washed from 2475m to 2490m. Worked pipe through tight spot @ 2510m (30klbs). Precautionary washed from 3417m to TD @ 3522m.
3522.0	P17	P	F4		6.5	Circulated and conditioned mud @ 580gpm / 2800psi. Reciprocated drillstring while bleeding in 9.3ppg premix mud. Pumped 30bbls of low weight 30bbls of high weight pills around, followed by 2x bottoms up. Final mud weight = 9.4 ppg.

Date : 31 Dec 2009 **Daily Cost : US$ 997681** **Report Number : 33**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	F4		1	Continued to circulate and condition mud @ 580gpm / 2800psi. Reciprocated string while bleeding in 9.3ppg premix mud. Reduced mud weight from 9.5+ppg down to 9.4ppg. Pumped 30bbl of low-weight and 30bbl of high-weight pills around followed by 2x bottoms up. Maintained MW at 9.4ppg.
3522.0	P17	P	G8		4	Performed 10min flow check. POOH from 3522m to 2965m. Pumped slug and continued to POOH to 9-5/8" cassing shoe @ 1965m.
3522.0	P17	P	G8		2.5	Performed 10min flow check and installed diverter insert bag and wiper rubber. Continued to POOH inside the casing from 1965m to 180m.
3522.0	P17	P	G8		1	POOH with BHA and racked back in the mast.
3522.0	P17	P	C1		1.5	Held pre-job safety meeting and rigged up electric wireline equipment.
3522.0	P17	P	E2		14	Made up MDT electric wireline tools and calibrated same. Continued with wireline run #2: MDT-GR-LEHQT. 10:50 to 11:45hrs - RIH to 2027.0m and checked on depths. 11:45 to 12:25hrs - RIH @ 3100.0m. Continued to RIH in open hole whilst checking with pick up tests. Hole tight at various depths - worked MDT tools up/down the hole. Continued to work tools and RIH between 12:25 - 13:35hrs to 3500.0m. Worked tools across sticky hole with the surface line tension of up to 9200 lbs - 4000 lbs head tension at depths from 2600-3400m. 13:35 to 14:15hrs @ 3500.0m. Correlated +3.5 m. Difficult to confirm with high line tension and stalling winch. 14:15 to 14:20 @ 3324.0m. Moved to 3424.5m for drop off tests 14:20 to 14:50hrs @ drop off tests at 3325m. 14:50 to 15:25hrs @ 3424.5m. Commenced pretests. 15:25 to 15:35hrs @ 3424.5m. Continued to correlate - difficult to correlate on depths. 15:35 to 17:35hrs tools at 3424.5m. Continued pretests, many tight, tool may have moved up hole due to line tension while stopped @ depth. 17:35 to 18:14hrs @ 3450.0m. Correlated +1m. Hole sticky giving variable line and head tensions up to 9000 lbs. 18:14 to 20:35hrs @ 3344.5m continued pretests. 20:35 to 20:45hrs @ 3337.0m. Software crash - pretest at 3337.0m and took 20cc drawdown instead of 2 x 10cc - pretest volume reset to 10cc. 20:45 to 22:00hrs @ 3336.0m. Continued with pretests. 22:00 to 23:59hrs @ 3324.0m. Continued pretests. 11bbls seepage losses to the well.

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Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time : 22:30

Activity Report For Rockhopper-1

Date : 01 Jan 2010 **Daily Cost : US$ 985977** **Report Number : 34**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	E2		12	Continued with MDT tools run #3: 00:00 to 00:25hrs @ 3268.7m. Continued pretests. 00:25 to 00:45hrs @ 3470.0m. RIH. 00:45 to 01:50hrs @ 3424.5m. Pumped out and sample collected. 01:50 to 02:30hrs @ 3408.0m. Continued with pretests. Note: Telephone communication lost from approximately 21:00hrs to 02:00hrs. 02:30 to 02:35hrs @ 3445.0m. RIH and adjusted heave compensator. 02:35 to 03:00hrs @ 3445.0m. Correlated on depth. 03:00 to 03:20hrs. RIH to continue pretests. 03:20 to 04:20hrs. Took 1x sample and continued with pretests. 04:20 to 05:05hrs @ 3407.5m. Pumped out. Sample #2 collected. 05:05 to 05:15hrs @ 3430.0m. Correlated, 1 m shallow. 05:15 to 05:25hrs @ 3398.0m. RIH. 05:25 to 07:30hrs @ 3380.5m. Continued with pretests. 07:30 to 08:00hrs @ 3348.0m. Attempted sample collection #3. Moved down 0.5m due to poor mobility. Moved back up 1m. 08:55 to 09:15hrs @ 3329.0m. Attempted sample #4 - tight. Note: Re-pressured heave compensator and recorrelated. 09:15 to 09:30hrs @ 3400.0m. Correlated +1m. 09:30 to 12.00hrs @ 3325.0m. Continued pretests and collected sample #3.
3522.0	P17	P	E2		12	12.00 to 16:30hrs @ 3338.0m. Continued sample retrieval. 1st attempt tight, moved up 0.5m - tight. Move down 1m - tight but possible. Pumped out and collected sample #5 (#4 MPSR). 16:30 to 17:00hrs @ 3345.0m. Continued with sample collection - tight. Abandoned further attempts. Correlated for next station. 17:00 to 17:40hrs @ 3380.0m. Correlated up 1m on 2nd confirmation pass (+ 8.8klbs tension). 17:40 to 21:30hrs @ 3290.5m. Resumed pre tests. Collected 2 samples at 3245.0m (MPRS #5, #6). 21:30 to 23:59hrs @ 3236.0m. Continued pretests. Collected samples.

Date : 02 Jan 2010 **Daily Cost : US$ 991169** **Report Number : 35**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	E2		3	Continued with electric wireline run #3: MDT-GR-LEHQT 00:00 to 00:30hrs @ 3235.0m. Continued with pretests. Collected 2nd sample at 3235.0m (MPRS #7). 00:30 to 01:30hrs - Unable to move tools up or down with maximum pull of 9klbs surface line tension. 01:30 to 02:00hrs - Tools came free. POOH to 9-5/8" casing shoe. 02:00 to 02:30hrs - RIH. Unable to pass 3060m. Worked tools up and down in an attempt to get through tight spots. After numerous attempts, decision made to POOH with wireline tools.
3522.0	P17	P	C2		1.5	POOH with wireline run #3 to surface.
3522.0	P17	P	C1		2	Held PJSM. Broke down and laid out electric wireline tools from run #3.
3522.0	P17	P	G6		1	Held PJSM. Made up 8-1/2" wiper trip BHA and RIH to 180m.
3522.0	P17	P	G7		0.5	Shallow tested MWD tools @ 600gpm / 850psi.
3522.0	P17	P	G8		1.5	Continued to RIH from 180m to 1037m.
3522.0	P17	P	G11		2	Slipped and cut 100ft of drill line. Serviced topdrive and dolly rollers.
3522.0	P17	P	G8		2	Continued to RIH from 1037m to 2150m.
3522.0	P17	P	F1		8	Precautionary washed and reamed from 2150m to TD at 3522m (550gpm / 1900psi). Volume of cuttings and wall cake observed over the shale shaker screens.
3522.0	P17	P	F4		2.5	Circulated and conditioned mud at 580gpm / 2100psi. Removed 150bbl of mud from active system. Bled into active system 150bbl of new premix mud over 3x circulations.

Date : 03 Jan 2010 **Daily Cost : US$ 985977** **Report Number : 36**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	F4		2.5	Continued to circulate and condition mud. Pumped low weight followed by high weight sweeps. Circulated 2x bottoms up. Removed 150bbl of mud from active system. Bled into active system 150bbl of new premix mud over 3x circulations. Note: 13% maximum gas recorded during reaming and circulating operations with a continuous 4-9%

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Date : 03 Jan 2010 **Daily Cost : US$ 985977** **Report Number : 36**

					gas when reaming below 3050m.
3522.0	P17	P	G8	3	Flow checked and pumped slug. POOH on elevators from 3522m to 1965m (shoe depth). Hole good with minimum hole drag on the trip out.
3522.0	P17	P	G8	3.5	Flow checked. Continued to POOH in casing from 1965m to 180m.
3522.0	P17	P	G6	1	Flow checked prior to pulling BHA through the BOPs. POOH BHA to surface. No balling of either bit or stabs observed at surface. Dull bit grade - no change 2-2-WT-A-E-1-NO-BHA.
3522.0	P17	P	G1	1	Held PJSM. Rigged up Schlumberger wireline.
3522.0	P17	P	E2	1	Made up MDT-GR wireline tools. Suite #1, run #4. RIH and calibrate. 10:10 to 10:20hrs JSA 10:20 to 11:15hrs Picked up sheaves 11:15 to 11:45hrs Picked up tool string 11:40 to 11:55hrs Surface check tools 11:55 to 11:58hrs Tools set @ zero reference depth
3522.0	P17	P	E2	12	RIH with MDT tools. 11:58 to 12:50hrs RIH to 150m for compensation. Rearranged compensator line - Wireline sheave and configuration of lines. 12:50 to 15:10hrs @ 150.0m. RIH. sticky from 3020-3060m. 15:10 to 15:48hrs @ 3250.0m. Maximum depth. Correlated -2m. 2nd pass +0.5m. Still difficult to correlate with sticky hole. Moved to 1st pretest point. 15:48 to 18:50hrs @ 3202.0m. Pretested and sampled. Pumped out and collected Sample #1 and #2 (run #4). Indication of software problem with error messages on bottle open and close. Pressure ok. Took 3rd sample as precaution (72 litres pumped). 18:50 to 19:05hrs @ 3260.0m. Re-pressured up heave compensator to line pull 22klbs on MD. Correlated - 0.8m shallow. 19:05 to 19:55hrs @ 3201.0m. Continued with pretests, pumped out to check hydrocarbons signature against previous samples. 19:55 to 21:30hrs @ 3200.0m. Continued pretests and collected samples. 21:30 to 23:35hrs @ 3146.5m. Continued pretests and collected samples when mobility made it possible. Pumped out at 3137.0m with Quicksilver. Sample not collected due time taken for reservoir to clean up. 23:35 to 23:59hrs @ 3137.5 Continued pretests. Note: Total Drlg Fluid seepage losses to formation = 24 BBL over 24 Hrs period.

Date : 04 Jan 2010 **Daily Cost : US$ 995922** **Report Number : 37**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	E2		3.5	Continued with wireline suite #1, run #4. 00:00 to 00:10hrs @ 3,137.5m. Re-pressured heave compensator to 22klbs. 00:10 to 00:20hrs @ 3,165.0m. Correlated - on depth. 00:20 to 02:45hrs @ 3,108.0m. Continued with pretests. 02:45 to 02:55hrs @ 2,605.0m. Correlated - on depth. 02:55 to 03:20 Hrs @ 2,549.2m Continued pretests.
3522.0	P17	P	C2		1	03:20 to 03:40hrs @ 2,549.2m. POOH - end of run. 03:40 to 04:25hrs @ 1,965.0m. Continued to POOH to 9-5/8" casing shoe. 04:25 to 04:40hrs @ 160.0m. De compensated and continued to POOH. 04:40 to 04:40hrs @ 0.0m. Wireline tool (MDT-GR) at surface.
3522.0	P17	P	C1		1	Laid out wireline tools (MDT-GR).
3522.0	P17	P	C1		2	Picked up and made up electric wireline tools suite #1, run #5: VSI-GR. 05:30 to 07:15hrs Picked up tool string VSI-GR, zeroed tool, lowered seismic source into water and commenced mammal watch.
3522.0	P17	P	C2		6.5	RIH to 150m and set compensator (22klbs). 07:45 to 08:45hrs @ 1160.0m. Continued to RIH (no mammals sighted) and soft started cluster gun. 08:45 to 10:05hrs @ 1700.0m. Continued to RIH, test shots fired at 1500m and 1700m. Retracted and re-anchored caliper arms and re-set software. 10:05 to 11:06hrs @ 2300.0m. Continued to RIH and tool momentarily held up at 2176.0m. Fired open hole QC shot at 2020.0m. 11:06 to 11:27hrs @ 2300.0m. Correlated @ 9-5/8" casing shoe (1965m). Found @ - 1.7 m deep. 11:27 to 11:42hrs @ 1965.0m. Continued to RIH. 11:42 to 12:00hrs @ 2260.0m. Correlated to 9-5/8" casing shoe (1965 m) - on depth. 12:00 to 12:22hrs @ 1965.0m. Continued to RIH. 12:22 to 13:16hrs @ 2445.0m. Held up and attempted to pass the point with wireline toolstring using

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Date : 04 Jan 2010 **Daily Cost : US$ 995922** **Report Number : 37**

						alternate logging speeds - no success. 13:16 to 13:41hrs @ 2445.0m. POOH to add additional weight to bottom of VSI-GR tool. 13:41 to 13:52hrs @ 150.0m. De-compensated and continued to POOH. 13:52 to 14:00hrs Wireline tool VSI-GR on surface
3522.0	P17	P	G2		0.5	Laid out toolstring run #5: VSI-GR.
3522.0	P17	P	C1		1	Added additional 535lbs to bottom of VSI-GR tool. Picked up VSI-GR tool string, zeroed tool.
3522.0	P17	P	C2		7	RIH to 150m and pressured up heave compensator to 22klbs. 15:40 to 16:50hrs @ 150.0m. RIH, QC shot fired at 250m. 16:50 to 17:01hrs @ 2150.0m. Correlated to 9-5/8" casing shoe (1965m) and found @ 2m deep. 17:01 to 17:06hrs @ 1965.0m. Continued to RIH. 17:06 to 17:13hrs @ 2100.0m. Correlated to 9-5/8" casing shoe (1965 m) - on depth. 17:13 to 17:42hrs @ 2040.0m. Continued to RIH. QC shot fired at 2070m. Tool momentarily held up at 2480m. 17:42 to 18:55hrs @ 2480.0m. Continued to RIH. VSI-GR tool held up between 2750m - 2780m. Alternated down hole speeds of 2000-7000 ft/hr in an attempt to pass through - no success. Pulled tool up to 2500 m to regain tension on sondes (1000-3000lbs overpull). 18:55 to 19:20hrs @ 2500.0m. Decision to abandon VSP and run a checkshot survey (3 shots / station) from the deepest point possible, due to the inability to pass the interval 2750m to 2780m with VSI-GR toolstring. 19:20 to 20:30hrs @ 2555.0m. Commenced logging up (deepest point possible) with VSI-GR wireline tool. Recorded checkshot and GR up-log, 2070m re-survey. 20:30 to 22:30hrs @ 1965.0m. Continued to log up through casing (inside 9-5/8" shoe).
3522.0	P17	P	C2		0.5	Commenced POOH - end of survey (280m last shot fired). 22:35 to 22:50hrs @ 150.0m. De-compensated, powered down tools and continued to POOH. 22:50 to 22:50hrs @ 0.0m. Wireline tool VSI-GR at surface.
3522.0	P17	P	C1		1	Laid out wireline tools VSI-GR and seismic source

Date : 05 Jan 2010 **Daily Cost : US$ 984737** **Report Number : 38**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	C1		2.5	00:00 to 00:10hrs @ 0.0m Held JSA. 00:10 to 00:45hrs @ 0.0m. Rigged up electric wireline tool: MSCT-GR. 02:00 to 02:20hrs @ 0.0m. Zeroed tools and performed surface checks on wireline tool MSCT-GR.
3522.0	P17	P	C2		1.5	02:20 to 02:30hrs @ 0.0m. RIH to 150m. Pressured up heave compensator to 22klbs. 02:30 to 03:50hrs @ 150.0m. Continued to RIH. Equalised pressure at 1500m and 3000m. 03:50 to 04:00hrs @ 3360.0m. Correlated on depth - 2m deep.
3522.0	P17	P	E2		10	04:00 to 14:00hrs Cut x32 rotary sidewall cores between 2832m and 3424.7m with gamma correlation passes as necessary.
3522.0	P17	P	C2		1.5	14:04 to 15:19hrs @ 2832.0m. Commenced to POOH. 15:19 to 15:19hrs Wireline tool MSCT-GR on surface. 15:19 to 15:46hrs Laid out electric wireline tools run#6 MSCT-GR.
3522.0	P17	P	C1		3	Conducted electric wireline run #7: FMI-DSI-GR. 15:36 to 15:46hrs Held JSA. 15:46 to 16:30hrs Rigged up electric wireline tool string: FMI-DSI-GR. 16:30 to 17:50hrs Cut off 100m of cable - Outside armour raised with wear. 17:50 to 18:03hrs Continued to rig up wireline tools run #7: FMI-DSI-GR 18:03 to 18:17hrs Set the tools @ zero and performed surface checks.
3522.0	P17	P	C2		1.5	Run #7 18:17 to 18:22hrs RIH to 150m. Pressured up heave compensator to 22klbs tension on MD. 18:22 to 18:55hrs @ 150.0m. Continued to RIH. 18:55 to 18:57hrs @ 1695.0m. Checked caliper. 18:57 to 19:45hrs @ 1695.0m. Continued to RIH.
3522.0	P17	P	E2		4	19:45 to 20:15hrs Tools @ 3440.0m. Logged up repeat section - on depth. 20:15 to 20:35hrs @ 3280.0m. RIH for main pass. 20:35 to 23:59hrs @ 3517.0m. Logged up main pass - FMI powered down at 2800m (end of run). Pressured up heave compensator to add 3klbs (slacking off).

Date : 06 Jan 2010 **Daily Cost : US$ 638628** **Report Number : 39**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P17	P	E2		5	00:00 to 04:50hrs @ 2800.0m. Continued to log up for main pass (run #7) with DSI-GR components.

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Date : 06 Jan 2010 **Daily Cost : US$ 638628** **Report Number : 39**

3522.0	P17	P	C2	1.5	04:50 to 05:05hrs @ 615.0m. Commenced POOH. 05:05 to 05:20hrs @ 150.0m. Continued POOH - closed compensator and powered down tools. 05:20 to 05:20hrs Wireline tools FMI-DSI-GR at surface. 05:20 to 06:00hrs Laid out wireline tool FMI-DSI-GR (completion of logging program). 06:00 to 06:30 Rigged down Schlumberger from Drill Floor
3522.0	P21	P	G2	0.5	Rigged up 2 7/8" handling equipment.
3522.0	P21	P	G2	1.5	Made up 169m of 2 7/8" tubing cement stinger in rotary.
3522.0	P21	P	G2	0.5	Rigged up 5" DP handling equipment
3522.0	P21	P	G2	3	RIH 2 7/8" cement stinger on 5" DP from 169m to 1932m.
3522.0	P21	P	G23	0.5	Tested rig ESDS.
3522.0	P21	P	G11	1	Serviced TDS and dolly rollers
3522.0	P21	P	G8	3.5	RIH from 1932m to 3493m.
3522.0	P21	P	F4	2	Washed in with cement stinger from 3493m to 3510m. Circulated mud until gas content at 1.5%. Maximum gas level at bottoms up 16.8%.
3522.0	P21	P	F3	0.5	Pumped 12bbl Hi Vis pill and displaced with 205bbl of mud to spot on bottom.
3522.0	P21	P	G1	0.5	Pulled back x2 stands from 3510m to 3465m. Rigged up cement head and surface lines to cement unit and positioned stinger at 3460m. Halliburton pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi for5 mins - ok.
3522.0	P21	P	F3	1	Halliburton mixed and pumped 38bbl of 15.8ppg cement slurry #1A (Used: 184 sxs of class G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Halliburton displaced cement slurry with 3.5bbl of fresh water followed with 183bbl of 9.4ppg mud. Plug depth 3460m to 3310m.
3522.0	P21	P	G8	1	Rigged down surface lines. Removed cement head and POOH slowly from 3460m to 3310m. Made up cement head and surface lines to cement unit.
3522.0	P21	P	F3	1	Halliburton pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi. Halliburton mixed and pumped 38bbl of 15.8 ppg cement slurry #1B (Used: 184 sxs of class G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11gal/sx). Halliburton displaced cement slurry with 3.5bbl of fresh water followed with 170bbl of 9.4ppg mud. Plug depth 3300m to 3160m.
3522.0	P21	P	G8	0.5	Rigged down surface lines. Removed cement head and POOH slowly from 3310m to 3156m. Made up cement head and surface lines.
3522.0	P21	P	F4	0.5	Circulated while dowell flushed and cleaned unit.

Date : 07 Jan 2010 **Daily Cost : US$ 653040** **Report Number : 40**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	P	F3		1	Cement unit pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi - ok. Cement unit mixed and pumped 38bbl of 15.8ppg cement slurry for plug #1C (Used: 184 sxs of G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Cement unit displaced cement with 3.5bbl fresh water followed by 160bbl of 9.4ppg mud. Plug depth 3156m - 3010m.
3522.0	P21	P	G8		0.5	Laid out cement head and POOH slowly from 3156m to 2973m.
3522.0	P21	P	F3		0.5	Pumped 12bbl Hi Vis pill and displaced with 173bbl of 9.4ppg mud to spot at 2973m.
3522.0	P21	P	G1		0.5	POOH from 2973m to 2925m. Made up cement head. Cement unit pumped 10bbl of fresh water spacer and pressure tested surface lines to 1000psi.
3522.0	P21	P	F3		0.5	Cement unit mixed and pumped 38bbl of 15.8ppg cement slurry for plug #2 (Used: 184 sxs of G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Cement unit displaced cement with 3.5bbl fresh water followed by 148bbl of 9.4ppg mud. Cement in place at 03:02. Plug depth 2925m - 2775m.
3522.0	P21	P	G8		1	Laid out cement head and POOH slowly from 2925m to 2760m. Continued to POOH from 2760m to 2482m.
3522.0	P21	P	F4		1	Made up TDS and circulated bottoms up at 580gpm, 1400psi.
3522.0	P21	P	F4		1.5	Circulated at 200gpm, 270psi and reciprocated pipe while WOC.
3522.0	P21	P	G8		0.5	POOH from 2482m to 2250m.
3522.0	P21	P	G2		2.5	Picked up 24 jts of 5" DP from deck and racked back in mast.
3522.0	P21	P	G8		1	RIH from 2250m to 2713m.
3522.0	P21	P	F1		0.5	Washed in from 2713m to tag TOC with 5 klbs at 2723m.

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3522.0	P21	P	G8	2	POOH wet from 2723m to 2106m.
3522.0	P21	P	F3	0.5	Picked up single to space out to 2118m. Pumped 12bbl Hi Vis pill and displaced with 123bbls of mud to spot at 2118m.
3522.0	P21	P	G1	0.5	POOH from 2118m to 2067 m. Rigged up cement head and surface lines to cement unit. Spaced out to 2068m.
3522.0	P21	P	F3	0.5	Cement unit pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi. Cement unit mixed and pumped 25bbl of 16.5ppg cement slurry plug #3 (Used: 123sxs of G cement, 14.9bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Cement unit displaced cement with 3.5bbl fresh water followed by 100bbl of 9.4ppg mud. Plug depth 2068m - 1968m.
3522.0	P21	P	G8	0.5	Rigged down cement head and POOH from 2068m to 1968m.
3522.0	P21	P	F4	0.5	Circulated bottoms up at 590gpm, 1200psi.
3522.0	P21	P	P3	0.5	Flow checked well - well static.
3522.0	P21	P	G8	4	Pumped slug and POOH from 1968m to 168m.
3522.0	P21	P	G2	2	Laid out 2 7/8" cement stinger to deck.
3522.0	P21	P	G6	2	Picked up 6 3/4" Sperry drill lobe motor. Made up 8½" bit and ran below table. Made up PM sub and HOC tool. Aligned MWD to mud motor bent housing.

Date : 08 Jan 2010 **Daily Cost : US$ 656608** **Report Number : 41**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	P	G6		0.5	Made up 8½" BHA to 217m. Shallow tested MWD and motor on 1st stand of DP 500gpm, 990psi - ok.
3522.0	P21	P	G8		3	RIH from 217m to 1951m. Filled pipe every 20 stands.
3522.0	P21	P	G11		0.5	Serviced TDS and travelling block.
3522.0	P21	P	F1		0.5	Established parameters and washed down with 200gpm, 350psi from 1951m to 2005m. No cement tagged.
3522.0	P21	P	F4		0.5	Circulated bottoms up to check for cement contamination. Traces of cement only in mud.
3522.0	P21	P	F1		1	Washed in hole from 2005m with 200gpm, 350 psi to 2096m. No sign of cement.
3522.0	P21	P	F4		1	Circulated bottoms up at 600gpm, 2000psi.
3522.0	P21	P	P3		0.5	Flow checked well. Well static.
3522.0	P21	TP	G6	WB	5	POOH and racked back BHA. Removed 8½" bit.
3522.0	P21	TP	G15	WB	0.5	Cleaned out cement from inside MWD tool.
3522.0	P21	TP	G2	WB	1.5	Made up mule shoe and 17 joints of 2 7/8" tubing cement stinger to 168m.
3522.0	P21	TP	G8	WB	4	RIH with cement stinger on 5" DP from 168m to 2168m.
3522.0	P21	TP	F4	WB	0.5	Circulated bottoms up at 550gpm, 1000psi.
3522.0	P21	TP	F3	WB	0.5	Pumped 25bbl Hi Vis pill and displaced with 126bbl of 9.4ppg mud to spot Hi Vis on bottom.
3522.0	P21	TP	G1	WB	0.5	POOH from 2168m to 2067m. Made up cement head and surface lines to cement unit.
3522.0	P21	TP	F3	WB	1	Cement unit pumped 5bbl fresh water spacer. Pressure tested surface lines to 1000psi. Cement unit pumped a further 5bbl fresh water spacer. Cement unit mixed and pumped 40bbl of 15.8ppg cement slurry. Cement unit displaced cement with 2.8bbl fresh water followed by 102bbl of 9.4ppg mud. No back flow. No losses seen during cementing operation. Cement plug depth 2067m - 1918m.
3522.0	P21	TP	G8	WB	0.5	POOH slowly from 2067m to 1874m.
3522.0	P21	TP	F4	WB	1	Circulated 1.5x bottoms up to check from cement contamination. No cement detected at shakers.
3522.0	P21	TP	G8	WB	1.5	POOH from 1874m to 1036m.

Date : 09 Jan 2010 **Daily Cost : US$ 584715** **Report Number : 42**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	G8	WB	1.5	POOH with 2 7/8" cement stinger from 1036m to 168m.
3522.0	P21	TP	G2	WB	1.5	Laid out 17 joints of 2 7/8" cement stinger and mule shoe.
3522.0	P21	TP	G6	WB	1	Made up 8½' bit on slick BHA to 176m.

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3522.0	P21	TP	G8	WB	3	RIH with 8½" bit BHA from 176m to 1318m. Filled pipe every 20 stands.
3522.0	P21	TP	F4	WB	2.5	Attempted to break circulation. Unable to circulate. String plugged with cement flaking off DP walls.
3522.0	P21	TP	G8	WB	0.5	POOH wet. Racked back BHA.
3522.0	P21	TP	G8	WB	2	Made up 3½" mule shoe to 5" DP amd RIH to 287m. Checked pipe clear as RIH.
3522.0	P21	TP	G8	WB	1	3½" mule shoe plugged while attempting to break circulation. POOH.
3522.0	P21	TP	G8	WB	5	RIH with open ended 5" DP to 1880m. Hammered pipe on way in to loosen cement flakes from internal wall.
3522.0	P21	TP	F1	WB	1.5	Washed in hole at 200gpm, 100psi from 1880m to 1985m. Tagged TOC at 1985m with 10klbs weight. "Rig on downtime @ 1930 hours".
3522.0	P21	TP	F4	RE	1	Circulated 1.5x bottoms up at 600gpm, 800psi. Green cement diverted at shakers. Total volume of contaminated mud diverted 95bbl.
3522.0	P21	TP	G8	RE	2.5	Flow checked 15mins. POOH from 1985m to surface.
3522.0	P21	TP	G2	RE	1	Rigged up handling equipment and pick 2 7/8" tubing from pipe deck to 168m.

Date : 10 Jan 2010 **Daily Cost : US$ 386141** **Report Number : 43**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	G2	RE	1	Made up from deck 2 7/8" cement stinger from 70m to 168m.
3522.0	P21	TP	G8	RE	2.5	RIH with 2 7/8" cement stinger on 5" DP from 168m to 1960m.
3522.0	P21	TP	F1	RE	0.5	Washed in hole to 1982m at 200gpm, 200psi. Made up cement head and surface lines to cement unit.
3522.0	P21	TP	F4	RE	0.5	Spaced out cement stinger to 1980m. Circulated bottoms up at 600gpm, 1000psi. Held PJSM on cementing.
3522.0	P21	TP	F3	RE	1	Cement unit pumped 5bbl fresh water spacer and pressure tested surface lines to 1000psi. Cement unit pumped 5bbl fresh water spacer. Cement unit mixed and pumped 28bbl of 15.8ppg class G cement slurry. Cement unit displaced cement with 3bbls fresh water followed by 100bbl of 9.4ppg mud. Rigged down cement head and surface lines.
3522.0	P21	TP	G8	RE	0.5	POOH slowly from 1980m to above cement at 1817m.
3522.0	P21	TP	F4	RE	2.5	Circulated pipe and annulus clean at 600gpm, 1150psi
3522.0	P21	TP	G11	RE	2	Racked back stand to 1788m. Slipped and cut 120ft of drill line.
3522.0	P21	TP	G11	RE	0.5	Serviced rig. Greased TDS, crown block, drawworks and travelling block assembly.
3522.0	P21	TP	G8	RE	3.5	POOH from 1788m to 168m.
3522.0	P21	TP	G2	RE	2	Laid out 17 joints of 2 7/8" tubing and stinger.
3522.0	P21	TP	G1	RE	0.5	Rigged down 2 7/8" handling equipment, rigged up 5" handling equipment and cleared rig floor of excess equipment.
3522.0	P21	TP	G2	RE	2.5	Made up 9 stands of DP with cement on the internal walls and laid out same.
3522.0	P21	TP	G8	RE	3	RIH with open ended 5" DP to 1817m.
3522.0	P21	TP	F4	RE	1	Circulated 1½x bottoms up at 600gpm, 900psi.
3522.0	P21	TP	F1	RE	0.5	Washed in hole with 200gpm at 280psi from 1817m to TOC at 1896m. Tagged cement with 10klbs weight down at 1896m tide corrected (69m above shoe).

Date : 11 Jan 2010 **Daily Cost : US$ 256891** **Report Number : 44**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	F4	RE	1	Circulated well clean above TOC at 1886m (600gpm, 900psi). 35bbls of out of spec mud were treated from the system.
3522.0	P21	TP	G8	RE	4	POOH from 1886m.
3522.0	P21	TP	G1	RE	0.5	Broke down cement head. Cleaned and tidied rig floor.
3522.0	P21	TP	G11	RE	15	Performed rig maintenance. Pressure tested 9 5/8" casing against BSR to 1000psi. Serviced and repaired minor faults on IBOP actuator, pipe handler and iron roughneck. Serviced

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Date : 11 Jan 2010 **Daily Cost : US$ 256891** **Report Number : 44**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
						RBS. Removed drill line spooler. Cleaned sand traps and shakers. Started repositioning cable run on Maniputor arm.
3522.0	P21	TP	G8	RE	3.5	RIH with open ended 5" DP to 1880m.

Date : 12 Jan 2010 **Daily Cost : US$ 262532** **Report Number : 45**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	G11	RE	14.5	Rig on downtime. Performed rig maintenance. Serviced and completed PMs on compenstor and travelling block. Continued changing service hoses to off drillers side of manipulator arm. Opened up and checked fluid end of mud pumps #2 and #3.
3522.0	P21	TP	F4	RE	2	Circulated mud at 1880m to maintain mud condition.
3522.0	P21	TP	G11	RE	7.5	Rig on downtime. Performed rig maintenance. Repaired TDS RPM counter. Commenced installing Hi/Low alarms to HPU resevoir.

Date : 13 Jan 2010 **Daily Cost : US$ 208921** **Report Number : 46**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	G11	RE	24	Rig on downtime. Performed rig maintenance. Monitored well on trip tank. 30% of banding on starboard crane kingpost removed. Installed remote valve switch for trip tank fill line valve at drillers station. Replaced air lines on shakers #2 and #3. Continued with preparations to change out drilling line spool. Changed out PLCs for top drive. Performed inspection on mast bolts. Circulated well at 1880m to condition mud at 500gpm, 550psi (12:45 - 14:45). Function tested BOPs. Function tested on blue pod from drill floor and on yellow pod from TP's remote station. Tightened mast bolts at crown cluster. Removed brackets and cable tray from manipulator arm. Performed maintenance on standpipe valves.

Date : 14 Jan 2010 **Daily Cost : US$ 218032** **Report Number : 47**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	G11	RE	24	Rig on downtime. Performed rig maintenance. Monitored well on trip tank. Removal of hard band on starboard crane kingpost completed. Dressed welds on starboard crane kingpost - 50% completed. Circulated and conditioned mud at 1880m at 560gpm, 440psi (13:00 to 15:00). Completed modifications to drill floor manipulator arm. Cleaned mud pump strainers. Completed PMs on top drive. Positioned new drilling line spool on cradle.

Date : 15 Jan 2010 **Daily Cost : US$ 242675** **Report Number : 48**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	G11	RE	24	Rig on downtime. Dressed welds on starboard crane king post - 100% completed. Prepared to split roller chain to install sliding Nylatron blocks. Commenced grinding out and rewelding cracks on Port crane king post hard band - 25% completed. Prepared drill floor to slip through new drilling line. Circulated and conditioned mud at 1880m. POOH with DP. Pressure tested surface safety valves and lower TDS IBOP for 250psi/5mins and 5000psi/10mins - ok. Pressure tested kelly hose to standpipe for 250psi/5mins and 4000psi/10mins - ok. Performed rig maintenance. Monitored well on trip tank.

Date : 16 Jan 2010 **Daily Cost : US$ 232667** **Report Number : 49**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity

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Date : 16 Jan 2010 **Daily Cost : US$ 232667** **Report Number : 49**

3522.0	P21	TP	G11	RE	24	Rig on down time. Removed pin from Starboard crane post chain and positioned 4 sliding nylatron blocks in roller chain. Continued with grinding out and rewelding of cracks on the Port crane hard band - 100% completed. Crane operational, repairs being monitored. Removed scaffolding on Aft crane boom in preparation to repair king post hard band. Slipped through new drill line to drawworks. Monitored well on trip tank.

Date : 17 Jan 2010 **Daily Cost : US$ 232236** **Report Number : 50**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	G11	RE	24	Rig on down time. Continued grinding and welding of cracks in Aft crane king post hard band - 100% completed. Top weld gouged out. Repairs completed. 6 of nylatron blocks fitted to Starboard crane roller chain. Chain reconnected and adjusted. Repairs completed. RIH with open ended 5" DP to 1880m. Circulated and conditioned mud at 510gpm/ 700psi. POOH with DP. Tested upper IBOP with rig pump. 250psi/2300psi. RIH with HWDP, DCs, Jars and flushed BHA for 30mins to clear any residual cement contamination. Changed out saver sub on TDS. Performed rig maintenance while monitoring well on trip Tank.

Date : 18 Jan 2010 **Daily Cost : US$ 228266** **Report Number : 51**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	G11	RE	19.5	Rig on downtime. Made up 5 stands of 5" HWDP and RIH. Flushed wellhead area on RIH. Made up BOP test plug to HWDP and RIH with 5" DP. Landed test plug in wellhead. Pressure tested BOPs and choke manifold 250psi/5mins, 5000psi/10mins - ok. Annular preventers tested to 250psi/5mins, 3500psi/10mins - ok. POOH and laid out test tool. Serviced rig. Tested cranes with and without loads. Patriot Engineer and Maersk Engineer handed cranes over as repaired and operational at 19:30hrs.
3522.0	P21	TP	G6	RE	1.5	Made up slick BHA with 8½" PDC bit to 198m.
3522.0	P21	TP	G8	RE	2.5	RIH from 198m to 1880m on 5" DP.
3522.0	P21	TP	F1	RE	0.5	Established circulation, recorded parameters and washed down to tag TOC at 1896m.

Date : 19 Jan 2010 **Daily Cost : US$ 164190** **Report Number : 52**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	TP	F4	RE	1	Circulated and conditioned mud.
3522.0	P21	TP	P3	RE	1	Performed well control drill. Closed in well and performed choke circulation exercise with drill crew. Flushed kill and choke lines with fresh 9.3ppg mud. Recorded SCRs.
3522.0	P21	TP	D1	RE	3	Drilled out cement in 9 5/8" casing and rat hole from 1896m to 1970m (5/10klbs WOB, 60rpm, 600gpm, 1700psi, 5k ft-lbs torque).
3522.0	P21	TP	F4	RE	4	Circulated for 15mins. Set down 15klbs on TOC to weight test and confirm hardness. Racked back one stand and continued to circulate well clean at 600gpm, 1600psi.
3522.0	P21	TP	G8	RE	4	Flow checked well. Well static. POOH wet from 1950m. Racked back BHA. Broke off bit.
3522.0	P21	TP	G11	RE	0.5	Serviced rig.
3522.0	P21	TP	G15	RE	4	Service hands arrived on board. Checked and prepared MWD unit and tools. ** Rockhopper-1 ended at commencement of kick off BHA make up at 17:30hrs.**

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Activity Report For Rockhopper-1

Date : 17 Feb 2010 **Daily Cost : US$ 384564** **Report Number : 53**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	P	F4		0.5	*** Rockhopper-1 recommenced at 11:30hrs *** Dropped wiper ball and made up TDS. Circulated 1.5 times bottoms up with 580gpm / 116spm / 1170 psi.
3522.0	P21	P	G8		3	Pumped slug and POOH laying down drill pipe from 1701m to 1181m.
3522.0	P21	P	P1		1	Held PJSM. Lined up cememt unit to perform pressure test on cement plug#3A against pipe rams. Circulated 5bbl of water through choke line and confirmed flowpath. Closed chokeline failsafe valve on BOP stack and pressure tested lines to 2500psi / 5min. Bled off pressure to 300psi and opened failsafe valve to confirm valve open. Spaced out tool joint for the pipe rams and closed same. Performed pressure test on cement plug #3A with pumping rate of 0.5bbl/min to 2000 psi. Held pressure for 10min - ok. Pumped 4bbl and returned 3.5bbl.
3522.0	P21	P	G2		2	Continued to POOH sideways laying out excess drillpipe from 1181m to 226m.
3522.0	P21	P	G2		0.5	RIH 5" drill pipe from the mast from 226m to 313m leaving 9 stands in the mast.
3522.0	P21	P	G2		2	Continued to POOH laying out excess drill pipe from 313m to 168m.
3522.0	P21	P	G2		2.5	Continued to POOH from 168m laying out 2-7/8" cement stinger from 168m to surface.
3522.0	P21	P	G16		1	Held PJSM. Made up jetting sub below 1x stand of HWDP and a 5ft pup. Connected wear bushing multi purpose running tool (MPT) and RIH to 84m. Jetted BOP stack and wellhead area.

Date : 18 Feb 2010 **Daily Cost : US$ 614050** **Report Number : 54**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	P	G12		0.5	Continued to RIH with wearbushing retrieval tool (MPT). Latched into wearbushing at 96.5m with 10klbs down weight. Released wearbushing from 18-3/4" wellhead with 70klbs overpull.
3522.0	P21	P	G8		1.5	POOH with wearbushing to surface. Laid out wearbushing and MPT.
3522.0	P21	P	G10		1.5	Made up EZSV bridge plug onto running tool and RIH to 205m. Set bridge plug with 36 turns to the right. Confirmed plug set in 15klb increments and released running tool from EZSV with 55klbs overpull. Confirmed bridge plug in position with 10klbs down weight.
3522.0	P21	P	G8		0.5	POOH from 205m to surface and laid out EZSV running tool.
3522.0	P21	P	G6		3	Held PJSM. Picked up and made up 9-5/8" casing cutting BHA. RIH to cut the casing @ 153.3m.
3522.0	P21	P	G17		2.5	Cut 9-5/8" casing with 100rpm / 200gpm / 610 psi - 7 min. Engaged spear with right hand turn. Pulled 9-5/8" casing hanger free from 18-3/4" wellhead with 120klbs overpull. POOH and racked back landing string.
3522.0	P21	P	G1		2.5	Rigged up 9-5/8" casing handling equipment. Laid out 4x full joints and 1x cut joint of casing. Laid out the 9-5/8" hanger. Rigged down casing equipment. SIMOPs included the displacement of the riser from mud to seawater.
3522.0	P21	P	G13		4	Rigged up to pull BOP and riser. Laid out the diverter and installed the riser landing joint.
3522.0	P21	P	G13		0.5	Locked slip joint inner barrel. Unlatched wellhead connector on BOP stack from 18-3/4" wellhead and observed same with ROV.
3522.0	P21	P	G13		4	Removed pod hoses and Choke and Kill hoses in moonpool. Disconnected marine riser tensioner (MRT) cables from slipjoint.
3522.0	P21	P	G13		3.5	Pulled and laid out riser landing joint, slip joint plus 1x 25ft riser pup joint.

Date : 19 Feb 2010 **Daily Cost : US$ 629633** **Report Number : 55**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	P	G13		1.5	Continued to pull BOP stack on marine riser.
3522.0	P21	P	G13		4.5	BOP on surface. Removed guide lines and transponder beacons. Skidded BOP stack to Aft of the moonpool. Laid out riser double.
3522.0	P21	P	G1		1	Rigged down riser handling equipment.
3522.0	P21	P	G6		2	Picked up 9-5/8" casing spear from the mast and laid out same. Installed 1 x 6-3/4" DC to the DC double and racked back in mast. Picked up and broke out bull nose section from cutting BHA and laid

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						out same.
3522.0	P21	U	G11		0.5	Waited on helicopter - crane shut down.
3522.0	P21	P	G5		3.5	Held PJSM. Picked up and made up 20" casing and 30" conductor cutting BHA. Changed out grapple on spear. Tested cutter knives operation with 200gpm @ 400psi.
3522.0	P21	TP	G11	RE	1	Rig mechanics troubleshot noise from TDS.
3522.0	P21	P	G8		1	RIH with casing cutter BHA and spaced out for cutters to cut @ 102m. Observed cutting BHA stab into 18-3/4" wellhead.
3522.0	P21	TP	G17	TP	2	Opened DSC and set casing cutting BHA to 20klbs overpull. Commenced casing cutting operation @ 130gpm / 26spm / 500psi and 100rpm. Unable to continue cutting operation due to cutting tool failure - apparent blockage in the assembly.
3522.0	P21	TP	G6	TP	4	Released spear and pulled cutting tool into open hole. Checked operation of the cutters with different pumping rates but unable to pump at more than 18spm / 90gpm / 500psi. Confirmed blockage in the system. POOH to surface. Broke connection on the cutter above the operating piston. Cleared blockage (silver tape) from the piston nozzle operating cutter knives. Inspected the rest of the cutting tool assembly. Made up connection and tested correct operation of cutter knives by pumping @ 130gpm. Attached ropes with "C" plates to guide lines and RIH. Landed out in wellhead.
3522.0	P21	P	G17		3	Opened DSC and set casing cutting BHA to 20klbs overpull. Continued to cut 20" casing / 30" conductor with 130gpm / 26spm / 500psi / 100rpm.

Date : 20 Feb 2010 **Daily Cost : US$ 607577** **Report Number : 56**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P21	P	G17		4	Continued to cut 20" casing / 30" conductor. Observed intermittent rotation of the 18-3/4" wellhead - indication of the 20" casing being cut. Torque started to drop off indicating that the 30" conductor had been cut. Took 400klbs overpull at various times - no sign of PGB moving. Released spear and pulled cutting Knives to the top of the 18-3/4" wellhead to inspect with ROV. Knives appeared worn but inconclusive as viewing made difficult due to thick marine life following the ROV lights. Decision made to POOH cutter to surface for closer inspection.
3522.0	P21	P	G6		1	POOH with cutting BHA and inspected cutter knives and tool for wear or damage. Removed worn knives.
3522.0	P21	P	G17		1	Installed new 52" cutter knives. Attached guideline ropes with "C" plates and RIH. Landed out in 18-3/4" wellhead and continued to cut 30" conductor with 180gpm / 500psi / 100rpm. Increased circulating rate to 200gpm with pressure to 700 psi over 1/2hr to bed in cutters. Increased circulating rate to 220gpm (pressure @ 830psi). Continued to cut. Observed gradual increase in torque and slope indicator began to move.
3522.0	P21	P	G17		5	30" conductor cut at 10:45hrs. Picked up 18-3/4" wellhead with cut 20"/30" above seabed. Held PJSM. Note: Continued to seafasten in preparation for the tow.
3522.0	P21	P	G8		1	Pulled to PGB, wellhead and cut casing to surface whilst recovering guidelines. Landed PGB on spider trolley in the moonpool and secured.
3522.0	P21	P	G15		1.5	Released cutting spear and pulled cutting assembly to drill floor. Broke down and laid out casing cutting tools.
3522.0	P21	P	G8		1.5	RIH with 5" open ended drill pipe. Tagged EZSV bridge plug @ 205m. Spaced out and installed swedge to set cement plug #4 as per program.
3522.0	P21	P	F3		1	Pumped 10bbl of drillwater spacer and pressure tested lines to 1000 psi. Mixed and pumped 586sx class G Cement slurry (122bbl) @ 15.9ppg. Displaced with 4bbl of seawater and set as balanced plug #4 from 205m to seabed @ 103m.
3522.0	P21	P	G8		1	Rigged down cement swedge and POOH to 80m. Flushed lines and drill pipe with seawater. Continued to POOH and lay down drill pipe.
3522.0	P21	P	G8		3	Continued to lay out all tubulars from the mast. ROV performed final seabed survey.
3522.0	P1	P	M6		4	Continued with sea fastening of all equipment in readiness for tow to NZ. Drill crew removed C&K hoses from the moonpool area and secured rig floor equipment. Subsea secured BOP on port side setback area. Also secured moonpool trolley, LMRP and BOP nomar carrier.

Date : 21 Feb 2010 **Daily Cost : US$ 628562** **Report Number : 57**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity

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Date : 21 Feb 2010 **Daily Cost : US$ 628562** **Report Number : 57**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P1	P	M6		4	Continued to seafasten all rig equipment in preparation for the tow to NZ.
3522.0	P1	P	M3		11	Commenced debalasting rig. Continued to seafasten all rig equipment in preparation for the tow to NZ. Attached Far Fosna and Far Scimitar to pennant wires on anchors #1 and #5 in preparation for the start of anchor handling duties.
3522.0	P1	P	M3		2.5	Could not deballast port aft pontoon to transit draft. Performed soundings on all port ballast tanks. All tank soundings returned with exceptable levels except 1 which showed 25ft of ballast. Opened all suction valves on port ballast tanks to equalise and note if water levels changed in any of the tanks. No changes noted. Sounding tube on offending ballast tank possibly blocked.
3522.0	P1	P	M4		3.5	1730 - ALL STOP DEBALLASTING RIG - RIG AT APPROX 29ft AND 2° DOWN PORT/AFT. 17.41 - ANCHOR #5 OFF BOTTOM. 17.43 - ANCHOR #1 OFF BOTTOM. 17.45 - COMMENCED HAUL IN ANCHORS #1 AND #5. 18.35 - ANCHOR #5 RACKED. 18.45 - ANCHOR #1 RACKED. 18.55 - PENNANT CABLE #5 BACK TO RIG. 19.08 - PENNANT CABLE #4 PASSED TO SCIMITAR. 19.15 - SCIMITAR STRIPPING OUT. 19.15 - PENNANT CABLE #1 BACK TO RIG. 19.23 - PENNANT CABLE #8 PASSED TO FOSNA. 19.26 - FOSNA STRIPPING OUT TO #8. 19.35 - SCIMITAR AT #4 ANCHOR. 19.37 - FOSNA AT ANCHOR #8. 19.39 - ANCHOR #4 OFF BOTTOM. HAULED IN #4. 19.44 - ANCHOR # 8 OFF BOTTOM. HAULED IN # 8. 20.30 - ANCHOR #8 RACKED. 20.43 - PENNANT CABLE #8 BACK TO RIG. 20.45 - ANCHOR #4 RACKED.
3522.0	P1	P	M4		3	21.00 - PENNANT CABLE #4 BACK TO RIG. 21.17 - PENNANT CABLE #6 PASSED TO FOSNA. 21.24 - FOSNA STRIPPING OUT TO #6. 21.35 - ANCHOR #6 OFF THE BOTTOM. HAULED IN #6. 21.43 - PENNANT CABLE #2 TO SCIMITAR. 21.53 - SCIMITAR STRIPPING OUT TO #2. 22.08 - ANCHOR #2 OFF BOTTOM. HAULED IN #2. 23.04 - ANCHOR #2 RACKED. 23.15 - PENNANT CABLE #2 BACK TO RIG. Decision made by Tow Master to connect Far Fosna to Anchor #3 as a secondary tow Vessel due to the possibility of having to make the complete tow at storm draft of 50ft.

Date : 22 Feb 2010 **Daily Cost : US$ 211724** **Report Number : 58**

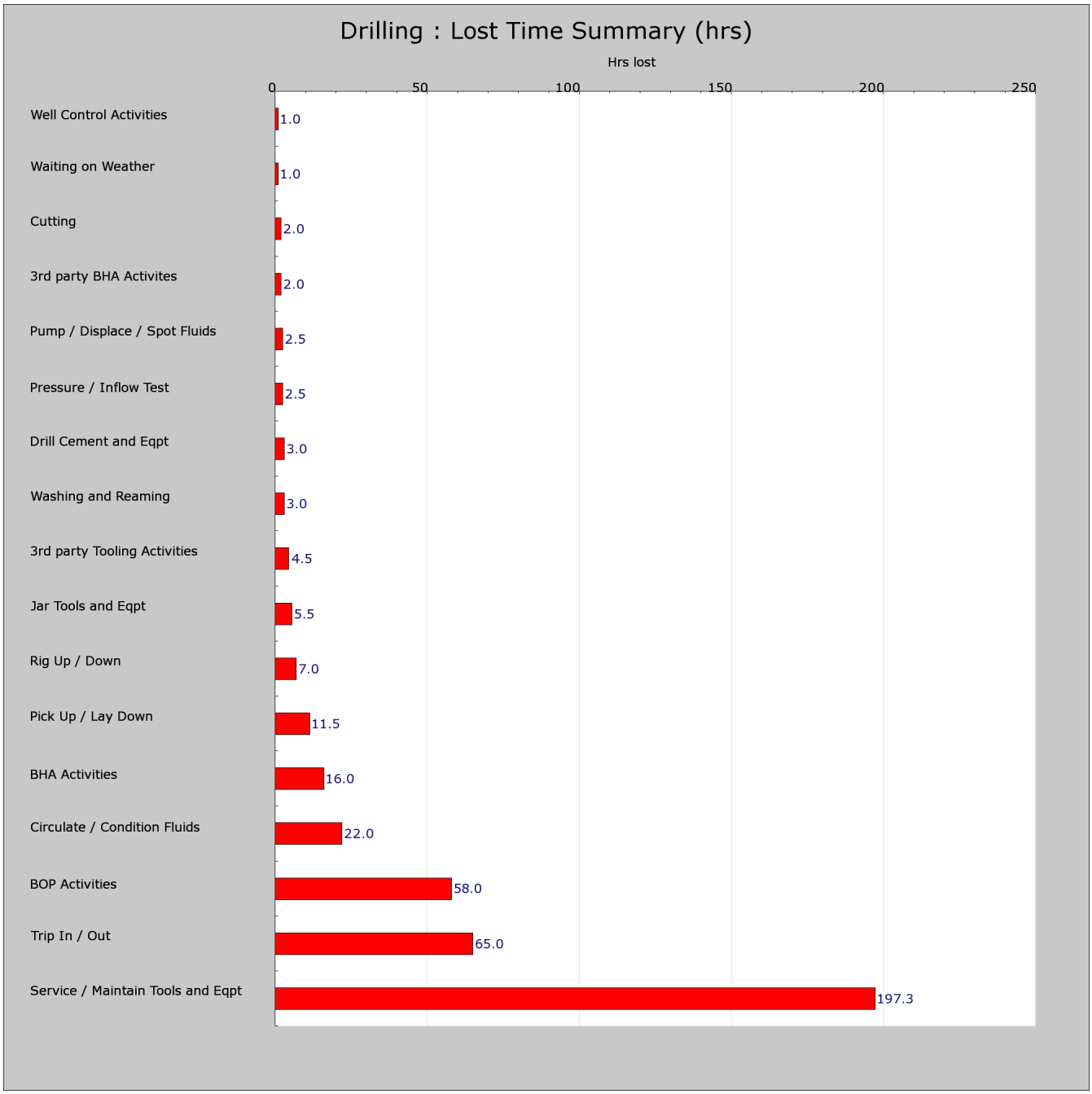
Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3522.0	P1	P	M4		7.5	00.25 - TOW BRIDLE PENNANT PASSED TO SCIMITAR 01.25 - SCIMITAR STRETCHED TOW WIRE 01.26 - HAULED IN #6 ANCHOR 02.37 - ANCHOR #6 RACKED 02.55 - PENNANT CABLE #6 BACK TO RIG 03.14 - PENNANT CABLE #3 PASSED TO FOSNA 03.16 - FOSNA CHASED OUT #3 03.32 - FOSNA AT #3 03.36 - SLACKED OFF ON #3 03.49 - ANCHOR #3 ON FOSNA DECK - CONNECTED TOW WIRE 04.39 - HAULED IN ON #3 04.55 - HAULED IN ON #7 05.28 - STOPED HAULING ON #3. BREAK ON. 05.35 - STOPED HAULING ON #7 07.15 - HAULED IN #7. 07.30 - ANCHOR #7 OFF BOTTOM. SCIMITAR PAYED OUT 500m. RIG UNDERWAY. During the tow it is planned to manually pump out the ballast tanks and troubleshoot reason for ballast pumps not being able to remove excess ballast. *** Rockhopper-1 ended at 07:30hrs on 22/2/10. ***

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APPENDIX 12: NET PRODUCTIVE TIME ANALYSIS

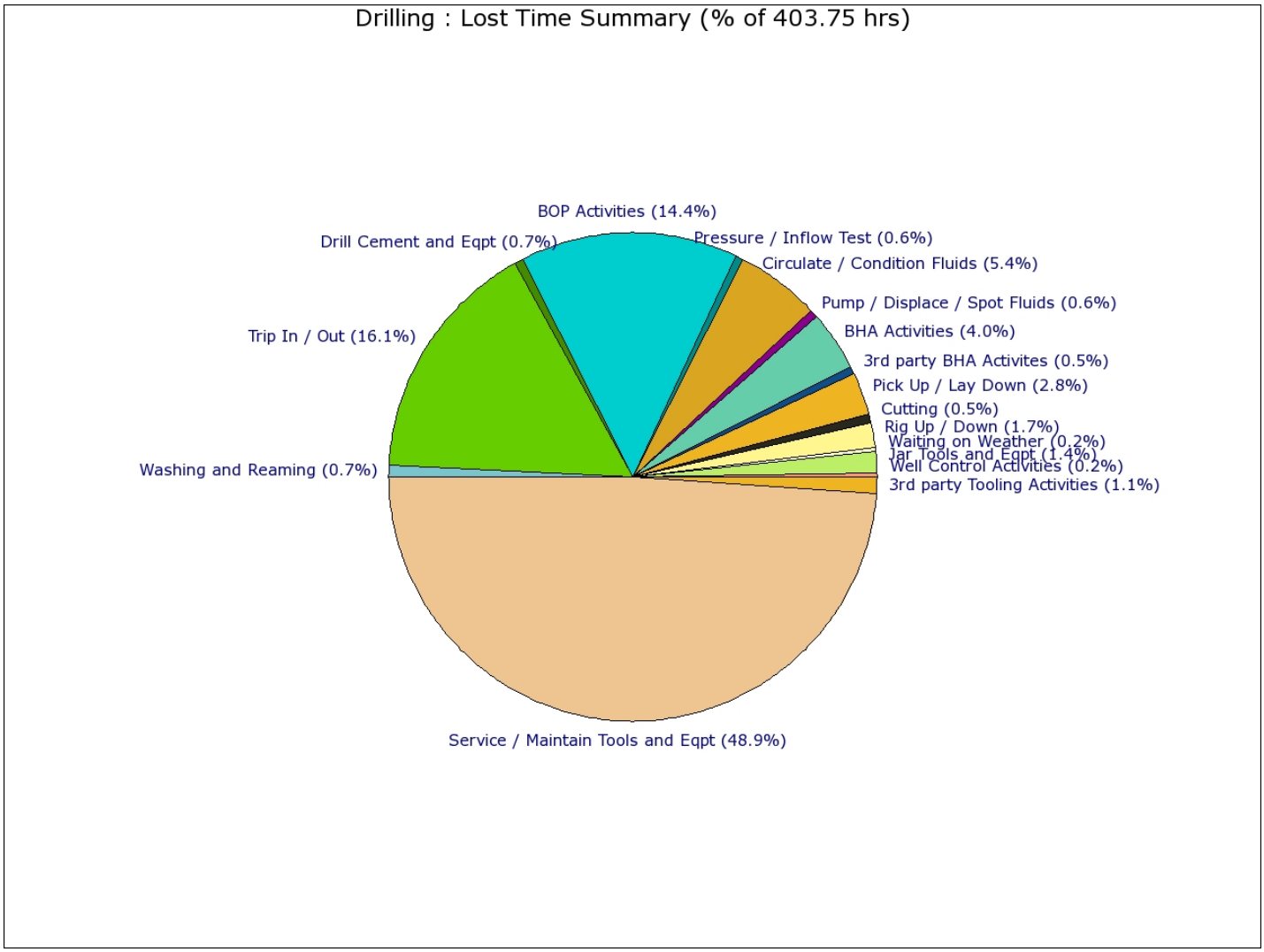
DFE above MSL : 26.0m	Lat : 39 Deg 47 Min 34.1828 Sec	Spud Date : 30 Nov 2009	Release Date : 07 Jan 2010
Water Depth : 74.3m	Long : 145 Deg 26 Min 21.466 Sec	Spud Time : 23:30	Release Time : 22:30

Trouble



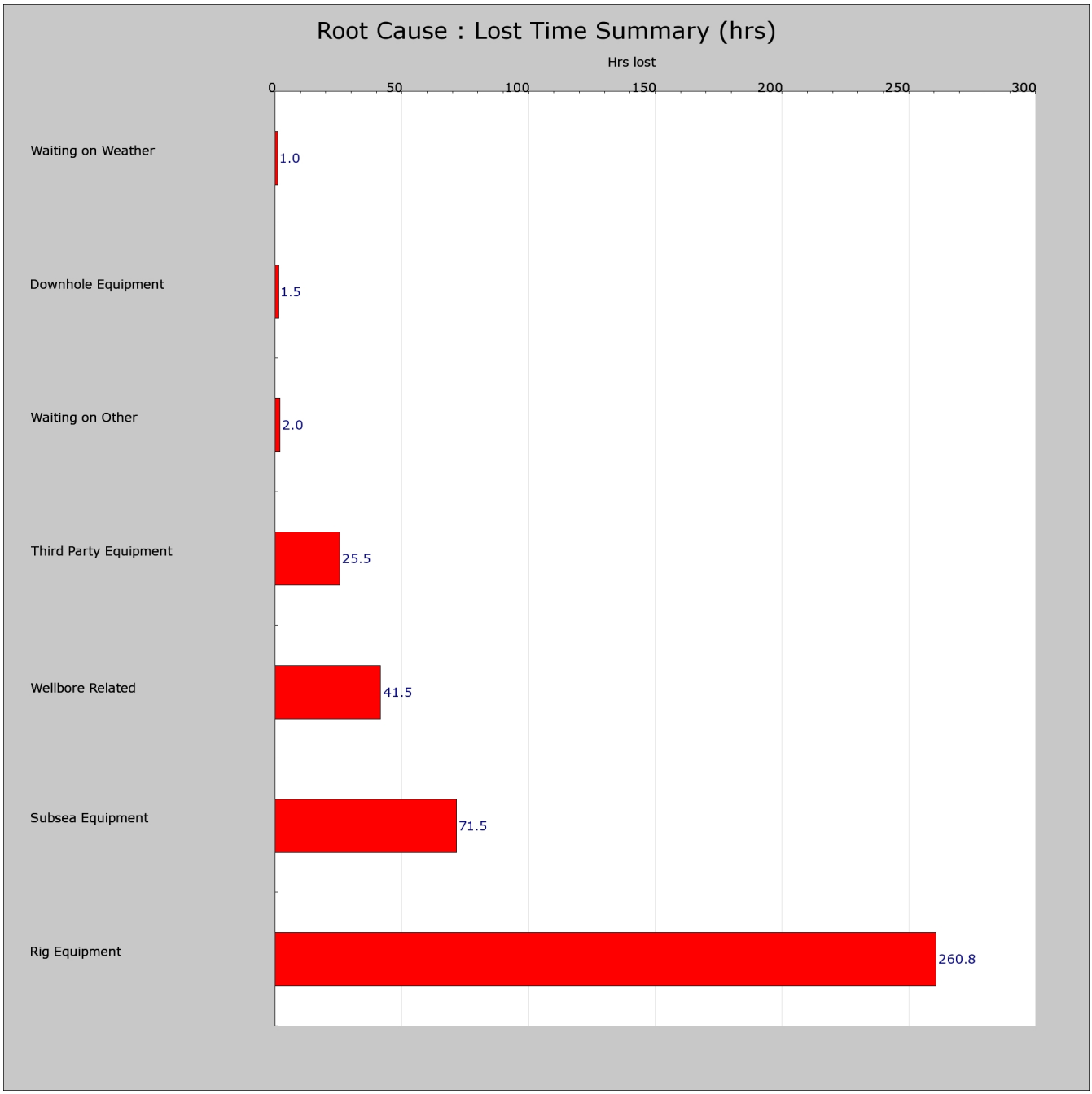
'Copyright IDS 2004', 20040415 (KS&JG),
ORIGINENERGY_FWR.xsl (parent/child V1.3)

Wellname : Rockhopper-1	Drilling Co. : Maersk		Rig : Kan Tan IV
DFE above MSL : 26.0m	Lat : 39 Deg 47 Min 34.1828 Sec	Spud Date : 30 Nov 2009	Release Date : 07 Jan 2010
Water Depth : 74.3m	Long : 145 Deg 26 Min 21.466 Sec	Spud Time : 23:30	Release Time : 22:30



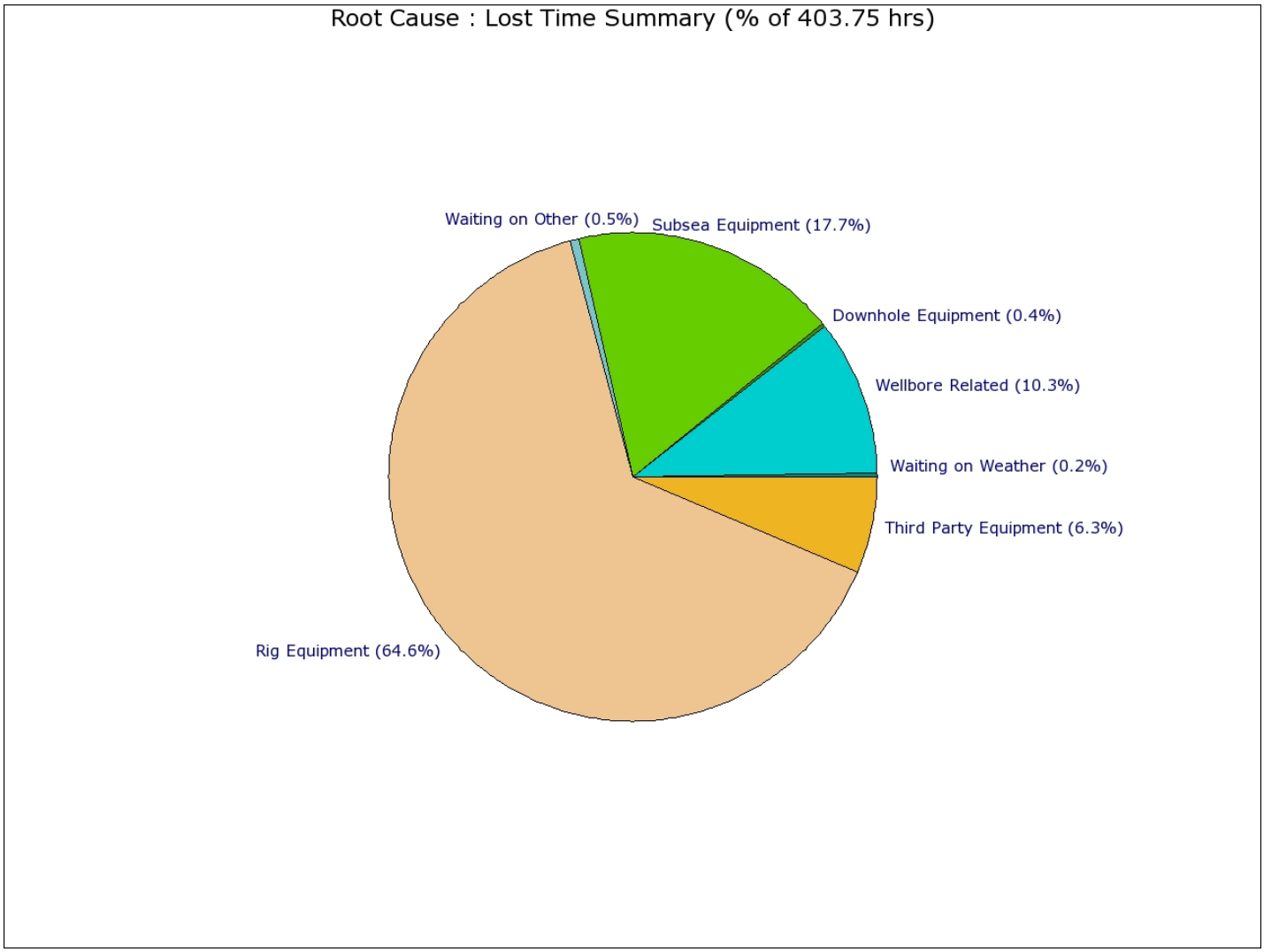
'Copyright IDS 2004', 20040415 (KS&JG),
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Wellname : Rockhopper-1	Drilling Co. : Maersk		Rig : Kan Tan IV
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Trouble During Programmed Time for Rockhopper-1

Date	PHS	Operation	NPT	Depth	Description of Programmed Trouble Time
01 Dec 2009	P2	Service / Maintain Tools and Eqpt	3.5	150.0	Saver sub backed out on connection. Laid out single with saver sub and pulled back to 110m. Re installed saver sub to TDS. Encountered problems with pipe handler when making up saver sub. Troubleshoot pipehandler problem.
01 Dec 2009	P2	Trip In / Out	0.5	150.0	RIH from 110m to 150m.
03 Dec 2009	P4	Service / Maintain Tools and Eqpt	0.5	427.0	Circulated well while changing oil filter on top frive in attempt to rectify slow cycling pipe handler (pipe handler cycling extremely slowly when breaking tool joint on connection).
05 Dec 2009	P5	Waiting on Weather	1	966.0	Shut down casing running operations due to wind gust over 30Kts and rig roll of +/-2° (crane limititation). WOW.
05 Dec 2009	P5	Rig Up / Down	1.5	966.0	Control line for the elevator spider caught on TDS whilst making up the wellhead and approximately 1-1/2 hrs was lost due to removing the bundle.
06 Dec 2009	P6	BOP Activities	7.5	966.0	Attempted to release BOP from Test Stump on carrier. Unable to release H4 connector from Test Stump. Troubleshot H4 connector while continuing to work at separating BOP from test stump on carrier. Confirmed the open/close displacement volumes correct. Disconnected riser double from LMRP and attempted to release H4 connector by "rocking" the Test Stump with tuggers - no go. Pressured up below shear rams and test stump - H4 connector released and separated with 400 psi.
06 Dec 2009	P6	BOP Activities	0.5	966.0	Reconnected riser double to LMRP.
07 Dec 2009	P6	BOP Activities	1	966.0	Waited on helicopter #1. Unable to use crane. Note: Helicopter arrival warning too early prior to actual arrival.
07 Dec 2009	P6	BOP Activities	1	966.0	Waited on helicopter #2. Unable to use crane. Note: Helicopter arrival warning too early prior to actual arrival.
08 Dec 2009	P6	Trip In / Out	1.5	966.0	POOH with test Tool. Rubber segment recovered from hole with test tool. Appearance consistent with that originating from the upper annular insert Element. Note: Observed +/-20klbs overpull when pulling the test tool through the BOP stack.
08 Dec 2009	P6	Trip In / Out	0.5	966.0	Redressed test tool with new "O" ring seal and RIH. Landed out test tool in 18-3/4" wellhead with 20klbs down weight. Note: No indication of drag on RIH with full bore tool.
08 Dec 2009	P6	Pressure / Inflow Test	0.5	966.0	Pressure tested collet connector on LMRP against upper annular to 650psi - ok. Increased pressure test to 3500 psi - test failed.
10 Dec 2009	P11	Circulate / Condition Fluids	2.5	1427.0	Shaker screens blinding with unsheared PHPA in mud system resulting in unsustainable loss of of mud over the shakers. Changed screens to course and circulated and conditioned mud. Lined up shearing and mixing hopper onto active pit and assisted PHPA shearing.
11 Dec 2009	P11	Service / Maintain Tools and Eqpt	0.5	1898.0	Removed broken DSC LP air line from mast. Damage to the hose caused by hose caught on mast structure due to high winds.
11 Dec 2009	P11	Service / Maintain Tools and Eqpt	0.75	1926.0	Replaced DSC Low Pressure oil/air hose to compensator. Secured to hose bundle in mast.
12 Dec 2009	P11	Pick Up / Lay Down	1.5	1955.0	Topdrive sat down on drill pipe stand causing 2x drill pipe singles to be bend. Laid out 2x bent joints of 5" drill pipe.
12 Dec 2009	P11	Pick Up / Lay Down	0.5	1955.0	Established circulation and wiped stand. Laid out extra drill pipe single for space out. Made up stand and washed back to bottom.
14 Dec 2009	P13	Circulate / Condition Fluids	1.5	1972.0	Picked up with 9-5/8" casing running tool. Running tool hanging up at LPR. Worked landing string to pass LPR. String worked free with circulation.
14 Dec 2009	P13	Trip In / Out	0.5	1972.0	Made up jetting sub and RIH to 96m.
14 Dec 2009	P13	Circulate / Condition Fluids	1	1972.0	Pumped 90bbl Hi-Vis pill to flush BOPs. Displaced choke and kill and riser to seawater.
14 Dec 2009	P13	Trip In / Out	0.5	1972.0	POOH and laid out jetting sub.
14 Dec 2009	P13	Rig Up / Down	1.5	1972.0	Held JSA. Rigged up riser handling equipment on drill floor and connected diverter handling tool to diverter.
15 Dec 2009	P13	BOP Activities	1	1972.0	Laid out diverter.
15 Dec 2009	P13	BOP Activities	2.5	1972.0	Made up landing joint to slipjoint. Removed service hoses from slip joint. Collapsed slip joint inner barrel and bolted to slip joint outer barrel.

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Trouble During Programmed Time for Rockhopper-1

Date	PHS	Operation	NPT	Depth	Description of Programmed Trouble Time
15 Dec 2009	P13	BOP Activities	0.5	1972.0	With blind/shear rams and failsafe valves confirmed closed, unlatched LMRP connector (unlatched at 03:35). Picked up LMRP clear of BOP guide posts.
15 Dec 2009	P13	BOP Activities	0.5	1972.0	Slacked off on guidelines and moved rig on anchor chains 15m port forward (ROV completed inspection of LMRP connector and BOP upper flange).
15 Dec 2009	P13	BOP Activities	4.5	1972.0	Removed MRT lines, choke and kill goosenecks from slip joint. Removed storm saddles from pod lines.
15 Dec 2009	P13	BOP Activities	3	1972.0	Laid out landing joint, slipjoint, riser pup and buoyancy joints.
15 Dec 2009	P13	BOP Activities	2	1972.0	Pulled LMRP into moonpool on riser double and landed on transporter. Disconnected handling riser double.
15 Dec 2009	P13	BOP Activities	3.5	1972.0	Skidded LMRP to starboard setback
15 Dec 2009	P13	BOP Activities	6.5	1972.0	Changed out upper annular element in LMRP.
16 Dec 2009	P13	Service / Maintain Tools and Eqpt	4	1972.0	Installed new element in upper annular.
16 Dec 2009	P13	BOP Activities	6.5	1972.0	Skidded LMRP to transporter and installed pod lines to LMRP. Installed test joint and adjusted test stump height.
16 Dec 2009	P13	Pressure / Inflow Test	1	1972.0	Pressure tested upper annular to 250 psi/5min and 3500 psi/10mins.
16 Dec 2009	P13	BOP Activities	0.5	1972.0	Skidded LMRP to well centre.
16 Dec 2009	P13	BOP Activities	2.5	1972.0	Made up a double of marine riser to LMRP.
16 Dec 2009	P13	BOP Activities	4	1972.0	Ran LMRP on a double slick joints, 1x bouyant joint and 1x pup joint. Installed slip joint. Freed up MRT tension ring.
16 Dec 2009	P13	BOP Activities	0.5	1972.0	Picked up landing joint and ran same.
16 Dec 2009	P13	BOP Activities	4	1972.0	Made up C&K lines to the slip joint and connected MRT lines and umbilical storm saddles.
16 Dec 2009	P13	BOP Activities	1	1972.0	Positioned rig over wellhead. Landed and latched LMRP to BOPs.
17 Dec 2009	P13	BOP Activities	2.5	1972.0	Stroked out slip joint. Disconnected and laid out landing joint.
17 Dec 2009	P13	BOP Activities	0.5	1972.0	Set pipe handler sequencing.
17 Dec 2009	P13	BOP Activities	0.5	1972.0	Picked up diverter and installed same.
17 Dec 2009	P13	BOP Activities	1	1972.0	Changed out damaged lock down dog inserts between diverter and slip joint.
17 Dec 2009	P13	Rig Up / Down	0.5	1972.0	Laid down diverter running tool.
17 Dec 2009	P13	Rig Up / Down	0.5	1972.0	Rigged down riser running equipment and rigged up 5" pipe handling equipment.
17 Dec 2009	P13	Rig Up / Down	1.5	1972.0	Ran 2x stands of HWDP and made up BOP test tool. RIH and landed the test tool.
17 Dec 2009	P13	Pressure / Inflow Test	1	1972.0	Tested upper annular and connector to 250/3500psi - ok. Tested C&K lines to 250/5000psi - ok.
17 Dec 2009	P13	Trip In / Out	1.5	1972.0	POOH to 100m and displaced riser and C&K lines to 9.5ppg mud. Continued to POOH to surface and laid down BOP test tool.
17 Dec 2009	P17	Service / Maintain Tools and Eqpt	0.5	1972.0	Unable to break out saver sub. Troubleshot torque wrench hydraulic system.
20 Dec 2009	P17	Trip In / Out	2	2023.0	Pumped a slug. POOH from 2023m to 1281m.
20 Dec 2009	P17	Service / Maintain Tools and Eqpt	0.5	2023.0	Serviced travelling block and topdrive.
20 Dec 2009	P17	Trip In / Out	2.5	2023.0	Continued to POOH from 1281m to 210m. Performed 10min flow check prior to pulling BHA through the BOP Stack.
20 Dec 2009	P17	BHA Activities	2	2023.0	POOH BHA from 210m to surface. Halliburton downloaded MWD tools and removed radio active sources. Laid out GeoPilot. Bit Grading = 0-0-NO-A-X-1-NO-DTF.
21 Dec 2009	P17	BHA Activities	1	2023.0	Picked up GeoPilot from the deck. Installed PDC Bit RR#6 and RIH picking up Bat, Sonic, HOC and ACAL from the mast.
21 Dec 2009	P17	3rd party BHA Activites	1.5	2023.0	Halliburton uploaded MWD tools and installed radioactive sources.
21 Dec 2009	P17	BHA Activities	1.5	2023.0	Continued to RIH with Geopilot BHA to 210m.
21 Dec 2009	P17	3rd party BHA Activites	0.5	2023.0	Halliburton shallow tested MWD tools (550gpm / 1000psi).
21 Dec 2009	P17	Trip In / Out	2.5	2023.0	Contiued to RIH BHA #7 on 5" drill pipe from 210m to 1350m.
21 Dec 2009	P17	BOP Activities	0.5	2023.0	Performed weekly function test of BOP stack on yellow pod.
21 Dec 2009	P17	Trip In / Out	0.5	2023.0	Continued to RIH to from 1350m to 1981m.
21 Dec 2009	P17	Trip In / Out	0.5	2023.0	Washed and reamed from 1981m to 2023m.

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Trouble During Programmed Time for Rockhopper-1

Date	PHS	Operation	NPT	Depth	Description of Programmed Trouble Time
24 Dec 2009	P17	Jar Tools and Eqpt	5.5	2753.0	Made up top drive and pumped out of hole from 2175m to 2146m. Worked tight hole - unable to move drill pipe up or down at 2146m. Jarred up x 3 times to make a working window. No drill pipe rotation although retained full circulation with no SPP change. Jarred down from 320klbs neutral point and slacked off down to 180klbs installing right hand torque into drill string. Pumped 60bbl of light weight lubricating mud @ 9.2ppg and displaced same around BHA. Recipe of Radiagreen pill as follows. 50 bbls of premix (concentrations as per fluids program) 7 bbls of drillwater 2 sacks of PAC-L (Filtration control agent) 2 Pails of EZ-MUD (PHPA) 2 X 55 Gallon drums of RADIAGREEN SALT Lubrication agent Mixed pill mud weight 9.2 ppg.
24 Dec 2009	P17	Service / Maintain Tools and Eqpt	1	2753.0	Investigated oil leak on top drive gearbox. Checked TDS motor ground fault.
26 Dec 2009	P17	Service / Maintain Tools and Eqpt	3	3199.0	Temperature alarm on the lube oil pump for the top drive came on. Racked back 1x drillpipe stand. Mechanics inspected TDS - probable lube oil pump failure and coupling damage. Conferred with ADA office and decision made to POOH to 9-5/8" casing shoe for repairs. Continued to circulate and reciprocate drill pipe. Pumped Hi-Vis sweep followed by 2 x bottoms up.
26 Dec 2009	P17	Trip In / Out	2	3199.0	POOH on elevators at from 3199m to 2900m. Tight hole @ 2929m to 2900m. Washed and back reamed through this section with 50spm / 750 psi / 40 RPM.
26 Dec 2009	P17	Trip In / Out	2	3199.0	Continued to POOH on elevators from 2900m to 1946m. Hole in good shape.
26 Dec 2009	P17	Service / Maintain Tools and Eqpt	2	3199.0	Repaired broken coupling on the top drive lube oil pump. Serviced traveling blocks and dollys.
26 Dec 2009	P17	Trip In / Out	3	3199.0	RIH from 1946m to 3199m. Performed trip drill (36 sec). Hole in good condition.
30 Dec 2009	P17	Service / Maintain Tools and Eqpt	0.5	3522.0	Troubleshot problem with iron roughneck switches.
08 Jan 2010	P21	BHA Activities	5	3522.0	POOH and racked back BHA. Removed 8½" bit.
08 Jan 2010	P21	3rd party Tooling Activities	0.5	3522.0	Cleaned out cement from inside MWD tool.
08 Jan 2010	P21	Pick Up / Lay Down	1.5	3522.0	Made up mule shoe and 17 joints of 2 7/8" tubing cement stinger to 168m.
08 Jan 2010	P21	Trip In / Out	4	3522.0	RIH with cement stinger on 5" DP from 168m to 2168m.
08 Jan 2010	P21	Circulate / Condition Fluids	0.5	3522.0	Circulated bottoms up at 550gpm, 1000psi.
08 Jan 2010	P21	Pump / Displace / Spot Fluids	0.5	3522.0	Pumped 25bbl Hi Vis pill and displaced with 126bbl of 9.4ppg mud to spot Hi Vis on bottom.
08 Jan 2010	P21	Rig Up / Down	0.5	3522.0	POOH from 2168m to 2067m. Made up cement head and surface lines to cement unit.
08 Jan 2010	P21	Pump / Displace / Spot Fluids	1	3522.0	Cement unit pumped 5bbl fresh water spacer. Pressure tested surface lines to 1000psi. Cement unit pumped a further 5bbl fresh water spacer. Cement unit mixed and pumped 40bbl of 15.8ppg cement slurry. Cement unit displaced cement with 2.8bbl fresh water followed by 102bbl of 9.4ppg mud. No back flow. No losses seen during cementing operation. Cement plug depth 2067m - 1918m.
08 Jan 2010	P21	Trip In / Out	0.5	3522.0	POOH slowly from 2067m to 1874m.
08 Jan 2010	P21	Circulate / Condition Fluids	1	3522.0	Circulated 1.5x bottoms up to check from cement contamination. No cement detected at shakers.
08 Jan 2010	P21	Trip In / Out	1.5	3522.0	POOH from 1874m to 1036m.
09 Jan 2010	P21	Trip In / Out	1.5	3522.0	POOH with 2 7/8" cement stinger from 1036m to 168m.
09 Jan 2010	P21	Pick Up / Lay Down	1.5	3522.0	Laid out 17 joints of 2 7/8" cement stinger and mule shoe.
09 Jan 2010	P21	BHA Activities	1	3522.0	Made up 8½' bit on slick BHA to 176m.
09 Jan 2010	P21	Trip In / Out	3	3522.0	RIH with 8½" bit BHA from 176m to 1318m. Filled pipe every 20 stands.
09 Jan 2010	P21	Circulate / Condition Fluids	2.5	3522.0	Attempted to break circulation. Unable to circulate. String plugged with cement flaking off DP walls.
09 Jan 2010	P21	Trip In / Out	0.5	3522.0	POOH wet. Racked back BHA.
09 Jan 2010	P21	Trip In / Out	2	3522.0	Made up 3½" mule shoe to 5" DP amd RIH to 287m. Checked pipe clear as RIH.

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09 Jan 2010	P21	Trip In / Out	1	3522.0	3½" mule shoe plugged while attempting to break circulation. POOH.
09 Jan 2010	P21	Trip In / Out	5	3522.0	RIH with open ended 5" DP to 1880m. Hammered pipe on way in to loosen cement flakes from internal wall.
09 Jan 2010	P21	Washing and Reaming	1.5	3522.0	Washed in hole at 200gpm, 100psi from 1880m to 1985m. Tagged TOC at 1985m with 10klbs weight. "Rig on downtime @ 1930 hours".
09 Jan 2010	P21	Circulate / Condition Fluids	1	3522.0	Circulated 1.5x bottoms up at 600gpm, 800psi. Green cement diverted at shakers. Total volume of contaminated mud diverted 95bbl.
09 Jan 2010	P21	Trip In / Out	2.5	3522.0	Flow checked 15mins. POOH from 1985m to surface.
09 Jan 2010	P21	Pick Up / Lay Down	1	3522.0	Rigged up handling equipment and pick 2 7/8" tubing from pipe deck to 168m.
10 Jan 2010	P21	Pick Up / Lay Down	1	3522.0	Made up from deck 2 7/8" cement stinger from 70m to 168m.
10 Jan 2010	P21	Trip In / Out	2.5	3522.0	RIH with 2 7/8" cement stinger on 5" DP from 168m to 1960m.
10 Jan 2010	P21	Washing and Reaming	0.5	3522.0	Washed in hole to 1982m at 200gpm, 200psi. Made up cement head and surface lines to cement unit.
10 Jan 2010	P21	Circulate / Condition Fluids	0.5	3522.0	Spaced out cement stinger to 1980m. Circulated bottoms up at 600gpm, 1000psi. Held PJSM on cementing.
10 Jan 2010	P21	Pump / Displace / Spot Fluids	1	3522.0	Cement unit pumped 5bbl fresh water spacer and pressure tested surface lines to 1000psi. Cement unit pumped 5bbl fresh water spacer. Cement unit mixed and pumped 28bbl of 15.8ppg class G cement slurry. Cement unit displaced cement with 3bbls fresh water followed by 100bbl of 9.4ppg mud. Rigged down cement head and surface lines.
10 Jan 2010	P21	Trip In / Out	0.5	3522.0	POOH slowly from 1980m to above cement at 1817m.
10 Jan 2010	P21	Circulate / Condition Fluids	2.5	3522.0	Circulated pipe and annulus clean at 600gpm, 1150psi
10 Jan 2010	P21	Service / Maintain Tools and Eqpt	2	3522.0	Racked back stand to 1788m. Slipped and cut 120ft of drill line.
10 Jan 2010	P21	Service / Maintain Tools and Eqpt	0.5	3522.0	Serviced rig. Greased TDS, crown block, drawworks and travelling block assembly.
10 Jan 2010	P21	Trip In / Out	3.5	3522.0	POOH from 1788m to 168m.
10 Jan 2010	P21	Pick Up / Lay Down	2	3522.0	Laid out 17 joints of 2 7/8" tubing and stinger.
10 Jan 2010	P21	Rig Up / Down	0.5	3522.0	Rigged down 2 7/8" handling equipment, rigged up 5" handling equipment and cleared rig floor of excess equipment.
10 Jan 2010	P21	Pick Up / Lay Down	2.5	3522.0	Made up 9 stands of DP with cement on the internal walls and laid out same.
10 Jan 2010	P21	Trip In / Out	3	3522.0	RIH with open ended 5" DP to 1817m.
10 Jan 2010	P21	Circulate / Condition Fluids	1	3522.0	Circulated 1½x bottoms up at 600gpm, 900psi.
10 Jan 2010	P21	Washing and Reaming	0.5	3522.0	Washed in hole with 200gpm at 280psi from 1817m to TOC at 1896m. Tagged cement with 10klbs weight down at 1896m tide corrected (69m above shoe).
11 Jan 2010	P21	Circulate / Condition Fluids	1	3522.0	Circulated well clean above TOC at 1886m (600gpm, 900psi). 35bbls of out of spec mud were treated from the system.
11 Jan 2010	P21	Trip In / Out	4	3522.0	POOH from 1886m.
11 Jan 2010	P21	Rig Up / Down	0.5	3522.0	Broke down cement head. Cleaned and tidied rig floor.
11 Jan 2010	P21	Service / Maintain Tools and Eqpt	15	3522.0	Performed rig maintenance. Pressure tested 9 5/8" casing against BSR to 1000psi. Serviced and repaired minor faults on IBOP actuator, pipe handler and iron roughneck. Serviced RBS. Removed drill line spooler. Cleaned sand traps and shakers. Started repositioning cable run on Manipulator arm.
11 Jan 2010	P21	Trip In / Out	3.5	3522.0	RIH with open ended 5" DP to 1880m.
12 Jan 2010	P21	Service / Maintain Tools and Eqpt	14.5	3522.0	Rig on downtime. Performed rig maintenance. Serviced and completed PMs on compenstor and travelling block. Continued changing service hoses to off drillers side of manipulator arm. Opened up and checked fluid end of mud pumps #2 and #3.
12 Jan 2010	P21	Circulate / Condition Fluids	2	3522.0	Circulated mud at 1880m to maintain mud condition.
12 Jan 2010	P21	Service / Maintain Tools and Eqpt	7.5	3522.0	Rig on downtime. Performed rig maintenance. Repaired TDS RPM counter. Commenced installing Hi/Low alarms to HPU resevoir.

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DFE above MSL : 26.0m | Lat : 39 Deg 47 Min 34.1828 Sec | Spud Date : 30 Nov 2009 | Release Date : 07 Jan 2010

Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time : 22:30

Trouble During Programmed Time for Rockhopper-1

Date	PHS	Operation	NPT	Depth	Description of Programmed Trouble Time
13 Jan 2010	P21	Service / Maintain Tools and Eqpt	24	3522.0	Rig on downtime. Performed rig maintenance. Monitored well on trip tank. 30% of banding on starboard crane kingpost removed. Installed remote valve switch for trip tank fill line valve at drillers station. Replaced air lines on shakers #2 and #3. Continued with preparations to change out drilling line spool. Changed out PLCs for top drive. Performed inspection on mast bolts. Circulated well at 1880m to condition mud at 500gpm, 550psi (12:45 - 14:45). Function tested BOPs. Function tested on blue pod from drill floor and on yellow pod from TP's remote station. Tightened mast bolts at crown cluster. Removed brackets and cable tray from manipulator arm. Performed maintenance on standpipe valves.
14 Jan 2010	P21	Service / Maintain Tools and Eqpt	24	3522.0	Rig on downtime. Performed rig maintenance. Monitored well on trip tank. Removal of hard band on starboard crane kingpost completed. Dressed welds on starboard crane kingpost - 50% completed. Circulated and conditioned mud at 1880m at 560gpm, 440psi (13:00 to 15:00). Completed modifications to drill floor manipulator arm. Cleaned mud pump strainers. Completed PMs on top drive. Positioned new drilling line spool on cradle.
15 Jan 2010	P21	Service / Maintain Tools and Eqpt	24	3522.0	Rig on downtime. Dressed welds on starboard crane king post - 100% completed. Prepared to split roller chain to install sliding Nylatron blocks. Commenced grinding out and rewelding cracks on Port crane king post hard band - 25% completed. Prepared drill floor to slip through new drilling line. Circulated and conditioned mud at 1880m. POOH with DP. Pressure tested surface safety valves and lower TDS IBOP for 250psi/5mins and 5000psi/10mins - ok. Pressure tested kelly hose to standpipe for 250psi/5mins and 4000psi/10mins - ok. Performed rig maintenance. Monitored well on trip tank.
16 Jan 2010	P21	Service / Maintain Tools and Eqpt	24	3522.0	Rig on down time. Removed pin from Starboard crane post chain and positioned 4 sliding nylatron blocks in roller chain. Continued with grinding out and rewelding of cracks on the Port crane hard band - 100% completed. Crane operational, repairs being monitored. Removed scaffolding on Aft crane boom in preparation to repair king post hard band. Slipped through new drill line to drawworks. Monitored well on trip tank.
17 Jan 2010	P21	Service / Maintain Tools and Eqpt	24	3522.0	Rig on down time. Continued grinding and welding of cracks in Aft crane king post hard band - 100% completed. Top weld gouged out. Repairs completed. 6 of nylatron blocks fitted to Starboard crane roller chain. Chain reconnected and adjusted. Repairs completed. RIH with open ended 5" DP to 1880m. Circulated and conditioned mud at 510gpm/ 700psi. POOH with DP. Tested upper IBOP with rig pump. 250psi/2300psi. RIH with HWDP, DCs, Jars and flushed BHA for 30mins to clear any residual cement contamination. Changed out saver sub on TDS. Performed rig maintenance while monitoring well on trip Tank.
18 Jan 2010	P21	Service / Maintain Tools and Eqpt	19.5	3522.0	Rig on downtime. Made up 5 stands of 5" HWDP and RIH. Flushed wellhead area on RIH. Made up BOP test plug to HWDP and RIH with 5" DP. Landed test plug in wellhead. Pressure tested BOPs and choke manifold 250psi/5mins, 5000psi/10mins - ok. Annular preventers tested to 250psi/5mins, 3500psi/10mins - ok. POOH and laid out test tool. Serviced rig. Tested cranes with and without loads. Patriot Engineer and Maersk Engineer handed cranes over as repaired and operational at 19:30hrs.
18 Jan 2010	P21	BHA Activities	1.5	3522.0	Made up slick BHA with 8½" PDC bit to 198m.

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DFE above MSL : 26.0m | Lat : 39 Deg 47 Min 34.1828 Sec | Spud Date : 30 Nov 2009 | Release Date : 07 Jan 2010

Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time : 22:30

Trouble During Programmed Time for Rockhopper-1

Date	PHS	Operation	NPT	Depth	Description of Programmed Trouble Time
18 Jan 2010	P21	Trip In / Out	2.5	3522.0	RIH from 198m to 1880m on 5" DP.
18 Jan 2010	P21	Washing and Reaming	0.5	3522.0	Established circulation, recorded parameters and washed down to tag TOC at 1896m.
19 Jan 2010	P21	Circulate / Condition Fluids	1	3522.0	Circulated and conditioned mud.
19 Jan 2010	P21	Well Control Activities	1	3522.0	Performed well control drill. Closed in well and performed choke circulation exercise with drill crew. Flushed kill and choke lines with fresh 9.3ppg mud. Recorded SCRs.
19 Jan 2010	P21	Drill Cement and Eqpt	3	3522.0	Drilled out cement in 9 5/8" casing and rat hole from 1896m to 1970m (5/10klbs WOB, 60rpm, 600gpm, 1700psi, 5k ft-lbs torque).
19 Jan 2010	P21	Circulate / Condition Fluids	4	3522.0	Circulated for 15mins. Set down 15klbs on TOC to weight test and confirm hardness. Racked back one stand and continued to circulate well clean at 600gpm, 1600psi.
19 Jan 2010	P21	Trip In / Out	4	3522.0	Flow checked well. Well static. POOH wet from 1950m. Racked back BHA. Broke off bit.
19 Jan 2010	P21	Service / Maintain Tools and Eqpt	0.5	3522.0	Serviced rig.
19 Jan 2010	P21	3rd party Tooling Activities	4	3522.0	Service hands arrived on board. Checked and prepared MWD unit and tools. ** Rockhopper-1 ended at commencement of kick off BHA make up at 17:30hrs.**
19 Feb 2010	P21	Service / Maintain Tools and Eqpt	1	3522.0	Rig mechanics troubleshot noise from TDS.
19 Feb 2010	P21	Cutting	2	3522.0	Opened DSC and set casing cutting BHA to 20klbs overpull. Commenced casing cutting operation @ 130gpm / 26spm / 500psi and 100rpm. Unable to continue cutting operation due to cutting tool failure - apparent blockage in the assembly.
19 Feb 2010	P21	BHA Activities	4	3522.0	Released spear and pulled cutting tool into open hole. Checked operation of the cutters with different pumping rates but unable to pump at more than 18spm / 90gpm / 500psi. Confirmed blockage in the system. POOH to surface. Broke connection on the cutter above the operating piston. Cleared blockage (silver tape) from the piston nozzle operating cutter knives. Inspected the rest of the cutting tool assembly. Made up connection and tested correct operation of cutter knives by pumping @ 130gpm. Attached ropes with "C" plates to guide lines and RIH. Landed out in wellhead.

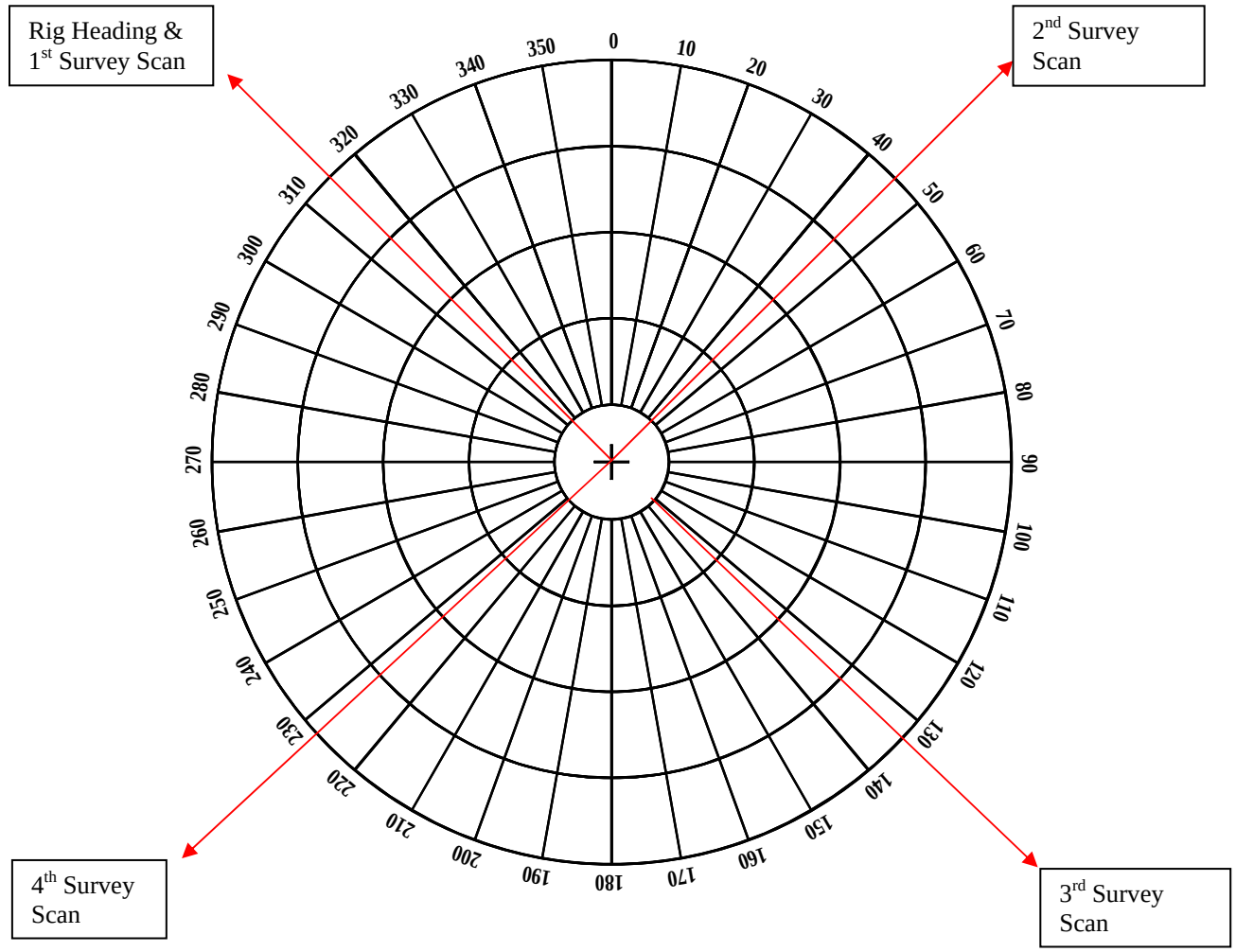
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APPENDIX 13: RIG MOVE & POSITIONING REPORT

FUGRO SUBSEA SERVICES (Australia) PTY LTD

Seabed Clearance Certificate

VESSEL/RIG:	**Kan Tan 4**	**PROJECT:**	**Rock Hopper 1**
LOCATION:	**Bass Basin**	**DATE:**	**20/02/10**
Co-ordinates: N/A			
Method of Survey: Visual and Sonar			
Type of Equipment Used: Imagenex Sonar		Contractor: ADA - Origin	
Range of Coverage: 25m visual + 50m Sonar		No. of scans: 4	
Rig Heading (Indicate on Diagram): 317°			
Positions of Rig Relative to Well During Scans: Same			
Height Above Seabed: ≤ 2mtrs		Height of Scanning Unit During Scan: ≤ 2m	
Nature of Seabed: Sand/ Silt		Type of Wellhead: N/A	
Type of Records Made: 1 video log, duplicated as needed			



All Scans 25m visual and sonar plus 50m sonar sweeps from 25m mark

LIST OF TARGETS					
	Position (Range & Bearing)	Approx. Dimensions (M)	Description	Means of Identification	Recovered
1	Nil				
2					
3					
4					
5					
6					
7					
8					
9					
10					

Means of Identification	Reasons for not removing remaining debris:
A - Sonar Scan	
B - Diving Inspection	
C - R.O.V.	
D - Rig Records	

Signatories:

Name Mike Lanzer ROV Supervisor Stu Maclean

Position ADA Rep Signature

Signature Date

Guidance Notes

1 Survey should extend to at least 70 metres from the well head.
2 The first signatory should be the person responsible for the rig, either the OIM or Client representative.

REPORT FOR THE
KAN TAN IV RIG MOVE TO
ROCKHOPPER-1

FUGRO BTW JOB NO. 09011

Client : AUSTRALIAN DRILLING ASSOCIATES LTD

Date of Survey : 25 November – 02 December 2009

0	Final	S. Armstrong	04 December 09
Rev	Description	Checked and Approved	Date

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ABSTRACT

Between 25 November and 02 December 2009, Fugro provided equipment and personnel for the semi-submersible Mobile Offshore Drilling Unit Kan Tan IV rig move from Trefoil-2 to Rockhopper-1 in Permit T/18P, Bass Basin, Australia.

Surface positioning was provided by Fugro's Starfix Total Position System (Starfix TOPS) and Starfix.Seis Navigation Software.

The final position for the drill stem derived from HP GPS observations at Rockhopper-1 is:

Location Name:	**Rockhopper-1**
MGA94	
Easting (m):	366374.031
Northing (m):	5594071.423
GDA94	
Latitude:	39° 47' 34.1828" S
Longitude:	145° 26' 21.4660" E
Rig Heading:	316.62° (True)

This position is 4.08m at a bearing of 209.83° (True) from the proposed Rockhopper-1 location.

All coordinates in this report are referenced to the Geocentric Datum of Australia 1994 (GDA94) and projected onto the Map Grid of Australia 1994 (MGA94) Zone 55 (CM 147°E), unless otherwise stated.

All times in this report are quoted in Australian Eastern Standard Time (AEST) unless otherwise stated.

1.0 INTRODUCTION

Fugro-BTW Ltd (Fugro) was contracted by ADA Ltd to provide navigation and positioning survey services onboard the semi-submersible Mobile Offshore Drilling Unit (MODU) *Kan Tan IV*, during the rig move from Trefoil-2 to Rockhopper-1 in Permit T/18P, Bass Basin, Australia.

A general location diagram is shown in Figure 1-1.

This report details the equipment used, survey parameters adopted, procedures employed and the results achieved. A section on safety is included in Section 3.0 of this report.

1.1 Scope of Work

Personnel and equipment were provided on a 24 hour per day basis for:

- Calibration and function testing of the survey equipment onboard the rig and the two Anchor Handling Vessels (AHVs).
- Surface navigation for the *Kan Tan IV* using Fugro's Starfix HP (High Performance) DGPS services.
- Surface navigation for AHVs during anchoring operations, using Starfix HP DGPS.
- Final rig surface positioning for Rockhopper-1 using DGPS observations.
- Final reporting of the positioning results.

1.2 Sequence of Events

On 25 November 2009 S. Armstrong and C. Tidey departed New Zealand for Melbourne, Australia.

On 26 November Fugro personnel departed Melbourne for the *Kan Tan IV*.

On 29 November 2009 the *Kan Tan IV* began the tow to Rockhopper-1.

At 0726 on 30 November 2009 the Final Fix for the *Kan Tan IV* position at Rockhopper-1 was completed.

Fugro personnel departed the Kan Tan IV at 0915 on 01 December 2009.

Further details of Fugro's involvement in the rig move are presented in the Daily Operations Reports included in Appendix A.

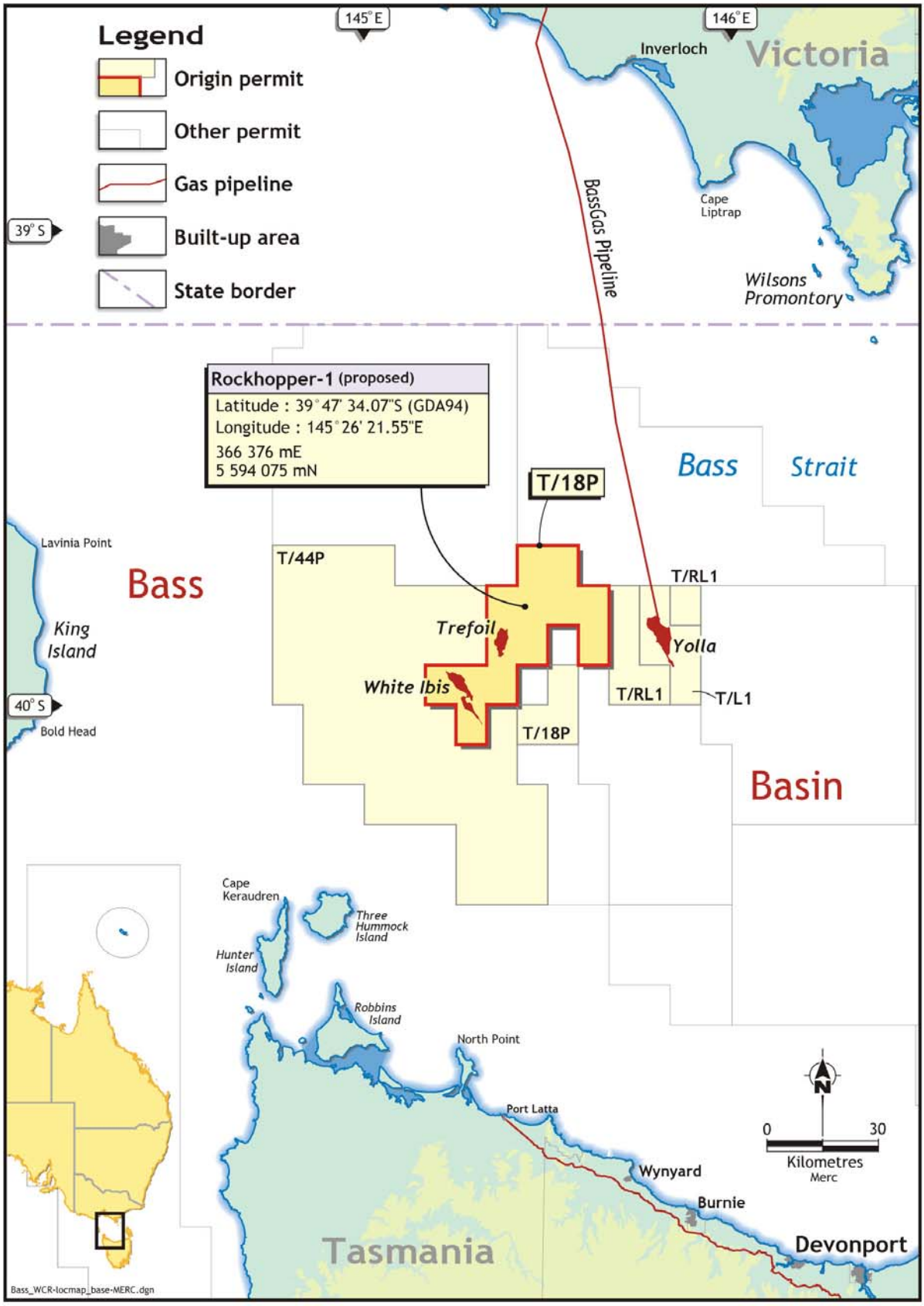


FIGURE 1-1 : GENERAL LOCATION DIAGRAM

2.0 RESULTS

2.1 Final Position

The final position of the *Kan Tan IV* drill stem was established upon arrival at Rockhopper-1 location. A mean position was calculated from five hours of HP data logged between 0127 and 0627 on 01 December 2009. During this period, calculated drill stem coordinates from the primary and secondary positioning systems were logged at five second intervals in Starfix.Seis. Data from the primary positioning system were used for the final position calculation.

GDA94 geographical positions for Rockhopper-1 are shown in Table 2-1.

GDA94			
Position	**Method**	**Latitude**	**Longitude**
Drill Stem at Surface	Starfix HP	39° 47' 34.1828" S	145° 26' 21.4660" E
Proposed Location	-	39° 47' 34.0680" S	145° 26' 21.5514" E

TABLE 2-1 : GEOGRAPHICAL POSITIONS FOR ROCKHOPPER-1

GDA94 grid coordinates (CM 147°E) for Rockhopper-1 are shown in Table 2-2.

GDA94, MGA, Zone 55, CM 147°E			
Position	**Method**	**Easting (m)**	**Northing (m)**
Drill Stem at Surface	HP	366374.031	5594071.423
Proposed Location	-	366376.000	5594075.000

TABLE 2-2 : GRID COORDINATES FOR ROCKHOPPER-1

This position is 4.08m at a bearing of 208.83° (Grid) from the design location.

A copy of the original rig position field report is contained in Appendix B.

2.2 Rig Heading

The heading of the *Kan Tan IV* was established by calculating the average heading during five hours of gyro data logged between 0127 and 0627 on 01 December 2009. During this period, gyro readings were logged at five second intervals in Starfix.Seis.

The *Kan Tan IV*'s heading is shown in Table 2-3.

Description	**Method**	**True**	**Grid**
Rig Heading	Starfix.TOPS	316.62°	315.62°
Proposed Heading	-	-	-

TABLE 2-3 : RIG HEADING FOR ROCKHOPPER-1

2.3 Anchor Positions

The approximate locations of the *Kan Tan IV*'s anchors are shown in Table 2-4.

GDA94, MGA, Zone 55, CM 147°E			
Anchor	**Easting (m)**	**Northing (m)**	**Deployed By**
1	365583	5593765	*Far Fosna*
2	365583	5594375	*Far Scimitar*
3	366028	5594873	*Far Scimitar*
4	366664	5594897	*Far Scimitar*
5	367139	5594391	*Far Scimitar*
6	367277	5593754	*Kan Tan IV*
7	366710	5593271	*Far Scimitar*
8	366048	5593215	*Far Fosna*

TABLE 2-4 : ANCHOR POSITIONS FOR ROCKHOPPER-1

Because the on board chain and tension counters were not all accurate the approximate coordinates of the *Kan Tan IV*'s anchors were unable to be recalculated for a more correct position.
The anchor locations shown in Table 2-4 are therefore simply the stern position of the AHV when the anchor 'On The Bottom' was called.

3.0 SAFETY

All work undertaken by Fugro personnel during the project was performed within the guidelines of Fugro's Health Safety & Environmental Management System Manual (HSEMS).

Fugro personnel worked within all project safety guidelines and plans adopted by ADA Ltd and Maersk.

No safety incidents involving Fugro personnel were reported during the project.

Fugro personnel attended all relevant safety meetings onboard the rig as required.

4.0 SURVEY OPERATIONS

4.1 Mobilisation

The survey equipment onboard the *Kan Tan IV, Far Scimitar and Far Fosna* was mobilised between 24 July and 12 August 2009. Rig offsets were checked and a total station traverse was conducted to determine C-O values for the Gyro compass and Starfix.TOPS.
The equipment was confirmed as operational after arrival at 1200 on 26 November 2009.

4.2 General Survey Procedures

The *Kan Tan IV* was taken under tow from Trefoil-2 by the *Far Fosna* at 0125 29 November 20098.

Anchor deployment operations commenced at 0520 on 29 November 2009, when Anchor #6 was deployed by the *Kan Tan IV*. All other anchors were deployed by the two AHVs. During the deployment of these anchors, the AHVs were provided with a waypoint and corresponding runline via the Wombat telemetry system. The AHVs ran out the anchors along this line to the desired drop point.

The *Kan Tan IV* was positioned at Rockhopper-1 with all anchoring, cross-tensioning and ballasting complete at 0030 on 30 November 2009. Final position data was logged between 0127 and 0627 on 01 December 2009. A rig positioning field report was issued to the ADA Ltd Company Representative (see Appendix B).

4.3 Demobilisation

The survey equipment onboard the *Kan Tan IV* was left onboard in preparation for the rig moves in the rest of the Drilling Program.

S. Armstrong and C. Tidey departed the *Kan Tan IV* at 0915 on 01 December 2009.

5.0 EQUIPMENT CALIBRATION

5.1 DGPS Navigation Integrity Check

In order to prove the correct operation of the navigation systems installed on board the *Kan Tan IV*, DGPS data was logged for 10 minutes on 26 November 2009, whilst the rig was located at Trefoil-2.

A comparison of the independent primary and secondary DGPS was also conducted. The results from both of these checks are provided in Table 5-1.

GDA94, MGA, Zone 55, CM 147°E		
	Easting (m)	**Northing (m)**
Established Well Coordinates	360690.390	5583676.591
Observed Coordinates	360691.011	5583676.460
Difference	0.621	-0.131
Primary Navigation	360691.011	5583676.460
Secondary Navigation	360690.957	5583676.472
Difference	**-0.054**	**0.012**

TABLE 5-1 : DGPS NAVIGATION INTEGRITY CHECK

Details of all positioning checks are provided in Appendix C.

5.2 Gyro Compass Calibration

The primary heading system Starfix.TOPS calculates a highly accurate real-time True heading using two GPS antennas set up at a known baseline and offset.

The calibration of the Starfix.TOPS heading system and survey gyro compasses comprised a total station traverse to determine the correction in heading from the GPS antenna baseline and the rig centreline.

These observations were carried out while the rig was alongside Lascelles Wharf in Geelong and stationary on 11 August 2009.

As the GPS baseline is a constant offset from the rig centreline and GPS is not affected by a slow ‘drift’ effect like conventional gyro compasses, therefore regular sun observations for a gyro compass correction are not required.

A C-O (Corrected-Observed) value of 99.98° was determined for the Starfix.TOPS baseline correction to align it to the rig centreline. This correction was applied in the navigation suite.

6.0 SURVEY PARAMETERS

6.1 Geodetic Parameters

All coordinates are referenced to the Geocentric Datum of Australia 1994 (GDA94) unless otherwise noted. The Global Positioning System (GPS) operates on the World Geodetic System 1984 (WGS84) datum. Fugro's Differential GPS Reference Stations are currently defined in the International Terrestrial Reference Frame 2000 (ITRF2000 Epoch 2009.5) datum. Due to the continual refinement of the WGS84 reference frame, for all cases, the transformation parameters indicate that the WGS84 and ITRF2000 reference frames are essentially identical.

Datum	**:**	**World Geodetic System 1984 (WGS84)**
Reference Spheroid	:	World Geodetic System 1984
Semi Major Axis	:	6378137.000m
Inverse flattening	:	298.257223563

Datum	**:**	**Geocentric Datum of Australia 1994 (GDA94)**
Reference Spheroid	:	Geodetic Reference System 1980 (GRS80)
Semi Major Axis	:	6378137.000m
Inverse flattening	:	298.257222101

The following seven parameter datum transformation (Table 6-1) was used in Fugro's software to transform WGS84 (ITRF2000 Epoch 2009.5) coordinates to GDA94 coordinates. These parameters are calculated from the 14 parameter transformation defined by Geoscience Australia. Fugro follows the Coordinate Frame Rotation convention (as defined by UKOOA) for datum transformations.

Transformation Parameters from WGS84 (ITRF2000 Epoch 2009.5) to GDA94			
dX	+0.0284m	rX	+0.018588"
dY	-0.0529m	rY	+0.015736"
dZ	-0.1209m	rZ	+0.019196"
dS	+0.002824ppm		

TABLE 6-1 : TRANSFORMATION PARAMETERS

The proposed drilling location and all project coordinates are grid coordinates on the Map Grid of Australia.

Grid	**:**	**Map Grid of Australia (MGA94)**
Projection	:	Universal Transverse Mercator
Latitude of Origin	:	0°
Central Meridian	:	147° E (UTM Zone 55)
Central Scale Factor	:	0.9996
False Easting	:	500000m
False Northing	:	10000000m
Units	:	Metres

6.2 Differential GPS Reference Stations

Fugro's Differential GPS Reference Stations are currently defined in the ITRF2000 (Epoch 2009.75) datum and are shown in Table 6-2.

ITRF2000, Epoch 2009.75					
Station	**Id**	**Latitude**	**Longitude**	**Height (m)**	**Uplink**
Melbourne	385	37° 47' 59.26129" S	144° 57' 39.31262" E	67.34	OCSat
Bathurst	336	33° 25' 46.87488" S	149° 34' 01.97127" E	756.675	OCSat
Cobar	316	31° 29' 57.42689" S	145° 50' 20.34725" E	270.182	OCSat
Brisbane	275	27° 28' 38.48330" S	153° 01' 37.35417" E	93.164	OCSat

TABLE 6-2 : DGPS REFERENCE STATIONS

6.3 Project Coordinates and Tolerances

Project target coordinates and surface tolerance for Rockhopper-1 were supplied by ADA Ltd and are shown in Table 6-3. Client supplied project information is provided in Appendix D.

GDA94, MGA, Zone 55, CM 147°E			
Location	**Easting (m)**	**Northing (m)**	**Tolerance**
Rockhopper-1	366376.00	5594075.00	10m radius

TABLE 6-3 : PROJECT DESIGN COORDINATES

7.0 SURVEY EQUIPMENT, VESSEL AND PERSONNEL

7.1 Equipment

Survey equipment used for positioning the *Kan Tan IV* is shown in Table 7-1.

Equipment Listing	
Ocean Patriot	
3 x	Starfix 8200HP (1 APSat link, 1 spare)
2 x	Starfix.TOPS Total Positioning System (1 OCSat link, 1 spare)
2 x	Pentium 4 computers, running Fugro's Starfix.Seis navigation software suite (1 spare)
5 x	20" monitors (2 spare)
1 x	SG Brown gyro compass
2 x	Uninterruptible power supply units (UPS)
2 x	Teledesign radio/modem (1 spare)
2 x	Esteem Wireless WiFi radios
1 x	Theodolite, tripod and dark glass
1 x	Printer
AHVs (complete system per vessel, plus one complete set of spares)	
1 x	Pentium 4 computer, running Starfix Display/Wombat
1 x	Monitor
1 x	Starfix 8200HP unit
1 x	Fluxgate compass
1 x	Teledesign radio/modem

TABLE 7-1 : EQUIPMENT LIST

All systems were provided complete with all necessary cabling, connectors, power supplies, antennae, accessories, manuals and consumables.

Refer to Figure 7-1 for an equipment flow diagram for the *Kan Tan IV* and Figure 7-2 for the equipment flow diagram for the AHVs.

7.2 Vessels

The vessels used for anchor handling and towing the *Kan Tan IV* were the *Far Fosna* and the *Far Scimitar*.

Refer to Figure 7-3 for the rig offsets.

7.3 Personnel

Fugro personnel involved in the rig move and positioning operations were as follows:

Steve Armstrong	Surveyor in Charge	25 November – 02 November 2009
Craig Tidey	Surveyor	25 November – 02 November 2009

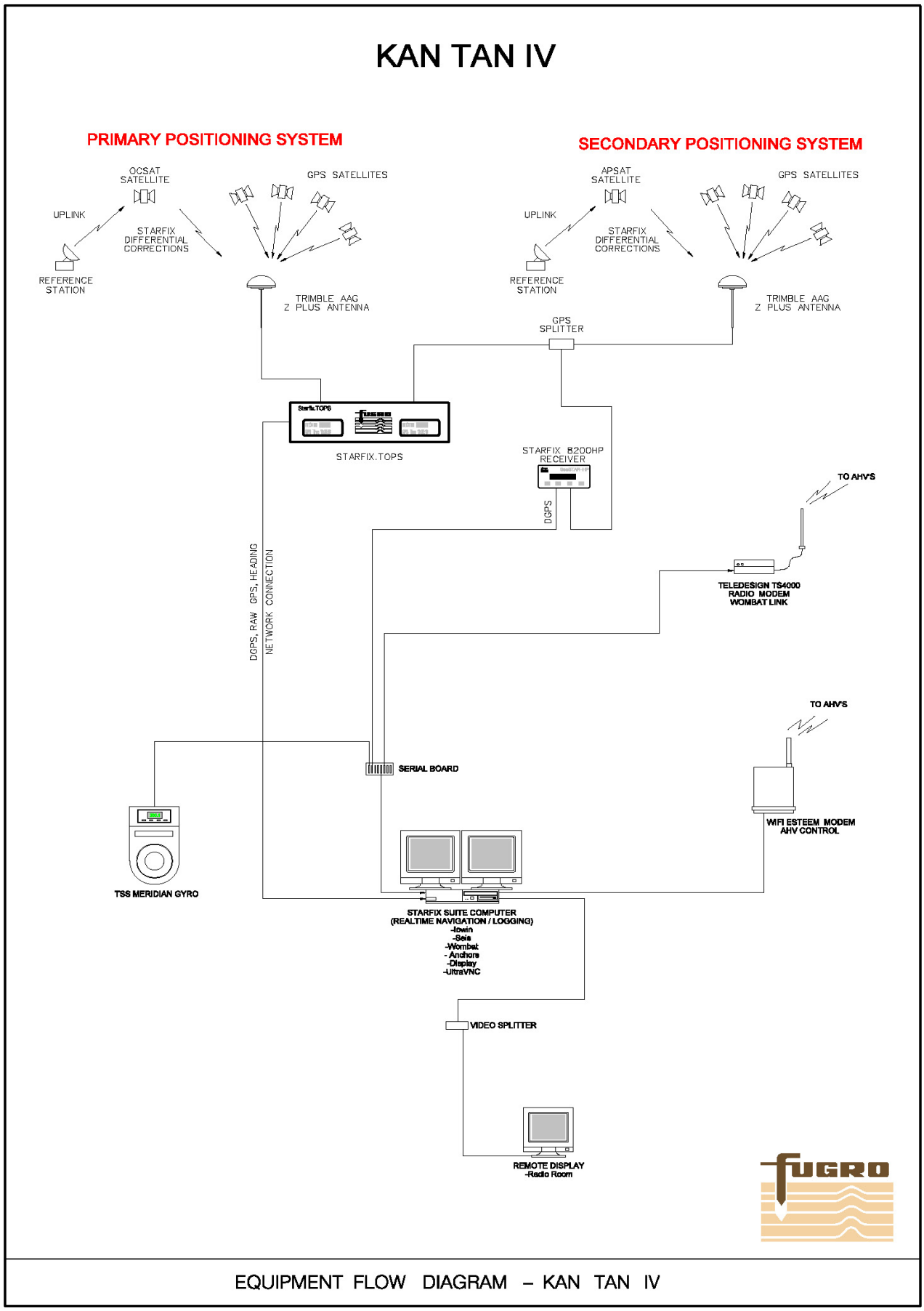


FIGURE 7-1 : EQUIPMENT FLOW DIAGRAM – MODU *KAN TAN IV*

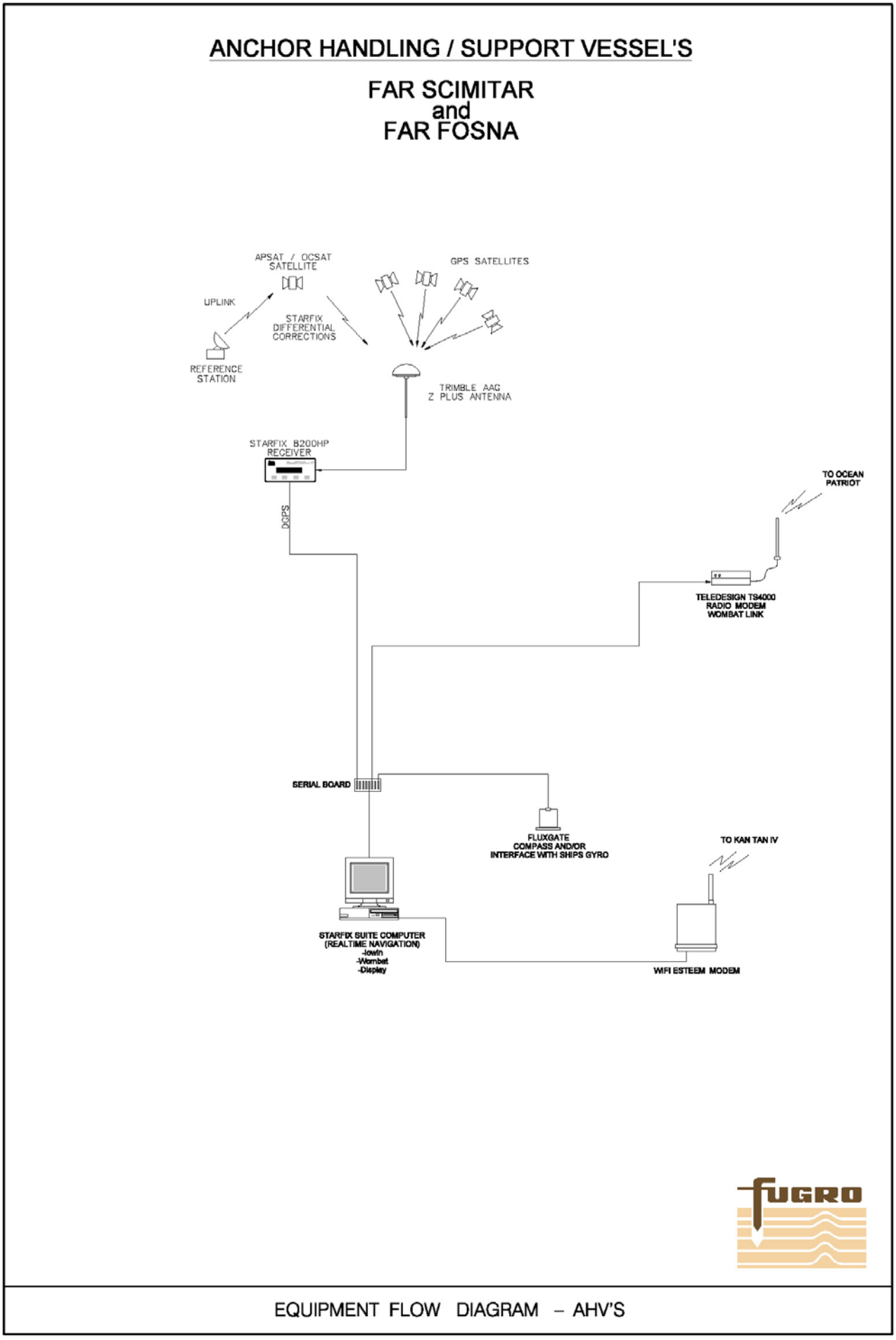


FIGURE 7-2 : EQUIPMENT FLOW DIAGRAM – AHVS

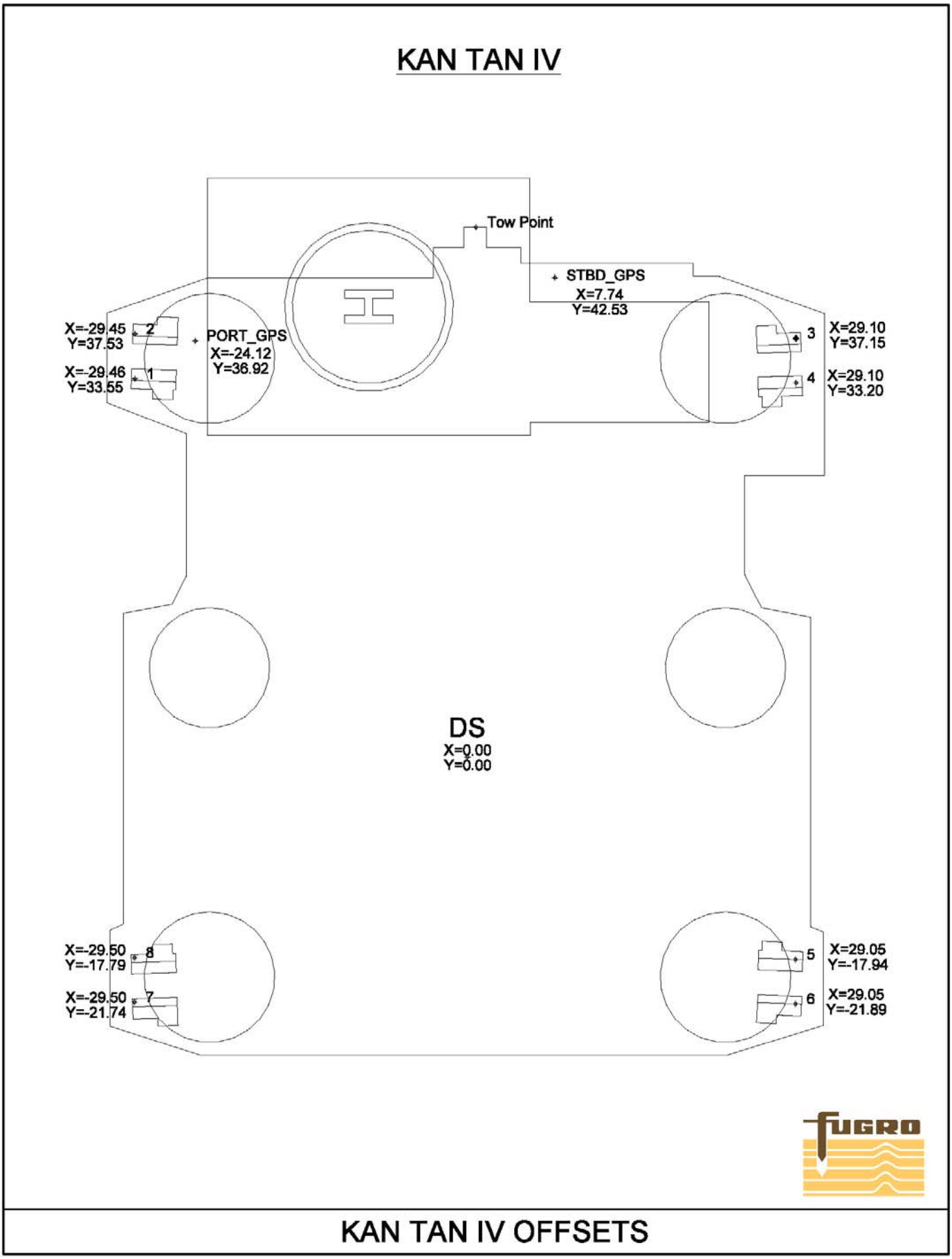


FIGURE 7-3 : RIG OFFSET DIAGRAM – MODU *KAN TAN IV*

8.0 CONCLUSIONS AND RECOMMENDATIONS

- The *Kan Tan IV* was successfully positioned during the recovery of anchors and the tow to Rockhopper-1.
- The *Far Fosna* and *Far Scimitar* were successfully positioned during the towing and anchoring operations.
- The surface position of the Rockhopper-1 well was determined.
- Fugro personnel worked well together with the Tow-masters, Marine and AHV crews resulting in a safe, efficient and positive working environment.

9.0 DISTRIBUTION

Copies of this report have been distributed as follows:

ADA Ltd	: 2 hard copies
Attn: Mr Mark Nasarczyk	: 1 electronic copy

APPENDIX A
DAILY OPERATIONS REPORTS

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 25/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
1300	1800	S. Armstrong and C. Tidey depart New Plymouth bound for Melbourne.
1800	2359	S. Armstrong and C. Tidey arrive at Melbourne and check into airport Hilton for overnight stay

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0
Comments:					

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	0	Starfix Wombat (remote)	0	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	0	Fluxgate Compass	0	C. Tidey	Surveyor
Radio Modem	0	Radio Modem	0		
UPS	0	Starfix HP DGPS	0		
Theodolite	0				
SG Brown Gyro	0				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION: 2 x Melbourne Airport Hilton					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	HOUSTON	09011-01

Fugro-BTW
PM-F50

DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 26/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

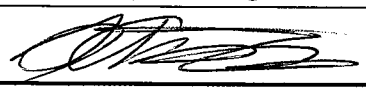
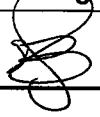
FROM	TO	SUMMARY OF OPERATIONS
0000	0700	S. Armstrong and C. Tidey overnight at Melbourne airport Hilton.
0700	0800	S. Armstrong and C. Tidey check into heliport for flight to Kan Tan iv
0800	0845	S. Armstrong and C. Tidey fly to Kan Tan iv
0845	0945	S. Armstrong and C. Tidey arrive at Kan Tan iv, C. Tidey completes rig induction
0945	1135	Setting up nav system
1135	1150	S. Armstrong basket transfer to Far Fosna to fix mouse
1150	1532	Nav system operational
1532	1542	Logging for pre rig move check
1542	1550	S G Brown C-O correction changed to 177 to align with tops heading
1550	2359	Stand by

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	1	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	1

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	Houston 	09011-02

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 27/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
0000	2130	Continue stand by
2130	2140	Pre anchor retrieval tool box meeting
2140	2200	Preparing to pass PCC #8 to Far Scimitar
2200		Far Scimitar receives PCC #8
2201		Preparing to pass PCC #5 to Far Fosna
2226		Far Fosna Receives PCC #5
2230		Far Scimitar stripping out on Anchor #8, Far Fosna stripping out on Anchor #5
2243		Far Fosna at Anchor #5, preparing to break out
2246		Far Scimitar at Anchor #8, preparing to break out
2258		Anchor #8 at roller of Far Scimitar, checking shackles etc
2259		Heaving in on Anchor #8
2350		Anchor #5 at roller of Far Fosna, checking shackles etc
2352		Heaving in on Anchor #5

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	1	JHA's	0
Incidents	0	Hazard Cards Submitted	1	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	HOUSTON	09011-03

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD		LOCATION: MELBOURNE, AUSTRALIA	DATE: 28/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1		VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
0044		Anchor #8 recovered but not racked
0045		PCC #8 recovered back to rig.
0115		Anchor #5 recovered but not racked
0118		PCC #5 recovered back to rig
0119	1435	Suspending anchor recovery operations due to adverse weather.
1435		Deballasting completed ready to continue retrieving anchors. Weather now acceptable.
1616	1555	Far Scimitar chasing out Anchor #1
1555		Far Scimitar at Anchor #1
1617		No. 4 PCC passed to Far Fosna
1631	1641	Far Fosna chasing out Anchor #4
1641		Far Fosna at Anchor #4
1652		Anchor #1 on roller of Far Scimitar
1654		Anchor #4 off bottom
1654		Heaving in on Anchor #1
1701		Heaving in on Anchor #4
1720		Re-commence hauling in on Anchor #1
1801		Anchor #4 Racked
1818		PCC #4 recovered back to rig
1830		PCC #3 passed to Far Fosna
1835		Far Fosna chasing out on Anchor #3
1845		Anchor #1 racked
1846		Far Fosna at Anchor #3
1849		PCC #1 recovered back to Kan Tan IV
1855		Anchor #3 off bottom
1902		Anchor #3 on roller of Far Fosna
1903		Heaving in on Anchor #3
1910		PCC #7 passed to Far Scimitar
1922	1930	Far Scimitar chasing out on Anchor #7
1930		Far Scimitar at Anchor #7
1940		Anchor #7 on roller of Far Scimitar
1942		Heaving in on anchor #7
1956		Anchor #3 Racked
2000		Abandon Rig Drill
2012		PCC #3 recovered back to Kan Tan IV
2050		Far Fosna attached to Kan Tan IV tow bridal
2140		Anchor #7 recovered back to Kan Tan IV but not racked due to winch problems
2150		PCC #7 recovered back to the Kan Tan IV
2215		PCC #2 passed to Far Scimitar
2229	2237	Far Scimitar chasing out on Anchor #2
2237		Far Scimitar at Anchor #2
2244		Anchor #2 off bottom
2254		Anchor #2 on roller of Far Scimitar
2255	2359	Heaving in on Anchor #2

DAILY OPERATIONS REPORT

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0
Comments:					

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	HOUSTON 	09011-04

Fugro-BTW
PM-F50

DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD		LOCATION: MELBOURNE, AUSTRALIA	DATE: 29/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1		VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
0000	0001	
0001		Anchor #2 Racked
0010		PCC #2 recovered back to back Kan Tan IV
0028		Heaving in on Anchor #6
0100		STATEMENT OF FACTS
0124		Anchor #6 off bottom
0125	0520	Commence tow to Rockhopper-1
0129		Anchor #6 recovered but not racked
0520		Anchor #6 on the bottom, deployed by Kan Tan IV, 367277mE 5593754mN
0545		Brake set on #6 winch, Kan Tan IV dragged to location by Far Fosna
0558		No. 2 PCP passed to Far Scimitar
0612	0700	Far Scimitar running Anchor #2
0700		Anchor #2 on bottom, 365583mE 5594375mN
0708	0732	Far Scimitar stripping back Anchor #2
0732		No. 2 PCP passed back to rig
0750		No. 7 PCP passed to Far Scimitar
0807	0848	Far Scimitar running Anchor #7
0848		Anchor #7 on bottom, 366710mE 5593271mN
0849	0910	Far Scimitar stripping back No. 7
0910		No. 7 PCP passed back to rig
0931		No. 3 PCP passed to Far Scimitar
0946	1017	Far Scimitar running Anchor #3
0955		Problem with winch #3, all stop
1005		Recommence paying out on winch 3
1017		Anchor #3 on bottom, 366028mE 5594873mN
1020	1053	Far Scimitar stripping back no. 3
1021		Far Fosna released from Tow Bridle
1038		No. 8 PCP passed to Far Fosna
1053		No. 3 PCP passed back to rig
1100	1115	Far Fosna running Anchor #8
1106		No.4 PCP passed to Far Scimitar
1115		Anchor #8 on bottom, 366048mE, 5593215mN
1119	1143	Far Fosna stripping back No. 8
1121	1143	Far Scimitar running Anchor #4
1143		No.8 PCP passed back to rig
1143		Anchor #4 on bottom, 366664mE, 5594897mN
1144	1219	Far Scimitar stripping back No. 4
1155		No.1 PCP passed to Far Fosna
1210	1238	Far Fosna running Anchor #1
1219		No. 4 PCP passed back to rig
1224		No. 5 PCP passed to Far Scimitar
1238		Anchor No.1 on bottom, 365583mE 5593765mN
1252	1317	Far Scimitar running Anchor #5
1254		Far Fosna stripping back No. 1
1317		Anchor #5 on bottom, 367139mE 5594391mN
1320		Far Scimitar stripping back No. 5
1321		No. 1 PCP passed back to rig
1345		No. 5 PCP passed back to rig
1355	1828	Commence ballasting operations

DAILY OPERATIONS REPORT

1828	1839	Start tensioning Anchors 4 and 8 for cross tension test
1839		Anchors 4 and 8 at full tension starting 15min test
1851		Start tensioning Anchors 4 and 8 for cross tension test
1904		Anchors 4 and 8 passed tension test
2021		Anchor #7 not holding
2023		Start tensioning Anchors 6 and 2 for cross tension test
2052		Anchors 6 and 2 at full tension starting 15min test
2106		Anchors 6 and 2 passed tension test
2123		PCC #7 passed to Far Scimitar
2139	2146	Far Scimitar chasing on Anchor #7
2146		Far Scimitar at Anchor #7
2155	2210	Anchor #7 on roller of Far Scimitar – upside down attempting to right
2210		Anchor #7 righted
2213		Paying out on Anchor #7
2233		Anchor #7 on the bottom Far Scimitar striping back to rig 366731mE 5593162mN
2315		PCC #7 retrieved back to Kan Tan IV
2345		Anchors 3 and 7 passed tension test, start winching to location

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	HOUSTON	09011-05

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 30/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
0001	0030	Winching onto location continues
0030	0035	On location, start logging preliminary fix
0035		Stop logging
0126	0726	Start logging final fix (pre spud)
0726		Stop logging final fix
1530		S. Armstrong basket transfer to Far Fosna to change radio modem
1542		Radio changed out on Far Fosna and operating correctly
1550		S. Armstrong transferred back to rig
1618		S. Armstrong basket transfer to Far Scimitar to change radio modem
1626		Radio changed out on Far Scimitar and operating correctly
1640		S. Armstrong transferred back to rig
2359		Overnight on Kan Tan IV

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	1	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	BAHouston	09011-06

Fugro-BTW
PM-F50

DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 01/12/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

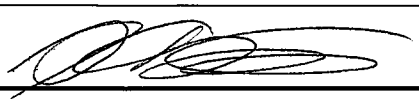
FROM	TO	SUMMARY OF OPERATIONS
0001	0730	Overnight on Kan Tan IV
0730	0800	Fugro personnel attend helicopter briefing
0915	1015	Fugro personnel depart Kan Tan IV by helicopter
1045	2359	S Armstrong check in to Hilton hotel, C Tidey stays with family.

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION: HILTON x1					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		09011-07

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 02/12/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

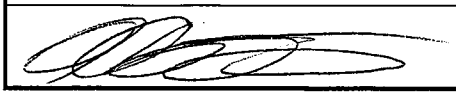
FROM	TO	SUMMARY OF OPERATIONS
0001	0900	Overnight at Hilton hotel
0900		Depart hotel for Melbourne Airport
1135	0500	Depart Melbourne for Auckland
0645		All flights to New Plymouth cancelled due to fog at airport.
0730		Check in to Auckland Airport Grand Chancellor Hotel

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION: GRAND CHANCELLOR x1					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		09011-08

APPENDIX B
FINAL POSITIONING DATA

Starfix Final Fix Report

Fugro Job Number	**09011**
Job Name	**Rig Move to Rockhopper-1**
Fugro Personnel	**S. Armstrong, C. Tidey**
Client Name	**Australian Drilling Associates Pty Ltd**
Client Representative	**B. Houston**
Sampling Started	**30 Nov 2009 1:26:58 a.m. (local)**
Sampling Ended	**30 Nov 2009 6:27:00 a.m. (local)**
Comment	**Final Fix**

Intended Offset / Well Location

Geodetic Datum	**GDA94**
Latitude	39°47'34.0680"S
Longitude	145°26'21.5514"E
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	366376.000 m
Northing	5594075.000 m
Intended Rig Heading	315.00 °T

Final DGPS Position Fix Summary for Kan Tan IV At Rockhopper-1

DS computed from TOPS_OCSAT.GGA (Primary)

DS Offset From CRP		
Starboard	0.000 m	
Forward	0.000 m	
Up	0.000 m	
Geodetic Datum	**GDA94**	**WGS84**
Latitude	39°47'34.1828"S	39°47'34.1552"S
Longitude	145°26'21.4660"E	145°26'21.4788"E
Projection	**Transverse Mercator (UTM) Zone: 55**	
Easting	366374.031 m	
Northing	5594071.423 m	
Height	20.933 m (ellipsoidal)	
Final Rig Heading	316.62 °T	
	315.62 °G (Convergence -1.00° Australia/New Zealand)	
Gyro C-O	99.98 °	

Position is 4.08 m @ 209.83 °T (208.83 °G) FROM intended location

DS computed from 8200HP_APSAT.GGA (Secondary)

Geodetic Datum	**GDA94**
Latitude	39°47'34.1833"S
Longitude	145°26'21.4671"E
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	366374.058 m
Northing	5594071.409 m
Height	21.959 m (ellipsoidal)

Position is 4.08 m @ 208.41 °T (207.41 °G) FROM intended location

Positioning System Comparison (System 2 minus System 1)

Delta Easting	0.027 m
Delta Northing	-0.014 m
Delta Height	1.026 m

Party Chief: _____ Client Representative: BAHouston

Geodetic Parameters

Geodetic Datum	**GDA94**		
Ellipsoid	**GRS80**		
Semi-Major Axis	6378137.000 m		
Inverse Flattening	298.2572221010		
Eccentricity^2	0.006694380022901		
DX	0.0284 m	RX	0.0186 arc seconds
DY	-0.0529 m	RY	0.0157 arc seconds
DZ	-0.1209 m	RZ	0.0192 arc seconds
D Scale	0.0028 ppm		
Rotation Convention	+RZ=-RLongitude		
Projection	**Transverse Mercator (UTM) Zone: 55**		
Latitude of Origin	0°00'00.0000"N		
Longitude of Origin	147°00'00.0000"E		
False Easting	500000.000 m		
False Northing	10000000.000 m		
Scale Factor	0.9996		

Final Primary Antenna Position (TOPS_OCSAT.GGA)
7202 observations used out of a total of 7202

Primary Antenna Offset from CRP

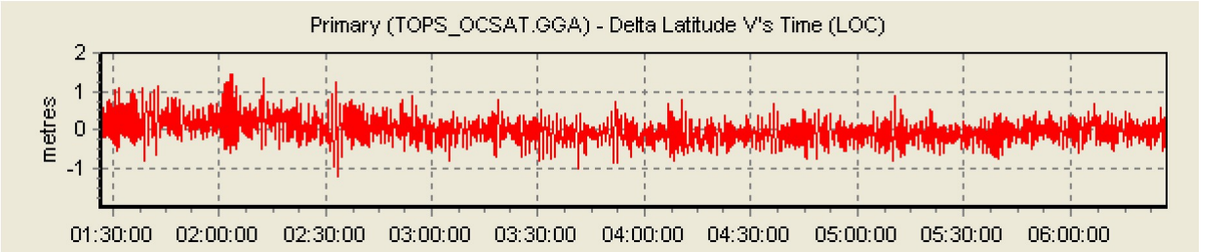
Starboard	-24.120 m
Forward	36.920 m
Up	0.000 m

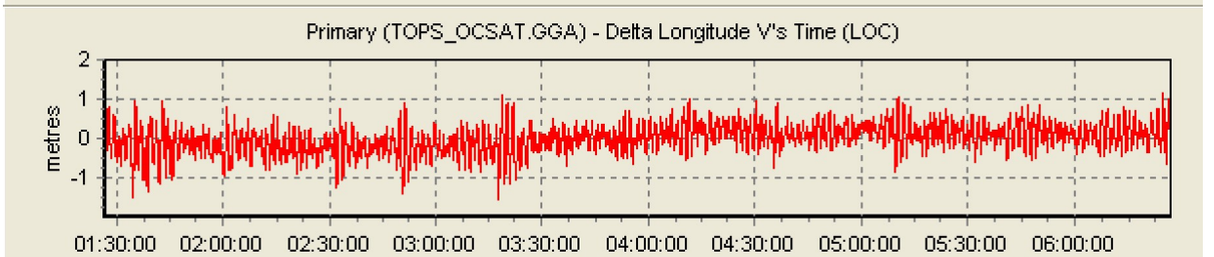
Mean

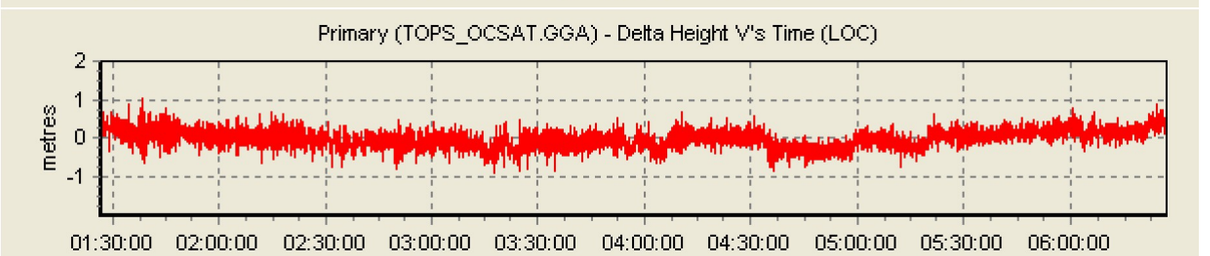
Geodetic Datum	**WGS84**
Latitude	39°47'33.8222"S
Longitude	145°26'19.6758"E
Ellipsoidal Ht	20.88 m
Geodetic Datum	**GDA94**
Latitude	39°47'33.8499"S
Longitude	145°26'19.6630"E
Ellipsoidal Ht	20.93 m
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	366330.969 m
Northing	5594080.940 m
HDOP	1.07
Heading	316.62 °T
Age Of Corrections	12.0 s
Satellites	8

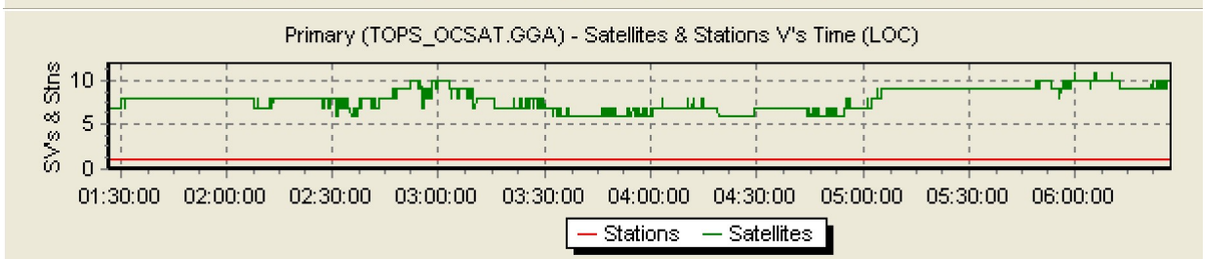
Standard Deviation

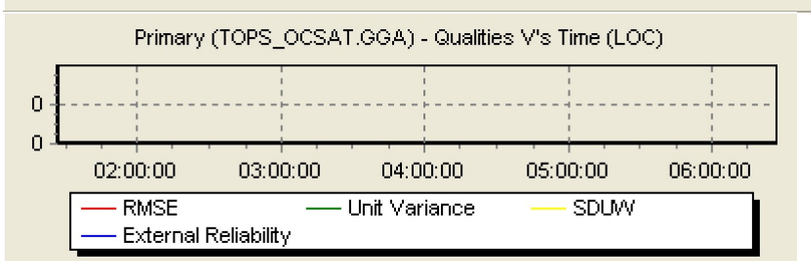
Latitude or Northing	0.31 m
Longitude or Easting	0.36 m
Ellipsoidal Height	0.24 m
HDOP	0.16
Heading	0.37 °T

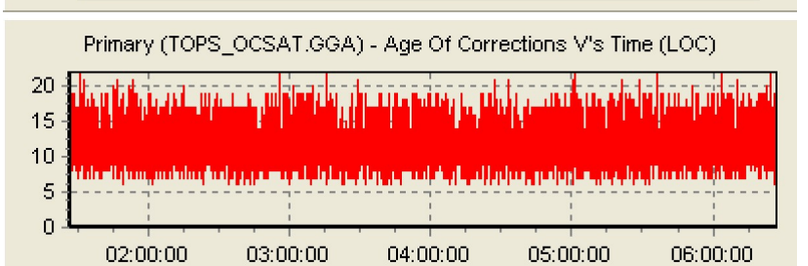

Primary (TOPS_OCSAT.GGA) - Delta Latitude V's Time (LOC)
metres
2
1
0
-1
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00

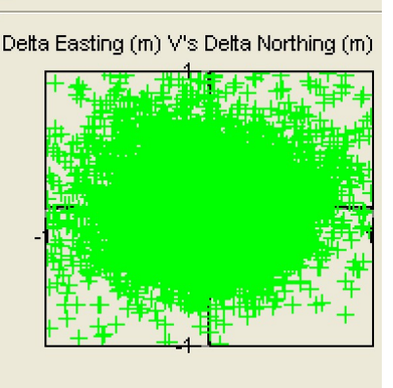

Primary (TOPS_OCSAT.GGA) - Delta Longitude V's Time (LOC)
metres
2
1
0
-1
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00


Primary (TOPS_OCSAT.GGA) - Delta Height V's Time (LOC)
metres
2
1
0
-1
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00


Primary (TOPS_OCSAT.GGA) - Satellites & Stations V's Time (LOC)
SV's & Stns
10
5
0
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00
Stations
Satellites


Primary (TOPS_OCSAT.GGA) - Qualities V's Time (LOC)
0
0
02:00:00
03:00:00
04:00:00
05:00:00
06:00:00
RMSE
Unit Variance
SDUW
External Reliability


Primary (TOPS_OCSAT.GGA) - Age Of Corrections V's Time (LOC)
20
15
10
5
0
02:00:00
03:00:00
04:00:00
05:00:00
06:00:00


Delta Easting (m) V's Delta Northing (m)
1
-1
1
-1

Final Secondary Antenna Position (8200HP_APSAT.GGA)
3601 observations used out of a total of 3601

Seconday Antenna Offset from CRP

Starboard	7.740 m
Forward	42.530 m
Up	0.000 m

Mean

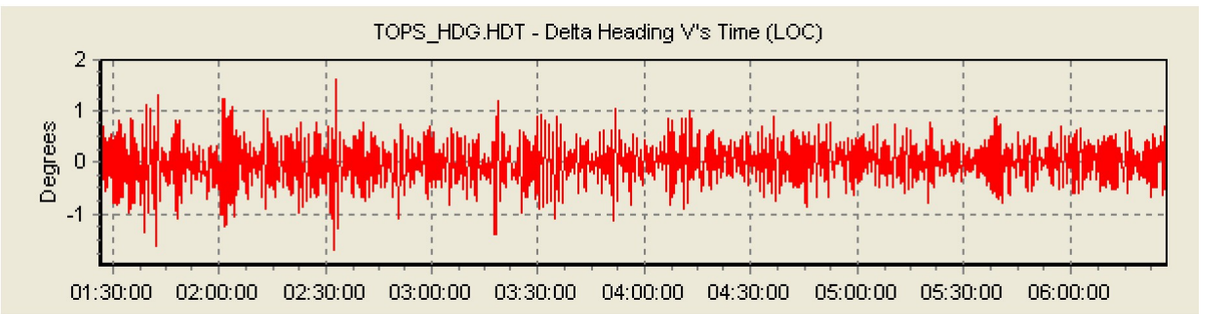
Geodetic Datum	**WGS84**
Latitude	39°47'32.9808"S
Longitude	145°26'20.4884"E
Ellipsoidal Ht	21.90 m
Geodetic Datum	**GDA94**
Latitude	39°47'33.0085"S
Longitude	145°26'20.4756"E
Ellipsoidal Ht	21.96 m
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	366349.843 m
Northing	5594107.219 m
HDOP	1.00
Age Of Corrections	10.9 s
Satellites	8

Standard Deviation

Latitude or Northing	0.26 m
Longitude or Easting	0.45 m
Ellipsoidal Height	0.32 m
HDOP	0.16

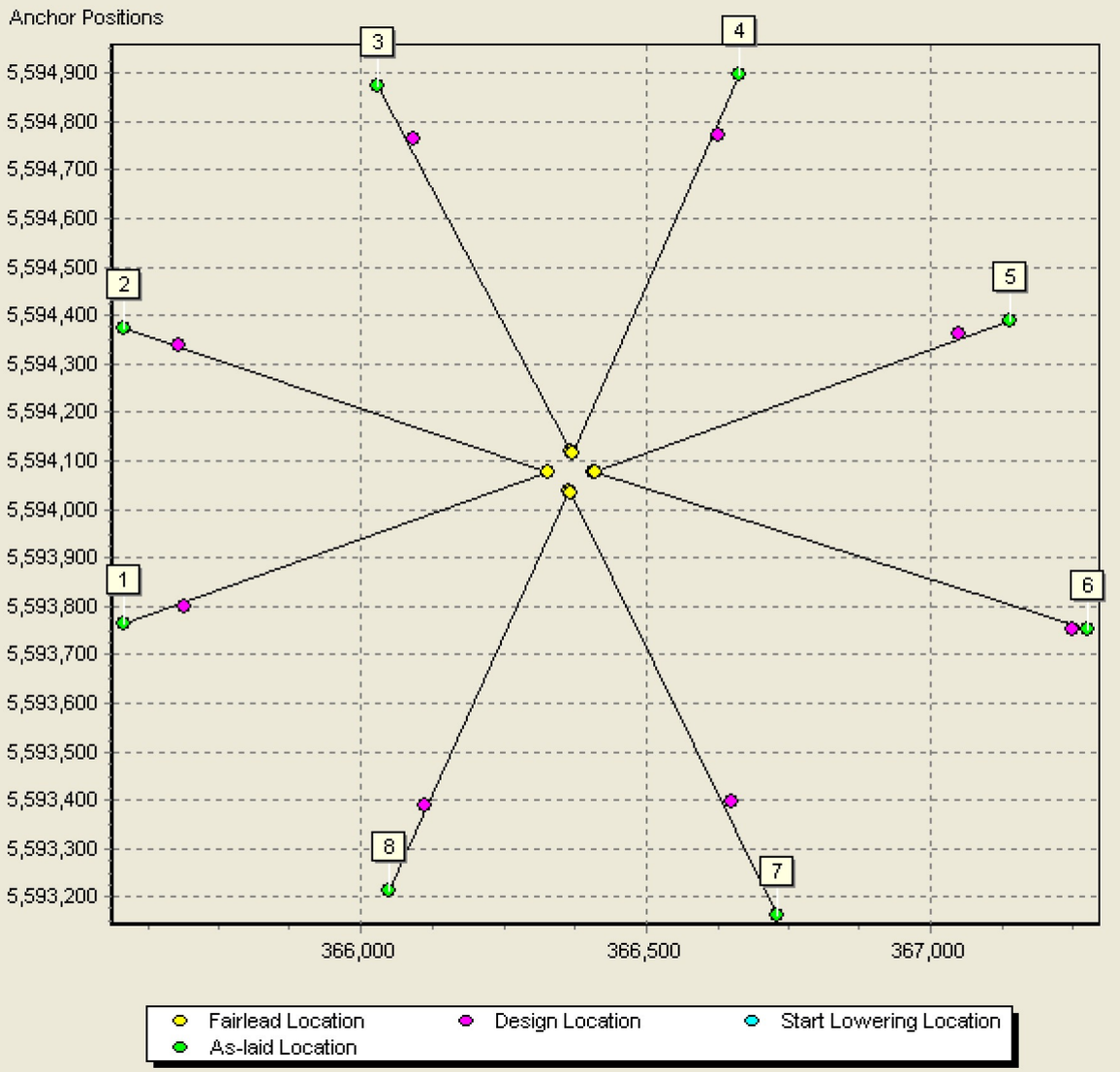
Heading Statistics (TOPS_HDG.HDT)
7202 observations used out of a total of 7202

Gyro C-O	99.98 °
Mean	316.62 °T
Standard Deviation	0.37 °T



Anchors of Kan Tan IV

Fairlead	Status	Transverse Mercator (UTM) Zone: 55	
1	Laid	39°47'42.6603"S	145°25'52.4882"E (Design)
		365689.400 m	5593798.001 m
		39°47'43.6765"S	145°25'47.9728"E (As-Laid)
		365582.559 m	5593764.787 m
		111.885 m @	72°43'51.7028" (TO design:Grid)
		808.729 m @	247°27'35.5742" (FL TO A-L:Grid)
2	Laid	39°47'25.1929"S	145°25'52.3722"E (Design)
		365677.200 m	5594336.500 m
		39°47'23.8801"S	145°25'48.4516"E (As-Laid)
		365583.240 m	5594375.342 m
		101.672 m @	112°27'34.2428" (TO design:Grid)
		800.877 m @	291°49'15.8602" (FL TO A-L:Grid)
3	Laid	39°47'11.5756"S	145°26'10.0486"E (Design)
		366090.300 m	5594763.701 m
		39°47'07.9897"S	145°26'07.5280"E (As-Laid)
		366028.412 m	5594873.213 m
		125.790 m @	150°31'40.8030" (TO design:Grid)
		828.098 m @	335°43'32.9951" (FL TO A-L:Grid)
4	Laid	39°47'11.6661"S	145°26'32.6899"E (Design)
		366628.900 m	5594770.301 m
		39°47'07.5756"S	145°26'34.2508"E (As-Laid)
		366663.836 m	5594897.061 m
		131.486 m @	195°24'30.1258" (TO design:Grid)
		834.402 m @	20°30'03.5300" (FL TO A-L:Grid)
5	Laid	39°47'25.1234"S	145°26'50.1370"E (Design)
		367051.100 m	5594362.601 m
		39°47'24.2652"S	145°26'53.8600"E (As-Laid)
		367139.194 m	5594390.595 m
		92.434 m @	252°22'16.1067" (TO design:Grid)
		795.456 m @	66°55'56.0188" (FL TO A-L:Grid)
6	Laid	39°47'45.0721"S	145°26'58.0220"E (Design)
		367249.300 m	5593750.801 m
		39°47'44.9885"S	145°26'59.1896"E (As-Laid)
		367277.025 m	5593753.859 m
		27.893 m @	263°42'16.7146" (TO design:Grid)
		924.873 m @	110°23'24.7926" (FL TO A-L:Grid)
7	Laid	39°47'56.2164"S	145°26'32.5846"E (Design)
		366650.300 m	5593396.701 m
		39°48'03.8688"S	145°26'35.8132"E (As-Laid)
		366731.188 m	5593162.098 m
		248.156 m @	340°58'34.9420" (TO design:Grid)
		945.618 m @	157°25'25.1195" (FL TO A-L:Grid)
8	Laid	39°47'56.1258"S	145°26'09.9393"E (Design)
		366111.700 m	5593390.101 m
		39°48'01.7772"S	145°26'07.1248"E (As-Laid)
		366047.813 m	5593214.687 m
		186.686 m @	20°00'42.8886" (TO design:Grid)
		882.510 m @	201°05'28.7635" (FL TO A-L:Grid)


Anchor Positions
5,594,900
5,594,800
5,594,700
5,594,600
5,594,500
5,594,400
5,594,300
5,594,200
5,594,100
5,594,000
5,593,900
5,593,800
5,593,700
5,593,600
5,593,500
5,593,400
5,593,300
5,593,200
366,000
366,500
367,000
1
2
3
4
5
6
7
8
Fairlead Location
Design Location
Start Lowering Location
As-laid Location

APPENDIX C
RIG MOVE POSITIONING SYSTEM SETUP, CHECKS AND CALIBRATIONS

Starfix Pre Rig Move Fix Report

Fugro Job Number	**09011**
Job Name	**Rig Move to Rockhopper-1**
Fugro Personnel	**S. Armstrong,C. Tidey**
Client Name	**Australian Drilling Associates Pty Ltd**
Client Representative	**B. Houston**
Sampling Started	**26 Nov 2009 3:32:50 p.m. (local)**
Sampling Ended	**26 Nov 2009 3:42:50 p.m. (local)**
Comment	**Kan Tan IV Pre Rig Move Check**

Intended Offset / Well Location

Geodetic Datum	**GDA94**
Latitude	39°53'07.9333"S
Longitude	145°22'14.6153"E
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	360690.390 m
Northing	5583676.591 m
Intended Rig Heading	0.00 °T

Final DGPS Position Fix Summary for Kan Tan IV At Bass Strait, Australia

CRP computed from TOPS_OCSAT.GGA (Primary)

CRP Offset From CRP		
Starboard	0.000 m	
Forward	0.000 m	
Up	0.000 m	
Geodetic Datum	**GDA94**	**WGS84**
Latitude	39°53'07.9379"S	39°53'07.9103"S
Longitude	145°22'14.6413"E	145°22'14.6541"E
Projection	**Transverse Mercator (UTM) Zone: 55**	
Easting	360691.011 m	
Northing	5583676.460 m	
Height	21.490 m (ellipsoidal)	
Final Rig Heading	317.76 °T	
	316.71 °G (Convergence -1.04° Australia/New Zealand)	
Gyro C-O	99.98 °	

Position is 0.63 m @ 102.94 °T (101.90 °G) FROM intended location

CRP computed from 8200HP_APSAT.GGA (Secondary)

Geodetic Datum	**GDA94**
Latitude	39°53'07.9375"S
Longitude	145°22'14.6391"E
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	360690.957 m
Northing	5583676.472 m
Height	22.519 m (ellipsoidal)

Position is 0.58 m @ 101.87 °T (100.82 °G) FROM intended location

Positioning System Comparison (System 2 minus System 1)

Delta Easting	-0.054 m
Delta Northing	0.012 m
Delta Height	1.029 m

Party Chief: _____ Client Representative: BAHouston

Geodetic Parameters

Geodetic Datum	**GDA94**		
Ellipsoid	**GRS80**		
Semi-Major Axis	6378137.000 m		
Inverse Flattening	298.2572221010		
Eccentricity^2	0.006694380022901		
DX	0.0284 m	RX	0.0186 arc seconds
DY	-0.0529 m	RY	0.0157 arc seconds
DZ	-0.1209 m	RZ	0.0192 arc seconds
D Scale	0.0028 ppm		
Rotation Convention	+RZ=-RLongitude		
Projection	**Transverse Mercator (UTM) Zone: 55**		
Latitude of Origin	0°00'00.0000"N		
Longitude of Origin	147°00'00.0000"E		
False Easting	500000.000 m		
False Northing	10000000.000 m		
Scale Factor	0.9996		

Final Primary Antenna Position (TOPS_OCSAT.GGA)
1201 observations used out of a total of 1201

Primary Antenna Offset from CRP

Starboard	-24.120 m
Forward	36.920 m
Up	0.000 m

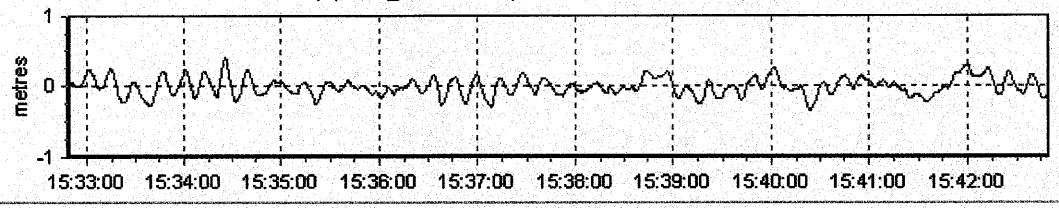
Mean

Geodetic Datum	**WGS84**
Latitude	39°53'07.5498"S
Longitude	145°22'12.8576"E
Ellipsoidal Ht	21.43 m
Geodetic Datum	**GDA94**
Latitude	39°53'07.5775"S
Longitude	145°22'12.8449"E
Ellipsoidal Ht	21.49 m
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	360648.138 m
Northing	5583686.795 m
HDOP	0.97
Heading	317.76 °T
Age Of Corrections	12.3 s
Satellites	10

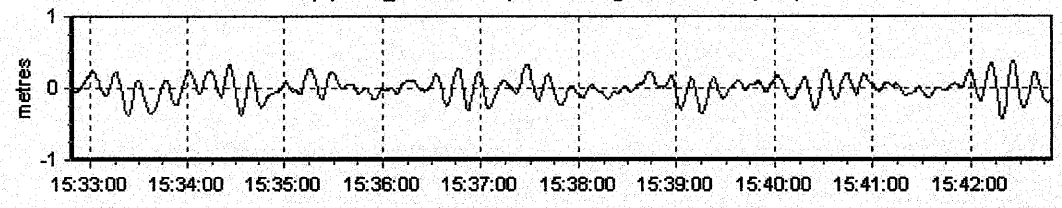
Standard Deviation

Latitude or Northing	0.12 m
Longitude or Easting	0.14 m
Ellipsoidal Height	0.20 m
HDOP	0.05
Heading	0.10 °T

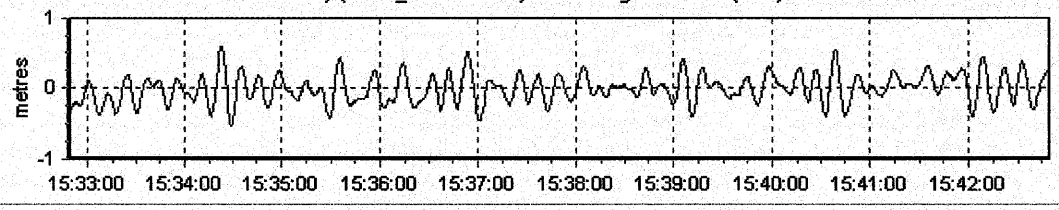
Primary (TOPS_OCSAT.GGA) - Delta Latitude V's Time (LOC)



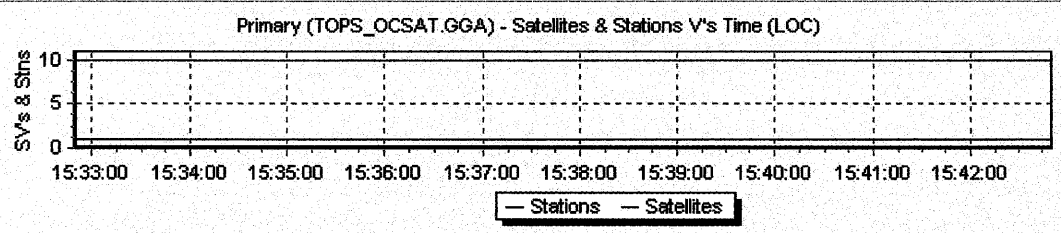
Primary (TOPS_OCSAT.GGA) - Delta Longitude V's Time (LOC)



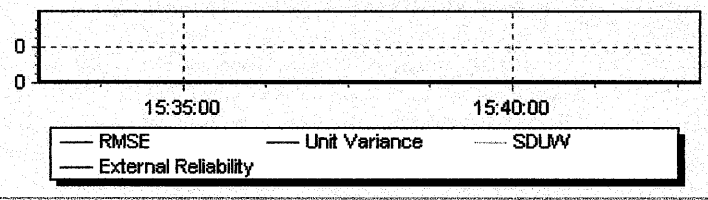
Primary (TOPS_OCSAT.GGA) - Delta Height V's Time (LOC)



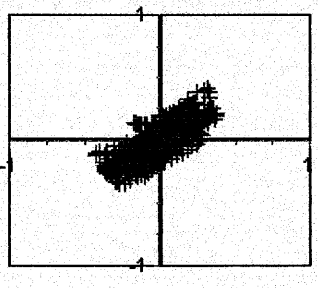
Primary (TOPS_OCSAT.GGA) - Satellites & Stations V's Time (LOC)



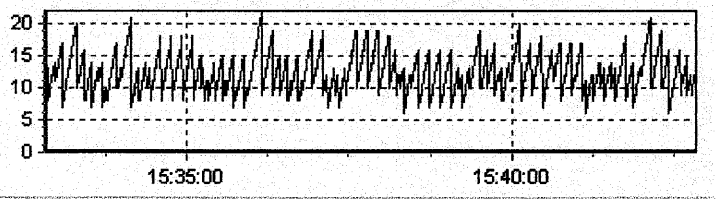
Primary (TOPS_OCSAT.GGA) - Qualities V's Time (LOC)



Delta Easting (m) V's Delta Northing (m)

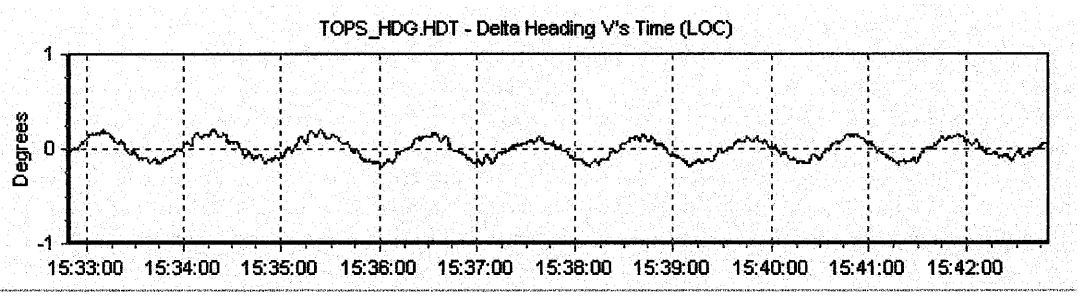


Primary (TOPS_OCSAT.GGA) - Age Of Corrections V's Time (LOC)



Heading Statistics (TOPS_HDG.HDT)
1201 observations used out of a total of 1201

Gyro C-O	99.98 °
Mean	317.76 °T
Standard Deviation	0.10 °T



RIG POSITIONING
GEODESY AND COORDINATE CHECK LIST

Client :	**ADA**	**Job Number :**	**09011**
Rig :	**Kan Tan IV**	**Date:**	**November 30, 2009**
Project :	**Rig Move from Trefoil-2 to Rockhopper-1**		

1. CONFIRMATION OF PROPOSED RIG COORDINATES and HEADING.

Well Name	**Rockhopper-1**		Ensure agreement with Client onsite prior to any positioning
Well Location – Latitude(ϕ)	-039° 47' 34.07"	S	Operations. OK (?) (Y) N.
Well Location – Longitude(λ)	145° 26' 21.55"	E	
Rig Heading (True)	315° T		

2. GEODETIC PARAMETERS (WGS84 to LOCAL DATUM)

DATUM:	Dx	0.02840 m	Ensure agreement with Client onsite prior to positioning operations.
GRS80	Dy	-0.05290 m	OK (?) (Y) / N.
	Dz	-0.12090 m	
	Rx	0.01859 "	
Projection:	Ry	0.01574 "	
	Rz	0.01920 "	
Transverse Mercator (UTM)	Ds	0.00282 ppm	
UTM Zone		55	
Central Meridian		147° East	

3. CHECK TRANSFORMATION OF SITE COORDINATES.

Well Location – Easting	366376.0	Ensure agreement with Starfix.Seis. OK (?) (Y) / N
Well Location – Northing	5594075.0	If not, CHECK and RECALC.
Convergence at Location	-1.00 °	
Rig Heading (° Grid)	314.00°	

4. MEAS. ANT. OFFSETS from ANT. TO D/STEM (Rel. to Datum) (Measure two (2) separate directions, verifying closure.)	**NAV #1 SYSTEM**	**NAV #2 SYSTEM**
Delta X(m)	-24.12 m	7.74 m
Delta Y(m)	36.92 m	42.53 m
Angle between Rig Centreline and Antenna(s) (Grid)	326.84°	10.3°
Distance between Drill Stem and Antenna (m)	44.10 m	43.23 m

5. MANUAL COORDINATE VERIFICATION FOR ANTENNAS		**NAV #1 SYSTEM**	**NAV #2 SYSTEM**
Proposed Drill Stem Position	Easting	366376.0	366376.0
	Northing	5594075.0	5594075.0
Drill Stem to Antenna	Proposed Hdg (G)	314.001°	314.001°
Brg (G) = Prop. Hdg. + Angle btwn centreline and antenna		280.844°	324.315°
	Distance (m)	44.10 m	43.23 m
Calculated Antenna	Easting	366332.69	366350.78
Coordinates (Local Datum)	Northing	5594083.30	5594110.11
	Latitude (ϕ)	-039° 47' 33.77" S	-039° 47' 32.92" S
	Longitude (λ)	145° 26' 19.74" E	145° 26' 20.52" E
Calculated Proposed Antenna Coords (WGS 84)	Latitude (ϕ)	-039° 47' 33.75" S	-039° 47' 32.89" S
	Longitude (λ)	145° 26' 19.75" E	145° 26' 20.53" E

6. POST RIG MOVE - OBSERVED ANTENNA COORD

Observed GPS Receiver Antenna Position in WGS84.	Latitude (ϕ)	-39 ° 47' 33.82 " S	-39 ° 47' 32.96 " S
	Longitude (λ)	145 ° 26' 19.68 " E	145 ° 26' 20.48 " E

Ensure agreement between calculated and observed coordinates. If **NO**, check calcs., antenna offsets. OK(?) (Y) / N

Surveyor : S. Armstrong Client Rep : B. Houston Date : 30-11-09

DOC: FSHY48-1
REV: 2

DATE: 8/1/01©

APPENDIX D
CLIENT SUPPLIED INFORMATION

4.0 Well Data

4.1 General License and Field Data

Well Name	Rockhopper-1
Well Type	Exploration
Field Name	Rockhopper
License/Permit	T/18P
Well Operator	Origin Energy Resources Ltd
Permit Operator	Origin Energy Resources Ltd
Partners	AWE Petroleum Ltd Cal Energy Gas (Australia) Ltd Arc (Bass Gas) Pty Ltd Innamincka Petroleum Ltd
Earliest Spud Date	September 2009
Latest Spud Date	November 2009
Total Depth	3140.4mTVDSS / 3166.4mTVDRT / 3486.6mMDRT
Well Type	Deviated
Water Depth	76m MSL

4.2 Surface Location

Spheroid and Datum	GDA94
Latitude	39° 47’ 34.07” S
Longitude	145° 26’ 21.55” E
Projection	UTM 55
Easting	366 376m
Northing	5 594 075m
Surface Tolerance	10m radius, centred on proposed well location

4.3 Target Location

Top Primary Reservoir Northing	5 594 724.50m
Top Primary Reservoir Easting	366 351.97m
Total Depth Northing	5 594 970.50m
Total Depth Easting	366 342.84m
Projection	UTM 55
Target Radius – Reservoir / TD	50m North / 100m South
Primary Target	Intra EVCM sands (*Lower L. balmei*)
Secondary Target	E1 horizon sands (*Lower M. diversus*)

APPENDIX 14: CASING & CEMENTING REPORTS

HALLIBURTON CEMENTING
END OF WELL REPORT

Prepared For: Australian Drilling Associates Pty Ltd

Well Name: Rockhopper 1 / ST1

Permit: P/L 0153

Location: Bass Straight

Rig: Kan Tan IV

Date: 6th March 2010

Revision: 0

Submitted by: Dave Webb
Technical Professional
Cementing

HALLIBURTON

Halliburton Australia Pty Ltd

END OF WELL REPORT

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1.0 WELL REVIEW

1.1 Cementing Event Summary

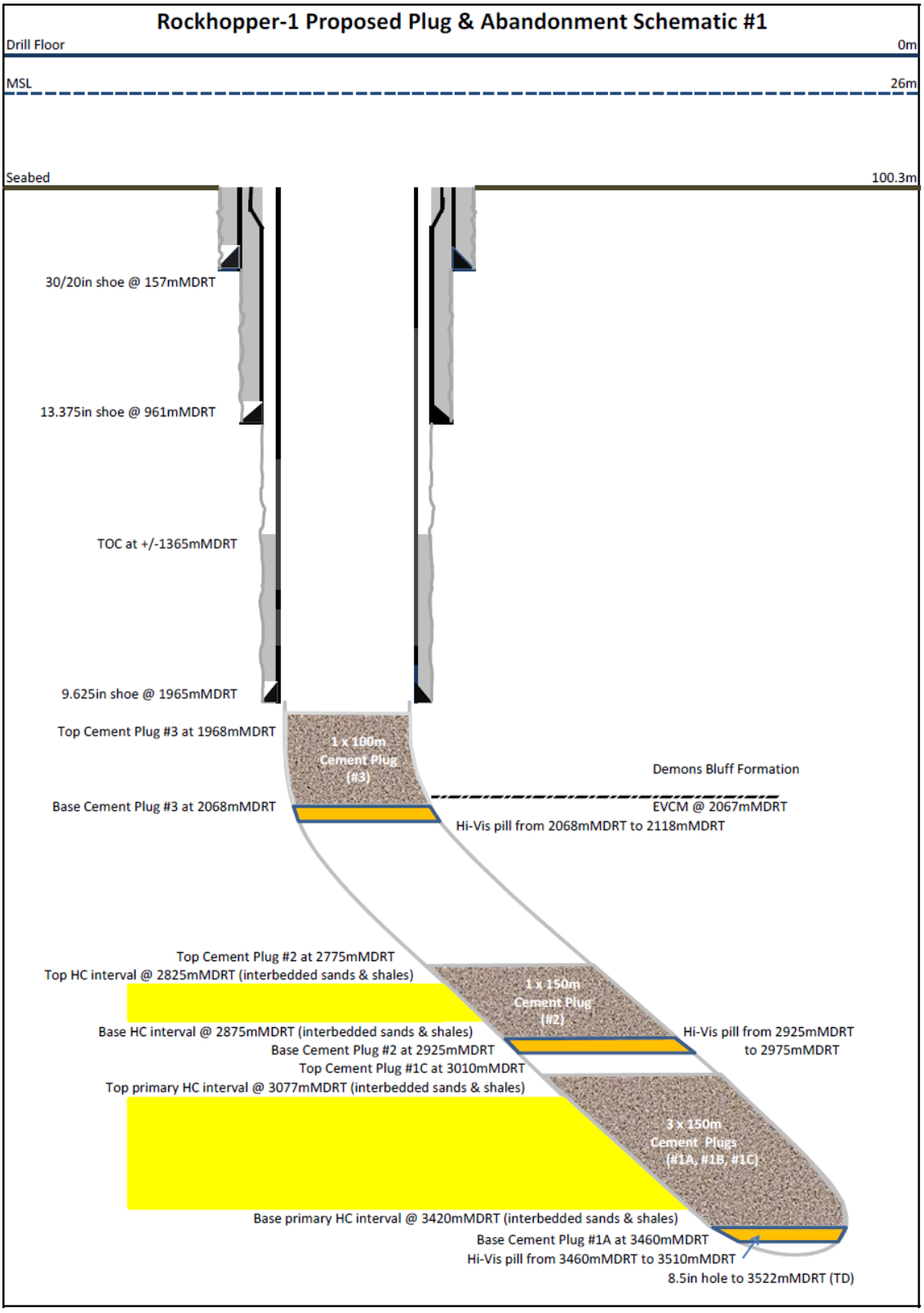
Event Date	Event Description
1/12/2009	**Cement 30" Conductor Casing**: 50 bbl seawater with MICA followed by 265 bbls 15.9ppg Class G slurry with 1%bwoc $CaCl_2$ slurry mixed with sea water
5/12/2009	**Cement 13 $^3/_8$" Surface Casing**: 50 bbl seawater with MICA followed by 470 bbls of 11.5ppg Class G slurry with 23gal/10bbl Econolite Lead Slurry 65 bbls of 15.8 ppg Class G slurry with 10gal/10bbl Halad 413L Tail Slurry
13/12/2009	**9 $^5/_8$" Intermediate Casing**:81bbl of 12.5ppg lead slurry. 47bbl 15.8ppgTail Slurry
6/1/2010	**Plug 1** A/B/C– TOC 2990 mMD 3 X 38 bbl of 15.8ppg Class G slurry with 10 gal/10bblMF SCR-100L
7/1/2010	**Plug 2** – TOC 2775 mMD 38 bbl of 15.8ppg Class G slurry 10 gal/10bblMF SCR-100L
7/1/2010- 10/1/2010	**Plug 3a/b/c** –TOC 1918 mMD 25 bbl of 16.5ppg Class G slurry with 5gal/10bbl CFR-3L and 5gal/10bbl SCR 100L. 40 bbl of 15.8ppg Class G slurry with 5gal/10bbl SCR 100L. 28bbl of 15.8ppg Class G slurry with 5gal/10bbl SCR 100L
15/2/2010	**Plug 1A/B/C** TOC 3002m 3 X 40 bbl of 15.8ppg Class G slurry with 10 gal/10bblMF SCR-100L
16/2/2010	**Plug 2** – TOC 2765 mMD 38 bbl of 15.8ppg Class G slurry 10 gal/10bblMF SCR-100L
16/2/2010 - 17/2/2010	**Plug 3a/b** – TOC 1965 mMD 28.85 bbl of 15.8ppg Class G slurry 4 gal/10bblMF SCR-100L 18.0 bbl of 15.8ppg Class G slurry 4 gal/10bblMF SCR-100L
20/2/2010	**Plug 4** – TOC 100.3 mMD 122 bbl of 15.9ppg Class G slurry 1%BWOC CaCl2 mixed with seawater.

1.2 Lessons Learnt

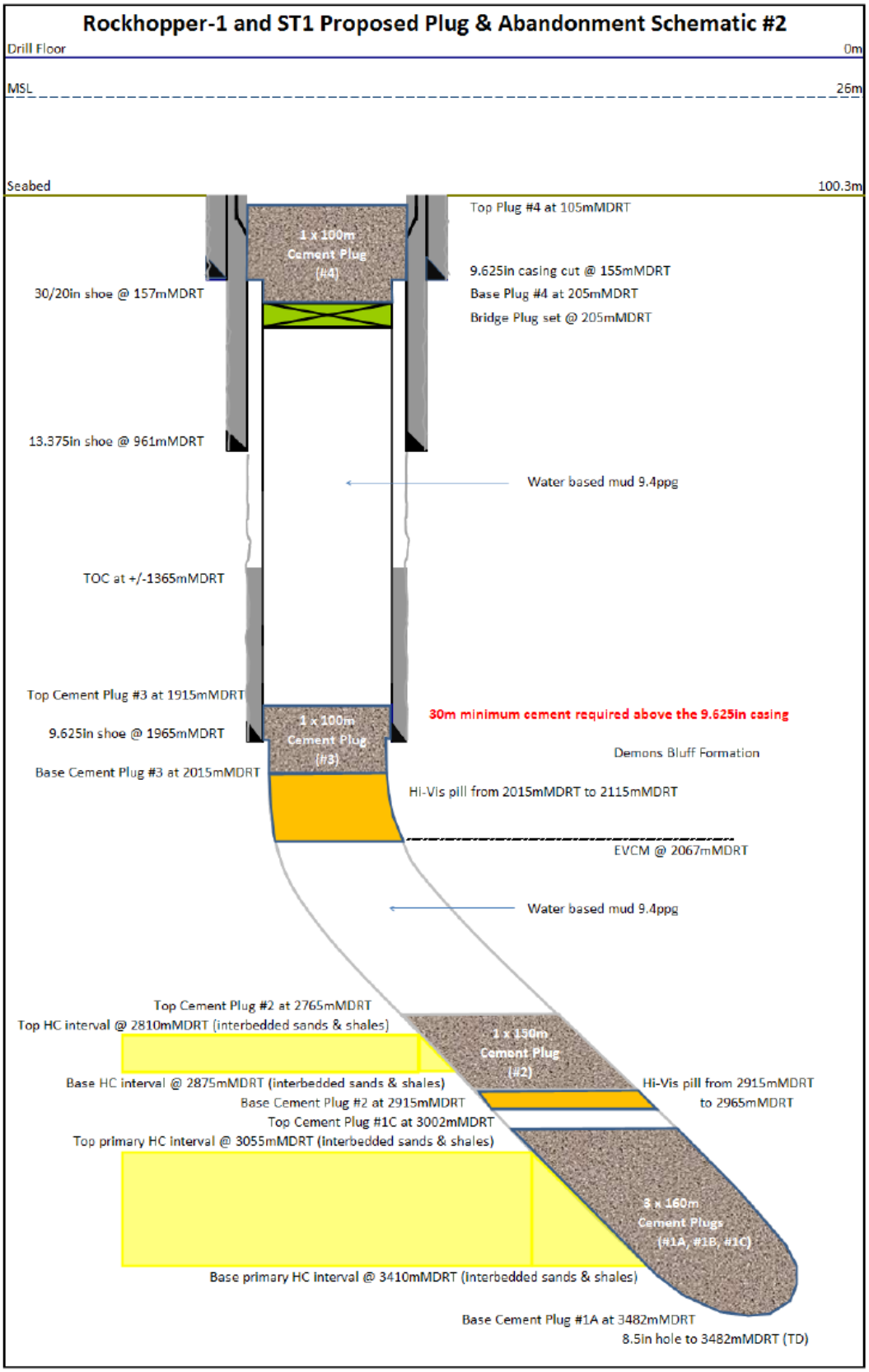
- Cement Heads requires a swivel to be attached to speed up rig up
- 11.5ppg lead slurry on the 13 3/8" casing worked well with returns seen at sea floor
- Increase Hivis pill at 9 5/8 shoe for plugs, Increase cement volume excess for 9 5/8 shoe plug.See KOP review for more details

1.3 Well Schematic

1.3.1 Rockhopper 1



1.3.2 Rockhopper 1 ST1



2.0 CEMENT 30" CONDUCTOR CASING

2.1 Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was planned to be performed using ABC Class G cement with 1% Calcium chloride pre-hydrated in the mixwater in the pits. Cement TOC – 100.3mMD

- Casing setting depth – 157 mMD
- Total Slurry volume pumped – 265 bbl
- Displacement volume – 110 bbl
- Cement returns were seen @ seafloor.

2.2 Job Logs

PERSONELL							
PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE hrs	PERSONNEL / EXPOSURE hrs
00408437	David Fernandez	24	00386793	Robert Bridgeman	24		

EQUIPMENT					
SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT	5			

CEMENT DESIGN

Single			
DENSITY	15.9ppg	WATER	5.16gal/sk
YIELD	1.17cuft/ft	MIX FLUID	5.20gal/sk
WATER SOURCE	Seawater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk		
Total Cement Used	1271sks		
Estimated TOC	102m		

Additive	Concentration	Total Used
Calcium Chloride	1 %BWOC	25sks
NF-6	0.125 gal/10bbl	5gals

JOB LOGS

DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
1.12.2009	18:55					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	19:15					Make PA Announcement
	19:18	5			1	Pump 5 bbls Sea Water Spacer
	19:22		1000			Test Surface Lines to 1000 psi
	19:28	25			1.5	Pump 25 bbls Sea Water Spacer
	19:38	20			2	Pump 20bbls with Mica
	19:57	265			4.5	Mix & Pump 265bbls CMT slurry @ 15.9ppg, with 160bbls Mix Water, 1.17 cuft, 5.20gps
	20:57	110			6	Displace CMT with 110bbls Sea Water
	20:22					Bleed off Floats Holding
	20:50					End job, Sign off permits
END OF JOB LOGS						

2.3 CSS

CUSTOMER SATISFACTION SURVEY

Sales 0	**Line Item:** 0	
Customer: ADA		**Job Type (BOM):** Pumping/Pr
Customer Rep./Phone: Bryan Houston		**API / UWI: (leave blank if unknown)** 0
Well Name: Rockhopper-1		**Well Number:** 0
Well Type: Gas & Oil	**Well Country:** Australia	
H2S 0	**Well State:** 0	**Well County:** 0

Dear Customer,

We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	**The date the survey was conducted**	
Survey Interviewer	**The survey interviewer is the person who initiated the survey.**	
Customer Participation	**Did the customer partipcipate in this survey? (Y/N)**	
Customer Representative	**Enter the Customer representative name**	
HSE	**Was our HSE performance satisfactory? Circle Y or N**	
Equipment	**Were you satisfied with our Equipment? Circle Y or N**	
Personnel	**Were you satisfied with our people? Circle Y or N**	
Customer Comment		
Job DVA	**Did we provide job DVA above our normal service today? Circle Y or N**	
Time	**Please enter hours in decimal format to nearest quarter hour.**	
Other	**Enter short text for other efficiencies gained.**	
Customer Initials	**Customer's Initials**	
Please provide details		

CUSTOMER SIGNATURE

3.0 CEMENT 13 3/8" SURFACE CASING

3.1 Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was planned to be performed using ABC Class G Lead cement with 23gal/10bbl Econolite and ABC Class G Tail cement with 10 gal/10bbl of Halad 413L. The. The job was completed without any issues.

- Cement TOC 100.3mMD.
- Casing Setting Depth – 961mMD
- Total Slurry volume pumped – 526 bbl
- Displacement volume – 410 bbl
- Cement returns were seen @ seafloor.

3.2 Job Logs

PERSONELL							
PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE hrs	PERSONNEL / EXPOSURE hrs
00408437	David Fernandez	24	00386793	Robert Bridgeman	24		

EQUIPMENT					
SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT	5			

WELL PROFILE		
NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
13.375in 68ppf N-80 BTC : 0m to 965m MD, m TVD	17.5in, 25 percent excess, 155m to 965m	30in, 309.7ppf, 0 to 155m

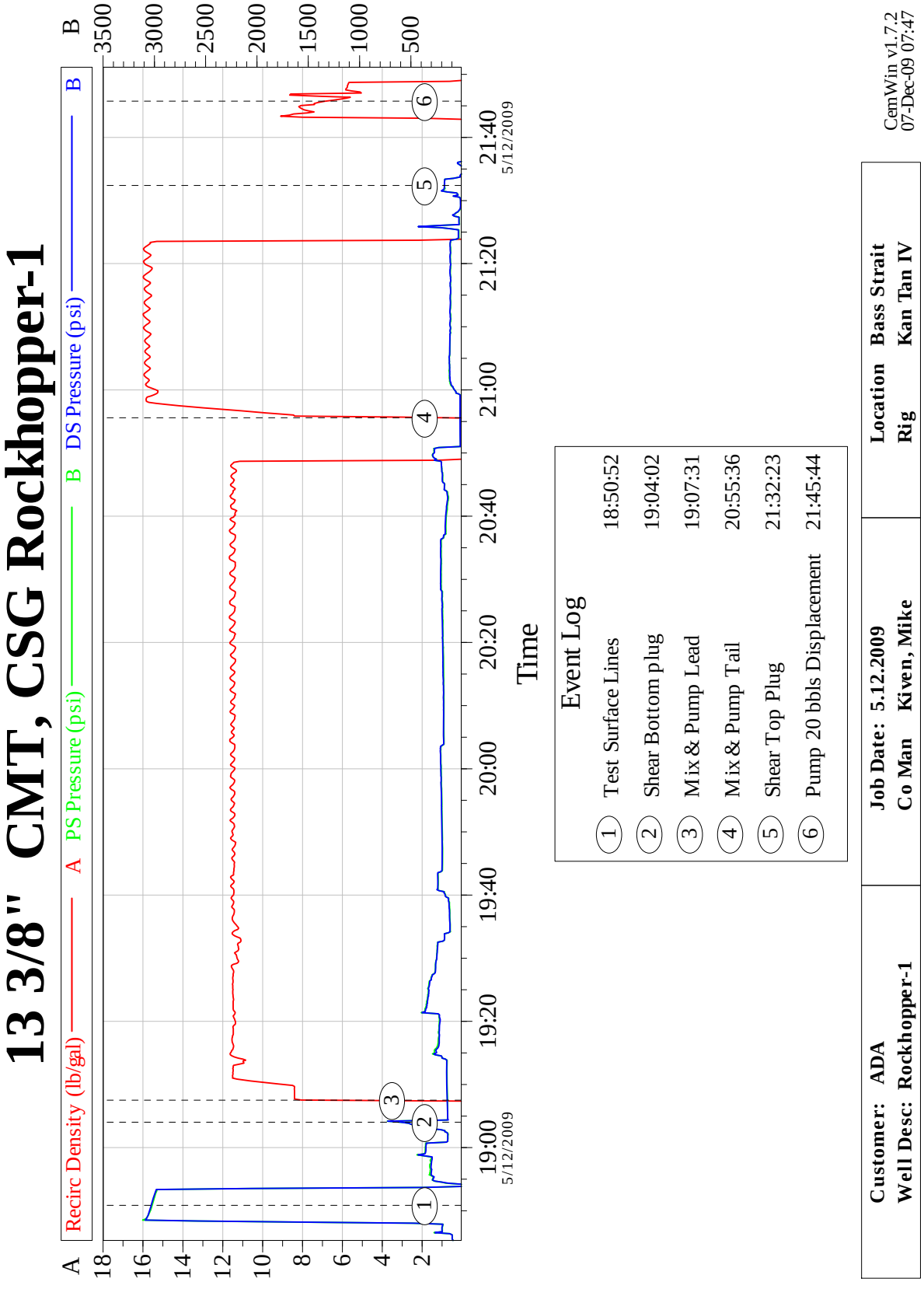
CEMENT DESIGN							
Lead				Tail			
DENSITY	11.5ppg	WATER	17.91gal/sk	DENSITY	15.8ppg	WATER	5.00gal/sk
YIELD	3.01cuft/ft	MIX FLUID	18.97gal/sk	YIELD	1.16cuft/ft	MIX FLUID	5.12gal/sk
WATER SOURCE	Seawater			WATER SOURCE	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			CEMENT TYPE	ABC Class 'G' at 94lb/sk		
Total Cement Used	858sks			Total Cement Used	323sks		
Estimated TOC	102m			Estimated TOC	845m		

Additive	Concentration	Total Used	Additive	Concentration	Total Used
Econolite Liquid	23 gal/10bbl	942sks	Halad-413L	10 gal/10bbl	40gals
NF-6	0.125 gal/10bbl	10gals	NF-6	0.125 gal/10bbl	1gals

JOB LOGS

DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
5.12.2009						Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
						Make PA Announcement
	18:40	10			2	Pump 10 bbls Sea Water Spacer
	18:45		3000			Test Surface Lines to 3000 psi
	18:50	30			2	Pump 30 bbls Sea Water Spacer
	18:52					Release Ball
	18:55		1100			Shear out Bottom Plug
	19:10	470			4	Mix & Pump 470bbls CMT slurry @ 11.5ppg, with 387bbls Mix Water, 3.01 cuft,
		66			4	Mix & Pump 66bbls CMT slurry @ 15.8ppg, with 39.5bbls Mix Water, 1.17 cuft,
						Drop Dart
			400			Shear out Top plug
		20			6	Displace with 20bbls of Sea Water
						Hand over to Rig to Finish Displacement
			2500			Test CSG, to 2500psi hold for 10 min
END OF JOB LOGS						

3.3 Job plots


13 3/8" CMT, CSG Rockhopper-1
Recirc Density (lb/gal)
A
PS Pressure (psi)
B
DS Pressure (psi)
B
A
Time
19:00
5/12/2009
19:20
19:40
20:00
20:20
20:40
21:00
21:20
21:40
5/12/2009
Event Log
1 Test Surface Lines 18:50:52
2 Shear Bottom plug 19:04:02
3 Mix & Pump Lead 19:07:31
4 Mix & Pump Tail 20:55:36
5 Shear Top Plug 21:32:23
6 Pump 20 bbls Displacement 21:45:44
Customer: ADA
Well Desc: Rockhopper-1
Job Date: 5.12.2009
Co Man Kiven, Mike
Location Bass Strait
Rig Kan Tan IV
CemWin v1.7.2
07-Dec-09 07:47

3.4 CSS

HALLIBURTON

CUSTOMER	SALES ORDER No.	DATE
ADA	0	5.12.2009

CEMENT/PUMPING JOB SUMMARY

LL	LOCATION/FIELD NAME	COUNTRY	HES REP	CUSTOMER REP	WELL TYPE
kkhopper-1	Bass Strait	Australia	David Fernandez	Mike Lanzar	Gas & Oil Dev
B TYPE		JOB PURPOSE CODE		BDA	RIG
mping/Pressure testing		INTERMEDIATE CASING 7522		Perth	Kan Tan IV

USTOMER SATISFACTION SURVEY

Sales
0
Customer:
ADA
Customer Rep./Phone:
Mike Lanzar
Well Name:
Rockhopper-1
Well Type:
Gas & Oil
H2S
0

Line Item:
0

Well Country:
Australia
Well State:
0

Job Type (BOM):
Pumping/Pr
API / UWI: (leave blank if unknown)
0
Well Number:
0

Well County:
0

Dear Customer,

We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

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CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	The date the survey was conducted	8.12.09
Survey Interviewer	The survey interviewer is the person who initiated the survey.	
Customer Participation	Did the customer partipcipate in this survey? (Y/N)	Yes
Customer Representative	Enter the Customer representative name	M. Lanzer
HSE	Was our HSE performance satisfactory? Circle Y or N	Y
Equipment	Were you satisfied with our Equipment? Circle Y or N	Y
Personnel	Were you satisfied with our people? Circle Y or N	Y
Customer Comment	Job performed well Thank you	
Job DVA	Did we provide job DVA above our normal service today? Circle Y or N	
Time	Please enter hours in decimal format to nearest quarter hour.	
Other	Enter short text for other efficiencies gained.	
Customer Initials	Customer's Initials	
Please provide details		

CUSTOMER SIGNATURE Michael Lanzer M. Lanzer

4.0 CEMENT 9 5/8" SURFACE CASING

4.1 Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was planned to be performed using ABC Class G Lead cement with 35gal/10bbl Gascon 469, 15 gal/10bbl Halad 413L and 3gal/10bbl SCR 100L and ABC Class G Tail cement with 30 gal/10bbl of Halad 413L, 10gal/10bbl Gascon 469, 3gal/10bbl CFR 3L and 2gal/10bbl SCR 100L. The. The job was completed without any issues.

- Cement TOC 1365mMD.
- Casing Setting Depth – 1965mMD
- Total Slurry volume pumped – 128 bbl
- Displacement volume – 434 bbl

4.2 Job Logs

PERSONELL							
PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE hrs	PERSONNEL / EXPOSURE hrs
#N/A	Daniel West	24	00386793	Robert Bridgeman	24		

EQUIPMENT					
SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT	5			

WELL PROFILE		
NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
Non Tapered Casing , Conventional, 24.658m shoe track		
9.625in 68ppf L80 VAM Top : 0m to 965m MD, m TVD	12.25in, 10 percent excess, 961m to 1972m	13.375in, 68ppf, 0 to 961m
FOR PLUG AND LINER JOBS PLEASE INDICATE WORKSTRING	5in ppf Drill Pipe with in of in ppf Stinger	

CEMENT DESIGN							
	Lead				Tail		
DENSITY	12.5ppg	WATER	10.72gal/sk	DENSITY	15.8ppg	WATER	4.62gal/sk
YIELD	2.11cuft/ft	MIX FLUID	12.28gal/sk	YIELD	1.16cuft/ft	MIX FLUID	5.18gal/sk
WATER SOURCE	Drillwater			WATER SOURCE	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			CEMENT TYPE	ABC Class 'G' at 94lb/sk		
Total Cement Used	214sks			Total Cement Used	224sks		
Estimated TOC	1364.75m			Estimated TOC	1764.75m		

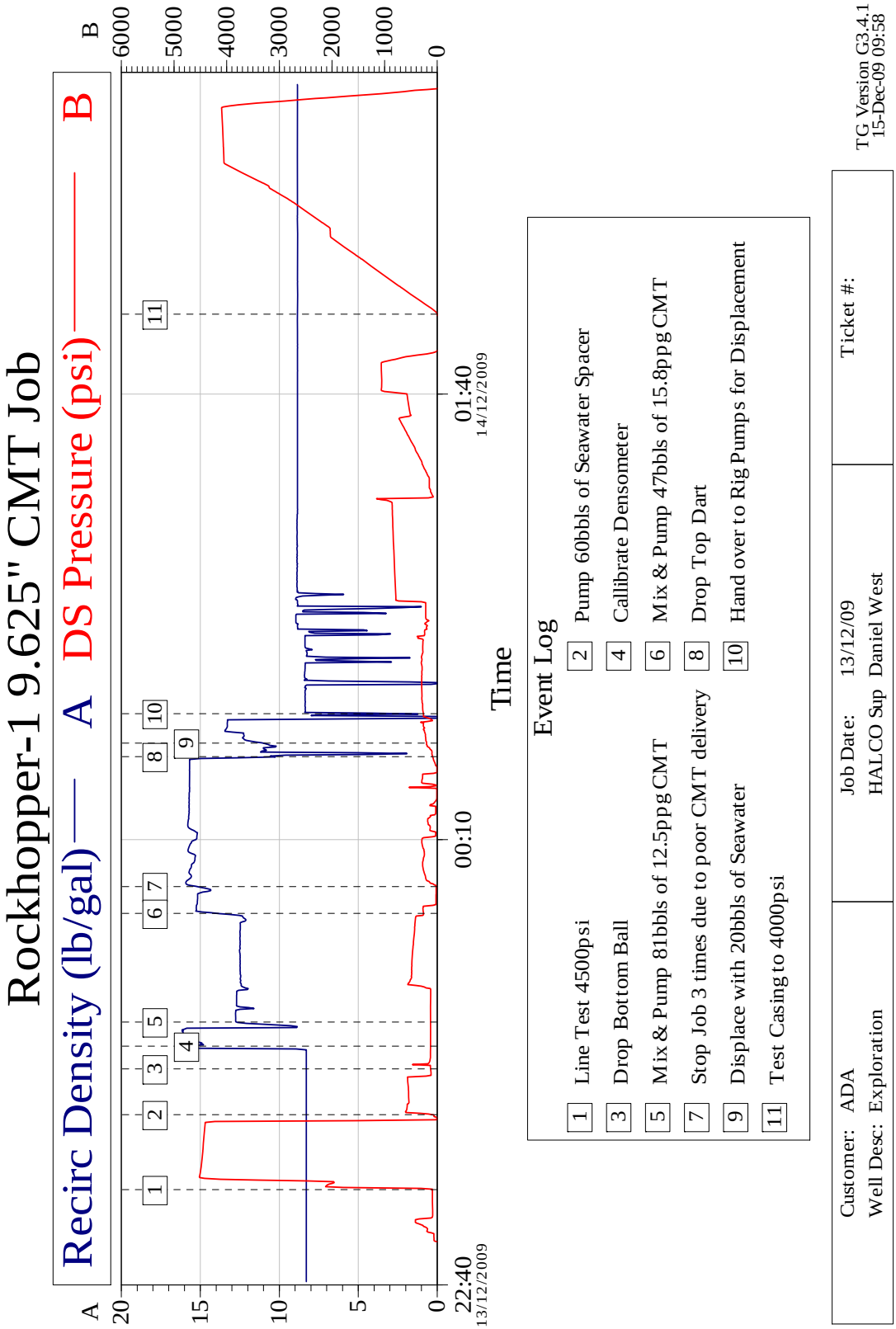
Additive	Concentration	Total Used	Additive	Concentration	Total Used
Gascon	35 gal/10bbl	217gals	Halad-413L	30 gal/10bbl	81gals
Halad 413L	15 gal/10bbl	93gals	Gascon	10 gal/10bbl	27gals
SCR-100L	3 gal/10bbl	19gals	CFR-3L	3 gal/10bbl	8.1gals
			SCR-100L	2 gal/10bbl	5.4gals

JOB LOGS

DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
13/12/2009						Hold JSA on the floor
						Hydraulic powerpak tripped out. Electrician had to reset it.
	22:59					Line Test to 4500psi
	23:14	60bbls	430psi		6bpm	Pump 60bbls of Seawater Spacer
	23:23					Drop Bottom Ball
	23:28					Callibrate Desometer
	23:33	81bbls	545psi		6bpm	Mix & Pump 81bbls of 12.5ppg lead CMT
	23:55	47bbls	387psi		4bpm	Mix & Pump 47bbls of 15.8ppg Tail CMT
	0:03					Stop job 3 times due to poor cement delivery
	0:26					Drop Top Dart
	0:29	20bbls	340psi		8bpm	Displace with 20bbls of Seawater
	0:35	434bbls				Rig pumps to displace with 434bbls of Mud
	1:56		4000psi		0.251	Casing Test

END OF JOB LOGS

4.3 Job plots


Rockhopper-1 9.625" CMT Job
Recirc Density (lb/gal) —— A
DS Pressure (psi) —— B
A
B
20
15
10
5
0
6000
5000
4000
3000
2000
1000
0
22:40
13/12/2009
00:10
01:40
14/12/2009
Time
1 2 3 4 5 6 7 8 9 10 11
Event Log
1 Line Test 4500psi
2 Pump 60bbls of Seawater Spacer
3 Drop Bottom Ball
4 Calibrate Densometer
5 Mix & Pump 81bbls of 12.5ppg CMT
6 Mix & Pump 47bbls of 15.8ppg CMT
7 Stop Job 3 times due to poor CMT delivery
8 Drop Top Dart
9 Displace with 20bbls of Seawater
10 Hand over to Rig Pumps for Displacement
11 Test Casing to 4000psi
Customer: ADA
Well Desc: Exploration
Job Date: 13/12/09
HALCO Sup Daniel West
Ticket #:
TG Version G3.4.1
15-Dec-09 09:58

4.4 CSS

CUSTOMER SATISFACTION SURVEY

Sales	**Line Item:**	
0	0	
Customer:		**Job Type (BOM):**
ADA		Pumping/Pr
Customer Rep./Phone:		**API / UWI: (leave blank if unknown)**
Mike Lanzar		0
Well Name:		**Well Number:**
Rockhopper-1		0
Well Type:	**Well Country:**	
Gas & Oil	Australia	
H2S	**Well State:**	**Well County:**
0	0	0

Dear Customer,

We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	**The date the survey was conducted**	
Survey Interviewer	**The survey interviewer is the person who initiated the survey.**	
Customer Participation	**Did the customer partipcipate in this survey? (Y/N)**	
Customer Representative	**Enter the Customer representative name**	
HSE	**Was our HSE performance satisfactory? Circle Y or N**	
Equipment	**Were you satisfied with our Equipment? Circle Y or N**	
Personnel	**Were you satisfied with our people? Circle Y or N**	
Customer Comment		
Job DVA	**Did we provide job DVA above our normal service today? Circle Y or N**	
Time	**Please enter hours in decimal format to nearest quarter hour.**	
Other	**Enter short text for other efficiencies gained.**	
Customer Initials	**Customer's Initials**	
Please provide details		

CUSTOMER SIGNATURE

5.0 PLUG BACK TO PREPARE FOR ST1

5.1 Plug-1 A @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 bbl drill water + 183 bbl mud = 186.5 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

5.2 Plug-1 B @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 bbl drill water + 173 bbl mud = 176.5 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

5.3 Plug-1 C @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 bbl drill water + 164 bbl mud = 167.5 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

5.4 Plug-2 @ 2925m Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 bbl drill water + 151 bbl mud = 154.5 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

5.5 Plug-3 KOP @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues. Due to large washout at shoe no cement was tagged which resulted in a second attempt at setting the plug. For more detail see KOP review report.

- Plug displaced with 3.5 drill water + 106bbl mud = 109.5bbl
- Total Slurry volume pumped –25bbl of 16.5ppg slurry.

5.6 Plug-3b KOP @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues. Due to large washout at shoe cement was tagged short which resulted in a thrid attempt at setting the plug. For more detail see KOP review report.

- Plug displaced with 3.5 drill water + 102bbl mud = 105.5bbl
- Total Slurry volume pumped –40bbl of 15.8ppg slurry.

5.7 Plug-3c KOP @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues. Due to large washout at shoe no cement was tagged which resulted in a second attempt at setting the plug. For more detail see KOP review report.

- Plug displaced with 106bbl mud
- Total Slurry volume pumped –28bbl of 15.8ppg slurry.
-

5.8 Job Logs

PERSONELL

PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE	hrs	PERSONNEL / EXPOSURE	hrs
00408437	David Fernandez	24	#N/A	Gavin Hick	24				

EQUIPMENT

SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT	10			

WELL PROFILE

NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
Non Tapered Casing , SSR, m shoe track		
13.375in 68ppf N-80 BTC : 0m to 965m MD, m TVD	17.5in, 25 percent excess, 155m to 965m	30in, 309.7ppf, 0 to 155m
9.625in 47ppf : 0m to 1965m MD, m TVD		

CEMENT DESIGN

Single				Single				Single			
DENSITY	15.8ppg	**WATER**	5.01gal/sk	**DENSITY**	15.8ppg	**WATER**	5.01gal/sk	**DENSITY**	15.8ppg	**WATER**	5.01gal/sk
YIELD	1.16cuft/ft	**MIX FLUID**	5.12gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.12gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	15.80gal/sk
WATER SOURCE	Drillwater			**WATER SOURCE**	Drillwater			**WATER SOURCE**	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk		
Total Cement Used	184sks			**Total Cement Used**	184sks			**Total Cement Used**	184sks		
Estimated TOC	3310m			**Estimated TOC**	3150m			**Estimated TOC**	2990m		
Additive	**Concentration**	**Total Used**		**Additive**	**Concentration**	**Total Used**		**Additive**	**Concentration**	**Total Used**	
SCR-100L	8.5 gal/10bbl	25gals		SCR-100L	8.5 gal/10bbl	25gals		SCR-100L	8.5 gal/10bbl	25gals	
NF-6	0.125 gal/10bbl	1gals		NF-6	0.125 gal/10bbl	1gals		NF-6	0.125 gal/10bbl	1gals	

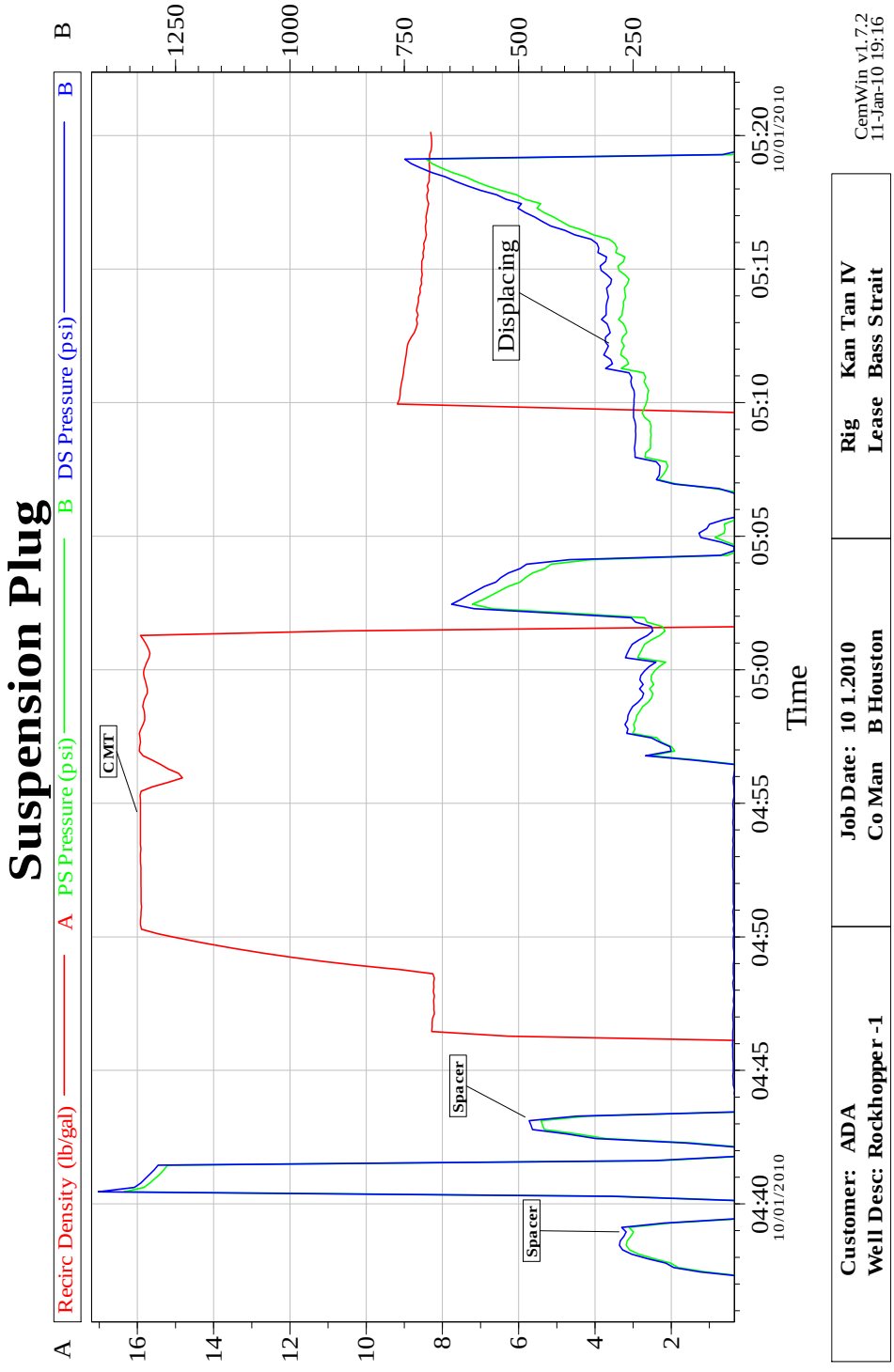
Single				Single				Single			
DENSITY	15.8ppg	**WATER**	5.06gal/sk	**DENSITY**	16.5ppg	**WATER**	4.27gal/sk	**DENSITY**	15.8ppg	**WATER**	5.06gal/sk
YIELD	1.16cuft/ft	**MIX FLUID**	5.11gal/sk	**YIELD**	1.06cuft/ft	**MIX FLUID**	4.38gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.11gal/sk
WATER SOURCE	Drillwater			**WATER SOURCE**	Drillwater			**WATER SOURCE**	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk		
Total Cement Used	184sks			**Total Cement Used**	134sks			**Total Cement Used**	211sks		
Estimated TOC	2775m			**Estimated TOC**	1975m			**Estimated TOC**	1918m		
Additive	**Concentration**	**Total Used**		**Additive**	**Concentration**	**Total Used**		**Additive**	**Concentration**	**Total Used**	
SCR-100L	4 gal/10bbl	12gals		SCR-100L	5gal gal/10bbl	10gals		SCR-100L	4 gal/10bbl	10gals	
NF-6	0.125 gal/10bbl	1gals		NF-6	0.125 gal/10bbl	1gals		NF-6	0.125 gal/10bbl	1gals	
				CFR-3L	5 gal/10bbl	10gals					

JOB LOGS

DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
6.1.2010	19:00					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	19:30					Make PA Announcement
	19:35	10			2	Pump 10 bbls Fresh Water Spacer
	19:57		1000			Test Surface Lines to 1000 psi
	20:10	38			4	Mix & Pump 38bbls CMT @ 15.8ppg, 184 sks, with 22.6bbls mix water
	20:25	3.5			2	Pump 3.5 bbls Drill Water behind
	20:28	183	750		7	Displace with 183bbls
	20:55					Bleed off Check Returnes
	20:45					Make PA Announcement
	21:25	10			2	Pump 10 bbls Fresh Water Spacer
	21:50		1000			Test Surface Lines to 1000 psi
	22:05	38			4	Mix & Pump 38bbls CMT @ 15.8ppg, 184 sks, with 22.6bbls mix water
	22:20	3.5			2	Pump 3.5 bbls Drill Water behind
	22:22	183	750		7	Displace with 173bbls
	22:40					Bleed off Check Returnes

7.1.2010	0:02					Make PA Announcement
	0:04	10			2	Pump 10 bbls Fresh Water Spacer
	0:08		1000			Test Surface Lines to 1000 psi
	0:16	38			4	Mix & Pump 38bbls CMT @ 15.8ppg, 184 sks, with 22.6bbls mix water
	0:30	3.5			2	Pump 3.5 bbls Drill Water behind
	0:32	183	750		7	Displace with 164bbls
	0:48					Bleed off Check Returnes
	2:15					Make PA Announcement
	2:17	10			2	Pump 10 bbls Fresh Water Spacer
	2:19		1000			Test Surface Lines to 1000 psi
	2:30	38			4	Mix & Pump 38bbls CMT @ 15.8ppg, 184 sks, with 22.6bbls mix water
	2:43	3.5			2	Pump 3.5 bbls Drill Water behind
	2:44	183	750		7	Displace with 151bbls
	2:58					Bleed off Check Returnes
7.1.2010	13:50					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	14:00					Make PA Announcement
	14:02	10			2	Pump 10 bbls Fresh Water Spacer
	14:03		1000			Test Surface Lines to 1000 psi
	14:13	38			4	Mix & Pump 25bbls CMT @ 16.5ppg, 134 sks, with 15bbls mix water
	14:22	3.5			2	Pump 3.5 bbls Drill Water behind
	14:22	106	750		7	Displace with 106bbls
	14:41					Bleed off Check Returnes
8.1.2010	19:20					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	19:45					Make PA Announcement
	19:50	10			2	Pump 10 bbls Fresh Water Spacer
	19:53		1000			Test Surface Lines to 1000 psi
	20:08	40			4	Mix & Pump 40bbls CMT @ 15.8ppg, 211 sks, with 22.6bbls mix water
	20:24	2.8			2	Pump 2.8 bbls Drill Water behind
	20:24	102	500		7	Displace with 102bbls
	20:38					Bleed off Check Returnes
10.1.2010	4:15					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	4:32					Make PA Announcement
	4:33	5			2	Pump 5 BBLs Spacer
	4:35		1000			Test Surface Lines to 1000psi
	4:37	5			2	Pump 5 BBLs Spacer
	4:50	28	400		4	Mix & Pump 28bbls CMT @ 15.8ppg, 135 sks, with 16.5bbls mix water
	5:02	106	750		7	Displace with 106 bbls Mud
	5:12					Bleed Off
END OF JOB LOGS						

5.9 Job Plot


Suspension Plug
Recirc Density (lb/gal)
A
PS Pressure (psi)
B
DS Pressure (psi)
B
A
16
14
12
10
8
6
4
2
1250
1000
750
500
250
CMT
Spacer
Spacer
Displacing
04:40
10/01/2010
04:45
04:50
04:55
05:00
05:05
05:10
05:15
05:20
10/01/2010
Time
CemWin v1.7.2
11-Jan-10 19:16
Customer: ADA
Well Desc: Rockhopper -1
Job Date: 10 1.2010
Co Man B Houston
Rig Kan Tan IV
Lease Bass Strait

5.10 CSS

CUSTOMER SATISFACTION SURVEY

Sales	**Line Item:**	
0	0	
Customer:		**Job Type (BOM):**
ADA		Pumping/Pr
Customer Rep./Phone:		**API / UWI: (leave blank if unknown)**
Bryan Houston		0
Well Name:		**Well Number:**
Rockhopper-1		0
Well Type:	**Well Country:**	
Gas & Oil	Australia	
H2S	**Well State:**	**Well County:**
0	0	0

Dear Customer,

We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	**The date the survey was conducted**	
Survey Interviewer	**The survey interviewer is the person who initiated the survey.**	
Customer Participation	**Did the customer partipcipate in this survey? (Y/N)**	
Customer Representative	**Enter the Customer representative name**	
HSE	**Was our HSE performance satisfactory? Circle Y or N**	
Equipment	**Were you satisfied with our Equipment? Circle Y or N**	
Personnel	**Were you satisfied with our people? Circle Y or N**	
Customer Comment		
Job DVA	**Did we provide job DVA above our normal service today? Circle Y or N**	
Time	**Please enter hours in decimal format to nearest quarter hour.**	
Other	**Enter short text for other efficiencies gained.**	
Customer Initials	**Customer's Initials**	
Please provide details		

CUSTOMER SIGNATURE

6.0 PLUG AND ABANDON

6.1 Plug-1 A @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 5 bbl drill water + 187 bbl mud = 193 bbl
- Total Slurry volume pumped –40bbl of 15.8ppg slurry.

6.2 Plug-1 B @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 5 bbl drill water + 177 bbl mud = 183 bbl
- Total Slurry volume pumped –40bbl of 15.8ppg slurry.

6.3 Plug-1 C @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 4 bbl drill water + 168 bbl mud = 172 bbl
- Total Slurry volume pumped –40bbl of 15.8ppg slurry.

6.4 Plug-2 @ 2915m Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3bbl drill water + 156 bbl mud = 159 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

6.5 Plug-3 @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues. Plug was tagged at 1980m requiring a second plug to be pumped.

- Plug displaced with 3.5 drill water + 105bbl mud = 108.5bbl
- Total Slurry volume pumped –28.8bbl of 15.8ppg slurry.

6.6 Plug-3a @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 drill water + 105bbl mud = 108.5bbl
- Total Slurry volume pumped –18bbl of 15.8ppg slurry.

6.7 Surface Plug- Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues..

- Plug displaced with 4 seawater
- Total Slurry volume pumped –122bbl of 15.9ppg slurry.

6.8 Job Logs

PERSONELL

PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE	hrs
#N/A	Jim Flockhart		#N/A	Gavin Hick		#N/A	Joel Scott			

EQUIPMENT

SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT		#N/A	Rigs BULK EQUIPMENT,Howco SFB	

WELL PROFILE

NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
Non Tapered Casing , , m shoe track		
13.375in 68ppf N-80 BTC : 0m to 965m MD, m TVD	8.5in, 0 percent excess, 1965m to 3482m, Caliper = 8.9 "	30in, 309.7ppf, 0 to 155m
9.625in 47ppf : 0m to 1965m MD, m TVD		

FOR PLUG AND LINER JOBS PLEASE INDICATE WORKSTRING 5in 19.5ppf Drill Pipe with 2.875in of 169in ppf Stinger

CEMENT DESIGN

Single				Single				Single			
DENSITY	15.8ppg	**WATER**	5.03gal/sk	**DENSITY**	15.8ppg	**WATER**	5.03gal/sk	**DENSITY**	15.8ppg	**WATER**	5.03gal/sk
YIELD	1.16cuft/ft	**MIX FLUID**	5.13gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.13gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.13gal/sk
WATER SOURCE	Drillwater			**WATER SOURCE**	Drillwater			**WATER SOURCE**	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk		
Total Cement Used	195sks			**Total Cement Used**	195sks			**Total Cement Used**	195sks		
Estimated TOC	3322m			**Estimated TOC**	3162m			**Estimated TOC**	3002m		

Additive	Concentration	Total Used	Additive	Concentration	Total Used	Additive	Concentration	Total Used
SCR-100L	8.5 gal/10bbl	25gals	SCR-100L	8.5 gal/10bbl	25gals	SCR-100L	8.5 gal/10bbl	25gals
NF-6	0.125 gal/10bbl	1gals	NF-6	0.125 gal/10bbl	1gals	NF-6	0.125 gal/10bbl	1gals

Single				Single @ shoe				Single @ shoe			
DENSITY	15.8ppg	**WATER**	5.03gal/sk	**DENSITY**	15.8ppg	**WATER**	5.07gal/sk	**DENSITY**	15.8ppg	**WATER**	5.07gal/sk
YIELD	1.16cuft/ft	**MIX FLUID**	5.13gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.12gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.12gal/sk
WATER SOURCE	Drillwater			**WATER SOURCE**	Drillwater			**WATER SOURCE**	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk		
Total Cement Used	195sks			**Total Cement Used**	119sks			**Total Cement Used**	87sks		
Estimated TOC	2765m			**Estimated TOC**	1915m			**Estimated TOC**	1915m		

Additive	Concentration	Total Used	Additive	Concentration	Total Used	Additive	Concentration	Total Used
SCR-100L	8.5 gal/10bbl	25gals	SCR-100L	4gal gal/10bbl	10gals	SCR-100L	4gal gal/10bbl	5gals
NF-6	0.125 gal/10bbl	1gals	NF-6	0.125 gal/10bbl	1gals	NF-6	0.125 gal/10bbl	1gals

Single			
DENSITY	15.9ppg	**WATER**	5.15gal/sk
YIELD	1.17cuft/ft	**MIX FLUID**	5.16gal/sk
WATER SOURCE	Seawater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk		

20/05/2009	7:00		
	8:20	3.3	210

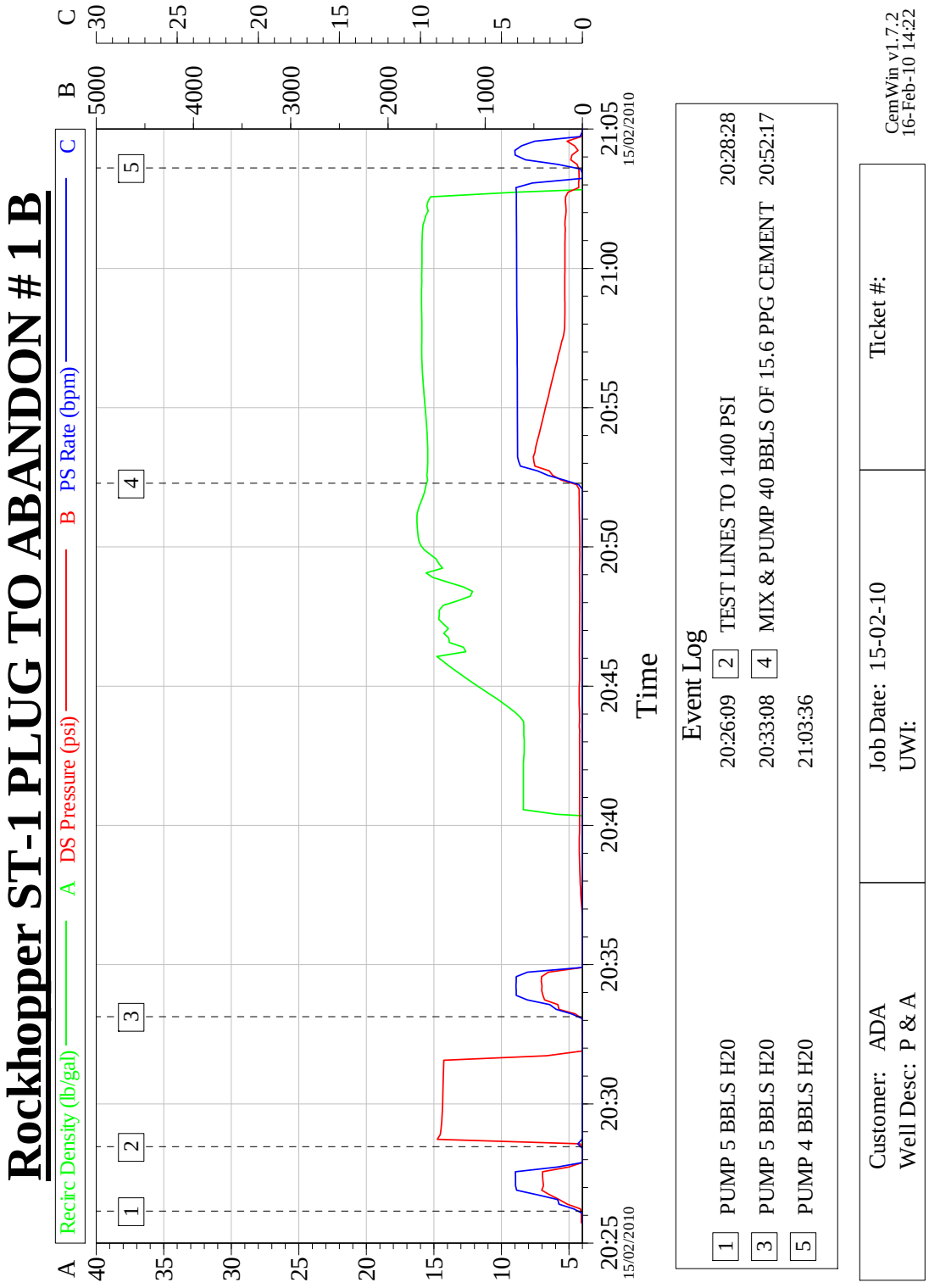
JOB LOGS

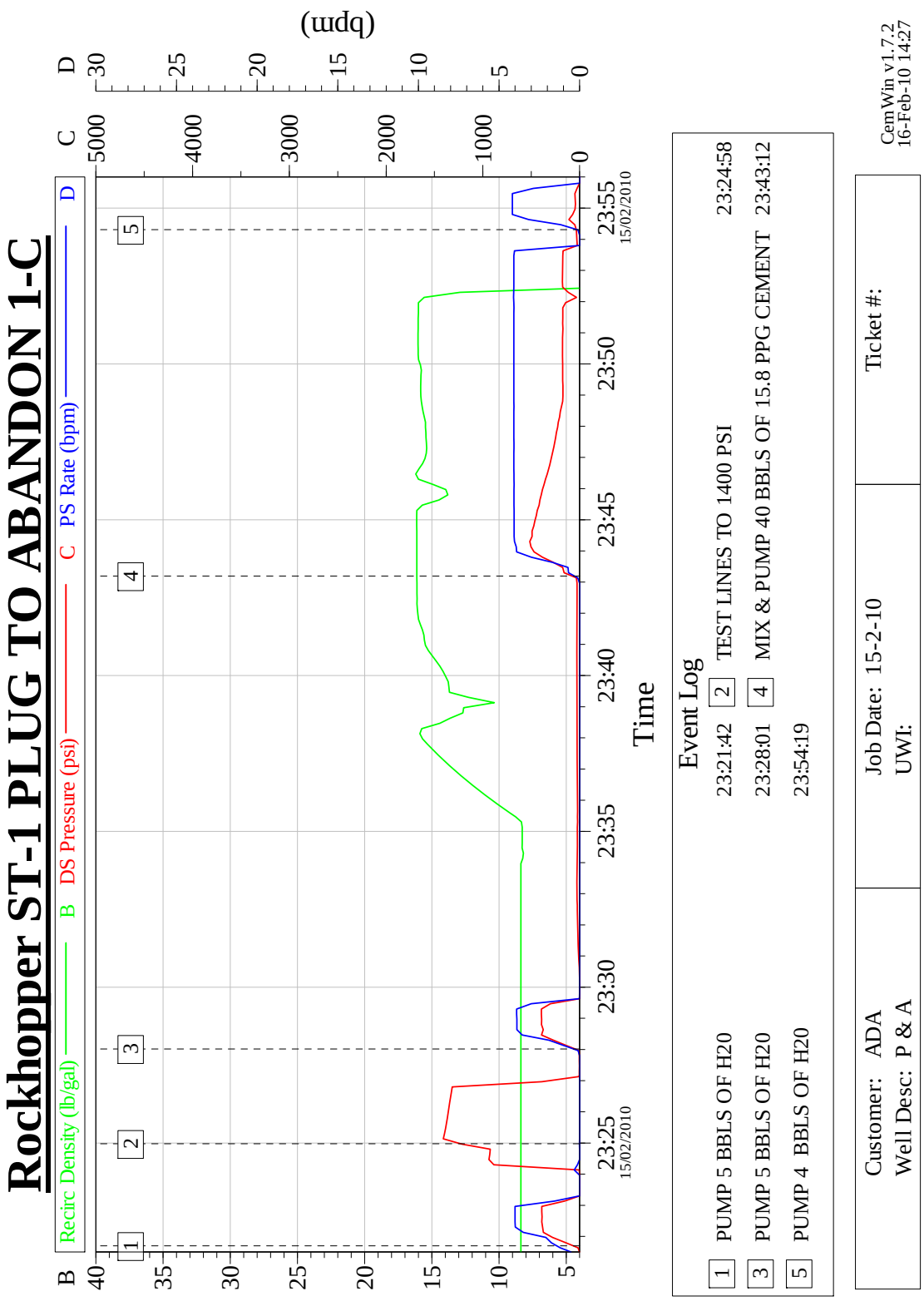
DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
15/02/2010						**PLUG # 1 A (3482m - 3322m) 8.5 inch open hole**
	16:30					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	16:40	5	295		4	Pump 5 bbls Fresh Water Spacer
	17:06	5	1450	290	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	17:31	40	550	290	4	Mix & Pump 40bbls CMT @ 15.8ppg, 195 sks, with 24 bbls mix water
	17:41	5	200		4	Pump 5 bbls Drill Water behind
	17:46	187			8	Hand over to rig to Displace with 187bbls of 9.3 ppg Mud
						PLUG # 1 B (3322m - 3162m) 8.5 inch open hole
	20:00					Hold JSA on the floor with all personell involved with cementing operations,
	20:26	5	425		4	Pump 5 bbls Fresh Water Spacer
	20:28	5	1450	400	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	20:52	40	450	180	4	Mix & Pump 40bbls CMT @ 15.8ppg, 195 sks, with 24 bbls mix water
	21:03	4	200		4	Pump 4 bbls Drill Water behind
	21:10	177			8	Hand over to rig to Displace with 177bbls of 9.3 ppg Mud
						PLUG # 1 C (3162m - 3002m) 8.5 inch open hole
	23:10					Safety Huddle
	23:21	5	375		4	Pump 5 bbls Fresh Water Spacer
	23:24	5	1450	365	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	23:28	40	500		4	Mix & Pump 40bbls CMT @ 15.8ppg, 195 sks, with 24 bbls mix water
	23:54	4			4	Pump 4 bbls Drill Water behind
	23:58	168			7	Hand over to rig to Displace with 168bbls of 9.3 ppg Mud

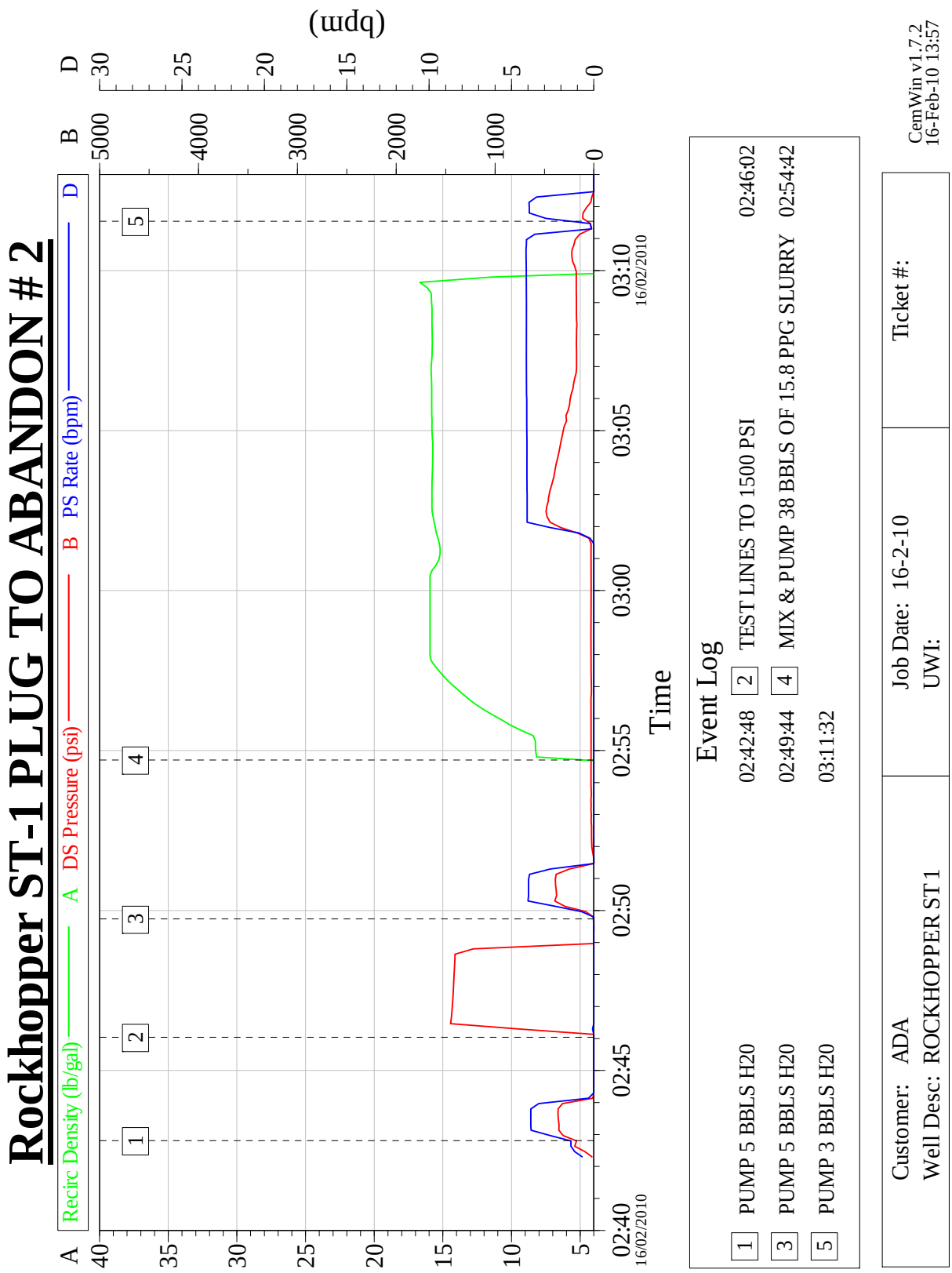
						PLUG # 2 (2915m - 2765m) 8.5 inch open hole
16/02/2010	2:30					Safety Huddle
	2:42	5	380		4	Pump 5 bbls Fresh Water Spacer
	2:46	5	1450	330	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	3:01	38	500		4	Mix & Pump 38bbls CMT @ 15.8ppg, 183 sks, with 22 bbls mix water
	3:11	3	180		4	Pump 3 bbls Drill Water behind
	3:16	156			7	Hand over to rig to Displace with 156bbls of 9.3 ppg Mud
						PLUG # 3 (2015m - 1915m) 9.625 inch shoe @ 1965 mtrs
	16:25					Hold JSA on the floor with all personell involved with cementing operations,
	16:48	5	350		4	Pump 5 bbls Fresh Water Spacer
	16:51	5	1450	340		Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	16:57	25	280		4	Mix & Pump 28.85bbls CMT @ 15.8ppg, 120 sks, with 17 bbls mix water
	17:17	3.5	320		4	Pump 3.5 bbls Drill Water behind
	17:20	105			7	Displace with 105bbls of 9.3 ppg Mud
17/02/2010						**PLUG # 3 A (1980m - 1915m) 9.625 inch shoe @ 1965 mtrs**
	8:45					Hold JSA on the floor with all personell involved with cementing operations,
	9:03	5	300		4	Pump 5 bbls Fresh Water Spacer
	9:25	5	1450	340		Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	9:50	25	350	100	4	Mix & Pump 18 bbls CMT @ 15.8ppg, 87 sks, with 17 bbls mix water
	9:57	3.5	320		4	Pump 3.5 bbls Drill Water behind
	10:02	105			7	Displace with 105bbls of 9.3 ppg Mud
	15:00					JSA WITH ALL CREW INVOLVED WITH PRESSURE TESTING
	15:20	5	150		3	BREAK CIRCULATION WITH HOWCO UNIT BACK TO TRIP TANK
	15:38	4.2	2000		0.5	TEST CEMENT PLUG INSIDE 9.625" CSG TO 2000 PSI FOR 10 MINS
						GOOD TEST 4.2 BBLS PUMPED 3.25 BBLS RETURNS
						PLUG # 4 (205m - 105m) SEABED @ 100.3 mtrs
20/02/2010	15:00					Hold JSA on the floor with all personell involved with cementing operations,
	15:23	5	50		4	Pump 5 bbls Fresh Water Spacer
	15:27	5	1450	50	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	15:40	122	200	100	5	Mix & Pump 122 bbls CMT @ 15.9ppg, 586 sks, with 70 BBLS SEA H20
	16:07	4			4	Displace with 4 bbls of SEA H20
						CHEMICALS / CEMENT / CONSUMABLES USED
						CLASS G CEMENT = 1561 SKS , 66.56 METRIC TONNE
						SCR - 100 L = 115 GALLONS
						NF 6 = 10 GALS
						1 X 9 5/8 INCH EZSV PACKER SET @ 250 MTRS
						CA CL2 = 150 LBS
END OF JOB LOGS						

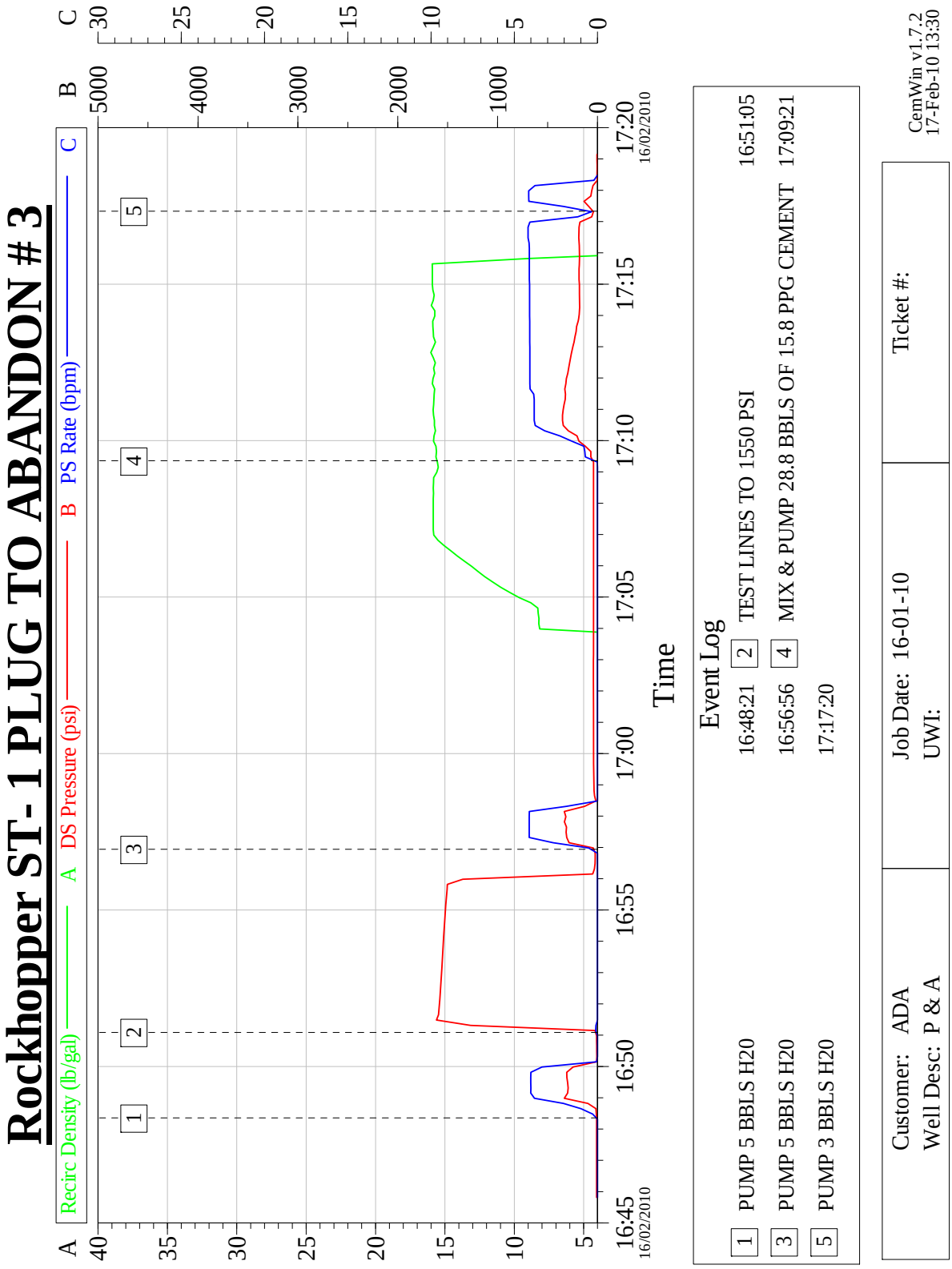
6.9 Job Plot

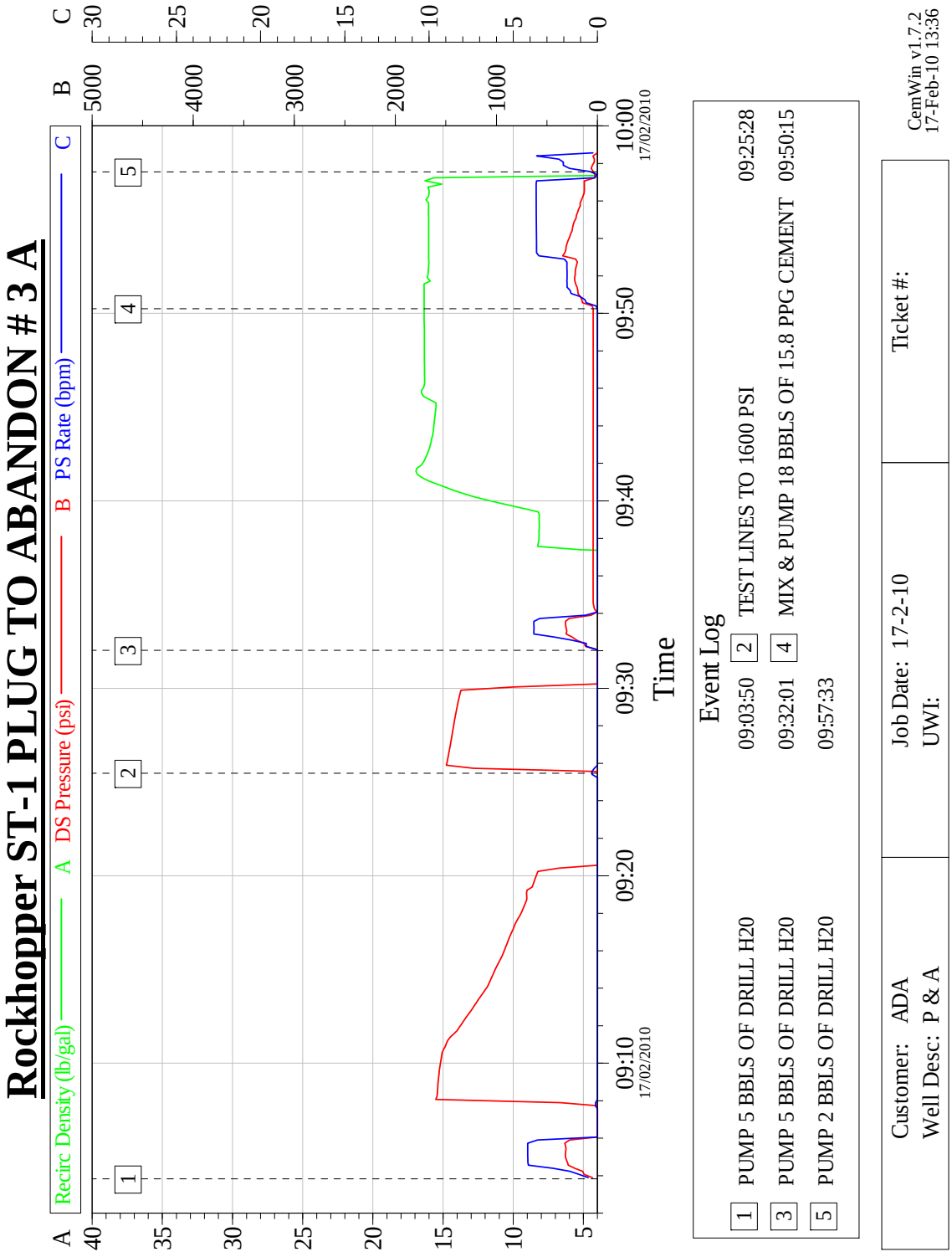

Rockhopper ST-1 PLUG TO ABANDON 1 A
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
PS Rate (bpm)
C
A
B
C
Time
17:05
15/02/2010
17:10
17:15
17:20
17:25
17:30
17:35
17:40
15/02/2010
Event Log
1 PUMP 5 BBLS H20
17:04:25
2 TEST LINES TO 1400 PSI
17:06:29
3 PUMP 5 BBLS H20
17:12:15
4 MIX & PUMP 40 BBLS OF 15.8 PPG CEMENT
17:31:10
5 PUMP 5 BBLS H20
17:41:56
Customer: ADA
Well Desc: P & A
Job Date: 15-02-10
UWI:
Ticket #:
CemWin v1.7.2
16-Feb-10 13:49

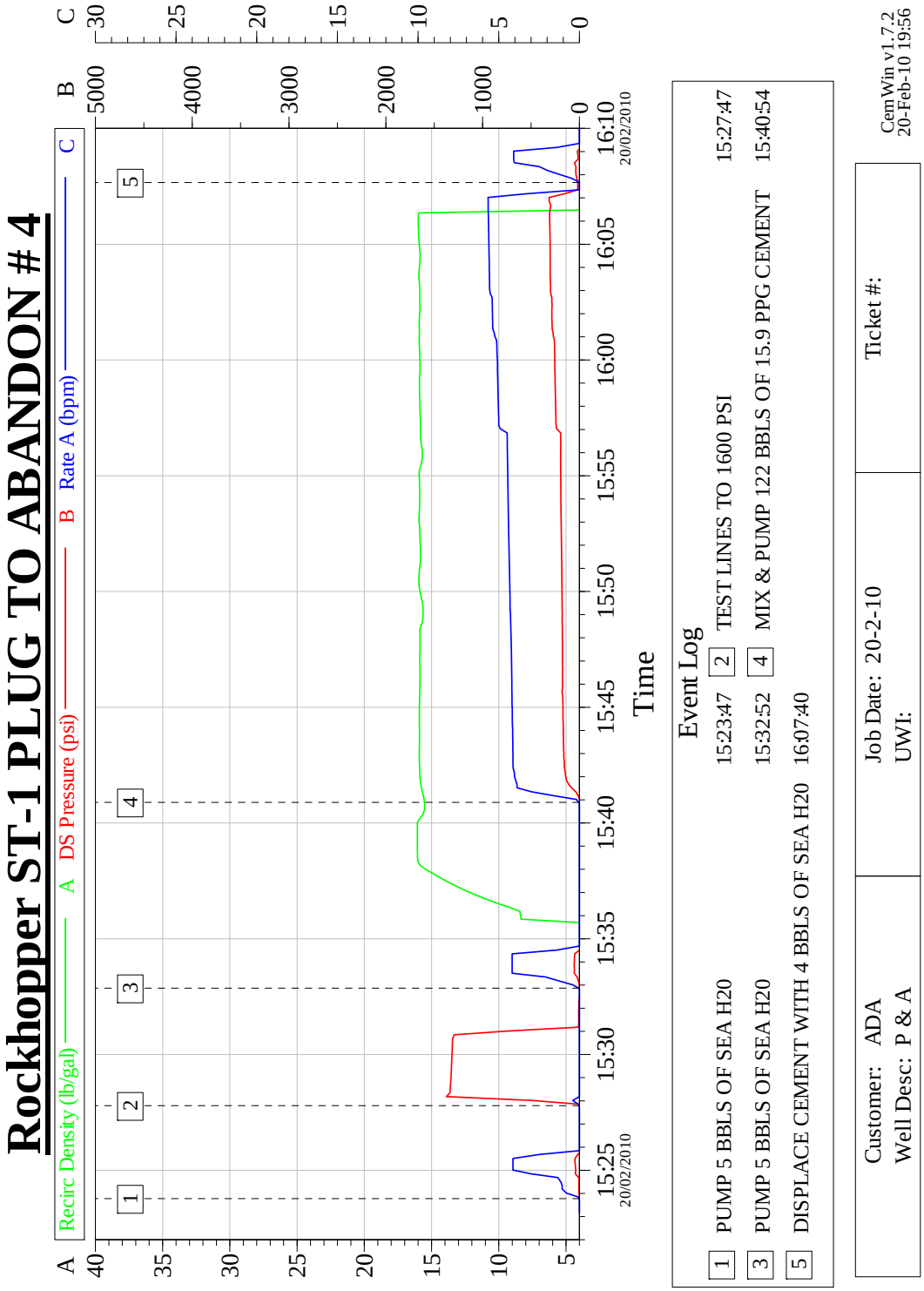

Rockhopper ST-1 PLUG TO ABANDON # 1 B
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
PS Rate (bpm)
C
Time
Event Log
1 PUMP 5 BBLS H20 20:26:09
2 TEST LINES TO 1400 PSI 20:28:28
3 PUMP 5 BBLS H20 20:33:08
4 MIX & PUMP 40 BBLS OF 15.6 PPG CEMENT 20:52:17
5 PUMP 4 BBLS H20 21:03:36
Customer: ADA
Well Desc: P & A
Job Date: 15-02-10
UWI:
Ticket #:
CemWin v1.7.2
16-Feb-10 14:22


Rockhopper ST-1 PLUG TO ABANDON 1-C
Recirc Density (lb/gal)
B
DS Pressure (psi)
C
PS Rate (bpm)
D
(psi)
(bpm)
Time
23:25
15/02/2010
23:30
23:35
23:40
23:45
23:50
23:55
15/02/2010
Event Log
1 PUMP 5 BBLS OF H20 23:21:42
2 TEST LINES TO 1400 PSI 23:24:58
3 PUMP 5 BBLS OF H20 23:28:01
4 MIX & PUMP 40 BBLS OF 15.8 PPG CEMENT 23:43:12
5 PUMP 4 BBLS OF H20 23:54:19
Customer: ADA
Well Desc: P & A
Job Date: 15-2-10
UWI:
Ticket #:
CemWin v1.7.2
16-Feb-10 14:27


Rockhopper ST-1 PLUG TO ABANDON # 2
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
PS Rate (bpm)
D
Time
02:40
16/02/2010
02:45
02:50
02:55
03:00
03:05
03:10
16/02/2010
Event Log
1 PUMP 5 BBLS H20 02:42:48
2 TEST LINES TO 1500 PSI 02:46:02
3 PUMP 5 BBLS H20 02:49:44
4 MIX & PUMP 38 BBLS OF 15.8 PPG SLURRY 02:54:42
5 PUMP 3 BBLS H20 03:11:32
Customer: ADA
Well Desc: ROCKHOPPER ST 1
Job Date: 16-2-10
UWI:
Ticket #:
CemWin v1.7.2
16-Feb-10 13:57


Rockhopper ST- 1 PLUG TO ABANDON # 3
Recirc Density (lb/gal) A
DS Pressure (psi) B
PS Rate (bpm) C
A
B
C
Time
16:45
16/02/2010
16:50
16:55
17:00
17:05
17:10
17:15
17:20
16/02/2010
Event Log
1 PUMP 5 BBLS H20
16:48:21
2 TEST LINES TO 1550 PSI
16:51:05
3 PUMP 5 BBLS H20
16:56:56
4 MIX & PUMP 28.8 BBLS OF 15.8 PPG CEMENT
17:09:21
5 PUMP 3 BBLS H20
17:17:20
Customer: ADA
Well Desc: P & A
Job Date: 16-01-10
UWI:
Ticket #:
CemWin v1.7.2
17-Feb-10 13:30


Rockhopper ST-1 PLUG TO ABANDON # 3 A
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
PS Rate (bpm)
C
A
B
C
40
35
30
25
20
15
10
5
5000
4000
3000
2000
1000
0
30
25
20
15
10
5
0
1
2
3
4
5
09:10
17/02/2010
09:20
09:30
09:40
09:50
10:00
17/02/2010
Time
Event Log
1 PUMP 5 BBLS OF DRILL H20 09:03:50
2 TEST LINES TO 1600 PSI 09:25:28
3 PUMP 5 BBLS OF DRILL H20 09:32:01
4 MIX & PUMP 18 BBLS OF 15.8 PPG CEMENT 09:50:15
5 PUMP 2 BBLS OF DRILL H20 09:57:33
Customer: ADA
Well Desc: P & A
Job Date: 17-2-10
UWI:
Ticket #:
CemWin v1.7.2
17-Feb-10 13:36


Rockhopper ST-1 PLUG TO ABANDON # 4
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
Rate A (bpm)
C
A
B
C
40
35
30
25
20
15
10
5
5000
4000
3000
2000
1000
0
30
25
20
15
10
5
0
1
2
3
4
5
15:25
20/02/2010
15:30
15:35
15:40
15:45
15:50
15:55
16:00
16:05
16:10
20/02/2010
Time
Event Log
1 PUMP 5 BBLS OF SEA H20 15:23:47
2 TEST LINES TO 1600 PSI 15:27:47
3 PUMP 5 BBLS OF SEA H20 15:32:52
4 MIX & PUMP 122 BBLS OF 15.9 PPG CEMENT 15:40:54
5 DISPLACE CEMENT WITH 4 BBLS OF SEA H20 16:07:40
Customer: ADA
Well Desc: P & A
Job Date: 20-2-10
UWI:
Ticket #:
CemWin v1.7.2
20-Feb-10 19:56

6.10 CSS

CUSTOMER SATISFACTION SURVEY

Sales	**Line Item:**	
0	0	
Customer:		**Job Type (BOM):**
ADA		P&A Plugs
Customer Rep./Phone:		**API / UWI: (leave blank if unknown)**
Mike Lanzer		0
Well Name:		**Well Number:**
Rockhopper-ST 1		ST-1
Well Type:	**Well Country:**	
Gas & Oil	Australia	
H2S	**Well State:**	**Well County:**
No	Open hole cemented	Australia /

Dear Customer,

We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	**The date the survey was conducted**	
Survey Interviewer	**The survey interviewer is the person who initiated the survey.**	
Customer Participation	**Did the customer partipcipate in this survey? (Y/N)**	
Customer Representative	**Enter the Customer representative name**	
HSE	**Was our HSE performance satisfactory? Circle Y or N**	
Equipment	**Were you satisfied with our Equipment? Circle Y or N**	
Personnel	**Were you satisfied with our people? Circle Y or N**	
Customer Comment		
Job DVA	**Did we provide job DVA above our normal service today? Circle Y or N**	
Time	**Please enter hours in decimal format to nearest quarter hour.**	
Other	**Enter short text for other efficiencies gained.**	
Customer Initials	**Customer's Initials**	
Please provide details		

CUSTOMER SIGNATURE

7.0 APPENDICES

7.1 Lab Reports

7.1.1 30" Conductor Casing

Cement Laboratory Report		HALLIBURTON MANAGEMENT SYSTEM Australasia		
DOCUMENT NO:	PREPARED BY: Megan Beale	APPROVED BY	REVISION NO: 12	DATE: 25-Jun-07

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	:	ADA	Date	:	25-Nov-09
Rig Name	:	Bass Straight	Lab Reference	:	C-09-096A
Well Name	:	ROCKHOPPER 1	API Schedule	:	9.20
Pipe Size / Casing Size	:	30" Conductor Casing			

Well Information

BHST	:	14	**°C**
BHCT	:	13	**°C**
Measured Depth	:	150	**m**
Total Vertical depth	:	150	**m**

HalCem™ cement Single Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			3/11/09	From Rig
Calcium Chloride	1.000	BWOC	1.00	BWOC		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Seawater	5.15	gal/sk				
Total Mixing Fluid :	5.16	gal/sk				
Slurry Density :	15.9	lb/gal				
Slurry Yield :	1.17	ft^3/sk				

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
13	3:42	4:23	4:41

Pumping time at 20 °C & 469 psi is 4:41 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces Vertical at 27 °C

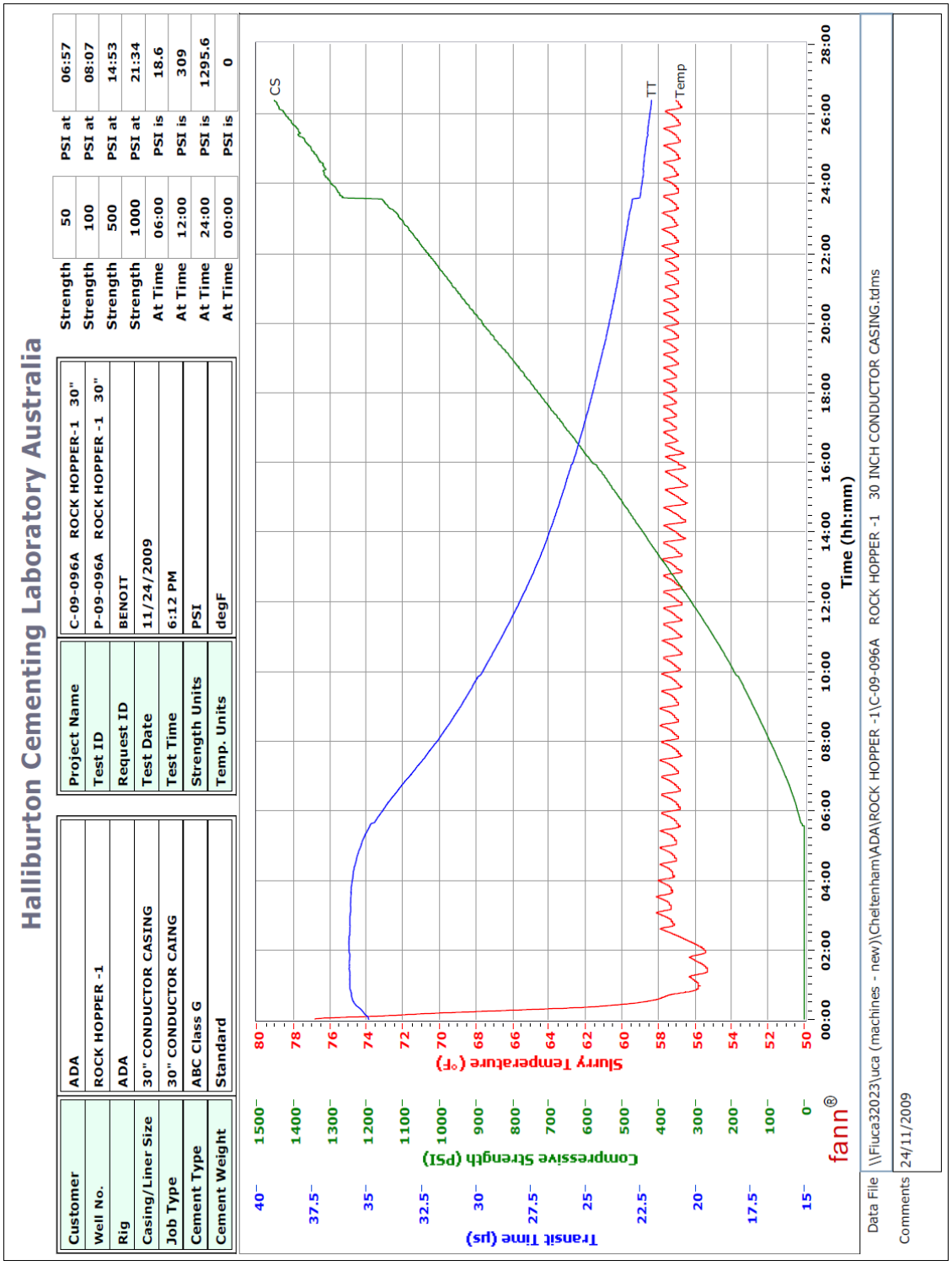
Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	14 °C	3000 psi	6:57	1296 psi

Notes: HPHT and UCA ran with chiller unit, but HPHT didn't achieve the BHCT as requested. Test temperature noted in results section.

Lab Technician: Gary Reid
Approved: Dave Webb

The above pilot report is based on sound engineering practices, but because of variable well conditions and other information which must be relied upon, Halliburton makes no warranty, express or implied, as to the accuracy of the data or any of the calculations or opinions expressed herein. You agree that Halliburton shall not be liable for any loss or damage whether due to negligence or otherwise arising out of or in connection with such data, calculations or opinions.


Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCK HOPPER -1
Rig ADA
Casing/Liner Size 30" CONDUCTOR CASING
Job Type 30" CONDUCTOR CAING
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-096A ROCK HOPPER-1 30"
Test ID P-09-096A ROCK HOPPER -1 30"
Request ID BENOIT
Test Date 11/24/2009
Test Time 6:12 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 06:57
Strength 100 PSI at 08:07
Strength 500 PSI at 14:53
Strength 1000 PSI at 21:34
At Time 06:00 PSI is 18.6
At Time 12:00 PSI is 309
At Time 24:00 PSI is 1295.6
At Time 00:00 PSI is 0
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
CS
TT
Temp
fann®
Data File \\Fiuca32023\uca (machines - new)\Cheltenham\ADA\ROCK HOPPER -1\C-09-096A ROCK HOPPER -1 30 INCH CONDUCTOR CASING.tdms
Comments 24/11/2009

7.1.2 13 3/8" Lead Surface Casing

Cement Laboratory Report		HALLIBURTON MANAGEMENT SYSTEM Australasia		
DOCUMENT NO:	PREPARED BY: Megan Beale	APPROVED BY	REVISION NO: 12	DATE: 25-Jun-07

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	:	ADA	Date	:	27-Nov-09
Rig Name	:	Bass Straight	Lab Reference	:	C-09-101A
Well Name	:	ROCKHOPPER 1	API Schedule	:	9.30
Pipe Size / Casing Size	:	13 3/8" Surface Casing			

Well Information

BHST	:	41	**°C**
BHCT	:	32	**°C**
Measured Depth	:	900	**m**
Total Vertical depth	:	900	**m**

HalCem™ cement Lead Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			3/11/09	From Rig
Econolite Liquid	1.054	gal/sk	23.00	gal/10bbl		
NF-6	0.011	gal/sk	0.25	gal/10bbl		
Seawater	18.18	gal/sk				
Total Mixing Fluid :	19.24	gal/sk				
Slurry Density :	11.5	lb/gal				
Slurry Yield :	3.04	ft^3/sk				

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
19	4:03	5:19	6:28

Pumping time at 32 °C & 1612 psi is 6:28 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

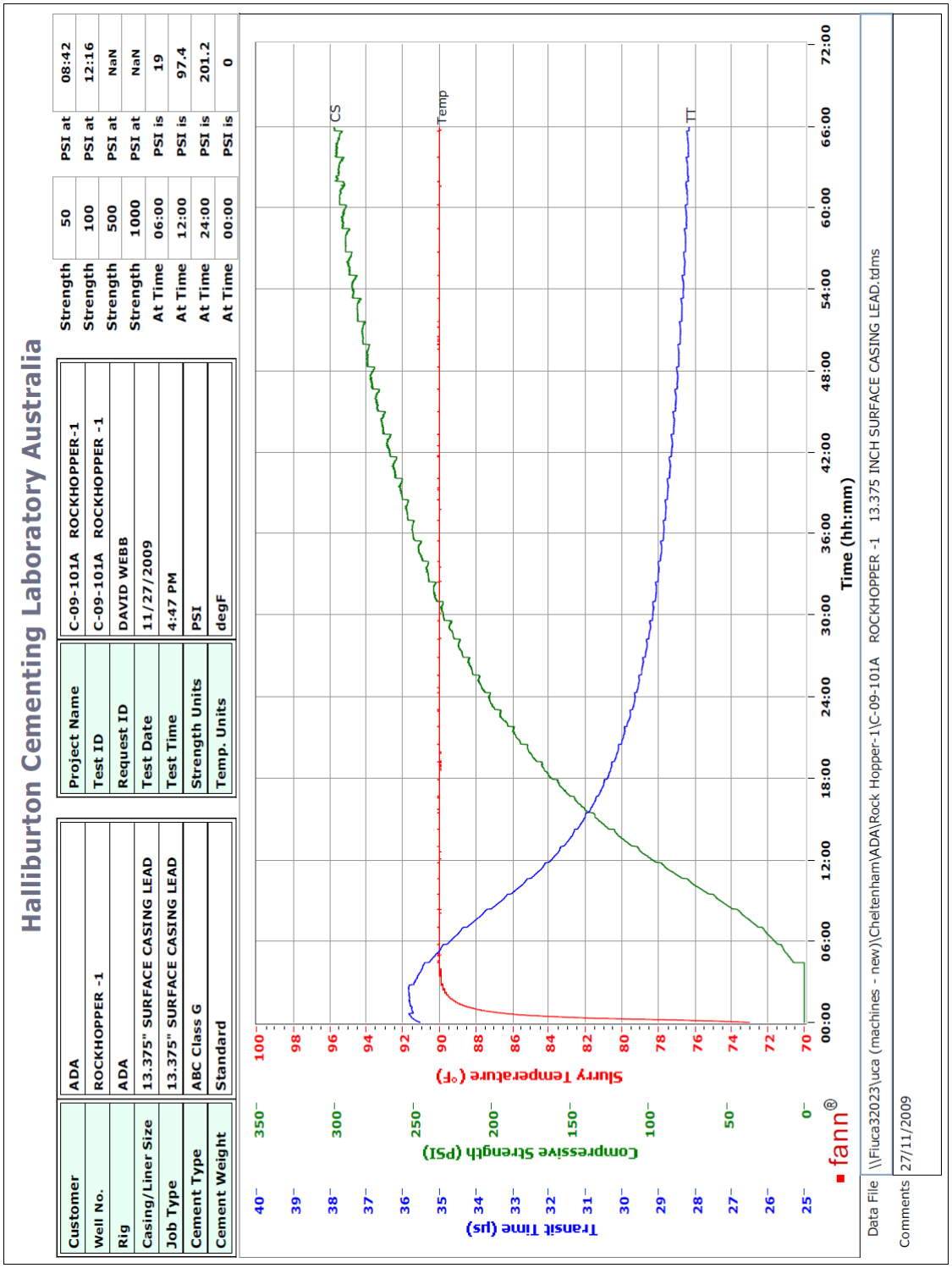
Free Fluid Traces Vertical at 27 °C

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	32 °C	3000 psi	8:42	201 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER -1
Rig ADA
Casing/Liner Size 13.375" SURFACE CASING LEAD
Job Type 13.375" SURFACE CASING LEAD
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-101A ROCKHOPPER-1
Test ID C-09-101A ROCKHOPPER -1
Request ID DAVID WEBB
Test Date 11/27/2009
Test Time 4:47 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 08:42
Strength 100 PSI at 12:16
Strength 500 PSI at NaN
Strength 1000 PSI at NaN
At Time 06:00 PSI is 19
At Time 12:00 PSI is 97.4
At Time 24:00 PSI is 201.2
At Time 00:00 PSI is 0
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
fann®
Data File \\Fiuca32023\uca (machines - new)\CheltenhamVADA\Rock Hopper-1\C-09-101A ROCKHOPPER -1 13.375 INCH SURFACE CASING LEAD.tdms
Comments 27/11/2009

7.1.3 13 3/8" Tail Surface Casing

Cement Laboratory Report		HALLIBURTON MANAGEMENT SYSTEM Australasia		
DOCUMENT NO:	PREPARED BY: Megan Beale	APPROVED BY	REVISION NO: 12	DATE: 25-Jun-07

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	:	ADA	Date	:	27-Nov-09
Rig Name	:	Bass Straight	Lab Reference	:	C-09-102A
Well Name	:	ROCKHOPPER 1	API Schedule	:	
Pipe Size / Casing Size	:	13 3/8" Surface Casing			

Well Information

BHST	:	41	°C
BHCT	:	32	°C
Measured Depth	:	900	m
Total Vertical depth	:	900	m

HalCem™ cement Tail Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			3/11/09	From Rig
Halad-413L	0.122	gal/sk	10.00	gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Drill Water	5.00	gal/sk	Cl- Content	200	mg/L	

Total Mixing Fluid	:	5.13	gal/sk
Slurry Density	:	15.8	lb/gal
Slurry Yield	:	1.16	ft^3/sk

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
11	4:10	4:43	4:54

Pumping time at 32 °C & 1612 psi is 4:54 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid 0.8 % Vertical at 27 °C

Calculated API Fluid Loss 774.5 cc/30 mins. at 32 °C and 1,000 psi

Slurry Rheology

	Fann Readings (RPM)						
	300	200	100	6	3	PV (cP)	YP (lb_f/100ft^2)
Mix Temp	109	92.5	72	32.5	25	55.5	54
Raised Temp 32 °C	77	65	55	24	16	33	44

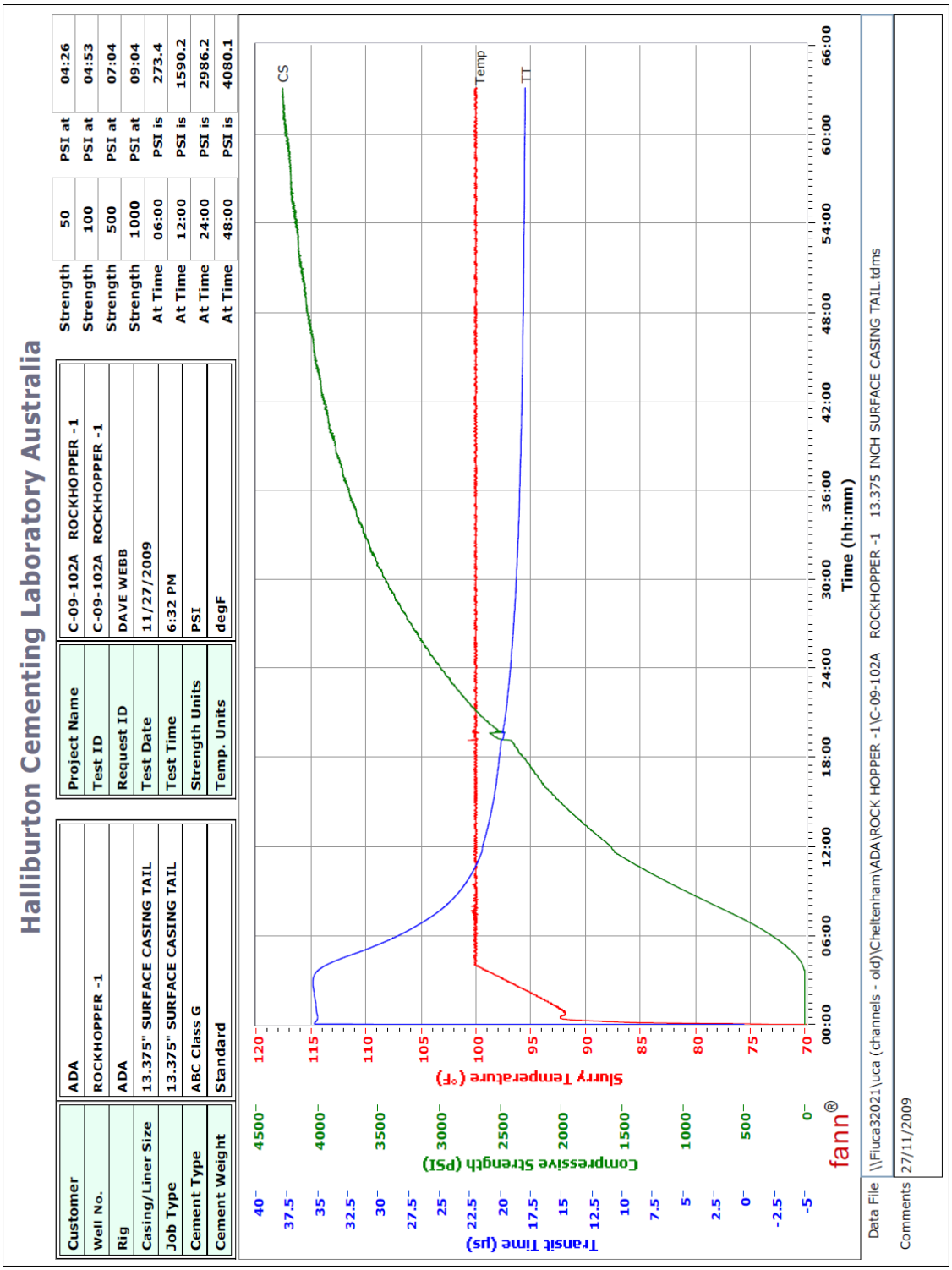
Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	38 °C	3000 psi	4:26	2986 psi

Notes:

Lab Technician: Gary Reid
Approved: Dave Webb

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Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER -1
Rig ADA
Casing/Liner Size 13.375" SURFACE CASING TAIL
Job Type 13.375" SURFACE CASING TAIL
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-102A ROCKHOPPER -1
Test ID C-09-102A ROCKHOPPER -1
Request ID DAVE WEBB
Test Date 11/27/2009
Test Time 6:32 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 04:26
Strength 100 PSI at 04:53
Strength 500 PSI at 07:04
Strength 1000 PSI at 09:04
At Time 06:00 PSI is 273.4
At Time 12:00 PSI is 1590.2
At Time 24:00 PSI is 2986.2
At Time 48:00 PSI is 4080.1
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
00:00 06:00 12:00 18:00 24:00 30:00 36:00 42:00 48:00 54:00 60:00 66:00
fann®
Data File \\Fiuca32021\uca (channels - old)\Cheltenham\ADA\ROCK HOPPER -1\C-09-102A ROCKHOPPER -1 13.375 INCH SURFACE CASING TAIL.tdms
Comments 27/11/2009

7.1.4 9 5/8 casing Lead

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 09-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-104AA
Well Name	: Rockhopper 1	API Schedule	:
Pipe Size / Casing Size	: 9 5/8" Intermediate Casing		

Well Information

BHST	:	82	°C
BHCT	:	51	°C
Measured Depth	:	1956	m
Total Vertical depth	:	1956	m

EconoCem™ cement Lead Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			12/10/09	From Rig
Gascon 469	1.023	gal/sk	35.00	gal/10bbl		
Halad-413L	0.439	gal/sk	15.00	gal/10bbl		
SCR-100L	0.088	gal/sk	3.00	gal/10bbl		
NF-6	0.007	gal/sk	0.25	gal/10bbl		
Drill Water	10.72	gal/sk	**Cl- Content**		mg/L	
Total Mixing Fluid	: 12.28	gal/sk				
Slurry Density	: 12.5	lb/gal				
Slurry Yield	: 2.11	ft^3/sk				

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
7	4:55	5:30	6:02

Pumping time at 51 °C & 3650 psi is 6:02 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces at 27 °C

API Fluid Loss 70 cc/30 mins. at 51 °C and 1,000 psi

Slurry Rheology

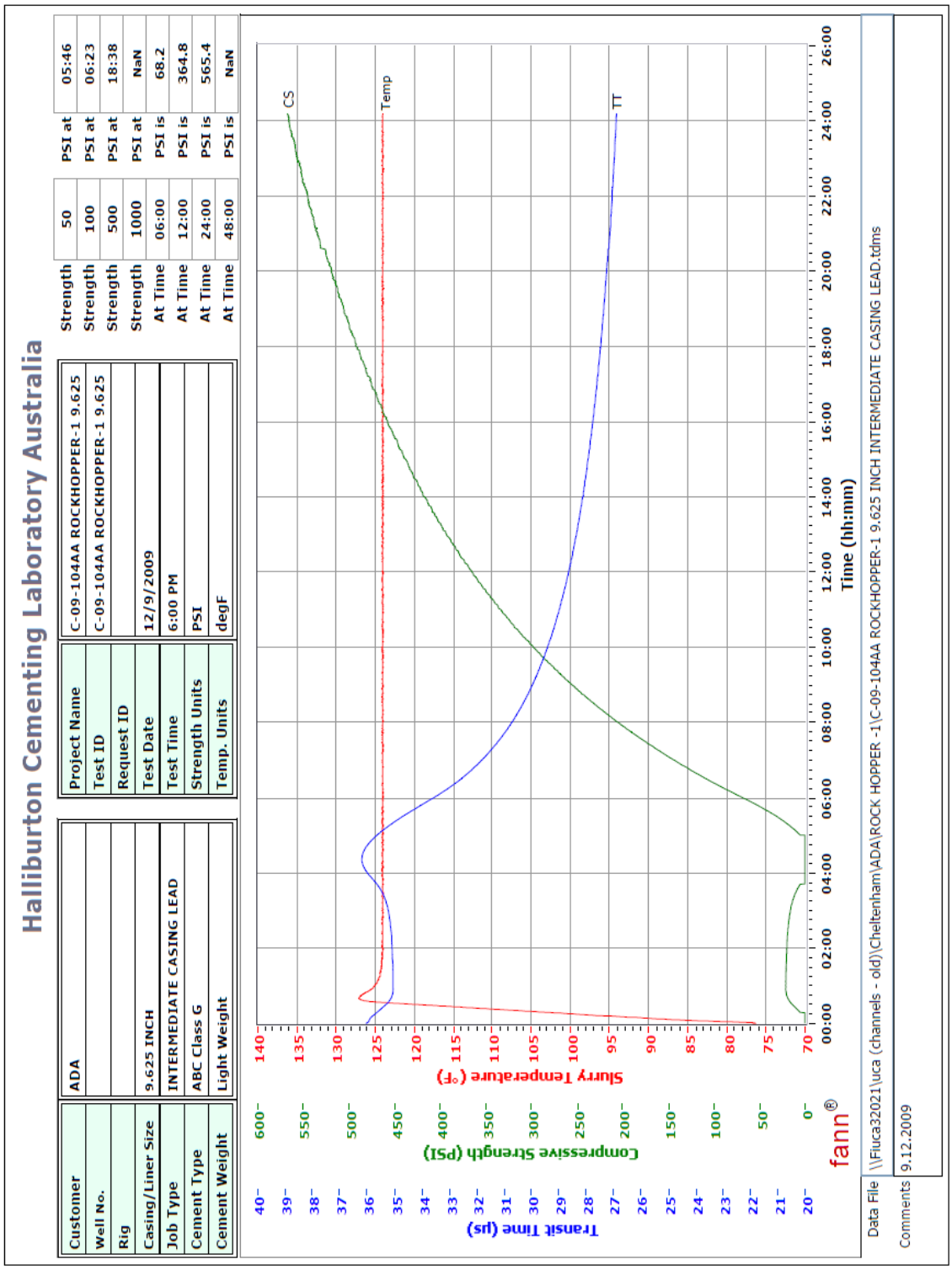
	Fann Readings (RPM)						
	300	**200**	**100**	**6**	**3**	**PV (cP)**	**YP (lb_f/100ft^2)**
Mix Temp	50	34	22.5	5.5	4	41.25	9
Raised Temp 37 °C	38	28.5	18	3	1.5	30	8

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	51 °C	3000 psi	5:46	565 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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Halliburton Cementing Laboratory Australia
Customer ADA
Well No.
Rig
Casing/Liner Size 9.625 INCH
Job Type INTERMEDIATE CASING LEAD
Cement Type ABC Class G
Cement Weight Light Weight
Project Name C-09-104AA ROCKHOPPER-1 9.625
Test ID C-09-104AA ROCKHOPPER-1 9.625
Request ID
Test Date 12/9/2009
Test Time 6:00 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 05:46
Strength 100 PSI at 06:23
Strength 500 PSI at 18:38
Strength 1000 PSI at NaN
At Time 06:00 PSI is 68.2
At Time 12:00 PSI is 364.8
At Time 24:00 PSI is 565.4
At Time 48:00 PSI is NaN
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
fann®
Data File \\Fiuca32021\uca (channels - old)\Cheltenham\ADA\ROCK HOPPER -1\C-09-104AA ROCKHOPPER-1 9.625 INCH INTERMEDIATE CASING LEAD.tdms
Comments 9.12.2009

7.1.5 9 5/8" Casing Tail

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 02-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-105A
Well Name	: Rockhopper	API Schedule	: 9.50
Pipe Size / Casing Size	: 9 5/8" Intermediate Casing		

Well Information

BHST	:	82	°C
BHCT	:	51	°C
Measured Depth	:	1956	m
Total Vertical depth	:	1956	m

HalCem™ cement Tail Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			3/11/09	From Rig
Gascon 469	0.123	gal/sk	10.00	gal/10bbl		
CFR-3L	0.037	gal/sk	3.00	gal/10bbl		
Halad-413L	0.370	gal/sk	30.00	gal/10bbl		
SCR-100L	0.025	gal/sk	2.00	gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Drill Water	4.62	gal/sk	**Cl- Content**		mg/L	

Total Mixing Fluid	: 5.18	gal/sk	
Slurry Density	: 15.8	lb/gal	
Slurry Yield	: 1.16	ft^3/sk	

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
28	3:09	3:18	3:28

Pumping time at 51 °C & 3650 psi is 3:28 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces at 27 °C

API Fluid Loss 36 cc/30 mins. at 51 °C and 1,000 psi

Slurry Rheology

Fann Readings (RPM)

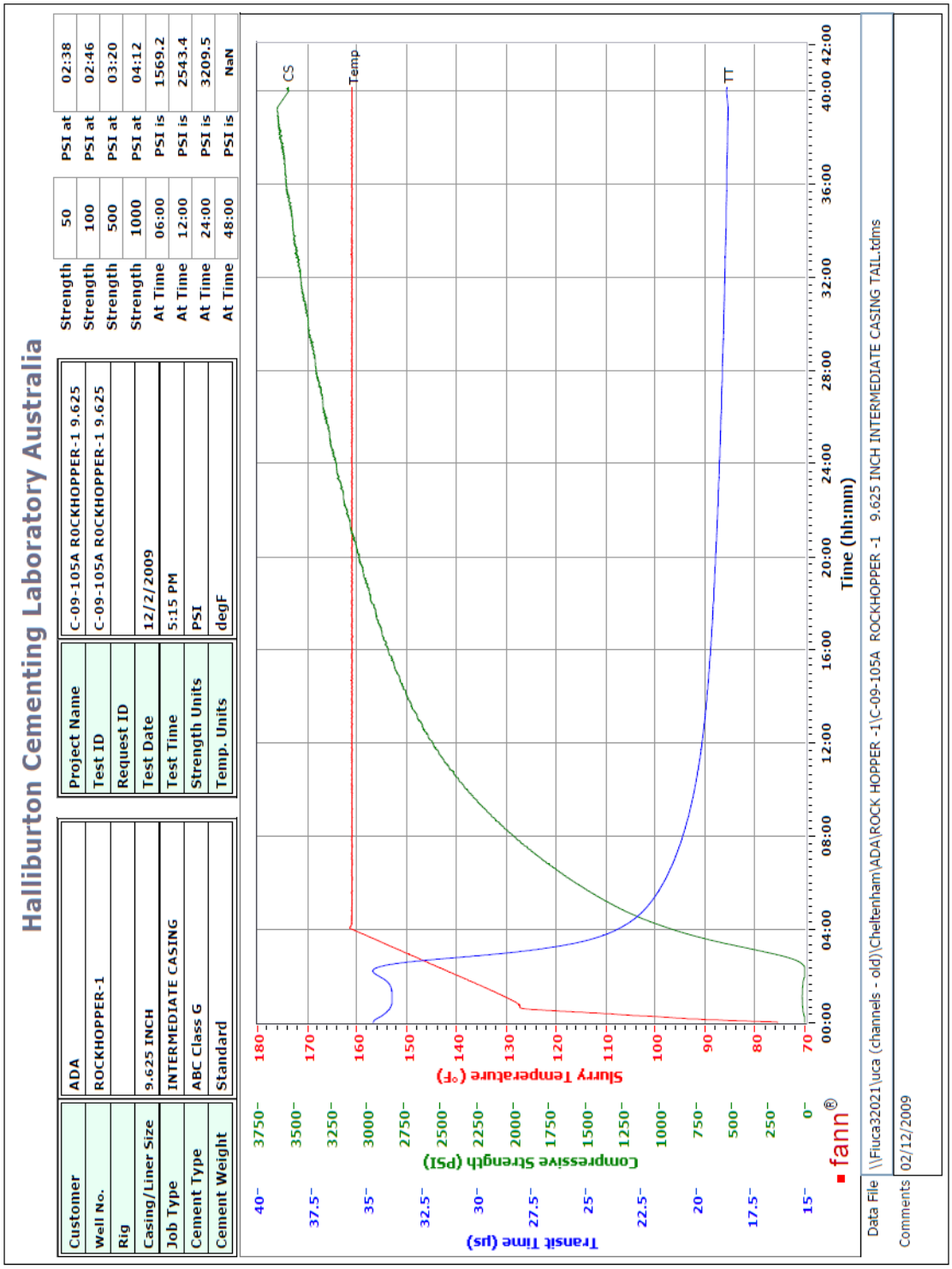
	300	200	100	6	3	PV (cP)	YP ($lb_f/100ft^2$)
Mix Temp	285	222	148	25.5	17	205.5	80
Raised Temp 46 °C	215	163	105	21.5	20	165	50

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	72 °C	3000 psi	2:38	3210 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER-1
Rig
Casing/Liner Size 9.625 INCH
Job Type INTERMEDIATE CASING
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-105A ROCKHOPPER-1 9.625
Test ID C-09-105A ROCKHOPPER-1 9.625
Request ID
Test Date 12/2/2009
Test Time 5:15 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 02:38
Strength 100 PSI at 02:46
Strength 500 PSI at 03:20
Strength 1000 PSI at 04:12
At Time 06:00 PSI is 1569.2
At Time 12:00 PSI is 2543.4
At Time 24:00 PSI is 3209.5
At Time 48:00 PSI is NaN
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
CS
Temp
TT
Time (hh:mm)
fann®
Data File \\Fiuca32021\uca (channels - old)\Cheltenham\ADA\ROCK HOPPER -1\C-09-105A ROCKHOPPER -1 9.625 INCH INTERMEDIATE CASING TAIL.tdms
Comments 02/12/2009

7.1.6 Plugs

HALLIBURTON — **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 16-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-114C
Well Name	: Rock hopper 1	API Schedule	: 9.19
Pipe Size / Casing Size	: Plug-1		

Well Information

BHST	:	130	°C
BHCT	:	109	°C
Measured Depth	:	3221	m
Total Vertical depth	:	3200	m

HalCem™ cement Plug Job Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			12/10/09	From Rig
SCR-100L	0.104	gal/sk	8.50	gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Freshwater	5.03	gal/sk	Cl- Content	500	mg/L	

Total Mixing Fluid	: 5.13	gal/sk	
Slurry Density	: 15.8	lb/gal	
Slurry Yield	: 1.16	ft^3/sk	

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
2	4:53	4:56	4:58

Pumping time at 109 °C & 6036 psi is 4:58 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid — Traces at 82 °C

API Fluid Loss — cc/30 mins. at 82 °C and 1,000 psi

Slurry Rheology

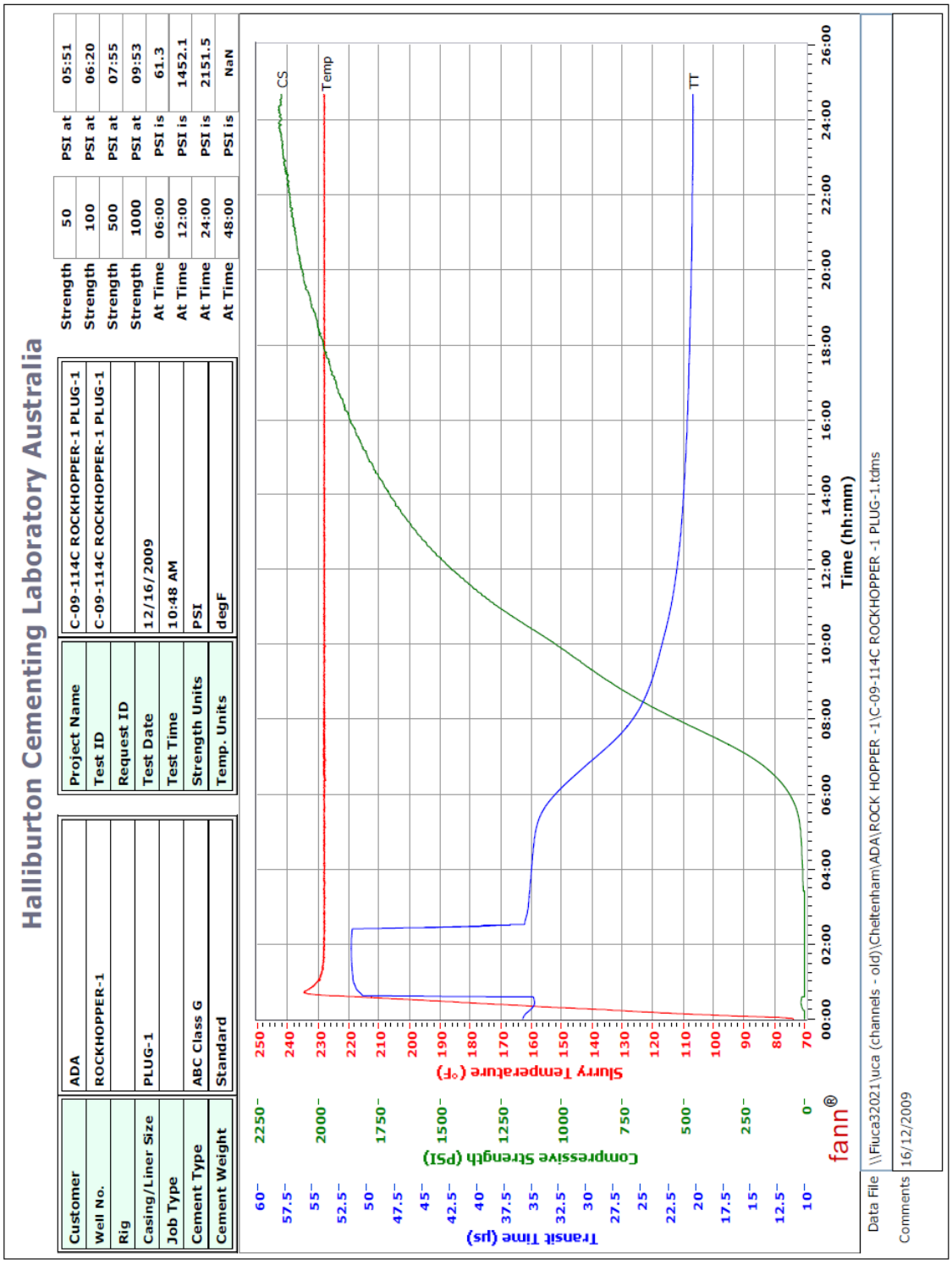
	Fann Readings (RPM)						
	300	200	100	6	3	PV (cP)	YP ($lb_f/100ft^2$)
Mix Temp							
Raised Temp 82 °C							

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	109 °C	3000 psi	5:51	2152 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER-1
Rig
Casing/Liner Size PLUG-1
Job Type
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-114C ROCKHOPPER-1 PLUG-1
Test ID C-09-114C ROCKHOPPER-1 PLUG-1
Request ID
Test Date 12/16/2009
Test Time 10:48 AM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 05:51
Strength 100 PSI at 06:20
Strength 500 PSI at 07:55
Strength 1000 PSI at 09:53
At Time 06:00 PSI is 61.3
At Time 12:00 PSI is 1452.1
At Time 24:00 PSI is 2151.5
At Time 48:00 PSI is NaN
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
fann®
Data File \\Fluca32021\uca (channels - old)\Cheltenham\ADA\ROCK HOPPER -1\C-09-114C ROCKHOPPER -1 PLUG-1.tdms
Comments 16/12/2009

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 24-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-115B
Well Name	: Rockhopper	API Schedule	: 9.17
Pipe Size / Casing Size	: Plug-2		

Well Information

BHST	:	84	°C
BHCT	:	68	°C
Measured Depth	:	2000	m
Total Vertical depth	:	2000	m

HalCem™ cement Plug Job Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			5/11/09	BBMT
SCR-100L	0.049	gal/sk	4.00	gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
BBMT Fresh Water	5.07	gal/sk	Cl- Content		mg/L	

Total Mixing Fluid	: 5.12	gal/sk	
Slurry Density	: 15.8	lb/gal	
Slurry Yield	: 1.16	ft^3/sk	

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
27	3:04	3:10	3:18

Pumping time at 68 °C & 3823 psi is 3:18 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

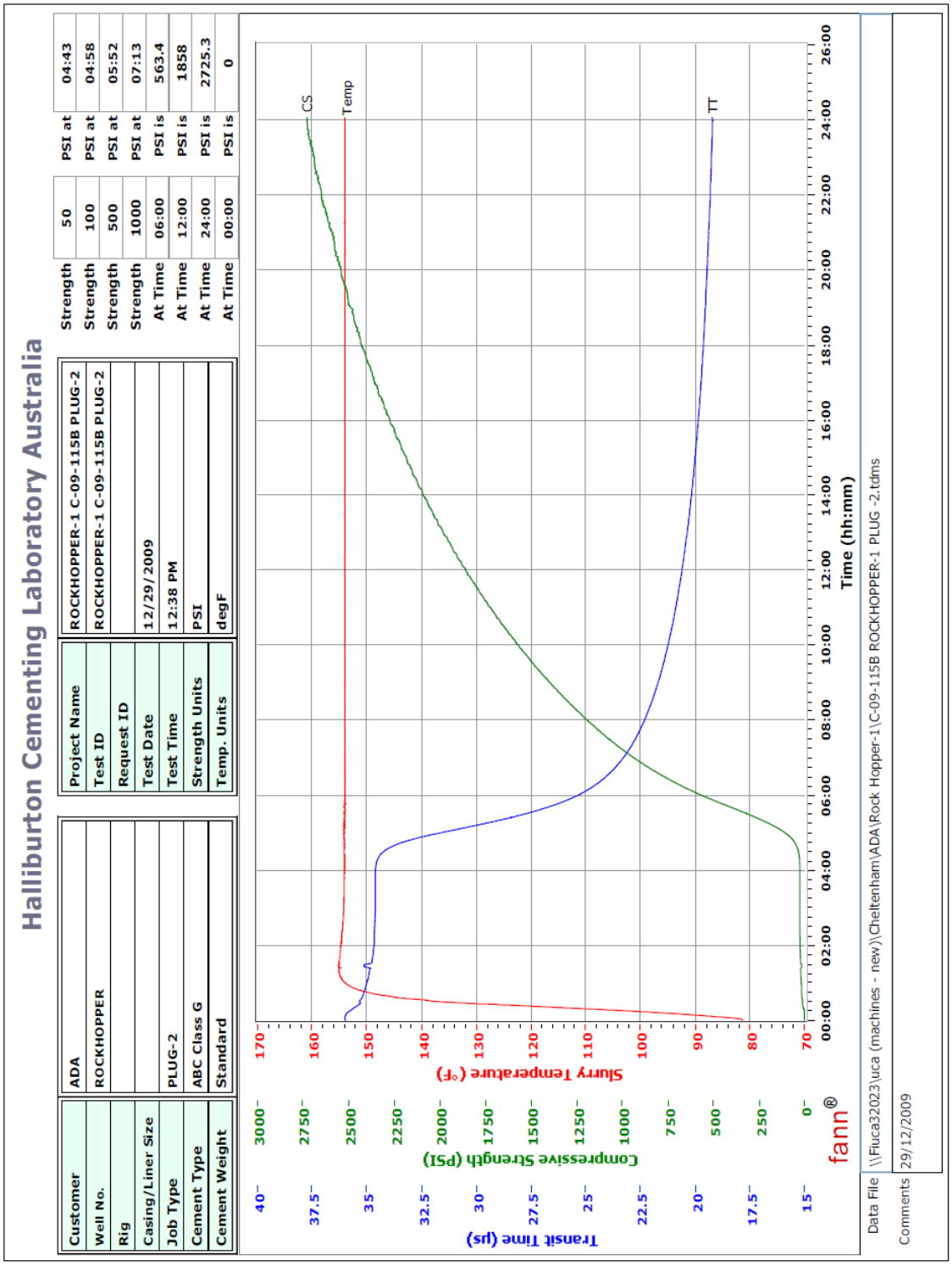
Free Fluid Traces at 27 °C

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	68 °C	3000 psi	4:43	2725 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER
Rig
Casing/Liner Size
Job Type PLUG-2
Cement Type ABC Class G
Cement Weight Standard
Project Name ROCKHOPPER-1 C-09-115B PLUG-2
Test ID ROCKHOPPER-1 C-09-115B PLUG-2
Request ID
Test Date 12/29/2009
Test Time 12:38 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 04:43
Strength 100 PSI at 04:58
Strength 500 PSI at 05:52
Strength 1000 PSI at 07:13
At Time 06:00 PSI is 563.4
At Time 12:00 PSI is 1858
At Time 24:00 PSI is 2725.3
At Time 00:00 PSI is 0
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
fann®
Data File \\Fluca32023\uca (machines - new)\Cheltenham\ADA\Rock Hopper-1\C-09-115B ROCKHOPPER-1 PLUG -2.tdms
Comments 29/12/2009

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 22-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-116A
Well Name	: Rockhopper	API Schedule	: 9.14
Pipe Size / Casing Size	: Plug-3		

Well Information

BHST	:	15	°C
BHCT	:	15	°C
Measured Depth	:	145	m
Total Vertical depth	:	145	m

HalCem™ cement Plug Job Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			5/11/09	BBMT
Calcium Chloride	1.000	BWOC	1.00	BWOC		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Seawater	5.15	gal/sk				
Total Mixing Fluid :	5.16	gal/sk				
Slurry Density :	15.9	lb/gal				
Slurry Yield :	1.17	ft^3/sk				

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
8	2:55	3:22	3:35

Pumping time at 15 °C & 463 psi is 3:35 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

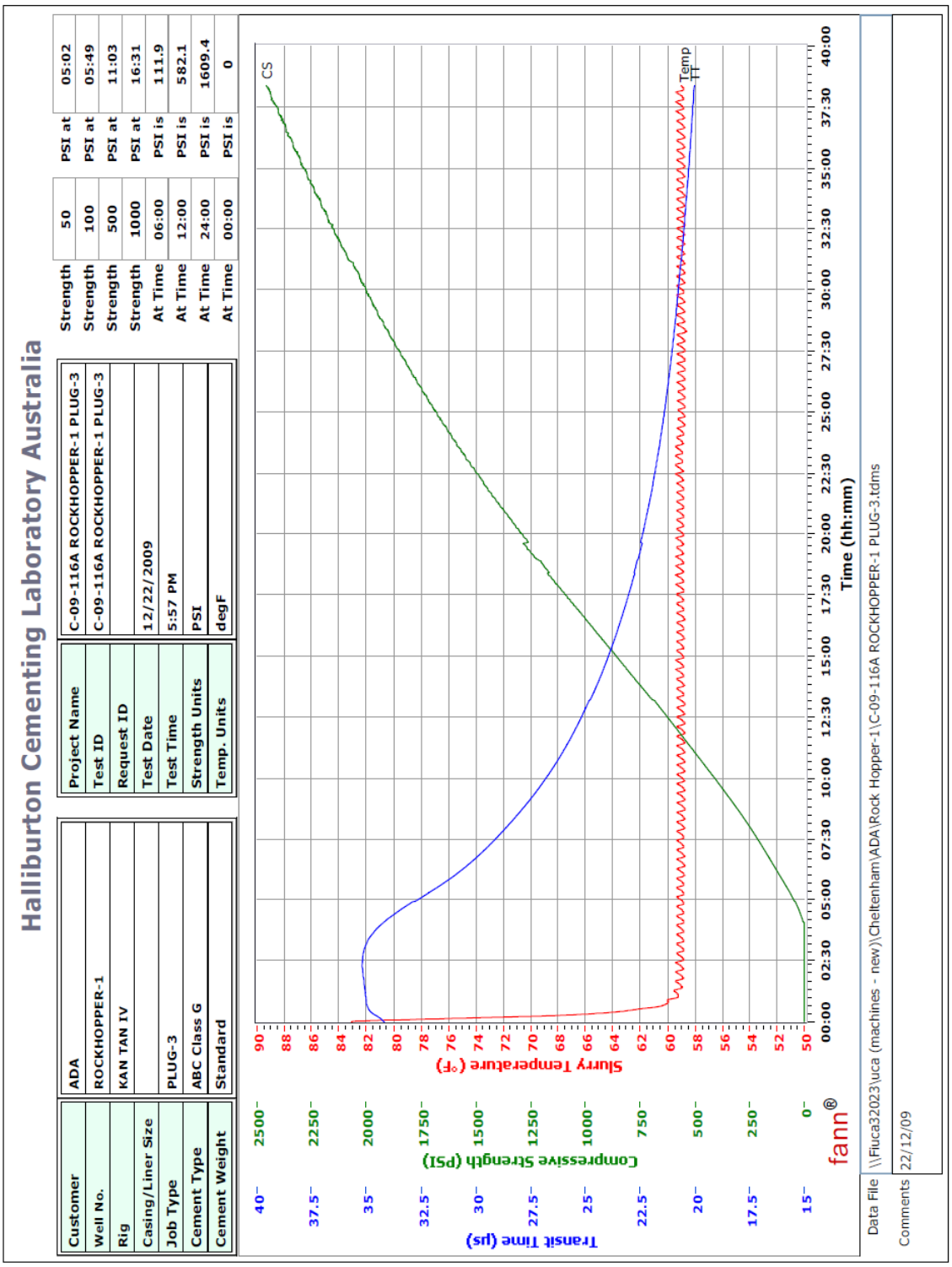
Free Fluid Traces at 27 °C

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	15 °C	3000 psi	5:02	1609 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER-1
Rig KAN TAN IV
Casing/Liner Size
Job Type PLUG-3
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-116A ROCKHOPPER-1 PLUG-3
Test ID C-09-116A ROCKHOPPER-1 PLUG-3
Request ID
Test Date 12/22/2009
Test Time 5:57 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 05:02
Strength 100 PSI at 05:49
Strength 500 PSI at 11:03
Strength 1000 PSI at 16:31
At Time 06:00 PSI is 111.9
At Time 12:00 PSI is 582.1
At Time 24:00 PSI is 1609.4
At Time 00:00 PSI is 0
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
CS
Temp
TT
fann®
Data File \\Fluca32023\uca (machines - new)\Cheltenham\ADA\Rock Hopper-1\C-09-116A ROCKHOPPER-1 PLUG-3.tdms
Comments 22/12/09

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 18-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-117B
Well Name	: Rockhopper	API Schedule	: 9.17
Pipe Size / Casing Size	: Kick Off Plug		

Well Information

BHST	:	84	°C
BHCT	:	68	°C
Measured Depth	:	2000	m
Total Vertical depth	:	2000	m

HalCem™ cement Plug Job Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			8/11/09	Bulk Plant
SCR-100L	0.042	gal/sk	4.00	gal/10bbl		
CFR-3L	0.031	gal/sk	3.00	gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Drill Water	4.31	gal/sk				

Total Mixing Fluid	:	4.39	gal/sk
Slurry Density	:	16.5	lb/gal
Slurry Yield	:	1.06	ft^3/sk

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
6	4:10	4:12	4:14

Pumping time at 68 °C & 3823 psi is 4:14 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

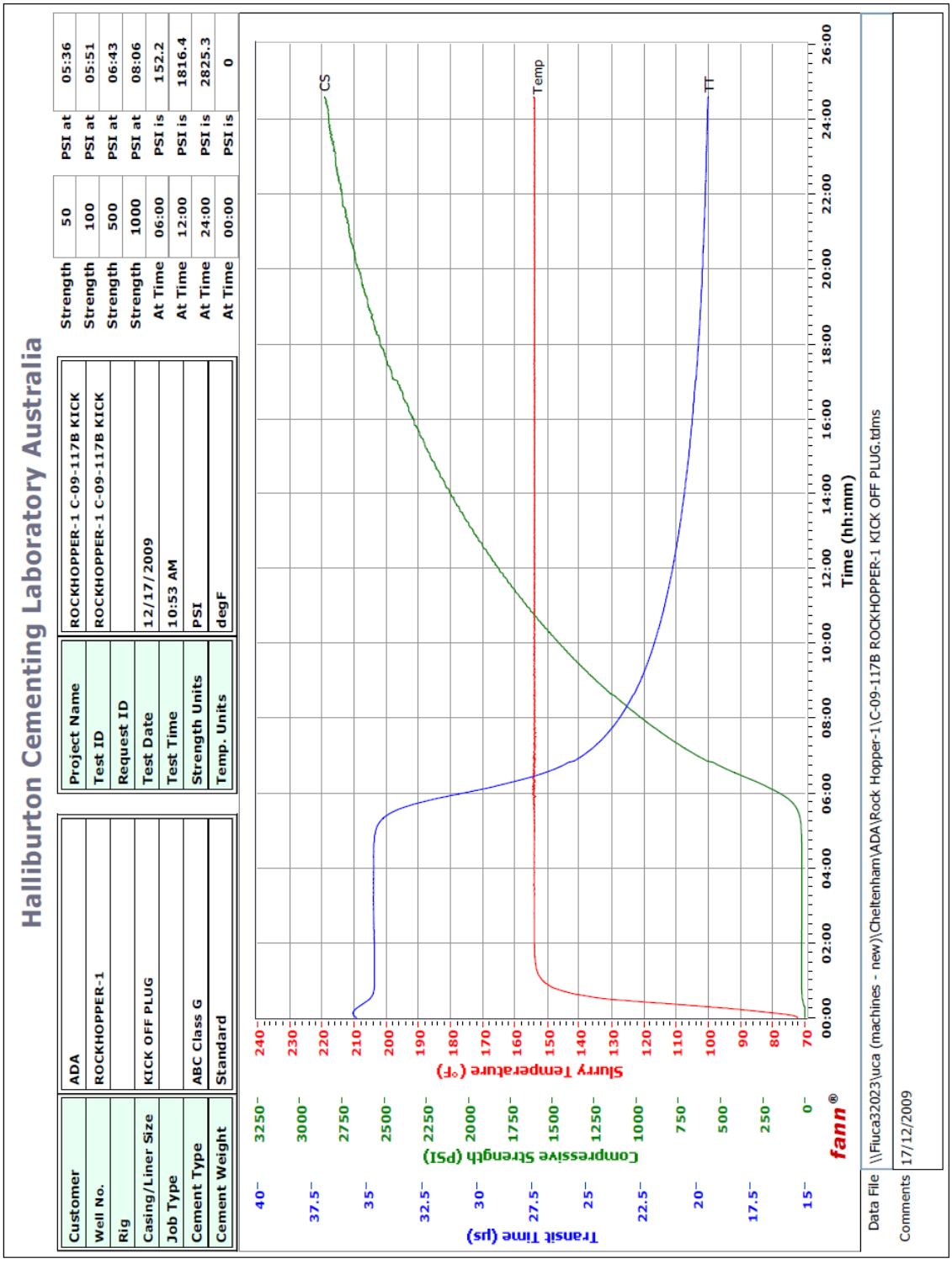
Free Fluid Traces Vertical at 27 °C

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	68 °C	3000 psi	5:36	2825 psi

Lab Technician: Maggie Batko
Approved: Dave Webb

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Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER-1
Rig
Casing/Liner Size KICK OFF PLUG
Job Type
Cement Type ABC Class G
Cement Weight Standard
Project Name ROCKHOPPER-1 C-09-117B KICK
Test ID ROCKHOPPER-1 C-09-117B KICK
Request ID
Test Date 12/17/2009
Test Time 10:53 AM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 05:36
Strength 100 PSI at 05:51
Strength 500 PSI at 06:43
Strength 1000 PSI at 08:06
At Time 06:00 PSI is 152.2
At Time 12:00 PSI is 1816.4
At Time 24:00 PSI is 2825.3
At Time 00:00 PSI is 0
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
CS
Temp
TT
Time (hh:mm)
fann®
Data File \\Fiuca32023\uca (machines - new)\Cheltenham\ADA\Rock Hopper-1\C-09-117B ROCKHOPPER-1 KICK OFF PLUG.tdms
Comments 17/12/2009

Rockhopper-1

13 3/8" CASING TALLY

RUNNING TALLY

Updated: Saturday 10th October 2009

Casing Specifications			Date Casing Run		
Grade	K55		Casing Burst	3,450	psi (23.8 MPa)
Weight (ppf)	68	(101.4 kg/m)	Casing Collapse	1,940	psi (13.4 MPa)
Connection	Butress		Pipe Yield	1,069,000	lb (475 kdaN)
Ave Thread Loss (m)	0.12	(4.724 in)	Connection Yield	1,300,000	lb (578 kdaN)
Casing OD (in)	13.375	(339.725 mm)	Calc. Capacity	0.4898	bbl/m (0.0779 M3/m)
Calipered ID (in)	12.397	(314.88 mm)	Calc. Capacity	20.572	US Gallons/metre
Hole ID (in)	17.500	(444.5 mm)	Calc. CE Displaceme	0.5701	bbl/m (0.0906 M3/m)
Mud Weight	8.50	ppg (1.02 SG)	Est. Dry Wt (lb)	217,190	(98.72 MT)
Bouyancy Factor	0.8700		Est. Bouyant Wt (lb)	188,958	(85.89 MT)
			Make-Up Torque	10,000 - 12,000	KLbs

** Make up loss from W'ford Data book and confirmed with measurement*

Centraliser Program

Shoe Joint - 2 x Slider 11 - 2 spaced equally between length of pipe. Pre-installed onshore

Float collar joint - 1 x Slider 11 - mid joint. - Pre-installed onshore

Casing - 5 x slider 11 - 1 per joint above shoe track - Over casing coupling

Pup Joint lengths		
	#A	0.000 m
	#B	0.000 m
	#C	0.000 m

RT to top of 13-3/8" WH	94.00 m	*Max Coupling OD*	*14.375*
Hole Depth	966.00 m		
Rat Hole Required	5.00 m		
13.375 in Landing Depth	961.00 m		
13.375 in Run Tally Length	973.52 m		
17.5 in Rat Hole/Stickup	94.00 m		
Comment:			
Comment:			

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
1		Shoe Jt A	12.302	12.182	12.182	948.82	961.00	2 X Slider 11 Centraliser	2380	6.9
2		Float Jt A	12.158	12.038	24.220	936.78	948.82	1 x Slider 11 Centraliser	4730	13.8
3		96	11.038	10.918	35.138	925.86	936.78	1 x Slider 11 Centraliser	6870	20
4		95	10.999	10.879	46.017	914.98	925.86	1 x Slider 11 Centraliser	8990	26.2
5		94	11.679	11.559	57.576	903.42	914.98	1 x Slider 11 Centraliser	11250	32.8
6		93	11.239	11.119	68.695	892.31	903.42	1 x Slider 11 Centraliser	13420	39.2
7		92	11.442	11.322	80.017	880.98	892.31	1 x Slider 11 Centraliser	15630	45.6
8		91	11.594	11.474	91.491	869.51	880.98		17880	52.2
9		90	10.358	10.238	101.729	859.27	869.51	Enter 30" W/Head Housing	19880	58
10		89	10.775	10.655	112.384	848.62	859.27		21960	64.1
11		88	11.539	11.419	123.803	837.20	848.62		24190	70.6
12		87	11.313	11.193	134.996	826.00	837.20		26380	77
13		86	10.932	10.812	145.808	815.19	826.00		28490	83.1
14		85	11.305	11.185	156.993	804.01	815.19		30670	89.5
15		84	11.175	11.055	168.048	792.95	804.01		32830	95.8
16		83	11.549	11.429	179.477	781.52	792.95		35070	102.3
17		82	11.632	11.512	190.989	770.01	781.52		37320	108.9
18		81	10.846	10.726	201.715	759.29	770.01		39410	115
19		80	11.580	11.460	213.175	747.83	759.29		41650	121.5
20		79	11.424	11.304	224.479	736.52	747.83		43860	128
21		78	10.428	10.308	234.787	726.21	736.52		45870	133.9
22		77	10.814	10.694	245.481	715.52	726.21		47960	140
23		76	11.525	11.405	256.886	704.11	715.52		50190	146.5
24		75	11.470	11.350	268.236	692.76	704.11		52410	152.9

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
25		74	10.380	10.260	278.496	682.50	692.76		54410	158.8
26		73	11.305	11.185	289.681	671.32	682.50		56600	165.2
27		72	11.420	11.300	300.981	660.02	671.32		58810	171.6
28		71	10.530	10.410	311.391	649.61	660.02		60840	177.5
29		70	11.555	11.435	322.826	638.17	649.61		63070	184.1
30		69	11.290	11.170	333.996	627.00	638.17		65260	190.4
31		68	11.670	11.550	345.546	615.45	627.00		67510	197
32		67	11.450	11.330	356.876	604.12	615.45		69730	203.5
33		66	11.705	11.585	368.461	592.54	604.12		71990	210.1
34		65	10.440	10.320	378.781	582.22	592.54		74010	216
35		64	11.360	11.240	390.021	570.98	582.22		76200	222.4
36		63	10.680	10.560	400.581	560.42	570.98		78270	228.4
37		62	11.330	11.210	411.791	549.21	560.42		80460	234.8
38		61	11.365	11.245	423.036	537.96	549.21		82650	241.2
39		60	11.405	11.285	434.321	526.68	537.96		84860	247.6
40		59	10.900	10.780	445.101	515.90	526.68		86960	253.8
41		58	11.690	11.570	456.671	504.33	515.90		89220	260.4
42		57	10.970	10.850	467.521	493.48	504.33		91340	266.6
43		56	11.450	11.330	478.851	482.15	493.48		93560	273
44		55	10.990	10.870	489.721	471.28	482.15		95680	279.2
45		54	10.650	10.530	500.251	460.75	471.28		97740	285.2
46		53	10.535	10.415	510.666	450.33	460.75		99770	291.2
47		52	11.360	11.240	521.906	439.09	450.33		101970	297.6
48		51	10.410	10.290	532.196	428.80	439.09		103980	303.4
49		50	11.370	11.250	543.446	417.55	428.80		106180	309.8
50		49	11.275	11.155	554.601	406.40	417.55		108360	316.2
51		48	11.150	11.030	565.631	395.37	406.40		110510	322.5
52		47	11.140	11.020	576.651	384.35	395.37		112670	328.8
53		46	10.980	10.860	587.511	373.49	384.35		114790	335
54		45	10.320	10.200	597.711	363.29	373.49		116780	340.8
55		44	11.550	11.430	609.141	351.86	363.29		119010	347.3
56		43	11.140	11.020	620.161	340.84	351.86		121170	353.6
57		42	11.185	11.065	631.226	329.77	340.84		123330	359.9
58		41	11.415	11.295	642.521	318.48	329.77		125540	366.3
	out	40	11.505	0.000	642.521	318.48	318.48	No Drift / Leave Out	125540	366.3
59		39	11.440	11.320	653.841	307.16	318.48		127750	372.8
60		38	11.340	11.220	665.061	295.94	307.16		129940	379.2
61		37	10.850	10.730	675.791	285.21	295.94		132040	385.3
62		36	11.470	11.350	687.141	273.86	285.21		134250	391.8
63		35	10.985	10.865	698.006	262.99	273.86		136380	398
64		34	10.385	10.265	708.271	252.73	262.99		138380	403.8
65		33	11.600	11.480	719.751	241.25	252.73		140620	410.4
66		32	10.950	10.830	730.581	230.42	241.25		142740	416.5
67		31	11.795	11.675	742.256	218.74	230.42		145020	423.2
68		30	11.710	11.590	753.846	207.15	218.74		147290	429.8
69		29	11.470	11.350	765.196	195.80	207.15		149500	436.3
70		28	11.555	11.435	776.631	184.37	195.80		151740	442.8
71		27	11.100	10.980	787.611	173.39	184.37		153880	449.1
72		26	11.560	11.440	799.051	161.95	173.39		156120	455.6
73		25	10.600	10.480	809.531	151.47	161.95		158170	461.6

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
74		24	11.570	11.450	820.981	140.02	151.47		160400	468.1
75		23	10.440	10.320	831.301	129.70	140.02		162420	474
76		22	11.605	11.485	842.786	118.21	129.70		164660	480.5
	out	21	11.535	0.000	842.786	118.21	118.21		164660	480.5
	out	20	10.980	0.000	842.786	118.21	118.21		164660	480.5
	out	19	11.325	0.000	842.786	118.21	118.21		164660	480.5
	out	18	11.515	0.000	842.786	118.21	118.21		164660	480.5
	out	17	11.620	0.000	842.786	118.21	118.21		164660	480.5
	out	16	11.520	0.000	842.786	118.21	118.21		164660	480.5
	out	15	11.071	0.000	842.786	118.21	118.21		164660	480.5
	out	14	11.480	0.000	842.786	118.21	118.21		164660	480.5
	out	13	11.313	0.000	842.786	118.21	118.21		164660	480.5
	out	12	11.376	0.000	842.786	118.21	118.21		164660	480.5
	out	11	11.999	0.000	842.786	118.21	118.21		164660	480.5
	out	10	12.358	0.000	842.786	118.21	118.21		164660	480.5
	out	9	12.063	0.000	842.786	118.21	118.21		164660	480.5
	out	8	11.732	0.000	842.786	118.21	118.21		164660	480.5
	out	7	10.963	0.000	842.786	118.21	118.21		164660	480.5
	out	6	11.407	0.000	842.786	118.21	118.21		164660	480.5
	out	5	11.025	0.000	842.786	118.21	118.21		164660	480.5
	out	4	12.186	0.000	842.786	118.21	118.21		164660	480.5
	out	3	11.913	0.000	842.786	118.21	118.21		164660	480.5
	out	2	11.515	0.000	842.786	118.21	118.21		164660	480.5
	out	1	11.389	0.000	842.786	118.21	118.21		164660	480.5
77		NC Jt - A	11.813	11.693	854.479	106.52	118.21	No Cross Coupling Jt	166950	487.2
			9.775	9.655	864.134	96.87	106.52	Btm of 18.3/4' HPWH	168830	492.7
			0.000	0.000	864.134	96.87	106.52	30" W/Head Housing Top	168830	492.7
			0.900	0.780	864.914	96.09	106.52	18-3/4" WH - Datum	168990	493.1
			1.450	1.450	866.364	94.64	105.74	R/Tool + X/Over	169270	494
			3.090	3.090	869.454	91.55	104.29	Pup Joint	169870	495.7
			28.170	28.170	897.624	63.38	101.20	STD #1 HWDP	175380	511.8
			28.290	28.290	925.914	35.09	73.03	STD #2 HWDP	180900	527.9
			28.350	28.350	954.264	6.74	44.74	STD #3 HWDP	186440	544.1
			19.260	19.260	973.524	-12.52	16.39	In on Cement Stand	190210	555.1
			0.000	0.000	973.524	-12.52	16.39		190210	555.1
	22		Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
Summary			1236.794	973.524	973.524	-12.524	961.000		190,210	555.1

Rockhopper-1
9-5/8" CASING TALLY

RUNNING TALLY

Updated: Sunday 13th December 2009

Casing Specifications			Date Casing Run		
Grade	L80		Casing Burst	6,870	psi (47.4 MPa)
Weight (ppf)	47	(70.1 kg/m)	Casing Collapse	4,750	psi (32.8 MPa)
Connection	VAM Top		Pipe Yield	1,086,000	lb (483 kdaN)
Ave Thread Loss (m)	0.142	(5.59 in)	Connection Yield	1,300,000	lb (578 kdaN)
Casing OD (in)	9.625	(244.475 mm)	Calc. Capacity	0.2448	bbl/m (0.0389 M3/m)
Calipered ID (in)	8.764	(222.61 mm)	Calc. Capacity	10.282	US Gallons/metre
Hole ID (in)	12.500	(317.5 mm)	Calc. CE Displaceme	0.0505	bbl/m (0.008 M3/m)
Mud Weight	9.20	ppg (1.104 SG)	Est. Dry Wt (lb)	304,047	(138.2 MT)
Bouyancy Factor	0.8596		Est. Bouyant Wt (lb)	261,372	(118.81 MT)
			Make-Up Torque	14,000 - 17,400	KLbs-Ft

** Make up loss from W'ford Data book and confirmed with measurement*

Centraliser Program

Shoe Joint - 2 x Slider 11 - 2 spaced equally between length of pipe. Pre-installed onshore

Float Collar joint - 2 x Slider 11 - mid joint. - Pre-installed onshore

Casing - 8x Slider 11 - 1 per joint above Shoetrack - Over Stopcollar

Pup Joint lengths		
	#A	0.000 m
	#B	0.000 m
	#C	0.000 m

R/Table to top of 9-5/8" Hanger	96.60 m	*Max Coupling OD*	*10.396 in*
Hole Depth	1972.00 m		
Rat Hole Required	7.25 m		
9.625 in Landing Depth	1964.75 m		
9.625 in Run Tally Length	1971.78 m		
12.5 in Rat Hole/Stickup	94.00 m		
Comment:			
Comment:			

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
1		Shoe Jt A	12.620	12.620	12.620	1952.13	1964.75	2 X Slider 11 Centraliser	1680	0.6
2		Int	12.180	12.038	24.658	1940.09	1952.13	2 X Slider 11 Centraliser	3290	1.2
3		Float Jt A	12.610	12.468	37.126	1927.62	1940.09	1 x Slider 11 Centraliser	4950	1.9
4		176	12.185	12.043	49.169	1915.58	1927.62	1 x Slider 11 Centraliser	6560	2.5
5		175	12.180	12.038	61.207	1903.54	1915.58	1 x Slider 11 Centraliser	8170	3.1
6		174	12.180	12.038	73.245	1891.51	1903.54	1 x Slider 11 Centraliser	9770	3.7
7		173	12.185	12.043	85.288	1879.46	1891.51	1 x Slider 11 Centraliser	11380	4.3
8		172	12.160	12.018	97.306	1867.44	1879.46	1 x Slider 11 Centraliser	12980	4.9
9		171	12.060	11.918	109.224	1855.53	1867.44	1 x Slider 11 Centraliser	14570	5.5
10		170	12.180	12.038	121.262	1843.49	1855.53	1 x Slider 11 Centraliser	16180	6.1
11		169	11.960	11.818	133.080	1831.67	1843.49	1 x Slider 11 Centraliser	17760	6.7
12		168	11.955	11.813	144.893	1819.86	1831.67		19330	7.3
13		167	12.155	12.013	156.906	1807.84	1819.86		20940	7.9
14		166	12.185	12.043	168.949	1795.80	1807.84		22540	8.5
15		165	12.120	11.978	180.927	1783.82	1795.80		24140	9.1
16		164	12.185	12.043	192.970	1771.78	1783.82		25750	9.7
17		163	12.185	12.043	205.013	1759.74	1771.78		27360	10.3
18		162	12.180	12.038	217.051	1747.70	1759.74		28960	11
19		161	12.180	12.038	229.089	1735.66	1747.70		30570	11.6
20		160	12.120	11.978	241.067	1723.68	1735.66		32170	12.2
21		159	12.165	12.023	253.090	1711.66	1723.68		33770	12.8
22		158	12.180	12.038	265.128	1699.62	1711.66		35380	13.4
23		157	12.185	12.043	277.171	1687.58	1699.62		36980	14
24		156	12.185	12.043	289.214	1675.54	1687.58		38590	14.6

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
25		**155**	**12.180**	**12.038**	301.252	1663.50	1675.54		40200	15.2
26		**154**	**12.185**	**12.043**	313.295	1651.46	1663.50		41800	15.8
27		**153**	**12.185**	**12.043**	325.338	1639.41	1651.46		43410	16.4
28		**152**	**12.185**	**12.043**	337.381	1627.37	1639.41		45020	17
29		**151**	**12.180**	**12.038**	349.419	1615.33	1627.37		46620	17.6
30		**150**	**12.185**	**12.043**	361.462	1603.29	1615.33		48230	18.2
31		**149**	**12.180**	**12.038**	373.500	1591.25	1603.29		49840	18.8
32		**148**	**12.185**	**12.043**	385.543	1579.21	1591.25		51440	19.5
33		**147**	**12.185**	**12.043**	397.586	1567.16	1579.21		53050	20.1
34		**146**	**12.180**	**12.038**	409.624	1555.13	1567.16		54660	20.7
35		**145**	**12.185**	**12.043**	421.667	1543.08	1555.13		56260	21.3
36		**144**	**12.180**	**12.038**	433.705	1531.05	1543.08		57870	21.9
37		**143**	**12.180**	**12.038**	445.743	1519.01	1531.05		59480	22.5
38		**142**	**12.180**	**12.038**	457.781	1506.97	1519.01		61080	23.1
39		**141**	**12.180**	**12.038**	469.819	1494.93	1506.97		62690	23.7
40		**140**	**12.180**	**12.038**	481.857	1482.89	1494.93		64300	24.3
41		**139**	**12.180**	**12.038**	493.895	1470.86	1482.89		65900	24.9
42		**138**	**12.180**	**12.038**	505.933	1458.82	1470.86		67510	25.5
43		**137**	**12.170**	**12.028**	517.961	1446.79	1458.82		69110	26.1
44		**136**	**12.185**	**12.043**	530.004	1434.75	1446.79		70720	26.7
45		**135**	**12.180**	**12.038**	542.042	1422.71	1434.75		72330	27.4
46		**134**	**12.185**	**12.043**	554.085	1410.67	1422.71		73930	28
47		**133**	**12.180**	**12.038**	566.123	1398.63	1410.67		75540	28.6
48		**132**	**12.180**	**12.038**	578.161	1386.59	1398.63		77150	29.2
49		**131**	**12.185**	**12.043**	590.204	1374.55	1386.59		78750	29.8
50		**130**	**12.180**	**12.038**	602.242	1362.51	1374.55		80360	30.4
51		**129**	**12.180**	**12.038**	614.280	1350.47	1362.51		81960	31
52		**128**	**12.180**	**12.038**	626.318	1338.43	1350.47		83570	31.6
53		**127**	**12.185**	**12.043**	638.361	1326.39	1338.43		85180	32.2
54		**126**	**12.180**	**12.038**	650.399	1314.35	1326.39		86780	32.8
55		**125**	**12.180**	**12.038**	662.437	1302.31	1314.35		88390	33.4
56		**124**	**12.185**	**12.043**	674.480	1290.27	1302.31		90000	34
57		**123**	**12.130**	**11.988**	686.468	1278.28	1290.27		91600	34.6
58		**122**	**12.185**	**12.043**	698.511	1266.24	1278.28		93200	35.2
59		**121**	**12.035**	**11.893**	710.404	1254.35	1266.24		94790	35.8
60		**120**	**12.180**	**12.038**	722.442	1242.31	1254.35		96400	36.5
61		**119**	**12.090**	**11.948**	734.390	1230.36	1242.31		97990	37.1
62		**118**	**12.140**	**11.998**	746.388	1218.36	1230.36		99590	37.7
63		**117**	**12.185**	**12.043**	758.431	1206.32	1218.36		101200	38.3
64		**116**	**12.185**	**12.043**	770.474	1194.28	1206.32		102810	38.9
65		**115**	**12.185**	**12.043**	782.517	1182.23	1194.28		104410	39.5
66		**114**	**12.170**	**12.028**	794.545	1170.21	1182.23		106020	40.1
67		**113**	**12.180**	**12.038**	806.583	1158.17	1170.21		107620	40.7
68		**112**	**12.185**	**12.043**	818.626	1146.12	1158.17		109230	41.3
69		**111**	**12.185**	**12.043**	830.669	1134.08	1146.12		110840	41.9
70		**110**	**12.180**	**12.038**	842.707	1122.04	1134.08		112440	42.5
71		**109**	**12.185**	**12.043**	854.750	1110.00	1122.04		114050	43.1
72		**108**	**12.180**	**12.038**	866.788	1097.96	1110.00		115660	43.7
73		**107**	**12.180**	**12.038**	878.826	1085.92	1097.96		117260	44.3
74		**106**	**12.180**	**12.038**	890.864	1073.89	1085.92		118870	45

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
75		**105**	**12.180**	**12.038**	902.902	1061.85	1073.89		120480	45.6
76		**104**	**12.180**	**12.038**	914.940	1049.81	1061.85		122080	46.2
77		**103**	**11.955**	**11.813**	926.753	1038.00	1049.81		123660	46.8
78		**102**	**12.185**	**12.043**	938.796	1025.95	1038.00		125270	47.4
79		**101**	**12.180**	**12.038**	950.834	1013.92	1025.95		126870	48
80		**100**	**12.185**	**12.043**	962.877	1001.87	1013.92		128480	48.6
81		**99**	**12.185**	**12.043**	974.920	989.83	1001.87		130090	49.2
82		**98**	**11.930**	**11.788**	986.708	978.04	989.83		131660	49.8
83		**97**	**12.010**	**11.868**	998.576	966.17	978.04		133240	50.4
84		**96**	**12.180**	**12.038**	1010.614	954.14	966.17		134850	51
85		**95**	**12.180**	**12.038**	1022.652	942.10	954.14		136450	51.6
86		**94**	**12.170**	**12.028**	1034.680	930.07	942.10		138060	52.2
87		**93**	**12.180**	**12.038**	1046.718	918.03	930.07		139670	52.8
88		**92**	**12.180**	**12.038**	1058.756	905.99	918.03		141270	53.4
89		**91**	**12.185**	**12.043**	1070.799	893.95	905.99		142880	54
90		**90**	**12.180**	**12.038**	1082.837	881.91	893.95		144490	54.6
91		**89**	**12.090**	**11.948**	1094.785	869.97	881.91		146080	55.2
92		**88**	**12.180**	**12.038**	1106.823	857.93	869.97		147690	55.9
93		**87**	**12.180**	**12.038**	1118.861	845.89	857.93		149290	56.5
94		**86**	**12.190**	**12.048**	1130.909	833.84	845.89		150900	57.1
95		**85**	**12.180**	**12.038**	1142.947	821.80	833.84		152510	57.7
96		**84**	**12.170**	**12.028**	1154.975	809.78	821.80		154110	58.3
97		**83**	**12.190**	**12.048**	1167.023	797.73	809.78		155720	58.9
98		**82**	**12.180**	**12.038**	1179.061	785.69	797.73		157320	59.5
99		**81**	**12.190**	**12.048**	1191.109	773.64	785.69		158930	60.1
100		**80**	**12.190**	**12.048**	1203.157	761.59	773.64		160540	60.7
101		**79**	**12.190**	**12.048**	1215.205	749.55	761.59		162150	61.3
102		**78**	**12.180**	**12.038**	1227.243	737.51	749.55		163750	61.9
103		**77**	**12.180**	**12.038**	1239.281	725.47	737.51		165360	62.5
104		**76**	**12.180**	**12.038**	1251.319	713.43	725.47		166970	63.1
105		**75**	**12.190**	**12.048**	1263.367	701.38	713.43		168570	63.8
106		**74**	**12.090**	**11.948**	1275.315	689.44	701.38		170170	64.4
107		**73**	**12.185**	**12.043**	1287.358	677.39	689.44		171770	65
108		**72**	**12.180**	**12.038**	1299.396	665.35	677.39		173380	65.6
109		**71**	**12.190**	**12.048**	1311.444	653.31	665.35		174990	66.2
110		**70**	**12.180**	**12.038**	1323.482	641.27	653.31		176600	66.8
111		**69**	**12.180**	**12.038**	1335.520	629.23	641.27		178200	67.4
112		**68**	**12.185**	**12.043**	1347.563	617.19	629.23		179810	68
113		**67**	**12.180**	**12.038**	1359.601	605.15	617.19		181410	68.6
114		**66**	**12.180**	**12.038**	1371.639	593.11	605.15		183020	69.2
115		**65**	**12.190**	**12.048**	1383.687	581.06	593.11		184630	69.8
116		**64**	**12.180**	**12.038**	1395.725	569.03	581.06		186230	70.4
117		**63**	**12.185**	**12.043**	1407.768	556.98	569.03		187840	71
118		**62**	**12.190**	**12.048**	1419.816	544.93	556.98		189450	71.6
119		**61**	**12.180**	**12.038**	1431.854	532.90	544.93		191060	72.3
120		**60**	**12.185**	**12.043**	1443.897	520.85	532.90		192660	72.9
121		**59**	**12.180**	**12.038**	1455.935	508.82	520.85		194270	73.5
122		**58**	**12.180**	**12.038**	1467.973	496.78	508.82		195870	74.1
123		**57**	**12.080**	**11.938**	1479.911	484.84	496.78		197470	74.7
124		**56**	**12.180**	**12.038**	1491.949	472.80	484.84		199070	75.3

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
125		55	12.180	12.038	1503.987	460.76	472.80		200680	75.9
126		54	12.180	12.038	1516.025	448.73	460.76		202290	76.5
127		53	11.740	11.598	1527.623	437.13	448.73		203830	77.1
128		52	12.190	12.048	1539.671	425.08	437.13		205440	77.7
129		51	12.190	12.048	1551.719	413.03	425.08		207050	78.3
130		50	12.180	12.038	1563.757	400.99	413.03		208660	78.9
131		49	12.205	12.063	1575.820	388.93	400.99		210270	79.5
132		48	12.185	12.043	1587.863	376.89	388.93		211870	80.1
133		47	12.185	12.043	1599.906	364.84	376.89		213480	80.7
134		46	11.970	11.828	1611.734	353.02	364.84		215060	81.3
135		45	12.180	12.038	1623.772	340.98	353.02		216660	81.9
136		44	12.185	12.043	1635.815	328.94	340.98		218270	82.5
137		43	12.185	12.043	1647.858	316.89	328.94		219880	83.2
138		42	12.185	12.043	1659.901	304.85	316.89		221480	83.8
139		41	12.180	12.038	1671.939	292.81	304.85		223090	84.4
140		40	12.180	12.038	1683.977	280.77	292.81		224700	85
141		39	11.855	11.713	1695.690	269.06	280.77		226260	85.6
142		38	12.180	12.038	1707.728	257.02	269.06		227870	86.2
143		37	12.170	12.028	1719.756	244.99	257.02		229470	86.8
144		36	12.180	12.038	1731.794	232.96	244.99		231080	87.4
145		35	12.180	12.038	1743.832	220.92	232.96		232680	88
146		34	12.185	12.043	1755.875	208.88	220.92		234290	88.6
147		33	12.180	12.038	1767.913	196.84	208.88		235900	89.2
148		32	12.185	12.043	1779.956	184.79	196.84		237500	89.8
149		31	12.130	11.988	1791.944	172.81	184.79		239100	90.4
150		30	12.185	12.043	1803.987	160.76	172.81		240710	91
151		29	12.185	12.043	1816.030	148.72	160.76		242320	91.6
152		28	12.130	11.988	1828.018	136.73	148.72		243920	92.2
153		27	12.180	12.038	1840.056	124.69	136.73		245520	92.9
154		26	12.185	12.043	1852.099	112.65	124.69		247130	93.5
155		25	12.180	12.038	1864.137	100.61	112.65		248740	94.1
	out	24	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	23	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	22	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	21	12.190	0.000	1864.137	100.61	100.61		248740	94.1
	out	20	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	19	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	18	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	17	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	16	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	15	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	14	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	13	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	12	12.060	0.000	1864.137	100.61	100.61		248740	94.1
	out	11	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	10	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	9	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	8	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	7	11.995	0.000	1864.137	100.61	100.61		248740	94.1
	out	6	12.155	0.000	1864.137	100.61	100.61		248740	94.1

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
	out	5	12.170	0.000	1864.137	100.61	100.61		248740	94.1
	out	4	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	3	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	2	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	1	12.180	0.000	1864.137	100.61	100.61		248740	94.1
			4.150	4.008	1868.145	96.61	100.61		249270	94.3
			0.000	0.000	1868.145	96.61	96.61	Top of 9-5/8" Csg Hanger	249270	94.3
			1.010	1.010	1869.155	95.60	96.61	18-3/4" WH - Datum	249410	94.3
			0.620	0.620	1869.775	94.98	95.60	R/Tool + X/Over	249490	94.4
			3.060	3.060	1872.835	91.92	94.98	Pup Joint	249900	94.5
			27.980	27.980	1900.815	63.94	91.92	STD #1 HWDP	253630	95.9
			28.400	28.400	1929.215	35.54	63.94	STD #2 HWDP	257420	97.4
			28.390	28.390	1957.605	7.15	35.54	STD #3 HWDP	261210	98.8
			14.170	14.170	1971.775	-7.02	7.15	In on Cement Stand	263100	99.5
			0.000	0.000	1971.775	-7.02	7.15		263100	99.5
	24		Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
Summary			2285.805	1971.775	1971.775	-7.025	1964.750		263,100	99.5

APPENDIX 15: FIT/LOT SUMMARY SHEETS

FIT / LOT SUMMARY SHEET

Australian Drilling Associates Pty Ltd

RIG	Kan Tan 4
WELL	Rockhopper 1
DATE	19-Dec-09

Casing Size:	9.625	in
Shoe Depth:	1965.00	m TVD
Hole Depth:	1977.00	m TVD
Mud Weight:	9.50	ppg
Pump Rate:	0.25	BPM
Vol pumped:	3.15	BBL
Vol bled back:	3	BBL

Target LOT EMW	>12.6	ppg
Target Surf Press	>1039	psi

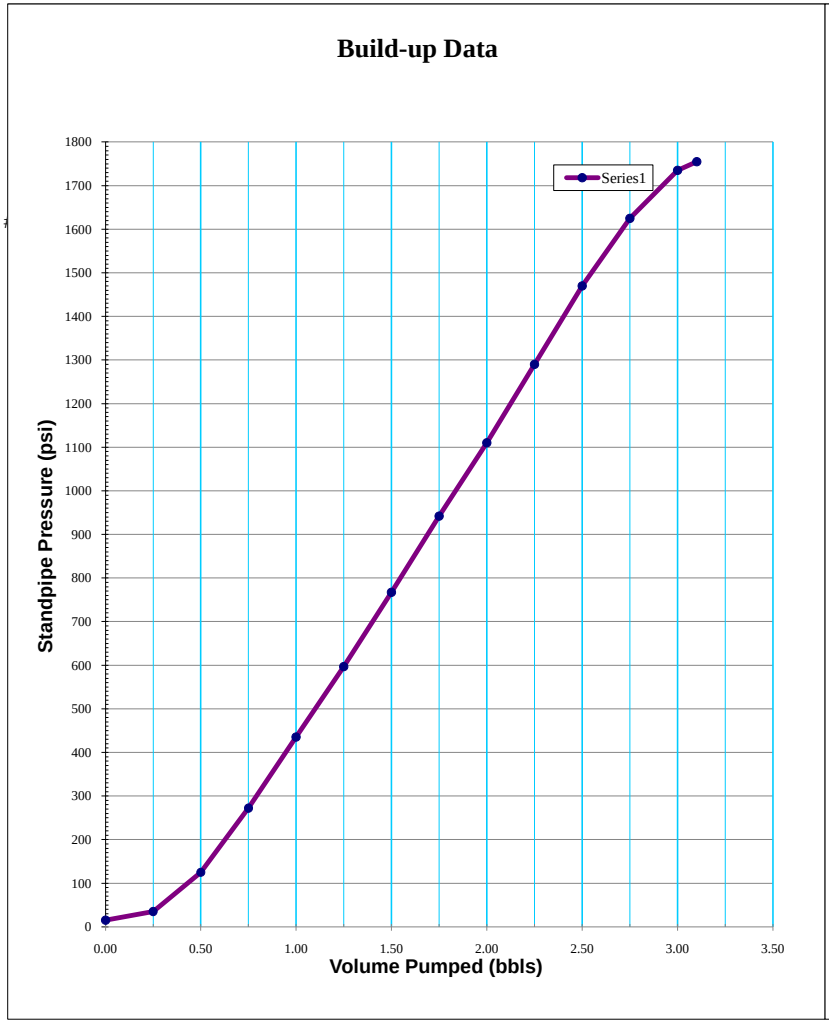
Actual Max Press	1710	psi
Actual EMW	**14.60**	**ppg**

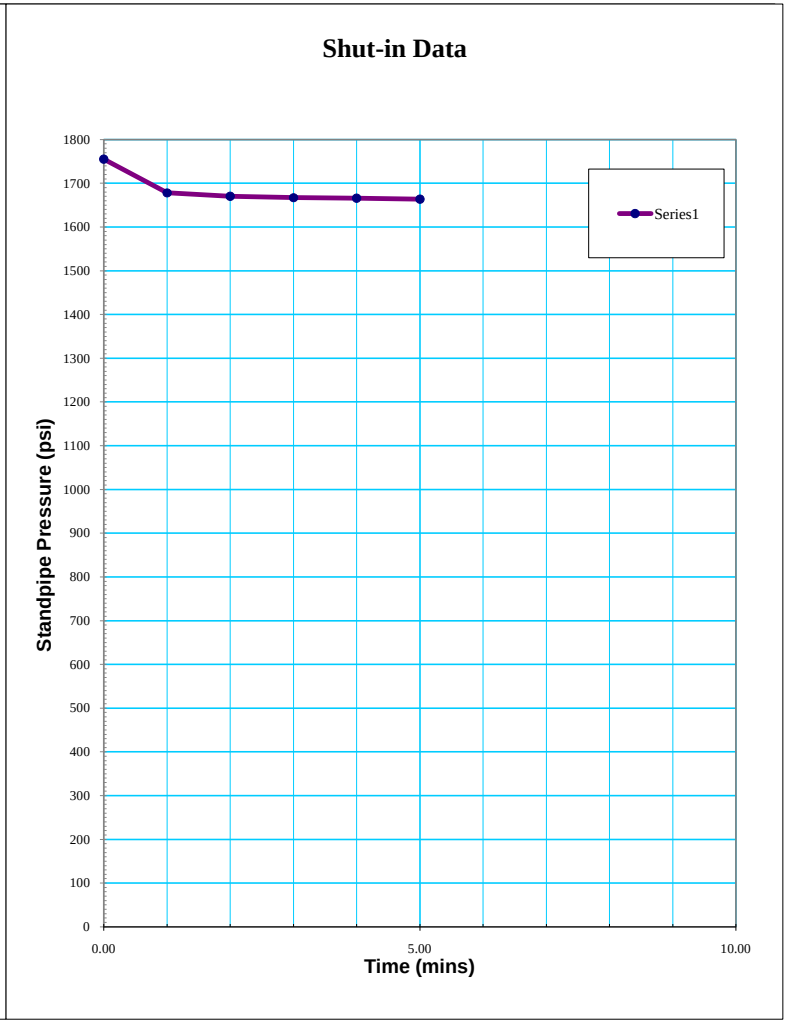
Build-up Data

Volume bbls	Pressure psi	Volume bbls	Pressure psi
Test 1		Test 2	
0.00	15		
0.25	35		
0.50	125		
0.75	272		
1.00	435		
1.25	597		
1.50	767		
1.75	942		
2.00	1110		
2.25	1290		
2.50	1470		
2.75	1625		
3.00	1735		
3.10	1755		

Shut-in Data

Time mins	Pressure psi	Time mins	Pressure psi
Test 1		Test 2	
0.00	1755		
1.00	1678		
2.00	1670		
3.00	1667		
4.00	1666		
5.00	1664		





NOTES

Test 1:

1. Performed FIT at ¼ BPM, recording data every 0.25 BBL pumped.
2. After 2.8 BBL pumped the formation started taking fluid. Based on this the intersection between the tangetial lines of the Pressure Build-up 1,710 psi was taken as the break-over pressure point.
3. At **1,710 psi** an **EMW** of **14.6 ppg** is obtained.

FIT / LOT SUMMARY SHEET

Australian Drilling Associates Pty Ltd

RIG	Kan Tan 4
WELL	Rockhopper 1
DATE	9-Dec-09

Casing Size:	13.375	in
Shoe Depth:	961.00	m TVD
Hole Depth:	971.00	m TVD
Mud Weight:	9.00	ppg
Pump Rate:	0.4	BPM
Vol pumped:	3.25	BBL
Vol bled back:	2.5	BBL

Target LOT EMW	>10.5	ppg
Target Surf Press	>246	psi

Actual Max Press	1400	psi
Actual EMW	**17.50**	**ppg**

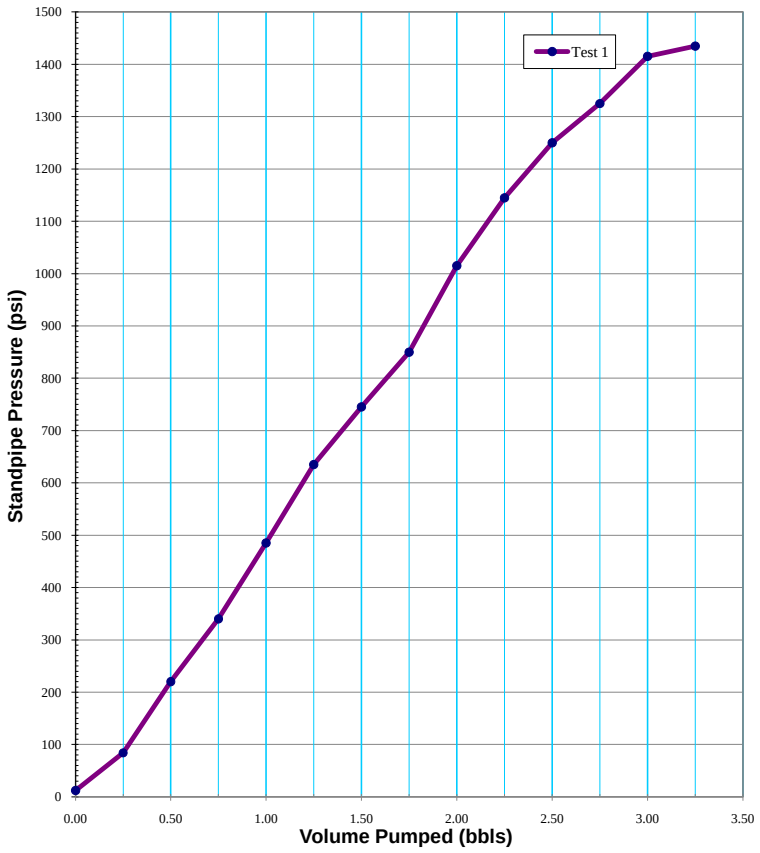
Build-up Data

Volume bbls	Pressure psi	Volume bbls	Pressure psi
Test 1		Test 2	
0.00	12		
0.25	84		
0.50	220		
0.75	340		
1.00	485		
1.25	635		
1.50	745		
1.75	850		
2.00	1015		
2.25	1145		
2.50	1250		
2.75	1325		
3.00	1415		
3.25	1435		

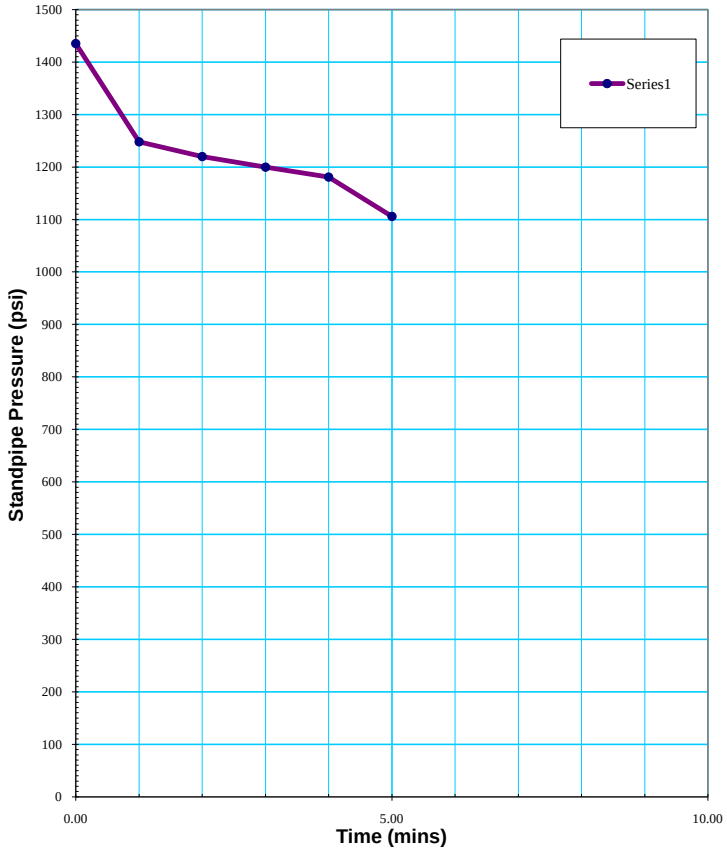
Shut-in Data

Time mins	Pressure psi	Time mins	Pressure psi
Test 1		Test 2	
0.00	1435		
1.00	1248		
2.00	1220		
3.00	1200		
4.00	1181		
5.00	1106		

Build-up Data



Shut-in Data



NOTES

Test 1:

1. Performed FIT at 0.4 BPM, recording data every 0.25 BBL pumped.
2. After 3.0 BBL pumped the formation started taking fluid. Based on this the intersection between the tangetial lines of the Pressure Build-up 1,400 psi was taken as the break-over pressure point.
3. At **1,400 psi** an **EMW** of **17.5 pp**g is obtained.

APPENDIX 16: DAILY DRILLING REPORTS

Australian Drilling Associates Pty Ltd

29 Nov 2009

From: Brian Houston/Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 1
Rockhopper-1

Rockhopper-1

Date:	29 Nov 2009	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	1	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.1828 "	**Longitude (East):**	145 ° 26 ' 21.466 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	0.0m	Cur. Hole Size		AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	0.0m	Last Casing OD		AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT		Daily Cost	US$2,043,391
Rig	Kan Tan IV	Days from spud	0.00	Shoe MDBRT		Cumul. Cost	US$2,043,391
Wtr Dpth(MSL)	74.3m	Days on well	0.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	28
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Making up stands of 5" HWDP		
Datum	GDA 94	Last BOP Test		Planned Op	Make up 7 stands of HWDP. Make up 18 3/4" RT to 18 3/4" housing with cement plugs installed. Make up 30 stands of 5" DP and rack in mast. Make up 26" x 36" spud in BHA. Complete seabed survey. Spud Rockhopper-1		

Summary of Period 0000 to 2400 Hrs

Completed rig move from Trefoil-2 to Rockhopper-1 location. Deployed anchors. Ballasted rig to operational draft. Cross tensioned anchors.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	25 Days	Full Emergency drill performed	
Fire Drill	0	15 Days	Main deck - Fire in Control room	
Permit To Work	15	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	14 Days	General safety meetings	
Safety Meeting	15	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	30	0 Days	Number of STOP Cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 29 Nov 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P1	P	M1	0100	0500	4.00	0.0m	Rig under tight tow from Trefoil-2. Rockhopper-1 well commenced at 01:00hrs
P1	P	M1	0500	0600	1.00	0.0m	Rig commenced run in to Rockhopper-1. Anchor #6 dropped and on bottom at 05:22hrs. Rig on location at 05:46hrs
P1	P	M4	0600	1400	8.00	0.0m	Deployed anchors on Rockhopper-1 location #2 anchor: 05:59 PCC to Far Scimitar - 07:00 anchor on bottom - 07:30 PCC back to rig #7 anchor: 07:52 PCC to Far Scimitar - 08:49 anchor on bottom - 09:17 PCC back to rig #3 anchor: 09:33 PCC to Far Scimitar - 10:19 anchor on bottom - 10:53 PCC back to rig #8 anchor: 10:38 PCC to Far Fosna - 11:17 anchor on bottom - 11:45 PCC back to rig #4 anchor: 11:06 PCC to Far Scimitar - 11:19 anchor on bottom - 12:20 PCC back to rig #1 anchor: 11:55 PCC to Far Fosna - 12:40 anchor on bottom - 13:24 PCC back to rig #5 anchor: 12:27 PCC to Far Scimitar - 13:18 anchor on bottom - 13:45 PCC back to rig
P1	P	M3	1400	1830	4.50	0.0m	Ballasted rig to drilling draft of 65ft.
P1	P	M5	1830	2400	5.50	0.0m	Cross tensioned anchors. #7 anchor not holding.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							21:25-23:15 Far Scimitar relaid #7 anchor. 23:51 Cross tensioned completed.

Operations For Period 0000 Hrs to 0600 Hrs on 30 Nov 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P1	P	M2	0000	0030	0.50	0.0m	Adjusted rig position to 4m radius. Rig position accepted by ADA NDSV at 00:25 (Far Fosna unable to transfer mud to rig due to weather conditions).
P2	P	G1	0030	0200	1.50	0.0m	PGB skidded under drill floor and #3 guide post (8ft) changed out for 10ft guide post.
P2	P	G5	0200	0300	1.00	0.0m	Made up a stand of 5" HWDP to 30" RT and stood back in mast.
P2	P	G5	0300	0500	2.00	0.0m	Made up 18 3/4" WHRT assembly and laid out same (all components drifted to 2 5/8").
P2	P	G2	0500	0600	1.00	0.0m	(IN PROGRESS) Made up 5" HWDP and racked back in mast.

Phase Data to 2400hrs, 29 Nov 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23	29 Nov 2009	29 Nov 2009	23.00	0.958	0.0m

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	20	0	227.0
Drill Water	m3	15	0	0	208.0
Pot Water	m3	36	38	0	213.0
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	0	0	0	73.0
Barite	MT	0	0	0	81.6
Bentonite	MT	0	0	0	46.0
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	0	0	8.0
XANTHUM GUM	sxs	0	0	0	35.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	0	0	0	0.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	0	0	38.0
Clayseal +	Drums	0	0	0	46.0
Cuttings Pit 1	can	0	0	0	32.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	0	0	0	100.0
Milpac - LV	sxs	0	0	0	38.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	0	0	0	33.0
KOH	can	0	0	0	12.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	0	0	22.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 175	Screens	0	0	0	7.0

Marine

Weather on 29 Nov 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	15kn	140.0deg	1006.0mbar	14C°	2.4m	110.0deg	4s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	1.3deg	1.0deg	315.0deg	0.00klb	745.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	110.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	
2	
3	
4	
5	
6	
7	
8	

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	23:15 - 21/11/09		Running standby

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		410
Potable Water	M3		124
Drill Water	M3		523
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		112
Mud	bbl		145

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:30 - 24/11/2009		Running standby

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		567
Pot Water	M3		340
Drill Water	M3		600
Bentonite	t		42
Barite	t		40
	t		130
Brine	M3		0
Mud	bbl		880

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Australian Drilling Associates Pty Ltd

29 Nov 2009

From: Brian Houston/Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 1
Rockhopper-1

Rockhopper-1

Date:	29 Nov 2009	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	1	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.07 "	**Longitude (East):**	145 ° 26 ' 21.55 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	0.0m	Cur. Hole Size		AFE Cost	US$26,950,963
Field	Rockhopper	TVDBRT	0.0m	Last Casing OD		AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT		Daily Cost	US$ 0
Rig		Days from spud		Shoe MDBRT		Cumul. Cost	US$ 0
Wtr Dpth(MSL)	76.0m	Days on well	0.21	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3489.5m			Days Since Last LTI	28
RT-ML	102.0m	Planned TD TVDRT	3168.5m	Current Op @ 0600			
Datum	GDA 94	Last BOP Test		Planned Op			

Summary of Period 0000 to 2400 Hrs

Operations For Period 0000 Hrs to 2400 Hrs on 29 Nov 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P1	P	M1	0100	0600	5.00	0.0m	Rig 500m from Trefoil-2. Rockhopper-1 well commenced at 01:00hrs 01:24 #6 anchor off bottom. 01:25 Commenced tow to Rockhopper-1 location.

Phase Data to 2400hrs, 29 Nov 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	5	29 Nov 2009	29 Nov 2009	5.00	0.208	0.0m

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	0	0	244.6
Drill Water	m3	0	0	0	193.0
Pot Water	m3	0	0	0	215.4
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	0	0	0	73.0
Barite	MT	0	0	0	81.6
Bentonite	MT	0	0	0	46.0
Barolift	boxes	0	0	0	16.0
Baradefoam-W300	can	0	0	0	8.0
Caustic Soda	pail	0	0	0	0.0
Soda Ash	sx	0	0	0	22.0
Sodium Bicarbonate	25kg sx	0	0	0	38.0
Citric Acid	Sacks	0	0	0	38.0
1840 kg/m3 Kill Mud	m3	0	0	0	0.0
Barite	t	0	0	0	0.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screen	0	0	0	24.0
Techmesh 140	Screen	0	0	0	16.0
Techmesh 175	Screen	0	0	0	7.0

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Australian Drilling Associates Pty Ltd

30 Nov 2009

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 2
Rockhopper-1

Rockhopper-1

Date:	30 Nov 2009	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	2	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.1828 "	**Longitude (East):**	145 ° 26 ' 21.466 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	117.0m	Cur. Hole Size		AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	117.0m	Last Casing OD		AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT		Daily Cost	US$681,290
Rig	Kan Tan IV	Days from spud	0.02	Shoe MDBRT		Cumul. Cost	US$2,724,681
Wtr Dpth(MSL)	74.3m	Days on well	1.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	29
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Troubleshooting pipe handler problem.		
Datum	GDA 94	Last BOP Test		Planned Op	POOH with spud assembly. Run and cement 30" casing.		

Summary of Period 0000 to 2400 Hrs

Adjusted final rig position. Skidded PGB under drill floor and installed 10ft guide post in position 3. Made up 30" RT to stand of HWDP. Made up 18 3/4" WHRT assembly and laid out. Made up 5" HWDP and racked in mast. Made up 18 3/4" WHRT to 18 3/4" WH with cement plugs installed and laid out. Made up 30 stands of 5" DP and racked in mast. Made up 26" x 36" spud in BHA. Tagged sea bed at 100.3m (tide corrected). Tested Anderdrift. 0.5deg. Spuded and drilled 26' x 36" hole from 100.3m to 117m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	26 Days	Full Emergency drill performed	
Fire Drill	0	16 Days	Main deck - Fire in Control room	
Gas Drill	1	0 Days	Held pre spud gas drill and muster	
Permit To Work	16	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	15 Days	General safety meetings	
Safety Meeting	16	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	35	0 Days	Number of STOP Cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 30 Nov 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P1	P	M2	0000	0030	0.50	0.0m	Adjusted rig position to 4m radius. Rig position accepted by ADA NDSV at 00:25 (Far Fosna unable to transfer mud to rig due to weather conditions).
P2	P	G1	0030	0200	1.50	0.0m	PGB skidded under drill floor and #3 guide post (8ft) changed out for 10ft guide post.
P2	P	G5	0200	0300	1.00	0.0m	Made up a stand of 5" HWDP to 30" RT and stood back in mast.
P2	P	G5	0300	0500	2.00	0.0m	Made up 18 3/4" WHRT assembly and laid out same (all components drifted to 2 5/8").
P2	P	G2	0500	0700	2.00	0.0m	Made up 5" HWDP and racked back in mast.
P2	P	G5	0700	0900	2.00	0.0m	Held JSA. Picked up 18 3/4" wellhead and set in rotary. Picked up WHRT, installed cement wiper plugs, made up to 18 3/4" wellhead and laid out from drill floor.
P2	P	G2	0900	1630	7.50	0.0m	Held JSA. Picked up 30 stands of 5" DP and racked back in mast.
P2	P	G6	1630	2230	6.00	0.0m	Held JSA and made up 26" bit x 36" hole opener. RIH BHA to 94m.
P2	P	G8	2230	2300	0.50	0.0m	Tagged bottom at 100.3m tide corrected. Offline held pre spud and shallow gas meeting while ROV reposition markers on seabed.
P2	P	F4	2300	2330	0.50	0.0m	Pulled up 10m. Broke circulation and function tested Anderdrift tool. 10 pulses counted 0.5deg.
P2	P	D2	2330	2400	0.50	117.0m	Spud Rockhopper-1. Drilled 36" hole from 100.3m to 117m. Started drilling with 30rpm,

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Printed on 01 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							250gpm, 0-5k WOB using PHG for first 5m. Gradually increased parameters to 80rpm, 800gpm, 2-5k WOB. Pumped 50bbl hi vis every single and spotted Hi Vis around BHA on connections.

Operations For Period 0000 Hrs to 0600 Hrs on 01 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P2	P	D2	0000	0230	2.50	150.0m	Drilled 26" x 36" hole from 117m to 150m. 80rpm, 800gpm, 2-5k WOB. Pumped 50bbl PBG hi vis every single and spotted PBG hi vis around BHA on connections.
P2	TP (RE)	G11	0230	0600	3.50	150.0m	Saver sub backed out on connection. Laid out single with saver sub and pulled back to 110m. Re installed saver sub to TDS. Encountered problems with pipe handler when making up saver sub. Troubleshoot pipehandler problem.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 30 Nov 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	23.5	30 Nov 2009	30 Nov 2009	47.00	1.958	117.0m

General Comments

00:00 TO 24:00 Hrs ON 30 Nov 2009

Operational Comments	Seabed survey completed Held 2 x Pre spud meetings with ADA / Origin

WBM Data

Cost Today US$ 29317

Mud Type:	Hi-Vis PHB/Guar gum Sweeps	API FL:		Cl:	1000mg/l	Solids(%vol):	
		Filter-Cake:		K+C*1000:		H2O:	95%
Sample-From:	Pit #1	HTHP-FL:		Hard/Ca:		Oil(%):	
Time:	1400	HTHP-cake:		MBT:	27	Sand:	
Weight:	8.80ppg			PM:		pH:	9
Temp:				PF:		PHPA:	

Viscosity	132sec/qt
PV	14cp
YP	56lb/100ft²
Gels 10s	25
Gels 10m	47
Fann 003	30
Fann 006	35
Fann 100	56
Fann 200	60
Fann 300	70
Fann 600	84

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	200	6	0	421.0
Drill Water	m3	300	10	0	498.0
Pot Water	m3	37	26	0	224.0
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	0	0	0	73.0
Barite	MT	0	2.4	0	79.2
Bentonite	MT	0	0	5	51.0
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	0	0	8.0
XANTHUM GUM	sxs	40	0	0	75.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	32	3	0	29.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	0	0	38.0
Clayseal +	Drums	0	0	0	46.0
Cuttings Pit 1	can	0	0	0	32.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	50	22	0	128.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Milpac - LV	sxs	0	0	0	38.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	0	0	0	33.0
KOH	can	0	0	0	12.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	2	0	20.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0
Lime	sxs	89	0	0	89.0

Personnel On Board

Company	Pax
ADA	6
Maersk	41
GRN	5
OMS	20
Dril-Quip	1
Geoservices	2
Halliburton Cementers	3
Halliburton (Baroid)	2
Fugro Survey	2
Fugro ROV	6
Other Contractor	1
Reach	1
Other Contractor	1
Other Contractor	1
Total	92

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / James Munford

Available	**1562.6bbl**
Active	55.0bbl
Mixing	
Hole	68.6bbl
Slug	
Reserve	
Kill	
Hi-Vis	1439.0bbl
PHB/Guar	
Sweeps	

Losses	**150.0bbl**
Downhole	
Surf+ Equip	0.0bbl
Dumped	150.0bbl
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	

Equipment	Description	Mesh Size	Comments

Marine

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Weather on 30 Nov 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	11kn	72.0deg	1020.0mbar	13C°	1.0m	90.0deg	7s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.6deg	0.9deg	315.0deg	0.00klb	480.00klb	Calm

Swell Height	Swell Dir.	Swell Period	Comments
1.3m	110.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	37.0
2	104.0
3	203.0
4	189.0
5	134.0
6	37.0
7	205.0
8	257.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	23:15 - 21/11/09	17:45 - 30/11/09	On route to Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		396
Potable Water	M3		121
Drill Water	M3		523
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		112
Mud	bbl		0

Discharged 145bbl Mud to TK4

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:30 - 24/11/2009		Running standby

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		354
Pot Water	M3		332
Drill Water	M3		600
Bentonite	t		42
Barite	t		40
	t		130
Brine	M3		0
Mud	bbl		880

Transferred 200mt FO to KT4

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:10 / 09:28	10 / 12	

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01 Dec 2009

From: Brian Houston/Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 3
Rockhopper-1

Rockhopper-1

Date:	01 Dec 2009	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	3	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.1828 "	**Longitude (East):**	145 ° 26 ' 21.466 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	158.0m	Cur. Hole Size	36.000in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	158.0m	Last Casing OD	30.000in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	41.0m	Shoe TVDBRT	157.0m	Daily Cost	US$709,926
Rig	Kan Tan IV	Days from spud	1.02	Shoe MDBRT	157.0m	Cumul. Cost	US$3,434,607
Wtr Dpth(MSL)	74.3m	Days on well	2.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	30
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Making up 17 1/2" BHA.		
Datum	GDA 94	Last BOP Test		Planned Op	RIH with 17 1/2" BHA. Drill out shoe track and drill ahead 17 1/2" hole		

Summary of Period 0000 to 2400 Hrs

Drilled 26" x 36" hole from 117m to 150m. TDS saver sub backed off on connection. Pulled back to 110m and corrected problem. Drilled 26" x 36" hole from 150m to 158m. Pumped hi vis pill and displaced well to 8.8ppg PHB mud. POOH and racked back BHA. Made up cement stand and racked in mast. Rigged up and made up 30" conductor. Made up 30" RT to conductor and latched 30" housing into PGB. RIH with conductor and PGB to 158m. Circulated casing contents. Cemented conductor with 265bbl 15.9ppg slurry. WOC.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	27 Days	Full Emergency drill performed	
Fire Drill	0	17 Days	Main deck - Fire in Control room	
Gas Drill	0	1 Day	Held pre spud gas drill and muster	
Permit To Work	12	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	12	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
Safety Meeting	2	0 Days	General safety meetings	Held General rig safety meeting. Held ADA/Origin HSE conference call
STOP Card	33	0 Days	Number of STOP Cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 01 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P2	P	D2	0000	0230	2.50	150.0m	Drilled 26" x 36" hole from 117m to 150m. 80rpm, 800gpm, 2-5k WOB. Pumped 50bbl PBG hi vis every single and spotted PBG hi vis around BHA on connections.
P2	TP (RE)	G11	0230	0600	3.50	150.0m	Saver sub backed out on connection. Laid out single with saver sub and pulled back to 110m. Re installed saver sub to TDS. Encountered problems with pipe handler when making up saver sub. Troubleshoot pipehandler problem.
P2	TP (RE)	G8	0600	0630	0.50	150.0m	RIH from 110m to 150m.
P2	P	D2	0630	0700	0.50	158.0m	Drilled 26" x 36" hole from 150m to 158m (36" hole to 157m). Anderdrift survey at TD 0 deg.
P2	P	F4	0700	0800	1.00	158.0m	Circulated 100bls Guar gum hi vis pill and displaced well with 330bbl 8.8ppg PHG mud.
P2	P	G8	0800	1000	2.00	158.0m	POOH to mudline. No drag. POOH to surface and racked back BHA.
P3	P	G5	1000	1100	1.00	158.0m	Made up cement stand and racked in mast.
P3	P	G1	1100	1200	1.00	158.0m	Held JSA and rigged up to run 30" conductor.
P3	P	G9	1200	1800	6.00	158.0m	Made up x5 joints of 30" conductor. Picked up 30" RT and filled conductor with

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							seawater. Made up RT to 30" housing. Landed 30" housing in PGB and latched same. RIH with 30" conductor and PGB on HWDP landing string to 157m. No drag. Bullseye on PGB showed 3/4 deg port of forward.
P3	P	F4	1800	1845	0.75	158.0m	Rigged up surface lines. Broke circulation with rig pumps in stages and circulated casing contents at 300gpm, 150psi.
P3	P	P1	1845	1900	0.25	158.0m	Haliburton cementer pumped 5bbls seawater. Pressure tested surface lines to 1000psi - ok.
P3	P	F3	1900	2100	2.00	158.0m	Haliburton cementer pumped 25bbls of seawater followed by 20bbl seawater/mica pill. Haliburton mixed and pumped 265bbls 15.9ppg class G cement slurry (used: 1271sx of G cement, 160bbl of FW mix). Halliburton displaced cement with 107bbl of seawater and checked for back flow. No back flow.
P3	P	G24	2100	2400	3.00	158.0m	WOC. Maintain weight of 30" conductor while wait on cement to harden.

Operations For Period 0000 Hrs to 0600 Hrs on 02 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P3	P	G24	0000	0200	2.00	158.0m	WOC. Held JSA on releasing 30" RT. Inspected seabed with ROV. Observed grey cement streaks around conductor showing evidence of returns to surface.
P3	P	G10	0200	0230	0.50	158.0m	Reduced block weight to 175klbs. Observed conductor and PGB for 10mins. Bullseye steady on 3/4deg slightly port of forward. Released 30" RT 4 1/2 turns to right and pulled clear of well head. Racked back cement stand.
P3	P	G8	0230	0400	1.50	158.0m	POOH with 30" RT. Laid out same.
P3	P	G6	0400	0500	1.00	158.0m	Laid out 26" bit, hole opener and Anderdrift tool.
P4	P	G6	0500	0600	1.00	158.0m	Made up 17 1/2" BHA.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 01 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	14	01 Dec 2009	01 Dec 2009	71.00	2.958	158.0m

WBM Data — Cost Today US$ 1066

Mud Type:	Hi-Vis PHB/Guar gum Sweeps	API FL:		Cl:	1000mg/l	Solids(%vol):	
		Filter-Cake:		K+C*1000:		H2O:	95%
Sample-From:	Pit #1	HTHP-FL:		Hard/Ca:		Oil(%):	
Time:	0900	HTHP-cake:		MBT:	27	Sand:	
Weight:	8.80ppg			PM:		pH:	9
Temp:				PF:		PHPA:	

Viscosity	124sec/qt
PV	11cp
YP	59lb/100ft²
Gels 10s	25
Gels 10m	40
Fann 003	25
Fann 006	33
Fann 100	55
Fann 200	60
Fann 300	70
Fann 600	81

Comment — Note: Costs are in AUD

Bit # 1

Wear	I	O1	D	L	B	G	O2	R
	1	1	WT	A	1	I	NO	TD

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	26.00in	IADC#	111	No.	Size	Progress	41.0m	Cumul. Progress	41.0m
Mfr:	Hughes	WOB(avg)				On Bottom Hrs	2.8h	Cumul. On Btm Hrs	2.8h
Type:	Rock	RPM(avg)	93			IADC Drill Hrs	3.0h	Cumul. IADC Drill Hrs	3.0h
Serial No.:	6077163	F.Rate	492gpm			Total Revs		Cumul. Total Revs	0
Bit Model	CR-1	SPP	320psi			ROP(avg)	14.64 m/hr	ROP(avg)	14.64 m/hr
Depth In	100.3m	HSI							
Depth Out	158.0m	TFA	0.000						

Bit Comment — Re-run from Trefoil-2

BHA # 1

Weight(Wet)	200.00klb	Length	973.0m	Torque(max)		D.C. (1) Ann Velocity	20fpm
Wt Below Jar(Wet)		String	200.00klb	Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up	200.00klb	Torque(On.Btm)		H.W.D.P. Ann Velocity	19fpm

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	Slack-Off 200.00klb		D.P. Ann Velocity 19fpm

BHA Run Description	26" bit x 36" hole opener top hole assembly
BHA Run Comment	

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.54m	26.00in		6077163	
Hole Opener	2.27m	36.00in	3.50in	703394	4 x 18 nozzles
Bit Sub	1.20m	9.50in	3.00in	98	With non ported float
Anderdrift	3.07m	9.38in	3.00in	ADB 604	
X/O	1.15m	8.25in	2.88in	95	
Drill Collar	56.51m	8.25in	2.88in		
X/O	1.09m	8.00in	2.25in	1783	
HWDP	84.75m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	6	0	415.0
Drill Water	m3	0	15	0	483.0
Pot Water	m3	36	21	0	239.0
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	132	55.8	0	149.2
Barite	MT	0	0	0	79.2
Bentonite	MT	43.5	0	0	94.5
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	0	0	8.0
XANTHUM GUM	sxs	80	0	0	155.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	0	5	0	24.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	0	0	38.0
Clayseal +	Drums	0	0	0	46.0
Cuttings Pit 1	can	0	0	0	32.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	0	5	0	123.0
Milpac - LV	sxs	0	2	0	36.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	0	0	0	33.0
KOH	can	32	0	0	44.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	6	0	14.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0
Lime	sxs	0	5	0	84.0

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Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.05	97	80	660	400
2	Continental Emsco	6.50	1.05	97	0	0	0
3	Continental Emsco	6.50	1.05	97	80	660	400

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx

Personnel On Board

Company	Pax
ADA	4
Maersk	42
GRN	5
OMS	20
Dril-Quip	2
Geoservices	2
Halliburton Cementers	3
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	6
PCS	3
Reach	1
Other Contractor	1
Other Contractor	1
Total	94

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / James Munford

Available	**1341.8bbl**
Active	55.0bbl
Mixing	
Hole	145.8bbl
Slug	
Reserve	
Kill	
Hi-Vis	1141.0bbl
PHB/Guar	
Sweeps	

Losses	**554.6bbl**
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped	554.6bbl
Sweep/Displace	

Equipment	Description	Mesh Size

Comments

Marine

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Weather on 01 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	5kn	65.0deg	1020.0mbar	17C°	0.6m	70.0deg	7s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.3m	0.9deg	1.1deg	315.0deg	0.00klb	396.00klb	Calm

Swell Height	Swell Dir.	Swell Period	Comments
0.6m	70.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	37.0
2	108.0
3	203.0
4	187.0
5	131.0
6	37.0
7	210.0
8	267.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	01:20 - 02/12/09		On route to Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		375
Potable Water	M3		119
Drill Water	M3		523
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		112
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:30 - 24/11/2009		Discharging bulks to rig

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		332
Pot Water	M3		324
Drill Water	M3		330
Bentonite	t		42
Barite	t		40
	t		0
Brine	M3		0
Mud	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:03 / 09:16	7 / 5	

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Printed on 01 Dec 2009

Australian Drilling Associates Pty Ltd ADA

02 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 4
Rockhopper-1

Rockhopper-1

Date:	02 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Brian Meechan
Report Number:	4	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	330.0m	Cur. Hole Size	17.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	330.0m	Last Casing OD	30.000in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	172.0m	Shoe TVDBRT	157.0m	Daily Cost	US$673,742
Rig	Kan Tan IV	Days from spud	2.02	Shoe MDBRT	157.0m	Cumul. Cost	US$4,108,349
Wtr Dpth(MSL)	74.3m	Days on well	3.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	31
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Drilling 17 1/2" hole at 454m.		
Datum	GDA 94	Last BOP Test		Planned Op	Drill 17 1/2" hole to TD. Spot hi-vis in well and perform 5 std wiper trip. Sweep100bbl hi vis and displace well to mud. POOH and run 13 3/8" casing.		

Summary of Period 0000 to 2400 Hrs

WOC. Released 30" RT from 30" housing and POOH. Laid out 30" RT. Laid out 26" bit, 36" hole opener and Anderdrift tool. Made up 17 1/2" drill ahead BHA and RIH. Tagged TOC at 147m. Drilled out cement and shoe track. Shoe at 157m. Drilled 17 1/2" hole from 158m to 330m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	28 Days	Full Emergency drill performed	
ER Exercises	0	0 Days	Held Ballast drill with CRO	
Fire Drill	0	18 Days	Main deck - Fire in Control room	
Permit To Work	12	1 Day	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	1 Day	General safety meetings	
Safety Meeting	12	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	44	0 Days	Number of STOP Cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 02 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P3	P	G24	0000	0200	2.00	158.0m	WOC. Held JSA on releasing 30" RT. Inspected seabed with ROV. Observed grey cement streaks around conductor - possible evidence of returns to surface.
P3	P	G10	0200	0230	0.50	158.0m	Reduced block weight to 175 klbs. Observed conductor and PGB for 10mins. Bullseye steady on 3/4deg slightly port of forward. Released 30" RT with 4 1/2 turns to right and pulled clear of well head. Racked back cement stand.
P3	P	G8	0230	0400	1.50	158.0m	POOH with 30" RT. Laid out same.
P3	P	G6	0400	0500	1.00	158.0m	Laid out 26" bit, 36" hole opener and Anderdrift tool.
P4	P	G6	0500	0800	3.00	158.0m	Held JSA. Made up 9 1/2" NMHOC, float sub, bit and 17 1/2" string stabiliser.
P4	P	G6	0800	1000	2.00	158.0m	Picked up 8" jar and 2 x 8 1/4" drill collars and set back in mast.
P4	P	G6	1000	1200	2.00	158.0m	Re arranged stands in mast to allow access to BHA for correct space out when stabbing into well.
P4	P	G6	1200	1430	2.50	158.0m	Made up 8 1/4" drill collars and 17 1/2" stabliser to 9 1/2" drill collars and run in BHA to 90 m.
P4	P	G8	1430	1500	0.50	158.0m	Stabbed into well head with ROV assistance.
P4	P	G8	1500	1530	0.50	158.0m	Washed down and tagged TOC at 147 m with 5 klbs weight down.
P4	P	D1	1530	1800	2.50	158.0m	Drilled out cement and shoe from 147 m to 157 m (shoe depth).

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P4	P	D2	1800	2400	6.00	330.0m	Drilled 17 1/2" hole from 158 m to 330 m. Pumped 40bbl hi vis sweeps on half stand and 50 bbl hi vis pill prior to connection (0-5K WOB, 1000gpm, 1630psi, 80rpm, 2-5k ft-lbs with torque limit set at 10klbs while drilling out with stabs in casing).

Operations For Period 0000 Hrs to 0600 Hrs on 03 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P4	P	D2	0000	0430	4.50	427.0m	Drilled 17 1/2" hole from 330 m to 427 m. Pumped 40bbl hi vis sweeps on half stand and 50bbl hi vis pill prior to connection (0-5klbs WOB, 1000 gpm, 1650 psi, 80 rpm, 2-5 k ft-lbs).
P4	TP (RE)	G11	0430	0500	0.50	427.0m	Circulated on well while oil filter changed on top drive in attempt to rectify slow cycling pipe handler (pipe handler cycling extremely slowly when breaking tool joint on connection.
P4	P	D2	0500	0600	1.00	454.0m	Drilled 17 1/2" hole from 427 m to 454 m. Pumped 40bbl hi vis sweeps on half stand and 50bbl hi vis pill prior to connection (0-5klbs WOB, 1000 gpm, 1650 psi, 80 rpm, 2-5 k ft-lbs).

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 02 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	19	02 Dec 2009	02 Dec 2009	95.00	3.958	330.0m

WBM Data

Cost Today US$ 22875

Mud Type:	Hi-Vis PHB Sweeps	API FL:		Cl:	1000mg/l	Solids(%vol):	
Sample-From:	Pit #1	Filter-Cake:		K+C*1000:		H2O:	96%
Time:	19:30	HTHP-FL:		Hard/Ca:		Oil(%):	
Weight:	8.80ppg	HTHP-cake:		MBT:	30	Sand:	
Temp:	25C°			PM:		pH:	9
				PF:		PHPA:	

Viscosity	127sec/qt
PV	11cp
YP	60lb/100ft²
Gels 10s	29
Gels 10m	42
Fann 003	27
Fann 006	36
Fann 100	53
Fann 200	61
Fann 300	71
Fann 600	82

Comment — Note: Costs are in AUD

Bit # 2

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	17.50in	IADC#	115	No.	Size	Progress	172.0m	Cumul. Progress	172.0m
Mfr:	Smith Bits	WOB(avg)	5.50klb	1	16/32nd"	On Bottom Hrs	3.9h	Cumul. On Btm Hrs	3.9h
Type:	mt	RPM(avg)	80	3	22/32nd"	IADC Drill Hrs	6.0h	Cumul. IADC Drill Hrs	6.0h
Serial No.:	PN2676	F.Rate	1000gpm			Total Revs	18480	Cumul. Total Revs	18480
Bit Model	XR+VCPS	SPP	1617psi			ROP(avg)	44.10 m/hr	ROP(avg)	44.10 m/hr
Depth In	158.0m	HSI							
Depth Out		TFA	1.310						

Bit Comment

BHA # 2

Weight(Wet)	65.00klb	Length	253.9m	Torque(max)	5000ft-lbs	D.C. (1) Ann Velocity	113fpm
Wt Below Jar(Wet)	41.00klb	String	230.00klb	Torque(Off.Btm)	1000ft-lbs	D.C. (2) Ann Velocity	103fpm
		Pick-Up	230.00klb	Torque(On.Btm)	3000ft-lbs	H.W.D.P. Ann Velocity	87fpm
		Slack-Off	230.00klb			D.P. Ann Velocity	87fpm

BHA Run Description — Rotary drill with MWD

BHA Run Comment

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Equipment	Length	OD	ID	Serial #	Comment
Bit	0.44m	17.50in		PN2676	
Bit Sub	0.84m	9.50in	3.00in	711621	Non ported float installed.
HOC	9.77m	9.63in		46811	
String Stabiliser	2.47m	9.50in	3.00in	207A97	17 1/2" Stab
Drill Collar	9.27m	9.75in	3.00in		
String Stabiliser	2.73m	9.50in	3.00in	SBD2709	17 1/2" Stab
Drill Collar	84.96m	8.25in	2.88in		
Drilling Jars	9.70m	8.00in	2.88in	1762-5074	
Drill Collar	18.75m	8.25in	2.75in		
X/O	1.09m	6.50in	2.25in	1783	
HWDP	141.21m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
242.36	0.2	278.1	242.36	0.0	0.0	0.3	0.1	Haliburton NMHOC
327.42	0.3	318.4	327.42	0.6	0.3	0.6	0.6	
356.38	0.2	310.1	356.38	0.8	0.3	0.7	0.2	
414.83	0.4	334.6	414.83	1.0	0.6	0.9	0.2	

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	6	0	409.0
Drill Water	m3	0	61	0	422.0
Pot Water	m3	36	12	0	263.0
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	9.3	0	0	158.5
Barite	MT	46.7	0	0	125.9
Bentonite	MT	0	19	0	75.5
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	1	0	7.0
XANTHUM GUM	sxs	0	35	0	120.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	0	7	0	17.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	3	0	35.0
Clayseal +	Drums	0	0	0	46.0
Cuttings Pit 1	can	0	0	0	32.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	0	0	0	123.0
Milpac - LV	sxs	0	0	0	36.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	0	0	0	33.0
KOH	can	0	0	0	44.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	7	0	7.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0
Lime	sxs	0	12	0	72.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.05	97	67	1630	335
2	Continental Emsco	6.50	1.05	97	66	1630	330
3	Continental Emsco	6.50	1.05	97	67	1630	335

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx

Personnel On Board

Company	Pax
ADA	4
Maersk	39
GRN	5
OMS	20
Dril-Quip	2
Geoservices	2
Halliburton Cementers	3
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	6
PCS	3
Reach	1
Other Contractor	1
Other Contractor	1
Total	91

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / Kosta Georgiou

Available	2550.7bbl	Losses	554.6bbl
Active	281.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	288.7bbl	Dumped	
Slug	55.0bbl	De-Gasser	
Reserve	185.0bbl	De-Sander	
Kill	600.0bbl	De-Silter	
Hi-Vis PHB/Guar Sweeps	1141.0bbl	Centrifuge	
		Pumped Sweep/Displace	554.6bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 02 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	5kn	65.0deg	1020.0mbar	17C°	0.6m	70.0deg	7s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.9deg	1.1deg	315.0deg	0.00klb	240.00klb	Wind and sea rising

Swell Height	Swell Dir.	Swell Period	Comments
0.6m	70.0deg	8s	

Rig Support

Anchors	Tension (klb)
1	37.0
2	108.0
3	203.0
4	187.0
5	131.0
6	37.0
7	210.0
8	267.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	01:20 - 02/12/09		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		359
Potable Water	M3		117
Drill Water	M3		523
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		112
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:30 - 24/11/2009		Alongside dock in Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		314
Pot Water	M3		316
Drill Water	M3		330
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	08:53 / 09:13	8 / 11	

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Australian Drilling Associates Pty Ltd

03 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 5
Rockhopper-1

Rockhopper-1

Date:	03 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Brian Meechan
Report Number:	5	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	823.0m	Cur. Hole Size	17.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	823.0m	Last Casing OD	30.000in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	493.0m	Shoe TVDBRT	157.0m	Daily Cost	US$640,232
Rig	Kan Tan IV	Days from spud	3.02	Shoe MDBRT	157.0m	Cumul. Cost	US$4,748,581
Wtr Dpth(MSL)	74.3m	Days on well	4.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	32
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Drilling 17 1/2" hole at 905m.		
Datum	GDA 94	Last BOP Test		Planned Op	Drill 17 1/2" hole to TD at 966m. Spot 80bbl hi vis on bottom and perform wiper trip. Displace well to 8.8 ppg mud. POOH. Make up cementing head. Rig up and run 13 3/8" casing.		

Summary of Period 0000 to 2400 Hrs

Drilled 17 1/2" hole from 330m to 425m. Changed return oil filter on pipe handler hydraulic system. Drilled 17 1/2" hole from 425m to 823m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	29 Days	Full Emergency drill performed	
ER Exercises	0	1 Day		
Fire Drill	0	19 Days	Main deck - Fire in Control room	
Permit To Work	12	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	2 Days	General safety meetings	
Safety Meeting	12	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	41	0 Days	Number of STOP Cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 03 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P4	P	D2	0000	0430	4.50	427.0m	Drilled 17 1/2" hole from 330m to 427m. Pumped 40bbl Hi-Vis sweeps on half stand and 50bbl Hi-Vis pill prior to connection. MWD survey taken every 3 stands (0-5klbs WOB, 1000gpm, 1650psi, 80rpm, 2-5 kft-lbs).
P4	TP	G11	0430	0500	0.50	427.0m	Circulated well while changing oil filter on top frive in attempt to rectify slow cycling pipe handler (pipe handler cycling extremely slowly when breaking tool joint on connection).
P4	P	D2	0500	2400	19.00	823.0m	Drilled 17-1/2" hole from 427m to 823m. Pumped 40bbl Hi-Vis sweeps on half stand and 50bbl Hi-Vis pill prior to connection. MWD survey taken every 3 stands (WOB 5-20klbs, 1000gpm, 1900psi, 90 rpm, 4-5 kft-lbs).

Operations For Period 0000 Hrs to 0600 Hrs on 04 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P4	P	D2	0000	0600	6.00	905.0m	Drilled 17 1/2" hole from 823m to 905m. Pumped 40bbl Hi-Vis sweeps on half stand and 50bbl Hi-Vis pill prior to connection. MWD survey taken every 3 stands (WOB 5-20klbs, 1000gpm, 1900psi, 90rpm, 4-5 kft-lbs).

Operations For Period Hrs to Hrs on

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Printed on 03 Dec 2009

Phase Data to 2400hrs, 03 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	43	02 Dec 2009	03 Dec 2009	119.00	4.958	823.0m

WBM Data

Cost Today US$ 12757

Mud Type:	Hi-Vis PHB/Guar gum Sweeps	API FL:		Cl:	1100mg/l	Solids(%vol):	
Sample-From:	Pit #1	Filter-Cake:		K+C*1000:		H2O:	96%
Time:	2131	HTHP-FL:		Hard/Ca:		Oil(%):	
Weight:	8.80ppg	HTHP-cake:		MBT:	30	Sand:	
Temp:				PM:		pH:	9
				PF:		PHPA:	

Viscosity	122sec/qt
PV	14cp
YP	50lb/100ft²
Gels 10s	25
Gels 10m	40
Fann 003	25
Fann 006	33
Fann 100	55
Fann 200	60
Fann 300	70
Fann 600	81

Comment — Note: Costs are in AUD

Bit # 2

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	17.50in	IADC#	115	No.	Size	Progress	493.0m	Cumul. Progress	665.0m
Mfr:	Smith Bits	WOB(avg)	10.00klb	1	16/32nd"	On Bottom Hrs	18.3h	Cumul. On Btm Hrs	22.2h
Type:	mt	RPM(avg)	80	3	22/32nd"	IADC Drill Hrs	23.5h	Cumul. IADC Drill Hrs	29.5h
Serial No.:	PN2676	F.Rate	1006gpm			Total Revs	83000	Cumul. Total Revs	101480
Bit Model	XR+VCPS	SPP	1617psi			ROP(avg)	26.94 m/hr	ROP(avg)	29.95 m/hr
Depth In	158.0m	HSI							
Depth Out		TFA	1.310						

Bit Comment

BHA # 2

Weight(Wet)	65.00klb	Length	253.9m	Torque(max)	7000ft-lbs	D.C. (1) Ann Velocity	114fpm
Wt Below Jar(Wet)	41.00klb	String	265.00klb	Torque(Off.Btm)	1500ft-lbs	D.C. (2) Ann Velocity	104fpm
		Pick-Up	270.00klb	Torque(On.Btm)	4000ft-lbs	H.W.D.P. Ann Velocity	88fpm
		Slack-Off	260.00klb			D.P. Ann Velocity	88fpm

BHA Run Description — Rotary drill with MWD

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.44m	17.50in		PN2676	
Bit Sub	0.84m	9.50in	3.00in	711621	Non ported float installed.
HOC	9.77m	9.63in		46811	
String Stabiliser	2.47m	9.50in	3.00in	207A97	17 1/2" Stab
Drill Collar	9.27m	9.75in	3.00in		
String Stabiliser	2.73m	9.50in	3.00in	SBD2709	17 1/2" Stab
Drill Collar	84.96m	8.25in	2.88in		
Drilling Jars	9.70m	8.00in	2.88in	1762-5074	
Drill Collar	18.75m	8.25in	2.75in		
X/O	1.09m	6.50in	2.25in	1783	
HWDP	141.21m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
502.13	0.3	356.6	502.13	1.1	1.1	1.0	0.1	Haliburton NMHOC MWD

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Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
559.33	0.3	356.4	559.33	1.4	1.4	1.0	0.0	Haliburton NMHOC MWD
645.93	0.2	77.1	645.93	1.7	1.6	0.9	0.1	Haliburton NMHOC MWD
733.40	0.1	264.5	733.39	1.7	1.7	0.8	0.1	Haliburton NMHOC MWD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	14	0	395.0
Drill Water	m3	0	204	0	218.0
Pot Water	m3	37	41	0	259.0
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	0	0	0	158.5
Barite	MT	0	0	0	125.9
Bentonite	MT	0	13	-21.5	41.0
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	0	0	7.0
XANTHUM GUM	sxs	0	10	0	110.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	0	6	0	11.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	0	0	35.0
Clayseal +	Drums	0	0	0	46.0
Cuttings Pit 1	can	0	0	0	32.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	0	0	0	123.0
Milpac - LV	sxs	0	0	0	36.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	0	0	0	33.0
KOH	can	0	0	0	44.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	4	0	3.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0
Lime	sxs	0	14	0	58.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.05	97	67	1900	335
2	Continental Emsco	6.50	1.05	97	66	1900	330

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420

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Pumps

Pump Data - Last 24 Hrs								Slow Pump Data									
3	Continental Emsco	6.50	1.05	97	67	1900	335		30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx

Personnel On Board

Company	Pax
ADA	4
Maersk	39
GRN	5
OMS	20
Dril-Quip	2
Geoservices	2
Halliburton Cementers	3
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	6
PCS	3
Reach	1
Other Contractor	1
Other Contractor	1
Total	91

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / James Munford

Available	**2552.0bbl**
Active	273.0bbl
Mixing	
Hole	743.0bbl
Slug	
Reserve	198.0bbl
Kill	
Hi-Vis PHB/Guar Sweeps	1338.0bbl

Losses	**1500.0bbl**
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped Sweep/Displace	1500.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 03 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	38kn	239.0deg	1016.0mbar	11C°	2.0m	260.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	1.8deg	4.2deg	315.0deg	0.00klb	98.00klb	Southerly Gales

Swell Height	Swell Dir.	Swell Period	Comments
3.1m	260.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	147.0
2	171.0
3	120.0
4	94.0
5	99.0
6	109.0
7	114.0
8	127.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status	Bulks

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Printed on 03 Dec 2009

Australian Drilling Associates Pty Ltd ADA

04 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 6
Rockhopper-1

Rockhopper-1

Date:	04 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Brian Meechan
Report Number:	6	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	966.0m	Cur. Hole Size	17.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	966.0m	Last Casing OD	30.000in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	143.0m	Shoe TVDBRT	157.0m	Daily Cost	US$642,862
Rig	Kan Tan IV	Days from spud	4.02	Shoe MDBRT	157.0m	Cumul. Cost	US$5,391,443
Wtr Dpth(MSL)	74.3m	Days on well	5.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	33
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Running 13 3/8" casing.		
Datum	GDA 94	Last BOP Test		Planned Op	Run 13 3/8" casing. Pick up 18 3/4" WH and RT. Run 13 3/8" casing in on landing string. Land and latch 18 3/4" wellhead in 30" housing. Cement 13 3/8" casing. POOH with landing string. Rig up to run BOPs.		

Summary of Period 0000 to 2400 Hrs

Drilled 17 1/2" hole from 823m to 966m. Spotted 80bbls hi vis on bottom and performed 5 stand wiper trip. Circulated 100bbl hi vis and displaced with 1.25 x hole volume of hi vis mud. POOH and racked BHA in mast. Made up jet sub, RIH, jetted well head, POOH. Made up HALCO cement head to stand of HWDP and racked in mast. Rigged up to run 13 3/8" casing. Made up 13 3/8" shoe track.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	30 Days	Full Emergency drill performed	
ER Exercises	0	2 Days		
Fire Drill	0	20 Days	Main deck - Fire in Control room	
Permit To Work	16	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	3 Days	General safety meetings	
Safety Meeting	16	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	33	0 Days	Number of STOP Cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 04 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P4	P	D2	0000	0900	9.00	966.0m	Drilled 17 1/2" hole from 823m to section TD at 966m (tide Corrected). Pumped 40bbl Hi-Vis sweeps on half stand and 50bbl Hi-Vis pill prior to connection. MWD survey taken every 3 stands (WOB 5-20klbs, 1000 gpm, 1900 psi, 90 rpm, 4-5 kft-lbs). Spotted 80bbl Hi Vis mud on bottom.
P4	P	G8	0900	1100	2.00	966.0m	POOH 5 stands. Tight spots from 909m to 841m with maximum hole drag of 30klbs. Wiped tight spots clean.
P4	P	G8	1100	1200	1.00	966.0m	RIH from 841m to 941m and washed last stand to TD at 966 m.
P4	P	F4	1200	1300	1.00	966.0m	Pumped 100bbl Hi Vis mud directly followed by 1100bbl consisting of 500bbl Pad Mud and 620bbl PHG (total hole displacement 1.5x hole volume).
P4	P	G8	1300	1830	5.50	966.0m	POOH to 30" conductor shoe at 157m. Maximum hole drag of 20klbs in marl section of the hole (last 50m of the hole). Continued to POOH with BHA. Laid out 17-1/2" stabiliser and 17-1/2" bit.
P4	P	G8	1830	1930	1.00	966.0m	Made up jet sub. RIH and stabbed into 30" wellhead housing.
P4	P	G8	1930	2030	1.00	966.0m	Jetted 30" wellhead housing from 102m with 770 GPM, 1200 psi for 10 mins. Pulled clear of wellhead housing (97m). POOH and laid out jet sub.
P5	P	G5	2030	2100	0.50	966.0m	Made up HALCO cement head into a stand of HWDP and racked back in mast.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P5	P	G1	2100	2300	2.00	966.0m	Held JSA for the rig-up of 13-3/8" casing. Rigged up to run 13-3/8" casing.
P5	P	G9	2300	2400	1.00	966.0m	Held JSA on running 13-3/8" Casing. Made up shoetrack backerlocking first 2 connections. Confirmed the float valve on shoe and Ffoat joint are working.

Operations For Period 0000 Hrs to 0600 Hrs on 05 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P5	P	G9	0000	0130	1.50	966.0m	Centralised shoe joint to well on guide wires with soft slings and ran 6 joints of 13-3/8" casing to 68m.
P5	TP (WOW)	G25	0130	0230	1.00	966.0m	Shut down casing running operations due to wind gust over 30Kts and rig roll of +/-2° (crane limititation). WOW.
P5	P	G9	0230	0400	1.50	966.0m	Continued to run 13-3/8" casing from 68m to 9 m. Stabbed into 30" wellhead housing with ROV in situ. Continued to run 13-3/8" casing to 123m filling every joint with 6bbl of seawater (total of 11 joints of casing run).
P5	P	G1	0400	0600	2.00	966.0m	Rigged up 500 T elevators and FMS Slips. Rigged up FACL circulating tool to topdrive.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 04 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	3.5	04 Dec 2009	04 Dec 2009	143.00	5.958	966.0m

WBM Data — Cost Today US$ 3347

Mud Type:	Hi-Vis PHB/Guar gum Sweeps	API FL:		Cl:	1400mg/l	Solids(%vol):	
Sample-From:	PILL Pit	Filter-Cake:		K+C*1000:		H2O:	96%
Time:	2130	HTHP-FL:		Hard/Ca:		Oil(%):	
Weight:	8.80ppg	HTHP-cake:		MBT:	15	Sand:	
Temp:				PM:		pH:	9
				PF:		PHPA:	

Viscosity	62sec/qt
PV	12cp
YP	37lb/100ft²
Gels 10s	10
Gels 10m	17
Fann 003	15
Fann 006	17
Fann 100	36
Fann 200	43
Fann 300	49
Fann 600	61

Comment — Note: Costs are in AUD

Bit # 2

Wear	I	O1	D	L	B	G	O2	R
	1	1	WT	A	E	I	NO	TD

Bitwear Comments:

Size ("):	17.50in	IADC#	115
Mfr:	Smith Bits	WOB(avg)	8.30klb
Type:	mt	RPM(avg)	982
Serial No.:	PN2676	F.Rate	1006gpm
Bit Model	XR+VCPS	SPP	1911psi
Depth In	158.0m	HSI	
Depth Out	966.0m	TFA	1.310

Nozzles

No.	Size
1	16/32nd"
3	22/32nd"

Drilled over last 24 hrs		Calculated over Bit Run	
Progress	143.0m	Cumul. Progress	808.0m
On Bottom Hrs	8.0h	Cumul. On Btm Hrs	30.2h
IADC Drill Hrs	9.0h	Cumul. IADC Drill Hrs	38.5h
Total Revs	255	Cumul. Total Revs	101735
ROP(avg)	17.88 m/hr	ROP(avg)	26.75 m/hr

Bit Comment

BHA # 2

Weight(Wet)	65.00klb	Length	253.9m	Torque(max)	8700ft-lbs	D.C. (1) Ann Velocity	114fpm
Wt Below Jar(Wet)	41.00klb	String	280.00klb	Torque(Off.Btm)	500ft-lbs	D.C. (2) Ann Velocity	104fpm
		Pick-Up	280.00klb	Torque(On.Btm)	3000ft-lbs	H.W.D.P. Ann Velocity	88fpm
		Slack-Off	270.00klb			D.P. Ann Velocity	88fpm

BHA Run Description — Rotary drill with MWD

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BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.44m	17.50in		PN2676	
Bit Sub	0.84m	9.50in	3.00in	711621	Non ported float installed.
HOC	9.77m	9.63in		46811	
String Stabiliser	2.47m	9.50in	3.00in	207A97	17 1/2" Stab
Drill Collar	9.27m	9.75in	3.00in		
String Stabiliser	2.73m	9.50in	3.00in	SBD2709	17 1/2" Stab
Drill Collar	84.96m	8.25in	2.88in		
Drilling Jars	9.70m	8.00in	2.88in	1762-5074	
Drill Collar	18.75m	8.25in	2.75in		
X/O	1.09m	6.50in	2.25in	1783	
HWDP	141.21m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
819.33	0.1	204.1	819.32	1.6	1.6	0.9	0.0	Haliburton NMHOC MWD
907.20	0.2	337.4	907.19	1.7	1.6	1.0	0.1	Haliburton NMHOC MWD
956.77	0.2	112.5	965.76	1.7	1.7	1.0	0.2	Haliburton NMHOC MWD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	7	0	388.0
Drill Water	m3	386	47	0	557.0
Pot Water	m3	17	38	0	238.0
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	0	0	0	158.5
Barite	MT	0	0	0	125.9
Bentonite	MT	0	8	0	33.0
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	0	0	7.0
XANTHUM GUM	sxs	0	0	0	110.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	0	0	0	11.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	3	0	32.0
Clayseal +	Drums	0	0	0	46.0
Cuttings Pit 1	can	0	0	0	32.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	0	0	0	123.0
Milpac - LV	sxs	0	0	0	36.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	0	0	0	33.0
KOH	can	0	0	0	44.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	3	0	0.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0
Lime	sxs	0	16	0	42.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.05	97	67	1900	335
2	Continental Emsco	6.50	1.05	97	66	1900	330
3	Continental Emsco	6.50	1.05	97	67	1900	335

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Personnel On Board

Company	Pax
ADA	4
Maersk	36
GRN	5
OMS	21
Dril-Quip	2
Geoservices	4
Halliburton Cementers	3
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	6
PCS	3
Reach	1
Other Contractor	1
Total	90

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / Kosta Georgiou

Available	**2130.5bbl**
Active	55.0bbl
Mixing	
Hole	934.5bbl
Slug	
Reserve	
Kill	
Hi-Vis	1141.0bbl
PHB/Guar	
Sweeps	

Losses	**1740.0bbl**
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped	1740.0bbl
Sweep/Displace	

Equipment	Description	Mesh Size

Comments

Marine

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Weather on 04 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	23kn	260.0deg	1014.0mbar	12C°	1.6m	280.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.6m	0.6deg	2.1deg	315.0deg	0.00klb	548.00klb	Weather blustery with westerly squalls. Seas rough

Swell Height	Swell Dir.	Swell Period	Comments
2.3m	280.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	261.0
2	257.0
3	292.0
4	285.0
5	262.0
6	260.0
7	216.0
8	271.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	01:20 - 02/12/09		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		337
Potable Water	M3		113
Drill Water	M3		143
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		112
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	19:15 - 4/12/09		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		615
Pot Water	M3		313
Drill Water	M3		600
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT 01	Bristow Helicopters	09:10 / 09:25	10 / 11	

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Printed on 06 Dec 2009

05 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 7
Rockhopper-1

Rockhopper-1

Date:	05 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Brian Meechan
Report Number:	7	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	966.0m	Cur. Hole Size	17.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	966.0m	Last Casing OD	13.375in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	961.0m	Daily Cost	US$867,546
Rig	Kan Tan IV	Days from spud	5.02	Shoe MDBRT	961.0m	Cumul. Cost	US$6,258,989
Wtr Dpth(MSL)	74.3m	Days on well	6.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	34
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Rigging up to run BOPs		
Datum	GDA 94	Last BOP Test		Planned Op	Rig up and run BOPs		

Summary of Period 0000 to 2400 Hrs

Ran 13 3/8" casing to 854m. Rigged down casing handling equipment and made up 18 3/4" wellhead assembly. Ran 13 3/8" casing in to 954 m. Made up cement stand. Landed and latched 18 3/4" wellhead in 30" housing. Tested latch with 50klbs overpull. Rigged up and pressure tested surface lines to 3000 psi. Cemented casing with 460bbl 11.5ppg lead slurry and 66.8bbl of 15.8 ppg tail slurry. Displaced with rig pumps and bumped plug with 500 psi above FCP. Pressure tested casing to 2500psi/10 mins with cement unit. Released WHRT.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	1	0 Days	Held abandon drill	Full life boat muster and abandonment drill
Emergency Drill	0	31 Days	Full Emergency drill performed	
ER Exercises	0	3 Days		
Fire Drill	0	21 Days	Main deck - Fire in Control room	
Permit To Work	15	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	4 Days	General safety meetings	
Safety Meeting	15	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	44	0 Days	Number of STOP Cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 05 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P5	P	G9	0000	0130	1.50	966.0m	Centralised shoe joint to well on guide wires with soft slings and ran 6 joints of 13-3/8" casing to 68m.
P5	TP (WOW)	G25	0130	0230	1.00	966.0m	Shut down casing running operations due to wind gust over 30Kts and rig roll of +/-2° (crane limititation). WOW.
P5	P	G9	0230	0400	1.50	966.0m	Continued to run 13-3/8" casing from 68m to 9 m. Stabbed into 30" wellhead housing with ROV in situ. Continued to run 13-3/8" casing to 123m filling every joint with 6bbl of seawater (total of 11 joints of casing run).
P5	P	G1	0400	0600	2.00	966.0m	Rigged up 500 T elevators and FMS Slips. Rigged up FACL circulating tool to topdrive.
P5	P	G9	0600	1330	7.50	966.0m	Ran 13-3/8" casing from 123m to 854m. Filled every joint with 6bbl of seawater (74 jts run).
P5	P	G9	1330	1400	0.50	966.0m	Laid out 500 T elvators. Changed handling equipment to 5" DP elevators and installed 18-3/4" wellhead with 13-3/8" extension. Laid out FMS casing slips and changed out bales. Ran 18-3/4" hanger below table. Total 13-3/8" Csg + wellhead weight on MD 320klbs - hole good.
P5	TP (TP)	G1	1400	1530	1.50	966.0m	Control line for the elevator spider caught on TDS whilst making up the wellhead and approximately 1-1/2 hrs was lost due to removing the bundle.
P5	P	G9	1530	1600	0.50	966.0m	Ran 13-3/8" casing in on 5" HWDP landing string to 954m.
P5	P	G9	1600	1700	1.00	966.0m	Picked up cement head stand out of mast and made up to running string. Connected

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							circulating hose to cement head. RIH and opened heave compensator. Landed 18-3/4" hanger in 30" Wellhead Housing. Total up weight of casing plus running string 350klbs on MD. Slacked off 50klbs down. Confirmed latch with 50klbs overpull to 400klbs MD. Reduced weight to 190klbs. Checked slope indicator - 3/4 deg fwd port - no change.
P5	P	G1	1700	1800	1.00	966.0m	Rigged up Haliburton control hoses to cement head.
P5	P	F3	1800	1830	0.50	966.0m	Held JSA on cementing operation. Haliburton pumped 10bbls seawater. Pressure tested surface lines to 3000psi for 5mins - ok. Halliburton pumped 30bbl seawater and dropped the ball. Displaced at 1 bbl/min. Bottom plug sheared after 1.8 bbl with 1000 psi.
P5	P	F3	1830	2130	3.00	966.0m	Haliburton mixed and pumped 460bbl of 11.5 ppg lead cement slurry (Used: 387bbl seawater mix fluid, 858 sx class G cement. Yield: 18.96 gal/sk - 3.01 Ft3/sk) Halliburton mixed and pumped 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323 sx class G cement. Yield: 5.12 gal/sk - 1.16 ft3/sk). Halliburton dropped top dart and displaced with 20bbl seawater. Top plug sheared with 250 psi after 3.8bbl pumped.
P5	P	F3	2130	2230	1.00	966.0m	Displaced cement with rig pumps at 7 bbl/min slowing down to 2 bbl/min for the last 100 strokes. Plug bumped after 3280 strokes pumped (calculated 3324 strokes). FCP before bump - 430psi. Pressured up to 900psi on bump. Visual indication of cement returns to mudline via ROV.
P5	P	P1	2230	2330	1.00	966.0m	Bled pressure off at cement unit to check for back flow. No flow. Lined up cement unit and pressure tested 13-3/8" casing to 2500 psi 10 mins. Bled off pressure. Pumped 4.5bbl and 4.5 BBL returned.
P5	P	G1	2330	2400	0.50	966.0m	Haliburton reset valves in cement head and removed control hoses. Rigged down surface line to cement head. Adjusted MD weight to 180klbs to compensate for blocks plus running string weight and released 18-3/4" RT with 4-1/2 turns to the right and picked up clear of well head.

Operations For Period 0000 Hrs to 0600 Hrs on 06 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P5	P	G8	0000	0030	0.50	966.0m	Racked back cement head in mast. POOH with 18-3/8" WHRT.
P5	P	G15	0030	0100	0.50	966.0m	Laid out 18-3/4" WHRT assembly (ROV inspected 18-3/4" Wellhead / PGB and seabed).
P5	P	G15	0100	0300	2.00	966.0m	Laid out Halliburton cement head and racked back drillpipe stand in mast.
P4	P	G6	0300	0500	2.00	966.0m	Laid out 9-1/2" DC, NMHOC and 17-1/2" stabiliser from mast.
P5	P	G1	0500	0530	0.50	966.0m	Cleared excess equipment from drillfloor.
P6	P	G13	0530	0600	0.50	966.0m	(IN PROGRESS) Rigged up to run riser and BOPs.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 05 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	27.5	04 Dec 2009	05 Dec 2009	167.00	6.958	966.0m

WBM Data

Cost Today US$ 6091

Mud Type:	Hi-Vis PHB/Guar gum Sweeps	API FL:		Cl:	1400mg/l	Solids(%vol):	
		Filter-Cake:		K+C*1000:		H2O:	96%
Sample-From:	PIT 2	HTHP-FL:		Hard/Ca:		Oil(%):	
Time:	2130	HTHP-cake:		MBT:	15	Sand:	
Weight:	8.80ppg			PM:		pH:	9
Temp:				PF:		PHPA:	

Viscosity	58sec/qt
PV	12cp
YP	36lb/100ft²
Gels 10s	10
Gels 10m	16
Fann 003	14
Fann 006	16
Fann 100	5
Fann 200	40
Fann 300	48
Fann 600	60

Comment

Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	18	0	370.0
Drill Water	m3	0	30	-1	526.0
Pot Water	m3	46	18	-2	264.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	0	0	0	158.5
Barite	MT	0	0	0	125.9
Bentonite	MT	0	0	0	33.0
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	0	0	7.0
XANTHUM GUM	sxs	0	0	0	110.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	0	0	0	11.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	0	0	32.0
Clayseal +	Drums	0	0	0	46.0
Cuttings Pit 1	can	0	0	0	32.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	0	0	0	123.0
Milpac - LV	sxs	0	0	0	36.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	0	0	0	33.0
KOH	can	0	0	0	44.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	0	0	0.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0
Lime	sxs	0	0	0	42.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.05	97	67	1900	335
2	Continental Emsco	6.50	1.05	97	66	1900	330
3	Continental Emsco	6.50	1.05	97	67	1900	335

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	/	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk)

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
			66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	36
GRN	5
OMS	21
Dril-Quip	2
Geoservices	4
Halliburton Cementers	3
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	6
PCS	3
Reach	1
Other Contractor	1
Total	90

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / Kosta Georgiou

Available	**1928.1bbl**
Active	55.0bbl
Mixing	700.0bbl
Hole	983.1bbl
Slug	
Reserve	
Kill	
PAD MUD	190.0bbl

Losses	**581.0bbl**
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped Sweep/Displace	581.0bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 05 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	12kn	252.0deg	1015.0mbar	12C°	1.0m	230.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	1.0deg	1.9deg	315.0deg	0.00klb	445.00klb	Calm

Swell Height	Swell Dir.	Swell Period	Comments
1.3m	230.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	245.0
2	252.0
3	287.0
4	274.0
5	268.0
6	263.0
7	219.0
8	264.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	01:20 - 02/12/09	19:10 - 5/12/09	In transit to Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		324
Potable Water	M3		111
Drill Water	M3		143
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		45
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	19:15 - 4/12/09		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		600
Pot Water	M3		307
Drill Water	M3		600

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Australian Drilling Associates Pty Ltd ADA

06 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 8
Rockhopper-1

Rockhopper-1

Date:	06 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Brian Meechan
Report Number:	8	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	966.0m	Cur. Hole Size	17.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	966.0m	Last Casing OD	13.375in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	961.0m	Daily Cost	US$634,191
Rig	Kan Tan IV	Days from spud	6.02	Shoe MDBRT	961.0m	Cumul. Cost	US$6,893,180
Wtr Dpth(MSL)	74.3m	Days on well	7.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	35
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Preparing to run BOP.		
Datum	GDA 94	Last BOP Test		Planned Op	Run BOP on riser. Make up slip joint and landing joint. Install C&K hoses and pressure test same. Make up MRT lines to slip joint and land BOP stack on well. Pressure test connector to 1000 psi. Lay out landing joint, install diverter and rig down riser handling equiment. RIH with test plug and test wellhead connector to 5000psi and LMRP connector to 3500 psi.		

Summary of Period 0000 to 2400 Hrs

Racked back cement stand and POOH with 18-3/4" RT. Laid out same. Laid out cement head. Laid out 17-1/2" BHA. Rigged up to run BOP stack. Made up riser double, skidded BOP to well centre and installed riser to LMRP. Attempted to lift BOP off carrier. Unable to release at H4 Connector. Trouble shot H4 Connector. BOP released from test stump. Installed guide lines and prepared BOP for running.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	32 Days	Full Emergency drill performed	
ER Exercises	0	4 Days		
Fire Drill	0	22 Days	Main deck - Fire in Control room	
Permit To Work	16	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	16	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
Safety Meeting	2	0 Days	General safety meetings	
STOP Card	48	0 Days	Number of STOP Cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 06 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P5	P	G8	0000	0030	0.50	966.0m	Racked back cement head in mast. POOH with 18-3/8" WHRT.
P5	P	G15	0030	0100	0.50	966.0m	Laid out 18-3/4" WHRT assembly (ROV inspected 18-3/4" Wellhead / PGB and seabed).
P5	P	G15	0100	0300	2.00	966.0m	Laid out Halliburton cement head and racked back drillpipe stand in mast.
P4	P	G6	0300	0500	2.00	966.0m	Laid out 9-1/2" DC, NMHOC and 17-1/2" stabiliser from mast.
P5	P	G1	0500	0530	0.50	966.0m	Cleared excess equipment from drillfloor.
P6	P	G13	0530	0800	2.50	966.0m	Rigged up to run riser and BOPs.
P6	P	G13	0800	1030	2.50	966.0m	Made up 2 x 50ft riser lengths.
P6	P	G13	1030	1300	2.50	966.0m	Skidded BOP to moonpool and made up double riser section to LMRP.
P6	TP (SS)	G13	1300	2030	7.50	966.0m	Attempted to release BOP from Test Stump on carrier. Unable to release H4 connector from Test Stump. Troubleshot H4 connector while continuing to work at separating BOP from test stump on carrier. Confirmed the open/close displacement volumes correct.

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Printed on 06 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							Disconnected riser double from LMRP and attempted to release H4 connector by "rocking" the Test Stump with tuggers - no go. Pressured up below shear rams and test stump - H4 connector released and separated with 400 psi.
P6	TP (SS)	G13	2030	2100	0.50	966.0m	Reconnected riser double to LMRP.
P6	P	G13	2100	2400	3.00	966.0m	Installed guide lines to BOP. Prepared umbilical lines and installed BOP beacon. Subsea engineer checked and functioned H4 connector.

Operations For Period 0000 Hrs to 0600 Hrs on 07 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P6	P	G13	0000	0100	1.00	966.0m	Prepared BOP on carrier. Secured yellow and blue pod umbilical hoses to BOP.
P6	TP (SS)	G13	0100	0600	5.00	966.0m	Leak observed on yellow pod umbilical hose between outer sheath and control hoses. Subsea Engineer removed hose connector block from yellow POD and investigated same. Hoses live at time of leak were tested. No leak found. Connector block reconnected to yellow POD and lines functioned - no leak.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 06 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	65.5	02 Dec 2009	06 Dec 2009	141.50	5.896	966.0m
Surface Casing(P5)	31	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	18.5	06 Dec 2009	06 Dec 2009	191.00	7.958	966.0m

WBM Data

Mud Type:	Hi-Vis PHB/Guar gum Sweeps	API FL:		Cl:	1300mg/l	Solids(%vol):	
		Filter-Cake:		K+C*1000:		H2O:	96%
Sample-From:	PIT 2	HTHP-FL:		Hard/Ca:		Oil(%):	
Time:	2145	HTHP-cake:		MBT:	15	Sand:	
Weight:	8.80ppg			PM:		pH:	9
Temp:				PF:		PHPA:	

Viscosity	58sec/qt
PV	12cp
YP	36lb/100ft²
Gels 10s	10
Gels 10m	16
Fann 003	14
Fann 006	16
Fann 100	5
Fann 200	40
Fann 300	48
Fann 600	60

Comment

Note: Costs are in AUD

Cost Today

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	22	0	348.0
Drill Water	m3	0	66	0	460.0
Pot Water	m3	15	25	0	254.0
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	0	0	0	158.5
Barite	MT	0	0	0	125.9
Bentonite	MT	0	0	0	33.0
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	0	0	7.0
XANTHUM GUM	sxs	0	0	0	110.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	0	0	0	11.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	0	0	32.0
Clayseal +	Drums	0	0	0	46.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	0	0	0	123.0
Milpac - LV	sxs	0	0	0	36.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	0	0	0	33.0
KOH	can	0	0	0	44.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	0	0	0.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0
Lime	sxs	0	0	0	42.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.05	97	67	1900	335
2	Continental Emsco	6.50	1.05	97	66	1900	330
3	Continental Emsco	6.50	1.05	97	67	1900	335

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	/	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	36
GRN	5
OMS	21
Dril-Quip	2
Geoservices	4
Halliburton Cementers	3
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	6
PCS	3
Reach	1
Other Contractor	1

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Personnel On Board

Total	90

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / Kosta Georgiou

Available	2705.1bbl
Active	55.0bbl
Mixing	1477.0bbl
Hole	983.1bbl
Slug	
Reserve	
Kill	
PAD MUD	190.0bbl

Losses	0.0bbl
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped	
Sweep/Displace	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 06 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	10kn	282.0deg	1011.0mbar	13C°	1.0m	240.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.9deg	1.4deg	315.0deg	0.00klb	1100.00klb	Calm

Swell Height	Swell Dir.	Swell Period	Comments
1.3m	240.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	134.0
2	115.0
3	190.0
4	125.0
5	170.0
6	190.0
7	160.0
8	160.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		19:10 - 5/12/09	In Port

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		712
Potable Water	M3		130
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		45
Mud	bbl		0

Bunkers commenced at 19:52
Completed: 21:16

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	19:15 - 4/12/09		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		591
Pot Water	M3		304
Drill Water	M3		600
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

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Australian Drilling Associates Pty Ltd ADA

07 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 9
Rockhopper-1

Rockhopper-1

Date:	07 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Brian Meechan
Report Number:	9	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	966.0m	Cur. Hole Size	17.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	966.0m	Last Casing OD	13.375in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	961.0m	Daily Cost	US$663,822
Rig	Kan Tan IV	Days from spud	7.02	Shoe MDBRT	961.0m	Cumul. Cost	US$7,557,002
Wtr Dpth(MSL)	74.3m	Days on well	8.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	36
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Rigging down riser handling equipment.		
Datum	GDA 94	Last BOP Test		Planned Op	Land BOP stack. Run BOP test tool and pressure test BOP Connector to 5000psi and LMRP connector to 3500psi. Pressure test surface equipment - TDS and stand pipe. Pick up 18 stands of DP into mast. Make up 12¼" BHA and RIH picking up another 18 stands of DP. Drill out shoe track and 5m of 12¼" hole. Perform LOT.		

Summary of Period 0000 to 2400 Hrs

Prepared BOP for running. Investigated leak coming from yellow pod umbilcal hose. No leak found, all hoses that were pressured were tested and re instated. Ran BOP stack on marine riser. Ran slip joint. Ran landing joint and installed C&K hoses to slip joint. Pressure tested C&K lines to 250psi/5000psi. Installed storm saddles and MRT lines. Moved rig over location on anchor chains and attempted to land BOP stack.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	33 Days	Full Emergency drill performed	
ER Exercises	0	5 Days		
Fire Drill	0	23 Days	Main deck - Fire in Control room	
Near Miss	1	0 Days	While using the Norbar Pneutorque on the BOP (on transporter in the moon-pool) the locking plunger of the reaction arm failed causing the reaction arm to fall approx five (5) feet	
Permit To Work	17	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	1 Day	General safety meetings	
Safety Meeting	17	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	46	0 Days	Number of STOP Cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 07 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P6	P	G13	0000	0100	1.00	966.0m	Prepared BOP on carrier. Secured yellow and blue pod umbilical hoses to BOP.
P6	TP (SS)	G13	0100	0600	5.00	966.0m	Leak observed on yellow pod umbilical hose between outer sheath and control hoses. Subsea Engineer removed hose connector block from yellow POD and investigated same. Hoses live at time of leak were tested. No leak found. Connector block reconnected to Yellow POD and lines functioned - no leak.
P6	P	G13	0600	0900	3.00	966.0m	Held JSA. Lifted BOP off carrier and ran through splash zone. Made up flotation riser

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							joint and 25ft riser pup joint. Total No of marine riser joints run - 3 x 50ft joints + 1 pup joint.
P6	U	G13	0900	1000	1.00	966.0m	Waited on helicopter #1. Unable to use crane. Note: Helicopter arrival warning too early prior to actual arrival.
P6	P	G13	1000	1200	2.00	966.0m	Held JSA. Made up slip joint.
P6	U	G13	1200	1300	1.00	966.0m	Waited on helicopter #2. Unable to use crane. Note: Helicopter arrival warning too early prior to actual arrival.
P6	P	G13	1300	1600	3.00	966.0m	Made up landing joint and ran slip joint to moonpool. Installed C&K goosenecks to slip joint.
P6	P	G13	1600	1700	1.00	966.0m	Pressure tested C&K lines to 250psi/5000psi for 5/10 mins with cement unit - ok.
P6	P	G13	1700	2100	4.00	966.0m	Installed pod umbilcal storm saddles. Connected MRT wires to slip joint.
P6	P	M2	2100	2200	1.00	966.0m	Moved rig over well center on anchor chains.
P6	P	G13	2200	2400	2.00	966.0m	Attempted to lower BOP stack onto guide posts. PGB on heading of 308°, BOP stack heading 295°. Turned BOP to 308°

Operations For Period 0000 Hrs to 0600 Hrs on 08 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P6	P	G13	0000	0100	1.00	966.0m	Engaged PGB guide posts with BOP guides. Landed BOP Stack on 18-3/4" wellhead and set 50klbs down weight. Latched H4 connector and confirmed with 50klbs overpull on connector.
P6	P	G13	0100	0130	0.50	966.0m	Reduced DSC pressure while trasferring the weight onto MRTs. Connected RBQ plates to pod reels. Slope Indicator readings after landed: PGB: 0.6° Port LBOP: 0.5° Fwd (Change from 0° before landing) UBOP: 1.5° Port / Aft LMRP: 1.5° Aft Flex Jt: 1.5° Stbd /Aft
P6	P	G13	0130	0200	0.50	966.0m	Pumped 9bbl of seawater with cement unit to fill choke line. Closed shear rams and pressure tested BOP connector against 13-3/8" casing to 1000psi for 5 min - ok.
P6	P	G13	0200	0400	2.00	966.0m	Connected hoses to slip joint. Stroked open slip joint and laid out landing joint.
P6	P	G13	0400	0600	2.00	966.0m	Installed diverter system in diverter housing.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 07 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	42.5	06 Dec 2009	07 Dec 2009	215.00	8.958	966.0m

General Comments

00:00 TO 24:00 Hrs ON 07 Dec 2009

WBM Data

Cost Today

Mud Type:	API FL:	Cl:	Solids(%vol):	Viscosity	
Sample-From:	Filter-Cake:	K+C*1000:	H2O:	PV	
Time:	HTHP-FL:	Hard/Ca:	Oil(%):	YP	
Weight:	HTHP-cake:	MBT:	Sand:	Gels 10s	
Temp:		PM:	pH:	Gels 10m	
		PF:	PHPA:	Fann 003	
				Fann 006	
				Fann 100	
				Fann 200	
				Fann 300	
				Fann 600	
Comment	Note: Costs are in AUD All Tests will conducted when sufficient shearing of polymer has occured and when mixing is complete.				

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	6	0	342.0
Drill Water	m3	20	10	0	470.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Pot Water	m3	17	20	0	251.0
Brine	m3	0	0	0	180.0
Cement class \'G\'	MT	0	0	0	158.5
Barite	MT	0	0	0	125.9
Bentonite	MT	0	0	0	33.0
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	0	0	7.0
XANTHUM GUM	sxs	0	0	0	110.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	0	0	0	11.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	0	0	32.0
Clayseal +	Drums	0	0	0	46.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	0	123	0	0.0
Milpac - LV	sxs	0	0	0	36.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	17	0	0	50.0
KOH	can	0	0	0	44.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	0	0	0.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0
Lime	sxs	0	42	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.05	97			
2	Continental Emsco	6.50	1.05	97			
3	Continental Emsco	6.50	1.05	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	/	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk)

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
			66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	6
Maersk	37
GRN	5
OMS	21
Dril-Quip	2
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	6
Haliburton Directional Drilling	1
Reach	1
MI Fluids	1
Others	2
Total	94

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / Kosta Georgiou

Available	**2908.1bbl**	**Losses**	**0.0bbl**	Equipment	Description	Mesh Size	Comments
Active	55.0bbl	Downhole					
Mixing	1680.0bbl	Surf+ Equip	0.0bbl				
Hole	983.1bbl	Dumped					
Slug		De-Gasser					
Reserve		De-Sander					
Kill		De-Silter					
PAD MUD	190.0bbl	Centrifuge					
		Pumped					
		Sweep/Displace					

Marine

Weather on 07 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	8kn	245.0deg	1010.0mbar	11C°	1.0m	250.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	1.1deg	0.9deg	315.0deg	0.00klb	770.00klb	Calm

Swell Height	Swell Dir.	Swell Period	Comments
1.3m	250.0deg	10s	

Rig Support

Anchors	Tension (klb)
1	200.0
2	212.0
3	202.0
4	228.0
5	205.0
6	211.0
7	201.0
8	250.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		19:10 - 5/12/09	In transit to Rockhopper-1

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		706
Potable Water	M3		127
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		45
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	19:15 - 4/12/09		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		579
Pot Water	M3		301

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Australian Drilling Associates Pty Ltd ADA

08 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 10
Rockhopper-1

Rockhopper-1

Date:	08 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Brian Meechan
Report Number:	10	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	966.0m	Cur. Hole Size	17.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	966.0m	Last Casing OD	13.375in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	961.0m	Daily Cost	US$629,477
Rig	Kan Tan IV	Days from spud	8.02	Shoe MDBRT	961.0m	Cumul. Cost	US$8,186,479
Wtr Dpth(MSL)	74.3m	Days on well	9.96	FIT/LOT:	/	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	37
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test					

Current Op @ 0600	RIH with 12¼" BHA to 440m while picking up singles of DP from deck.
Planned Op	RIH making up DP. Hold kick drill. Drill out shoe track. Displace well to 9.0ppg KCL mud system. Drill 5m of new formation. Circulate and condition mud. Pull into shoe and perform LOT. Drill ahead 12¼" hole.

Summary of Period 0000 to 2400 Hrs

Landed and latched BOP stack. Confirmed latch with 5klbs overpull. Pressure tested H4 connector against BSR to 1000psi. Stroked open slip joint, laid out landing joint and installed diverter. Ran test plug into 18-3/4" wellhead and pressure tested BOP stack H4 connector to 5000psi. Attempted to pressure test LMRP collet connector to 3500psi. No test. Recovered large piece of annular insert element on POOH with test plug. Re ran plug and attempted to pressure test LMRP collet connector to 3500psi. No test. POOH. Pressure tested TDS IBOPs, rotary hose and standpipe to 250/5000psi for 5/10min. Installed and tested diverter element. Picked up 18 stands of DP from deck and racked back in mast. Made up 9-5/8" casing hanger and laid out. Commenced to make up 12¼" BHA.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	34 Days	Full Emergency drill performed	
ER Exercises	0	6 Days		
Fire Drill	0	24 Days	Main deck - Fire in Control room	
Near Miss	0	1 Day		
Permit To Work	16	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	2 Days	General safety meetings	
Safety Meeting	16	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	37	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m

Operations For Period 0000 Hrs to 2400 Hrs on 08 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P6	P	G13	0000	0100	1.00	966.0m	Engaged PGB guide posts with BOP guides. Landed BOP Stack on 18-3/4" wellhead and set 50klbs down weight. Latched H4 connector and confirmed with 50klbs overpull on connector.
P6	P	G13	0100	0130	0.50	966.0m	Reduced DSC pressure while trasferring the weight onto MRTs. Connected RBQ plates to Yellow and Blue Pod reels. Slope indicator readings after landing: PGB: 0.6° Port LBOP: 0.5° Fwd (Change from 0° before landing)

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Printed on 08 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							UBOP: 1.5° Port / Aft LMRP: 1.5° Aft Flex Jt: 1.5° Stbd /Aft
P6	P	P1	0130	0200	0.50	966.0m	Pumped 9bbl of seawater with cement unit to fill choke line. Closed shear rams and pressure tested BOP connector against 13-3/8" casing to 1000psi for 5min.
P6	P	G13	0200	0400	2.00	966.0m	Connected hoses to slip joint. Stroked open slip joint and laid out riser landing joint.
P6	P	G13	0400	0530	1.50	966.0m	Installed diverter system in diverter housing.
P6	P	G1	0530	0730	2.00	966.0m	Rigged down marine riser handling equipment and rigged up to handle drill pipe.
P6	P	G8	0730	0900	1.50	966.0m	Made up Dril-Quip test plug with 3 stands of HWDP below. Ran test tool in on DP and landed in 18-3/4" wellhead with 20klbs down weight.
P6	P	P1	0900	1030	1.50	966.0m	Pressure tested H4 BOP Stack/wellhead connector to 5000psi for 10min against UPR - good test. Pressure tested Cameron collet connector LMRP/BOP against upper Annular to 500psi - ok. Increased pressure test to 3500 psi - test failed.
P6	TP (SS)	G8	1030	1200	1.50	966.0m	POOH with test Tool. Rubber segment recovered from hole with test tool. Appearance consistent with that originating from the upper annular insert Element. Note: Observed +/-20klbs overpull when pulling the test tool through the BOP stack.
P6	TP (SS)	G8	1200	1230	0.50	966.0m	Redressed test tool with new "O" ring seal and RIH. Landed out test tool in 18-3/4" wellhead with 20klbs down weight. Note: No indication of drag on RIH with full bore tool.
P6	TP (SS)	P1	1230	1300	0.50	966.0m	Pressure tested collet connector on LMRP against upper annular to 650psi - ok. Increased pressure test to 3500 psi - test failed.
P6	P	G8	1300	1430	1.50	966.0m	POOH with test tool and laid out same. Racked back HWDP.
P6	P	P1	1430	1630	2.00	966.0m	Rigged up surface lines and pressure tested TDS UIBOP, LIBOP, standpipe and rotary mud hose to 250/4000psi for 5/10 min. Rigged down surface lines
P6	P	G10	1630	1700	0.50	966.0m	Installed and function tested diverter.
P11	P	G2	1700	2100	4.00	966.0m	Picked up 54 joints of 5" drill pipe from deck and racked back in mast.
P11	P	G5	2100	2300	2.00	966.0m	Picked up 9-5/8" casing hanger to drill floor. Installed cement plugs onto runing tool/seal assembly and made up running tool assembly to 9-5/8" hanger. Laid out hanger assembly.
P11	P	G6	2300	2400	1.00	966.0m	Held JSA. Picked up Sperry mud motor with ported float installed. Made up bit, stabiliser and Sperry RLL tool to mud motor.

Operations For Period 0000 Hrs to 0600 Hrs on 09 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	G6	0000	0030	0.50	966.0m	Made up Sperry RLL tool.
P11	P	G6	0030	0130	1.00	966.0m	Sperry programed RLL tool and checked alignment of RLL to bent housing in mud motor.
P11	P	G6	0130	0400	2.50	966.0m	Made up NMDC and remaining BHA from mast to 252m.
P11	P	G6	0400	0500	1.00	966.0m	Shallow tested RLL tool and mud motor. Installed diverter element.
P11	P	G2	0500	0600	1.00	966.0m	Held JSA. RIH BHA on DP from deck from 252m to 440m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 08 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	7	08 Dec 2009	08 Dec 2009	239.00	9.958	966.0m

General Comments

00:00 TO 24:00 Hrs ON 08 Dec 2009

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WBM Data

Mud Type:	KCL/PHPA WBF	API FL:		Cl:		Solids(%vol):	
Sample-From:	PIT 4	Filter-Cake:		K+C*1000:	8%	H2O:	96%
Time:	2000	HTHP-FL:		Hard/Ca:	1mg/l	Oil(%):	
Weight:	8.90ppg	HTHP-cake:		MBT:	5	Sand:	
Temp:	25C°			PM:	0.2	pH:	9
				PF:	0.25	PHPA:	2ppb

Comment	Note: Costs are in AUD The MBT test I conducted gave me a result of 5.

Cost Today

Viscosity	49sec/qt
PV	10cp
YP	13lb/100ft²
Gels 10s	4
Gels 10m	6
Fann 003	14
Fann 006	16
Fann 100	5
Fann 200	40
Fann 300	48
Fann 600	60

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	202	18	-1	525.0
Drill Water	m3	30	18	-1	481.0
Pot Water	m3	0	33	0	218.0
Brine	m3	0	64	0	116.0
Cement class \'G\'	MT	0	0	0	158.5
Barite	MT	0	0	0	125.9
Bentonite	MT	0	0	0	33.0
BIOCIDE	can	0	0	0	8.0
Baradefoam-W300	cans	0	0	0	7.0
XANTHUM GUM	sxs	0	0	0	110.0
Barolift	box	0	0	0	16.0
Barofibre	sxs	0	0	0	40.0
Barofilm/Petrofree	sxs	0	0	0	40.0
Caustic Soda	can	0	0	0	11.0
Circal 60/16	Sacks	0	0	0	149.0
Circal Y	sxs	0	0	0	91.0
Citric Acid	sxs	0	0	0	32.0
Clayseal +	Drums	0	0	0	46.0
DEFOAMER	sxs	0	0	0	126.0
EZ-SPOT	Drum	0	0	0	5.0
EZ-MUD	pail	0	0	0	121.0
Gel	sxs	0	0	0	0.0
Milpac - LV	sxs	0	0	0	36.0
N-DRILL HT +	sxs	0	0	0	105.0
OBM	sxs	0	0	0	6.0
OXYGON	can	0	0	0	33.0
Pipe-Lax W	sxs	0	0	0	87.0
POTASSIUM CHLORIDE	MT	0	0	0	50.0
KOH	can	0	0	0	44.0
SOBM	sxs	0	0	0	18.0
Soda Ash	sxs	0	0	0	0.0
Sodium Bicarbonate	sxs	0	0	0	38.0
SALT FINE	pail	0	0	0	32.0
Surface Water	sxs	0	0	0	40.0
Foaming Agent	sxs	0	0	0	40.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0
Lime	sxs	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)

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Pumps

Pump Data - Last 24 Hrs								Slow Pump Data								
1	Continental Emsco	6.50	1.05	97					30		252	40		336	50		420
2	Continental Emsco	6.50	1.05	97					30		252	40		336	50		420
3	Continental Emsco	6.50	1.05	97					30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	/	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	6
Maersk	37
GRN	5
OMS	21
Dril-Quip	2
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	6
Haliburton Directional Drilling	1
Reach	1
MI Fluids	1
Others	2
Total	94

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / Kosta Georgiou

Available	**2705.1bbl**
Active	55.0bbl
Mixing	1477.0bbl
Hole	983.1bbl
Slug	
Reserve	
Kill	
PAD MUD	190.0bbl

Losses	**0.0bbl**
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped	
Sweep/Displace	

Equipment	Description	Mesh Size	Comments

Marine

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Weather on 08 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	16kn	263.0deg	1008.0mbar	11C°	1.3m	263.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.2deg	0.5deg	315.0deg	0.00klb	306.00klb	Calm

Swell Height	Swell Dir.	Swell Period	Comments
1.6m	250.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	210.0
2	219.0
3	192.0
4	225.0
5	199.0
6	221.0
7	212.0
8	217.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:40 - 8/12/09	19:10 - 5/12/09	Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		694
Potable Water	M3		124
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		45
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	19:15 - 4/12/09		Standby at Kan Tan IV

Item	Unit	Used	Quantity
Rig Fuel	M3		369
Pot Water	M3		298
Drill Water	M3		600
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 11
Rockhopper-1

09 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

Rockhopper-1

Date:	09 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	11	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1060.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1060.0m	Last Casing OD	13.375in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	94.0m	Shoe TVDBRT	961.0m	Daily Cost	US$747,737
Rig	Kan Tan IV	Days from spud	9.02	Shoe MDBRT	961.0m	Cumul. Cost	US$8,934,216
Wtr Dpth(MSL)	74.3m	Days on well	10.96	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	38
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Drilling 12¼" hole at 1243m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Drill ahead 12¼" hole.		

Summary of Period 0000 to 2400 Hrs

Made up 12¼" BHA. Shallow tested mud motor and RLL tool. RIH singling in 5" DP from deck to 773m. Continued to RIH to 923m. Washed from 923m to TOC at 946m. Drilled out shoe track to 954m. Continued to drill out shoetrack and clean rathole while displacing well to 9.0ppg KCL PHPA mud system. Drilled 12¼" hole from 966m to 971m. Circulate and condition mud. Pull into shoe and perform LOT (EWM 17.5 ppg). Drilled 12¼" hole from 971 m to 1060 m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	35 Days	Full Emergency drill performed	
ER Exercises	0	7 Days		
Fire Drill	0	25 Days	Main deck - Fire in Control room	
Near Miss	0	2 Days		
Permit To Work	16	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	3 Days	General safety meetings	
Safety Meeting	16	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	34	0 Days	Number of STOP Cards submitted	

FORMATION	
Name	Top
Torquay Group	100.30m

Operations For Period 0000 Hrs to 2400 Hrs on 09 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	G6	0000	0030	0.50	966.0m	Made up Sperry RLL tool.
P11	P	G6	0030	0130	1.00	966.0m	Sperry programed RLL tool and checked alignment of RLL to PDM bent housing (0.78 Deg) .
P11	P	G6	0130	0400	2.50	966.0m	Made up NMDC and remaining BHA from mast to 252m.
P11	P	G6	0400	0500	1.00	966.0m	Shallow tested RLL tool and PDM. Installed diverter element.
P11	P	G2	0500	0800	3.00	966.0m	Held JSA. RIH BHA from 252m to 773m on DP picked up from pipe deck (54 joints of 5" DP).
P11	P	F1	0800	1130	3.50	966.0m	RIH with stands from 773m to 923m. Washed and reamed cement stringers in from 923m to TOC at 946m. Tagged TOC with 5klbs.
P11	P	D1	1130	1530	4.00	966.0m	Drilled out shoetrack, plugs and float shoe from 946m to 954m with seawater. Pumped 2x 30bbls PAD mud Hi-Vis sweeps.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	D1	1530	1630	1.00	966.0m	Continued to drill shoetrack from 954m to shoe at 961m. Pumped 60bbl Hi-Vis ahead of new mud and converted to 9.0 ppg PHPA/KCL mud. Cleaned out rathole to 17-1/2" hole TD at 966m and reamed shoe 3x. Note: Firm/hard cement in the shoetrack.
P11	P	D2	1630	1700	0.50	971.0m	Drilled 5m of new 12-1/4" hole 966m to 971m.
P11	P	F4	1700	1730	0.50	971.0m	Circulated and conditioned mud prior to LOT. Circulated 2x bottoms up before shaker screens cleaned up.
P11	P	E1	1730	1800	0.50	971.0m	Pulled back inside the shoe. Made up surface lines for LOT.
P11	P	E1	1800	1830	0.50	971.0m	Lined up Halliburton and flushed lines until returns to trip tank. Closed lower annular BOP and performed LOT with 9.0 ppg mud. Leak of pressure of 1400psi corresponding to EMW of 17.5 ppg.
P11	P	E1	1830	1930	1.00	971.0m	Rigged down surface lines. Opened lower annular BOP. Displaced C&K lines to 9.0ppg mud and recorded CLFL. Picked up stand and washed to bottom.
P11	P	D2	1930	2400	4.50	1060.0m	Drilled 12¼" hole from 971m to 1060m (850gpm, 1350psi, WOB 10-20klbs, RPM 100, 3klbs-ft torque)

Operations For Period 0000 Hrs to 0600 Hrs on 10 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	D2	0000	0600	6.00	1243.0m	Drilled 12¼" hole from 1060m to 1243 m (925gpm, SPP 1870 psi, WOB 10-20klbs, RPM 100, 3-5klbs-ft torque)

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 09 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	31	08 Dec 2009	09 Dec 2009	263.00	10.958	1060.0m

General Comments

00:00 TO 24:00 Hrs ON 09 Dec 2009

WBM Data

Cost Today US$ 47959

Mud Type:	KCl- PHPA	API FL:	7.0cc/30min	Cl:		Solids(%vol):	2%
Sample-From:	PIT 3	Filter-Cake:	1/32nd"	K+C*1000:	9%	H2O:	95%
Time:	2045	HTHP-FL:	12.4cc/30min	Hard/Ca:	280mg/l	Oil(%):	
Weight:	9.00ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.1
Temp:	25C°			PM:	0.4	pH:	10
				PF:	0.35	PHPA:	1ppb

Viscosity	42sec/qt
PV	10cp
YP	16lb/100ft²
Gels 10s	5
Gels 10m	7
Fann 003	5
Fann 006	6
Fann 100	13
Fann 200	17
Fann 300	26
Fann 600	36

Comment: Note: Costs are in AUD

Ditch Magnet: 365gms

Bit # 3

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	12.25in	IADC#	M432	No.	Size	Progress	94.0m	Cumul. Progress	94.0m
Mfr:	REED	WOB(avg)	15.20klb	6	15/32nd"	On Bottom Hrs	4.0h	Cumul. On Btm Hrs	4.0h
Type:	PDC	RPM(avg)	176			IADC Drill Hrs	5.0h	Cumul. IADC Drill Hrs	5.0h
Serial No.:	222170	F.Rate	842gpm			Total Revs	62000	Cumul. Total Revs	62000
Bit Model	RSR616M	SPP	1347psi			ROP(avg)	23.50 m/hr	ROP(avg)	23.50 m/hr
Depth In	966.0m	HSI							
Depth Out		TFA	1.035						

Bit Comment

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BHA # 3

Weight(Wet)	68340.00klb	Length	252.7m	Torque(max)	5000ft-lbs	D.C. (1) Ann Velocity	252fpm
Wt Below Jar(Wet)	36205.00klb	String	280.00klb	Torque(Off.Btm)	1000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	280.00klb	Torque(On.Btm)	3000ft-lbs	H.W.D.P. Ann Velocity	165fpm
		Slack-Off	270.00klb			D.P. Ann Velocity	165fpm

BHA Run Description

BHA Run Comment: Hours on drilling jars = 4 hrs.

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.28m	12.25in		222170	6 x 15 Jets
Mud Motor	9.22m	9.63in		963448	Bent housing set at 0.78° Ported float installed
String Stab	1.91m	12.25in	3.00in	231191	
LWD Tools	7.38m	8.00in	3.50in	PA90231607	RLL LWD/MWD
NM Drill Collar	4.81m	8.00in		246907	
String Stab	1.87m	12.25in	3.00in	701049	
Drill Collar	56.51m	8.25in	2.88in		
Drilling Jars	9.70m	8.00in	2.88in	1762-5074	
Drill Collar	18.75m	8.25in	2.88in		
X/Over Sub	1.09m	6.75in	2.25in	1973	
HWDP	141.21m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
980.35	0.0	258.5	980.34	1.7	1.7	0.9	0.2	Sperry Sun RLL Tool
1009.96	0.2	60.5	1009.95	1.7	1.7	0.9	0.2	Sperry Sun RLL Tool
1039.18	0.2	57.4	1039.17	1.8	1.8	0.8	0.0	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	8	0	517.0
Drill Water	m3	0	37	0	444.0
Pot Water	m3	52	29	0	241.0
Brine	m3	50	0	0	166.0
Cement class \'G\'	MT	0	0	-60.5	98.0
Barite	MT	0	0	0	125.9
Bentonite	MT	0	0	-3	30.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.08	97	89	1350	421
2	Continental Emsco	6.50	1.08	97	89	1350	421
3	Continental Emsco	6.50	1.08	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1115.0	30	150	252	40	200	336	50	250	420
1115.0	30	150	252	40	200	336	50	250	420
1115.0	30	120	252	40	170	336	50	250	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped.

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Printed on 09 Dec 2009

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
13.38	17.50ppg /	961.00m / 961.00m	Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx 460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	6
Maersk	38
GRN	5
OMS	21
Dril-Quip	2
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	6
Haliburton Directional Drilling	1
Reach	1
MI Fluids	1
Other Contractor	1
Total	94

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan / Kosta Georgiou

Available	**1782.4bbl**
Active	293.0bbl
Mixing	275.0bbl
Hole	570.4bbl
Slug	44.0bbl
Reserve	525.0bbl
Kill	
PAD MUD	75.0bbl

Losses	**795.5bbl**
Downhole	
Surf+ Equip	743.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Treated out of system	52.5bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 09 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	11kn	342.0deg	1004.0mbar	13C°	1.0m	342.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.3deg	0.4deg	315.0deg	0.00klb	550.00klb	Calm

Swell Height	Swell Dir.	Swell Period	Comments
1.6m	270.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	222.0
2	222.0
3	204.0
4	234.0
5	210.0
6	224.0
7	205.0
8	212.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:40 - 8/12/09		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		684
Potable Water	M3		123
Drill Water	M3		637

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Australian Drilling Associates Pty Ltd ADA

10 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 12
Rockhopper-1

Rockhopper-1

Date:	10 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	12	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1587.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1587.0m	Last Casing OD	13.375in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	527.0m	Shoe TVDBRT	961.0m	Daily Cost	US$794,960
Rig	Kan Tan IV	Days from spud	10.02	Shoe MDBRT	961.0m	Cumul. Cost	US$9,729,176
Wtr Dpth(MSL)	74.3m	Days on well	11.96	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	39
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Drilling 12¼" hole at 1726m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Drill 12 ¼" hole to 1926m. Orientate hole to 2° at TD of 1966m. Circulate well clean. POOH to run 9-5/8" casing.		

Summary of Period 0000 to 2400 Hrs

Drilled 12¼" hole from 1060m to 1427m. Circulated and conditioned mud. Drilled 12¼" hole from 1427m to 1587m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	36 Days	Full Emergency drill performed	
ER Exercises	0	8 Days		
Fire Drill	0	26 Days	Main deck - Fire in Control room	
First Aid Case	1	0 Days	IP cut his thumb across the nail while attempting to cut through a broom handle with a hacksaw. IP was treated and returned to work.	
Permit To Work	11	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	4 Days	General safety meetings	
Safety Meeting	11	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	44	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1141.00m
Angahook Volcanics Equiv	1295.00m
Lower Angahook	1539.00m

Operations For Period 0000 Hrs to 2400 Hrs on 10 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	D2	0000	1500	15.00	1427.0m	Drilled 12¼" hole from 1060m to 1427m. Drilling parameters: GPM 925; SPP 1870psi, WOB 10-20klbs, RPM 100, Torque 3-5klbs-ft.
P11	TP (TP)	F4	1500	1730	2.50	1427.0m	Shaker screens blinding with unsheared PHPA in mud system resulting in unsustainable loss of of mud over the shakers. Changed screens to course and circulated and conditioned mud. Lined up shearing and mixing hopper onto active pit

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	D2	1730	2400	6.50	1587.0m	and assisted PHPA shearing. Drilled 12¼" hole from 1427m to 1587m. Drilling parameters: GPM 950; SPP 2000psi, WOB 10klbs, RPM 100, 3-5klbs-ft.

Operations For Period 0000 Hrs to 0600 Hrs on 11 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	D2	0000	0600	6.00	1726.0m	Drilled 12¼" hole from 1587m to 1726m. Drilling parameters: GPM 960 gpm; SPP 2150psi; WOB 10klbs; RPM 100; Torque 3-5klbs-ft

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 10 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	55	08 Dec 2009	10 Dec 2009	287.00	11.958	1587.0m

General Comments

00:00 TO 24:00 Hrs ON 10 Dec 2009

WBM Data

Cost Today US$ 173014

Mud Type:	Hi-Vis PHB/Guar gum Sweeps	API FL:	5.8cc/30min	Cl:		Solids(%vol):	3%	Viscosity	61sec/qt
		Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	94%	PV	12cp
Sample-From:	PIT 2	HTHP-FL:	11.2cc/30min	Hard/Ca:	200mg/l	Oil(%):		YP	25lb/100ft²
Time:	2105	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.4	Gels 10s	8
Weight:	9.20ppg			PM:	0.3	pH:	9	Gels 10m	10
Temp:	32C°			PF:	0.25	PHPA:	2ppb	Fann 003	7
								Fann 006	9
								Fann 100	22
								Fann 200	29
								Fann 300	37
								Fann 600	49

Comment — Note: Costs are in AUD

Bit # 3

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	12.25in	IADC#	M432	No.	Size	Progress	527.0m	Cumul. Progress	621.0m
Mfr:	REED	WOB(avg)	3.10klb	6	15/32nd"	On Bottom Hrs	14.0h	Cumul. On Btm Hrs	18.0h
Type:	PDC	RPM(avg)	209			IADC Drill Hrs	21.5h	Cumul. IADC Drill Hrs	26.5h
Serial No.:	222170	F.Rate	931gpm			Total Revs	150000	Cumul. Total Revs	212000
Bit Model	RSR616M	SPP	2030psi			ROP(avg)	37.64 m/hr	ROP(avg)	34.50 m/hr
Depth In	966.0m	HSI							
Depth Out		TFA	1.035						

Bit Comment

BHA # 3

Weight(Wet)	68340.00klb	Length	252.7m	Torque(max)	6740ft-lbs	D.C. (1) Ann Velocity	278fpm
Wt Below Jar(Wet)	36205.00klb	String	315.00klb	Torque(Off.Btm)	3600ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	315.00klb	Torque(On.Btm)	1200ft-lbs	H.W.D.P. Ann Velocity	182fpm
		Slack-Off	310.00klb			D.P. Ann Velocity	182fpm

BHA Run Description

BHA Run Comment — Hours on drilling jars = 18 hrs.

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Equipment	Length	OD	ID	Serial #	Comment
Bit	0.28m	12.25in		222170	6 x 15 Jets
Mud Motor	9.22m	9.63in		963448	Bent housing set at 0.78° Ported float installed
String Stab	1.91m	12.25in	3.00in	231191	
LWD Tools	7.38m	8.00in	3.50in	PA90231607	RLL LWD/MWD
NM Drill Collar	4.81m	8.00in		246907	
String Stab	1.87m	12.25in	3.00in	701049	
Drill Collar	56.51m	8.25in	2.88in		
Drilling Jars	9.70m	8.00in	2.88in	1762-5074	
Drill Collar	18.75m	8.25in	2.88in		
X/Over Sub	1.09m	6.75in	2.25in	1973	
HWDP	141.21m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
1068.02	0.3	56.4	1068.01	1.8	1.8	-0.6	0.3	Sperry Sun RLL Tool
1096.69	0.1	334.7	1096.68	1.9	1.9	-0.6	1.1	Sperry Sun RLL Tool
1125.20	0.3	23.4	1125.19	2.0	2.0	-0.6	0.9	Sperry Sun RLL Tool
1153.52	0.3	18.6	1153.51	2.1	2.1	-0.5	0.1	Sperry Sun RLL Tool
1182.12	0.3	64.5	1182.11	2.2	2.2	-0.4	0.8	Sperry Sun RLL Tool
1210.69	0.3	28.3	1210.68	2.3	2.3	-0.3	0.7	Sperry Sun RLL Tool
1239.34	0.4	49.9	1239.33	2.5	2.5	-0.2	0.6	Sperry Sun RLL Tool
1298.15	0.4	29.5	1298.14	2.8	2.8	0.1	0.2	Sperry Sun RLL Tool
1327.53	0.4	32.2	1327.52	2.9	2.9	0.2	0.1	Sperry Sun RLL Tool
1356.77	0.3	47.3	1356.76	3.1	3.1	0.3	0.5	Sperry Sun RLL Tool
1385.60	0.4	56.1	1385.59	3.2	3.2	0.4	0.4	Sperry Sun RLL Tool
1412.81	0.5	46.3	1412.80	3.3	3.3	0.6	0.5	Sperry Sun RLL Tool
1441.66	0.6	57.5	1441.65	3.5	3.5	0.8	0.5	Sperry Sun RLL Tool
1470.69	0.6	43.7	1470.67	3.6	3.7	1.0	0.5	Sperry Sun RLL Tool
1499.95	0.6	47.8	1499.93	3.8	3.9	1.3	0.1	Sperry Sun RLL Tool
1529.47	0.6	57.0	1529.45	4.0	4.1	1.5	0.3	Sperry Sun RLL Tool
1558.73	0.6	46.7	1558.71	4.2	4.3	1.7	0.4	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	5	1	513.0
Drill Water	m3	0	73	0	371.0
Pot Water	m3	44	30	0	255.0
Brine	m3	0	166	0	0.0
Cement class \'G\'	MT	0	0	0	98.0
Barite	MT	0	15.2	0	110.7
Bentonite	MT	0	10	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.08	97	62	2030	310
2	Continental Emsco	6.50	1.08	97	62	2030	310
3	Continental Emsco	6.50	1.08	97	62	2030	310

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1290.0	30	150	252	40	200	336	50	250	420
1290.0	30	160	252	40	210	336	50	260	420
1290.0	30	150	252	40	200	336	50	250	420

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Printed on 10 Dec 2009

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	6
Maersk	38
GRN	5
OMS	21
Dril-Quip	2
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	3
PCS	3
Haliburton Directional Drilling	1
Reach	1
MI Fluids	1
Other Contractor	1
Total	94

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**1543.1bbl**
Active	55.0bbl
Mixing	380.0bbl
Hole	759.1bbl
Slug	44.0bbl
Reserve	230.0bbl
Kill	
PAD MUD	75.0bbl

Losses	**245.0bbl**
Downhole	
Surf+ Equip	219.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	26.0bbl
Pumped Sweep/Displace	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 10 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	15kn	241.0deg	1006.0mbar	10C°	1.3m	241.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.4deg	1.0deg	315.0deg	248.00klb	350.00klb	Unsettled

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	270.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	232.0
2	231.0
3	200.0
4	212.0
5	184.0
6	229.0
7	213.0
8	226.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:40 - 8/12/09		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		674
Potable Water	M3		1118

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Australian Drilling Associates Pty Ltd ADA

11 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 13
Rockhopper-1

Rockhopper-1

Date:	11 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	13	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1946.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1946.0m	Last Casing OD	13.375in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	359.0m	Shoe TVDBRT	961.0m	Daily Cost	US$683,287
Rig	Kan Tan IV	Days from spud	11.02	Shoe MDBRT	961.0m	Cumul. Cost	US$10,412,463
Wtr Dpth(MSL)	74.3m	Days on well	12.96	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	40
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test	08 Dec 2009				

Current Op @ 0600	Circulating well for clean returns over shaker screens.
Planned Op	Complete circulating at section TD. POOH. Make up cement head assembly. Install pup joint on 9-5/8" casing running tool. Recover wearbushing and set up index line. Rig up and run 9-5/8" casing.

Summary of Period 0000 to 2400 Hrs

Drilled 12¼" hole from 1587m to 1811m. Recorded SCRs and CLF pressure losses. Drilled 12¼" hole from 1811m to 1869m. Orientated and drilled in sliding mode from 1869m to 1898m. Removed damaged DCS service hose from mast. Orientate/rotate drilled from 1898m to 1905m. Flow checked unexplained 20bbl gain. Well static. Orientated and drilled in sliding mode from 1905m to 1926m. Replaced damaged DSC line in mast and secured to hose bundle. Orientate drilled from 1926m to 1946m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	37 Days	Full Emergency drill performed	
Fire Drill	0	27 Days	Main deck - Fire in Control room	
Permit To Work	11	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	5 Days	General safety meetings	
Safety Meeting	11	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	49	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 11 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	D2	0000	1030	10.50	1811.0m	Drilled 12¼" hole from 1587m to 1811m. Drilling parameters: GPM 960gpm; SPP 2150psi; WOB 10klbs; RPM 100; Torque 3-5 klbs-ft Hole and connections good.
P11	P	P3	1030	1100	0.50	1811.0m	Took SCRs and CLF losses.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	D2	1100	1430	3.50	1869.0m	Drilled 12¼" hole from 1811m to 1869m. Drilling parameters: GPM 960gpm; SPP 2150psi; WOB 10klbs; RPM 100; Torque 3-5 klbs-ft. Hole and connections good.
P11	P	D3	1430	1600	1.50	1887.0m	Orientated toolface on bit and drilled 12¼" hole in sliding mode from 1869m to 1887m.
P11	P	D2	1600	1700	1.00	1898.0m	Rotary drilled 12¼" hole from 1887m to 1898m. Hole and connections good.
P11	TP (RE)	G11	1700	1730	0.50	1898.0m	Removed broken DSC LP air line from mast. Damage to the hose caused by hose caught on mast structure due to high winds.
P11	P	D3	1730	1930	2.00	1905.0m	Orientated and drilled in sliding mode 12¼" hole from 1898m to 1905m.
P11	P	P3	1930	2015	0.75	1905.0m	Flow checked on unexplained 20bbl gain to active system. Well static - no flow.
P11	P	D3	2015	2200	1.75	1926.0m	Orientated and drilled 12¼" hole in sliding mode from 1905m to 1926m. Hole and connections good.
P11	TP (RE)	G11	2200	2245	0.75	1926.0m	Replaced DSC Low Pressure oil/air hose to compensator. Secured to hose bundle in mast.
P11	P	F3	2245	2300	0.25	1926.0m	Displaced choke and kill lines to fresh 9.4 ppg mud.
P11	P	D3	2300	2400	1.00	1940.0m	Orientated and drilled 12¼" hole in sliding mode from 1926m to 1940m. Drilling parameters: GPM 973; SPP 2490psi; WOB 10klbs. Hole and connections good.

Operations For Period 0000 Hrs to 0600 Hrs on 12 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	D3	0000	0130	1.50	1955.0m	Orientated and drilled 12¼" hole in sliding mode from 1946m to 1955m. Hole and connections good.
P11	TP (RE)	G2	0130	0300	1.50	1955.0m	Topdrive sat down on drill pipe stand causing 2x drill pipe singles to be bend. Laid out 2x bent joints of 5" drill pipe.
P11	TP (RE)	G2	0300	0330	0.50	1955.0m	Established circulation and wiped stand. Laid out extra drill pipe single for space out. Made up stand and washed back to bottom.
P11	P	D3	0330	0430	1.00	1972.0m	Orientated and drilled 12¼" hole in sliding mode from 1955m to 1972m. Drilling parameters: WOB 10klbs, Flow 960gpm, SPP 2350psi. Hole and connections good.
P11	P	F4	0430	0600	1.50	1972.0m	(IN PROGRESS) Circulated well until returns over the shaker screens clean. Raised mud weight from 9.4ppg to 9.5ppg.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 11 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	79	08 Dec 2009	11 Dec 2009	311.00	12.958	1940.0m

WBM Data

Cost Today US$ 31279

Mud Type:	Hi-Vis PHB/Guar gum Sweeps	API FL:	5.7cc/30min	Cl:		Solids(%vol):	3%	Viscosity	60sec/qt
		Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	94%	PV	13cp
Sample-From:	Flowline	HTHP-FL:	11.4cc/30min	Hard/Ca:	200mg/l	Oil(%):		YP	27lb/100ft²
Time:	1010	HTHP-cake:	2/32nd"	MBT:	15	Sand:	.35	Gels 10s	10
Weight:	9.40ppg			PM:	0.35	pH:	9.5	Gels 10m	15
Temp:	52C°			PF:	0.3	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	25
								Fann 200	33
								Fann 300	40
								Fann 600	53

Comment

Note: Costs are in AUD

Ditch Magnet 89gms

Bit # 3

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments: One lost tooth on the outer nose area. There were 6 other cutters with chip damage spread over the bit. Cutters undamaged showed little or no wear.

Size ("):	12.25in	IADC#	M432	**Nozzles**	**Drilled over last 24 hrs**	**Calculated over Bit Run**

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Mfr:	REED	WOB(avg)	2.70klb	No.	Size	Progress	359.0m	Cumul. Progress	980.0m
Type:	PDC	RPM(avg)	188	6	15/32nd"	On Bottom Hrs	15.5h	Cumul. On Btm Hrs	33.5h
Serial No.:	222170	F.Rate	953gpm			IADC Drill Hrs	23.0h	Cumul. IADC Drill Hrs	49.5h
Bit Model	RSR616M	SPP	2250psi			Total Revs	98000	Cumul. Total Revs	310000
Depth In	966.0m	HSI				ROP(avg)	23.16 m/hr	ROP(avg)	29.25 m/hr
Depth Out		TFA	1.035						

Bit Comment

BHA # 3

Weight(Wet)	68340.00klb	Length	252.7m	Torque(max)	6290ft-lbs	D.C. (1) Ann Velocity	285fpm
Wt Below Jar(Wet)	36205.00klb	String	340.00klb	Torque(Off.Btm)	1600ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	340.00klb	Torque(On.Btm)	3800ft-lbs	H.W.D.P. Ann Velocity	187fpm
		Slack-Off	330.00klb			D.P. Ann Velocity	187fpm

BHA Run Description

BHA Run Comment: Hours on drilling jars = 35.2 hrs.

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.28m	12.25in		222170	6 x 15 Jets
Mud Motor	9.22m	9.63in		963448	Bent housing set at 0.78° Ported float installed
String Stab	1.91m	12.25in	3.00in	231191	
LWD Tools	7.38m	8.00in	3.50in	PA90231607	RLL LWD/MWD
NM Drill Collar	4.81m	8.00in		246907	
String Stab	1.87m	12.25in	3.00in	701049	
Drill Collar	56.51m	8.25in	2.88in		
Drilling Jars	9.70m	8.00in	2.88in	1762-5074	
Drill Collar	18.75m	8.25in	2.88in		
X/Over Sub	1.09m	6.75in	2.25in	1973	
HWDP	141.21m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
1587.90	0.6	49.0	1587.88	4.4	4.5	2.0	0.1	Sperry Sun RLL Tool
1616.89	0.7	52.6	1616.87	4.6	4.7	2.2	0.4	Sperry Sun RLL Tool
1645.39	0.6	67.5	1645.36	4.7	4.8	2.5	0.7	Sperry Sun RLL Tool
1673.84	0.7	56.9	1673.81	4.9	5.0	2.8	0.5	Sperry Sun RLL Tool
1702.24	0.7	57.6	1702.21	5.1	5.2	3.1	0.0	Sperry Sun RLL Tool
1759.92	0.7	70.2	1759.89	5.3	5.5	3.7	0.3	Sperry Sun RLL Tool
1789.63	0.8	75.2	1789.59	5.5	5.6	4.1	0.4	Sperry Sun RLL Tool
1848.62	0.8	79.0	1848.58	5.6	5.8	4.9	0.1	Sperry Sun RLL Tool
1876.78	0.9	76.6	1876.74	5.7	5.9	5.3	0.4	Sperry Sun RLL Tool
1905.30	0.8	78.6	1905.25	5.8	6.0	5.7	0.4	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	33	0	480.0
Drill Water	m3	0	58	0	313.0
Pot Water	m3	50	39	0	266.0
Brine	m3	131	14	0	117.0
Cement class \'G\'	MT	0	0	0	98.0
Barite	MT	0	0	0	110.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0

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Printed on 13 Dec 2009

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	65	2492	325
2	Continental Emsco	6.50	1.12	97	65	2492	325
3	Continental Emsco	6.50	1.12	97	65	2492	325

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1810.0	30	240	252	40	300	336	50	390	420
1810.0	30	240	252	40	290	336	50	350	420
1810.0	30	220	252	40	300	336	50	350	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	6
Maersk	38
GRN	4
OMS	21
Dril-Quip	2
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
PCS	6
Haliburton Directional Drilling	1
Reach	1
MI Fluids	1
Other Contractor	1
Total	97

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

				Equipment	Description	Mesh Size	Comments
Available	**1836.5bbl**	**Losses**	**86.0bbl**				
Active	269.0bbl	Downhole					
Mixing	300.0bbl	Surf+ Equip	70.0bbl				
Hole	918.5bbl	Dumped					
Slug	44.0bbl	De-Gasser					
Reserve	230.0bbl	De-Sander					
Kill		De-Silter					
PAD MUD	75.0bbl	Centrifuge	16.0bbl				
		Pumped Sweep/Displace					

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Marine

Weather on 11 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	36kn	274.0deg	1013.0mbar	12C°	2.0m	274.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.6m	0.7deg	2.7deg	315.0deg	248.00klb	200.00klb	Stormy

Swell Height	Swell Dir.	Swell Period	Comments
2.6m	270.0deg	3s	

Rig Support

Anchors	Tension (klb)
1	222.0
2	260.0
3	213.0
4	224.0
5	188.0
6	210.0
7	206.0
8	221.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		06:15 - 11/12/09	En Route to Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		648
Potable Water	M3		115
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	06:00 - 11/12/09	11:30 - 9/12/09	Stdby Kan Tan IV

Item	Unit	Used	Quantity
Rig Fuel	M3		320
Pot Water	M3		289
Drill Water	M3		600
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Discharged 127 m3 of Brine to rig

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT 01	-	09:02 / 09:18	11 / 8	

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origin

Australian Drilling Associates Pty Ltd ADA

12 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 14
Rockhopper-1

Rockhopper-1

Date:	12 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	14	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1972.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1972.0m	Last Casing OD	13.375in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	26.0m	Shoe TVDBRT	961.0m	Daily Cost	US$657,034
Rig	Kan Tan IV	Days from spud	12.02	Shoe MDBRT	961.0m	Cumul. Cost	US$11,069,497
Wtr Dpth(MSL)	74.3m	Days on well	13.96	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	41
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Running 9 5/8" casing at 698m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Run 9 5/8" casing to 1864m. Make up 9-5/8" Casing Hanger and run casing on landing string. Land out casing hanger in 18-3/4" wellhead and cement 9-5/8" casing.		

Summary of Period 0000 to 2400 Hrs

Drilled from 1946m to 1955m in orienting/sliding mode. Laid out 2x bent DP damaged by Top Drive. Drilled from 1955m to 1972m in sliding mode. Circulated well clean. MW brought up to 9.5ppg. Flow checked and POOH. Made up cement head assembly and laid out same. Made up pup joint onto 9-5/8" running tool - hanger assembly. Laid out same. Recovered wearbushing. Rigged up to run 9-5/8" casing. Made up shoe joint and intermediate joint.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	7 Days	Held abandon drill	
Emergency Drill	0	38 Days	Full Emergency drill performed	
Fire Drill	0	28 Days	Main deck - Fire in Control room	
Flash Reports	1	0 Days	5" DP Bent by Top Drive	While disconnecting the TDS from a single of DP the Driller accidentally placed the draw-works in reverse. When the draw-works clutch was engaged the TDS came down onto the single of 5" bending that joint and also the top of the joint that was in the slips in the rotary table.
Permit To Work	14	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	6 Days	General safety meetings	
Safety Meeting	14	0 Days	Prejob safety meetings	
Safety Meeting	8	0 Days	Safety Meetings	
STOP Card	56	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 12 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P11	P	D3	0000	0130	1.50	1955.0m	Orientated and drilled 12¼" hole in sliding mode from 1946m to 1955m. Hole and

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Printed on 14 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							connections good.
P11	TP (RE)	G2	0130	0300	1.50	1955.0m	Topdrive sat down on drill pipe stand causing 2x drill pipe singles to be bend. Laid out 2x bent joints of 5" drill pipe.
P11	TP (RE)	G2	0300	0330	0.50	1955.0m	Established circulation and wiped stand. Laid out extra drill pipe single for space out. Made up stand and washed back to bottom.
P11	P	D3	0330	0430	1.00	1972.0m	Orientated and drilled 12¼" hole in sliding mode from 1955m to 1972m. Drilling parameters: WOB 10klbs, Flow 960gpm, SPP 2350psi. Hole and connections good.
P11	P	F4	0430	0730	3.00	1972.0m	Circulated well until returns over the shaker screens clean. Raised mud weight from 9.4ppg to 9.5ppg.
P11	P	G8	0730	0930	2.00	1972.0m	Flow checked well. POOH wet on elevators from 1972m to 1553m.
P11	P	G8	0930	1130	2.00	1972.0m	Pumped slug and continued to POOH from 1553m to inside 9-5/8" casing shoe at 946m.
P11	P	G11	1130	1200	0.50	1972.0m	Flow checked at shoe. Serviced travelling block.
P11	P	G8	1200	1330	1.50	1972.0m	POOH from 946m to 252m.
P11	P	G6	1330	1430	1.00	1972.0m	Racked back BHA.
P11	P	G7	1430	1500	0.50	1972.0m	Haliburton downloaded MWD/LWD data from RLL tool.
P11	P	G6	1500	1530	0.50	1972.0m	Broke off bit and racked back stand.
P13	P	G15	1530	1700	1.50	1972.0m	Made up Haliburton cement head assembly and laid out same.
P13	P	G15	1700	1800	1.00	1972.0m	Picked up 9 5/8" casing hanger and running tool and installed 10ft pup joint on running tool. Laid out assembly.
P13	P	G12	1800	1900	1.00	1972.0m	Released wearbushing from wellhead with 70klbs-ft overpull. POOH, laid out wearbushing and WBRT.
P13	P	G12	1900	2000	1.00	1972.0m	Made up Dril-Quip wearbushing running tool and RIH. Landed running tool in wearbushing in the 18-3/4" wellhead. Marked landing string and set up index line.
P13	P	G1	2000	2300	3.00	1972.0m	Held JSA. Rigged up to run 9-5/8" casing. Rigged up 500 T elevators, bails, slips, FACL circulating tool and PCS equipment.
P13	P	G9	2300	2400	1.00	1972.0m	Held JSA. Made up shoe and intermediate joint. Backerlocked connections. Checked float valve in shoe joint - valve holding.

Operations For Period 0000 Hrs to 0600 Hrs on 13 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	P	G9	0000	0100	1.00	1972.0m	Picked up float shoe joint to drillfloor. Confirmed float operating and holding pressure from below. Picked up intermediate joint and bakerlocked same. Installed float collar joint and checked the float operating - ok. Completed bakerlocking the first 3x joints.
P13	P	G9	0100	0600	5.00	1972.0m	(IN PROGRESS) Ran 9-5/8" casing from 37m to 1864m - total of 155 joints ran. Filled every joint on the run with mud.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 12 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	8.5	12 Dec 2009	12 Dec 2009	335.00	13.958	1972.0m

General Comments

00:00 TO 24:00 Hrs ON 12 Dec 2009

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WBM Data

Cost Today US$ 9123

Mud Type:	Hi-Vis PHB/Guar gum Sweeps	API FL:	5.6cc/30min	Cl:		Solids(%vol):	4%	Viscosity	51sec/qt
		Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	94%	PV	18cp
Sample-From:	PIT 2	HTHP-FL:	11.7cc/30min	Hard/Ca:	200mg/l	Oil(%):		YP	22lb/100ft²
Time:	2100	HTHP-cake:	2/32nd"	MBT:	15	Sand:	.4	Gels 10s	11
Weight:	9.40ppg			PM:	0.35	pH:	9.5	Gels 10m	16
Temp:	25C°			PF:	0.3	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	26
								Fann 200	35
								Fann 300	40
								Fann 600	58

Comment — Note: Costs are in AUD

Bit # 3

Wear	I	O1	D	L	B	G	O2	R
	4	4	LT	N	X	I	CT	TD

Bitwear Comments: One lost tooth on the outer nose area. There were 6 other cutters with chip damage spread over the bit. Cutters undamaged showed little or no wear.

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	12.25in	IADC#	M432	No.	Size	Progress	26.0m	Cumul. Progress	1006.0m
Mfr:	REED	WOB(avg)	2.70klb	6	15/32nd"	On Bottom Hrs	1.7h	Cumul. On Btm Hrs	35.2h
Type:	PDC	RPM(avg)	126			IADC Drill Hrs	2.5h	Cumul. IADC Drill Hrs	52.0h
Serial No.:	222170	F.Rate	966gpm			Total Revs	314000	Cumul. Total Revs	624000
Bit Model	RSR616M	SPP	2431psi			ROP(avg)	15.29 m/hr	ROP(avg)	28.58 m/hr
Depth In	966.0m	HSI							
Depth Out	1972.0m	TFA	1.035						

Bit Comment

BHA # 3

Weight(Wet)	68340.00klb	Length	252.7m	Torque(max)	1600ft-lbs	D.C. (1) Ann Velocity	289fpm
Wt Below Jar(Wet)	36205.00klb	String	340.00klb	Torque(Off.Btm)	1600ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	340.00klb	Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	189fpm
		Slack-Off	330.00klb			D.P. Ann Velocity	189fpm

BHA Run Description

BHA Run Comment — Hours on drilling jars = 35.2 hrs.

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.28m	12.25in		222170	6 x 15 Jets
Mud Motor	9.22m	9.63in		963448	Bent housing set at 0.78° Ported float installed
String Stab	1.91m	12.25in	3.00in	231191	
LWD Tools	7.38m	8.00in	3.50in	PA90231607	RLL LWD/MWD
NM Drill Collar	4.81m	8.00in		246907	
String Stab	1.87m	12.25in	3.00in	701049	
Drill Collar	56.51m	8.25in	2.88in		
Drilling Jars	9.70m	8.00in	2.88in	1762-5074	
Drill Collar	18.75m	8.25in	2.88in		
X/Over Sub	1.09m	6.75in	2.25in	1973	
HWDP	141.21m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
1934.76	0.9	50.9	1934.71	5.9	6.2	6.1	1.4	Sperry Sun RLL Tool
1951.76	0.7	51.7	1951.71	6.1	6.3	6.3	1.2	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	10	0	470.0

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Printed on 14 Dec 2009

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Drill Water	m3	34	33	0	314.0
Pot Water	m3	11	26	0	251.0
Brine	m3	0	36	0	81.0
Cement class \'G\'	MT	0	0	0	98.0
Barite	MT	0	0	0	110.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	64	2431	320
2	Continental Emsco	6.50	1.14	97	64	2431	320
3	Continental Emsco	6.50	1.14	97	65	2431	325

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	6
Maersk	38
GRN	4
OMS	21
Dril-Quip	2
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
PCS	6
Haliburton Directional Drilling	1
Reach	1
MI Fluids	1
Other Contractor	1
Total	97

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	1701.7bbl	Losses	58.0bbl
Active	277.0bbl	Downhole	
Mixing		Surf+ Equip	47.0bbl
Hole	1006.7bbl	Dumped	
Slug	13.0bbl	De-Gasser	
Reserve	230.0bbl	De-Sander	
Kill		De-Silter	
PAD MUD	175.0bbl	Centrifuge	11.0bbl
		Pumped Sweep/Displace	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 12 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	23kn	245.0deg	1014.0mbar	12C°	3.1m	245.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.3m	0.4deg	1.4deg	315.0deg	248.00klb	340.00klb	Stormy

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	265.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	220.0
2	240.0
3	210.0
4	213.0
5	179.0
6	219.0
7	219.0
8	233.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	07:00 - 12/12/09		Stdby Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		633
Potable Water	M3		112
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	06:00 - 11/12/09		Stdby Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		310
Pot Water	M3		286
Drill Water	M3		600
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT 01	-	08:40 / 08:51	3 / 3	

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Australian Drilling Associates Pty Ltd ADA

13 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 15
Rockhopper-1

Rockhopper-1

Date:	13 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	15	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1972.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1972.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$1,202,148
Rig	Kan Tan IV	Days from spud	13.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$12,271,645
Wtr Dpth(MSL)	74.3m	Days on well	15.04	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	42
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Laying out cement head		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	POOH and lay out 9 5/8" casing running tool. Run and set wearbushing. Lay down 12¼" BHA. Jet BOPs. Rig up and recover LMRP to moonpool.		

Summary of Period 0000 to 2400 Hrs

Made up and tested 9-5/8" shoetrack. Ran 9-5/8" casing to 1864 m. Laid out casing handling equipment. Made up 9-5/8" casing hanger on running tool. Ran 9-5/8" casing to 1945m on landing string. Washed/worked casing from 1945m to 1957m. Made up cement head and washed/worked casing from 1957m to 1964m and landed casing hanger in 18-3/4" wellhead. Connected cement head control lines. Pressure tested cementing surface lines to 4500 psi. Halliburton pumped spacer, dropped ball and sheared bottom plug with 1500 psi. Halliburton mixed and pumped 82 bbl of 12.5ppg lead cement slurry.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	1	0 Days	Held abandon drill	
Emergency Drill	0	39 Days	Full Emergency drill performed	
Fire Drill	1	0 Days		
Permit To Work	15	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	7 Days	General safety meetings	
Safety Meeting	15	0 Days	Prejob safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	40	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 13 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	P	G9	0000	0100	1.00	1972.0m	Picked up float shoe joint to drillfloor. Confirmed float operating and holding pressure from below. Picked up intermediate joint and bakerlocked same. Installed float collar joint and checked the float operating - ok. Completed bakerlocking the first 3x joints.
P13	P	G9	0100	1530	14.50	1972.0m	Ran 9-5/8" casing from 37m to 1864m - total of 155 joints ran. Filled every joint on the run with mud.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	P	G1	1530	1630	1.00	1972.0m	Rigged down casing elevators and FACL circulating tool. Rigged up drill pipe elevators and running equipment.
P13	P	G9	1630	1830	2.00	1972.0m	Made up 9-5/8" casing hanger on running tool and RIH to 1925m. Picked up 9-5/8" casing string on drill pipe elevators and took casing weight - 420klbs up/410klbs down - hole good.
P13	P	G9	1830	1930	1.00	1972.0m	Continued to RIH with 9-5/8" casing on drill pipe to 1934m. Hole drag increased from +/- 20klbs to 60klbs weight while RIH last part of 2nd stand. Connected TDS and washed casing down from 1945m to 1957m (150 GPM, 250psi).
P13	P	G2	1930	2030	1.00	1972.0m	Picked up cement head assembly from deck. Made up onto a single of drill pipe and pup of 5" drill pipe below the cement head and made up to landing string.
P13	P	G9	2030	2200	1.50	1972.0m	Washed and worked casing down from 1957m with 200 GPM (300psi) and landed 9-5/8" casing hanger off in 18-3/4" wellhead. Set down casing weight of 220klbs placing shoe at depth of 1965m. Confirmed hanger on depth against index line.
P13	P	G1	2200	2230	0.50	1972.0m	Connected cement head control lines and held pre cementing JSA while continuing to circulate at 200 GPM, 300psi.
P13	P	F3	2230	2400	1.50	1972.0m	Halliburton pumped 10bbl seawater and pressure tested surface lines to 4500psi. Halliburton pumped 50bbl seawater spacer. Dropped ball and sheared bottom plug with 1500psi after 0.18bbl pumped. Halliburton mixed and pumped 82bbl of 12.5ppg lead cement slurry. Used: 215sx class G cement, 63bbl drill/mix water.

Operations For Period 0000 Hrs to 0600 Hrs on 14 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	P	F3	0000	0030	0.50	1972.0m	Halliburton mixed and pumped 47bbl of 15.8ppg of tail cement slurry. Used: 223sx class G cement, 28bbl of drill/mix water. Halliburton released dart and sheared the top plug after 3.6bbl with 2200psi. Haliburton continued to displace cement with a total of 20bbl of seawater.
P13	P	F3	0030	0130	1.00	1972.0m	Changed line up to rig pumps and continued to displace cement. Bottom plug landed in float collar and held 500psi above circulating pressure. Circulating pressure 280psi. Pressure on bottom plug holding at 770psi. Increased pressure to burst lower plug diaphram with 1500psi. Continued to displace cement. Plug bumped at 3608 strokes (theoretical 3652 strokes). Final circulating pressure 550psi at 2bbl/min. Pressured up to 1050psi to confirm bump.
P13	P	P1	0130	0230	1.00	1972.0m	Bled off pressure at cement unit and checked for back flow. Floats holding. Pressure tested 9-5/8" casing to 4000psi for 10 mins - ok.
P13	P	G1	0230	0300	0.50	1972.0m	Removed control lines and cement hose from cement head.
P13	P	P1	0300	0400	1.00	1972.0m	Set down landing string weight of 15klbs on casing running tool. Energised seal assembly by turning 6 turns to right. Observed 10" drop in drill string to indicate seal assembly set. Lined up to Halliburton cement unit down kill line, closed LPR and pressured tested seal assembly to intial 2500psi with final test pressure of 5000psi for 10 mins - ok. Opened LPR. Sheared running tool off casing hanger and seal assembly with 65klbs overpull. Set down 10klbs onto seal assembly. Closed LPR and confirmed seal assembly integrity with 5000psi for 3 mins - ok. Opened LPR.
P13	TP (DH)	F4	0400	0530	1.50	1972.0m	Picked up with 9-5/8" casing running tool. Running tool hanging up at LPR. Worked landing string to pass LPR. String worked free with circulation.
P13	P	G2	0530	0600	0.50	1972.0m	Laid out cement head.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 13 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	34.5	12 Dec 2009	13 Dec 2009	361.00	15.042	1972.0m

General Comments

00:00 TO 24:00 Hrs ON 13 Dec 2009

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WBM Data

Cost Today US$ 19779

Mud Type:	KCl- PHPA	API FL:	5.8cc/30min	Cl:		Solids(%vol):	3%	Viscosity	59sec/qt
Sample-From:	PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	94%	PV	12cp
Time:	2105	HTHP-FL:	11.2cc/30min	Hard/Ca:	200mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.60ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.4	Gels 10s	10
Temp:	32C°			PM:	0.3	pH:	9	Gels 10m	13
				PF:	0.25	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	26
								Fann 200	35
								Fann 300	40
								Fann 600	58

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	4	0	466.0
Drill Water	m3	57	33	0	338.0
Pot Water	m3	0	24	0	227.0
Brine	m3	0	0	0	81.0
Cement class \'G\'	MT	0	30.5	0	67.5
Barite	MT	0	16	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	6
Maersk	38
GRN	4
OMS	21
Dril-Quip	2
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
PCS	6

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Personnel On Board

Haliburton Directional Drilling	1
Reach	1
MI Fluids	1
Other Contractor	1
Total	97

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	2724.0bbl	Losses	163.0bbl
Active	433.0bbl	Downhole	
Mixing	790.0bbl	Surf+ Equip	163.0bbl
Hole	523.0bbl	Dumped	
Slug	13.0bbl	De-Gasser	
Reserve	790.0bbl	De-Sander	
Kill		De-Silter	
Hi Vis	175.0bbl	Centrifuge	
		Pumped Sweep/Displace	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 13 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	20kn	230.0deg	1019.0mbar	11C°	3.0m	230.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.5deg	0.9deg	315.0deg	248.00klb	650.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.6m	270.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	229.0
2	230.0
3	201.0
4	223.0
5	203.0
6	235.0
7	225.0
8	233.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	07:00 - 12/12/09		Stdby Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		622
Potable Water	M3		110
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	06:00 - 11/12/09		Stdby Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		299
Pot Water	M3		283
Drill Water	M3		600
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT 01	-	08:40 / 08:51	3 / 3	

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Printed on 13 Dec 2009

14 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 16
Rockhopper-1

Rockhopper-1

Date:	14 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	16	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1972.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1972.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$659,367
Rig	Kan Tan IV	Days from spud	14.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$12,931,012
Wtr Dpth(MSL)	74.3m	Days on well	15.96	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	43
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Laying out slip joint.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Recover LMRP to surface. Replace Upper Annular element and test same. Rig up and run LMRP.		

Summary of Period 0000 to 2400 Hrs

Halliburton mixed and pumped 47bbl of 15.8ppg G cement slurry. Released dart and sheared top plug with 2200psi. Halliburton displaced cement with 20bbl mud. Changed to rig pumps and continued to displace cement. Plug bumped with 500psi above FCP. Checked for back flow. Pressure tested casing to 4000psi for 10 mins. Set pack off in wellhead and pressure tested to 5000psi for 10mins against LPR. Released 9-5/8" casing running tool with 65klbs overpull. Laid out cement head. POOH laid out casing running tool. Made up wear bushing on running tool and RIH. Attempted to set wear bushing - misrun. POOH and made up jetting sub below running tool and wear bushing and RIH. Jetted BOP stack and wellhead area. Set wear bushing and POOH with running tool. Laid out same. RIH with jetting sub, jetted BOP pumping 90bbl Hi-Vis and displaced riser to seawater. POOH. Rigged up to pull LMRP.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	40 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	1 Day		
Permit To Work	12	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	2	7 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	36	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 14 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	P	F3	0000	0030	0.50	1972.0m	Halliburton mixed and pumped 47bbl of 15.8ppg tail cement slurry. Used: 223sx class G cement, 28bbl of drill/mix water. Halliburton released dart and sheared the top plug after 3.6bbl with 2200 psi. Displacement - Halliburton displaced cement with a total of 20bbl of mud.
P13	P	F3	0030	0130	1.00	1972.0m	Lined up to rig pumps and continued to displace cement with mud. Bottom plug landed

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							in float collar and held 500psi above circulating pressure. Circulating pressure 280psi. Pressure on bottom plug holding at 770psi. Increased pressure to burst lower plug diaphragm with 1500psi. Continued to displace cement. Plug bumped at 3608 strokes (theoretical 3652 strokes). Final circulating pressure 550psi at 2bbl/min. Pressured up to 1050psi to confirm bump.
P13	P	P1	0130	0230	1.00	1972.0m	Bled off pressure at cement unit and checked for back flow - floats holding. Pressure tested 9-5/8" casing to 4000psi for 10 mins - ok.
P13	P	G1	0230	0300	0.50	1972.0m	Removed control lines and cement hose from cement head.
P13	P	P1	0300	0400	1.00	1972.0m	Set down landing string weight of 15klbs on casing running tool. Energised seal assembly by turning 6 turns to right. Observed 10" drop in drillstring to indicate seal assembly set. Lined up to Halliburton cement unit down Kill line. Closed LPR and pressured tested seal assembly to intial 2500psi with final test pressure of 5000psi for 10 mins. Opened LPR. Released CHSRT running tool from casing hanger and seal assembly with 65klbs overpull. Set down 10klbs onto seal assembly. Closed LPR and confirmed seal assembly integrity with 5000psi for 3mins. Opened LPR.
P13	TP (DH)	F4	0400	0530	1.50	1972.0m	Picked up with 9-5/8" casing running tool. Running tool hanging up at LPR. Worked landing string to pass LPR. String worked free with circulation.
P13	P	G2	0530	0830	3.00	1972.0m	Racked back cement stand to clear BOP. Laid out cement head.
P13	P	G12	0830	1100	2.50	1972.0m	Made up wearbushing on wear bushing running tool and RIH. Attempted to set wearbushing in 18-3/4" wellhead. Unsuccessful. POOH
P13	P	G12	1100	1130	0.50	1972.0m	Made up jetting sub on 2 stands of HWDP below wear bushing running tool and wear bushing. RIH and jetted wellhead and BOPs. RIH and set wearbushing in 18-3/4" wellhead with 20klbs down weight. Released wear bushing running tool from wearbushing with 50klbs overpull. POOH and laid out running tool.
P13	P	G6	1130	2030	9.00	1972.0m	Laid out 12¼" BHA from mast. Laid out Sperry mud motor, Sperry RLL tools, 2 x 12¼" stabilsers, 8" jar and 8 x 8¼" DCs.
P13	TP (SS)	G8	2030	2100	0.50	1972.0m	Made up jetting sub and RIH to 96m.
P13	TP (SS)	F4	2100	2200	1.00	1972.0m	Pumped 90bbl Hi-Vis pill to flush BOPs. Displaced choke and kill and riser to seawater.
P13	TP (SS)	G8	2200	2230	0.50	1972.0m	POOH and laid out jetting sub.
P13	TP (SS)	G1	2230	2400	1.50	1972.0m	Held JSA. Rigged up riser handling equipment on drill floor and connected diverter handling tool to diverter.

Operations For Period 0000 Hrs to 0600 Hrs on 15 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	TP (SS)	G13	0000	0100	1.00	1972.0m	Laid out diverter.
P13	TP (SS)	G13	0100	0330	2.50	1972.0m	Made up landing joint to slip joint. Removed service hoses from slip joint. Collapsed slip joint inner barrel and bolted to slip joint outer barrel.
P13	TP (SS)	G13	0330	0400	0.50	1972.0m	Unlatched LMRP connector (unlatched at 03:35). Picked up LMRP clear of BOP guide posts. Slacked off on guidelines and winched rig 15m port forward (ROV completed inspection of LMRP connections and BOP).
P13	TP (SS)	G13	0400	0600	2.00	1972.0m	Removed MRT lines, choke & kill goosenecks from slip joint. Removed storm saddles from pod lines.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 14 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	56.5	12 Dec 2009	14 Dec 2009	383.00	15.958	1972.0m

General Comments

00:00 TO 24:00 Hrs ON 14 Dec 2009

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WBM Data

Cost Today US$ 1130

Mud Type	KCL/Polymer/PHPA	API FL:	5.2cc/30min	Cl:		Solids(%vol):	4%	Viscosity	70sec/qt
Sample-From:	PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	93%	PV	11cp
Time:	2200	HTHP-FL:	11.5cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	27lb/100ft²
Weight:	9.65ppg	HTHP-cake:	2/32nd"	MBT:	8	Sand:		Gels 10s	10
Temp:	25C°			PM:	0.3	pH:	9	Gels 10m	15
				PF:	0.3	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	24
								Fann 200	32
								Fann 300	38
								Fann 600	49

Comment: Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	2	0	464.0
Drill Water	m3	247	0	0	585.0
Pot Water	m3	44	27	0	244.0
Brine	m3	0	0	0	81.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	42
GRN	4
OMS	17
Dril-Quip	1
Geoservices	6
Halliburton Cementers	2

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Personnel On Board

Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	6
3rd Party	1
Haliburton Directional Drilling	2
Reach	1
MI Fluids	1
Total	94

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / James Munford

Available	**2213.0bbl**
Active	800.0bbl
Mixing	
Hole	473.0bbl
Slug	
Reserve	890.0bbl
Kill	
PAD Mud	50.0bbl

Losses	**80.3bbl**
Downhole	
Surf+ Equip	80.3bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped Sweep/Displace	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 14 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	8kn	72.0deg	1021.0mbar	13C°	1.0m	72.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.4deg	0.8deg	315.0deg	248.00klb	650.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	265.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	178.0
2	228.0
3	180.0
4	227.0
5	230.0
6	207.0
7	228.0
8	217.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	07:00 - 12/12/09		Stdby Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		611
Potable Water	M3		107
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	06:00 - 11/12/09		Stdby Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		285
Pot Water	M3		280
Drill Water	M3		600
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT 01	Bristow Helicopters	09:04 / 09:18	11 / 11	
KT 02	Bristow Helicopters	12:24 / 12:37	4 / 7	

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Australian Drilling Associates Pty Ltd

15 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 17
Rockhopper-1

Rockhopper-1

Date:	15 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	17	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1972.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1972.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$657,912
Rig	Kan Tan IV	Days from spud	15.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$13,588,924
Wtr Dpth(MSL)	74.3m	Days on well	16.96	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	44
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test	08 Dec 2009				

Current Op @ 0600	Installing pod lines to LMRP prior to pressure testing.
Planned Op	Pressure test upper annular to 250psi/3500psi for 5min/10min. Skid LMRP to moonpool and make up to riser. Run LMRP and connect to BOP. Displace riser to 9.5ppg KCL- PHPA mud. Run test plug into wellhead and pressure test LMRP connector.

Summary of Period 0000 to 2400 Hrs

Laid out diverter. Picked up riser landing joint, collapsed and locked slip joint inner barrel. With BSR and failsafes closed on BOP disconnected LMRP from BOP. Removed marine riser tensioners and choke and kill goosenecks from slipjoint. Laid out riser landing joint, slip joint and recovered LMRP to moonpool. Landed LMRP on transporter and skidded to starboard setback. Replaced damaged upper annular element in LMRP.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	41 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	2 Days		
JSA	16	0 Days	Maersk SJA format	
Permit To Work	10	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	8 Days	General safety meetings	
Safety Meeting	8	0 Days	Safety Meetings	Held HSE conference call with ADA shore base. Deck crew held extra safety meeting
STOP Card	44	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 15 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	TP (SS)	G13	0000	0100	1.00	1972.0m	Laid out diverter.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	TP (SS)	G13	0100	0330	2.50	1972.0m	Made up landing joint to slipjoint. Removed service hoses from slip joint. Collapsed slip joint inner barrel and bolted to slip joint outer barrel.
P13	TP (SS)	G13	0330	0400	0.50	1972.0m	With blind/shear rams and failsafe valves confirmed closed, unlatched LMRP connector (unlatched at 03:35). Picked up LMRP clear of BOP guide posts.
P13	TP (SS)	G13	0400	0430	0.50	1972.0m	Slacked off on guidelines and moved rig on anchor chains 15m port forward (ROV completed inspection of LMRP connector and BOP upper flange).
P13	TP (SS)	G13	0430	0900	4.50	1972.0m	Removed MRT lines, choke and kill goosenecks from slip joint. Removed storm saddles from pod lines.
P13	TP (SS)	G13	0900	1200	3.00	1972.0m	Laid out landing joint, slipjoint, riser pup and buoyancy joints.
P13	TP (SS)	G13	1200	1400	2.00	1972.0m	Pulled LMRP into moonpool on riser double and landed on transporter. Disconnected handling riser double.
P13	TP (SS)	G13	1400	1730	3.50	1972.0m	Skidded LMRP to starboard setback
P13	TP (SS)	G13	1730	2400	6.50	1972.0m	Changed out upper annular element in LMRP.

Operations For Period 0000 Hrs to 0600 Hrs on 16 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	TP (SS)	G11	0000	0400	4.00	1972.0m	Installed new element in upper annular.
P13	TP (SS)	G13	0400	0600	2.00	1972.0m	Skidded LMRP to transporter and installed pod lines to LMRP.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 15 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	80.5	12 Dec 2009	15 Dec 2009	407.00	16.958	1972.0m

General Comments

00:00 TO 24:00 Hrs ON 15 Dec 2009

WBM Data

Cost Today US$ 3495

Mud Type	KCL/Polymer/PHPA	API FL:	5.3cc/30min	Cl:		Solids(%vol):	4%	Viscosity	70sec/qt
Sample-From:	PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	93%	PV	11cp
Time:	2200	HTHP-FL:	10.5cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	28lb/100ft²
Weight:	9.65ppg	HTHP-cake:	2/32nd"	MBT:	8	Sand:		Gels 10s	10
Temp:	20C°			PM:	0.3	pH:	9.5	Gels 10m	15
				PF:	0.3	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	24
								Fann 200	32
								Fann 300	39
								Fann 600	50

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	7	0	0	471.0
Drill Water	m3	0	0	0	585.0
Pot Water	m3	46	40	0	250.0
Brine	m3	0	0	0	81.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	42
GRN	4
OMS	17
Dril-Quip	1
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	6
3rd Party	1
Haliburton Directional Drilling	2
Reach	1
MI Fluids	1
Total	94

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / James Munford

Available	2214.8bbl	Losses	0.0bbl
Active	800.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	473.0bbl	Dumped	
Slug		De-Gasser	
Reserve	891.8bbl	De-Sander	
Kill		De-Silter	
PAD Mud	50.0bbl	Centrifuge	
		Pumped Sweep/Displace	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 15 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	19kn	50.0deg	1013.0mbar	14C°	2.3m	50.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.1deg	0.2deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
0.3m	265.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	126.0
2	304.0
3	141.0
4	257.0
5	329.0
6	92.0
7	279.0
8	193.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	07:00 - 12/12/09	14:45 - 15/12/09	Enroute to Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		693
Potable Water	M3		104
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	06:00 - 11/12/09		Stdby Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		278
Pot Water	M3		277
Drill Water	M3		400
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT 01	Bristow Helicopters	/	/	

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Australian Drilling Associates Pty Ltd ADA

16 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 18
Rockhopper-1

Rockhopper-1

Date:	16 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	18	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1972.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1972.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$650,982
Rig	Kan Tan IV	Days from spud	16.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$14,239,906
Wtr Dpth(MSL)	74.3m	Days on well	17.96	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	45
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Make up and RIH with BOP test tool to pressure test LMRP connectors and upper annular.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Pressure test LMRP connectors. Displace riser to mud. Rig up and press test Geopilot manifold. Pick up 5" drill pipe. Make up 8.5" BHA & RIH. Drill out cement and shoe track.		

Summary of Period 0000 to 2400 Hrs

Installed new element in upper annular. Installed pod lines to LMRP. Pressure tested upper annular to 250psi/5min, 3500psi/10mins. Ran LMRP on a double slick joints, 1x bouyant jnt, 1x pup jnt. Freed up MRT tension ring. Picked up landing joint. Made up C&K lines to slip joint and connected MRT wires and umbilical saddles. Positioned rig over well head. Landed and latched LMRP to BOPs.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	42 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days		
Permit To Work	21	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	9 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	33	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 16 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	TP (SS)	G11	0000	0400	4.00	1972.0m	Installed new element in upper annular.
P13	TP (SS)	G13	0400	1030	6.50	1972.0m	Skidded LMRP to transporter and installed pod lines to LMRP. Installed test joint and adjusted test stump height.
P13	TP (SS)	P1	1030	1130	1.00	1972.0m	Pressure tested upper annular to 250 psi/5min and 3500 psi/10mins.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	TP (SS)	G13	1130	1200	0.50	1972.0m	Skidded LMRP to well centre.
P13	TP (SS)	G13	1200	1430	2.50	1972.0m	Made up a double of marine riser to LMRP.
P13	TP (SS)	G13	1430	1830	4.00	1972.0m	Ran LMRP on a double slick joints, 1x bouyant joint and 1x pup joint. Installed slip joint. Freed up MRT tension ring.
P13	TP (SS)	G13	1830	1900	0.50	1972.0m	Picked up landing joint and ran same.
P13	TP (SS)	G13	1900	2300	4.00	1972.0m	Made up C&K lines to the slip joint and connected MRT lines and umbilical storm saddles.
P13	TP (SS)	G13	2300	2400	1.00	1972.0m	Positioned rig over wellhead. Landed and latched LMRP to BOPs.

Operations For Period 0000 Hrs to 0600 Hrs on 17 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	TP (SS)	G13	0000	0230	2.50	1972.0m	Stroked out slipjoint. Disconnected and laid out landing joint.
P13	TP (SS)	G13	0230	0300	0.50	1972.0m	Set pipe handler sequencing.
P13	TP (SS)	G13	0300	0330	0.50	1972.0m	Picked up diverter and installed same.
P13	TP (SS)	G13	0330	0430	1.00	1972.0m	Changed out damaged lock down dog inserts between diverter and slip joint.
P13	TP (SS)	G1	0430	0500	0.50	1972.0m	Laid down diverter running tool.
P13	TP (SS)	CN3	0500	0530	0.50	1972.0m	Rigged down riser running equipment and rigged up 5" pipe handling equipment.
P13	TP (SS)	G13	0530	0600	0.50	1972.0m	Ran 2x stands of HWDP and made up BOP test tool.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 16 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	104.5	12 Dec 2009	16 Dec 2009	431.00	17.958	1972.0m

General Comments

00:00 TO 24:00 Hrs ON 16 Dec 2009

WBM Data

Cost Today US$ 2302

Mud Type	KCL/Polymer/PHPA	API FL:	5.2cc/30min	Cl:		Solids(%vol):	4%
Sample-From:	PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	93%
Time:	2300	HTHP-FL:	10.3cc/30min	Hard/Ca:	240mg/l	Oil(%):	
Weight:	9.65ppg	HTHP-cake:	2/32nd"	MBT:	8	Sand:	
Temp:	20C°			PM:	0.3	pH:	9.5
				PF:	0.3	PHPA:	2ppb

Viscosity	70sec/qt
PV	13cp
YP	26lb/100ft²
Gels 10s	10
Gels 10m	15
Fann 003	8
Fann 006	10
Fann 100	24
Fann 200	33
Fann 300	39
Fann 600	52

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	5	0	466.0
Drill Water	m3	0	6	0	579.0
Pot Water	m3	48	43	0	255.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Brine	m3	0	0	0	81.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	4
OMS	17
Dril-Quip	1
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	6
3rd Party	2
Haliburton Directional Drilling	2
Reach	1
MI Fluids	1
Total	94

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / James Munford

Available	2216.0bbl	Losses	0.0bbl
Active	800.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	473.0bbl	Dumped	
Slug		De-Gasser	
Reserve	893.0bbl	De-Sander	
Kill		De-Silter	
PAD Mud	50.0bbl	Centrifuge	
		Pumped Sweep/Displace	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 16 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	7kn	220.0deg	1004.0mbar	16C°	1.0m	220.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
3.0m	0.2deg	0.5deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	90.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	178.0
2	235.0
3	171.0
4	262.0
5	158.0
6	200.0
7	222.0
8	200.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Enroute to KT4 From Melbourne

Item	Unit	Used	Quantity
Rig Fuel	M3		693
Potable Water	M3		104
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	06:00 - 11/12/09		Stdby Kan Tan IV

Item	Unit	Used	Quantity
Rig Fuel	M3		268
Pot Water	M3		277
Drill Water	M3		400
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Standby and cargo operations at Kan Tan 4.

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT 01	Bristow Helicopters	0901 / 0913	6 / 6	2xDPI personell Crew change NDS.

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Printed on 16 Dec 2009

17 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 19
Rockhopper-1

Rockhopper-1

Date:	17 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	19	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1972.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1972.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$767,136
Rig	Kan Tan IV	Days from spud	17.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$15,007,042
Wtr Dpth(MSL)	74.3m	Days on well	18.96	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	46
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Picking up drill pipe from the deck and RIH at 1530m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	RIH. Drill out cement and shoe track. Perform LOT. Drill ahead 8 1/2" hole section.		

Summary of Period 0000 to 2400 Hrs

Stroked out slip joint. Disconnected and laid out landing joint. Picked up diverter and installed same. Changed out damaged lock down dog inserts. Laid down diverter running tool. Rigged down riser running equipment and rigged up 5" drill pipe handling equipment. Made up BOP test tool. RIH and tested upper annular and connector. Tested C&K lines. POOH and dsplaced riser and C&K lines to 9.5 ppg mud. Continued to POOH to surface and laid down BOP test tool. Rigged up and pressure tested stand pipe manifold, GeoSpan unit and top drive. Changed out saver sub. Picked up 15 joints of 5" drill pipe from deck and racked in the mast. Picked up and made up directional BHA. Installed radio active sources.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	43 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	4 Days		
Permit To Work	9	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	10 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety Meetings	
STOP Card	41	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 17 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	TP (SS)	G13	0000	0230	2.50	1972.0m	Stroked out slip joint. Disconnected and laid out landing joint.
P13	TP (SS)	G13	0230	0300	0.50	1972.0m	Set pipe handler sequencing.
P13	TP (SS)	G13	0300	0330	0.50	1972.0m	Picked up diverter and installed same.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P13	TP (SS)	G13	0330	0430	1.00	1972.0m	Changed out damaged lock down dog inserts between diverter and slip joint.
P13	TP (SS)	G1	0430	0500	0.50	1972.0m	Laid down diverter running tool.
P13	TP (SS)	G1	0500	0530	0.50	1972.0m	Rigged down riser running equipment and rigged up 5" pipe handling equipment.
P13	TP (SS)	G1	0530	0700	1.50	1972.0m	Ran 2x stands of HWDP and made up BOP test tool. RIH and landed the test tool.
P13	TP (SS)	P1	0700	0800	1.00	1972.0m	Tested upper annular and connector to 250/3500psi - ok. Tested C&K lines to 250/5000psi - ok.
P13	TP (SS)	G8	0800	0930	1.50	1972.0m	POOH to 100m and displaced riser and C&K lines to 9.5ppg mud. Continued to POOH to surface and laid down BOP test tool.
P13	P	G15	0930	1000	0.50	1972.0m	Broke down casing hanger running tool and laid out same.
P17	P	G1	1000	1130	1.50	1972.0m	Rigged up and pressure tested stand pipe manifold and GeoSpan unit.
P17	P	P1	1130	1630	5.00	1972.0m	Pressure tested stand pipe manifold, GeoSpan unit and top drive - 250/4000psi for 5/10min - ok.
P17	TP (RE)	G11	1630	1700	0.50	1972.0m	Unable to break out saver sub. Troubleshot torque wrench hydraulic system.
P17	P	G5	1700	1730	0.50	1972.0m	Changed out saver sub.
P17	P	G2	1730	1930	2.00	1972.0m	Picked up 15 joint of 5" drill pipe from deck and rack in the mast.
P17	P	G7	1930	2100	1.50	1972.0m	Held PJSM. Picked up and made up directional BHA.
P17	P	G7	2100	2200	1.00	1972.0m	Halliburton MWD loaded and programmed tools.
P17	P	G7	2200	2230	0.50	1972.0m	Halliburton MWD installed radio active sources.
P17	P	G6	2230	2400	1.50	1972.0m	Continued to pick up BHA and RIH to 211.15 m.

Operations For Period 0000 Hrs to 0600 Hrs on 18 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G7	0000	0100	1.00	1972.0m	Perform shallow test on MWD tools.
P17	P	G8	0100	0600	5.00	1972.0m	Held PJSM. Picked up 5" DP from the deck and RIH to 1530m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 17 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	14	17 Dec 2009	17 Dec 2009	455.00	18.958	1972.0m

General Comments

00:00 TO 24:00 Hrs ON 17 Dec 2009

WBM Data — Cost Today US$ 3763

Mud TypeKCL/Polymer/PHPA	API FL:	4.8cc/30min	Cl:		Solids(%vol):	4%	Viscosity 69sec/qt
Sample-From: PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	93%	PV 13cp
Time: 2300	HTHP-FL:	10.0cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP 25lb/100ft²
Weight: 9.65ppg	HTHP-cake:	2/32nd"	MBT:	8	Sand:		Gels 10s 10
Temp: 20C°			PM:	0.3	pH:	9.5	Gels 10m 15
			PF:	0.3	PHPA:	2ppb	Fann 003 8
							Fann 006 10
							Fann 100 24
							Fann 200 32
							Fann 300 38
							Fann 600 51

Comment — Note: Costs are in AUD

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Bit # 4

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

Size (''):	8.50in	IADC#	M424	**Nozzles**	**Drilled over last 24 hrs**		**Calculated over Bit Run**
Mfr:	Security	WOB(avg)		No. Size	Progress		Cumul. Progress 0.0m
Type:	PDC	RPM(avg)			On Bottom Hrs		Cumul. On Btm Hrs 0.0h
Serial No.:	11370552	F.Rate			IADC Drill Hrs		Cumul. IADC Drill Hrs 0.0h
Bit Model	FMF3653Z	SPP			Total Revs		Cumul. Total Revs 0
Depth In	1972.0m	HSI			ROP(avg)	N/A	ROP(avg) 0.00 m/hr
Depth Out		TFA	0.000				

Bit Comment

BHA # 4

Weight(Wet)	40.00klb	Length	211.2m	Torque(max)		D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	32.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	0fpm
		Slack-Off				D.P. Ann Velocity	0fpm

BHA Run Description

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		11370552	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL280	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	5	0	461.0
Drill Water	m3	0	0	0	579.0
Pot Water	m3	48	35	0	268.0
Brine	m3	0	0	0	81.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)

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Printed on 17 Dec 2009

Pumps

Pump Data - Last 24 Hrs								Slow Pump Data								
1	Continental Emsco	6.50	1.14	97					30		252	40		336	50		420
2	Continental Emsco	6.50	1.14	97					30		252	40		336	50		420
3	Continental Emsco	6.50	1.14	97					30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	4
OMS	17
Dril-Quip	1
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	6
3rd Party	2
Haliburton Directional Drilling	2
Reach	1
MI Fluids	1
Total	94

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / James Munford

Available	**2171.4bbl**
Active	599.0bbl
Mixing	
Hole	597.4bbl
Slug	
Reserve	945.0bbl
Kill	
PAD Mud	30.0bbl

Losses	**28.0bbl**
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped Sweep/Displace	28.0bbl

Equipment	Description	Mesh Size	Comments

Marine

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Weather on 17 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	22kn	239.0deg	1004.0mbar	11C°	3.0m	239.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
3.0m	0.2deg	0.7deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	265.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	217.0
2	231.0
3	207.0
4	234.0
5	199.0
6	193.0
7	225.0
8	223.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	03.45 - 17/12/09		On Location

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		563
Potable Water	M3		95
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000 - 0345 On passage to KT4
0345 - 2400 On location

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	06:00 - 11/12/09		Stdby Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		268
Pot Water	M3		277
Drill Water	M3		400
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Standby and cargo operations at Kan Tan 4.

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT 01	Bristow Helicopters	0901 / 0913	6 / 6	2xDPI personell Crew cahnge NDS

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Australian Drilling Associates Pty Ltd

18 Dec 2009

From: Michael Lanzer / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 20
Rockhopper-1

Rockhopper-1

Date:	18 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	20	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	1972.0m	Cur. Hole Size	12.250in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	1972.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$771,438
Rig	Kan Tan IV	Days from spud	18.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$15,778,480
Wtr Dpth(MSL)	74.3m	Days on well	19.96	FIT/LOT:	/ 17.50ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	47
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Shallow testing MWD and PDM tools.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	RIH with new mill tooth bit and BHA. Drill out float equipment and cement in shoetrack. Drill new hole and conduct LOT. Drill ahead in 8-1/2" hole.		

Summary of Period 0000 to 2400 Hrs

Performed shallow test on MWD tools. Picked up 5" drill pipe from the deck and RIH to 1657m. RIH with stands form the mast from 1657m to 1917m. Washed from 1917m to top of cement at 1938m. Attempted to drill out shoetrack from 1938m to 1940m. Pumped slug. Continued to POOH to 211m. POOH with BHA and racked back in mast. Laid down 1x stabiliser and float sub sub. Removed radio active sources from MWD and down loaded MWD tools. Service broke ACAL, HOC and Bat Sonic tools and laid out same.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	44 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	5 Days		
Permit To Work	10	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	11 Days	General safety meetings	
Safety Meeting	9	0 Days	Safety Meetings	
STOP Card	39	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 18 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G7	0000	0100	1.00	1972.0m	Performed shallow test on MWD tools.
P17	P	G8	0100	0630	5.50	1972.0m	Held PJSM. Picked up 5" drill pipe from the deck and RIH to 1657m.
P17	P	G8	0630	0800	1.50	1972.0m	Continued to RIH with stands form the mast from 1657m to 1917m.
P17	P	G8	0800	0830	0.50	1972.0m	Washed from 1917m to top of cement at 1938m. Tagged with 5klbs down weight.
P17	P	G8	0830	1700	8.50	1972.0m	Drilled out shoe track from 1938m to 1940m with varying the drilling parameters: Initial WOB = 5-10klbs; Final WOB 15-20klbs.

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Printed on 20 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							RPM = 35-70; GPM 450-600. Initial drilling on plugs typical with nominal Torque 3-4klbs-ft which declined to negligible. Regularly picked up off bottom and gradually increased the WOB to 15klbs. Rubber from plugs over the shakers with traces of alluminium indicated progress through the plugs. Erratic torque developed with cycling from 4-10klbs. Shavings of the casing in returns over the shakers with increasing trend with no drilling progress.
P17	U	F3	1700	1730	0.50	1972.0m	Pumped slug and rigged down Geoservice and MWD geolograph lines.
P17	U	G8	1730	1800	0.50	1972.0m	Attempted to install power slips. Slips jammed on drill pipe. Removed power slips. Secured compensator and top drive hoses due to hoses hanging up in the mast.
P17	U	G8	1800	2130	3.50	1972.0m	Continued to POOH from 1940m to 211m.
P17	U	G6	2130	2230	1.00	1972.0m	POOH with BHA and racked in mast. Laid down 1x stabiliser and float sub.
P17	U	G7	2230	2300	0.50	1972.0m	Removed radio active sources from MWD tools.
P17	U	G7	2300	2330	0.50	1972.0m	Downloaded MWD tools.
P17	U	G7	2330	2400	0.50	1972.0m	Service broke MWD tools ACAL, HOC and BAT sonic tools and laid out same.

Operations For Period 0000 Hrs to 0600 Hrs on 19 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	U	G7	0000	0100	1.00	1972.0m	Broke off bit and racked back GeoPilot in the mast. Bit dull Grading 2-3-BT-S-X-I-CT-PR.
P17	U	G7	0100	0330	2.50	1972.0m	Picked up mud motor, PM sub and HOC. Made up 8-1/2" GT-1 mill tooth Bit. Set bent sub on PDM to 1.15° and scribed MWD.
P17	U	G6	0330	0430	1.00	1972.0m	Picked up stabiliser and float sub + 3x 6-3/4" drillcollars from the deck.
P17	U	G6	0430	0530	1.00	1972.0m	Continued to RIH BHA from the mast to 216m.
P17	U	G7	0530	0600	0.50	1972.0m	(IN PROGRESS) Shallow tested MWD tools. 500gpm / 950psi.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 18 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	38	17 Dec 2009	18 Dec 2009	479.00	19.958	1972.0m

General Comments

00:00 TO 24:00 Hrs ON 18 Dec 2009

WBM Data

Cost Today US$ 17986

Mud TypeKCL/Polymer/PHPA		API FL:	5.4cc/30min	Cl:		Solids(%vol):	4%
Sample-From:	PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	93%
Time:	2000	HTHP-FL:	10.2cc/30min	Hard/Ca:	280mg/l	Oil(%):	
Weight:	9.55ppg	HTHP-cake:	2/32nd"	MBT:	8	Sand:	
Temp:	20C°			PM:	0.2	pH:	9
				PF:	0.2	PHPA:	2ppb

Viscosity	54sec/qt
PV	10cp
YP	21lb/100ft²
Gels 10s	10
Gels 10m	15
Fann 003	7
Fann 006	9
Fann 100	20
Fann 200	26
Fann 300	31
Fann 600	41

Comment — Note: Costs are in AUD

Bit # 4

Wear	I	O1	D	L	B	G	O2	R
	2	3	BT	S	X	I	CT	PR

Bitwear Comments: Broken and chipped teeth. A piece of rubber from the damaged annular element was jammed in to the centre of the bit.

Size ("):	8.50in	IADC#	M424	Nozzles	Drilled over last 24 hrs	Calculated over Bit Run

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Mfr:	Security	WOB(avg)		No. Size		Progress 0.0m	Cumul. Progress 0.0m
Type:	PDC	RPM(avg)	368			On Bottom Hrs 6.5h	Cumul. On Btm Hrs 6.5h
Serial No.:	11370552	F.Rate				IADC Drill Hrs	Cumul. IADC Drill Hrs 0.0h
Bit Model	FMF3653Z	SPP	1069psi			Total Revs 23	Cumul. Total Revs 23
Depth In	1972.0m	HSI				ROP(avg) N/A	ROP(avg) 0.00 m/hr
Depth Out	1972.0m	TFA	0.000				
Bit Comment		Could Not Drill Through Float Collar.					

BHA # 4

Weight(Wet)	40.00klb	Length	211.2m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	32.00klb	String		Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	0fpm
		Slack-Off				D.P. Ann Velocity	0fpm

BHA Run Description

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		11370552	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL280	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	12	0	449.0
Drill Water	m3	0	0	0	579.0
Pot Water	m3	45	42	0	271.0
Brine	m3	0	0	0	81.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

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Pumps

Pump Data - Last 24 Hrs								Slow Pump Data									
	Emsco																

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	39
GRN	3
OMS	19
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
Reach	1
MI Fluids	1
Total	87

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / James Munford

Available	2135.5bbl
Active	799.0bbl
Mixing	
Hole	571.5bbl
Slug	
Reserve	735.0bbl
Kill	
PAD Mud	30.0bbl

Losses	54.0bbl
Downhole	
Surf+ Equip	54.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped Sweep/Displace	

Equipment	Description	Mesh Size	Comments

Marine

Weather on 18 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	27kn	269.0deg	1011.0mbar	11C°	13.0m	239.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
5.0m	1.0deg	2.0deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
8.0m	275.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	230.0
2	275.0
3	235.0
4	245.0
5	181.0
6	189.0
7	209.0
8	221.0

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Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status	Bulks

Far Scimitar | 03.45 - 17/12/09 | | On Location KT4

Item	Unit	Used	Quantity
Rig Fuel	M3		556
Potable Water	M3		90
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Far Fosna | 06:00 - 11/12/09 | | Stdby Kan Tan IV

Item	Unit	Used	Quantity
Rig Fuel	M3		260
Pot Water	M3		271
Drill Water	M3		400
Bentonite	t		0
Barite	t		0
	t		0
Brine	M3		0
Mud	bbl		0

Standby at Kan Tan 4.

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	0858 / 0909	9 / 10	Crew Change
KT02	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	1212 / 1222	2 / 8	Crew Change

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Australian Drilling Associates Pty Ltd

19 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 21
Rockhopper-1

Rockhopper-1

Date:	19 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	21	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	2019.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	2018.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	47.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$666,520
Rig	Kan Tan IV	Days from spud	19.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$16,445,000
Wtr Dpth(MSL)	74.3m	Days on well	20.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	48
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	RIH with BHA #6.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Continue to RIH. Slip and cut drill line. Take SCRs and choke line frictions. Drill ahead new 8 1/2" hole.		

Summary of Period 0000 to 2400 Hrs

Broke off bit and racked back GeoPilot in the mast. Picked up mud motor, PM sub and HOC. Made up 8-1/2" mill tooth bit. Set bent sub on PDM to 1.15 deg and scribed MWD. Picked up stabiliser and float sub + 3x 6-3/4" drillcollars from the deck. Continued to RIH BHA from the mast to 216m. Shallow tested MWD tools. Continue to RIH to 1922m. Serviced travelling block and top drive. Washed and reamed from 1922m to 1940m. Drilled out shoe track from 1940m to 1965m. Cleaned out rathole. Drilled new 8-1/2" hole from 1972m to 1977m. Circulated and conditioned mud. Rigged up and performed LOT with 9.5ppg mud to 1710 psi = Equivelent MW of 14.6ppg. Drilled 8-1/2" hole from 1977m to 2019m.
Took survey. Circulated bottoms up and pumped slug. POOH from 2019m to 700m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	1	0 Days	Held abandon drill	
Emergency Drill	0	45 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	0 Days	Crane eng Fire	
Flash Reports	1	0 Days	Flash Report 056	At 0930, the crane operator was in the process of lowering the STBD crane boom into its rest when the boom swayed slightly as a result of rig movement causing the walkway on the inboard side of the boom to strike the top of the MWD Unit. The MWD unit is located on the Schlumberger deck (STBD of the drill floor). The impact resulted in minor damage to the walkway and caused 3 x bolts to shear off and drop onto a drum storage area below. Nil damage to the MWD Unit. Due to space constraints on the rig the MWD Unit does overhang off the Schlumberger deck by approx. 45cm. Joule energy of one nut and bolt dropped - 9m x 80grams x 9.81 = 7.1 j = potential First Aid Case. No injuries to personnel occurred as a result of this incident.
Permit To Work	14	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	12 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety Meetings	
STOP Card	40	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m

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FORMATION	
Name	Top
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 19 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	U	G7	0000	0100	1.00	1972.0m	Broke off bit and racked back GeoPilot in the mast. Bit dull Grading 2-3-BT-S-X-I-CT-PR.
P17	U	G7	0100	0330	2.50	1972.0m	Picked up mud motor, PM sub and HOC. Made up 8-1/2" GT-1 mill tooth Bit. Set bent sub on PDM to 1.15° and scribed MWD.
P17	U	G6	0330	0430	1.00	1972.0m	Picked up stabiliser and float sub + 3x 6-3/4" drillcollars from the deck.
P17	U	G6	0430	0530	1.00	1972.0m	Continued to RIH BHA from the mast to 216m.
P17	U	G7	0530	0630	1.00	1972.0m	Shallow tested MWD tools. 500gpm / 950psi.
P17	U	G8	0630	0930	3.00	1972.0m	Continued to RIH from 216m to 1922m.
P17	U	G11	0930	1000	0.50	1972.0m	Serviced travelling block and top drive.
P17	U	F1	1000	1030	0.50	1972.0m	Washed down from 1922m to 1940m (60spm / 550gpm /1650psi/ 60 RPM).
P17	P	D1	1030	1200	1.50	1972.0m	Drilled out shoetrack from 1940m to 1965m. Cleaned out rathole and reamed through float and shoe 3 times (60spm / 550gpm /1650 psi / 60 RPM).
P17	P	D2	1200	1230	0.50	1977.0m	Drilled New 8-1/2" hole from 1972m to 1977m (60 spm / 550gpm / 1650 psi / 80 RPM / 3-5klbs-ft torque).
P17	P	F4	1230	1330	1.00	1977.0m	Circulated and conditioned mud (60 spm/ 550gpm /1650psi / 80 RPM).
P17	P	G1	1330	1400	0.50	1977.0m	Made up side entry sub rigged up for LOT.
P17	P	P1	1400	1500	1.00	1977.0m	Held PJSM. Performed LOT as per program with 9.5ppg mud to leak-off @ 1710psi = equivelent MW of 14.6ppg.
P17	P	G1	1500	1530	0.50	1977.0m	Rigged down LOT assembly.
P17	P	D3	1530	1600	0.50	1981.0m	Drilled 8-1/2" hole from 1977m to 1981m (60 spm / 550gpm / 1650psi / 80 RPM / 3-5klbs-ft torque). Final inclination angle 4.8°.
P17	P	D3	1600	1830	2.50	1994.0m	Slide drilled from 1981m to 1994m (60spm / 550gpm / 1650psi).
P17	P	D3	1830	2030	2.00	2019.0m	Continued to drill 8-1/2" hole from 1994m to 2019m (60spm / 550 gpm / 1650psi / 80 RPM / 3-5klbs-ft torque).
P17	U	F4	2030	2130	1.00	2019.0m	Took survey. Circulated bottoms up @ 550gpm / 1640psi.
P17	U	G8	2130	2200	0.50	2019.0m	Pumped slug. POOH from 2019m to 1965m (9-5/8" shoe depth).
P17	U	G8	2200	2400	2.00	2019.0m	Flow checked. Installed wiper rubber and POOH 1965m to 700m.

Operations For Period 0000 Hrs to 0600 Hrs on 20 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	U	G8	0000	0130	1.50	2019.0m	Continued to POOH from 700 m to 216 m. Flow checked before BHA entered the BOP Stack.
P17	U	G6	0130	0330	2.00	2019.0m	POOH BHA from 216 m to surface. Laid out mud motor and MWD tools. Bit grading = 2-2-WT-A-E-1-NO-BHA.
P17	U	G7	0330	0500	1.50	2019.0m	Picked up BHA #6. Made up PDC bit type FMF3755 dressed with 3x 16/32 jets and RIH.
P17	U	G7	0500	0600	1.00	2019.0m	Halliburton Uploading MWD Tools.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 19 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	62	17 Dec 2009	19 Dec 2009	503.00	20.958	2019.0m

General Comments

00:00 TO 24:00 Hrs ON 19 Dec 2009

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Printed on 20 Dec 2009

WBM Data

Cost Today US$ 2018

Mud Type	KCL/Polymer/PHPA	API FL:	5.4cc/30min	Cl:		Solids(%vol):	4%	
Sample-From:	PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	93%	
Time:	2130	HTHP-FL:	10.6cc/30min	Hard/Ca:	260mg/l	Oil(%):		
Weight:	9.55ppg	HTHP-cake:	2/32nd"	MBT:	7	Sand:		
Temp:	20C°			PM:	0.3	pH:	9.5	
				PF:	0.25	PHPA:	2ppb	

Viscosity	49sec/qt
PV	11cp
YP	22lb/100ft²
Gels 10s	10
Gels 10m	15
Fann 003	7
Fann 006	9
Fann 100	21
Fann 200	28
Fann 300	33
Fann 600	44

Comment — Note: Costs are in AUD

Bit # 5

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

Size ("):	8.50in	IADC#		**Nozzles**		**Drilled over last 24 hrs**		**Calculated over Bit Run**	
Mfr:	Baker Huhes Chistensen	WOB(avg)	20.00klb	No.	Size	Progress	47.0m	Cumul. Progress	47.0m
Type:	tri	RPM(avg)	60			On Bottom Hrs	4.7h	Cumul. On Btm Hrs	4.7h
Serial No.:	6076381	F.Rate	552gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	8 1/2 GT-1	SPP	1800psi			Total Revs	123	Cumul. Total Revs	123
Depth In	1972.0m	HSI				ROP(avg)	10.00 m/hr	ROP(avg)	10.00 m/hr
Depth Out	2019.0m	TFA	0.000						

Bit Comment — RR Bit to drill out Shoe Track & build initial angle.

BHA # 4

Weight(Wet)	40.00klb	Length	211.2m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	32.00klb	String		Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	0fpm
		Slack-Off				D.P. Ann Velocity	0fpm

BHA Run Description

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		11370552	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL280	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

BHA # 5

Weight(Wet)		Length	216.7m	Torque(max)	7000ft-lbs	D.C. (1) Ann Velocity	507fpm
Wt Below Jar(Wet)		String	315.00klb	Torque(Off.Btm)	2000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	320.00klb	Torque(On.Btm)	5000ft-lbs	H.W.D.P. Ann Velocity	286fpm
		Slack-Off	310.00klb			D.P. Ann Velocity	286fpm

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BHA Run Description

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
Float Sub	0.91m	6.75in	3.00in	11029122	
String Stab	1.70m	6.50in	2.88in	700802	
6 3/4" DC	27.96m	6.75in	2.88in	Rig	
6 3/4" DC	28.20m	6.75in	2.88in	Rig	
HWDP	84.57m	5.00in	3.00in	Rig	
Jar	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in	Rig	
Bit	0.24m	8.50in	2.50in	6076381	
Motor	8.28m	6.75in	4.50in	675400	
Stab	2.03m	6.81in	2.88in	10988869	
Sub	2.79m	6.75in	1.92in	194443	
HOC	3.03m	6.75in	1.92in	203842	

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
1968.42	0.69	57.75	1968.37	6.17	6.4	6.3	0.4	Sperry Sun RLL Tool
1992.64	3.64	23.88	1992.57	6.93	7.2	6.7	12.8	Sperry Sun RLL Tool
2006.90	4.80	20.69	2006.79	7.89	8.1	7.1	8.3	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	22	0	427.0
Drill Water	m3	43	10	0	612.0
Pot Water	m3	0	13	0	258.0
Brine	m3	0	0	0	81.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

Slow Pump Data

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)	Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1	Continental Emsco	6.50	1.14	97					30		252	40		336	50		420
2	Continental Emsco	6.50	1.14	97					30		252	40		336	50		420
3	Continental Emsco	6.50	1.14	97					30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement.

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
			Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	39
GRN	3
OMS	19
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	4
Fugro ROV	3
Haliburton Directional Drilling	1
Reach	1
MI Fluids	1
Total	87

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / James Munford

Available	**1978.6bbl**	**Losses**	**160.8bbl**
Active	719.0bbl	Downhole	
Mixing		Surf+ Equip	149.8bbl
Hole	584.6bbl	Dumped	
Slug		De-Gasser	
Reserve	645.0bbl	De-Sander	
Kill		De-Silter	
PAD Mud	30.0bbl	Centrifuge	
		Evaporation	11.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 19 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	14kn	225.0deg	1019.0mbar	11C°	4.0m	225.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
4.0m	0.3deg	0.5deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
5.0m	280.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	188.0
2	232.0
3	217.0
4	237.0
5	203.0
6	202.0
7	202.0
8	206.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	03.45 - 17/12/09		On Location KT4

Item	Unit	Used	Quantity
Rig Fuel	M3		549
Potable Water	M3		85
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			Steaming to Kan Tan 4.

Item	Unit	Used	Quantity
Rig Fuel	M3		659
Pot Water	M3		265
Drill Water	M3		400
Bentonite	t		104

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Printed on 20 Dec 2009

Australian Drilling Associates Pty Ltd

20 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 22
Rockhopper-1

Rockhopper-1

Date:	20 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	22	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	2023.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	2022.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	6.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$669,541
Rig	Kan Tan IV	Days from spud	20.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$17,114,541
Wtr Dpth(MSL)	74.3m	Days on well	21.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	49
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Tripping in the hole @ 1350m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Continue to RIH. Drill ahead 8-1/2" directional hole.		

Summary of Period 0000 to 2400 Hrs

Continued to POOH to 216m. Flow checked before BHA entered the BOP Stack. POOH BHA to surface. Laid out mud motor and MWD tools. Bit grading = 2-2-WT-A-E-1-NO-BHA. Picked up BHA #6. Made up PDC bit type FMF3755 dressed with 3x 16/32 jets and RIH. Halliburton Uploaded MWD tools and installed radioactive sources. Shallow tested MWD tools. RIH 5" drill pipe to 1252m. Slipped and cut drill line. Continued to RIH to 1972m. Reamed and washed while relogging new hole from 1972m to 2019m. Drilled 8-1/2" hole from 2019m to 2023m. Rotary steerable GeoPilot tool failed to operate. Pumped slug. POOH from 2023m to 1281m. Serviced travelling block and topdrive. Continued to POOH to 210 m. POOH BHA from 210m to surface. Halliburton down loaded MWD tools and removed radio active sources. Laid out GeoPilot.
Bit grading = 0-0-NO-A-X-1-NO-DTF.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	1	1 Day	Held abandon drill	
Emergency Drill	0	46 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	1 Day	Crane eng Fire	
Permit To Work	9	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	8	0 Days	Safety Meetings	
Safety Meeting	2	0 Days	General safety meetings	
STOP Card	48	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Torquay Group	100.30m
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m

Operations For Period 0000 Hrs to 2400 Hrs on 20 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	U	G8	0000	0130	1.50	2019.0m	Continued to POOH from 700m to 216m. Flow checked before BHA entered the BOP Stack.
P17	U	G6	0130	0330	2.00	2019.0m	POOH BHA from 216m to surface. Laid out mud motor and MWD tools. Bit grading = 2-2-WT-A-E-1-NO-BHA.
P17	U	G7	0330	0500	1.50	2019.0m	Picked up BHA #6. Made up PDC bit type FMF3755 dressed with 3x 16/32 jets and RIH.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	U	G7	0500	0600	1.00	2019.0m	Halliburton uploaded MWD tools.
P17	U	G7	0600	0630	0.50	2019.0m	Halliburton installed radio active sources.
P17	U	G6	0630	0800	1.50	2019.0m	RIH with 8-1/2" Geopilot assembly to 210m.
P17	U	G7	0800	0830	0.50	2019.0m	Shallow tested MWD Tools with 500gpm / 920psi.
P17	U	G8	0830	1000	1.50	2019.0m	RIH 5" drill pipe from 210m to 1252m.
P17	U	G11	1000	1200	2.00	2019.0m	Slipped and cut drill line.
P17	U	G8	1200	1330	1.50	2019.0m	Continued to RIH from 1252m to 1972m.
P17	U	D6	1330	1500	1.50	2019.0m	Washed and reamed re-logged new hole from 1972m to 2019m.
P17	P	D2	1500	1700	2.00	2023.0m	Drilled 8-1/2" hole from 2019m to 2023m (tide corrected). Attempted to set the GeoPilot to required steering power/ angle without success. The RPM readback not functioning correctly. Unable to drill ahead in directional hole.
P17	TP (TP)	G8	1700	1900	2.00	2023.0m	Pumped a slug. POOH from 2023m to 1281m.
P17	TP (TP)	G11	1900	1930	0.50	2023.0m	Serviced travelling block and topdrive.
P17	TP (TP)	G8	1930	2200	2.50	2023.0m	Continued to POOH from 1281m to 210m. Performed 10min flow check prior to pulling BHA through the BOP Stack.
P17	TP (TP)	G6	2200	2400	2.00	2023.0m	POOH BHA from 210m to surface. Halliburton downloaded MWD tools and removed radio active sources. Laid out GeoPilot. Bit Grading = 0-0-NO-A-X-1-NO-DTF.

Operations For Period 0000 Hrs to 0600 Hrs on 21 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (TP)	G6	0000	0130	1.50	2023.0m	Picked up GeoPilot from the deck. Installed PDC Bit RR#6 and RIH.
P17	TP (TP)	G7	0130	0230	1.00	2023.0m	Halliburton uploaded MWD tools and installed radio active sources.
P17	TP (TP)	G6	0230	0330	1.00	2023.0m	Continued to RIH with BHA to 210m.
P17	TP (TP)	G7	0330	0400	0.50	2023.0m	Halliburton shallow tested MWD tools.
P17	TP (TP)	G8	0400	0600	2.00	2023.0m	Contiued to RIH BHA #7 on 5" drill pipe from 210m to 1350m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 20 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	86	17 Dec 2009	20 Dec 2009	527.00	21.958	2023.0m

General Comments

00:00 TO 24:00 Hrs ON 20 Dec 2009

WBM Data — Cost Today US$ 1120

Mud TypeKCL/Polymer/PHPA		API FL:	4.9cc/30min	Cl:		Solids(%vol):	4%
Sample-From:	PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	93%
Time:	2000	HTHP-FL:	10.3cc/30min	Hard/Ca:	220mg/l	Oil(%):	
Weight:	9.60ppg	HTHP-cake:	2/32nd"	MBT:	8	Sand:	
Temp:	28C°			PM:	0.3	pH:	9
				PF:	0.2	PHPA:	2ppb

Viscosity	52sec/qt
PV	11cp
YP	22lb/100ft²
Gels 10s	10
Gels 10m	15
Fann 003	8
Fann 006	9
Fann 100	21
Fann 200	28
Fann 300	33
Fann 600	44

Comment — Note: Costs are in AUD

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Bit # 6

Wear	I	O1	D	L	B	G	O2	R
	0	0	NO	A	X	I	NO	DTF

Bitwear Comments:

Size (''):	8.50in	IADC#		**Nozzles**		**Drilled over last 24 hrs**		**Calculated over Bit Run**	
Mfr:	Security	WOB(avg)	13.00klb	No.	Size	Progress	6.0m	Cumul. Progress	6.0m
Type:	PDC	RPM(avg)	107			On Bottom Hrs	0.3h	Cumul. On Btm Hrs	0.3h
Serial No.:	11103697	F.Rate	543gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	FMF 3755	SPP	1589psi			Total Revs	5	Cumul. Total Revs	5
Depth In	2019.0m	HSI				ROP(avg)	20.00 m/hr	ROP(avg)	20.00 m/hr
Depth Out	2023.8m	TFA	0.000						

Bit Comment

BHA # 6

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	499fpm
Wt Below Jar(Wet)	32.00klb	String		Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	282fpm
		Slack-Off				D.P. Ann Velocity	282fpm

BHA Run Description

BHA Run Comment: Geo/Pilot Failure.

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	9.29m	6.75in		GP850TL284	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	25	0	402.0
Drill Water	m3	49	12	0	649.0
Pot Water	m3	0	23	0	235.0
Brine	m3	0	0	0	81.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)

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Printed on 20 Dec 2009

Pumps

Pump Data - Last 24 Hrs								Slow Pump Data									
1	Continental Emsco	6.50	1.14	97				2018.0	30	200	252	40	280	336	50	400	420
2	Continental Emsco	6.50	1.14	97				2018.0	30	200	252	40	290	336	50	410	420
3	Continental Emsco	6.50	1.14	97				2018.0	30	200	252	40	280	336	50	410	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	39
GRN	3
OMS	19
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
Reach	1
MI Fluids	1
Total	87

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / James Munford

Available	**1960.2bbl**
Active	729.0bbl
Mixing	
Hole	611.2bbl
Slug	
Reserve	590.0bbl
Kill	
PAD Mud	30.0bbl

Losses	**6.8bbl**
Downhole	
Surf+ Equip	6.8bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Pumped Sweep/Displace	

Equipment	Description	Mesh Size	Comments

Marine

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Weather on 20 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	14kn	240.0deg	1016.0mbar	8C°	4.0m	240.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	0.2deg	0.3deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	280.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	199.0
2	253.0
3	231.0
4	238.0
5	200.0
6	200.0
7	217.0
8	207.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		11.45	In Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		531
Potable Water	M3		80
Drill Water	M3		637
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

FAR SCIMITAR off location 11:45hrs 20/12/09 bound Melbourne eta 24:00hrs 20/12/09.

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	11.45		Standby KT4

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		638
Pot Water	M3		262
Drill Water	M3		400
Bentonite	t		104
Barite	t		37.2
	t		0
Brine	M3		0
Mud	bbl		0

0001 - 1145 Steaming to Kan Tan 4.
1145 - 2400 Standby at Kan Tan 4.

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Australian Drilling Associates Pty Ltd ADA

21 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 23
Rockhopper-1

Rockhopper-1

Date:	21 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	23	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	2230.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	2220.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	207.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$698,962
Rig	Kan Tan IV	Days from spud	21.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$17,813,503
Wtr Dpth(MSL)	74.3m	Days on well	22.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	50
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Drilling ahead 8-1/2" hole @ 2320m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Continue to drill ahead 8-1/2" hole.		

Summary of Period 0000 to 2400 Hrs

Picked up GeoPilot. Installed PDC Bit RR#6 and RIH picking up Bat, Sonic, HOC, and ACAL. Halliburton uploaded MWD tools and installed radioactive sources. Continued to RIH with Geopilot BHA to 183m. Shallow tested MWD tools. Contiued to RIH to 1350m. Performed weekly function test of BOP stack on yellow pod. Continued to RIH to 1981m. Washed and reamed from 1981m to 2023m. Drilled ahead 8-1/2" hole from 2023m to 2230m (24° inclination).

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	1	2 Days	Held abandon drill	
Emergency Drill	0	47 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	2 Days	Crane eng Fire	
Permit To Work	8	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	1 Day	General safety meetings	
Safety Meeting	8	0 Days	Safety Meetings	
STOP Card	52	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m
Eastern View Coal Measures	2067.50m

Operations For Period 0000 Hrs to 2400 Hrs on 21 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (TP)	G6	0000	0100	1.00	2023.0m	Picked up GeoPilot from the deck. Installed PDC Bit RR#6 and RIH picking up Bat, Sonic, HOC and ACAL from the mast.
P17	TP (TP)	G7	0100	0230	1.50	2023.0m	Halliburton uploaded MWD tools and installed radioactive sources.
P17	TP (TP)	G6	0230	0400	1.50	2023.0m	Continued to RIH with Geopilot BHA to 210m.
P17	TP (TP)	G7	0400	0430	0.50	2023.0m	Halliburton shallow tested MWD tools (550gpm / 1000psi).
P17	TP	G8	0430	0700	2.50	2023.0m	Contiued to RIH BHA #7 on 5" drill pipe from 210m to 1350m.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	(TP) TP (TP)	G13	0700	0730	0.50	2023.0m	Performed weekly function test of BOP stack on yellow pod.
P17	TP (TP)	G8	0730	0800	0.50	2023.0m	Continued to RIH to from 1350m to 1981m.
P17	TP (TP)	G8	0800	0830	0.50	2023.0m	Washed and reamed from 1981m to 2023m.
P17	P	D4	0830	2400	15.50	2230.0m	Set up the GeoPlot tool and drilled 8-1/2" hole from 2023m to 2230m. Built-up angle to 24° inclination. Drilling parameters: 545 gpm / 110spm / 1710psi. WOB 5 to 10klbs Torque 3 to 20klbs-ft ROP - Initial 5-20 m/mr (with formation change @ 2067m ROP increased to 25-30m/hr). Magnet contents 105 grams.

Operations For Period 0000 Hrs to 0600 Hrs on 22 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0600	6.00	2320.0m	Drilled ahead 8-1/2" hole from 2230m to 2320m with angle build to 31° inclination. Drilling parameters: 545gpm / 110 spm / 1870psi. WOB 5 to 15klbs. Torque 3 to 20klbs-ft ROP 5 to 30m/hr

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 21 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	110	17 Dec 2009	21 Dec 2009	551.00	22.958	2230.0m

General Comments

00:00 TO 24:00 Hrs ON 21 Dec 2009

WBM Data

Cost Today US$ 15466

Mud Type	KCL/Polymer/PHPA	API FL:	4.8cc/30min	Cl:		Solids(%vol):	4%
Sample-From:	PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	8%	H2O:	93%
Time:	2130	HTHP-FL:	9.5cc/30min	Hard/Ca:	200mg/l	Oil(%):	
Weight:	9.55ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	
Temp:	55C°			PM:	0.2	pH:	9
				PF:	0.1	PHPA:	2ppb

Viscosity	51sec/qt
PV	13cp
YP	26lb/100ft²
Gels 10s	10
Gels 10m	16
Fann 003	8
Fann 006	10
Fann 100	25
Fann 200	33
Fann 300	39
Fann 600	52

Comment — Note: Costs are in AUD

Bit # 6 RR

Wear	I	O1	D	L	B	G	O2	R
							NO	

Bitwear Comments:

Size ("):	8.50in	IADC#	Nozzles	Drilled over last 24 hrs	Calculated over Bit Run

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Mfr:	Security	WOB(avg)	11.50klb	No.	Size	Progress	207.0m	Cumul. Progress	207.0m
Type:	PDC	RPM(avg)	117			On Bottom Hrs	11.5h	Cumul. On Btm Hrs	11.5h
Serial No.:	11103697	F.Rate	551gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	FMF 3755	SPP	1725psi			Total Revs	165	Cumul. Total Revs	165
Depth In	2023.0m	HSI				ROP(avg)	18.00 m/hr	ROP(avg)	18.00 m/hr
Depth Out		TFA	0.000						

Bit Comment

BHA # 7

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	506fpm
Wt Below Jar(Wet)	32.00klb	String		Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	286fpm
		Slack-Off				D.P. Ann Velocity	286fpm

BHA Run Description: Bit RR #6

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL085	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2047.71	7.43	22.90	2047.36	11.86	12.2	8.7	6.5	Sperry Sun RLL Tool
2076.22	10.04	18.43	2075.54	15.87	16.2	10.3	9.5	Sperry Sun RLL Tool
2104.97	12.80	14.68	2103.72	21.27	21.7	11.9	9.9	Sperry Sun RLL Tool
2134.78	14.54	10.50	2132.68	28.09	28.6	13.4	6.7	Sperry Sun RLL Tool
2164.31	17.43	9.42	2161.07	36.05	36.6	14.8	9.8	Sperry Sun RLL Tool
2193.36	20.51	7.83	2188.54	45.33	45.9	16.2	10.8	Sperry Sun RLL Tool
2250.02	26.59	5.77	2240.45	67.70	68.4	18.8	10.8	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	30	0	372.0
Drill Water	m3	24	57	0	616.0
Pot Water	m3	22	29	0	228.0
Brine	m3	0	0	0	81.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	55	1810	551
2	Continental Emsco	6.50	1.14	97	55	1810	551
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2202.0	30	240	252	40	340	336	50	480	420
2202.0	30	250	252	40	330	336	50	470	420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	2
OMS	17
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
3rd Party	2
Total	95

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / James Munford

Available	**1881.3bbl**
Active	644.0bbl
Mixing	
Hole	562.3bbl
Slug	
Reserve	675.0bbl
Kill	

Losses	**66.4bbl**
Downhole	
Surf+ Equip	48.4bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	18.0bbl
Pumped Sweep/Displace	

Equipment	Description	Mesh Size	Comments

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Marine

Weather on 21 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	3kn	227.0deg	1010.0mbar	13C°	1.0m	227.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.3deg	0.1deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	280.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	178.0
2	233.0
3	224.0
4	232.0
5	206.0
6	197.0
7	206.0
8	196.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			En-route to KT 4

Item	Unit	Used	Quantity
Rig Fuel	M3		529
Potable Water	M3		550
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000 - 1952 Alongside Melbourne
1952 - 2400 En-route to KT 4

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	11.45		Standby KT4

Item	Unit	Used	Quantity
Rig Fuel	M3		629
Pot Water	M3		259
Drill Water	M3		400
Bentonite	t		104
Barite	t		37.2
	t		0
Brine	M3		0
Mud	bbl		0

0000 - 2400 Standby and cargo operations at Kan Tan 4.

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4-1	-	09.00 / 09.13	11 / 11	Crew Change
KT4-2	-	12.38 / 12.46	8 / 0	Schlumberger wire line to KT4

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 24
Rockhopper-1

22 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

Rockhopper-1

Date:	22 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	24	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	2550.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	2475.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	527.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$694,016
Rig	Kan Tan IV	Days from spud	22.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$18,507,519
Wtr Dpth(MSL)	74.3m	Days on well	23.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	51
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Drilling ahead 8-1/2" hole @ 2609m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Continue to drill 8-1/2" hole.		

Summary of Period 0000 to 2400 Hrs

Drilled 8-1/2" hole from 2230m to 2550m with angle built to 42° inclination. Drilling parameters:
561gpm / 2025psi
WOB 5 to 20klbs
Torque 15 to 24 kLbs-ft
ROP 5 to 30m/hr
Ditch magnet contents = 115 grams.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	48 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days	Crane engine fire	
Permit To Work	11	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	2 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	34	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m
Eastern View Coal Measures	2067.50m

Operations For Period 0000 Hrs to 2400 Hrs on 22 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	1200	12.00	2389.0m	Drilled 8-1/2" hole from 2230m to 2389m with the hole inclination angle built to 37°. Drilling parameters: 545gpm / 1870psi WOB 5 to 15kLbs Torque 3 to 20kLbs-ft ROP 5 to 30 m/hr Hole and connections good.
P17	P	D4	1200	2400	12.00	2550.0m	Drilled ahead in 8-1/2" hole from 2389m to 2550m with the hole angle built to 42°

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							inclination. Drilling parameters: 561gpm / 2025psi WOB 5 to 20klbs Torque 15 to 24klbs-ft ROP 5 to 30m/hr Ditch Magnet Contents = 115 grams. Hole and connections good.

Operations For Period 0000 Hrs to 0600 Hrs on 23 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0600	6.00	2610.0m	Drilled ahead 8-1/2" hole from 2550m to 2610m with inclination angle held at 42°. Drilling parameters: 561gpm / 2025psi WOB 5 to 20kllbs Torque 15 to 24klbs-ft ROP 5 to 30m/hr At 2572m the torque dropped off to between 4-6 klbs-ft. Stick slip and vibration increased. Adjusted parameters to reduce this. At 2608m high torque returned.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 22 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	134	17 Dec 2009	22 Dec 2009	575.00	23.958	2550.0m

General Comments

00:00 TO 24:00 Hrs ON 22 Dec 2009

WBM Data

Cost Today US$ 30819

Mud TypeKCL/Polymer/PHPA		API FL:	4.3cc/30min	Cl:		Solids(%vol):	5%
Sample-From:	PIT 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	92%
Time:	2130	HTHP-FL:	9.4cc/30min	Hard/Ca:	180mg/l	Oil(%):	
Weight:	9.55ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.3
Temp:	59C°			PM:	0.3	pH:	9.5
				PF:	0.2	PHPA:	2ppb

Viscosity	49sec/qt
PV	14cp
YP	29lb/100ft²
Gels 10s	10
Gels 10m	18
Fann 003	8
Fann 006	11
Fann 100	28
Fann 200	36
Fann 300	43
Fann 600	57

Comment — Note: Costs are in AUD

Bit # 6 RR

Wear	I	O1	D	L	B	G	O2	R
							NO	

Bitwear Comments:

				Nozzles	Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#		No. Size	Progress	527.0m	Cumul. Progress	734.0m
Mfr:	Security	WOB(avg)	14.00klb		On Bottom Hrs	28.9h	Cumul. On Btm Hrs	40.4h
Type:	PDC	RPM(avg)	117		IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Serial No.:	11103697	F.Rate	580gpm		Total Revs	247	Cumul. Total Revs	412
Bit Model	FMF 3755	SPP	2094psi		ROP(avg)	18.24 m/hr	ROP(avg)	18.17 m/hr
Depth In	2023.0m	HSI						
Depth Out		TFA	0.000					

Bit Comment

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BHA # 7

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	533fpm
Wt Below Jar(Wet)	32.00klb	String		Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	301fpm
		Slack-Off				D.P. Ann Velocity	301fpm

BHA Run Description: Bit RR #6

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL085	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2278.27	29.06	6.88	2265.44	80.75	81.5	20.3	2.7	Sperry Sun RLL Tool
2307.32	31.70	6.12	2290.50	95.28	96.1	21.9	2.8	Sperry Sun RLL Tool
2336.99	34.05	2.98	2315.41	111.28	112.1	23.2	2.9	Sperry Sun RLL Tool
2366.57	36.34	359.97	2339.59	128.29	129.2	23.6	2.9	Sperry Sun RLL Tool
2395.13	37.77	356.94	2362.38	145.49	146.4	23.1	2.4	Sperry Sun RLL Tool
2423.37	39.84	355.17	2384.39	163.18	164.0	21.9	2.5	Sperry Sun RLL Tool
2452.17	42.32	354.45	2406.10	182.07	182.9	20.2	2.6	Sperry Sun RLL Tool
2481.68	43.11	354.88	2427.78	202.05	202.8	18.3	0.9	Sperry Sun RLL Tool
2511.39	42.92	354.47	2449.50	222.28	223.0	16.5	0.3	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	33	0	339.0
Drill Water	m3	22	49	0	589.0
Pot Water	m3	46	23	0	251.0
Brine	m3	0	17	0	64.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental	6.50	1.14	97	55	2100	551

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2462.0	30	260	252	40	370	336	50	520	420

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Pumps

Pump Data - Last 24 Hrs								Slow Pump Data									
	Emsco																
2	Continental Emsco	6.50	1.14	97	55	2100	551	2462.0	30	260	252	40	370	336	50	500	420
3	Continental Emsco	6.50	1.14	97					30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	2
OMS	17
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
3rd Party	2
Total	95

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / James Munford

Available	**2000.8bbl**	**Losses**	**137.2bbl**
Active	639.0bbl	Downhole	
Mixing		Surf+ Equip	68.2bbl
Hole	644.8bbl	Dumped	
Slug		De-Gasser	
Reserve	717.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	49.0bbl
		Evaporation	20.0bbl

Equipment	Description	Mesh Size	Comments

Marine

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Weather on 22 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	5kn	209.0deg	1012.0mbar	13C°	1.0m	209.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.2deg	0.3deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	275.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	182.0
2	230.0
3	223.0
4	229.0
5	201.0
6	190.0
7	206.0
8	196.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	09.00		On Location KT4

Item	Unit	Used	Quantity
Rig Fuel	M3		513
Potable Water	M3		545
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

FAR SCIMITAR 0000 - 0900 En-route to KT 4
0900 - 2400 On location

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna		09.00	Alongside South Wharf, Melbourne.

Item	Unit	Used	Quantity
Rig Fuel	M3		611
Pot Water	M3		256
Drill Water	M3		400
Bentonite	t		104
Barite	t		37.2
	t		0
Brine	M3		0
Mud	bbl		0

0000 - 0900 Standby and cargo operations at Kan Tan 4.
0900 - 2200 Steaming to Melbourne.
2200 - 2400 Alongside South Wharf, Melbourne.

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Australian Drilling Associates Pty Ltd ADA

DRILLING MORNING REPORT # 25
Rockhopper-1

23 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

Rockhopper-1

Date:	23 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	25	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	2753.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	2626.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	730.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$706,408
Rig	Kan Tan IV	Days from spud	23.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$19,213,927
Wtr Dpth(MSL)	74.3m	Days on well	24.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	52
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Working tight hole @ 2146m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	Continue with wiper trip after working tight hole. Continue to drill ahead 8-1/2 hole.		

Summary of Period 0000 to 2400 Hrs

Drilled ahead 8-1/2" hole from 2550m to 2753m with inclination angle held at 42° (ROP 5 to 30m/hr). At 2572m the torque dropped off to between 4-6 klbs-ft. Stick slip and vibration increased. Adjusted parameters to reduce this. At 2608m high torque returned. Topped up oil on top drive gear box. Put 3 ltrs of PHPA into the drill string. Circulated 2 x bottoms up until shakers were clean. Flow checked 10 min. POOH on elevators from 2753m to 2520m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	49 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	4 Days	Crane engine fire	
Permit To Work	15	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	3 Days	General safety meetings	
Safety Meeting	8	0 Days	Safety meetings	
STOP Card	33	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m
Eastern View Coal Measures	2067.50m

Operations For Period 0000 Hrs to 2400 Hrs on 23 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0230	2.50	2581.0m	Drilled ahead 8-1/2" hole from 2550m to 2581m with inclination angle held at 42°. Drilling parameters: 561gpm / 2025 psi WOB 5 to 20klbs Torque 15 to 24klbs-ft ROP 5 to 30m/hr At 2572 m the torque dropped off to between 4-6klbs-ft. Stick slip and vibration increased. Adjusted parameters to reduce this. At 2608m high torque returned.
P17	P	G11	0230	0300	0.50	2581.0m	Top up oil on top drive gearbox.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0300	2100	18.00	2753.0m	Drilled ahead 8-1/2" hole from 2581m to 2753m with inclination angle held at 42°. Drilling parameters: 561gpm / 2025 psi WOB 5 to 20klbs Torque 15 to 24klbs-ft ROP 5 to 30m/hr
P17	U	F4	2100	2230	1.50	2753.0m	Added 3 ltrs of PHPA into the drill string. Circulated 2 x bottoms up untill shakers were clean. Flow checked 10min.
P17	U	G8	2230	2400	1.50	2753.0m	POOH on elevators from 2753m to 2520m. Tight spots from 2620m to 2600m. Maximum 30klbs overpull. Tight spots from 2575m to 2515m. Maximum 40klbs overpull.

Operations For Period 0000 Hrs to 0600 Hrs on 24 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	U	G8	0000	0100	1.00	2753.0m	Continue to POOH from 2520m to 2303m.
P17	U	G8	0100	0130	0.50	2753.0m	Made up top drive and washed through tight spots from 2303m to 2265m.
P17	U	G8	0130	0200	0.50	2753.0m	Continued to POOH from 2265m to 2165m. Made up top drive and attempt to wash through tight spot @ 2185m. Could not move pipe up or down. Fired jars once up unintentionally - pipe came free.
P17	U	G8	0200	0230	0.50	2753.0m	Pumped out of hole from 2165m to 2175m.
P17	TP (WB)	G22	0230	0600	3.50	2753.0m	Made up top drive and pumped out of hole from 2175m to 2146m. Could not move pipe up or down at 2146m. Jarred up x 3 times. No pipe rotation although circulation possible (differentially stuck). Jarred down 320k neutral point to 200k using right hand torque.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 23 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	158	17 Dec 2009	23 Dec 2009	599.00	24.958	2753.0m

General Comments

00:00 TO 24:00 Hrs ON 23 Dec 2009

WBM Data

Cost Today US$ 33879

Mud TypeKCL/Polymer/PHPA	API FL: 4.7cc/30min	Cl:	Solids(%vol): 5%	Viscosity	50sec/qt
Sample-From: FLOWLINE	Filter-Cake: 1/32nd"	K+C*1000: 7%	H2O: 92%	PV	17cp
Time: 2130	HTHP-FL: 9.6cc/30min	Hard/Ca: 180mg/l	Oil(%):	YP	31lb/100ft²
Weight: 9.60ppg	HTHP-cake: 2/32nd"	MBT: 7.5	Sand: .3	Gels 10s	10
Temp: 59C°		PM: 0.35	pH: 9.5	Gels 10m	15
		PF: 0.35	PHPA: 2ppb	Fann 003	8
				Fann 006	10
				Fann 100	30
				Fann 200	40
				Fann 300	48
				Fann 600	65

Comment — Note: Costs are in AUD

Bit # 6 RR

Wear	I	O1	D	L	B	G	O2	R
							NO	

Bitwear Comments:

Size ("): 8.50in | IADC#

Nozzles	Drilled over last 24 hrs	Calculated over Bit Run

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Mfr:	Security	WOB(avg)	14.00klb	No. Size	Progress	730.0m	Cumul. Progress	1464.0m
Type:	PDC	RPM(avg)	108		On Bottom Hrs	42.2h	Cumul. On Btm Hrs	82.6h
Serial No.:	11103697	F.Rate	578gpm		IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	FMF 3755	SPP	2091psi		Total Revs	597	Cumul. Total Revs	1009
Depth In	2023.0m	HSI			ROP(avg)	17.30 m/hr	ROP(avg)	17.72 m/hr
Depth Out		TFA	0.000					

Bit Comment

BHA # 7

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	531fpm
Wt Below Jar(Wet)	32.00klb	String		Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	300fpm
		Slack-Off				D.P. Ann Velocity	300fpm

BHA Run Description: Bit RR #6

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL085	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2540.16	43.10	354.54	2470.54	241.87	242.5	14.6	0.2	Sperry Sun RLL Tool
2568.35	43.01	353.48	2491.14	261.07	261.6	12.6	0.8	Sperry Sun RLL Tool
2596.31	42.88	354.12	2511.60	280.06	280.6	10.5	0.5	Sperry Sun RLL Tool
2626.30	43.28	355.27	2533.51	300.51	301.0	8.6	0.9	Sperry Sun RLL Tool
2655.72	43.09	355.77	2554.96	320.62	321.0	7.1	0.4	Sperry Sun RLL Tool
2683.98	42.76	356.30	2575.65	339.86	340.2	5.7	0.5	Sperry Sun RLL Tool
2712.30	43.19	356.38	2596.37	359.16	359.5	4.5	0.5	Sperry Sun RLL Tool
2741.97	43.47	355.92	2617.96	379.50	379.8	3.1	0.4	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	29	0	310.0
Drill Water	m3	3	1	0	591.0
Pot Water	m3	41	21	0	271.0
Brine	m3	0	19	0	45.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	55	2100	551
2	Continental Emsco	6.50	1.14	97	55	2100	551
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	2
OMS	17
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
3rd Party	2
Total	95

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**2071.7bbl**
Active	585.0bbl
Mixing	
Hole	676.7bbl
Slug	
Reserve	810.0bbl
Kill	

Losses	**197.5bbl**
Downhole	
Surf+ Equip	97.5bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	80.0bbl
Evaporation	20.0bbl

Equipment	Description	Mesh Size	Comments

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Marine

Weather on 23 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	8kn	139.0deg	1003.0mbar	16C°	2.0m	139.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.1deg	0.7deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	275.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	163.0
2	238.0
3	147.0
4	167.0
5	233.0
6	196.0
7	196.0
8	168.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	09.00		On Location KT4

Item	Unit	Used	Quantity
Rig Fuel	M3		507
Potable Water	M3		540
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna		09.00	En-route to rig

Item	Unit	Used	Quantity
Rig Fuel	M3		602
Pot Water	M3		400
Drill Water	M3		400
Bentonite	t		104
Barite	t		37.2
	t		0
Brine	M3		0
Mud	bbl		0

0001 - 1525 Alongside South Wharf, Melbourne.
1525 - 2400 En-route to rig

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4-01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	09.04 / 09.18	10 / 12	Crew Change

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 26
Rockhopper-1

24 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

Rockhopper-1

Date:	24 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	26	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	2865.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	2707.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	842.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$715,952
Rig	Kan Tan IV	Days from spud	24.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$19,929,879
Wtr Dpth(MSL)	74.3m	Days on well	25.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	53
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Drilling ahead 8-1/2" hole @ 2948m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op			

Summary of Period 0000 to 2400 Hrs

Continue to POOH to 2303 m. Washed through tight spots from 2303m to 2265m. Continued to POOH to 2165 m. Attempted to wash through tight spot @ 2185m. Pumped out of hole from 2165m to 2146m. Could not move pipe up or down at 2146m. No pipe rotation although circulation possible (differentially stuck). Jarred down 320k neutral point to 180k using right hand torque. Pumped 60bbls of light weight 9.2 ppg lubricating mud. Pipe came free. Washed and reamed from 2146m to 2129m. Continued to POOH to 1946m. Circulated bottoms up at the shoe. Serviced TDS and dolly rollers. Investigated oil leak on topdrive gearbox. Checked TDS motor ground fault. RIH from 1946m to 2539m. Took 30k WOB. Washed and reamed to 2753m. Drilled 8-1/2" hole from 2753m to 2865m.
Ditch Magnet Contents = 135 grams.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	50 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	5 Days	Crane engine fire	
Permit To Work	7	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	4 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	46	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Upper Angahook	1140.80m
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m
Eastern View Coal Measures	2067.50m

Operations For Period 0000 Hrs to 2400 Hrs on 24 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	U	G8	0000	0100	1.00	2753.0m	Continued to POOH from 2520m to 2303m.
P17	U	G8	0100	0130	0.50	2753.0m	Made up top drive and washed through tight spots from 2303m to 2265m. Hole good, hole drag 30-40klbs.
P17	U	G8	0130	0200	0.50	2753.0m	Continued to POOH from 2265m to 2165m. Made up top drive and attempted to wash through tight spot @ 2185m. Unable to move drill pipe up or down. Fired jars once up unintentionally - pipe came free.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	U	G8	0200	0230	0.50	2753.0m	Pumped out of hole from 2165m to 2175m.
P17	TP (WB)	G22	0230	0800	5.50	2753.0m	Made up top drive and pumped out of hole from 2175m to 2146m. Worked tight hole - unable to move drill pipe up or down at 2146m. Jarred up x 3 times to make a working window. No drill pipe rotation although retained full circulation with no SPP change. Jarred down from 320klbs neutral point and slacked off down to 180klbs installing right hand torque into drill string. Pumped 60bbl of light weight lubricating mud @ 9.2ppg and displaced same around BHA. Recipe of Radiagreen pill as follows. 50 bbls of premix (concentrations as per fluids program) 7 bbls of drillwater 2 sacks of PAC-L (Filtration control agent) 2 Pails of EZ-MUD (PHPA) 2 X 55 Gallon drums of RADIAGREEN SALT Lubrication agent Mixed pill mud weight 9.2 ppg.
P17	U	G8	0800	1000	2.00	2753.0m	Washed and light back-reamed from 2146m to 2129m. Continued to POOH on elevators from 2129m to casing shoe at 1946m - hole good (maximum drag +/-15klbs). Circulated bottoms up at the shoe.
P17	P	G11	1000	1030	0.50	2753.0m	Serviced TDS and dolly rollers.
P17	TP (RE)	G11	1030	1130	1.00	2753.0m	Investigated oil leak on top drive gearbox. Checked TDS motor ground fault.
P17	U	G8	1130	1300	1.50	2753.0m	RIH from 1946m to 2539m - hole good with 10 - 15klbs drag.
P17	U	D6	1300	1500	2.00	2753.0m	Took 30klbs WOB at 2539m. Precautionary washed and light reamed from 2539m to 2753m.
P17	P	D4	1500	2400	9.00	2865.0m	Drilled 8-1/2" hole from 2753m to 2865m (584gpm / 117spm / 2265psi / 120 RPM / 4 - 7 klbs-ft torque). ROP: 25 to 30 m/hr Ditch Magnet Contents = 135 grams.

Operations For Period 0000 Hrs to 0600 Hrs on 25 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0600	6.00	3180.0m	(IN PROGRESS) Drilled 8-1/2" hole from 2865 m to 3180 m. Drilling parameters: 584gpm @ 117spm / 2265 psi / 120 RPM / Torque 4 - 7klbs-ft / WOB 5-10klbs. ROP: 20 to 30 m/hr. Hole and conenctions good. Frequent indication of high slip-stick recorded downhole on bit/BHA. Attempted to reduce the slip-stick by changing drilling parameters (RPM and WOB) with little effect.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 24 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	182	17 Dec 2009	24 Dec 2009	623.00	25.958	2865.0m

General Comments

00:00 TO 24:00 Hrs ON 24 Dec 2009

WBM Data — Cost Today US$ 45609

Mud Type	KCL/Polymer/PHPA	API FL:	4.7cc/30min	Cl:		Solids(%vol):	4%	Viscosity	52sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	93%	PV	16cp
Time:	2023	HTHP-FL:	9.1cc/30min	Hard/Ca:	160mg/l	Oil(%):		YP	31lb/100ft²
Weight:	9.50ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.3	Gels 10s	10
Temp:	57C°			PM:	0.35	pH:	9.5	Gels 10m	16
				PF:	0.4	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	30
								Fann 200	39
								Fann 300	47
								Fann 600	63

Comment — Note: Costs are in AUD

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Bit # 6 RR

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

Size (''):	8.50in	IADC#		**Nozzles**		**Drilled over last 24 hrs**		**Calculated over Bit Run**	
Mfr:	Security	WOB(avg)	11.60klb	No.	Size	Progress	842.0m	Cumul. Progress	2306.0m
Type:	PDC	RPM(avg)	127			On Bottom Hrs	48.7h	Cumul. On Btm Hrs	131.3h
Serial No.:	11103697	F.Rate	586gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	FMF 3755	SPP	2252psi			Total Revs	655	Cumul. Total Revs	1664
Depth In	3180.0m	HSI				ROP(avg)	17.29 m/hr	ROP(avg)	17.56 m/hr
Depth Out		TFA	0.000						

Bit Comment

BHA # 7

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	538fpm
Wt Below Jar(Wet)	32.00klb	String	400000.00klb	Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	410000.00klb	Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	304fpm
		Slack-Off	390000.00klb			D.P. Ann Velocity	304fpm

BHA Run Description: Bit RR #6

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL085	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2770.22	42.94	356.20	2638.55	398.83	399.1	1.8	0.6	Sperry Sun RLL Tool
2799.07	43.15	356.27	2659.63	418.51	418.8	0.5	0.2	Sperry Sun RLL Tool
2828.79	42.74	355.82	2681.39	438.75	439.0	-0.9	0.5	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	8	0	302.0
Drill Water	m3	50	9	0	632.0
Pot Water	m3	0	37	0	234.0
Brine	m3	0	0	0	45.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	55	2100	551
2	Continental Emsco	6.50	1.14	97	55	2100	551
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	44
GRN	2
OMS	12
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
Total	92

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**1939.9bbl**
Active	643.0bbl
Mixing	
Hole	708.9bbl
Slug	
Reserve	588.0bbl
Kill	

Losses	**452.0bbl**
Downhole	
Surf+ Equip	330.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	91.0bbl
Evaporation	31.0bbl

Equipment	Description	Mesh Size	Comments

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Marine

Weather on 24 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	20kn	230.0deg	1009.0mbar	12C°	3.0m	230.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.4deg	1.7deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
5.0m	230.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	185.0
2	269.0
3	143.0
4	135.0
5	239.0
6	196.0
7	167.0
8	194.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		04.55	Alongside Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		488
Potable Water	M3		535
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000 - 0455 On location
0455 - 1534 En-route to Melbourne
1534 - 2400 Alongside Melbourne

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	05.20		Rig standby.

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		587
Pot Water	M3		442
Drill Water	M3		400
Bentonite	t		104
Barite	t		37.2
	t		0
Brine	M3		0
Mud	bbl		0

0001 - 0440 En-route to rig
0520 - 0700 s/s rig. Cargo ops
0700 - 1545 r/stby
1545 - 1815 s/s rig. Cargo ops
1815 - r/stby

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4-01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	08.28 / 08.43	12 / 13	Crew Change

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Australian Drilling Associates Pty Ltd ADA

25 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 27
Rockhopper-1

Rockhopper-1

Date:	25 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	27	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3180.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	2940.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	-1149.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$666,517
Rig	Kan Tan IV	Days from spud	25.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$20,596,396
Wtr Dpth(MSL)	74.3m	Days on well	26.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	54
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	POOH at 2983m due to failure of hydraulic lube oil pump/motor on TDS.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	POOH to 9-5/8" casing shoe. Change out hydraulic lube oil pump / motor and drive coupling. RIH and drill 8-1/2" Hole to TD.		

Summary of Period 0000 to 2400 Hrs

Drilled 8-1/2" hole from 2865m to 3180m (584gpm @ 117spm / 2550 psi / 120 RPM / Drilling Torque 4 - 7klbs-ft). ROP: 20 to 30 m/hr.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	51 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	6 Days	Crane engine fire	
Permit To Work	12	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	5 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety Meetings	
STOP Card	37	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Angahook Volcanics Equiv	1284.80m
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m
Eastern View Coal Measures	2067.50m
P3 Zone	3082.00m

Operations For Period 0000 Hrs to 2400 Hrs on 25 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	2400	24.00	3180.0m	Drilled 8-1/2" hole from 2865 m to 3180 m. Drilling parameters: 584gpm @ 117spm / 2265 psi / 120 RPM / Torque 4 - 7klbs-ft / WOB 5-10klbs. ROP: 20 to 30 m/hr. Hole and conenctions good. Frequent indication of high slip-stick recorded downhole on bit/BHA. Attempted to reduce the slip-stick by changing drilling parameters (RPM and WOB) with little effect.

Operations For Period 0000 Hrs to 0600 Hrs on 26 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0200	2.00	3199.0m	Drilled 8-1/2" hole from 3180m to 3199m. Drilling parameters:

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (RE)	G11	0200	0500	3.00	3199.0m	584gpm @ 117 SPM / 2550 psi / 120 RPM / Torque 4 - 7 KLbs-Ft / WOB 5-15 KLbs. ROP 20 to 30 m/Hr. Hole and connections good. Temperature alarm on the lube oil pump for the top drive came on. Racked back 1x drillpipe stand. Mechanics inspected TDS - probable lube oil pump failure and coupling damage. Conferred with ADA office and decision made to POOH to 9-5/8" casing shoe for repairs. Continued to circulate and reciprocate drill pipe. Pumped Hi-Vis sweep followed by 2 x bottoms up.
P17	TP (RE)	G8	0500	0600	1.00	3199.0m	(IN PROGRESS) POOH on elevators at from 3199m to 2900m. Tight hole @ 2929m to 2900m. Washed and back reamed through this section with 50spm / 750 psi / 40 RPM.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 25 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	206	17 Dec 2009	25 Dec 2009	647.00	26.958	3180.0m

General Comments

00:00 TO 24:00 Hrs ON 25 Dec 2009

WBM Data

Cost Today US$ 13815

Mud TypeKCL/Polymer/PHPA	API FL:	4.6cc/30min	Cl:		Solids(%vol):	4%	
Sample-From: pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	93%	
Time: 2000	HTHP-FL:	9.4cc/30min	Hard/Ca:	180mg/l	Oil(%):		
Weight: 9.55ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.3	
Temp: 57C°			PM:	0.2	pH:	9	
			PF:	0.15	PHPA:	2ppb	

Viscosity	52sec/qt
PV	17cp
YP	33lb/100ft²
Gels 10s	11
Gels 10m	16
Fann 003	8
Fann 006	10
Fann 100	31
Fann 200	42
Fann 300	50
Fann 600	67

Comment — Note: Costs are in AUD

Bit # 6 RR

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#		No.	Size	Progress	-1149.0m	Cumul. Progress	1157.0m
Mfr:	Security	WOB(avg)	11.60klb			On Bottom Hrs	-65.1h	Cumul. On Btm Hrs	66.2h
Type:	PDC	RPM(avg)	60			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Serial No.:	11103697	F.Rate	598gpm			Total Revs	847	Cumul. Total Revs	2511
Bit Model	FMF 3755	SPP	2550psi			ROP(avg)	17.65 m/hr	ROP(avg)	17.48 m/hr
Depth In	3180.0m	HSI							
Depth Out		TFA	0.000						

Bit Comment

BHA # 7

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	549fpm
Wt Below Jar(Wet)	32.00klb	String	400000.00klb	Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	410000.00klb	Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	310fpm
		Slack-Off	390000.00klb			D.P. Ann Velocity	310fpm

BHA Run Description — Bit RR #6

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Printed on 28 Dec 2009

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL085	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2857.71	43.48	356.21	2702.50	458.50	458.7	-2.3	0.8	Sperry Sun RLL Tool
2886.29	43.02	355.19	2723.32	478.07	478.2	-3.7	0.9	Sperry Sun RLL Tool
2914.35	43.18	355.63	2743.81	497.22	497.3	-5.3	0.4	Sperry Sun RLL Tool
2942.96	43.00	355.89	2764.70	516.75	516.8	-6.7	0.3	Sperry Sun RLL Tool
2972.30	43.13	356.10	2786.13	536.77	536.8	-8.1	0.2	Sperry Sun RLL Tool
3031.32	43.35	358.13	2829.13	577.19	577.2	-10.2	0.7	Sperry Sun RLL Tool
3059.74	43.12	357.42	2849.84	596.66	596.6	-10.9	0.6	Sperry Sun RLL Tool
3116.75	42.91	356.52	2891.52	635.54	635.5	-13.0	0.3	Sperry Sun RLL Tool
3175.85	42.94	355.93	2934.80	675.77	675.6	-15.6	0.2	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	8	0	294.0
Drill Water	m3	20	8	0	644.0
Pot Water	m3	20	36	0	218.0
Brine	m3	0	0	0	45.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	55	2100	551
2	Continental Emsco	6.50	1.14	97	55	2100	551
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
13.38	17.50ppg /	961.00m / 961.00m	Ratio 5.20gal/sx 460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	44
GRN	2
OMS	12
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
Total	92

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**1913.1bbl**	**Losses**	**153.5bbl**
Active	677.0bbl	Downhole	
Mixing		Surf+ Equip	110.0bbl
Hole	773.1bbl	Dumped	
Slug		De-Gasser	
Reserve	463.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	30.0bbl
		Evaporation	13.5bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 25 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	15kn	210.0deg	1017.0mbar	12C°	1.0m	210.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.2m	0.6deg	1.7deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
5.0m	250.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	173.0
2	273.0
3	131.0
4	136.0
5	242.0
6	189.0
7	168.0
8	181.0

Vessel Name	**Arrived (Date/Time)**	**Departed (Date/Time)**	**Status**
Far Scimitar		04.55	Alongside Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		487
Potable Water	M3		530
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0

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Printed on 28 Dec 2009

Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 28
Rockhopper-1

26 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

Rockhopper-1

Date:	26 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	28	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3311.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	2681.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	131.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$665,020
Rig	Kan Tan IV	Days from spud	26.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$21,261,416
Wtr Dpth(MSL)	74.3m	Days on well	27.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	55
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test	08 Dec 2009				

Current Op @ 0600	Drilling ahead 8-1/2" hole @ 3382mBRT / 3087mTVD. Hole and connections good.
Planned Op	Drill 8-1/2" hole to TD. POOH and conduct short wiper trip. POOH to run electric wireline logs. Rig up and run wireline logs.

Summary of Period 0000 to 2400 Hrs

Drilled 8-1/2" hole to 3199m. ROP 20 to 30 m/hr. Temperature alarm on the lube oil pump for the top drive came on. Mechanics inspected TDS - probable lube oil pump failure and coupling damage. Conferred with ADA office and decision made to POOH to 9-5/8" casing shoe for repairs. Continued to circulate and reciprocate drill pipe. Pumped Hi-Vis sweep followed by 2 x bottoms up. POOH on elevators to 2900m. Tight hole @ 2929m to 2900m. Washed and back reamed through this section. Continued to POOH on elevators to 1946m. Replaced coupling on the top drive lube oil pump. Serviced travelling block and dolly. RIH to 3199m. Performed trip drill (36 sec). Hole in good condition. Drilled Ahead 8-1/2" hole from 3199m to 3311mBRT / 2681m TVD. Ditch Magnet contents = 45 grams.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	1	0 Days	Held abandon drill	
Emergency Drill	0	52 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	0 Days	Fire on Helideck	
Permit To Work	13	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	6 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety Meetings	
STOP Card	44	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Lower Angahook	1538.50m
Demons Bluff Formation	1825.30m
Eastern View Coal Measures	2067.50m
P3 Zone	3082.00m
AL30 equivalent	3191.00m

Operations For Period 0000 Hrs to 2400 Hrs on 26 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0200	2.00	3199.0m	Drilled 8-1/2" hole from 3180m to 3199m. Drilling parameters: 584gpm @ 117 SPM / 2550 psi / 120 RPM / Torque 4 - 7 KLbs-Ft / WOB 5-15 KLbs. ROP 20 to 30 m/Hr. Hole and connections good.
P17	TP (RE)	G11	0200	0500	3.00	3199.0m	Temperature alarm on the lube oil pump for the top drive came on. Racked back 1x drillpipe stand. Mechanics inspected TDS - probable lube oil pump failure and coupling

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							damage. Conferred with ADA office and decision made to POOH to 9-5/8" casing shoe for repairs. Continued to circulate and reciprocate drill pipe. Pumped Hi-Vis sweep followed by 2 x bottoms up.
P17	TP (RE)	G8	0500	0700	2.00	3199.0m	POOH on elevators at from 3199m to 2900m. Tight hole @ 2929m to 2900m. Washed and back reamed through this section with 50spm / 750 psi / 40 RPM.
P17	TP (RE)	G8	0700	0900	2.00	3199.0m	Continued to POOH on elevators from 2900m to 1946m. Hole in good shape.
P17	TP (RE)	G11	0900	1100	2.00	3199.0m	Repaired broken coupling on the top drive lube oil pump. Serviced traveling blocks and dollys.
P17	TP (RE)	G8	1100	1400	3.00	3199.0m	RIH from 1946m to 3199m. Performed trip drill (36 sec). Hole in good condition.
P17	P	D4	1400	2400	10.00	3311.0m	Established drilling parameters and drilled Ahead 8-1/2" hole from 3199m to 3311mMDRT / 2681mTVD. Drilling parameters: 607gpm / 120spm / 2600 psi. Torque 4 - 15 klbs-ft / WOB 5-15klbs. ROP 10 to 25m/hr Ditch Magnet contents = 45 grams. Max Gas 11 percent.

Operations For Period 0000 Hrs to 0600 Hrs on 27 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0600	6.00	3447.0m	(IN PROGRESS) Drilled 8-1/2" hole from 3311m to 3447mMDRT (3117mTVDRT). Drilling parameters: 600gpm / 120spm / 2600 psi / Torque 4 - 15klbs-ft / WOB 5-15klbs. ROP 10 to 25 m/hr. Hole and connections good.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 26 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	230	17 Dec 2009	26 Dec 2009	671.00	27.958	3311.0m

General Comments

00:00 TO 24:00 Hrs ON 26 Dec 2009

WBM Data

Cost Today US$ 11944

Mud TypeKCL/Polymer/PHPA	API FL: 4.8cc/30min	Cl:	Solids(%vol): 5%	Viscosity	52sec/qt
Sample-From: pit 2	Filter-Cake: 1/32nd"	K+C*1000: 6%	H2O: 92%	PV	18cp
Time: 2200	HTHP-FL: 9.7cc/30min	Hard/Ca: 160mg/l	Oil(%):	YP	32lb/100ft²
Weight: 9.50ppg	HTHP-cake: 2/32nd"	MBT: 7.5	Sand: .3	Gels 10s	11
Temp: 57C°		PM: 0.2	pH: 9.5	Gels 10m	16
		PF: 0.2	PHPA: 2ppb	Fann 003	9
				Fann 006	11
				Fann 100	32
				Fann 200	42
				Fann 300	50
				Fann 600	68

Comment — Note: Costs are in AUD

Bit # 6 RR

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

Size ("): 8.50in	IADC#	Nozzles	Drilled over last 24 hrs	Calculated over Bit Run

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Mfr:	Security	WOB(avg)	14.00klb	No.	Size	Progress	131.0m	Cumul. Progress	1288.0m
Type:	PDC	RPM(avg)	57			On Bottom Hrs	8.6h	Cumul. On Btm Hrs	74.8h
Serial No.:	11103697	F.Rate	598gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	FMF 3755	SPP	2598psi			Total Revs	905	Cumul. Total Revs	3416
Depth In	3180.0m	HSI				ROP(avg)	15.23 m/hr	ROP(avg)	17.22 m/hr
Depth Out		TFA	0.000						

Bit Comment

BHA # 7

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	549fpm
Wt Below Jar(Wet)	32.00klb	String	400000.00klb	Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	410000.00klb	Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	310fpm
		Slack-Off	390000.00klb			D.P. Ann Velocity	310fpm

BHA Run Description: Bit RR #6

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL085	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
3232.85	42.61	354.97	2976.64	714.44	714.2	-18.7	0.4	Sperry Sun RLL Tool
3261.40	42.02	354.71	2997.75	733.63	733.4	-20.4	0.6	Sperry Sun RLL Tool
3290.95	42.18	356.09	3019.67	753.41	753.1	-22.0	1.0	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	229	12	0	511.0
Drill Water	m3	0	6	0	638.0
Pot Water	m3	41	26	0	233.0
Brine	m3	0	0	0	45.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

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Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	60	2580	600
2	Continental Emsco	6.50	1.14	97	60	2580	600
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	44
GRN	2
OMS	12
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
Total	92

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**1892.9bbl**
Active	639.0bbl
Mixing	
Hole	799.9bbl
Slug	
Reserve	454.0bbl
Kill	

Losses	**120.0bbl**
Downhole	
Surf+ Equip	95.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	12.0bbl
Evaporation	13.0bbl

Equipment	Description	Mesh Size	Comments

Marine

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Weather on 26 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	4kn	165.0deg	1018.0mbar	14C°	1.0m	165.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.4m	1.0deg	1.5deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
4.0m	250.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	168.0
2	275.0
3	120.0
4	135.0
5	255.0
6	185.0
7	166.0
8	187.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		04.55	Alongside Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		486
Potable Water	M3		525
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	05.20		Rig standby.

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		365
Pot Water	M3		426
Drill Water	M3		400
Bentonite	t		104
Barite	t		37.2
	t		0
Brine	M3		0
Mud	bbl		0

0001 - 0920 r/stby
0920 - 1135 s/s rig disch. Fuel
1135 - 1530 r/stby
1530 - 1650 s/s rig disch.
1650 - 2400 r/stby

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Australian Drilling Associates Pty Ltd ADA

27 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 29
Rockhopper-1

Rockhopper-1

Date:	27 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	29	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	211.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$668,388
Rig	Kan Tan IV	Days from spud	27.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$21,929,804
Wtr Dpth(MSL)	74.3m	Days on well	28.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	56
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	POOH @ 2526m.		
Datum	GDA 94	Last BOP Test	08 Dec 2009	Planned Op	POOH to BHA. Lay down MWD tools and GeoPilot. Rig up and run electric wireline logging suits.		

Summary of Period 0000 to 2400 Hrs

Drilled 8-1/2" hole from 3311m to 3522mMDRT (3192mTVD). ROP 10 to 25m/hr. Hole and conections good. Rapid decline in ROP from 10+ m/hr to 1+ m/hr with progress of less than 2m in 1-1/2hrs near TD. Circulated hole until returns over the shakers clean. Pumped 30bbls of low weight sweep followed by 30bbls of high weight sweep. Circulated sweeps out. Flow checked. POOH on elevators from 3522m to 3100m. Hole in good condition - no tight spots. RIH from 3100m to 3522m. No drag observed. Hole in good condition.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	1	1 Day	Held abandon drill	
Emergency Drill	0	53 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	1 Day	Fire on Helideck	
Permit To Work	9	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	7 Days	General safety meetings	
Safety Meeting	10	0 Days	Safety Meetings	
STOP Card	47	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 27 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	1200	12.00	3447.0m	Drilled 8-1/2" hole from 3311m to 3447mMDRT (3117mTVDRT). Drilling parameters: 600gpm / 120spm / 2600 psi / Torque 4 - 15klbs-ft / WOB 5-15klbs. ROP 10 to 25 m/hr. Hole and connections good.
P17	P	D4	1200	1900	7.00	3522.0m	Continued to drill 8-1/2" hole from 3447m to well TD at 3522mMDRT (3192mTVDRT). Drilling parameters: 600gpm / 120spm / 2650psi / Torque 4 - 15klbs-ft / WOB 5-20klbs. ROP 10 to 25m/hr. Hole and connections good. Rapid decline in ROP from 10+ m/hr to 1+ m/hr in 1hr. The torque flattened and pressure spikes appeared indicating bit failure. Total steel

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							recovered from ditch magnets 103g.
P17	P	F4	1900	2130	2.50	3522.0m	Circulated hole until returns over shale shakers cleaned up. Last pill pumped 30bbl of low weight sweep followed by 30bbl of high weight sweep. Circulated out sweeps.
P17	P	G8	2130	2300	1.50	3522.0m	Flow checked - ok. POOH on elevators from 3522m to 3100m. Hole in good condition. No tight spots.
P17	P	G8	2300	2400	1.00	3522.0m	RIH from 3100m to 3522m. No drag observed. Hole in good condition.

Operations For Period 0000 Hrs to 0600 Hrs on 28 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0330	3.50	3522.0m	Circulated 1x bottoms up. Pumped 40 BBL of Lo-weight followed by 40 BBL of Hi-weight pill and continued to circulate and condition mud with 2 x bottoms up untill returns over the Shale Shakers were clean.
P17	P	G8	0330	0600	2.50	3522.0m	(IN PROGRESS) Flow checked and pumped slug and POOH from 3522 m to 211 m. No tight spots over the hole drag of 10-15 KLbs.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 27 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	254	17 Dec 2009	27 Dec 2009	695.00	28.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 27 Dec 2009

WBM Data — Cost Today US$ 16153

Mud TypeKCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:		Solids(%vol):	5%	Viscosity 60sec/qt
Sample-From: pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	92%	PV 18cp
Time: 2200	HTHP-FL:	9.0cc/30min	Hard/Ca:	160mg/l	Oil(%):		YP 31lb/100ft²
Weight: 9.55ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.3	Gels 10s 10
Temp: 48C°			PM:	0.15	pH:	9	Gels 10m 15
			PF:	0.1	PHPA:	2ppb	Fann 003 8
Comment	Note: Costs are in AUD						Fann 006 10
							Fann 100 31
							Fann 200 42
							Fann 300 49
							Fann 600 67

Bit # 6 RR

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#		No.	Size	Progress	211.0m	Cumul. Progress	1499.0m
Mfr:	Security	WOB(avg)	14.00klb			On Bottom Hrs	14.7h	Cumul. On Btm Hrs	89.5h
Type:	PDC	RPM(avg)	47			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Serial No.:	11103697	F.Rate	598gpm			Total Revs	994	Cumul. Total Revs	4410
Bit Model	FMF 3755	SPP	2637psi			ROP(avg)	14.35 m/hr	ROP(avg)	16.75 m/hr
Depth In	3180.0m	HSI							
Depth Out		TFA	0.000						

Bit Comment

BHA # 7

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	549fpm
Wt Below Jar(Wet)	32.00klb	String	400000.00klb	Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm

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	Pick-Up	410000.00klb	Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	310fpm
	Slack-Off	390000.00klb			D.P. Ann Velocity	310fpm

BHA Run Description	Bit RR #6
BHA Run Comment	

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL085	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
3348.87	42.01	356.27	3062.65	792.22	791.8	-24.6	0.1	Sperry Sun RLL Tool
3377.12	41.91	356.10	3083.66	811.10	810.7	-25.8	0.2	Sperry Sun RLL Tool
3405.96	41.76	356.10	3105.15	830.32	829.9	-27.2	0.2	Sperry Sun RLL Tool
3435.82	41.85	357.17	3127.41	850.22	849.7	-28.3	0.7	Sperry Sun RLL Tool
3494.20	41.35	357.89	3171.06	888.98	888.5	-30.0	0.4	Sperry Sun RLL Tool
3522.00	41.35	357.89	3191.93	907.34	906.8	-30.7	0.0	Sperry Sun RLL Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	17	0	494.0
Drill Water	m3	0	28	0	610.0
Pot Water	m3	51	28	0	256.0
Brine	m3	0	0	0	45.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	60	2580	600
2	Continental Emsco	6.50	1.14	97	60	2580	600
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	44
GRN	2
OMS	12
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
Total	92

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**1977.5bbl**
Active	812.0bbl
Mixing	
Hole	853.5bbl
Slug	
Reserve	312.0bbl
Kill	

Losses	**215.0bbl**
Downhole	
Surf+ Equip	165.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	27.0bbl
Evaporation	23.0bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 27 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	3kn	250.0deg	1016.0mbar	16C°	0.0m	250.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.4m	0.5deg	0.7deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	168.0
2	275.0
3	128.0
4	138.0
5	263.0
6	189.0
7	163.0
8	187.0

Vessel Name	**Arrived (Date/Time)**	**Departed (Date/Time)**	**Status**
Far Scimitar		04.55	Alongside Melbourne

Item	**Unit**	**Used**	**Quantity**
Rig Fuel	M3		485
Potable Water	M3		520

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Printed on 28 Dec 2009

28 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 30
Rockhopper-1

Rockhopper-1

Date:	28 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	30	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$821,582
Rig	Kan Tan IV	Days from spud	28.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$22,751,386
Wtr Dpth(MSL)	74.3m	Days on well	29.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	57
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test	08 Dec 2009				

Current Op @ 0600	Continue run #1 of wireline logging program: SP-CMR- HRLA-PEX-HNGS.
Planned Op	* Complete run #1 of wireline logging program: SP-CMR- HRLA-PEX-HNGS * POOH * Remove radoactive sources and read tool temperature gauges * Rig up and prepare for run #2: MDT-GR-LEHQT * Commence run #2 of wireline program

Summary of Period 0000 to 2400 Hrs

Circulated 1x bottoms up. Pumped 40bbl of low weight followed by 40bbl of high-weight pill and continued to circulate and condition mud with 2x bottoms up for clean returns over the shakers. Flow checked, pumped slug and POOH from 3522m to 211m. POOH with BHA to 40m. Removed radioactive sources and downloaded MWD tools. Continued to POOH Halliburton BHA and laid out same. Rigged up to run electric wireline. Made up schlumberger tools and calibrated same. Installed radioactive sources to wireline tools. RIH with CMR - HNGS - PEX - HRLA - SP Schlumberger tools @ 2000m/hr.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	08 Dec 2009			
Abandon Drill	1	2 Days	Held abandon drill	
Emergency Drill	0	54 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	2 Days	Fire on helideck	
Permit To Work	14	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	8 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	53	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 28 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0330	3.50	3522.0m	Circulated 1x bottoms up. Pumped 40bbl of low-weight followed by 40bbl of high-

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							weight pill and continued to circulate and condition mud with 2 x bottoms up untill returns over the shale shakers were clean.
P17	P	G8	0330	1030	7.00	3522.0m	Flow checked and pumped slug and POOH from 3522m to 211m. No tight spots over the hole drag of 10-15klbs.
P17	P	G6	1030	1130	1.00	3522.0m	POOH with BHA from 211m to 40m.
P17	P	G7	1130	1300	1.50	3522.0m	Removed radioactive sources and down loaded MWD tools.
P17	P	G7	1300	1500	2.00	3522.0m	Continued to POOH MWD tools and GeoPilot BHA and laid out same.
P17	P	G1	1500	1700	2.00	3522.0m	Held TBT and rigged up to run electric wireline logs.
P17	P	C1	1700	1800	1.00	3522.0m	Made up Schlumberger tools for the run #1 - CMR-HNGS-PEX-HRLA and calibrated same.
P17	P	C1	1800	1830	0.50	3522.0m	Zeroed tools and installed radioactive sources in wireline tools.
P17	P	C2	1830	2400	5.50	3522.0m	RIH with electric tools Run #1: CMR - HNGS - PEX - HRLA Log down 18:25hrs Held up 3192m 19:40hrs HRLT before Cal Repeat Pass 19:53 - 20:12hrs Logger at bottom 20:22hrs Logged up from 3517m 20:24 - 23:30hrs Playing back PEX-HRLA (at 9-5/8" Casing Shoe) 23:30hrs Hole good with one "sticky point" @ 3182m to 3190m. Confirmed 9-5/8" casing shoe @ 1965 m.

Operations For Period 0000 Hrs to 0600 Hrs on 29 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0600	6.00	3522.0m	Continue with electric wireline run #1 CMR-HNGS-PEX-HRLA. Depth matched, QC and uploaded of run #1. SP-HRLA-PEX-HNGS-LEHQT data before CMR run. Ran in hole for CMR main pass. 18bbl mud lost over 16hr period.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 28 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	278	17 Dec 2009	28 Dec 2009	719.00	29.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 28 Dec 2009

WBM Data

Cost Today US$ 20895

Mud TypeKCL/Polymer/PHPA		API FL:	4.6cc/30min	Cl:		Solids(%vol):	5%
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	92%
Time:	2000	HTHP-FL:	9.7cc/30min	Hard/Ca:	160mg/l	Oil(%):	
Weight:	9.50ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.3
Temp:	35C°			PM:	0.2	pH:	9.5
				PF:	0.2	PHPA:	2ppb

Viscosity	53sec/qt
PV	19cp
YP	36lb/100ft²
Gels 10s	12
Gels 10m	17
Fann 003	10
Fann 006	12
Fann 100	34
Fann 200	46
Fann 300	55
Fann 600	74

Comment — Note: Costs are in AUD

Bit # 6 RR

Wear	I	O1	D	L	B	G	O2	R
	6	6	BT	A	X	I	NO	PR

Bitwear Comments:

Size ("): 8.50in IADC#

Nozzles	Drilled over last 24 hrs	Calculated over Bit Run

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Mfr:	Security	WOB(avg)	14.00klb	No. Size	Progress	0.0m	Cumul. Progress	1499.0m
Type:	PDC	RPM(avg)	47		On Bottom Hrs	0.0h	Cumul. On Btm Hrs	89.5h
Serial No.:	11103697	F.Rate	598gpm		IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	FMF 3755	SPP	2637psi		Total Revs	994	Cumul. Total Revs	5404
Depth In	3180.0m	HSI			ROP(avg)	N/A	ROP(avg)	16.75 m/hr
Depth Out	3522.0m	TFA	0.000					

Bit Comment

BHA # 7

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	549fpm
Wt Below Jar(Wet)	32.00klb	String	400000.00klb	Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	410000.00klb	Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	310fpm
		Slack-Off	390000.00klb			D.P. Ann Velocity	310fpm

BHA Run Description: Bit RR #6

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL085	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	29	0	465.0
Drill Water	m3	0	30	0	580.0
Pot Water	m3	40	26	0	270.0
Brine	m3	0	0	0	45.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs | **Slow Pump Data**

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)	Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1	Continental Emsco	6.50	1.14	97	60	2580	600	2581.0	30	300	252	40	450	336	50	580	420
2	Continental Emsco	6.50	1.14	97	60	2580	600	2581.0	30	330	252	40	440	336	50	570	420
3	Continental	6.50	1.14	97				2581.0	30	340	252	40	430	336	50	590	420

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Pumps

Pump Data - Last 24 Hrs								Slow Pump Data									
	Emsco																

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	45
GRN	1
OMS	14
Geoservices	4
Halliburton Cementers	1
Halliburton (Baroid)	2
Sperry Sun	4
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
Total	92

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	2074.0bbl	Losses	120.0bbl
Active	707.0bbl	Downhole	
Mixing		Surf+ Equip	95.0bbl
Hole	853.0bbl	Dumped	
Slug		De-Gasser	
Reserve	514.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	12.0bbl
		Evaporation	13.0bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 28 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	11kn	230.0deg	1019.0mbar	14C°	1.0m	230.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.4m	0.8deg	1.0deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	250.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	172.0
2	287.0
3	125.0
4	135.0
5	259.0
6	188.0
7	169.0
8	195.0

Vessel Name	Arrived (Date/Time)	Departed	Status	Bulks

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Printed on 29 Dec 2009

(Date/Time)							
Far Scimitar		04.55	Rig S/By	**Item**	**Unit**	**Used**	**Quantity**
				Rig Fuel	M3		470
				Potable Water	M3		515
				Drill Water	M3		482
					t		0
				Barite	t		0
				Bentonite	t		0
				Brine	M3		0
				Mud	bbl		0
0000 - 1100 Alongside Melbourne 1100 - 2200 On Passage to KT4 2200 - 2400 Running S/By							
Far Fosna	05.20		Rig standby.	**Item**	**Unit**	**Used**	**Quantity**
				Rig Fuel	M3		349
				Pot Water	M3		410
				Drill Water	M3		400
				Bentonite	t		37.2
				Barite	t		74
					t		0
				Brine	M3		0
				Mud	bbl		0
0001 - 1600 r/stby 1600 - 1855 s/s rig cargo ops 1855 - 2400 r/stby							

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4-01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	0914 / 0928	12 / 12	Crew Change

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Australian Drilling Associates Pty Ltd ADA

29 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 31
Rockhopper-1

Rockhopper-1

Date:	29 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	31	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$827,993
Rig	Kan Tan IV	Days from spud	29.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$23,579,379
Wtr Dpth(MSL)	74.3m	Days on well	30.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	58
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Pressure testing BOP stack.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Complete pressure testing the BOP stack. POOH with test tool and lay out. RIH and perform wiper trip and condition mud.		

Summary of Period 0000 to 2400 Hrs

Continued with electric wireline run #1 CMR-HNGS-PEX-HRLA. Downhole mud loss 18bbl mud lost over 16hr period. POOH with wireline run #1. Removed Radioactive Sources from the tools. Laid out Schlumberger tools from run #1. Picked up tools for wireline run #2: MDT-GR-LEHQT. Calibrated and RIH same. Began wire line logging Run #2. POOH with wireline run #2 due to tools continually sticking and hole condition deteriorating. Broke down and laid out wireline tools from run #2.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	1	3 Days	Held abandon drill	
Emergency Drill	0	55 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	3 Days	Fire on Helideck	
Permit To Work	16	1 Day	Permits administered	
Pre-tour Meeting	2	1 Day	Shift change meetings	
Safety Meeting	0	9 Days	General safety meetings	
Safety Meeting	7	1 Day	Safety Meetings	
STOP Card	36	1 Day	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 29 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0630	6.50	3522.0m	Continued to run electric wireline logs. Run #1 CMR-HNGS-PEX-HRLA. Depth matched, QC and uploaded run #1. SP-HRLA-PEX-HNGS-LEHQT data before CMR run. RIH for CMR main pass. Downhole fluid loss 18 BBL over 16 Hr period.
P17	P	C2	0630	0800	1.50	3522.0m	POOH with wireline run #1.

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Printed on 29 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C1	0800	0830	0.50	3522.0m	Removed radioactive sources from the tools.
P17	P	C1	0830	0930	1.00	3522.0m	Laid out wireline tools from run #1.
P17	P	C1	0930	1030	1.00	3522.0m	Picked up tools for wireline run #2 MDT-GR-LEHQT.
P17	P	C2	1030	1230	2.00	3522.0m	Calibrated and RIH with wireline tools run #2.
P17	P	C2	1230	2100	8.50	3522.0m	Commenced wireline logging run #2. RIH to 2250m and correlated on depth. From 12:52 - 13:15hrs @ 2134.0m moved to first station for drop off tests: 0,2,5 mins - all OK. 13:15 - 14:00hrs @ 2134.2m - Commenced pre-tests, completed 3 points. 14:00 - 14:25hrs @ 2400.0m - Moved down for correlation. 14:25 - 14:40hrs @ 2640.0m - Correlated up, variably sticky from 2500-2650m 14:40 - 14:50hrs @ 2550.0m - Go to 2550m for check drop off test - OK. 14:50 - 15:12hrs @ 2550.0m - Continued pretests. 15:12 - 16:10hrs @ 2560.0m - Down and correlated +1.3m. Changed to low gear, hole sticky (2846m) add 1 m, speed very erratic, changed to low - low. 16:10 - 16:52hrs @ 2730.0m - Continued pretests. Problems with toolstring moving. Adjusted/raised heave compensator pressure. 16:52 - 17:40hrs @ 2785.0m - Correlated on depth but indication of deteriorating hole condition. Hung up at 2933m, 2927m and 2945m. 17:40 - 18:45hrs @ 2832.0m - Continued with pretests. Hole tight at 2896m. 18:45 - 19:20hrs @ 3000.0m. Correlated on depth. 19:20 - 19:45hrs @ 2962.0m. Continued with pretests. 20:40 - 21:00hrs @ 3145.0m. Went down to correlate with various tight spots at 3022 m, 3070 m and 3083 m. 21:00 - 21:30hrs @ 3010.0 m. Stuck between 3050-3010m with maximum overpull (9000 lbs) reached and tool pulled free.
P17	P	C2	2100	2230	1.50	3522.0m	POOH with wireline run #2. Hole sticky and deteriorating condition. Below is a summary of the tight spot areas where the tool experienced high tension or got held up during the MDT-pretest run: 2846m, 2933m (tight and held up), 2927m, 2945m, 2896m, 2993m (held up), 3010m. Tool stuck. Worked wireline free with up/down with maximum pull up 9000 lbs.
P17	P	C1	2230	2400	1.50	3522.0m	Tools at surface. Broke down and laid out wireline tools from run #2.

Operations For Period 0000 Hrs to 0600 Hrs on 30 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G1	0000	0030	0.50	3522.0m	Continued to rig down Schlumberger wireline equipment.
P17	P	G6	0030	0300	2.50	3522.0m	Picked up and made up wiper trip BHA and RIH to 97m.
P17	P	G13	0300	0330	0.50	3522.0m	Flushed BOP stack and wellhead @ 550gpm.
P17	P	G6	0330	0400	0.50	3522.0m	Continued to RIH picking up BHA from 97m to 180m.
P17	P	G2	0400	0500	1.00	3522.0m	Removed diverter bag insert. Picked up and made up BOP test tool.
P17	P	G8	0500	0530	0.50	3522.0m	RIH with BOP test tool and landed out in wellhead.
P17	P	P1	0530	0600	0.50	3522.0m	Began pressure testing of BOP stack as follows: Pipe Rams: 250psi / 5min ; 5000psi / 10min Annular BOP: 250psi / 5min ; 3500 psi / 10min C&K failsafe valves: 250psi / 5min ; 5000 / 10min

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 29 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	302	17 Dec 2009	29 Dec 2009	743.00	30.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 29 Dec 2009

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WBM Data

Cost Today US$ 743

Mud Type	KCL/Polymer/PHPA	API FL:	4.6cc/30min	Cl:		Solids(%vol):	5%	Viscosity	63sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	93%	PV	19cp
Time:	2000	HTHP-FL:	9.9cc/30min	Hard/Ca:	160mg/l	Oil(%):		YP	37lb/100ft²
Weight:	9.65ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.3	Gels 10s	12
Temp:	35C°			PM:	0.2	pH:	9	Gels 10m	16
				PF:	0.1	PHPA:	2ppb	Fann 003	10
								Fann 006	12
								Fann 100	33
								Fann 200	46
								Fann 300	56
								Fann 600	75

Comment: Note: Costs are in AUD

Bit # 6 RR

Wear	I	O1	D	L	B	G	O2	R
	6	6	BT	A	X	I	NO	PR

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#		No.	Size	Progress	0.0m	Cumul. Progress	1499.0m
Mfr:	Security	WOB(avg)	14.00klb			On Bottom Hrs	0.0h	Cumul. On Btm Hrs	89.5h
Type:	PDC	RPM(avg)	47			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Serial No.:	11103697	F.Rate	598gpm			Total Revs	994	Cumul. Total Revs	6398
Bit Model	FMF 3755	SPP	2637psi			ROP(avg)	N/A	ROP(avg)	16.75 m/hr
Depth In	3180.0m	HSI							
Depth Out	3522.0m	TFA	0.000						

Bit Comment

BHA # 7

Weight(Wet)	40.00klb	Length	210.9m	Torque(max)	27ft-lbs	D.C. (1) Ann Velocity	549fpm
Wt Below Jar(Wet)	32.00klb	String	400000.00klb	Torque(Off.Btm)	1ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	410000.00klb	Torque(On.Btm)	0ft-lbs	H.W.D.P. Ann Velocity	310fpm
		Slack-Off	390000.00klb			D.P. Ann Velocity	310fpm

BHA Run Description: Bit RR #6

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m	8.50in		1103697	Security Bit
Geo_Pilot	8.89m	6.75in		GP850TL085	GeoPilot NM
RLL Nuke String	8.60m	7.19in		90217460	RLL & Stab
stabilizer	9.23m	6.63in		90232558	ALD+CTN & Stab
Sonic 6	6.76m	7.38in		9023557	Bat Sonic
HOC	3.04m	6.69in		203846	HOC
Float Sub	2.74m	6.56in	2.94in	11029122	ACAL + Float sub
stabilizer	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.47m	6.75in	2.88in	1761	
6 3/4" DC	9.46m	6.75in	2.88in	1183	
6 3/4" DC	9.27m	6.75in	2.88in	1191	
HWDP	84.57m	5.00in	3.00in		
Jars	9.84m	5.00in	3.00in	17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	14	0	451.0
Drill Water	m3	0	10	0	570.0
Pot Water	m3	36	24	0	282.0
Brine	m3	0	0	0	45.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7

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Printed on 29 Dec 2009

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	45
GRN	1
OMS	14
Geoservices	4
Halliburton Cementers	1
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	2
Schlumberger (Wireline)	8
Total	92

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	2166.9bbl
Active	697.0bbl
Mixing	
Hole	955.9bbl
Slug	
Reserve	514.0bbl
Kill	

Losses	10.6bbl
Downhole	10.6bbl
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge Evaporation	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 29 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	11kn	235.0deg	1022.0mbar	13C°	2.0m	235.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.4m	0.8deg	1.0deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
5.0m	245.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	168.0
2	273.0
3	128.0
4	136.0
5	263.0
6	190.0
7	166.0
8	188.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		04.55	Rig S/By

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		462
Potable Water	M3		510
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000 - 1300 R/ Stby
1300 - 1500 Disch cargo to KT4
2200 - 2400 R/Stby

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	05.20		Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		329
Pot Water	M3		402
Drill Water	M3		400
Bentonite	t		37.2
Barite	t		74
	t		0
Brine	M3		0
Mud	bbl		0

0001 - 1030 r/stby
1030 - 1100 s/s rig cargo ops
1100 - 2230 En- route to Melbourne
2230 - 2400 Melb

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30 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 32
Rockhopper-1

Rockhopper-1

Date:	30 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	32	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	47.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$916,887
Rig	Kan Tan IV	Days from spud	30.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$24,496,266
Wtr Dpth(MSL)	74.3m	Days on well	31.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	59
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	POOH in casing @ 1140m.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Continued to POOH. Rack back BHA. Rig up and run Schlumberger wireline Logs.		

Summary of Period 0000 to 2400 Hrs

Continued to rig down Schlumberger wireline equipment. Picked up and made up wiper trip BHA and RIH to 97m. Flushed BOP stack. Continued to RIH picking up BHA to 180m. Removed diverter bag insert. Picked up and made up BOP test tool. RIH and landed out on 9-5/8" wearbushing. Pressure tested BOP Stack. Function tested BOP stack on both pods. POOH and removed test tool from the string. RIH on 5" drill pipe to 1965m. Serviced TDS and greased dolly rollers. Continued to RIH in open hole to 3417m. Worked pipe through tight spots. Precautionary washed from 3417m to TD @ 3522m. Circulated and conditioned mud with final MW of 9.4ppg.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	1	4 Days	Held abandon drill	
Emergency Drill	0	56 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	4 Days	Fire on helideck	
Permit To Work	24	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	10 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	34	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 30 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G1	0000	0030	0.50	3522.0m	Continued to rig down electric wireline equipment.
P17	P	G6	0030	0300	2.50	3522.0m	Picked up and made up wiper trip BHA and RIH to 97m.
P17	P	G13	0300	0330	0.50	3522.0m	Flushed BOP stack and wellhead area with 550gpm.
P17	P	G6	0330	0400	0.50	3522.0m	Continued to RIH picking up BHA from 97m to 180m.
P17	P	G2	0400	0500	1.00	3522.0m	Removed diverter bag insert. Picked up and installed BOP test tool into the drill string.
P17	P	G8	0500	0530	0.50	3522.0m	RIH with BOP test tool and landed out on 9-5/8" wearbushing in wellhead.
P17	P	P1	0530	0900	3.50	3522.0m	Pressure tested of BOP stack as follows:

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							Pipe Rams: 250psi / 5min ; 5000psi / 10min Annular BOP: 250psi / 5min ; 3500psi / 10min C&K failsafe valves: 250psi / 5min ; 5000psi / 10min
P17	P	P1	0900	0930	0.50	3522.0m	Function tested BOP stack on both pods.
P17	P	G8	0930	1000	0.50	3522.0m	Unseated test tool with 5klbs overpull. POOH and laid out same.
P17	P	G8	1000	1100	1.00	3522.0m	RIH on 5" drill pipe from 180m to 758m.
P17	TP (RE)	G11	1100	1130	0.50	3522.0m	Troubleshot problem with iron roughneck switches.
P17	P	G8	1130	1300	1.50	3522.0m	Continued to RIH on 5" drill pipe to 1965m (9-5/8" casing shoe).
P17	P	G11	1300	1330	0.50	3522.0m	Serviced TDS and greased dolly rollers.
P17	P	G8	1330	1730	4.00	3522.0m	Continued to RIH in open hole from 1944m to 3522m. Worked pipe through tight spots @ 2427m (20klbs) and 2482m (40klbs). Made up topdrive and washed from 2475m to 2490m. Worked pipe through tight spot @ 2510m (30klbs). Precautionary washed from 3417m to TD @ 3522m.
P17	P	F4	1730	2400	6.50	3522.0m	Circulated and conditioned mud @ 580gpm / 2800psi. Reciprocated drillstring while bleeding in 9.3ppg premix mud. Pumped 30bbls of low weight 30bbls of high weight pills around, followed by 2x bottoms up. Final mud weight = 9.4 ppg.

Operations For Period 0000 Hrs to 0600 Hrs on 31 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0100	1.00	3522.0m	Continued to circulate and condition mud @ 580gpm / 2800psi. Reciprocated string while bleeding in 9.3ppg premix mud. Pumped 30bbls of low weight and 30bbls of high weight pills around followed by 2x bottoms up. Maintained MW at 9.4 ppg.
P17	P	G8	0100	0500	4.00	3522.0m	Performed 10min flow check - ok. POOH from 3522m to 2965m. Pumped slug and continued to POOH to 1965m (shoe depth).
P17	P	G8	0500	0600	1.00	3522.0m	Performed 10min flow check and installed diverter insert and wiper rubber. Continued to POOH in casing from 1965m to 1140m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 30 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	326	17 Dec 2009	30 Dec 2009	767.00	31.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 30 Dec 2009

WBM Data — Cost Today US$ 24991

Mud TypeKCL/Polymer/PHPA		API FL:	4.8cc/30min	Cl:		Solids(%vol):	5%
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	92%
Time:	2220	HTHP-FL:	10.0cc/30min	Hard/Ca:	200mg/l	Oil(%):	
Weight:	9.45ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.25
Temp:				PM:	0.25	pH:	9
				PF:	0.25	PHPA:	2ppb
Comment		Note: Costs are in AUD					

Viscosity	61sec/qt
PV	20cp
YP	43lb/100ft²
Gels 10s	12
Gels 10m	16
Fann 003	11
Fann 006	13
Fann 100	41
Fann 200	54
Fann 300	63
Fann 600	83

Bit # 7 RR1

Wear	I	O1	D	L	B	G	O2	R
	2	2	WT	A	E	1	NO	BHA

Bitwear Comments:

Size ("):	8.50in	IADC#	Nozzles	Drilled over last 24 hrs	Calculated over Bit Run

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Mfr:	Baker Huhes Chistensen	WOB(avg)		No. Size	Progress	47.0m	Cumul. Progress	47.0m
Type:	tri	RPM(avg)	60		On Bottom Hrs	4.7h	Cumul. On Btm Hrs	4.7h
Serial No.:	6076381	F.Rate	570gpm		IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	8 1/2 GT-1	SPP	2450psi		Total Revs		Cumul. Total Revs	0
Depth In	3522.0m	HSI			ROP(avg)	10.00 m/hr	ROP(avg)	10.00 m/hr
Depth Out	3522.0m	TFA	0.000					
Bit Comment		RR Bit to drill out Shoe Track & build initial angle.						

BHA # 8

Weight(Wet)	40.00klb	Length	180.5m	Torque(max)		D.C. (1) Ann Velocity	523fpm
Wt Below Jar(Wet)	28.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	296fpm
		Slack-Off				D.P. Ann Velocity	296fpm
BHA Run Description		Wiper Trip BHA Jets 3 x 20					
BHA Run Comment							

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.24m	8.50in		6076381	
Bit Sub	1.18m	6.88in	2.75in	0087	
8-1/2" String Stab	2.02m	8.13in	2.88in	10988869	
HOC	5.81m	6.75in		19443/203842	HOC & PM Sub
6 3/4" DC	9.48m	6.75in	2.88in	1190	
String Stabiliser	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.29m	6.75in	2.88in	1788	
6 3/4" DC	9.19m	6.75in	2.88in	1188	
HWDP	84.57m	5.00in	3.00in		
Jar	9.84m	6.50in		17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	22	0	429.0
Drill Water	m3	20	50	0	540.0
Pot Water	m3	0	28	0	254.0
Brine	m3	0	16	0	29.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	43
GRN	2
OMS	15
Geoservices	3
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
Total	91

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2172.5bbl**	**Losses**	**160.0bbl**
Active	293.0bbl	Downhole	
Mixing		Surf+ Equip	116.0bbl
Hole	853.5bbl	Dumped	
Slug		De-Gasser	
Reserve	1026.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	17.0bbl
		Evaporation	27.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 30 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	22kn	60.0deg	1013.0mbar	16C°	3.0m	60.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.4deg	1.4deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
6.0m	240.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	185.0
2	303.0
3	135.0
4	209.0
5	350.0
6	211.0
7	182.0
8	184.0

Vessel Name	**Arrived (Date/Time)**	**Departed (Date/Time)**	**Status**
Far Scimitar		04.55	Rig S/By

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		454
Potable Water	M3		505

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				Item	Unit	Used	Quantity
				Drill Water	M3		482
					t		0
				Barite	t		0
				Bentonite	t		0
				Brine	M3		0
				Mud	bbl		0

00.00 - 24.00 R/ Stby

				Item	Unit	Used	Quantity
Far Fosna	05.20		Melbourne	Rig Fuel	M3		329
				Pot Water	M3		402
				Drill Water	M3		400
				Bentonite	t		37.2
				Barite	t		74
					t		0
				Brine	M3		0
				Mud	bbl		0

0001 - 1030 r/stby
1030 - 1100 s/s rig cargo ops
1100 - 2230 En- route to Melbourne
2230 - 2400 Melb

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4 - 01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	08.55 / 09.08	9 / 10	Crew Change

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 33
Rockhopper-1

31 Dec 2009

From: Michael Lanzer / Paul Leathem
To: Texas Richards

Rockhopper-1

Date:	31 Dec 2009	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	33	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$746,601
Rig	Kan Tan IV	Days from spud	31.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$25,242,867
Wtr Dpth(MSL)	74.3m	Days on well	32.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	60
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Continue with electric wireline run #3 - MDT.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Complete electric wireline run #2 - MDT. Pick up tools and run #3 - VSI.		

Summary of Period 0000 to 2400 Hrs

Continued to circulate and condition mud to final mud weight of 9.4ppg. Pumped 30bbl of low-weight and 30bbl of high-weight pills around followed by 2x bottoms up. Maintained MW at 9.4ppg. POOH to 9-5/8" casing shoe and flowchecked. Continued to POOH in casing to 180m. Racked BHA back in mast. Held PJSM and rigged up for electric wireline. Picked up MDT tools and calibrated same. Continued run #2: MDT-GR-LEHQT. RIH with MDT tools run #3. 11bbls seepage losses to the well.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	1	5 Days	Held abandon drill	
Emergency Drill	0	57 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	5 Days	Fire on helideck	
Permit To Work	19	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	11 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	35	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 31 Dec 2009

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0100	1.00	3522.0m	Continued to circulate and condition mud @ 580gpm / 2800psi. Reciprocated string while bleeding in 9.3ppg premix mud. Reduced mud weight from 9.5+ppg down to 9.4ppg. Pumped 30bbl of low-weight and 30bbl of high-weight pills around followed by 2x bottoms up. Maintained MW at 9.4ppg.
P17	P	G8	0100	0500	4.00	3522.0m	Performed 10min flow check. POOH from 3522m to 2965m. Pumped slug and continued to POOH to 9-5/8" cassing shoe @ 1965m.
P17	P	G8	0500	0730	2.50	3522.0m	Performed 10min flow check and installed diverter insert bag and wiper rubber. Continued to POOH inside the casing from 1965m to 180m.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G8	0730	0830	1.00	3522.0m	POOH with BHA and racked back in the mast.
P17	P	C1	0830	1000	1.50	3522.0m	Held pre-job safety meeting and rigged up electric wireline equipment.
P17	P	E2	1000	2400	14.00	3522.0m	Made up MDT electric wireline tools and calibrated same. Continued with wireline run #2: MDT-GR-LEHQT. 10:50 to 11:45hrs - RIH to 2027.0m and checked on depths. 11:45 to 12:25hrs - RIH @ 3100.0m. Continued to RIH in open hole whilst checking with pick up tests. Hole tight at various depths - worked MDT tools up/down the hole. Continued to work tools and RIH between 12:25 - 13:35hrs to 3500.0m. Worked tools across sticky hole with the surface line tension of up to 9200 lbs - 4000 lbs head tension at depths from 2600- 3400m. 13:35 to 14:15hrs @ 3500.0m. Correlated +3.5 m. Difficult to confirm with high line tension and stalling winch. 14:15 to 14:20 @ 3324.0m. Moved to 3424.5m for drop off tests 14:20 to 14:50hrs @ drop off tests at 3325m. 14:50 to 15:25hrs @ 3424.5m. Commenced pretests. 15:25 to 15:35hrs @ 3424.5m. Continued to correlate - difficult to correlate on depths. 15:35 to 17:35hrs tools at 3424.5m. Continued pretests, many tight, tool may have moved up hole due to line tension while stopped @ depth. 17:35 to 18:14hrs @ 3450.0m. Correlated +1m. Hole sticky giving variable line and head tensions up to 9000 lbs. 18:14 to 20:35hrs @ 3344.5m continued pretests. 20:35 to 20:45hrs @ 3337.0m. Software crash - pretest at 3337.0m and took 20cc drawdown instead of 2 x 10cc - pretest volume reset to 10cc. 20:45 to 22:00hrs @ 3336.0m. Continued with pretests. 22:00 to 23:59hrs @ 3324.0m. Continued pretests. 11bbls seepage losses to the well.

Operations For Period 0000 Hrs to 0600 Hrs on 01 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	E2	0000	0600	6.00	3522.0m	(IN PROGRESS) Continued with MDT tools run #3: 00:00 to 00:25hrs @ 3268.7m. Continued pretests. 00:25 to 00:45hrs @ 3470.0m. RIH. 00:45 to 01:50hrs @ 3424.5m. Pumped out and sample collected. 01:50 to 02:30hrs @ 3408.0m. Continued with pretests. Note: Telephone communication lost from approximately 21:00hrs to 02:00hrs. 02:30 to 02:35hrs @ 3445.0m. RIH and adjusted heave compensator. 02:35 to 03:00hrs @ 3445.0m. Correlated on depth. 03:00 to 03:20hrs. RIH to continue pretests. 03:20 to 04:20hrs. Took 1x sample and continued with pretests. 04:20 to 05:05hrs @ 3407.5m. Pumped out. Sample #2 collected. 05:05 to 05:15hrs @ 3430.0m. Correlated, 1 m shallow. 05:15 to 05:25hrs @ 3398.0m. RIH. 05:25 to 07:30hrs @ 3380.5m. Continued with pretests. 07:30 to 08:00hrs @ 3348.0m. Attempted sample collection #3. Moved down 0.5m due to poor mobility. Moved back up 1m. 08:55 to 09:15hrs @ 3329.0m. Attempted sample #4 - tight. Note: Re-pressured heave compensator and recorrelated. 09:15 to 09:30hrs @ 3400.0m. Correlated +1m. 09:30 to 12.00hrs @ 3325.0m. Continued pretests and collected sample #3.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 31 Dec 2009

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	350	17 Dec 2009	31 Dec 2009	791.00	32.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 31 Dec 2009

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WBM Data

Cost Today US$ 2199

Mud Type	KCL/Polymer/PHPA	API FL:	4.6cc/30min	Cl:		Solids(%vol):	4%	Viscosity	66sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	93%	PV	18cp
Time:	1945	HTHP-FL:	9.6cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	33lb/100ft²
Weight:	9.44ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.25	Gels 10s	9
Temp:				PM:	0.25	pH:	9	Gels 10m	13
				PF:	0.1	PHPA:	2ppb	Fann 003	9
								Fann 006	11
								Fann 100	31
								Fann 200	41
								Fann 300	51
								Fann 600	69

Comment: Note: Costs are in AUD

Bit # 7 RR1

Wear	I	O1	D	L	B	G	O2	R
	2	2	WT	A	E	1	NO	BHA

Bitwear Comments:

Size ("):	8.50in	IADC#		**Nozzles**		**Drilled over last 24 hrs**		**Calculated over Bit Run**	
Mfr:	Baker Huhes Chistensen	WOB(avg)		No.	Size	Progress	0.0m	Cumul. Progress	47.0m
Type:	tri	RPM(avg)	60			On Bottom Hrs	0.0h	Cumul. On Btm Hrs	4.7h
Serial No.:	6076381	F.Rate	570gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	8 1/2 GT-1	SPP	2450psi			Total Revs		Cumul. Total Revs	0
Depth In	3522.0m	HSI				ROP(avg)	N/A	ROP(avg)	10.00 m/hr
Depth Out	3522.0m	TFA	0.000						

Bit Comment: RR Bit to drill out Shoe Track & build initial angle.

BHA # 8

Weight(Wet)	40.00klb	Length	180.5m	Torque(max)		D.C. (1) Ann Velocity	523fpm
Wt Below Jar(Wet)	28.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	296fpm
		Slack-Off				D.P. Ann Velocity	296fpm

BHA Run Description: Wiper Trip BHA
Jets 3 x 20

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.24m	8.50in		6076381	
Bit Sub	1.18m	6.88in	2.75in	0087	
8-1/2" String Stab	2.02m	8.13in	2.88in	10988869	
HOC	5.81m	6.75in		19443/203842	HOC & PM Sub
6 3/4" DC	9.48m	6.75in	2.88in	1190	
String Stabiliser	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.29m	6.75in	2.88in	1788	
6 3/4" DC	9.19m	6.75in	2.88in	1188	
HWDP	84.57m	5.00in	3.00in		
Jar	9.84m	6.50in		17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	23	0	406.0
Drill Water	m3	20	10	0	550.0
Pot Water	m3	20	26	0	248.0
Brine	m3	0	0	-7	22.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	42
GRN	2
OMS	15
Geoservices	3
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	9
Total	91

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2235.9bbl**
Active	715.0bbl
Mixing	
Hole	955.9bbl
Slug	
Reserve	565.0bbl
Kill	

Losses	**0.0bbl**
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Evaporation	

Equipment	Description	Mesh Size

Comments

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Printed on 03 Jan 2010

Marine

Weather on 31 Dec 2009

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	25kn	25.0deg	1003.0mbar	19C°	4.0m	25.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.4m	0.7deg	1.6deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
6.0m	280.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	218.0
2	382.0
3	147.0
4	193.0
5	295.0
6	190.0
7	179.0
8	194.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Rig S/By

Item	Unit	Used	Quantity
	M3		447
	M3		500
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

00.00 - 24.00 R/ Stby

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			Melbourne

Item	Unit	Used	Quantity
	M3		753
	M3		386
	M3		400
	t		37.2
	t		74
	t		0
	M3		0
	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4 - 01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	08.33 / 08.39	1 / 1	Schlumberger Mechanic to rig.

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 34
Rockhopper-1

01 Jan 2010

From: Michael Lanzer / Paul Leathem
To: Texas Richards

Rockhopper-1

Date:	01 Jan 2010	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	34	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$734,897
Rig	Kan Tan IV	Days from spud	32.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$25,977,764
Wtr Dpth(MSL)	74.3m	Days on well	33.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	61
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Laying out Schlumberger wireline tools from run #3.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Rig down Schlumberger. RIH with 8-1/2" BHA (wiper trip). Washed and reamed tight sections. Circulate and condition mud. POOH.		

Summary of Period 0000 to 2400 Hrs

Continued with electric wireline logs run #3:
MDT-GR-LEHQT tools.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	58 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	6 Days	Fire on helideck	
Permit To Work	17	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	12 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	66	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 01 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	E2	0000	1200	12.00	3522.0m	Continued with MDT tools run #3: 00:00 to 00:25hrs @ 3268.7m. Continued pretests. 00:25 to 00:45hrs @ 3470.0m. RIH. 00:45 to 01:50hrs @ 3424.5m. Pumped out and sample collected. 01:50 to 02:30hrs @ 3408.0m. Continued with pretests. Note: Telephone communication lost from approximately 21:00hrs to 02:00hrs. 02:30 to 02:35hrs @ 3445.0m. RIH and adjusted heave compensator. 02:35 to 03:00hrs @ 3445.0m. Correlated on depth. 03:00 to 03:20hrs. RIH to continue pretests.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							03:20 to 04:20hrs. Took 1x sample and continued with pretests. 04:20 to 05:05hrs @ 3407.5m. Pumped out. Sample #2 collected. 05:05 to 05:15hrs @ 3430.0m. Correlated, 1 m shallow. 05:15 to 05:25hrs @ 3398.0m. RIH. 05:25 to 07:30hrs @ 3380.5m. Continued with pretests. 07:30 to 08:00hrs @ 3348.0m. Attempted sample collection #3. Moved down 0.5m due to poor mobility. Moved back up 1m. 08:55 to 09:15hrs @ 3329.0m. Attempted sample #4 - tight. Note: Re-pressured heave compensator and recorrelated. 09:15 to 09:30hrs @ 3400.0m. Correlated +1m. 09:30 to 12.00hrs @ 3325.0m. Continued pretests and collected sample #3.
P17	P	E2	1200	2400	12.00	3522.0m	12.00 to 16:30hrs @ 3338.0m. Continued sample retrieval. 1st attempt tight, moved up 0.5m - tight. Move down 1m - tight but possible. Pumped out and collected sample #5 (#4 MPSR). 16:30 to 17:00hrs @ 3345.0m. Continued with sample collection - tight. Abandoned further attempts. Correlated for next station. 17:00 to 17:40hrs @ 3380.0m. Correlated up 1m on 2nd confirmation pass (+ 8.8klbs tension). 17:40 to 21:30hrs @ 3290.5m. Resumed pre tests. Collected 2 samples at 3245.0m (MPRS #5, #6). 21:30 to 23:59hrs @ 3236.0m. Continued pretests. Collected samples.

Operations For Period 0000 Hrs to 0600 Hrs on 02 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	E2	0000	0300	3.00	3522.0m	Continued with electric wireline run #3: MDT-GR-LEHQT 00:00 to 00:30hrs @ 3235.0m. Continued with pretests. Collected 2nd sample at 3235.0m (MPRS #7). 00:30 to 01:30hrs - Unable to move tools up or down with maximum pull of 9klbs surface line tension. 01:30 to 02:00hrs - Tools came free. POOH to 9-5/8" casing shoe. 02:00 to 02:30hrs - RIH. Unable to pass 3060m. Worked tools up and down in an attempt to get through tight spots. After numerous attempts, decision made to POOH with wireline tools.
P17	P	C2	0300	0430	1.50	3522.0m	POOH with wireline run #3 to surface.
P17	P	C1	0430	0600	1.50	3522.0m	(IN PROGRESS) Held PJSM. Broke down and laid out electric wireline tools from run #3.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 01 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	374	17 Dec 2009	01 Jan 2010	815.00	33.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 01 Jan 2010

WBM Data

Mud Type	KCL/Polymer/PHPA	API FL:	4.6cc/30min	Cl:		Solids(%vol):	3%	Viscosity	63sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	94%	PV	19cp
Time:	2040	HTHP-FL:	9.0cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.44ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.25	Gels 10s	7
Temp:				PM:	0.2	pH:	9	Gels 10m	10
				PF:	0.1	PHPA:	2ppb	Fann 003	7
								Fann 006	9
								Fann 100	26
								Fann 200	36
								Fann 300	44
								Fann 600	63

Comment — Note: Costs are in AUD

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Bit # 7 RR1

Wear	I	O1	D	L	B	G	O2	R
	2	2	WT	A	E	1	NO	BHA

Bitwear Comments:

Size ("):	8.50in	IADC#		**Nozzles**		**Drilled over last 24 hrs**		**Calculated over Bit Run**	
Mfr:	Baker Huhes Chistensen	WOB(avg)		No.	Size	Progress	0.0m	Cumul. Progress	47.0m
Type:	tri	RPM(avg)	60			On Bottom Hrs	0.0h	Cumul. On Btm Hrs	4.7h
Serial No.:	6076381	F.Rate	570gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	8 1/2 GT-1	SPP	2450psi			Total Revs		Cumul. Total Revs	0
Depth In	3522.0m	HSI				ROP(avg)	N/A	ROP(avg)	10.00 m/hr
Depth Out	3522.0m	TFA	0.000						

Bit Comment: RR Bit to drill out Shoe Track & build initial angle.

BHA # 8

Weight(Wet)	40.00klb	Length	180.5m	Torque(max)		D.C. (1) Ann Velocity	523fpm
Wt Below Jar(Wet)	28.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	296fpm
		Slack-Off				D.P. Ann Velocity	296fpm

BHA Run Description: Wiper Trip BHA
Jets 3 x 20

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.24m	8.50in		6076381	
Bit Sub	1.18m	6.88in	2.75in	0087	
8-1/2" String Stab	2.02m	8.13in	2.88in	10988869	
HOC	5.81m	6.75in		19443/203842	HOC & PM Sub
6 3/4" DC	9.48m	6.75in	2.88in	1190	
String Stabiliser	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.29m	6.75in	2.88in	1788	
6 3/4" DC	9.19m	6.75in	2.88in	1188	
HWDP	84.57m	5.00in	3.00in		
Jar	9.84m	6.50in		17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	7	0	399.0
Drill Water	m3	0	0	0	550.0
Pot Water	m3	30	27	0	251.0
Brine	m3	0	0	0	22.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420

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Pumps

Pump Data - Last 24 Hrs								Slow Pump Data									
2	Continental Emsco	6.50	1.14	97				2581.0	30	330	252	40	440	336	50	570	420
3	Continental Emsco	6.50	1.14	97				2581.0	30	340	252	40	430	336	50	590	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	42
GRN	2
OMS	15
Geoservices	3
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	9
Total	91

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2227.9bbl**
Active	707.0bbl
Mixing	
Hole	955.9bbl
Slug	
Reserve	565.0bbl
Kill	

Losses	**8.0bbl**
Downhole	8.0bbl
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Evaporation	

Equipment	Description	Mesh Size	Comments

Marine

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Weather on 01 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	7kn	260.0deg	1007.0mbar	13C°	2.0m	240.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.4m	0.8deg	1.7deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	250.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	196.0
2	245.0
3	188.0
4	204.0
5	221.0
6	220.0
7	196.0
8	223.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Rig S/By

Bulks

Item	Unit	Used	Quantity
	M3		440
	M3		495
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

00.00 - 24.00 R/ Stby

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		752
	M3		378
	M3		400
	t		37.2
	t		74
	t		0
	M3		0
	bbl		0

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Australian Drilling Associates Pty Ltd ADA

02 Jan 2010

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 35
Rockhopper-1

Rockhopper-1

Date:	02 Jan 2010	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	35	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$740,089
Rig	Kan Tan IV	Days from spud	33.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$26,717,853
Wtr Dpth(MSL)	74.3m	Days on well	34.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	62
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	POOH from wiper trip @ 1727m.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Continue to POOH. Rack back BHA. Rig up and RIH with electric wireline tools.		

Summary of Period 0000 to 2400 Hrs

Continued with electric wireline run #3. Experienced difficulties in moving the MDT toolstring up / down hole. POOH with wireline run #3 to surface. Broke down and laid out tools. Made up 8-1/2" BHA and RIH to 180m. Shallow tested MWD tools. Continued to RIH to 1037m. Slipped and cut 100ft of drilling line. Serviced top drive and dolly rollers. Continued to RIH to 2150m. Precautionary washed and reamed from 2150m to 3522m (TD). Cuttings and wall cake seen at the shakers. Circulated and conditioned mud as reamed into the hole.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	1	0 Days	Held abandon drill	
Emergency Drill	0	59 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	0 Days	Fire in paint locker	
Permit To Work	19	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	13 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	68	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 02 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	E2	0000	0300	3.00	3522.0m	Continued with electric wireline run #3: MDT-GR-LEHQT 00:00 to 00:30hrs @ 3235.0m. Continued with pretests. Collected 2nd sample at 3235.0m (MPRS #7). 00:30 to 01:30hrs - Unable to move tools up or down with maximum pull of 9klbs surface line tension. 01:30 to 02:00hrs - Tools came free. POOH to 9-5/8" casing shoe. 02:00 to 02:30hrs - RIH. Unable to pass 3060m. Worked tools up and down in an attempt to get through tight spots. After numerous attempts, decision made to POOH with wireline tools.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0300	0430	1.50	3522.0m	POOH with wireline run #3 to surface.
P17	P	C1	0430	0630	2.00	3522.0m	Held PJSM. Broke down and laid out electric wireline tools from run #3.
P17	P	G6	0630	0730	1.00	3522.0m	Held PJSM. Made up 8-1/2" wiper trip BHA and RIH to 180m.
P17	P	G7	0730	0800	0.50	3522.0m	Shallow tested MWD tools @ 600gpm / 850psi.
P17	P	G8	0800	0930	1.50	3522.0m	Continued to RIH from 180m to 1037m.
P17	P	G11	0930	1130	2.00	3522.0m	Slipped and cut 100ft of drill line. Serviced topdrive and dolly rollers.
P17	P	G8	1130	1330	2.00	3522.0m	Continued to RIH from 1037m to 2150m.
P17	P	F1	1330	2130	8.00	3522.0m	Precautionary washed and reamed from 2150m to TD at 3522m (550gpm / 1900psi). Volume of cuttings and wall cake observed over the shale shaker screens.
P17	P	F4	2130	2400	2.50	3522.0m	Circulated and conditioned mud at 580gpm / 2100psi. Removed 150bbl of mud from active system. Bled into active system 150bbl of new premix mud over 3x circulations.

Operations For Period 0000 Hrs to 0600 Hrs on 03 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0230	2.50	3522.0m	Continued to circulate and condition mud. Pumped low weight followed by high weight sweeps. Circulated 2x bottoms up. Removed 150 BBL of mud from active system. Bled into active system 150 BBL of new premix mud over 3x circulations. Note: 13% maximum gas recorded during reaming and circulating operations with a continuous 4-9% Gas when reaming below 3050 m.
P17	P	G8	0230	0530	3.00	3522.0m	Flow checked and pumped Slug. POOH on elevators from 3522m to 1964m. Shoe Depth. Hole good with minimum hole drag on the trip out.
P17	P	G8	0530	0600	0.50	3522.0m	(IN PROGRESS) Flow checked. Continued to POOH in casing F/1964 m to 180 m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 02 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	398	17 Dec 2009	02 Jan 2010	839.00	34.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 02 Jan 2010

WBM Data

Cost Today US$ 6490

Mud TypeKCL/Polymer/PHPA	API FL: 4.2cc/30min	Cl:		Solids(%vol): 3%	Viscosity	61sec/qt
Sample-From: pit 2	Filter-Cake: 1/32nd"	K+C*1000: 6%		H2O: 94%	PV	18cp
Time: 2300	HTHP-FL: 8.8cc/30min	Hard/Ca: 160mg/l		Oil(%):	YP	25lb/100ft²
Weight: 9.35ppg	HTHP-cake: 2/32nd"	MBT: 7.5		Sand: .2	Gels 10s	7
Temp:		PM: 0.2		pH: 9.5	Gels 10m	11
		PF: 0.2		PHPA: 2ppb	Fann 003	8
					Fann 006	9
					Fann 100	25
					Fann 200	34
					Fann 300	43
					Fann 600	61

Comment — Note: Costs are in AUD

Bit # 7 RR1

Wear	I	O1	D	L	B	G	O2	R
	2	2	WT	A	E	1	NO	BHA

Bitwear Comments:

Size ("): 8.50in	IADC#	Nozzles	Drilled over last 24 hrs	Calculated over Bit Run

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Mfr:	Baker Huhes Chistensen	WOB(avg)		No. Size	Progress	0.0m	Cumul. Progress	47.0m
Type:	tri	RPM(avg)	60		On Bottom Hrs	0.0h	Cumul. On Btm Hrs	4.7h
Serial No.:	6076381	F.Rate	570gpm		IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	8 1/2 GT-1	SPP	2450psi		Total Revs		Cumul. Total Revs	0
Depth In	3522.0m	HSI			ROP(avg)	N/A	ROP(avg)	10.00 m/hr
Depth Out	3522.0m	TFA	0.000					
Bit Comment		RR Bit to drill out Shoe Track & build initial angle.						

BHA # 8

Weight(Wet)	40.00klb	Length	180.5m	Torque(max)		D.C. (1) Ann Velocity	523fpm
Wt Below Jar(Wet)	28.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	296fpm
		Slack-Off				D.P. Ann Velocity	296fpm
BHA Run Description		Wiper Trip BHA Jets 3 x 20					
BHA Run Comment							

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.24m	8.50in		6076381	
Bit Sub	1.18m	6.88in	2.75in	0087	
8-1/2" String Stab	2.02m	8.13in	2.88in	10988869	
HOC	5.81m	6.75in		19443/203842	HOC & PM Sub
6 3/4" DC	9.48m	6.75in	2.88in	1190	
String Stabiliser	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.29m	6.75in	2.88in	1788	
6 3/4" DC	9.19m	6.75in	2.88in	1188	
HWDP	84.57m	5.00in	3.00in		
Jar	9.84m	6.50in		17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	14	0	385.0
Drill Water	m3	0	11	0	539.0
Pot Water	m3	51	26	0	276.0
Brine	m3	0	0	0	22.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	64	2488	600
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97	56	2488	600

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	42
GRN	2
OMS	15
Geoservices	3
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	9
Total	91

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2151.5bbl**	**Losses**	**79.5bbl**
Active	619.0bbl	Downhole	
Mixing		Surf+ Equip	69.5bbl
Hole	853.5bbl	Dumped	
Slug		De-Gasser	
Reserve	679.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Evaporation	10.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 02 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	23kn	230.0deg	1013.0mbar	11C°	4.0m	230.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	1.1deg	3.2deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
7.0m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	201.0
2	233.0
3	178.0
4	188.0
5	206.0
6	218.0
7	188.0
8	229.0

Vessel Name	**Arrived (Date/Time)**	**Departed (Date/Time)**	**Status**
Far Scimitar			Rig S/By

Bulks

Item	Unit	Used	Quantity
	M3		432
	M3		490
	M3		482

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				Item	Unit	Used	Quantity
					t		0
					t		0
					t		0
					M3		0
					bbl		0

0000 - 0820 Rig St/by.
0820 -0920 Backload deck cargo
0920 - 2400 Rig St/By.

				Item	Unit	Used	Quantity
Far Fosna	22.30		St/by KT4.		M3		735
					M3		370
					M3		560
					t		37.2
					t		74
					t		0
					M3		0
					bbl		0

0001 - 1050 Melbourne
1050 - 22.30 hrs to Kan Tan 4.
22.30 - 24.00 St/by KT4.

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 36
Rockhopper-1

03 Jan 2010

From: Michael Lanzer / Paul Leathem
To: Texas Richards

Rockhopper-1

Date:	03 Jan 2010	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	36	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Dennis Archer

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$729,646
Rig	Kan Tan IV	Days from spud	34.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$27,447,499
Wtr Dpth(MSL)	74.3m	Days on well	35.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	63
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Picking up wireline tools for suite 1, run #5: VSI-GR.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Continue to pick up amd rig up wireline tools for Suite #1, run #5: VSI-GR. RIH with VSI-GR and log the well.		

Summary of Period 0000 to 2400 Hrs

Continued to circulate and condition mud. Pumped low weight followed by high weight sweeps to assist hole cleaning. Circulated 2x bottoms up. Removed 150bbl of mud from active system. Bled into active system 150bbl of new premix mud over 3x circulations with even MW of 9.4 ppg. Maximum gas level recorded during reaming and circulating operations 13%. POOH to 9-5/8" casing shoe @ 1965m. Hole good with minimum hole drag. Flow checked. Continued to POOH to 180m. Flow checked prior to pulling BHA through the BOP stack. POOH BHA to surface. No balling of either bit or stabs observed at surface. Dull bit grade. No change 2-2-WT-A-E-1-NO-BHA . Held PJSM. Rigged up Schlumberger wireline tools suite #1, run #4: MDT-GR. Calibrated tools and RIH. Conducted wireline operations with pretests and samples as per program. Seepage losses to open formations 24bbl.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	60 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	1 Day	Fire in paint locker	
Permit To Work	18	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	9	0 Days	Safety Meetings	
Safety Meeting	2	0 Days	General safety meetings	
STOP Card	67	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 03 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0230	2.50	3522.0m	Continued to circulate and condition mud. Pumped low weight followed by high weight sweeps. Circulated 2x bottoms up. Removed 150bbl of mud from active system. Bled into active system 150bbl of new premix mud over 3x circulations. Note: 13% maximum gas recorded during reaming and circulating operations with a

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							continuous 4-9% gas when reaming below 3050m.
P17	P	G8	0230	0530	3.00	3522.0m	Flow checked and pumped slug. POOH on elevators from 3522m to 1965m (shoe depth). Hole good with minimum hole drag on the trip out.
P17	P	G8	0530	0900	3.50	3522.0m	Flow checked. Continued to POOH in casing from 1965m to 180m.
P17	P	G6	0900	1000	1.00	3522.0m	Flow checked prior to pulling BHA through the BOPs. POOH BHA to surface. No balling of either bit or stabs observed at surface. Dull bit grade - no change 2-2-WT-A-E-1-NO-BHA.
P17	P	G1	1000	1100	1.00	3522.0m	Held PJSM. Rigged up Schlumberger wireline.
P17	P	E2	1100	1200	1.00	3522.0m	Made up MDT-GR wireline tools. Suite #1, run #4. RIH and calibrate. 10:10 to 10:20hrs JSA 10:20 to 11:15hrs Picked up sheaves 11:15 to 11:45hrs Picked up tool string 11:40 to 11:55hrs Surface check tools 11:55 to 11:58hrs Tools set @ zero reference depth
P17	P	E2	1200	2400	12.00	3522.0m	RIH with MDT tools. 11:58 to 12:50hrs RIH to 150m for compensation. Rearranged compensator line - Wireline sheave and configuration of lines. 12:50 to 15:10hrs @ 150.0m. RIH. sticky from 3020-3060m. 15:10 to 15:48hrs @ 3250.0m. Maximum depth. Correlated -2m. 2nd pass +0.5m. Still difficult to correlate with sticky hole. Moved to 1st pretest point. 15:48 to 18:50hrs @ 3202.0m. Pretested and sampled. Pumped out and collected Sample #1 and #2 (run #4). Indication of software problem with error messages on bottle open and close. Pressure ok. Took 3rd sample as precaution (72 litres pumped). 18:50 to 19:05hrs @ 3260.0m. Re-pressured up heave compensator to line pull 22klbs on MD. Correlated - 0.8m shallow. 19:05 to 19:55hrs @ 3201.0m. Continued with pretests, pumped out to check hydrocarbons signature against previous samples. 19:55 to 21:30hrs @ 3200.0m. Continued pretests and collected samples. 21:30 to 23:35hrs @ 3146.5m. Continued pretests and collected samples when mobility made it possible. Pumped out at 3137.0m with Quicksilver. Sample not collected due time taken for reservoir to clean up. 23:35 to 23:59hrs @ 3137.5 Continued pretests. Note: Total Drlg Fluid seepage losses to formation = 24 BBL over 24 Hrs period.

Operations For Period 0000 Hrs to 0600 Hrs on 04 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	E2	0000	0330	3.50	3522.0m	Continued with wireline suite #1, run #4. 00:00 to 00:10hrs @ 3,137.5m. Re-pressured heave compensator to 22klbs. 00:10 to 00:20hrs @ 3,165.0m. Correlated - on depth. 00:20 to 02:45hrs @ 3,108.0m. Continued with pretests. 02:45 to 02:55hrs @ 2,605.0m. Correlated - on depth. 02:55 to 03:20 Hrs @ 2,549.2m Continued pretests.
P17	P	C2	0330	0430	1.00	3522.0m	03:20 to 03:40hrs @ 2,549.2m. POOH - end of run. 03:40 to 04:25hrs @ 1,965.0m. Continued to POOH to 9-5/8" casing shoe. 04:25 to 04:40hrs @ 160.0m. Decompensate and continued to POOH. 04:40 to 04:40hrs @ 0.0m. Wireline tool (MDT-GR) at surface.
P17	P	C1	0430	0530	1.00	3522.0m	04:40 to 05:30hrs @ 0.0m. Laid out wireline tools (MDT-GR).
P17	P	C1	0530	0600	0.50	3522.0m	Picked up and made up wireline tools suite #, run #5: VSI-GR.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 03 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	422	17 Dec 2009	03 Jan 2010	863.00	35.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 03 Jan 2010

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WBM Data

Cost Today

Mud Type	KCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:		Solids(%vol):	3%	Viscosity	60sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	94%	PV	19cp
Time:	2140	HTHP-FL:	8.9cc/30min	Hard/Ca:	200mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.25	Gels 10s	7
Temp:				PM:	0.2	pH:	9	Gels 10m	10
				PF:	0.25	PHPA:	2ppb	Fann 003	7
								Fann 006	9
								Fann 100	26
								Fann 200	36
								Fann 300	44
								Fann 600	63

Comment — Note: Costs are in AUD

Bit # 7 RR1

Wear	I	O1	D	L	B	G	O2	R
	2	2	WT	A	E	1	NO	BHA

Bitwear Comments:

Size ("):	8.50in	IADC#		**Nozzles**		**Drilled over last 24 hrs**		**Calculated over Bit Run**	
Mfr:	Baker Huhes Chistensen	WOB(avg)		No.	Size	Progress	0.0m	Cumul. Progress	47.0m
Type:	tri	RPM(avg)	60			On Bottom Hrs	0.0h	Cumul. On Btm Hrs	4.7h
Serial No.:	6076381	F.Rate	570gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	8 1/2 GT-1	SPP	2450psi			Total Revs		Cumul. Total Revs	0
Depth In	3522.0m	HSI				ROP(avg)	N/A	ROP(avg)	10.00 m/hr
Depth Out	3522.0m	TFA	0.000						

Bit Comment — RR Bit to drill out Shoe Track & build initial angle.

BHA # 8

Weight(Wet)	40.00klb	Length	180.5m	Torque(max)		D.C. (1) Ann Velocity	523fpm
Wt Below Jar(Wet)	28.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	296fpm
		Slack-Off				D.P. Ann Velocity	296fpm

BHA Run Description — Wiper Trip BHA
Jets 3 x 20

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.24m	8.50in		6076381	
Bit Sub	1.18m	6.88in	2.75in	0087	
8-1/2" String Stab	2.02m	8.13in	2.88in	10988869	
HOC	5.81m	6.75in		19443/203842	HOC & PM Sub
6 3/4" DC	9.48m	6.75in	2.88in	1190	
String Stabiliser	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.29m	6.75in	2.88in	1788	
6 3/4" DC	9.19m	6.75in	2.88in	1188	
HWDP	84.57m	5.00in	3.00in		
Jar	9.84m	6.50in		17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	0	0	385.0
Drill Water	m3	0	0	0	539.0
Pot Water	m3	0	0	0	276.0
Brine	m3	0	0	0	22.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	64	2488	600
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97	56	2488	600

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	42
GRN	2
OMS	15
Geoservices	3
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	9
Total	91

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2275.9bbl**
Active	660.0bbl
Mixing	
Hole	955.9bbl
Slug	
Reserve	660.0bbl
Kill	

Losses	**43.6bbl**
Downhole	
Surf+ Equip	38.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge Evaporation	5.6bbl

Equipment	Description	Mesh Size	Comments

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Printed on 04 Jan 2010

Marine

Weather on 03 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	15kn	230.0deg	1018.0mbar	12C°	2.0m	230.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	1.5deg	1.6deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
5.0m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	192.0
2	233.0
3	178.0
4	196.0
5	218.0
6	222.0
7	197.0
8	213.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Melbourne

Item	Unit	Used	Quantity
	M3		412
	M3		485
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

0000 - 1120 Running S/By
1120 -1140 Backload deck cargo
1140- 2330 Steam into Melbourne
2330 - 2400 Standby at Melbourne

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	22.30		St/by KT4.

Item	Unit	Used	Quantity
	M3		723
	M3		362
	M3		560
	t		37.2
	t		74
	t		0
	M3		0
	bbl		0

0001 - 0430 r/stby to wx
0430 - 0540 s/s rig cargo ops
0540 - 2400 r/stby to wx

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 37
Rockhopper-1

04 Jan 2010

From: Michael Lanzer / Paul Leathem
To: Texas Richards

Rockhopper-1

Date:	04 Jan 2010	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	37	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Larissa Hansen

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$744,842
Rig	Kan Tan IV	Days from spud	35.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$28,192,341
Wtr Dpth(MSL)	74.3m	Days on well	36.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	64
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Continue with wireline suite #1, run #6: MSCT-GR. Collection of sidewall cores.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Continue with collection of sidewall cores (31 cores in total)		

Summary of Period 0000 to 2400 Hrs

Continued with wireline suite #1, Run #4. Correlated and pretested. POOH - end of run.
Laid out wireline tools (MDT-GR). Picked up wireline tools suite #1, run #5: VSI-GR. Set zero depth @ tool and lowered seismic source into water. Commenced mammal watch. No mammals sighted. RIH and soft started cluster gun. Continued RIH. Test shots fired at 1500m and 1700m. Continued to RIH. Tool momentarily held up at 2176.0m. Fired open hole QC shot at 2020.0m. Correlated to 9-5/8" casing shoe. Continued to RIH. At 2445.0m held up and attempted to pass the tight spot using alternate logging speeds - no success. POOH and added 535lbs of additional weight to bottom of VSI-GR Tool. RIH. QC shot fired at 250m. Correlated @ 9-5/8" casing shoe. Continued to RIH. VSI-GR tool held up between 2750m - 2780m. Tried to pass - no success. Decision made to abandon VSP and run a checkshot survey from the deepest point possible. Commenced logging up with VSI-GR wireline tool. Recorded checkshots and GR from 2555m to 280m. De-compensated and powered down tools. POOH. Laid out Wireline tool VSI-GR and seismic source.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	61 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	2 Days	Fire in paint locker	
Permit To Work	18	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	9	1 Day	Safety meetings	
Safety Meeting	2	1 Day	General safety meetings	
STOP Card	61	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 04 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	E2	0000	0330	3.50	3522.0m	Continued with wireline suite #1, run #4. 00:00 to 00:10hrs @ 3,137.5m. Re-pressured heave compensator to 22klbs.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							00:10 to 00:20hrs @ 3,165.0m. Correlated - on depth. 00:20 to 02:45hrs @ 3,108.0m. Continued with pretests. 02:45 to 02:55hrs @ 2,605.0m. Correlated - on depth. 02:55 to 03:20 Hrs @ 2,549.2m Continued pretests.
P17	P	C2	0330	0430	1.00	3522.0m	03:20 to 03:40hrs @ 2,549.2m. POOH - end of run. 03:40 to 04:25hrs @ 1,965.0m. Continued to POOH to 9-5/8" casing shoe. 04:25 to 04:40hrs @ 160.0m. De compensated and continued to POOH. 04:40 to 04:40hrs @ 0.0m. Wireline tool (MDT-GR) at surface.
P17	P	C1	0430	0530	1.00	3522.0m	Laid out wireline tools (MDT-GR).
P17	P	C1	0530	0730	2.00	3522.0m	Picked up and made up electric wireline tools suite #1, run #5: VSI-GR. 05:30 to 07:15hrs Picked up tool string VSI-GR, zeroed tool, lowered seismic source into water and commenced mammal watch.
P17	P	C2	0730	1400	6.50	3522.0m	RIH to 150m and set compensator (22klbs). 07:45 to 08:45hrs @ 1160.0m. Continued to RIH (no mammals sighted) and soft started cluster gun. 08:45 to 10:05hrs @ 1700.0m. Continued to RIH, test shots fired at 1500m and 1700m. Retracted and re-anchored caliper arms and re-set software. 10:05 to 11:06hrs @ 2300.0m. Continued to RIH and tool momentarily held up at 2176.0m. Fired open hole QC shot at 2020.0m. 11:06 to 11:27hrs @ 2300.0m. Correlated @ 9-5/8" casing shoe (1965m). Found @ -1.7 m deep. 11:27 to 11:42hrs @ 1965.0m. Continued to RIH. 11:42 to 12:00hrs @ 2260.0m. Correlated to 9-5/8" casing shoe (1965 m) - on depth. 12:00 to 12:22hrs @ 1965.0m. Continued to RIH. 12:22 to 13:16hrs @ 2445.0m. Held up and attempted to pass the point with wireline toolstring using alternate logging speeds - no success. 13:16 to 13:41hrs @ 2445.0m. POOH to add additional weight to bottom of VSI-GR tool. 13:41 to 13:52hrs @ 150.0m. De-compensated and continued to POOH. 13:52 to 14:00hrs Wireline tool VSI-GR on surface
P17	P	G2	1400	1430	0.50	3522.0m	Laid out toolstring run #5: VSI-GR.
P17	P	C1	1430	1530	1.00	3522.0m	Added additional 535lbs to bottom of VSI-GR tool. Picked up VSI-GR tool string, zeroed tool.
P17	P	C2	1530	2230	7.00	3522.0m	RIH to 150m and pressured up heave compensator to 22klbs. 15:40 to 16:50hrs @ 150.0m. RIH, QC shot fired at 250m. 16:50 to 17:01hrs @ 2150.0m. Correlated to 9-5/8" casing shoe (1965m) and found @ 2m deep. 17:01 to 17:06hrs @ 1965.0m. Continued to RIH. 17:06 to 17:13hrs @ 2100.0m. Correlated to 9-5/8" casing shoe (1965 m) - on depth. 17:13 to 17:42hrs @ 2040.0m. Continued to RIH. QC shot fired at 2070m. Tool momentarily held up at 2480m. 17:42 to 18:55hrs @ 2480.0m. Continued to RIH. VSI-GR tool held up between 2750m - 2780m. Alternated down hole speeds of 2000-7000 ft/hr in an attempt to pass through - no success. Pulled tool up to 2500 m to regain tension on sondes (1000-3000lbs overpull). 18:55 to 19:20hrs @ 2500.0m. Decision to abandon VSP and run a checkshot survey (3 shots / station) from the deepest point possible, due to the inability to pass the interval 2750m to 2780m with VSI-GR toolstring. 19:20 to 20:30hrs @ 2555.0m. Commenced logging up (deepest point possible) with VSI-GR wireline tool. Recorded checkshot and GR up-log, 2070m re-survey. 20:30 to 22:30hrs @ 1965.0m. Continued to log up through casing (inside 9-5/8" shoe).
P17	P	C2	2230	2300	0.50	3522.0m	Commenced POOH - end of survey (280m last shot fired). 22:35 to 22:50hrs @ 150.0m. De-compensated, powered down tools and continued to POOH. 22:50 to 22:50hrs @ 0.0m. Wireline tool VSI-GR at surface.
P17	P	C1	2300	2400	1.00	3522.0m	Laid out wireline tools VSI-GR and seismic source

Operations For Period 0000 Hrs to 0600 Hrs on 05 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C1	0000	0230	2.50	3522.0m	00:00 to 00:10hrs @ 0.0m. JSA. 00:10 to 00:45hrs @ 0.0m. Rigged up wireline tool MSCT-GR. 02:00 to 02:20hrs @ 0.0m. Zeroed tools and performed surface checks on wireline tool MSCT-GR.
P17	P	C2	0230	0400	1.50	3522.0m	02:20 to 02:30hrs @ 0.0m. RIH to 150m. Pressured up heave compensator to 22klbs. 02:30 to 03:50hrs @ 150.0m. Continued to RIH. Equalised pressure at 1500m and 3000m. 03:50 to 04:00hrs @ 3360.0m. Correlated - 2 m deep.
P17	P	E2	0400	0600	2.00	3522.0m	04:00 to 04:10hrs @ 3,360.0m. Correlated - on depth. 04:10 to 04:30hrs @ 3323.1m. Commenced coring - 3323.1m (motor stalled), 3325.0m (fast core).

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							04:30 to 04:40hrs @ 3333.2m. Continued coring - 3333.2m (motor stalled), 3336.1m (fast core). 04:40 to 05:05hrs @ 3341.5m. Continued coring - 3341.5m (motor stalled), 3343.8 m (fast core), 3347.7 m (motor stalled). 05:05 to 05:17hrs @ 3450.0m. Correlated - 2m deep. 05:17 to 05:30hrs @ 3450.0m. Correlated - on depth.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 04 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	446	17 Dec 2009	04 Jan 2010	887.00	36.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 04 Jan 2010

WBM Data

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:		Solids(%vol):	3%
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	94%
Time:	2100	HTHP-FL:	8.9cc/30min	Hard/Ca:	160mg/l	Oil(%):	
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.25
Temp:				PM:	0.2	pH:	9
				PF:	0.15	PHPA:	2ppb

Comment: Note: Costs are in AUD

Cost Today

Viscosity	59sec/qt
PV	19cp
YP	22lb/100ft²
Gels 10s	7
Gels 10m	10
Fann 003	6
Fann 006	7
Fann 100	24
Fann 200	33
Fann 300	41
Fann 600	60

Bit # 7 RR1

Wear	I	O1	D	L	B	G	O2	R
	2	2	WT	A	E	1	NO	BHA

Bitwear Comments:

Size ("):	8.50in	IADC#		**Nozzles**		**Drilled over last 24 hrs**		**Calculated over Bit Run**	
Mfr:	Baker Huhes Chistensen	WOB(avg)		No.	Size	Progress	0.0m	Cumul. Progress	47.0m
Type:	tri	RPM(avg)	60			On Bottom Hrs	0.0h	Cumul. On Btm Hrs	4.7h
Serial No.:	6076381	F.Rate	570gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	8 1/2 GT-1	SPP	2450psi			Total Revs		Cumul. Total Revs	0
Depth In	3522.0m	HSI				ROP(avg)	N/A	ROP(avg)	10.00 m/hr
Depth Out	3522.0m	TFA	0.000						

Bit Comment: RR Bit to drill out Shoe Track & build initial angle.

BHA # 8

Weight(Wet)	40.00klb	Length	180.5m	Torque(max)		D.C. (1) Ann Velocity	523fpm
Wt Below Jar(Wet)	28.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	296fpm
		Slack-Off				D.P. Ann Velocity	296fpm

BHA Run Description: Wiper Trip BHA
Jets 3 x 20

BHA Run Comment:

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Equipment	Length	OD	ID	Serial #	Comment
Bit	0.24m	8.50in		6076381	
Bit Sub	1.18m	6.88in	2.75in	0087	
8-1/2" String Stab	2.02m	8.13in	2.88in	10988869	
HOC	5.81m	6.75in		19443/203842	HOC & PM Sub
6 3/4" DC	9.48m	6.75in	2.88in	1190	
String Stabiliser	1.70m	8.50in	2.88in	700802	
6 3/4" DC	9.29m	6.75in	2.88in	1788	
6 3/4" DC	9.19m	6.75in	2.88in	1188	
HWDP	84.57m	5.00in	3.00in		
Jar	9.84m	6.50in		17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	14	1	372.0
Drill Water	m3	30	5	11	575.0
Pot Water	m3	0	28	-6	242.0
Brine	m3	0	0	0	22.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97	64	2488	600
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97	56	2488	600

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30	300	252	40	450	336	50	580	420
2581.0	30	330	252	40	440	336	50	570	420
2581.0	30	340	252	40	430	336	50	590	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	39
GRN	2
OMS	19
Geoservices	3

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Personnel On Board

Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
Total	91

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2275.9bbl**	**Losses**	**9.0bbl**
Active	660.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	955.9bbl	Dumped	
Slug		De-Gasser	
Reserve	660.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Sepage from pits	9.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 04 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	6kn	315.0deg	1014.0mbar	15C°	1.0m	315.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.4deg	1.4deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	177.0
2	235.0
3	176.0
4	199.0
5	224.0
6	220.0
7	188.0
8	204.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		761
	M3		480
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

0000 - 1120 Running S/By
1120 -1140 Backload deck cargo
1140- 2330 Steam into Melbourne
2330 - 2400 Standby at Melbourne

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	22.30		St/by KT4.

Bulks

Item	Unit	Used	Quantity
	M3		714
	M3		354
	M3		560
	t		37.2
	t		74
	t		0
	M3		0
	bbl		0

0001 - 1920 r/stby
1920 - 2035 p/s cargo ops
2035 - 2400 r/stby

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment

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Helicopter Movement				
KT4-01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	09.03 / 09.15	12 / 12	Crew Change

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Printed on 04 Jan 2010

05 Jan 2010

From: Michael Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 38
Rockhopper-1

Rockhopper-1

Date:	05 Jan 2010	**Well Site Representative:**	Michael Lanzer	**OIM:**	Stig Sundgaard
Report Number:	38	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Larissa Hansen

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$930,886
Rig	Kan Tan IV	Days from spud	36.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$29,533,438
Wtr Dpth(MSL)	74.3m	Days on well	37.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	65
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test	30 Dec 2009				

Current Op @ 0600	Laying out tool from suite #1, run #7: FMI-DSI-GR.
Planned Op	Pick up 2-7/8" tubing and RIH on 5" DP. Circulate and condition mud. Mix and pump 4x formation isolation balanced cement plugs and 1x kick-off cement plug. POOH and lay down cement stinger.

Summary of Period 0000 to 2400 Hrs

Continued and completed wireline suite #1, run #6 MSCT-GR. Run completed without complications. 32 mechanical side-wall cores attempted and 32 recovered. Core condition variable. Conducted suite #1, run #7 with wireline tool FMI-DSI-GR. During FMI-DSI tool rig-up worn cable was noticed. Cut 200m of cable and re-terminated before completing the tool rig-up. FMI completed and switched off at 2800m (end of run).

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	62 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days	Fire in paint locker	
Permit To Work	20	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	2	2 Days	General safety meetings	
Safety Meeting	8	0 Days	Safety Meetings	
STOP Card	42	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 05 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C1	0000	0230	2.50	3522.0m	00:00 to 00:10hrs @ 0.0m Held JSA. 00:10 to 00:45hrs @ 0.0m. Rigged up electric wireline tool: MSCT-GR. 02:00 to 02:20hrs @ 0.0m. Zeroed tools and performed surface checks on wireline tool MSCT-GR.
P17	P	C2	0230	0400	1.50	3522.0m	02:20 to 02:30hrs @ 0.0m. RIH to 150m. Pressured up heave compensator to 22klbs. 02:30 to 03:50hrs @ 150.0m. Continued to RIH. Equalised pressure at 1500m and

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							3000m. 03:50 to 04:00hrs @ 3360.0m. Correlated on depth - 2m deep.
P17	P	E2	0400	1400	10.00	3522.0m	04:00 to 14:00hrs Cut x32 rotary sidewall cores between 2832m and 3424.7m with gamma correlation passes as necessary.
P17	P	C2	1400	1530	1.50	3522.0m	14:04 to 15:19hrs @ 2832.0m. Commenced to POOH. 15:19 to 15:19hrs Wireline tool MSCT-GR on surface. 15:19 to 15:46hrs Laid out electric wireline tools run#6 MSCT-GR.
P17	P	C1	1530	1830	3.00	3522.0m	Conducted electric wireline run #7: FMI-DSI-GR. 15:36 to 15:46hrs Held JSA. 15:46 to 16:30hrs Rigged up electric wireline tool string: FMI-DSI-GR. 16:30 to 17:50hrs Cut off 100m of cable - Outside armour raised with wear. 17:50 to 18:03hrs Continued to rig up wireline tools run #7: FMI-DSI-GR 18:03 to 18:17hrs Set the tools @ zero and performed surface checks.
P17	P	C2	1830	2000	1.50	3522.0m	Run #7 18:17 to 18:22hrs RIH to 150m. Pressured up heave compensator to 22klbs tension on MD. 18:22 to 18:55hrs @ 150.0m. Continued to RIH. 18:55 to 18:57hrs @ 1695.0m. Checked caliper. 18:57 to 19:45hrs @ 1695.0m. Continued to RIH.
P17	P	E2	2000	2400	4.00	3522.0m	19:45 to 20:15hrs Tools @ 3440.0m. Logged up repeat section - on depth. 20:15 to 20:35hrs @ 3280.0m. RIH for main pass. 20:35 to 23:59hrs @ 3517.0m. Logged up main pass - FMI powered down at 2800m (end of run). Pressured up heave compensator to add 3klbs (slacking off).

Operations For Period 0000 Hrs to 0600 Hrs on 06 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	E2	0000	0500	5.00	3522.0m	00:00 to 04:50hrs @ 2800.0m. Continued to log up for main pass (run #7) with DSI-GR components.
P17	P	C2	0500	0600	1.00	3522.0m	04:50 to 05:05hrs @ 615.0m. Commenced POOH. 05:05 to 05:20hrs @ 150.0m. Continued POOH - closed compensator and powered down tools. 05:20 to 05:20hrs Wireline tools FMI-DSI-GR at surface. 05:20 to 06:00hrs Laid out wireline tool FMI-DSI-GR (completion of logging program).

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 05 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	470	17 Dec 2009	05 Jan 2010	911.00	37.958	3522.0m

General Comments

00:00 TO 24:00 Hrs ON 05 Jan 2010

WBM Data

Mud TypeKCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:		Solids(%vol):	3%	
Sample-From: pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	94%	
Time: 2300	HTHP-FL:	9.8cc/30min	Hard/Ca:	160mg/l	Oil(%):		
Weight: 9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.20	
Temp:			PM:	0.2	pH:	9	
			PF:	0.2	PHPA:	2ppb	

Comment — Note: Costs are in AUD

Cost Today

Viscosity	61sec/qt
PV	17cp
YP	30lb/100ft²
Gels 10s	7
Gels 10m	11
Fann 003	8
Fann 006	9
Fann 100	26
Fann 200	36
Fann 300	47
Fann 600	64

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	12	0	360.0
Drill Water	m3	41	0	0	616.0
Pot Water	m3	0	28	0	214.0
Brine	m3	0	0	0	22.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30		252	40		336	50		420
2581.0	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	39
GRN	2
OMS	19
Geoservices	3
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
Total	91

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

Available	2275.9bbl
Active	660.0bbl
Mixing	
Hole	955.9bbl
Slug	
Reserve	660.0bbl
Kill	

Losses	0.0bbl
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	
Sepage	
from pits	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 05 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	15kn	230.0deg	1015.0mbar	13C°	2.0m	230.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.6deg	1.2deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	235.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	184.0
2	232.0
3	169.0
4	187.0
5	225.0
6	211.0
7	188.0
8	215.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			On Route to KT4

Bulks

Item	Unit	Used	Quantity
	M3		759
	M3		475
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

0000 - 2330 Standby at Melbourne
2330 -2400 On Passage to KT4

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	22.30		St/by KT4.

Bulks

Item	Unit	Used	Quantity
	M3		708
	M3		346
	M3		560
	t		37.2
	t		74
	t		0
	M3		0
	bbl		0

0001 - 1105 r/stby
1105 - 1200 s/s cargo ops
1200 - 2400 r/stby

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 39
Rockhopper-1

06 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

Rockhopper-1

Date:	06 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	39	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Larissa Hansen

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$638,628
Rig	Kan Tan IV	Days from spud	37.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$31,327,185
Wtr Dpth(MSL)	74.3m	Days on well	38.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	66
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Circulating at 2482m while WOC.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Tag cement plug #2. Set kick off cement plug at 2068m - 1968m. POOH and make up 8½" kick off BHA and RIH.		

Summary of Period 0000 to 2400 Hrs

Schlumberger wireline completed log run #7 with DSI-GR components. POOH and laid out tools. Rigged down Schlumberger. Made up 269m of 2-7/8" cement stinger and RIH to 1932m on 5" DP. Rig tested ESDS. Serviced TDS and dolly rollers. RIH with cement stinger to 3493m. Washed from 3493m to 3510m. Circulated until gas content of mud reduced from 16.8% to 1.5%. Pumped 12bbl Hi Vis pill and spotted on bottom. POOH to 3465 m, made up cement head and spotted 38bbl 15.8ppg cement plug #1A from 3460m to 3310m. POOH to 3310m. Made up cement head and spotted 38bbl 15.8ppg cement plug #1B from 3300m to 3160m. POOH slowly to 3156m. Made up cement head and circulated while Halliburton flushed and cleaned cement unit.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	63 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	4 Days	Fire in paint locker	
Permit To Work	20	1 Day	Permits administered	
Pre-tour Meeting	2	1 Day	Shift change meetings	
Safety Meeting	2	3 Days	General safety meetings	
Safety Meeting	8	1 Day	Safety Meetings	
STOP Card	42	1 Day	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 06 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	E2	0000	0500	5.00	3522.0m	00:00 to 04:50hrs @ 2800.0m. Continued to log up for main pass (run #7) with DSI-GR components.
P17	P	C2	0500	0630	1.50	3522.0m	04:50 to 05:05hrs @ 615.0m. Commenced POOH. 05:05 to 05:20hrs @ 150.0m. Continued POOH - closed compensator and powered down tools. 05:20 to 05:20hrs Wireline tools FMI-DSI-GR at surface.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							05:20 to 06:00hrs Laid out wireline tool FMI-DSI-GR (completion of logging program). 06:00 to 06:30 Rigged down Schlumberger from Drill Floor
P21	P	G2	0630	0700	0.50	3522.0m	Rigged up 2 7/8" handling equipment.
P21	P	G2	0700	0830	1.50	3522.0m	Made up 169m of 2 7/8" tubing cement stinger in rotary.
P21	P	G2	0830	0900	0.50	3522.0m	Rigged up 5" DP handling equipment
P21	P	G2	0900	1200	3.00	3522.0m	RIH 2 7/8" cement stinger on 5" DP from 169m to 1932m.
P21	P	G23	1200	1230	0.50	3522.0m	Tested rig ESDS.
P21	P	G11	1230	1330	1.00	3522.0m	Serviced TDS and dolly rollers
P21	P	G8	1330	1700	3.50	3522.0m	RIH from 1932m to 3493m.
P21	P	F4	1700	1900	2.00	3522.0m	Washed in with cement stinger from 3493m to 3510m. Circulated mud until gas content at 1.5%. Maximum gas level at bottoms up 16.8%.
P21	P	F3	1900	1930	0.50	3522.0m	Pumped 12bbl Hi Vis pill and displaced with 205bbl of mud to spot on bottom.
P21	P	G1	1930	2000	0.50	3522.0m	Pulled back x2 stands from 3510m to 3465m. Rigged up cement head and surface lines to cement unit and positioned stinger at 3460m. Halliburton pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi for5 mins - ok.
P21	P	F3	2000	2100	1.00	3522.0m	Halliburton mixed and pumped 38bbl of 15.8ppg cement slurry #1A (Used: 184 sxs of class G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Halliburton displaced cement slurry with 3.5bbl of fresh water followed with 183bbl of 9.4ppg mud. Plug depth 3460m to 3310m.
P21	P	G8	2100	2200	1.00	3522.0m	Rigged down surface lines. Removed cement head and POOH slowly from 3460m to 3310m. Made up cement head and surface lines to cement unit.
P21	P	F3	2200	2300	1.00	3522.0m	Halliburton pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi. Halliburton mixed and pumped 38bbl of 15.8 ppg cement slurry #1B (Used: 184 sxs of class G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11gal/sx). Halliburton displaced cement slurry with 3.5bbl of fresh water followed with 170bbl of 9.4ppg mud. Plug depth 3300m to 3160m.
P21	P	G8	2300	2330	0.50	3522.0m	Rigged down surface lines. Removed cement head and POOH slowly from 3310m to 3156m. Made up cement head and surface lines.
P21	P	F4	2330	2400	0.50	3522.0m	Circulated while dowell flushed and cleaned unit.

Operations For Period 0000 Hrs to 0600 Hrs on 07 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	F3	0000	0100	1.00	3522.0m	Halliburton pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi. Halliburton mixed and pumped 38bbl 15.8ppg cement slurry #1C (Used: 184 sxs of G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Dowell displaced cement with 3.5bbl fresh water followed by 160bbl of 9.4ppg mud. Plug depth 3156m - 3010m.
P21	P	G8	0100	0130	0.50	3522.0m	Laid out cement head and POOH slowly from 3156m to 2973m.
P21	P	F3	0130	0200	0.50	3522.0m	Pumped 12bbl Hi Vis pill and displaced with 173bbl of 9.4ppg mud to spot at 2973m.
P21	P	G1	0200	0230	0.50	3522.0m	POOH from 2973m to 2925m. Made up cement head. Halliburton pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi.
P21	P	F3	0230	0300	0.50	3522.0m	Halliburton mixed and pumped 38bbl 15.8ppg cement slurry #2 (Used: 184 sxs of G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Halliburton displaced cement with 3.5bbl fresh water followed by 148bbl of 9.4 ppg mud. Cement in place at 03:02. Plug depth 2925m - 2775m.
P21	P	G8	0300	0400	1.00	3522.0m	Laid out cement head and POOH slowly from 2925m to 2760m. Continued to POOH from 2760m to 2482m.
P21	P	F4	0400	0500	1.00	3522.0m	Made up TDS and circulated bottoms up at 580 gpm, 1400 psi.
P21	P	F4	0500	0600	1.00	3522.0m	Circulated at 200gpm and reciprocated pipe while WOC.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 06 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	17.5	06 Jan 2010	06 Jan 2010	935.00	38.958	3522.0m

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Printed on 06 Jan 2010

General Comments

00:00 TO 24:00 Hrs ON 06 Jan 2010

WBM Data

Cost Today

Mud Type	KCL/Polymer/PHPA	API FL:	4.5cc/30min	Cl:		Solids(%vol):	3%	Viscosity	58sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	94%	PV	16cp
Time:	2000	HTHP-FL:	9.4cc/30min	Hard/Ca:	200mg/l	Oil(%):		YP	31lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.20	Gels 10s	7
Temp:				PM:	0.2	pH:	9	Gels 10m	10
				PF:	0.2	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	26
								Fann 200	36
								Fann 300	47
								Fann 600	63

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	0	0	360.0
Drill Water	m3	0	0	0	616.0
Pot Water	m3	0	0	0	214.0
Brine	m3	0	0	0	22.0
Cement class \'G\'	MT	0	0	0	67.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30		252	40		336	50		420
2581.0	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	3
Maersk	38
GRN	2
OMS	20

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Personnel On Board

Geoservices	3
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	2
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Schlumberger (Wireline)	8
Other Contractor	1
Other Contractor	1
Petrolab	1
ABS	1
Total	94

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2242.0bbl**
Active	752.0bbl
Mixing	
Hole	830.0bbl
Slug	
Reserve	660.0bbl
Kill	

Losses	**41.0bbl**
Downhole	
Surf+ Equip	41.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge Sepage from pits	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 06 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	15kn	230.0deg	1015.0mbar	13C°	2.0m	230.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.6deg	1.2deg	315.0deg	248.00klb	1020.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	235.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	184.0
2	232.0
3	169.0
4	187.0
5	225.0
6	211.0
7	188.0
8	215.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	11:00 6th Jan		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		739
	M3		470
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

0000 -1100 On Passage to KT4
1100 - 1300 Stand By at Kan Tan IV
1300 - 1520 Discharge Brine and deck cargo
1520 - 2400 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			St/by KT4.

Bulks

Item	Unit	Used	Quantity
	M3		700
	M3		338
	M3		560
	t		37.2
	t		74
	t		0
	M3		0
	bbl		0

0001 - 1515 r/stby

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1515 - 1800 s/s cargo ops
1800 - 2400 r/stby

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Australian Drilling Associates Pty Ltd ADA

07 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 40
Rockhopper-1

Rockhopper-1

Date:	07 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	40	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Larissa Hansen

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$653,040
Rig	Kan Tan IV	Days from spud	37.96	Shoe MDBRT	1965.0m	Cumul. Cost	US$31,980,225
Wtr Dpth(MSL)	74.3m	Days on well	39.90	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	67
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Washing in hole from 2096m to tag TOC.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Kick off well to begin sidetrack. Circulate well clean. Perform wiper trip. POOH and make up Geopilot BHA.		

Summary of Period 0000 to 2400 Hrs

Pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi. Mixed, pumped and displaced 38bbl of 15.8ppg cement slurry #1C . Plug depth 3156m - 3010m. POOH to 2973m and spotted 12bbl Hi Vis pill on bottom. POOH to 2925m. Mixed, pumped and displaced 38bbl of 15.8ppg cement slurry #2 . Cement in place at 03:02. Plug depth 2925m - 2775m. POOH from 2925m to 2482m and circulated while WOC. POOH to 2250m and picked up 24 jts of 5" DP from deck. Racked same in mast. RIH and tagged TOC at 2723m. POOH and spotted 12bbl Hi Vis pill at 2118m. POOH to 2068m. Pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi. Mixed, pumped and displaced 25bbl of 16.5ppg cement slurry for plug #3. Plug depth 2068m - 1968m. POOH to 1968m and circulated. Flow checked well. POOH and laid down 2 7/8" cement stinger. Made up mud motor and 8½" bit.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	64 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	5 Days	Fire in paint locker	
Permit To Work	16	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	2	4 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	42	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 07 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	F3	0000	0100	1.00	3522.0m	Cement unit pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi - ok. Cement unit mixed and pumped 38bbl of 15.8ppg cement slurry for plug #1C (Used: 184 sxs of G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Cement unit displaced cement with 3.5bbl fresh water followed by 160bbl of 9.4ppg mud. Plug depth 3156m - 3010m.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G8	0100	0130	0.50	3522.0m	Laid out cement head and POOH slowly from 3156m to 2973m.
P21	P	F3	0130	0200	0.50	3522.0m	Pumped 12bbl Hi Vis pill and displaced with 173bbl of 9.4ppg mud to spot at 2973m.
P21	P	G1	0200	0230	0.50	3522.0m	POOH from 2973m to 2925m. Made up cement head. Cement unit pumped 10bbl of fresh water spacer and pressure tested surface lines to 1000psi.
P21	P	F3	0230	0300	0.50	3522.0m	Cement unit mixed and pumped 38bbl of 15.8ppg cement slurry for plug #2 (Used: 184 sxs of G cement, 22.4bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Cement unit displaced cement with 3.5bbl fresh water followed by 148bbl of 9.4ppg mud. Cement in place at 03:02. Plug depth 2925m - 2775m.
P21	P	G8	0300	0400	1.00	3522.0m	Laid out cement head and POOH slowly from 2925m to 2760m. Continued to POOH from 2760m to 2482m.
P21	P	F4	0400	0500	1.00	3522.0m	Made up TDS and circulated bottoms up at 580gpm, 1400psi.
P21	P	F4	0500	0630	1.50	3522.0m	Circulated at 200gpm, 270psi and reciprocated pipe while WOC.
P21	P	G8	0630	0700	0.50	3522.0m	POOH from 2482m to 2250m.
P21	P	G2	0700	0930	2.50	3522.0m	Picked up 24 jts of 5" DP from deck and racked back in mast.
P21	P	G8	0930	1030	1.00	3522.0m	RIH from 2250m to 2713m.
P21	P	F1	1030	1100	0.50	3522.0m	Washed in from 2713m to tag TOC with 5 klbs at 2723m.
P21	P	G8	1100	1300	2.00	3522.0m	POOH wet from 2723m to 2106m.
P21	P	F3	1300	1330	0.50	3522.0m	Picked up single to space out to 2118m. Pumped 12bbl Hi Vis pill and displaced with 123bbls of mud to spot at 2118m.
P21	P	G1	1330	1400	0.50	3522.0m	POOH from 2118m to 2067 m. Rigged up cement head and surface lines to cement unit. Spaced out to 2068m.
P21	P	F3	1400	1430	0.50	3522.0m	Cement unit pumped 10bbl fresh water spacer and pressure tested surface lines to 1000psi. Cement unit mixed and pumped 25bbl of 16.5ppg cement slurry plug #3 (Used: 123sxs of G cement, 14.9bbl of mix water, yield 1.16 ft3/sx, 5.11 gal/sx). Cement unit displaced cement with 3.5bbl fresh water followed by 100bbl of 9.4ppg mud. Plug depth 2068m - 1968m.
P21	P	G8	1430	1500	0.50	3522.0m	Rigged down cement head and POOH from 2068m to 1968m.
P21	P	F4	1500	1530	0.50	3522.0m	Circulated bottoms up at 590gpm, 1200psi.
P21	P	P3	1530	1600	0.50	3522.0m	Flow checked well - well static.
P21	P	G8	1600	2000	4.00	3522.0m	Pumped slug and POOH from 1968m to 168m.
P21	P	G2	2000	2200	2.00	3522.0m	Laid out 2 7/8" cement stinger to deck.
P21	P	G6	2200	2230	0.50	3522.0m	Picked up 6 3/4" Sperry drill lobe motor. Made up 8½" bit and ran below table. Made up PM sub and HOC tool. Aligned MWD to mud motor bent housing.

Operations For Period 0000 Hrs to 0600 Hrs on 08 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G6	0000	0030	0.50	3522.0m	Made up 8½" BHA to 217m . Shallow tested MWD and motor on 1st stand of DP 500gpm, 990psi
P21	P	G8	0030	0330	3.00	3522.0m	RIH from 217m to 1951m. Filled pipe every 20 stands.
P21	P	G11	0330	0400	0.50	3522.0m	Serviced TDS and travelling block.
P21	P	F1	0400	0430	0.50	3522.0m	Established parameters and washed down with 200gpm, 350psi from 1951m to 2005m. No cement tagged.
P21	P	F4	0430	0500	0.50	3522.0m	Circulated bottoms up to check for cement contamination. Traces of cement only in mud.
P21	P	F1	0500	0600	1.00	3522.0m	Washed in hole from 2005m with 200gpm, 350 psi to 2096m. No sign of cement.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 07 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	40	06 Jan 2010	07 Jan 2010	957.50	39.896	3522.0m

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General Comments

00:00 TO 24:00 Hrs ON 07 Jan 2010

WBM Data

Cost Today US$ 466

Mud Type	KCL/Polymer/PHPA	API FL:	4.8cc/30min	Cl:		Solids(%vol):	3%	Viscosity	58sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	94%	PV	17cp
Time:	2250	HTHP-FL:	10.1cc/30min	Hard/Ca:	200mg/l	Oil(%):		YP	26lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.3	Gels 10s	8
Temp:				PM:	0.25	pH:	9	Gels 10m	12
				PF:	0.2	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	27
								Fann 200	35
								Fann 300	43
								Fann 600	60

Comment: Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	5	0	355.0
Drill Water	m3	0	0	0	616.0
Pot Water	m3	39	34	0	219.0
Brine	m3	0	0	0	22.0
Cement class \'G\'	MT	0	37	0	30.5
Barite	MT	0	0	0	94.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30		252	40		336	50		420
2581.0	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	36
GRN	2
OMS	23

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Printed on 08 Jan 2010

Personnel On Board

Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2
Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Other Contractor	1
ABS	1
Total	88

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**1702.5bbl**	**Losses**	**344.3bbl**
Active	359.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	598.5bbl	Dumped	
Slug		De-Gasser	
Reserve	745.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Left Behind Plugs.	344.3bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 07 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	15kn	54.0deg	1018.0mbar	15C°	1.6m	54.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.1deg	0.3deg	315.0deg	248.00klb	817.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.3m	270.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	186.0
2	227.0
3	167.0
4	193.0
5	222.0
6	219.0
7	177.0
8	261.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	11:00 6th Jan		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		732
	M3		465
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

0000 - 0430 Stand By at Kan Tan IV
0430 - 0600 Discharge deck cargo
0600 - 2230 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna		11:15 - 7th Jan	Enroute to Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		679
	M3		330
	M3		560
	t		37.2
	t		74
	t		0
	M3		0
	bbl		0

0001 - 1130 r/stby
1030 - 1115 s/s cargo ops
1115 - 2230 Enroute to Melbourne

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Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:39 / 09:51	6 / 12	

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Australian Drilling Associates Pty Ltd ADA

08 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 41
Rockhopper-1

Rockhopper-1

Date:	08 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	41	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Larissa Hansen

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$656,608
Rig	Kan Tan IV	Days from spud	39.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$32,636,833
Wtr Dpth(MSL)	74.3m	Days on well	40.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	68
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	RIH with 8½" bit to 1058m.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Tag TOC. POOH. Suspend well until starboard crane repaired.		

Summary of Period 0000 to 2400 Hrs

Made up 8½" side track BHA. Shallow tested MWD and motor. RIH to 1951m. Serviced TDS. Washed down to tag cement from 1951m to 2121m. No sign of cement. Circulated bottoms up. Flow checked well. Well static. POOH. Made up 2 7/8" cement stinger and RIH to 2168m. Circulated bottoms up. Pumped 25bbl Hi Vis pill and spotted on bottom. POOH to 2067m and rigged up to cement.
Cement unit pumped 5bbl fresh water spacer. Pressure tested surface lines to 1000psi. Cement unit pumped a further 5bbl fresh water spacer. Cement unit mixed, pumped and displaced 40bbl 15.8ppg cement slurry. POOH slowly from 2067m to 1874m. Circulated 1½ x bottoms up. No sign of cement contamination. POOH to 1036m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	65 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	6 Days	Fire in paint locker	
Permit To Work	17	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	2	5 Days	General safety meetings	
Safety Meeting	7	1 Day	Safety Meetings	
STOP Card	43	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 08 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G6	0000	0030	0.50	3522.0m	Made up 8½" BHA to 217m. Shallow tested MWD and motor on 1st stand of DP 500gpm, 990psi - ok.
P21	P	G8	0030	0330	3.00	3522.0m	RIH from 217m to 1951m. Filled pipe every 20 stands.
P21	P	G11	0330	0400	0.50	3522.0m	Serviced TDS and travelling block.
P21	P	F1	0400	0430	0.50	3522.0m	Established parameters and washed down with 200gpm, 350psi from 1951m to 2005m. No cement tagged.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	F4	0430	0500	0.50	3522.0m	Circulated bottoms up to check for cement contamination. Traces of cement only in mud.
P21	P	F1	0500	0600	1.00	3522.0m	Washed in hole from 2005m with 200gpm, 350 psi to 2096m. No sign of cement.
P21	P	F4	0600	0700	1.00	3522.0m	Circulated bottoms up at 600gpm, 2000psi.
P21	P	P3	0700	0730	0.50	3522.0m	Flow checked well. Well static.
P21	TP (WB)	G6	0730	1230	5.00	3522.0m	POOH and racked back BHA. Removed 8½" bit.
P21	TP (WB)	G15	1230	1300	0.50	3522.0m	Cleaned out cement from inside MWD tool.
P21	TP (WB)	G2	1300	1430	1.50	3522.0m	Made up mule shoe and 17 joints of 2 7/8" tubing cement stinger to 168m.
P21	TP (WB)	G8	1430	1830	4.00	3522.0m	RIH with cement stinger on 5" DP from 168m to 2168m.
P21	TP (WB)	F4	1830	1900	0.50	3522.0m	Circulated bottoms up at 550gpm, 1000psi.
P21	TP (WB)	F3	1900	1930	0.50	3522.0m	Pumped 25bbl Hi Vis pill and displaced with 126bbl of 9.4ppg mud to spot Hi Vis on bottom.
P21	TP (WB)	G1	1930	2000	0.50	3522.0m	POOH from 2168m to 2067m. Made up cement head and surface lines to cement unit.
P21	TP (WB)	F3	2000	2100	1.00	3522.0m	Cement unit pumped 5bbl fresh water spacer. Pressure tested surface lines to 1000psi. Cement unit pumped a further 5bbl fresh water spacer. Cement unit mixed and pumped 40bbl of 15.8ppg cement slurry. Cement unit displaced cement with 2.8bbl fresh water followed by 102bbl of 9.4ppg mud. No back flow. No losses seen during cementing operation. Cement plug depth 2067m - 1918m.
P21	TP (WB)	G8	2100	2130	0.50	3522.0m	POOH slowly from 2067m to 1874m.
P21	TP (WB)	F4	2130	2230	1.00	3522.0m	Circulated 1.5x bottoms up to check from cement contamination. No cement detected at shakers.
P21	TP (WB)	G8	2230	2400	1.50	3522.0m	POOH from 1874m to 1036m.

Operations For Period 0000 Hrs to 0600 Hrs on 09 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (WB)	G8	0000	0130	1.50	3522.0m	POOH with 2 7/8" cement stinger from 1036m to 168m.
P21	TP (WB)	G2	0130	0300	1.50	3522.0m	Laid out 17 joints of 2 7/8" cement stinger and mule shoe.
P21	TP (WB)	G6	0300	0400	1.00	3522.0m	Made up 8½' bit on slick BHA to 176m.
P21	TP (WB)	G8	0400	0600	2.00	3522.0m	(IN PROGRESS) RIH with 8½" bit BHA from 176m to 1318m. Filled pipe every 20 stands.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 08 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	65.5	06 Jan 2010	08 Jan 2010	983.00	40.958	3522.0m

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WBM Data

Cost Today US$ 10560

Mud Type	KCL/Polymer/PHPA	API FL:	4.5cc/30min	Cl:		Solids(%vol):	3%	Viscosity	49sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	13cp
Time:	1700	HTHP-FL:	9.0cc/30min	Hard/Ca:	800mg/l	Oil(%):		YP	16lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	8
Temp:				PM:	2.4	pH:	10.5	Gels 10m	12
				PF:	2.1	PHPA:	2ppb	Fann 003	7
								Fann 006	8
								Fann 100	17
								Fann 200	24
								Fann 300	29
								Fann 600	42

Comment: Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	310	7	0	658.0
Drill Water	m3	0	30	0	586.0
Pot Water	m3	26	25	0	220.0
Brine	m3	0	16	0	6.0
Cement class \'G\'	MT	0	8.2	0	22.3
Barite	MT	0	0	4	98.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2581.0	30		252	40		336	50		420
2581.0	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	36
GRN	2
OMS	23
Geoservices	6
Halliburton Cementers	2
Halliburton (Baroid)	2

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Personnel On Board

Sperry Sun	3
Fugro ROV	3
Haliburton Directional Drilling	2
MI Fluids	1
Other Contractor	1
ABS	1
Total	88

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jey Tien/ Kosta Georgiou

				Equipment	Description	Mesh Size	Comments
Available	**1702.5bbl**	**Losses**	**344.3bbl**				
Active	359.0bbl	Downhole					
Mixing		Surf+ Equip	0.0bbl				
Hole	598.5bbl	Dumped					
Slug		De-Gasser					
Reserve	745.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge Left Behind Plugs.	344.3bbl				

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance/ Kosta Georgiou

				Equipment	Description	Mesh Size	Comments
Available	**2012.5bbl**	**Losses**	**1.0bbl**				
Active	642.0bbl	Downhole					
Mixing		Surf+ Equip	1.0bbl				
Hole	598.5bbl	Dumped					
Slug	25.0bbl	De-Gasser					
Reserve	747.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge					

Marine

Weather on 08 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	18kn	28.0deg	1010.0mbar	16C°	2.1m	28.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.2deg	0.3deg	315.0deg	248.00klb	980.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.3m	270.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	178.0
2	229.0
3	177.0
4	199.0
5	233.0
6	217.0
7	172.0
8	255.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	11:00 6th Jan		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		732
	M3		465
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

0000 - 0430 Stand By at Kan Tan IV
0430 - 0600 Discharge deck cargo
0600 - 2230 Stand By at Kan Tan IV

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Far Fosna		11:15 - 7th Jan	Enroute to Melbourne	**Item**	**Unit**	**Used**	**Quantity**
					M3		679
					M3		330
					M3		560
					t		37.2
					t		74
					t		0
					M3		0
					bbl		0

0001 - 1130 r/stby
1030 - 1115 s/s cargo ops
1115 - 2230 Enroute to Melbourne

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:39 / 09:51	6 / 12	
KT01	Bristow Helicopters	15:00 / 15:11	0 / 12	Down man due to suspended operations

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Australian Drilling Associates Pty Ltd ADA

09 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 42
Rockhopper-1

Rockhopper-1

Date:	09 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	42	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$622,669
Rig	Kan Tan IV	Days from spud	40.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$33,259,502
Wtr Dpth(MSL)	74.3m	Days on well	41.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	69
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Circulating clean at 1817m.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Slip and cut drill Line. POOH and lay out cement stinger. RIH with 5" DP and tag TOC. POOH.		

Summary of Period 0000 to 2400 Hrs

POOH and laid out 2 7/8" cement stinger. Made up 8½" bit and slick BHA. RIH to 1318m. Bit plugged by cement flaking off DP while breaking circulation. POOH. RIH with 3½" mule shoe on 5" DP. Mule shoe plugged while breaking circulation at 287m. POOH. RIH with open ended DP to 1880m. Established circulation and washed in from 1880m to tag cement at 1985m with 10klbs weight. Circulated bottoms up at 600gpm, 800psi. Green cement returns at shakers. Contaminated mud diverted. POOH. Made up 2 7/8" cement stinger to 70m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	1	0 Days	Held abandon drill	
Emergency Drill	0	66 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	0 Days	Fire in Galley	
Permit To Work	15	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	6 Days	General safety meetings	
Safety Meeting	10	0 Days	Safety Meetings.	3 x weekly departmental safety meetings
STOP Card	52	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 09 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (WB)	G8	0000	0130	1.50	3522.0m	POOH with 2 7/8" cement stinger from 1036m to 168m.
P21	TP (WB)	G2	0130	0300	1.50	3522.0m	Laid out 17 joints of 2 7/8" cement stinger and mule shoe.
P21	TP (WB)	G6	0300	0400	1.00	3522.0m	Made up 8½' bit on slick BHA to 176m.
P21	TP (WB)	G8	0400	0700	3.00	3522.0m	RIH with 8½" bit BHA from 176m to 1318m. Filled pipe every 20 stands.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (WB)	F4	0700	0930	2.50	3522.0m	Attempted to break circulation. Unable to circulate. String plugged with cement flaking off DP walls.
P21	TP (WB)	G8	0930	1000	0.50	3522.0m	POOH wet. Racked back BHA.
P21	TP (WB)	G8	1000	1200	2.00	3522.0m	Made up 3½" mule shoe to 5" DP amd RIH to 287m. Checked pipe clear as RIH.
P21	TP (WB)	G8	1200	1300	1.00	3522.0m	3½" mule shoe plugged while attempting to break circulation. POOH.
P21	TP (WB)	G8	1300	1800	5.00	3522.0m	RIH with open ended 5" DP to 1880m. Hammered pipe on way in to loosen cement flakes from internal wall.
P21	TP (WB)	F1	1800	1930	1.50	3522.0m	Washed in hole at 200gpm, 100psi from 1880m to 1985m. Tagged TOC at 1985m with 10klbs weight. "Rig on downtime @ 1930 hours".
P21	TP (RE)	F4	1930	2030	1.00	3522.0m	Circulated 1.5x bottoms up at 600gpm, 800psi. Green cement diverted at shakers. Total volume of contaminated mud diverted 95bbl.
P21	TP (RE)	G8	2030	2300	2.50	3522.0m	Flow checked 15mins. POOH from 1985m to surface.
P21	TP (RE)	G2	2300	2400	1.00	3522.0m	Rigged up handling equipment and pick 2 7/8" tubing from pipe deck to 168m.

Operations For Period 0000 Hrs to 0600 Hrs on 10 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G2	0000	0100	1.00	3522.0m	Made up from deck 2 7/8" cement stinger from 70m to 168m.
P21	TP (RE)	G8	0100	0330	2.50	3522.0m	RIH with 2 7/8" cement stinger on 5" DP from 168m to 1960m.
P21	TP (RE)	F1	0330	0400	0.50	3522.0m	Washed in hole to 1982m at 200gpm, 200psi. Made up cement head and surface lines to cement unit.
P21	TP (RE)	F4	0400	0430	0.50	3522.0m	Spaced out cement stinger to 1980m. Circulated bottoms up at 600gpm, 1000psi. Held PJSM on cementing.
P21	TP (RE)	F3	0430	0530	1.00	3522.0m	Cement unit pumped 5bbl fresh water spacer and pressure tested surface lines to 1000psi. Cement unit pumped 5bbl fresh water spacer. Cement unit mixed and pumped 28bbl of 15.8ppg class G cement slurry. Cement unit displaced cement with 3bbls fresh water followed by 100bbl of 9.4ppg mud. Rigged down cement head and surface lines.
P21	TP (RE)	G8	0530	0600	0.50	3522.0m	POOH slowly from 1980m to above cement at 1817m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 09 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	89.5	06 Jan 2010	09 Jan 2010	1,007.00	41.958	3522.0m

WBM Data — Cost Today US$ 7957

Mud Type	KCL/Polymer/PHPA	API FL:	5.5cc/30min	Cl:	35500mg/l	Solids(%vol):	3%	Viscosity	50sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	16cp
Time:	2000	HTHP-FL:	11.0cc/30min	Hard/Ca:	900mg/l	Oil(%):		YP	21lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	7
Temp:	30C°			PM:	3.2	pH:	11	Gels 10m	9
				PF:	3.5	PHPA:	2ppb	Fann 003	7
								Fann 006	8
								Fann 100	20
								Fann 200	30
								Fann 300	37
								Fann 600	53

Comment — Note: Costs are in AUD

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	14	0	644.0
Drill Water	m3	0	2	0	584.0
Pot Water	m3	29	23	0	226.0
Brine	m3	0	0	0	6.0
Cement class \'G\'	MT	0	0	0	22.3
Barite	MT	0	0	0	98.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		252	40		336	50		420
	30		252	40		336	50		420
	30		252	40		336	50		420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	38
GRN	2
OMS	21
Geoservices	2
Halliburton Cementers	2
Halliburton (Baroid)	1
Sperry Sun	1
Fugro ROV	3
Other Contractor	1
Total	75

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	1920.5bbl	Losses	105.0bbl
Active	729.0bbl	Downhole	
Mixing		Surf+ Equip	10.0bbl
Hole	598.5bbl	Dumped	
Slug	25.0bbl	De-Gasser	
Reserve	568.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Treated from system	95.0bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 09 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	16kn	209.0deg	1015.0mbar	16C°	1.6m	209.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.2deg	0.5deg	315.0deg	248.00klb	985.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	60.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	178.0
2	229.0
3	177.0
4	199.0
5	233.0
6	217.0
7	172.0
8	255.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	11:00 6th Jan		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		441
	M3		455
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

0000 - 2400 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna		11:15 - 7th Jan	Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		677
	M3		324
	M3		560
	t		37.2
	t		74
	t		0
	M3		0
	bbl		0

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Printed on 10 Jan 2010

Australian Drilling Associates Pty Ltd ADA

10 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 43
Rockhopper-1

Rockhopper-1

Date:	10 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	43	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$603,276
Rig	Kan Tan IV	Days from spud	41.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$33,862,778
Wtr Dpth(MSL)	74.3m	Days on well	42.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	70
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Servicing rig.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Continue servicing rig.		

Summary of Period 0000 to 2400 Hrs

RIH with 2 7/8" cement stinger on 5" DP to 1982m. Rigged up cement head and circulated bottoms up at 600gpm. Cement unit pumped 5bbl fresh water spacer and pressure tested surface lines to 1000psi. Cement unit pumped 5bbl fresh water spacer. Cement unit mixed, pumped and displaced 28bbl of 15.8ppg class G cement slurry. Rigged down cement head and surface lines. POOH slowly from 1980m to 1817m. Circulated 1½x bottoms up at 600gpm, 1150psi. Racked back stand and slipped and cut drilling line. Serviced rig. POOH and laid out 2 7/8" tubing cement stinger. Ran 9 stands of cement contaminated 5" DP from mast and laid out same. RIH with open ended 5" DP to 1817m. Circulated 1½x bottoms up at 600gpm, 900psi. Washed down from 1817m with 200gpm, 280psi and tagged TOC at 1896m with 10klbs weight.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	67 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	1 Day	Fire in galley	
Permit To Work	13	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	7 Days	General safety meetings	
Safety Meeting	9	0 Days	Safety meetings	2 x weekly departmental safety meetings
STOP Card	53	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 10 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G2	0000	0100	1.00	3522.0m	Made up from deck 2 7/8" cement stinger from 70m to 168m.
P21	TP (RE)	G8	0100	0330	2.50	3522.0m	RIH with 2 7/8" cement stinger on 5" DP from 168m to 1960m.
P21	TP (RE)	F1	0330	0400	0.50	3522.0m	Washed in hole to 1982m at 200gpm, 200psi. Made up cement head and surface lines to cement unit.
P21	TP	F4	0400	0430	0.50	3522.0m	Spaced out cement stinger to 1980m. Circulated bottoms up at 600gpm, 1000psi. Held

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
	(RE)						PJSM on cementing.
P21	TP (RE)	F3	0430	0530	1.00	3522.0m	Cement unit pumped 5bbl fresh water spacer and pressure tested surface lines to 1000psi. Cement unit pumped 5bbl fresh water spacer. Cement unit mixed and pumped 28bbl of 15.8ppg class G cement slurry. Cement unit displaced cement with 3bbls fresh water followed by 100bbl of 9.4ppg mud. Rigged down cement head and surface lines.
P21	TP (RE)	G8	0530	0600	0.50	3522.0m	POOH slowly from 1980m to above cement at 1817m.
P21	TP (RE)	F4	0600	0830	2.50	3522.0m	Circulated pipe and annulus clean at 600gpm, 1150psi
P21	TP (RE)	G11	0830	1030	2.00	3522.0m	Racked back stand to 1788m. Slipped and cut 120ft of drill line.
P21	TP (RE)	G11	1030	1100	0.50	3522.0m	Serviced rig. Greased TDS, crown block, drawworks and travelling block assembly.
P21	TP (RE)	G8	1100	1430	3.50	3522.0m	POOH from 1788m to 168m.
P21	TP (RE)	G2	1430	1630	2.00	3522.0m	Laid out 17 joints of 2 7/8" tubing and stinger.
P21	TP (RE)	G1	1630	1700	0.50	3522.0m	Rigged down 2 7/8" handling equipment, rigged up 5" handling equipment and cleared rig floor of excess equipment.
P21	TP (RE)	G2	1700	1930	2.50	3522.0m	Made up 9 stands of DP with cement on the internal walls and laid out same.
P21	TP (RE)	G8	1930	2230	3.00	3522.0m	RIH with open ended 5" DP to 1817m.
P21	TP (RE)	F4	2230	2330	1.00	3522.0m	Circulated 1½x bottoms up at 600gpm, 900psi.
P21	TP (RE)	F1	2330	2400	0.50	3522.0m	Washed in hole with 200gpm at 280psi from 1817m to TOC at 1896m. Tagged cement with 10klbs weight down at 1896m tide corrected (69m above shoe).

Operations For Period 0000 Hrs to 0600 Hrs on 11 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	F4	0000	0100	1.00	3522.0m	Circulated well clean above TOC at 1886m (600gpm, 900psi). 35bbls of out of spec mud were treated from the system.
P21	TP (RE)	G8	0100	0500	4.00	3522.0m	POOH from 1886m.
P21	TP (RE)	G11	0500	0600	1.00	3522.0m	Broke down cement head. Cleaned and tidied rig floor.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 10 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	113.5	06 Jan 2010	10 Jan 2010	1,031.00	42.958	3522.0m

WBM Data — Cost Today US$ 2285

Mud TypeKCL/Polymer/PHPA		API FL:	5.5cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	50sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	16cp
Time:	2230	HTHP-FL:	11.0cc/30min	Hard/Ca:	900mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	8
Temp:	30C°			PM:	4	pH:	11	Gels 10m	12
				PF:	3.5	PHPA:	2ppb	Fann 003	7
								Fann 006	8
								Fann 100	23
								Fann 200	33
								Fann 300	41
								Fann 600	57

Comment — Note: Costs are in AUD

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	2	0	642.0
Drill Water	m3	0	10	0	574.0
Pot Water	m3	39	30	0	235.0
Brine	m3	0	0	0	6.0
Cement class \'G\'	MT	0	9	0	13.3
Barite	MT	0	0	0	98.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	**1918.0bbl**
Active	776.0bbl
Mixing	
Hole	549.0bbl
Slug	25.0bbl
Reserve	568.0bbl
Kill	

Losses	**3.0bbl**
Downhole	
Surf+ Equip	3.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 10 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
8.0nm	28kn	56.0deg	1015.0mbar	15C°	2.0m	56.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.3deg	1.3deg	315.0deg	248.00klb	980.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.6m	270.0deg	11s	

Rig Support

Anchors	Tension (klb)
1	170.0
2	223.0
3	172.0
4	217.0
5	270.0
6	235.0
7	177.0
8	246.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	11:00 6th Jan		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		436
	M3		455
	M3		482
	t		0
	t		0

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				Item	Unit	Used	Quantity
					t		0
					M3		0
					bbl		0
0000 - 2400 Stand By at Kan Tan IV							
Far Fosna		11:15 - 7th Jan	Melbourne	**Item**	**Unit**	**Used**	**Quantity**
					M3		676
					M3		319
					M3		560
					t		37.2
					t		74
					t		0
					M3		0
					bbl		0

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 44
Rockhopper-1

11 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

Rockhopper-1

Date:	11 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	44	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$256,891
Rig	Kan Tan IV	Days from spud	42.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$34,058,904
Wtr Dpth(MSL)	74.3m	Days on well	43.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	71
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Rig on down time. Performing rig maintenance.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Wait on personnel and equipment to repair Port and Starboard cranes. Circulate mud to maintain mud condition.		

Summary of Period 0000 to 2400 Hrs

Circulated bottoms up at 600gpm, 800psi. Diverted 35bbl of out of spec mud. Flow checked well and POOH. Broke down cement head and laid out. Performed rig maintenance and minor repairs on DF equipment. RIH with open ended DP to 1880m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	68 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	2 Days	Fire in galley	
Permit To Work	15	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	8 Days	General safety meetings	
Safety Meeting	8	0 Days	Safety meetings.	1 x Drill crew safety meeting
STOP Card	41	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 11 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	F4	0000	0100	1.00	3522.0m	Circulated well clean above TOC at 1886m (600gpm, 900psi). 35bbls of out of spec mud were treated from the system.
P21	TP (RE)	G8	0100	0500	4.00	3522.0m	POOH from 1886m.
P21	TP (RE)	G1	0500	0530	0.50	3522.0m	Broke down cement head. Cleaned and tidied rig floor.
P21	TP (RE)	G11	0530	2030	15.00	3522.0m	Performed rig maintenance. Pressure tested 9 5/8" casing against BSR to 1000psi. Serviced and repaired minor faults on IBOP actuator, pipe handler and iron roughneck. Serviced RBS. Removed drill line spooler. Cleaned sand traps and shakers. Started

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G8	2030	2400	3.50	3522.0m	repositioning cable run on Maniputor arm. RIH with open ended 5" DP to 1880m.

Operations For Period 0000 Hrs to 0600 Hrs on 12 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	0600	6.00	3522.0m	Rig on downtime. Performed rig maintenance.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 11 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	137.5	06 Jan 2010	11 Jan 2010	1,055.00	43.958	3522.0m

WBM Data — Cost Today US$ 2182

Mud TypeKCL/Polymer/PHPA	API FL:	5.5cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	53sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	17cp
Time:	2000	HTHP-FL:	11.0cc/30min	Hard/Ca:	880mg/l	Oil(%):		YP	24lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	8
Temp:	31C°			PM:	4	pH:	11	Gels 10m	12
				PF:	3.5	PHPA:	2ppb	Fann 003	7
								Fann 006	8
								Fann 100	25
								Fann 200	34
								Fann 300	41
								Fann 600	58

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	11	-1	630.0
Drill Water	m3	0	51	-1	522.0
Pot Water	m3	37	47	-1	224.0
Brine	m3	0	0	0	6.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	98.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m /	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement.

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
		1965.00m	Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	40
GRN	2
OMS	19
Halliburton Cementers	1
Halliburton (Baroid)	1
Fugro ROV	3
Other Contractor	1
Total	71

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	**1840.0bbl**	**Losses**	**85.0bbl**
Active	279.0bbl	Downhole	
Mixing		Surf+ Equip	50.0bbl
Hole	598.0bbl	Dumped	
Slug	25.0bbl	De-Gasser	
Reserve	938.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Treated from system	35.0bbl

Equipment	Description	Mesh Size

Comments: SANDTRAPS PUMPED OUT TO RESERVE PIT

Marine

Weather on 11 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	32kn	46.0deg	1000.0mbar	19C°	2.0m	60.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.6m	0.4deg	1.5deg	315.0deg	248.00klb	630.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	60.0deg	7s	

Rig Support

Anchors	Tension (klb)
1	177.0
2	226.0
3	187.0
4	319.0
5	261.0
6	237.0
7	182.0
8	256.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	11:00 6th Jan	11:00 11th Jan	Alongside berth 28S - Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		420
	M3		450
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

0000 - 1100 Stand By at Kan Tan IV
11:00 - 22:00 Steaming to Melbourne
22:00 - 24:00 Alongside berth 28S Melbourne

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	11:00 11th Jan	11:15 - 7th Jan	Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		654
	M3		314
	M3		560
	t		37.2

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				Item	Unit	Used	Quantity
					t		74
					t		0
					M3		0
					bbl		0

00:00 - 11:00 Steaming to Kan Tan IV
11:00 - 24:00 Stand By at Kan Tan IV

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	08:11 / 08:28	8 / 12	

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Australian Drilling Associates Pty Ltd

12 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 45
Rockhopper-1

Rockhopper-1

Date:	12 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	45	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$262,532
Rig	Kan Tan IV	Days from spud	43.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$34,321,436
Wtr Dpth(MSL)	74.3m	Days on well	44.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	72
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Rig on downtime. Performing rig maintenance.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Await arrival of crane repair team. Begin onsite preparations for crane repair.		

Summary of Period 0000 to 2400 Hrs

Rig on downtime. Performed rig repairs and maintenance.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	69 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days	Fire in galley	
Permit To Work	14	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	9 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings.	
STOP Card	41	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 12 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	1430	14.50	3522.0m	Rig on downtime. Performed rig maintenance. Serviced and completed PMs on compenstor and travelling block. Continued changing service hoses to off drillers side of manipulator arm. Opened up and checked fluid end of mud pumps #2 and #3.
P21	TP (RE)	F4	1430	1630	2.00	3522.0m	Circulated mud at 1880m to maintain mud condition.
P21	TP (RE)	G11	1630	2400	7.50	3522.0m	Rig on downtime. Performed rig maintenance. Repaired TDS RPM counter. Commenced installing Hi/Low alarms to HPU resevoir.

Operations For Period 0000 Hrs to 0600 Hrs on 13 Jan 2010

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Printed on 12 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	0600	6.00	3522.0m	Rig on downtime. Performed rig maintenance.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 12 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	161.5	06 Jan 2010	12 Jan 2010	1,079.00	44.958	3522.0m

WBM Data — Cost Today US$ 4070

Mud Type	KCL/Polymer/PHPA	API FL:	4.8cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	53sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	18cp
Time:	1800	HTHP-FL:	11.0cc/30min	Hard/Ca:	900mg/l	Oil(%):		YP	30lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	9
Temp:	31C°			PM:	4	pH:	11	Gels 10m	14
				PF:	3.6	PHPA:	2ppb	Fann 003	8
								Fann 006	9
								Fann 100	29
								Fann 200	40
								Fann 300	48
								Fann 600	66

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	10	0	620.0
Drill Water	m3	0	5	0	517.0
Pot Water	m3	28	41	0	211.0
Brine	m3	0	0	0	6.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	98.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	/	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax

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Personnel On Board

ADA	4
Maersk	40
GRN	2
OMS	19
Halliburton Cementers	1
Halliburton (Baroid)	1
Fugro ROV	3
Other Contractor	1
Total	71

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	**1730.0bbl**	**Losses**	**3.0bbl**
Active	327.0bbl	Downhole	
Mixing		Surf+ Equip	3.0bbl
Hole	549.0bbl	Dumped	
Slug	0.0bbl	De-Gasser	
Reserve	854.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equipment	Description	Mesh Size	Comments

Marine

Weather on 12 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
8.0nm	22kn	232.0deg	1007.0mbar	13C°	2.0m	250.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.6m	0.8deg	2.2deg	315.0deg	248.00klb	460.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	250.0deg	7s	

Rig Support

Anchors	Tension (klb)
1	209.0
2	237.0
3	174.0
4	210.0
5	203.0
6	215.0
7	182.0
8	282.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	11:00 6th Jan	11:00 11th Jan	Alongside berth 28S - Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		419
	M3		445
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Alongside berth 28S Melbourne

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	11:00 11th Jan	11:15 - 7th Jan	Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		645
	M3		309
	M3		560
	t		37.2
	t		74
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Stand By at Kan Tan IV

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Printed on 12 Jan 2010

Australian Drilling Associates Pty Ltd

13 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 46
Rockhopper-1

Rockhopper-1

Date:	13 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	46	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$208,921
Rig	Kan Tan IV	Days from spud	44.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$34,530,357
Wtr Dpth(MSL)	74.3m	Days on well	45.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	73
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Performing rig maintenance. Monitoring well on trip tank.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Perform rig maintenance. Make preparations for crane repairs.		

Summary of Period 0000 to 2400 Hrs

Rig on downtime. Performed rig maintenance. Monitored well on trip tank. Circulated and conditioned mud.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	70 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	4 Days	Fire in galley	
Permit To Work	22	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	10 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	43	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 13 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	2400	24.00	3522.0m	Rig on downtime. Performed rig maintenance. Monitored well on trip tank. 30% of banding on starboard crane kingpost removed. Installed remote valve switch for trip tank fill line valve at drillers station. Replaced air lines on shakers #2 and #3. Continued with preparations to change out drilling line spool. Changed out PLCs for top drive. Performed inspection on mast bolts. Circulated well at 1880m to condition mud at 500gpm, 550psi (12:45 - 14:45). Function tested BOPs. Function tested on blue pod from drill floor and on yellow pod from TP's remote station. Tightened mast bolts at crown cluster.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							Removed brackets and cable tray from manipulator arm. Performed maintenance on standpipe valves.

Operations For Period 0000 Hrs to 0600 Hrs on 14 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	0600	6.00	3522.0m	Rig on downtime. Performed rig maintenance. Monitored well on trip tank.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 13 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	185.5	06 Jan 2010	13 Jan 2010	1,103.00	45.958	3522.0m

WBM Data — Cost Today US$ 4070

Mud TypeKCL/Polymer/PHPA	API FL:	4.8cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity 53sec/qt
Sample-From: pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV 18cp
Time: 1800	HTHP-FL:	11.0cc/30min	Hard/Ca:	900mg/l	Oil(%):		YP 30lb/100ft²
Weight: 9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s 9
Temp: 31C°			PM:	4	pH:	11	Gels 10m 14
			PF:	3.6	PHPA:	2ppb	Fann 003 8
Comment	Note: Costs are in AUD						Fann 006 9
							Fann 100 29
							Fann 200 40
							Fann 300 48
							Fann 600 66

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	37	0	583.0
Drill Water	m3	0	12	0	505.0
Pot Water	m3	32	34	0	209.0
Brine	m3	0	0	0	6.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	98.7
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk)

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
			47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	42
GRN	1
OMS	21
Halliburton Cementers	1
Halliburton (Baroid)	1
Fugro ROV	3
Leighton	5
Other Contractor	1
Total	79

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	**1730.0bbl**	**Losses**	**3.0bbl**
Active	327.0bbl	Downhole	
Mixing		Surf+ Equip	3.0bbl
Hole	549.0bbl	Dumped	
Slug	0.0bbl	De-Gasser	
Reserve	854.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equipment	Description	Mesh Size	Comments

Marine

Weather on 13 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	14kn	196.0deg	1016.0mbar	12C°	1.0m	190.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.3deg	1.6deg	315.0deg	248.00klb	510.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.6m	190.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	197.0
2	228.0
3	171.0
4	221.0
5	222.0
6	225.0
7	184.0
8	274.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		18:00 - 13th Jan	Enroute to Kan Tan IV

Item	Unit	Used	Quantity
	M3		814
	M3		442
	M3		482
	t		67
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 18:00 Alongside berth 28S Melbourne
18:00 - 24:00 Enroute to Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	11:00 11th Jan	11:15 - 7th Jan	Stand By at Kan Tan IV

Item	Unit	Used	Quantity
	M3		633
	M3		301
	M3		560
	t		37.2
	t		74
	t		0
	M3		0

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				Item	Unit	Used	Quantity
					bbl		0

00:00 - 09:00 Stand By at Kan Tan IV
09:00 - 09:30 Close Stand By
09: - 11:30 Cargo Ops
11:30 - 24:00 Stand By at Kan Tan IV

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	08:59 / 09:10	11 / 3	

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Australian Drilling Associates Pty Ltd

14 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 47
Rockhopper-1

Rockhopper-1

Date:	14 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	47	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$218,032
Rig	Kan Tan IV	Days from spud	45.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$34,554,065
Wtr Dpth(MSL)	74.3m	Days on well	46.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(MSL)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	74
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Rig on downtime. Dressing welds on starboard Ccane kingpost. Monitoring well on trip tank.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Continue to repair and modify starboard crane.		

Summary of Period 0000 to 2400 Hrs

Rig on downtime. Removed hard band on starboard crane king post 100%. Commenced to dress off welds on starboard crane kingpost. Performed rig maintenance. Monitored well on trip tank.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	71 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	5 Days	Fire in galley	
Permit To Work	20	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	11 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	46	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 14 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	2400	24.00	3522.0m	Rig on downtime. Performed rig maintenance. Monitored well on trip tank. Removal of hard band on starboard crane kingpost completed. Dressed welds on starboard crane kingpost - 50% completed. Circulated and conditioned mud at 1880m at 560gpm, 440psi (13:00 to 15:00). Completed modifications to drill floor manipulator arm. Cleaned mud pump strainers. Completed PMs on top drive. Positioned new drilling line spool on cradle.

Operations For Period 0000 Hrs to 0600 Hrs on 15 Jan 2010

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	0600	6.00	3522.0m	Rig on downtime. Dressed welds on starboard crane king post - 70% completed. Performed rig maintenance. Monitored well on trip tank.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 14 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	209.5	06 Jan 2010	14 Jan 2010	1,127.00	46.958	3522.0m

WBM Data — Cost Today US$ 1713

Mud Type	KCL/Polymer/PHPA	API FL:	4.8cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	52sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	23cp
Time:	1800	HTHP-FL:	11.0cc/30min	Hard/Ca:	840mg/l	Oil(%):		YP	31lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	10
Temp:	34C°			PM:	4.5	pH:	10.5	Gels 10m	14
				PF:	2.2	PHPA:	2ppb	Fann 003	9
								Fann 006	11
								Fann 100	32
								Fann 200	46
								Fann 300	54
								Fann 600	77

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	16	0	567.0
Drill Water	m3	0	0	0	505.0
Pot Water	m3	39	25	0	223.0
Brine	m3	0	0	0	6.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	50.8	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax

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Personnel On Board

ADA	4
Maersk	40
GRN	2
OMS	22
Halliburton Cementers	1
Halliburton (Baroid)	1
Fugro ROV	3
Leighton	5
Other Contractor	1
Other Contractor	1
Other Contractor	1
Total	81

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	**1730.0bbl**	**Losses**	**1.0bbl**
Active	327.0bbl	Downhole	
Mixing		Surf+ Equip	1.0bbl
Hole	549.0bbl	Dumped	
Slug	0.0bbl	De-Gasser	
Reserve	854.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equipment	Description	Mesh Size	Comments

Marine

Weather on 14 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	10kn	214.0deg	1018.0mbar	13C°	1.3m	195.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.7deg	2.0deg	315.0deg	248.00klb	390.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	195.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	198.0
2	231.0
3	171.0
4	226.0
5	225.0
6	227.0
7	185.0
8	267.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		18:00 - 13th Jan	Stand By at Kan Tan IV

Item	Unit	Used	Quantity
	M3		810
	M3		439
	M3		482
	t		67
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 05:45 Enroute to Kan Tan IV
05:45 - 14:00 Stand By at Kan Tan IV
14:00- 14:30 Discharge cargo
14:30 - 24:00 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	11:00 11th Jan	11:15 - 7th Jan	Melbourne

Item	Unit	Used	Quantity
	M3		613
	M3		396
	M3		560
	t		37.2
	t		24
	t		0
	M3		0
	bbl		0

00:00 - 08:30 Stand By at Kan Tan IV
08:30 - 11:00 Cargo Ops
11:00 - 22:30 In Transit to Melbourne

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22:30 - 24:00 Alonside Melbourne

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	13:11 / 13:22	5 / 3	

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Australian Drilling Associates Pty Ltd ADA

15 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 48
Rockhopper-1

Rockhopper-1

Date:	15 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	48	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$242,675
Rig	Kan Tan IV	Days from spud	46.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$34,796,740
Wtr Dpth (LAT)	74.3m	Days on well	47.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	75
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test	30 Dec 2009				

Current Op @ 0600	Grinding and welding cracks on Port crane hard band. Preparing drill floor to slip through new drill line. Starboard crane roller chain split.
Planned Op	Continue preparations to install sliding nylatron blocks on Starboard crane. Continue to grind and weld cracks in Port crane hard band. Slip through new drilling line to drawworks.

Summary of Period 0000 to 2400 Hrs

Rig on down time. Dressing off Starboard crane welds completed. Prepared to split Starboard crane roller chain. Commenced grinding and rewelding cracks on Port crane hard band. Circulated and conditioned mud. POOH with DP. Prepared drill floor to slip through new drill line. Commenced pressure testing surface equipment. Performed maintenance on rig. Monitored well on trip tank.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	72 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	6 Days	Fire in galley	
Permit To Work	22	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	12 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings.	
STOP Card	33	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 15 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	2400	24.00	3522.0m	Rig on downtime. Dressed welds on starboard crane king post - 100% completed. Prepared to split roller chain to install sliding Nylatron blocks. Commenced grinding out and rewelding cracks on Port crane king post hard band - 25% completed.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							Prepared drill floor to slip through new drilling line. Circulated and conditioned mud at 1880m. POOH with DP. Pressure tested surface safety valves and lower TDS IBOP for 250psi/5mins and 5000psi/10mins - ok. Pressure tested kelly hose to standpipe for 250psi/5mins and 4000psi/10mins - ok. Performed rig maintenance. Monitored well on trip tank.

Operations For Period 0000 Hrs to 0600 Hrs on 16 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	0600	6.00	3522.0m	(IN PROGRESS) Rig on down time. Removed pin from Starboard crane post chain and positioned 4 sliding nylatron blocks in roller chain. Continued with grinding out and rewelding of cracks on the Port crane hard band - 100% completed. Crane operational, repairs being monitored. Removed scaffolding on Aft crane boom in preparation to repair king post hard band. Slipped through new drill line to drawworks. Monitored well on trip tank.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 15 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	233.5	06 Jan 2010	15 Jan 2010	1,151.00	47.958	3522.0m

WBM Data

Cost Today US$ 2368

Mud TypeKCL/Polymer/PHPA		API FL:	4.7cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	55sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	21cp
Time:	1600	HTHP-FL:	9.5cc/30min	Hard/Ca:	880mg/l	Oil(%):		YP	36lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	10
Temp:	30C°			PM:	4.4	pH:	10.5	Gels 10m	15
				PF:	1.2	PHPA:	2ppb	Fann 003	9
								Fann 006	11
								Fann 100	34
								Fann 200	47
								Fann 300	57
								Fann 600	78

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	7	-41	519.0
Drill Water	m3	0	5	-11	489.0
Pot Water	m3	35	18	3	243.0
Brine	m3	0	0	69	75.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
13.38	17.50ppg /	961.00m / 961.00m	Ratio 5.20gal/sx 460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	35
GRN	3
OMS	25
Halliburton Cementers	1
Halliburton (Baroid)	1
Fugro ROV	3
Leighton	5
Other Contractor	1
Other Contractor	1
Other Contractor	1
Total	80

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	**1838.0bbl**	**Losses**	**2.0bbl**
Active	277.0bbl	Downhole	
Mixing		Surf+ Equip	2.0bbl
Hole	598.0bbl	Dumped	
Slug	25.0bbl	De-Gasser	
Reserve	938.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equipment	Description	Mesh Size	Comments

Marine

Weather on 15 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	13kn	90.0deg	1010.0mbar	13C°	0.6m	90.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.9deg	1.2deg	315.0deg	248.00klb	390.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
0.6m	90.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	185.0
2	230.0
3	172.0
4	221.0
5	220.0
6	222.0
7	182.0
8	267.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:30 14th Jan		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		803
	M3		436
	M3		482
	t		67
	t		0
	t		0
	M3		0
	bbl		0

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00:00 - 18:30 Stand By at Kan Tan IV
18:30- 19:00 Cargo Ops
19:00 - 24:00 Stand By at Kan Tan IV

Far Fosna		16:00 15th Jan	Enroute to Kan Tan IV	**Item**	**Unit**	**Used**	**Quantity**
					M3		603
					M3		291
					M3		560
					t		37.2
					t		24
					t		0
					M3		0
					bbl		0

00:00 - 16:00 Alonside Melbourne
16:00 - 24:00 Enroute to Kan Tan IV

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:00 / 09:11	10 / 5	

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Australian Drilling Associates Pty Ltd

16 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 49
Rockhopper-1

Rockhopper-1

Date:	16 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	49	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$232,667
Rig	Kan Tan IV	Days from spud	47.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$35,029,407
Wtr Dpth (LAT)	74.3m	Days on well	48.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	76
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test	30 Dec 2009				

Current Op @ 0600	Repairing Aft crane king post hard band - 50% completed.
Planned Op	Install remaining 2 nylatron sliding blocks to starboard crane roller chain on arrival. Reconnect roller chain and test crane. Continue to monitor repairs on Port crane. Grind and weld cracks on Aft crane king post hard band. Pressure test choke mainfold.

Summary of Period 0000 to 2400 Hrs

Rig on down time. Fitted 4 nylatron blocks in Starboard crane roller chain. Completed repairs to Port crane king post hard band. Prepared Aft crane to begin repairs to king post hard band. Slipped new drill line through to drawworks.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	1	0 Days	Held abandon drill	
Emergency Drill	0	73 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	0 Days	Fire in pit room	Fire in pit room exercise with rescue of injured person by fire team.
Permit To Work	22	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	13 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety Meetings	
STOP Card	39	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 16 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	2400	24.00	3522.0m	Rig on down time. Removed pin from Starboard crane post chain and positioned 4 sliding nylatron blocks in roller chain. Continued with grinding out and rewelding of cracks on the Port crane hard band - 100% completed. Crane operational, repairs being monitored. Removed scaffolding on Aft crane boom in preparation to repair king post hard band. Slipped through new drill line to drawworks. Monitored well on trip tank.

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Operations For Period 0000 Hrs to 0600 Hrs on 17 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	0600	6.00	3522.0m	(IN PROGRESS) Rig on down time. Continued grinding and welding of cracks in Aft crane king post hard band - 100% completed. Top weld gouged out. Repairs completed. 6 of nylatron blocks fitted to Starboard crane roller chain. Chain reconnected and adjusted. Repairs completed. RIH with open ended 5" DP to 1880m. Circulated and conditioned mud at 510gpm/ 700psi. POOH with DP. Tested upper IBOP with rig pump. 250psi/2300psi. RIH with HWDP, DCs, Jars and flushed BHA for 30mins to clear any residual cement contamination. Changed out saver sub on TDS. Performed rig maintenance while monitoring well on trip Tank.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 16 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	257.5	06 Jan 2010	16 Jan 2010	1,175.00	48.958	3522.0m

WBM Data — Cost Today US$ 2288

Mud Type	KCL/Polymer/PHPA	API FL:	4.8cc/30min	Cl:	35500mg/l	Solids(%vol):	3%	Viscosity	56sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	20cp
Time:	1745	HTHP-FL:	10.0cc/30min	Hard/Ca:	900mg/l	Oil(%):		YP	34lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	10
Temp:	24C°			PM:	4.3	pH:	10.5	Gels 10m	14
				PF:	0.75	PHPA:	2ppb	Fann 003	9
								Fann 006	10
								Fann 100	33
								Fann 200	44
								Fann 300	54
								Fann 600	74

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	18	0	501.0
Drill Water	m3	0	10	0	479.0
Pot Water	m3	36	23	0	256.0
Brine	m3	0	0	0	75.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement.

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
9.63	14.60ppg /	1965.00m / 1965.00m	Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk) 82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	35
GRN	3
OMS	25
Halliburton Cementers	1
Halliburton (Baroid)	1
Fugro ROV	3
Leighton	5
Other Contractor	1
Other Contractor	1
Other Contractor	1
Total	80

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	**1798.0bbl**	**Losses**	**14.0bbl**
Active	255.0bbl	Downhole	
Mixing		Surf+ Equip	2.0bbl
Hole	598.0bbl	Dumped	
Slug	40.0bbl	De-Gasser	
Reserve	905.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	12.0bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 16 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
8.0nm	20kn	252.0deg	1006.0mbar	13C°	2.0m	260.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	1.5deg	3.6deg	315.0deg	248.00klb	360.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.3m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	210.0
2	246.0
3	172.0
4	198.0
5	209.0
6	218.0
7	183.0
8	279.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:30 14th Jan		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		797
	M3		433
	M3		482
	t		67
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Stand By at Kan Tan IV

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Printed on 17 Jan 2010

Far Fosna	04:00 16th Jan	11:00 16th Jan	Enroute to Melbourne	**Item**	**Unit**	**Used**	**Quantity**
					M3		585
					M3		286
					M3		560
					t		37.2
					t		24
					t		0
					M3		0
					bbl		0

00:00 - 04:00 Enroute to Kan Tan IV
04:00 - 07:00 Stand by at Kan Tan IV
07:00 - 11:00 Cargo Ops
11:00 - 24:00 Enroute to Melbourne.

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:00 / 09:11	10 / 5	

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Australian Drilling Associates Pty Ltd

17 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 50
Rockhopper-1

Rockhopper-1

Date:	17 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	50	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$232,236
Rig	Kan Tan IV	Days from spud	48.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$35,261,643
Wtr Dpth (LAT)	74.3m	Days on well	49.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	77
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Making up BOP test tool to stand of DP.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Adjust Starboard crane slew motors and function test Starboard crane, with and without load. Pressure test BOPs and choke manifold.		

Summary of Period 0000 to 2400 Hrs

Completed repairs to Aft crane king post hard band. Installed 6 nylatron blocks in starboard crane roller chain. Reconnected and adjusted chain. RIH with 5" DP to 1880m. Circulated and conditioned mud. POOH. Pressure tested upper IBOP. RIH with HWDP, DCs and Jars. Flushed BHA to clear any residual cement. POOH. Changed saver sub on TDS.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	74 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	1 Day	Fire in pit room	
Permit To Work	22	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	6	0 Days	Safety meetings	
Safety Meeting	2	0 Days	General safety meetings	
STOP Card	31	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 17 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	2400	24.00	3522.0m	Rig on down time. Continued grinding and welding of cracks in Aft crane king post hard band - 100% completed. Top weld gouged out. Repairs completed. 6 of nylatron blocks fitted to Starboard crane roller chain. Chain reconnected and adjusted. Repairs completed. RIH with open ended 5" DP to 1880m. Circulated and conditioned mud at 510gpm/ 700psi. POOH with DP. Tested upper IBOP with rig pump. 250psi/2300psi. RIH with HWDP, DCs, Jars and flushed BHA for 30mins to clear any residual cement

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Printed on 17 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							contamination. Changed out saver sub on TDS. Performed rig maintenance while monitoring well on trip Tank.

Operations For Period 0000 Hrs to 0600 Hrs on 18 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	0600	6.00	3522.0m	Made up 5 stands 5" HWDP and RIH. Flushed wellhead area on RIH.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 17 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	281.5	06 Jan 2010	17 Jan 2010	1,199.00	49.958	3522.0m

WBM Data — Cost Today US$ 1751

Mud TypeKCL/Polymer/PHPA		API FL:	4.8cc/30min	Cl:	35500mg/l	Solids(%vol):	3%	Viscosity	55sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	20cp
Time:	1730	HTHP-FL:	10.0cc/30min	Hard/Ca:	900mg/l	Oil(%):		YP	34lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	10
Temp:	28C°			PM:	4.3	pH:	10.5	Gels 10m	14
				PF:	0.75	PHPA:	2ppb	Fann 003	9
								Fann 006	11
								Fann 100	33
								Fann 200	44
								Fann 300	54
								Fann 600	74

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	6	0	495.0
Drill Water	m3	20	3	0	496.0
Pot Water	m3	13	24	0	245.0
Brine	m3	0	0	0	75.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk)

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
			47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	35
GRN	3
OMS	26
Halliburton Cementers	1
Halliburton (Baroid)	1
Fugro ROV	3
Leighton	5
Other Contractor	1
Other Contractor	1
Other Contractor	1
Other Contractor	2
Other Contractor	1
Total	84

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	**1798.0bbl**	**Losses**	**4.0bbl**
Active	255.0bbl	Downhole	
Mixing		Surf+ Equip	4.0bbl
Hole	598.0bbl	Dumped	
Slug	40.0bbl	De-Gasser	
Reserve	905.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equipment	Description	Mesh Size	Comments

Marine

Weather on 17 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
6.0nm	30kn	231.0deg	1004.0mbar	10C°	1.6m	250.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	1.3deg	2.5deg	315.0deg	248.00klb	300.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.3m	250.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	218.0
2	246.0
3	173.0
4	190.0
5	196.0
6	212.0
7	187.0
8	289.0

Vessel Name	**Arrived (Date/Time)**	**Departed (Date/Time)**	**Status**
Far Scimitar	05:30 14th Jan		Stand By at Kan Tan IV

Item	**Unit**	**Used**	**Quantity**
	M3		788
	M3		430
	M3		482
	t		67
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Stand By at Kan Tan IV

Vessel Name	**Arrived (Date/Time)**	**Departed (Date/Time)**	**Status**
Far Fosna	04:00 16th Jan	11:00 16th Jan	Alonside in Melbourne

Item	**Unit**	**Used**	**Quantity**
	M3		576
	M3		281

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				Item	Unit	Used	Quantity
					M3		560
					t		37.2
					t		24
					t		0
					M3		0
					bbl		0

00:00 - 02:00 Enroute to Melbourne.
02:00 - 24:00 Alongside in Melbourne

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	12:56 / 13:07	4 / 0	

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Printed on 17 Jan 2010

Australian Drilling Associates Pty Ltd ADA

18 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 51
Rockhopper-1

Rockhopper-1

Date:	18 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	51	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$228,266
Rig	Kan Tan IV	Days from spud	49.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$35,489,909
Wtr Dpth (LAT)	74.3m	Days on well	50.96	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	78
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Circulating well clean.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	POOH. Make up 8½" kick off BHA and RIH.		

Summary of Period 0000 to 2400 Hrs

Made up BOP test tool and RIH to wellhead. Pressure tested BOP and choke manifold 250psi/5mins, 5000psi/10mins. POOH laid out test tool. Made up slick BHA with 8½" PDC bit and RIH to TOC at 1896m. Tested cranes. Cranes handed over as operational at 19:30hrs.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	75 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	2 Days	Fire in pit room	
Permit To Work	23	0 Days	Permits administered	
Pre-tour Meeting	2	1 Day	Shift change meetings	
Safety Meeting	0	1 Day	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	36	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 18 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	G11	0000	1930	19.50	3522.0m	Rig on downtime. Made up 5 stands of 5" HWDP and RIH. Flushed wellhead area on RIH. Made up BOP test plug to HWDP and RIH with 5" DP. Landed test plug in wellhead. Pressure tested BOPs and choke manifold 250psi/5mins, 5000psi/10mins - ok. Annular preventers tested to 250psi/5mins, 3500psi/10mins - ok. POOH and laid out test tool. Serviced rig. Tested cranes with and without loads. Patriot Engineer and Maersk Engineer handed cranes over as repaired and operational at 19:30hrs.
P21	TP (RE)	G6	1930	2100	1.50	3522.0m	Made up slick BHA with 8½" PDC bit to 198m.
P21	TP (RE)	G8	2100	2330	2.50	3522.0m	RIH from 198m to 1880m on 5" DP.
P21	TP	F1	2330	2400	0.50	3522.0m	Established circulation, recorded parameters and washed down to tag TOC at 1896m.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
	(RE)						

Operations For Period 0000 Hrs to 0600 Hrs on 19 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	F4	0000	0100	1.00	3522.0m	Circulated and conditioned mud.
P21	TP (RE)	P3	0100	0200	1.00	3522.0m	Performed well control drill. Closed in well and performed choke circulation exercise with drill crew. Flushed kill and choke lines with fresh 9.4ppg mud. Recorded SCRs.
P21	TP (RE)	D1	0200	0500	3.00	3522.0m	Drilled out cement in 9 5/8" casing and rat hole from 1896m to 1970m (5/10klbs WOB, 60rpm, 600gpm, 1700psi, 5k ft-lbs torque).
P21	TP (RE)	F4	0500	0600	1.00	3522.0m	Circulated 15mins. Set down 15klbs on TOC to weight test and confirm hardness. Racked back one stand and continued to circulate well clean.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 18 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	305.5	06 Jan 2010	18 Jan 2010	1,223.00	50.958	3522.0m

WBM Data — Cost Today US$ 1714

Mud Type	KCL/Polymer/PHPA	API FL:	4.8cc/30min	Cl:	35500mg/l	Solids(%vol):	3%	Viscosity	57sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	21cp
Time:	1745	HTHP-FL:	9.5cc/30min	Hard/Ca:	880mg/l	Oil(%):		YP	31lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	9
Temp:	22C°			PM:	4.3	pH:	10.5	Gels 10m	13
				PF:	0.75	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	32
								Fann 200	43
								Fann 300	52
								Fann 600	73

Comment — Note: Costs are in AUD

Bit # 6 RR1

Wear	I	O1	D	L	B	G	O2	R
							NO	

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M424	No.	Size	Progress	0.0m	Cumul. Progress	0.0m
Mfr:	Security	WOB(avg)	10.00klb	4	16/32nd"	On Bottom Hrs	0.0h	Cumul. On Btm Hrs	0.0h
Type:	PDC	RPM(avg)	60			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Serial No.:	11103697	F.Rate	600gpm			Total Revs		Cumul. Total Revs	0
Bit Model	FMF 3755	SPP	1700psi			ROP(avg)	N/A	ROP(avg)	0.00 m/hr
Depth In	3522.0m	HSI							
Depth Out	3522.0m	TFA	0.785						

Bit Comment

BHA # 9

Weight(Wet)	42.00klb	Length	198.2m	Torque(max)	7000ft-lbs	D.C. (1) Ann Velocity	551fpm
Wt Below Jar(Wet)	34.00klb	String	310.00klb	Torque(Off.Btm)	2000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	310.00klb	Torque(On.Btm)	5000ft-lbs	H.W.D.P. Ann Velocity	311fpm
		Slack-Off	310.00klb			D.P. Ann Velocity	311fpm

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BHA Run Description					
BHA Run Comment	Cement drill out BHA				
Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.40m			11103697	PDC bit
Drill Collar	56.16m	6.75in			
HWDP	84.57m	5.00in			
Drilling Jars	9.84m				
HWDP	47.18m				

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	5	0	490.0
Drill Water	m3	0	10	0	486.0
Pot Water	m3	34	39	0	240.0
Brine	m3	0	0	0	75.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	36
GRN	3
OMS	25
Halliburton Cementers	1
Halliburton (Baroid)	1
Fugro ROV	3
Leighton	3
Other Contractor	1
Other Contractor	1
Other Contractor	1
Other Contractor	2
Other Contractor	1
Other Contractor	2
Total	84

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	1797.0bbl	Losses	0.0bbl
Active	259.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	598.0bbl	Dumped	
Slug	40.0bbl	De-Gasser	
Reserve	900.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 18 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	21kn	217.0deg	1009.0mbar	11C°	1.6m	200.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.6m	1.0deg	2.4deg	315.0deg	248.00klb	700.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.6m	200.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	201.0
2	233.0
3	169.0
4	208.0
5	213.0
6	222.0
7	192.0
8	284.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:30 14th Jan		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		777
	M3		427
	M3		482
	t		67
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	04:00 16th Jan	11:00 16th Jan	Alongside in Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		575
	M3		276
	M3		560
	t		37.2
	t		24
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Alongside in Melbourne

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:18 / 09:30	7 / 7	

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Australian Drilling Associates Pty Ltd ADA

19 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 52
Rockhopper-1

Rockhopper-1

Date:	19 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	52	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$164,190
Rig	Kan Tan IV	Days from spud	49.75	Shoe MDBRT	1965.0m	Cumul. Cost	US$35,654,099
Wtr Dpth (LAT)	74.3m	Days on well	51.69	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	79
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600			
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op			

Summary of Period 0000 to 2400 Hrs

Circulated bottoms up at 1896m. Held well control exercise and choke circulation drills. Drilled out cement from 1896m to 1970m. Circulated well clean. POOH wet. Serviced rig. Checked and prepared drilling tools and unit. Rockhopper-1 well ended at 17:30hrs.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	76 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days	Fire in pit room	
Permit To Work	23	1 Day	Permits administered	
Pre-tour Meeting	2	2 Days	Shift change meetings	
Safety Meeting	0	2 Days	General safety meetings	
Safety Meeting	7	1 Day	Safety meetings	
STOP Card	36	1 Day	Number of STOP cards submitted	
Well Control	1	0 Days	Well Control Excercise	Shut in well and performed choke circulation exercises with Drill Crew

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 19 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	TP (RE)	F4	0000	0100	1.00	3522.0m	Circulated and conditioned mud.
P21	TP (RE)	P3	0100	0200	1.00	3522.0m	Performed well control drill. Closed in well and performed choke circulation exercise with drill crew. Flushed kill and choke lines with fresh 9.3ppg mud. Recorded SCRs.
P21	TP (RE)	D1	0200	0500	3.00	3522.0m	Drilled out cement in 9 5/8" casing and rat hole from 1896m to 1970m (5/10klbs WOB, 60rpm, 600gpm, 1700psi, 5k ft-lbs torque).
P21	TP (RE)	F4	0500	0900	4.00	3522.0m	Circulated for 15mins. Set down 15klbs on TOC to weight test and confirm hardness. Racked back one stand and continued to circulate well clean at 600gpm, 1600psi.
P21	TP	G8	0900	1300	4.00	3522.0m	Flow checked well. Well static. POOH wet from 1950m. Racked back BHA. Broke off

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Printed on 19 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
	(RE)						bit.
P21	TP (RE)	G11	1300	1330	0.50	3522.0m	Serviced rig.
P21	TP (RE)	G15	1330	1730	4.00	3522.0m	Service hands arrived on board. Checked and prepared MWD unit and tools. ** Rockhopper-1 ended at commencement of kick off BHA make up at 17:30hrs.**

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 19 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	323	06 Jan 2010	19 Jan 2010	1,240.50	51.688	3522.0m

WBM Data — Cost Today US$ 1714

Mud Type	KCL/Polymer/PHPA	API FL:	4.8cc/30min	Cl:	35500mg/l	Solids(%vol):	3%	Viscosity	57sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	21cp
Time:	1745	HTHP-FL:	9.5cc/30min	Hard/Ca:	880mg/l	Oil(%):		YP	31lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.2	Gels 10s	9
Temp:	22C°			PM:	4.3	pH:	10.5	Gels 10m	13
				PF:	0.75	PHPA:	2ppb	Fann 003	8
								Fann 006	10
								Fann 100	32
								Fann 200	43
								Fann 300	52
								Fann 600	73

Comment — Note: Costs are in AUD

Bit # 6 RR1

Wear	I	O1	D	L	B	G	O2	R
							NO	TD

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M424	No.	Size	Progress	0.0m	Cumul. Progress	0.0m
Mfr:	Security	WOB(avg)	10.00klb	4	16/32nd"	On Bottom Hrs	0.0h	Cumul. On Btm Hrs	0.0h
Type:	PDC	RPM(avg)	60			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Serial No.:	11103697	F.Rate	600gpm			Total Revs		Cumul. Total Revs	0
Bit Model	FMF 3755	SPP	1700psi			ROP(avg)	N/A	ROP(avg)	0.00 m/hr
Depth In	3522.0m	HSI							
Depth Out	3522.0m	TFA	0.785						

Bit Comment — Bit used to drill out cement in 9 5/8" casing.

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	0	0	490.0
Drill Water	m3	0	0	0	486.0
Pot Water	m3	0	0	0	240.0
Brine	m3	0	0	0	75.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs | **Slow Pump Data**

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)	Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1	Continental Emsco	6.50	1.12	97	60	1700	300	1896.0	30	270	252	40	350	336	50	450	420
2	Continental Emsco	6.50	1.12	97					30		252	40		336	50		420
3	Continental Emsco	6.50	1.12	97	60	1700	300	1896.0	30	280	252	40	360	336	50	480	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	36
GRN	3
OMS	25
Halliburton Cementers	1
Halliburton (Baroid)	1
Fugro ROV	3
Leighton	3
Other Contractor	1
Other Contractor	1
Other Contractor	1
Other Contractor	2
Other Contractor	1
Other Contractor	2
Total	84

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

				Equipment	Description	Mesh Size	Comments
Available	**1797.0bbl**	**Losses**	**0.0bbl**				
Active	259.0bbl	Downhole					
Mixing		Surf+ Equip	0.0bbl				
Hole	598.0bbl	Dumped					
Slug	40.0bbl	De-Gasser					
Reserve	900.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge					

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Marine

Weather on 19 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
8.0nm	20kn	252.0deg	1006.0mbar	13C°	2.0m	260.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	1.5deg	3.6deg	315.0deg	248.00klb	360.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.3m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	210.0
2	246.0
3	172.0
4	198.0
5	209.0
6	218.0
7	183.0
8	279.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:30 14th Jan		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		766
	M3		424
	M3		482
	t		67
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	04:00 16th Jan	11:00 16th Jan	Alongside in Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		574
	M3		555
	M3		560
	t		37.2
	t		24
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Alongside in Melbourne

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	14:28 / 14:41	10 / 5	

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Australian Drilling Associates Pty Ltd ADA

17 Feb 2010

From: Mike Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 53
Rockhopper-1

Rockhopper-1

Date:	17 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundagaard
Report Number:	53	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$384,564
Rig	Kan Tan IV	Days from spud	79.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$36,038,663
Wtr Dpth (LAT)	74.3m	Days on well	52.21	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	81
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Picking up 9-5/8" casing cutting toolstring.		
Datum	GDA 94	Last BOP Test	10 Feb 2010	Planned Op	Cut 9-5/8" casing. POOH and lay down 9-5/8" casing. Rig up and recover BOP stack on marine riser.		

Summary of Period 0000 to 2400 Hrs

Dropped wiper ball and circulated 1.5 times bottoms up. Pumped slug and POOH laying down drill pipe to 1181m. Performed pressure test on cement plug #3A to 2000psi and held for 10 min. Pumped 4bbl and returned 3.5bbl. Continued to POOH laying out drill pipe to 226m. RIH 5" drill pipe from the mast to 313m. Continued to POOH laying out drill pipe to 168 m. POOH with cement stinger laying out 2-7/8" tubing from 168m to surface. Picked up and made up wearbushing retrieval tool.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	10 Feb 2010			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	105 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	4 Days		
Permit To Work	13	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	3 Days	General safety meetings	
Safety Meeting	8	0 Days	Safety meetings	
STOP Card	42	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 17 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	F4	1130	1200	0.50	3522.0m	*** Rockhopper-1 recommenced at 11:30hrs *** Dropped wiper ball and made up TDS. Circulated 1.5 times bottoms up with 580gpm / 116spm / 1170 psi.
P21	P	G8	1200	1500	3.00	3522.0m	Pumped slug and POOH laying down drill pipe from 1701m to 1181m.
P21	P	P1	1500	1600	1.00	3522.0m	Held PJSM. Lined up cememt unit to perform pressure test on cement plug#3A against pipe rams. Circulated 5bbl of water through choke line and confirmed flowpath. Closed chokeline failsafe valve on BOP stack and pressure tested lines to 2500psi / 5min. Bled

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							off pressure to 300psi and opened failsafe valve to confirm valve open. Spaced out tool joint for the pipe rams and closed same. Performed pressure test on cement plug #3A with pumping rate of 0.5bbl/min to 2000 psi. Held pressure for 10min - ok. Pumped 4bbl and returned 3.5bbl.
P21	P	G2	1600	1800	2.00	3522.0m	Continued to POOH sideways laying out excess drillpipe from 1181m to 226m.
P21	P	G2	1800	1830	0.50	3522.0m	RIH 5" drill pipe from the mast from 226m to 313m leaving 9 stands in the mast.
P21	P	G2	1830	2030	2.00	3522.0m	Continued to POOH laying out excess drill pipe from 313m to 168m.
P21	P	G2	2030	2300	2.50	3522.0m	Continued to POOH from 168m laying out 2-7/8" cement stinger from 168m to surface.
P21	P	G16	2300	2400	1.00	3522.0m	Held PJSM. Made up jetting sub below 1x stand of HWDP and a 5ft pup. Connected wear bushing multi purpose running tool (MPT) and RIH to 84m. Jetted BOP stack and wellhead area.

Operations For Period 0000 Hrs to 0600 Hrs on 18 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G12	0000	0030	0.50	3522.0m	Continued to RIH with wearbushing retrieval tool. Latched into wear bushing at 96.5m. Applied 10klbs down to latch the bushing and release same from the wellhead with 70klbs overpull.
P21	P	G8	0030	0200	1.50	3522.0m	POOH with wear bushing to surface. Laid out wear bushing and MPT.
P21	P	G10	0200	0330	1.50	3522.0m	Made up EZSV bridge plug onto running tool and RIH to 205m. Set bridge plug with 36 turns to the right. Confirmed plug set with 55klbs overpull (15klbs increments) and 10klbs down weight.
P21	P	G8	0330	0400	0.50	3522.0m	POOH from 205m to surface and laid out EZSV running tool.
P21	P	G13	0400	0600	2.00	3522.0m	Held PJSM. Picked up and made up casing cutting BHA and RIH to cut the casing @ 153.3 m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 17 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	335.5	06 Jan 2010	17 Feb 2010	1,253.00	52.208	3522.0m

WBM Data — Cost Today US$ 1616

Mud TypeKCL/Polymer/PHPA		API FL:	6.2cc/30min	Cl:	35000mg/l	Solids(%vol):	7%	Viscosity	67sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	93%	PV	18cp
Time:	1600	HTHP-FL:	10.2cc/30min	Hard/Ca:	920mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.1	Gels 10s	7
Temp:	30C°			PM:	0.2	pH:	10	Gels 10m	10
				PF:	0.2	PHPA:	2ppb	Fann 003	7
								Fann 006	9
								Fann 100	24
								Fann 200	35
								Fann 300	43
								Fann 600	61

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	20	0	470.0
Drill Water	m3	0	14	0	472.0
Pot Water	m3	36	26	0	250.0
Brine	m3	0	0	0	75.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	-55.5	94.0
Bentonite	MT	0	0	-19	1.0
Generic Mesh 24	Screens	0	0	0	12.0

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	60	1700	300
2	Continental Emsco	6.50	1.12	97			
3	Continental Emsco	6.50	1.12	97	60	1700	300

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1896.0	30	270	252	40	350	336	50	450	420
	30		252	40		336	50		420
1896.0	30	280	252	40	360	336	50	480	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	33
GRN	1
OMS	25
Halliburton Cementers	4
Halliburton (Baroid)	1
Fugro ROV	6
PCS	2
Other Contractor	3
Dril-Quip	1
SMITH	1
3rd Party	5
Total	86

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan

Available	**1788.5bbl**	**Losses**	**5.7bbl**
Active	543.0bbl	Downhole	
Mixing		Surf+ Equip	5.7bbl
Hole	730.5bbl	Dumped	
Slug	0.0bbl	De-Gasser	
Reserve	515.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equipment	Description	Mesh Size	Comments

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Marine

Weather on 17 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
8.0nm	19kn	215.0deg	1016.0mbar	16C°	1.0m	215.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.9deg	1.2deg	315.0deg	248.00klb	360.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.5m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	180.0
2	205.0
3	153.0
4	210.0
5	229.0
6	216.0
7	187.0
8	227.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Stand By at Kan Tan IV

Item	Unit	Used	Quantity
Rig Fuel	M3		932
Potable Water	M3		525
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:00 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23.15 17 Feb10		Stand By at Kan Tan IV

Item	Unit	Used	Quantity
Rig Fuel	M3		798
Pot Water	M3		540
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

Far Fosna on location 23:15 17/02/2010

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09.18 / 09.33	10 / 14	Crew Change
KT02	Bristow Helicopters	12.45 / 12.56	5 / 4	Crew Change

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18 Feb 2010

From: Mike Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 54
Rockhopper-1

Rockhopper-1

Date:	18 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundagaard
Report Number:	54	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$614,050
Rig	Kan Tan IV	Days from spud	80.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$36,652,713
Wtr Dpth (LAT)	74.3m	Days on well	53.21	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	109
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test	30 Dec 2009				

Current Op @ 0600	Disconnecting double of riser from BOP to lay out same.
Planned Op	Rig down BOP running equipment. Make up 20"/30" casing cutting BHA. RIH and engage spear. Cut both 30" conductor and 20" casing and POOH with PGB to surface. RIH with cement stinger to tag top of EZSV packer and pump cement plug #4. Lay down casing cutting equipment and all tubulars from mast. Prepare to retrieve anchors.

Summary of Period 0000 to 2400 Hrs

Made up EZSV bridge plug onto running tool. RIH and set bridge plug at 205m. Picked up 9-5/8" casing cutting BHA. RIH and cut the 9-5/8" casing @ 153.3m. Engaged spear and POOH casing hanger/casing to surface. Racked back landing string and rigged up 9-5/8" casing equipment. Laid out 4 joints + cut joint and 9-5/8" hanger. Rigged up to pull BOP stack and riser. Laid out diverter. Removed pod hoses and choke and kill hoses. Disconnected MRT cables. Pulled and laid out landing joint, slip joint and a single riser joint.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	106 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	5 Days		
Permit To Work	31	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	4 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety meetings	
STOP Card	33	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 18 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G12	0000	0030	0.50	3522.0m	Continued to RIH with wearbushing retrieval tool (MPT). Latched into wearbushing at 96.5m with 10klbs down weight. Released wearbushing from 18-3/4" wellhead with

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							70klbs overpull.
P21	P	G8	0030	0200	1.50	3522.0m	POOH with wearbushing to surface. Laid out wearbushing and MPT.
P21	P	G10	0200	0330	1.50	3522.0m	Made up EZSV bridge plug onto running tool and RIH to 205m. Set bridge plug with 36 turns to the right. Confirmed plug set in 15klb increments and released running tool from EZSV with 55klbs overpull. Confirmed bridge plug in position with 10klbs down weight.
P21	P	G8	0330	0400	0.50	3522.0m	POOH from 205m to surface and laid out EZSV running tool.
P21	P	G6	0400	0700	3.00	3522.0m	Held PJSM. Picked up and made up 9-5/8" casing cutting BHA. RIH to cut the casing @ 153.3m.
P21	P	G17	0700	0930	2.50	3522.0m	Cut 9-5/8" casing with 100rpm / 200gpm / 610 psi - 7 min. Engaged spear with right hand turn. Pulled 9-5/8" casing hanger free from 18-3/4" wellhead with 120klbs overpull. POOH and racked back landing string.
P21	P	G1	0930	1200	2.50	3522.0m	Rigged up 9-5/8" casing handling equipment. Laid out 4x full joints and 1x cut joint of casing. Laid out the 9-5/8" hanger. Rigged down casing equipment. SIMOPs included the displacement of the riser from mud to seawater.
P21	P	G13	1200	1600	4.00	3522.0m	Rigged up to pull BOP and riser. Laid out the diverter and installed the riser landing joint.
P21	P	G13	1600	1630	0.50	3522.0m	Locked slip joint inner barrel. Unlatched wellhead connector on BOP stack from 18-3/4" wellhead and observed same with ROV.
P21	P	G13	1630	2030	4.00	3522.0m	Removed pod hoses and Choke and Kill hoses in moonpool. Disconnected marine riser tensioner (MRT) cables from slipjoint.
P21	P	G13	2030	2400	3.50	3522.0m	Pulled and laid out riser landing joint, slip joint plus 1x 25ft riser pup joint.

Operations For Period 0000 Hrs to 0600 Hrs on 19 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G13	0000	0130	1.50	3522.0m	Continued to pull BOP stack on marine riser.
P21	P	G13	0130	0600	4.50	3522.0m	BOP on surface. Removed guide lines and beacons. Skidded BOP stack to aft of the moonpool.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 18 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	359.5	06 Jan 2010	18 Feb 2010	1,277.00	53.208	3522.0m

WBM Data — Cost Today US$ 1540

Mud TypeKCL/Polymer/PHPA		API FL:	6.2cc/30min	Cl:	35000mg/l	Solids(%vol):	7%	Viscosity	67sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	93%	PV	18cp
Time:	1600	HTHP-FL:	10.2cc/30min	Hard/Ca:	920mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.1	Gels 10s	7
Temp:	30C°			PM:	0.2	pH:	10	Gels 10m	10
				PF:	0.2	PHPA:	2ppb	Fann 003	7
								Fann 006	9
								Fann 100	24
								Fann 200	35
								Fann 300	43
								Fann 600	61

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	14	-71	385.0
Drill Water	m3	0	5	73	540.0
Pot Water	m3	33	27	-117	139.0
Brine	m3	0	0	0	75.0
Cement class \'G\'	MT	0	0	0	13.3

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Barite	MT	0	0	-85	9.0
Bentonite	MT	0	0	0	1.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	60	1700	300
2	Continental Emsco	6.50	1.12	97			
3	Continental Emsco	6.50	1.12	97	60	1700	300

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1896.0	30	270	252	40	350	336	50	450	420
	30		252	40		336	50		420
1896.0	30	280	252	40	360	336	50	480	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	33
GRN	1
OMS	25
Halliburton Cementers	4
Halliburton (Baroid)	1
Fugro ROV	6
PCS	2
Other Contractor	3
Dril-Quip	1
SMITH	1
3rd Party	5
Total	86

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan

Available	611.0bbl
Active	0.0bbl
Mixing	
Hole	0.0bbl
Slug	0.0bbl
Reserve	0.0bbl
Kill	
Left in hole	611.0bbl

Losses	1393.8bbl
Downhole	
Surf+ Equip	0.0bbl
Dumped	1393.8bbl
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 18 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
8.0nm	14kn	65.0deg	1023.0mbar	17C°	1.0m	65.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.7deg	1.3deg	315.0deg	248.00klb	360.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	225.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	172.0
2	208.0
3	154.0
4	223.0
5	241.0
6	212.0
7	185.0
8	224.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		1730 hrs 18 Feb 10	En route to Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		912
Potable Water	M3		515
Drill Water	M3		410
	t		0
Barite	t		73
Bentonite	t		11
Brine	M3		0
Mud	bbl		0

0000 - 1730 On location
1730 - 2400 En route to Melbourne

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23.15 17 Feb10		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		785
Pot Water	M3		532
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0001 - 0430 r/stby
0430 - 0520 s/s rig disch deck cargo
0520 - 2400 r/stby & close stby

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Printed on 18 Feb 2010

Australian Drilling Associates Pty Ltd

19 Feb 2010

From: Mike Lanzer / Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 55
Rockhopper-1

Rockhopper-1

Date:	19 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundagaard
Report Number:	55	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$629,633
Rig	Kan Tan IV	Days from spud	81.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$37,282,346
Wtr Dpth (LAT)	74.3m	Days on well	54.21	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	110
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Continue to cut 30" casing with new set of 52" cutting knives.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Cut 30" casing. POOH with cut casing and PGB. RIH with 5" drill pipe and tag top of EZSV bridge plug. Set cement plug #4. Commence to pull anchors		

Summary of Period 0000 to 2400 Hrs

Continued to pull BOP on marine riser. Removed guide lines and transponder beacons. Skidded BOP stack to aft of the moonpool. Rigged down riser handling equipment. Picked up 9-5/8" casing spear from the mast and laid out same. Made up 20/30" casing cutting BHA. Rig mechanics troubleshot noise from TDS. RIH with casing cutter BHA placing cutters @ 102m. Began casing cutting operation. Tool failed due to blockage. Released spear, POOH to surface and established blockage (silver tape) in the cutter operating piston nozzle. Cleared blockage and function tested. Attached ropes to guide lines and RIH. Continued with casing cutting operation.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	107 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	6 Days		
Permit To Work	18	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	5 Days	General safety meetings	
Safety Meeting	8	0 Days	Safety meetings	
STOP Card	39	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 19 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G13	0000	0130	1.50	3522.0m	Continued to pull BOP stack on marine riser.
P21	P	G13	0130	0600	4.50	3522.0m	BOP on surface. Removed guide lines and transponder beacons. Skidded BOP stack to Aft of the moonpool. Laid out riser double.
P21	P	G1	0600	0700	1.00	3522.0m	Rigged down riser handling equipment.

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Printed on 21 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G6	0700	0900	2.00	3522.0m	Picked up 9-5/8" casing spear from the mast and laid out same. Installed 1 x 6-3/4" DC to the DC double and racked back in mast. Picked up and broke out bull nose section from cutting BHA and laid out same.
P21	U	G11	0900	0930	0.50	3522.0m	Waited on helicopter - crane shut down.
P21	P	G5	0930	1300	3.50	3522.0m	Held PJSM. Picked up and made up 20" casing and 30" conductor cutting BHA. Changed out grapple on spear. Tested cutter knives operation with 200gpm @ 400psi.
P21	TP (RE)	G11	1300	1400	1.00	3522.0m	Rig mechanics troubleshot noise from TDS.
P21	P	G8	1400	1500	1.00	3522.0m	RIH with casing cutter BHA and spaced out for cutters to cut @ 102m. Observed cutting BHA stab into 18-3/4" wellhead.
P21	TP (TP)	G17	1500	1700	2.00	3522.0m	Opened DSC and set casing cutting BHA to 20klbs overpull. Commenced casing cutting operation @ 130gpm / 26spm / 500psi and 100rpm. Unable to continue cutting operation due to cutting tool failure - apparent blockage in the assembly.
P21	TP (TP)	G6	1700	2100	4.00	3522.0m	Released spear and pulled cutting tool into open hole. Checked operation of the cutters with different pumping rates but unable to pump at more than 18spm / 90gpm / 500psi. Confirmed blockage in the system. POOH to surface. Broke connection on the cutter above the operating piston. Cleared blockage (silver tape) from the piston nozzle operating cutter knives. Inspected the rest of the cutting tool assembly. Made up connection and tested correct operation of cutter knives by pumping @ 130gpm. Attached ropes with "C" plates to guide lines and RIH. Landed out in wellhead.
P21	P	G17	2100	2400	3.00	3522.0m	Opened DSC and set casing cutting BHA to 20klbs overpull. Continued to cut 20" casing / 30" conductor with 130gpm / 26spm / 500psi / 100rpm.

Operations For Period 0000 Hrs to 0600 Hrs on 20 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G17	0000	0400	4.00	3522.0m	Continued to cut 20" casing / 30" conductor. Observed intermittent rotation of the 18-3/4" wellhead - indication of the 20" casing being cut. Torque started to drop off indicating that the 30" conductor had been cut. Took 400klbs overpull at various times - no sign of PGB moving. Released spear and pulled cutting Knives to the top of the 18-3/4" wellhead to inspect with ROV. Knives appeared worn but inconclusive as viewing made difficult due to thick marine life following the ROV lights. Decision made to POOH cutter to surface for closer inspection.
P21	P	G6	0400	0500	1.00	3522.0m	POOH with cutting BHA and inspected cutter knives and tool for wear or damage. Removed worn knives.
P21	P	G17	0500	0600	1.00	3522.0m	(IN PROGRESS) Installed new 52" cutter knives. Attached guideline ropes with "C" plates and RIH. Landed out in 18-3/4" wellhead and continued to cut 30" conductor with 180gpm / 500psi / 100rpm. Increased circulating rate to 200gpm with pressure to 700 psi over 1/2hr to bed in cutters. Increased circulating rate to 220gpm (pressure @ 830psi). Continued to cut. Observed gradual increase in torque and slope indicator began to move.
P21	P	G17	0500	0600	1.00	3522.0m	(IN PROGRESS) 30" conductor cut at 10:45hrs. Picked up 18-3/4" wellhead with cut 20"/30" above seabed. Held PJSM. Note: Continued to seafasten in preparation for the tow.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 19 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Mob/Demob(P1)	23.5	29 Nov 2009	30 Nov 2009	23.50	0.979	0.0m
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	57.00	2.375	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	76.00	3.167	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	139.50	5.813	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	172.50	7.188	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	232.00	9.667	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	326.50	13.604	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	441.00	18.375	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	917.50	38.229	3522.0m
Suspend and Abandon(P21)	383.5	06 Jan 2010	19 Feb 2010	1,301.00	54.208	3522.0m

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WBM Data

Cost Today US$ 1540

Mud Type	KCL/Polymer/PHPA	API FL:	6.2cc/30min	Cl:	35000mg/l	Solids(%vol):	7%	Viscosity	67sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	93%	PV	18cp
Time:	1600	HTHP-FL:	10.2cc/30min	Hard/Ca:	920mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.1	Gels 10s	7
Temp:	30C°			PM:	0.2	pH:	10	Gels 10m	10
				PF:	0.2	PHPA:	2ppb	Fann 003	7
								Fann 006	9
								Fann 100	24
								Fann 200	35
								Fann 300	43
								Fann 600	61

Comment: Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	12	0	373.0
Drill Water	m3	0	6	0	534.0
Pot Water	m3	34	26	0	147.0
Brine	m3	0	0	0	75.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	9.0
Bentonite	MT	0	0	0	1.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	60	1700	300
2	Continental Emsco	6.50	1.12	97			
3	Continental Emsco	6.50	1.12	97	60	1700	300

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1896.0	30	270	252	40	350	336	50	450	420
	30		252	40		336	50		420
1896.0	30	280	252	40	360	336	50	480	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	5
Maersk	39
GRN	3
OMS	25
Halliburton Cementers	3
3rd Party	1
Fugro ROV	7
Noble Denton	1

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Personnel On Board

Other Contractor	3
SMITH	1
3rd Party	4
Total	92

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan

Available	**611.0bbl**	**Losses**	**1393.8bbl**
Active	0.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	0.0bbl	Dumped	1393.8bbl
Slug	0.0bbl	De-Gasser	
Reserve	0.0bbl	De-Sander	
Kill		De-Silter	
Left in hole	611.0bbl	Centrifuge	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 19 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
8.0nm	17kn	45.0deg	1015.0mbar	17C°	1.0m	45.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.4m	0.6deg	1.4deg	315.0deg	248.00klb	360.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	225.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	172.0
2	208.0
3	154.0
4	223.0
5	241.0
6	212.0
7	185.0
8	224.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		1730 hrs 18 Feb 10	En route to Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		977
Potable Water	M3		510
Drill Water	M3		410
	t		0
Barite	t		73
Bentonite	t		11
Brine	M3		0
Mud	bbl		0

0000 - 0526 En route to Melbourne
0526 - 1500 Alongsdie Melbourne - clearing customs
1500 - 2400 En route to Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23.15 17 Feb10		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		764
Pot Water	M3		524
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0001 - 1330 close stby - r/stby
1330 - 1545 s/s rig 4 pers. down.
1545 - 2400 r/stby - close stby

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09.08 / 09.26	12 / 12	Crew Change
KT02	Bristow Helicopters	12.40 / 12.56	12 / 6	Crew Change

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 56
Rockhopper-1

20 Feb 2010

From: Mike Lanzer / Paul Leathem
To: Texas Richards

Rockhopper-1

Date:	20 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundagaard
Report Number:	56	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$607,577
Rig	Kan Tan IV	Days from spud	82.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$37,889,923
Wtr Dpth (LAT)	74.3m	Days on well	55.46	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	111
RT-ML	100.3m	Planned TD TVDRT	3166.4m				
Datum	GDA 94	Last BOP Test	30 Dec 2009				

Current Op @ 0600	Continue to sea fasten and deballast all equipment in preparation for the tow to NZ. Far Fosna and Far Scimitar connected to penant wires on anchors #1 and #5 in prerparation for the start of anchor handling duties.
Planned Op	Continue to deballast rig. Pull anchors. Attach tow boat to tow bridle. Pull and rack last remainig anchors. Commence the tow to Hoki-1 location in New Zealand.

Summary of Period 0000 to 2400 Hrs

Continued to cut 20" Casing / 30" Conductor. Released spear and pulled cutting knives to the top of the 18-3/4" wellhead to inspect with ROV. Knives looked worn. POOH and removed worn knives. Installed new 52" cutter knives. RIH and landed out in well head and continued to cut 30" conductor. Recovered PGB and well head with cut casing to monpool and landed onto spider trolley. Releaesd spear and broke down and laid out casing cutting and retrieval tools. RIH with 5" cement stinger. Tagged EZSV bridge plug @ 205m. Installed cement swedge and pumped cement plug #4. POOH laying down drill pipe. Continued to lay out all tubulars from the mast. ROV performed final seabed survey. Continued with sea fastening of all equipment.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	7 Days	Held abandon drill	
Emergency Drill	0	108 Days	Full Emergency drill performed	
Fire Drill	0	7 Days		
Permit To Work	20	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	6 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety Meetings.	
STOP Card	42	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 20 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G17	0000	0400	4.00	3522.0m	Continued to cut 20" casing / 30" conductor. Observed intermittent rotation of the 18-3/4" wellhead - indication of the 20" casing being cut. Torque started to drop off

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							indicating that the 30" conductor had been cut. Took 400klbs overpull at various times - no sign of PGB moving. Released spear and pulled cutting Knives to the top of the 18-3/4" wellhead to inspect with ROV. Knives appeared worn but inconclusive as viewing made difficult due to thick marine life following the ROV lights. Decision made to POOH cutter to surface for closer inspection.
P21	P	G6	0400	0500	1.00	3522.0m	POOH with cutting BHA and inspected cutter knives and tool for wear or damage. Removed worn knives.
P21	P	G17	0500	1100	6.00	3522.0m	Installed new 52" cutter knives. Attached guideline ropes with "C" plates and RIH. Landed out in 18-3/4" wellhead and continued to cut 30" conductor with 180gpm / 500psi / 100rpm. Increased circulating rate to 200gpm with pressure to 700 psi over 1/2hr to bed in cutters. Increased circulating rate to 220gpm (pressure @ 830psi). Continued to cut. Observed gradual increase in torque and slope indicator began to move.
P21	P	G17	0500	1100	6.00	3522.0m	30" conductor cut at 10:45hrs. Picked up 18-3/4" wellhead with cut 20"/30" above seabed. Held PJSM. Note: Continued to seafasten in preparation for the tow.
P21	P	G8	1100	1200	1.00	3522.0m	Pulled to PGB, wellhead and cut casing to surface whilst recovering guidelines. Landed PGB on spider trolley in the moonpool and secured.
P21	P	G15	1200	1330	1.50	3522.0m	Released cutting spear and pulled cutting assembly to drill floor. Broke down and laid out casing cutting tools.
P21	P	G8	1330	1500	1.50	3522.0m	RIH with 5" open ended drill pipe. Tagged EZSV bridge plug @ 205m. Spaced out and installed swedge to set cement plug #4 as per program.
P21	P	F3	1500	1600	1.00	3522.0m	Pumped 10bbl of drillwater spacer and pressure tested lines to 1000 psi. Mixed and pumped 586sx class G Cement slurry (122bbl) @ 15.9ppg. Displaced with 4bbl of seawater and set as balanced plug #4 from 205m to seabed @ 103m.
P21	P	G8	1600	1700	1.00	3522.0m	Rigged down cement swedge and POOH to 80m. Flushed lines and drill pipe with seawater. Continued to POOH and lay down drill pipe.
P21	P	G8	1700	2000	3.00	3522.0m	Continued to lay out all tubulars from the mast. ROV performed final seabed survey.
P1	P	M6	2000	2400	4.00	3522.0m	Continued with sea fastening of all equipment in readiness for tow to NZ. Drill crew removed C&K hoses from the moonpool area and secured rig floor equipment. Subsea secured BOP on port side setback area. Also secured moonpool trolley, LMRP and BOP nomar carrier.

Operations For Period 0000 Hrs to 0600 Hrs on 21 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P1	P	M6	0000	0400	4.00	3522.0m	Continued to Seafasten all Rig equipment in preparation for the tow to NZ.
P1	P	M3	0400	0600	2.00	3522.0m	(IN PROGRESS) Comenced to Debalast Rig. Continued to Seafasten all Rig equipment in preparation for the tow to NZ. Attached Far Fosna & Far Schimitar to Pennant Wires on Anchors 1 & 5 in preparation for the start of Anchor handling duties.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 20 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	33.50	1.396	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	52.50	2.188	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	116.00	4.833	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	149.00	6.208	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	208.50	8.688	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	303.00	12.625	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	417.50	17.396	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	894.00	37.250	3522.0m
Mob/Demob(P1)	27.5	29 Nov 2009	20 Feb 2010	921.50	38.396	3522.0m
Suspend and Abandon(P21)	409.5	06 Jan 2010	20 Feb 2010	1,331.00	55.458	3522.0m

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WBM Data

Cost Today US$ 1540

Mud Type	KCL/Polymer/PHPA	API FL:	6.2cc/30min	Cl:	35000mg/l	Solids(%vol):	7%	Viscosity	67sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	93%	PV	18cp
Time:	1600	HTHP-FL:	10.2cc/30min	Hard/Ca:	920mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.1	Gels 10s	7
Temp:	30C°			PM:	0.2	pH:	10	Gels 10m	10
				PF:	0.2	PHPA:	2ppb	Fann 003	7
								Fann 006	9
								Fann 100	24
								Fann 200	35
								Fann 300	43
								Fann 600	61

Comment: Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	11	0	362.0
Drill Water	m3	0	0	0	534.0
Pot Water	m3	30	28	0	149.0
Brine	m3	0	0	0	75.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	9.0
Bentonite	MT	0	0	0	1.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	60	1700	300
2	Continental Emsco	6.50	1.12	97			
3	Continental Emsco	6.50	1.12	97	60	1700	300

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1896.0	30	270	252	40	350	336	50	450	420
	30		252	40		336	50		420
1896.0	30	280	252	40	360	336	50	480	420

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	5
Maersk	39
GRN	3
OMS	25
Halliburton Cementers	3
3rd Party	1
Fugro ROV	7
Noble Denton	1

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Personnel On Board

Other Contractor	3
SMITH	1
3rd Party	4
Total	92

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan

Available	**611.0bbl**	**Losses**	**1393.8bbl**	Equipment	Description	Mesh Size	Comments
Active	0.0bbl	Downhole	1393.8bbl				
Mixing		Surf+ Equip	0.0bbl				
Hole	0.0bbl	Dumped					
Slug	0.0bbl	De-Gasser					
Reserve	0.0bbl	De-Sander					
Kill		De-Silter					
Left in hole	611.0bbl	Centrifuge					

Marine

Weather on 20 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	25kn	20.0deg	1004.0mbar	20C°	1.0m	25.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.8deg	1.2deg	315.0deg	248.00klb	360.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	225.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	182.0
2	225.0
3	168.0
4	243.0
5	241.0
6	215.0
7	185.0
8	224.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		1730 hrs 18 Feb 10	Stby Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		964
Potable Water	M3		505
Drill Water	M3		410
	t		0
Barite	t		73
Bentonite	t		11
Brine	M3		0
Mud	bbl		0

0000 - 0225 En route to Kan Tan IV
0225 - 2400 On location - Rig move meetings and JHA's

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23.15 17 Feb10		Stand By at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		752
Pot Water	M3		516
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0001 - 2400 close stby - r/stby

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09.08 / 09.26	12 / 12	Crew Change
KT02	Bristow Helicopters	12.40 / 12.56	12 / 6	Crew Change

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Australian Drilling Associates Pty Ltd ADA

21 Feb 2010

From: Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 57
Rockhopper-1

Rockhopper-1

Date:	21 Feb 2010	**Well Site Representative:**	Paul Leathem	**OIM:**	Stig Sundagaard
Report Number:	57	**Night Representative:**		**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$628,562
Rig	Kan Tan IV	Days from spud	83.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$38,518,485
Wtr Dpth (LAT)	74.3m	Days on well	56.46	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	112
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Far Fosna connecting tow line to anchor chain #3. Far Scimitar holding rig on station with tow bridle.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Continue to retrieve and rack #7 anchor. Begin wet tow from present location to New Zealand.		

Summary of Period 0000 to 2400 Hrs

Continued to seafasten all rig equipment in preparation for the tow to NZ. Deballasted rig. Began pulling anchors.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	30 Dec 2009			
Abandon Drill	0	8 Days	Held abandon drill	
Emergency Drill	0	109 Days	Full Emergency drill performed	
Fire Drill	0	8 Days		
Permit To Work	28	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	7 Days	General safety meetings	
Safety Meeting	11	0 Days	Safety Meetings.	
STOP Card	42	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 21 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P1	P	M6	0000	0400	4.00	3522.0m	Continued to seafasten all rig equipment in preparation for the tow to NZ.
P1	P	M3	0400	1500	11.00	3522.0m	Commenced debalasting rig. Continued to seafasten all rig equipment in preparation for the tow to NZ. Attached Far Fosna and Far Scimitar to pennant wires on anchors #1 and #5 in preparation for the start of anchor handling duties.
P1	P	M3	1500	1730	2.50	3522.0m	Could not deballast port aft pontoon to transit draft. Performed soundings on all port ballast tanks. All tank soundings returned with exceptable levels except 1 which showed 25ft of ballast. Opened all suction valves on port ballast tanks to equalise and note if water levels changed in any of the tanks. No changes noted. Sounding tube on offending ballast tank possibly blocked.
P1	P	M4	1730	2100	3.50	3522.0m	1730 - ALL STOP DEBALLASTING RIG - RIG AT APPROX 29ft AND 2° DOWN

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							PORT/AFT. 17.41 - ANCHOR #5 OFF BOTTOM. 17.43 - ANCHOR #1 OFF BOTTOM. 17.45 - COMMENCED HAUL IN ANCHORS #1 AND #5. 18.35 - ANCHOR #5 RACKED. 18.45 - ANCHOR #1 RACKED. 18.55 - PENNANT CABLE #5 BACK TO RIG. 19.08 - PENNANT CABLE #4 PASSED TO SCIMITAR. 19.15 - SCIMITAR STRIPPING OUT. 19.15 - PENNANT CABLE #1 BACK TO RIG. 19.23 - PENNANT CABLE #8 PASSED TO FOSNA. 19.26 - FOSNA STRIPPING OUT TO #8. 19.35 - SCIMITAR AT #4 ANCHOR. 19.37 - FOSNA AT ANCHOR #8. 19.39 - ANCHOR #4 OFF BOTTOM. HAULED IN #4. 19.44 - ANCHOR # 8 OFF BOTTOM. HAULED IN # 8. 20.30 - ANCHOR #8 RACKED. 20.43 - PENNANT CABLE #8 BACK TO RIG. 20.45 - ANCHOR #4 RACKED.
P1	P	M4	2100	2400	3.00	3522.0m	21.00 - PENNANT CABLE #4 BACK TO RIG. 21.17 - PENNANT CABLE #6 PASSED TO FOSNA. 21.24 - FOSNA STRIPPING OUT TO #6. 21.35 - ANCHOR #6 OFF THE BOTTOM. HAULED IN #6. 21.43 - PENNANT CABLE #2 TO SCIMITAR. 21.53 - SCIMITAR STRIPPING OUT TO #2. 22.08 - ANCHOR #2 OFF BOTTOM. HAULED IN #2. 23.04 - ANCHOR #2 RACKED. 23.15 - PENNANT CABLE #2 BACK TO RIG. Decision made by Tow Master to connect Far Fosna to Anchor #3 as a secondary tow Vessel due to the possibility of having to make the complete tow at storm draft of 50ft.

Operations For Period 0000 Hrs to 0600 Hrs on 22 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P1	P	M4	0000	0600	6.00	3522.0m	00.25 - TOW BRIDLE PENNANT PASSED TO SCIMITAR. 01.25 - SCIMITAR STRETCHED TOW WIRE. 01.26 - HAULED IN #6 ANCHOR 02.37 - ANCHOR #6 RACKED. 02.55 - PENNANT CABLE #6 BACK TO RIG. 03.14 - PENNANT CABLE #3 PASSED TO FOSNA. 03.16 - FOSNA CHASING OUT #3. 03.32 - FOSNA AT #3. 03.36 - SLACKED OFF ON #3. 03.49 - ANCHOR #3 ON DECK - CONNECTING TOW WIRE. 04.39 - HAULED IN ON #3. 04.55 - HAULED IN ON #7. 05.28 - STOPPED HAULING ON #3. 05.35 - STOPPED HAULING ON #7. Far Fosna connected tow line to anchor chain #3. Visual inspection perfomed on port aft ballast tanks. 500T of ballast still in tanks that would not pump out. Note: Once underway it is planned to manually pump out the tanks and deballast rig accordingly and troubleshoot reason for ballast pumps not being able to remove this excess ballast.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 21 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	33.50	1.396	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	52.50	2.188	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	116.00	4.833	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	149.00	6.208	966.0m
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	208.50	8.688	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	303.00	12.625	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	417.50	17.396	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	894.00	37.250	3522.0m
Suspend and Abandon(P21)	409.5	06 Jan 2010	20 Feb 2010	1,303.50	54.313	3522.0m
Mob/Demob(P1)	51.5	29 Nov 2009	21 Feb 2010	1,355.00	56.458	3522.0m

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General Comments

00:00 TO 24:00 Hrs ON 21 Feb 2010

Operational Comments	Drilling department: 1. Cleaning pits #1, #4 and pill pit. 2. Remove unrequired equipment on rig floor (i.e. old fitting bolts and rubbish at back of drawworks). 3. Clean out trip tank and suction strainer.
Operational Comments	Subsea department: 1. Remove all rams from BOP. Remove all seals and prepare ram blocks for NDT inspection. 2. Prepare all bonnet bolts for NDT inspection.
Operational Comments	Maintenance department: 1. Service on No.2 EMD. 2. Mud pumps x3 isolated. 3. Agitators #1, #4 and #5 isolated. 4. Power outlet in hydraulic room adapted for welding machines. 5. Start air compressor oil changed. 6. V-Door tugger brake band adjusted. 7. Bulk air system isolated. 8. Relief valves on bulk system swap out progressed. 9. Old framework from shaker house removed. 10. Stbd moonpool tugger operating handle replaced. 11. TDS oil pump assembly dismantled. 12. Lighting maintenance around the rig. 13. Scaffold erected adjacent to moonpool for pipework repairs. 14. Work commenced on removal of moonpool fire main monitor pipework.

WBM Data

Cost Today US$ 1540

Mud Type	KCL/Polymer/PHPA	API FL:	6.2cc/30min	Cl:	35000mg/l	Solids(%vol):	7%	Viscosity	67sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	93%	PV	18cp
Time:	1600	HTHP-FL:	10.2cc/30min	Hard/Ca:	920mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.1	Gels 10s	7
Temp:	30C°			PM:	0.2	pH:	10	Gels 10m	10
				PF:	0.2	PHPA:	2ppb	Fann 003	7
								Fann 006	9
								Fann 100	24
								Fann 200	35
								Fann 300	43
								Fann 600	61

Comment — Note: Costs are in AUD

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	10	0	352.0
Drill Water	m3	0	97	0	437.0
Pot Water	m3	43	26	0	166.0
Brine	m3	0	0	0	75.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	9.0
Bentonite	MT	0	0	0	1.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs | **Slow Pump Data**

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)	Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1	Continental Emsco	6.50	1.12	97	60	1700	300	1896.0	30	270	252	40	350	336	50	450	420
2	Continental Emsco	6.50	1.12	97					30		252	40		336	50		420
3	Continental Emsco	6.50	1.12	97	60	1700	300	1896.0	30	280	252	40	360	336	50	480	420

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Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

Personnel On Board

Company	Pax
ADA	4
Maersk	38
GRN	3
OMS	31
Other Contractor	6
Other Contractor	1
Fugro ROV	2
Other Contractor	2
Other Contractor	2
Other Contractor	5
Other Contractor	2
Total	96

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan

Available	**611.0bbl**	**Losses**	**1393.8bbl**	Equipment	Description	Mesh Size
Active	0.0bbl	Downhole				
Mixing		Surf+ Equip	0.0bbl			
Hole	0.0bbl	Dumped	1393.8bbl			
Slug	0.0bbl	De-Gasser				
Reserve	0.0bbl	De-Sander				
Kill		De-Silter				
Left in hole	611.0bbl	Centrifuge				

Comments

Marine

Weather on 21 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	5kn	295.0deg	1010.0mbar	15C°	1.0m	270.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.2m	0.7deg	1.9deg	315.0deg	248.00klb	360.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	270.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	0.0
2	0.0
3	212.0
4	0.0
5	0.0
6	0.0
7	212.0
8	0.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		1730 hrs 18 Feb 10	Pulling Anchors

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		949
Potable Water	M3		500
Drill Water	M3		410

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Printed on 21 Feb 2010

				Item	Unit	Used	Quantity
					t		0
				Barite	t		73
				Bentonite	t		11
				Brine	M3		0
				Mud	bbl		0

0000 - 2400 On location - pulling anchors

				Item	Unit	Used	Quantity
Far Fosna	23.15 17 Feb10		Pulling Anchors	Rig Fuel	M3		737
				Pot Water	M3		508
				Drill Water	M3		560
				Bentonite	t		37.2
				Barite	t		82
					t		0
				Brine	M3		0
				Mud	bbl		0

0001 - 0500 r/stby
0500 - 2400 Anchor recovery

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09.04 / 09.20	12 / 11	Crew Change
KT02	Bristow Helicopters	14.04 / 14.29	11 / 8	Crew Change

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Australian Drilling Associates Pty Ltd

22 Feb 2010

From: Paul Leathem
To: Texas Richards

DRILLING MORNING REPORT # 58
Rockhopper-1

Rockhopper-1

Date:	22 Feb 2010	**Well Site Representative:**	Paul Leathem	**OIM:**	Stig Sundagaard
Report Number:	58	**Night Representative:**		**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3522.0m	Cur. Hole Size	8.500in	AFE Cost	US$27,409,709
Field	Rockhopper	TVDBRT	3192.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$213,308
Rig	Kan Tan IV	Days from spud	83.33	Shoe MDBRT	1965.0m	Cumul. Cost	US$38,731,793
Wtr Dpth (LAT)	74.3m	Days on well	56.77	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD	3486.5m			Days Since Last LTI	113
RT-ML	100.3m	Planned TD TVDRT	3166.4m	Current Op @ 0600	Continue anchor pulling operations.		
Datum	GDA 94	Last BOP Test	30 Dec 2009	Planned Op	Mobilise KTIV to New Zealand.		

Summary of Period 0000 to 2400 Hrs

Pulled anchors and prepared for rig move to New Zealand.

FORMATION

Name	Top
AL30 equivalent	3191.00m
AL140 equivalent	3318.50m
TL60 equivalent	3371.00m
Cretaceous Volcanics	3425.00m
Total Depth	3522.00m

Operations For Period 0000 Hrs to 2400 Hrs on 22 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P1	P	M4	0000	0600	6.00	3522.0m	00.25 - TOW BRIDLE PENNANT PASSED TO SCIMITAR. 01.25 - SCIMITAR STRETCHED TOW WIRE. 01.26 - HAULED IN #6 ANCHOR 02.37 - ANCHOR #6 RACKED. 02.55 - PENNANT CABLE #6 BACK TO RIG. 03.14 - PENNANT CABLE #3 PASSED TO FOSNA. 03.16 - FOSNA CHASING OUT #3. 03.32 - FOSNA AT #3. 03.36 - SLACKED OFF ON #3. 03.49 - ANCHOR #3 ON DECK - CONNECTING TOW WIRE. 04.39 - HAULED IN ON #3. 04.55 - HAULED IN ON #7. 05.28 - STOPPED HAULING ON #3. 05.35 - STOPPED HAULING ON #7. Far Fosna connected tow line to anchor chain #3. Visual inspection perfomed on port aft ballast tanks. 500T of ballast still in tanks that would not pump out.
P1	P	M4	0600	0730	1.50	3522.0m	Anchor pulling operations completed. Rig under tight tow to New Zealand. During the tow it is planned to manually pump out the ballast tanks and troubleshoot reason for ballast pumps not being able to remove excess ballast. *** Rockhopper-1 ended at 07:30hrs on 22/2/10. ***

Phase Data to 2400hrs, 22 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Conductor Hole(P2)	33.5	30 Nov 2009	01 Dec 2009	33.50	1.396	158.0m
Conductor Casing(P3)	19	01 Dec 2009	02 Dec 2009	52.50	2.188	158.0m
Surface Hole(P4)	63.5	02 Dec 2009	04 Dec 2009	116.00	4.833	966.0m
Surface Casing(P5)	33	04 Dec 2009	06 Dec 2009	149.00	6.208	966.0m

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Phase Data to 2400hrs, 22 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
BOPs/Risers(P6)	59.5	06 Dec 2009	08 Dec 2009	208.50	8.688	966.0m
Production Hole (1)(P11)	94.5	08 Dec 2009	12 Dec 2009	303.00	12.625	1972.0m
Production Casing(1)(P13)	114.5	12 Dec 2009	17 Dec 2009	417.50	17.396	1972.0m
Liner Hole (1)(P17)	476.5	17 Dec 2009	06 Jan 2010	894.00	37.250	3522.0m
Suspend and Abandon(P21)	409.5	06 Jan 2010	20 Feb 2010	1,303.50	54.313	3522.0m
Mob/Demob(P1)	59	29 Nov 2009	22 Feb 2010	1,362.50	56.771	3522.0m

Casing

OD	LOT / FIT	Csg Shoe (MD/TVD)	Cementing
30 "	/	156.80m / 156.80m	265bbl 15.9ppg G cement slurry pumped. Used: 1271sx of G cement - 160bbls of mix water. Yield 1.17 ft3/sx Ratio 5.20gal/sx
13.38	17.50ppg /	961.00m / 961.00m	460bbl of 11.5 ppg lead cement slurry. (Used: 387bbl SW mix fluid, 858 sx class G cement. Yield, 18.96 gal/sk - 3.01 ft3/sk) 66.8bbl of 15.8 ppg tail cement slurry (Used: 39.5bbl fresh water mix, 323sx class G cement. Yield, 5.12 gal/sk - 1.16 ft3/sk)
9.63	14.60ppg /	1965.00m / 1965.00m	82 bbl of 12.5 ppg lead cement slurry. (Used: 63 bbl FW mix fluid, 215 sx class G cement. Yield, 12.28 gal/sk - 2.11 ft3/sk) 47 bbl of 15.8 ppg tail cement slurry (Used: 28 bbl fresh water mix, 223 sx class G cement. Yield, 5.18 gal/sk - 1.16 ft3/sk)

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APPENDIX 17: DAILY GEOLOGICAL REPORTS

origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 07 Dec 2009 | **Geology Report Number : 1** | (associated DDR # 9)

Well Details

Depth MDBRT:	966.0m	Rig:	Kan Tan IV	Date:	07 Dec 2009
Depth TVDBRT:	966.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	940.0m	RTE agl:		Report End:	2400
Hole Size:	17.500in	GLE amsl:	0 (m)	Days On Location:	8.96
Hole Size Carbide:		Last Csg Size:	13.375in	Days since Spud:	7.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	961.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/		

Operations Summary

24hr Summary:	Ran BOP on marine riser. Pressure tested choke and kill lines. Attempted to land BOP.
Forward Plan:	Pressure test BOP connector and surface equipment, make up drill pipe stands, make up 311 mm (12-1/4") BHA, RIH, drill out shoe track and 5 m new hole, perform leak off test (LOT).

General Comments

00:00 TO 24:00 Hrs ON 07 Dec 2009

Operational Comments	This is the first DGR for Rockhopper-1
Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Gas calibrations to be done prior to drill ahead in 311 mm (12-1/4") hole. Sperry: 2 MWD engineers, 1 DD on board. 311 mm (12-1/4") hole main and back up tools checked OK. WSG: 2 on board

WBM Data

Mud Type:		Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	
Sample From:		MWD Circ Temp:		Hard/Ca:		High Gravity Solids:		PV	
Time:		Glycol CP Temp:		MBT:		Solids (corrected):		YP	
Weight:		Glycol:		PM:		H2O:		Gels 10s	
ECD TD:		Nitrates:		PF:		Oil:		Gels 10m	
ECD Shoe:		Sulphites:		MF:		Sand:	%	Fann 003	
ECD Cuttings:		API FL:		pH:		Barite:		Fann 006	
KCl Equiv:		API Cake:		PHPA Excess:				Fann 100	
								Fann 200	
								Fann 300	
								Fann 600	

Shakers, Volumes and Losses Data

Engineer : Jay Wan / Kosta Georgiou

				Equip.	Descr.	Mesh Size	Hours
Available	**2908.1bbl**	**Losses**	**0.0bbl**				
Active	55.0bbl	Downhole					
Mixing	1680.0bbl	Surf+ Equip	0.0bbl				
Hole	983.1bbl	Dumped					
Slug		De-Gasser					
Reserve		De-Sander					
Kill		De-Silter					
PAD MUD	190.0bbl	Centrifuge					
		Pumped Sweep/Displace					

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00			0.00	0.00	

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Printed on 07 Dec 2009

06:00 Hrs Update	
Time:	06:00 Hrs on 08 Dec 2009
Depth:	966 mMDRT/966 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Rigging down riser handling equipment.
Formation:	No returns to surface
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)	
(Days) - Dennis Archer	(Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 08 Dec 2009 | **Geology Report Number : 2** | (associated DDR # 10)

Well Details

Depth MDBRT:	966.0m	Rig:	Kan Tan IV	Date:	08 Dec 2009
Depth TVDBRT:	966.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	940.0m	RTE agl:		Report End:	2400
Hole Size:	17.500in	GLE amsl:	0 (m)	Days On Location:	9.96
Hole Size Carbide:		Last Csg Size:	13.375in	Days since Spud:	8.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	961.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/		

Operations Summary

24hr Summary:	Unsuccessfully pressure tested BOP connector. Successfully pressure tested surface equipment. Made up drill pipe stands. Made up 244 mm (9-5/8") casing hanger. Commenced making up 311 mm (12-1/4") BHA.
Forward Plan:	RIH, drill out shoe track and 5 m of new hole, conduct LOT, drill ahead in 311 mm (12-1/4") hole section.

General Comments

00:00 TO 24:00 Hrs ON 08 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 8 Dec 09. Sperry: 2 MWD engineers, 1 DD on board. 311 mm (12-1/4") hole back up tools checked OK.
Operational Comments	LWD sensor distances: Vibration (DDSr): 0.00 m Gamma (DGR): 12.37 m Resisitivity (EWR-P4): 14.84 m Directional (PCD): 19.79 m

WBM Data

Mud Type:	KCL/PHPA WBF	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	49sec/qt
Sample From:	PIT 4	MWD Circ Temp:		Hard/Ca:	1mg/l	High Gravity Solids:		PV	10cp
Time:	2000	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	13lb/100ft²
Weight:	8.90ppg	Glycol:		PM:	0.2	H2O:	96%	Gels 10s	4
ECD TD:		Nitrates:		PF:	0.25	Oil:		Gels 10m	6
ECD Shoe:		Sulphites:		MF:	1.1	Sand:	%	Fann 003	14
ECD Cuttings:		API FL:		pH:	9	Barite:		Fann 006	16
KCl Equiv:	8%	API Cake:		PHPA Excess:				Fann 100	5
								Fann 200	40
								Fann 300	48
								Fann 600	60

Shakers, Volumes and Losses Data

Engineer : Jay Wan / Kosta Georgiou

				Equip.	Descr.	Mesh Size	Hours
Available	**2705.1bbl**	**Losses**	**0.0bbl**				
Active	55.0bbl	Downhole					
Mixing	1477.0bbl	Surf+ Equip	0.0bbl				
Hole	983.1bbl	Dumped					
Slug		De-Gasser					
Reserve		De-Sander					
Kill		De-Silter					
PAD MUD	190.0bbl	Centrifuge					
		Pumped Sweep/Displace					

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	0.00	Sea bed

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Printed on 08 Dec 2009

06:00 Hrs Update	
Time:	06:00 Hrs on 09 Dec 2009
Depth:	966 mMDRT/966 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	RIH with 12¼" BHA while picking up singles of DP from deck.
Formation:	Torquay Group
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Dennis Archer (Nights) - Cleve Matthews

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Rockhopper-1

Date : 09 Dec 2009 | **Geology Report Number : 3** | (associated DDR # 11)

Well Details

Depth MDBRT:	1060.0m	Rig:	Kan Tan IV	Date:	09 Dec 2009
Depth TVDBRT:	1060.0m	Progress:	94.0m	Report Start:	0000
Depth TVDSS:	1034.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	10.96
Hole Size Carbide:		Last Csg Size:	13.375in	Days since Spud:	9.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	961.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Made up 311 mm (12-1/4") BHA. Ran in hole. Shallow tested LWD tools successfully. RIH. Tagged cement at 947 mMDRT. Drilled out shoe track. Drilled new hole to 971mMDRT. Conducted Leak Off Test. Drilled ahead in 311 mm (12-1/4") hole section to 1060 mMDRT.
Forward Plan:	Drill ahead in 311 mm (12-1/4") hole section.

General Comments

00:00 TO 24:00 Hrs ON 09 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 8 Dec 09. Sperry: 2 MWD engineers, 1 DD on board. 311 mm (12-1/4") hole back up tools checked OK.
Operational Comments	LWD sensor distances: Vibration (DDSr): 0.00 m Gamma (DGR): 12.37 m Resisitivity (EWR-P4): 14.84 m Directional (PCD): 19.79 m

WBM Data

Mud Type:	KCl- PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	42sec/qt
Sample From:	PIT 3	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:		PV	10cp
Time:	2045	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	16lb/100ft²
Weight:	9.00ppg	Glycol:		PM:	0.4	H2O:	95%	Gels 10s	5
ECD TD:		Nitrates:		PF:	0.35	Oil:		Gels 10m	7
ECD Shoe:		Sulphites:		MF:	1.2	Sand:	.1 %	Fann 003	5
ECD Cuttings:		API FL:	7.0cc/30min	pH:	10	Barite:		Fann 006	6
KCl Equiv:	9%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	13
								Fann 200	17
								Fann 300	26
								Fann 600	36

Shakers, Volumes and Losses Data

Engineer : Jay Wan / Kosta Georgiou

				Equip.	Descr.	Mesh Size	Hours
Available	**1782.4bbl**	**Losses**	**795.5bbl**				
Active	293.0bbl	Downhole					
Mixing	275.0bbl	Surf+ Equip	743.0bbl				
Hole	570.4bbl	Dumped					
Slug	44.0bbl	De-Gasser					
Reserve	525.0bbl	De-Sander					
Kill		De-Silter					
PAD MUD	75.0bbl	Centrifuge					
		Treated out of system	52.5bbl				

Comment

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Printed on 09 Dec 2009

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.70	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1141.00	1115.00	-16.00	0.00	GR decr, res incr, litho

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
980.00	1060.00	Min:10 Avg:22 Max:72	CALCILUTITE and interbedded CALCAREOUS CLAYSTONE CALCILUTITE (80-95%): medium grey to medium dark grey, very soft to soft, blocky to sub-blocky, occasional minor very fine sand, trace to minor corals, trace skeletal fragments, trace very fine grained pyrite. CALCAREOUS CLAYSTONE (5-20%): medium bluish grey, very soft to soft, blocky to sub-blocky, 20-30% calcareous clay.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
970.00 -	Trip	0.130	0.1300	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
970.00 - 1060.00	Drilled	0.161	0.1403	0.0001	0.0002	0.0001	0.0001	0.0001	0.000
1060.00 -	Peak	0.327	0.2956	0.0012	0.0007	0.0004	0.0001	0.0001	0.000
1108.00 -	Peak	0.613	0.4282	0.0001	0.0006	0.0002	0.0001	0.0000	0.000
1162.00 -	Peak	0.744	0.6128	0.0000	0.0007	0.0002	0.0001	0.0001	0.000

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
980.35	0.0	258.5	980.34	1.7	0.2	1.7	0.9	Sperry Sun RLL Tool
1009.96	0.2	60.5	1009.95	1.7	0.2	1.7	0.9	Sperry Sun RLL Tool
1039.18	0.2	57.4	1039.17	1.8	0.0	1.8	0.8	Sperry Sun RLL Tool

06:00 Hrs Update

Time:	06:00 Hrs on 10 Dec 2009
Depth:	1243 mMDRT/1243 mTVDRT
Progress Since Midnight (m):	183
Status @ 0600hrs:	Drill 12¼" hole from 1243 m
Formation:	Upper Angahook Formation
Lithology:	Calcareous siltstone, minor interbedded calcilutite
ROP:	Ave 46 m/hr (9.5-190 m/hr)
Gas:	Background: 0.3117 %, C1 0.2665%, C2 0.0004%, C3 0.0005%, iC4 0.0002%, nC4 0.0001%, C5 0.0003%, CO2 0.0000%

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Cleve Matthews

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origin

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Rockhopper-1

Date : 10 Dec 2009 | **Geology Report Number : 4** | (associated DDR # 12)

Well Details

Depth MDBRT:	1587.0m	Rig:	Kan Tan IV	Date:	10 Dec 2009
Depth TVDBRT:	1587.0m	Progress:	527.0m	Report Start:	0000
Depth TVDSS:	1561.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	11.96
Hole Size Carbide:		Last Csg Size:	13.375in	Days since Spud:	10.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	961.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Drilled ahead in 311 mm (12-1/4") hole section from 1060 mMDRT to 1587 mMDRT.
Forward Plan:	Drill ahead in 311 mm (12-1/4") hole to section TD, circulate hole clean, POOH, prepare to run 244 mm (9-5/8") casing.

General Comments

00:00 TO 24:00 Hrs ON 10 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 8 Dec 09. Sperry: 2 MWD engineers, 1 DD on board. 311 mm (12-1/4") hole back up tools checked OK.
Operational Comments	LWD sensor distances: Vibration (DDSr): 0.00 m Gamma (DGR): 12.37 m Resisitivity (EWR-P4): 14.84 m Directional (PCD): 19.79 m

WBM Data

Mud Type:	Hi-Vis PHB/Guar gum	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	61sec/qt
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:		PV	12cp
Time:	2105	Glycol CP Temp:		MBT:	10	Solids (corrected):		YP	25lb/100ft²
Weight:	9.20ppg	Glycol:		PM:	0.3	H2O:	94%	Gels 10s	8
ECD TD:		Nitrates:		PF:	0.25	Oil:		Gels 10m	10
ECD Shoe:		Sulphites:		MF:	1.2	Sand:	.4 %	Fann 003	7
ECD Cuttings:		API FL:	5.8cc/30min	pH:	9	Barite:		Fann 006	9
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	22
								Fann 200	29
								Fann 300	37
								Fann 600	49

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

				Equip.	Descr.	Mesh Size	Hours
Available	**1543.1bbl**	**Losses**	**245.0bbl**				
Active	55.0bbl	Downhole					
Mixing	380.0bbl	Surf+ Equip	219.0bbl				
Hole	759.1bbl	Dumped					
Slug	44.0bbl	De-Gasser					
Reserve	230.0bbl	De-Sander					
Kill		De-Silter					
PAD MUD	75.0bbl	Centrifuge	26.0bbl				
		Pumped Sweep/Displace					

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.70	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1141.00	1115.00	-16.00	154.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1295.00	1269.00	-1.00	244.00	GR decr, res incr
Lower Angahook	1543.00	1517.00	1539.00	1513.00	4.00	0.00	GR decr, res incr

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1060.00	1141.00	Min:17 Avg:38 Max:175	Interbedded CALCILUTITE, CALCAREOUS CLAYSTONE, CLAYSTONE and CALCAREOUS SILTSTONE CALCILUTITE (15-100%): medium grey to medium dark grey and pale yellowish brown, very soft to soft, blocky to sub-blocky, trace skeletal fragments, trace very fine grained pyrite. CALCAREOUS CLAYSTONE (0-20%): medium bluish grey to dark grey and dark greenish grey, very soft to soft, blocky to sub-blocky, 20-30% calcareous clay. CLAYSTONE (0-5%): medium bluish grey to dark greenish grey, very soft to friable, blocky to sub-blocky, 10% calcareous clay. CALCAREOUS SILTSTONE (0-85%): dark grey to dark greenish grey, soft to friable, blocky to fissile, 20% calcareous clay.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1141.00	1295.00	Min:9 Avg:44 Max:194	CALCAREOUS SILTSTONE with minor CALCILUTITE and occasional SILTSTONE Interbeds CALCAREOUS SILTSTONE (80-100%): dark grey to dark greenish grey, soft to friable, blocky to fissile, 30% calcareous clay. CALCILUTITE (0-15%): medium grey to pale yellowish brown, very soft to soft, blocky, rare very fine grained pyrite. SILTSTONE (0-5%): dark grey to dark greenish grey, soft to friable, blocky to fissile, 20% calcareous clay.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1295.00	1539.00	Min:8 Avg:34 Max:124	CALCAREOUS SILTSTONE interbedded with SILTSTONE and occasional CLAYSTONE CALCAREOUS SILTSTONE (0-100%): very light grey, medium light grey, meium dark grey, olive grey and dark greenish grey in part, 20-30% calcareous clay, trace carbonaceous specks, trace to 3% glauconite grains, trace lithic fragments, traceshell fragments and forams, trace very fine grained pyrite. SILTSTONE (0-100%): medium light grey to dark grey, olive grey and greenish grey in parts, soft to firm, friable in part, blocky to subblocky, 0-10% calcareous clay, 0-15% clay, 0-5% very fine quartz grains, trace carbonaceous material, trace glauconite grains, trace lithic fragments, trace mica flakes, trace corals, grading more arenaceous with depth. CLAYSTONE (0-10%): medium dark grey, soft to firm, blocky to subblocky, 10% calcareous clay, trace mica flakes, trace lithic fragments.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1539.00	1587.00	Min:18 Avg:38 Max:190	CALCAREOUS SILTSTONE interbedded with occasional CALCILUTITE and SILTSTONE CALCAREOUS SILTSTONE (85-100%): medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous specks, trace lithic fragments and foraminifera. CALCILUTITE (0-10%): light grey to medium light grey, very soft to soft, blocky to sub-blocky, 10% clay. SILTSTONE (0-5%): olive grey to dark greenish grey, friable, sub-blocky.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
1060.00 - 1141.00	Drilled	0.350	0.3008	0.0004	0.0005	0.0002	0.0001	0.0004	0.000
1108.00 -	Peak	0.613	0.4282	0.0001	0.0006	0.0002	0.0001	0.0000	0.000
1141.00 - 1240.00	Drilled	0.361	0.3081	0.0014	0.0009	0.0003	0.0002	0.0005	0.000
1162.00 -	Peak	0.744	0.6128	0.0000	0.0007	0.0002	0.0001	0.0001	0.000
1220.00 -	Peak	0.644	0.5587	0.0017	0.0009	0.0003	0.0001	0.0003	0.000
1240.00 - 1295.00	Drilled	0.340	0.3036	0.0028	0.0013	0.0004	0.0002	0.0007	0.000
1249.00 -	Peak	0.738	0.6536	0.0028	0.0013	0.0004	0.0002	0.0006	0.000
1295.00 - 1539.00	Drilled	0.379	0.3250	0.0019	0.0009	0.0004	0.0002	0.0004	0.000
1368.00 -	Peak	0.470	0.3478	0.0018	0.0009	0.0004	0.0002	0.0004	0.000
1420.00 -	Peak	0.688	0.6108	0.0032	0.0014	0.0005	0.0003	0.0005	0.000
1450.00 -	Peak	0.824	0.5736	0.0029	0.0013	0.0005	0.0002	0.0004	0.000
1539.00 - 1587.00	Drilled	0.418	0.3569	0.0017	0.0014	0.0006	0.0003	0.0005	0.000
1566.00 -	Peak	1.085	1.0084	0.0023	0.0036	0.0013	0.0007	0.0007	0.000

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Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
1068.02	0.3	56.4	1068.01	1.8	0.3	1.8	-0.6	Sperry Sun RLL Tool
1096.69	0.1	334.7	1096.68	1.9	1.1	1.9	-0.6	Sperry Sun RLL Tool
1125.20	0.3	23.4	1125.19	2.0	0.9	2.0	-0.6	Sperry Sun RLL Tool
1153.52	0.3	18.6	1153.51	2.1	0.1	2.1	-0.5	Sperry Sun RLL Tool
1182.12	0.3	64.5	1182.11	2.2	0.8	2.2	-0.4	Sperry Sun RLL Tool
1210.69	0.3	28.3	1210.68	2.3	0.7	2.3	-0.3	Sperry Sun RLL Tool
1239.34	0.4	49.9	1239.33	2.5	0.6	2.5	-0.2	Sperry Sun RLL Tool
1298.15	0.4	29.5	1298.14	2.8	0.2	2.8	0.1	Sperry Sun RLL Tool
1327.53	0.4	32.2	1327.52	2.9	0.1	2.9	0.2	Sperry Sun RLL Tool
1356.77	0.3	47.3	1356.76	3.1	0.5	3.1	0.3	Sperry Sun RLL Tool
1385.60	0.4	56.1	1385.59	3.2	0.4	3.2	0.4	Sperry Sun RLL Tool
1412.81	0.5	46.3	1412.80	3.3	0.5	3.3	0.6	Sperry Sun RLL Tool
1441.66	0.6	57.5	1441.65	3.5	0.5	3.5	0.8	Sperry Sun RLL Tool
1470.69	0.6	43.7	1470.67	3.6	0.5	3.7	1.0	Sperry Sun RLL Tool
1499.95	0.6	47.8	1499.93	3.8	0.1	3.9	1.3	Sperry Sun RLL Tool
1529.47	0.6	57.0	1529.45	4.0	0.3	4.1	1.5	Sperry Sun RLL Tool
1558.73	0.6	46.7	1558.71	4.2	0.4	4.3	1.7	Sperry Sun RLL Tool

06:00 Hrs Update

Time:	06:00 Hrs on 11 Dec 2009
Depth:	1726 mMDRT/1726 mTVDRT
Progress Since Midnight (m):	139
Status @ 0600hrs:	Drill 12¼" hole from 1587 to 1726 m.
Formation:	Lower Angahook Formation
Lithology:	CALCAREOUS SILTSTONE, minor thin CALCILUTITE and SILTSTONE interbeds
ROP:	Ave 32.4 m/hr (10.2-120 m/hr)
Gas:	Ave background 0.3322%, C1 0.2891%, C2 0.0017%, C3 0.0013%, iC4 0.0005%, nC4 0.0002%, C5 0.0004%, CO2 0.0001%

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 11 Dec 2009 | **Geology Report Number : 5** | (associated DDR # 13)

Well Details

Depth MDBRT:	1946.0m	Rig:	Kan Tan IV	Date:	11 Dec 2009
Depth TVDBRT:	1946.0m	Progress:	359.0m	Report Start:	0000
Depth TVDSS:	1920.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	12.96
Hole Size Carbide:		Last Csg Size:	13.375in	Days since Spud:	11.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	961.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Drilled ahead in 311 mm (12-1/4") hole section from 1587 mMDRT to 1946 mMDRT.
Forward Plan:	Drill ahead in 311 mm (12-1/4") hole to section TD, circulate hole clean, POOH, prepare to run 244 mm (9-5/8") casing.

General Comments

00:00 TO 24:00 Hrs ON 11 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 8 Dec 09. Sperry: 3 MWD engineers, 1 DD on board. 311 mm (12-1/4") hole back up tools checked OK.
Operational Comments	LWD sensor distances: Vibration (DDSr): 0.00 m Gamma (DGR): 12.37 m Resisitivity (EWR-P4): 14.84 m Directional (PCD): 19.79 m

WBM Data

Mud Type:	Hi-Vis PHB/Guar gum	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	60sec/qt
		MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:		PV	13cp
Sample From:	Flowline	Glycol CP Temp:		MBT:	15	Solids (corrected):		YP	27lb/100ft²
Time:	1010	Glycol:		PM:	0.35	H2O:	94%	Gels 10s	10
Weight:	9.40ppg	Nitrates:		PF:	0.3	Oil:		Gels 10m	15
ECD TD:		Sulphites:		MF:	1.25	Sand:	.35 %	Fann 003	8
ECD Shoe:		API FL:	5.7cc/30min	pH:	9.5	Barite:		Fann 006	10
ECD Cuttings:		API Cake:	1/32nd"	PHPA Excess:				Fann 100	25
KCl Equiv:	8%							Fann 200	33
								Fann 300	40
								Fann 600	53

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

				Equip.	Descr.	Mesh Size	Hours
Available	**1836.5bbl**	**Losses**	**86.0bbl**				
Active	269.0bbl	Downhole					
Mixing	300.0bbl	Surf+ Equip	70.0bbl				
Hole	918.5bbl	Dumped					
Slug	44.0bbl	De-Gasser					
Reserve	230.0bbl	De-Sander					
Kill		De-Silter					
PAD MUD	75.0bbl	Centrifuge	16.0bbl				
		Pumped Sweep/Displace					

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.70	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1141.00	1115.00	-16.00	154.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1295.00	1269.00	-1.00	244.00	GR decr, res incr
Lower Angahook	1543.00	1517.00	1539.00	1513.00	4.00	286.00	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.00	1799.00	2.00	0.00	GR incr, res incr

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1587.00	1735.00	Min: Avg: Max:	CALCAREOUS SILTSTONE interbedded with occasional CALCILUTITE and SILTSTONE CALCAREOUS SILTSTONE (85-100%): medium light grey to medium dark grey, olive grey in part, soft, sub-blocky, 20% calcareous clay, trace carbonaceous specks, trace lithic fragments and foraminifera. CALCILUTITE (0-10%): light grey to medium light grey, very soft to soft, blocky to sub-blocky, 10% clay. SILTSTONE (0-5%): olive grey to dark greenish grey, friable, sub-blocky.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1735.00	1825.00	Min:7 Avg:34 Max:72	ARGILLACEOUS SILSTONE, thin interbeds of CALCAREOUS SILTSTONE ARGILLACEOUS SILTSTONE (80-95%): brownish grey, soft, subblocky to blocky, 5% calcareous clay, 20% clay, trace lithic fragments, trace carbonaceous specks, trace glauconite grains, trace very fine grained pyrite. CALCAREOUS SILTSTONE (5-20%): white, yellowish grey, brownish grey, trace greenish black, very soft to firm, subblocky to subfissile, 20% calcareous clay, 10% clay, traces reworked crystalline CALCILUTITE.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1825.00	1946.00	Min:4 Avg:16 Max:102	ARGILLACEOUS SILTSTONE, minor interbeds of CALCAREOUS SILTSTONE and CALCILUTITE at top of section, minor interbeds of SILTSTONE at bottom of section. ARGILLACEOUS SILTSTONE (0-100%): brownish black, dark greenish grey, very soft to soft, subblocky to blocky, 20% clay, 10-23% calcareous clay, 2-5% very fine quartz grains, trace lithic fragments, trace carbonaceous specks, trace micas, trace forams, trace feldspar, traces calcite crystals, grains sometimes show fine laminations. CALCAREOUS SILTSTONE (0-25%): yellowish grey, brownish grey, greenish black, very soft to soft, subblocky to subfissile, 20% calcareous clay, 10% clay. CALCILUTITE (0-5%): brownish grey, soft to firm, blocky to subblocky, in part crystalline, traces calcite crystals. SILTSTONE (0-100%): brownish black, dark greenish grey, greenish grey, very soft to soft, subblocky to blocky, 15% clay, 5% calcareous clay, 5% very fine quartz grains, trace micas, trace very fine grained pyrite.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
1587.00 - 1735.00	Drilled	0.328	0.2793	0.0020	0.0011	0.0010	0.0004	0.0005	0.000
1675.00 -	Peak	0.747	0.6700	0.0065	0.0027	0.0010	0.0004	0.0005	0.000
1735.00 - 1825.00	Drilled	0.444	0.3918	0.0018	0.0018	0.0007	0.0002	0.0003	0.000
1825.00 - 1946.00	Drilled	0.495	0.3739	0.0089	0.0045	0.0023	0.0007	0.0010	0.000
1829.00 -	Peak	1.050	0.8165	0.0161	0.0069	0.0029	0.0009	0.0012	0.000
1858.00 -	Peak	1.211	0.8048	0.0164	0.0075	0.0035	0.0010	0.0014	0.000

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Survey								
MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
1587.90	0.6	49.0	1587.88	4.4	0.1	4.5	2.0	Sperry Sun RLL Tool
1616.89	0.7	52.6	1616.87	4.6	0.4	4.7	2.2	Sperry Sun RLL Tool
1645.39	0.6	67.5	1645.36	4.7	0.7	4.8	2.5	Sperry Sun RLL Tool
1673.84	0.7	56.9	1673.81	4.9	0.5	5.0	2.8	Sperry Sun RLL Tool
1702.24	0.7	57.6	1702.21	5.1	0.0	5.2	3.1	Sperry Sun RLL Tool
1759.92	0.7	70.2	1759.89	5.3	0.3	5.5	3.7	Sperry Sun RLL Tool
1789.63	0.8	75.2	1789.59	5.5	0.4	5.6	4.1	Sperry Sun RLL Tool
1848.62	0.8	79.0	1848.58	5.6	0.1	5.8	4.9	Sperry Sun RLL Tool
1876.78	0.9	76.6	1876.74	5.7	0.4	5.9	5.3	Sperry Sun RLL Tool
1905.30	0.8	78.6	1905.25	5.8	0.4	6.0	5.7	Sperry Sun RLL Tool

06:00 Hrs Update	
Time:	06:00 Hrs on 12 Dec 2009
Depth:	1972 mMDRT/1972 mTVDRT
Progress Since Midnight (m):	26
Status @ 0600hrs:	Circulate well for clean returns over Shaker Screens.
Formation:	Demons Bluff Formation
Lithology:	ARGILLACEOUS SILTSTONE
ROP:	Ave 42 m/hr (8.5-14.7 m/hr)
Gas:	Ave background 0.3527%, C1 0.2782%, C2 0.0074%, C3 0.0038%, iC4 0.0019%, nC4 0.0005%, C5 0.0007%, CO2 0.0000%

Wellsite Geologist(s)
(Days) - Dennis Archer (Nights) - Cleve Matthews

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Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 12 Dec 2009 | **Geology Report Number : 6** | (associated DDR # 14)

Well Details

Depth MDBRT:	1972.0m	Rig:	Kan Tan IV	Date:	12 Dec 2009
Depth TVDBRT:	1972.0m	Progress:	26.0m	Report Start:	0000
Depth TVDSS:	1946.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	14.04
Hole Size Carbide:		Last Csg Size:	13.375in	Days since Spud:	12.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	961.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Drilled ahead in 311 mm (12-1/4") hole to section TD at 1972 mMDRT. Circulated hole clean. Pulled out of hole. Downloaded LWD data. Rigged up to run 244 mm (9-5/8") casing.
Forward Plan:	Complete running and cementing 244 mm (9 5/8") casing.

General Comments

00:00 TO 24:00 Hrs ON 12 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 8 Dec 09. 311 mm (12-1/4") cuttings samples packed ready for offload from rig. Sperry: 3 MWD engineers, 1 DD on board. Waiting for tools from boat for 216 mm (8-1/2") hole.
Operational Comments	LWD sensor distances: Vibration (DDSr): 0.00 m Gamma (DGR): 12.37 m Resisitivity (EWR-P4): 14.84 m Directional (PCD): 19.79 m

WBM Data

Mud Type:	Hi-Vis PHB/Guar gum	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	51sec/qt
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:		PV	18cp
Time:	2100	Glycol CP Temp:		MBT:	15	Solids (corrected):		YP	22lb/100ft²
Weight:	9.40ppg	Glycol:		PM:	0.35	H2O:	94%	Gels 10s	11
ECD TD:		Nitrates:		PF:	0.3	Oil:		Gels 10m	16
ECD Shoe:		Sulphites:		MF:	1.3	Sand:	.4 %	Fann 003	8
ECD Cuttings:		API FL:	5.6cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	26
								Fann 200	35
								Fann 300	40
								Fann 600	58

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**1701.7bbl**	**Losses**	**58.0bbl**
Active	277.0bbl	Downhole	
Mixing		Surf+ Equip	47.0bbl
Hole	1006.7bbl	Dumped	
Slug	13.0bbl	De-Gasser	
Reserve	230.0bbl	De-Sander	
Kill		De-Silter	
PAD MUD	175.0bbl	Centrifuge	11.0bbl
		Pumped Sweep/Displace	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	0.00	GR incr, res incr

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1946.00 - 1972.00		Min:9 Avg:15 Max:42	ARGILLACEOUS SILTSTONE ARGILLACEOUS SILTSTONE (100%): brownish black, dark greenish grey to greenish black, very soft to soft, sub-blocky to blocky, 5% calcareous clay, 20% clay, 5% very fine quartz grains, trace micas, trace carbonaceous specks.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
1946.00 - 1972.00	Drilled	0.353	0.2782	0.0074	0.0038	0.0019	0.0005	0.0008	0.000
1951.00 -	Peak	0.583	0.4375	0.0107	0.0049	0.0023	0.0006	0.0080	0.000

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
1934.76	0.9	50.9	1934.71	5.9	1.4	6.2	6.1	Sperry Sun RLL Tool
1951.76	0.7	51.7	1951.71	6.1	1.2	6.3	6.3	Sperry Sun RLL Tool

06:00 Hrs Update

Time:	06:00 Hrs on 13 Dec 2009
Depth:	1972 mMDRT/1972 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Running 9 5/8" casing.
Formation:	Demons Bluff Formation
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 13 Dec 2009 | **Geology Report Number : 7** | (associated DDR # 15)

Well Details

Depth MDBRT:	1972.0m	Rig:	Kan Tan IV	Date:	13 Dec 2009
Depth TVDBRT:	1972.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	1946.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	15.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	13.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Ran and cemented 244 mm (9-5/8") casing.
Forward Plan:	Rig up and recover Lower Marine Riser Package (LMRP) to moonpool for repairs.

General Comments

00:00 TO 24:00 Hrs ON 13 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 8 Dec 09. Sperry: 3 MWD engineers, 1 DD on board. Waiting for tools from boat for 216 mm (8-1/2") hole.

WBM Data

Mud Type:	Hi-Vis PHB/Guar gum	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	61sec/qt
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:		PV	12cp
Time:	2105	Glycol CP Temp:		MBT:	10	Solids (corrected):		YP	25lb/100ft²
Weight:	9.20ppg	Glycol:		PM:	0.3	H2O:	94%	Gels 10s	8
ECD TD:		Nitrates:		PF:	0.25	Oil:		Gels 10m	10
ECD Shoe:		Sulphites:		MF:	1.2	Sand:	.4 %	Fann 003	7
ECD Cuttings:		API FL:	5.8cc/30min	pH:	9	Barite:		Fann 006	9
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	22
								Fann 200	29
								Fann 300	37
								Fann 600	49

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**1543.1bbl**	**Losses**	**245.0bbl**
Active	55.0bbl	Downhole	
Mixing	380.0bbl	Surf+ Equip	219.0bbl
Hole	759.1bbl	Dumped	
Slug	44.0bbl	De-Gasser	
Reserve	230.0bbl	De-Sander	
Kill		De-Silter	
PAD MUD	75.0bbl	Centrifuge	26.0bbl
		Pumped Sweep/Displace	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	0.00	GR incr, res incr

06:00 Hrs Update

Time:	06:00 Hrs on 14 Dec 2009
Depth:	1972 mMDRT/1972 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Run and install wearbushing
Formation:	Demons Bluff Formation
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 14 Dec 2009 | **Geology Report Number : 8** | (associated DDR # 16)

Well Details

Depth MDBRT:	1972.0m	Rig:	Kan Tan IV	Date:	14 Dec 2009
Depth TVDBRT:	1972.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	1946.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	16.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	14.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Ran wear bushing. Rigged up to retrieved LMRP for repairs.
Forward Plan:	Recover LMRP to surface for repairs.

General Comments

00:00 TO 24:00 Hrs ON 14 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 8 Dec 09. Sperry: 3 MWD engineers, 1 DD on board. 216 mm (8-1/2") hole section tools on board, commenced op checks.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	70sec/qt
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:		PV	11cp
Time:	2200	Glycol CP Temp:		MBT:	8	Solids (corrected):		YP	27lb/100ft²
Weight:	9.65ppg	Glycol:		PM:	0.3	H2O:	93%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.3	Oil:		Gels 10m	15
ECD Shoe:		Sulphites:		MF:	2	Sand:	%	Fann 003	8
ECD Cuttings:		API FL:	5.2cc/30min	pH:	9	Barite:		Fann 006	10
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	24
								Fann 200	32
								Fann 300	38
								Fann 600	49

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / James Munford

Available	**2213.0bbl**	**Losses**	**80.3bbl**
Active	800.0bbl	Downhole	
Mixing		Surf+ Equip	80.3bbl
Hole	473.0bbl	Dumped	
Slug		De-Gasser	
Reserve	890.0bbl	De-Sander	
Kill		De-Silter	
PAD Mud	50.0bbl	Centrifuge	
		Pumped Sweep/Displace	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	0.00	GR incr, res incr

06:00 Hrs Update

Time:	06:00 Hrs on 15 Dec 2009
Depth:	1972 mMDRT/1972 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Pulling LMRP
Formation:	Demons Bluff Formation
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 15 Dec 2009 | **Geology Report Number : 9** | (associated DDR # 17)

Well Details

Depth MDBRT:	1972.0m	Rig:	Kan Tan IV	Date:	15 Dec 2009
Depth TVDBRT:	1972.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	1946.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	17.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	15.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Recovered LMRP and undertook repair operations.
Forward Plan:	Continue with LMRP repair operations, pressure test upper annular, run LMRP on marine riser, connect to BOP.

General Comments

00:00 TO 24:00 Hrs ON 15 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 8 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Main string checked OK, op checking backup string.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	70sec/qt
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:		PV	11cp
Time:	2200	Glycol CP Temp:		MBT:	8	Solids (corrected):		YP	28lb/100ft²
Weight:	9.65ppg	Glycol:		PM:	0.3	H2O:	93%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.3	Oil:		Gels 10m	15
ECD Shoe:		Sulphites:		MF:	1.9	Sand:	%	Fann 003	8
ECD Cuttings:		API FL:	5.3cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	24
								Fann 200	32
								Fann 300	39
								Fann 600	50

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / James Munford

Available	**2214.8bbl**	**Losses**	**0.0bbl**
Active	800.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	473.0bbl	Dumped	
Slug		De-Gasser	
Reserve	891.8bbl	De-Sander	
Kill		De-Silter	
PAD Mud	50.0bbl	Centrifuge	
		Pumped Sweep/Displace	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	0.00	GR incr, res incr

06:00 Hrs Update

Time:	06:00 Hrs on 16 Dec 2009
Depth:	1972 mMDRT/1972 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Installing Pod lines to LMRP prior to Pressure testing
Formation:	Demons Bluff Formation
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 16 Dec 2009 | **Geology Report Number : 10** | (associated DDR # 18)

Well Details

Depth MDBRT:	1972.0m	Rig:	Kan Tan IV	Date:	16 Dec 2009
Depth TVDBRT:	1972.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	1946.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	18.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	16.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Pressure tested upper annular successfully. Ran in hole with LMRP on marine riser. Landed out on BOP.
Forward Plan:	Pressure test LMRP connectors, pick up DP singles, pick up and RIH with 216 mm (8-1/2") directional assembly, drill out shoe track.

General Comments

00:00 TO 24:00 Hrs ON 16 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	LWD Tools: Distance to Bit Vibration (DDSr-DGR): 0.00 m Directional (PCD): 7.78 m Gamma (DGR): 10.49 m Resisitivity (EWR-P4): 12.85 m Pressure While Drilling (PWD): 15.38 m Density (ALD): 21.84 m Neutron (CTN): 25.88 m Sonic (BAT): 30.47 m Caliper (ACAL): 37.31 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	70sec/qt
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:		PV	13cp
Time:	2300	Glycol CP Temp:		MBT:	8	Solids (corrected):		YP	26lb/100ft²
Weight:	9.65ppg	Glycol:		PM:	0.3	H2O:	93%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.3	Oil:		Gels 10m	15
ECD Shoe:		Sulphites:		MF:	2	Sand:	%	Fann 003	8
ECD Cuttings:		API FL:	5.2cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	24
								Fann 200	33
								Fann 300	39
								Fann 600	52

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / James Munford

Available	**2216.0bbl**	**Losses**	**0.0bbl**	Equip.	Descr.	Mesh Size	Hours
Active	800.0bbl	Downhole					
Mixing		Surf+ Equip	0.0bbl				
Hole	473.0bbl	Dumped					
Slug		De-Gasser					
Reserve	893.0bbl	De-Sander					
Kill		De-Silter					
PAD Mud	50.0bbl	Centrifuge					
		Pumped Sweep/Displace					

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	0.00	GR incr, res incr

06:00 Hrs Update

Time:	06:00 Hrs on 17 Dec 2009
Depth:	1972 mMDRT/1972 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	M/Up & RIH with BOP test tool to press test LMRP connectors & upper annular.
Formation:	No drilling
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Cleve Matthews

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Rockhopper-1

Date : 17 Dec 2009 | **Geology Report Number : 11** | (associated DDR # 19)

Well Details

Depth MDBRT:	1972.0m	Rig:	Kan Tan IV	Date:	17 Dec 2009
Depth TVDBRT:	1972.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	1946.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	19.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	17.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Pressure tested LMRP connector successfully. Completed installation and pressure testing of Geospan. Pressure tested surface equipment sucessfully. Picked up and made up 216 mm (8-1/2") directional BHA.
Forward Plan:	Pick up DP singles, RIH, drill out shoe track and 5 m of new hole, conduct LOT, directionally drill ahead in 216 mm (8-1/2") hole section.

General Comments

00:00 TO 24:00 Hrs ON 17 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string checked OK. Main string shallow test OK.
Operational Comments	LWD Tools: Distance to Bit Vibration (DDSr-DGR): 0.00 m Directional (PCD): 7.78 m Gamma (DGR): 10.49 m Resisitivity (EWR-P4): 12.85 m Pressure While Drilling (PWD): 15.38 m Density (ALD): 21.84 m Neutron (CTN): 25.88 m Sonic (BAT): 30.47 m Caliper (ACAL): 37.31 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:	
Time:	2300	Glycol CP Temp:		MBT:	8	Solids (corrected):	
Weight:	9.65ppg	Glycol:		PM:	0.3	H2O:	93%
ECD TD:		Nitrates:		PF:	0.3	Oil:	
ECD Shoe:		Sulphites:		MF:	2.1	Sand:	%
ECD Cuttings:		API FL:	4.8cc/30min	pH:	9.5	Barite:	
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	69sec/qt
PV	13cp
YP	25lb/100ft²
Gels 10s	10
Gels 10m	15
Fann 003	8
Fann 006	10
Fann 100	24
Fann 200	32
Fann 300	38
Fann 600	51

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / James Munford

Available	**2171.4bbl**	**Losses**	**28.0bbl**
Active	599.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	597.4bbl	Dumped	
Slug		De-Gasser	
Reserve	945.0bbl	De-Sander	
Kill		De-Silter	
PAD Mud	30.0bbl	Centrifuge	
		Pumped Sweep/Displace	28.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	0.00	GR incr, res incr

06:00 Hrs Update

Time:	06:00 Hrs on 18 Dec 2009
Depth:	1972 mMDRT/1972 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Picking Uo D/Pipe from the deck & RIH @ 1530m.
Formation:	Demons Bluff Formation
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Cleve Matthews

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Rockhopper-1

Date : 18 Dec 2009 | **Geology Report Number : 12** | (associated DDR # 20)

Well Details

Depth MDBRT:	1972.0m	Rig:	Kan Tan IV	Date:	18 Dec 2009
Depth TVDBRT:	1972.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	1946.0m	RTE agl:		Report End:	2400
Hole Size:	12.250in	GLE amsl:	0 (m)	Days On Location:	20.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	18.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 17.50ppg		

Operations Summary

24hr Summary:	Ran in hole picking up singles. Performed LWD shallow hole test successfully. Ran in hole picking up singles to 1657 mMDRT. Ran in hole to top of cement at 1938 mMDRT. Unsuccessfully attempted to drill shoetrack. Pulled out of hole. Downloaded LWD. Laid out sonic.
Forward Plan:	Change BHA to mud motor, bent sub and MWD, RIH, drill out shoe track and 5 m new hole, conduct LOT, drill ahead in 216 mm (8-1/2") hole section.

General Comments

00:00 TO 24:00 Hrs ON 18 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	LWD Tools: Distance to Bit Vibration (DDSr-DGR): 0.00 m Directional (PCD): 7.78 m Gamma (DGR): 10.49 m Resisitivity (EWR-P4): 12.85 m Pressure While Drilling (PWD): 15.38 m Density (ALD): 21.84 m Neutron (CTN): 25.88 m Sonic (BAT): 30.47 m Caliper (ACAL): 37.31 m
Operational Comments	WSG crewchange Cleve off, Brenton on.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:	
Time:	2000	Glycol CP Temp:		MBT:	8	Solids (corrected):	
Weight:	9.55ppg	Glycol:		PM:	0.2	H2O:	93%
ECD TD:		Nitrates:		PF:	0.2	Oil:	
ECD Shoe:		Sulphites:		MF:	2.4	Sand:	%
ECD Cuttings:		API FL:	5.4cc/30min	pH:	9	Barite:	
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	54sec/qt
PV	10cp
YP	21lb/100ft²
Gels 10s	10
Gels 10m	15
Fann 003	7
Fann 006	9
Fann 100	20
Fann 200	26
Fann 300	31
Fann 600	41

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / James Munford

Available	**2135.5bbl**	**Losses**	**54.0bbl**
Active	799.0bbl	Downhole	
Mixing		Surf+ Equip	54.0bbl
Hole	571.5bbl	Dumped	
Slug		De-Gasser	
Reserve	735.0bbl	De-Sander	
Kill		De-Silter	
PAD Mud	30.0bbl	Centrifuge	
		Pumped Sweep/Displace	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	0.00	GR incr, res incr

06:00 Hrs Update

Time:	06:00 Hrs on 19 Dec 2009
Depth:	1972 mMDRT/1972 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Shallow testing MWD & PDM tools.
Formation:	Demons Bluff Formation
Lithology:	No new formation drilled
ROP:	No new formation drilled
Gas:	No new formation drilled

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 19 Dec 2009 | **Geology Report Number : 13** | (associated DDR # 21)

Well Details

Depth MDBRT:	2019.0m	Rig:	Kan Tan IV	Date:	19 Dec 2009
Depth TVDBRT:	2018.0m	Progress:	47.0m	Report Start:	0000
Depth TVDSS:	1992.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	21.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	19.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Ran in hole with mud motor BHA. Drilled out shoe track. Drilled 5 m new hole to 1977 mMDRT. Conducted LOT. Directionally drilled ahead in 216 mm (8-1/2") hole section to 2019mMDRT. Commenced POOH for BHA change.
Forward Plan:	POOH, change BHA and RIH with LWD suite and Geopilot, drill ahead in 216 mm (8-1/2") hole section.

General Comments

00:00 TO 24:00 Hrs ON 19 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	MWD Tools: Distance to Bit Directional (PCD): 7.76 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	260mg/l	High Gravity Solids:	
Time:	2130	Glycol CP Temp:		MBT:	7	Solids (corrected):	
Weight:	9.55ppg	Glycol:		PM:	0.3	H2O:	93%
ECD TD:		Nitrates:		PF:	0.25	Oil:	
ECD Shoe:		Sulphites:		MF:	2.4	Sand:	%
ECD Cuttings:		API FL:	5.4cc/30min	pH:	9.5	Barite:	
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	49sec/qt
PV	11cp
YP	22lb/100ft²
Gels 10s	10
Gels 10m	15
Fann 003	7
Fann 006	9
Fann 100	21
Fann 200	28
Fann 300	33
Fann 600	44

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / James Munford

Available	**1978.6bbl**	**Losses**	**160.8bbl**
Active	719.0bbl	Downhole	
Mixing		Surf+ Equip	149.8bbl
Hole	584.6bbl	Dumped	
Slug		De-Gasser	
Reserve	645.0bbl	De-Sander	
Kill		De-Silter	
PAD Mud	30.0bbl	Centrifuge	
		Evaporation	11.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	0.00	GR incr, res incr

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1972.00 - 2019.00		Min:3 Avg:10 Max:165	ARGILLACEOUS SILTSTONE ARGILLACEOUS SILTSTONE (100%): brownish black, olive grey, greenish black, very soft to firm, sub-blocky to blocky, 0 to 5% calcareous clay, 25 to 30% clay, trace carbonaceous specks, trace to 2% mica, trace foraminifera, trace shell fragments, trace lithic fragments, trace pyrite, trace dolomite.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
1972.00 -	Trip	0.160	0.1327	0.0041	0.0027	0.0016	0.0004	0.0012	0.000
1972.00 - 2019.00	Drilled	0.269	0.1996	0.0061	0.0044	0.0025	0.0008	0.0015	0.000
1997.00 -	Peak	0.445	0.3876	0.0114	0.0072	0.0032	0.0010	0.0015	0.000
2007.00 -	Peak	0.482	0.3289	0.0104	0.0076	0.0040	0.0012	0.0018	0.000

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
1968.42	0.69	57.75	1968.37	6.17	0.4	6.4	6.3	Sperry Sun RLL Tool
1992.64	3.64	23.88	1992.57	6.93	12.8	7.2	6.7	Sperry Sun RLL Tool
2006.90	4.80	20.69	2006.79	7.89	8.3	8.1	7.1	Sperry Sun RLL Tool

06:00 Hrs Update

Time:	06:00 Hrs on 20 Dec 2009
Depth:	2019 mMDRT / 2018 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	RIH W/ BHA#6
Formation:	Demons Bluff Formation
Lithology:	No new formation drilled
ROP:	No new formation drilled
Gas:	No new formation drilled

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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origin

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Rockhopper-1

Date : 20 Dec 2009 | **Geology Report Number : 14** | (associated DDR # 22)

Well Details

Depth MDBRT:	2023.0m	Rig:	Kan Tan IV	Date:	20 Dec 2009
Depth TVDBRT:	2022.0m	Progress:	6.0m	Report Start:	0000
Depth TVDSS:	1996.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	22.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	20.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Pulled out of hole. Changed BHA to Geopilot and LWD. Ran in hole. Slipped and cut drill line. Ran in hole. Washed and reamed while recording LWD in wipe mode from 244 mm (9-5/8") shoe to 2019 mMDRT. Directionally drilled ahead in 216 mm (8-1/2") hole section to 2023 mMDRT. Geopilot malfunctioned. Pulled out of hole.
Forward Plan:	POOH, change out Geopilot, RIH, directionally drill ahead in 216 mm (8-1/2") hole section.

General Comments

00:00 TO 24:00 Hrs ON 20 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string checked OK. Replaced Geopilot for current BHA.
Operational Comments	LWD Tools: Distance to Bit for wiped interval 1965-2019 mMDRT and drilled interval 2019-2023 mMDRT: Vibration (DDSr-DGR): 0.00 m Directional (PCD): 7.76 m Gamma (DGR): 10.52 m Resisitivity (EWR-P4): 12.88 m Pressure While Drilling (PWD): 15.41 m Density (ALD): 21.87 m Neutron (CTN): 25.91 m Sonic (BAT): 30.50 m Caliper (ACAL): 37.34 m
Operational Comments	LWD Tools: Distance to Bit for depth interval from 2023 mMDRT. Vibration (DDSr-DGR): 0.00 m Directional (PCD): 8.73 m Gamma (DGR): 11.50 m Resisitivity (EWR-P4): 13.86 m Pressure While Drilling (PWD): 16.39 m Density (ALD): 22.85 m Neutron (CTN): 26.89 m Sonic (BAT): 31.48 m Caliper (ACAL): 38.32 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	220mg/l	High Gravity Solids:	
Time:	2000	Glycol CP Temp:		MBT:	8	Solids (corrected):	
Weight:	9.60ppg	Glycol:		PM:	0.3	H2O:	93%
ECD TD:		Nitrates:		PF:	0.2	Oil:	
ECD Shoe:		Sulphites:		MF:	2.3	Sand:	%
ECD Cuttings:		API FL:	4.9cc/30min	pH:	9	Barite:	
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	52sec/qt
PV	11cp
YP	22lb/100ft²
Gels 10s	10
Gels 10m	15
Fann 003	8
Fann 006	9
Fann 100	21
Fann 200	28
Fann 300	33
Fann 600	44

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Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / James Munford

Available	1960.2bbl	Losses	6.8bbl
Active	729.0bbl	Downhole	
Mixing		Surf+ Equip	6.8bbl
Hole	611.2bbl	Dumped	
Slug		De-Gasser	
Reserve	590.0bbl	De-Sander	
Kill		De-Silter	
PAD Mud	30.0bbl	Centrifuge	
		Pumped Sweep/Displace	

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	0.00	GR incr, res incr

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2019.00 - 2023.00		Min:11 Avg:30 Max:51	Interpreted as ARGILLACEOUS SILTSTONE Not circulated out

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2019.00 - 2023.00	Circulated								
Comment - Not circulated out									
2019.00 -	Trip	0.371	0.2805	0.0093	0.0079	0.0046	0.0016	0.0022	0.000

06:00 Hrs Update

Time:	06:00 Hrs on 21 Dec 2009
Depth:	2023 mMDRT/2023 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Tripping in the hole @ 1350 m
Formation:	Demons Bluff Formation
Lithology:	No new formation drilled
ROP:	No new formation drilled
Gas:	No new formation drilled

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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Rockhopper-1

Date : 21 Dec 2009 | **Geology Report Number : 15** | (associated DDR # 23)

Well Details

Depth MDBRT:	2230.0m	Rig:	Kan Tan IV	Date:	21 Dec 2009
Depth TVDBRT:	2220.0m	Progress:	207.0m	Report Start:	0000
Depth TVDSS:	2194.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	23.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	21.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Replaced Geopilot. Ran in hole. Directionally drilled ahead in 216 mm (8-1/2") hole section.
Forward Plan:	Directionally drill ahead in 216 mm (8-1/2") hole.

General Comments

00:00 TO 24:00 Hrs ON 21 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string minus Geopilot checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. Checking tools and equipment.
Operational Comments	LWD Tools: Distance to Bit for depth interval from 2023 mMDRT. Vibration (DDSr-DGR): 0.00 m Directional (PCD): 8.73 m Gamma (DGR): 11.50 m Resisitivity (EWR-P4): 13.86 m Pressure While Drilling (PWD): 16.39 m Density (ALD): 22.85 m Neutron (CTN): 26.89 m Sonic (BAT): 31.48 m Caliper (ACAL): 38.32 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:	
Time:	2130	Glycol CP Temp:		MBT:	7.5	Solids (corrected):	
Weight:	9.55ppg	Glycol:		PM:	0.2	H2O:	93%
ECD TD:		Nitrates:		PF:	0.1	Oil:	
ECD Shoe:		Sulphites:		MF:	2.2	Sand:	%
ECD Cuttings:		API FL:	4.8cc/30min	pH:	9	Barite:	
KCl Equiv:	8%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	51sec/qt
PV	13cp
YP	26lb/100ft²
Gels 10s	10
Gels 10m	16
Fann 003	8
Fann 006	10
Fann 100	25
Fann 200	33
Fann 300	39
Fann 600	52

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / James Munford

Available	**1881.3bbl**	**Losses**	**66.4bbl**
Active	644.0bbl	Downhole	
Mixing		Surf+ Equip	48.4bbl
Hole	562.3bbl	Dumped	
Slug		De-Gasser	
Reserve	675.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	18.0bbl
		Pumped Sweep/Displace	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	0.00	GR decr, res decr

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Lithology Summary		
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2019.00 - 2067.00	Min:4 Avg:11 Max:51	ARGILLACEOUS SILTSTONE, minor interbeds of CALCAREOUS SILTSTONE, thin CALCILUTITE ARGILLACEOUS SILTSTONE (85-100%): brownish black, in part greenish black, in part olive grey, very soft to firm, 25% clay, trace carbonaceous specks, lithic fragments, foraminifera. CALCAREOUS SILTSTONE (0-10%): olive grey, firm, subblocky, 25% calcareous clay, trace carbonaceous material , trace glauconite grains. CALCILUTITE (0-5%): white, soft, subblocky, chalky.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2067.00 - 2097.00	Min:10 Avg:19 Max:33	Interbedded SANDSTONE and CLAYSTONE, thin CALCAREOUS SANDSTONE at top of section SANDSTONE (20-80%): greenish grey, brownish grey, loose to friable, 20% very fine to fine grained, rounded to subrounded, moderate to well sorted, subspherical to spherical, 15% clay matrix, 10% glauconite, fair visual porosity, no shows. CLAYSTONE (20-75%): greenish grey, olive grey, brownish grey, soft, amorphous to subblocky,10% very fine to fine quartz grains, trace glauconite. CALCAREOUS SANDSTONE (0-5%): dark greenish grey, hard, conchoidal fracture, very fine, subrounded to rounded, moderate to well sorted, subspherical to spherical, 30% well calcareous cemented, 5% glauconite, trace carbonaceous material, fair visual porosity, no shows.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2097.00 - 2150.00	Min:5 Avg:20 Max:56	Interbedded SANDSTONE, SILTY SANDSTONE, SILTSTONE, ARGILLACEOUS SILTSTONE and CLAYSTONE with minor LIMESTONE interbeds at top of section. SILTY SANDSTONE grades to SILTY CLAYSTONE at bottom of section. SANDSTONE (10-90%): clear, light grey, opaque, trace yellowish grey, loose quartz, 10% very fine, 10% fine, 20% medium, 30% coarse, 20% very coarse, 10% granular, angular (shattered) to subrounded, poorly sorted, subspherical to subelongate, inferred fair visual porosity, no show. SILTY SANDSTONE (0-80%): brownish grey, light olive grey, in part clear, soft to firm, 80% fine, 10% medium, 10% coarse quartz grains, medium and coarse fractions occur as loose clear quartz grains, 30% silt, 10% clay, subrounded to subangular (shattered), poor to moderate sorting, subspherical, trace lithic fragments, poor inferred visual porosity, no show. SILTSTONE (10-80%): brownish black, olive grey, firm, subblocky to blocky, 15% clay, 10% very fine sand, trace pyrite aggregates, carbonaceous specs, lithic fragments. ARGILLACEOUS SILTSTONE (0-90%): brownish black, soft to firm, subblocky to finely interbedded, trace carbonaceous specks, trace mica, trace very fine grained aggregates. CLAYSTONE (0-80%): greenish grey, olive grey, soft, amorphous to subblocky,10% very fine to fine quartz grains, trace glauconite. LIMESTONE (0-20%): olive grey, mottled, friable to very hard, subblocky to subfissile, 15% clay, trace carbonaceous material. SILTY CLAYSTONE (0-20%): medium grey, greenish grey, soft, amorphous to sub-blocky, trace glauconite.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2150.00 - 2200.00	Min:8 Avg:24 Max:41	SILTSTONE, interbedded ARGILLACEOUS SILTSTONE, minor SANDSTONE and CLAYSTONE interbeds at top of section. SILTSTONE (60-100%): brownish grey, olive grey, soft to firm, subblocky to blocky, 10% clay, 15% very fine sand occurring as laminations and rare shattered coarse clear quartz crystals, trace carbonaceous specks, lithic fragments, micromica. ARGILLACEOUS SILTSTONE (0-100%): brownish black, olive grey, in part olive black, soft to firm, subblocky to blocky, 20% clay, 10% very fine sand occurring as laminations, trace pyrite aggregates, carbonaceous specks, lithic fragments, micromica. SANDSTONE (0-40%): light grey, light olive grey, clear, soft to loose, sub blocky, 40% very fine, 30% fine, 10% medium, 20% coarse quartz grains, coarse fraction occurs as loose clear quartz crystals, 10% clay matrix, subrounded to subangular (shattered), moderately sorted, subspherical to subelongate, trace lithic fragments, laminations, 5% rock flour, fair inferred visual porosity, no show. CLAYSTONE (0-60%): medium grey, greenish grey, very soft to soft, amorphous to subblocky, trace glauconite, carbonaceous specks, lithic fragments, pyrite.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2200.00 - 2230.00	Min:20 Avg:32 Max:56	SANDSTONE with minor SILTSTONE and ARGILLACEOUS SILTSTONE Interbeds SANDSTONE (40-90%): light grey, light olive grey, clear, soft to loose, sub blocky, 75% very fine, 20% fine, 5% coarse quartz grains, coarse fraction occurs as loose clear quartz crystals, 5% clay matrix, 15% silt occurring in laminations, subrounded to subangular (shattered), moderately to well sorted, subspherical, trace lithic fragments, pyrite, laminations, locally silty, 5 to 95% rock flour, fair inferred visual porosity, no show. SILTSTONE (10-60%): brownish grey, olive grey, brownish black, soft to firm, sub blocky to blocky, 5% clay, 5% very fine sand occurring in laminations, trace micromicas, lithic fragments, carbonaceous specks, fine laminations. ARGILLACEOUS SILTSTONE (0-40%): brownish black, olive grey, soft, subblocky, 20% clay, trace carbonaceous specks, pyrite aggregates, micromicas.

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Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2023.00 -	Trip	0.199	0.1282	0.0032	0.0029	0.0021	0.0015	0.0016	0.000
2023.00 - 2067.00	Drilled	0.223	0.2043	0.0067	0.0056	0.0042	0.0020	0.0034	0.200
2067.00 - 2230.00	Drilled	0.284	0.1363	0.0046	0.0037	0.0031	0.0034	0.0036	0.080
2082.00 -	Peak	0.314	0.1857	0.0048	0.0039	0.0030	0.0014	0.0028	0.000
2139.00 -	Peak	0.302	0.1247	0.0056	0.0053	0.0049	0.0025	0.0057	0.000
2167.00 -	Peak	0.342	0.1661	0.0068	0.0050	0.0041	0.0022	0.0049	0.000
2184.00 -	Peak	0.377	0.1171	0.0064	0.0061	0.0058	0.0035	0.0074	0.100

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2047.71	7.43	22.90	2047.36	11.86	6.5	12.2	8.7	Sperry Sun RLL Tool
2076.22	10.04	18.43	2075.54	15.87	9.5	16.2	10.3	Sperry Sun RLL Tool
2104.97	12.80	14.68	2103.72	21.27	9.9	21.7	11.9	Sperry Sun RLL Tool
2134.78	14.54	10.50	2132.68	28.09	6.7	28.6	13.4	Sperry Sun RLL Tool
2164.31	17.43	9.42	2161.07	36.05	9.8	36.6	14.8	Sperry Sun RLL Tool
2193.36	20.51	7.83	2188.54	45.33	10.8	45.9	16.2	Sperry Sun RLL Tool
2250.02	26.59	5.77	2240.45	67.70	10.8	68.4	18.8	Sperry Sun RLL Tool

06:00 Hrs Update

Time:	06:00 Hrs on 22 Dec 2009
Depth:	2318 mMDRT/2299.5 mTVDRT
Progress Since Midnight (m):	88
Status @ 0600hrs:	Drilling ahead 8-1/2" hole @ 2320 m.
Formation:	Eastern View Coal Measures
Lithology:	Sandstione, minor interbeds of Argillaceous Siltstone, occasional thin coals.
ROP:	Ave 19.8 m/hr (4.7-132 m/hr)
Gas:	Ave Background 0.1657%, C1 0.0297, C2 0.0021%, C3 0.0019%, iC4 0.0020%, nC4 0.0010%, C5 0.0035%, CO2 0.0030%

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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Rockhopper-1

Date : 22 Dec 2009 | **Geology Report Number : 16** | (associated DDR # 24)

Well Details

Depth MDBRT:	2550.0m	Rig:	Kan Tan IV	Date:	22 Dec 2009
Depth TVDBRT:	2475.0m	Progress:	527.0m	Report Start:	0000
Depth TVDSS:	2449.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	24.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	22.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Directionally drilled ahead in 216 mm (8-1/2") hole section
Forward Plan:	Direcionally drill ahead in 216 mm (8-1/2") hole section

General Comments

00:00 TO 24:00 Hrs ON 22 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string minus Geopilot checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. Checking tools and equipment: Run #1 (PEX) main and back up checked OK, VSP tools checked OK (guns still to be checked).
Operational Comments	LWD Tools: Distance to Bit for depth interval from 2023 mMDRT. Vibration (DDSr-DGR): 0.00 m Directional (PCD): 8.73 m Gamma (DGR): 11.50 m Resisitivity (EWR-P4): 13.86 m Pressure While Drilling (PWD): 16.39 m Density (ALD): 22.85 m Neutron (CTN): 26.89 m Sonic (BAT): 31.48 m Caliper (ACAL): 38.32 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	PIT 2	MWD Circ Temp:		Hard/Ca:	180mg/l	High Gravity Solids:	
Time:	2130	Glycol CP Temp:		MBT:	7.5	Solids (corrected):	
Weight:	9.55ppg	Glycol:		PM:	0.3	H2O:	92%
ECD TD:		Nitrates:		PF:	0.2	Oil:	
ECD Shoe:		Sulphites:		MF:	2.4	Sand:	.3 %
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9.5	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	49sec/qt
PV	14cp
YP	29lb/100ft²
Gels 10s	10
Gels 10m	18
Fann 003	8
Fann 006	11
Fann 100	28
Fann 200	36
Fann 300	43
Fann 600	57

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / James Munford

Available	**2000.8bbl**	**Losses**	**137.2bbl**
Active	639.0bbl	Downhole	
Mixing		Surf+ Equip	68.2bbl
Hole	644.8bbl	Dumped	
Slug		De-Gasser	
Reserve	717.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	49.0bbl
		Evaporation	20.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	0.00	GR decr, res decr

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2230.00	2305.00	Min:5 Avg:20 Max:132	Interbedded SANDSTONE, ARGILLACEOUS SILTSTONE and SILTSTONE with occasional thin coals. SANDSTONE (10-90%): light olive grey, light grey, clear, loose to firm, subblocky, 10% white clay matrix, 95% fine, 5% coarse quartz grains, coarse fraction occurs as loose clear quartz grains, subrounded to subangular (shattered), poorly sorted, subspherical, trace lithic fragments, carbonaceous specs, 20-95% rock flour, poor inferred visual porosity, no show. ARGILLACEOUS SILTSTONE (10-70%): brownish black, olive grey, soft to firm, subblocky, 20% clay, trace micromicas, thin coaly laminations. SILTSTONE (10-60%): brownish black, brownish grey, olive grey, firm, subblocky to blocky, 10% clay, trace carbonaceous specks, micromicas, lithic fragments. COAL (0-5%): black, brownish black, soft to firm, subblocky to blocky, trace finely disseminated pyrite.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2305.00	2550.00	Min:3 Avg:18 Max:115	Interbedded ARGILLACEOUS SILTSTONE, CLAYSTONE and SANDSTONE with thin COALS and minor ARGILLACEOUS SANDSTONE. ARGILLACEOUS SILTSTONE (15-95%): light brownish grey, light grey, very soft to firm, amorphous to subblocky, 25% clay, trace carbonaceous and coaly material as laminae SANDSTONE (5-90%): light grey, clear, opaque, predominantly loose, in part friable, fine to medium grained, subangular to subrounded, well sorted, subspherical to subrounded, clay matrix washing out, good inferred visual porosity, no shows. CLAYSTONE (0-80%): olive grey, brownish grey, soft and sticky to firm, amorphous to subblocky, traces carbonaceous material as specks and thin laminae, trace micromicas. COAL (0-10%): black, brownish black, firm to moderately hard, cleated to subfissile to subblocky, conchoidal fracture, bright. ARGILLACEOUS SANDSTONE (0-20%): very light grey, friable, 25% white clay matrix, fine grained, subrounded to subangular,well sorted, subspherical to subelongate, traces interbedded carbonaceous laminae, good inferred visual porosity, no show.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2203.00 -	Peak	0.227	0.0873	0.0048	0.0044	0.0045	0.0025	0.0061	0.070
2230.00 - 2305.00	Drilled	0.166	0.0297	0.0021	0.0019	0.0020	0.0010	0.0035	0.003
2275.00 -	Peak	0.209	0.0843	0.0067	0.0053	0.0040	0.0016	0.0045	0.000
2305.00 - 2550.00	Drilled	0.402	0.1875	0.0112	0.0094	0.0060	0.0026	0.0048	0.003
2342.00 -	Peak	0.713	0.5113	0.0250	0.0155	0.0080	0.0042	0.0054	0.000
2434.00 -	Peak	0.632	0.4047	0.0219	0.0169	0.0080	0.0038	0.0055	0.080
2456.00 -	Peak	0.672	0.4410	0.0226	0.0164	0.0083	0.0039	0.0083	0.000
2472.50 -	Peak	1.125	0.8527	0.0412	0.0275	0.0118	0.0052	0.0100	0.000
2522.00 -	Peak	0.800	0.4612	0.0229	0.0154	0.0086	0.0035	0.0055	0.040

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Survey								
MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2278.27	29.06	6.88	2265.44	80.75	8.9	81.5	20.3	Sperry Sun RLL Tool
2307.32	31.70	6.12	2290.50	95.28	9.2	96.1	21.9	Sperry Sun RLL Tool
2336.99	34.05	2.98	2315.41	111.28	9.8	112.1	23.2	Sperry Sun RLL Tool
2366.57	36.34	359.97	2339.59	128.29	9.7	129.2	23.6	Sperry Sun RLL Tool
2395.13	37.77	356.94	2362.38	145.49	8.1	146.4	23.1	Sperry Sun RLL Tool
2423.37	39.84	355.17	2384.39	163.18	8.3	164.0	21.9	Sperry Sun RLL Tool
2452.17	42.32	354.45	2406.10	182.07	8.8	182.9	20.2	Sperry Sun RLL Tool
2481.68	43.11	354.88	2427.78	202.05	2.9	202.8	18.3	Sperry Sun RLL Tool
2511.39	42.92	354.47	2449.50	222.28	1.1	223.0	16.5	Sperry Sun RLL Tool

06:00 Hrs Update	
Time:	06:00 Hrs on 23 Dec 2009
Depth:	2609 mMDRT/2520.8 mTVDRT
Progress Since Midnight (m):	59
Status @ 0600hrs:	Drilling ahead in 8-1/2" hole @ 2609.
Formation:	Eastern View Coal Measures
Lithology:	Interbedded Argillaceous Siltstone, Sandstone, Claystone, minor Siltstone.
ROP:	Ave 15.8 m/hr (4.9-107 m/hr)
Gas:	Ave background gas: 0.5690%, C1 0.2659%, C2 0.0158%, C3 0.0101%, iC4 0.0055%, nC4 0.0023, C5 0.0047%, CO2 0.0000%

Wellsite Geologist(s)
(Days) - Dennis Archer (Nights) - Brenton Richards

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 23 Dec 2009 | **Geology Report Number : 17** | (associated DDR # 25)

Well Details

Depth MDBRT:	2753.0m	Rig:	Kan Tan IV	Date:	23 Dec 2009
Depth TVDBRT:	2626.0m	Progress:	730.0m	Report Start:	0000
Depth TVDSS:	2600.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	25.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	23.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Directionally drilled ahead in 216 mm (8-1/2") hole section. Wiper trip to 1965mMDRT - 244mm (9-5/8") casing shoe.
Forward Plan:	Finish wiper trip to 1965mMDRT - 244mm (9-5/8") casing shoe, RIH, directionally drill ahead in 216 mm (8-1/2') hole section.

General Comments

00:00 TO 24:00 Hrs ON 23 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string minus Geopilot checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. Opchecking all tool strings. Remaining components from full program to be checked: VSP guns, MSCT, MDT pump out sub (due Thursday).
Operational Comments	LWD Tools: Distance to Bit for depth interval from 2023 mMDRT. Vibration (DDSr-DGR): 0.00 m Directional (PCD): 8.73 m Gamma (DGR): 11.50 m Resisitivity (EWR-P4): 13.86 m Pressure While Drilling (PWD): 16.39 m Density (ALD): 22.85 m Neutron (CTN): 26.89 m Sonic (BAT): 31.48 m Caliper (ACAL): 38.32 m (memory full @ 2400 hrs 23 Dec 09)

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	50sec/qt
Sample From:	FLOWLINE	MWD Circ Temp:		Hard/Ca:	180mg/l	High Gravity Solids:		PV	17cp
Time:	2130	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	31lb/100ft²
Weight:	9.60ppg	Glycol:		PM:	0.35	H2O:	92%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.35	Oil:		Gels 10m	15
ECD Shoe:		Sulphites:		MF:	2.7	Sand:	.3 %	Fann 003	8
ECD Cuttings:		API FL:	4.7cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	30
								Fann 200	40
								Fann 300	48
								Fann 600	65

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**2071.7bbl**	**Losses**	**197.5bbl**
Active	585.0bbl	Downhole	
Mixing		Surf+ Equip	97.5bbl
Hole	676.7bbl	Dumped	
Slug		De-Gasser	
Reserve	810.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	80.0bbl
		Evaporation	20.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Printed on 23 Dec 2009

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	0.00	GR decr, res decr

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2550.00	2667.00	Min:2 Avg:19 Max:106	Interbedded ARGILLACEOUS SILTSTONE, SANDSTONE and CLAYSTONE, minor SILTSTONE and occasional thin COALS ARGILLACEOUS SILTSTONE (15-90%): brownish black, brownish grey, olive grey, soft to firm, subblocky to blocky, 25% clay, 10% very fine sand occurring in laminae, trace micromicas, lithic fragments, fine carbonaceous laminae. SANDSTONE (5-60%): light grey, translucent, friable, 30% very fine, 50% fine, 15% medium, 5% coarse grained quartz crystals, subangular (shattered) to subrounded, moderately to well sorted, subspherical to subelongate, trace lithic fragments, fair to good inferred visual porosity, no shows, 20-40% rock flour. CLAYSTONE (10-100%): light olive grey, light brownish grey, in part light grey, very soft to soft, subblocky, trace micromica, lithic fragments. SILTSTONE (0-90%):brownish grey, brownish black, olive grey, subblocky to blocky, 20% clay, 10% very fine sand occurring in laminae, trace carbonaceous laminae, micromicas, lithic fragments, locally argillaceous. COAL (0-10%): black, brownish black, firm, blocky and cleated to subfissile, conchoidal fracture in part, earthy to bright.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2667.00	2690.00	Min:12 Avg:22 Max:43	CLAYSTONE CLAYSTONE (100%): brownish black, brownish grey, olive grey, light grey, soft to firm, subblocky to subfissile, 0-10% very fine sand occurring as laminae, 2% carbonaceous material as specks and fine laminae, trace to 1% mica, trace lithic fragments.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2690.00	2753.00	Min:8 Avg:17 Max:28	CLAYSTONE, interbedded SANDSTONE and SILTSTONE, occasional thin COALS. CLAYSTONE (40-100%): brownish black, brownish grey, olive grey, light grey, soft to firm, amorphous to subfissile, trace to 2% carbonaceous material as specks and fine laminae, trace to 1% mica, trace lithic fragments. SANDSTONE (0-60%): light grey, olive grey, firm to loose (disaggregated), 30-70% very fine to fine grained, subangular to subrounded, moderate to well sorted, subspherical, 10% calcareous clay, moderately well siliceous cemented, trace red brown and green lithic fragments, fair to good inferred visual porosity, no hydrocarbon fluorescence, in part light grey, clear and opaque loose coarse to very coarse quartz grains, subrounded to subangular (shattered), moderately to well sorted, subspherical. SILTSTONE (0-60%): olive grey, light olive grey, soft to firm, subblocky to blocky, 10% clay, traces carbonaceous material, traces pyrite. COAL (0-5%): black, brownish black, firm to brittle, blocky to subfissile, conchoidal fracture in part, earthy to bright.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2550.00 - 2667.00	Drilled	0.615	0.3371	0.0206	0.0132	0.0068	0.0028	0.0051	0.000
2571.50 -	Peak	0.606	0.3115	0.0176	0.0116	0.0070	0.0024	0.0049	0.000
2592.00 -	Peak	0.760	0.4459	0.0251	0.0155	0.0076	0.0027	0.0049	0.000
2606.00 -	Peak	1.074	0.7417	0.0385	0.0177	0.0069	0.0027	0.0047	0.000
2610.00 -	Peak	0.961	0.6128	0.0387	0.0221	0.0091	0.0038	0.0058	0.000
2626.00 -	Peak	1.105	0.7492	0.0478	0.0251	0.0095	0.0043	0.0057	0.000
2653.00 -	Peak	1.886	1.5717	0.0843	0.0375	0.0107	0.0060	0.0071	0.000
2667.00 - 2690.00	Drilled	1.267	0.8094	0.0590	0.0364	0.0112	0.0063	0.0079	0.020
2690.00 - 2753.00	Drilled	0.804	0.3717	0.0305	0.0307	0.0107	0.0076	0.0086	0.011
2709.00 -	Peak	1.107	0.6047	0.0477	0.0425	0.0134	0.0095	0.0128	0.003
2732.50 -	Peak	1.088	0.5278	0.0335	0.0341	0.0118	0.0088	0.0093	0.100
2751.00 -	Peak	1.376	0.7220	0.0607	0.0543	0.0154	0.0122	0.0115	0.130

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Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2540.16	43.10	354.54	2470.54	241.87	0.2	242.5	14.6	Sperry Sun RLL Tool
2568.35	43.01	353.48	2491.14	261.07	0.8	261.6	12.6	Sperry Sun RLL Tool
2596.31	42.88	354.12	2511.60	280.06	0.5	280.6	10.5	Sperry Sun RLL Tool
2626.30	43.28	355.27	2533.51	300.51	0.9	301.0	8.6	Sperry Sun RLL Tool
2655.72	43.09	355.77	2554.96	320.62	0.4	321.0	7.1	Sperry Sun RLL Tool
2683.98	42.76	356.30	2575.65	339.86	0.5	340.2	5.7	Sperry Sun RLL Tool
2712.30	43.19	356.38	2596.37	359.16	0.5	359.5	4.5	Sperry Sun RLL Tool
2741.97	43.47	355.92	2617.96	379.50	0.4	379.8	3.1	Sperry Sun RLL Tool

06:00 Hrs Update

Time:	06:00 Hrs on 24 Dec 2009
Depth:	2753 mMDRT/2626 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Working tight hole @ 2146m.
Formation:	Eastern View Coal Measures
Lithology:	No new formation drilled
ROP:	No new formation drilled
Gas:	No new formation drilled

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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Rockhopper-1

Date : 24 Dec 2009 | **Geology Report Number : 18** | (associated DDR # 26)

Well Details

Depth MDBRT:	2865.0m	Rig:	Kan Tan IV	Date:	24 Dec 2009
Depth TVDBRT:	2707.0m	Progress:	842.0m	Report Start:	0000
Depth TVDSS:	2681.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	26.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	24.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Pulled out of hole for wiper trip to shoe. Pipe stuck at 2146 mMDRT. Freed stuck pipe. Pulled out of hole to shoe. Directionally drilled ahead in 216mm (8-1/2") hole section.
Forward Plan:	Directionally drill ahead in 216mm (8-1/2") hole section.

General Comments

00:00 TO 24:00 Hrs ON 24 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string minus Geopilot checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. Opchecking all tool strings. Remaining components from full program to be checked: VSP guns.
Operational Comments	LWD Tools: Distance to Bit for depth interval from 2023 mMDRT. Vibration (DDSr-DGR): 0.00 m Directional (PCD): 8.73 m Gamma (DGR): 11.50 m Resisitivity (EWR-P4): 13.86 m Pressure While Drilling (PWD): 16.39 m Density (ALD): 22.85 m Neutron (CTN): 26.89 m Sonic (BAT): 31.48 m Caliper (ACAL): 38.32 m (memory full @ 2400 hrs 23 Dec 09)
Operational Comments	1 Origin reservoir engineer on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	52sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:		PV	16cp
Time:	2023	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	31lb/100ft²
Weight:	9.50ppg	Glycol:		PM:	0.35	H2O:	93%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.4	Oil:		Gels 10m	16
ECD Shoe:		Sulphites:		MF:	3.1	Sand:	.3 %	Fann 003	8
ECD Cuttings:		API FL:	4.7cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	30
								Fann 200	39
								Fann 300	47
								Fann 600	63

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

				Equip.	Descr.	Mesh Size	Hours
Available	**1939.9bbl**	**Losses**	**452.0bbl**				
Active	643.0bbl	Downhole					
Mixing		Surf+ Equip	330.0bbl				
Hole	708.9bbl	Dumped					
Slug		De-Gasser					
Reserve	588.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge	91.0bbl				
		Evaporation	31.0bbl				

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	0.00	GR decr, res decr

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2753.00	2865.00	Min:5 Avg:17 Max:59	SILTSTONE, interbedded CLAYSTONE, SANDSTONE and COAL SILTSTONE (20-80%): brownish black, brownish grey, olive black, in part medium dark grey, firm to moderately hard, subblocky to subfissile, 10% clay, trace carbonaceous specks, micas, pyrite aggregates. CLAYSTONE (20-40%): brownish black, brownish grey, in part light grey, soft to firm, subblocky to subfissile, 10% silt in laminae, trace carbonaceous specks and fine laminae. SANDSTONE (0-40%): light grey, light olive grey, firm to moderately hard, 10% white clay, 30% very fine, 70% fine grained quartz crystals, subrounded, moderately sorted, subspherical, moderate siliceous cement, trace lithic fragments, bright coaly laminae, fair inferred visual porosity, except for thin sand from 2828-2830 mMDRT, no hydrocarbon fluorescence. COAL (0-5%): black, firm, subfissile to conchoidal, trace finely disseminated pyrite, lithic fragments.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2753.00 -	Trip	0.924	0.4278	0.0375	0.0356	0.0114	0.0089	0.0094	0.040
2753.00 - 2865.00	Drilled	1.009	0.5817	0.0601	0.0491	0.0104	0.0127	0.0110	0.316
2777.00 -	Other	1.604	1.1157	0.0774	0.0484	0.0097	0.0086	0.0075	0.240
2805.00 -	Peak	1.051	0.6578	0.0656	0.0497	0.0110	0.0117	0.0098	0.340
2831.00 -	Peak	5.497	3.5007	0.4204	0.3683	0.0664	0.0946	0.0560	0.420
2838.00 -	Peak	2.258	1.7693	0.1593	0.0912	0.0138	0.0193	0.0127	0.330
2853.50 -	Peak	1.519	1.0651	0.1060	0.0764	0.0152	0.0194	0.0138	0.460

Hydrocarbon Shows

From (m)	To (m)	Formation	Lithology	Percentage	White Light			UV Light			Rating
					Stain	Cut	Residue	Fluor.	Cut Fluor.	Residue	
2828.00	2830.00	Eastern View Coal Measures	SANDSTONE	40				dull to moderate yellow	slow, streaming dull yellow - bluish white	dull yellow residual ring	poor
Shows Description:			Dull to moderate yellow aggregate fluorescence, slow streaming dull yellow - bluish white cut fluorescence, dull yellow residual ring fluorescence								

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2770.22	42.94	356.20	2638.55	398.83	0.6	399.1	1.8	Sperry Sun RLL Tool
2799.07	43.15	356.27	2659.63	418.51	0.2	418.8	0.5	Sperry Sun RLL Tool
2828.79	42.74	355.82	2681.39	438.75	0.5	439.0	-0.9	Sperry Sun RLL Tool

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06:00 Hrs Update	
Time:	06:00 Hrs on 25 Dec 2009
Depth:	2948 mMDRT/2768.3 mTVDRT
Progress Since Midnight (m):	83
Status @ 0600hrs:	Drilling Ahead 8-1/2" hole @ 2948 m.
Formation:	Eastern View Coal Measures
Lithology:	Claystone with interbedded siltstones
ROP:	Ave 17.8 m/hr (7.4-34.4 m/hr)
Gas:	Ave background 0.8379%, C1 0.4878%, C2 0.0599%, C3 0.0555%, iC4 0.0106, nC4 0.0157%, C5 0.0110, CO2 0.6100%

Wellsite Geologist(s)
(Days) - Dennis Archer (Nights) - Brenton Richards

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Rockhopper-1

Date : 25 Dec 2009 | **Geology Report Number : 19** | (associated DDR # 27)

Well Details

Depth MDBRT:	3180.0m	Rig:	Kan Tan IV	Date:	25 Dec 2009
Depth TVDBRT:	2940.0m	Progress:	-1149.0m	Report Start:	0000
Depth TVDSS:	2914.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	27.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	25.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Directionally drilled ahead in 216mm (8-1/2") hole section.
Forward Plan:	Directionally drill 216mm (8-1/2") hole section to TD (prognosed at 3487mMDRT).

General Comments

00:00 TO 24:00 Hrs ON 25 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string minus Geopilot checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. All tool strings opchecked OK.
Operational Comments	LWD Tools: Distance to Bit for depth interval from 2023 mMDRT. Vibration (DDSr-DGR): 0.00 m Directional (PCD): 8.73 m Gamma (DGR): 11.50 m Resisitivity (EWR-P4): 13.86 m Pressure While Drilling (PWD): 16.39 m Density (ALD): 22.85 m Neutron (CTN): 26.89 m Sonic (BAT): 31.48 m Caliper (ACAL): 38.32 m (memory full @ 2400 hrs 23 Dec 09)
Operational Comments	1 Origin reservoir engineer on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	180mg/l	High Gravity Solids:	
Time:	2000	Glycol CP Temp:		MBT:	7.5	Solids (corrected):	
Weight:	9.55ppg	Glycol:		PM:	0.2	H2O:	93%
ECD TD:		Nitrates:		PF:	0.15	Oil:	
ECD Shoe:		Sulphites:		MF:	3.3	Sand:	.3 %
ECD Cuttings:		API FL:	4.6cc/30min	pH:	9	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	52sec/qt
PV	17cp
YP	33lb/100ft²
Gels 10s	11
Gels 10m	16
Fann 003	8
Fann 006	10
Fann 100	31
Fann 200	42
Fann 300	50
Fann 600	67

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**1913.1bbl**	**Losses**	**153.5bbl**
Active	677.0bbl	Downhole	
Mixing		Surf+ Equip	110.0bbl
Hole	773.1bbl	Dumped	
Slug		De-Gasser	
Reserve	463.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	30.0bbl
		Evaporation	13.5bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	0.00	GR decr, res decr

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Lithology Summary		
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2865.00 - 2895.00	Min:9 Avg:18 Max:32	Interbedded SILTSTONE, CLAYSTONE and SANDSTONE, minor SANDY SILTSTONE SILTSTONE (30-80%): brownish black, brownish grey, olive black, firm to moderately hard, subblocky to subfissile, 10% clay, 5% very fine sand in laminae, trace carbonaceous laminae, micas. CLAYSTONE (20-60%): brownish black, brownish grey, light grey, soft to firm, subblocky, trace fine carbonaceous laminae, lithic fragments. SANDSTONE (0-40%): light grey, light olive grey, firm to moderately hard, 10% white clay, 10% very fine, 65% fine, 20% medium, 5% coarse clear quartz grains, subrounded, moderately sorted, subspherical, moderate siliceous cement, trace lithic fragments, thin coaly laminae, glauconite, good inferred visual porosity, no hydrocarbon fluorescence. SANDY SILTSTONE (0-40%): brownish black, olive grey, brownish grey, firm to moderately hard, subblocky to subfissile, 10% clay, trace carbonaceous specks and laminae, micas.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2895.00 - 2958.00	Min:7 Avg:19 Max:34	Interbedded SILTSTONE and CLAYSTONE, minor thin SANDSTONE interbeds SILTSTONE (40-90%): brownish black, brownish grey, olive black, firm to moderately hard, subblocky to subfissile, 10% clay, 10% very fine sand in laminae, trace carbonaceous specks, micas, finely disseminated pyrite. CLAYSTONE (10-40%): brownish black, brownish grey, soft to firm, subblocky to subfissile, 10% silt occurring as laminae, trace fine carbonaceous laminae, lithic fragments. SANDSTONE (0-40%): olive grey, light grey, friable, fine grained, 20% very fine, 10% white clay matrix, poor siliceous cement, subangular to subrounded, moderate to well sorted, subspherical, trace lithic grains, good visual porosity, no hydrocarbon fluorescence.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2958.00 - 2995.00	Min:9 Avg:24 Max:67	Interbedded CLAYSTONE, SILTSTONE and SANDSTONES CLAYSTONE (10-70%): brownish black, brownish grey, soft to firm, subblocky to subfissile, trace carbonaceous material as specks and occasional laminae. SILTSTONE (20-85%): medium dark grey, olive black, firm to moderately hard, subblocky to subfissile, 15% clay, trace carbonaceous specks, trace to 1% micromicas, occasional pyrite. SANDSTONE (5-60%): olive grey, light grey, medium light grey, friable, fine grained, 20% very fine, 10% white clay matrix, poor siliceous cement, subangular to subrounded, moderate to well sorted, subspherical, trace lithic grains, good visual porosity, nil to 40% hydrocarbon fluorescence.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2995.00 - 3082.00	Min:5 Avg:23 Max:69	CLAYSTONE, minor SILTSTONE interbeds CLAYSTONE (80-100%): brownish black, olive black, olive grey, firm subblocky to subfissile, 10% silt, trace carbonaceous specks, trace micromicas. SILTSTONE (0-20%): brownish grey, olive grey, firm, subblocky to subfissile, 15% clay, trace carbonaceous specks, trace micromicas, trace lithic fragments.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
3082.00 - 3105.00	Min:8 Avg:19 Max:58	SILTSTONE with interbedded CLAYSTONE and SANDSTONE. SILTSTONE (20-40%): olive grey, soft, subblocky to subfissile, 15% clay, 1% carbonaceous material as laminae, trace micromicas, trace lithic fragments. CLAYSTONE (0-20%): brownish grey, olive grey, olive black, soft to firm, subblocky to blocky, 10% silt occurring as laminae, trace micromica, fine carbonaceous laminae. SANDSTONE (40-80%): medium light grey, opaque, clear, yellowish grey, friable to loose, 10% white clay matrix, 40% fine, 20% medium, 20% coarse, 20% very coarse, angular (shattered) to subangular to subrounded, poor to moderately sorted, poor to fair siliceous cement, trace lithic fragments, 1% carbonaceous material/coal, good visual porosity, trace hydrocarbon fluorescence at 3090-3093mMDRT.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
3105.00 - 3199.00	Min:8 Avg:17 Max:76	Interbedded SANDSTONE, SILTSTONE and CLAYSTONE, minor COAL SANDSTONE (30-70%): light grey, opaque, clear, yellowish grey, light olive grey, friable to moderately hard, 10% white clay matrix, 10% very fine, 75% fine, 10% medium, 5% coarse, subrounded to subangular (shattered), poor to moderately sorted, subspherical, poor to moderate siliceous cement, trace lithic fragments, 2% carbonaceous material/coal, good visual porosity, hydrocarbon fluorescence from 3132-3135,3144-3147,3153-3156,3162-3168mMDRT. Masked by 20-40% rock flour. SILTSTONE (40-70%): olive grey, brownish black, in part olive black, in part light grey, soft to firm, subblocky to subfissile, 15% clay, 1% carbonaceous material as laminae, trace micromicas, trace lithic fragments. CLAYSTONE (0-30%): brownish grey, olive grey, soft to firm, subblocky to blocky, 10% silt occurring as laminae, trace micromica, fine carbonaceous laminae. COAL (0-5%): black, firm, subfissile to conchoidal, bright.

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Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2865.00 - 2895.00	Drilled	0.756	0.3848	0.0347	0.0363	0.0099	0.0141	0.0124	0.505
2895.00 - 2958.00	Drilled	0.914	0.4508	0.0527	0.0502	0.0102	0.0152	0.0113	0.616
2958.00 - 2995.00	Drilled	2.513	1.5057	0.2001	0.1888	0.0302	0.0497	0.0274	0.680
2962.00 -	Peak	8.997	6.5979	0.7537	0.6803	0.1039	0.1511	0.0776	0.650
2978.00 -	Peak	6.415	3.7839	0.5668	0.5708	0.0906	0.1558	0.0820	0.790
2995.00 - 3082.00	Drilled	1.159	0.4619	0.0724	0.0819	0.0185	0.0298	0.0207	0.660
3077.00 -	Peak	1.172	0.5087	0.0694	0.0655	0.0154	0.0229	0.0179	0.880
3082.00 - 3105.00	Drilled	2.155	0.1967	0.1620	0.1548	0.0348	0.0446	0.0331	0.427
3083.00 -	Peak	1.937	1.0500	0.1436	0.1357	0.0300	0.0396	0.0277	0.300
3091.00 -	Peak	3.564	2.0935	0.2818	0.2703	0.0602	0.0731	0.0522	0.570
3096.00 -	Peak	3.000	1.7414	0.2323	0.2251	0.0512	0.0617	0.0368	0.770
3104.50 -	Peak	3.011	1.7911	0.2479	0.2469	0.0550	0.0702	0.0470	0.007
3105.00 - 3199.00	Drilled	2.535	1.4037	0.1938	0.1823	0.0402	0.0549	0.0384	0.318
3117.50 -	Peak	2.078	1.2577	0.1459	0.1196	0.0236	0.0347	0.0252	0.370
3125.00 -	Peak	3.037	1.8783	0.2068	0.1612	0.0307	0.0424	0.0269	0.210
3135.50 -	Peak	5.961	3.4943	0.5063	0.5267	0.1232	0.1499	0.0953	0.370
3144.50 -	Peak	2.813	1.5534	0.2207	0.2201	0.0478	0.0661	0.0450	0.380
3156.50 -	Peak	4.780	2.7552	0.4077	0.3741	0.0784	0.1011	0.0627	0.490
3167.00 -	Peak	4.116	2.6888	0.3433	0.2864	0.0588	0.0815	0.0533	0.071
3191.50 -	Peak	6.003	4.2339	0.5452	0.3938	0.0705	0.1054	0.0638	0.470
3196.50 -	Peak	13.810	9.1156	1.2606	0.9544	0.1636	0.2447	0.1296	0.490

Hydrocarbon Shows

From (m)	To (m)	Formation	Lithology	Percentage	White Light			UV Light			Rating
					Stain	Cut	Residue	Fluor.	Cut Fluor.	Residue	
2973.00	2979.00	Eastern View Coal Measures	SANDSTONE	40-5				mod bri yell	slo str to blooming bri blu wh crush	dull pa yell diffuse, dull yell thick ring	poor
Shows Description:			Aggregates with moderate bright yellow overall fluorescence, crush cut: bright blue white slow streaming to blooming, yellow film to dull yellow thick ring residue. Show decreases with depth.								
3132.00	3135.00	Eastern View Coal Measures	SANDSTONE	30				mod bri yell	slo str to blooming bri blu wh crush	dull pa yell diffuse, dull yell thick ring	poor
Shows Description:			Aggregates with moderate bright yellow overall fluorescence, crush cut: bright blue white slow streaming to blooming, yellow film to dull yellow thick ring residue.								
3144.00	3147.00	Eastern View Coal Measures	SANDSTONE	30				mod bri yell	slo str to blooming bri blu wh crush	dull pa yell diffuse, dull yell thick ring	poor
Shows Description:			Aggregates with moderate bright yellow overall fluorescence, crush cut: bright blue white slow streaming to blooming, yellow film to dull yellow thick ring residue.								
3153.00	3156.00	Eastern View Coal Measures	SANDSTONE	40				dull to mod bri yell	slo str dull blu wh crush	dull pl yell thick ring	poor
Shows Description:			Aggregates with dull to moderate bright yellow overall fluorescence, crush cut: dull blue white slow streaming, dull pale yellow thick ring residue.								
3162.00	3168.00	Eastern View Coal Measures	SANDSTONE	40-5				dull to mod bri yell	slo str dull blu wh crush	dull pl yell thick ring	poor
Shows Description:			Aggregates with dull to moderate bright yellow overall fluorescence, crush cut: dull blue white slow streaming, dull pale yellow thick ring residue. Show decreases with depth.								

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Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2857.71	43.48	356.21	2702.50	458.50	0.8	458.7	-2.3	Sperry Sun RLL Tool
2886.29	43.02	355.19	2723.32	478.07	0.9	478.2	-3.7	Sperry Sun RLL Tool
2914.35	43.18	355.63	2743.81	497.22	0.4	497.3	-5.3	Sperry Sun RLL Tool
2942.96	43.00	355.89	2764.70	516.75	0.3	516.8	-6.7	Sperry Sun RLL Tool
2972.30	43.13	356.10	2786.13	536.77	0.2	536.8	-8.1	Sperry Sun RLL Tool
3031.32	43.35	358.13	2829.13	577.19	0.7	577.2	-10.2	Sperry Sun RLL Tool
3059.74	43.12	357.42	2849.84	596.66	0.6	596.6	-10.9	Sperry Sun RLL Tool
3116.75	42.91	356.52	2891.52	635.54	0.3	635.5	-13.0	Sperry Sun RLL Tool
3175.85	42.94	355.93	2934.80	675.77	0.2	675.6	-15.6	Sperry Sun RLL Tool

06:00 Hrs Update

Time:	06:00 Hrs on 26 Dec 2009
Depth:	3199 mMDRT / 2952 mTVDRT
Progress Since Midnight (m):	19
Status @ 0600hrs:	POOH at 2983 m. Reason for pulling out - Failure of Hydraulic Lube oil pump / motor on TDS.
Formation:	Eastern View Coal Measures
Lithology:	Interbedded SANDSTONE, SILTSTONE, CLAYSTONE and minor COAL
ROP:	Ave 17.75 m/hr (8.31-76.48m/hr)
Gas:	Ave background 4.2296%, C1 2.4971%, C2 0.3567%, C3 0.3046%, iC4 0.0617, nC4 0.884%, C5 0.0567, CO2 0.3300%

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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Rockhopper-1

Date : 26 Dec 2009 | **Geology Report Number : 20** | (associated DDR # 28)

Well Details

Depth MDBRT:	3311.0m	Rig:	Kan Tan IV	Date:	26 Dec 2009
Depth TVDBRT:	2681.0m	Progress:	131.0m	Report Start:	0000
Depth TVDSS:	2655.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	28.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	26.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Pulled out of hole to 1965mMDRT - 244mm (9-5/8") casing shoe, to change out hydraulic pump on top drive. Ran in hole and directionally drilled ahead in 216mm (8-1/2") hole section.
Forward Plan:	Directionally drill 216mm (8-1/2") hole section to well TD, circulate hole clean, POOH.

General Comments

00:00 TO 24:00 Hrs ON 26 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string minus Geopilot checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. All tool strings opchecked OK.
Operational Comments	LWD Tools: Distance to Bit for depth interval from 2023 mMDRT. Vibration (DDSr-DGR): 0.00 m Directional (PCD): 8.73 m Gamma (DGR): 11.50 m Resisitivity (EWR-P4): 13.86 m Pressure While Drilling (PWD): 16.39 m Density (ALD): 22.85 m Neutron (CTN): 26.89 m Sonic (BAT): 31.48 m Caliper (ACAL): 38.32 m (memory full @ 2400 hrs 23 Dec 09)
Operational Comments	1 Origin reservoir engineer on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	52sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:		PV	18cp
Time:	2200	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	32lb/100ft²
Weight:	9.50ppg	Glycol:		PM:	0.2	H2O:	92%	Gels 10s	11
ECD TD:		Nitrates:		PF:	0.2	Oil:		Gels 10m	16
ECD Shoe:		Sulphites:		MF:	3.2	Sand:	.3 %	Fann 003	9
ECD Cuttings:		API FL:	4.8cc/30min	pH:	9.5	Barite:		Fann 006	11
KCl Equiv:	6%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	32
								Fann 200	42
								Fann 300	50
								Fann 600	68

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**1892.9bbl**	**Losses**	**120.0bbl**
Active	639.0bbl	Downhole	
Mixing		Surf+ Equip	95.0bbl
Hole	799.9bbl	Dumped	
Slug		De-Gasser	
Reserve	454.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	12.0bbl
		Evaporation	13.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	0.00	GR decr, res incr

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3199.00 - 3311.00		Min:4 Avg:15 Max:55	Interbedded SANDSTONE, SILTSTONE, CLAYSTONE, minor COAL beds. SANDSTONE (10-70%): light grey, yellowish grey, light olive grey, clear, firm to friable, 10% white clay matrix, 0-20% very fine, 30-60% fine, 10-30% medium, 0-30% coarse, 0-20% very coarse quartz grains, mostly subrounded in part subangular to angular and shattered, poor to moderately to well sorted, subspherical to subelongate, poor to fair siliceous cement, trace carbonaceous specks, nil to trace to 2% lithic fragments, good to fair inferred visual porosity, trace hydrocarbon fluorescence from 3210-3216 and 3255-3261, masked by 10-40% rock flour. SILTSTONE (20-60%): light grey, olive grey, brownish black, olive black, firm to moderately hard, subblocky to blocky, 10-15% clay, trace - 1%carbonaceous specks and laminae, fine pyrite aggregates, micromicas. CLAYSTONE (10-30%): brownish grey, olive grey, light grey, soft to firm, subblocky to subfissile, 10% silt, trace carbonaceous specks and laminae, micromicas. COAL (0-5%): black, brownish black, firm, subfissile to conchoidal, bright.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3199.00 -	Trip	1.405	0.5492	0.0712	0.0898	0.0283	0.0454	0.0397	0.420
3199.00 - 3311.00	Drilled	3.217	1.5578	0.2421	0.2060	0.0444	0.0716	0.0540	0.400
3209.00 -	Peak	3.663	2.2436	0.3186	0.2539	0.0520	0.0810	0.0570	0.510
3213.00 -	Peak	4.778	2.8389	0.4273	0.3612	0.0741	0.0810	0.0625	0.650
3219.00 -	Peak	3.105	1.5959	0.2415	0.2235	0.0507	0.0758	0.0554	0.350
3233.00 -	Peak	6.587	3.7082	0.6155	0.5075	0.0983	0.1547	0.0985	0.660
3240.00 -	Peak	10.326	6.9497	0.9305	0.6932	0.1229	0.1821	0.1031	0.280
3260.50 -	Peak	9.395	4.7302	0.6785	0.6219	0.1250	0.1893	0.1146	0.550
3269.50 -	Peak	13.538	8.4755	1.2250	0.7620	0.1159	0.1838	0.1004	0.140
3285.50 -	Peak	4.809	2.6282	0.3560	0.2428	0.0516	0.0777	0.0597	0.370
3321.00 -	Peak	9.698	4.5441	0.7593	0.6649	0.1399	0.2071	0.1371	0.620
3331.00 -	Peak	11.024	7.0004	0.8955	0.4977	0.0898	0.1264	0.0808	0.800
3338.50 -	Peak	13.890	8.9630	1.3091	0.6550	0.1170	0.1678	0.1059	0.810
3344.50 -	Peak	11.432	7.2305	1.0667	0.4948	0.0914	0.1299	0.0865	0.850
3350.00 -	Peak	9.449	5.8834	0.8484	0.3750	0.0673	0.0973	0.0675	0.230
3360.00 -	Peak	4.608	2.4229	0.3915	0.2254	0.0471	0.0747	0.0589	0.800

Hydrocarbon Shows

From (m)	To (m)	Formation	Lithology	Percentage	White Light			UV Light			Rating
					Stain	Cut	Residue	Fluor.	Cut Fluor.	Residue	
3210.00	3216.00	Eastern View Coal Measures	Sandstone	7-5				dull yellow	slo str blu wh crush	dull yell grn film to ring residue	Poor
Shows Description:			In aggregates: overall dull yellow fluorescence, slow streaming blue white crush cut, dull yellow green film to ring residue.								
3255.00	3261.00	Eastern View Coal Measures	Sandstone	10-5				dull yellow	slo str d yl to d blu wh crush	d yl to d blu wh film to ring residue	Poor
Shows Description:			In aggregates: overall dull yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellow to dull bluish								

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Hydrocarbon Shows

From (m)	To (m)	Formation	Lithology	Percentage	White Light			UV Light			Rating
					Stain	Cut	Residue	Fluor.	Cut Fluor.	Residue	
			white film to ring residue.								
3318.00	3357.00	Eastern View Coal Measures	Sandstone	20-5				dull to moderate yellow	slo str d yl to d blu wh crush	d yl-gr to d blu wh film to thick ring residue	poor to moderate
Shows Description:			In aggregates: overall dull to moderate yellow fluorescence, slow streaming dull yellow to bluish white crush cut, dull yellowish green to dull bluish white film to thick ring residue.								

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
3232.85	42.61	354.97	2976.64	714.44	0.4	714.2	-18.7	Sperry Sun RLL Tool
3261.40	42.02	354.71	2997.75	733.63	0.6	733.4	-20.4	Sperry Sun RLL Tool
3290.95	42.18	356.09	3019.67	753.41	1.0	753.1	-22.0	Sperry Sun RLL Tool

06:00 Hrs Update

Time:	06:00 Hrs on 27 Dec 2009
Depth:	3382 mMDRT/3087 mTVDRT
Progress Since Midnight (m):	71
Status @ 0600hrs:	Drilling Ahead 8-1/2" hole @ 3382 m BRT/3087 m TVD. Hole and connections good.
Formation:	Eastern View Coal Measures
Lithology:	Interbedded SANDSTONE, SILTSTONE, CLAYSTONE.
ROP:	Ave 14.9 m/hr (4.2-50 m/hr)
Gas:	Ave background 5.2222%, C1 2.8336%, C2 0.4273, C3 0.2509%, iC4 0.0511, nC4 0.0769%, C5 0.0591%, CO2 0.6987%

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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Rockhopper-1

Date : 27 Dec 2009 | **Geology Report Number : 21** | (associated DDR # 29)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	27 Dec 2009
Depth TVDBRT:	3192.0m	Progress:	211.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	29.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	27.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Directionally drilled 216 mm (8-1/2") hole section to a TD of 3522mMDRT. Wiper trip to 3100mMDRT. Circulated hole clean.
Forward Plan:	Finish circulating hole clean, POOH, rig up and run wireline.

General Comments

00:00 TO 24:00 Hrs ON 27 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string minus Geopilot checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. All tool strings opchecked OK.
Operational Comments	LWD Tools: Distance to Bit for depth interval from 2023 mMDRT. Vibration (DDSr-DGR): 0.00 m Directional (PCD): 8.73 m Gamma (DGR): 11.50 m Resisitivity (EWR-P4): 13.86 m Pressure While Drilling (PWD): 16.39 m Density (ALD): 22.85 m Neutron (CTN): 26.89 m Sonic (BAT): 31.48 m Caliper (ACAL): 38.32 m (memory full @ 2400 hrs 23 Dec 09)
Operational Comments	1 Origin reservoir engineer on board.
Operational Comments	Rockhopper-1 TD of 3522 mMDRT (3191.9 mTVDRT) at 1900 hrs 27 Dec 09.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	60sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:		PV	18cp
Time:	2200	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	31lb/100ft²
Weight:	9.55ppg	Glycol:		PM:	0.15	H2O:	92%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.1	Oil:		Gels 10m	15
ECD Shoe:		Sulphites:		MF:	3	Sand:	.3 %	Fann 003	8
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	31
								Fann 200	42
								Fann 300	49
								Fann 600	67

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Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	1977.5bbl	Losses	215.0bbl
Active	812.0bbl	Downhole	
Mixing		Surf+ Equip	165.0bbl
Hole	853.5bbl	Dumped	
Slug		De-Gasser	
Reserve	312.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	27.0bbl
		Evaporation	23.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3311.00	3425.00	Min:3 Avg:19 Max:50	Interbedded SANDSTONE, CLAYSTONE and SILTSTONE, thin COAL at 3411 mMDRT SANDSTONE (10-85%): light grey, clear when disaggregated, 10-15% white clay matrix, 35% very fine, 80% fine grained, 10% medium, 5% coarse quartz grains, coarse fraction occurs as loose quartz grains, subrounded to subangular (shattered), poorly sorted, subspherical, poor to moderate siliceous cement, good inferred visual porosity, no hydrocarbon fluorescence, masked by 20-40% rock flour. CLAYSTONE(0-70%: brownish black, brownish grey, olive grey, in part light grey, soft to firm, subblocky to subfissile, trace carbonaceous specks, micromicas, lithic fragments. SILTSTONE (10-85%): brownish black, olive black, firm to moderately hard, subblocky to blocky, 10% clay, trace carbonaceous specks, micromicas. COAL (0-5%): black, brownish black, subfissile, bright to earthy
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3425.00	3438.00	Min:8 Avg:24 Max:57	METAMORPHICS METAMORPHICS (100%): multicoloured, very dusky red, light greenish grey, greenish grey, light grey, hard, blocky, siliceous and calcareous, altered siltstones and claystones, micro flow patterns and inter bedding evident.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3438.00	3522.00	Min:4 Avg:13 Max:31	VOLCANICS VOLCANICS (100%): medium bluish grey, greyish purple, mottled dusky blue green, blackish red, firm to hard, blocky, calcite veining, chloritic mottling.

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Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3311.00 - 3425.00	Drilled	5.360	3.0148	0.4425	0.2389	0.0480	0.0741	0.0574	0.750
3321.00 -	Peak	9.698	4.5441	0.7593	0.6649	0.1399	0.2071	0.1371	0.620
3331.00 -	Peak	11.024	7.0004	0.8955	0.4977	0.0898	0.1264	0.0808	0.800
3338.50 -	Peak	13.890	8.9630	1.3091	0.6550	0.1170	0.1678	0.1059	0.810
3344.50 -	Peak	11.432	7.2305	1.0667	0.4948	0.0914	0.1299	0.0865	0.850
3350.00 -	Peak	9.449	5.8834	0.8484	0.3750	0.0673	0.0973	0.0675	0.230
3360.00 -	Peak	4.608	2.4229	0.3915	0.2254	0.0471	0.0747	0.0589	0.800
3373.50 -	Peak	10.923	6.7404	0.9400	0.4773	0.0917	0.1336	0.0901	0.860
3379.00 -	Peak	7.967	4.8559	0.6810	0.3494	0.0671	0.1058	0.0751	0.850
3387.00 -	Peak	5.016	2.9914	0.4312	0.2134	0.0405	0.0665	0.0522	0.840
3393.50 -	Peak	3.789	2.0445	0.3233	0.1694	0.0342	0.0579	0.0485	0.870
3401.50 -	Peak	13.451	8.8921	1.2266	0.5519	0.0947	0.1517	0.0960	0.940
3425.00 - 3438.00	Drilled	2.055	0.8858	0.1406	0.0885	0.0229	0.0396	0.0397	0.840
3438.00 - 3522.00	Drilled	0.875	0.3323	0.0287	0.0226	0.0100	0.0180	0.0260	0.690
3443.00 -	Peak	1.705	0.4792	0.0920	0.0700	0.0214	0.0369	0.0396	0.840
3470.00 -	Peak	1.356	0.5712	0.0377	0.0279	0.0123	0.0222	0.0301	0.680
3513.00 -	Peak	0.720	0.4757	0.0214	0.0066	0.0044	0.0079	0.0168	0.720

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
3348.87	42.01	356.27	3062.65	792.22	0.1	791.8	-24.6	Sperry Sun RLL Tool
3377.12	41.91	356.10	3083.66	811.10	0.2	810.7	-25.8	Sperry Sun RLL Tool
3405.96	41.76	356.10	3105.15	830.32	0.2	829.9	-27.2	Sperry Sun RLL Tool
3435.82	41.85	357.17	3127.41	850.22	0.7	849.7	-28.3	Sperry Sun RLL Tool
3494.20	41.35	357.89	3171.06	888.98	0.4	888.5	-30.0	Sperry Sun RLL Tool
3522.00	41.35	357.89	3191.93	907.34	0.0	906.8	-30.7	Sperry Sun RLL Tool

06:00 Hrs Update

Time:	06:00 Hrs on 28 Dec 2009
Depth:	3522 mMDRT/3192mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	POOH @ 2526 m.
Formation:	Eastern View Coal Measures
Lithology:	No new formation drilled
ROP:	No new formation drilled
Gas:	No new formation drilled

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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Rockhopper-1

Date : 28 Dec 2009 | **Geology Report Number : 22** | (associated DDR # 30)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	28 Dec 2009
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	30.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	28.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Circulated well clean. POOH. Rigged up for wireline. Commenced Run 1: PEX-HRLA-HNGS-CMR+.
Forward Plan:	Complete Run 1, run log 2, (MDT-GR).

General Comments

00:00 TO 24:00 Hrs ON 28 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Back up string minus Geopilot checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. All tool strings opchecked OK.
Operational Comments	LWD Tools: Distance to Bit for depth interval from 2023 mMDRT. Vibration (DDSr-DGR): 0.00 m Directional (PCD): 8.73 m Gamma (DGR): 11.50 m Resisitivity (EWR-P4): 13.86 m Pressure While Drilling (PWD): 16.39 m Density (ALD): 22.85 m Neutron (CTN): 26.89 m Sonic (BAT): 31.48 m Caliper (ACAL): 38.32 m (memory full @ 2400 hrs 23 Dec 09)
Operational Comments	1 Origin reservoir engineer on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:	
Time:	2000	Glycol CP Temp:		MBT:	7.5	Solids (corrected):	
Weight:	9.50ppg	Glycol:		PM:	0.2	H2O:	92%
ECD TD:		Nitrates:		PF:	0.2	Oil:	
ECD Shoe:		Sulphites:		MF:	2.9	Sand:	.3 %
ECD Cuttings:		API FL:	4.6cc/30min	pH:	9.5	Barite:	
KCl Equiv:	6%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	53sec/qt
PV	19cp
YP	36lb/100ft²
Gels 10s	12
Gels 10m	17
Fann 003	10
Fann 006	12
Fann 100	34
Fann 200	46
Fann 300	55
Fann 600	74

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**2074.0bbl**	**Losses**	**120.0bbl**
Active	707.0bbl	Downhole	
Mixing		Surf+ Equip	95.0bbl
Hole	853.0bbl	Dumped	
Slug		De-Gasser	
Reserve	514.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	12.0bbl
		Evaporation	13.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

06:00 Hrs Update

Time:	06:00 Hrs on 29 Dec 2009
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Continue run #1 of wireline logging program: SP-CMR- HRLA-PEX-HNGS.
Formation:	Eastern View Coal Measures
Lithology:	No new formation drilled
ROP:	No new formation drilled
Gas:	No new formation drilled

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 29 Dec 2009 | **Geology Report Number : 23** | (associated DDR # 31)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	29 Dec 2009
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	31.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	29.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Completed Suite 1, Run 1 - PEX-HRLA-HNGS-CMR+. Commenced Suite 1 Run 2 - MDT-GR. Aborted run due to poor hole conditions. Pulled out of hole. Laid out tools. Rigged down wireline.
Forward Plan:	Conduct BOP pressure test, RIH for wiper trip.

General Comments

00:00 TO 24:00 Hrs ON 29 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 3 MWD engineers, 2 DD on board. 216 mm (8-1/2") hole section tools: Backloading tools, checking new tools. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. All tool strings opchecked OK.
Operational Comments	1 Origin reservoir engineer on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	63sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:		PV	19cp
Time:	2000	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	37lb/100ft²
Weight:	9.65ppg	Glycol:		PM:	0.2	H2O:	93%	Gels 10s	12
ECD TD:		Nitrates:		PF:	0.1	Oil:		Gels 10m	16
ECD Shoe:		Sulphites:		MF:	2.8	Sand:	.3 %	Fann 003	10
ECD Cuttings:		API FL:	4.6cc/30min	pH:	9	Barite:		Fann 006	12
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	33
								Fann 200	46
								Fann 300	56
								Fann 600	75

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Kosta Georgiou

Available	**2166.9bbl**	**Losses**	**10.6bbl**
Active	697.0bbl	Downhole	10.6bbl
Mixing		Surf+ Equip	0.0bbl
Hole	955.9bbl	Dumped	
Slug		De-Gasser	
Reserve	514.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

06:00 Hrs Update

Time:	06:00 Hrs on 30 Dec 2009
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Pressure Testing BOPs.
Formation:	Eastern View Coal Measures
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 30 Dec 2009 | **Geology Report Number : 24** | (associated DDR # 32)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	30 Dec 2009
Depth TVDBRT:	3192.0m	Progress:	47.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	32.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	30.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Pressure tested BOP successfully. Ran in hole for wiper trip. Washed down from 3417 mMDRT to TD. Circulated and conditioned mud.
Forward Plan:	Finish circulating and conditioning mud, POOH, Rig up for wireline; Suite-2-Run-1 MDT-GR.

General Comments

00:00 TO 24:00 Hrs ON 30 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 2 MWD engineers, 2 DD on board. 216 mm (8-1/2") sidetrack hole section tools: Op checking tools. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach on board. All tool strings opchecked OK.
Operational Comments	1 Origin reservoir engineer on board.
Operational Comments	MWD sensor distance from bit: 4.69 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:	
Time:	2220	Glycol CP Temp:		MBT:	7.5	Solids (corrected):	
Weight:	9.45ppg	Glycol:		PM:	0.25	H2O:	92%
ECD TD:		Nitrates:		PF:	0.25	Oil:	
ECD Shoe:		Sulphites:		MF:	2.9	Sand:	.25 %
ECD Cuttings:		API FL:	4.8cc/30min	pH:	9	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	61sec/qt
PV	20cp
YP	43lb/100ft²
Gels 10s	12
Gels 10m	16
Fann 003	11
Fann 006	13
Fann 100	41
Fann 200	54
Fann 300	63
Fann 600	83

Shakers, Volumes and Losses Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2172.5bbl**	**Losses**	**160.0bbl**
Active	293.0bbl	Downhole	
Mixing		Surf+ Equip	116.0bbl
Hole	853.5bbl	Dumped	
Slug		De-Gasser	
Reserve	1026.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	17.0bbl
		Evaporation	27.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3522.00 -	Trip	3.700	2.2751	0.1675	0.0806	0.0120	0.0158	0.0116	3.520
Comment - Wiper trip gas									
3522.00 -	Trip	0.254	0.0232	0.0034	0.0041	0.0021	0.0026	0.0056	4.000
Comment - Wiper trip gas. Abundant Circal (CaCO3) in mud system.									

06:00 Hrs Update

Time:	06:00 Hrs on 31 Dec 2009
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	POOH in casing @ 1140 m.
Formation:	Eastern View Coal Measures
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 31 Dec 2009 | **Geology Report Number : 25** | (associated DDR # 33)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	31 Dec 2009
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	33.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	31.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Pulled out of hole. Rigged up wireline. Commenced Suite 1, Run 3, MDT-GR.
Forward Plan:	Complete Suite 1, Run 3, continue with wireline logging as per program.

General Comments

00:00 TO 24:00 Hrs ON 31 Dec 2009

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 2 MWD engineers, 2 DD on board. 216 mm (8-1/2") sidetrack hole section tools: Op checking tools. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach, 1 mechanic on board. All tool strings opchecked OK.
Operational Comments	1 Origin reservoir engineer on board.
Operational Comments	MWD sensor distance from bit: 4.69 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	66sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:		PV	18cp
Time:	1945	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	33lb/100ft²
Weight:	9.44ppg	Glycol:		PM:	0.25	H2O:	93%	Gels 10s	9
ECD TD:		Nitrates:		PF:	0.1	Oil:		Gels 10m	13
ECD Shoe:		Sulphites:		MF:	2.6	Sand:	.25 %	Fann 003	9
ECD Cuttings:		API FL:	4.6cc/30min	pH:	9	Barite:		Fann 006	11
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	31
								Fann 200	41
								Fann 300	51
								Fann 600	69

Shakers, Volumes and Losses Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2235.9bbl**	**Losses**	**0.0bbl**
Active	715.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	955.9bbl	Dumped	
Slug		De-Gasser	
Reserve	565.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

06:00 Hrs Update

Time:	06:00 Hrs on 01 Jan 2010
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Continue W/ MDT tools Run Suite #1 Run #3.
Formation:	Eastern View Coal Measures
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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origin

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Rockhopper-1

Date : 01 Jan 2010 | **Geology Report Number : 26** | (associated DDR # 34)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	01 Jan 2010
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	34.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	32.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Continued wireline logging program. Suiite 1, Run 3, MDT-GR-Quicksilver.
Forward Plan:	POOH with wireline tools, conduct wiper trip.

General Comments

00:00 TO 24:00 Hrs ON 01 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 2 MWD engineers, 2 DD on board. 216 mm (8-1/2") sidetrack hole section tools: Main string checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach, 1 mechanic on board. All tool strings opchecked OK.
Operational Comments	1 Origin reservoir engineer on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:	
Time:	2040	Glycol CP Temp:		MBT:	7.5	Solids (corrected):	
Weight:	9.44ppg	Glycol:		PM:	0.2	H2O:	94%
ECD TD:		Nitrates:		PF:	0.1	Oil:	
ECD Shoe:		Sulphites:		MF:	2.5	Sand:	.25 %
ECD Cuttings:		API FL:	4.6cc/30min	pH:	9	Barite:	
KCl Equiv:	6%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	63sec/qt
PV	19cp
YP	25lb/100ft²
Gels 10s	7
Gels 10m	10
Fann 003	7
Fann 006	9
Fann 100	26
Fann 200	36
Fann 300	44
Fann 600	63

Shakers, Volumes and Losses Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2227.9bbl**	**Losses**	**8.0bbl**
Active	707.0bbl	Downhole	8.0bbl
Mixing		Surf+ Equip	0.0bbl
Hole	955.9bbl	Dumped	
Slug		De-Gasser	
Reserve	565.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

06:00 Hrs Update

Time:	06:00 Hrs on 02 Jan 2010
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Laying out Schlumberger Wireline tools from Run#3.
Formation:	Eastern View Coal Measures
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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Rockhopper-1

Date : 02 Jan 2010 | **Geology Report Number : 27** | (associated DDR # 35)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	02 Jan 2010
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	35.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	33.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Continued wireline Suite 1, Run 3. Experienced hole problems. Pulled out of hole for wiper trip and hole conditioning.
Forward Plan:	Complete wiper trip, continue wireline logging operations, Suite 1, Run 4, MDT-GR.

General Comments

00:00 TO 24:00 Hrs ON 02 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 2 MWD engineers, 2 DD on board. 216 mm (8-1/2") sidetrack hole section tools: Main string checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach, 1 mechanic on board. All tool strings opchecked OK.
Operational Comments	1 Origin reservoir engineer on board.
Operational Comments	MWD sensor distance from bit: 3.98m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:	
Time:	2300	Glycol CP Temp:		MBT:	7.5	Solids (corrected):	
Weight:	9.35ppg	Glycol:		PM:	0.2	H2O:	94%
ECD TD:		Nitrates:		PF:	0.2	Oil:	
ECD Shoe:		Sulphites:		MF:	2.4	Sand:	.2 %
ECD Cuttings:		API FL:	4.2cc/30min	pH:	9.5	Barite:	
KCl Equiv:	6%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	61sec/qt
PV	18cp
YP	25lb/100ft²
Gels 10s	7
Gels 10m	11
Fann 003	8
Fann 006	9
Fann 100	25
Fann 200	34
Fann 300	43
Fann 600	61

Shakers, Volumes and Losses Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2151.5bbl**	**Losses**	**79.5bbl**
Active	619.0bbl	Downhole	
Mixing		Surf+ Equip	69.5bbl
Hole	853.5bbl	Dumped	
Slug		De-Gasser	
Reserve	679.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	10.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2367.00 -	Trip	8.589	1.6209	0.4850	0.5148	0.1317	0.0207	0.1395	3.320
Comment - Wiper Trip Gas									
2492.00 -	Trip	10.472	3.0580	0.7432	0.7016	0.1608	0.2423	0.1487	8.140
Comment - Wiper Trip Gas									
2754.00 -	Trip	9.550	1.4043	0.3569	0.3737	0.0961	0.1487	0.1037	2.910
Comment - Wiper Trip Gas									
3100.00 -	Trip	11.387	4.2679	0.7628	0.6112	0.1293	0.1955	0.1198	6.080
Comment - Wiper Trip Gas									
3381.00 -	Trip	10.398	2.9459	0.6424	0.6321	0.1516	0.2382	0.1564	5.070
Comment - Wiper Trip Gas									
3522.00 -	Trip	13.334	6.3938	0.9640	0.7064	0.1451	0.2242	0.1396	5.380
Comment - Wiper Trip Gas from TD									

06:00 Hrs Update

Time:	06:00 Hrs on 03 Jan 2010
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	POOH from Wiper Trip @ 1727 m.
Formation:	Eastern View Coal Measures
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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Rockhopper-1

Date : 03 Jan 2010 | **Geology Report Number : 28** | (associated DDR # 36)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	03 Jan 2010
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	36.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	34.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Completed hole cleaning and mud conditioning. Pulled out of hole. Rigged up for wireline. Ran Suite 1, Run 4, MDT-GR.
Forward Plan:	Finish Suite 1, Run 4, MDT-GR, rig up and run Suite 1, Run 5, VSI-GR.

General Comments

00:00 TO 24:00 Hrs ON 03 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 2 MWD engineers, 2 DD on board. 216 mm (8-1/2") sidetrack hole section tools: Main string checked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach, 1 mechanic on board. All tool strings opchecked OK.
Operational Comments	1 Origin reservoir engineer on board.
Operational Comments	MWD sensor distance from bit: 3.98m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	60sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:		PV	19cp
Time:	2140	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	25lb/100ft²
Weight:	9.40ppg	Glycol:		PM:	0.2	H2O:	94%	Gels 10s	7
ECD TD:		Nitrates:		PF:	0.25	Oil:		Gels 10m	10
ECD Shoe:		Sulphites:		MF:	2.4	Sand:	.25 %	Fann 003	7
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9	Barite:		Fann 006	9
KCl Equiv:	6%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	26
								Fann 200	36
								Fann 300	44
								Fann 600	63

Shakers, Volumes and Losses Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2275.9bbl**	**Losses**	**43.6bbl**
Active	660.0bbl	Downhole	
Mixing		Surf+ Equip	38.0bbl
Hole	955.9bbl	Dumped	
Slug		De-Gasser	
Reserve	660.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	5.6bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

06:00 Hrs Update

Time:	06:00 Hrs on 04 Jan 2010
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Laying out wireline tools from suite 1, run 4, MDT-GR-.
Formation:	Eastern View Coal Measures
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer (Nights) - Brenton Richards

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1

Date : 04 Jan 2010 | **Geology Report Number : 29** | (associated DDR # 37)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	04 Jan 2010
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	37.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	35.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Completed wireline Suite 1, Run 4, MDT-GR. Rigged up and ran in hole with wireline Suite 1, Run 5, VSI-GR. Tool unable to penetrate deeper than 2555mMDRT. Completed Suite 1, Run 5, VSI-GR from 2555mMDRT.
Forward Plan:	Rig up, run and complete wireline Suite 1, Run 6, MSCT-GR.

General Comments

00:00 TO 24:00 Hrs ON 04 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 2 MWD engineers, 2 DD on board. 216 mm (8-1/2") sidetrack hole section tools: Main string checked OK. Back up string on board. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach, 1 mechanic on board. All tool strings opchecked OK.
Operational Comments	1 Origin reservoir engineer on board. WSG crew change. Dennis Archer off, Larissa Hansen on.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	59sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:		PV	19cp
Time:	2100	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	22lb/100ft²
Weight:	9.40ppg	Glycol:		PM:	0.2	H2O:	94%	Gels 10s	7
ECD TD:		Nitrates:		PF:	0.15	Oil:		Gels 10m	10
ECD Shoe:		Sulphites:		MF:	2.3	Sand:	.25 %	Fann 003	6
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9	Barite:		Fann 006	7
KCl Equiv:	6%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	24
								Fann 200	33
								Fann 300	41
								Fann 600	60

Shakers, Volumes and Losses Data

Engineer : Jey Tien/ Kosta Georgiou

				Equip.	Descr.	Mesh Size	Hours
Available	**2275.9bbl**	**Losses**	**9.0bbl**				
Active	660.0bbl	Downhole					
Mixing		Surf+ Equip	0.0bbl				
Hole	955.9bbl	Dumped					
Slug		De-Gasser					
Reserve	660.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge					
		Sepage from pits	9.0bbl				

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

06:00 Hrs Update

Time:	06:00 Hrs on 05 Jan 2010
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Continue W/ wireline Suite 1, Run #6, MSCT-GR Collection of sidewall cores (31 cores in total to collect.)
Formation:	Eastern View Coal Measures
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Larissa Hansen (Nights) - Brenton Richards

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Rockhopper-1

Date : 05 Jan 2010 | **Geology Report Number : 30** | (associated DDR # 38)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	05 Jan 2010
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	38.04
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	36.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Continue with wireline program. RIH for suite 1, Run 6, MSCT-GR. Completed Suite 1, Run 6, MSCT-GR. RIH for Suite 1, Run 7, FMI-DSI-GR.
Forward Plan:	Finish wireline logging program with completion of Suite 1, Run 7, FMI-DSI-GR, POOH, rig down wireline, RIH and cement plugs for sidetrack.

General Comments

00:00 TO 24:00 Hrs ON 05 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 2 MWD engineers, 2 DD on board. 216 mm (8-1/2") sidetrack hole section tools: Main string and back up string opchecked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach, 1 mechanic on board. All tool strings opchecked OK.
Operational Comments	1 Origin reservoir engineer on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:		Viscosity	61sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:		PV	17cp
Time:	2300	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	30lb/100ft²
Weight:	9.40ppg	Glycol:		PM:	0.2	H2O:	94%	Gels 10s	7
ECD TD:		Nitrates:		PF:	0.2	Oil:		Gels 10m	11
ECD Shoe:		Sulphites:		MF:	2.3	Sand:	.20 %	Fann 003	8
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9	Barite:		Fann 006	9
KCl Equiv:	6%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	26
								Fann 200	36
								Fann 300	47
								Fann 600	64

Shakers, Volumes and Losses Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2275.9bbl**	**Losses**	**0.0bbl**
Active	660.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	955.9bbl	Dumped	
Slug		De-Gasser	
Reserve	660.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Sepage from pits	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

06:00 Hrs Update

Time:	06:00 Hrs on 06 Jan 2010
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Laying out Tool F/ Suite 1 Run #7: FMI-DSI-GR.
Formation:	Eastern View Coal Measures
Lithology:	No Drilling
ROP:	No Drilling
Gas:	No Drilling

Wellsite Geologist(s)

(Days) - Larissa Hansen (Nights) - Brenton Richards

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Rockhopper-1

Date : 06 Jan 2010 | **Geology Report Number : 31** | (associated DDR # 39)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	06 Jan 2010
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	39.29
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	37.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Finished wireline program with completion of Suite 1, Run 7, FMI-DSI-GR. Rigged down wireline. Circulated and conditioned mud. Commenced cementing plugs in preperation for open hole abandonment.
Forward Plan:	Finish cementing plugs, wait on cement, kick off plugs for Rockhopper 1- ST1 from 1968mMDRT.

General Comments

00:00 TO 24:00 Hrs ON 06 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger on board. Reserval and back up gas equipment calibrated 16 Dec 09. Sperry: 2 MWD engineers, 2 DD on board. 216 mm (8-1/2") sidetrack hole section tools: Main string and back up string opchecked OK. Schlumberger: 2 engineers, 4 operators, 1 MDT specialist, 1 technical coach, 1 mechanic on board. All tool strings opchecked OK.
Operational Comments	1 Origin reservoir engineer off.
Operational Comments	1 Petrolab technician on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:	
Time:	2000	Glycol CP Temp:		MBT:	7.5	Solids (corrected):	
Weight:	9.40ppg	Glycol:		PM:	0.2	H2O:	94%
ECD TD:		Nitrates:		PF:	0.2	Oil:	
ECD Shoe:		Sulphites:		MF:	1.9	Sand:	.20 %
ECD Cuttings:		API FL:	4.5cc/30min	pH:	9	Barite:	
KCl Equiv:	6%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	58sec/qt
PV	16cp
YP	31lb/100ft²
Gels 10s	7
Gels 10m	10
Fann 003	8
Fann 006	10
Fann 100	26
Fann 200	36
Fann 300	47
Fann 600	63

Shakers, Volumes and Losses Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**2242.0bbl**	**Losses**	**41.0bbl**
Active	752.0bbl	Downhole	
Mixing		Surf+ Equip	41.0bbl
Hole	830.0bbl	Dumped	
Slug		De-Gasser	
Reserve	660.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Sepage from pits

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics Equiv	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3522.00 -	Trip	16.139	5.6580	1.4850	1.8159	0.3980	0.6266	0.3626	14.570

Comment - Ciculated out

06:00 Hrs Update

Time:	06:00 Hrs on 07 Jan 2010
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Circulate at 2482m while WOC.
Formation:	Eastern View Coal Measures
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Larissa Hansen (Nights) - Brenton Richards

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Rockhopper-1

Date : 07 Jan 2010 | **Geology Report Number : 32** | (associated DDR # 40)

Well Details

Depth MDBRT:	3522.0m	Rig:	Kan Tan IV	Date:	07 Jan 2010
Depth TVDBRT:	3192.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:	3166.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	39.96
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	38.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Finished cementing plugs. Waited on cement. Commenced making up BHA for Rockhopper 1 ST1. Rockhopper 1 completed (plugged and abandoned) at 22:30 on the 7th of January 2010.
Forward Plan:	Finish making up BHA, run in hole, kick off cement plugs for Rockhopper-1 / ST1.

General Comments

00:00 TO 24:00 Hrs ON 07 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 07 Jan 09. Sperry: 2 MWD engineers, 2 DD on board. 216 mm (8-1/2") sidetrack hole section tools: Main string and back up string opchecked OK.
Operational Comments	1 Petrolab technician off.
Operational Comments	Schlumberger crew off.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:		Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:	
Time:	2250	Glycol CP Temp:		MBT:	7.5	Solids (corrected):	
Weight:	9.40ppg	Glycol:		PM:	0.25	H2O:	94%
ECD TD:		Nitrates:		PF:	0.2	Oil:	
ECD Shoe:		Sulphites:		MF:	2.6	Sand:	.3 %
ECD Cuttings:		API FL:	4.8cc/30min	pH:	9	Barite:	
KCl Equiv:	6%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	58sec/qt
PV	17cp
YP	26lb/100ft²
Gels 10s	8
Gels 10m	12
Fann 003	8
Fann 006	10
Fann 100	27
Fann 200	35
Fann 300	43
Fann 600	60

Shakers, Volumes and Losses Data

Engineer : Jey Tien/ Kosta Georgiou

Available	**1702.5bbl**	**Losses**	**344.3bbl**
Active	359.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	598.5bbl	Dumped	
Slug		De-Gasser	
Reserve	745.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Left Behind Plugs.	344.3bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	102.00	76.00	100.30	74.30	1.70	1040.50	Sea bed
Lower Miocene Seismic marker	949.00	923.00			0.00	0.00	Not identified
Upper Angahook	1125.00	1099.00	1140.80	1114.80	-15.80	144.00	GR decr, res incr, litho
Angahook Volcanics	1294.00	1268.00	1284.80	1258.80	9.20	253.70	GR decr, res incr

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Formation Tops

Equiv							
Lower Angahook	1543.00	1517.00	1538.50	1512.50	4.50	286.80	GR decr, res incr
Demons Bluff Formation	1827.00	1801.00	1825.30	1799.30	1.70	242.20	GR incr, res incr
Eastern View Coal Measures	2066.10	2039.00	2067.50	2041.00	-2.00	1014.50	GR decr, res decr
P3 Zone	3114.90	2862.00	3082.00	2840.10	21.90	109.00	GR decr, res decr
AL30 equivalent	3196.40	2923.00	3191.00	2917.90	5.10	127.50	GR decr, res incr
AL140 equivalent	3325.80	3020.00	3318.50	3014.10	5.90	52.50	GR decr, res incr
TL60 equivalent	3373.80	3056.00	3371.00	3053.10	2.90	54.00	GR decr, res incr
Cretaceous Volcanics	3436.60	3103.00	3425.00	3093.40	9.60	97.00	GR decr, res decr
Total Depth	3486.60	3140.40	3522.00	3165.90	-25.50	0.00	

06:00 Hrs Update

Time:	06:00 Hrs on 08 Jan 2010
Depth:	3522 mMDRT/3192 mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Washing in hole from 2096m to tag TOC.
Formation:	Eastern View Coal Measures
Lithology:	No drilling
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Larissa Hansen (Nights) - Brenton Richards

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APPENDIX 18: MUD ENGINEERS REPORTS

HALLIBURTON

Fluid Systems

BAROID FLUID SERVICES RECAP

ADA/ORIGIN ENERGY RESOURCE LTD
ROCKHOPPER-1 & ROCKHOPPER-1 ST1
BASS STRAIT, TASMANIA

Prepared by: 'Jay' Tien Guan Wan, Mike Lawrance
James Munford, Kosta Georgiou

Date: 1st March 2010

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13. DAILY DRILLING FLUIDS REPORTS

1. WELL SUMMARY

1.1 Well Data

Well Name	:	**Rockhopper-1**	**/ Rockhopper-1 ST1**
Operator	:	Origin Energy Ltd	
Well Type	:	Deviated, Exploration	
Bottom Hole Temperature	:	92 °C (Dynamic)	/ 89 °C (Dynamic)
Maximum Inclination	:	43.5 deg	/ 36.74 deg
Location	:	T/18P, Bass Basin, Bass Strait, Tasmania	
Contractor/Rig	:	ADA / Kan Tan IV	
Start Date (Rig)	:	29th November 2009	/ 19th January 2010
Baroid On Location	:	29th November 2009	
Drill Out Date	:	30th November 2009	/ 19th January 2010
RT to Mudline	:	100.2 m	
Total Depth	:	3522 mMDRT, 3191 mTVD	/ 3482 mMDRT, 3232.20mTVD
Date TD Reached	:	27th December 2009	/ 3rd February 2010
Total Days Actual Drilling	:	21 days	/ 16 days
Date Released	:	19th February 2010	
Total Days on Well	:	41 days	/ 32 days
Drilling Cuttings Volume	:	2215.5 bbl / 352 m3 (combined RH-1 & RH-1 ST1)	

1.2 Formation Tops - ROCKHOPPER-1

Formation	PREDICTED TOP (mMDRT)	PREDICTED TOP (mTVDRT)	ACTUAL TOP (mMDRT)	ACTUAL TOP (mTVDRT)	HIGH/ LOW (mTVD)
Torquay Group	102.5	102.5	102.5	102.5	0
Upper Angahook	1168	1142	1099	1099	6m High
Angahook Volcanics Equivalent	1323	1297	1331	1305	8m Low
Lower Angahook	1564	1538	1569	1543	5m Low
Demons Bluff Fm.	1839	1813	1850	1824	11m Low
Eastern View Coal Measures	2092	2066	2105	2079	13m Low

Formation Tops - ROCKHOPPER-1 ST1

Formation	PREDICTED TOP (mMDRT)	PREDICTED TOP (mTVDRT)	ACTUAL TOP (mMDRT)	ACTUAL TOP (mTVDRT)	HIGH/ LOW (mTVD)
Eastern View Coal Measures	2066	2040	2067	2041	1.0m Low
E1 Seismic Marker	2807	2674	2811	2684.37	10.37m Low
RL 30	3151	2972	3163.50	2964.5	25.5m High
RL 90	3279	3079	3287.60	3073.8	5.20m High
Cretaceous Volcanics	3377	3161	3432	3191.90	30.90m Low

1.3 Casing Program

30" X 20"	Conductor	@	157 mMDRT
13 ⅜"	Surface Casing	@	961 mMDRT
9 ⅝ "	Casing	@	1965 mMDRT

1.4 Personnel

Drilling Supervisors	:	Bryan Houston	Kevin Monkhouse
	:	Mike Lanzer	Paul Leathem
Baroid Field Service Reps	:	Jay Tien Guan Wan	Mike Lawrance
	:	James Munford	Kostandinos Georgiou

COST SUMMARY

2.1 Drilling Fluid Costs - ROCKHOPPER-1

	Drilling Fluid	Hole Size	MD From	MD To	Cost AUD $
1.	Seawater / Hi-Vis Gel Sweeps	36"	100 m	158 m	0.00**
2.	Seawater / Hi-Vis Gel Sweeps	17 ½"	158 m	966 m	38,288.87
3.	KCl / PHPA / CLAYSEAL PLUS	12 ¼"	966 m	1972 m	278,636.64
4.	KCl / PHPA / CLAYSEAL PLUS	8 ½"	1972 m	3522 m	258,231.53
Total Mud Materials used for Drilling				AUD $	575,157.03
Mud Materials used for Cementing				AUD $	542.04
Contingency Chemicals i.e. spotting fluids / lubricants				AUD $	33,593.54
Cost of Shaker Screens				AUD $	24,105.08
Mud Materials used for Completion				AUD $	0.00
Mud Materials lost or damaged				AUD $	0.00
				Total Mud Materials Cost AUD $	663,397.69

**Mud was received from previous well.

2.2 Engineering Costs - ROCKHOPPER-1

Service Representatives	From (date)	To (date)	Days
'Jay' Tien Guan Wan	29/11/09	8/12/09	10
	30/12/09	07/01/09	9
Mike Lawrance	09/12/09	29/12/09	21
	08/01/10	19/01/10	12
James Munford	29/11/09	01/12/09	3
	14/12/09	22/12/09	9
Kostandinos Georgiou	02/12/09	13/12/09	12
	23/12/09	08/01/10	17
Total Days:			93
Service Cost @ AUD $1,540/day		**AUD $**	**143,220.00**
		Total Actual Cost of Materials & Engineering AUD $:	**776,617.69**
		Predicted Cost of Materials & Engineering AUD $:	**632,238.45**
		Variance :	**22.8 % (higher)**

2.3 Drilling Fluid Costs – ROCKHOPPER-1 ST1

	Drilling Fluid	Hole Size	MD From	MD To	Cost AUD $
5.	KCl / PHPA / CLAYSEAL PLUS	8 ½"	1965 m	3482 m	237,823.07
Total Mud Materials used for Drilling				AUD $	237,823.07
Mud Materials used for Cementing				AUD $	0.00
Contingency Chemicals i.e. spotting fluids / lubricants				AUD $	57,283.44
Cost of Shaker Screens				AUD $	21,456.28
Mud Materials used for Completion				AUD $	0.00
Mud Materials lost or damaged				AUD $	76.08
			Total Mud Materials Cost	AUD $	316,638.87

2.4 Engineering Costs - ROCKHOPPER-1 ST1

Service Representatives	From (date)	To (date)	Days
'Jay' Tien Guan Wan	11/02/10	19/02/10	9
Mike Lawrance	20/01/10	10/02/10	22
Kostandinos Georgiou	19/01/10	15/02/10	28
Total Days:			59
Service Cost @ AUD $1,540/day		**AUD $**	**90,860.00**
		Total Actual Cost of Materials & Engineering AUD $:	**407,498.87**
		Predicted Cost of Materials & Engineering AUD $:	**210,935.33**
		Variance :	**93.2 % (higher)**

3. PERFORMANCE SUMMARY

3.1 Performance Indicators

Interval 1. (100 m - 158 m) - 36" Hole	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	60	58	Y
• Volume Built, bbl	772	997	N
• Mud Cost / bbl, AUD$	53.69	0.00	N
• Mud Cost / m, AUD$	690.80	0.00	N
• Interval Mud Cost, AUD$	41,448.10	0.00	N

Interval 2. (158 m - 966 m) - 17 ½" Hole	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	803	808	Y
• Volume Built, bbl	4318	3374	N
• Mud Cost / bbl, AUD$	11.03	11.35	Y
• Mud Cost / m, AUD$	59.33	47.39	N
• Net Interval Mud Cost, AUD$	47,640.12	38,288.87	N

Interval 3. (966 m - 1972 m) - 12 ¼" Hole	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	1001	1006	Y
• Volume Built, bbl	2675	2645	Y
• Dilution Rate, bbl/m	1.1	0.46	N
• Mud Cost / bbl, AUD$	73.59	105.34	N
• Mud Cost / m, AUD$	196.65	276.97	N
• Net Interval Mud Cost, AUD$	196,849.80	278,636.64	N

Interval 4. (1972 m - 3522 m) - 8 ½" Hole	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	1520	1550	Y
• Volume Built, bbl	2915	1380	N
• Dilution Rate, bbl/m	1.3	1.09	Y
• Mud Cost / bbl, AUD$	65.49	187.07	N
• Mud Cost / m, AUD$	125.60	166.55	N
• Net Interval Mud Cost, AUD$	190,914.83	258,157.03	N

Interval 5. (1965 m - 3482 m) - 8 ½" Hole - ST1	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	1653	1517	Y
• Volume Built, bbl	1957	2180	Y
• Dilution Rate, bbl/m	1.2	1.27	Y
• Mud Cost / bbl, AUD$	76.31	109.09	N
• Mud Cost / m, AUD$	90.34	156.77	N
• Interval Mud Cost, AUD$	149,335.33	237,823.07	N

3.3 Explanation of Non-Conformance

Interval 1:
The interval mud cost came in well under the programmed values for this interval. This occurred for several reasons. Firstly the mud from the previous well "Trefoil-2" was carried over and used to build Kill Mud and also as a spud mud along with seawater to drill this interval.
Secondly, the bulk system on the Kan Tan IV is such that a correction made by the barge engineer to the measured volumes wiped out any cost associated with this interval. The bulk quantities are taken from 'dips' and results vary depending on the engineer and the formula they apply to measure the bulk. Several times adjustments were made to volumes with no actual bulk usage taking place.

Interval 2:
Interval length was drilled 5 m deeper than programmed. The total mud cost for this section was lower than programmed. During the drilling phase the company man changed the mud program to reduce the size of the high viscosity sweeps used to 90 bbl/stand instead of the 120 bbl/stand in the mud program. BARAZAN D PLUS was required as viscosifer in this section to suspend solids because the 10.0 ppg Kill mud was diluted with sea water/PHG hi-vis to 8.8 ppg pad mud.

Interval 3:
The cost for this section was higher than programmed. This can be traced to two products being used more than programmed. 70% extra KCL was required for this interval as well as 30 ton of barite. Most of the barite used was actually a correction made by the Kan Tan IV control room due to the measurement of the bulks. The barite had been previously used in interval 2. Significant portion of the excess KCL can be accounted for in the 600 bbl of premix that was brought over to the 8 ½" section.

Interval 4:
The cost for this section well exceeded the program estimate. The use of 15 drums of Radiagreen EME (lubricant) was not in the original program except as a contingency material. This addition added over AUD $33,000 to the fluids cost but succeeded in reducing torque. The fluid volume carried over from the previous section was in excess of 2100 bbl, significantly more than programmed. This assisted in keeping the cost down as less fluid was required to be built. Time was lost due to stuck wireline, resulting in a lengthy fishing operation and also a damaged crane that halted drilling progress. This section charges include all the engineer and maintenance costs associated with the downtime from these incidents.

Interval 5:
The cost of the sidetrack was more than that programmed. The mud that was received from the previous 8 ½ inch interval was heavily contaminated by cement. This was principally due to the final cement plug failing twice with the ensuing circulation bringing contaminants into the pits. The contamination gave both high pH and high hardness. This was treated out with both citric acid and sodium bicarbonate whose use was not included in the fluids program cost estimate. The high pH and hardness led to some deterioration of the premium products such as EZ-MUD (PHPA) and CLAYSEAL PLUS that had to be compensated for. Consequently, to achieve the programmed concentrations and fluid properties, greater product usage was required.
The use of Radiagreen EME was not factored into the cost of the sidetrack. A total of 25 drums were added during this interval increasing the cost by AUD $ 55,000.
To maintain the programmed pH considerably more units of potassium hydroxide were required. It was noted that upon circulating bottom's up prior to cutting the final core, 5% CO_2 was detected at the shakers. This would lead to a lowering of the pH and consequently increase the quantity of potassium hydroxide required maintain pH at programmed levels.
Due to the amount of tripping a considerable number of slugs were pumped. This led to barite usage which was not factored into the cost estimate. To maintain the programmed mud weight the centrifuge was used both whilst circulating and during tripping. This led to the stripping out of calcium carbonate bridging agents. Additional bridging agent were therefore required to maintain the programmed concentration.

More PAC-LE and N-DRIL HT PLUS was used than programmed. This can be traced to both the additional treatment required post cement contamination and the challenge of maintaining a fluid loss of under 4.5 ml/30mins.

4. INTERVAL - 1

4.1 SUMMARY

36" Hole From 100 m To 158 m In 4 Hours

Drilling Fluid Seawater with PHB/Guar Sweeps
Formations Torquay Group

The well was spudded at 23:30 hrs on November 30th with a 26" bit and a 36" hole opener located 1 m behind the bit. Prior to spudding, an initial volume of 879 bbl of 10ppg hi-vis prehydrated bentonite kill mud was prepared as per program. Bentonite gel and guar gum was mixed as necessary to ensure adequate volumes for sweeps as drilling commenced.

Drilling commenced from the seabed at 100 m RKB and was successfully drilled to 158 m using seawater and hi-vis sweeps. Three 50 bbl sweeps per stand were pumped (each drill pipe single) and spotted hi-vis around BHA on connections. Lime and caustic was utilized to flocculate the sweeps prior to pumping down hole.

At interval TD, the hole was swept with 100 bbl of hi-vis bentonite. The hole was then displaced with 330 bbl of PHB mud and the BHA was pulled to surface. No drag was observed when pulling out of hole. The tapered 20x30" casing was successfully run and cemented with the 20" shoe at 157 m RKB.

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Funnel Viscosity	120	-	125	126	Yes
Chlorides (mg/lt)		1500		1000	Yes
pH		9		9	Yes

Explanation of Non-Conformance
- All properties were maintained in the programmed range

Solids Control Equipment
- In this interval, all returns were to the seabed; hence no solids control equipment was utilized.

4.2 EVALUATION

Comments

This interval was drilled and cased trouble free.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem None
   Cause
   Action

Drilling Fluid

1) Problem None.
   Cause
   Action

Solids Control and Mud Mixing Equipment

1) Problem Difficulty in ascertaining how much barite was being added via the surge tank
   Cause Weight scale is not working.
   Action Requested that the scale be checked and calibrated.

4.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- None.

Drilling Fluid

- None.

Solids Control and Mud Mixing Equipment

- None.

5. INTERVAL - 2

5.1 SUMMARY

17 ½" Hole From 158 m To 966 m In 3 Days

Drilling Fluid Seawater/Hi-Vis PHG Sweeps
Formations Torquay Group

The 17 ½" interval was drilled with Seawater / PHG / Guar Gum hi-vis sweeps. A 17 ½" BHA with a Smith MT bit with 3x22 and 1x13 nozzles was made up and ran in hole. Top of cement was tagged at 147 m. The 30x20" conductor shoe track and cement was drilled and a 40 bbl hi-vis pill was pumped to assist in hole cleaning.

The 17 ½" hole was drilled and surveyed from 158 m to section TD at 966 m. 40 bbl PHG hi-vis pills were pumped at half a stand and another 50 bbl pill after a full stand assist hole cleaning. At TD, 80 bbl of hi-vis was pumped and the hole was circulated clean. A wiper trip was carried out and a single tight spot with 30k overpull was noticed from 909 m to 841 m interval. The BHA was ran in and washed down to bottom and no fill was encountered.

A 100 bbl hi-vis pill was pumped and the hole was displaced with 1200 bbl of 8.8 ppg pad mud. The BHA was pulled out of hole with normal drag and was racked back.

Finally, the 13 ⅜" casing handling equipment was rigged up and 13 ⅜" casing was ran to bottom without hole problems. The 13 ⅜" casing was cemented with shoe at 961 m.

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Funnel Viscosity	120	-	122	130	Y
Chlorides (mg/L)		1500	1000	1200	Y
Calcium (mg/L)		400	120	240	Y
pH		9		9	Y

Explanation of Non-Conformance

- The PHB hi-vis was mixed to the recommended guidelines with drill water and within required specifications.

Solids Control Equipment

- In this interval, all returns were to the seabed; hence no solids control equipment was utilized.

5.2 EVALUATION

Comments

This interval was drilled and cased trouble free.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem None
   Cause
   Action

Drilling Fluid

1) Problem Reduced weight of pad mud and utilization of BARAZAN D PLUS
   Cause Changes in Company man preference with pad mud weight and Guar Gum utilization.
   Action Reduced 9.0 ppg pad mud weight in program to 8.8 ppg. Guar Gum was not used at the later part of hi-vis preparation and substituted with BARAZAN D PLUS.

Solids Control and Mud Mixing Equipment

1) Problem None
   Cause
   Action

5.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- None.

Drilling Fluid

- None.

Solids Control and Mud Mixing Equipment

- None.

6. INTERVAL - 3

6.1 SUMMARY

Whilst drilling out the shoe track, the seawater was displaced to new 9.0 ppg KCl/Polymer fluid. 5 meters of new formation was drilled and a LOT performed, yielding an EMW of 17.5 ppg. The 12 ¼" hole was then drilled to a TD of 1972 m. No hole issues were identified. On pulling out of hole only minimal over pull was observed. As a consequence no wiper trip was required prior to running casing. The 9 ⅝" casing was run to bottom without any issues and cemented as per program.

12 ¼" Hole From 966 m To 1972 m In 4 Days

Drilling Fluid KCl/Polymer/PHPA/CLAYSEAL PLUS
Formations Angahook, Demons Bluff, Eastern V.C. Measures

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Mud Weight (ppg)	8.8	9.5	9.0	9.5	Yes
6 Rpm	12	14	4	11	No
Pv (cp)	alap	-	10	19	Yes
KCl %	8	10	8	8.4	Yes
CLAYSEAL PLUS (%v/v)	2	2	2	2	Yes
LGS (% by vol)	-	5	0.3	3.4	Yes
Sand content (%)	-	1	0.1	0.35	Yes
API Fluid loss (ml/30 mins)	-	6	4.5	7.0	No
Cake (_/32nd)	-	1	1	1	Yes
HPHT FL (ml/30 mins)	-	15	9.5	12.5	Yes
MBT (ppb Eq)	-	25	2.5	15	Yes
Hardness (mg/l)	-	400	160	400	Yes

Explanation of Non-Conformance
The 6 rpm readings were generally lower than programmed. This can be traced to the short notice change in the fluids program in terms of EZ-MUD incorporation. This is expanded on further below. The API Filtrate loss was initially higher than programmed as less PAC-LE was used from the start for the same reason. Once circulation commenced and the fluid sheared sufficiently, further PAC-LE was added and the filtrate loss quickly achieved targeted levels.

Maintenance

- At the request of the ADA company man there was a deviation in the fluid program prior to the commencement of drilling operations. It was required that EZ-MUD (PHPA) be incorporated in the freshly formulated fluid. This differed to the programmed requirement in that EZ-MUD was to be added to the system following displacement and the treating out of cement contamination. This led to the challenge of trying to sufficiently shear the PHPA on surface to ensure that there would be no issues in terms of losses over the shakers when the fluid returned to surface.
- As EZ-MUD was incorporated into the new mud prior to displacement the initial formulation was revised. The concentration of BARAZAN D PLUS was initially lower. This reflected the concern that the shakers may have trouble passing target rheology fluid with poorly sheared PHPA incorporated. This concern was justified, as on the commencement of drilling, the fluid took 2-3 circulations to shear to an extent that the programmed flow rate could be reached without losing fluid over the shakers.

- The rheology on the commencement of drilling was therefore initially lower than programmed. The addition of BARAZAN D PLUS had to be staged as it was found that if the concentration was raised too quickly the combination of poorly sheared PHPA and increased viscosity from the BARAZAN D PLUS led to mud loss over the shakers at the normal drilling flow rate.
- No Calcium Carbonate Bridging agents were added to the fluid prior to displacement for the same reasons as detailed above. These were incorporated into the fluid once drilling progressed. Additions were made to the active to compensate for losses from the solids control equipment.
- CLAYSEAL PLUS was added to the programmed 2% by volume following the LOT and the start of drilling. Further additions were made to compensate for depletion through reserve volume addition.
- Caustic Potash and caustic soda were added to the system to maintain the pH within the programmed range.
- ALDACIDE G was added to surface volume and active pits to inhibit bacterial growth.
- PAC LE was added directly to the active system to maintain low filtration loss.
- The KCl concentration was maintained to the required level by controlling the ratio of 21% brine to Drillwater in the premix.
- OXYGON was added to programmed concentrations.
- In response to cavings ADA instructed the mud weight to be raised to 9.5 ppg with the Barite.

Solids Control Equipment

- Four Brandt VSM-300 shakers, were employed. All were dressed with API 20 mesh on the top scalping deck throughout the entirety of the 12 ¼" section. Initially the lower decks were all dressed with API 50 mesh. As the fluid thinned with temperature they were changed out to a combination of API 100 and API 80 mesh as per the solids control program.

- Two MI Swaco 518 centrifuges were used to control the build up of solids in the system.

- Sand traps were utilized from the start of the drilling. They were at no time dumped as the centrifuges take from suction from the base of the 5 sand traps, which are all equalized.

6.2 EVALUATION

Comments

This interval was drilled successfully. Whilst the short notice change to the drilling program impacted the starting rheology and pump rates, the interval was drilled successfully. The programmed concentrations mirrored the required properties well.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem None
   Cause
   Action

Drilling Fluid

1) Problem None.
   Cause
   Action

Solids Control and Mud Mixing Equipment

1) Problem None
   Cause
   Action

6.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- The hole was in excellent condition throughout. This is highlighted by the ease in which the 9 ⅝" casing went to bottom.

Drilling Fluid

- The fluid system worked well. No recommendations are identified in terms of drilling fluid performance. As discussed above, the program was changed at short notice. This impacted on the initial fluid properties, with the rheology being lower than programmed to compensate for poorly sheared PHPA.

Solids Control and Mud Mixing Equipment

- If EZ-MUD is to be incorporated into virgin mud prior to displacing the well then consideration should be given to a different shaker screen strategy. A number of circulations were required for the fluid to sufficiently shear to allow easy passage through the API 20 mesh screens that were on the top deck of the shakers. A coarser top screen would have allowed programmed flow rates to be used without mud loss.
- The shakers have no angle adjustment on them. As a consequence the poorly sheared PHPA was able to flow over the top of the shakers. If the angle could be adjusted then greater fluid retention time on the shakers would allow more potential for the fluid to pass through the screens as opposed to flowing over them.
- The mud mixing equipment and shear hoppers were not effective in fully shearing the PHPA in the cold virgin mud. The mud pits are a significant distance from the mixing hoppers. As a consequence there is significant pressure loss in the system.

7. INTERVAL - 4

7.1 SUMMARY

Drilling the floats and shoe track inside the 9 ⅝" casing with a PDC bit proved unsuccessful. It was pulled and a tri-cone bit was run. This successfully drilled through the shoe and 5 meters of new formation prior to the leak off test which revealed an equivalent mud weight of 14.6 ppg. The bit was pulled at 2019 mMDRT and was changed out for a PDC bit with a GEOPILOT rotary steerable tool. At 2753 mMDRT a wiper trip to the shoe was performed. Whilst pulling out, at 2129 mMDRT, the pipe became stuck. A 60 bbl Radiagreen EME / EZ-MUD pill was spotted around the BHA. After 10 minutes of soaking and jarring the pipe became free and the trip to the shoe completed. Following running in hole the 8 ½" hole was drilled to 3199 mMDRT where another wiper trip was enforced due to required maintenance in the top drive. On pulling out to the shoe only one tight spot was identified, between 2930 mMDRT and 2900 mMDRT. The trip back in went well and the 8 ½" hole was drilled from 3199 mMDRT to a final TD of 3522 mMDRT. A short wiper trip was followed by pulling out of hole for wireline logging.

Due to the extensive logging program two wiper trips were carried out between wireline logging operations to condition the mud and the hole. The active mud weight was reduced and maintained at 9.4 ppg and API water loss was kept around 4.3 mls/30 min. Five wireline runs were performed as follows:
Run #1 – PEX-HRLA-CMR
Run #2 – MDT
Run #3 – VSI
Run #4 – MSCT
Run #5 – FMI-MSIP
Finally five balanced abandonment cement plugs were spotted. On running in to drill out cement and kick off the sidetrack it was found that the final balanced cement plug failed. This resulted in a further cement job, which again failed as the top of the cement was below the shoe. The third balanced plug was successful, being tagged at 1886 mMDRT. Following this operations were suspended pending repairs on the cranes. Whilst repairs were carried out on the cranes, 5 inch open ended drill pipe was run into 1880 m and the mud circulated at 12 hour intervals to allow treatment.

8 ½" Hole From 1972 m To 3522 m In 7 Days

Drilling Fluid KCl/Polymer/PHPA/CLAYSEAL PLUS
Formations Eastern V.C. Measures

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Mud Weight (ppg)	9	10	9.4	9.6	Yes
6 Rpm	9	13	9	13	Yes
Pv (cp)	alap	-	10	20	Yes
KCl %	6	8	6.3	8.2	Yes
CLAYSEAL PLUS (%v/v)	2	2	2	2	Yes
LGS (% by vol)	-	5	1.1	4.3	Yes
Sand content (%)	-	1	0.15	0.3	Yes
API Fluid loss (ml/30 mins)	-	5	3.9	5.4	Yes
Cake (_/32nd)	-	1	1	1	Yes
HPHT FL (ml/30 mins)	-	13	8.5	11.0	Yes
MBT (ppb Eq)	-	25	5.5	10	Yes
Hardness (mg/l)	-	400	120	300	Yes

Explanation of Non-Conformance
Not applicable. Full conformance.

Maintenance

- 2141 bbl of fluid was carried over from the 12 ¼" fluid set.
- The mud weight was maintained at 9.5 - 9.6 ppg with controlled additions of unweighted pre-mix. The finest available screens were run coupled with the use of centrifuges to control solids.
- Due to the high bottom hole temperature calculated additions of water were made directly to the active to compensate for that lost through evaporation.
- Reserve fluid was bled into the active to maintain volume and properties.
- CLAYSEAL PLUS and EZ-MUD were added to the active to ensure programmed concentrations were maintained.
- Low filtration was maintained with the addition of DEXTRID LTE and as the bottom hole temperature increased, PAC-LE. As the bottom hole temperature further increased N-DRIL HT PLUS was added.
- Circal 60/16, sized calcium carbonate bridging agent was added direct to the active to compensate for depletion from filter cake formation and losses from solids control equipment
- Caustic Soda and Caustic Potash were added to maintain pH.
- Soda ash was added to control the hardness. The target hardness of 400 mg/l was lowered on the direction of the ADA company man to under 200 mg/l for unspecified reasons.
- OXYGON, corrosion inhibitor was added as per program.
- As detailed in the interval summary, whilst pulling out of hole to the shoe at 2129 m the string became stuck. It was believed to be differential sticking in a zone of sandstone around the BHA. The ADA Company man directed Baroid to make up a pill, detailing the exact recipe. It consisted of 50 bbl of pre-mix (concentrations as per the fluids program), 7 bbl drillwater, an additional of 1.6 ppb EZ-MUD and PAC-LE. Two drums of Radiagreen EME were then added equating to a concentration of 3.6 %vol. The pill weight was 9.2 ppg, 0.3 ppg below the current mud weight.
- To combat High torque, Radiagreen EME was added directly to the active up to a concentration of 1% by volume. A reduction in torque was identified, from 24 Klbs-ft to 6-8 Klbs-ft.
- Circulation following the setting of 7 balanced cement plugs led to significant cement contamination in the active fluid set. Efforts were made to treat this with sodium bicarbonate and citric acid.
- Whilst working on the cranes the fluid in the well was circulated daily. This ensured minimal polymer degradation due to extended exposure to down hole conditions.
- A perceived lack of citric acid and sodium bicarbonate meant that the pH and hardness remained over the programmed range following the completion of the cementing operation for some days. In actual fact it was later found that the citric acid and sodium bicarbonate had been on the rig for several days sitting in sea containers but the mud engineer was not advised of its arrival the materials controller.

7.2 EVALUATION

Comments

This interval was drilled and logged successfully.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem: High torque, in excess on 20 Klbs-ft experienced
   Cause: Combination of bit mechanics and high angle
   Action: The addition of Radiagreen EME reduced torque as detailed above.

Drilling Fluid

1) Problem: None.
   Cause:
   Action:

Solids Control and Mud Mixing Equipment

1) Problem: Centrifuge number 2 went down for circa 36 hours.
   Cause: Torque limiter failed.
   Action: Spare located on rig eventually. Swaco advised to have full inventory of spares and be aware of their location at all times.

7.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

The addition of Radiagreen EME prior to building angle is recommended. This would be a proactive rather than a reactive step to control and limit excessive torque.

Drilling Fluid

The drilling fluid performed as expected. The KCl concentration was lowered from 8% to 6.5% on the direction of ADA. Initially to maintain the mud weight at 9.5 ppg was challenging. Once API 120 TECHMESH screens mesh replaced API 80 TECHMESH screens the mud weight was relatively stable. Clear and consistent direction from ADA would assist in the planning and execution of a successful fluid program. Pills of Lo-weight and Hi-weight mud did not show significant improvement in terms of hole cleaning but resulted in longer circulation time to condition the mud to achieve uniform mud weights. All pills, their make up, weight and viscosity were dictated by the Company man.

During cementing operations, if it is the intention to carry over the active fluid to another well or sidetrack, it is recommended that a short circulation system be employed. Here the circulating volume should be minimized i.e. low active pit volume with sandtraps being by-passed. This would mean that any cement contamination would affect the lowest possible volume of fluid and either mean treating or dumping the lowest possible volume.

Solids Control and Mud Mixing Equipment

The Brandt VSM 300 shakers have a 7 degree inward tilt (i.e. towards the possum belly) that is not adjustable. This lack of flexibility impacted significantly on screen life span. During normal circulation rates the edge of the fluid bed would be approximately only a third of the way from the rear of the shaker. At this point, due to poor solids progression, the solids would reciprocate on the same spot and not advance effectively to the front of the shaker for discharge. This would therefore lead to concentrated wear and poor mesh life at that point. The front and back screens were regularly rotated to enhance life span and where practicable the shakers were patched.

When the screens were changed out from API 80 TECHMESH to API 120 TECHMESH it was noticeable that the forward progression of the retained solids improved. It was clear that the finer retained solids were more mobile than the coarser solids retained on the API 80 TECHMESH. Even though solids progression improved the pattern of screen wear as described was maintained.

Finer scalping screens would reduce the volume of solids received on the lower deck thereby reducing wear and improving lifespan. A finer mesh screen on the lower deck would produce a more mobile solids bed whilst improving solids control due to higher mesh size.
The centrifuges were run continuously whilst drilling. One time the centrifuge was down for about 36 hours, this coincided with a wiper trip so did not impact significantly on mud properties.

Indicators from the fluid properties revealed that there was no significant build up of drilled solids. The MW remained stable throughout and there was no significant increase in PV and the MBT remained low. This can be attributed principally to a high level of inhibition/encapsulation as opposed to a high performing solids control system.

The mud mixing equipment performed adequately. There were no delays in mixing chemicals due to equipment downtime. The pressure in the mixing lines however is low due to the distance the pits are away from the mixing hopper.

8. INTERVAL - 5

8.1 SUMMARY

The original well was spudded on the 29th of November 2009. The 9 ⅝" casing was set at 1965 m. The 8 ½ inch section reached a TD of 3522 mMDRT on the 27th December 2009. An extensive logging program was performed prior plugging back inside the 9 ⅝" casing shoe. For reporting purposes the sidetrack was initiated on the 19th January 2010, when the kick off assembly was run in hole. This drilled to 2112 mMDRT where the assembly was pulled in favor of a GEOPILOT directional tool. The GEOPILOT drilled to 3158 m, where it was pulled due to communication problems. A new bit was run and the 8 ½ inch hole was drilled to the first core point at 3196 mMDRT. A coring assembly was made up, including a 30 m core barrel and tripped in without any problems. After 17 meters of coring, torque dropped back and no further progress was made. The core had become jammed in the barrel. The 8 ½ inch hole was then conventionally drilled to the next coring point of 3283 m. Only 15.5 meters of core was cut before yet again no further progress could be achieved. The core assembly was pulled out and the same coring assembly was then run in and cored a further 10.5 m to 3309 mMDRT. A GEOPILOT rotary drilling assembly was then picked up and the 8 ½ inch hole was drilled to a final TD of 3462 mMDRT, 3232.30 mTVD. The BHA was pulled out of hole and laid down.

A total of seven wireline logging runs were conducted on this section. They were:
Run # 1 CMR
Run # 2 XPT, GR, ECRD, LEHQT
Run # 3 Quick Silver Probe MDT
Run # 4 FMI - OSI
Run # 5 Seismic String
Run # 6 MSCT
Run # 7 Dual Packer

The MSCT tool became stuck and was successfully fished out with an overshot assembly on drillpipe. This was followed by a wiper trip to condition the hole before Run # 7. During Run # 7, the Dual Packer also became stuck briefly at 3214 m and was worked free. A total of 13 stations were logged successfully. A cement stinger was made up and the hole was plugged back with cement plugs 1A, 1B, 1C, 2 and 3 as per plug and abandonment program. Cement plug 3A was required as the TOC of cement plug # 3 was deeper at 1978 m. A successful pressure test was conducted at 2000 psi for 15 minutes after waiting on cement. Subsequently, a bridge plug was set at 205 m after the casing pressure test. Finally the 9 ⅝" casing and 20x30 inch conductors were cut and pulled out. The BOP and marine riser were lifted and a cement plug was set at seabed.

8 ½" Hole From 1965 m To 3482 m In 16 Days

Drilling Fluid KCl/Polymer/PHPA/CLAYSEAL PLUS
Formations Eastern V.C. Measures, Cretaceous Volcanics

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Mud Weight (ppg)	9	9.5	9.3	9.4	Yes
6 Rpm	9	13	9	12	Yes
Pv (cp)	alap	-	15	22	Yes
KCl %	7	7	6.4	7.0	Yes
CLAYSEAL PLUS (%v/v)	2	2	2	2.1	Yes
LGS (% by vol)	-	5	0.9	2.7	Yes
Sand content (%)	-	1	0.15	0.25	Yes

API Fluid loss (ml/30 mins)	-	4.5	4.1	4.6	Yes
Cake (_/32nd)	-	1	1	1	Yes
HPHT FL (ml/30 mins)	-	13	6.6	9.5	Yes
MBT (ppb Eq)	-	25	5	10	Yes
Hardness (mg/l)	-	400	80	1280	No
pH	8.5	9.5	9.0	11.5	No

Explanation of Non-Conformance
Initially the pH and the hardness were higher than programmed; this was due to the high level of cement contamination present in the fluid set carried over from the original wellbore. The final balanced plug failed twice, so in total 3 final plugs were set to secure cement inside the 9 ⅝" casing. Fluid that was heavily contaminated with green cement was dumped when it reached surface however some of it found its way into the mud. A short system, by-passing the sandtraps was employed to minimize the potential volume impacted by cement contamination. The high pH and hardness was treated out quickly with citric acid and sodium bicarbonate respectively. Only 5 meters of new formation was drilled with excessive hardness and pH before treatment was applied.

Maintenance

- 1713.9 bbl of fluid was carried over from the original 8 ½" fluid set.
- The mud weight was maintained at 9.3 - 9.4 ppg with the addition of unweighted premix added to the active while circulating, and the almost continual use of two centrifuges. Significant attention was paid to screen maintenance to ensure maximum solids control efficiency. A desirable mud weight of 9.3 ppg was achieved at TD.
- During periods when there was no circulation/drilling the surface volume was centrifuged. The active fluid would be pumped from the pits up to sandtraps (where the centrifuges took suction from). With the incorporation of a number of slugs in the active fluid set this was necessary to ensure the target mud weight was not exceeded.
- The concentration of both CLAYSEAL PLUS and EZ-MUD (PHPA) was maintained by controlled addition to both premix and when necessary the active fluid set.
- The pH was maintained with the addition of caustic potash also yeilding extra potassium for clay inhibition.
- Soda ash was added directly to the active and premixes to control hardness.
- Tight filtration was maintained with the addition of DEXTRID LTE and PAC-LE. As the bottom hole temperature increased, N-DRIL HT PLUS was added.
- A significant focus was placed on maintaining the concentration of bridging agents. Typically pre-mixes were made up at a concentration 10 ppb (6 ppb Circal 60/16 and 4 ppb Circal Y). This is double the concentration detailed in the fluids program. This higher concentration took into account continuous depletion from solids control equipment and meant no direct additions were made to the active. This led to a stable concentration of bridging agents and assisted in the geological interpretation of cuttings.
- ALDACIDE G bactericide was added into premixes and prior to tripping, to the active.
- OXYGON corrosion inhibitor was added as per program.
- From circa 2480 m, Radiagreen EME was added at a concentration of 0.5% volume directly to the active to reduce torque. As per the original well, a reduction in torque was evident. At 3158 m this concentration was increased to 1% vol. At 3309 m the remaining Radiagreen EME was added to the active system, giving a final concentration of just under 1.5% per volume at TD.
- BAROLIFT sweeps at a concentration of 0.3 ppb, were used regularly, both during connections whilst drilling ahead and at the TD of bit runs. Typically 15 bbl was pumped. When the head of the pill reached the riser the third mud pump was used to boost the riser via the kill lines, thereby increasing the annular velocity in this section. See details in attached pill report.

- Whilst circulating water was bled into the active to offset losses from evaporation. This ensured the polymer based fluids system remained hydrated enabling a consistent rheology.

8.2 EVALUATION

Comments

This interval was drilled and logged successfully.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions – No hole problems identified
1) Problem
   Cause
   Action

Drilling Fluid
1) Problem None.
   Cause
   Action

Solids Control and Mud Mixing Equipment
1) Problem Poor shaker efficiency. Discussed further below.
   Cause
   Action

8.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions
No hole condition issues were identified. The proactive addition of Radiagreen EME assisted in ensuring that there was no excessive torque.

Drilling Fluid
The drilling fluid performed well and no areas for improvement are identified. Clear and consistent instructions from ADA with no deviations from the fluids program assisted in delivering a stable and high performing fluid.

Solids Control and Mud Mixing Equipment
The limitations of the Brandt VSM 300 shakers have been discussed at length in the recap for the original Rockhopper-1 well section. For this interval API 40 screens were used for the scalping deck instead of coarser API 20's. This assisted in reducing the volume of solids received by the lower deck. The problem of poor lower deck lifespan remained however due to the severe backward shaker angle. API 140 mesh screens were initially used on the lower deck. However, due to the finer fibers used in the manufacture of these screens the lifespan was both unacceptable and uneconomical. Screens would typically last only 6-8 hours before they were damaged beyond repair. This is not believed to be due to the fact that they are poor quality screens, but the performance of the shakers means that the lower deck sees minimal or no solids progression. It is recommended that an engineer investigates the limitations of this shaker system. The use of API 100 screens gave the best compromise of screen life and solids control.

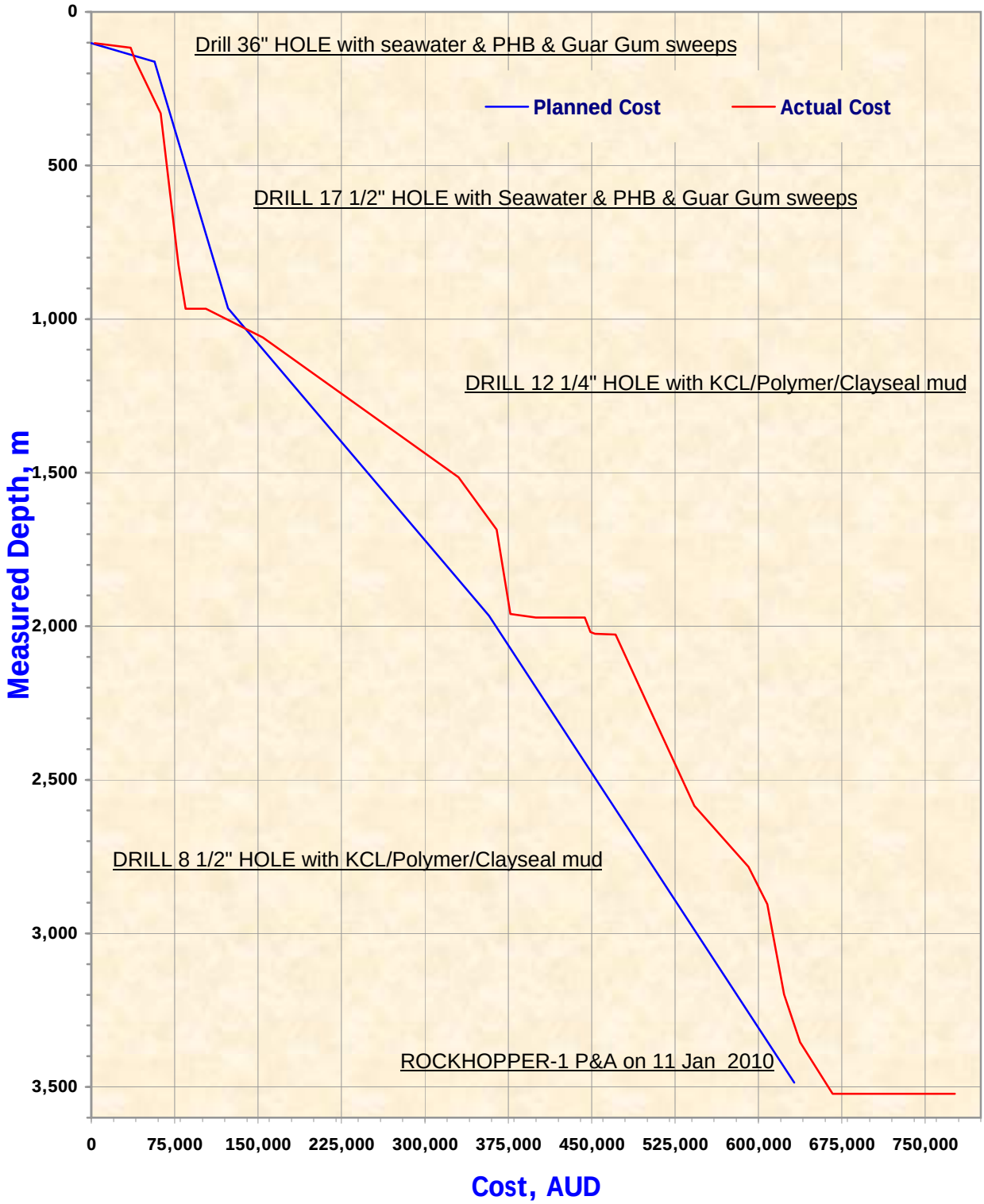
9. PILL & SWEEPS REPORT

Well: ROCKHOPPER-1 / ROCKHOPPER-1 ST-1

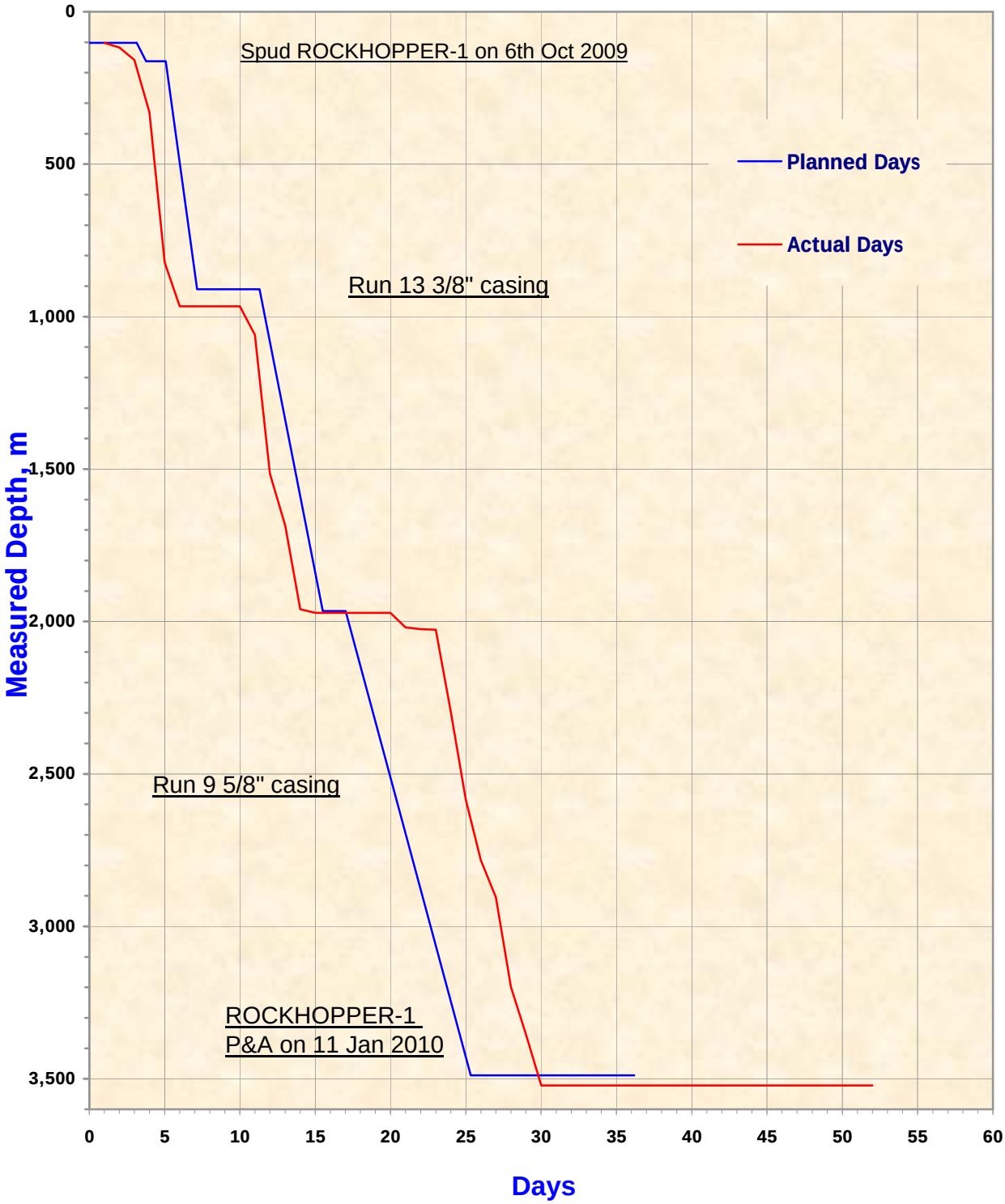
Date	Time	Hole Size (in)	Bit Depth (mMDRT)	Hole Angle (º)	Pill Volume (bbl)	Pill Weight (ppg)	Pill Composition & Key Properties	Remarks / Results (e.g. % incr cuttings at shakers)
24/12/09	0800	8.5	2752	43.00	60	9.2	50 bbl Premix, 7 bbl Drillwater, 2 x drums Radiagreen EME, + 1.5 ppb PAC-LE, 1.5 ppb PHPA.	Premix composition as per fluids program. Pill pumped and soaked around BHA.. Pipe free after 10 minutes of down-jarring. Continue POOH to casing shoe.
25/12/09	0100	8.5	2877	42.00	31	9.5	KCl- PHPA w/ 3 Sx BARAZAN D PLUS	Pumped pill, and waited for shakers to reduce cuttings load. Cuttings load increased by up to 20%, took two circulations.
27/12/09	2000	8.5	3522	41.35	30	9.3	Low Wt KCl- PHPA Fluid	This was the Initial Pill
27/12/09	2005	8.5	3522	41.35	30	10	High Wt KCl- PHPA Fluid	Chased by High Wt, High rheology Fluid until shaker was clean. Increased cuttings by 25%
28/12/09	0014	8.5	3522	41.35	30	9.3	Low Wt KCl- PHPA Fluid	This was the Initial Pill
28/12/09	0019	8.5	3522	41.35	30	10	High Wt KCl- PHPA Fluid	Chased by High Wt, High rheology Fluid until shaker was clean. Did 3x Bottoms up before shakers were clean. It took 2 hours. Increased cuttings by 40%
30/12/09	2037	8.5	3522	41.35	47	9.0	Low Wt KCl- PHPA Fluid	This was the Initial Pill
30/12/09	2052	8.5	3522	41.35	47	10	High Wt KCl- PHPA Fluid	Chased by High Wt, High rheology Fluid until shaker were clean. No great Change in cuttings load. Stopped circulating at 0100 hrs.
02/01/10	2350	8.5	3522	41.35	40	9.0	Low Wt KCl- PHPA Fluid	This was the Initial Pill
02/01/10	0007	8.5	3522	41.35	40	10	High Wt KCl- PHPA Fluid	No change was noticed, hole by this time was clean.
23/01/10	0505	8.5 ST-1	2780	35.61	20	9.4	BAROLIFT pill	Very slight increase in cuttings returned.
25/01/10	1700	8.5 ST-1	3157	35.40	15	9.4	Active mud + 0.3 ppb BAROLIFT	When pill reached riser section, kill lines were utilized to boost riser to maximize hole cleaning in the riser annular section. No increase in cuttings visible
03/02/02	1500	8.5 ST-1	3482	35.5	20	9.4	Active mud + 0.3 ppb BAROLIFT	Pill pumped at TD. Minimal increase in cuttings seen.
12/02/10	0100	8.5 ST-1	3482	35.47	20	8.9	Low Wt KCl- PHPA Fluid	This was the Initial Pill
12/0210	0115	8.5 ST-1	3482	35.47	20	10.3	High Wt KCl- PHPA Fluid	No change was noticed, hole by this time was clean.

GRAPHS

Cost vs Depth



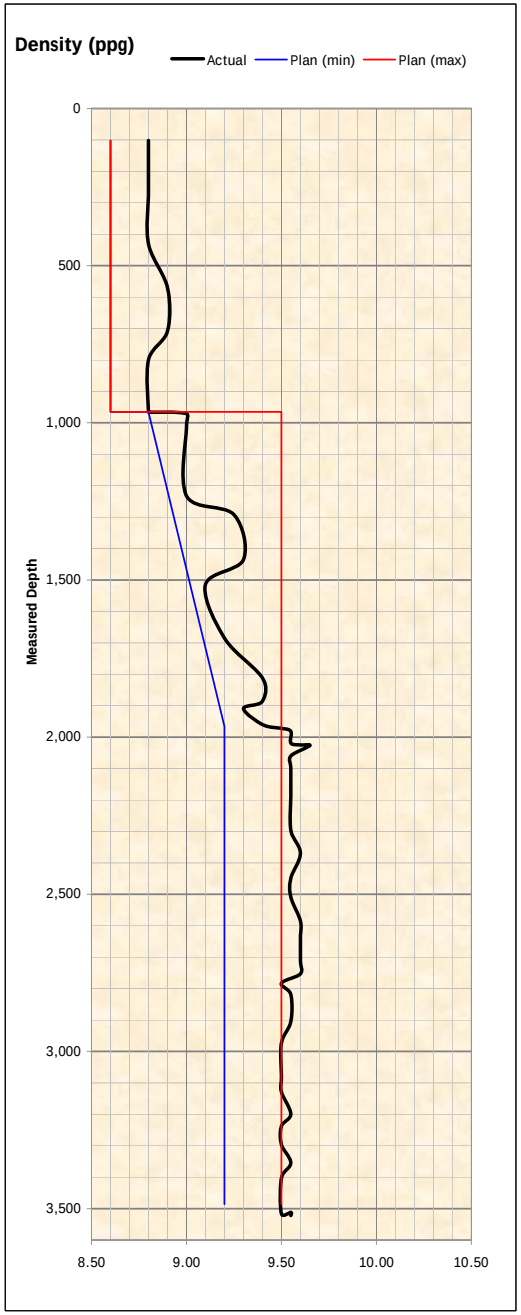
Days vs Depth

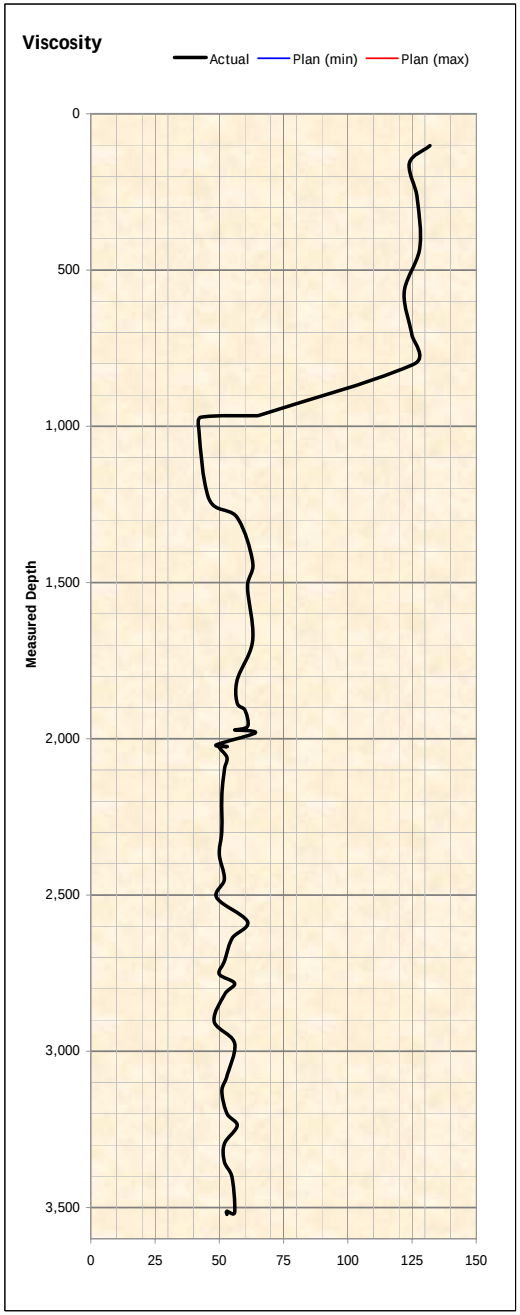


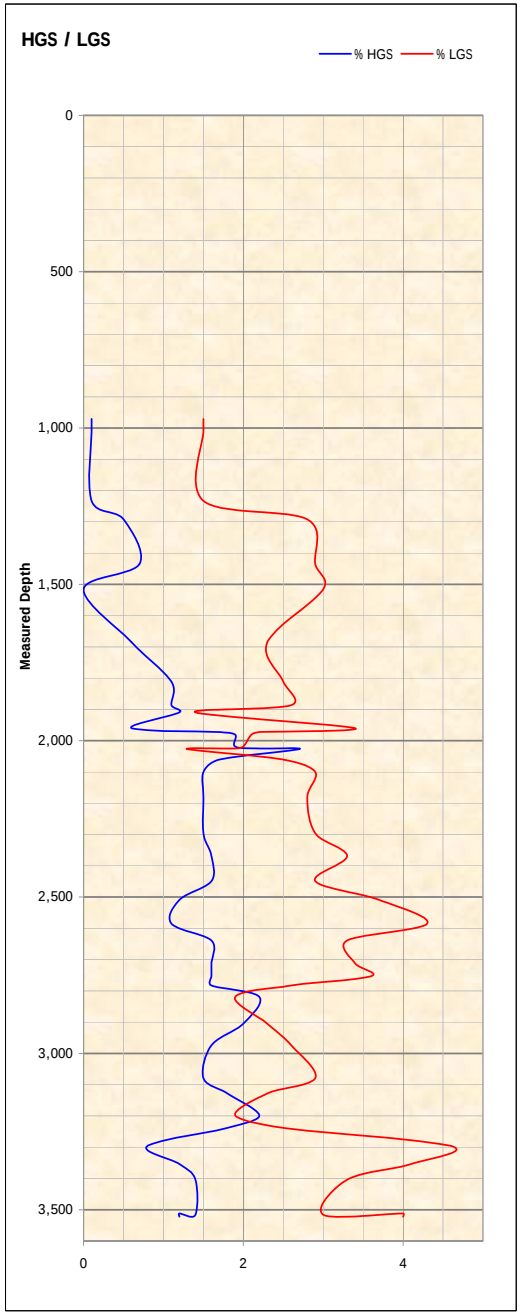
Origin Energy

ROCKHOPPER-1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long







HALLIBURTON
Fluid Systems

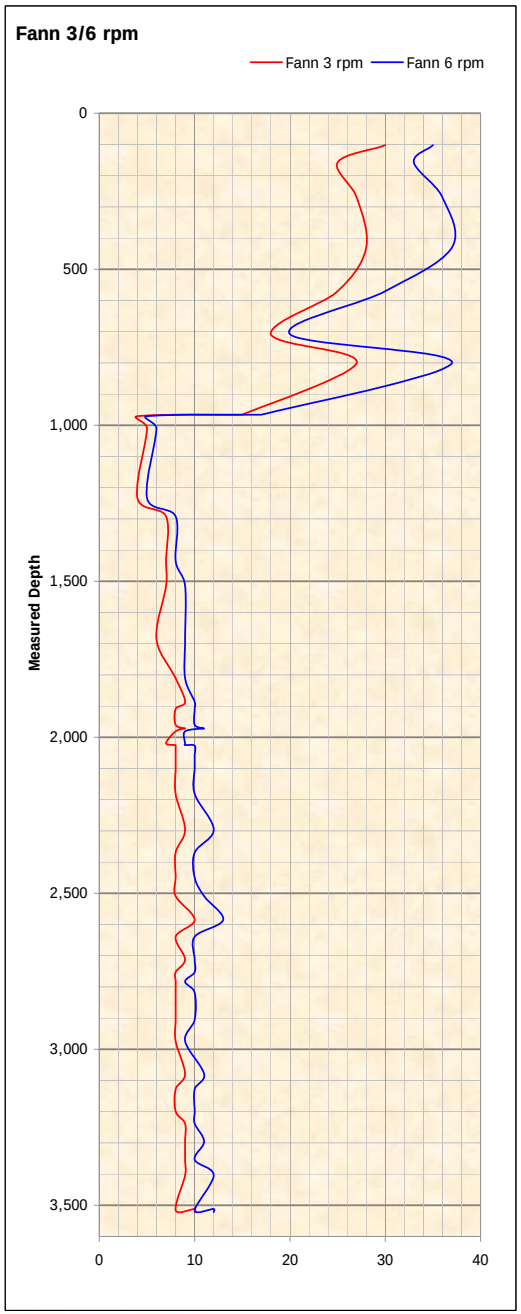
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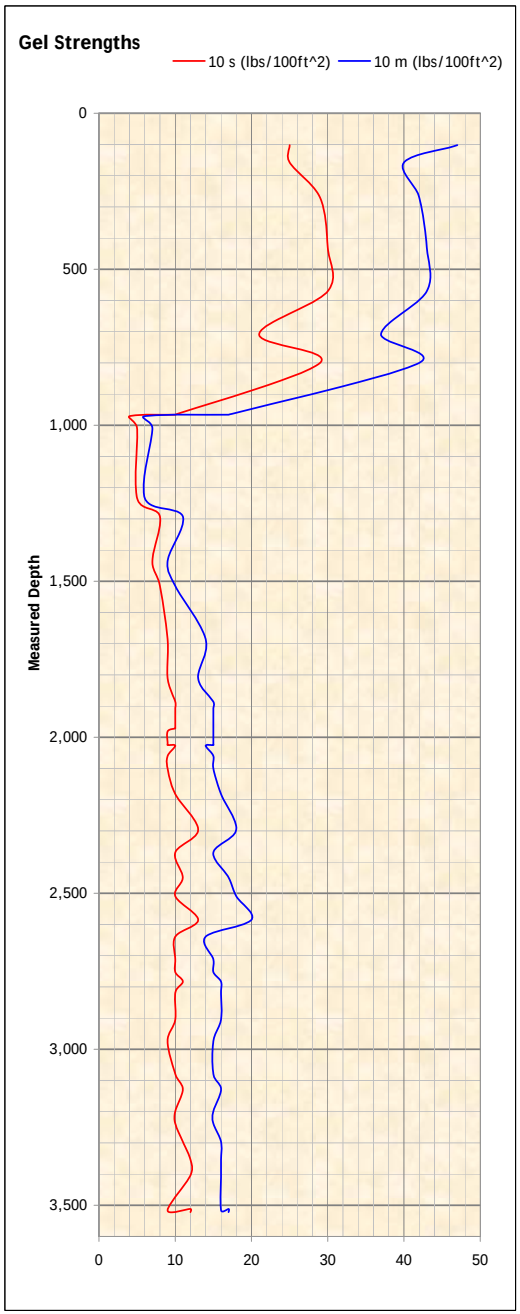
Baroid Fluid Services

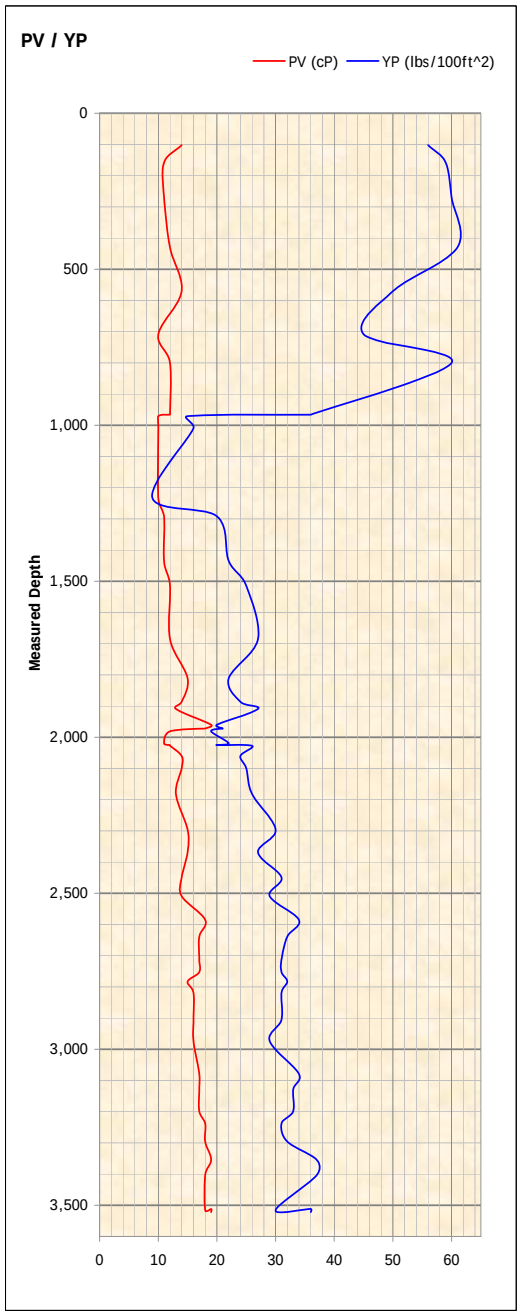
Origin Energy

ROCKHOPPER-1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long







HALLIBURTON
Fluid Systems

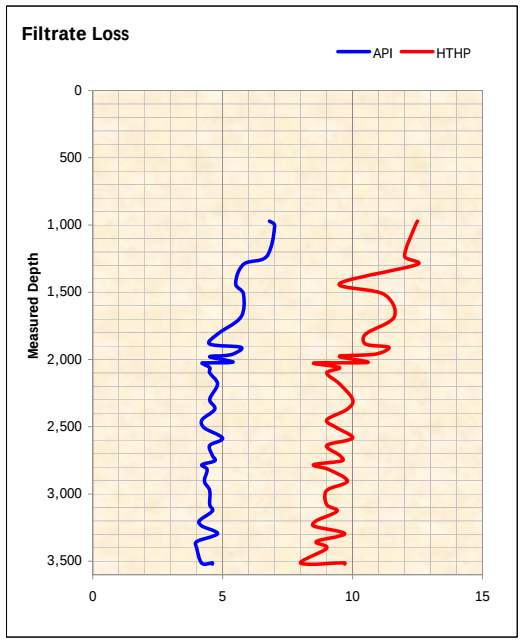
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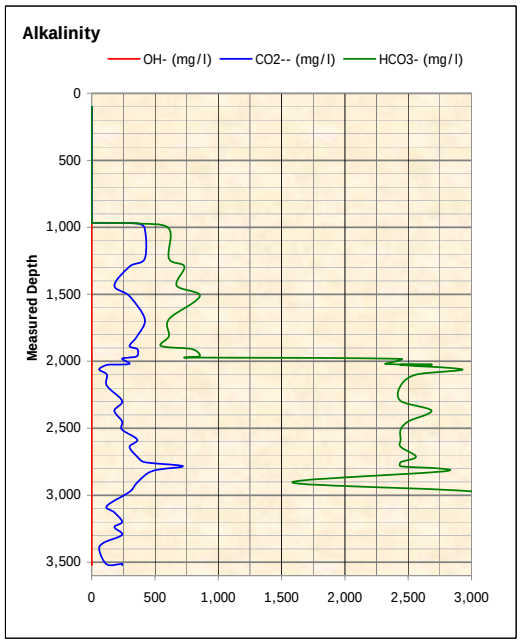
Baroid Fluid Services

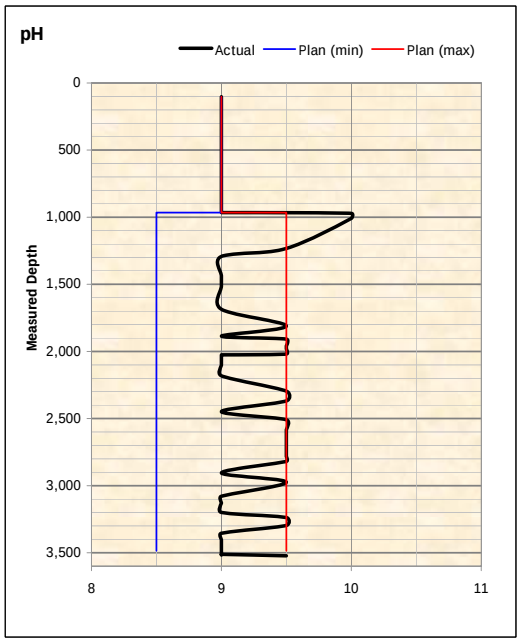
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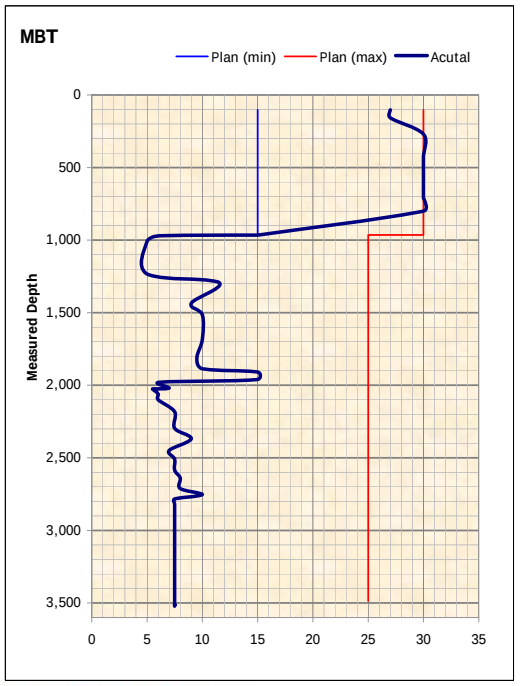
ROCKHOPPER-1

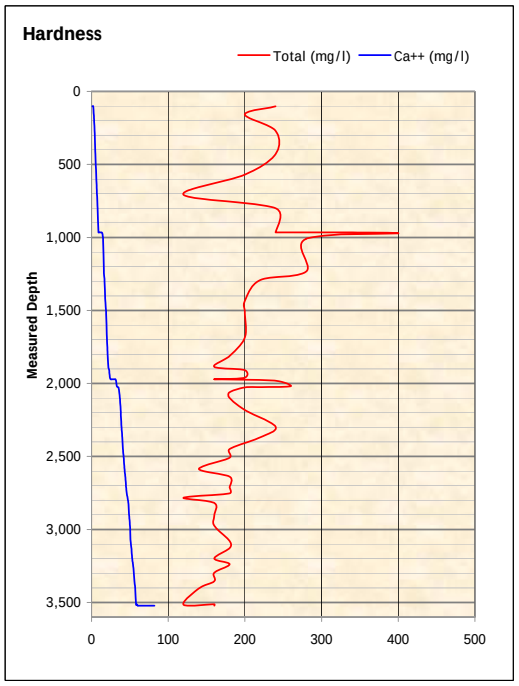
39o 47’34.1833”S Lat X 145o 26’21.4671”E Long

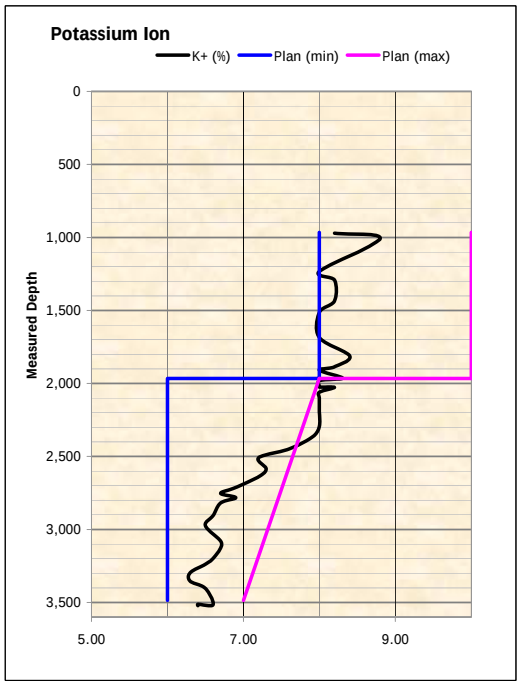










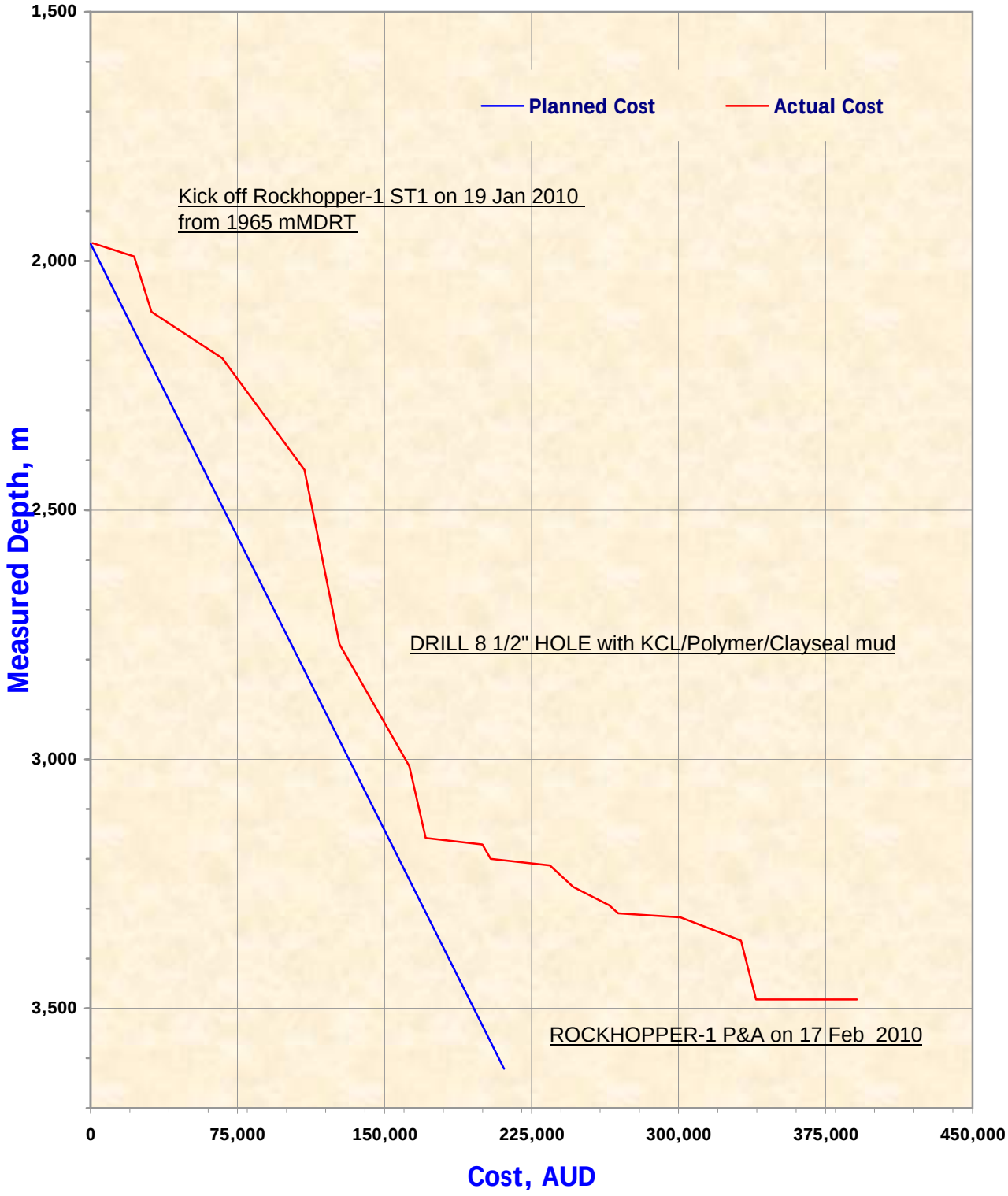


HALLIBURTON
Fluid Systems

WBM Properties

Baroid Fluid Services

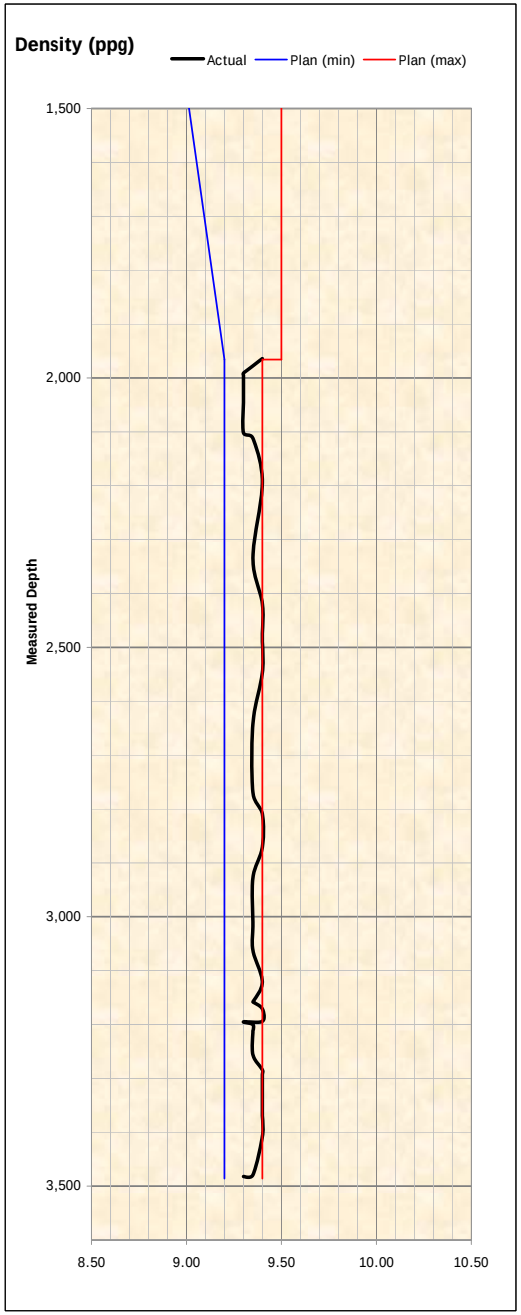
Cost vs Depth

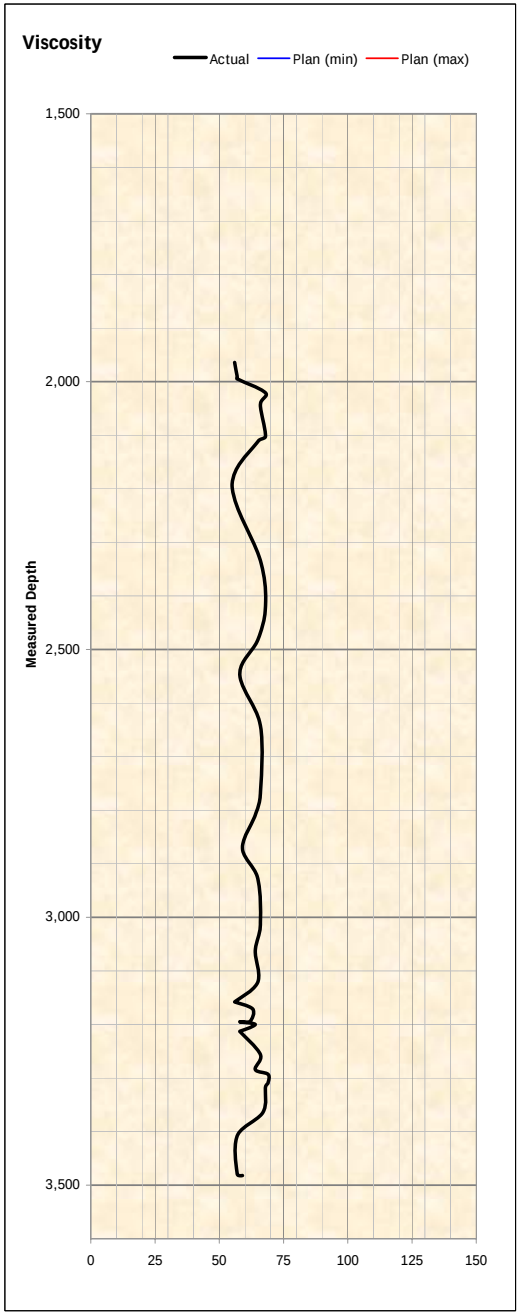


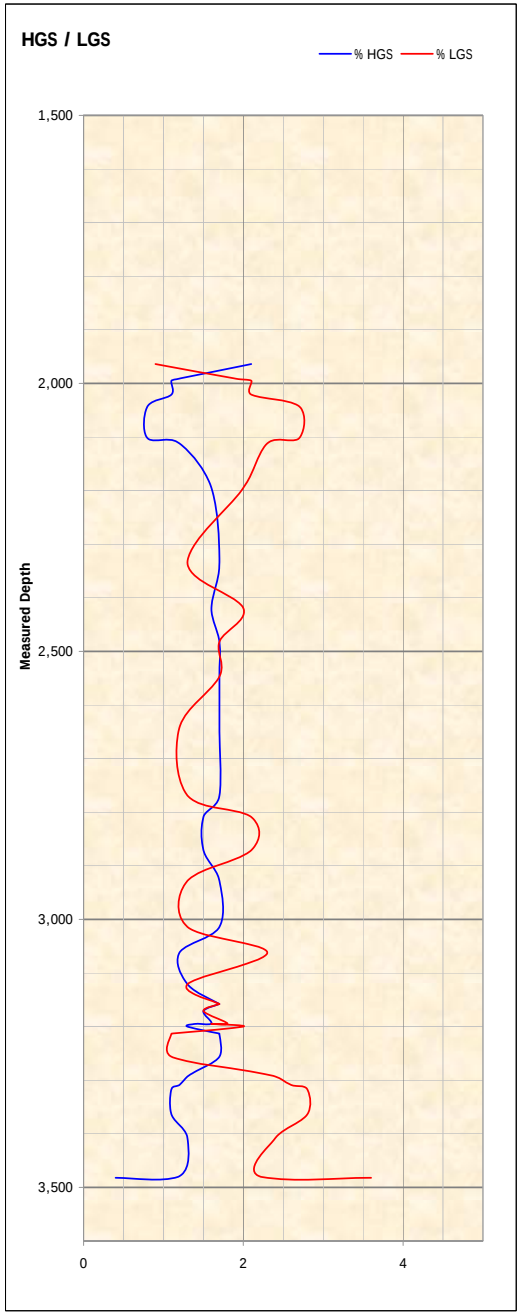
Origin Energy

ROCKHOPPER-1 ST1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long







HALLIBURTON
Fluid Systems

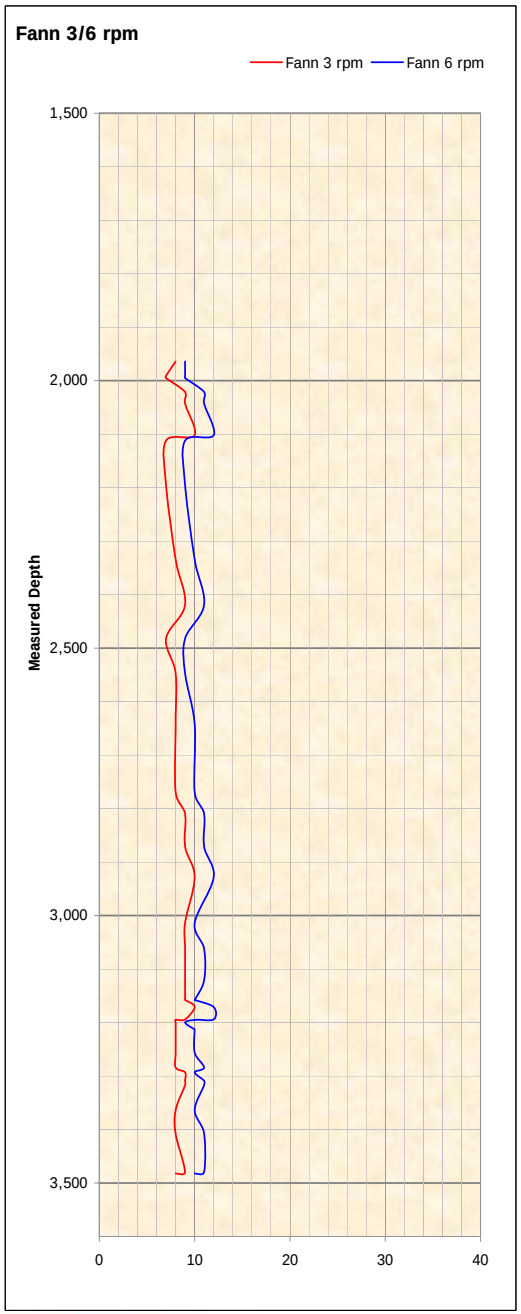
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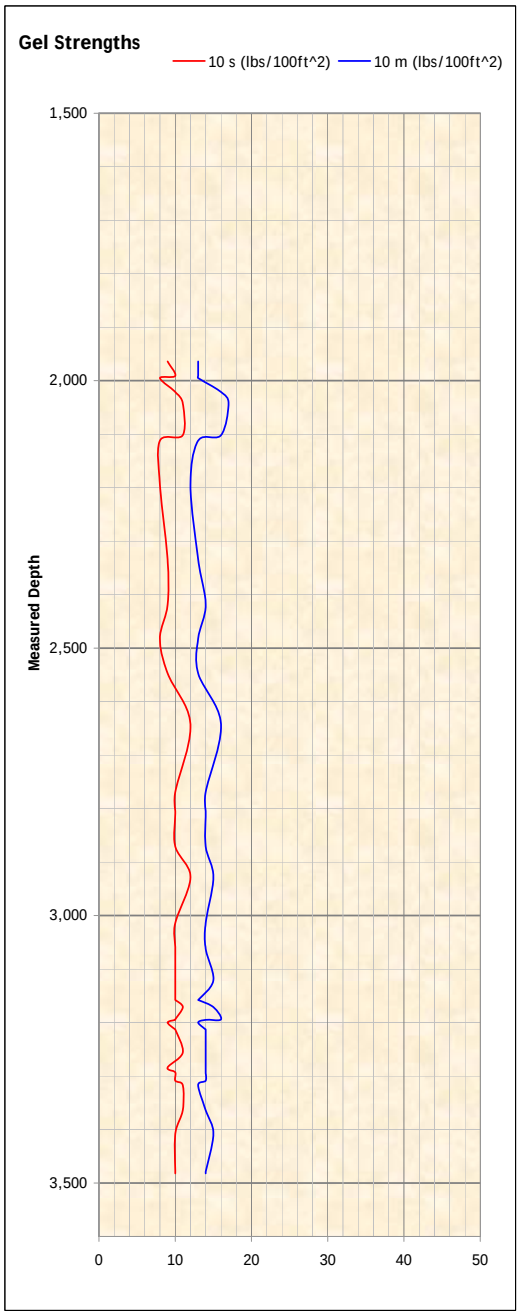
Baroid Fluid Services

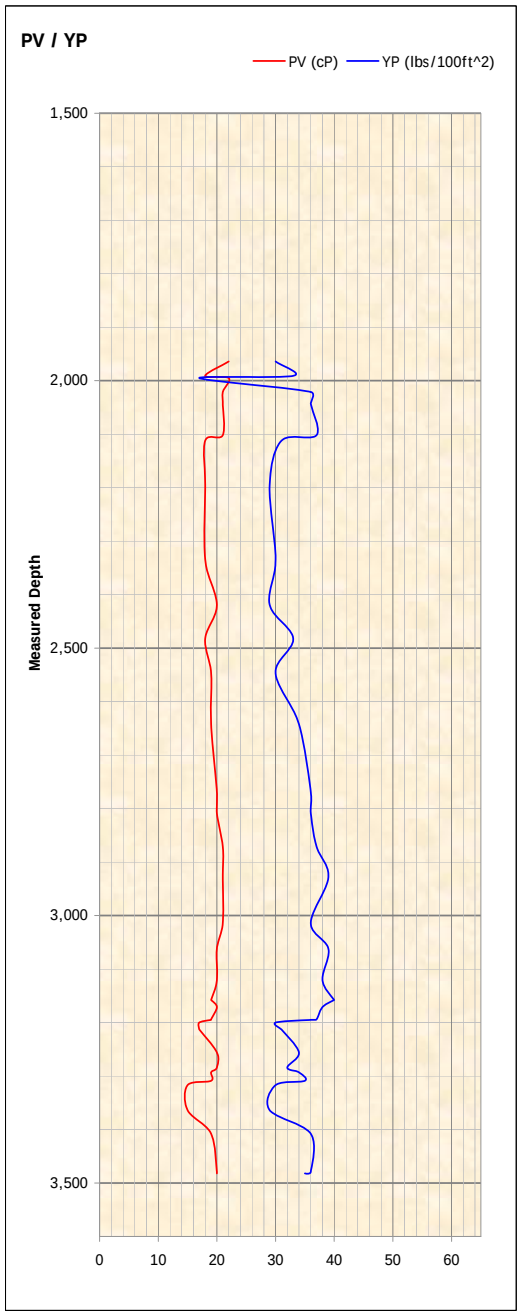
Origin Energy

ROCKHOPPER-1 ST1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long







HALLIBURTON
Fluid Systems

Physical Properties

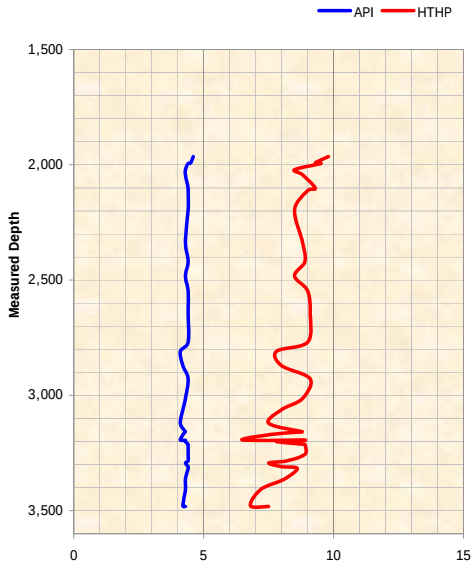
Baroid Fluid Services

Origin Energy

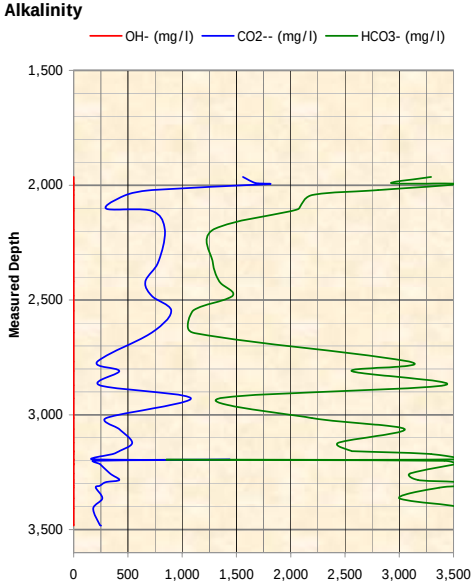
ROCKHOPPER-1 ST1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long

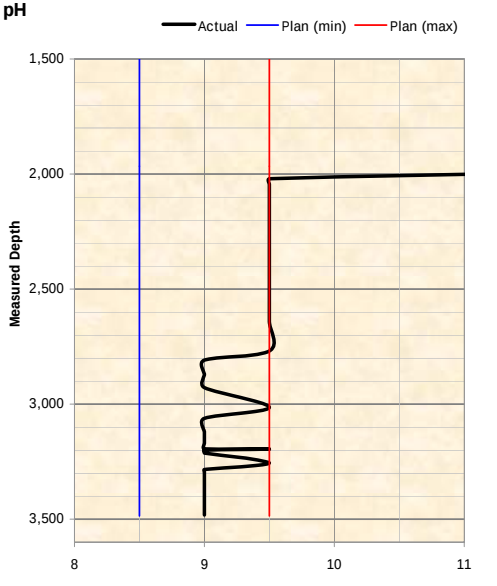
Filtrate Loss



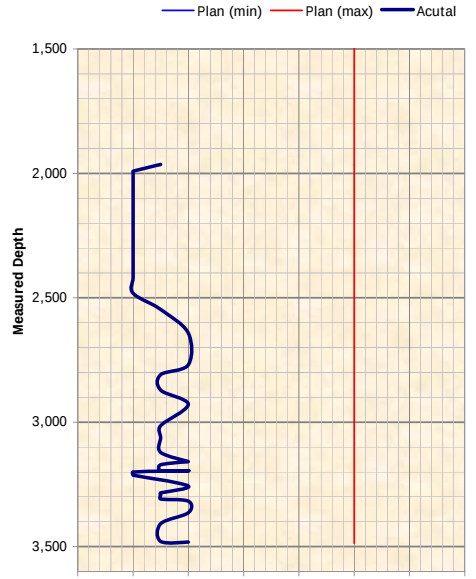
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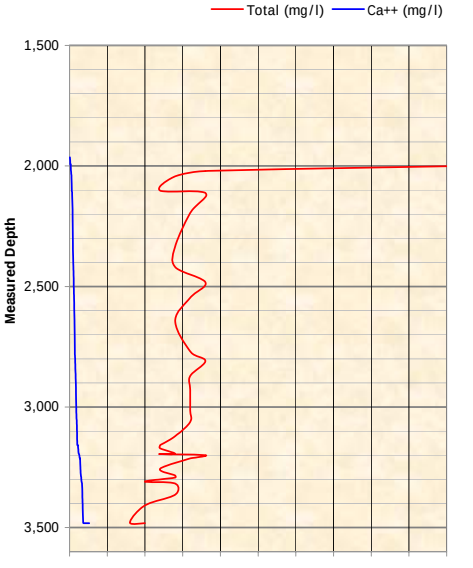
pH



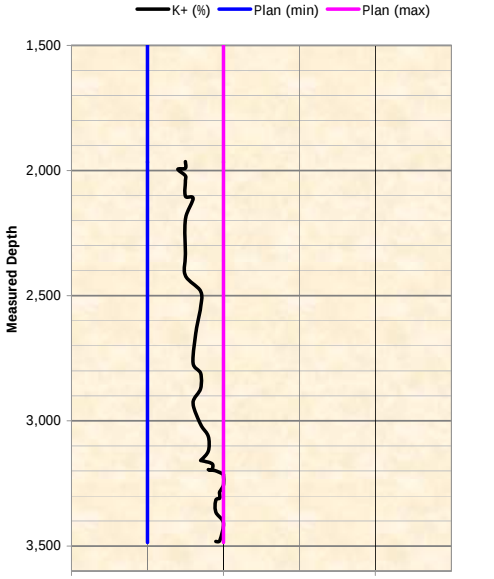
MBT



Hardness



Potassium Ion



HALLIBURTON
Fluid Systems

WBM Properties

Baroid Fluid Services

POSTWELL AUDIT

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Well Summary Report

Well Data

Spud Date		30/11/2009	Fluids/Products: Drilling Cost	$A	812,980.10
TD Date		03/02/2010	Fluids/Products: Completion Cost	$A	0.00
Project			Solids Control/Waste Management Cost	$A	45,561.36
Days on Well		82	Fluids/Products: Cementing Cost	$A	542.04
From Date		29/11/2009	Prod Lost/Damaged Cost	$A	76.08
To Date		18/02/2010	Engineer Services Cost	$A	234,080.00
Drilling Days		37	Equipment Cost	$A	0.00
Rotating / Drilling Hours		413.5/394.5	Transport/Packaging	$A	0.00
Average ROP	ft/hr	41.1	Other Cost	$A	90,876.98
Maximum Density	ppg	9.70	Total Well Cost	$A	1,184,116.56
Total Measured Depth	m	3,522	Planned Cost	$A	843,173.78
True Vertical Depth	m	3,161	Fluid Cost Per Fluid Volume	$A/bbl	49.44
Distance Drilled	m	4,939	Fluid Cost Per Length Drilled	$A/m	164.60
Maximum Deviation	deg	43.47	Fluid Cost/Vol of Hole Drilled	$A/bbl	367.14
Max. Horz. Displacement	m	724	Total Additions/Hole Drilled	bbl/bbl	7.425
Bottom Hole Temp	Deg C	110	Total Additions/Length Drilled	bbl/m	3.329

Casing Design

Description	Set Date & Time	Top MD m	Top TVD m	End MD m	End TVD m	CSG OD in	CSG ID in	Max. Hole Size in	Hole MD m	Hole TVD m
30 APISAW 457.9	05/12/2009 23:59	100	100	158	158	30.000	27.000	36.000	158	158
13.375 K-55 72.0	05/12/2009 23:59	100	100	961	961	13.375	12.347	17.500	966	966
9.625 HCK-55 36.0	13/12/2009 22:20	100	100	1,965	1,964	9.625	8.921	12.25	1,972	1,971

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Well Summary Report

Fluid Program

Int #	Fluid Type	Interval Days	BHT Deg C	Max. Dens ppg	Whole fluid + Mix products	Other material charges	Other charges	Total Interval Cost $A		
								Plan	Actual	Variance
1	Seawater	3		8.80		84.84	9,240.00	56,848.10	9,324.84	-47,523.26
2	Seawater	6	21	9.00	38,288.87	583.02	18,480.00	66,120.12	57,351.89	-8,768.23
3	Seawater 12 1/4" KCl/Polymer	10	53	9.65	278,636.64	12,447.96	30,800.00	234,728.52	321,884.60	87,156.08
4	Hi-Vis PHB/Guar sweeps 12 1/4" KCl/Polymer Brine 8 1/2" KCl/Polymer	33	110	9.70	258,231.53	45,124.84	84,700.00	274,541.71	388,056.37	113,514.66
5	Brine 8 1/2" KCl/Polymer 8 1/2" ST-1 KCl/Polymer	31	83	9.50	237,823.07	78,815.80	90,860.00	210,935.33	407,498.87	196,563.54
Total Well Cost $A					**812,980.10**	**137,056.46**	**234,080.00**	**843,173.78**	**1,184,116.56**	**340,942.78**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	ADA Drilling

Total Cost Breakdown

	Unit Size	Quantity	Total Cost
Engineering/Services			
Drilling Fluids Engineer	day(s)	83.00	127,820.00
Drilling Fluids Engineer 2	day(s)	69.00	106,260.00
		SubTotal **$A**	**234,080.00**
Fluids/Products: Cementing Cost			
citric acid	25 kg bag	6.00	457.20
mica	25 kg bag	2.00	84.84
		SubTotal **$A**	**542.04**
Fluid/Product: Lost Damage			
Circal 60/16	25 kg bag	6.00	76.08
		SubTotal **$A**	**76.08**
Other			
BARA-DEFOAM W300	25 l can	2.00	251.64
BAROLIFT	15 lb box	7.00	2,226.14
Radiagreen EME-Salt	175 kg drum	40.00	88,399.20
		SubTotal **$A**	**90,876.98**
Solids Control/Waste Management Cost			
Generic Mesh 40 (API 40)	1 each box	9.00	5,268.60
Techmesh 110 (API 60)	1 each box	12.00	6,415.20
Techmesh 140 (API 80)	1 each box	1.00	559.96
Techmesh 175 (API 100)	1 each box	15.00	8,399.40
Techmesh 210 (API 120)	1 each box	24.00	14,049.60
Techmesh 260(API 140)	1 each box	14.00	8,195.60
Techmesh 84 (API 50)	1 each box	5.00	2,673.00
		SubTotal **$A**	**45,561.36**
Fluids/Products: Drilling Cost			
ALDACIDE G	25 kg can	41.00	7,096.69
BARAZAN D PLUS	25 kg bag	240.00	51,681.60
barite	1 tons bulk	119.400	87,231.25
bentonite	1000 kg bulk	54.000	41,112.90
caustic soda	25 kg can	32.00	1,736.96
Circal 60/16	25 kg bag	781.00	9,903.08
Circal Y	25 kg bag	155.00	4,171.05
citric acid	25 kg bag	65.00	4,953.00
CLAYSEAL PLUS	55 gal drum	149.00	224,925.93
DEXTRID LTE	25 kg sack	458.00	24,264.84
EZ-MUD	25 kg pail	425.00	40,370.75
guar gum	25 kg bag	74.00	6,567.50
hec	25 kg bag	32.00	No Charge
lime	25 kg bag	47.00	781.14
N-DRIL HT PLUS	50 lb bag	105.00	15,629.25

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	ADA Drilling

Total Cost Breakdown

Omyacarb 5	25 kg bag	6.00	103.86
OXYGON	50 lb can	33.00	18,876.99
PAC-L	25 kg bag	289.00	46,332.48
potassium chloride	1000 kg bag	131.00	194,341.12
potassium hydroxide	20 kg pail	190.00	25,100.90
soda ash	25 kg bag	118.00	3,589.56
sodium bicarbonate	25 kg bag	149.00	4,209.25
		SubTotal	**$A** **812,980.10**
		Total Well Cost:	**$A** **1,184,116.56**

Well	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Net Well Cost Breakdown

Cost Breakdown I $A	Interval 01	Interval 02	Interval 03	Interval 04	Interval 05	Total
Fluid/Product: Drilling	30,298.00	41,407.63	279,397.99	224,053.42	237,823.07	812,980.10
Fluid/Product: Comp/Filtration						
Solids Control/Waste Management Cost			12,447.96	11,657.12	21,456.28	45,561.36
Fluids/Products: Cementing Cost	84.84	457.20				542.04
Engineering Services	9,240.00	18,480.00	30,800.00	84,700.00	90,860.00	234,080.00
Fluid/Product: Lost Damage					76.08	76.08
Other Cost		125.82		33,467.72	57,283.44	90,876.98
Equipment Cost						
Transport/Packaging Cost						
Total Cost	39,622.84	60,470.65	322,645.95	353,878.26	407,498.87	1,184,116.56

Cost Breakdown II $A	Interval 01	Interval 02	Interval 03	Interval 04	Interval 05	Total
Total Products Cost	30,382.84	41,990.65	291,845.95	269,178.26	316,638.87	950,036.56
Total Fluids Cost						
Total Charges Cost	9,240.00	18,480.00	30,800.00	84,700.00	90,860.00	234,080.00
Allocated To / From Other Interval						
Total Cost	39,622.84	60,470.65	322,645.95	353,878.26	407,498.87	1,184,116.56
Planned Cost	56,848.10	66,120.12	234,728.52	274,541.71	210,935.33	843,173.78
Variance	-17,225.26	-5,649.47	87,917.43	79,336.55	196,563.54	340,942.79

Volume Breakdown bbl	Interval 01	Interval 02	Interval 03	Interval 04	Interval 05	Total
Total Base Fluids Addition						
Total Chemical Addition	3.9	111.9	413.1	242.4	270.4	1,041.7
Total Barite Addition	55.7		45.3	40.5	37.5	178.9
Total Water Addition	937.9	3,261.9	2,186.8	1,096.9	1,865.1	9,348.6
Total Fluid Built	997.5	3,373.8	2,645.2	1,379.8	2,172.9	10,569.2
Total Fluid Received	1,142.5	92.6	1,147.3	780.8	2,709.7	5,872.9
Total Influx Addition						
Not Used In Interval	-1,141.0		-52.5		-22.5	
Total Fluid Volume	999.0	4,900.7	3,874.2	4,354.1	6,968.9	16,442.1

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 1	**Max Bit Size: 36.0 in**	**Hole Size Avg/Max**	**36.0 / 36.0 in**

Interval Start Date		29/11/2009	Planned Cost	$A	56,848.10
Interval End Date		01/12/2009	Total Interval Cost	$A	9,324.84
Interval TD Date		01/12/2009	Program Variance	$A	-47,523.26
Drilling Days		2.00	Other material charges	$A	84.84
Rotating/Hours		4.00 / 4.00	Total Fluids Cost		
Interval Top MD/TVD	m	100.0 / 100.0	Total Charges Cost	$A	9,240.00
Interval End MD/TVD	m	158.0 / 158.0	Total Cementing Cost	$A	84.84
Footage	m	58.0	Fluid Cost Per Vol Unit	$A/bbl	0.00
Average ROP	m/hr	14.5	Fluid Cost/Hole Drilled	$A/m	0.00
Max Hole Angle	degrees	0.00	Fluid Cost/Vol Drilled	$A/bbl	0.00
Casing Size	in	0.000	Fluid Built	bbl	997.5
Casing Shoe MD	m	0.0	Total Additions/Vol Drilled	bbl/bbl	4.19
Casing Length	m	0.0	Total Additions/Hole Drilled	bbl/m	17.22
Bottom Hole Temp			Fluid Loss/Vol Drilled	bbl/bbl	0.00
Max Fluid Density	ppg	8.80	Fluid Loss/Hole Drilled	bbl/m	0.00

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Lost Circulation/Bridging Agent				
mica	No Fluid	25 kg bag	2.000	84.84
			Total	**$A 84.84**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 2	**Max Bit Size: 17.50 in**	**Hole Size Avg/Max**	**17.50 / 17.50 in**

Interval Start Date		02/12/2009	Planned Cost	$A	66,120.12
Interval End Date		07/12/2009	Total Interval Cost	$A	57,351.89
Interval TD Date		04/12/2009	Program Variance	$A	-8,768.23
Drilling Days		3.00	Other material charges	$A	583.02
Rotating/Hours		41.00 / 41.00	Total Fluids Cost	$A	38,288.87
Interval Top MD/TVD	m	158.0 / 158.0	Total Charges Cost	$A	18,480.00
Interval End MD/TVD	m	966.0 / 966.0	Total Cementing Cost	$A	457.20
Footage	m	808.0	Fluid Cost Per Vol Unit	$A/bbl	7.81
Average ROP	m/hr	19.7	Fluid Cost/Hole Drilled	$A/m	47.39
Max Hole Angle	degrees	0.00	Fluid Cost/Vol Drilled	$A/bbl	48.55
Casing Size	in	13.375	Fluid Built	bbl	3,373.8
Casing Shoe MD	m	961.0	Total Additions/Vol Drilled	bbl/bbl	6.21
Casing Length	m	861.0	Total Additions/Hole Drilled	bbl/m	6.07
Bottom Hole Temp	Deg C	21	Fluid Loss/Vol Drilled	bbl/bbl	1.74
Max Fluid Density	ppg	9.00	Fluid Loss/Hole Drilled	bbl/m	1.70

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Defoamer				
BARA-DEFOAM W300	No Fluid	25 l can	1.000	125.82
			Total	**$A 125.82**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	Seawater	25 kg bag	11.000	2,368.74
bentonite	Seawater	1000 kg bulk	40.000	30,454.00
guar gum	Seawater	25 kg bag	45.000	3,993.75
			Total	**$A 36,816.49**
Alkalinity Control				
caustic soda	Seawater	25 kg can	13.000	705.64
citric acid	No Fluid	25 kg bag	6.000	457.20
lime	Seawater	25 kg bag	26.000	432.12
soda ash	Seawater	25 kg bag	11.000	334.62
			Total	**$A 1,929.58**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 3	**Max Bit Size: 12.25 in**	**Hole Size Avg/Max**	**12.25 / 12.25 in**

Interval Start Date		08/12/2009	Planned Cost	$A	234,728.52
Interval End Date		17/12/2009	Total Interval Cost	$A	321,884.60
Interval TD Date		17/12/2009	Program Variance	$A	87,156.08
Drilling Days		4.00	Other material charges	$A	12,447.96
Rotating/Hours		52.00 / 53.50	Total Fluids Cost	$A	278,636.64
Interval Top MD/TVD	m	966.0 / 966.0	Total Charges Cost	$A	30,800.00
Interval End MD/TVD	m	1,972.0 / 1,971.9	Total Cementing Cost	$A	0.00
Footage	m	1,006.0	Fluid Cost Per Vol Unit	$A/bbl	71.92
Average ROP	m/hr	19.3	Fluid Cost/Hole Drilled	$A/m	176.97
Max Hole Angle	degrees	0.67	Fluid Cost/Vol Drilled	$A/bbl	579.12
Casing Size	in	9.625	Fluid Built	bbl	2,645.2
Casing Shoe MD	m	1,965.0	Total Additions/Vol Drilled	bbl/bbl	8.05
Casing Length	m	1,865.0	Total Additions/Hole Drilled	bbl/m	3.85
Bottom Hole Temp	Deg C	53	Fluid Loss/Vol Drilled	bbl/bbl	4.03
Max Fluid Density	ppg	9.65	Fluid Loss/Hole Drilled	bbl/m	1.93

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Bactericides				
ALDACIDE G	KCl/Polymer	25 kg can	4.000	692.36
			Total	**$A 692.36**
Weighting Material				
barite	KCl/Polymer	1 tons bulk	30.250	22,100.05
			Total	**$A 22,100.05**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	KCl/Polymer	25 kg bag	95.000	20,457.30
bentonite	KCl/Polymer	1000 kg bulk	13.000	9,897.55
			Total	**$A 30,354.85**
Alkalinity Control				
caustic soda	KCl/Polymer	25 kg can	11.000	597.08
potassium hydroxide	KCl/Polymer	20 kg pail	24.000	3,170.64
sodium bicarbonate	KCl/Polymer	25 kg bag	38.000	1,073.50
			Total	**$A 4,841.22**
Corrosion Inhibitor				
OXYGON	KCl/Polymer	50 lb can	8.000	4,576.24
			Total	**$A 4,576.24**
Shale Control				
EZ-MUD	KCl/Polymer	25 kg pail	121.000	11,493.79
potassium chloride	KCl/Polymer	1000 kg bag	80.000	118,681.60
CLAYSEAL PLUS	KCl/Polymer	55 gal drum	45.000	67,930.65
			Total	**$A 198,106.04**
Lost Circulation/Bridging Agent				
Circal Y	KCl/Polymer	25 kg bag	16.000	430.56
Circal 60/16	KCl/Polymer	25 kg bag	166.000	2,104.88
			Total	**$A 2,535.44**
Filtration Control				

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

DEXTRID LTE	KCl/Polymer	25 kg sack	146.000		7,735.08
PAC-L	KCl/Polymer	25 kg bag	48.000		7,695.36
			Total	**$A**	**15,430.44**
Solids Control Equipment					
Techmesh 110 (API 60)	No Fluid	1 each box	12.000		6,415.20
Techmesh 175 (API 100)	No Fluid	1 each box	5.000		2,799.80
Techmesh 140 (API 80)	No Fluid	1 each box	1.000		559.96
Techmesh 84 (API 50)	No Fluid	1 each box	5.000		2,673.00
			Total	**$A**	**12,447.96**

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 4	**Max Bit Size: 8.50 in**	**Hole Size Avg/Max**	**8.50 / 8.50 in**

Interval Start Date		18/12/2009	Planned Cost	$A	274,541.71
Interval End Date		19/01/2010	Total Interval Cost	$A	388,056.37
Interval TD Date		02/01/2010	Program Variance	$A	113,514.66
Drilling Days		12.00	Other material charges	$A	45,124.84
Rotating/Hours		152.00 / 139.50	Total Fluids Cost	$A	258,231.53
Interval Top MD/TVD	m	1,972.0 / 1,971.9	Total Charges Cost	$A	84,700.00
Interval End MD/TVD	m	3,522.0 / 3,131.9	Total Cementing Cost	$A	0.00
Footage	m	1,550.0	Fluid Cost Per Vol Unit	$A/bbl	59.31
Average ROP	m/hr	10.2	Fluid Cost/Hole Drilled	$A/m	166.60
Max Hole Angle	degrees	43.47	Fluid Cost/Vol Drilled	$A/bbl	723.50
Casing Size	in	9.625	Fluid Built	bbl	1,379.8
Casing Shoe MD	m	1,965.0	Total Additions/Vol Drilled	bbl/bbl	12.20
Casing Length	m	1,865.0	Total Additions/Hole Drilled	bbl/m	2.81
Bottom Hole Temp	Deg C	110	Fluid Loss/Vol Drilled	bbl/bbl	6.29
Max Fluid Density	ppg	9.70	Fluid Loss/Hole Drilled	bbl/m	1.45

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Bactericides				
ALDACIDE G	KCl/Polymer	25 kg can	25.000	4,327.25
			Total	**$A 4,327.25**
Weighting Material				
barite	KCl/Polymer	1 tons bulk	27.000	19,725.66
barite	Seawater	1 tons bulk	37.150	27,141.05
			Total	**$A 46,866.71**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	KCl/Polymer	25 kg bag	47.000	10,120.98
BARAZAN D PLUS	Seawater	25 kg bag	12.000	2,584.08
bentonite	Seawater		1.000	761.35
guar gum	Seawater		29.000	2,573.75
hec	KCl/Polymer	25 kg bag	32.000	No Charge
			Total	**$A 16,040.16**
Filtration Control				
N-DRIL HT PLUS	KCl/Polymer	50 lb bag	37.000	5,507.45
DEXTRID LTE	KCl/Polymer	25 kg sack	208.000	11,019.84
PAC-L	KCl/Polymer	25 kg bag	138.000	22,124.16
			Total	**$A 38,651.45**
Alkalinity Control				
caustic soda	Seawater		8.000	434.24
citric acid	KCl/Polymer	25 kg bag	32.000	2,438.40
lime	Seawater		21.000	349.02
potassium hydroxide	KCl/Polymer	20 kg pail	63.000	8,322.93
soda ash	KCl/Polymer	25 kg bag	34.000	1,034.28
soda ash	Seawater	25 kg bag	11.000	334.62
sodium bicarbonate	KCl/Polymer	25 kg bag	48.000	1,356.00
			Total	**$A 14,269.49**

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Corrosion Inhibitor					
OXYGON	KCl/Polymer	50 lb can	18.000		10,296.54
			Total	**$A**	**10,296.54**
Shale Control					
EZ-MUD	KCl/Polymer	25 kg pail	168.000		15,958.32
potassium chloride	KCl/Polymer	1000 kg bag	21.000		31,153.92
CLAYSEAL PLUS	KCl/Polymer	55 gal drum	51.000		76,988.07
			Total	**$A**	**124,100.31**
Lost Circulation/Bridging Agent					
Circal 60/16	KCl/Polymer	25 kg bag	282.000		3,575.76
Omyacarb 5	KCl/Polymer	25 kg bag	6.000		103.86
BAROLIFT	No Fluid	15 lb box	1.000		318.02
			Total	**$A**	**3,997.64**
Lubricant					
Radiagreen EME-Salt	No Fluid	175 kg drum	15.000		33,149.70
			Total	**$A**	**33,149.70**
Solids Control Equipment					
Techmesh 175 (API 100)	No Fluid	1 each box	2.000		1,119.92
Techmesh 210 (API 120)	No Fluid	1 each box	18.000		10,537.20
			Total	**$A**	**11,657.12**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 5	**Max Bit Size: 8.50 in**	**Hole Size Avg/Max**	**8.50 / 8.50 in**

Interval Start Date		19/01/2010	Planned Cost	$A	210,935.33
Interval End Date		18/02/2010	Total Interval Cost	$A	407,498.87
Interval TD Date		12/02/2010	Program Variance	$A	196,563.54
Drilling Days		16.00	Other material charges	$A	78,815.80
Rotating/Hours		164.50 / 145.00	Total Fluids Cost	$A	237,823.07
Interval Top MD/TVD	m	1,964.0 / 1,964.0	Total Charges Cost	$A	90,860.00
Interval End MD/TVD	m	3,482.0 / 3,161.3	Total Cementing Cost	$A	0.00
Footage	m	1,517.0	Fluid Cost Per Vol Unit	$A/bbl	34.13
Average ROP	m/hr	9.2	Fluid Cost/Hole Drilled	$A/m	156.77
Max Hole Angle	degrees	36.06	Fluid Cost/Vol Drilled	$A/bbl	680.82
Casing Size	in	0.000	Fluid Built	bbl	2,172.9
Casing Shoe MD	m	0.0	Total Additions/Vol Drilled	bbl/bbl	19.95
Casing Length	m	0.0	Total Additions/Hole Drilled	bbl/m	4.59
Bottom Hole Temp	Deg C	83	Fluid Loss/Vol Drilled	bbl/bbl	9.15
Max Fluid Density	ppg	9.50	Fluid Loss/Hole Drilled	bbl/m	2.11

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Bactericides				
ALDACIDE G	KCl/Polymer	25 kg can	12.000	2,077.08
			Total	**$A 2,077.08**
Defoamer				
BARA-DEFOAM W300	No Fluid	25 l can	1.000	125.82
			Total	**$A 125.82**
Weighting Material				
barite	KCl/Polymer	1 tons bulk	25.000	18,264.50
			Total	**$A 18,264.50**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	KCl/Polymer	25 kg bag	75.000	16,150.50
			Total	**$A 16,150.50**
Filtration Control				
N-DRIL HT PLUS	KCl/Polymer	50 lb bag	68.000	10,121.80
DEXTRID LTE	KCl/Polymer	25 kg sack	104.000	5,509.92
PAC-L	KCl/Polymer	25 kg bag	103.000	16,512.96
			Total	**$A 32,144.68**
Corrosion Inhibitor				
OXYGON	KCl/Polymer	50 lb can	7.000	4,004.21
			Total	**$A 4,004.21**
Alkalinity Control				
citric acid	KCl/Polymer	25 kg bag	33.000	2,514.60
potassium hydroxide	KCl/Polymer	20 kg pail	103.000	13,607.33
soda ash	KCl/Polymer	25 kg bag	62.000	1,886.04
sodium bicarbonate	KCl/Polymer	25 kg bag	63.000	1,779.75
			Total	**$A 19,787.72**
Shale Control				
EZ-MUD	KCl/Polymer	25 kg pail	136.000	12,918.64

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

potassium chloride	KCl/Polymer	1000 kg bag	30.000		44,505.60
CLAYSEAL PLUS	KCl/Polymer	55 gal drum	53.000		80,007.21
			Total	**$A**	**137,431.45**
Lost Circulation/Bridging Agent					
Circal Y	KCl/Polymer	25 kg bag	139.000		3,740.49
Circal 60/16	KCl/Polymer	25 kg bag	333.000		4,222.44
Circal 60/16	No Fluid	25 kg bag	6.000		76.08
BAROLIFT	No Fluid	15 lb box	6.000		1,908.12
			Total	**$A**	**9,947.13**
Lubricant					
Radiagreen EME-Salt	No Fluid	175 kg drum	25.000		55,249.50
			Total	**$A**	**55,249.50**
Solids Control Equipment					
Techmesh 175 (API 100)	No Fluid	1 each box	8.000		4,479.68
Techmesh 260(API 140)	No Fluid	1 each box	14.000		8,195.60
Techmesh 210 (API 120)	No Fluid	1 each box	6.000		3,512.40
Generic Mesh 40 (API 40)	No Fluid	1 each box	9.000		5,268.60
			Total	**$A**	**21,456.28**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval #	**01**	**From Date**	**29/11/2009**	**Top of Interval**	**100.0 m**
Max. Hole Size / Bit Size	**36.000 / 26.000 in**	**To Date**	**01/12/2009**	**Bottom of Interval**	**158.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	3.00		4620.00
Drilling Fluids Engineer 2	day(s)	3.00		4620.00
		SubTotal	**$A**	**9,240.00**
Fluids/Products: Cementing Cost				
mica	25 kg bag	2.00		84.84
		SubTotal	**$A**	**84.84**
Fluids/Products: Drilling Cost				
barite	1 tons bulk	37.150		27141.05
caustic soda	25 kg can	8.00		434.24
guar gum	25 kg bag	27.00		2396.25
lime	25 kg bag	5.00		83.10
soda ash	25 kg bag	8.00		243.36
		SubTotal	**$A**	**30,298.00**
		Interval Total Cost	**$A**	**39,622.84**
	Charged To/From Other Interval		**$A**	**-30,298.00**
	Net Description Total Cost		**$A**	**9,324.84**
	Programmed Cost		**$A**	**56,848.10**
	Program Variance		**$A**	**-47,523.26**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval #	**02**	**From Date**	**02/12/2009**	**Top of Interval**	**158.0 m**
Max. Hole Size / Bit Size	**17.50 / 17.50 in**	**To Date**	**07/12/2009**	**Bottom of Interval**	**966.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	6.00		9240.00
Drilling Fluids Engineer 2	day(s)	6.00		9240.00
		SubTotal	**$A**	**18,480.00**
Fluids/Products: Cementing Cost				
citric acid	25 kg bag	6.00		457.20
		SubTotal	**$A**	**457.20**
Other				
BARA-DEFOAM W300	25 l can	1.00		125.82
		SubTotal	**$A**	**125.82**
Fluids/Products: Drilling Cost				
BARAZAN D PLUS	25 kg bag	23.00		4952.82
bentonite	1000 kg bulk	40.000		30454.00
caustic soda	25 kg can	13.00		705.64
guar gum	25 kg bag	47.00		4171.25
lime	25 kg bag	42.00		698.04
soda ash	25 kg bag	14.00		425.88
		SubTotal	**$A**	**41,407.63**
		Interval Total Cost	**$A**	**60,470.65**
	Charged To/From Other Interval		**$A**	**-3,118.76**
	Net Description Total Cost		**$A**	**57,351.89**
	Programmed Cost		**$A**	**66,120.12**
	Program Variance		**$A**	**-8,768.23**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval # 03		**From Date**	**08/12/2009**	**Top of Interval**	**966.0 m**
Max. Hole Size / Bit Size	**12.25 / 12.25 in**	**To Date**	**17/12/2009**	**Bottom of Interval**	**1,972.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	10.00		15400.00
Drilling Fluids Engineer 2	day(s)	10.00		15400.00
		SubTotal	**$A**	**30,800.00**
Solids Control/Waste Management Cost				
Techmesh 110 (API 60)	1 each box	12.00		6415.20
Techmesh 140 (API 80)	1 each box	1.00		559.96
Techmesh 175 (API 100)	1 each box	5.00		2799.80
Techmesh 84 (API 50)	1 each box	5.00		2673.00
		SubTotal	**$A**	**12,447.96**
Fluids/Products: Drilling Cost				
ALDACIDE G	25 kg can	4.00		692.36
BARAZAN D PLUS	25 kg bag	95.00		20457.30
barite	1 tons bulk	30.250		22100.05
bentonite	1000 kg bulk	14.000		10658.90
caustic soda	25 kg can	11.00		597.08
Circal 60/16	25 kg bag	166.00		2104.88
Circal Y	25 kg bag	16.00		430.56
CLAYSEAL PLUS	55 gal drum	45.00		67930.65
DEXTRID LTE	25 kg sack	146.00		7735.08
EZ-MUD	25 kg pail	121.00		11493.79
OXYGON	50 lb can	8.00		4576.24
PAC-L	25 kg bag	48.00		7695.36
potassium chloride	1000 kg bag	80.00		118681.60
potassium hydroxide	20 kg pail	24.00		3170.64
sodium bicarbonate	25 kg bag	38.00		1073.50
		SubTotal	**$A**	**279,397.99**
		Interval Total Cost	**$A**	**322,645.95**
	Charged To/From Other Interval		**$A**	**-761.35**
	Net Description Total Cost		**$A**	**321,884.60**
	Programmed Cost		**$A**	**234,728.52**
	Program Variance		**$A**	**87,156.08**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval #	**04**	**From Date**	**18/12/2009**	**Top of Interval**	**1,972.0 m**
Max. Hole Size / Bit Size	**8.50 / 8.50 in**	**To Date**	**19/01/2010**	**Bottom of Interval**	**3,522.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	33.00		50820.00
Drilling Fluids Engineer 2	day(s)	22.00		33880.00
		SubTotal	**$A**	**84,700.00**
Other				
BAROLIFT	15 lb box	1.00		318.02
Radiagreen EME-Salt	175 kg drum	15.00		33149.70
		SubTotal	**$A**	**33,467.72**
Solids Control/Waste Management Cost				
Techmesh 175 (API 100)	1 each box	2.00		1119.92
Techmesh 210 (API 120)	1 each box	18.00		10537.20
		SubTotal	**$A**	**11,657.12**
Fluids/Products: Drilling Cost				
ALDACIDE G	25 kg can	25.00		4327.25
BARAZAN D PLUS	25 kg bag	47.00		10120.98
barite	1 tons bulk	27.000		19725.66
Circal 60/16	25 kg bag	282.00		3575.76
citric acid	25 kg bag	32.00		2438.40
CLAYSEAL PLUS	55 gal drum	51.00		76988.07
DEXTRID LTE	25 kg sack	208.00		11019.84
EZ-MUD	25 kg pail	168.00		15958.32
hec	25 kg bag	32.00		No Charge
N-DRIL HT PLUS	50 lb bag	37.00		5507.45
Omyacarb 5	25 kg bag	6.00		103.86
OXYGON	50 lb can	18.00		10296.54
PAC-L	25 kg bag	138.00		22124.16
potassium chloride	1000 kg bag	21.00		31153.92
potassium hydroxide	20 kg pail	63.00		8322.93
soda ash	25 kg bag	34.00		1034.28
sodium bicarbonate	25 kg bag	48.00		1356.00
		SubTotal	**$A**	**224,053.42**
		Interval Total Cost	**$A**	**353,878.26**
	Charged To/From Other Interval		**$A**	**34,178.11**
	Net Description Total Cost		**$A**	**388,056.37**
	Programmed Cost		**$A**	**274,541.71**
	Program Variance		**$A**	**113,514.66**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval #	**05**	**From Date**	**19/01/2010**	**Top of Interval**	**1,964.0 m**
Max. Hole Size / Bit Size	**8.50 / 8.50 in**	**To Date**	**18/02/2010**	**Bottom of Interval**	**3,482.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	31.00		47740.00
Drilling Fluids Engineer 2	day(s)	28.00		43120.00
		SubTotal	**$A**	**90,860.00**
Fluid/Product: Lost Damage				
Circal 60/16	25 kg bag	6.00		76.08
		SubTotal	**$A**	**76.08**
Other				
BARA-DEFOAM W300	25 l can	1.00		125.82
BAROLIFT	15 lb box	6.00		1908.12
Radiagreen EME-Salt	175 kg drum	25.00		55249.50
		SubTotal	**$A**	**57,283.44**
Solids Control/Waste Management Cost				
Generic Mesh 40 (API 40)	1 each box	9.00		5268.60
Techmesh 175 (API 100)	1 each box	8.00		4479.68
Techmesh 210 (API 120)	1 each box	6.00		3512.40
Techmesh 260(API 140)	1 each box	14.00		8195.60
		SubTotal	**$A**	**21,456.28**
Fluids/Products: Drilling Cost				
ALDACIDE G	25 kg can	12.00		2077.08
BARAZAN D PLUS	25 kg bag	75.00		16150.50
barite	1 tons bulk	25.000		18264.50
Circal 60/16	25 kg bag	333.00		4222.44
Circal Y	25 kg bag	139.00		3740.49
citric acid	25 kg bag	33.00		2514.60
CLAYSEAL PLUS	55 gal drum	53.00		80007.21
DEXTRID LTE	25 kg sack	104.00		5509.92
EZ-MUD	25 kg pail	136.00		12918.64
N-DRIL HT PLUS	50 lb bag	68.00		10121.80
OXYGON	50 lb can	7.00		4004.21
PAC-L	25 kg bag	103.00		16512.96
potassium chloride	1000 kg bag	30.00		44505.60
potassium hydroxide	20 kg pail	103.00		13607.33
soda ash	25 kg bag	62.00		1886.04
sodium bicarbonate	25 kg bag	63.00		1779.75
		SubTotal	**$A**	**237,823.07**
		Interval Total Cost	**$A**	**407,498.87**
	Charged To/From Other Interval		**$A**	
	Net Description Total Cost		**$A**	**407,498.87**
	Programmed Cost		**$A**	**210,935.33**
	Program Variance		**$A**	**196,563.54**

Australia

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Inventory Report

Interval # 01	**From Date**	**29/11/2009**		**Top of Interval**		**100.0 m**	
Max. Hole Size / Bit Size	**To Date**	**01/12/2009**		**Bottom of Interval**		**158.0 m**	
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**
ALDACIDE G	25 kg can		8.0			8.0	440.92
Amodrill 1235	1 bbl bulk		19.400			19.400	5,320.82
BARA-DEFOAM W300	25 l can		8.0			8.0	386.88
BARAZAN D PLUS	25 kg bag		155.0			155.0	8,542.91
barite	1 tons bulk		116.400	37.150		79.250	174,716.34
BAROLIFT	15 lb box		16.0			16.0	240.00
BARO-SEAL FINE	40 lb bag		40.0			40.0	1,600.00
BARO-SEAL MEDIUM	40 lb bag		70.0			70.0	2,800.00
bentonite	1000 kg bulk		94.500			94.500	208,336.83
caustic soda	25 kg can		32.0	8.0		24.0	1,322.77
Circal 60/16	25 kg bag		149.0			149.0	8,212.22
Circal Y	25 kg bag		91.0			91.0	5,015.52
citric acid	25 kg bag		38.0			38.0	2,094.39
CLAYSEAL PLUS	55 gal drum		46.0			46.0	21,944.21
CON DET	5 gal can		32.0			32.0	1,367.76
DEXTRID LTE	25 kg sack		126.0			126.0	6,944.56
EZ SPOT	55 gal drum		5.0			5.0	5,275.05
EZ-MUD	25 kg pail		121.0			121.0	6,668.98
Generic mesh 24 (API 20)	1 each box		12.0			12.0	
guar gum	25 kg bag		150.0	27.0		123.0	6,779.21
lime	25 kg bag		89.0	5.0		84.0	4,629.71
mica	25 kg bag		38.0	2.0		36.0	1,984.16
N-DRIL HT PLUS	50 lb bag		105.0			105.0	5,250.00
Omyacarb 5	25 kg bag		6.0			6.0	330.69
OXYGON	50 lb can		33.0			33.0	1,650.00
PAC-L	25 kg bag		87.0			87.0	4,795.05
potassium chloride	1000 kg bag		33.0			33.0	72,752.54
potassium hydroxide	20 kg pail		44.0			44.0	1,940.07
sapp	25 kg bag		18.0			18.0	992.08
soda ash	25 kg bag		22.0	8.0		14.0	771.62
sodium bicarbonate	25 kg bag		38.0			38.0	2,094.39
SOURSCAV	25 kg pail		32.0			32.0	1,763.70
STEELSEAL 100	50 lb sack		40.0			40.0	2,000.00
STEELSEAL 400	50 lb sack		40.0			40.0	2,000.00
Techmesh 110 (API 60)	1 each box		24.0			24.0	
Techmesh 140 (API 80)	1 each box		16.0			16.0	
Techmesh 175 (API 100)	1 each box		7.0			7.0	
Techmesh 84 (API 50)	1 each box		8.0			8.0	
					Total Weight of Products in Stock lb		**570,963.39**
					Total Weight of Products in Stock, Metric Tons		**258.98**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Inventory Report

Interval # 02		**From Date**	**02/12/2009**		**Top of Interval**		**158.0 m**	
Max. Hole Size / Bit Size	**17.50 / 17.5 in**	**To Date**	**07/12/2009**		**Bottom of Interval**		**966.0 m**	
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**	
ALDACIDE G	25 kg can	8.0				8.0	440.92	
Amodrill 1235	1 bbl bulk	19.400				19.400	5,320.82	
BARA-DEFOAM W300	25 l can	8.0		1.0		7.0	338.52	
BARAZAN D PLUS	25 kg bag	155.0		23.0		132.0	7,275.25	
barite	1 tons bulk	79.250				79.250	174,716.34	
BAROLIFT	15 lb box	16.0				16.0	240.00	
BARO-SEAL FINE	40 lb bag	40.0				40.0	1,600.00	
BARO-SEAL MEDIUM	40 lb bag	70.0				70.0	2,800.00	
bentonite	1000 kg bulk	94.500		40.000	21.500	33.000	72,752.54	
caustic soda	25 kg can	24.0		13.0		11.0	606.27	
Circal 60/16	25 kg bag	149.0				149.0	8,212.22	
Circal Y	25 kg bag	91.0				91.0	5,015.52	
citric acid	25 kg bag	38.0		6.0		32.0	1,763.70	
CLAYSEAL PLUS	55 gal drum	46.0				46.0	21,944.21	
CON DET	5 gal can	32.0				32.0	1,367.76	
DEXTRID LTE	25 kg sack	126.0				126.0	6,944.56	
EZ SPOT	55 gal drum	5.0				5.0	5,275.05	
EZ-MUD	25 kg pail	121.0				121.0	6,668.98	
Generic mesh 24 (API 20)	1 each box	12.0				12.0		
guar gum	25 kg bag	123.0		47.0	76.0			
lime	25 kg bag	84.0		42.0	42.0			
mica	25 kg bag	36.0				36.0	1,984.16	
N-DRIL HT PLUS	50 lb bag	105.0				105.0	5,250.00	
Omyacarb 5	25 kg bag	6.0				6.0	330.69	
OXYGON	50 lb can	33.0				33.0	1,650.00	
PAC-L	25 kg bag	87.0				87.0	4,795.05	
potassium chloride	1000 kg bag	33.0	17.0			50.0	110,231.13	
potassium hydroxide	20 kg pail	44.0				44.0	1,940.07	
sapp	25 kg bag	18.0				18.0	992.08	
soda ash	25 kg bag	14.0		14.0				
sodium bicarbonate	25 kg bag	38.0				38.0	2,094.39	
SOURSCAV	25 kg pail	32.0				32.0	1,763.70	
STEELSEAL 100	50 lb sack	40.0				40.0	2,000.00	
STEELSEAL 400	50 lb sack	40.0				40.0	2,000.00	
Techmesh 110 (API 60)	1 each box	24.0				24.0		
Techmesh 140 (API 80)	1 each box	16.0				16.0		
Techmesh 175 (API 100)	1 each box	7.0				7.0		
Techmesh 84 (API 50)	1 each box	8.0				8.0		
					Total Weight of Products in Stock lb		**458,313.94**	
					Total Weight of Products in Stock, Metric Tons		**207.89**	

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Inventory Report

Interval # 03		**From Date**	**08/12/2009**		**Top of Interval**		**966.0 m**	
Max. Hole Size / Bit Size	**12.25 / 12.25 in**	**To Date**	**17/12/2009**		**Bottom of Interval**		**1,972.0 m**	
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**	
ALDACIDE G	25 kg can	8.0		4.0		4.0	220.46	
Amodrill 1235	1 bbl bulk	19.400				19.400	5,320.82	
BARA-DEFOAM W300	25 l can	7.0				7.0	338.52	
BARAZAN D PLUS	25 kg bag	132.0	40.0	95.0		77.0	4,243.90	
barite	1 tons bulk	79.250	44.000	30.250		93.000	205,029.89	
BAROLIFT	15 lb box	16.0				16.0	240.00	
BARO-SEAL FINE	40 lb bag	40.0				40.0	1,600.00	
BARO-SEAL MEDIUM	40 lb bag	70.0				70.0	2,800.00	
bentonite	1000 kg bulk	33.000		14.000		19.000	41,887.83	
caustic soda	25 kg can	11.0		11.0				
Circal 60/16	25 kg bag	149.0	319.0	166.0		302.0	16,644.90	
Circal Y	25 kg bag	91.0		16.0		75.0	4,133.67	
citric acid	25 kg bag	32.0				32.0	1,763.70	
CLAYSEAL PLUS	55 gal drum	46.0	48.0	45.0		49.0	23,375.35	
CON DET	5 gal can	32.0				32.0	1,367.76	
DEXTRID LTE	25 kg sack	126.0	180.0	146.0		160.0	8,818.49	
EZ SPOT	55 gal drum	5.0				5.0	5,275.05	
EZ-MUD	25 kg pail	121.0	192.0	121.0		192.0	10,582.19	
Generic mesh 24 (API 20)	1 each box	12.0				12.0		
guar gum	25 kg bag							
lime	25 kg bag							
mica	25 kg bag	36.0				36.0	1,984.16	
N-DRIL HT PLUS	50 lb bag	105.0				105.0	5,250.00	
Omyacarb 5	25 kg bag	6.0				6.0	330.69	
OXYGON	50 lb can	33.0		8.0		25.0	1,250.00	
PAC-L	25 kg bag	87.0	80.0	48.0		119.0	6,558.75	
potassium chloride	1000 kg bag	50.0	54.0	80.0		24.0	52,910.94	
potassium hydroxide	20 kg pail	44.0	32.0	24.0		52.0	2,292.81	
sapp	25 kg bag	18.0				18.0	992.08	
soda ash	25 kg bag							
sodium bicarbonate	25 kg bag	38.0		38.0				
SOURSCAV	25 kg pail	32.0				32.0	1,763.70	
STEELSEAL 100	50 lb sack	40.0				40.0	2,000.00	
STEELSEAL 400	50 lb sack	40.0				40.0	2,000.00	
Techmesh 110 (API 60)	1 each box	24.0		12.0		12.0		
Techmesh 140 (API 80)	1 each box	16.0		1.0		15.0		
Techmesh 175 (API 100)	1 each box	7.0		5.0		2.0		
Techmesh 84 (API 50)	1 each box	8.0		5.0		3.0		
					Total Weight of Products in Stock lb		**410,975.66**	
					Total Weight of Products in Stock, Metric Tons		**186.42**	

Baroid Fluid Services

Interval Inventory Report

Interval # 04	From Date 18/12/2009	Top of Interval 1,972.0 m
Max. Hole Size / Bit Size 8.50 / 8.50 in	To Date 19/01/2010	Bottom of Interval 3,522.0 m

Product Name	Units	Starting	Received	Used	Returned	Ending	Weight lb
ALDACIDE G	25 kg can	4.0	32.0	25.0		11.0	606.27
Amodrill 1235	1 bbl bulk	19.400				19.400	5,320.82
BARA-DEFOAM W300	25 l can	7.0				7.0	338.52
BARAZAN D PLUS	25 kg bag	77.0	80.0	47.0		110.0	6,062.71
barite	1 tons bulk	93.000	81.000	27.000		147.000	324,079.51
BAROLIFT	15 lb box	16.0		1.0		15.0	225.00
BARO-SEAL FINE	40 lb bag	40.0				40.0	1,600.00
BARO-SEAL MEDIUM	40 lb bag	70.0				70.0	2,800.00
bentonite	1000 kg bulk	19.000				19.000	41,887.83
caustic soda	25 kg can						
Circal 60/16	25 kg bag	302.0	195.0	282.0		215.0	11,849.85
Circal Y	25 kg bag	75.0				75.0	4,133.67
citric acid	25 kg bag	32.0		32.0			
CLAYSEAL PLUS	55 gal drum	49.0	56.0	51.0		54.0	25,760.59
CON DET	5 gal can	32.0				32.0	1,367.76
DEXTRID LTE	25 kg sack	160.0	152.0	208.0		104.0	5,732.02
EZ SPOT	55 gal drum	5.0				5.0	5,275.05
EZ-MUD	25 kg pail	192.0	96.0	168.0		120.0	6,613.87
Generic mesh 24 (API 20)	1 each box	12.0				12.0	
Generic Mesh 40 (API 40)	1 each box		24.0			24.0	
guar gum	25 kg bag						
hec	25 kg bag		32.0	32.0			
lime	25 kg bag						
mica	25 kg bag	36.0				36.0	1,984.16
N-DRIL HT PLUS	50 lb bag	105.0		37.0		68.0	3,400.00
Omyacarb 5	25 kg bag	6.0		6.0			
OXYGON	50 lb can	25.0		18.0		7.0	350.00
PAC-L	25 kg bag	119.0	42.0	138.0		23.0	1,267.66
potassium chloride	1000 kg bag	24.0	15.0	21.0		18.0	39,683.21
potassium hydroxide	20 kg pail	52.0	82.0	63.0		71.0	3,130.56
Radiagreen EME-Salt	175 kg drum		40.0	15.0		25.0	9,645.22
sapp	25 kg bag	18.0				18.0	992.08
soda ash	25 kg bag		96.0	34.0		62.0	3,417.16
sodium bicarbonate	25 kg bag		48.0	48.0			
SOURSCAV	25 kg pail	32.0				32.0	1,763.70
STEELSEAL 100	50 lb sack	40.0				40.0	2,000.00
STEELSEAL 400	50 lb sack	40.0				40.0	2,000.00
Techmesh 110 (API 60)	1 each box	12.0				12.0	
Techmesh 140 (API 80)	1 each box	15.0				15.0	
Techmesh 175 (API 100)	1 each box	2.0	8.0	2.0		8.0	
Techmesh 210 (API 120)	1 each box		24.0	18.0		6.0	
Techmesh 84 (API 50)	1 each box	3.0				3.0	
					Total Weight of Products in Stock lb		**513,287.22**
					Total Weight of Products in Stock, Metric Tons		**232.82**

Baroid Fluid Services

Interval Inventory Report

Interval # 05		From Date 19/01/2010		Top of Interval			1,964.0 m
Max. Hole Size / Bit Size 8.50 / 8.50 in		To Date 18/02/2010		Bottom of Interval			3,482.0 m
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**
ALDACIDE G	25 kg can	11.0	6.0	12.0	5.0		
Amodrill 1235	1 bbl bulk	19.400			19.400		
BARA-DEFOAM W300	25 l can	7.0		1.0	6.0		
BARAZAN D PLUS	25 kg bag	110.0		75.0	35.0		
barite	1 tons bulk	147.000	12.000	25.000	134.000		
BAROLIFT	15 lb box	15.0		6.0	9.0		
BARO-SEAL FINE	40 lb bag	40.0			40.0		
BARO-SEAL MEDIUM	40 lb bag	70.0			70.0		
bentonite	1000 kg bulk	19.000			19.000		
caustic soda	25 kg can						
Circal 60/16	25 kg bag	215.0	280.0	339.0	156.0		
Circal Y	25 kg bag	75.0	192.0	139.0	128.0		
citric acid	25 kg bag		80.0	33.0	47.0		
CLAYSEAL PLUS	55 gal drum	54.0	8.0	53.0	9.0		
CON DET	5 gal can	32.0			32.0		
DEXTRID LTE	25 kg sack	104.0		104.0			
EZ SPOT	55 gal drum	5.0			5.0		
EZ-MUD	25 kg pail	120.0	32.0	136.0	16.0		
Generic mesh 24 (API 20)	1 each box	12.0			12.0		
Generic Mesh 40 (API 40)	1 each box	24.0		9.0	15.0		
guar gum	25 kg bag						
hec	25 kg bag						
lime	25 kg bag						
mica	25 kg bag	36.0			36.0		
N-DRIL HT PLUS	50 lb bag	68.0		68.0			
Omyacarb 5	25 kg bag						
OXYGON	50 lb can	7.0		7.0			
PAC-L	25 kg bag	23.0	80.0	103.0			
potassium chloride	1000 kg bag	18.0	12.0	30.0			
potassium hydroxide	20 kg pail	71.0	32.0	103.0			
Radiagreen EME-Salt	175 kg drum	25.0		25.0			
sapp	25 kg bag	18.0			18.0		
soda ash	25 kg bag	62.0		62.0			
sodium bicarbonate	25 kg bag		96.0	63.0	33.0		
SOURSCAV	25 kg pail	32.0			32.0		
STEELSEAL 100	50 lb sack	40.0			40.0		
STEELSEAL 400	50 lb sack	40.0			40.0		
Techmesh 110 (API 60)	1 each box	12.0			12.0		
Techmesh 140 (API 80)	1 each box	15.0			15.0		
Techmesh 175 (API 100)	1 each box	8.0		8.0			
Techmesh 210 (API 120)	1 each box	6.0		6.0			
Techmesh 260(API 140)	1 each box		20.0	14.0	6.0		
Techmesh 84 (API 50)	1 each box	3.0			3.0		

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 01																				
Fluid Name: Hi-Vis PHB/Guar sweeps																				
002	30/11/2009		1,050.0			482.1	55.7	2.3		1,590.1			151.1			151.1			1,439.0	1,439.0
003	1/12/2009	1,439.0				255.0		1.6		256.6			554.6			554.6			1,141.0	1,141.0
Cumulative Volume			1,050.0			737.1	55.7	3.9		1,846.7			705.7			705.7				
Fluid Name: Seawater																				
002	30/11/2009					123.6				123.6							68.6	55.0		123.6
003	1/12/2009	123.6				77.2			92.5	169.7							238.3	55.0		293.3
Cumulative Volume						200.8			92.5	293.3										

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 02																				
Fluid Name:	**Hi-Vis PHB/Guar sweeps**																			
004	2/12/2009	1,141.0				748.0				748.0			551.0			551.0			1,338.0	1,338.0
005	3/12/2009	1,338.0				1,500.0				1,500.0			1,500.0			1,500.0			1,338.0	1,338.0
006	4/12/2009	1,338.0						2.6		2.6			759.6			759.6			581.0	581.0
007	5/12/2009	581.0											581.0			581.0				
Cumulative Volume						2,248.0		2.6		2,250.6			3,391.6			3,391.6				
Fluid Name:	**Seawater**																			
004	2/12/2009	293.3	0.1			114.5		53.2		167.8			24.9			24.9	288.7	55.0		343.7
005	3/12/2009	343.7				418.6		35.7	92.5	546.8							743.0	55.0		798.0
006	4/12/2009	798.0				246.3				246.3			141.6			141.6	934.5	55.0	54.9	1,044.4
007	5/12/2009	1,044.4				234.5		20.1		254.6			875.8			875.8	589.5			589.5
008	6/12/2009	589.5											166.3			166.3	589.5			589.5
009	7/12/2009	589.5											166.3			166.3	589.5			589.5
Cumulative Volume			0.1			1,013.9		109.0	92.5	1,215.5			1,374.9			1,374.9				

Baroid Fluid Services

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 03																				
Fluid Name:	**Hi-Vis PHB/Guar sweeps**																			
11A	9/12/2009					190.0				190.0			115.0			115.0			75.0	75.0
013	11/12/2009	75.0	45.0							45.0									120.0	120.0
014	12/12/2009	120.0				65.0				65.0									185.0	185.0
015	13/12/2009	185.0									2.0					2.0			183.0	183.0
016	14/12/2009	183.0											133.0			133.0			50.0	50.0
019	17/12/2009	50.0						2.5		2.5			22.5			22.5			30.0	30.0
Cumulative Volume			45.0			255.0		2.5		302.5	2.0		270.5			272.5				
Fluid Name:	**Seawater**																			
010	8/12/2009	589.5				414.8				414.8			61.4			61.4	942.9			942.9
11A	9/12/2009	942.9				175.4				175.4			1,103.3			1,103.3			15.0	15.0
012	10/12/2009	15.0							30.0	30.0									45.0	45.0
013	11/12/2009	45.0											45.0			45.0				
Cumulative Volume						590.2			30.0	620.2			1,209.7			1,209.7				
Fluid Name:	**12 1/4" KCl/Polymer**																			
11A	9/12/2009		820.0			818.0		81.6	164.3	1,883.9	132.0		36.0			168.0	589.9	712.0	414.0	1,715.9
012	10/12/2009	1,715.9				28.0	22.5	265.1		315.6	185.0		34.0			219.0	778.6	804.0	230.0	1,812.6
013	11/12/2009	1,812.6	88.0			250.0		36.5		374.5	63.1		7.0			70.1	938.0	269.0	910.0	2,117.0
014	12/12/2009	2,117.0				245.6		5.6		251.2	45.0		13.0			58.0	1,026.2	277.0	1,007.0	2,310.2
015	13/12/2009	2,310.2					22.9	15.2		38.1	36.5		69.0			105.5	600.7	433.0	1,209.0	2,242.7
016	14/12/2009	2,242.7						0.6		0.6	3.0		77.3			80.3	473.0	800.0	890.0	2,163.0
017	15/12/2009	2,163.0						1.8		1.8							473.0	800.0	891.8	2,164.8
018	16/12/2009	2,164.8						1.2		1.2							473.0	800.0	893.0	2,166.0
019	17/12/2009	2,166.0						3.3		3.3			28.0			28.0	597.4	599.0	945.0	2,141.4

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Cumulative Volume			908.0			1,341.6	45.4	410.9	164.3	2,870.2	464.6		264.3			728.9				

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 04																				
Fluid Name:	**Hi-Vis PHB/Guar sweeps**																			
023	21/12/2009	30.0												30.0		30.0				
Cumulative Volume														30.0		30.0				
Fluid Name:	**12 1/4" KCl/Polymer**																			
020	18/12/2009	2,141.4												2,141.4		2,141.4				
Cumulative Volume														2,141.4		2,141.4				
Fluid Name:	**Brine**																			
023	21/12/2009		50.0							50.0				50.0		50.0				
024	22/12/2009		100.0							100.0				100.0		100.0				
041	8/01/2010		74.0							74.0				74.0		74.0				
Cumulative Volume			224.0							224.0				224.0		224.0				
Fluid Name:	**8 1/2" KCl/Polymer**																			
020	18/12/2009			2,141.4				18.1		2,159.5	54.0					54.0	571.5	799.0	735.0	2,105.5
021	19/12/2009	2,105.5						3.9		3.9	124.5		49.0			173.5	571.9	719.0	645.0	1,935.9
022	20/12/2009	1,935.9						1.1		1.1	7.3					7.3	597.4	729.0	590.0	1,916.4
023	21/12/2009	1,916.4		80.0		75.0		18.7		173.7	161.4		30.0			191.4	579.7	644.0	675.0	1,898.7
024	22/12/2009	1,898.7		100.0		100.0		39.4		239.4	117.2		20.0			137.2	644.8	639.0	717.0	2,000.8
025	23/12/2009	2,000.8	200.0			200.0		47.9		447.9	141.0		56.5			197.5	686.1	738.0	827.0	2,251.1
026	24/12/2009	2,251.1	20.2			15.0		6.6		41.8	161.0		80.0			241.0	708.9	643.0	700.0	2,051.9
027	25/12/2009	2,051.9						14.6		14.6	127.0		26.5			153.5	773.1	677.0	463.0	1,913.1
028	26/12/2009	1,913.1				90.0		10.5		100.5	95.0		25.6			120.6	799.9	639.0	454.0	1,892.9
029	27/12/2009	1,892.9				300.0		9.1		309.1	140.0		84.5			224.5	853.5	812.0	312.0	1,977.5
030	28/12/2009	1,977.5	222.5				16.5	17.4		256.4	42.0		14.9			56.9	955.9	707.0	514.0	2,176.9

Baroid Fluid Services

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume bbl	Received bbl	Mixed bbl	Base bbl	Water bbl	Barite bbl	Chemicals bbl	Other bbl	Daily Total bbl	SCE bbl	Downhole bbl	Misc bbl	Mixed bbl	Returned bbl	Daily Total bbl	Hole Volume bbl	Active Pit Volume bbl	Reserve Volume bbl	Final Volume bbl
031	29/12/2009	2,176.9						0.6		0.6		10.6				10.6	955.9	697.0	514.0	2,166.9
032	30/12/2009	2,166.9	100.0			32.0	16.5	22.4		170.9	116.3		49.0			165.3	853.5	293.0	1,026.0	2,172.5
033	31/12/2009	2,172.5				61.9		1.4		63.3							955.9	715.0	565.0	2,235.9
034	1/01/2010	2,235.9										8.0				8.0	955.9	707.0	565.0	2,227.9
035	2/01/2010	2,227.9						3.2		3.2	69.5		10.0			79.5	853.5	619.0	679.0	2,151.5
036	3/01/2010	2,151.5									38.0		5.6			43.6	955.9	660.0	492.0	2,107.9
037	4/01/2010	2,107.9											9.0			9.0	955.9	637.0	506.0	2,098.9
039	6/01/2010	2,098.9						0.6		0.6	36.0		17.3			53.3	772.2	752.0	522.0	2,046.2
040	7/01/2010	2,046.2	13.0					0.7		13.7							955.9	359.0	745.0	2,059.9
041	8/01/2010	2,059.9		74.0		200.0		14.1		288.1	3.1					3.1	955.9	642.0	747.0	2,344.9
42	9/01/2010	2,344.9					7.5	5.3		12.8	104.8					104.8	955.9	729.0	568.0	2,252.9
43	10/01/2010	2,252.9						1.4		1.4	2.4		0.6			3.0	907.3	776.0	568.0	2,251.3
44	11/01/2010	2,251.3						0.3		0.3	78.7					78.7	907.7	327.2	938.0	2,172.9
45	12/01/2010	2,172.9	1.1			5.0		1.9		8.0	3.0		5.0			8.0	907.7	327.2	938.0	2,172.9
46	13/01/2010	2,172.9				4.0		0.6		4.6	0.6		4.0			4.6	907.7	327.2	938.0	2,172.9
47	14/01/2010	2,172.9				4.0		0.1		4.1	0.1		4.0			4.1	907.7	327.2	938.0	2,172.9
48	15/01/2010	2,172.9				4.0		0.5		4.5	39.0		6.0			45.0	955.9	277.5	899.0	2,132.4
49	16/01/2010	2,132.4						0.8		0.8	5.3		12.0			17.3	955.9	255.0	905.0	2,115.9
50	17/01/2010	2,115.9				4.0		0.4		4.4			4.4			4.4	955.9	255.0	905.0	2,115.9
51	18/01/2010	2,115.9						0.1		0.1							896.1	320.0	899.9	2,116.0
52A	19/01/2010	2,116.0				2.0				2.0	19.5		26.0	0.1		45.6	955.9	226.5	890.0	2,072.4
Cumulative Volume			556.8	2,395.4		1,096.9	40.5	241.7		4,331.3	1,686.7	18.6	539.9	0.1		2,245.3				

Fluid Name: 8 1/2" ST-1 KCl/Polymer

52A	19/01/2010			0.1						0.1	0.1					0.1				
Cumulative Volume				0.1						0.1	0.1					0.1				

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 05																				
Fluid Name:	**Brine**																			
052B	19/01/2010		60.0							60.0				60.0		60.0				
055	22/01/2010		125.0							125.0				125.0		125.0				
056	23/01/2010		0.1			0.1				0.2				0.2		0.2				
061	28/01/2010		100.0							100.0				100.0		100.0				
Cumulative Volume			285.1			0.1				285.2				285.2		285.2				
Fluid Name:	**8 1/2" KCl/Polymer**																			
052B	19/01/2010	2,072.4											358.5	1,713.9		2,072.4				
081	17/02/2010		2,010.5							2,010.5	5.7					5.7	597.4	543.0	515.1	1,655.5
082	18/02/2010	1,655.5											853.6			853.6	801.8			801.8
Cumulative Volume			2,010.5							2,010.5	5.7		1,212.1	1,713.9		2,931.7				
Fluid Name:	**8 1/2" ST-1 KCl/Polymer**																			
052B	19/01/2010			1,773.9		110.0		11.5		1,895.4	8.6					8.6	538.3	433.5	915.0	1,886.8
053	20/01/2010	1,886.8				25.0		19.7		44.7	104.1		78.0			182.1	558.8	253.5	937.0	1,749.3
054	21/01/2010	1,749.3				200.0		3.7		203.7	21.5		6.4			27.9	631.2	672.0	622.0	1,925.2
055	22/01/2010	1,925.2		125.0		200.0		40.7		365.7	132.0		80.3			212.3	616.6	725.0	737.0	2,078.6
056	23/01/2010	2,078.6	90.8	0.2		164.0		21.4		276.4	150.5		55.1			205.6	685.4	730.0	734.0	2,149.4
057	24/01/2010	2,149.4	152.6			150.0		9.5		312.1	110.0		33.8			143.8	739.7	677.0	901.0	2,317.7
058	25/01/2010	2,317.7	151.3			150.0		44.2		345.5	308.0		113.0			421.0	795.2	650.0	797.0	2,242.2
059	26/01/2010	2,242.2						3.8		3.8	60.6		20.0			80.6	794.3	724.0	647.0	2,165.3
060	27/01/2010	2,165.3	9.4			150.0		8.3		167.7	161.0		28.4			189.4	880.6	710.0	553.0	2,143.6
061	28/01/2010	2,143.6	0.6	100.0		210.0		0.8		311.4	218.8		29.0			247.8	842.6	675.0	689.0	2,206.6
062	29/01/2010	2,206.6	1.3					21.9		23.2	75.0		19.5			94.5	793.3	650.0	692.0	2,135.3
063	30/01/2010	2,135.3						16.7		16.7	53.6		7.9			61.5	860.3	676.0	556.0	2,092.3

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume bbl	Received bbl	Mixed bbl	Base bbl	Water bbl	Barite bbl	Chemicals bbl	Other bbl	Daily Total bbl	SCE bbl	Downhole bbl	Misc bbl	Mixed bbl	Returned bbl	Daily Total bbl	Hole Volume bbl	Active Pit Volume bbl	Reserve Volume bbl	Final Volume bbl
064	31/01/2010	2,092.3					25.5	1.2		26.7	18.0		5.7			23.7	904.3	641.0	550.0	2,095.3
065	1/02/2010	2,095.3						1.1		1.1	66.4		3.0			69.4	886.0	649.0	492.0	2,027.0
066	2/02/2010	2,027.0	8.1			122.0		26.7		156.8	6.0		1.0			7.0	817.7	639.0	720.0	2,176.7
067	3/02/2010	2,176.7				134.0	12.0	21.8		167.8	58.0		17.8			75.8	883.7	597.0	788.0	2,268.7
068	4/02/2010	2,268.7				150.0		4.5		154.5			24.5			24.5	946.7	604.0	848.0	2,398.7
069	5/02/2010	2,398.7						3.3		3.3	15.0		5.0			20.0	946.7	624.0	811.3	2,382.0
070	6/02/2010	2,382.0						1.2		1.2	30.0		5.5			35.5	946.7	704.0	697.0	2,347.7
071	7/02/2010	2,347.7						3.5		3.5	175.0		5.5			180.5	946.7	704.0	520.0	2,170.7
072	8/02/2010	2,170.7						0.3		0.3			0.3			0.3	946.7	704.0	520.0	2,170.7
073	9/02/2010	2,170.7						0.4		0.4			7.4			7.4	946.7	649.0	568.0	2,163.7
074	10/02/2010	2,163.7						0.7		0.7	37.0		7.1			44.1	921.2	663.0	536.0	2,120.2
075	11/02/2010	2,120.2						0.8		0.8	37.0		34.9			71.9	761.0	598.0	690.0	2,049.0
076	12/02/2010	2,049.0				100.0		0.8		100.8	3.0		5.1			8.1	946.7	639.0	556.0	2,141.7
078	14/02/2010	2,141.7						0.2		0.2							946.7	586.2	609.0	2,141.9
079	15/02/2010	2,141.9						1.2		1.2	73.1					73.1	771.0	757.0	542.0	2,070.0
080	16/02/2010	2,070.0											59.5			59.5	854.4	613.0	543.1	2,010.5
081	17/02/2010	2,010.5									5.7				2,004.8	2,010.5				
Cumulative Volume			414.1	1,999.1		1,865.0	37.5	269.9		4,585.6	1,927.9		653.7		2,004.8	4,586.4				

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Interval #	**01**	**From Report Date**	**29/11/2009**	**Top of Interval**	**100.0 m**
Max. Hole Size / Bit Size	**36.0 / 36.0 in**	**To Report Date**	**01/12/2009**	**Bottom of Interval**	**158.0 m**

Fluid Name: **Hi-Vis PHB/Guar sweeps**

Material	Average ppb	Minimum ppb	Maximum ppb
barite	47.61	43.71	51.51
caustic soda	0.18	0.10	0.25
guar gum	0.79	0.76	0.81
lime	0.16	0.16	0.16
soda ash	0.16	0.07	0.25

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Interval # 02		**From Report Date**	**02/12/2009**	**Top of Interval**	**158.0 m**
Max. Hole Size / Bit Size	**17.5 / 17.5 in**	**To Report Date**	**07/12/2009**	**Bottom of Interval**	**966.0 m**

Fluid Name: Hi-Vis PHB/Guar sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
BARAZAN D PLUS	0.49	0.49	0.49
barite	15.92	12.42	26.40
caustic soda	0.09	0.07	0.15
guar gum	0.34	0.23	0.49
lime	0.39	0.05	0.70
soda ash	0.15	0.07	0.20

Fluid Name: Seawater

Material	Average ppb	Minimum ppb	Maximum ppb
BARA-DEFOAM W300	0.04	0.03	0.05
BARAZAN D PLUS	0.50	0.41	0.66
bentonite	67.64	58.10	90.84
caustic soda	0.61	0.48	0.84
guar gum	2.28	1.62	4.18
lime	1.18	0.96	1.56
soda ash	0.53	0.40	0.84

Baroid Fluid Services

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Interval Chemical Concentration

Interval # 03		From Report Date	08/12/2009	Top of Interval	966.0 m
Max. Hole Size / Bit Size	12.25 / 12.25 in	To Report Date	17/12/2009	Bottom of Interval	1,972.0 m

Fluid Name: Hi-Vis PHB/Guar sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
BARAZAN D PLUS	0.28	0.19	0.49
barite	6.95	4.80	12.42
bentonite	41.99	41.99	41.99
caustic soda	0.04	0.03	0.07
guar gum	0.17	0.12	0.31
lime	0.39	0.27	0.70
soda ash	0.11	0.08	0.20

Fluid Name: Seawater

Material	Average ppb	Minimum ppb	Maximum ppb
BARA-DEFOAM W300	0.01	0.00	0.02
BARAZAN D PLUS	0.11	0.04	0.21
bentonite	16.79	5.51	31.37
caustic soda	0.13	0.04	0.25
guar gum	0.45	0.15	0.84
lime	0.27	0.09	0.50
soda ash	0.11	0.04	0.21

Fluid Name: 12 1/4" KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.07	0.05	0.09
BARAZAN D PLUS	1.29	0.97	1.76
barite	20.83	9.24	25.63
bentonite	9.68	6.16	10.85
caustic soda	0.20	0.11	0.25
Circal 60/16	2.70	0.44	3.38
Circal Y	0.32	0.25	0.43
CLAYSEAL PLUS	7.63	6.26	8.83
DEXTRID LTE	2.24	1.74	2.75
EZ-MUD	1.56	1.07	1.99
OXYGON	0.12	0.06	0.18
PAC-L	0.77	0.44	0.87
potassium chloride	53.60	19.89	74.37
potassium hydroxide	0.30	0.19	0.37
sodium bicarbonate	0.59	0.44	0.81

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Interval # 04		**From Report Date**	**18/12/2009**	**Top of Interval**	**1,972.0 m**
Max. Hole Size / Bit Size	**8.50 / 8.50 in**	**To Report Date**	**19/01/2010**	**Bottom of Interval**	**3,522.0 m**

Fluid Name: Hi-Vis PHB/Guar sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
BARAZAN D PLUS	0.19	0.19	0.19
barite	4.80	4.80	4.80
bentonite	41.99	41.99	41.99
caustic soda	0.03	0.03	0.03
guar gum	0.12	0.12	0.12
lime	0.27	0.27	0.27
soda ash	0.08	0.08	0.08

Fluid Name: 12 1/4" KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.09	0.09	0.09
BARAZAN D PLUS	1.76	1.76	1.76
barite	25.58	25.58	25.58
bentonite	10.34	10.34	10.34
caustic soda	0.25	0.25	0.25
Circal 60/16	3.37	3.37	3.37
Circal Y	0.30	0.30	0.30
CLAYSEAL PLUS	7.64	7.64	7.64
DEXTRID LTE	2.13	2.13	2.13
EZ-MUD	1.99	1.99	1.99
OXYGON	0.18	0.18	0.18
PAC-L	0.87	0.87	0.87
potassium chloride	56.14	56.14	56.14
potassium hydroxide	0.34	0.34	0.34
sodium bicarbonate	0.53	0.53	0.53

Fluid Name: 8 1/2" KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.33	0.12	0.46
BARAZAN D PLUS	1.37	1.03	2.18
barite	26.42	12.71	31.25
bentonite	5.30	3.07	10.25
caustic soda	0.12	0.07	0.25
Circal 60/16	5.22	3.67	6.03

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Circal Y	0.15	0.08	0.30
citric acid	0.78	0.13	0.87
CLAYSEAL PLUS	9.33	7.08	10.79
DEXTRID LTE	3.39	2.90	4.03
EZ-MUD	3.05	2.54	3.47
guar gum	0.00	0.00	0.00
hec	0.40	0.04	0.74
lime	0.00	0.00	0.00
N-DRIL HT PLUS	0.54	0.11	0.76
Omyacarb 5	0.08	0.04	0.15
OXYGON	0.29	0.16	0.37
PAC-L	2.11	1.01	2.65
potassium chloride	37.35	24.99	55.67
potassium hydroxide	0.78	0.36	0.92
Radiagreen EME-Salt	1.43	1.09	1.71
soda ash	0.43	0.10	0.67
sodium bicarbonate	0.72	0.21	1.49

Fluid Name: 8 1/2" ST-1 KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.46	0.46	0.46
BARAZAN D PLUS	1.40	1.40	1.40
barite	31.12	31.12	31.12
bentonite	3.71	3.71	3.71
caustic soda	0.09	0.09	0.09
Circal 60/16	5.51	5.51	5.51
Circal Y	0.10	0.10	0.10
citric acid	0.86	0.86	0.86
CLAYSEAL PLUS	8.56	8.56	8.56
DEXTRID LTE	4.02	4.02	4.02
EZ-MUD	3.08	3.08	3.08
guar gum	0.00	0.00	0.00
hec	0.73	0.73	0.73
lime	0.00	0.00	0.00
N-DRIL HT PLUS	0.76	0.76	0.76
Omyacarb 5	0.05	0.05	0.05
OXYGON	0.35	0.35	0.35
PAC-L	2.63	2.63	2.63
potassium chloride	30.21	30.21	30.21
potassium hydroxide	0.92	0.92	0.92
Radiagreen EME-Salt	1.32	1.32	1.32
soda ash	0.39	0.39	0.39
sodium bicarbonate	1.48	1.48	1.48

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Interval # 05		**From Report Date**	**19/01/2010**	**Top of Interval**	**1,964.0 m**
Max. Hole Size / Bit Size	**8.50 / 8.50 in**	**To Report Date**	**18/02/2010**	**Bottom of Interval**	**3,482.0 m**

Fluid Name: 8 1/2" KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.39	0.38	0.39
BARAZAN D PLUS	1.18	1.16	1.19
barite	26.27	25.74	26.53
bentonite	3.13	3.07	3.16
caustic soda	0.07	0.07	0.07
Circal 60/16	4.65	4.56	4.70
Circal Y	0.09	0.08	0.09
citric acid	0.73	0.71	0.74
CLAYSEAL PLUS	7.22	7.08	7.30
DEXTRID LTE	3.40	3.33	3.43
EZ-MUD	2.60	2.54	2.62
guar gum	0.00	0.00	0.00
hec	0.62	0.61	0.63
lime	0.00	0.00	0.00
N-DRIL HT PLUS	0.64	0.63	0.65
Omyacarb 5	0.04	0.04	0.04
OXYGON	0.29	0.29	0.30
PAC-L	2.22	2.18	2.25
potassium chloride	25.49	24.98	25.75
potassium hydroxide	0.78	0.76	0.78
Radiagreen EME-Salt	1.11	1.09	1.12
soda ash	0.33	0.32	0.33
sodium bicarbonate	1.25	1.23	1.26

Fluid Name: 8 1/2" ST-1 KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.30	0.21	0.37
BARA-DEFOAM W300	0.01	0.01	0.02
BARAZAN D PLUS	1.40	1.11	1.52
barite	23.85	11.03	32.14
bentonite	1.37	1.00	2.77
caustic soda	0.03	0.02	0.06
Circal 60/16	5.85	4.44	6.49
Circal Y	1.63	0.04	2.89
citric acid	0.71	0.52	1.57

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

CLAYSEAL PLUS	8.71	6.48	10.07
DEXTRID LTE	2.75	2.18	3.36
EZ-MUD	2.76	2.40	3.02
guar gum	0.00	0.00	0.00
hec	0.27	0.20	0.55
lime	0.00	0.00	0.00
N-DRIL HT PLUS	1.05	0.40	1.32
Omyacarb 5	0.02	0.01	0.04
OXYGON	0.20	0.15	0.26
PAC-L	2.14	1.59	2.48
potassium chloride	25.30	20.44	28.32
potassium hydroxide	1.23	0.46	1.89
Radiagreen EME-Salt	2.38	0.49	3.33
soda ash	0.79	0.21	1.25
sodium bicarbonate	1.31	1.07	1.86

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
Interval # 01										**From Date**				**29/11/2009**						**Top of Interval**			**100.0**		**m**						
Max. Hole Size / Bit Size	**36.0 / 36.0 in**									**To Date**				**01/12/2009**						**Bottom of Interval**			**158.0**		**m**						
30/11/2009	100		8.80	132	14	56	25	47	60						9.00				1,000	240	27.0					95	84.0	70.0	60.0	56.0	35.0	30.0
30/11/2009	100		8.80	130	15	55	25	47	60						9.00				1,000	240	27.0					95	85.0	70.0	60.0	55.0	34.0	29.0
01/12/2009	158		8.80	124	11	59	25	40	51						9.00				1,000	200	27.0					95	81.0	70.0	60.0	55.0	33.0	25.0
01/12/2009	158		8.80	122	12	58	26	39	47						9.00				1,000	200	27.0					95	82.0	70.0	60.0	52.0	35.0	26.0
Interval # 02										**From Date**				**02/12/2009**						**Top of Interval**			**158.0**		**m**						
Max. Hole Size / Bit Size	**17.50 / 17.50 in**									**To Date**				**07/12/2009**						**Bottom of Interval**			**966.0**		**m**						
02/12/2009	158		8.80	130	12	61	30	43	55						9.00				1,000	240	27.5					95	85.0	73.0	63.0	55.0	37.0	28.0
02/12/2009	270		8.80	127	11	60	29	42	54						9.00				1,000	240	30.0					96	82.0	71.0	61.0	53.0	36.0	27.0
03/12/2009	430		8.80	128	12	61	30	43	55						9.00				1,000	240	30.0					96	85.0	73.0	63.0	55.0	37.0	28.0
03/12/2009	570		8.90	122	14	50	30	43	55						9.00				1,200	200	30.0					95	78.0	64.0	54.0	47.0	30.0	25.0
03/12/2009	708		8.90	125	10	45	21	37	50						9.00				1,000	120	30.0					95	65.0	55.0	49.0	43.0	20.0	18.0
03/12/2009	800		8.80	126	12	60	29	42	54						9.00				1,100	240	30.0					96	84.0	72.0	62.0	54.0	37.0	27.0
04/12/2009	966		8.80	65	12	36	10	17	21	7.2					9.00				1,500	240	15.0					95	60.0	48.0	42.0	35.0	17.0	15.0
04/12/2009	966		8.80	62	12	37	10	17	21	7.4					9.00				1,400	240	15.0					96	61.0	49.0	43.0	36.0	17.0	15.0
05/12/2009	966		8.80	60	12	36	10	16	20	7.4					9.50				1,500	240	15.0					95	60.0	48.0	40.0	35.0	16.0	15.0
05/12/2009	966		8.80	58	12	36	10	16	20	7.6					9.00				1,400	240	15.0					96	60.0	48.0	40.0	35.0	16.0	14.0
06/12/2009	966		9.00	80	14	44	13	18	25	7.6					9.00				1,500	320	15.0					95	72.0	58.0	48.0	35.0	17.0	15.0
06/12/2009	966		9.00	80	14	44	13	18	25	7.6					9.00				1,300	280	15.0					96	72.0	58.0	48.0	35.0	18.0	
Interval # 03										**From Date**				**08/12/2009**						**Top of Interval**			**966.0**		**m**						
Max. Hole Size / Bit Size	**12.25 / 12.25 in**									**To Date**				**17/12/2009**						**Bottom of Interval**			**1,972.0**		**m**						
08/12/2009	966		9.00	51	10	13	4	6	8	7.2	10.0	1	2		9.50	0.30	0.25	1.10	41,000	280	2.5		1.07	0.436		95.5	33.0	23.0	18.0	13.0	4.0	3.0
08/12/2009	966		8.90	49	10	13	4	6	8	7.4	10.4	1	2		9.00	0.20	0.25	1.10	40,000	280	9.0		0.64	0.258		96	33.0	23.0	16.0	12.0	4.0	3.0
09/12/2009	966		9.00	47	9	15	4	6	9	7.0	12.2	1	2		9.50	0.30	0.30	0.80	42,000	240	6.0	0.10	1.5	1.362		95	33.0	24.0	15.0	12.0	5.0	4.0
09/12/2009	971	22	9.00	43	10	15	4	6	9	6.8	12.5	1	2	120	10.00	0.50	0.30	0.90	41,000	400	6.0	0.10	1.59	1.455		95	35.0	25.0	16.0	13.0	5.0	4.0
09/12/2009	1,009	25	9.00	42	10	16	5	7	11	7.0	12.4	1	2	120	10.00	0.40	0.35	1.20	41,000	280	5.0	0.10	1.59	1.455		95	36.0	26.0	17.0	13.0	6.0	5.0

Baroid Fluid Services

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
10/12/2009	1,233	30	9.00	46	10	9	5	6	7	6.7	12.0	1	2	120	9.50	0.50	0.35	1.20	40,000	280	5.0	0.10	1.67	1.547		95	29.0	19.0	17.0	13.0	5.0	4.0
10/12/2009	1,292	33	9.25	57	11	20	8	11	14	5.8	12.5	1	2	120	9.00	0.30	0.25	1.10	39,000	220	11.5	0.25	3.31	2.821		93.5	42.0	31.0	24.0	18.0	8.0	7.0
10/12/2009	1,435	28	9.30	63	11	22	7	9	12	5.5	9.5	1	2	120	9.00	0.20	0.15	0.85	39,000	200	9.0	0.25	3.52	2.853		93.3	44.0	33.0	25.0	19.0	8.0	7.0
10/12/2009	1,515	31	9.10	61	12	25	8	10	14	5.8	11.2	1	2	120	9.00	0.30	0.25	1.20	38,000	200	10.0	0.40	2.88	3.016		94	49.0	37.0	29.0	22.0	9.0	7.0
11/12/2009	1,685	40	9.20	63	12	27	9	14	17	5.7	11.6	1	2	120	9.00	0.35	0.35	1.20	38,000	200	10.0	0.35	2.88	2.267		94	51.0	39.0	32.0	24.0	9.0	6.0
11/12/2009	1,811	43	9.40	57	15	22	9	13	16	4.8	10.5	1	2	120	9.50	0.40	0.30	1.10	41,000	180	9.5	0.25	3.66	2.536		93	52.0	37.0	32.0	24.0	9.0	8.0
11/12/2009	1,886	44	9.40	57	14	24	10	15	18	4.5	10.5	1	2	120	9.00	0.30	0.25	0.95	40,000	160	10.0	0.25	3.74	2.626		93	52.0	38.0	31.0	24.0	10.0	9.0
11/12/2009	1,909	51	9.30	60	13	27	10	15	18	5.7	11.4	1	2	120	9.50	0.35	0.30	1.25	41,000	200	15.0	0.35	2.62	1.246		94	53.0	40.0	33.0	25.0	10.0	8.0
12/12/2009	1,960	51	9.40	61	19	20	10	15	18	5.4	10.9	1	2	120	9.50	0.30	0.30	1.30	43,000	200	15.0	0.30	4.01	3.374		92.5	58.0	39.0	35.0	26.0	10.0	8.0
12/12/2009	1,972	45	9.50	56	18	21	10	15	18	5.0	9.5	1	2	120	9.50	0.35	0.25	1.10	41,000	160	10.0	0.25	3.87	2.194		92.8	57.0	39.0	35.0	27.0	11.0	9.0
12/12/2009	1,972	25	9.50	51	18	22	11	16	19	5.6	11.7	1	2	120	9.00	0.35	0.30	1.25	42,000	200	15.0	0.30	3.57	1.696		93	58.0	40.0	36.0	28.0	11.0	9.0
13/12/2009	1,972		9.50	61	19	19	10	14	18	4.8	11.5	1	2	120	9.50	0.35	0.25	1.10	40,000	200	10.0	0.25	3.74	1.877		93	57.0	38.0	33.0	25.0	10.0	9.0
13/12/2009	1,972	25	9.50	59	18	22	10	13	17	5.1	11.3	1	2	120	9.00	0.35	0.30	1.25	42,000	200	15.0	0.35	3.57	1.696		93	58.0	40.0	35.0	26.0	10.0	8.0
14/12/2009	1,972		9.65	69	13	27	10	15	19	4.8	11.5	1	2	120	9.50	0.30	0.20	1.30	41,000	240	10.0	0.25	4.69	2.701		92	53.0	40.0	33.0	25.0	10.0	9.0
14/12/2009	1,972		9.65	70	11	27	10	15	18	5.2	11.5	1	2	120	9.00	0.30	0.30	2.00	44,000	240	8.0	0.25	3.92	1.41		92.5	49.0	38.0	32.0	24.0	10.0	8.0
15/12/2009	1,972		9.65	71	13	26	10	15	19	5.5	10.5	1	2	120	9.50	0.30	0.20	1.65	40,000	240	8.0	0.25	4.26	1.772		92.5	52.0	39.0	33.0	24.0	10.0	9.0
15/12/2009	1,972		9.65	70	11	28	10	15	18	5.3	10.5	1	2	120	9.50	0.30	0.30	1.90	41,000	240	8.0	0.25	4.18	1.682		92.5	50.0	39.0	32.0	24.0	10.0	8.0
16/12/2009	1,972		9.65	69	13	25	9	14	18	5.0	9.5	1	2	120	9.50	0.30	0.35	2.10	41,000	240	7.5	0.20	4.18	1.682		92.5	51.0	38.0	32.0	24.0	10.0	8.0
16/12/2009	1,972		9.65	70	13	26	10	15	18	5.2	10.3	1	2	120	9.50	0.30	0.30	2.00	42,000	240	8.0	0.10	4.2	1.796		92.4	52.0	39.0	33.0	24.0	10.0	8.0
17/12/2009	1,972		9.65	72	14	24	9	14	18	4.5	9.5	1	2	120	9.00	0.30	0.25	2.20	40,000	260	7.0	0.20	4.78	2.791		92	52.0	38.0	32.0	24.0	9.0	8.0
17/12/2009	1,972		9.65	69	13	25	10	15	18	4.8	10.0	1	2	120	9.50	0.30	0.30	2.10	42,000	240	8.0	0.10	4.4	2.204		92.2	51.0	38.0	32.0	24.0	10.0	8.0
Interval # 04										**From Date**				**18/12/2009**						**Top of Interval**			**1,972.0**	**m**							
Max. Hole Size / Bit Size 8.50 / 8.50 in										**To Date**				**19/01/2010**						**Bottom of Interval**			**3,522.0**	**m**							
18/12/2009	1,972	33	9.60	63	11	25	9	15	17	4.5	10.0	1	2	49	9.00	0.25	0.15	2.40	40,500	280	6.5	0.20	4.22	2.102		92.5	47.0	36.0	31.0	24.0	9.0	8.0
18/12/2009	1,972	37	9.55	55	11	21	9	15	18	4.5	9.0	1	2	49	9.00	0.15	0.10	2.30	40,000	280	5.5	0.15	4.05	2.113		92.7	43.0	32.0	27.0	21.0	9.0	8.0
18/12/2009	1,972		9.55	54	10	21	10	15	18	5.4	10.2	1	2	49	9.00	0.20	0.20	2.40	42,000	280	7.5	0.15	3.88	1.933		92.7	41.0	31.0	26.0	20.0	9.0	7.0
19/12/2009	1,972		9.60	68	11	20	9	13	16	4.8	11.0	1	2	49	8.50	0.05	0.05	2.60	40,500	300	5.5	0.15	4.11	1.898		92.6	42.0	31.0	26.0	20.0	9.0	8.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
19/12/2009	1,981	33	9.55	64	12	19	9	15	19	4.5	9.5	1	2	49	9.50	0.25	0.20	2.40	40,000	240	6.0	0.15	4.05	2.113		92.7	43.0	31.0	27.0	20.0	9.0	8.0
19/12/2009	2,019	44	9.55	49	11	22	9	15	18	5.4	10.6	1	2	49	9.50	0.30	0.25	2.40	41,000	260	7.0	0.15	3.97	2.024		92.7	44.0	33.0	28.0	21.0	9.0	7.0
20/12/2009	2,019		9.60	58	11	22	10	16	19	4.5	10.5	1	2	49	9.00	0.10	0.05	2.30	40,500	260	6.0	0.20	4.22	2.102		92.5	44.0	33.0	28.0	20.0	9.0	8.0
20/12/2009	2,023		9.60	53	12	20	9	15	18	4.5	10.0	1	2	49	9.00	0.20	0.15	2.50	40,000	220	5.5	0.20	4.16	1.943		92.6	44.0	32.0	27.0	21.0	9.0	8.0
20/12/2009	2,023		9.60	52	11	22	10	14	18	4.9	10.3	1	2	49	9.50	0.30	0.20	2.30	41,000	220	7.0	0.20	3.97	1.649		92.7	44.0	33.0	28.0	21.0	9.0	8.0
21/12/2009	2,027	37	9.65	50	12	26	10	14	17	4.2	8.5	1	2	49	9.00	0.15	0.10	2.20	41,000	200	5.5	0.20	3.97	1.275		92.7	50.0	38.0	31.0	24.0	10.0	8.0
21/12/2009	2,060	43	9.55	53	14	24	9	15	19	4.5	9.5	1	2	49	9.00	0.10	0.05	2.50	40,000	180	6.0	0.25	4.26	2.521		92.5	52.0	38.0	32.0	24.0	10.0	8.0
21/12/2009	2,100	47	9.55	52	14	25	9	15	18	4.5	9.0	1	2	49	9.00	0.15	0.10	2.30	40,000	180	6.0	0.25	4.47	2.928		92.3	53.0	39.0	33.0	26.0	10.0	8.0
21/12/2009	2,182	51	9.55	51	13	26	10	16	19	4.8	9.5	1	2	49	9.00	0.20	0.10	2.20	41,000	200	7.5	0.20	4.38	2.839		92.3	52.0	39.0	33.0	25.0	10.0	8.0
22/12/2009	2,296	57	9.55	51	15	30	13	18	22	4.5	10.0	1	2	49	9.50	0.30	0.20	2.40	40,000	240	7.5	0.20	4.47	2.928		92.3	60.0	45.0	39.0	29.0	12.0	9.0
22/12/2009	2,369	58	9.60	50	15	27	10	15	20	4.7	9.8	1	2	49	9.50	0.20	0.15	2.50	39,000	220	9.0	0.25	4.86	3.254		92	57.0	42.0	36.0	27.0	10.0	8.0
22/12/2009	2,449	59	9.55	52	14	31	11	17	21	4.2	9.0	1	2	49	9.00	0.30	0.20	2.45	38,000	180	7.0	0.25	4.53	2.902		92.4	59.0	45.0	38.0	28.0	10.0	8.0
22/12/2009	2,509	59	9.55	49	14	29	10	18	21	4.3	9.4	1	2	49	9.50	0.30	0.20	2.40	38,000	180	7.5	0.30	4.94	3.716		92	57.0	43.0	36.0	28.0	11.0	8.0
23/12/2009	2,585	60	9.60	61	18	34	13	20	30	5.0	10.0	1	2	49	9.50	0.40	0.30	2.60	39,000	140	7.5	0.30	5.38	4.272		91.5	70.0	52.0	43.0	32.0	13.0	10.0
23/12/2009	2,639	61	9.60	55	17	32	10	14	23	4.5	9.0	1	2	49	9.50	0.30	0.25	2.50	38,500	180	8.0	0.30	4.9	3.298		92	66.0	49.0	41.0	30.0	10.0	8.0
23/12/2009	2,712	62	9.60	52	17	31	10	15	19	4.6	9.5	1	2	49	9.50	0.30	0.30	2.70	37,000	180	8.0	0.25	5.03	3.43		92	65.0	48.0	40.0	30.0	10.0	9.0
23/12/2009	2,753	58	9.60	50	17	31	10	15	19	4.7	9.6	1	2	49	9.50	0.35	0.35	2.70	35,000	180	10.0	0.30	5.19	3.603		92	65.0	48.0	40.0	30.0	10.0	8.0
24/12/2009	2,753	55	9.60	55	17	32	11	16	19	4.8	9.6	1	2	49	9.00	0.35	0.35	2.80	35,000	180	7.5	0.30	5.19	3.603		92	66.0	49.0	41.0	31.0	11.0	9.0
24/12/2009	2,753		9.65	62	17	31	10	16	22	4.5	10.0	1	2	49	9.00	0.15	0.10	2.70	38,000	220	7.5	0.25	4.84	2.764		92.1	65.0	48.0	41.0	29.0	10.0	9.0
24/12/2009	2,783	61	9.50	56	15	32	9	15	20	4.2	8.5	1	2	49	9.50	0.40	0.60	3.20	37,000	120	7.5	0.25	4.2	2.551		92.8	62.0	47.0	39.0	30.0	9.0	8.0
24/12/2009	2,819	53	9.55	52	16	31	10	16	19	4.4	9.1	1	2	49	9.50	0.35	0.40	3.10	36,000	160	7.5	0.30	4.08	1.858		93	63.0	47.0	39.0	30.0	10.0	8.0
25/12/2009	2,905	63	9.55	48	16	31	10	16	19	4.3	9.8	1	2	49	9.00	0.30	0.30	1.90	36,000	160	7.5	0.30	4.28	2.264		92.8	63.0	47.0	39.0	30.0	10.0	8.0
25/12/2009	2,974	64	9.50	56	16	29	9	15	20	4.5	9.0	1	2	49	9.50	0.30	0.25	3.00	37,000	160	7.5	0.25	4.2	2.551		92.8	61.0	45.0	37.0	27.0	9.0	8.0
25/12/2009	3,079	64	9.50	53	17	34	10	15	19	4.5	9.0	1	2	49	9.00	0.15	0.10	3.20	35,000	180	7.5	0.25	4.47	2.929		92.7	68.0	51.0	42.0	31.0	11.0	9.0
25/12/2009	3,128	57	9.50	51	17	33	11	16	19	4.6	9.4	1	2	49	9.00	0.20	0.15	3.30	35,000	180	7.5	0.30	4.16	2.319		93	67.0	50.0	42.0	31.0	10.0	8.0
26/12/2009	3,199	52	9.55	53	17	33	10	15	18	4.1	8.6	1	2	49	9.00	0.20	0.20	3.00	35,000	160	7.5	0.25	4.16	1.945		93	67.0	50.0	42.0	31.0	10.0	8.0
26/12/2009	3,199		9.60	57	20	41	11	16	20	4.0	8.5	1	2	49	9.00	0.10	0.05	3.20	34,000	180	7.5	0.25	4.65	2.47		92.6	81.0	61.0	51.0	39.0	13.0	10.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
26/12/2009	3,238	62	9.50	57	18	31	10	15	17	4.2	8.5	1	2	49	9.50	0.20	0.15	3.10	33,000	180	7.5	0.25	4.32	2.493		93	67.0	49.0	41.0	31.0	10.0	9.0
26/12/2009	3,296	58	9.50	52	18	32	11	16	18	4.8	9.7	1	2	49	9.50	0.20	0.20	3.20	32,000	160	7.5	0.20	5.43	4.608		92	68.0	50.0	42.0	32.0	11.0	9.0
27/12/2009	3,404	65	9.50	55	18	37	12	16	19	4.0	9.0	1	2	49	9.00	0.15	0.05	3.20	33,000	140	7.5	0.30	4.73	3.305		92.6	73.0	55.0	46.0	35.0	12.0	9.0
27/12/2009	3,516	68	9.50	56	18	30	9	16	18	4.2	8.0	1	2	49	9.00	0.15	0.10	3.20	36,000	120	7.5	0.30	4.49	3.045		92.6	66.0	48.0	41.0	31.0	10.0	8.0
27/12/2009	3,354	58	9.55	52	18	37	12	16	19	4.0	8.6	1	2	49	9.00	0.10	0.08	2.90	33,000	160	7.5	0.30	5.35	4.149		92	73.0	55.0	46.0	35.0	12.0	9.0
27/12/2009	3,522	48	9.55	60	18	31	10	15	18	4.3	9.0	1	2	49	9.00	0.15	0.10	3.00	35,000	160	7.5	0.36	5.19	3.978		92	67.0	49.0	42.0	31.0	10.0	8.0
28/12/2009	3,522		9.65	58	19	37	12	18	21	4.5	9.0	1	2	49	9.50	0.20	0.15	3.10	35,000	180	7.5	0.25	5.19	3.229		92	75.0	56.0	47.0	36.0	13.0	11.0
28/12/2009	3,522	48	9.50	60	20	37	13	19	22	4.3	9.4	1	2	49	9.50	0.25	0.20	2.80	35,000	160	7.5	0.30	5.19	4.352		92	77.0	57.0	48.0	37.0	14.0	12.0
28/12/2009	3,522	35	9.55	53	19	36	12	17	20	4.6	9.7	1	2	49	9.50	0.20	0.20	2.90	35,000	160	7.5	0.30	5.19	3.978		92	74.0	55.0	46.0	34.0	12.0	10.0
29/12/2009	3,522		9.70	61	19	38	12	16	18	4.5	8.0	1	2	49	9.00	0.10	0.10	3.00	33,000	180	7.5	0.30	5.35	3.025		92	76.0	57.0	47.0	36.0	13.0	11.0
29/12/2009	3,522		9.65	63	19	37	12	16	18	4.6	9.9	1	2	49	9.50	0.10	0.15	2.80	34,000	160	7.5	0.30	4.76	2.299		92.5	75.0	56.0	46.0	33.0	12.0	10.0
30/12/2009	3,522		9.30	60	18	27	6	11	13	4.8	9.8	1	2	49	9.50	0.30	0.20	2.70	35,000	200	7.5	0.25	4.16	3.817		93	63.0	45.0	38.0	28.0	9.0	7.0
30/12/2009	3,522		9.45	61	20	43	12	16	19	4.8	10.0	1	2	49	9.00	0.25	0.25	2.90	36,000	200	7.5	0.25	5.11	4.64		92	83.0	63.0	54.0	41.0	13.0	11.0
31/12/2009	3,522		9.40	65	18	32	8	14	17	4.6	9.4	1	2	49	9.00	0.20	0.10	2.50	36,000	240	10.0	0.25	4.08	2.981		93	68.0	50.0	40.0	30.0	11.0	9.0
31/12/2009	3,522		9.40	66	18	33	9	13	16	4.6	9.6	1	2	49	9.00	0.25	0.10	2.60	35,000	240	7.5	0.25	4.16	3.068		93	69.0	51.0	41.0	31.0	11.0	9.0
01/01/2010	3,522		9.40	61	19	24	6	9	11	4.6	9.0	1	2	49	9.00	0.20	0.10	2.40	36,000	240	7.5	0.20	3.04	0.947		94	62.0	43.0	35.0	26.0	8.0	7.0
01/01/2010	3,522		9.40	63	19	25	7	10	12	4.6	9.0	1	2	49	9.00	0.20	0.10	2.50	35,000	240	7.5	0.25	3.13	1.036		94	63.0	44.0	36.0	26.0	9.0	7.0
02/01/2010	3,522		9.40	60	19	23	7	9	11	4.6	9.2	1	2	49	9.00	0.20	0.20	2.50	35,000	200	7.5	0.20	3.13	1.036		94	61.0	42.0	35.0	26.0	8.0	7.0
02/01/2010	3,522		9.45	60	18	25	7	11	14	4.3	9.0	1	2	49	9.00	0.20	0.20	2.50	36,000	160	7.5	0.25	3.04	0.573		94	61.0	43.0	35.0	26.0	9.0	8.0
02/01/2010	3,522		9.40	59	18	26	8	12	15	4.4	9.0	1	2	49	9.50	0.20	0.20	2.30	36,000	160	7.5	0.20	3.04	0.947		94	62.0	44.0	36.0	26.0	9.0	8.0
02/01/2010	3,522		9.40	61	18	25	7	11	14	4.2	8.8	1	2	49	9.50	0.20	0.20	2.40	36,000	160	7.5	0.20	3.04	0.947		94	61.0	43.0	34.0	25.0	9.0	8.0
03/01/2010	3,522		9.35	61	18	25	7	11	14	4.2	8.8	1	2	49	9.50	0.20	0.20	2.50	35,000	160	7.5	0.20	3.13	1.41		94	61.0	43.0	34.0	25.0	9.0	8.0
03/01/2010	3,522		9.40	61	19	24	7	11	13	4.3	9.0	1	2	49	9.50	0.20	0.20	2.30	35,000	200	7.5	0.25	3.13	1.036		94	62.0	43.0	35.0	26.0	9.0	7.0
03/01/2010	3,522		9.40	60	19	25	8	12	15	4.3	8.9	1	2	49	9.50	0.20	0.25	2.40	35,000	200	7.5	0.25	3.13	1.036		94	63.0	44.0	36.0	26.0	10.0	8.0
04/01/2010	3,522		9.40	60	19	23	7	10	12	4.4	9.0	1	2	49	9.00	0.20	0.15	2.20	35,000	160	7.5	0.20	3.13	1.036		94	61.0	42.0	34.0	25.0	8.0	7.0
04/01/2010	3,522		9.40	59	19	22	7	10	12	4.4	8.9	1	2	49	9.00	0.20	1.50	2.30	35,000	160	7.5	0.20	3.13	1.036		94	60.0	41.0	33.0	24.0	7.0	6.0
05/01/2010	3,522		9.40	63	17	30	7	11	13	4.3	9.2	1	2	49	9.00	0.20	0.15	2.20	35,000	160	7.5	0.20	3.13	1.036		94	64.0	47.0	36.0	26.0	9.0	8.0

Baroid Fluid Services

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness			% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l	ppb Eq.	% by vol	Corr Solid	LGS	NAP Base	Water						
05/01/2010	3,522		9.40	61	17	30	7	11	13	4.3	9.8	1	2	49	9.00	0.20	0.20	2.30	35,000	160	7.5	0.20	3.13	1.036		94	64.0	47.0	36.0	26.0	9.0	8.0
06/01/2010	3,522		9.40	61	16	30	6	9	11	4.4	9.0	1	2	49	9.00	0.20	0.15	2.20	35,000	200	7.5	0.20	3.13	1.036		94	62.0	46.0	35.0	27.0	9.0	7.0
06/01/2010	3,522		9.40	58	16	31	7	10	12	4.5	9.4	1	2	49	9.00	0.20	0.20	1.90	35,000	200	7.5	0.20	3.13	1.036		94	63.0	47.0	36.0	28.0	10.0	8.0
07/01/2010	3,522		9.40	56	17	24	7	11	13	5.2	9.4	1	2	49	10.00	0.30	0.20	2.60	35,000	640	7.5	0.20	3.13	1.036		94	58.0	41.0	33.0	25.0	8.0	6.0
07/01/2010	3,522		9.40	55	16	23	6	9	11	5.2	9.3	1	2	49	10.00	0.30	0.20	2.50	35,000	600	7.5	0.20	3.64	2.052		93.5	55.0	39.0	32.0	23.0	6.0	5.0
07/01/2010	3,522		9.40	55	17	24	7	11	13	5.1	10.3	1	2	49	10.00	0.30	0.25	2.40	34,000	640	7.5	0.30	3.21	1.124		94	58.0	41.0	33.0	25.0	8.0	7.0
07/01/2010	3,522		9.40	58	17	26	8	12	14	4.8	10.1	1	2	49	9.50	0.25	0.20	2.60	35,000	400	7.5	0.30	3.13	1.036		94	60.0	43.0	35.0	27.0	10.0	8.0
08/01/2010	1,970		9.40	55	17	26	8	12	14	4.5	10.1	1	2	49	9.50	0.20	0.20	2.30	36,000	360	7.5	0.30	3.04	0.947		94	60.0	43.0	35.0	27.0	10.0	8.0
08/01/2010	1,970		9.40	49	13	16	8	11	13	4.5	9.0	1	2	49	10.50	2.40	2.10	7.20	36,000	800	7.5	0.20	3.04	0.947		94	42.0	29.0	24.0	17.0	8.0	7.0
09/01/2010	1,970		9.40	50	13	17	7	9	12	5.5	10.5	1	2	49	10.50	2.20	2.40	7.80	36,000	720	7.5	0.25	3.04	0.947		94	43.0	30.0	24.0	17.0	8.0	7.0
09/01/2010	1,970		9.40	51	16	21	7	9	11	5.5	11.0	1	2	49	11.00	3.20	3.50	8.30	35,500	900	7.5	0.25	3.09	0.992		94	53.0	37.0	30.0	20.0	8.0	7.0
10/01/2010	1,970	41	9.40	50	17	27	9	12	15	5.5	10.5	1	2	49	11.00	3.50	3.20	7.50	36,000	960	7.5	0.25	3.04	0.947		94	61.0	44.0	36.0	26.0	8.0	7.0
10/01/2010	1,970	42	9.40	52	16	25	8	12	14	5.5	10.0	1	2	49	11.00	4.00	3.50	7.20	36,000	900	7.5	0.20	3.04	0.947		94	57.0	41.0	33.0	23.0	8.0	7.0
11/01/2010	1,965		9.40	53	17	24	8	12	15	5.5	11.0	1	2	49	11.00	3.70	3.50	7.30	36,000	880	7.5	0.20	3.04	0.947		94	58.0	41.0	34.0	25.0	8.0	7.0
11/01/2010	1,970		9.40	53	16	25	7	11	14	5.5	10.5	1	2	49	11.00	4.00	3.40	7.80	35,500	900	7.5	0.25	3.09	0.992		94	57.0	41.0	33.0	23.0	8.0	7.0
12/01/2010	1,965		9.40	52	17	24	8	11	13	5.5	10.8	1	2	49	11.00	3.60	3.40	7.30	36,000	880	7.5	0.20	3.04	0.947		94	58.0	41.0	34.0	24.0	8.0	7.0
12/01/2010	1,965		9.40	54	18	30	9	14	16	4.8	9.0	1	2	49	11.00	4.20	3.60	7.40	35,500	900	7.5	0.20	3.09	0.992		94	66.0	48.0	40.0	29.0	9.0	8.0
13/01/2010	1,965		9.40	52	19	29	9	13	16	5.0	10.5	1	2	49	11.00	4.20	3.80	7.40	36,000	900	7.5	0.25	3.04	0.947		94	67.0	48.0	41.0	30.0	9.0	8.0
13/01/2010	1,965		9.40	50	21	34	10	15	18	4.8	9.5	1	2	49	11.00	4.10	3.60	7.30	35,500	880	7.5	0.20	3.09	0.992		94	76.0	55.0	46.0	33.0	11.0	9.0
14/01/2010	1,965		9.40	56	21	38	10	14	18	5.0	9.8	1	2	49	11.00	4.30	2.80	6.20	36,000	860	7.5	0.20	3.04	0.947		94	80.0	59.0	48.0	35.0	11.0	9.0
14/01/2010	1,965	44	9.40	52	21	37	10	15	18	4.8	9.5	1	2	49	10.50	4.40	2.40	5.90	35,000	840	7.5	0.20	3.13	1.036		94	79.0	58.0	48.0	36.0	12.0	9.0
14/01/2010	1,965		9.40	52	23	31	10	14	17	4.8	9.8	1	2	49	10.50	4.50	2.20	5.60	36,000	840	7.5	0.20	3.04	0.947		94	77.0	54.0	46.0	32.0	11.0	9.0
15/01/2010	1,965		9.40	55	20	34	10	15	18	4.8	9.5	1	2	49	10.50	4.50	1.40	4.60	36,000	840	7.5	0.20	3.04	0.947		94	74.0	54.0	44.0	33.0	11.0	9.0
15/01/2010	1,965		9.40	55	21	36	10	15	19	4.7	9.5	1	2	49	10.50	4.40	1.20	4.30	36,000	880	7.5	0.20	3.04	0.947		94	78.0	57.0	47.0	34.0	11.0	9.0
16/01/2010	1,965		9.40	56	21	31	9	13	17	4.8	9.5	1	2	49	10.50	4.40	0.80	4.20	35,500	880	7.5	0.20	3.09	0.992		94	73.0	52.0	43.0	32.0	10.0	8.0
16/01/2010	1,965		9.40	56	20	34	10	14	17	4.8	10.0	1	2	49	10.50	4.30	0.75	4.25	35,000	900	7.5	0.20	3.13	1.036		94	74.0	54.0	44.0	33.0	10.0	9.0
17/01/2010	1,965	37	9.40	52	21	36	10	14	17	4.7	9.0	1	2	49	10.50	4.50	0.80	4.30	36,000	880	7.5	0.20	3.04	0.947		94	78.0	57.0	47.0	36.0	11.0	9.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
17/01/2010	1,965		9.40	54	20	34	10	14	17	4.8	9.5	1	2	49	10.50	4.30	0.75	4.20	35,500	880	7.5	0.20	3.19	1.195		93.9	74.0	54.0	44.0	33.0	11.0	9.0
18/01/2010	1,965		9.40	56	20	34	10	15	17	4.8	9.5	1	2	49	10.50	4.20	0.70	4.30	35,500	880	7.5	0.20	3.09	0.992		94	74.0	54.0	44.0	34.0	11.0	9.0
18/01/2010	1,965		9.40	57	21	31	9	13	16	4.8	9.5	1	2	49	10.50	4.30	0.75	4.35	35,500	880	7.5	0.20	3.09	0.992		94	73.0	52.0	43.0	32.0	10.0	8.0
19/01/2010	1,970	45	9.40	51	22	29	8	12	16	4.7	9.5	1	2	49	11.50	6.30	1.40	5.20	36,000	1,200	7.5	0.20	3.04	0.947		94	73.0	51.0	40.0	27.0	9.0	7.0
19/01/2010	1,970		9.40	55	21	36	9	14	17	4.8	9.5	1	2	49	11.50	6.50	1.50	5.40	35,000	1,240	7.5	0.20	3.13	1.036		94	78.0	57.0	47.0	36.0	9.0	8.0
19/01/2010	1,964		9.40	56	22	30	9	13	16	4.6	9.8	1	2	49	11.50	6.20	1.30	5.30	36,000	1,280	7.5	0.25	3.04	0.947		94	74.0	52.0	41.0	27.0	9.0	8.0
19/01/2010	1,964		9.40	56	22	30	9	13	16	4.6	9.7	1	2	49	11.50	6.30	1.30	5.40	36,000	1,240	7.5	2.50	3.04	0.947		94	74.0	52.0	41.0	27.0	9.0	8.0
Interval # 05										**From Date**				**19/01/2010**						**Top of Interval**			**1,964.0**	**m**							
Max. Hole Size / Bit Size 8.50 / 8.50 in										**To Date**				**18/02/2010**						**Bottom of Interval**			**3,482.0**	**m**							
19/01/2010	1,970	45	9.40	51	22	29	8	12	16	4.7	9.5	1	2	49	11.50	6.30	1.40	5.20	36,000	1,200	7.5	0.20	3.04	0.947		94	73.0	51.0	40.0	27.0	9.0	7.0
19/01/2010	1,970		9.40	55	21	36	9	14	17	4.8	9.5	1	2	49	11.50	6.50	1.50	5.40	35,000	1,240	7.5	0.20	3.13	1.036		94	78.0	57.0	47.0	36.0	9.0	8.0
19/01/2010	1,964		9.40	56	22	30	9	13	16	4.6	9.8	1	2	49	11.50	6.20	1.30	5.30	36,000	1,280	7.5	0.25	3.04	0.947		94	74.0	52.0	41.0	27.0	9.0	8.0
19/01/2010	1,964		9.40	56	22	30	9	13	16	4.6	9.7	1	2	49	11.50	6.30	1.30	5.40	36,000	1,240	7.5	2.50	3.04	0.947		94	74.0	52.0	41.0	27.0	9.0	8.0
20/01/2010	1,991	37	9.30	57	18	33	10	13	17	4.5	9.3	1	2	49	11.50	5.80	1.40	5.20	36,000	1,200	5.0	0.25	3.15	1.9		93.9	69.0	51.0	41.0	31.0	9.0	7.0
20/01/2010	1,995	47	9.30	57	22	17	8	13	16	4.4	9.5	1	2	49	11.50	6.30	1.50	5.90	35,500	1,200	5.0	0.25	3.29	2.147		93.8	61.0	39.0	30.0	20.0	9.0	7.0
20/01/2010	2,021	48	9.30	68	21	36	10	16	19	4.3	8.5	1	2	49	9.50	1.60	0.60	3.50	36,000	360	5.0	0.25	3.25	2.103		93.8	78.0	57.0	47.0	35.0	11.0	9.0
20/01/2010	2,043	48	9.30	66	21	36	11	17	20	4.3	8.8	1	2	49	9.50	0.80	0.40	2.60	36,000	280	5.0	0.25	3.56	2.713		93.5	78.0	57.0	47.0	35.0	11.0	9.0
21/01/2010	2,102	47	9.30	68	21	37	11	16	19	4.4	9.3	1	2	49	9.50	0.40	0.25	2.20	36,000	240	5.0	0.25	3.56	2.713		93.5	79.0	58.0	48.0	36.0	12.0	10.0
21/01/2010	2,112	52	9.35	65	18	31	8	13	17	4.4	9.0	1	2	49	9.50	1.40	0.60	2.85	37,000	360	5.0	0.20	3.48	2.25		93.5	67.0	49.0	43.0	31.0	9.0	7.0
21/01/2010	2,112		9.35	67	18	30	8	13	16	4.4	8.8	1	2	49	9.50	1.60	0.75	3.00	36,000	380	5.0	0.25	3.46	2.135		93.6	66.0	48.0	40.0	29.0	9.0	7.0
21/01/2010	2,112		9.35	58	18	31	9	14	17	4.4	9.1	1	2	49	9.50	1.50	0.70	2.80	36,000	340	5.0	0.25	3.56	2.339		93.5	67.0	49.0	41.0	30.0	10.0	8.0
22/01/2010	2,112		9.35	61	18	31	9	14	17	4.4	9.1	1	2	49	9.50	1.60	0.75	2.90	36,000	340	5.0	0.25	3.04	1.322		94	67.0	49.0	41.0	30.0	10.0	8.0
22/01/2010	2,112	45	9.40	65	18	28	8	13	16	4.3	8.0	1	2	49	9.50	2.10	0.80	2.20	36,500	360	5.0	0.20	3.52	1.92		93.5	64.0	46.0	39.0	29.0	9.0	7.0
22/01/2010	2,195	49	9.40	55	18	29	8	12	15	4.4	8.5	1	2	49	9.50	2.00	0.70	2.45	35,500	320	5.0	0.20	3.6	2.008		93.5	65.0	47.0	40.0	29.0	9.0	7.0
22/01/2010	2,344	53	9.35	66	18	30	9	13	16	4.3	8.8	1	2	49	9.50	1.80	0.65	2.35	36,000	280	5.0	0.15	3.04	1.322		94	66.0	48.0	41.0	30.0	10.0	8.0
23/01/2010	2,419	58	9.40	68	20	29	9	14	17	4.4	8.9	1	2	49	9.50	1.30	0.55	2.20	36,000	280	5.0	0.20	3.56	1.964		93.5	69.0	49.0	42.0	31.0	11.0	9.0
23/01/2010	2,482	52	9.40	65	18	33	8	13	17	4.3	8.5	1	2	49	9.50	1.80	0.60	2.40	37,000	360	5.0	0.20	3.37	1.672		93.6	69.0	51.0	43.0	31.0	9.0	7.0

Baroid Fluid Services

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness			% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l	ppb Eq.	% by vol	Corr Solid	LGS	NAP Base	Water						
23/01/2010	2,547	52	9.40	58	19	30	9	13	15	4.4	9.0	1	2	49	9.50	2.30	0.75	2.40	37,000	320	7.5	0.25	3.37	1.672		93.6	68.0	49.0	41.0	30.0	9.0	8.0
23/01/2010	2,642	68	9.35	66	19	34	12	16	21	4.4	9.1	1	2	49	9.50	1.90	0.60	2.10	37,000	280	10.0	0.25	2.96	1.233		94	72.0	53.0	45.0	32.0	10.0	8.0
24/01/2010	2,809	58	9.40	64	20	36	10	14	17	4.1	7.8	1	2	49	9.00	0.75	0.35	2.80	37,000	360	7.5	0.25	3.58	2.079		93.4	76.0	56.0	47.0	34.0	11.0	9.0
24/01/2010	2,871	60	9.40	59	21	37	10	14	19	4.2	8.0	1	2	49	9.00	0.60	0.20	3.20	36,500	320	7.5	0.25	3.62	2.123		93.4	79.0	58.0	48.0	36.0	11.0	9.0
24/01/2010	2,769	57	9.35	66	20	36	10	14	17	4.4	9.0	1	2	49	9.50	0.55	0.18	2.90	36,000	320	10.0	0.25	3.04	1.322		94	76.0	56.0	47.0	34.0	10.0	8.0
24/01/2010	2,928	64	9.35	65	21	39	12	15	18	4.4	9.1	1	2	49	9.00	0.55	0.90	2.90	36,000	320	10.0	0.25	3.04	1.322		94	81.0	60.0	50.0	38.0	12.0	10.0
25/01/2010	3,014	57	9.35	66	21	36	10	14	17	4.3	8.8	1	2	49	9.50	1.40	0.25	2.30	36,500	320	7.5	0.25	3	1.278		94	78.0	57.0	37.0	33.0	10.0	9.0
25/01/2010	3,062	62	9.35	64	20	39	10	14	17	4.2	8.0	1	2	49	9.00	1.40	0.35	3.20	37,000	320	7.5	0.20	3.48	2.25		93.5	79.0	59.0	49.0	37.0	11.0	9.0
25/01/2010	3,121	65	9.40	65	20	38	10	15	18	4.1	7.5	1	2	49	9.00	1.60	0.45	2.90	37,000	280	7.5	0.20	3.79	2.486		93.2	78.0	58.0	47.0	34.0	11.0	9.0
25/01/2010	3,158		9.35	56	19	40	10	13	15	4.3	8.8	1	2	49	9.00	1.50	0.35	2.80	36,500	240	10.0	0.25	3	1.278		94	78.0	59.0	47.0	34.0	10.0	9.0
26/01/2010	3,158		9.35	56	22	34	10	14	17	4.4	8.9	1	2	49	9.00	1.40	0.30	2.90	37,000	240	10.0	0.20	2.96	1.233		94	78.0	56.0	47.0	31.0	10.0	8.0
26/01/2010	3,158		9.40	67	20	36	10	15	17	4.2	8.0	1	2	49	9.00	1.30	0.45	3.10	37,000	280	7.5	0.20	3.68	2.283		93.3	76.0	56.0	47.0	33.0	11.0	9.0
26/01/2010	3,158		9.35	66	19	35	9	13	16	4.3	8.5	1	2	49	9.00	1.10	0.30	3.20	37,000	240	7.5	0.20	3.48	2.25		93.5	73.0	54.0	44.0	32.0	10.0	8.0
26/01/2010	3,158		9.30	57	19	34	9	13	16	4.4	9.1	1	2	49	9.00	1.00	0.29	3.30	37,000	240	10.0	0.20	2.96	1.607		94	72.0	53.0	43.0	31.0	10.0	8.0
27/01/2010	3,158		9.30	56	18	37	10	14	17	4.4	9.1	1	2	49	9.00	1.00	0.30	3.20	37,000	240	7.5	0.20	2.96	1.607		94	73.0	55.0	44.0	33.0	10.0	8.0
27/01/2010	3,171	64	9.40	63	20	38	11	15	18	4.2	7.5	1	2	49	9.00	0.95	0.30	3.30	37,500	240	7.5	0.20	3.54	2.035		93.4	78.0	58.0	47.0	37.0	12.0	10.0
27/01/2010	3,194	66	9.40	62	19	37	10	16	19	4.1	6.5	1	2	49	9.00	0.80	0.15	3.20	37,500	280	7.5	0.20	3.43	1.831		93.5	75.0	56.0	47.0	35.0	12.0	9.0
27/01/2010	3,195		9.30	58	19	36	10	14	17	4.3	8.9	1	2	49	9.50	0.70	1.20	3.10	37,000	240	10.0	0.20	2.96	1.607		94	74.0	55.0	46.0	34.0	10.0	8.0
28/01/2010	3,195		9.35	56	19	37	10	14	17	4.3	8.8	1	2	49	9.50	0.70	1.00	3.10	37,000	240	10.0	0.20	2.96	1.233		94	75.0	56.0	47.0	35.0	11.0	9.0
28/01/2010	3,195		9.35	57	18	33	9	13	15	4.2	7.5	1	2	49	9.00	0.95	0.30	2.80	37,500	320	5.0	0.15	3.23	1.799		93.7	69.0	51.0	43.0	32.0	9.0	8.0
28/01/2010	3,200	54	9.35	64	17	30	9	13	16	4.3	7.8	1	2	49	9.00	0.65	0.15	3.10	37,500	360	5.0	0.15	3.33	2.002		93.6	64.0	47.0	39.0	29.0	9.0	8.0
28/01/2010	3,213		9.35	58	17	31	10	14	17	4.4	8.9	1	2	49	9.00	0.70	0.20	3.30	38,000	320	5.0	0.25	2.88	1.143		94	65.0	48.0	40.0	30.0	10.0	8.0
29/01/2010	3,213		9.30	59	17	30	9	13	16	4.4	8.9	1	2	49	9.00	0.60	0.45	2.90	37,000	280	5.0	0.20	2.96	1.607		94	64.0	47.0	39.0	29.0	10.0	8.0
29/01/2010	3,213		9.35	62	15	24	9	12	15	4.3	7.8	1	2	49	9.00	0.55	0.25	3.40	37,500	320	5.0	0.15	3.43	2.206		93.5	54.0	39.0	33.0	25.0	9.0	8.0
29/01/2010	3,213		9.35	60	15	23	8	13	15	4.4	8.0	1	2	49	9.00	0.95	0.40	3.25	38,000	320	5.0	0.10	3.39	2.161		93.5	53.0	38.0	33.0	24.0	9.0	7.0
29/01/2010	3,213		9.40	62	15	25	10	15	17	4.3	8.9	1	2	49	9.50	0.80	0.28	2.90	38,000	280	5.0	0.15	2.88	0.769		94	55.0	40.0	35.0	26.0	11.0	9.0
30/01/2010	3,284		9.40	64	20	32	9	14	17	4.4	8.2	1	2	49	9.00	0.95	0.35	3.30	39,000	280	7.5	0.20	3.52	2.104		93.3	72.0	52.0	43.0	33.0	11.0	8.0

Baroid Fluid Services

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
30/01/2010	3,284		9.40	62	18	30	9	13	16	4.4	8.0	1	2	49	9.00	0.85	0.25	3.50	39,000	360	7.5	0.15	3.52	2.104		93.3	66.0	48.0	39.0	30.0	10.0	8.0
30/01/2010	3,256	68	9.35	66	20	34	11	14	17	4.4	8.9	1	2	49	9.50	0.60	0.28	3.10	38,000	240	10.0	0.20	2.88	1.143		94	74.0	54.0	45.0	33.0	10.0	8.0
30/01/2010	3,284		9.35	58	18	33	10	14	17	4.4	8.9	1	2	49	9.50	0.85	0.24	3.30	38,500	320	10.0	0.20	2.83	1.099		94	69.0	51.0	43.0	31.0	10.0	8.0
31/01/2010	3,283		9.40	75	18	33	10	14	17	4.4	8.9	1	2	49	9.00	0.65	0.26	3.30	38,000	240	10.0	0.20	3.91	2.804		93	69.0	51.0	43.0	31.0	10.0	8.0
31/01/2010	3,293	56	9.40	69	19	34	10	14	18	4.3	7.5	1	2	49	9.00	0.55	0.25	3.40	38,500	280	7.5	0.20	3.66	2.353		93.2	72.0	53.0	42.0	31.0	10.0	9.0
31/01/2010	3,293		9.35	67	18	33	9	13	17	4.4	8.0	1	2	49	9.00	0.45	0.15	2.85	38,500	240	7.5	0.15	3.35	2.116		93.5	69.0	51.0	41.0	32.0	10.0	8.0
31/01/2010	3,298		9.35	65	18	34	10	13	16	4.4	8.6	1	2	49	9.00	0.50	0.25	3.00	38,000	240	10.0	0.20	3.39	2.161		93.5	70.0	52.0	42.0	33.0	10.0	8.0
01/02/2010	3,298		9.40	55	18	34	9	13	15	4.4	9.0	1	2	49	9.00	0.45	0.24	2.90	38,000	240	10.0	0.20	3.91	2.804		93	70.0	52.0	42.0	33.0	10.0	8.0
01/02/2010	3,298		9.35	67	15	24	9	13	16	4.3	7.7	1	2	49	9.00	0.55	0.15	3.35	38,500	360	7.5	0.15	3.35	2.116		93.5	54.0	39.0	33.0	27.0	9.0	8.0
01/02/2010	3,309		9.40	69	19	35	10	14	17	4.4	8.0	1	2	49	9.00	0.85	0.20	3.40	38,500	200	7.5	0.15	3.76	2.556		93.1	73.0	54.0	45.0	34.0	11.0	9.0
01/02/2010	3,309		9.40	68	19	34	10	14	17	4.4	9.0	1	2	49	9.00	0.75	0.20	3.10	38,000	240	10.0	0.20	3.91	2.804		93	72.0	53.0	44.0	33.0	10.0	8.0
02/02/2010	3,309		9.40	66	19	35	10	14	17	4.4	9.0	1	2	121	9.00	0.80	0.21	3.20	38,000	240	10.0	0.20	3.91	2.804		93	73.0	54.0	45.0	34.0	11.0	9.0
02/02/2010	3,309		9.40	71	16	28	9	13	17	4.3	7.8	1	2	121	9.00	0.70	0.20	3.15	38,000	200	7.5	0.15	3.7	2.397		93.2	60.0	44.0	37.0	28.0	9.0	8.0
02/02/2010	3,309		9.40	73	18	28	9	14	18	4.4	8.2	1	2	121	9.00	0.55	0.15	3.35	38,000	240	7.5	0.20	3.5	1.99		93.4	64.0	46.0	39.0	28.0	10.0	8.0
02/02/2010	3,317	68	9.40	68	15	30	11	13	17	4.4	8.6	1	2	121	9.00	0.60	0.17	3.10	37,500	280	10.0	0.20	3.95	2.849		93	60.0	45.0	38.0	29.0	11.0	9.0
03/02/2010	3,364	69	9.40	67	15	29	11	14	18	4.3	8.1	1	2	121	9.00	0.65	0.22	2.90	37,500	280	10.0	0.20	3.95	2.849		93	59.0	44.0	38.0	29.0	10.0	8.0
03/02/2010	3,408	69	9.40	57	19	36	10	15	19	4.3	7.2	1	2	121	9.00	0.45	0.15	3.25	38,500	200	7.5	0.15	3.66	2.353		93.2	74.0	55.0	46.0	34.0	11.0	8.0
03/02/2010	3,479	69	9.35	57	20	36	10	14	19	4.2	6.8	1	2	121	9.00	0.65	0.20	3.30	37,500	160	7.5	0.20	3.43	2.206		93.5	76.0	56.0	47.0	35.0	11.0	9.0
03/02/2010	3,482		9.30	59	20	35	10	14	19	4.3	7.5	1	2	121	9.00	0.60	0.21	3.40	38,000	200	10.0	0.25	3.91	3.553		93	75.0	55.0	46.0	34.0	10.0	8.0
04/02/2010	3,482		9.30	57	20	35	10	14	19	4.3	7.2	1	2	121	9.00	0.60	0.23	3.00	38,000	200	5.0	0.25	3.91	3.553		93	75.0	55.0	46.0	34.0	10.0	8.0
04/02/2010	3,482		9.30	63	18	38	10	14	17	4.3	6.8	1	2	121	9.00	0.60	0.20	3.25	38,000	120	5.0	0.15	3.19	2.129		93.7	74.0	56.0	45.0	33.0	10.0	9.0
04/02/2010	3,482		9.30	65	18	33	9	13	16	4.3	7.0	1	2	121	9.00	0.55	0.15	3.45	38,000	80	5.0	0.15	3.19	2.129		93.7	69.0	51.0	42.0	30.0	10.0	8.0
04/02/2010	3,482		9.30	63	18	34	10	14	17	4.3	7.3	1	2	121	9.00	0.60	0.18	3.30	38,000	120	5.0	0.20	3.91	3.553		93	70.0	52.0	43.0	31.0	10.0	8.0
05/02/2010	3,482		9.30	62	18	35	10	14	17	4.3	7.2	1	2	121	9.00	0.60	0.18	3.20	38,000	120	5.0	0.20	2.88	1.518		94	71.0	53.0	44.0	31.0	10.0	8.0
05/02/2010	3,482		9.30	66	18	28	9	13	16	4.2	6.6	1	2	121	9.00	0.60	0.20	2.95	38,500	160	5.0	0.20	3.14	2.084		93.7	64.0	46.0	37.0	29.0	9.0	8.0
05/02/2010	3,482		9.30	68	18	33	10	14	18	4.2	6.8	1	2	121	9.00	0.45	0.15	3.05	38,500	120	5.0	0.20	3.14	2.084		93.7	69.0	51.0	42.0	33.0	10.0	9.0
05/02/2010	3,482		9.30	66	19	32	10	14	19	4.3	7.0	1	2	121	9.00	0.40	0.20	3.00	38,000	120	5.0	0.25	2.88	1.518		94	70.0	51.0	42.0	33.0	10.0	8.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness			% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l	ppb Eq.	% by vol	Corr Solid	LGS	NAP Base	Water						
06/02/2010	3,482		9.30	69	15	27	9	13	15	4.3	6.8	1	2	121	9.50	1.45	0.45	3.55	38,000	160	5.0	0.15	3.39	2.536		93.5	57.0	42.0	36.0	27.0	9.0	8.0
06/02/2010	3,482		9.30	70	16	26	9	13	16	4.2	7.0	1	2	121	9.50	1.60	0.45	3.30	38,500	160	5.0	0.15	3.14	2.084		93.7	58.0	42.0	37.0	29.0	10.0	8.0
06/02/2010	3,482		9.30	72	16	27	9	13	15	4.3	7.0	1	2	121	9.50	1.50	0.45	3.00	38,000	160	5.0	0.20	3.39	2.536		93.5	59.0	43.0	38.0	30.0	10.0	8.0
07/02/2010	3,482		9.30	71	15	26	9	12	15	4.3	7.0	1	2	121	9.00	0.85	0.25	3.15	38,500	120	5.0	0.15	3.04	1.88		93.8	56.0	41.0	35.0	26.0	9.0	8.0
07/02/2010	3,482		9.30	74	16	25	9	13	16	4.4	7.2	1	2	121	9.00	0.70	0.20	2.90	38,500	160	5.0	0.15	3.04	1.88		93.8	57.0	41.0	36.0	27.0	9.0	8.0
08/02/2010	3,482		9.30	70	16	27	9	13	15	4.3	7.1	1	2	121	9.50	0.60	0.20	3.00	38,000	160	5.0	0.20	3.08	1.925		93.8	59.0	43.0	35.0	28.0	10.0	8.0
08/02/2010	3,482		9.30	72	15	27	9	13	17	4.3	6.8	1	2	121	9.50	1.55	0.35	3.15	38,500	120	5.0	0.15	3.04	1.88		93.8	57.0	42.0	36.0	27.0	9.0	8.0
08/02/2010	3,482		9.30	75	15	28	9	13	18	4.4	7.2	1	2	121	9.50	0.95	0.25	3.05	38,500	160	5.0	0.15	3.04	1.88		93.8	58.0	43.0	36.0	28.0	9.0	8.0
08/02/2010	3,482		9.30	77	15	29	10	14	19	4.4	7.8	1	2	121	9.50	1.00	0.20	2.90	38,000	160	5.0	0.20	3.39	2.536		93.5	59.0	44.0	37.0	29.0	10.0	8.0
09/02/2010	3,482		9.30	77	14	31	10	14	19	4.4	7.2	1	2	121	9.50	0.45	0.25	2.90	38,000	160	5.0	0.20	3.39	2.536		93.5	59.0	45.0	38.0	29.0	10.0	8.0
09/02/2010	3,482		9.30	77	15	25	8	12	16	4.3	7.0	1	2	121	9.50	0.45	0.15	3.35	38,500	80	5.0	0.15	3.04	1.88		93.8	55.0	40.0	34.0	26.0	9.0	7.0
09/02/2010	3,482		9.30	79	15	24	9	12	15	4.4	7.2	1	2	121	9.00	0.35	0.10	3.30	38,500	120	5.0	0.15	3.04	1.88		93.8	54.0	39.0	33.0	26.0	9.0	8.0
09/02/2010	3,482		9.30	78	15	25	10	14	18	4.4	7.1	1	2	121	9.50	0.40	0.10	3.00	38,000	160	5.0	0.20	3.39	2.536		93.5	55.0	40.0	34.0	27.0	10.0	8.0
10/02/2010	3,482		9.30	78	15	23	8	12	15	4.3	7.2	1	2	121	9.00	0.35	0.10	3.35	38,500	80	5.0	0.15	3.04	1.88		93.8	53.0	38.0	32.0	24.0	9.0	7.0
10/02/2010	3,482	38	9.35	75	17	31	10	14	18	4.3	7.0	1	2	121	8.50	0.15	0.05	3.15	38,500	120	5.0	0.15	3.35	2.116		93.5	65.0	48.0	40.0	31.0	11.0	8.0
10/02/2010	3,482	48	9.35	77	18	38	11	15	21	4.4	7.5	1	2	121	8.50	0.20	0.05	3.34	38,000	240	5.0	0.15	3.39	2.161		93.5	74.0	56.0	48.0	37.0	12.0	10.0
10/02/2010	3,482		9.30	69	18	37	11	15	21	4.4	7.7	1	2	121	8.50	0.20	0.10	3.55	38,000	280	5.0	0.20	2.88	1.518		94	73.0	55.0	47.0	36.0	11.0	9.0
11/02/2010	3,482		9.30	77	18	39	11	15	21	4.4	7.7	1	2	121	8.50	0.20	0.90	3.40	38,000	280	5.0	0.20	2.88	1.518		94	75.0	57.0	49.0	38.0	11.0	9.0
11/02/2010	3,482		9.30	72	16	33	11	14	17	4.4	7.2	1	2	121	8.50	0.25	0.10	3.20	38,500	240	5.0	0.20	3.04	1.88		93.8	65.0	49.0	40.0	31.0	10.0	8.0
11/02/2010	3,482		9.35	70	16	28	8	12	14	4.5	8.0	1	2	121	8.50	0.20	0.10	2.80	40,000	320	5.0	0.20	3.22	1.981		93.5	60.0	44.0	37.0	28.0	10.0	8.0
11/02/2010	3,482	68	9.40	65	16	29	9	13	15	4.5	7.7	1	2	121	8.50	0.25	0.10	3.40	39,000	280	5.0	0.20	2.79	0.679		94	61.0	45.0	38.0	29.0	10.0	8.0
12/02/2010	3,482		9.40	60	15	30	9	13	17	4.5	7.8	1	2	121	8.50	0.10	0.20	3.45	39,000	240	5.0	0.20	3.31	1.697		93.5	60.0	45.0	38.0	30.0	10.0	8.0
12/02/2010	3,482		9.30	65	17	28	8	12	15	4.5	7.6	1	2	121	8.50	0.20	0.15	2.70	37,000	280	5.0	0.20	3.48	2.625		93.5	62.0	45.0	37.0	27.0	9.0	8.0
12/02/2010	3,482		9.30	70	17	29	8	12	15	4.5	7.8	1	2	121	8.50	0.20	0.15	2.80	37,000	280	5.0	0.20	3.48	2.625		93.5	63.0	46.0	37.0	27.0	10.0	8.0
12/02/2010	3,482		9.30	71	17	30	9	13	17	4.5	7.8	1	2	121	8.50	0.25	0.20	2.70	38,000	240	5.0	0.20	3.39	2.536		93.5	64.0	47.0	38.0	27.0	10.0	8.0
13/02/2010	3,482		9.30	70	18	28	7	11	14	4.5	7.8	1	2	121	8.50	0.10	0.15	2.70	37,000	280	5.0	0.20	3.48	2.625		93.5	64.0	46.0	37.0	27.0	9.0	8.0
13/02/2010	3,482		9.30	71	18	27	7	11	14	4.5	7.5	1	2	121	8.50	1.20	0.16	2.80	37,500	280	5.0	0.20	3.43	2.58		93.5	63.0	45.0	36.0	26.0	9.0	8.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
14/02/2010	3,482		9.30	68	17	29	7	11	13	4.5	7.6	1	2	121	8.50	0.20	0.15	2.70	37,000	280	5.0	0.20	3.48	2.625		93.5	63.0	46.0	37.0	27.0	9.0	8.0
14/02/2010	3,482		9.30	73	17	30	8	12	14	4.5	7.6	1	2	121	8.50	0.15	0.15	2.70	37,500	280	5.0	0.20	3.43	2.58		93.5	64.0	47.0	38.0	27.0	9.0	8.0
15/02/2010	3,482		9.30	70	17	29	7	10	13	4.5	7.8	1	2	121	8.50	0.15	0.10	2.80	37,000	280	5.0	0.20	3.48	2.625		93.5	63.0	46.0	37.0	27.0	9.0	7.0
15/02/2010	3,482		9.30	70	17	30	8	11	14	4.5	8.0	1	2	121	8.50	0.15	0.15	2.70	37,500	280	5.0	0.20	3.43	2.58		93.5	64.0	47.0	38.0	28.0	9.0	7.0
16/02/2010	3,482		9.50	65	17	26	8	11	13	5.1	8.2	1	2	121	10.00	0.20	0.20	3.10	34,500	720	5.0	0.20	4.51	2.973		92.7	60.0	43.0	35.0	24.0	9.0	7.0
16/02/2010	3,482		9.40	66	18	24	7	10	12	5.5	8.4	1	2	121	10.00	0.20	0.20	2.90	35,000	880	5.0	0.10	4.16	3.068		93	60.0	42.0	35.0	26.0	9.0	7.0
17/02/2010	3,482		9.40	65	17	26	7	10	12	5.8	9.2	1	2	121	10.00	0.20	0.20	3.00	35,000	1,000	5.0	0.10	3.64	2.052		93.5	60.0	43.0	34.0	24.0	8.0	6.0
17/02/2010	3,482		9.40	67	18	25	7	10	12	6.2	10.2	1	2	121	10.00	0.20	0.20	3.10	35,000	920	5.0	0.10	3.64	2.052		93.5	61.0	43.0	35.0	24.0	9.0	7.0
18/02/2010	0		9.40	65	18	25	7	10	12	6.2	10.2	1	2	121	10.00	0.20	0.20	3.10	35,000	920	5.0	0.10	3.64	2.052		93.5	61.0	43.0	35.0	24.0	9.0	7.0

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
012	10/12/2009	5:37	1,233	Gel, 10 seconds	lbs/100 ft2	5	Low	8	14
012	10/12/2009	8:30	1,292	KCl %	#N/A	#N/A	High	#N/A	#N/A
012	10/12/2009	18:00	1,435	KCl %	#N/A	#N/A	High	#N/A	#N/A
012	10/12/2009	18:00	1,435	Gel, 10 seconds	lbs/100 ft2	7	Low	8	14
013	11/12/2009	10:40	1,811	KCl %	#N/A	#N/A	High	#N/A	#N/A
013	11/12/2009	16:00	1,886	KCl %	#N/A	#N/A	High	#N/A	#N/A
014	12/12/2009	4:00	1,960	KCl %	#N/A	#N/A	High	#N/A	#N/A
040	07/01/2010	4:20	3,522	pH	-	10.00	High	8.50	9.50
040	07/01/2010	9:00	3,522	pH	-	10.00	High	8.50	9.50
040	07/01/2010	16:00	3,522	pH	-	10.00	High	8.50	9.50
041	08/01/2010	17:00	1,970	pH	-	10.50	High	8.50	9.50
053	20/01/2010	3:00	1,991	KCl %	#N/A	#N/A	Low	#N/A	#N/A
053	20/01/2010	3:00	1,991	pH	-	11.50	High	8.50	9.50
053	20/01/2010	7:40	1,995	KCl %	#N/A	#N/A	Low	#N/A	#N/A
053	20/01/2010	7:40	1,995	pH	-	11.50	High	8.50	9.50
053	20/01/2010	15:20	2,021	KCl %	#N/A	#N/A	Low	#N/A	#N/A
053	20/01/2010	21:30	2,043	KCl %	#N/A	#N/A	Low	#N/A	#N/A
054	21/01/2010	3:50	2,102	KCl %	#N/A	#N/A	Low	#N/A	#N/A
054	21/01/2010	21:40	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
054	21/01/2010	14:00	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
054	21/01/2010	8:20	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
055	22/01/2010	3:00	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
055	22/01/2010	7:45	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
055	22/01/2010	14:15	2,195	KCl %	#N/A	#N/A	Low	#N/A	#N/A
055	22/01/2010	21:25	2,344	KCl %	#N/A	#N/A	Low	#N/A	#N/A
056	23/01/2010	4:35	2,419	KCl %	#N/A	#N/A	Low	#N/A	#N/A
056	23/01/2010	8:40	2,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
056	23/01/2010	13:45	2,547	KCl %	#N/A	#N/A	Low	#N/A	#N/A
056	23/01/2010	20:35	2,642	KCl %	#N/A	#N/A	Low	#N/A	#N/A

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
057	24/01/2010	4:00	2,769	KCl %	#N/A	#N/A	Low	#N/A	#N/A
057	24/01/2010	10:00	2,809	KCl %	#N/A	#N/A	Low	#N/A	#N/A
057	24/01/2010	13:45	2,871	KCl %	#N/A	#N/A	Low	#N/A	#N/A
057	24/01/2010	20:30	2,928	KCl %	#N/A	#N/A	Low	#N/A	#N/A
058	25/01/2010	4:00	3,014	KCl %	#N/A	#N/A	Low	#N/A	#N/A
058	25/01/2010	8:15	3,062	KCl %	#N/A	#N/A	Low	#N/A	#N/A
058	25/01/2010	13:30	3,121	KCl %	#N/A	#N/A	Low	#N/A	#N/A
058	25/01/2010	20:05	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
059	26/01/2010	15:00	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
059	26/01/2010	22:40	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
059	26/01/2010	3:00	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
059	26/01/2010	10:00	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
060	27/01/2010	3:00	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
060	27/01/2010	7:00	3,171	KCl %	#N/A	#N/A	Low	#N/A	#N/A
060	27/01/2010	13:10	3,194	KCl %	#N/A	#N/A	Low	#N/A	#N/A
060	27/01/2010	21:40	3,195	KCl %	#N/A	#N/A	Low	#N/A	#N/A
061	28/01/2010	3:30	3,195	KCl %	#N/A	#N/A	Low	#N/A	#N/A
061	28/01/2010	9:40	3,195	KCl %	#N/A	#N/A	Low	#N/A	#N/A
061	28/01/2010	14:45	3,200	KCl %	#N/A	#N/A	Low	#N/A	#N/A
062	29/01/2010	7:50	3,213	KCl %	#N/A	#N/A	Low	#N/A	#N/A
062	29/01/2010	3:00	3,213	KCl %	#N/A	#N/A	Low	#N/A	#N/A
062	29/01/2010	15:00	3,213	KCl %	#N/A	#N/A	Low	#N/A	#N/A
063	30/01/2010	9:30	3,284	KCl %	#N/A	#N/A	Low	#N/A	#N/A
063	30/01/2010	13:45	3,284	KCl %	#N/A	#N/A	Low	#N/A	#N/A
064	31/01/2010	7:30	3,293	KCl %	#N/A	#N/A	Low	#N/A	#N/A
064	31/01/2010	14:00	3,293	KCl %	#N/A	#N/A	Low	#N/A	#N/A
065	01/02/2010	8:00	3,298	KCl %	#N/A	#N/A	Low	#N/A	#N/A
065	01/02/2010	14:00	3,309	KCl %	#N/A	#N/A	Low	#N/A	#N/A
066	02/02/2010	13:00	3,309	KCl %	#N/A	#N/A	Low	#N/A	#N/A

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
066	02/02/2010	9:00	3,309	KCl %	#N/A	#N/A	Low	#N/A	#N/A
066	02/02/2010	17:30	3,317	KCl %	#N/A	#N/A	Low	#N/A	#N/A
067	03/02/2010	1:15	3,364	KCl %	#N/A	#N/A	Low	#N/A	#N/A
067	03/02/2010	13:30	3,479	KCl %	#N/A	#N/A	Low	#N/A	#N/A
067	03/02/2010	19:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
068	04/02/2010	4:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
068	04/02/2010	22:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
069	05/02/2010	9:45	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
069	05/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
069	05/02/2010	3:45	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
069	05/02/2010	21:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
070	06/02/2010	8:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
070	06/02/2010	20:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
070	06/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
071	07/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
071	07/02/2010	9:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
072	08/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
072	08/02/2010	2:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
072	08/02/2010	22:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
072	08/02/2010	8:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
073	09/02/2010	21:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
073	09/02/2010	9:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
073	09/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
074	10/02/2010	16:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
074	10/02/2010	12:15	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
074	10/02/2010	22:40	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
074	10/02/2010	3:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
075	11/02/2010	3:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
075	11/02/2010	9:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
075	11/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
075	11/02/2010	22:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
076	12/02/2010	9:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
076	12/02/2010	2:45	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
076	12/02/2010	22:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
076	12/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
077	13/02/2010	8:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
077	13/02/2010	21:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
078	14/02/2010	9:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
078	14/02/2010	21:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
079	15/02/2010	10:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
079	15/02/2010	21:20	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
080	16/02/2010	20:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
080	16/02/2010	8:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
080	16/02/2010	8:00	3,482	pH	-	10.00	High	8.50	9.50
080	16/02/2010	20:00	3,482	pH	-	10.00	High	8.50	9.50
081	17/02/2010	9:00	3,482	pH	-	10.00	High	8.50	9.50
081	17/02/2010	16:00	3,482	pH	-	10.00	High	8.50	9.50
11A	09/12/2009	18:10	971	KCl %	#N/A	#N/A	High	#N/A	#N/A
11A	09/12/2009	18:10	971	Gel, 10 seconds	lbs/100 ft2	4	Low	8	14
11A	09/12/2009	18:10	971	pH	-	10.00	High	8.50	9.50
11A	09/12/2009	20:45	1,009	KCl %	#N/A	#N/A	High	#N/A	#N/A
11A	09/12/2009	20:45	1,009	Gel, 10 seconds	lbs/100 ft2	5	Low	8	14
11A	09/12/2009	20:45	1,009	pH	-	10.00	High	8.50	9.50
42	09/01/2010	8:00	1,970	pH	-	10.50	High	8.50	9.50
42	09/01/2010	20:00	1,970	pH	-	11.00	High	8.50	9.50
43	10/01/2010	7:00	1,970	pH	-	11.00	High	8.50	9.50
43	10/01/2010	22:30	1,970	pH	-	11.00	High	8.50	9.50
44	11/01/2010	8:00	1,965	pH	-	11.00	High	8.50	9.50

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
44	11/01/2010	20:00	1,970	pH	-	11.00	High	8.50	9.50
45	12/01/2010	8:00	1,965	pH	-	11.00	High	8.50	9.50
45	12/01/2010	18:00	1,965	pH	-	11.00	High	8.50	9.50
46	13/01/2010	8:00	1,965	pH	-	11.00	High	8.50	9.50
46	13/01/2010	17:00	1,965	pH	-	11.00	High	8.50	9.50
47	14/01/2010	18:00	1,965	pH	-	10.50	High	8.50	9.50
47	14/01/2010	13:40	1,965	pH	-	10.50	High	8.50	9.50
47	14/01/2010	7:45	1,965	pH	-	11.00	High	8.50	9.50
48	15/01/2010	7:30	1,965	pH	-	10.50	High	8.50	9.50
48	15/01/2010	16:00	1,965	pH	-	10.50	High	8.50	9.50
49	16/01/2010	17:45	1,965	pH	-	10.50	High	8.50	9.50
49	16/01/2010	7:45	1,965	pH	-	10.50	High	8.50	9.50
50	17/01/2010	8:00	1,965	pH	-	10.50	High	8.50	9.50
50	17/01/2010	17:30	1,965	pH	-	10.50	High	8.50	9.50
51	18/01/2010	8:00	1,965	pH	-	10.50	High	8.50	9.50
51	18/01/2010	17:45	1,965	pH	-	10.50	High	8.50	9.50
52A	19/01/2010	15:50	1,970	pH	-	11.50	High	8.50	9.50
52A	19/01/2010	6:00	1,970	pH	-	11.50	High	8.50	9.50

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**01**		**From Date**	**001**	**Top of Interval**	**100.0**	**m**
Max. Hole Size / Bit Size	**36.000 / 36.000**	**in**	**To Date**	**003**	**Bottom of Interval**	**158.0**	**m**

For Report # 001 On 29/11/2009	**Operation at Depth 100.0 m**
Rig Activity	Tow to location from Trefoil-1 to Rockhopper-1, arrive on location at 0546hrs. Anchor handling. Ballast Rig. Cross tension Anchors.
Activity	TRIPPING
Fluid Treatment	Kantan IV towed to location from Trefoil to Rockhopper as of 0546hrs Begin preparing PHB mud for the 36" hole.
For Report # 002 On 30/11/2009	**Operation at Depth 117.0 m**
Rig Activity	Cont. to cross tension anchor. M/U 18 3/4" WHRT assembly & laid out same. M/U 5" HWDP & racked back in derrick. Held JSA. P/U 18 3/4" wellhead & set in rotary. P/U WHRT, installed cement wiper plugs, M/U to 18 3/4" wellhead & laid out f/ drill floor. P/U 26" X 36" BHA assembly, RIH to 94 m. RIH & tag bottom at 100.3 m. Pulled up 10 m. Broke circulation & function tested Anderdrift tool. 10 pulses counted 0.5 deg. Spud in Rockhopper-1. Drill 36" hole f/ 100.3 m to 117 m. Started drilling w/ using PHG for first 5 m. Pumped 50 bbl hi-vis every single & spotted Hi Vis around BHA on connections.
Activity	Drilling
Fluid Treatment	Mixed 540 bbl PHB mud. R'ced 880 bbl KCl Polymer/Gel mud f/ Fosna. Which was converted to 10 ppg Kill mud. R'ced chemicals f/ Fosna/Scimitar. Weight indicator at Bentonite surge tank = ok. Weight indicator at Barite surge tank = failed. Note: The 5MT Betonite received represents a correction that is consistent with an adjustment made by KanTanIV control room
For Report # 003 On 01/12/2009	**Operation at Depth 158.0 m**
Rig Activity	Drilled 26" x 36" hole f/ 117 m to 150 m. Pumping 50 bbl PBG hi-vis every single & spotted PBG hi-vis around BHA on connections. Saver sub backed out on connection. POOH to 110 m, troubleshoot. RIH to 150 m, drill ahead f/ 150 m to 158 m, 36" hole to 157 m. Pump 100 bbl Guar gum pill followed by 330 bbl 8.8 ppg PHG mud. POOH to surface, no drag. Rig up to run 30" conductor. RIH w/ 30" conductor on HWDP to 157 m, no drag. Rig up surface lines, circulate casing contents, pumped 265 bbl 15.9 ppg class G cement slurry. WOC.
Activity	Wait on cement
Fluid Treatment	Cont top up PHB Hivis. Prepare mud for next interval. Displaced hole w/ 330 bbl PHB mud. Cleaned Pit 4 for Cementer, Mica used for cementing. Received bulk chemicals off the Far Fosna. Daily Mud Mixed: 256.6 bbl Total Mud Mixed for Interval: 796.7 bbl

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**02**		**From Date**	**004**	**Top of Interval**	**158.0**	**m**
Max. Hole Size / Bit Size	**36.000 / 26.000**	**in**	**To Date**	**009**	**Bottom of Interval**	**966.0**	**m**

For Report # 004 On 02/12/2009	**Operation at Depth 330.0 m**
Rig Activity	WOC. Slack off to 175, cmt holding, release tool 4.5 right hand turns. L/O cmt assy, POOH. L/O running tool & SLM. L/O 26 x 36 assy. P/U & M/U 17.5" Drilling assy, attach bridle to BHA & secure to guidelines. Stab into well w/ ROV guidance. Cont RIH M/U TDS washed down f/ 131m, tagged cmt @ w/ 5K. Drill cmt & shoe f/ 147 m to 157 m. Drill 17.5" hole f/ 158 m to 330 m.
Activity	Drilling 17.5" Interval
Fluid Treatment	Cont. mixing PBG in Pit 1 & transferring over to active Pit 4 when needed. 19 MT Bentonite was used according to Control Room figures. Daily Mud Mixed: 1010 bbl Total Mud Mixed for 17.5" Interval: 1010 bbl Daily Hi Vis usage: 551 bbl
For Report # 005 On 03/12/2009	**Operation at Depth 823.0 m**
Rig Activity	Cont. drilling 17.5" interval f/ 330 to 425 m. Changed out HPU filter on Top Drive. Cont. drilling f/ 425 to 823 m
Activity	Drilling 17.5" Interval
Fluid Treatment	Lime & Caustic used to flocculate & thicken PHG. Inventory correction on Bentonite as per KT4 control room. Cont. to top up PHB Hi Vis. Under instruction from Company Men, built displacement fluid in Pill Pit 158 bbl & Pit 2 353 bbl of 8.8 ppg Fluid. In order to achieve this 340 bbl of 10 ppg Kill was to be dumped in total from Pill Pit & Pit 2. Previous Daily Mud Mixed 1010 bbl Daily Mud Mixed: 1600 bbl Total Mud Mixed for 17.5" Interval: 2610 bbl Daily Fluid Lose 1840 bbl
For Report # 006 On 04/12/2009	**Operation at Depth 966.0 m**
Rig Activity	Cont. drill 17.5" f/ 823 - 966 m, tide corrected, survey @ TD & pumped 80 bbl hi-vis. POOH 6 std, tight spots f/ 909 - 841 m, max over pull 30k wiped tight spots clean. RIH & wash to bottom f/ 941, no fill. Circ 100 bbl hi-vis, followed by 1.25 x hole vol hi-vis. POOH to csg shoe @ 157 m, max over pull 20K. L/O 17.5" stab & bit. Racked BHA in derrick, removed Halliburton probe f/ NMHOC. M/U jet sub to std HWDP. RIH w/ jet sub o/ 102. Jetting 1150 psi @ 1555 hrs, POOH, L/O jet sub. M/U cmt head, HTBT f/ rigging up & running 13 3/8' csg. R/U up PCS, Pick up shoe jt, check, float jt, check OK, run 13 3/8" per program.
Activity	Run 13 3/8" casing
Fluid Treatment	Mixed & displaced 1200 bbl of 8.8 Pad mud to hole. Top up 8.8 ppg Pad mud. Cleaned Pits 1,3 & 4 for KCl brine, acquired permit to clean pits & organised sack room for next section. Prepare to B/L 2 x pallets Guar Gum & 1 x pallet Lime. Crew busy due to csg & cmt jobs. Previous Daily Mud Mixed 2610 bbl Daily Mud Mixed: 1740 bbl Total Mud Mixed for 17.5" Interval: 4350 bbl Daily Fluid used 1740 bbl

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**02**		**From Date**	**004**	**Top of Interval**	**158.0**	**m**
Max. Hole Size / Bit Size	**36.000 / 26.000**	**in**	**To Date**	**009**	**Bottom of Interval**	**966.0**	**m**

For Report # 007 On 05/12/2009	**Operation at Depth 966.0 m**
Rig Activity	Run 13 3/8" csg f/ 24 - 68 m, WOW. Run csg f/ 68 - 123 m stabbing into 30". R/U PCS spider & slips, cont run csg f/ 123 - 845 m filling each jt. P/U 18 3/4" wellhead & cont RIH. R/D PCS spider,slips,tong & equipment. Cont RIH w/ csg on landing string. M/U cmt std & cmt hose, cont RIH - 961 m & land out 18 3/4" w/ head w/ 50K. Down then o'pull - 400K. Then slacked off to landing wt 190K. R/U Halliburton control panel & lines to cmt head & HTBT. Cmt as per program. Displace w/ rig pumps 3286/3286 & bump plug 912/650 psi 60 spm. Press test csg t/ 2500 psi. Remove Halliburton control line, cmt hose & release running tool 175K, 4.5 right turns.
Activity	Rig up and rig down
Fluid Treatment	Pits cleaned & received 430 bbl KCl brine from Scimitar. Guar Gum & Lime backloaded. 8 MT Bentonite charged as it had settled further as per control room. Daily Mud mixed: 0 bbl Total Mud mixed: 4350 bbl Total Mud Used: 475 bbl Total Sea water used to displace For CMT Job 400.8 bbl
For Report # 008 On 06/12/2009	**Operation at Depth 966.0 m**
Rig Activity	POOH running tool. L/O running tool. SLM landing string, L/O cmt head. L/O 17.5" BHA. Remove all un needed tools, subs, boxes etc f/ rig floor. Unable to disconnect BOP f/ test stump. Attempt 65 o'pull, no success. Break out double of marine riser, fill void above stump w/ water. Apply press in stages against SR's. BOP free @ 400 psi.
Activity	Ready to run BOP.
Fluid Treatment	Mixing KCl Polymer Fluid in progress. All Chemicals will be charged off at the beginning of 12.25" interval. Backload 76 sxs Guar Gum, 42 sxs Lime to Far Fosna. Dress shaker screens 3x20 (Top)/4x50 (btm).
For Report # 009 On 07/12/2009	**Operation at Depth 966.0 m**
Rig Activity	Cont pre run checks for BOP, Repair yellow pod hose, Running BOP on riser. HTBT. Wait on helicopter. P/U & M/U slip Jt. Cont running BOP on riser. Wait on Helicopter. P/U & M/U landing Jt to slip Jt w/ kill lines co-flexip hoses. HTBT, press test choke & kill lines via cmt unit 250 psi f/ 5 mins, 5000 psi f/ 10 mins, Ok. Installed pod lines saddles. Installed MRT wires to slip Jt, Skid rig over well. Attempt to land BOP on well head.
Activity	Attempt to Land BOP on Well Head.
Fluid Treatment	Cont to mix KCl/PHPA mud w/ 1 ppb PHPA. Sand Traps were filled w/ sea water & flushed clean. Transferred 435 bbl f/ pit 4 to sand traps & lines, & cont to mix KCl-polymer fluid in pit 4. Sheared mud w/ 1 ppb PHPA via shearing hopper. All fluid tests will be provided once KCL- Polymer fluid has time to shear properly. Will charge off all chemical used for mixing at the start of 12.25" Interval. All four shakers have been dressed w/ 20 API/ 20 Mesh on the Scalper Deck & 50 API/ 84 mesh screens on the Primary Deck. Sack room cleaned & re-organised.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**03**		**From Date**	**010**	**Top of Interval**	**966.0**	**m**
Max. Hole Size / Bit Size	**17.50 / 17.50**	**in**	**To Date**	**019**	**Bottom of Interval**	**1,972.0**	**m**

For Report # 010 On 08/12/2009	**Operation at Depth 966.0 m**
Rig Activity	Land BOP & conf latch w/ 50 K O' pull. Test well head conductor via C & K lines 1000 psi, Ok. Scope out slip Jt & install diverter. Rig down riser hand gear. RIH test plug. Test H4 conn 5 K, 10 mins Ok. Test LMRP cxn against UAP, no go. POOH, test plug, redress same. RIH & attempt re test LMRP cxn against UAP. POOH & L/O test plug, reposition in mast. R/U & test surf lines 250/ 5, 5 K 5 mins Ok. Rig down test assy. Install diverter insert packer. Function test same. P/U & M/U 5" DP f/ deck 54 Jts POOH & rack back same. P/U, M/U & LD 9 5/8" csg hanger as per Dril Quip eng'r. Install cmt plugs as per Halco cmt'r. P/U & M/U 12.25" BHA f/ 0 - 23 m.
Activity	Make up 12.25" BHA
Fluid Treatment	Cont to shear KCl-/PHPA mud in pits. Test results due to virgin/unused fluid. 224 bbl of Hi-vis left over from 17 1/2" section will be used as sweeps.
For Report # 11A On 09/12/2009	**Operation at Depth 1,060.0 m**
Rig Activity	Cont P/U directional BHA. Down link MWD & scribe motor. Cont run BHA out derrick & shallow test @ 40 K down, 65 K total BHA wt. Ran BHA on 5" D/P, coming off deck & f/ derrick - 923 m. H/U geolograph lines, wash f/ 927 - 946 m & tag cmt. Drill out shoe track f/ 946 - 961 m then displace w/ KCL- PHPA 9 ppg fluid, wash past shoe x 3 & clean out rat hole - 966 m. Drill f/ 966 - 971 m. 2 x CBU. R/B std & R/U LOT assy. HTBT proceed w/ LOT as per program - 1400 psi 9 ppg & circ through K & C lines via C mani. Took C line friction loss. Drill f/ 971 - 1060m.
Activity	Drilling 12.25" Interval
Fluid Treatment	Displaced hole w/ 611 bbl 9.0 ppg KCl- PHPA fluid. Dumped over board 17 bbl when drilled through cmt. 116 bbl adjustment according to control room. Continued mixing in Active to maintain properties. Continued mixing in Pits 2 & 3 to maintain volume.
For Report # 012 On 10/12/2009	**Operation at Depth 1,587.0 m**
Rig Activity	Cont to Drill 12.25" interval f/ 1060 - 1427 m. Circ & condition mud. Cont to drill 12.25" interval 1427 - 1587 m midnight depth. **Continued Treatments** Tried screening up other shakers, however was using to much fluid. Receive chemicals. Some crates are inaccessible & their chemicals will be entered following inspection. Adjust bulk volume to reflect Barge report details.
Activity	Drilling 12.25" Interval.
Fluid Treatment	Cont Mixing in Pits 2,3& 4. Pit 2 having the largest pit volume is now our active. Add BARAZAN D PLUS directly to active to increase low end rheology, Bicarb to control Hardness, CLAYSEAL PLUS to maintain concentration as per program. Cont to build reserve volume & bleed into active to maintain properties & volume. Run centrifuge to control solids. Change out damaged API 50 mesh shaker screens & replace w/ API 60 mesh followed by API 100 mesh once rheology allowed.
For Report # 013 On 11/12/2009	**Operation at Depth 1,940.0 m**
Rig Activity	Drill 12.25" hole f/ 1587 - 1811 m, take SCR's & CLF's. Slide f/ 1869 - 1887, cont drill f/ 1887 - 1898 m. Remove broken DSC LP air line f/ Derrick. Slide f/ 1898 - 1905 m. Flow Check 20 bbl gain, well stable. Slide f/ 1905 - 1926 m. Replace DSC LP air line to DSC, secured to hose bundle in derrick then displace C & K line w/ fresh 9.4 ppg mud. Cont slide f/ 1926 - 1940 m.
Activity	Dilling 12.25" Interval.
Fluid Treatment	Add Barite to active to increase mud weight as per ADA instruction. Add Caustic Soda/Potash to maintain pH. Add ALDACIDE G prior to tripping to inhibit bacterial growth. Add Oxygon corrosion inhibitor as per program.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**03**		**From Date**	**010**	**Top of Interval**	**966.0**	**m**
Max. Hole Size / Bit Size	**17.50 / 17.50**	**in**	**To Date**	**019**	**Bottom of Interval**	**1,972.0**	**m**

	Continue to build reserve volume & bleed into active to maintain properties. Change lower screens on all shakers to API 100 & 80 mesh as a consequence of mud thinning w/ increasing temperature. Receive chemicals/Brine into inventory.
For Report # 014 On 12/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Slide f/ 1940 - 1955 m. Top sat down on DP L/O single bending 2 x singles & bent 5" DP. Circ, wiped stand & washed back to bottom @ 1955 m. Slide f/ 1955 - 1972 m TD. Circ well clean w/ 9.5 ppg Fluid. Flow check & POOH. HTBT, Down load MWD & rack back. Rig up cmt assy & w/bsng tools. Clean rig floor, R/P drilling bails & elevators. R/U 9 5/8" csg equipment. P/U shoe & check same ok, RIH w/ 9 5/8" csg.
Activity	Run 9 5/8" CSG
Fluid Treatment	Add OXYGON corrosion inhibitor & ALDACIDE G bacteriacide prior to POOH. Add BARAZAN D PLUS to active to maintain rheology. Continue to build pre-mix in reserve pits. Whilst Circ, increased MW to 9.5 ppg all round. Pumped 31 bbl of 11.5 ppg Slug at TD. Barite correction to inventory made to ensure consistency with control room figures. Conduct full chemical inventory. Inspect & change out damaged shaker screens. Callibrate mud balances. Asked Geo Services to calibrate pit equipment.
For Report # 015 On 13/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Cont RIH w/ 9 5/8" csg f/ 24 - 1864 m. R/D csg elevators & fill tool. M/U 9 5/8" csg hanger & RIH on LNDG string - 1945 m. Take 60 K below - M/U TD & wash dn w/ 150 gpm + 250 psi. R/U & P/U cmt head assy, M/U cmt hose. Cont wash dn 9 5/8" csg w/ 150 gpm + 250 psi, then 200 gpm + 300 psi f/ 1957 - 1964 m. HTBT, pump 10 bbl s/w ahead then tested surface lines - 4500 psi f/ 10 mins - Ok. Followed by 50 bbl s/w. Dropped ball & sheared out btm plug, pumped lead slurry 215 Sx's "G" cmt @ 12.5 ppg w/ 63 bbl mix fluid, followed by tail slurry of 223 Sx's "G" cmt @ 15.8 ppg in 28 bbl mix fluid.
Activity	CMT job for 9 5/8" CSG
Fluid Treatment	Build Hi-vis in pill pit w/ Gel only. Take returns/ Displacement into Pit 1, 230 bbl of 9.5 ppg, KCl- PHPA Fluid, f/ cmt job. Chase cmt w/ rig pumps, re line Pit 2 as active, suction & return. Add caustic to active & reserve volume to maintain pH.
For Report # 016 On 14/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Haliburton mixed & pumped 47 bbl 15.8 ppg G cement slurry. Released dart & sheared top plug w/ 2200 psi. Displaced cement w/ 20 bbl of SW. Plug bumped w/ 500 psi above FCP. Pressure tested CSG to 4000 psi. Set pack off in wellhead & pressure tested to 5000 psi against LPR. Released 9 5/8" casing RT w/ 65 klbs overpull. Pulled RT clear of BOP w/ difficalty. Required circulation to pull RT above BOP. Made up WB on WBRT & RIH. Jetted wellhead. Set wearbushing & POOH w/ RT. L/O same. RIH w/ jet sub, jetted BOP pumping 90 bbl Hi Vis Displaced riser to Seawater. POOH. Rigged up to pull LMRP. Installed diverter RT.
Activity	Laying out Diverter
Fluid Treatment	Treat active & reserve volume w/ caustic to maintain pH. Increase in mud weight in active pit attributable to incorporation of slug & mud cooling.
For Report # 017 On 15/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	L/O diverter. Made up landing joint to slip joint. Collapsed slip joint inner barrel & bolted to slip joint outer barrel. Unlatched LMRP connector (unlatched at 03:35). Picked up LMRP clear of BOP guide posts. Slacked off on guidelines & winched rig 15 m port forward. Removed MRT lines, choke & kill goosenecks f/ slip joint. L/O landing joint, slip joint, riser pup & bouyancy joints. Pulled LMRP into moonpool on

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**03**		**From Date**	**010**	**Top of Interval**	**966.0**	**m**
Max. Hole Size / Bit Size	**17.50 / 17.50**	**in**	**To Date**	**019**	**Bottom of Interval**	**1,972.0**	**m**

	riser double & landed on transporter. Disconnected riser double. Skidded LMRP to starboard setback. Changed out Upper Annular Element in LMRP.
Activity	Change Upper Annular Element in LMRP
Fluid Treatment	Add ALDACIDE G to surface volume to inhibit bacterial degradation. Add Caustic to maintain pH. Callibrate mud balances.
For Report # 018 On 16/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Installed new element in upper annular. Skidded LMRP to transporter & installed pod lines to LMRP. Installed Test joint & Adjust test stump Ht. Press test Upper annular. Skid LMRP to well centre. M/Up a double of riser to LMRP. Run LMRP on a double slick joints, 1x bouyant jnt, 1x pup jnt. Slip jnt. Free up MRT tension ring. P/Up landing joint & run. M/Up C&K lines to slip joint & connect MRT wires. Position rig over well head. Lower & latch LMRP to BOPs.
Activity	Lower LMRP
Fluid Treatment	Add caustic potash to surface pits to maintain pH. Prepare 40 bbl Hi-vis gel to act as spacer when displacing riser f/ seawater to KCl/Polymer fluid. Maintain all mud lab testing equipment.
For Report # 019 On 17/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Stroked out Slipjoint. Disconnected & laid out Landing Joint. P/U Diverter & installed same. Changed out damaged Lock Down Dog Inserts. Laid down Diverter R/Tool. Rigged down Riser Running equipment & rigged up 5" Pipe Handling equipment. M/Up BOP Test Tool. RIH & Test Upper Annular & Connector. Test C&K Lines. POOH & Displace Riser & C&K lines to 9.5 ppg mud. Cont to POOH to surface & lay down BOP Test Tool. R/Up & Press/Test Std/Pipe Manifold, GeoSpan Unit & T/Drive. Changed Out Saver Sub. P/Up 15 jnts of 5" D.P f/ deck & racked in the Derrick. P/Up & M/U Directional BHA.
Activity	Make up BHA
Fluid Treatment	Pump Hi-vis spacer ahead of KCl/Polymer mud whilst displacing riser from seawater to avoid contamination. Add EZ-MUD (PHPA) to reserve volume & pump through shear hopper for extended period.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

For Report # 020 On 18/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Perform Shallow Water Test On MWD Tools. Held PJSM. Picked up 5" DP f/ Deck & RIH to 1657 m. Cont RIH w/ Stands f/ Derrick f/ 1657 m - 1917 m. Wash & Ream f/1917 m to top of Cmt at 1938 m. Tag w/ 5k down. Attempt to Drill out Shoe track f/ 1938 m - 1940 m. Pump Slug & Rig down Geoservice & MWD Geolograph Lines. Attempt to install Power Slips. Slips jammed on D/Pipe. Removeed Power Slips. Secured Compensator & Top Drive hoses due to Hoses hanging up in the Derrick. Cont POOH f/ 1940 m to 211 m. POOH w/ BHA & Rack In Derrick. L/D 1x Stab & Float Sub. Halliburton MWD Removed Radio Active Sources & download MWD tools.
Activity	Tripping
Fluid Treatment	On circulating bottom's up add ALDACIDE G bacteriacide. Build & shear pre-mix volume in reserve pits. Run only shakers 1-3 to promote more efficient cuttings transport due to lower flow rate. Run centrifuge to control solids & condition mud. Prepare slug for POOH.
For Report # 021 On 19/12/2009	**Operation at Depth 2,019.0 m**
Rig Activity	M/U 8-1/2" GT-1 mill tooth bit. Set bent sub on PDM to 1.15 deg & scribed MWD. Picked up stabiliser & float sub + 3x 6-3/4" drill collars f/ deck. RIH w/ BHA f/ Derrick to 216 m. Shallow test MWD tools. Cont. to RIH to 1922 m. Wash & ream f/ 1922 m to 1940 m. Drill out show track f/ 1940 m to 1965 m. Ream though float & shoe 3x. Drill 8 1/2" hole f/ 1972 m to 1977 m. Circ hole clean & perform LOT w/ 9.4 ppg mud EMW = 14.6 ppg. Drill f/ 1977 m to 1981 m. Slide f/ 1981 m to 1994 m. Cont. drill f/ 1994 to 2019 m. Take surveys, CBU. Pump slug & POOH f/ 2019 m to 700 m.
Activity	Tripping
Fluid Treatment	Add ALDACIDE G to inhibit bacterial growth. Add DEXTRID LTE to promote low filtration. Add Circal 60/16 sized calcium carbonate bridging agent to replenish that lost through solids control equipment. Allow pH to drop to low end of target (8.5) in anticipation of pH increase through drilling out cement. Add Soda ash to active to treat out hardness following drilling cement. Prepare slug for POOH. Bleed reserve volume into active to maintain volume & properties.
For Report # 022 On 20/12/2009	**Operation at Depth 2,023.0 m**
Rig Activity	Continued to POOH f/ 700 m to surface. L/O MWD tools. Pick up BHA & RIH to 210 m. Shallow test tools. RIH f/ 210 m to 1252 m. Slip & cut drill line. Cont. RIH f/ 1252 m to 1972 m. Ream & relog new hole f/ 1972 m to 2019 m. Drilled 8 1/2" hole f/ 2019 m to 2023 m. Pumped slug & POOH to surface.
Activity	Tripping
Fluid Treatment	Add soda ash to control hardness. Add caustic potash to maintain pH. Add PAC-LE to control filtration. Shaker screen maintenance - changed out damaged with previously used screens. Prepare slug for POOH.
For Report # 023 On 21/12/2009	**Operation at Depth 2,230.0 m**
Rig Activity	P/U GeoPilot f/ deck. Install PDC Bit RR#6 & RIH. Halliburton uploaded MWD tools & installed Radio Active Sources. RIH w/ 8 1/2" BHA to 210 m. Shallow test MWD tools. Cont. RIH to 1981 m. Wash & ream f/ 1981 m to 2023 m. Drill 8 1/2" hole f/ 2023 m to

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

	2230 m.
Activity	Drilling 8 1/2" hole
Fluid Treatment	Add BARAZAN D PLUS to maintain low end rheology. Add PAC-LE & DEXTRID LTE to ensure tight filtration. Caustic potash addition to maintain pH. Maintain PHPA concentration through EZ-MUD addition. Add CLAYSEAL PLUS to compensate for depletion through drilling. Run centrifuge to control solids. Add Circal 60/16 sized bridging agent to compensate for loses f/ solids control equipment. *Note LGS concentration includes 5 ppb Calcium Carbonate Bridging agents.
For Report # 024 On 22/12/2009	**Operation at Depth 2,550.0 m**
Rig Activity	Cont. to drill 8-1/2" hole f/ 2230 m to 2550 m w/ angle build to 31° inclination. Drilling parameters: 561gpm / 112 spm / 2025 psi. WOB 5 to 15 klbs. Torque 15 to 24 klbs-ft ROP 5 to 30 m/hr
Activity	Drilling 8 1/2" hole
Fluid Treatment	Add PAC-LE & DEXTRID LTE to ensure tight filtration. Caustic potash addition to maintain pH. Soda Ash added to help lower hardness. Run centrifuge to control solids. Add Circal 60/16 sized bridging agent to compensate for losses f/ solids control equipment. Add CLAYSEAL PLUS & EZ-MUD to maintain concentration. ALDACDIE G addition to control bacterial growth. Bleed water to active to offset evaporation loss. Start tapering KCl% down to 6% as per ADA Instruction. *Note LGS concentration includes 5 ppb Calcium Carbonate Bridging agents.
For Report # 025 On 23/12/2009	**Operation at Depth 2,753.0 m**
Rig Activity	Cont. to drill 8-1/2" hole f/ 2550 m to 2753 m as per directional driller. Top up oil Top Drive gearbox 25 LTRS. Add 3 LTRS of PHPA in pipe circ 2 X btms up FLC. POOH f/ 2753 - 2520 m preform wiper trip, mat O/P 40 K.
Activity	Wiper Trip 8.5" Interval
Fluid Treatment	Build pre-mix volume & bleed into active to maintain properties & volume. New premixes containing lower KCl percentage as per ADA Instruction. Add EZ-MUD & CLAYEAL PLUS to compensate for depletion whilst drilling. Maintain tight filtration through PAC-LE & DEXTRID LTE addition. Bleed water into active to compensate for evaporation loss. Maintain pH w/ caustic potash addition. Run centrifuges to control solids. Add ALDACIDE G to treat Fluid system & OXYGON for corrosion prevention.
For Report # 026 On 24/12/2009	**Operation at Depth 2,865.0 m**
Rig Activity	Cont POOH f/ 2520-2303 m tight spot (TS) - 2297m.Worked pipe TS f/ 2303-2265 m. Cont POOH f/ 2265-2175 m tight. Pump out of hole f/ 2175- 2145 m. Worked pipe @ TS fired jars w/ 420 K- 220 K jar up x 3 as / Co Man instruction - 420 K + 70 K. O/P stuck worked pipe between 420 - 430 K. W/R - 2129 m, POOH - 1946 m, CBU up & shakers clean. Service TDS/Dolly. Check for TDS faults. RIH f/ 1946 - 2539 m. Take 30 K W/R f/ 2539 - 2753 m. Drill 8.5" interval f/ 2753 - 2865 m.
Activity	Drilling 8.5" Interval
Fluid Treatment	Pump Radiagreen EME Lubrication Pill at 2145 m as per ADA Instruction. Add Radiagreen EME to active at a concentration of 1% vol to reduce torque, as requested by Co Man. Dress lower deck of shakers w/ API 120 TECHMESH Screens. Run centrifuges & bleed in premix to reduce mud weight as per ADA Instruction.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval		**04**			**From Date**	**020**	**Top of Interval**	**1,972.0 m**
Max. Hole Size / Bit Size		**8.50 / 8.50**		**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0 m**
					Bleed in water to active to offset evaporation. Receive Chemicals & screens. Perform inventory check. Calibrate mud balances. Continued to maintain fluid properties. Transfer premix f/ Pit 4 into Pit 2.			
For Report	**# 027**	**On**	**25/12/2009**		**Operation at Depth**		**3,180.0 m**	
Rig Activity					Drilling 8.5" Interval f/ 2865 - 3180 m			
Activity					Drilling 8.5" Interval			
Fluid Treatment					Add Circal 60/16, sized Calcium Carbonate bridging agent, to compensate for losses f/ solids control equipment. This will promote low filtration with thin filter cake formation. Compliment Circal 60/16 addition w/ PAC-LE. Add Caustic Potash to maintain pH. Add HEC-10 to maintain programmed rheolgy. Maintain shaker screens for optimum solids control. One centrifuge down. Continue to Bleed over from pit 3 into Active pit 2.			
For Report	**# 028**	**On**	**26/12/2009**		**Operation at Depth**		**3,312.0 m**	
Rig Activity					Drilling f/ 3180 - 3199 m. Failure to TDS oil pump - CBU. POOH work TS 3199 - 2895 m. Change coupling, Lub TDS & greased wash pipe. RIH no TS. RIH connect up Geolograph, establish parameters. Drill 8.5" interval f/ 3199 - 3312 m.			
Activity					Drilling 8.5" Interval			
Fluid Treatment					Cont to Transfer premix volume f/ Pit 3 into active Pit 2, Cont to maintain Fluid properties: KOH for pH to 9.5, Circal 60/16 for Cal Carb concentration, PAC LE & DEXTRID for API properties, Soda Ash for hardness, & EZ MUD & CLAYSEAL PLUS for inhibition. *Note - 0900hrs mud check shows high rheology due to incorporation of Hi-vis sweep into fluid system. Will Mix BAROFILT sweep upon Co Man approval.			
For Report	**# 029**	**On**	**27/12/2009**		**Operation at Depth**		**3,522.0 m**	
Rig Activity					CBU 120 spm, 600 gpm 2700 psi. Pumped 30 bbl low Wt 9.3 ppg, low rheology sweep chased by 30 bbl high Wt 10 ppg, high rheology sweep circ until shakers were clean. F/C, POOH f/ 3522 - 3100 m. RIH f/ 3100 - 3522 m prepare to pump 2nd lot of sweeps.			
Activity					Prepare to Pump Sweeps			
Fluid Treatment					Phase in addition of N-DRIL HT PLUS filtration control agent in response to increasing BHT. Maintain volume & properties through addition of premix. Maintain water addition at 2.5 bbl/hr to offset losses f/ evaporation. Add caustic potash for pH control. Add Circal 60/16 Calcium Carbonate bridging agent to offset depletion f/ solids control. Build further pre-mix on TD extension. Run centrifuges to control solids. Maintain shaker screens & change out as necessary. Pump 30 bbl low Wt, low rheology sweep chased by 30 bbl High Wt x 2, High reology sweep x 2. Made 55 bbl 10.6 ppg Slug, yet to pump			
For Report	**# 030**	**On**	**28/12/2009**		**Operation at Depth**		**3,522.0 m**	
Rig Activity					Circ H/C @ 120 spm 600 gpm 2700 psi, pumped low Wt 9.3 ppg/ rheology -high Wt/ rheology Vis Pills. Circ hole clean. F/C, POOH f/ 3522 - 211 m. POOH BHA f/ 211 - 40 m, removed MWD sources. Down load MWD tools. Cont POOH Hall BHA's L/O same. R/U Schlb elec logs. M/U Schlb tool & calibrate same. Installed sources to tools. RIH w/ CMR-HNGS-PEX-HRLA- SP Schlb tools @ 2000 m/hr. Log down, RIH to bottom & Log up.			
Activity					Wire Line Logging 8.5" interval			
Fluid Treatment					Conduct full inventory. Checked Mud Balances & conducted a Mud Lab Inventory. *Note mud in active pit shows an increase in rheology & weight due to incorporation of viscous/weighted sweeps. Also additonal volume in pit came f/ sand traps. We used a wieldon pump to trans volume f/ sand traps over shakers to filter fines out and lined up volume to Pit 3. Treated pits 2 and 3 w/ ALDACIDE G & KOH to maintain properties. Cont to make Premix in Pit 1. Will leave Pit 4 clean & empty. Received			

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**
			114 MT of Barite, 20 Drums Radiagreen EME, & Shaker Screens.				
For Report	**# 031**	**On**	**29/12/2009**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Process log data. RIH t/ 3480 m, POOH logging t/ 2800 m, cont t/ POOH. Remove sources f/ tools. L/O Schlb tools for run 1. P/U tools for run 2. Calibrate, RIH w/ MDT Schlb tools @ 2000 m/hr. Test Zones @ 2875 m 1900 hrs. Log f/ 3145 m - 3010 m, stuck - free w/ 9 K above - POOH. Tools @ Surf - R/D.				
Activity			Rig Down Wire Line Tools				
Fluid Treatment			Maintain pH & Bacteria, by adding KOH & ALDACIDE G. Clean & organize sack room.				
For Report	**# 032**	**On**	**30/12/2009**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Cont R/D Wire Line. HTBT M/U BHA & RIH - 97m. Test BOP & function test BOP. RIH w/ 5" DP f/ 97 - 1944 m CSG shoe. TDS Service. Cont RIH w/ 5" DP 1944 - 3418 m work TS 2427, 2482, 2510 2545 & 2550. Wash ream hole f 3418 m, 550 gpm 2550 psi, 50 rpm. 5 - 10 TRQ, tag btm @ 3522 m w/ 10 K. Circ 530 gpm - 2300 psi, recip string while lowering Fluid Wt - 9.4 ppg.				
Activity			Circ/Lowering Mud Wt.				
Fluid Treatment			Cont to mix additional 250 bbl for volume. Blended unweighted premix to lower active MW to 9.4 ppg circulating. Ran both centrifuges to lower MW to 9.4 ppg.				
For Report	**# 033**	**On**	**31/12/2009**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Circ hole clean w/ 600 gpm - 2700 psi. F/C - POOH f/ 3522 - 3245 m pump 30 bbl, 10.5 ppg slug. POOH f/ 1944 - 180 m. F/C -ok, POOH w/ BHA f/ 180 - Surface, rack back same. M/U Schlub MDT tools K calibrate. HTBT for Schlub wire line. RIH w/ MDT tools @ 2000 m/hr. Start Logging ops - cont RIH 3425 m & correlate. Log out to 3306 m				
Activity			Logging 8.5" Interval				
Fluid Treatment			Conditioned & treated the active mud in Pit 2 with fluid loss reducer. API FL lowered to 4.6 mls w/ 1 ppb PAC LE and 0.5 ppb N-Dril HT plus. MW was lowered to 9.4 ppg w/ premix from Pit 1.Checked & patched screens at shakers. Conducted inventory check. Calibrate Mud Balances				
For Report	**# 034**	**On**	**01/01/2010**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Cont to log out f/ 3306 - 3330 m doing sampling for pressure & flow. RIH to 3349 m & cont sampling. Correlating. Pressure testing & sampling f/ 3349 - 3236 m.				
Activity			8.5" Wire Line Logs				
Fluid Treatment			Transferred Fluid f/ pit 2 to pit 4. Repairing leaks in the mixing lines into Pit 2. No Additions of chemicals.				
For Report	**# 035**	**On**	**02/01/2010**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Cont press testing & sampling @ 3226 m. Work tight hole 3224 m. POOH to shoe @ 1965 m wire line wiper trip. RIH to 3060 m hung up. POOH to surface. HTBT L/O wire line tools & handling equipment. HTBT M/U BHA & RIH - 180 m. Shallow test Hall tools 600 pgm - 850 psi. Cont RIH f/ 180 - 1037 m slip & cut 100 ft drill line & service TDS. Cont RIH f/ 1037 - 2150 m Wash & Ream f/ 2150 - 3522 m 550 gpm 1850 - 1950 psi 60 rpm 3 K. Circ & condition hole.				
Activity			Cir & Condition Mud 8.5' Interval				
Fluid Treatment			Fixed & welded the leaks in mixing lines into pit 2. Hydro tested same. Transferred active mud f/ Pit 4 to Pit 2 (as active). Mixed pumpable 30 bbl of Hi-Weight pill @ 10.0 ppg f/ active mud. Mixed pumpable 15 bbl of Slug @ 10.5 ppg f/ active mud. Cont to tighten active mud system for fluid loss while circ & cond hole. Added in fresh premix to maintain MW @ 9.4 ppg. Ran centrifuges. MW in 9.35 - 9.4				

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

	+ ppg. MW out - 9.3 - 9.6 ppg. MWt out reading of 9.3 was low Wt pill bottoms up. Maintain consistant MWt in 9.35 ppg & out 9.4 figures consistant w/ both shaker house & pit room MWt reports.
For Report # 036 On 03/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Pump 30 bbl 9.0 ppg low Wt & 30 bbl 10 ppg high Wt pills. Circ Shakers clean as per Co Man & Mud Eng'rs instruction. F/C ok, pump 25 bbl 10.5 ppg slug, POOH f/ 3522 - shoe 1964 m. F/C ok, cont POOH f/ 1964 - 180 m. F/C ok, cont POOH f/ 180 - surface. HTBT, R/U Schlub wireline. M/U MDT tools RIH & calibrate same 3000 m/hr - 3250 m. Correlate & log f/ 3207 - 3132 m.
Activity	Wireline MDT logs 8.5" Interval
Fluid Treatment	R'ced mud chemicals f/ Far Fosna. Arranged sack store & shaker screens store.
For Report # 037 On 04/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Cont logging f/ 3132 - 2549 m. POOH f/ 2549 - surface. L/O MDT tools. R/U seismic tools. HTBT, RIH w/ seismic tools @ 1100 m/hr. Correlate passes. RIH f/ 2224 - 2430 m unable to pass. POOH - M/U extra Wt to tools, change tools & M/U tools. RIH w/ tools @ 1100 m/hr @ 2150 m correlating up to 9 5/8" csg depth 1964 m. RIH hang up @ 2760 m - working tools up & down cont RIH -2555m. Check shots between 2555 - 280 m. POOH to surface. HTBT - L/O seismic tools.
Activity	L/O Seismic Tools
Fluid Treatment	Cont to arrange chemicals in sack store. Cont to arrange new & used screens in store. Housekeeping in the mud lab. Checked pit & shaker areas w/ crew, instructed them on housekeeping.
For Report # 038 On 05/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Cont L/O seismic tools. P/U MSCT tools, rebuild head for MSCT run & test. RIH - 3360 m, correlate samples f/ 3360 - 3290 m & 3290 - 3270 m. Cont to correlate & sample f/ 3270 - 2900 m. POOH w/ Schulb tools to surface @ 2500 m/hr & L/O tools. M/U Schlub FMI sonic scanner tools. Found fraid strands of cable, cut 100 m & re terminate same. RIH w/ FMI sonic tools - 3380 m. Repeat pass 3320 - 3380 m, Log out f/ 3380 - 2550 m.
Activity	Log 8.5" Interval w/ FMI Tools
Fluid Treatment	Housekeeping in the mud lab. Cont putting used screens into boxes & leave store tidy. Over see shaker house miantenance. No treatments required to active system.
For Report # 039 On 06/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Cont log out f/ 2550 - 600 m. POOH, L/O tools. R/U & P/U 2 7/8" eqp. P/U & RIH w/ same for cmt job. R/D 2 7/8" & R/U 5" eqp. RIH on 5" DP - 1932 m for cmt job. Test ESDS & Service TD & rollers. Cont RIH to 3493 m, wash & CBU. Pump Hi-vis 12 bbl 9.4, disp w/ 205 bbl - 1722 stks. POOH - 3465 m & R/U cmt head - 10 bbl & test line. Pump cmt plug 1A & disp w/ cmt unit 183 bbl. Break off cmt head & POOH - 3310 m & R/U cmt head. Pump 10 bbl & test line. Pump plug 1B & disp w/ 174 bbl. Break off cmt head & POOH - 3156 m, R/U cmt head. Circ w/ pumps wait on cmt'r for pre-mix @ 40 spm - 340 psi.
Activity	Plug and Abandonment 8.5"
Fluid Treatment	Mixed 45 bbl 9.4 ppg H-vis in slug pit. Maintained balance MW @ 9.4 ppg while circulating. Ran 2 centrifuges & streamed in premix to control MW. MW in 9.4 ppg. MW out 9.4 - 9.4+ ppg. Plug 1A No trace of cmt found whilst circing. MWt 9.4 & pH 9 stable. Plug 1B No trace of cmt found both MWt & pH stable.
For Report # 040 On 07/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Pump plug 1B & disp w/ cmt unit 174 bbl, break off cmt head, POOH - 2973 m slow. Pump Hi-vis pill 12 bbl & disp w/ 173 bbl. POOH - 2925 m R/U cmt head flush lines.

Operations Log Recap

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

	Pump plug 2 & disp w/ cmt unit 152 bbl R/D cmt head. POOH 2482 m slow. Circ btms up WOC, POOH - 2250 m & R/B cmt head. Rig floor maintenance. RIH & wash f/ 2713 - 2723 m TOC. POOH - 406 m (wet) clean rig floor. P/U single, spot 12 bbl Hi-vis @ 2118m. Pull 2 stds, P/U single, cmt TBT. Pump spacer, test lines 1000 psi. cmt pre program, disp 103 bbl. L/O cmt asy, POOH - 1968 m. Pump 11 ppg 15 bbl slug. POOH f 1968 - 168 m. M/U BHA & RIH.
Activity	M/U BHA & Start to RIH
Fluid Treatment	Properties changed due to slight traces of cmt returns to active. Plug # 3 - Mud return 9.4 ppg. No cement return. Mixed & pumped 11 ppg slug. Cont to treat mud for 8 1/2" ST-1. Volume in sandtrap was transferred out & mud treated. Sand traps have been flushed & cleaned w/ sea water to remove traces of cmt. Shakers & screens prepared for next interval. Mud treated for hardness, pH & API filtrate. All Treatments & new mud mixed wil be charged off in the sidetrack interval. M/U BAROLIFT Pill 20 bbl pumpable as per 8.5" side track SID. 344.3 bbl of KCl-mud left below cmt plugs @ 1970 m.
For Report # 041 On 08/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Shallow test Halliburton Tools. RIH from 207 m to 1960 m. Service TDS. Wash to 2005 m, CBU. Cont to wash down to 2121m, CBU. Flow check, static. POOH. Clean out MWD. Pick up 17 joints of 2 7/8" tubing w/ mule shoe. RIH to 2168 m on drill pipe. CBU. Spot 25 bbl Hi-vis pill on bottom. Pull back to 2067 m & cement as per program. Rig down cement head & POOH to 1874 m. CBU. Continue to POOH wet.
Activity	POOH following cement job
Fluid Treatment	Re-arrange sack room & conduct full inventory of all sack & liquid products. In response to current & future operations these have been charged off to ensure correct inventory reporting. Whilst circulating bottom's up prior to cementing, further treat active fluid w/ citric acid & sodium bicarbonate to control pH and & hardness respectively. Prepare 25 bbl pumpable Hi-viscosity pill for sitting below suspension plug.
For Report # 42 On 09/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Continue to POOH. Rig up 2 7/8" handling equipment. Clean rig floor & prepare to RIH w/ 81/2" mill tooth bit. RIH to 1318 m. POOH due to pressure increase when pumping/filling pipe. RIH 3 1/2" mule shoe. POOH plugged mule shoe. RIH on 5" DP. Wash down f/ 1880 m to top of cement at 1985 m. CBU. Flowcheck, POOH. Start to pick up 2 7/8" tubing,
Activity	Tripping
Fluid Treatment	Whilst circulating bottom's up following tagging cement further treat active fluid w/ sodium bicarbonate to control hardness & citric acid to lower pH. Add HEC to maintain rheology. Add ALDACIDE G to inhibit bacterial growth.
For Report # 43 On 10/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	RIH to 1982 m. Rig up cement head & CBU. Pump 5 bbl spacer. Test line & diplace f/ cement unit. Rig down cement head & POOH to 1817 m. Ciculate 1.5 x bottom's up. POOH to 1788 m. Cut & slip drill line. Service top drive & continue POOH. L/O 2 7/8" tubing. RIH 9 stands contaminated 5 inch drill pipe & layout same. RIH to 1817 m, circulate 1.5 x bottom's up. Wash down f/ 1817 m to 1896 m & tag cement.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

Activity	circulate
Fluid Treatment	Whilst circulating, condition active fluid w/ addition of HEC to increase low end rheology following cement contamination. Circulate active pit to ensure full release of polymer additions. Treat active volume w/ OXYGON corrosion inhibitor as per program. Treat surface volume w/ ALDACIDE G bacteriacide.
For Report # 44 On 11/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	CBU. Divert unconditioned mud. Flow check, static. Break down cement head. Service top drive. Continue w/ rig maintenance. RIH w/ 5" drill pipe to 1880 m.
Activity	RIH
Fluid Treatment	Monitor bottom's up following tagging cement. Divert fluid accordingly. Whilst circulating, add BARAZAN D PLUS to maintain rheology. Pump out sandtraps to reserve pits to allow agitation & treatment. Clean out shakers, flowline & sandtraps.
For Report # 45 On 12/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Rig service: work on compensator, grease standpipe & choke manifold, top drive RPM, shift t-drive transmission. Circulate & condition mud. Continue w/ rig service.
Activity	Rig Service
Fluid Treatment	Whilst circulating, condition mud w/ addition of BARAZAN D PLUS to increase low end rheology as per program. DEXTRID LTE & PAC LE addition to ensure tight filtration. Add water whilst circulating to offset loss f/ evaporation & to ensure hydration of polymer additions. ALDACIDE G addition to active fluid to inhibit bacterial growth. Mud lab maintenance.
For Report # 46 On 13/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Rig servive: compensator manifold, change 2 airlines on shakers, bolt check on derrick. Prepare to change out drilling line spool. Circulate & condition mud. Coninue w/ rig service: work on mud pumps.
Activity	Rig Service
Fluid Treatment	Whilst circulating add PAC LE & DEXTRID LTE to lower filtration. Add water to offset evaporation & ensure hydration of polymers. Inspect shaker screens & change out w/ previously used as necessary. Change out valves in mixing line to pits. Conduct full audit on all lab equipment & reagents.
For Report # 47 On 14/01/2010	**Operation at Depth 3,522.0 m**

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

Rig Activity	Continue rig service: racking arm modifications, mud pumps, spot drilling line shaft in spool. Circulate & condition mud.
Activity	Rig Service
Fluid Treatment	Whilst circulating add ALDACIDE G to inhibit bacterial growth. 1340 hrs mud check is f/ a bottom's up sample taken to ascertain any deterioration in mud properties following circa 24hrs under static downhole conditions - none detected, fluid stable, slight drop in pH only. Continue to by-pass sandtraps so as to ensure maximum treatable surface volume. Add water whilst circulating to offset loss f/ evaporation & to ensure fluid system properly hydrated. Receive Barite.

For Report	**# 48**	**On**	**15/01/2010**	**Operation at Depth**	**3,522.0 m**

Rig Activity	Work on drawworks. Pull old and new drill line through to rig floor. Clean ends for snake to be installed. Continue PM's. Circulate mud & POOH. Replace airline brackets, port derrick leg. Pressure test surface equipment. Prepare to install new drill line.
Activity	Rig Service
Fluid Treatment	Circulate mud. Bleed in water whilst circulating to offset evaporation loss. Maintain properties of pre-mix w/ addition of caustic potash, PAC-LE & BARAZAN D PLUS. Note: the addition of premium products CLAYSEAL PLUS & EZ-MUD (PHPA) will be made just prior to kicking off sidetrack. Cunduct full screen inventory.

For Report	**# 49**	**On**	**16/01/2010**	**Operation at Depth**	**3,522.0 m**

Rig Activity	Remove wraps f/ deadman anchor, remove crown-o-matic ready for slipping drill line. Grease & service TDS travelling blocks, dolly rollers. Hold tool box talk. Pull new drill line onto drum. Remove used drill line f/ drawworks. Restore floor to drilling mode. Continue working on cranes.
Activity	Rig Service
Fluid Treatment	No circulation due to rig activity. Treat reserve volume w/ DEXTRID LTE & BARAZAN D PLUS to maintain tight filtration & programmed rheology respectively. Conduct inventory of all sack products.

For Report	**# 50**	**On**	**17/01/2010**	**Operation at Depth**	**3,522.0 m**

Rig Activity	Install bails-elevators. Change out burst hose on iron roughneck. RIH 5" drill pipe to 1880 m, circulate. POOH. Rig up and test upper IBOP. RIH BHA & check free of cement. Continue work on cranes.
Activity	Rig Service
Fluid Treatment	Circulate mud. Add DEXTRID LTE to maintain low filtration. Add water whilst circulating to offset evaporation loss & maintain hydration of polymers. Conduct inventory on all liquid products.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

	Maintain screens.
For Report # 51 On 18/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Complete maintenance & housekeeping. Make up BOP test tool, RIH & flush wellhead. Pressure test as per program. POOH, lay out test tool, install diverter element. Service crown, top drive & dolly track. Make up 8.5" PDC bit & slick BHA to 198 m. RIH to 1880 m. Check parameters & tag cement at 1896 m
Activity	Tag cement
Fluid Treatment	Add ALDACIDE G to surface volume to inhibit bacterial growth. Re-arrange sack room. Make up new premix. Additions to be charged at the start of the sidetrack section. Dress shakers for maximum solids control efficiency for drilling out cement.
For Report # 52A On 19/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Drill out cement.
Activity	Rig Service
Fluid Treatment	Whilst drilling out cement continue w/ short system (sandtraps by-passed) to minimise the volume of fluid contaminated w/ cement. Add water whilst circulating to offset loss f/ evaporaton. Complete making up further premix volume - to be charged off against ST-1. Note: Calcium carbonate bridging agents, which are stripped out by SCE, will be added upon kicking off sidetrack. This will reduce API Filtrate loss. Awaiting arrival of citric acid & sodium bicarbonate to treat pH & hardness respectively.

Operations Log Recap

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

For Report # 52A On 19/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Drill out cement.
Activity	Rig Service
Fluid Treatment	Whilst drilling out cement continue w/ short system (sandtraps by-passed) to minimise the volume of fluid contaminated w/ cement. Add water whilst circulating to offset loss f/ evaporaton. Complete making up further premix volume - to be charged off against ST-1. Note: Calcium carbonate bridging agents, which are stripped out by SCE, will be added upon kicking off sidetrack. This will reduce API Filtrate loss. Awaiting arrival of citric acid & sodium bicarbonate to treat pH & hardness respectively.
For Report # 052B On 19/01/2010	**Operation at Depth 1,964.0 m**
Rig Activity	M/U HUGHES A841A9GT5 Bit, scribe motor, installed probes & cont to RIH w/ BHA - 216 m. Shallow test Sperry tools @ 120 spm - 600 gpm - 1400 psi. Cont RIH f/ 216 m on 5" DP - 795 m fill pipe @ 30 spm 280 psi 220 stks, cont RIH f/ 795 - 1373 m fill pipe @ 30 spm 280psi 265 stks cont RIH on 5" DP f/ 1373 - 1964 m.
Activity	Cont RIH 5" DP
Fluid Treatment	First Mud Report for Rockhopper 1 ST-1 Carry over 1713.9 bbl of fluid from previous fluid set to new fluid set 8 1/2" ST-1 KCl/Polymer. Noticed A decrease in volume in Pill Pit, all master valves checked, continuing to problem solve. Cont to use short system as agreed w/ Co Men until KCl- PHPA fluid treated. Chemicals & screens to arrive tomorrow.
For Report # 053 On 20/01/2010	**Operation at Depth 2,065.0 m**
Rig Activity	Break circ- CBU. Drill f/ 1970 - 1990 m. Drill directional hole f/ 1990 - 2065 m, as / DD's instruction.
Activity	Drilling 8.5" ST-1 Interval
Fluid Treatment	Reduce pH w/ citric acid. Reduce Hardness w/ sodium bicarbonate. Add BARAZAN D PLUS to maintain programmed low end rheology. Add EZ-MUD to maintain PHPA concentration. *Note, LGS concentration includes 5 ppb Calcium Carbonate bridging agents. Change out scalping screens on shakers 2,3 & 4 to API 40 mesh to promote more efficient solids control & increase lower deck lifespan. Prepare BAROLIFT sweep as per program. Maintained properties in pit 3. Conducted a chemical & mud lab inventory.
For Report # 054 On 21/01/2010	**Operation at Depth 2,112.0 m**
Rig Activity	Cont Drill 8.5" ST-1 interval f/ 2065 - 2112 m. Circ, pump 15 bbl BAROLIFT Pill as per program. POOH f/ 2096 - 1951 m pump 10.8 ppg Slug as per Co Man request, POOH to surface. MWD installed sources & test tools, cont RIH w/ GEOPILOT assy. Test @ 244 m failed. POOH remove source, change Jt. RIH plug in, install sources.
Activity	RIH w/ GEOPILOT 8.5' ST-1
Fluid Treatment	Pump BAROLIFT sweep at 2112 m. No increase in cuttings visible. Prepare & pump slug for POOH. Add ALDACIDE G Bacteriacide prior to POOH. Add OXYGON corroion inhibitor as per program. Incorporate all 5 sandtraps into active system. Maintain properties of premix. Identify leak in mixing line & patch as necessary. Calibrated Mud Balances. Checked shaker screens & repaired where necessary. All shaker screens are now in mesh size as opposed to API standard as

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

	requested by Co Man. Receive PAC-LE.
For Report # 055 On 22/01/2010	**Operation at Depth 2,368.0 m**
Rig Activity	RIH f/ 38 - 1845 m filling every 20 stds. Wash 1945 - 1970 m breaking in GEOPILOT as per DD' instruction. Logging 1970 - 2112 m @ 60 m/hr. Take SCR's, downlink, break in bit pattern & drill 8.5" ST-1 hole f/ 2112 - 2368 m MD. Ream f/ 2331 - 2350 m 30/40 & drag w/ pipe rotation, 5 K w/out rotation.
Activity	Drilling 8.5" ST-1 Interval
Fluid Treatment	Add EZ-MUD to maintain PHPA concentration. Add sodium bicarbonate to control hardness. Build further premix volume & bleed into active to maintain properties & volume. Run centrifuge to control solids. Change out damaged screens as necessary & patch older screens. Continue to maintain properties in active system.
For Report # 056 On 23/01/2010	**Operation at Depth 2,706.0 m**
Rig Activity	Cont Drill 8.5" ST-1 f/ 2368 - 2706 m MD & 2635.3 TVD.
Activity	Drilling 8.5" ST-1 Interval
Fluid Treatment	Add Radiagreen EME at a concentration of 0.5% vol to reduce torque. Maintain PHPA concentration w/ addition of EZ-MUD. Build pre-mix & bleed into active to maintain properties & volume. Pump BAROLIFT sweep - minimal increase in cuttings seen at shakers. Add Sodium Bicarbonate to reduce hardness.
For Report # 057 On 24/01/2010	**Operation at Depth 2,973.0 m**
Rig Activity	Cont drill 8.5" ST-1 hole f/ 2706 - 2856 m. Pump 20 bbl BAROLIFT Pill @ 2784 m & pump out. Cont drill f/ 2856 - 2926 m. R/B std f/ 2926 - 2897 m. C/O saver sub & disks in TDS. Wash f/ 2897 - 2926 m, Cont drill f/ 2926 - 2973 m pump 17 bbl BAROLIFT pill @ 2926, well clean. Max gas 13.9 %, background 3 %.
Activity	Drilling 8.5" ST-1 Interval
Fluid Treatment	Add Radiagreen EME to maintain 0.5% vol concentration in active. Maintain PHPA concentration w/ the addition of EZ-MUD. Control hardness w/ additon of soda ash. Maintain pH w/ addition of caustic potash. Add OXYGON corrosion inhibitor as per program. Build pre-mix volume pit 1& bleed into active to maintain properties & volume. Continue to Build new Volume pit 3. Pumped a 17 bbl BAROLIFT pill at 2100 hrs on 3 rig pumps & boosted riser. Pill came over @ 2146 hrs slight increase in cuttings load. Continued to run on 3 rig pumps (BOOST) for 11 mins, until 2157 hrs.
For Report # 058 On 25/01/2010	**Operation at Depth 3,158.0 m**
Rig Activity	Cont drill 8.5" ST-1 f/ 2973 - 3158 m. Pump 15 bbl BAROLIFT pill & circ same out of hole, while boosting riser w/ 3 M/P. Halliburton MWD attempted to reset down load tool, neg. F/C, static. POOH f/ 3158 - 2492 wet, pumping & back reaming all 30 K over tight spots. 0000 hrs POOH depth, 2492 MD - 2451 TVD.
Activity	POOH 8.5" ST-1 Interval
Fluid Treatment	Add Circal Y & Circal 60/16 sized Calcium Carbonate bridging agents to compensate for used fluid f/ solids control equipment & maintain tight filtration. Add Soda ash to

Operations Log Recap

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

	reduce hardness. Add Caustic Potash to maintain pH. Build premix & bleed into active to maintain volume/properties. Add Radiagreen EME to active to maintain 0.5%vol concentration. Pump 15 bbl BAROLIFT sweep at 3157 m. Minimal increase in solids observed. Centrifuge 2 had leaking hoses & was shut down early for repairs. Cont to maintain shaker screens.
For Report # 059 On 26/01/2010	**Operation at Depth 3,158.0 m**
Rig Activity	Cont POOH 8.5 BHA " ST-1 f/ 2492 m - surface. P/U & M/U bit, GEOpilot, MWD tools & upload. RIH - 239 m. Shallow test tools, 600 gpm_400 psi. Test Good. Cont RIH f/ 239 - 2525 MD_2478 TVD.
Activity	RIH 8.5" ST-1 Interval
Fluid Treatment	Cont to maintain properties in active pit 2. Start premix in pit 1. 317 bbl of brine brought into leg f/ boat. used two 15 bbl 9.3 ppg BAROLIFT pills & 19 bbl 11.3 ppg KCl- PHPA slug. Conducted a full chem inventory. Maintained screens at shakers & patched repairable screens.
For Report # 060 On 27/01/2010	**Operation at Depth 3,195.0 m**
Rig Activity	RIH f/ 2525 - 3158 m. Establish parameters f/ MWD tools & re-Log 3140 - 3156 m. Cont drill 8.5" ST-1 hole f/ 3156 - 3195 m. Circ & boost riser w/ 3 M/P. POOH f/ 3195 - 1965 m, max 10 K over pull, F/C OK. Cont POOH f/ 1965 - Surface. Remove sources & down load tools.
Activity	Down Load MWD Tools.
Fluid Treatment	Increased Radiagreen EME concentration to 1% per active volume. Bled over mix into active system for volume. Built new KCL- PHPA premix in pit 1. Centrifuging sandtraps to condition mud. Maintained all shakers, screens & repaired screens to increase longevity. Maintained properties in active system. Added Barite to inventory to have coresponding figures w/ Control Room.
For Report # 061 On 28/01/2010	**Operation at Depth 3,213.0 m**
Rig Activity	P/U & M/U Core bit, core bbls & RIH - 3182 m on 5" DP. Wash f/ 3182 - 3196 m & take SCR's. L/O single, drop ball & establish parameters. Ball landed w/ 120 psi. Cut core f/ 3196 - 3213 m. Torque went flat, no penetration. F/C_static pump slug, Cont POOH w/ cores f/ 1935 - 1087 m.
Activity	POOH 8.5" Core Interval
Fluid Treatment	Treated active KCl- PHPA system to maintain fluid properties. Prepared new KCl-PHPA premix in pit 4. Continued to maintain shaker screens& change out as required. Continued to run centrifuges to assist in solids control.Conducted a Chem/Bulk inventory.
For Report # 062 On 29/01/2010	**Operation at Depth 3,234.0 m**
Rig Activity	Cont POOH core barrel f/ 1087 - 370 m & F/C_ static. Cont POOH f/ 370 - 32 m. HTBT check gas level_ok, remove inner core barrel. Service TDS & travelling equipment. HTBT P/U 8.5" BHA M/U BHA. Upload tools & install R/A source. RIH w/ BHA - 215 m. Shallow test & down link tools_ok. Cont RIH f/ 215 - 3132 m. Break circ, take SCR's, wash f/ 3123 - 3161 m, Log w/ Sperry f/ 3175 - 3213 m. Drill f/ 3213 - 3234 m as / DD instruction.
Activity	Drill 8.5" ST-1 Interval
Fluid Treatment	Valve repaired on Red mix line. Add Radiagreen directly to active to maintain 1% vol concentration. Cont to maintain PHPA concentration by adding EZ MUD. Cont to maintain fluid loss properties by adding PAC LE & N-DRILL HT PLUS. Continue to maintain properties in both premixes, pits 1 & 4. Centrifuge to control solids in drilling fluid & maintain MWt. Transferring volume across f/ pit 1 to maintain volume in active, pit 2. Change out shaker screens to maximise solids control continue to patch screens where necessary.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

For Report # 063 On 30/01/2010	**Operation at Depth 3,283.0 m**
Rig Activity	Drill 8.5" f/ 3234 - 3283 m. Circ btms up while boosting riser w/ 3 MP. POOH f/ 3283 - shoe. Service TDS. Cont POOH f/ 1965 - surface. L/O Halliburton sources & down load, R/B same & clean floor. HTBT, ran outter barrel f/ derrick 7 P/U inner bbl f/ deck. Secure premier cg control hoses to prevent damage after wind shift. RIH core bbls on BHA f/ 32 - 1125 m.
Activity	POOH 8.5" interval
Fluid Treatment	Continue running centrifuges to maintain solids content as low as possible. Add KOH to maintain pH level. Change out shaker screens to maintain optimal solids control, repaired screens where necessary. Altered bulk figures to be in line w/ Control Room figures/volumes.
For Report # 064 On 31/01/2010	**Operation at Depth 3,298.0 m**
Rig Activity	RIH f/ 1125 - 3236 m. Wash f/ 3236 - 3283 m. Space out, P/U pup, L/O single, drop ball & seat same. Core f/ 3283 - 3298 m, torque went flat. No penetration. Circ 15 min, pull back 1 std L/O pup. F/C_static. Pump slug, POOH f/ 3236 - surface.
Activity	POOH 8.5" 2 nd core Interval.
Fluid Treatment	Maintained properties in active system. Continued to centrifuge to maintain solids & MWt. Maintained screens to assist in solids control. Calibrated mud balances. Maintained chemical inventory.
For Report # 065 On 01/02/2010	**Operation at Depth 3,309.0 m**
Rig Activity	Cont L/O core singles. P/U new inner core barrel. RIH 32 - 547 m. Cut & slip drill line. Cont RIH f/ 547 - 3236 m. M/U TDS was down f/ 3236 - 3298.5 m space out & drop ball. Establish parameters & cut core # 3 f/ 3289.5 - 3309 m. P/U record depth, circ & boost riser. P/B f/ 3309 - 3256 m, F/C_static. Pump slug. Cont POOH f/ 3256 - 316 m.
Activity	POOH w/ Core Head & BBLS # 3.
Fluid Treatment	Cont to centrifuge sand traps & active pit 2 in order to maintain solids content. Cont to maintain volume & properties in active.
For Report # 066 On 02/02/2010	**Operation at Depth 3,357.0 m**
Rig Activity	Cont pull out 374 - 32 m w/ C/bbls. L/O C/bbls inner & outer. Run GeoPilot std f/ derrick & M/U bit. P/U HOC, BAT & ACAL. Down load sperry tools & install sources. RIH w/ 8.5" BHA - 160 m. L/O drilling jar & replace w/ Low Ha jars, cont RIH - 221 m. Shallow test MWD tools. Cont RIH f/ 221 - 1658 m, filling pipe every 20 std's. Cont RIH w/ 8.5" drilling assy - 9 5/8" shoe @ 1965 m. Break circ, space out. Function test BOP - ok, F/C_static, take SCR's. Cont RIH - 3260 m. Log, ream f/ 3260 - 3309 m. Cont drill 8.5" ST-1 interval f/ 3309 -3357 m.
Activity	Drilling 8.5" ST-1 Interval.
Fluid Treatment	Add Radiagreen EME to increase concentration to 1% /Volume. Added Circal 60/16 & Circal Y to maintain concentration of bridging agents in both active & premixes to assist in preventing fluid loss. Cont to maintain properties as per program. Prepared premix in pit 1. Maintain fluid volume in active via transfers. Cont to maintain & repair shaker screens as required. Mud filtrate, mud cake & drilling fluid provided to Geologist & MWD's. Off loaded chemical f/ Far Fosna & entered into inventory.
For Report # 067 On 03/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Drill 8.5" ST-1 f/ 3357 - 3482 m. Circ, F/C_static. Pump 20 bbl BAROLIFT pill, circ shakers clean. F/C_static. POOH f/ 3482 - 3309 m. RIH f/ 3309 - 3482 m. CIrc hole clean while reciprocating pipe. F/C for 15 mins_static. P/B - 3300 m. Pump 16 bbl, 11.1 ppg slug. POOH - 9 5/8" csg shoe 1965 m.
Activity	POOH 8.5" ST-1 Interval

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

Fluid Treatment	Maintained properties in active. Made premix in pit 4. Continue to run centrifuges to prevent solids build in fluid. Change out & repair shaker screens as required. Conducted a full screen & chem inventory for back load. Provided Geologist & SLB w/ filtrate, mud cake & mud samples. Had small issue w/ barite hopper. Charged off all bulks both Brine & Barite, so figure correlate w/ Control Room figures.
For Report # 068 On 04/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	F/C_static. Service TDS. Cont POOH 1965 - 375 m, F/C_static pull BHA - 212 m. Remove Sperry R/A sources & shut down tools. L/O 8.5" stab, Float Stab, A CAL, HOC, Bat Sonic, PWD, CTN, ALD tab, B/O bit, L/O DGR & EWR, RLL Stab, NM Flex Jt, & GEOPILOT. HTBT R/U - wireline & P/U CMR tools. Log down - 4380 m. Log Up f/ 3480 - 195 m. Process data - RIH f/ 1965 - 3135 m. Correlate & tune tools. RIH f/ 3135 - 3330 m. Log up repeat. Log up main.
Activity	CMR Wire Line Logs ST-1
Fluid Treatment	Continue to Maintain KCl- PHPA properties. Begin to load Chem into containers, for back load. Cont to conduct inventories. Inventories will be adjusted once chem/containers are on the boat.
For Report # 069 On 05/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Cont W/L log # 1 - 3480.5 m. POOH - surface. SLB remove R/A sources & tools. SLB M/U tool head & tools for run # 2. L/O logging tools. RIH w/ SLB MDT string # 2 - 2135 m. Drop off test. Take pressure points between 2135 - 3320 m. Tool String = XPT, GR, ECRD,LEHQT.
Activity	MDT Wire Line Logs ST-1
Fluid Treatment	Continue to maintain properties a per program. Transfer KCL- PHPA reserve fluid into active to maintain volume & MWt. Mi Swaco centrifuge hand performed PM's on equipment. Continue to check chem & backload onto Far Fosna.
For Report # 070 On 06/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Cont - log # 2 taking pressure points f/ 3320 - 2135.5 m. Correlate tools @ 3303 m string # 2 = XPT, GR, ECRD & LEHQT. POOH w/ string # 2 & R/D same. SLB R/U & test string # 3 Quick Silver Probe MDT. RIH - 1965 m Enter O/H - difficulties getting down 2 K over. Correlate tools. Drop off test. Start sampling @ 2941 m. Correlate & POOH - 2772 m & start sampling. RIH - 3435 m start sampling @ 3409 - 2415 m.
Activity	Wireline Run 3 Quick Silver Probe MDT
Fluid Treatment	Received KOH off Far Fosna & maintained pH of fluid in Pit 3 & 4. Continued maintaining properties in Active pit 2 as/ program. Begin to clean empty Pit 1 w/ sea water, after transferring remaining KCl- PHPA volume over to active. Cont to maintain volume in active using Pits 3 & 4. Changed shaker 1,3 & 4 to 140 mesh screens. Shaker 2 has 100 mesh on btms.
For Report # 071 On 07/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Cont SLB W/L Quick Silver Probe MDT run 3, f/ 3410 - 3183.2 m sampling.
Activity	W/L QUICK SILVER PROBE MDT Run 3.
Fluid Treatment	175 bbl Sea Water used to clean pit 1 treated to sea. Cont to maintain KCl-PHPA properties.
For Report # 072 On 08/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	SLB W/L Cont run 3 f/ 3183 - 3109 m. POOH run 3 - surface. L/O tools. Test & M/U FMI - OSI tools for Run 4. RIH - 1965 m. Log down f/ 1965 - 3375 m. Log up f/ 3365 - 1965 m shoe. POOH w/ FMI - OSI W/L run 4 - surface.
Activity	POOH Run 4 FMI-OSI Wireline

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

Fluid Treatment	Whilst boosting riser add potassium hydroxide(KOH) to maintain pH & soda ash to reduce hardness. Conduct full used screen inventory.
For Report # 073 On 09/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	HTBT R/D FMI string 4. Slb W/L R/U Seismic string 5. Guns in water on stbd crane. SLB W/L RIH w/ Seismic string 5 - 3370 m. Log out 3370 - 1600 m. POOH - surface. L/O seismic string 5 tools. M/U MSCT string 6 tools. RIH MSCT logging string 6 - 3420 m, correlate. Core 3420 - 3316 m, correlate log. Core f/ 3300 - 3137 m core # 26. SLB W/L under tension. Attempt to wok loose.
Activity	SLB W/L Under Tension.
Fluid Treatment	6 ALDACIDE G added to inventory came off Far Fosna. Cont maintain properties fluid to targets.
For Report # 074 On 10/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	SLB held tension on W/L & attempt to free. Attach "t" bars to W/L & TDS & pull. W/L shear pin broke free @ 10 K O/P. POOH W/ SLB W/L, R/D SLB. P/U o'shot assy & M/U to std # 1. Service TDS. TOFS- dropped object survey TDS. RIH w/ fishing assy - 1965 m. Estab circ & increased 700 gpm, 140 spm, 1630 psi. Cont RIH f/ 1965 - 3110 m. Circ & condition mud, take SCR's. Reduce stks, lower O/S fish, engage fish. Shut down pump, P/U O/S 3117 m, confirm fish engaged. F/C pump slug & POOH - shoe. F/C_static. Service TDS. Cont POOH w/ fishing assy - 954 m.
Activity	POOH W/ Fishing Assy
Fluid Treatment	On circulating @ shoe add potassium hydroxide to maintain pH. Change out lower deck screens to coarser mesh to avoid stripping out calcium carbonate bridging agents. Divert bottom's up return to empty pit for treatment. Replace volume with in-spec surface fluid. Add soda ash to reduce hardness. Add ALDACIDE G to inhibit bacterial growth. Prepare slug.
For Report # 075 On 11/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Cont POOH w/ fish assy f/ 954 - surface. F/C_static prior - pulling pipe through BHA.SLB L/O fish (100%), L/O o' shot & fish assy. Run BHA f/ derrick, P/U stab, bit sub, 8.5" bit, 1 stg stb - 89 m. Jet WH w/ bit f/ 89 - 174 m. M/U BHA test assy & RIH . L/O in WH @ 95 m w/ 40K under. HTBT, BOP test / Maersk precedures. Unseat BOP test tool, POOH - 174 m, L/O assy & install diverter packer. RIH f/ 174 - 1965 m. Estab circ @ shoe, cont RIH f/ 1965 - 3470 m. Circ btms up f/ 3150 - 3470 & worked tight spots, up & down.
Activity	Wash & Ream.
Fluid Treatment	Prepared 8.8 ppg Lo-Weight and 10.3 ppg Hi Weight pills as per prog. Prepared 10.3 ppg slug. Conditioned & Maintained active system w/ bridging agents & PAC LE. Treated active mud w/ KOH for alkalinity. Diverted heavy contaminated mud w/ CO2 into pit 1. Maintain active mud weight at 9.3 ppg w/ premix from pit 4. Radiagreen - 1.4 %
For Report # 076 On 12/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Wash & ream f/ 3470 - 3482 m.Circ btms up. Pump 20 bbl Low Wt 8.9 ppg pill, followed by High Wt 10.3 ppg pill. Cont circ 2 x btms up until Mud Eng'rs instruction. F/C_static. POOH to surface. HTBT, R/U w/ WL Dual Packer. M/U WL Dual Packer run # 7. RIH - 3400 m. Tight hole @ 2740 & 2793 m. Correlate, POOH - 3302. Tight @ 3396 - 3350 m. Sample @ 3302 (2nd Station) RIH - 3340 m. Log up f/ 3340 3294.2 m. Sample @ 3294.2 m (2nd Station).
Activity	SLB W/L Dual Packer Run # 7
Fluid Treatment	Moved chemicals into containers wait on back load. Packing mud lab equipment in progress. Conditioned & treated contaminated mud f/ hole. Maintained properties in active pit 2. Prepared unused shaker screens for back load.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

For Report	**# 077**	**On**	**13/02/2010**	**Operation at Depth**	**3,482.0 m**
Rig Activity				Cont Sample @ 3294.2 m (3rd station). Correlate up - 3230 m, positioned f/ @ 3214.4 m & sample. Stuck @ 3214.4 m, work free turning packer on & off. POOH - 3205 m correlate & sample station 5 @ 3205 m. POOH - 3110 m & sample station 6. RIH - 3140 m & sample station 7.	
Activity				SLB W/L Dual Packer Run # 7	
Fluid Treatment				General packing & housekeeping at mud lab. Transferred unused shaker screens into container OPC 437 for backload. Radiagreen conc. @ 1.42%.	
For Report	**# 078**	**On**	**14/02/2010**	**Operation at Depth**	**3,482.0 m**
Rig Activity				Cancelled station # 8 @ 3312.8 m. Correlated up f/ 3140 m. Sampling @ station # 9, 3184.6 m. POOH - 3083 m & pressure test @ station # 10. RIH - 3172 m & pressure test @ station # 11 - 3172 m. RIH - 3331 m & pressure test station # 12. POOH - 3312 m. Correlate & pressure test station # 13.	
Activity				POOH w/ W/L Dual Packer Run # 7	
Fluid Treatment				General housekeeping & packing in mud lab. Radiagreen concentration = 1.4%. Prepared 9.3 ppg, 55 bbl Hi-vis BARAZAN D PLUS in slug, for P&A job.	
For Report	**# 079**	**On**	**15/02/2010**	**Operation at Depth**	**3,482.0 m**
Rig Activity				Cont - pressure test station # 13 @ 3312 m. POOH w/ SLB tool string, L/O & R/D W/L. Slip & cut drlg line. R/U 2 7/8" handling equipment & RIH - 168 m. RIH 5" DP f/ 168 - 1961 m. Service TDS. Cont RIH f/ 1961 - 3482 m & tag btm. Circ & condition mud. HTBT, M/U cmt assy. Proceed w/ cmt plug # 1A / program. R/D cmt assy. POOH f/ 3482 - 3322 m. Pump plug 1B. Circ 1.5 btms up, treated out 33 bbl of cont mud. HTBT, R/U cmt line & press Test_ ok. Mix & pump 195 Sx "G" class cmt w/ 24 bbl H2O @ 15.8 ppg. Displace w/ drillwater. Check flow back + 1.5 bbl. POOH f/ 3322 - 3162 m, circ btms up. treated out 19 bbl of cont mud. Test lines & set plug # 1C / program.	
Activity				P & A Set Plug # 1C	
Fluid Treatment				Mixed 55 bbl Hi-vis @ 9.5 ppg FV 198 sec/qt. Circ & Conditioned mud balance at 9.5 ppg. Plug 1A Diverted & treated out , 73.1 bbl contaminated mud/DW/traces of cement @ 9.35 ppg. Started placing non essential, packed lab equipment on pallet ready for back load.	
For Report	**# 080**	**On**	**16/02/2010**	**Operation at Depth**	**3,482.0 m**
Rig Activity				Halliburton cementing pumped cement plugs 1B, 1C, 2 as per P & A program. Excess DP were laid down. TOC was tagged @ 2768m. 25 bbl h-ivis was pumped & diplaced @ 2115 m. Cement plug # 3 was pumped & displaced as per program. Excess DP was laid down.	
Activity				P & A	
Fluid Treatment				Plug 1b - Diverted 19 bbl contaminated mud w/ traces of cmt. Plug 1c - Diverted 10.5 bbl contaminated mud w/ traces of cmt. Plug 2 - Diverted 9 bbl contaminated mud w/ traces of cmt. Mixed 60 bbl 10.6 ppg Slug. Plug 3 - Diverted 21 bbl contaminated mud/Drill water @ 9.2 ppg - traces of cmt. Cement in hole - 187.2 bbl Mud properties not in specs due to cement contamination & no treatment. Mud engineering cost for Kosta ends 16 Feb 2010.	
For Report	**# 081**	**On**	**17/02/2010**	**Operation at Depth**	**3,482.0 m**

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

Rig Activity	WOC. P/ tested csg - failed. RIH & tagged TOC @ 1978 m. Circ. M/U cement head & pumped 19 bbl cmt plug # 3A. POOH to 1701 m & circ. WOC. P/Test csg to 2000 psi/15 min - ok. POOH & laid down DP. Retrieved wear bushing.
Activity	P & A
Fluid Treatment	Plug 3A - Mud return @ 9.3 ppg. No cement return. Cement in hole - 216.2 bbl Mud properties not in spec due to cement contamination & no treatment. Chemicals backload to Far Scimitar. Shaker screens backload to Far Scimitar. Mud lab equipment backload to Far Scimitar. 6 bags damaged Circal 60/16 - inventory correction.

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Deviation Actual

Survey Date	MD m	TVD m	Angle	Direction	Horiz Displ. m
03/12/2009	327	327	0.34	316.4	0.3
03/12/2009	356	356	0.16	310.1	0.3
03/12/2009	415	415	0.43	334.6	0.6
03/12/2009	502	502	0.26	356.6	1.1
03/12/2009	559	559	0.33	356.6	1.4
03/12/2009	646	646	0.22	77.0	1.6
03/12/2009	733	733	0.10	264.5	1.7
04/12/2009	819	819	0.13	204.1	1.6
04/12/2009	907	907	0.22	337.4	1.6
04/12/2009	957	957	0.15	112.4	1.7
11/12/2009	1,529	1,529	0.61	56.9	1.3
13/12/2009	1,972	1,972	0.67	57.7	1.2
20/12/2009	2,007	2,007	4.80	20.7	7.1
22/12/2009	2,105	2,104	12.80	14.6	11.8
22/12/2009	2,250	2,240	26.59	5.7	18.8
23/12/2009	2,367	2,340	36.34	359.9	23.5
23/12/2009	2,511	2,450	42.92	354.4	16.4
23/12/2009	2,741	2,617	43.47	355.9	3.0
24/12/2009	2,828	2,681	42.00	355.8	
25/12/2009	3,175	2,934	42.94	355.9	
26/12/2009	3,290	3,019	42.18	356.0	
27/12/2009	3,522	3,132	41.35	357.9	
23/01/2010	2,685	2,608	36.05	179.7	1.2
24/01/2010	2,945	2,819	35.81	174.8	422.2
28/01/2010	3,185	3,016	35.70	178.5	559.2
29/01/2010	3,203	3,031	35.56	178.7	569.7
02/02/2010	3,325	3,130	36.06	178.6	640.5
04/02/2010	3,467	3,245	35.47	179.3	723.6

DAILY MUD REPORTS

Baroid Fluid Services

Report No 001

Daily Drilling Fluid Report

Date 29/11/2009		**Depth** 0.0 m	
Spud Date 30/11/2009		**Rig Activity** TRIPPING	
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m) OD	ID	Length	in Casing m OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	in							Model			
Make/Type								Bore in			
Jets								Strokes in			
TFA	sq-in							Eff(%)			
Jets Velocity	ft/sec							bbl/strk			
Jet Impact Force	lbf							SPM			
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m							Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg							Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program
Source							
Time							
Depth	m						
FL Temp	Deg C						
Density @ Deg C	ppg						
FV @ Deg C	sec/qt						
PV @ Deg C	cP						
YP	lbs/100 ft2						
GELS	lbs/100 ft2						
600/300							
200/100							
6/3							
API Filt	ml/30 min						
HTHP @ Deg C	ml/30 min						
Cake API/HTHP	32nd in						
Corr Solid	% by Vol						
NAP/Water	% by Vol						
Sand	% by vol						
MBT	ppb Eq.						
pH @ Deg C							
ALK Mud	Pm						
ALK Filt	Pf/Mf						
Chlorides	mg/l						
Tot. Hardness	mg/l						
LGS/HGS	% by Vol						
LGS/HGS	ppb						
ASG	SG						
Additional Properties							

Fluid Treatments

Fluid Type

Kantan IV towed to location from Trefoil to Rockhopper as of 0546hrs

Begin preparing PHB mud for the 36" hole.

Rig Activity

Tow to location from Trefoil-1 to Rockhopper-1, arrive on location at 0546hrs. Anchor handling. Ballast Rig. Cross tension Anchors.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can		8		8	
Amodrill 1235	1 bbl bulk		19.400		19.400	
BARA-DEFOAM W300	25 l can		8		8	
BARAZAN D PLUS	25 kg bag		35		35	
barite	1 tons bulk		116.400		116.400	
BAROLIFT	15 lb box		16		16	
BARO-SEAL FINE	40 lb bag		40		40	
BARO-SEAL MEDIUM	40 lb bag		70		70	
bentonite	1000 kg bulk		46.000		46.000	
Circal 60/16	25 kg bag		149		149	
Circal Y	25 kg bag		91		91	
citric acid	25 kg bag		38		38	
CLAYSEAL PLUS	55 gal drum		46		46	
CON DET	5 gal can		32		32	
DEXTRID LTE	25 kg sack		126		126	
EZ SPOT	55 gal drum		5		5	
EZ-MUD	25 kg pail		121		121	
Generic mesh 24 (API 20)	1 each box		12		12	
guar gum	25 kg bag		100		100	
mica	25 kg bag		38		38	
N-DRIL HT PLUS	50 lb bag		105		105	
Omyacarb 5	25 kg bag		6		6	
OXYGON	50 lb can		33		33	
PAC-L	25 kg bag		87		87	
potassium chloride	1000 kg bag		33		33	
potassium hydroxide	20 kg pail		12		12	
sapp	25 kg bag		18		18	

Solids Control Equipment				Time	
Shaker	Screens	Hrs		Drilling	
VSM-300				Circulating	
VSM-300				Trips	
VSM-300				Rig	
VSM-300				Surveys	
				Fishing	
				Run Casing	
				Coring	
				Reaming	
Hydrocyclone	Cones	Screens	Hrs	Testing	
				Logging	
				Dir Work	
				Repair	
				Other	23.0
Centrifuge	Speed	Feed Rate	Hrs	Total	23.0
518	4,000	80.00		Rotating	
518	4,000	80.00		ROP	
				Dil Rate	0.00

Fluid Volume Breakdown

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Change		Other		Downhole	
Total Vol		Total		Total Losses	

Fluid Types	Vol bbl

Deviation Information

Survey MD	m
Survey TVD	m
Angle	Deg
Direction	
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A0.00	Total Cumulative Cost	$A3,080.00

Baroid Representatives	James Munford	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 002

Daily Drilling Fluid Report

Date 30/11/2009		Depth 117.0 m	
Spud Date 30/11/2009		Rig Activity Drilling	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	26.000	in
Make/Type	SMITH/CR1	
Jets	2x20|4x18	
TFA	1.608	sq-in
Jets Velocity	75	ft/sec
Jet Impact Force	128.3	lbf
Bit HHSI	0.02	hhp/in2
Press Drop @ Bit	44	psi
Bit Depth	117.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit	8.82	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	3.000	51.2
Drill Collar	8.250	2.875	65.8
Open Hole	36.000		16.7

in Casing m

OD	Set	MD

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	75	0	0
gpm|bbl/min	376 | 8.96		
Total GPM	376	AV, Riser	Circ Press psi 250
Total Circ Time	13	AV min DP 7.3	Tot Pres Loss 174
BU Time , min	7	AV max DC 7.5	Press Drop DP 63
Total Strokes	980	BU Strokes 492	Press Drop An 0

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #1	Pit #1					
Time		14:00	18:00					
Depth	m	100	100					
FL Temp	Deg C							
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25				8.50	9.00
FV @ Deg C	sec/qt	132 @ 25	130 @ 25					
PV @ Deg C	cP	14 @ 49	15 @ 49					
YP	lbs/100 ft2	56	55					
GELS	lbs/100 ft2	25/47/60	25/47/60					
600/300		84.0/70.0	85.0/70.0					
200/100		60.0/56.0	60.0/55.0					
6/3		35.0/30.0	34.0/29.0					
API Filt	ml/30 min							
HTHP @ Deg C	ml/30 min							
Cake API/HTHP	32nd in							
Corr Solid	% by Vol							
NAP/Water	% by Vol	-/95.0	-/95.0					
Sand	% by vol							
MBT	ppb Eq.	27.0	27.0					
pH @ Deg C		9.00 @ 25	9.00 @ 25					
ALK Mud	Pm							
ALK Filt	Pf/Mf							
Chlorides	mg/l	1,000	1,000					
Tot. Hardness	mg/l	240	240					
LGS/HGS	% by Vol							
LGS/HGS	ppb							
ASG	SG							

Additional Properties

Fluid Treatments

Fluid Type Seawater

Mixed 540 bbl PHB mud.
R'ced 880 bbl KCl Polymer/Gel mud f/ Fosna.
Which was converted to 10 ppg Kill mud.

R'ced chemicals f/ Fosna/Scimitar.

Weight indicator at Bentonite surge tank = ok.
Weight indicator at Barite surge tank = failed.
Note: The 5MT Betonite received represents a correction that is consistent with an adjustment made by KanTanIV control room

Rig Activity

Cont. to cross tension anchor. M/U 18 3/4" WHRT assembly & laid out same. M/U 5" HWDP & racked back in derrick. Held JSA. P/U 18 3/4" wellhead & set in rotary. P/U WHRT, installed cement wiper plugs, M/U to 18 3/4" wellhead & laid out f/ drill floor. P/U 26" X 36" BHA assembly, RIH to 94 m. RIH & tag bottom at 100.3 m. Pulled up 10 m. Broke circulation & function tested Anderdrift tool. 10 pulses counted 0.5 deg. Spud in Rockhopper-1. Drill 36" hole f/ 100.3 m to 117 m. Started drilling w/ using PHG for first 5 m. Pumped 50 bbl hi-vis every single & spotted Hi Vis around BHA on connections.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	116.400		37.150	79.250	$A27,141.05
guar gum	25 kg bag	100	50	22	128	$A1,952.50
caustic soda	25 kg can		32	3	29	$A162.84
soda ash	25 kg bag	22		2	20	$A60.84
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	8			8	
BARAZAN D PLUS	25 kg bag	35	40		75	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	46.000	5.000		51.000	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	38			38	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
lime	25 kg bag		89		89	
mica	25 kg bag	38			38	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Daily Products Cost	$A29,317.23	Total Daily Cost	$A32,397.23
Cumulative Products Cost	$A29,317.23	Total Cumulative Cost	$A35,477.23

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	1.0
Circulating	0.5
Trips	17.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	5.0
Total	24.0
Rotating	1.0
ROP	383.9
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus	58.8	Base		Fluid Dumped	
Pipe Cap	3.2	Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	62.0	Sea Water	123.6	Evaporation	
Total Circ	117.0	Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Change	123.6	Other		Downhole	
Total Vol	117.0	Total	123.6	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	1439.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	Deg
Direction	
Horiz Displ.	m

Baroid Representatives	James Munford	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 003

Daily Drilling Fluid Report

Date 01/12/2009		Depth 158.0 m	
Spud Date 30/11/2009		Rig Activity Wait on cement	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in							Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type								Bore in	6.500	6.500	6.500
Jets								Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM	AV, Riser	Circ Press psi	
Bit Depth	m	Open Hole	36.000	57.7				Total Circ Time	AV min DP	Tot Pres Loss	
ECD @ Csg Shoe	ppg							BU Time , min	AV max DC	Press Drop DP	
ECD @ Bit	ppg							Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets		Program	
Source		Pit #1	Pit #1						
Time		9:00	23:00						
Depth	m	158	158						
FL Temp	Deg C								
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25					8.50	9.00
FV @ Deg C	sec/qt	124 @ 25	122 @ 25						
PV @ Deg C	cP	11 @ 49	12 @ 49						
YP	lbs/100 ft2	59	58						
GELS	lbs/100 ft2	25/40/51	26/39/47						
600/300		81.0/70.0	82.0/70.0						
200/100		60.0/55.0	60.0/52.0						
6/3		33.0/25.0	35.0/26.0						
API Filt	ml/30 min								
HTHP @ Deg C	ml/30 min								
Cake API/HTHP	32nd in								
Corr Solid	% by Vol								
NAP/Water	% by Vol	-/95.0	-/95.0						
Sand	% by vol								
MBT	ppb Eq.	27.0	27.0						
pH @ Deg C		9.00 @ 25	9.00 @ 25						
ALK Mud	Pm								
ALK Filt	Pf/Mf								
Chlorides	mg/l	1,000	1,000						
Tot. Hardness	mg/l	200	200						
LGS/HGS	% by Vol								
LGS/HGS	ppb								
ASG	SG								
Additional Properties									

Fluid Treatments

Fluid Type Seawater

Cont top up PHB Hivis. Prepare mud for next interval.
Displaced hole w/ 330 bbl PHB mud.

Cleaned Pit 4 for Cementer, Mica used for cementing.

Received bulk chemicals off the Far Fosna.

Daily Mud Mixed: 256.6 bbl
Total Mud Mixed for Interval: 796.7 bbl

Rig Activity

Drilled 26" x 36" hole f/ 117 m to 150 m. Pumping 50 bbl PBG hi-vis every single & spotted PBG hi-vis around BHA on connections. Saver sub backed out on connection. POOH to 110 m, troubleshoot. RIH to 150 m, drill ahead f/ 150 m to 158 m, 36" hole to 157 m. Pump 100 bbl Guar gum pill followed by 330 bbl 8.8 ppg PHG mud. POOH to surface, no drag. Rig up to run 30" conductor. RIH w/ 30" conductor on HWDP to 157 m, no drag. Rig up surface lines, circulate casing contents, pumped 265 bbl 15.9 ppg class G cement slurry. WOC.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
guar gum	25 kg bag	128		5	123	$A443.75
caustic soda	25 kg can	29		5	24	$A271.40
soda ash	25 kg bag	20		6	14	$A182.52
mica	25 kg bag	38		2	36	$A84.84
lime	25 kg bag	89		5	84	$A83.10
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	8			8	
BARAZAN D PLUS	25 kg bag	75	80		155	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	51.000	43.500		94.500	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	38			38	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Solids Control Equipment			
Shaker	Screens		Hrs
VSM-300			
VSM-300			
VSM-300			
VSM-300			
Hydrocyclone	Cones	Screens	Hrs
Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time	
Drilling	3.0
Circulating	2.0
Trips	2.5
Rig	3.5
Surveys	
Fishing	
Run Casing	10.0
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	3.0
Total	24.0
Rotating	3.0
ROP	44.8
Dil Rate	0.00

Fluid Volume Breakdown Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	238.3	Sea Water	77.2	Evaporation	
Total Circ	55.0	Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	117.0	Chemicals		Total Surface	
Net Change	169.7	Other	92.5	Downhole	
Total Vol	293.3	Total	169.7	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	1141.0

Deviation Information		
Survey MD		m
Survey TVD		m
Angle		Deg
Direction		
Horiz Displ.		m

Daily Products Cost	$A1,065.61	Total Daily Cost	$A4,145.61
Cumulative Products Cost	$A30,382.84	Total Cumulative Cost	$A39,622.84
Baroid Representatives	James Munford	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 004

Daily Drilling Fluid Report

Date 02/12/2009		Depth 330.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 17.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	17.500	in
Make/Type	SMITH/SMITH	
Jets	3x22|1x16	
TFA	1.310	sq-in
Jets Velocity	244	ft/sec
Jet Impact Force	1108.7	lbf
Bit HHSI	1.13	hhp/in2
Press Drop @ Bit	467	psi
Bit Depth	330.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit	8.97	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	3.000	217.3
Drill Collar	8.250	2.875	112.7
Open Hole	36.000		57.7
Open Hole	17.500		172.0

in Casing m

OD	Set	MD

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	66	66	67
gpm|bbl/min	331 | 7.88	331 | 7.88	336 | 8.00
Total GPM	998	AV, Riser	Circ Press psi 1661
Total Circ Time	18	AV min DP 19.2	Tot Pres Loss 1369
BU Time , min	16	AV max DC 102.7	Press Drop DP 645
Total Strokes	3,652	BU Strokes 3,115	Press Drop An 9

Properties		Hyd 1	2	3	4	Targets	Program
Source		Pit #1	Pit #1				
Time		9:00	19:30				
Depth	m	158	270				
FL Temp	Deg C						
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25				8.50 9.00
FV @ Deg C	sec/qt	130 @ 25	127 @ 25				
PV @ Deg C	cP	12 @ 49	11 @ 49				
YP	lbs/100 ft2	61	60				
GELS	lbs/100 ft2	30/43/55	29/42/54				
600/300		85.0/73.0	82.0/71.0				
200/100		63.0/55.0	61.0/53.0				
6/3		37.0/28.0	36.0/27.0				
API Filt	ml/30 min						
HTHP @ Deg C	ml/30 min						
Cake API/HTHP	32nd in						
Corr Solid	% by Vol						
NAP/Water	% by Vol	-/95.0	-/96.0				
Sand	% by vol						
MBT	ppb Eq.	27.5	30.0				
pH @ Deg C		9.00 @ 25	9.00 @ 25				8.50 9.50
ALK Mud	Pm						
ALK Filt	Pf/Mf						
Chlorides	mg/l	1,000	1,000				
Tot. Hardness	mg/l	240	240				400
LGS/HGS	% by Vol						
LGS/HGS	ppb						
ASG	SG						
Additional Properties							

Fluid Treatments

Fluid Type Seawater

Cont. mixing PBG in Pit 1 & transferring over to active Pit 4 when needed.

19 MT Bentonite was used according to Control Room figures.

Daily Mud Mixed: 1010 bbl
Total Mud Mixed for 17.5" Interval: 1010 bbl

Daily Hi Vis usage: 551 bbl

Rig Activity

WOC. Slack off to 175, cmt holding, release tool 4.5 right hand turns. L/O cmt assy, POOH. L/O running tool & SLM. L/O 26 x 36 assy. P/U & M/U 17.5" Drilling assy, attach bridle to BHA & secure to guidelines. Stab into well w/ ROV guidance. Cont RIH M/U TDS washed down f/ 131m, tagged cmt @ w/ 5K. Drill cmt & shoe f/ 147 m to 157 m. Drill 17.5" hole f/ 158 m to 330 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
bentonite	1000 kg bulk	94.500		19.000	75.500	$A14,465.65
guar gum	25 kg bag	123		35	88	$A3,106.25
BARAZAN D PLUS	25 kg bag	155		5	150	$A1,076.70
caustic soda	25 kg can	24		7	17	$A379.96
citric acid	25 kg bag	38		3	35	$A228.60
soda ash	25 kg bag	14		7	7	$A212.94
lime	25 kg bag	84		12	72	$A199.44
BARA-DEFOAM W300	25 l can	8		1	7	$A125.82
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	8.5
Circulating	
Trips	1.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	14.5
Total	24.0
Rotating	8.5
ROP	66.4
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus	372.0	Base		Fluid Dumped	
Pipe Cap	9.2	Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	381.2	Sea Water	114.5	Evaporation	
Total Circ	436.2	Whole Mud	0.1	Trips	
Reserve		Barite		Other	-24.9
Prev Vol	293.3	Chemicals	53.3	Total Surface	
Net Change	143.0	Other		Downhole	
Total Vol	436.2	Total	167.9	Total Losses	-24.9

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	1338.0

Deviation Information

Survey MD	327.4 m
Survey TVD	327.4 m
Angle	0.34 Deg
Direction	316
Horiz Displ.	0.3 m

Daily Products Cost	$A19,795.36	Total Daily Cost	$A22,875.36
Cumulative Products Cost	$A50,178.20	Total Cumulative Cost	$A62,498.20

Baroid Representatives	Kosta Georgiou	Jay Wan	
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Baroid Fluid Services

Report No 005

Daily Drilling Fluid Report

Date	03/12/2009	**Depth**	823.0 m
Spud Date	30/11/2009	**Rig Activity**	Drilling 17.5" Interval

Operator	ADA DRILLING	**Report For**	Mike Lanzer / Kevin Monkhouse
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Brian Meechan / Geoff Chapman
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	17.500	in
Make/Type	SMITH/SMITH	
Jets	3x22|1x16	
TFA	1.310	sq-in
Jets Velocity	245	ft/sec
Jet Impact Force	1119.9	lbf
Bit HHSI	1.15	hhp/in2
Press Drop @ Bit	472	psi
Bit Depth	823.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit	9.00	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	3.000	710.3
Drill Collar	8.250	2.875	112.7
Open Hole	36.000		57.7
Open Hole	17.500		665.0

in Casing m

OD	Set	MD

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	66	67	67
gpm|bbl/min	331 | 7.88	336 | 8.00	336 | 8.00

Total GPM	1,003	AV, Riser	Circ Press psi 1933
Total Circ Time	37	AV min DP 19.3	Tot Pres Loss 2309
BU Time , min	34	AV max DC 103.2	Press Drop DP 1559
Total Strokes	7,456	BU Strokes 6,800	Press Drop An 29

Properties		Hyd 1	2	3	4	Targets	Program
Source		Pit #1	Pit #1	Pit #1	Pit #1		
Time		5:30	16:00	21:31	10:30		
Depth	m	430	708	800	570		
FL Temp	Deg C						
Density @ Deg C	ppg	8.80 @ 25	8.90 @ 25	8.80 @ 25	8.90 @ 25		8.50 9.00
FV @ Deg C	sec/qt	128 @ 25	125 @ 25	126 @ 25	122 @ 25		
PV @ Deg C	cP	12 @ 49	10 @ 49	12 @ 49	14 @ 49		
YP	lbs/100 ft2	61	45	60	50		
GELS	lbs/100 ft2	30/43/55	21/37/50	29/42/54	30/43/55		
600/300		85.0/73.0	65.0/55.0	84.0/72.0	78.0/64.0		
200/100		63.0/55.0	49.0/43.0	62.0/54.0	54.0/47.0		
6/3		37.0/28.0	20.0/18.0	37.0/27.0	30.0/25.0		
API Filt	ml/30 min						
HTHP @ Deg C	ml/30 min						
Cake API/HTHP	32nd in						
Corr Solid	% by Vol						
NAP/Water	% by Vol	-/96.0	-/95.0	-/96.0	-/95.0		
Sand	% by vol						
MBT	ppb Eq.	30.0	30.0	30.0	30.0		
pH @ Deg C		9.00 @ 25	9.00	9.00 @ 25	9.00 @ 25		8.50 9.50
ALK Mud	Pm						
ALK Filt	Pf/Mf						
Chlorides	mg/l	1,000	1,000	1,100	1,200		
Tot. Hardness	mg/l	240	120	240	200		400
LGS/HGS	% by Vol						
LGS/HGS	ppb						
ASG	SG						
Additional Properties							

Fluid Treatments

Fluid Type Seawater

Lime & Caustic used to flocculate & thicken PHG. Inventory correction on Bentonite as per KT4 control room. Cont. to top up PHB Hi Vis.

Under instruction from Company Men, built displacement fluid in Pill Pit 158 bbl & Pit 2 353 bbl of 8.8 ppg Fluid. In order to achieve this 340 bbl of 10 ppg Kill was to be dumped in total from Pill Pit & Pit 2.

Previous Daily Mud Mixed 1010 bbl
Daily Mud Mixed: 1600 bbl
Total Mud Mixed for 17.5" Interval: 2610 bbl
Daily Fluid Lose 1840 bbl

Rig Activity

Cont. drilling 17.5" interval f/ 330 to 425 m.
Changed out HPU filter on Top Drive. Cont. drilling f/ 425 to 823 m

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
bentonite	1000 kg bulk	75.500		13.000	41.000	$A9,897.55
BARAZAN D PLUS	25 kg bag	150		6	144	$A1,292.04
guar gum	25 kg bag	88		10	78	$A887.50
caustic soda	25 kg can	17		6	11	$A325.68
lime	25 kg bag	72		14	58	$A232.68
soda ash	25 kg bag	7		4	3	$A121.68
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	35			35	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Daily Products Cost	$A12,757.13	Total Daily Cost	$A15,837.13
Cumulative Products Cost	$A62,935.33	Total Cumulative Cost	$A78,335.33

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	23.5
Circulating	
Trips	
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	23.5
ROP	68.8
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus	812.1	Base		Fluid Dumped	
Pipe Cap	23.4	Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	835.5	Sea Water	418.6	Evaporation	
Total Circ	890.5	Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	436.2	Chemicals	35.9	Total Surface	
Net Change	546.9	Other	92.5	Downhole	
Total Vol	890.5	Total	546.9	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	1338.0

Deviation Information

Survey MD	819.3 m
Survey TVD	819.3 m
Angle	0.13 Deg
Direction	204
Horiz Displ.	1.6 m

Baroid Representatives Kosta Georgiou Jay Wan
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Baroid Fluid Services

Report No 006

Daily Drilling Fluid Report

Date 04/12/2009		Depth 966.0 m	
Spud Date 30/11/2009		Rig Activity Run 13 3/8" casing	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	in
Make/Type	
Jets	
TFA	sq-in
Jets Velocity	ft/sec
Jet Impact Force	lbf
Bit HHSI	hhp/in2
Press Drop @ Bit	psi
Bit Depth	m
ECD @ Csg Shoe	ppg
ECD @ Bit	ppg

Drill String (in) / (m)

	OD	ID	Length
Open Hole	36.000		1.0
Open Hole	17.500		808.0

in Casing m

OD	Set	MD

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM	AV, Riser	Circ Press psi
Total Circ Time	AV min DP	Tot Pres Loss
BU Time , min	AV max DC	Press Drop DP
Total Strokes	BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pill Pit					
Time		12:00	21:30					
Depth	m	966	966					
FL Temp	Deg C							
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25				8.50	9.00
FV @ Deg C	sec/qt	65 @ 25	62 @ 25					
PV @ Deg C	cP	12 @ 49	12 @ 49					
YP	lbs/100 ft2	36	37					
GELS	lbs/100 ft2	10/17/21	10/17/21					
600/300		60.0/48.0	61.0/49.0					
200/100		42.0/35.0	43.0/36.0					
6/3		17.0/15.0	17.0/15.0					
API Filt	ml/30 min	7.2	7.4					
HTHP @ Deg C	ml/30 min							
Cake API/HTHP	32nd in							
Corr Solid	% by Vol							
NAP/Water	% by Vol	-/95.0	-/96.0					
Sand	% by vol							
MBT	ppb Eq.	15.0	15.0					
pH @ Deg C		9.00 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm							
ALK Filt	Pf/Mf							
Chlorides	mg/l	1,500	1,400					
Tot. Hardness	mg/l	240	240					400
LGS/HGS	% by Vol							
LGS/HGS	ppb							
ASG	SG							

Additional Properties

Fluid Treatments

Fluid Type Seawater

Mixed & displaced 1200 bbl of 8.8 Pad mud to hole. Top up 8.8 ppg Pad mud.
Cleaned Pits 1,3 & 4 for KCl brine, acquired permit to clean pits & organised sack room for next section. Prepare to B/L 2 x pallets Guar Gum & 1 x pallet Lime. Crew busy due to csg & cmt jobs.
Previous Daily Mud Mixed 2610 bbl
Daily Mud Mixed: 1740 bbl
Total Mud Mixed for 17.5" Interval: 4350 bbl
Daily Fluid used 1740 bbl

Rig Activity

Cont. drill 17.5" f/ 823 - 966 m, tide corrected, survey @ TD & pumped 80 bbl hi-vis. POOH 6 std, tight spots f/ 909 - 841 m, max over pull 30k wiped tight spots clean. RIH & wash to bottom f/ 941, no fill. Circ 100 bbl hi-vis, followed by 1.25 x hole vol hi-vis. POOH to csg shoe @ 157 m, max over pull 20K. L/O 17.5" stab & bit. Racked BHA in derrick, removed Halliburton probe f/ NMHOC. M/U jet sub to std HWDP. RIH w/ jet sub o/ 102. Jetting 1150 psi @ 1555 hrs, POOH, L/O jet sub. M/U cmt head, HTBT f/ rigging up & running 13 3/8' csg. R/U up PCS, Pick up shoe jt, check, float jt, check OK, run 13 3/8" per program.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	144		12	132	$A2,584.08
lime	25 kg bag	58		16	42	$A265.92
citric acid	25 kg bag	35		3	32	$A228.60
guar gum	25 kg bag	78		2	76	$A177.50
soda ash	25 kg bag	3		3		$A91.26
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	41.000			41.000	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Daily Products Cost	$A3,347.36	Total Daily Cost	$A6,427.36
Cumulative Products Cost	$A66,282.69	Total Cumulative Cost	$A84,762.69

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	9.0
Circulating	1.0
Trips	8.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	5.5
Total	24.0
Rotating	9.0
ROP	52.1
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	792.8	Sea Water	246.3	Evaporation	
Total Circ	55.0	Whole Mud		Trips	
Reserve	54.9	Barite		Other	-141.6
Prev Vol	890.5	Chemicals		Total Surface	
Net Change	104.7	Other		Downhole	
Total Vol	902.7	Total	246.3	Total Losses	-141.6

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	581.0

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Baroid Representatives Kosta Georgiou Jay Wan
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Baroid Fluid Services

Report No 007

Daily Drilling Fluid Report

Date 05/12/2009		Depth 966.0 m	
Spud Date 30/11/2009		Rig Activity Rig up and rig down	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bit Size	in				30.000	@	158.0	Bore in	6.500	6.500	6.500
Make/Type					13.375	@	961.0	Strokes in	12.000	12.000	12.000
Jets								Eff(%)	97	97	97
TFA	sq-in							bbl/strk	0.119	0.119	0.119
Jets Velocity	ft/sec							SPM	0	0	0
Jet Impact Force	lbf							gpm|bbl/min			
Bit HHSI	hhp/in2										
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Open Hole	17.500	5.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg							Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2							Fluid Type Seawater
Time		9:00	21:10							Pits cleaned & received 430 bbl KCl brine from Scimitar.
Depth	m	966	966							Guar Gum & Lime backloaded.
FL Temp	Deg C									8 MT Bentonite charged as it had settled further as per control room.
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25					8.50	9.00	
FV @ Deg C	sec/qt	60 @ 25	58 @ 25							Daily Mud mixed: 0 bbl
PV @ Deg C	cP	12 @ 49	12 @ 49							Total Mud mixed: 4350 bbl
YP	lbs/100 ft2	36	36							
GELS	lbs/100 ft2	10/16/20	10/16/20							Total Mud Used: 475 bbl
600/300		60.0/48.0	60.0/48.0							Total Sea water used to displace For CMT Job 400.8 bbl
200/100		40.0/35.0	40.0/35.0							
6/3		16.0/15.0	16.0/14.0							
API Filt	ml/30 min	7.4	7.6							
HTHP @ Deg C	ml/30 min									
Cake API/HTHP	32nd in									
Corr Solid	% by Vol									
NAP/Water	% by Vol	-/95.0	-/96.0							
Sand	% by vol									
MBT	ppb Eq.	15.0	15.0							
pH @ Deg C		9.50 @ 25	9.00 @ 25					8.50	9.50	
ALK Mud	Pm									
ALK Filt	Pf/Mf									
Chlorides	mg/l	1,500	1,400							
Tot. Hardness	mg/l	240	240						400	
LGS/HGS	% by Vol									
LGS/HGS	ppb									
ASG	SG									
Additional Properties										

Rig Activity

Run 13 3/8" csg f/ 24 - 68 m, WOW. Run csg f/ 68 - 123 m stabbing into 30". R/U PCS spider & slips, cont run csg f/ 123 - 845 m filling each jt. P/U 18 3/4" wellhead & cont RIH. R/D PCS spider,slips,tong & equipment. Cont RIH w/ csg on landing string. M/U cmt std & cmt hose, cont RIH - 961 m & land out 18 3/4" w/ head w/ 50K. Down then o'pull - 400K. Then slacked off to landing wt 190K. R/U Halliburton control panel & lines to cmt head & HTBT. Cmt as per program. Displace w/ rig pumps 3286/3286 & bump plug 912/650 psi 60 spm. Press test csg t/ 2500 psi. Remove Halliburton control line, cmt hose & release running tool 175K, 4.5 right turns.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
bentonite	1000 kg bulk	41.000		8.000	33.000	$A6,090.80
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	132			132	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
guar gum	25 kg bag	76			76	
lime	25 kg bag	42			42	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	
potassium chloride	1000 kg bag	33			33	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	14.5
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	9.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole	423.2	Sea Water	234.5	Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	-875.8
Prev Vol	902.7	Chemicals	20.1	Total Surface	
Net Change	-621.2	Other		Downhole	
Total Vol	423.2	Total	254.6	Total Losses	-875.8

Fluid Types	Vol bbl

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Daily Products Cost	$A6,090.80	Total Daily Cost	$A9,170.80
Cumulative Products Cost	$A72,373.49	Total Cumulative Cost	$A93,933.49

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 008

Daily Drilling Fluid Report

Date 06/12/2009	**Depth** 966.0 m		
Spud Date 30/11/2009	**Rig Activity** Ready to run BOP.		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bit Size	in				30.000	@	158.0	Bore in	6.500	6.500	6.500
Make/Type					13.375	@	961.0	Strokes in	12.000	12.000	12.000
Jets								Eff(%)	97	97	97
TFA	sq-in							bbl/strk	0.119	0.119	0.119
Jets Velocity	ft/sec							SPM	0	0	0
Jet Impact Force	lbf							gpm|bbl/min			
Bit HHSI	hhp/in2										
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Open Hole	17.500	5.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg							Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pill Pit	Pit #2					
Time		12:00	20:45					
Depth	m	966	966					
FL Temp	Deg C							
Density @ Deg C	ppg	9.00 @ 25	9.00 @ 25				8.50	9.00
FV @ Deg C	sec/qt	80 @ 25	80 @ 25					
PV @ Deg C	cP	14 @ 49	14 @ 49					
YP	lbs/100 ft2	44	44					
GELS	lbs/100 ft2	13/18/25	13/18/25					
600/300		72.0/58.0	72.0/58.0					
200/100		48.0/35.0	48.0/35.0					
6/3		17.0/15.0	18.0/-					
API Filt	ml/30 min	7.6	7.6					
HTHP @ Deg C	ml/30 min							
Cake API/HTHP	32nd in							
Corr Solid	% by Vol							
NAP/Water	% by Vol	-/95.0	-/96.0					
Sand	% by vol							
MBT	ppb Eq.	15.0	15.0					
pH @ Deg C		9.00 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm							
ALK Filt	Pf/Mf							
Chlorides	mg/l	1,500	1,300					
Tot. Hardness	mg/l	320	280					400
LGS/HGS	% by Vol							
LGS/HGS	ppb							
ASG	SG							
Additional Properties								

Fluid Treatments

Fluid Type Seawater

Mixing KCl Polymer Fluid in progress. All Chemicals will be charged off at the beginning of 12.25" interval.
Backload 76 sxs Guar Gum, 42 sxs Lime to Far Fosna.
Dress shaker screens 3x20 (Top)/4x50 (btm).

Rig Activity

POOH running tool. L/O running tool. SLM landing string, L/O cmt head. L/O 17.5" BHA. Remove all un needed tools, subs, boxes etc f/ rig floor. Unable to disconnect BOP f/ test stump. Attempt 65 o'pull, no success. Break out double of marine riser, fill void above stump w/ water. Apply press in stages against SR's. BOP free @ 400 psi.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	132			132	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	33.000			33.000	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
guar gum	25 kg bag	76				
lime	25 kg bag	42				
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	
potassium chloride	1000 kg bag	33			33	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.0
Total	1.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole	423.2	Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	423.2	Chemicals		Total Surface	-166.3
Net Change	-166.3	Other		Downhole	
Total Vol	423.2	Total		Total Losses	-166.3

Fluid Types Vol bbl

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A72,373.49	Total Cumulative Cost	$A97,013.49
Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 009

Daily Drilling Fluid Report

Date 07/12/2009		Depth 966.0 m	
Spud Date 30/11/2009		Rig Activity Attempt to Land BOP on Well Head.	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	966.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Open Hole	17.500		5.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM	AV, Riser	Circ Press psi
Total Circ Time	AV min DP	Tot Pres Loss
BU Time , min	AV max DC	Press Drop DP
Total Strokes	BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program
Source							
Time							
Depth	m						
FL Temp	Deg C						
Density @ Deg C	ppg						
FV @ Deg C	sec/qt						
PV @ Deg C	cP						
YP	lbs/100 ft2						
GELS	lbs/100 ft2						
600/300							
200/100							
6/3							
API Filt	ml/30 min						
HTHP @ Deg C	ml/30 min						
Cake API/HTHP	32nd in						
Corr Solid	% by Vol						
NAP/Water	% by Vol						
Sand	% by vol						
MBT	ppb Eq.						
pH @ Deg C							
ALK Mud	Pm						
ALK Filt	Pf/Mf						
Chlorides	mg/l						
Tot. Hardness	mg/l						
LGS/HGS	% by Vol						
LGS/HGS	ppb						
ASG	SG						
Additional Properties							

Fluid Treatments

Fluid Type Seawater

Cont to mix KCl/PHPA mud w/ 1 ppb PHPA. Sand Traps were filled w/ sea water & flushed clean. Transferred 435 bbl f/ pit 4 to sand traps & lines, & cont to mix KCl- polymer fluid in pit 4. Sheared mud w/ 1 ppb PHPA via shearing hopper. All fluid tests will be provided once KCL-Polymer fluid has time to shear properly. Will charge off all chemical used for mixing at the start of 12.25" Interval. All four shakers have been dressed w/ 20 API/ 20 Mesh on the Scalper Deck & 50 API/ 84 mesh screens on the Primary Deck. Sack room cleaned & re-organised.

Rig Activity

Cont pre run checks for BOP, Repair yellow pod hose, Running BOP on riser. HTBT. Wait on helicopter. P/U & M/U slip Jt. Cont running BOP on riser. Wait on Helicopter. P/U & M/U landing Jt to slip Jt w/ kill lines co-flexip hoses. HTBT, press test choke & kill lines via cmt unit 250 psi f/ 5 mins, 5000 psi f/ 10 mins, Ok. Installed pod lines saddles. Installed MRT wires to slip Jt, Skid rig over well. Attempt to land BOP on well head.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	132			132	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	33.000			33.000	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	
potassium chloride	1000 kg bag	33	17		50	
potassium hydroxide	20 kg pail	44			44	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	5.0
Other	19.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole	423.2	Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	423.2	Chemicals		Total Surface	-166.3
Net Change	-166.3	Other		Downhole	
Total Vol	423.2	Total		Total Losses	-166.3

Fluid Types Vol bbl

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A72,373.49	Total Cumulative Cost	$A100,093.49

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 010

Daily Drilling Fluid Report

Date 08/12/2009		Depth 966.0 m	
Spud Date 30/11/2009		Rig Activity Make up 12.25" BHA	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets								Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	0.000					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	17.500	5.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg							Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #3	Pit #4					
Time		10:00	20:00					
Depth	m	966	966					
FL Temp	Deg C							
Density @ Deg C	ppg	9.00 @ 25	8.90 @ 25				8.50	9.00
FV @ Deg C	sec/qt	51 @ 25	49 @ 25					
PV @ Deg C	cP	10 @ 49	10 @ 49					
YP	lbs/100 ft2	13	13					
GELS	lbs/100 ft2	4/6/8	4/6/8					
600/300		33.0/23.0	33.0/23.0					
200/100		18.0/13.0	16.0/12.0					
6/3		4.0/3.0	4.0/3.0					
API Filt	ml/30 min	7.2	7.4					
HTHP @ Deg C	ml/30 min	10.0	10.4					
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	1.1	0.6					
NAP/Water	% by Vol	-/95.5	-/96.0					
Sand	% by vol							
MBT	ppb Eq.	2.5	9.0					
pH @ Deg C		9.50 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm	0.30	0.20					
ALK Filt	Pf/Mf	0.25/1.10	0.25/1.10					
Chlorides	mg/l	41,000	40,000					
Tot. Hardness	mg/l	280	280					400
LGS/HGS	% by Vol	0.4/0.6	0.3/0.4					
LGS/HGS	ppb	3.97/9.31	2.35/5.58					
ASG	SG	3.548	3.551					
Additional Properties								
KCl %	-	8.20	8.00					

Fluid Treatments

Fluid Type Seawater

Cont to shear KCl-/PHPA mud in pits. Test results due to virgin/unused fluid.

224 bbl of Hi-vis left over from 17 1/2" section will be used as sweeps.

Rig Activity

Land BOP & conf latch w/ 50 K O' pull. Test well head conductor via C & K lines 1000 psi, Ok. Scope out slip Jt & install diverter. Rig down riser hand gear. RIH test plug. Test H4 conn 5 K, 10 mins Ok. Test LMRP cxn against UAP, no go. POOH, test plug, redress same. RIH & attempt re test LMRP cxn against UAP. POOH & L/O test plug, reposition in mast. R/U & test surf lines 250/ 5, 5 K 5 mins Ok. Rig down test assy. Install diverter insert packer. Function test same. P/U & M/U 5" DP f/ deck 54 Jts POOH & rack back same. P/U, M/U & LD 9 5/8" csg hanger as per Dril Quip eng'r. Install cmt plugs as per Halco cmt'r. P/U & M/U 12.25" BHA f/ 0 - 23 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	132			132	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	33.000			33.000	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	
potassium chloride	1000 kg bag	50			50	
potassium hydroxide	20 kg pail	44			44	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 84	
VSM-300	20 84	
VSM-300	20 84	
VSM-300	20 84	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	24.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole		Sea Water	414.8	Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	-61.4
Prev Vol	423.2	Chemicals		Total Surface	
Net Change	353.4	Other		Downhole	
Total Vol		Total	414.8	Total Losses	-61.4

Fluid Types — Vol bbl

Deviation Information

Survey MD	956.7	m
Survey TVD	956.7	m
Angle	0.15	Deg
Direction	112	
Horiz Displ.	1.7	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A72,373.49	Total Cumulative Cost	$A103,173.49
Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 11A

Daily Drilling Fluid Report

Date 09/12/2009	Depth 1,060.0 m		
Spud Date 30/11/2009	Rig Activity Drilling 12.25" Interval		
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	12.250 in
Make/Type	REED/RSR616M
Jets	6x15
TFA	1.035 sq-in
Jets Velocity	264 ft/sec
Jet Impact Force	1047.4 lbf
Bit HHSI	2.36 hhp/in2
Press Drop @ Bit	559 psi
Bit Depth	1,060.0 m
ECD @ Csg Shoe	9.09 ppg
ECD @ Bit	9.09 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	807.3
Drill Pipe	5.000	3.000	141.2
Drill Collar	8.063	2.875	111.5
Riser	19.750		100.0
Open Hole	17.500		99.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	85	85	0
gpm|bbl/min	426 10.15	426 10.15	
Total GPM	853	AV, Riser 57.3	Circ Press psi 1570
Total Circ Time	64	AV min DP 164.0	Tot Pres Loss 1910
BU Time , min	26	AV max DC 239.0	Press Drop DP 999
Total Strokes	10,900	BU Strokes 4,495	Press Drop An 15

Properties		1	2	Hyd 3	4	Targets				Program	
Source		Pit #4	Pit #4	Pit #3							
Time		11:00	18:10	20:45							
Depth	m	966	971	1,009							
FL Temp	Deg C		22	25							
Density @ Deg C	ppg	9.00 @ 18	9.00 @ 19	9.00 @ 25						8.80	9.50
FV @ Deg C	sec/qt	47 @ 18	43 @ 19	42							
PV @ Deg C	cP	9 @ 49	10 @ 49	10 @ 49							
YP	lbs/100 ft2	15	15	16							
GELS	lbs/100 ft2	4/6/9	4/6/9	5/7/11		X	*	*		8/-/-	14/-/-
600/300		33.0/24.0	35.0/25.0	36.0/26.0							
200/100		15.0/12.0	16.0/13.0	17.0/13.0							
6/3		5.0/4.0	5.0/4.0	6.0/5.0							
API Filt	ml/30 min	7.0	6.8	7.0		X	X	X			6.0
HTHP @ Deg C	ml/30 min	12.2	12.5 @ 120	12.4 @ 120							15.0
Cake API/HTHP	32nd in	1/2	1/2	1/2							
Corr Solid	% by Vol	1.5	1.6	1.6							
NAP/Water	% by Vol	-/95.0	-/95.0	-/95.0							
Sand	% by vol	0.10	0.10	0.10							1.0
MBT	ppb Eq.	6.0	6.0	5.0							25.0
pH @ Deg C		9.50 @ 25	10.00 @ 25	10.00 @ 25			X	X		8.50	9.50
ALK Mud	Pm	0.30	0.50	0.40							
ALK Filt	Pf/Mf	0.30/0.80	0.30/0.90	0.35/1.20							
Chlorides	mg/l	42,000	41,000	41,000							47,000
Tot. Hardness	mg/l	240	400	280							400
LGS/HGS	% by Vol	1.4/0.1	1.5/0.1	1.5/0.1							
LGS/HGS	ppb	12.41/2.03	13.26/1.94	13.26/1.94							
ASG	SG	2.747	2.733	2.733							
Additional Properties											
KCl %	-	8.20	8.20	8.80		X	X	X		6.00	8.00

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Displaced hole w/ 611 bbl 9.0 ppg KCl- PHPA fluid. Dumped over board 17 bbl when drilled through cmt. 116 bbl adjustment according to control room.
Continued mixing in Active to maintain properties. Continued mixing in Pits 2 & 3 to maintain volume.

Rig Activity

Cont P/U directional BHA. Down link MWD & scribe motor. Cont run BHA out derrick & shallow test @ 40 K down, 65 K total BHA wt. Ran BHA on 5" D/P, coming off deck & f/ derrick - 923 m. H/U geolograph lines, wash f/ 927 - 946 m & tag cmt. Drill out shoe track f/ 946 - 961 m then displace w/ KCL- PHPA 9 ppg fluid, wash past shoe x 3 & clean out rat hole - 966 m. Drill f/ 966 971 m. 2 x CBU. R/B std & R/U LOT assy. HTBT proceed w/ LOT as per program - 1400 psi 9 ppg & circ through K & C lines via C mani. Took C line friction loss. Drill f/ 971 - 1060m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	50		17	33	$A25,219.84
BARAZAN D PLUS	25 kg bag	132		34	98	$A7,321.56
EZ-MUD	25 kg pail	121		64	57	$A6,079.36
DEXTRID LTE	25 kg sack	126		94	32	$A4,980.12
PAC-L	25 kg bag	87		15	72	$A2,404.80
potassium hydroxide	20 kg pail	44		8	36	$A1,056.88
sodium bicarbonate	25 kg bag	38		25	13	$A706.25
Circal 60/16	25 kg bag	149		15	134	$A190.20
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	33.000			33.000	
caustic soda	25 kg can	11			11	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50 50	12.0
VSM-300	20 20 20 50 50 50 50	12.0
VSM-300	20 20 20 50 50 50 50	12.0
VSM-300	20 20 20 50 50 50 50	1.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	10.0
Circulating	0.5
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	13.5
Total	24.0
Rotating	10.0
ROP	30.8
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	536.9	Base		Fluid Dumped	
Pipe Cap	53.0	Drill Water	818.0	Transferred	
Active Pits	712.0	Dewatering		SCE	-132.0
Total Hole	589.9	Sea Water		Evaporation	-3.0
Total Circ	1301.9	Whole Mud	820.0	Trips	
Reserve	414.0	Barite		Other	-33.0
Prev Vol		Chemicals	81.5	Total Surface	
Net Change	1715.8	Other	164.3	Downhole	
Total Vol	1715.9	Total	1883.8	Total Losses	-168.0

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	75.0
Seawater	15.0

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Daily Products Cost	$A47,959.01	Total Daily Cost	$A51,039.01
Cumulative Products Cost	$A120,332.50	Total Cumulative Cost	$A154,212.50

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 012

Daily Drilling Fluid Report

Date 10/12/2009	**Depth** 1,587.0 m		
Spud Date 30/11/2009	**Rig Activity** Drilling 12.25" Interval.		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	12.250	in
Make/Type	REED/RSR616M	
Jets	6x15	
TFA	1.035	sq-in
Jets Velocity	295	ft/sec
Jet Impact Force	1322.9	lbf
Bit HHSI	3.33	hhp/in2
Press Drop @ Bit	706	psi
Bit Depth	1,587.0	m
ECD @ Csg Shoe	9.25	ppg
ECD @ Bit	9.28	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,334.3
Drill Pipe	5.000	3.000	141.2
Drill Collar	8.063	2.875	111.5
Riser	19.750		100.0
Open Hole	12.250		626.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	63	64	63
gpm|bbl/min	316 | 7.52	321 | 7.64	316 | 7.52
Total GPM	953	AV, Riser 64.0	Circ Press psi 2065
Total Circ Time	70	AV min DP 183.3	Tot Pres Loss 2377
BU Time , min	31	AV max DC 274.6	Press Drop DP 1305
Total Strokes	13,250	BU Strokes 5,823	Press Drop An 47

Properties		1	2	3	Hyd 4	Targets			Program	
Source		Pit #2	Flow Line	Pit #2	Pit #2					
Time		5:37	8:30	18:00	21:05					
Depth	m	1,233	1,292	1,435	1,515					
FL Temp	Deg C	30	33	28	31					
Density @ Deg C	ppg	9.00 @ 30	9.25 @ 27	9.30 @ 32	9.10 @ 33				8.80	9.50
FV @ Deg C	sec/qt	46 @ 30	57 @ 27	63 @ 30	61 @ 33					
PV @ Deg C	cP	10 @ 49	11 @ 49	11 @ 49	12 @ 49					
YP	lbs/100 ft2	9	20	22	25					
GELS	lbs/100 ft2	5/6/7	8/11/14	7/9/12	8/10/14	X		*	8/-/-	14/-/-
600/300		29.0/19.0	42.0/31.0	44.0/33.0	49.0/37.0					
200/100		17.0/13.0	24.0/18.0	25.0/19.0	29.0/22.0					
6/3		5.0/4.0	8.0/7.0	8.0/7.0	9.0/7.0					
API Filt	ml/30 min	6.7	5.8	5.5	5.8	X				6.0
HTHP @ Deg C	ml/30 min	12.0 @ 120	12.5 @ 120	9.5 @ 120	11.2 @ 120					15.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2					
Corr Solid	% by Vol	1.7	3.3	3.5	2.9					
NAP/Water	% by Vol	-/95.0	-/93.5	-/93.3	-/94.0					
Sand	% by vol	0.10	0.25	0.25	0.40					1.0
MBT	ppb Eq.	5.0	11.5	9.0	10.0					25.0
pH @ Deg C		9.50 @ 25	9.00 @ 25	9.00 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm	0.50	0.30	0.20	0.30					
ALK Filt	Pf/Mf	0.35/1.20	0.25/1.10	0.15/0.85	0.25/1.20					
Chlorides	mg/l	40,000	39,000	39,000	38,000					47,000
Tot. Hardness	mg/l	280	220	200	200					400
LGS/HGS	% by Vol	1.5/0.1	2.8/0.5	2.9/0.7	3.0/-0.1					
LGS/HGS	ppb	14.10/1.85	25.70/7.19	26.00/9.75	27.48/-2.05					
ASG	SG	2.720	2.836	2.901	2.522					
Additional Properties										
KCl %	-	8.00	8.20	8.20	8.00		X	X	6.00	8.00

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Cont Mixing in Pits 2,3& 4. Pit 2 having the largest pit volume is now our active. Add BARAZAN D PLUS directly to active to increase low end rheology, Bicarb to control Hardness, CLAYSEAL PLUS to maintain concentration as per program. Cont to build reserve volume & bleed into active to maintain properties & volume. Run centrifuge to control solids. Change out damaged API 50 mesh shaker screens & replace w/ API 60 mesh followed by API 100 mesh once rheology allowed.

Rig Activity

Cont to Drill 12.25" interval f/ 1060 - 1427 m. Circ & condition mud. Cont to drill 12.25" interval 1427 - 1587 m midnight depth.

Continued Treatments

Tried screening up other shakers, however was using to much fluid. Receive chemicals. Some crates are inaccessible & their chemicals will be entered following inspection. Adjust bulk volume to reflect Barge report details.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	33	24	57		$A84,560.64
CLAYSEAL PLUS	55 gal drum	46		33	13	$A49,815.81
barite	1 tons bulk	79.250		15.000	64.250	$A10,958.70
bentonite	1000 kg bulk	33.000		10.000	23.000	$A7,613.50
Techmesh 110 (API 60)	1 each box	24		12	12	$A6,415.20
BARAZAN D PLUS	25 kg bag	98		17	81	$A3,660.78
EZ-MUD	25 kg pail	57		30	27	$A2,849.70
DEXTRID LTE	25 kg sack	32		32		$A1,695.36
Techmesh 84 (API 50)	1 each box	8		3	5	$A1,603.80
PAC-L	25 kg bag	72		10	62	$A1,603.20
potassium hydroxide	20 kg pail	36		6	30	$A792.66
Circal 60/16	25 kg bag	134		51	83	$A646.68
Circal Y	25 kg bag	91		16	75	$A430.56
sodium bicarbonate	25 kg bag	13		13		$A367.25
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
caustic soda	25 kg can	11			11	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	

Daily Products Cost	$A173,013.84	Total Daily Cost	$A176,093.84
Cumulative Products Cost	$A293,346.34	Total Cumulative Cost	$A330,306.34

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	24.0
VSM-300	20 20 20 60 60 60 60	24.0
VSM-300	20 20 20 60 60 60 60	24.0
VSM-300	20 20 20 60 60 60 60	20.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	5.0
518	4,000	80.00	5.0

Time

Drilling	21.5
Circulating	2.5
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	21.5
ROP	80.4
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	695.5	Base		Fluid Dumped	
Pipe Cap	83.0	Drill Water	28.0	Transferred	
Active Pits	804.0	Dewatering		SCE	-185.0
Total Hole	778.6	Sea Water		Evaporation	-8.0
Total Circ	1582.6	Whole Mud		Trips	
Reserve	230.0	Barite	22.5	Other	-26.0
Prev Vol	1715.9	Chemicals	265.1	Total Surface	
Net Change	96.5	Other		Downhole	
Total Vol	1812.6	Total	315.5	Total Losses	-219.0

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	75.0
Seawater	45.0

Deviation Information

Survey MD	1,529.4 m
Survey TVD	1,529.4 m
Angle	0.61 Deg
Direction	57
Horiz Displ.	1.3 m

Baroid Representatives Kosta Georgiou Mike Lawrance

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Baroid Fluid Services

Report No 013

Daily Drilling Fluid Report

Date 11/12/2009	**Depth** 1,940.0 m		
Spud Date 30/11/2009	**Rig Activity** Dilling 12.25" Interval.		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	12.250	in
Make/Type	REED/RSR616M	
Jets	6x15	
TFA	1.035	sq-in
Jets Velocity	295	ft/sec
Jet Impact Force	1352.0	lbf
Bit HHSI	3.40	hhp/in2
Press Drop @ Bit	721	psi
Bit Depth	1,940.0	m
ECD @ Csg Shoe	9.47	ppg
ECD @ Bit	9.50	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,687.3
Drill Pipe	5.000	3.000	141.2
Drill Collar	8.063	2.875	111.5
Riser	19.750		100.0
Open Hole	12.250		979.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600		
Bore in	6.500	6.500	6.500		
Strokes in	12.000	12.000	12.000		
Eff(%)	97	97	97		
bbl/strk	0.119	0.119	0.119		
SPM	66	63	61		
gpm|bbl/min	331 | 7.88	316 | 7.52	306 | 7.29		
Total GPM	953	AV, Riser	64.0	Circ Press psi	1630
Total Circ Time	53	AV min DP	183.3	Tot Pres Loss	2562
BU Time , min	37	AV max DC	274.6	Press Drop DP	1468
Total Strokes	10,106	BU Strokes	6,990	Press Drop An	66

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Flow Line						
Time		3:55	10:40	16:00	20:10						
Depth	m	1,685	1,811	1,886	1,909						
FL Temp	Deg C	40	43	44	51						
Density @ Deg C	ppg	9.20 @ 35	9.40 @ 28	9.40 @ 31	9.30 @ 51					8.80	9.50
FV @ Deg C	sec/qt	63 @ 33	57 @ 28	57 @ 31	60 @ 51						
PV @ Deg C	cP	12 @ 49	15 @ 49	14 @ 49	13 @ 49						
YP	lbs/100 ft2	27	22	24	27						
GELS	lbs/100 ft2	9/14/17	9/13/16	10/15/18	10/15/18					8/-/-	14/-/-
600/300		51.0/39.0	52.0/37.0	52.0/38.0	53.0/40.0						
200/100		32.0/24.0	32.0/24.0	31.0/24.0	33.0/25.0						
6/3		9.0/6.0	9.0/8.0	10.0/9.0	10.0/8.0						
API Filt	ml/30 min	5.7	4.8	4.5	5.7						6.0
HTHP @ Deg C	ml/30 min	11.6 @ 120	10.5 @ 120	10.5 @ 120	11.4 @ 120						15.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	2.9	3.7	3.7	2.6						
NAP/Water	% by Vol	-/94.0	-/93.0	-/93.0	-/94.0						
Sand	% by vol	0.35	0.25	0.25	0.35						1.0
MBT	ppb Eq.	10.0	9.5	10.0	15.0						25.0
pH @ Deg C		9.00 @ 25	9.50 @ 25	9.00 @ 25	9.50 @ 25					8.50	9.50
ALK Mud	Pm	0.35	0.40	0.30	0.35						
ALK Filt	Pf/Mf	0.35/1.20	0.30/1.10	0.25/0.95	0.30/1.25						
Chlorides	mg/l	38,000	41,000	40,000	41,000						47,000
Tot. Hardness	mg/l	200	180	160	200						400
LGS/HGS	% by Vol	2.3/0.6	2.5/1.1	2.6/1.1	1.2/1.4						
LGS/HGS	ppb	20.66/8.97	23.11/16.53	23.93/16.44	11.36/20.26						
ASG	SG	2.939	3.091	3.077	3.440						
Additional Properties											
KCl %	-	8.00	8.40	8.20	8.00		X	X		6.00	8.00

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Add Barite to active to increase mud weight as per ADA instruction.
Add Caustic Soda/Potash to maintain pH. Add ALDACIDE G prior to tripping to inhibit bacterial growth. Add Oxygon corrosion inhibitor as per program.
Continue to build reserve volume & bleed into active to maintain properties. Change lower screens on all shakers to API 100 & 80 mesh as a consequence of mud thinning w/ increasing temperature.
Receive chemicals/Brine into inventory.

Rig Activity

Drill 12.25" hole f/ 1587 - 1811 m, take SCR's & CLF's. Slide f/ 1869 - 1887, cont drill f/ 1887 - 1898 m. Remove broken DSC LP air line f/ Derrick. Slide f/ 1898 - 1905 m. Flow Check 20 bbl gain, well stable. Slide f/ 1905 - 1926 m. Replace DSC LP air line to DSC, secured to hose bundle in derrick then displace C & K line w/ fresh 9.4 ppg mud. Cont slide f/ 1926 - 1940 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	13	48	12	49	$A18,114.84
potassium chloride	1000 kg bag		30	4	26	$A5,934.08
PAC-L	25 kg bag	62	80	16	126	$A2,565.12
BARAZAN D PLUS	25 kg bag	81	40	6	115	$A1,292.04
potassium hydroxide	20 kg pail	30	32	9	53	$A1,188.99
DEXTRID LTE	25 kg sack		180	20	160	$A1,059.60
Circal 60/16	25 kg bag	83	319	40	362	$A507.20
ALDACIDE G	25 kg can	8		2	6	$A346.18
caustic soda	25 kg can	11		5	6	$A271.40
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	64.250			64.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	23.000			23.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	27	192		219	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	24.0
VSM-300	20 20 20 100 100 100 100	24.0
VSM-300	20 20 20 80 80 80 80	24.0
VSM-300	20 20 20 80 80 80 80	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	8.0
518	4,000	80.00	8.0

Time

Drilling	20.5
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	3.5
Total	24.0
Rotating	20.5
ROP	56.5
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	834.8	Base		Fluid Dumped	
Pipe Cap	103.2	Drill Water	250.0	Transferred	
Active Pits	269.0	Dewatering		SCE	-63.1
Total Hole	938.0	Sea Water		Evaporation	-3.0
Total Circ	1207.0	Whole Mud	88.0	Trips	
Reserve	910.0	Barite		Other	-4.0
Prev Vol	1812.6	Chemicals	36.4	Total Surface	
Net Change	304.3	Other		Downhole	
Total Vol	2117.0	Total	374.4	Total Losses	-70.1

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	120.0

Deviation Information

Survey MD	1,529.4	m
Survey TVD	1,529.4	m
Angle	0.61	Deg
Direction	57	
Horiz Displ.	1.3	m

Daily Products Cost	$A31,279.45	Total Daily Cost	$A34,359.45
Cumulative Products Cost	$A324,625.79	Total Cumulative Cost	$A364,665.79

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 014

Daily Drilling Fluid Report

Date 12/12/2009	**Depth** 1,972.0 m		
Spud Date 30/11/2009	**Rig Activity** Run 9 5/8" CSG		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets								Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	9.50 ppg	Open Hole	12.250	1,011.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		17.50	Total Strokes		BU Strokes	Press Drop An

Properties		1	Hyd 2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2						**Fluid Type** 12 1/4" KCl/Polymer
Time		13:00	21:00	4:00						Add OXYGON corrosion inhibitor & ALDACIDE G bacteriacide prior to POOH. Add BARAZAN D PLUS to active to maintain rheology. Continue to build pre-mix in reserve pits. Whilst Circ, increased MW to 9.5 ppg all round. Pumped 31 bbl of 11.5 ppg Slug at TD. Barite correction to inventory made to ensure consistency with control room figures. Conduct full chemical inventory. Inspect & change out damaged shaker screens. Callibrate mud balances. Asked Geo Services to calibrate pit equipment.
Depth	m	1,972	1,972	1,960						
FL Temp	Deg C	45	25	51						
Density @ Deg C	ppg	9.50 @ 32	9.50 @ 25	9.40 @ 35				9.00	10.00	
FV @ Deg C	sec/qt	56 @ 32	51 @ 25	61 @ 35						
PV @ Deg C	cP	18 @ 49	18 @ 49	19 @ 49						
YP	lbs/100 ft2	21	22	20						
GELS	lbs/100 ft2	10/15/18	11/16/19	10/15/18						
600/300		57.0/39.0	58.0/40.0	58.0/39.0						
200/100		35.0/27.0	36.0/28.0	35.0/26.0						
6/3		11.0/9.0	11.0/9.0	10.0/8.0						
API Filt	ml/30 min	5.0	5.6	5.4		X	X		5.0	
HTHP @ Deg C	ml/30 min	9.5 @ 120	11.7 @ 120	10.9 @ 120					13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2						
Corr Solid	% by Vol	3.9	3.6	4.0						
NAP/Water	% by Vol	-/92.8	-/93.0	-/92.5						
Sand	% by vol	0.25	0.30	0.30					1.0	
MBT	ppb Eq.	10.0	15.0	15.0					25.0	
pH @ Deg C		9.50 @ 25	9.00 @ 25	9.50 @ 25				8.50	9.50	
ALK Mud	Pm	0.35	0.35	0.30						
ALK Filt	Pf/Mf	0.25/1.10	0.30/1.25	0.30/1.30						
Chlorides	mg/l	41,000	42,000	43,000						
Tot. Hardness	mg/l	160	200	200					400	
LGS/HGS	% by Vol	2.2/1.7	1.7/1.9	3.4/0.6						
LGS/HGS	ppb	20.00/24.60	15.45/27.64	30.75/9.33						
ASG	SG	3.292	3.441	2.853						
Additional Properties										**Rig Activity**
KCl %	-	8.20	8.30	8.30						Slide f/ 1940 - 1955 m. Top sat down on DP L/O single bending 2 x singles & bent 5" DP. Circ, wiped stand & washed back to bottom @ 1955 m. Slide f/ 1955 - 1972 m TD. Circ well clean w/ 9.5 ppg Fluid. Flow check & POOH. HTBT, Down load MWD & rack back. Rig up cmt assy & w/bsng tools. Clean rig floor, R/P drilling bails & elevators. R/U 9 5/8" csg equipment. P/U shoe & check same ok, RIH w/ 9 5/8" csg.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Techmesh 175 (API 100)	1 each box	7		5	2	$A2,799.80
BARAZAN D PLUS	25 kg bag	115		12	103	$A2,584.08
PAC-L	25 kg bag	126		7	119	$A1,122.24
Techmesh 84 (API 50)	1 each box	5		2	3	$A1,069.20
Circal 60/16	25 kg bag	362		60	302	$A760.80
Techmesh 140 (API 80)	1 each box	16		1	15	$A559.96
ALDACIDE G	25 kg can	6		1	5	$A173.09
caustic soda	25 kg can	6		1	5	$A54.28
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	64.250	44.000		108.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	23.000			23.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	219			219	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	

Solids Control Equipment				Time	
Shaker	Screens	Hrs		Drilling	
VSM-300	20 20 20 100 100 100 100	10.0		Circulating	3.5
VSM-300	20 20 20 100 100 100 100	10.0		Trips	7.0
VSM-300	20 20 20 80 80 80 80	10.0		Rig	
VSM-300	20 20 20 80 80 80 80	10.0		Surveys	
				Fishing	
				Run Casing	
				Coring	
				Reaming	
Hydrocyclone	Cones	Screens	Hrs	Testing	
				Logging	
				Dir Work	
				Repair	
				Other	13.5
Centrifuge	Speed	Feed Rate	Hrs	Total	24.0
518	4,000	80.00		Rotating	
518	4,000	80.00		ROP	
				Dil Rate	0.00

Fluid Volume Breakdown		12 1/4" KCl/Polymer			
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	245.6	Transferred	
Active Pits	277.0	Dewatering		SCE	-45.0
Total Hole	1026.2	Sea Water		Evaporation	-5.0
Total Circ	277.0	Whole Mud		Trips	-8.0
Reserve	1007.0	Barite		Other	
Prev Vol	2117.0	Chemicals	5.6	Total Surface	
Net Change	193.2	Other		Downhole	
Total Vol	2310.2	Total	251.2	Total Losses	-58.0

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	185.0

Deviation Information		
Survey MD	1,972.0	m
Survey TVD	1,971.9	m
Angle	0.67	Deg
Direction	58	
Horiz Displ.	1.2	m

Daily Products Cost	$A9,123.45	Total Daily Cost	$A12,203.45
Cumulative Products Cost	$A333,749.24	Total Cumulative Cost	$A376,869.24

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 015

Daily Drilling Fluid Report

Date 13/12/2009	**Depth** 1,972.0 m		
Spud Date 30/11/2009	**Rig Activity** CMT job for 9 5/8" CSG		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,972.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	12.250		7.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		10:00	20:30					
Depth	m	1,972	1,972					
FL Temp	Deg C		25					
Density @ Deg C	ppg	9.50 @ 21	9.50 @ 25				9.00	10.00
FV @ Deg C	sec/qt	61 @ 21	59 @ 25					
PV @ Deg C	cP	19 @ 49	18 @ 49					
YP	lbs/100 ft2	19	22					
GELS	lbs/100 ft2	10/14/18	10/13/17					
600/300		57.0/38.0	58.0/40.0					
200/100		33.0/25.0	35.0/26.0					
6/3		10.0/9.0	10.0/8.0					
API Filt	ml/30 min	4.8	5.1			X		5.0
HTHP @ Deg C	ml/30 min	11.5 @ 120	11.3 @ 120					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.7	3.6					
NAP/Water	% by Vol	-/93.0	-/93.0					
Sand	% by vol	0.25	0.35					1.0
MBT	ppb Eq.	10.0	15.0					25.0
pH @ Deg C		9.50 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm	0.35	0.35					
ALK Filt	Pf/Mf	0.25/1.10	0.30/1.25					
Chlorides	mg/l	40,000	42,000					
Tot. Hardness	mg/l	200	200					400
LGS/HGS	% by Vol	1.9/1.9	1.7/1.9					
LGS/HGS	ppb	17.10/27.46	15.45/27.64					
ASG	SG	3.398	3.441					
Additional Properties								
KCl %	-	8.10	8.30					

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Build Hi-vis in pill pit w/ Gel only. Take returns/ Displacement into Pit 1, 230 bbl of 9.5 ppg, KCl-PHPA Fluid, f/ cmt job. Chase cmt w/ rig pumps, re line Pit 2 as active, suction & return. Add caustic to active & reserve volume to maintain pH.

Rig Activity

Cont RIH w/ 9 5/8" csg f/ 24 - 1864 m. R/D csg elevators & fill tool. M/U 9 5/8" csg hanger & RIH on LNDG string - 1945 m. Take 60 K below - M/U TD & wash dn w/ 150 gpm + 250 psi. R/U & P/U cmt head assy, M/U cmt hose. Cont wash dn 9 5/8" csg w/ 150 gpm + 250 psi, then 200 gpm + 300 psi f/ 1957 - 1964 m. HTBT, pump 10 bbl s/w ahead then tested surface lines - 4500 psi f/ 10 mins - Ok. Followed by 50 bbl s/w. Dropped ball & sheared out btm plug, pumped lead slurry 215 Sx's "G" cmt @ 12.5 ppg w/ 63 bbl mix fluid, followed by tail slurry of 223 Sx's "G" cmt @ 15.8 ppg in 28 bbl mix fluid.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	108.250		15.250	93.000	$A11,141.35
potassium chloride	1000 kg bag	26		2	24	$A2,967.04
bentonite	1000 kg bulk	23.000		3.000	20.000	$A2,284.05
OXYGON	50 lb can	33		3	30	$A1,716.09
BARAZAN D PLUS	25 kg bag	103		7	96	$A1,507.38
caustic soda	25 kg can	5		3	2	$A162.84
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	219			219	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
PAC-L	25 kg bag	119			119	
potassium hydroxide	20 kg pail	53			53	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	11.0
VSM-300	20 20 20 100 100 100 100	11.0
VSM-300	20 20 20 80 80 80 80	11.0
VSM-300	20 20 20 80 80 80 80	11.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	17.5
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	6.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	433.0	Dewatering		SCE	-36.5
Total Hole	600.7	Sea Water		Evaporation	
Total Circ	433.0	Whole Mud		Trips	
Reserve	1209.0	Barite	22.9	Other	-69.0
Prev Vol	2310.2	Chemicals	15.2	Total Surface	
Net Change	-67.5	Other		Downhole	
Total Vol	2242.7	Total	38.0	Total Losses	-105.5

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	183.0

Deviation Information

Survey MD	1,972.0	m
Survey TVD	1,971.9	m
Angle	0.67	Deg
Direction	58	
Horiz Displ.	1.2	m

Daily Products Cost	$A19,778.75	Total Daily Cost	$A22,858.75
Cumulative Products Cost	$A353,527.98	Total Cumulative Cost	$A399,727.98

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
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Baroid Fluid Services

Report No 016

Daily Drilling Fluid Report

Date 14/12/2009		Depth 1,972.0 m	
Spud Date 30/11/2009		Rig Activity Laying out Diverter	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	1,972.0 m							Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		17.50	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program		Fluid Treatments
Source		Pit #2	Pit #2						Fluid Type 12 1/4" KCl/Polymer
Time		11:00	22:00						Treat active & reserve volume w/ caustic to maintain pH.
Depth	m	1,972	1,972						
FL Temp	Deg C								Increase in mud weight in active pit attributable to incorporation of slug & mud cooling.
Density @ Deg C	ppg	9.65 @ 24	9.65 @ 25				9.00	10.00	
FV @ Deg C	sec/qt	69 @ 24	70 @ 25						
PV @ Deg C	cP	13 @ 49	11 @ 49						
YP	lbs/100 ft2	27	27						
GELS	lbs/100 ft2	10/15/19	10/15/18						
600/300		53.0/40.0	49.0/38.0						
200/100		33.0/25.0	32.0/24.0						
6/3		10.0/9.0	10.0/8.0						
API Filt	ml/30 min	4.8	5.2			X		5.0	
HTHP @ Deg C	ml/30 min	11.5 @ 120	11.5 @ 120					13.0	
Cake API/HTHP	32nd in	1/2	1/2						
Corr Solid	% by Vol	4.7	3.9						
NAP/Water	% by Vol	-/92.0	-/92.5						
Sand	% by vol	0.25	0.25					1.0	
MBT	ppb Eq.	10.0	8.0					25.0	
pH @ Deg C		9.50 @ 25	9.00 @ 25				8.50	9.50	
ALK Mud	Pm	0.30	0.30						
ALK Filt	Pf/Mf	0.20/1.30	0.30/2.00						
Chlorides	mg/l	41,000	44,000						
Tot. Hardness	mg/l	240	240					400	
LGS/HGS	% by Vol	2.7/2.0	1.4/2.5						
LGS/HGS	ppb	24.62/29.33	12.85/36.99						
ASG	SG	3.279	3.625						
Additional Properties									
KCl %	-	8.10	8.00						

Rig Activity

Haliburton mixed & pumped 47 bbl 15.8 ppg G cement slurry. Released dart & sheared top plug w/ 2200 psi. Displaced cement w/ 20 bbl of SW. Plug bumped w/ 500 psi above FCP. Pressure tested CSG to 4000 psi. Set pack off in wellhead & pressure tested to 5000 psi against LPR. Released 9 5/8" casing RT w/ 65 klbs overpull. Pulled RT clear of BOP w/ difficalty. Required circulation to pull RT above BOP. Made up WB on WBRT & RIH. Jetted wellhead. Set wearbushing & POOH w/ RT. L/O same. RIH w/ jet sub, jetted BOP pumping 90 bbl Hi Vis Displaced riser to Seawater. POOH. Rigged up to pull LMRP. Installed diverter RT.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	96		5	91	$A1,076.70
caustic soda	25 kg can	2		1	1	$A54.28
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	20.000			20.000	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	219			219	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	30			30	
PAC-L	25 kg bag	119			119	
potassium chloride	1000 kg bag	24			24	
potassium hydroxide	20 kg pail	53			53	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	4.0
VSM-300	20 20 20 100 100 100 100	4.0
VSM-300	20 20 20 80 80 80 80	4.0
VSM-300	20 20 20 80 80 80 80	4.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	1.0
Trips	6.5
Rig	
Surveys	
Fishing	
Run Casing	15.0
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	800.0	Dewatering		SCE	-3.0
Total Hole	473.0	Sea Water		Evaporation	
Total Circ	800.0	Whole Mud		Trips	
Reserve	890.0	Barite		Other	
Prev Vol	2242.7	Chemicals	0.6	Total Surface	-77.3
Net Change	-79.7	Other		Downhole	
Total Vol	2163.0	Total	0.6	Total Losses	-80.3

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	50.0

Deviation Information

Survey MD	1,972.0 m
Survey TVD	1,971.9 m
Angle	0.67 Deg
Direction	58
Horiz Displ.	1.2 m

Daily Products Cost	$A1,130.98	Total Daily Cost	$A4,210.98
Cumulative Products Cost	$A354,658.96	Total Cumulative Cost	$A403,938.96

Baroid Representatives	Mike Lawrance	James Munford	
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Baroid Fluid Services

Report No 017

Daily Drilling Fluid Report

Date 15/12/2009		Depth 1,972.0 m	
Spud Date 30/11/2009		Rig Activity Change Upper Annular Element in LMRP	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m) OD ID Length	in Casing m OD Set MD	Circulation/Hydraulics Data			
Bit Size	in		30.000 @ 158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type			13.375 @ 961.0	Bore in	6.500	6.500	6.500
Jets			9.625 @ 1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in			Eff(%)	97	97	97
Jets Velocity	ft/sec			bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf			SPM	0	0	0
Bit HHSI	hhp/in2			gpm|bbl/min			
Press Drop @ Bit	psi			Total GPM	AV, Riser	Circ Press psi	
Bit Depth 1,972.0	m			Total Circ Time	AV min DP	Tot Pres Loss	
ECD @ Csg Shoe	ppg			BU Time , min	AV max DC	Press Drop DP	
ECD @ Bit	ppg		Leak Off ppg 17.50	Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		10:00	22:00					
Depth	m	1,972	1,972					
FL Temp	Deg C							
Density @ Deg C	ppg	9.65 @ 20	9.65 @ 20				9.00	10.00
FV @ Deg C	sec/qt	71 @ 20	70 @ 20					
PV @ Deg C	cP	13 @ 49	11 @ 49					
YP	lbs/100 ft2	26	28					
GELS	lbs/100 ft2	10/15/19	10/15/18					
600/300		52.0/39.0	50.0/39.0					
200/100		33.0/24.0	32.0/24.0					
6/3		10.0/9.0	10.0/8.0					
API Filt	ml/30 min	5.5	5.3			X X		5.0
HTHP @ Deg C	ml/30 min	10.5 @ 120	10.5 @ 120					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	4.3	4.2					
NAP/Water	% by Vol	-/92.5	-/92.5					
Sand	% by vol	0.25	0.25					1.0
MBT	ppb Eq.	8.0	8.0					25.0
pH @ Deg C		9.50 @ 25	9.50 @ 25				8.50	9.50
ALK Mud	Pm	0.30	0.30					
ALK Filt	Pf/Mf	0.20/1.65	0.30/1.90					
Chlorides	mg/l	40,000	41,000					
Tot. Hardness	mg/l	240	240					400
LGS/HGS	% by Vol	1.8/2.5	1.7/2.5					
LGS/HGS	ppb	16.15/36.62	15.33/36.71					
ASG	SG	3.534	3.555					
Additional Properties								
KCl %	-	8.00	8.00					

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Add ALDACIDE G to surface volume to inhibit bacterial degradation.

Add Caustic to maintain pH.

Callibrate mud balances.

Rig Activity

L/O diverter. Made up landing joint to slip joint. Collapsed slip joint inner barrel & bolted to slip joint outer barrel. Unlatched LMRP connector (unlatched at 03:35). Picked up LMRP clear of BOP guide posts. Slacked off on guidelines & winched rig 15 m port forward. Removed MRT lines, choke & kill goosenecks f/ slip joint. L/O landing joint, slip joint, riser pup & bouyancy joints. Pulled LMRP into moonpool on riser double & landed on transporter. Disconnected riser double. Skidded LMRP to starboard setback. Changed out Upper Annular Element in LMRP.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
OXYGON	50 lb can	30		3	27	$A1,716.09
BARAZAN D PLUS	25 kg bag	91		5	86	$A1,076.70
EZ-MUD	25 kg pail	219		5	214	$A474.95
ALDACIDE G	25 kg can	5		1	4	$A173.09
caustic soda	25 kg can	1		1		$A54.28
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	20.000			20.000	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
PAC-L	25 kg bag	119			119	
potassium chloride	1000 kg bag	24			24	
potassium hydroxide	20 kg pail	53			53	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	24.0
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	800.0	Dewatering		SCE	
Total Hole	473.0	Sea Water		Evaporation	
Total Circ	800.0	Whole Mud		Trips	
Reserve	891.8	Barite		Other	
Prev Vol	2163.0	Chemicals	1.8	Total Surface	
Net Change	1.8	Other		Downhole	
Total Vol	2164.8	Total	1.8	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	50.0

Deviation Information

Survey MD	1,972.0 m
Survey TVD	1,971.9 m
Angle	0.67 Deg
Direction	58
Horiz Displ.	1.2 m

Daily Products Cost	$A3,495.11	Total Daily Cost	$A6,575.11
Cumulative Products Cost	$A358,154.07	Total Cumulative Cost	$A410,514.07

Baroid Representatives Mike Lawrance James Munford

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Baroid Fluid Services

Report No 018

Daily Drilling Fluid Report

Date 16/12/2009		Depth 1,972.0 m	
Spud Date 30/11/2009		Rig Activity Lower LMRP	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth 1,972.0	m							Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		17.50	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program		Fluid Treatments
Source		Pit #2	Pit #2						Fluid Type 12 1/4" KCl/Polymer
Time		11:30	23:00						Add caustic potash to surface pits to maintain pH.
Depth	m	1,972	1,972						
FL Temp	Deg C								Prepare 40 bbl Hi-vis gel to act as spacer when displacing riser f/ seawater to KCl/Polymer fluid.
Density @ Deg C	ppg	9.65	9.65 @ 20				9.00	10.00	
FV @ Deg C	sec/qt	69 @ 21	70 @ 20						Maintain all mud lab testing equipment.
PV @ Deg C	cP	13 @ 49	13 @ 49						
YP	lbs/100 ft2	25	26						
GELS	lbs/100 ft2	9/14/18	10/15/18						
600/300		51.0/38.0	52.0/39.0						
200/100		32.0/24.0	33.0/24.0						
6/3		10.0/8.0	10.0/8.0						
API Filt	ml/30 min	5.0	5.2			X		5.0	
HTHP @ Deg C	ml/30 min	9.5 @ 120	10.3 @ 120					13.0	
Cake API/HTHP	32nd in	1/2	1/2						
Corr Solid	% by Vol	4.2	4.2						
NAP/Water	% by Vol	-/92.5	-/92.4						
Sand	% by vol	0.20	0.10					1.0	
MBT	ppb Eq.	7.5	8.0					25.0	
pH @ Deg C		9.50 @ 25	9.50 @ 25				8.50	9.50	
ALK Mud	Pm	0.30	0.30						
ALK Filt	Pf/Mf	0.35/2.10	0.30/2.00						
Chlorides	mg/l	41,000	42,000						
Tot. Hardness	mg/l	240	240					400	
LGS/HGS	% by Vol	1.7/2.5	1.8/2.4						
LGS/HGS	ppb	15.33/36.71	16.37/35.33						
ASG	SG	3.555	3.515						
Additional Properties									
KCl %	-	8.10	8.00						

Rig Activity

Installed new element in upper annular. Skidded LMRP to transporter & installed pod lines to LMRP. Installed Test joint & Adjust test stump Ht. Press test Upper annular. Skid LMRP to well centre. M/Up a double of riser to LMRP. Run LMRP on a double slick joints, 1x bouyant jnt, 1x pup jnt. Slip jnt. Free up MRT tension ring. P/Up landing joint & run. M/Up C&K lines to slip joint & connect MRT wires. Position rig over well head. Lower & latch LMRP to BOPs.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
OXYGON	50 lb can	27		2	25	$A1,144.06
BARAZAN D PLUS	25 kg bag	86		3	83	$A646.02
EZ-MUD	25 kg pail	214		4	210	$A379.96
potassium hydroxide	20 kg pail	53		1	52	$A132.11
ALDACIDE G	25 kg can	4			4	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	20.000			20.000	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
PAC-L	25 kg bag	119			119	
potassium chloride	1000 kg bag	24			24	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment				Time	
Shaker	Screens	Hrs		Drilling	
VSM-300				Circulating	
VSM-300				Trips	
VSM-300				Rig	
VSM-300				Surveys	
				Fishing	
				Run Casing	
				Coring	
				Reaming	
Hydrocyclone	Cones	Screens	Hrs	Testing	
				Logging	
				Dir Work	
				Repair	24.0
				Other	
Centrifuge	Speed	Feed Rate	Hrs	Total	24.0
518	4,000	80.00		Rotating	
518	4,000	80.00		ROP	
				Dil Rate	0.00

Fluid Volume Breakdown		12 1/4" KCl/Polymer			
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	800.0	Dewatering		SCE	
Total Hole	473.0	Sea Water		Evaporation	
Total Circ	800.0	Whole Mud		Trips	
Reserve	893.0	Barite		Other	
Prev Vol	2164.8	Chemicals	1.2	Total Surface	
Net Change	1.2	Other		Downhole	
Total Vol	2166.0	Total	1.2	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	50.0

Deviation Information		
Survey MD	1,972.0	m
Survey TVD	1,971.9	m
Angle	0.67	Deg
Direction	58	
Horiz Displ.	1.2	m

Daily Products Cost	$A2,302.15	Total Daily Cost	$A5,382.15
Cumulative Products Cost	$A360,456.22	Total Cumulative Cost	$A415,896.22

Baroid Representatives	Mike Lawrance	James Munford	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 019

Daily Drilling Fluid Report

Date 17/12/2009	**Depth** 1,972.0 m		
Spud Date 30/11/2009	**Rig Activity** Make up BHA		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		17.50	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		10:30	23:00					
Depth	m	1,972	1,972					
FL Temp	Deg C							
Density @ Deg C	ppg	9.65 @ 19	9.65 @ 20				9.00	10.00
FV @ Deg C	sec/qt	72 @ 19	69 @ 20					
PV @ Deg C	cP	14 @ 49	13 @ 49					
YP	lbs/100 ft2	24	25					
GELS	lbs/100 ft2	9/14/18	10/15/18					
600/300		52.0/38.0	51.0/38.0					
200/100		32.0/24.0	32.0/24.0					
6/3		9.0/8.0	10.0/8.0					
API Filt	ml/30 min	4.5	4.8					5.0
HTHP @ Deg C	ml/30 min	9.5 @ 120	10.0 @ 120					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	4.8	4.4					
NAP/Water	% by Vol	-/92.0	-/92.2					
Sand	% by vol	0.20	0.10					1.0
MBT	ppb Eq.	7.0	8.0					25.0
pH @ Deg C		9.00 @ 25	9.50 @ 25				8.50	9.50
ALK Mud	Pm	0.30	0.30					
ALK Filt	Pf/Mf	0.25/2.20	0.30/2.10					
Chlorides	mg/l	40,000	42,000					
Tot. Hardness	mg/l	260	240					400
LGS/HGS	% by Vol	2.8/2.0	2.2/2.2					
LGS/HGS	ppb	25.43/29.24	20.08/32.37					
ASG	SG	3.265	3.399					
Additional Properties								
KCl %	-	8.10	8.10					

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Pump Hi-vis spacer ahead of KCl/Polymer mud whilst displacing riser from seawater to avoid contamination.

Add EZ-MUD (PHPA) to reserve volume & pump through shear hopper for extended period.

Rig Activity

Stroked out Slipjoint. Disconnected & laid out Landing Joint. P/U Diverter & installed same. Changed out damaged Lock Down Dog Inserts. Laid down Diverter R/Tool. Rigged down Riser Running equipment & rigged up 5" Pipe Handling equipment. M/Up BOP Test Tool. RIH & Test Upper Annular & Connector. Test C&K Lines. POOH & Displace Riser & C&K lines to 9.5 ppg mud. Cont to POOH to surface & lay down BOP Test Tool. R/Up & Press/Test Std/Pipe Manifold, GeoSpan Unit & T/Drive. Changed Out Saver Sub. P/Up 15 jnts of 5" D.P f/ deck & racked in the Derrick. P/Up & M/U Directional BHA.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
EZ-MUD	25 kg pail	210		18	192	$A1,709.82
BARAZAN D PLUS	25 kg bag	83		6	77	$A1,292.04
bentonite	1000 kg bulk	20.000		1.000	19.000	$A761.35
ALDACIDE G	25 kg can	4			4	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	25			25	
PAC-L	25 kg bag	119			119	
potassium chloride	1000 kg bag	24			24	
potassium hydroxide	20 kg pail	52			52	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	6.5
Logging	
Dir Work	1.5
Repair	10.0
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	599.0	Dewatering		SCE	
Total Hole	597.4	Sea Water		Evaporation	
Total Circ	599.0	Whole Mud		Trips	
Reserve	945.0	Barite		Other	
Prev Vol	2166.0	Chemicals	3.3	Total Surface	-28.0
Net Change	-24.7	Other		Downhole	
Total Vol	2141.4	Total	3.3	Total Losses	-28.0

Fluid Types

	Vol bbl
Hi-Vis PHB/Guar sweeps	30.0

Deviation Information

Survey MD	1,972.0 m
Survey TVD	1,971.9 m
Angle	0.67 Deg
Direction	58
Horiz Displ.	1.2 m

Daily Products Cost	$A3,763.21	Total Daily Cost	$A6,843.21
Cumulative Products Cost	$A364,219.43	Total Cumulative Cost	$A422,739.43

Baroid Representatives	Mike Lawrance	James Munford	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
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Baroid Fluid Services

Report No 020

Daily Drilling Fluid Report

Date 18/12/2009		Depth 1,972.0 m	
Spud Date 30/11/2009		Rig Activity Tripping	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	250.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	38.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0

in Casing m

	OD	Set	MD
	30.000	@	158.0
	13.375	@	961.0
	9.625	@	1,965.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2				
Time		10:00	16:30	20:00				
Depth	m	1,972	1,972	1,972				
FL Temp	Deg C	33	37					
Density @ Deg C	ppg	9.60 @ 26	9.55 @ 32	9.55 @ 37			9.00	10.00
FV @ Deg C	sec/qt	63 @ 26	55 @ 32	54 @ 37				
PV @ Deg C	cP	11 @ 49	11 @ 49	10 @ 49				
YP	lbs/100 ft2	25	21	21				
GELS	lbs/100 ft2	9/15/17	9/15/18	10/15/18				
600/300		47.0/36.0	43.0/32.0	41.0/31.0				
200/100		31.0/24.0	27.0/21.0	26.0/20.0				
6/3		9.0/8.0	9.0/8.0	9.0/7.0				
API Filt	ml/30 min	4.5	4.5	5.4		X		5.0
HTHP @ Deg C	ml/30 min	10.0 @ 49	9.0 @ 49	10.2 @ 49				13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2				
Corr Solid	% by Vol	4.2	4.1	3.9				
NAP/Water	% by Vol	-/92.5	-/92.7	-/92.7				
Sand	% by vol	0.20	0.15	0.15				1.0
MBT	ppb Eq.	6.5	5.5	7.5				25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22			8.50	9.50
ALK Mud	Pm	0.25	0.15	0.20				
ALK Filt	Pf/Mf	0.15/2.40	0.10/2.30	0.20/2.40				
Chlorides	mg/l	40,500	40,000	42,000				
Tot. Hardness	mg/l	280	280	280				400
LGS/HGS	% by Vol	2.1/2.1	2.1/1.9	1.9/2.0				
LGS/HGS	ppb	19.15/31.15	19.26/28.55	17.62/28.73				
ASG	SG	3.403	3.366	3.404				
Additional Properties								
KCl %	-	8.00	8.00	8.00				

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

On circulating bottom's up add ALDACIDE G bacteriacide.
Build & shear pre-mix volume in reserve pits.
Run only shakers 1-3 to promote more efficient cuttings transport due to lower flow rate. Run centrifuge to control solids & condition mud.
Prepare slug for POOH.

Rig Activity

Perform Shallow Water Test On MWD Tools. Held PJSM. Picked up 5" DP f/ Deck & RIH to 1657 m. Cont RIH w/ Stands f/ Derrick f/ 1657 m - 1917 m. Wash & Ream f/1917 m to top of Cmt at 1938 m. Tag w/ 5k down. Attempt to Drill out Shoe track f/ 1938 m - 1940 m. Pump Slug & Rig down Geoservice & MWD Geolograph Lines. Attempt to install Power Slips. Slips jammed on D/Pipe. Removeed Power Slips. Secured Compensator & Top Drive hoses due to Hoses hanging up in the Derrick. Cont POOH f/ 1940 m to 211 m. POOH w/ BHA & Rack In Derrick. L/D 1x Stab & Float Sub. Halliburton MWD Removed Radio Active Sources & download MWD tools.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	49		6	43	$A9,057.42
BARAZAN D PLUS	25 kg bag	77		17	60	$A3,660.78
EZ-MUD	25 kg pail	192		22	170	$A2,089.78
DEXTRID LTE	25 kg sack	160		31	129	$A1,642.38
PAC-L	25 kg bag	119		6	113	$A961.92
ALDACIDE G	25 kg can	4		1	3	$A173.09
Circal 60/16	25 kg bag	302		13	289	$A164.84
potassium hydroxide	20 kg pail	52		1	51	$A132.11
Omyacarb 5	25 kg bag	6		6		$A103.86
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	25			25	
potassium chloride	1000 kg bag	24			24	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	10.0
VSM-300	20 20 20 100 100 100 100	10.0
VSM-300	20 20 20 80 80 80 80	10.0
VSM-300	20 20 20 80 80 80 80	1.5

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	8.0
518	4,000	80.00	8.0

Time

Drilling	
Circulating	
Trips	11.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	10.5
Testing	
Logging	
Dir Work	1.0
Repair	0.5
Other	1.0
Total	24.0
Rotating	10.5
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	128.4	Base		Fluid Dumped	
Pipe Cap	8.1	Drill Water		Transferred	
Active Pits	799.0	Dewatering		SCE	-54.0
Total Hole	571.5	Sea Water		Evaporation	
Total Circ	935.5	Whole Mud	2141.4	Trips	
Reserve	735.0	Barite		Other	
Prev Vol		Chemicals	18.0	Total Surface	
Net Change	2105.5	Other		Downhole	
Total Vol	2105.5	Total	2159.4	Total Losses	-54.0

Fluid Types

	Vol bbl
Hi-Vis PHB/Guar sweeps	30.0

Deviation Information

Survey MD	1,972.0 m
Survey TVD	1,971.9 m
Angle	0.67 Deg
Direction	58
Horiz Displ.	1.2 m

Daily Products Cost	$A17,986.18	Total Daily Cost	$A21,066.18
Cumulative Products Cost	$A382,205.61	Total Cumulative Cost	$A443,805.61

Baroid Representatives	Mike Lawrance	James Munford	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 021

Daily Drilling Fluid Report

Date 19/12/2009		Depth 2,019.0 m	
Spud Date 30/11/2009		Rig Activity Tripping	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	700.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	488.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		54.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties

		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2				
Time		9:00	16:20	21:30				
Depth	m	1,972	1,981	2,019				
FL Temp	Deg C		33	44				
Density @ Deg C	ppg	9.60 @ 27	9.55 @ 29	9.55 @ 40			9.00	10.00
FV @ Deg C	sec/qt	68 @ 27	64 @ 29	49 @ 35				
PV @ Deg C	cP	11 @ 49	12 @ 49	11 @ 49				
YP	lbs/100 ft2	20	19	22				
GELS	lbs/100 ft2	9/13/16	9/15/19	9/15/18				
600/300		42.0/31.0	43.0/31.0	44.0/33.0				
200/100		26.0/20.0	27.0/20.0	28.0/21.0				
6/3		9.0/8.0	9.0/8.0	9.0/7.0				
API Filt	ml/30 min	4.8	4.5	5.4		X		5.0
HTHP @ Deg C	ml/30 min	11.0 @ 49	9.5 @ 49	10.6 @ 49				13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2				
Corr Solid	% by Vol	4.1	4.1	4.0				
NAP/Water	% by Vol	-/92.6	-/92.7	-/92.7				
Sand	% by vol	0.15	0.15	0.15				1.0
MBT	ppb Eq.	5.5	6.0	7.0				25.0
pH @ Deg C		8.50 @ 22	9.50 @ 22	9.50 @ 22			8.50	9.50
ALK Mud	Pm	0.05	0.25	0.30				
ALK Filt	Pf/Mf	0.05/2.60	0.20/2.40	0.25/2.40				
Chlorides	mg/l	40,500	40,000	41,000				
Tot. Hardness	mg/l	300	240	260				400
LGS/HGS	% by Vol	1.9/2.2	2.1/1.9	2.0/1.9				
LGS/HGS	ppb	17.30/32.63	19.26/28.55	18.44/28.64				
ASG	SG	3.462	3.366	3.384				

Additional Properties

KCl %	-	8.10	8.00	8.00				

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add ALDACIDE G to inhibit bacterial growth.
Add DEXTRID LTE to promote low filtration.
Add Circal 60/16 sized calcium carbonate bridging agent to replenish that lost through solids control equipment.
Allow pH to drop to low end of target (8.5) in anticipation of pH increase through drilling out cement.
Add Soda ash to active to treat out hardness following drilling cement.
Prepare slug for POOH.
Bleed reserve volume into active to maintain volume & properties.

Rig Activity

M/U 8-1/2" GT-1 mill tooth bit. Set bent sub on PDM to 1.15 deg & scribed MWD. Picked up stabiliser & float sub + 3x 6-3/4" drill collars f/ deck. RIH w/ BHA f/ Derrick to 216 m. Shallow test MWD tools. Cont. to RIH to 1922 m. Wash & ream f/ 1922 m to 1940 m. Drill out show track f/ 1940 m to 1965 m. Ream though float & shoe 3x. Drill 8 1/2" hole f/ 1972 m to 1977 m. Circ hole clean & perform LOT w/ 9.4 ppg mud EMW = 14.6 ppg. Drill f/ 1977 m to 1981 m. Slide f/ 1981 m to 1994 m. Cont. drill f/ 1994 to 2019 m. Take surveys, CBU. Pump slug & POOH f/ 2019 m to 700 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
EZ-MUD	25 kg pail	170		10	160	$A949.90
DEXTRID LTE	25 kg sack	129		11	118	$A582.78
Circal 60/16	25 kg bag	289		15	274	$A190.20
ALDACIDE G	25 kg can	3		1	2	$A173.09
soda ash	25 kg bag		48	4	44	$A121.68
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	60			60	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	43			43	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	25			25	
PAC-L	25 kg bag	113			113	
potassium chloride	1000 kg bag	24			24	
potassium hydroxide	20 kg pail	51			51	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	13.0
VSM-300	20 20 20 100 100 100 100	13.0
VSM-300	20 20 20 80 80 80 80	13.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	3.5
Circulating	1.5
Trips	11.0
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	2.0
Testing	
Logging	
Dir Work	3.5
Repair	
Other	2.0
Total	24.0
Rotating	5.5
ROP	22.0
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	204.9	Base		Fluid Dumped	
Pipe Cap	33.7	Drill Water		Transferred	
Active Pits	719.0	Dewatering		SCE	-124.5
Total Hole	571.9	Sea Water		Evaporation	-11.0
Total Circ	957.6	Whole Mud		Trips	
Reserve	645.0	Barite		Other	-38.0
Prev Vol	2105.5	Chemicals	3.9	Total Surface	
Net Change	-169.6	Other		Downhole	
Total Vol	1935.9	Total	3.9	Total Losses	-173.5

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	30.0

Deviation Information

Survey MD	2,006.9	m
Survey TVD	2,006.8	m
Angle	4.8	Deg
Direction	21	
Horiz Displ.	7.1	m

Daily Products Cost	$A2,017.65	Total Daily Cost	$A5,097.65
Cumulative Products Cost	$A384,223.26	Total Cumulative Cost	$A448,903.26

Baroid Representatives Mike Lawrance James Munford
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Baroid Fluid Services

Report No 022

Daily Drilling Fluid Report

Date 20/12/2009	**Depth** 2,023.0 m		
Spud Date 30/11/2009	**Rig Activity** Tripping		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in								
Make/Type							30.000	@	158.0
Jets							13.375	@	961.0
TFA	sq-in						9.625	@	1,965.0
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	m	Riser	19.750		100.0				
ECD @ Csg Shoe	ppg	Open Hole	8.500		58.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets	Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2					**Fluid Type** 8 1/2" KCl/Polymer
Time		10:00	17:30	22:00					Add soda ash to control hardness.
Depth	m	2,019	2,023	2,023					Add caustic potash to maintain pH.
FL Temp	Deg C								Add PAC-LE to control filtration.
Density @ Deg C	ppg	9.60 @ 31	9.60 @ 34	9.60 @ 28			9.00	10.00	
FV @ Deg C	sec/qt	58 @ 31	53 @ 34	52 @ 28					Shaker screen maintenance - changed out
PV @ Deg C	cP	11 @ 49	12 @ 49	11 @ 49					damaged with previously used screens.
YP	lbs/100 ft2	22	20	22					
GELS	lbs/100 ft2	10/16/19	9/15/18	10/14/18					Prepare slug for POOH.
600/300		44.0/33.0	44.0/32.0	44.0/33.0					
200/100		28.0/20.0	27.0/21.0	28.0/21.0					
6/3		9.0/8.0	9.0/8.0	9.0/8.0					
API Filt	ml/30 min	4.5	4.5	4.9				5.0	
HTHP @ Deg C	ml/30 min	10.5 @ 49	10.0 @ 49	10.3 @ 49				13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2					
Corr Solid	% by Vol	4.2	4.2	4.0					
NAP/Water	% by Vol	-/92.5	-/92.6	-/92.7					
Sand	% by vol	0.20	0.20	0.20				1.0	
MBT	ppb Eq.	6.0	5.5	7.0				25.0	
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.50 @ 22			8.50	9.50	
ALK Mud	Pm	0.10	0.20	0.30					
ALK Filt	Pf/Mf	0.05/2.30	0.15/2.50	0.20/2.30					
Chlorides	mg/l	40,500	40,000	41,000					
Tot. Hardness	mg/l	260	220	220				400	
LGS/HGS	% by Vol	2.1/2.1	1.9/2.2	1.6/2.3					
LGS/HGS	ppb	19.15/31.15	17.70/32.59	15.03/34.15					
ASG	SG	3.403	3.452	3.535					
Additional Properties									
KCl %	-	8.10	8.00	8.00					

Rig Activity

Continued to POOH f/ 700 m to surface. L/O MWD tools. Pick up BHA & RIH to 210 m. Shallow test tools. RIH f/ 210 m to 1252 m. Slip & cut drill line. Cont. RIH f/ 1252 m to 1972 m. Ream & relog new hole f/ 1972 m to 2019 m. Drilled 8 1/2" hole f/ 2019 m to 2023 m. Pumped slug & POOH to surface.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	113		3	110	$A480.96
potassium hydroxide	20 kg pail	51		3	48	$A396.33
soda ash	25 kg bag	44		8	36	$A243.36
ALDACIDE G	25 kg can	2			2	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	60			60	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	274			274	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	43			43	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	118			118	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	160			160	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	25			25	
potassium chloride	1000 kg bag	24			24	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment			
Shaker	Screens	Hrs	
VSM-300	20 20 20 100 100 100 100	5.0	
VSM-300	20 20 20 100 100 100 100	5.0	
VSM-300	20 20 20 80 80 80 80	5.0	
VSM-300	20 20 20 80 80 80 80		
Hydrocyclone	Cones	Screens	Hrs
Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time	
Drilling	2.0
Circulating	
Trips	14.5
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	3.5
Repair	
Other	3.5
Total	24.0
Rotating	2.0
ROP	2.4
Dil Rate	0.00

Fluid Volume Breakdown	8 1/2" KCl/Polymer				
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	729.0	Dewatering		SCE	-7.3
Total Hole	610.7	Sea Water		Evaporation	
Total Circ	729.0	Whole Mud		Trips	
Reserve	590.0	Barite		Other	
Prev Vol	1935.9	Chemicals	1.0	Total Surface	
Net Change	-6.3	Other		Downhole	
Total Vol	1929.7	Total	1.0	Total Losses	-7.3

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	30.0

Deviation Information		
Survey MD	2,006.9	m
Survey TVD	2,006.8	m
Angle	4.8	Deg
Direction	21	
Horiz Displ.	7.1	m

Daily Products Cost	$A1,120.65	Total Daily Cost	$A4,200.65
Cumulative Products Cost	$A385,343.91	Total Cumulative Cost	$A453,103.91

Baroid Representatives	Mike Lawrance	James Munford	
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Baroid Fluid Services

Report No 023

Daily Drilling Fluid Report

Date 21/12/2009		Depth 2,230.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8 1/2" hole	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	SECURITY DBS/FMS3653
Jets	6x14
TFA	0.902 sq-in
Jets Velocity	194 ft/sec
Jet Impact Force	524.3 lbf
Bit HHSI	1.80 hhp/in2
Press Drop @ Bit	321 psi
Bit Depth	2,230.0 m
ECD @ Csg Shoe	10.05 ppg
ECD @ Bit	23.63 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,018.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		265.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	54	55	0
gpm|bbl/min	271 | 6.45	276 | 6.57	
Total GPM	547	AV, Riser	36.7
Total Circ Time	94	AV min DP	245.5
BU Time , min	35	AV max DC	3200.3
Total Strokes	10,245	BU Strokes	3,841
Circ Press psi	1710		
Tot Pres Loss	6455		
Press Drop DP	652		
Press Drop An	5357		

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		9:05	13:30	16:00	21:30			
Depth	m	2,027	2,060	2,100	2,182			
FL Temp	Deg C	37	43	47	51			
Density @ Deg C	ppg	9.65 @ 29	9.55 @ 37	9.55 @ 40	9.55 @ 44		9.00	10.00
FV @ Deg C	sec/qt	50 @ 29	53 @ 37	52 @ 40	51 @ 44			
PV @ Deg C	cP	12 @ 49	14 @ 49	14 @ 49	13 @ 49			
YP	lbs/100 ft2	26	24	25	26			
GELS	lbs/100 ft2	10/14/17	9/15/19	9/15/18	10/16/19			
600/300		50.0/38.0	52.0/38.0	53.0/39.0	52.0/39.0			
200/100		31.0/24.0	32.0/24.0	33.0/26.0	33.0/25.0			
6/3		10.0/8.0	10.0/8.0	10.0/8.0	10.0/8.0			
API Filt	ml/30 min	4.2	4.5	4.5	4.8			5.0
HTHP @ Deg C	ml/30 min	8.5 @ 49	9.5 @ 49	9.0 @ 49	9.5 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.0	4.3	4.5	4.4			
NAP/Water	% by Vol	-/92.7	-/92.5	-/92.3	-/92.3			
Sand	% by vol	0.20	0.25	0.25	0.20			1.0
MBT	ppb Eq.	5.5	6.0	6.0	7.5			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	0.15	0.10	0.15	0.20			
ALK Filt	Pf/Mf	0.10/2.20	0.05/2.50	0.10/2.30	0.10/2.20			
Chlorides	mg/l	41,000	40,000	40,000	41,000			
Tot. Hardness	mg/l	200	180	180	200			400
LGS/HGS	% by Vol	1.3/2.7	2.5/1.7	2.9/1.5	2.8/1.5			
LGS/HGS	ppb	11.62/39.66	22.97/25.60	26.69/22.65	25.87/22.73			
ASG	SG	3.686	3.253	3.151	3.164			
Additional Properties								
KCl %	-	8.20	8.00	8.00	8.00			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add BARAZAN D PLUS to maintain low end rheology. Add PAC-LE & DEXTRID LTE to ensure tight filtration. Caustic potash addition to maintain pH.
Maintain PHPA concentration through EZ-MUD addition.
Add CLAYSEAL PLUS to compensate for depletion through drilling.
Run centrifuge to control solids.
Add Circal 60/16 sized bridging agent to compensate for loses f/ solids control equipment.
*Note LGS concentration includes 5 ppb Calcium Carbonate Bridging agents.

Rig Activity

P/U GeoPilot f/ deck. Install PDC Bit RR#6 & RIH. Halliburton uploaded MWD tools & installed Radio Active Sources. RIH w/ 8 1/2" BHA to 210 m. Shallow test MWD tools. Cont. RIH to 1981 m. Wash & ream f/ 1981 m to 2023 m. Drill 8 1/2" hole f/ 2023 m to 2230 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	43		4	39	$A6,038.28
potassium chloride	1000 kg bag	24		2	22	$A2,967.04
PAC-L	25 kg bag	110		12	98	$A1,923.84
BARAZAN D PLUS	25 kg bag	60	40	6	94	$A1,292.04
EZ-MUD	25 kg pail	160		11	149	$A1,044.89
potassium hydroxide	20 kg pail	48		7	41	$A924.77
DEXTRID LTE	25 kg sack	118		17	101	$A900.66
Circal 60/16	25 kg bag	274		20	254	$A253.60
soda ash	25 kg bag	36		4	32	$A121.68
ALDACIDE G	25 kg can	2	32		34	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag		32		32	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	25			25	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	17.0
VSM-300	20 20 20 100 100 100 100	17.0
VSM-300	20 20 20 80 80 80 80	1.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	16.0
518	4,000	80.00	16.0

Time

Drilling	15.5
Circulating	0.5
Trips	5.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	0.5
Testing	0.5
Logging	
Dir Work	1.5
Repair	
Other	
Total	24.0
Rotating	16.0
ROP	39.9
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	458.8	Base		Fluid Dumped	
Pipe Cap	120.9	Drill Water	75.0	Transferred	
Active Pits	644.0	Dewatering		SCE	-161.4
Total Hole	579.7	Sea Water		Evaporation	-18.0
Total Circ	1223.7	Whole Mud	80.0	Trips	
Reserve	675.0	Barite		Other	-12.0
Prev Vol	1929.7	Chemicals	18.8	Total Surface	
Net Change	-17.7	Other		Downhole	
Total Vol	1898.7	Total	173.8	Total Losses	-191.4

Fluid Types Vol bbl

Deviation Information

Survey MD	2,104.9 m
Survey TVD	2,103.7 m
Angle	12.8 Deg
Direction	15
Horiz Displ.	11.8 m

Daily Products Cost	$A15,466.80	Total Daily Cost	$A18,546.80
Cumulative Products Cost	$A400,810.71	Total Cumulative Cost	$A471,650.71

Baroid Representatives Mike Lawrance James Munford
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Baroid Fluid Services

Report No 024

Daily Drilling Fluid Report

Date	22/12/2009	**Depth**	2,550.0 m
Spud Date	30/11/2009	**Rig Activity**	Drilling 8 1/2" hole

Operator	ADA DRILLING	**Report For**	Mike Lanzer / Paul Leathem
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Stig Sundgaard / Ole Andreasen
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity	199	ft/sec
Jet Impact Force	553.5	lbf
Bit HHSI	1.96	hhp/in2
Press Drop @ Bit	339	psi
Bit Depth	2,550.0	m
ECD @ Csg Shoe	10.11	ppg
ECD @ Bit	22.80	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,338.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		585.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	56	56	0
gpm|bbl/min	281 | 6.69	281 | 6.69	
Total GPM	562	AV, Riser	37.7
Total Circ Time	96	AV min DP	252.3
BU Time , min	38	AV max DC	3288.4
Total Strokes	10,749	BU Strokes	4,234
Circ Press psi	2025		
Tot Pres Loss	6767		
Press Drop DP	761		
Press Drop An	5538		

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		4:00	10:00	16:30	21:30			
Depth	m	2,296	2,369	2,449	2,509			
FL Temp	Deg C	57	58	59	59			
Density @ Deg C	ppg	9.55 @ 44	9.60 @ 45	9.55 @ 47	9.55 @ 45		9.00	10.00
FV @ Deg C	sec/qt	51 @ 44	50 @ 45	52 @ 47	49 @ 45			
PV @ Deg C	cP	15 @ 49	15 @ 49	14 @ 49	14 @ 49			
YP	lbs/100 ft2	30	27	31	29			
GELS	lbs/100 ft2	13/18/22	10/15/20	11/17/21	10/18/21			
600/300		60.0/45.0	57.0/42.0	59.0/45.0	57.0/43.0			
200/100		39.0/29.0	36.0/27.0	38.0/28.0	36.0/28.0			
6/3		12.0/9.0	10.0/8.0	10.0/8.0	11.0/8.0			
API Filt	ml/30 min	4.5	4.7	4.2	4.3			5.0
HTHP @ Deg C	ml/30 min	10.0 @ 49	9.8 @ 49	9.0 @ 49	9.4 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.5	4.9	4.5	4.9			
NAP/Water	% by Vol	-/92.3	-/92.0	-/92.4	-/92.0			
Sand	% by vol	0.20	0.25	0.25	0.30			1.0
MBT	ppb Eq.	7.5	9.0	7.0	7.5			25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.00 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.30	0.20	0.30	0.30			
ALK Filt	Pf/Mf	0.20/2.40	0.15/2.50	0.20/2.45	0.20/2.40			
Chlorides	mg/l	40,000	39,000	38,000	38,000			
Tot. Hardness	mg/l	240	220	180	180			400
LGS/HGS	% by Vol	2.9/1.5	3.3/1.6	2.9/1.6	3.7/1.2			
LGS/HGS	ppb	26.69/22.65	29.65/23.65	26.45/23.96	33.87/18.05			
ASG	SG	3.151	3.129	3.175	2.997			
Additional Properties								
KCl %	-	8.00	7.90	7.60	7.20			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add PAC-LE & DEXTRID LTE to ensure tight filtration. Caustic potash addition to maintain pH. Soda Ash added to help lower hardness.
Run centrifuge to control solids. Add Circal 60/16 sized bridging agent to compensate for losses f/ solids control equipment.
Add CLAYSEAL PLUS & EZ-MUD to maintain concentration. ALDACDIE G addition to control bacterial growth.
Bleed water to active to offset evaporation loss.
Start tapering KCl% down to 6% as per ADA Instruction.
*Note LGS concentration includes 5 ppb Calcium Carbonate Bridging agents.

Rig Activity

Cont. to drill 8-1/2" hole f/ 2230 m to 2550 m w/ angle build to 31° inclination.
Drilling parameters:
561gpm / 112 spm / 2025 psi.
WOB 5 to 15 klbs.
Torque 15 to 24 klbs-ft
ROP 5 to 30 m/hr

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	39		8	31	$A12,076.56
potassium chloride	1000 kg bag	22		6	16	$A8,901.12
EZ-MUD	25 kg pail	149		25	124	$A2,374.75
OXYGON	50 lb can	25		3	22	$A1,716.09
PAC-L	25 kg bag	98		8	90	$A1,282.56
DEXTRID LTE	25 kg sack	101		24	77	$A1,271.52
Techmesh 175 (API 100)	1 each box	2		2		$A1,119.92
potassium hydroxide	20 kg pail	41		7	34	$A924.77
BARAZAN D PLUS	25 kg bag	94		2	92	$A430.68
ALDACIDE G	25 kg can	34		2	32	$A346.18
Circal 60/16	25 kg bag	254		20	234	$A253.60
soda ash	25 kg bag	32		4	28	$A121.68
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	32			32	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80 80	24.0
VSM-300	20 20 20 100 100 100 100	24.0
VSM-300	20 20 20 80 80 80 80	3.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	24.0

Time

Drilling	24.0
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	24.0
ROP	43.7
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	505.7	Base		Fluid Dumped	
Pipe Cap	139.1	Drill Water	100.0	Transferred	
Active Pits	639.0	Dewatering		SCE	-117.2
Total Hole	644.8	Sea Water		Evaporation	
Total Circ	1283.8	Whole Mud	100.0	Trips	
Reserve	717.0	Barite		Other	-20.0
Prev Vol	1898.7	Chemicals	39.4	Total Surface	
Net Change	102.2	Other		Downhole	
Total Vol	2000.8	Total	239.4	Total Losses	-137.2

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	2,511.3	m
Survey TVD	2,449.5	m
Angle	42.92	Deg
Direction	354	
Horiz Displ.	16.4	m

Daily Products Cost	$A30,819.43	Total Daily Cost	$A33,899.43
Cumulative Products Cost	$A431,630.14	Total Cumulative Cost	$A505,550.14

Baroid Representatives	Mike Lawrance	James Munford	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 025

Daily Drilling Fluid Report

Date	23/12/2009	**Depth**	2,753.0 m
Spud Date	30/11/2009	**Rig Activity**	Wiper Trip 8.5" Interval

Operator	ADA DRILLING	**Report For**	Mike Lanzer / Paul Leathem
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Stig Sundgaard / Ole Andreasen
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity	206	ft/sec
Jet Impact Force	596.9	lbf
Bit HHSI	2.19	hhp/in2
Press Drop @ Bit	365	psi
Bit Depth	2,753.0	m
ECD @ Csg Shoe	10.20	ppg
ECD @ Bit	23.41	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,541.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		788.0

in Casing m

	OD	Set	MD
	30.000	@	158.0
	13.375	@	961.0
	9.625	@	1,965.0
Leak Off ppg			14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	56	0
gpm|bbl/min	301 | 7.17	281 | 6.69	|
Total GPM	582	AV, Riser	39.1
Total Circ Time	103	AV min DP	261.3
BU Time , min	39	AV max DC	3405.8
Total Strokes	11,924	BU Strokes	4,483
Circ Press psi	2175		
Tot Pres Loss	7922		
Press Drop DP	922		
Press Drop An	6486		

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Flow Line			
Time		3:30	10:20	16:25	21:52			
Depth	m	2,585	2,639	2,712	2,753			
FL Temp	Deg C	60	61	62	58			
Density @ Deg C	ppg	9.60 @ 53	9.60 @ 51	9.60 @ 53	9.60 @ 58		9.00	10.00
FV @ Deg C	sec/qt	61 @ 53	55 @ 51	52 @ 53	50 @ 58			
PV @ Deg C	cP	18 @ 49	17 @ 49	17 @ 49	17 @ 49			
YP	lbs/100 ft2	34	32	31	31			
GELS	lbs/100 ft2	13/20/30	10/14/23	10/15/19	10/15/19			
600/300		70.0/52.0	66.0/49.0	65.0/48.0	65.0/48.0			
200/100		43.0/32.0	41.0/30.0	40.0/30.0	40.0/30.0			
6/3		13.0/10.0	10.0/8.0	10.0/9.0	10.0/8.0			
API Filt	ml/30 min	5.0	4.5	4.6	4.7			5.0
HTHP @ Deg C	ml/30 min	10.0 @ 49	9.0 @ 49	9.5 @ 49	9.6 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	5.4	4.9	5.0	5.2			
NAP/Water	% by Vol	-/91.5	-/92.0	-/92.0	-/92.0			
Sand	% by vol	0.30	0.30	0.25	0.30			1.0
MBT	ppb Eq.	7.5	8.0	8.0	10.0			25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.40	0.30	0.30	0.35			
ALK Filt	Pf/Mf	0.30/2.60	0.25/2.50	0.30/2.70	0.35/2.70			
Chlorides	mg/l	39,000	38,500	37,000	35,000			
Tot. Hardness	mg/l	140	180	180	180			400
LGS/HGS	% by Vol	4.3/1.1	3.3/1.6	3.4/1.6	3.6/1.6			
LGS/HGS	ppb	38.93/16.27	30.05/23.61	31.25/23.49	32.84/23.35			
ASG	SG	2.929	3.123	3.108	3.089			
Additional Properties								
KCl %	-	7.30	7.20	6.90	6.70			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Build pre-mix volume & bleed into active to maintain properties & volume. New premixes containing lower KCl percentage as per ADA Instruction. Add EZ-MUD & CLAYEAL PLUS to compensate for depletion whilst drilling. Maintain tight filtration through PAC-LE & DEXTRID LTE addition. Bleed water into active to compensate for evaporation loss.
Maintain pH w/ caustic potash addition. Run centrifuges to control solids. Add ALDACIDE G to treat Fluid system & OXYGON for corrosion prevention.

Rig Activity

Cont. to drill 8-1/2" hole f/ 2550 m to 2753 m as per directional driller. Top up oil Top Drive gearbox 25 LTRS. Add 3 LTRS of PHPA in pipe circ 2 X btms up FLC. POOH f/ 2753 - 2520 m preform wiper trip, mat O/P 40 K.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	16		8	8	$A11,868.16
CLAYSEAL PLUS	55 gal drum	31		7	24	$A10,566.99
PAC-L	25 kg bag	90		20	70	$A3,206.40
DEXTRID LTE	25 kg sack	77		41	36	$A2,172.18
EZ-MUD	25 kg pail	124		22	102	$A2,089.78
OXYGON	50 lb can	22		3	19	$A1,716.09
potassium hydroxide	20 kg pail	34		7	27	$A924.77
ALDACIDE G	25 kg can	32		5	27	$A865.45
Circal 60/16	25 kg bag	234		25	209	$A317.00
soda ash	25 kg bag	28		5	23	$A152.10
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	32		2	30	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80 80	2.0
VSM-300	20 20 20 80 80 80 100	24.0
VSM-300	20 20 20 80 80 80 80	24.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	20.0
518	4,000	80.00	20.0

Time

Drilling	20.5
Circulating	
Trips	1.5
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.5
Total	24.0
Rotating	20.5
ROP	32.5
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	535.4	Base		Fluid Dumped	
Pipe Cap	150.7	Drill Water	200.0	Transferred	
Active Pits	738.0	Dewatering		SCE	-141.0
Total Hole	686.1	Sea Water		Evaporation	-36.5
Total Circ	1424.1	Whole Mud	200.0	Trips	-9.0
Reserve	827.0	Barite		Other	-11.0
Prev Vol	2000.8	Chemicals	47.8	Total Surface	
Net Change	250.3	Other		Downhole	
Total Vol	2251.1	Total	447.8	Total Losses	-197.5

Fluid Types — Vol bbl

Deviation Information

Survey MD	2,741.0	m
Survey TVD	2,617.0	m
Angle	43.47	Deg
Direction	356	
Horiz Displ.	3.0	m

Daily Products Cost	$A33,878.92	Total Daily Cost	$A36,958.92
Cumulative Products Cost	$A465,509.06	Total Cumulative Cost	$A542,509.06

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 026

Daily Drilling Fluid Report

Date 24/12/2009	**Depth** 2,865.0 m		
Spud Date 30/11/2009	**Rig Activity** Drilling 8.5" Interval		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity	212	ft/sec
Jet Impact Force	624.9	lbf
Bit HHSI	2.35	hhp/in2
Press Drop @ Bit	382	psi
Bit Depth	2,865.0	m
ECD @ Csg Shoe	10.16	ppg
ECD @ Bit	22.63	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,653.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		900.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	72	47	0
gpm|bbl/min	361 | 8.60	236 | 5.61	
Total GPM	597	AV, Riser	40.1
Total Circ Time	95	AV min DP	268.0
BU Time , min	39	AV max DC	3493.9
Total Strokes	11,319	BU Strokes	4,620
Circ Press psi	2328		
Tot Pres Loss	7883		
Press Drop DP	957		
Press Drop An	6396		

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		12:00	17:05	3:00	20:23			
Depth	m	2,753	2,783	2,753	2,819			
FL Temp	Deg C		61	55	53			
Density @ Deg C	ppg	9.65 @ 37	9.50 @ 42	9.60 @ 40	9.55 @ 49		9.00	10.00
FV @ Deg C	sec/qt	62 @ 37	56 @ 42	55 @ 40	52 @ 49			
PV @ Deg C	cP	17 @ 49	15 @ 49	17 @ 49	16 @ 49			
YP	lbs/100 ft2	31	32	32	31			
GELS	lbs/100 ft2	10/16/22	9/15/20	11/16/19	10/16/19			
600/300		65.0/48.0	62.0/47.0	66.0/49.0	63.0/47.0			
200/100		41.0/29.0	39.0/30.0	41.0/31.0	39.0/30.0			
6/3		10.0/9.0	9.0/8.0	11.0/9.0	10.0/8.0			
API Filt	ml/30 min	4.5	4.2	4.8	4.4			5.0
HTHP @ Deg C	ml/30 min	10.0 @ 49	8.5 @ 49	9.6 @ 49	9.1 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.8	4.2	5.2	4.1			
NAP/Water	% by Vol	-/92.1	-/92.8	-/92.0	-/93.0			
Sand	% by vol	0.25	0.25	0.30	0.30			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.00 @ 22	9.50 @ 22	9.00 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.15	0.40	0.35	0.35			
ALK Filt	Pf/Mf	0.10/2.70	0.60/3.20	0.35/2.80	0.40/3.10			
Chlorides	mg/l	38,000	37,000	35,000	36,000			
Tot. Hardness	mg/l	220	120	180	160			400
LGS/HGS	% by Vol	2.8/2.1	2.6/1.6	3.6/1.6	1.9/2.2			
LGS/HGS	ppb	25.19/30.56	23.25/24.27	32.84/23.35	16.93/32.66			
ASG	SG	3.286	3.228	3.089	3.471			
Additional Properties								
KCl %	-	6.90	6.90	6.70	6.70			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Pump Radiagreen EME Lubrication Pill at 2145 m as per ADA Instruction. Add Radiagreen EME to active at a concentration of 1% vol to reduce torque, as requested by Co Man. Dress lower deck of shakers w/ API 120 TECHMESH Screens. Run centrifuges & bleed in premix to reduce mud weight as per ADA Instruction. Bleed in water to active to offset evaporation. Receive Chemicals & screens. Perform inventory check. Calibrate mud balances. Continued to maintain fluid properties.
Transfer premix f/ Pit 4 into Pit 2.

Rig Activity

Cont POOH f/ 2520-2303 m tight spot (TS) - 2297m.Worked pipe TS f/ 2303-2265 m. Cont POOH f/ 2265-2175 m tight. Pump out of hole f/ 2175- 2145 m. Worked pipe @ TS fired jars w/ 420 K- 220 K jar up x 3 as / Co Man instruction - 420 K + 70 K. O/P stuck worked pipe between 420 - 430 K. W/R - 2129 m, POOH - 1946 m, CBU up & shakers clean. Service TDS/Dolly. Check for TDS faults. RIH f/ 1946 - 2539 m. Take 30 K W/R f/ 2539 - 2753 m. Drill 8.5" interval f/ 2753 - 2865 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Radiagreen EME-Salt	175 kg drum		20	15	5	$A33,149.70
CLAYSEAL PLUS	55 gal drum	24	24	4	44	$A6,038.28
Techmesh 210 (API 120)	1 each box		20	8	12	$A4,683.20
PAC-L	25 kg bag	70		5	65	$A801.60
ALDACIDE G	25 kg can	27		3	24	$A519.27
EZ-MUD	25 kg pail	102		3	99	$A284.97
potassium hydroxide	20 kg pail	27	18	1	44	$A132.11
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	209			209	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	36			36	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	30			30	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	19			19	
potassium chloride	1000 kg bag	8			8	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	9.0
518	4,000	80.00	9.0

Time

Drilling	9.5
Circulating	
Trips	4.5
Rig	1.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	8.5
Total	24.0
Rotating	9.5
ROP	38.7
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	551.8	Base		Fluid Dumped	
Pipe Cap	157.1	Drill Water	15.0	Transferred	
Active Pits	643.0	Dewatering		SCE	-161.0
Total Hole	708.9	Sea Water		Evaporation	-35.0
Total Circ	1351.9	Whole Mud	20.2	Trips	-5.0
Reserve	700.0	Barite		Other	-40.0
Prev Vol	2251.1	Chemicals	6.7	Total Surface	
Net Change	-199.1	Other		Downhole	
Total Vol	2051.9	Total	41.9	Total Losses	-241.0

Fluid Types Vol bbl

Deviation Information

Survey MD	2,828.0	m
Survey TVD	2,681.0	m
Angle	42	Deg
Direction	356	
Horiz Displ.		m

Daily Products Cost	$A45,609.13	Total Daily Cost	$A48,689.13
Cumulative Products Cost	$A511,118.19	Total Cumulative Cost	$A591,198.19

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 027

Daily Drilling Fluid Report

Date 25/12/2009		Depth 3,180.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	SECURITY DBS/FMS3653
Jets	6x14
TFA	0.902 sq-in
Jets Velocity	214 ft/sec
Jet Impact Force	632.1 lbf
Bit HHSI	2.39 hhp/in2
Press Drop @ Bit	387 psi
Bit Depth	3,180.0 m
ECD @ Csg Shoe	10.14 ppg
ECD @ Bit	21.64 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,968.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		1,215.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	61	59	0
gpm|bbl/min	306 | 7.29	296 | 7.05	
Total GPM	602	AV, Riser 40.4	Circ Press psi 2500
Total Circ Time	101	AV min DP 270.3	Tot Pres Loss 8195
BU Time , min	42	AV max DC 3523.3	Press Drop DP 1072
Total Strokes	12,141	BU Strokes 5,007	Press Drop An 6585

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Flow Line	Pit #2	Pit #2	Pit #2			
Time		8:10	16:10	3:30	20:00			
Depth	m	2,974	3,079	2,905	3,128			
FL Temp	Deg C	64	64	63	57			
Density @ Deg C	ppg	9.50 @ 52	9.50 @ 51	9.55 @ 49	9.50 @ 49		9.00	10.00
FV @ Deg C	sec/qt	56 @ 52	53 @ 51	48 @ 49	51 @ 59			
PV @ Deg C	cP	16 @ 49	17 @ 49	16 @ 49	17 @ 49			
YP	lbs/100 ft2	29	34	31	33			
GELS	lbs/100 ft2	9/15/20	10/15/19	10/16/19	11/16/19			
600/300		61.0/45.0	68.0/51.0	63.0/47.0	67.0/50.0			
200/100		37.0/27.0	42.0/31.0	39.0/30.0	42.0/31.0			
6/3		9.0/8.0	11.0/9.0	10.0/8.0	10.0/8.0			
API Filt	ml/30 min	4.5	4.5	4.3	4.6			5.0
HTHP @ Deg C	ml/30 min	9.0 @ 49	9.0 @ 49	9.8 @ 49	9.4 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.2	4.5	4.3	4.2			
NAP/Water	% by Vol	-/92.8	-/92.7	-/92.8	-/93.0			
Sand	% by vol	0.25	0.25	0.30	0.30			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	0.30	0.15	0.30	0.20			
ALK Filt	Pf/Mf	0.25/3.00	0.10/3.20	0.30/1.90	0.15/3.30			
Chlorides	mg/l	37,000	35,000	36,000	35,000			
Tot. Hardness	mg/l	160	180	160	180			400
LGS/HGS	% by Vol	2.6/1.6	2.9/1.5	2.3/2.0	2.3/1.8			
LGS/HGS	ppb	23.25/24.27	26.69/22.65	20.63/29.71	21.14/27.07			
ASG	SG	3.228	3.151	3.354	3.308			
Additional Properties								
KCl %	-	6.50	6.70	6.60	6.70			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add Circal 60/16, sized Calcium Carbonate bridging agent, to compensate for losses f/ solids control equipment. This will promote low filtration with thin filter cake formation. Compliment Circal 60/16 addition w/ PAC-LE. Add Caustic Potash to maintain pH. Add HEC-10 to maintain programmed rheolgy. Maintain shaker screens for optimum solids control. One centrifuge down. Continue to Bleed over from pit 3 into Active pit 2.

Rig Activity

Drilling 8.5" Interval f/ 2865 - 3180 m

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	44		4	40	$A6,038.28
Techmesh 210 (API 120)	1 each box	12		4	8	$A2,341.60
EZ-MUD	25 kg pail	99		17	82	$A1,614.83
PAC-L	25 kg bag	65		9	56	$A1,442.88
potassium hydroxide	20 kg pail	44		9	35	$A1,188.99
Circal 60/16	25 kg bag	209		65	144	$A824.20
DEXTRID LTE	25 kg sack	36		4	32	$A211.92
soda ash	25 kg bag	23		5	18	$A152.10
ALDACIDE G	25 kg can	24			24	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	30		6	24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	19			19	
potassium chloride	1000 kg bag	8			8	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	

Time

Drilling	24.0
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	24.0
ROP	43.1
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	598.0	Base		Fluid Dumped	
Pipe Cap	175.1	Drill Water		Transferred	
Active Pits	677.0	Dewatering		SCE	-127.0
Total Hole	773.1	Sea Water		Evaporation	-13.5
Total Circ	1450.1	Whole Mud		Trips	
Reserve	463.0	Barite		Other	-13.0
Prev Vol	2051.9	Chemicals	14.6	Total Surface	
Net Change	-138.9	Other		Downhole	
Total Vol	1913.1	Total	14.6	Total Losses	-153.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,175.0 m
Survey TVD	2,934.0 m
Angle	42.94 Deg
Direction	356
Horiz Displ.	m

Daily Products Cost	$A13,814.80	Total Daily Cost	$A16,894.80
Cumulative Products Cost	$A524,932.99	Total Cumulative Cost	$A608,092.99

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 028

Daily Drilling Fluid Report

Date 26/12/2009		Depth 3,312.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity	214	ft/sec
Jet Impact Force	632.1	lbf
Bit HHSI	2.39	hhp/in2
Press Drop @ Bit	387	psi
Bit Depth	3,312.0	m
ECD @ Csg Shoe	10.15	ppg
ECD @ Bit	23.08	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,100.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		1,347.0

in Casing m

	Set	MD
30.000 @		158.0
13.375 @		961.0
9.625 @		1,965.0
Leak Off ppg		14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	0	60
gpm|bbl/min	301 | 7.17		301 | 7.17
Total GPM	602	AV, Riser 40.4	Circ Press psi 2590
Total Circ Time	100	AV min DP 270.3	Tot Pres Loss 8675
BU Time , min	43	AV max DC 3523.3	Press Drop DP 1134
Total Strokes	12,048	BU Strokes 5,169	Press Drop An 6996

Properties

		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		1:55	9:00	17:00	22:00			
Depth	m	3,199	3,199	3,238	3,296			
FL Temp	Deg C	52		62	58			
Density @ Deg C	ppg	9.55 @ 49	9.60 @ 47	9.50 @ 42	9.50 @ 49		9.00	10.00
FV @ Deg C	sec/qt	53 @ 49	57 @ 47	57 @ 42	52 @ 49			
PV @ Deg C	cP	17 @ 49	20 @ 49	18 @ 49	18 @ 49			
YP	lbs/100 ft2	33	41	31	32			
GELS	lbs/100 ft2	10/15/18	11/16/20	10/15/17	11/16/18			
600/300		67.0/50.0	81.0/61.0	67.0/49.0	68.0/50.0			
200/100		42.0/31.0	51.0/39.0	41.0/31.0	42.0/32.0			
6/3		10.0/8.0	13.0/10.0	10.0/9.0	11.0/9.0			
API Filt	ml/30 min	4.1	4.0	4.2	4.8			5.0
HTHP @ Deg C	ml/30 min	8.6 @ 49	8.5 @ 49	8.5 @ 49	9.7 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.2	4.7	4.3	5.4			
NAP/Water	% by Vol	-/93.0	-/92.6	-/93.0	-/92.0			
Sand	% by vol	0.25	0.25	0.25	0.20			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.50 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.20	0.10	0.20	0.20			
ALK Filt	Pf/Mf	0.20/3.00	0.05/3.20	0.15/3.10	0.20/3.20			
Chlorides	mg/l	35,000	34,000	33,000	32,000			
Tot. Hardness	mg/l	160	180	180	160			400
LGS/HGS	% by Vol	1.9/2.2	2.5/2.2	2.5/1.8	4.6/0.8			
LGS/HGS	ppb	17.72/32.59	22.51/32.13	22.72/26.94	41.99/12.14			
ASG	SG	3.452	3.351	3.277	2.843			
Additional Properties								
KCl %	-	6.60	6.80	6.50	6.30			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Cont to Transfer premix volume f/ Pit 3 into active Pit 2, Cont to maintain Fluid properties: KOH for pH to 9.5, Circal 60/16 for Cal Carb concentration, PAC LE & DEXTRID for API properties, Soda Ash for hardness, & EZ MUD & CLAYSEAL PLUS for inhibition. *Note - 0900hrs mud check shows high rheology due to incorporation of Hi-vis sweep into fluid system. Will Mix BAROFILT sweep upon Co Man approval.

Rig Activity

Drilling f/ 3180 - 3199 m. Failure to TDS oil pump - CBU. POOH work TS 3199 - 2895 m. Change coupling, Lub TDS & greased wash pipe. RIH no TS. RIH connect up Geolograph, establish parameters. Drill 8.5" interval f/ 3199 - 3312 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	40		4	36	$A6,038.28
Techmesh 210 (API 120)	1 each box	8		4	4	$A2,341.60
EZ-MUD	25 kg pail	82		10	72	$A949.90
PAC-L	25 kg bag	56		5	51	$A801.60
potassium hydroxide	20 kg pail	35		5	30	$A660.55
DEXTRID LTE	25 kg sack	32		9	23	$A476.82
Circal 60/16	25 kg bag	144		30	114	$A380.40
ALDACIDE G	25 kg can	24		1	23	$A173.09
soda ash	25 kg bag	18		4	14	$A121.68
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	19			19	
potassium chloride	1000 kg bag	8			8	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	15.0

Time

Drilling	12.0
Circulating	
Trips	3.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	5.5
Other	3.0
Total	24.0
Rotating	12.0
ROP	36.1
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	617.4	Base		Fluid Dumped	
Pipe Cap	182.6	Drill Water	90.0	Transferred	
Active Pits	639.0	Dewatering		SCE	-95.0
Total Hole	799.9	Sea Water		Evaporation	-13.0
Total Circ	1438.9	Whole Mud		Trips	
Reserve	454.0	Barite		Other	-12.6
Prev Vol	1913.1	Chemicals	10.7	Total Surface	
Net Change	-19.9	Other		Downhole	
Total Vol	1892.9	Total	100.7	Total Losses	-120.6

Fluid Types Vol bbl

Deviation Information

Survey MD	3,290.0	m
Survey TVD	3,019.0	m
Angle	42.18	Deg
Direction	356	
Horiz Displ.		m

Daily Products Cost	$A11,943.92	Total Daily Cost	$A15,023.92
Cumulative Products Cost	$A536,876.91	Total Cumulative Cost	$A623,116.91

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 029

Daily Drilling Fluid Report

Date 27/12/2009		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Prepare to Pump Sweeps	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity	209	ft/sec
Jet Impact Force	619.7	lbf
Bit HHSI	2.30	hhp/in2
Press Drop @ Bit	372	psi
Bit Depth	3,522.0	m
ECD @ Csg Shoe	10.22	ppg
ECD @ Bit	10.45	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,310.1
Drill Pipe	5.000	3.750	141.6
Drill Collar	6.750	2.875	70.3
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0
Leak Off ppg		14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	0	60
gpm|bbl/min	301 | 7.17		301 | 7.17
Total GPM	602	AV, Riser 40.4	Circ Press psi 2350
Total Circ Time	116	AV min DP 270.3	Tot Pres Loss 2325
BU Time , min	46	AV max DC 552.8	Press Drop DP 1085
Total Strokes	13,945	BU Strokes 5,499	Press Drop An 517

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		3:00	7:50	17:00	22:00			
Depth	m	3,354	3,404	3,516	3,522			
FL Temp	Deg C	58	65	68	48			
Density @ Deg C	ppg	9.55 @ 49	9.50 @ 60	9.50 @ 58	9.55 @ 49		9.00	10.00
FV @ Deg C	sec/qt	52 @ 49	55 @ 60	56 @ 58	60 @ 49			
PV @ Deg C	cP	18 @ 49	18 @ 49	18 @ 49	18 @ 49			
YP	lbs/100 ft2	37	37	30	31			
GELS	lbs/100 ft2	12/16/19	12/16/19	9/16/18	10/15/18			
600/300		73.0/55.0	73.0/55.0	66.0/48.0	67.0/49.0			
200/100		46.0/35.0	46.0/35.0	41.0/31.0	42.0/31.0			
6/3		12.0/9.0	12.0/9.0	10.0/8.0	10.0/8.0			
API Filt	ml/30 min	4.0	4.0	4.2	4.3			5.0
HTHP @ Deg C	ml/30 min	8.6 @ 49	9.0 @ 49	8.0 @ 49	9.0 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	5.4	4.7	4.5	5.2			
NAP/Water	% by Vol	-/92.0	-/92.6	-/92.6	-/92.0			
Sand	% by vol	0.30	0.30	0.30	0.36			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	0.10	0.15	0.15	0.15			
ALK Filt	Pf/Mf	0.08/2.90	0.05/3.20	0.10/3.20	0.10/3.00			
Chlorides	mg/l	33,000	33,000	36,000	35,000			
Tot. Hardness	mg/l	160	140	120	160			400
LGS/HGS	% by Vol	4.1/1.2	3.3/1.4	3.0/1.4	4.0/1.2			
LGS/HGS	ppb	37.81/17.71	30.12/21.04	27.75/21.24	36.25/17.83			
ASG	SG	2.960	3.083	3.114	2.974			
Additional Properties								
KCl %	-	6.30	6.50	6.60	6.60			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Phase in addition of N-DRIL HT PLUS filtration control agent in response to increasing BHT. Maintain volume & properties through addition of premix. Maintain water addition at 2.5 bbl/hr to offset losses f/ evaporation. Add caustic potash for pH control. Add Circal 60/16 Calcium Carbonate bridging agent to offset depletion f/ solids control. Build further pre-mix on TD extension. Run centrifuges to control solids. Maintain shaker screens & change out as necessary. Pump 30 bbl low Wt, low rheology sweep chased by 30 bbl High Wt x 2, High reology sweep x 2. Made 55 bbl 10.6 ppg Slug, yet to pump

Rig Activity

CBU 120 spm, 600 gpm 2700 psi. Pumped 30 bbl low Wt 9.3 ppg, low rheology sweep chased by 30 bbl high Wt 10 ppg, high rheology sweep circ until shakers were clean. F/C, POOH f/ 3522 3100 m. RIH f/ 3100 - 3522 m prepare to pump 2nd lot of sweeps.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	36		4	32	$A6,038.28
Techmesh 210 (API 120)	1 each box	4		2	2	$A1,170.80
OXYGON	50 lb can	19		2	17	$A1,144.06
EZ-MUD	25 kg pail	72		8	64	$A759.92
N-DRIL HT PLUS	50 lb bag	105		5	100	$A744.25
potassium hydroxide	20 kg pail	30		5	25	$A660.55
PAC-L	25 kg bag	51		3	48	$A480.96
Circal 60/16	25 kg bag	114		18	96	$A228.24
ALDACIDE G	25 kg can	23		1	22	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	23			23	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	24		2	22	
mica	25 kg bag	36			36	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	5			5	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80 80	
VSM-300	20 20 20 210 210 210 210	20.0
VSM-300	20 20 20 210 210 210 210	20.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	18.0
518	4,000	80.00	18.0

Time

Drilling	19.0
Circulating	1.0
Trips	2.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.5
Total	24.0
Rotating	19.0
ROP	36.3
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	656.8	Base		Fluid Dumped	
Pipe Cap	196.7	Drill Water	300.0	Transferred	
Active Pits	812.0	Dewatering		SCE	-140.0
Total Hole	853.5	Sea Water		Evaporation	-60.0
Total Circ	1665.5	Whole Mud		Trips	-12.5
Reserve	312.0	Barite		Other	-12.0
Prev Vol	1892.9	Chemicals	9.3	Total Surface	
Net Change	84.8	Other		Downhole	
Total Vol	1977.5	Total	309.3	Total Losses	-224.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A11,400.15	Total Daily Cost	$A14,480.15
Cumulative Products Cost	$A548,277.06	Total Cumulative Cost	$A637,597.06

Baroid Representatives Kosta Georgiou Mike Lawrance

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Baroid Fluid Services

Report No 030

Daily Drilling Fluid Report

Date 28/12/2009	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Wire Line Logging 8.5" interval		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in						30.000	@	158.0
Make/Type							13.375	@	961.0
Jets							9.625	@	1,965.0
TFA	sq-in								
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	3,522.0 m	Riser	19.750		100.0				
ECD @ Csg Shoe	9.55 ppg	Open Hole	8.500		1,557.0				
ECD @ Bit	9.55 ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	Hyd 3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2				
Time		4:10	12:00	20:00				
Depth	m	3,522	3,522	3,522				
FL Temp	Deg C	48		35				
Density @ Deg C	ppg	9.50 @ 42	9.65 @ 42	9.55 @ 28			9.00	10.00
FV @ Deg C	sec/qt	60 @ 42	58 @ 42	53 @ 28				
PV @ Deg C	cP	20 @ 49	19 @ 49	19 @ 49				
YP	lbs/100 ft2	37	37	36				
GELS	lbs/100 ft2	13/19/22	12/18/21	12/17/20				
600/300		77.0/57.0	75.0/56.0	74.0/55.0				
200/100		48.0/37.0	47.0/36.0	46.0/34.0				
6/3		14.0/12.0	13.0/11.0	12.0/10.0				
API Filt	ml/30 min	4.3	4.5	4.6				5.0
HTHP @ Deg C	ml/30 min	9.4 @ 49	9.0 @ 49	9.7 @ 49				13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2				
Corr Solid	% by Vol	5.2	5.2	5.2				
NAP/Water	% by Vol	-/92.0	-/92.0	-/92.0				
Sand	% by vol	0.30	0.25	0.30				1.0
MBT	ppb Eq.	7.5	7.5	7.5				25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22			8.50	9.50
ALK Mud	Pm	0.25	0.20	0.20				
ALK Filt	Pf/Mf	0.20/2.80	0.15/3.10	0.20/2.90				
Chlorides	mg/l	35,000	35,000	35,000				
Tot. Hardness	mg/l	160	180	160				400
LGS/HGS	% by Vol	4.4/0.8	3.2/2.0	4.0/1.2				
LGS/HGS	ppb	39.66/12.32	29.42/28.86	36.25/17.83				
ASG	SG	2.858	3.204	2.974				
Additional Properties								
KCl %	-	6.40	6.40	6.40				

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Conduct full inventory. Checked Mud Balances & conducted a Mud Lab Inventory. *Note mud in active pit shows an increase in rheology & weight due to incorporation of viscous/weighted sweeps. Also additonal volume in pit came f/ sand traps. We used a wieldon pump to trans volume f/ sand traps over shakers to filter fines out and lined up volume to Pit 3. Treated pits 2 and 3 w/ ALDACIDE G & KOH to maintain properties. Cont to make Premix in Pit 1. Will leave Pit 4 clean & empty. Received 114 MT of Barite, 20 Drums Radiagreen EME, & Shaker Screens.

Rig Activity

Circ H/C @ 120 spm 600 gpm 2700 psi, pumped low Wt 9.3 ppg/ rheology -high Wt/ rheology Vis Pills. Circ hole clean. F/C, POOH f/ 3522 - 211 m. POOH BHA f/ 211 - 40 m, removed MWD sources. Down load MWD tools. Cont POOH Hall BHA's L/O same. R/U Schlb elec logs. M/U Schlb tool & calibrate same. Installed sources to tools. RIH w/ CMR-HNGS-PEX-HRLA- SP Schlb tools @ 2000 m/hr. Log down, RIH to bottom & Log up.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	32		6	26	$A9,057.42
barite	1 tons bulk	93.000	31.000	11.000	113.000	$A8,036.38
PAC-L	25 kg bag	48		22	26	$A3,527.04
EZ-MUD	25 kg pail	64		18	46	$A1,709.82
BARAZAN D PLUS	25 kg bag	92		6	86	$A1,292.04
ALDACIDE G	25 kg can	22		4	18	$A692.36
DEXTRID LTE	25 kg sack	23		12	11	$A635.76
potassium hydroxide	20 kg pail	25		4	21	$A528.44
Circal 60/16	25 kg bag	96		30	66	$A380.40
N-DRIL HT PLUS	50 lb bag	100		1	99	$A148.85
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	22			22	
mica	25 kg bag	36			36	
OXYGON	50 lb can	17			17	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	5	20		25	
sapp	25 kg bag	18			18	

Daily Products Cost	$A26,008.51	Total Daily Cost	$A29,088.51
Cumulative Products Cost	$A574,285.57	Total Cumulative Cost	$A666,685.57

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	2.0
VSM-300	20 20 20 210 210 210	8.0
VSM-300	20 20 20 210 210 210	8.0
VSM-300	20 20 20 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	3.5
Trips	10.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	9.0
Dir Work	
Repair	
Other	1.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	707.0	Dewatering		SCE	-42.0
Total Hole	955.9	Sea Water		Evaporation	-3.9
Total Circ	707.0	Whole Mud	222.5	Trips	-7.0
Reserve	514.0	Barite	16.5	Other	-4.0
Prev Vol	1977.5	Chemicals	17.3	Total Surface	
Net Change	199.4	Other		Downhole	
Total Vol	2176.9	Total	256.3	Total Losses	-56.9

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 031

Daily Drilling Fluid Report

Date 29/12/2009	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Rig Down Wire Line Tools		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in								
Make/Type							30.000	@	158.0
Jets							13.375	@	961.0
TFA	sq-in						9.625	@	1,965.0
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	m	Riser	19.750		100.0				
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,557.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		11:00	22:00					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.70 @ 40	9.65 @ 35				9.00	10.00
FV @ Deg C	sec/qt	61 @ 40	63 @ 35					
PV @ Deg C	cP	19 @ 49	19 @ 49					
YP	lbs/100 ft2	38	37					
GELS	lbs/100 ft2	12/16/18	12/16/18					
600/300		76.0/57.0	75.0/56.0					
200/100		47.0/36.0	46.0/33.0					
6/3		13.0/11.0	12.0/10.0					
API Filt	ml/30 min	4.5	4.6					5.0
HTHP @ Deg C	ml/30 min	8.0 @ 49	9.9 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	5.4	4.8					
NAP/Water	% by Vol	-/92.0	-/92.5					
Sand	% by vol	0.30	0.30					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.00 @ 22	9.50 @ 22				8.50	9.50
ALK Mud	Pm	0.10	0.10					
ALK Filt	Pf/Mf	0.10/3.00	0.15/2.80					
Chlorides	mg/l	33,000	34,000					
Tot. Hardness	mg/l	180	160					400
LGS/HGS	% by Vol	3.0/2.3	2.3/2.5					
LGS/HGS	ppb	27.57/34.24	20.95/36.17					
ASG	SG	3.295	3.427					
Additional Properties								
KCl %	-	6.70	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Maintain pH & Bacteria, by adding KOH & ALDACIDE G. Clean & organize sack room.

Rig Activity

Process log data. RIH t/ 3480 m, POOH logging t/ 2800 m, cont t/ POOH. Remove sources f/ tools. L/O Schlb tools for run 1. P/U tools for run 2. Calibrate, RIH w/ MDT Schlb tools @ 2000 m/hr. Test Zones @ 2875 m 1900 hrs. Log f/ 3145 m - 3010 m, stuck - free w/ 9 K above - POOH. Tools @ Surf - R/D.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	21		3	18	$A396.33
ALDACIDE G	25 kg can	18		2	16	$A346.18
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	113.000			113.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	66			66	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	26			26	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	11			11	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	46			46	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box		24		24	
hec	25 kg bag	22			22	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	99			99	
OXYGON	50 lb can	17			17	
PAC-L	25 kg bag	26			26	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	15.3
Dir Work	
Repair	
Other	2.8
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	697.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	697.0	Whole Mud		Trips	
Reserve	514.0	Barite		Other	
Prev Vol	2176.9	Chemicals	0.5	Total Surface	
Net Change	-10.1	Other		Downhole	-10.6
Total Vol	2166.9	Total	0.5	Total Losses	-10.6

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A742.51	Total Daily Cost	$A3,822.51
Cumulative Products Cost	$A575,028.08	Total Cumulative Cost	$A670,508.08

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 032

Daily Drilling Fluid Report

Date 30/12/2009		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Circ/Lowering Mud Wt.	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity	209	ft/sec
Jet Impact Force	616.5	lbf
Bit HHSI	2.29	hhp/in2
Press Drop @ Bit	370	psi
Bit Depth	3,522.0	m
ECD @ Csg Shoe	9.45	ppg
ECD @ Bit	9.45	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,310.1
Drill Pipe	5.000	3.750	141.6
Drill Collar	6.750	2.875	70.3
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	59	61	0
gpm|bbl/min	296 | 7.05	306 | 7.29	
Total GPM	602	AV, Riser 40.4	Circ Press psi 1700
Total Circ Time	80	AV min DP 270.3	Tot Pres Loss 370
BU Time , min	46	AV max DC 552.8	Press Drop DP
Total Strokes	9,599	BU Strokes 5,499	Press Drop An

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		14:30	22:20					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.30 @ 25	9.45 @ 25				9.00	10.00
FV @ Deg C	sec/qt	60 @ 25	61 @ 25					
PV @ Deg C	cP	18 @ 49	20 @ 49					
YP	lbs/100 ft2	27	43					
GELS	lbs/100 ft2	6/11/13	12/16/19					
600/300		63.0/45.0	83.0/63.0					
200/100		38.0/28.0	54.0/41.0					
6/3		9.0/7.0	13.0/11.0					
API Filt	ml/30 min	4.8	4.8					5.0
HTHP @ Deg C	ml/30 min	9.8 @ 49	10.0 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	4.2	5.1					
NAP/Water	% by Vol	-/93.0	-/92.0					
Sand	% by vol	0.25	0.25					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.30	0.25					
ALK Filt	Pf/Mf	0.20/2.70	0.25/2.90					
Chlorides	mg/l	35,000	36,000					
Tot. Hardness	mg/l	200	200					400
LGS/HGS	% by Vol	3.8/0.3	4.6/0.5					
LGS/HGS	ppb	34.79/5.02	42.28/6.88					
ASG	SG	2.731	2.746					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Cont to mix additional 250 bbl for volume. Blended unweighted premix to lower active MW to 9.4 ppg circulating. Ran both centrifuges to lower MW to 9.4 ppg.

Rig Activity

Cont R/D Wire Line. HTBT M/U BHA & RIH - 97m. Test BOP & function test BOP. RIH w/ 5" DP f/ 97 - 1944 m CSG shoe. TDS Service. Cont RIH w/ 5" DP 1944 - 3418 m work TS 2427, 2482, 2510 2545 & 2550. Wash ream hole f 3418 m, 550 gpm 2550 psi, 50 rpm. 5 - 10 TRQ, tag btm @ 3522 m w/ 10 K. Circ 530 gpm - 2300 psi, recip string while lowering Fluid Wt - 9.4 ppg.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	113.000		11.000	102.000	$A8,036.38
CLAYSEAL PLUS	55 gal drum	26		4	22	$A6,038.28
potassium chloride	1000 kg bag	8		4	4	$A5,934.08
PAC-L	25 kg bag	26		12	14	$A1,923.84
OXYGON	50 lb can	17		3	14	$A1,716.09
DEXTRID LTE	25 kg sack	11		11		$A582.78
EZ-MUD	25 kg pail	46		5	41	$A474.95
Circal 60/16	25 kg bag	66		12	54	$A152.16
potassium hydroxide	20 kg pail	18		1	17	$A132.11
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	22		2	20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	99			99	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	18.0
518	4,000	80.00	18.0

Time

Drilling	
Circulating	6.5
Trips	
Rig	0.5
Surveys	
Fishing	
Run Casing	0.5
Coring	
Reaming	1.0
Testing	9.0
Logging	
Dir Work	
Repair	
Other	6.5
Total	24.0
Rotating	1.0
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	656.8	Base		Fluid Dumped	
Pipe Cap	196.7	Drill Water	32.0	Transferred	
Active Pits	293.0	Dewatering		SCE	-116.3
Total Hole	853.5	Sea Water		Evaporation	-27.0
Total Circ	1146.5	Whole Mud	100.0	Trips	-5.0
Reserve	1026.0	Barite	16.5	Other	-17.0
Prev Vol	2166.9	Chemicals	22.4	Total Surface	
Net Change	5.6	Other		Downhole	
Total Vol	2172.5	Total	170.9	Total Losses	-165.3

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A24,990.67	Total Daily Cost	$A28,070.67
Cumulative Products Cost	$A600,018.75	Total Cumulative Cost	$A698,578.75

Baroid Representatives	Kosta Georgiou	Jay Wan	
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Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 033

Daily Drilling Fluid Report

Date 31/12/2009		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Logging 8.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		12:00	19:45					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25				9.00	10.00
FV @ Deg C	sec/qt	65 @ 25	66 @ 25					
PV @ Deg C	cP	18 @ 49	18 @ 49					
YP	lbs/100 ft2	32	33					
GELS	lbs/100 ft2	8/14/17	9/13/16					
600/300		68.0/50.0	69.0/51.0					
200/100		40.0/30.0	41.0/31.0					
6/3		11.0/9.0	11.0/9.0					
API Filt	ml/30 min	4.6	4.6					5.0
HTHP @ Deg C	ml/30 min	9.4 @ 49	9.6 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	4.1	4.2					
NAP/Water	% by Vol	-/93.0	-/93.0					
Sand	% by vol	0.25	0.25					1.0
MBT	ppb Eq.	10.0	7.5					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.20	0.25					
ALK Filt	Pf/Mf	0.10/2.50	0.10/2.60					
Chlorides	mg/l	36,000	35,000					
Tot. Hardness	mg/l	240	240					400
LGS/HGS	% by Vol	3.0/1.1	3.1/1.1					
LGS/HGS	ppb	27.17/16.12	27.96/16.05					
ASG	SG	3.030	3.019					
Additional Properties								
KCl %	-	6.30	6.40					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Conditioned & treated the active mud in Pit 2 with fluid loss reducer.
API FL lowered to 4.6 mls w/ 1 ppb PAC LE and 0.5 ppb N-Dril HT plus.
MW was lowered to 9.4 ppg w/ premix from Pit 1.Checked & patched screens at shakers.
Conducted inventory check. Calibrate Mud Balances

Rig Activity

Circ hole clean w/ 600 gpm - 2700 psi. F/C - POOH f/ 3522 - 3245 m pump 30 bbl, 10.5 ppg slug. POOH f/ 1944 - 180 m. F/C -ok, POOH w/ BHA f/ 180 - Surface, rack back same. M/U Schlub MDT tools K calibrate. HTBT for Schlub wire line. RIH w/ MDT tools @ 2000 m/hr. Start Logging ops - cont RIH 3425 m & correlate. Log out to 3306 m

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	14		10	4	$A1,603.20
N-DRIL HT PLUS	50 lb bag	99		4	95	$A595.40
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	54			54	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22			22	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41			41	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
OXYGON	50 lb can	14			14	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17			17	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	2.0
518	4,000	80.00	2.0

Time

Drilling	
Circulating	1.0
Trips	4.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	16.0
Dir Work	
Repair	
Other	2.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	61.9	Transferred	
Active Pits	715.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	715.0	Whole Mud		Trips	
Reserve	565.0	Barite		Other	
Prev Vol	2172.5	Chemicals	1.4	Total Surface	
Net Change	63.3	Other		Downhole	
Total Vol	2235.9	Total	63.3	Total Losses	

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A2,198.60	Total Daily Cost	$A5,278.60
Cumulative Products Cost	$A602,217.35	Total Cumulative Cost	$A703,857.35

Baroid Representatives	Kosta Georgiou	Jay Wan	
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Baroid Fluid Services

Report No 034

Daily Drilling Fluid Report

Date 01/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity 8.5" Wire Line Logs	
Operator: ADA DRILLING	Report For: Mike Lanzer / Paul Leathem	Well Name: Rockhopper-1	
Contractor: MAERSK	Report For: Stig Sundgaard / Ole Andreasen	Rig Name: Kantan IV	Unit System: ADA Drilling
Country: Australia	State/Province/Region: Tasmania	Geographic Area/County: Bass Strait	Field or Block: T/18P

Bit Information

Bit Size	in
Make/Type	
Jets	
TFA	sq-in
Jets Velocity	ft/sec
Jet Impact Force	lbf
Bit HHSI	hhp/in2
Press Drop @ Bit	psi
Bit Depth	m
ECD @ Csg Shoe	ppg
ECD @ Bit	ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		11:00	20:40					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25				9.00	10.00
FV @ Deg C	sec/qt	61 @ 25	63 @ 25					
PV @ Deg C	cP	19 @ 49	19 @ 49					
YP	lbs/100 ft2	24	25					
GELS	lbs/100 ft2	6/9/11	7/10/12					
600/300		62.0/43.0	63.0/44.0					
200/100		35.0/26.0	36.0/26.0					
6/3		8.0/7.0	9.0/7.0					
API Filt	ml/30 min	4.6	4.6					5.0
HTHP @ Deg C	ml/30 min	9.0 @ 49	9.0 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.25					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.20	0.20					
ALK Filt	Pf/Mf	0.10/2.40	0.10/2.50					
Chlorides	mg/l	36,000	35,000					
Tot. Hardness	mg/l	240	240					400
LGS/HGS	% by Vol	0.9/2.1	1.0/2.1					
LGS/HGS	ppb	8.63/30.87	9.44/30.80					
ASG	SG	3.702	3.670					
Additional Properties								
KCl %	-	6.40	6.40					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Transferred Fluid f/ pit 2 to pit 4. Repairing leaks in the mixing lines into Pit 2. No Additions of chemicals.

Rig Activity

Cont to log out f/ 3306 - 3330 m doing sampling for pressure & flow. RIH to 3349 m & cont sampling. Correlating. Pressure testing & sampling f/ 3349 - 3236 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	54			54	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22			22	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41			41	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	95			95	
OXYGON	50 lb can	14			14	
PAC-L	25 kg bag	4			4	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17			17	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	707.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	707.0	Whole Mud		Trips	
Reserve	565.0	Barite		Other	
Prev Vol	2235.9	Chemicals		Total Surface	
Net Change	-8.0	Other		Downhole	-8.0
Total Vol	2227.9	Total		Total Losses	-8.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A602,217.35	Total Cumulative Cost	$A706,937.35

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 035

Daily Drilling Fluid Report

Date 02/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Cir & Condition Mud 8.5' Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HUGHES/A841A9GT5
Jets	3x20
TFA	0.920 sq-in
Jets Velocity	174 ft/sec
Jet Impact Force	425.8 lbf
Bit HHSI	1.32 hhp/in2
Press Drop @ Bit	256 psi
Bit Depth	3,522.0 m
ECD @ Csg Shoe	9.87 ppg
ECD @ Bit	9.98 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,310.1
Drill Pipe	5.000	3.750	141.6
Drill Collar	6.750	2.875	70.3
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	50	0	50
gpm|bbl/min	251 | 5.97		251 | 5.97
Total GPM	502	AV, Riser 33.7	Circ Press psi 2335
Total Circ Time	123	AV min DP 225.2	Tot Pres Loss 1615
BU Time , min	55	AV max DC 460.7	Press Drop DP 875
Total Strokes	12,329	BU Strokes 5,499	Press Drop An 347

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #4	Pit #2	Pit #2	Pit #2			
Time		10:00	17:00	21:00	23:00			
Depth	m	3,522	3,522	3,522	3,522			
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.45 @ 32	9.40 @ 37	9.40 @ 39		9.00	10.00
FV @ Deg C	sec/qt	60 @ 25	60 @ 32	59 @ 37	61 @ 39			
PV @ Deg C	cP	19 @ 49	18 @ 49	18 @ 49	18 @ 49			
YP	lbs/100 ft2	23	25	26	25			
GELS	lbs/100 ft2	7/9/11	7/11/14	8/12/15	7/11/14			
600/300		61.0/42.0	61.0/43.0	62.0/44.0	61.0/43.0			
200/100		35.0/26.0	35.0/26.0	36.0/26.0	34.0/25.0			
6/3		8.0/7.0	9.0/8.0	9.0/8.0	9.0/8.0			
API Filt	ml/30 min	4.6	4.3	4.4	4.2			5.0
HTHP @ Deg C	ml/30 min	9.2 @ 49	9.0 @ 49	9.0 @ 49	8.8 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	3.1	3.0	3.0	3.0			
NAP/Water	% by Vol	-/94.0	-/94.0	-/94.0	-/94.0			
Sand	% by vol	0.20	0.25	0.20	0.20			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.50 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.20	0.20	0.20	0.20			
ALK Filt	Pf/Mf	0.20/2.50	0.20/2.50	0.20/2.30	0.20/2.40			
Chlorides	mg/l	35,000	36,000	36,000	36,000			
Tot. Hardness	mg/l	200	160	160	160			400
LGS/HGS	% by Vol	1.0/2.1	0.6/2.5	0.9/2.1	0.9/2.1			
LGS/HGS	ppb	9.44/30.80	5.22/36.38	8.63/30.87	8.63/30.87			
ASG	SG	3.670	3.899	3.702	3.702			
Additional Properties								
KCl %	-	6.40	6.30	6.30	6.30			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Fixed & welded the leaks in mixing lines into pit 2. Hydro tested same.

Transferred active mud f/ Pit 4 to Pit 2 (as active). Mixed pumpable 30 bbl of Hi-Weight pill @ 10.0 ppg f/ active mud. Mixed pumpable 15 bbl of Slug @ 10.5 ppg f/ active mud. Cont to tighten active mud system for fluid loss while circ & cond hole. Added in fresh premix to maintain MW @ 9.4 ppg. Ran centrifuges. MW in 9.35 - 9.4 + ppg. MW out - 9.3 - 9.6 ppg. MWt out reading of 9.3 was low Wt pill bottoms up. Maintain consistant MWt in 9.35 ppg & out 9.4 figures consistant w/ both shaker house & pit room MWt reports.

Rig Activity

Cont press testing & sampling @ 3226 m. Work tight hole 3224 m. POOH to shoe @ 1965 m wire line wiper trip. RIH to 3060 m hung up. POOH to surface. HTBT L/O wire line tools & handling equipment. HTBT M/U BHA & RIH - 180 m. Shallow test Hall tools 600 pgm - 850 psi. Cont RIH f/ 180 - 1037 m slip & cut 100 ft drill line & service TDS. Cont RIH f/ 1037 - 2150 m Wash & Ream f/ 2150 - 3522 m 550 gpm 1850 - 1950 psi 60 rpm 3 K. Circ & condition hole.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
OXYGON	50 lb can	14		6	8	$A3,432.18
N-DRIL HT PLUS	50 lb bag	95		15	80	$A2,232.75
PAC-L	25 kg bag	4		4		$A641.28
Circal 60/16	25 kg bag	54		10	44	$A126.80
sodium bicarbonate	25 kg bag	48		2	46	$A56.50
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22			22	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41			41	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17			17	
Radiagreen EME-Salt	175 kg drum	25			25	

Daily Products Cost	$A6,489.51	Total Daily Cost	$A9,569.51
Cumulative Products Cost	$A608,706.86	Total Cumulative Cost	$A716,506.86

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	18.0
VSM-300	20 20 20 210 210 210 210	18.0
VSM-300	20 20 20 210 210 210 210	18.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	10.0
518	4,000	80.00	10.0

Time

Drilling	
Circulating	2.5
Trips	2.0
Rig	1.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	8.0
Testing	
Logging	7.5
Dir Work	
Repair	1.5
Other	1.0
Total	24.0
Rotating	8.0
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	656.8	Base		Fluid Dumped	
Pipe Cap	196.7	Drill Water		Transferred	
Active Pits	619.0	Dewatering		SCE	-69.5
Total Hole	853.5	Sea Water		Evaporation	-10.0
Total Circ	1472.5	Whole Mud		Trips	
Reserve	679.0	Barite		Other	
Prev Vol	2227.9	Chemicals	3.3	Total Surface	
Net Change	-76.2	Other		Downhole	
Total Vol	2151.5	Total	3.3	Total Losses	-79.5

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 036

Daily Drilling Fluid Report

Date 03/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Wireline MDT logs 8.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	Hyd 3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2				
Time		2:00	11:00	21:40				
Depth	m	3,522	3,522	3,522				
FL Temp	Deg C							
Density @ Deg C	ppg	9.35 @ 39	9.40 @ 30	9.40 @ 25			9.00	10.00
FV @ Deg C	sec/qt	61 @ 39	61 @ 30	60 @ 25				
PV @ Deg C	cP	18 @ 49	19 @ 49	19 @ 49				
YP	lbs/100 ft2	25	24	25				
GELS	lbs/100 ft2	7/11/14	7/11/13	8/12/15				
600/300		61.0/43.0	62.0/43.0	63.0/44.0				
200/100		34.0/25.0	35.0/26.0	36.0/26.0				
6/3		9.0/8.0	9.0/7.0	10.0/8.0				
API Filt	ml/30 min	4.2	4.3	4.3				5.0
HTHP @ Deg C	ml/30 min	8.8 @ 49	9.0 @ 49	8.9 @ 49				13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2				
Corr Solid	% by Vol	3.1	3.1	3.1				
NAP/Water	% by Vol	-/94.0	-/94.0	-/94.0				
Sand	% by vol	0.20	0.25	0.25				1.0
MBT	ppb Eq.	7.5	7.5	7.5				25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22			8.50	9.50
ALK Mud	Pm	0.20	0.20	0.20				
ALK Filt	Pf/Mf	0.20/2.50	0.20/2.30	0.25/2.40				
Chlorides	mg/l	35,000	35,000	35,000				
Tot. Hardness	mg/l	160	200	200				400
LGS/HGS	% by Vol	1.4/1.7	1.0/2.1	1.0/2.1				
LGS/HGS	ppb	12.85/25.29	9.44/30.80	9.44/30.80				
ASG	SG	3.479	3.670	3.670				
Additional Properties								
KCl %	-	6.30	6.30	6.30				

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

R'ced mud chemicals f/ Far Fosna. Arranged sack store & shaker screens store.

Rig Activity

Pump 30 bbl 9.0 ppg low Wt & 30 bbl 10 ppg high Wt pills. Circ Shakers clean as per Co Man & Mud Eng'rs instruction. F/C ok, pump 25 bbl 10.5 ppg slug, POOH f/ 3522 - shoe 1964 m. F/C ok, cont POOH f/ 1964 - 180 m. F/C ok, cont POOH f/ 180 - surface. HTBT, R/U Schlub wireline. M/U MDT tools RIH & calibrate same 3000 m/hr - 3250 m. Correlate & log f/ 3207 - 3132 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	44			44	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22			22	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41			41	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17			17	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	4.0
VSM-300	20 20 20 210 210 210 210	4.0
VSM-300	20 20 20 210 210 210 210	4.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	6.0
518	4,000	80.00	6.0

Time

Drilling	
Circulating	2.0
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	15.0
Dir Work	
Repair	
Other	7.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	660.0	Dewatering		SCE	-38.0
Total Hole	955.9	Sea Water		Evaporation	-5.6
Total Circ	660.0	Whole Mud		Trips	
Reserve	492.0	Barite		Other	
Prev Vol	2151.5	Chemicals		Total Surface	
Net Change	-43.6	Other		Downhole	
Total Vol	2107.9	Total		Total Losses	-43.6

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A608,706.86	Total Cumulative Cost	$A719,586.86
Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 037

Daily Drilling Fluid Report

Date 04/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** L/O Seismic Tools		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	3,522.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		9:00	21:00					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25				9.00	10.00
FV @ Deg C	sec/qt	60 @ 25	59 @ 25					
PV @ Deg C	cP	19 @ 49	19 @ 49					
YP	lbs/100 ft2	23	22					
GELS	lbs/100 ft2	7/10/12	7/10/12					
600/300		61.0/42.0	60.0/41.0					
200/100		34.0/25.0	33.0/24.0					
6/3		8.0/7.0	7.0/6.0					
API Filt	ml/30 min	4.4	4.4					5.0
HTHP @ Deg C	ml/30 min	9.0 @ 49	8.9 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.1	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.20	0.20					
ALK Filt	Pf/Mf	0.15/2.20	1.50/2.30					
Chlorides	mg/l	35,000	35,000					
Tot. Hardness	mg/l	160	160					400
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1					
LGS/HGS	ppb	9.44/30.80	9.44/30.80					
ASG	SG	3.670	3.670					
Additional Properties								
KCl %	-	6.30	6.30					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Cont to arrange chemicals in sack store. Cont to arrange new & used screens in store. Housekeeping in the mud lab. Checked pit & shaker areas w/ crew, instructed them on housekeeping.

Rig Activity

Cont logging f/ 3132 - 2549 m. POOH f/ 2549 - surface. L/O MDT tools. R/U seismic tools. HTBT, RIH w/ seismic tools @ 1100 m/hr. Correlate passes. RIH f/ 2224 - 2430 m unable to pass. POOH - M/U extra Wt to tools, change tools & M/U tools. RIH w/ tools @ 1100 m/hr @ 2150 m correlating up to 9 5/8" csg depth 1964 m. RIH hang up @ 2760 m - working tools up & down cont RIH -2555m. Check shots between 2555 - 280 m. POOH to surface. HTBT - L/O seismic tools.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86	40		126	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	44	195		239	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22	32		54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack		152		152	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41	96		137	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag		42		42	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17	64		81	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	16.5
Dir Work	
Repair	
Other	1.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	637.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	637.0	Whole Mud		Trips	
Reserve	506.0	Barite		Other	-9.0
Prev Vol	2107.9	Chemicals		Total Surface	
Net Change	-9.0	Other		Downhole	
Total Vol	2098.9	Total		Total Losses	-9.0

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A608,706.86	Total Cumulative Cost	$A722,666.86

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 038

Daily Drilling Fluid Report

Date 05/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Log 8.5" Interval w/ FMI Tools		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	in									Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type							30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets							13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	sq-in						9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity	ft/sec									bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf									SPM	0	0	0
Bit HHSI	hhp/in2									gpm|bbl/min			
Press Drop @ Bit	psi									Total GPM		AV, Riser	Circ Press psi
Bit Depth	3,522.0 m	Riser	19.750		100.0					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,557.0					BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg					Leak Off ppg			14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2							**Fluid Type** 8 1/2" KCl/Polymer
Time		10:00	22:30							Housekeeping in the mud lab. Cont putting used screens into boxes & leave store tidy. Over see shaker house miantenance. No treatments required to active system.
Depth	m	3,522	3,522							
FL Temp	Deg C									
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25					9.00	10.00	
FV @ Deg C	sec/qt	63 @ 25	61 @ 25							
PV @ Deg C	cP	17 @ 49	17 @ 49							
YP	lbs/100 ft2	30	30							
GELS	lbs/100 ft2	7/11/13	7/11/13							
600/300		64.0/47.0	64.0/47.0							
200/100		36.0/26.0	36.0/26.0							
6/3		9.0/8.0	9.0/8.0							
API Filt	ml/30 min	4.3	4.3						5.0	
HTHP @ Deg C	ml/30 min	9.2 @ 49	9.8 @ 49						13.0	
Cake API/HTHP	32nd in	1/2	1/2							
Corr Solid	% by Vol	3.1	3.1							
NAP/Water	% by Vol	-/94.0	-/94.0							
Sand	% by vol	0.20	0.20						1.0	
MBT	ppb Eq.	7.5	7.5						25.0	
pH @ Deg C		9.00 @ 22	9.00 @ 22					8.50	9.50	
ALK Mud	Pm	0.20	0.20							
ALK Filt	Pf/Mf	0.15/2.20	0.20/2.30							
Chlorides	mg/l	35,000	35,000							
Tot. Hardness	mg/l	160	160						400	
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1							
LGS/HGS	ppb	9.44/30.80	9.44/30.80							
ASG	SG	3.670	3.670							
Additional Properties										
KCl %	-	6.30	6.30							

Rig Activity

Cont L/O seismic tools. P/U MSCT tools, rebuild head for MSCT run & test.
RIH - 3360 m, correlate samples f/ 3360 - 3290 m & 3290 - 3270 m. Cont to correlate & sample f/ 3270 - 2900 m. POOH w/ Schulb tools to surface @ 2500 m/hr & L/O tools. M/U Schlub FMI sonic scanner tools. Found fraid strands of cable, cut 100 m & re terminate same. RIH w/ FMI sonic tools - 3380 m. Repeat pass 3320 - 3380 m, Log out f/ 3380 - 2550 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	126			126	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	239			239	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	152			152	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	137			137	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag	42			42	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	81			81	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	637.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	637.0	Whole Mud		Trips	
Reserve	506.0	Barite		Other	
Prev Vol	2098.9	Chemicals		Total Surface	
Net Change		Other		Downhole	
Total Vol	2098.9	Total		Total Losses	

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A608,706.86	Total Cumulative Cost	$A725,746.86
Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 039

Daily Drilling Fluid Report

Date 06/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Plug and Abandonment 8.5"	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	2.875	in
Make/Type	DUMMY/2 7/8 Open End	
Jets		
TFA	10.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	3,300.0	m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit	9.40	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	2.750	3,131.0
Drill Pipe	2.875	2.375	169.0
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		11:00	20:00					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 30				9.00	10.00
FV @ Deg C	sec/qt	61 @ 25	58 @ 30					
PV @ Deg C	cP	16 @ 49	16 @ 49					
YP	lbs/100 ft2	30	31					
GELS	lbs/100 ft2	6/9/11	7/10/12					
600/300		62.0/46.0	63.0/47.0					
200/100		35.0/27.0	36.0/28.0					
6/3		9.0/7.0	10.0/8.0					
API Filt	ml/30 min	4.4	4.5					5.0
HTHP @ Deg C	ml/30 min	9.0 @ 49	9.4 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.1	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.20	0.20					
ALK Filt	Pf/Mf	0.15/2.20	0.20/1.90					
Chlorides	mg/l	35,000	35,000					
Tot. Hardness	mg/l	200	200					400
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1					
LGS/HGS	ppb	9.44/30.80	9.44/30.80					
ASG	SG	3.670	3.670					
Additional Properties								
KCl %	-	6.20	6.30					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Mixed 45 bbl 9.4 ppg H-vis in slug pit. Maintained balance MW @ 9.4 ppg while circulating. Ran 2 centrifuges & streamed in premix to control MW. MW in 9.4 ppg. MW out 9.4 - 9.4+ ppg. Plug 1A No trace of cmt found whilst circing. MWt 9.4 & pH 9 stable. Plug 1B No trace of cmt found both MWt & pH stable.

Rig Activity

Cont log out f/ 2550 - 600 m. POOH, L/O tools. R/U & P/U 2 7/8" eqp. P/U & RIH w/ same for cmt job. R/D 2 7/8" & R/U 5" eqp. RIH on 5" DP - 1932 m for cmt job. Test ESDS & Service TD & rollers. Cont RIH to 3493 m, wash & CBU. Pump Hi-vis 12 bbl 9.4, disp w/ 205 bbl - 1722 stks. POOH - 3465 m & R/U cmt head - 10 bbl & test line. Pump cmt plug 1A & disp w/ cmt unit 183 bbl. Break off cmt head & POOH - 3310 m & R/U cmt head. Pump 10 bbl & test line. Pump plug 1B & disp w/ 174 bbl. Break off cmt head & POOH - 3156 m, R/U cmt head. Circ w/ pumps wait on cmt'r for pre-mix @ 40 spm - 340 psi.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	126		2	124	$A430.68
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	239			239	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	152			152	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	137			137	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20		4	16	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag	42			42	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	81			81	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	
VSM-300	20 20 20 210 210 210 210	14.0
VSM-300	20 20 20 210 210 210 210	14.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	7.0
518	4,000	80.00	7.0

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	6.0
Dir Work	
Repair	1.5
Other	16.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	642.5	Base		Fluid Dumped	
Pipe Cap	78.5	Drill Water		Transferred	
Active Pits	752.0	Dewatering		SCE	-36.0
Total Hole	772.2	Sea Water		Evaporation	-7.0
Total Circ	1473.0	Whole Mud		Trips	-7.8
Reserve	522.0	Barite		Other	-2.5
Prev Vol	2098.9	Chemicals	0.6	Total Surface	
Net Change	-52.7	Other		Downhole	
Total Vol	2046.2	Total	0.6	Total Losses	-53.3

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A430.68	Total Daily Cost	$A3,510.68
Cumulative Products Cost	$A609,137.54	Total Cumulative Cost	$A729,257.54

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 040

Daily Drilling Fluid Report

Date 07/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity M/U BHA & Start to RIH	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	9.40 ppg	Open Hole	8.500	1,557.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	Hyd 4	Targets			Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2	Pit #2						Fluid Type 8 1/2" KCl/Polymer
Time		4:20	9:00	16:00	22:50						Properties changed due to slight traces of cmt returns to active.
Depth	m	3,522	3,522	3,522	3,522						Plug # 3 - Mud return 9.4 ppg. No cement return. Mixed & pumped 11 ppg slug. Cont to treat mud for 8 1/2" ST-1. Volume in sandtrap was transferred out & mud treated. Sand traps have been flushed & cleaned w/ sea water to remove traces of cmt. Shakers & screens prepared for next interval. Mud treated for hardness, pH & API filtrate. All Treatments & new mud mixed wil be charged off in the sidetrack interval. M/U BAROLIFT Pill 20 bbl pumpable as per 8.5" side track SID. 344.3 bbl of KCl- mud left below cmt plugs @ 1970 m.
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 30	9.40 @ 30	9.40 @ 35	9.40 @ 27				9.00	10.00	
FV @ Deg C	sec/qt	55 @ 30	56 @ 30	55 @ 35	58 @ 27						
PV @ Deg C	cP	17 @ 49	17 @ 49	16 @ 49	17 @ 49						
YP	lbs/100 ft2	24	24	23	26						
GELS	lbs/100 ft2	7/11/13	7/11/13	6/9/11	8/12/14						
600/300		58.0/41.0	58.0/41.0	55.0/39.0	60.0/43.0						
200/100		33.0/25.0	33.0/25.0	32.0/23.0	35.0/27.0						
6/3		8.0/7.0	8.0/6.0	6.0/5.0	10.0/8.0						
API Filt	ml/30 min	5.1	5.2	5.2	4.8	X	X	X		5.0	
HTHP @ Deg C	ml/30 min	10.3 @ 49	9.4 @ 49	9.3 @ 49	10.1 @ 49					13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.2	3.1	3.6	3.1						
NAP/Water	% by Vol	-/94.0	-/94.0	-/93.5	-/94.0						
Sand	% by vol	0.30	0.20	0.20	0.30					1.0	
MBT	ppb Eq.	7.5	7.5	7.5	7.5					25.0	
pH @ Deg C		10.00 @ 22	10.00 @ 22	10.00 @ 22	9.50 @ 22	X	X	X	8.50	9.50	
ALK Mud	Pm	0.30	0.30	0.30	0.25						
ALK Filt	Pf/Mf	0.25/2.40	0.20/2.60	0.20/2.50	0.20/2.60						
Chlorides	mg/l	34,000	35,000	35,000	35,000						
Tot. Hardness	mg/l	640	640	600	400	X	X	X		400	
LGS/HGS	% by Vol	1.1/2.1	1.0/2.1	2.1/1.6	1.0/2.1						
LGS/HGS	ppb	10.24/30.73	9.44/30.80	18.70/23.42	9.44/30.80						
ASG	SG	3.640	3.670	3.299	3.670						
Additional Properties											
KCl %	-	6.10	6.30	6.30	6.40						

Rig Activity

Pump plug 1B & disp w/ cmt unit 174 bbl, break off cmt head, POOH - 2973 m slow. Pump Hi-vis pill 12 bbl & disp w/ 173 bbl. POOH - 2925 m R/U cmt head flush lines. Pump plug 2 & disp w/ cmt unit 152 bbl R/D cmt head. POOH 2482 m slow. Circ btms up WOC, POOH - 2250 m & R/B cmt head. Rig floor maintenance. RIH & wash f/ 2713 - 2723 m TOC. POOH - 406 m (wet) clean rig floor. P/U single, spot 12 bbl Hi-vis @ 2118m. Pull 2 stds, P/U single, cmt TBT. Pump spacer, test lines 1000 psi. cmt pre program, disp 103 bbl. L/O cmt asy, POOH - 1968 m. Pump 11 ppg 15 bbl slug. POOH f 1968 - 168 m. M/U BHA & RIH.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
citric acid	25 kg bag	32		5	27	$A381.00
sodium bicarbonate	25 kg bag	46		3	43	$A84.75
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	124			124	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	239			239	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	152			152	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	137			137	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	16			16	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag	42			42	
potassium chloride	1000 kg bag	4	15		19	
potassium hydroxide	20 kg pail	81			81	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	
VSM-300	20 20 20 210 210 210 210	20.0
VSM-300	20 20 20 210 210 210 210	20.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.5
Trips	7.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	14.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	359.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	359.0	Whole Mud	13.0	Trips	
Reserve	745.0	Barite		Other	
Prev Vol	2046.2	Chemicals	0.7	Total Surface	
Net Change	13.7	Other		Downhole	
Total Vol	2059.9	Total	13.7	Total Losses	

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A465.75	Total Daily Cost	$A3,545.75
Cumulative Products Cost	$A609,603.29	Total Cumulative Cost	$A732,803.29

Baroid Representatives	Kosta Georgiou	Jay Wan	
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Baroid Fluid Services

Report No 041

Daily Drilling Fluid Report

Date 08/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity POOH following cement job	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,970.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		3:50	17:00					
Depth	m	1,970	1,970					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 27	9.40 @ 26				9.00	10.00
FV @ Deg C	sec/qt	55 @ 27	49 @ 26					
PV @ Deg C	cP	17 @ 49	13 @ 49					
YP	lbs/100 ft2	26	16					
GELS	lbs/100 ft2	8/12/14	8/11/13					
600/300		60.0/43.0	42.0/29.0					
200/100		35.0/27.0	24.0/17.0					
6/3		10.0/8.0	8.0/7.0					
API Filt	ml/30 min	4.5	4.5					5.0
HTHP @ Deg C	ml/30 min	10.1 @ 49	9.0 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.0					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.30	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.50 @ 22	10.50 @ 22			X	8.50	9.50
ALK Mud	Pm	0.20	2.40					
ALK Filt	Pf/Mf	0.20/2.30	2.10/7.20					
Chlorides	mg/l	36,000	36,000					
Tot. Hardness	mg/l	360	800			X		400
LGS/HGS	% by Vol	0.9/2.1	0.9/2.1					
LGS/HGS	ppb	8.63/30.87	8.63/30.87					
ASG	SG	3.702	3.702					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Re-arrange sack room & conduct full inventory of all sack & liquid products. In response to current & future operations these have been charged off to ensure correct inventory reporting.

Whilst circulating bottom's up prior to cementing, further treat active fluid w/ citric acid & sodium bicarbonate to control pH and & hardness respectively.

Prepare 25 bbl pumpable Hi-viscosity pill for sitting below suspension plug.

Rig Activity

Shallow test Halliburton Tools. RIH from 207 m to 1960 m. Service TDS. Wash to 2005 m, CBU. Cont to wash down to 2121m, CBU. Flow check, static. POOH. Clean out MWD. Pick up 17 joints of 2 7/8" tubing w/ mule shoe. RIH to 2168 m on drill pipe. CBU.
Spot 25 bbl Hi-vis pill on bottom. Pull back to 2067 m & cement as per program. Rig down cement head & POOH to 1874 m. CBU.
Continue to POOH wet.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
N-DRIL HT PLUS	50 lb bag	80		12	68	$A1,786.20
citric acid	25 kg bag	27		22	5	$A1,676.40
EZ-MUD	25 kg pail	137		17	120	$A1,614.83
PAC-L	25 kg bag	42		10	32	$A1,603.20
DEXTRID LTE	25 kg sack	152		26	126	$A1,377.48
potassium hydroxide	20 kg pail	81		9	72	$A1,188.99
sodium bicarbonate	25 kg bag	43		30	13	$A847.50
BARAZAN D PLUS	25 kg bag	124		2	122	$A430.68
BAROLIFT	15 lb box	16		1	15	$A318.02
Circal 60/16	25 kg bag	239		24	215	$A304.32
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	102.000			102.000	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	16			16	
mica	25 kg bag	36			36	
OXYGON	50 lb can	8			8	
potassium chloride	1000 kg bag	19			19	

Daily Products Cost	$A11,147.62	Total Daily Cost	$A14,227.62
Cumulative Products Cost	$A620,750.91	Total Cumulative Cost	$A747,030.91

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	6.0
VSM-300	20 20 20 210 210 210 210	6.0
VSM-300	20 20 20 210 210 210 210	6.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	15.8
Rig	1.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	7.3
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	200.0	Transferred	
Active Pits	642.0	Dewatering		SCE	-3.1
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	642.0	Whole Mud	74.0	Trips	
Reserve	747.0	Barite		Other	
Prev Vol	2059.9	Chemicals	14.2	Total Surface	
Net Change	285.1	Other		Downhole	
Total Vol	2344.9	Total	288.2	Total Losses	-3.1

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives Kosta Georgiou Mike Lawrance
Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555
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Baroid Fluid Services

Report No 42

Daily Drilling Fluid Report

Date 09/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Tripping	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,970.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets				Program	
Source		Pit #2	Pit #2								
Time		20:00	8:00								
Depth	m	1,970	1,970								
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 30	9.40 @ 26							9.00	10.00
FV @ Deg C	sec/qt	51 @ 30	50 @ 24								
PV @ Deg C	cP	16 @ 49	13 @ 49								
YP	lbs/100 ft2	21	17								
GELS	lbs/100 ft2	7/9/11	7/9/12								
600/300		53.0/37.0	43.0/30.0								
200/100		30.0/20.0	24.0/17.0								
6/3		8.0/7.0	8.0/7.0								
API Filt	ml/30 min	5.5	5.5			X	X				5.0
HTHP @ Deg C	ml/30 min	11.0 @ 49	10.5 @ 49								13.0
Cake API/HTHP	32nd in	1/2	1/2								
Corr Solid	% by Vol	3.1	3.0								
NAP/Water	% by Vol	-/94.0	-/94.0								
Sand	% by vol	0.25	0.25								1.0
MBT	ppb Eq.	7.5	7.5								25.0
pH @ Deg C		11.00 @ 22	10.50 @ 22			X	X			8.50	9.50
ALK Mud	Pm	3.20	2.20								
ALK Filt	Pf/Mf	3.50/8.30	2.40/7.80								
Chlorides	mg/l	35,500	36,000								
Tot. Hardness	mg/l	900	720			X	X				400
LGS/HGS	% by Vol	1.0/2.1	0.9/2.1								
LGS/HGS	ppb	9.04/30.83	8.63/30.87								
ASG	SG	3.686	3.702								
Additional Properties											
KCl %	-	6.50	6.50								

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Whilst circulating bottom's up following tagging cement further treat active fluid w/ sodium bicarbonate to control hardness & citric acid to lower pH.

Add HEC to maintain rheology.

Add ALDACIDE G to inhibit bacterial growth.

Rig Activity

Continue to POOH. Rig up 2 7/8" handling equipment. Clean rig floor & prepare to RIH w/ 81/2" mill tooth bit. RIH to 1318 m. POOH due to pressure increase when pumping/filling pipe. RIH 3 1/2" mule shoe. POOH plugged mule shoe. RIH on 5" DP. Wash down f/ 1880 m to top of cement at 1985 m. CBU. Flowcheck, POOH. Start to pick up 2 7/8" tubing,

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	102.000		5.000	97.000	$A3,652.90
potassium chloride	1000 kg bag	19		1	18	$A1,483.52
citric acid	25 kg bag	5		5		$A381.00
sodium bicarbonate	25 kg bag	13		13		$A367.25
ALDACIDE G	25 kg can	16		1	15	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	122			122	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	16		5	11	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag	32			32	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	3.0
VSM-300	20 20 20 210 210 210 210	3.0
VSM-300	20 20 20 210 210 210 210	3.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	21.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	3.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	729.0	Dewatering		SCE	-104.8
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	729.0	Whole Mud		Trips	
Reserve	568.0	Barite	7.5	Other	
Prev Vol	2344.9	Chemicals	5.3	Total Surface	
Net Change	-92.0	Other		Downhole	
Total Vol	2252.9	Total	12.8	Total Losses	-104.8

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A6,057.76	Total Daily Cost	$A7,597.76
Cumulative Products Cost	$A626,808.67	Total Cumulative Cost	$A754,628.67

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 43

Daily Drilling Fluid Report

Date 10/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity circulate	

Operator: ADA DRILLING	Report For: Bryan Houston / Kevin Monkhouse	Well Name: Rockhopper-1	
Contractor: MAERSK	Report For: Brian Meechan / Geoff Chapman	Rig Name: Kantan IV	Unit System: ADA Drilling
Country: Australia	State/Province/Region: Tasmania	Geographic Area/County: Bass Strait	Field or Block: T/18P

Bit Information

Bit Size	8.500	in
Make/Type	GEO/none	
Jets		
TFA	18.000	sq-in
Jets Velocity	11	ft/sec
Jet Impact Force	31.3	lbf
Bit HHSI	0.01	hhp/in2
Press Drop @ Bit	1	psi
Bit Depth	1,896.0	m
ECD @ Csg Shoe	9.86	ppg
ECD @ Bit	9.87	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,896.0
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	60	0
gpm|bbl/min	301 | 7.17	301 | 7.17	
Total GPM	602	AV, Riser 40.4	Circ Press psi 900
Total Circ Time	91	AV min DP 270.3	Tot Pres Loss 847
BU Time , min	29	AV max DC	Press Drop DP 520
Total Strokes	10,946	BU Strokes 3,537	Press Drop An 154

Properties		1	Hyd 2	3	4	Targets				Program	
Source		Flow Line	Pit #2								
Time		7:00	22:30								
Depth	m	1,970	1,970								
FL Temp	Deg C	41	42								
Density @ Deg C	ppg	9.40 @ 36	9.40 @ 33							9.00	10.00
FV @ Deg C	sec/qt	50 @ 36	52 @ 33								
PV @ Deg C	cP	17 @ 49	16 @ 49								
YP	lbs/100 ft2	27	25								
GELS	lbs/100 ft2	9/12/15	8/12/14								
600/300		61.0/44.0	57.0/41.0								
200/100		36.0/26.0	33.0/23.0								
6/3		8.0/7.0	8.0/7.0								
API Filt	ml/30 min	5.5	5.5			X	X				5.0
HTHP @ Deg C	ml/30 min	10.5 @ 49	10.0 @ 49								13.0
Cake API/HTHP	32nd in	1/2	1/2								
Corr Solid	% by Vol	3.0	3.0								
NAP/Water	% by Vol	-/94.0	-/94.0								
Sand	% by vol	0.25	0.20								1.0
MBT	ppb Eq.	7.5	7.5								25.0
pH @ Deg C		11.00 @ 22	11.00 @ 22			X	X			8.50	9.50
ALK Mud	Pm	3.50	4.00								
ALK Filt	Pf/Mf	3.20/7.50	3.50/7.20								
Chlorides	mg/l	36,000	36,000								
Tot. Hardness	mg/l	960	900			X	X				400
LGS/HGS	% by Vol	0.9/2.1	0.9/2.1								
LGS/HGS	ppb	8.63/30.87	8.63/30.87								
ASG	SG	3.702	3.702								
Additional Properties											
KCl %	-	6.50	6.50								

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Whilst circulating, condition active fluid w/ addition of HEC to increase low end rheology following cement contamination.

Circulate active pit to ensure full release of polymer additions.

Treat active volume w/ OXYGON corrosion inhibitor as per program.

Treat surface volume w/ ALDACIDE G bacteriacide.

Rig Activity

RIH to 1982 m. Rig up cement head & CBU. Pump 5 bbl spacer. Test line & diplace f/ cement unit. Rig down cement head & POOH to 1817 m. Ciculate 1.5 x bottom's up. POOH to 1788 m. Cut & slip drill line. Service top drive & continue POOH. L/O 2 7/8" tubing. RIH 9 stands contaminated 5 inch drill pipe & layout same. RIH to 1817 m, circulate 1.5 x bottom's up. Wash down f/ 1817 m to 1896 m & tag cement.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
OXYGON	50 lb can	8		1	7	$A572.03
ALDACIDE G	25 kg can	15		1	14	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	122			122	
barite	1 tons bulk	97.000			97.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	11		11		
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
PAC-L	25 kg bag	32			32	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	

Daily Products Cost	$A745.12	Total Daily Cost			$A2,285.12
Cumulative Products Cost	$A627,553.79	Total Cumulative Cost			$A756,913.79
Baroid Representatives	Mike Lawrance				
Office	90 Talinga Rd Melbourne		Telephone	61-03-9581-7555	
Warehouse	c/o of Esso Australia Ltd		Telephone	61-3-56-881-445	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	3.5
VSM-300	20 20 20 210 210 210 210	3.5
VSM-300	20 20 20 210 210 210 210	3.5
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	3.5
Trips	16.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	422.5	Base		Fluid Dumped	
Pipe Cap	108.8	Drill Water		Transferred	
Active Pits	776.0	Dewatering		SCE	-2.4
Total Hole	907.3	Sea Water		Evaporation	-0.6
Total Circ	1307.3	Whole Mud		Trips	
Reserve	568.0	Barite		Other	
Prev Vol	2252.9	Chemicals	1.5	Total Surface	
Net Change	-1.5	Other		Downhole	
Total Vol	2251.3	Total	1.5	Total Losses	-3.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

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Baroid Fluid Services

Report No 44

Daily Drilling Fluid Report

Date 11/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** RIH		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information			Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	8.500	in									Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type	GEO/none		Drill Pipe	5.000	4.276	1,880.0		30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets								13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	18.000	sq-in						9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity		ft/sec									bbl/strk	0.119	0.119	0.119
Jet Impact Force		lbf									SPM	0	0	0
Bit HHSI		hhp/in2									gpm|bbl/min			
Press Drop @ Bit		psi									Total GPM		AV, Riser	Circ Press psi
Bit Depth	1,880.0	m	Riser	19.750		100.0					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe		ppg	Open Hole	8.500		1,557.0					BU Time , min		AV max DC	Press Drop DP
ECD @ Bit		ppg					Leak Off ppg			14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2									**Fluid Type** 8 1/2" KCl/Polymer
Time		20:00	8:00									Monitor bottom's up following tagging cement.
Depth	m	1,970	1,965									Divert fluid accordingly.
FL Temp	Deg C											
Density @ Deg C	ppg	9.40 @ 32	9.40 @ 31							9.00	10.00	Whilst circulating, add BARAZAN D PLUS to
FV @ Deg C	sec/qt	53 @ 32	53 @ 31									maintain rheology.
PV @ Deg C	cP	16 @ 49	17 @ 49									
YP	lbs/100 ft2	25	24									Pump out sandtraps to reserve pits to allow
GELS	lbs/100 ft2	7/11/14	8/12/15									agitation & treatment.
600/300		57.0/41.0	58.0/41.0									
200/100		33.0/23.0	34.0/25.0									Clean out shakers, flowline & sandtraps.
6/3		8.0/7.0	8.0/7.0									
API Filt	ml/30 min	5.5	5.5			X	X				5.0	
HTHP @ Deg C	ml/30 min	10.5 @ 49	11.0 @ 49								13.0	
Cake API/HTHP	32nd in	1/2	1/2									
Corr Solid	% by Vol	3.1	3.0									
NAP/Water	% by Vol	-/94.0	-/94.0									
Sand	% by vol	0.25	0.20								1.0	**Rig Activity**
MBT	ppb Eq.	7.5	7.5								25.0	CBU. Divert unconditioned mud. Flow check,
pH @ Deg C		11.00 @ 22	11.00 @ 22			X	X			8.50	9.50	static. Break down cement head. Service top
ALK Mud	Pm	4.00	3.70									drive. Continue w/ rig maintenance. RIH w/ 5"
ALK Filt	Pf/Mf	3.40/7.80	3.50/7.30									drill pipe to 1880 m.
Chlorides	mg/l	35,500	36,000									
Tot. Hardness	mg/l	900	880			X	X				400	
LGS/HGS	% by Vol	1.0/2.1	0.9/2.1									
LGS/HGS	ppb	9.04/30.83	8.63/30.87									
ASG	SG	3.686	3.702									
Additional Properties												
KCl %	-	6.50	6.50									

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	122		3	119	$A646.02
ALDACIDE G	25 kg can	14			14	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	97.000			97.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	32			32	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment			
Shaker	Screens	Hrs	
VSM-300	20 20 20 210 210 210 210	1.0	
VSM-300	20 20 20 210 210 210 210	1.0	
VSM-300	20 20 20 210 210 210 210	1.0	
VSM-300	20 20 20 80 80 80 80	1.0	
Hydrocyclone	Cones	Screens	Hrs
Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time	
Drilling	
Circulating	1.0
Trips	8.0
Rig	15.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown	8 1/2" KCl/Polymer				
Active	bbl	Additions	bbl	Losses	bbl
Annulus	419.8	Base		Fluid Dumped	
Pipe Cap	107.9	Drill Water		Transferred	
Active Pits	327.2	Dewatering		SCE	-78.7
Total Hole	907.7	Sea Water		Evaporation	
Total Circ	854.8	Whole Mud		Trips	
Reserve	938.0	Barite		Other	
Prev Vol	2251.3	Chemicals	0.3	Total Surface	
Net Change	-78.4	Other		Downhole	
Total Vol	2172.9	Total	0.3	Total Losses	-78.7

Fluid Types	Vol bbl

Deviation Information		
Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A646.02	Total Daily Cost	$A2,186.02
Cumulative Products Cost	$A628,199.81	Total Cumulative Cost	$A759,099.81

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 45

Daily Drilling Fluid Report

Date 12/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Rig Service		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information			Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	8.500	in									Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type	GEO/none		Drill Pipe	5.000	4.276	1,880.0		30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets								13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	18.000	sq-in						9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity		ft/sec									bbl/strk	0.119	0.119	0.119
Jet Impact Force		lbf									SPM	0	0	0
Bit HHSI		hhp/in2									gpm|bbl/min			
Press Drop @ Bit		psi									Total GPM		AV, Riser	Circ Press psi
Bit Depth	1,880.0	m	Riser	19.750		100.0					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe		ppg	Open Hole	8.500		1,557.0					BU Time , min		AV max DC	Press Drop DP
ECD @ Bit		ppg					Leak Off ppg			14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2									**Fluid Type** 8 1/2" KCl/Polymer
Time		18:00	8:00									Whilst circulating, condition mud w/ addition of BARAZAN D PLUS to increase low end rheology as per program.
Depth	m	1,965	1,965									
FL Temp	Deg C											
Density @ Deg C	ppg	9.40 @ 35	9.40 @ 30							9.00	10.00	DEXTRID LTE & PAC LE addition to ensure tight filtration.
FV @ Deg C	sec/qt	54 @ 35	52 @ 30									
PV @ Deg C	cP	18 @ 49	17 @ 49									Add water whilst circulating to offset loss f/ evaporation & to ensure hydration of polymer additions.
YP	lbs/100 ft2	30	24									
GELS	lbs/100 ft2	9/14/16	8/11/13									
600/300		66.0/48.0	58.0/41.0									
200/100		40.0/29.0	34.0/24.0									
6/3		9.0/8.0	8.0/7.0									
API Filt	ml/30 min	4.8	5.5					X			5.0	ALDACIDE G addition to active fluid to inhibit bacterial growth.
HTHP @ Deg C	ml/30 min	9.0 @ 49	10.8 @ 49								13.0	
Cake API/HTHP	32nd in	1/2	1/2									Mud lab maintenance.
Corr Solid	% by Vol	3.1	3.0									
NAP/Water	% by Vol	-/94.0	-/94.0									**Rig Activity**
Sand	% by vol	0.20	0.20								1.0	Rig service: work on compensator, grease standpipe & choke manifold, top drive RPM, shift t-drive transmission.
MBT	ppb Eq.	7.5	7.5								25.0	
pH @ Deg C		11.00 @ 22	11.00 @ 22			X	X			8.50	9.50	Circulate & condition mud.
ALK Mud	Pm	4.20	3.60									Continue w/ rig service.
ALK Filt	Pf/Mf	3.60/7.40	3.40/7.30									
Chlorides	mg/l	35,500	36,000									
Tot. Hardness	mg/l	900	880			X	X				400	
LGS/HGS	% by Vol	1.0/2.1	0.9/2.1									
LGS/HGS	ppb	9.04/30.83	8.63/30.87									
ASG	SG	3.686	3.702									
Additional Properties												
KCl %	-	6.50	6.50									

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	119		6	113	$A1,292.04
PAC-L	25 kg bag	32		4	28	$A641.28
DEXTRID LTE	25 kg sack	126		8	118	$A423.84
ALDACIDE G	25 kg can	14		1	13	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	97.000			97.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Daily Products Cost	$A2,530.25	Total Daily Cost	$A4,070.25
Cumulative Products Cost	$A630,730.06	Total Cumulative Cost	$A763,170.06

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	
Rig	22.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	419.8	Base		Fluid Dumped	
Pipe Cap	107.9	Drill Water	5.0	Transferred	
Active Pits	327.2	Dewatering		SCE	-3.0
Total Hole	907.7	Sea Water		Evaporation	-5.0
Total Circ	854.8	Whole Mud	1.1	Trips	
Reserve	938.0	Barite		Other	
Prev Vol	2172.9	Chemicals	2.0	Total Surface	
Net Change	0.1	Other		Downhole	
Total Vol	2172.9	Total	8.1	Total Losses	-8.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 46

Daily Drilling Fluid Report

Date 13/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	GEO/none	
Jets		
TFA	18.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,880.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,880.0
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		8:00	17:00					
Depth	m	1,965	1,965					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 31	9.40 @ 34				9.00	10.00
FV @ Deg C	sec/qt	52 @ 31	50 @ 34					
PV @ Deg C	cP	19 @ 49	21 @ 49					
YP	lbs/100 ft2	29	34					
GELS	lbs/100 ft2	9/13/16	10/15/18					
600/300		67.0/48.0	76.0/55.0					
200/100		41.0/30.0	46.0/33.0					
6/3		9.0/8.0	11.0/9.0					
API Filt	ml/30 min	5.0	4.8					5.0
HTHP @ Deg C	ml/30 min	10.5 @ 49	9.5 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.25	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		11.00 @ 22	11.00 @ 22			X X	8.50	9.50
ALK Mud	Pm	4.20	4.10					
ALK Filt	Pf/Mf	3.80/7.40	3.60/7.30					
Chlorides	mg/l	36,000	35,500					
Tot. Hardness	mg/l	900	880			X X		400
LGS/HGS	% by Vol	0.9/2.1	1.0/2.1					
LGS/HGS	ppb	8.63/30.87	9.04/30.83					
ASG	SG	3.702	3.686					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Whilst circulating add PAC LE & DEXTRID LTE to lower filtration.
Add water to offset evaporation & ensure hydration of polymers.

Inspect shaker screens & change out w/ previously used as necessary.

Change out valves in mixing line to pits.

Conduct full audit on all lab equipment & reagents.

Rig Activity

Rig servive: compensator manifold, change 2 airlines on shakers, bolt check on derrick.
Prepare to change out drilling line spool.
Circulate & condition mud.
Coninue w/ rig service: work on mud pumps.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	28		2	26	$A320.64
DEXTRID LTE	25 kg sack	118		4	114	$A211.92
ALDACIDE G	25 kg can	13			13	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	113			113	
barite	1 tons bulk	97.000			97.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	
Rig	22.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	419.8	Base		Fluid Dumped	
Pipe Cap	107.9	Drill Water	4.0	Transferred	
Active Pits	327.2	Dewatering		SCE	-0.6
Total Hole	907.7	Sea Water		Evaporation	-4.0
Total Circ	854.8	Whole Mud		Trips	
Reserve	938.0	Barite		Other	
Prev Vol	2172.9	Chemicals	0.6	Total Surface	
Net Change	0.0	Other		Downhole	
Total Vol	2172.9	Total	4.6	Total Losses	-4.6

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A532.56	Total Daily Cost	$A2,072.56
Cumulative Products Cost	$A631,262.62	Total Cumulative Cost	$A765,242.62

Baroid Representatives Mike Lawrance

Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555
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Baroid Fluid Services

Report No 47

Daily Drilling Fluid Report

Date 14/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	GEO/none	
Jets		
TFA	18.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,880.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,880.0
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program		Fluid Treatments
Source		Pit #2	Flow Line	Pit #2					Fluid Type 8 1/2" KCl/Polymer
Time		7:45	13:40	18:00					Whilst circulating add ALDACIDE G to inhibit bacterial growth.
Depth	m	1,965	1,965	1,965					
FL Temp	Deg C		44						1340 hrs mud check is f/ a bottom's up sample taken to ascertain any deterioration in mud properties following circa 24hrs under static downhole conditions - none detected, fluid stable, slight drop in pH only.
Density @ Deg C	ppg	9.40 @ 26	9.40 @ 33	9.40 @ 34			9.00	10.00	
FV @ Deg C	sec/qt	56 @ 26	52 @ 33	52 @ 34					
PV @ Deg C	cP	21 @ 49	21 @ 49	23 @ 49					
YP	lbs/100 ft2	38	37	31					
GELS	lbs/100 ft2	10/14/18	10/15/18	10/14/17					
600/300		80.0/59.0	79.0/58.0	77.0/54.0					
200/100		48.0/35.0	48.0/36.0	46.0/32.0					
6/3		11.0/9.0	12.0/9.0	11.0/9.0					
API Filt	ml/30 min	5.0	4.8	4.8				5.0	Continue to by-pass sandtraps so as to ensure maximum treatable surface volume. Add water whilst circulating to offset loss f/ evaporation & to ensure fluid system properly hydrated. Receive Barite.
HTHP @ Deg C	ml/30 min	9.8 @ 49	9.5 @ 49	9.8 @ 49				13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2					
Corr Solid	% by Vol	3.0	3.1	3.0					
NAP/Water	% by Vol	-/94.0	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20	0.20				1.0	
MBT	ppb Eq.	7.5	7.5	7.5				25.0	
pH @ Deg C		11.00 @ 22	10.50 @ 22	10.50 @ 22		X X X	8.50	9.50	
ALK Mud	Pm	4.30	4.40	4.50					
ALK Filt	Pf/Mf	2.80/6.20	2.40/5.90	2.20/5.60					
Chlorides	mg/l	36,000	35,000	36,000					
Tot. Hardness	mg/l	860	840	840		X X X		400	
LGS/HGS	% by Vol	0.9/2.1	1.0/2.1	0.9/2.1					
LGS/HGS	ppb	8.63/30.87	9.44/30.80	8.63/30.87					
ASG	SG	3.702	3.670	3.702					
Additional Properties									**Rig Activity**
KCl %	-	6.50	6.40	6.50					Continue rig service: racking arm modifications, mud pumps, spot drilling line shaft in spool. Circulate & condition mud.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	13		1	12	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	113			113	
barite	1 tons bulk	97.000	50.000		147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	114			114	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	26			26	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	
Rig	22.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	419.8	Base		Fluid Dumped	
Pipe Cap	107.9	Drill Water	4.0	Transferred	
Active Pits	327.2	Dewatering		SCE	-0.1
Total Hole	907.7	Sea Water		Evaporation	-4.0
Total Circ	854.8	Whole Mud		Trips	
Reserve	938.0	Barite		Other	
Prev Vol	2172.9	Chemicals	0.1	Total Surface	
Net Change	0.0	Other		Downhole	
Total Vol	2172.9	Total	4.1	Total Losses	-4.1

Fluid Types | Vol bbl

Daily Products Cost	$A173.09	Total Daily Cost	$A1,713.09
Cumulative Products Cost	$A631,435.71	Total Cumulative Total Cost	$A766,955.71

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 48

Daily Drilling Fluid Report

Date 15/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	GEO/none	
Jets		
TFA	18.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	0.1	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	0.1
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		16:00	7:30					
Depth	m	1,965	1,965					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 30	9.40 @ 29				9.00	10.00
FV @ Deg C	sec/qt	55 @ 30	55 @ 29					
PV @ Deg C	cP	21 @ 49	20 @ 49					
YP	lbs/100 ft2	36	34					
GELS	lbs/100 ft2	10/15/19	10/15/18					
600/300		78.0/57.0	74.0/54.0					
200/100		47.0/34.0	44.0/33.0					
6/3		11.0/9.0	11.0/9.0					
API Filt	ml/30 min	4.7	4.8					5.0
HTHP @ Deg C	ml/30 min	9.5 @ 49	9.5 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.0					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		10.50 @ 22	10.50 @ 22			X X	8.50	9.50
ALK Mud	Pm	4.40	4.50					
ALK Filt	Pf/Mf	1.20/4.30	1.40/4.60					
Chlorides	mg/l	36,000	36,000					
Tot. Hardness	mg/l	880	840			X X		400
LGS/HGS	% by Vol	0.9/2.1	0.9/2.1					
LGS/HGS	ppb	8.63/30.87	8.63/30.87					
ASG	SG	3.702	3.702					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Circulate mud.
Bleed in water whilst circulating to offset evaporation loss.

Maintain properties of pre-mix w/ addition of caustic potash, PAC-LE & BARAZAN D PLUS.

Note: the addition of premium products CLAYSEAL PLUS & EZ-MUD (PHPA) will be made just prior to kicking off sidetrack.

Cunduct full screen inventory.

Rig Activity

Work on drawworks. Pull old and new drill line through to rig floor. Clean ends for snake to be installed. Continue PM's. Circulate mud & POOH. Replace airline brackets, port derrick leg. Pressure test surface equipment. Prepare to install new drill line.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	26		3	23	$A480.96
BARAZAN D PLUS	25 kg bag	113		1	112	$A215.34
potassium hydroxide	20 kg pail	72		1	71	$A132.11
ALDACIDE G	25 kg can	12			12	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	114			114	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
potassium chloride	1000 kg bag	18			18	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	4.0
Rig	18.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	0.1	Base		Fluid Dumped	
Pipe Cap	0.0	Drill Water	4.0	Transferred	
Active Pits	277.5	Dewatering		SCE	-39.0
Total Hole	955.9	Sea Water		Evaporation	-4.0
Total Circ	277.6	Whole Mud		Trips	-2.0
Reserve	899.0	Barite		Other	
Prev Vol	2172.9	Chemicals	0.5	Total Surface	
Net Change	-40.5	Other		Downhole	
Total Vol	2132.4	Total	4.5	Total Losses	-45.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A828.41	Total Daily Cost	$A2,368.41
Cumulative Products Cost	$A632,264.12	Total Cumulative Cost	$A769,324.12

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 49

Daily Drilling Fluid Report

Date 16/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500	1,557.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2							Fluid Type 8 1/2" KCl/Polymer
Time		7:45	17:45							No circulation due to rig activity.
Depth	m	1,965	1,965							
FL Temp	Deg C									Treat reserve volume w/ DEXTRID LTE &
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 24					9.00	10.00	BARAZAN D PLUS to maintain tight filtration &
FV @ Deg C	sec/qt	56 @ 25	56 @ 24							programmed rheology respectively.
PV @ Deg C	cP	21 @ 49	20 @ 49							
YP	lbs/100 ft2	31	34							Conduct inventory of all sack products.
GELS	lbs/100 ft2	9/13/17	10/14/17							
600/300		73.0/52.0	74.0/54.0							
200/100		43.0/32.0	44.0/33.0							
6/3		10.0/8.0	10.0/9.0							
API Filt	ml/30 min	4.8	4.8						5.0	
HTHP @ Deg C	ml/30 min	9.5 @ 49	10.0 @ 49						13.0	
Cake API/HTHP	32nd in	1/2	1/2							
Corr Solid	% by Vol	3.1	3.1							
NAP/Water	% by Vol	-/94.0	-/94.0							
Sand	% by vol	0.20	0.20						1.0	**Rig Activity**
MBT	ppb Eq.	7.5	7.5						25.0	Remove wraps f/ deadman anchor, remove
pH @ Deg C		10.50 @ 22	10.50 @ 22			X	X	8.50	9.50	crown-o-matic ready for slipping drill line. Grease
ALK Mud	Pm	4.40	4.30							& service TDS travelling blocks, dolly rollers.
ALK Filt	Pf/Mf	0.80/4.20	0.75/4.25							Hold tool box talk. Pull new drill line onto drum.
Chlorides	mg/l	35,500	35,000							Remove used drill line f/ drawworks. Restore
Tot. Hardness	mg/l	880	900			X	X		400	floor to drilling mode.
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1							Continue working on cranes.
LGS/HGS	ppb	9.04/30.83	9.44/30.80							
ASG	SG	3.686	3.670							
Additional Properties										
KCl %	-	6.50	6.40							

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	112		2	110	$A430.68
DEXTRID LTE	25 kg sack	114		6	108	$A317.88
ALDACIDE G	25 kg can	12			12	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	23			23	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment				Time	
Shaker	Screens		Hrs	Drilling	
VSM-300	20 20 20 210 210 210 210		0.0	Circulating	
VSM-300	20 20 20 210 210 210 210		0.0	Trips	
VSM-300	20 20 20 210 210 210 210		0.0	Rig	24.0
VSM-300	20 20 20 80 80 80 80		0.0	Surveys	
				Fishing	
				Run Casing	
				Coring	
				Reaming	
Hydrocyclone	Cones	Screens	Hrs	Testing	
				Logging	
				Dir Work	
				Repair	
				Other	
Centrifuge	Speed	Feed Rate	Hrs	Total	24.0
518	4,000	80.00		Rotating	
518	4,000	80.00		ROP	
				Dil Rate	0.00

Fluid Volume Breakdown		8 1/2" KCl/Polymer			
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	255.0	Dewatering		SCE	-5.3
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	255.0	Whole Mud		Trips	-12.0
Reserve	905.0	Barite		Other	
Prev Vol	2132.4	Chemicals	0.8	Total Surface	
Net Change	-16.5	Other		Downhole	
Total Vol	2115.9	Total	0.8	Total Losses	-17.3

Fluid Types	Vol bbl

Deviation Information		
Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A748.56	Total Daily Cost	$A2,288.56
Cumulative Products Cost	$A633,012.68	Total Cumulative Cost	$A771,612.68

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 50

Daily Drilling Fluid Report

Date 17/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth 1,965.0	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500	1,557.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Flow Line	Flow Line							Fluid Type 8 1/2" KCl/Polymer
Time		17:30	8:00							Circulate mud. Add DEXTRID LTE to maintain low filtration.
Depth	m	1,965	1,965							
FL Temp	Deg C		37							Add water whilst circulating to offset evaporation loss & maintain hydration of polymers.
Density @ Deg C	ppg	9.40 @ 28	9.40 @ 33					9.00	10.00	
FV @ Deg C	sec/qt	54 @ 28	52 @ 33							Conduct inventory on all liquid products.
PV @ Deg C	cP	20 @ 49	21 @ 49							
YP	lbs/100 ft2	34	36							Maintain screens.
GELS	lbs/100 ft2	10/14/17	10/14/17							
600/300		74.0/54.0	78.0/57.0							
200/100		44.0/33.0	47.0/36.0							
6/3		11.0/9.0	11.0/9.0							
API Filt	ml/30 min	4.8	4.7						5.0	
HTHP @ Deg C	ml/30 min	9.5 @ 49	9.0 @ 49						13.0	
Cake API/HTHP	32nd in	1/2	1/2							
Corr Solid	% by Vol	3.2	3.0							
NAP/Water	% by Vol	-/93.9	-/94.0							
Sand	% by vol	0.20	0.20						1.0	Rig Activity
MBT	ppb Eq.	7.5	7.5						25.0	Install bails-elevators. Change out burst hose on iron roughneck. RIH 5" drill pipe to 1880 m, circulate. POOH. Rig up and test upper IBOP. RIH BHA & check free of cement. Continue work on cranes.
pH @ Deg C		10.50 @ 22	10.50 @ 22			X	X	8.50	9.50	
ALK Mud	Pm	4.30	4.50							
ALK Filt	Pf/Mf	0.75/4.20	0.80/4.30							
Chlorides	mg/l	35,500	36,000							
Tot. Hardness	mg/l	880	880			X	X		400	
LGS/HGS	% by Vol	1.2/2.0	0.9/2.1							
LGS/HGS	ppb	10.89/29.36	8.63/30.87							
ASG	SG	3.600	3.702							
Additional Properties										
KCl %	-	6.50	6.50							

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
DEXTRID LTE	25 kg sack	108		4	104	$A211.92
ALDACIDE G	25 kg can	12			12	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	110			110	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	23			23	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Daily Products Cost	$A211.92	Total Daily Cost	$A1,751.92
Cumulative Products Cost	$A633,224.60	Total Cumulative Cost	$A773,364.60

Solids Control Equipment			
Shaker	Screens	Hrs	
VSM-300	20 20 20 210 210 210 210	2.0	
VSM-300	20 20 20 210 210 210 210	2.0	
VSM-300	20 20 20 210 210 210 210	2.0	
VSM-300	20 20 20 80 80 80 80	2.0	
Hydrocyclone	Cones	Screens	Hrs
Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time	
Drilling	
Circulating	2.0
Trips	7.0
Rig	15.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown	8 1/2" KCl/Polymer				
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	4.0	Transferred	
Active Pits	255.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	-4.4
Total Circ	255.0	Whole Mud		Trips	
Reserve	905.0	Barite		Other	
Prev Vol	2115.9	Chemicals	0.4	Total Surface	
Net Change	0.0	Other		Downhole	
Total Vol	2115.9	Total	4.4	Total Losses	-4.4

Fluid Types	Vol bbl

Deviation Information	
Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No **51**

Daily Drilling Fluid Report

Date 18/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Tag cement		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY/FM3755	
Jets	4x16	
TFA	0.785	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,896.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,697.8
Drill Pipe	5.000	3.000	141.6
Drill Collar	6.750	2.875	56.6
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		8:00	17:45					
Depth	m	1,965	1,965					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 23	9.40 @ 22				9.00	10.00
FV @ Deg C	sec/qt	56 @ 23	57 @ 22					
PV @ Deg C	cP	20 @ 49	21 @ 49					
YP	lbs/100 ft2	34	31					
GELS	lbs/100 ft2	10/15/17	9/13/16					
600/300		74.0/54.0	73.0/52.0					
200/100		44.0/34.0	43.0/32.0					
6/3		11.0/9.0	10.0/8.0					
API Filt	ml/30 min	4.8	4.8					5.0
HTHP @ Deg C	ml/30 min	9.5 @ 49	9.5 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.1	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		10.50 @ 22	10.50 @ 22			X X	8.50	9.50
ALK Mud	Pm	4.20	4.30					
ALK Filt	Pf/Mf	0.70/4.30	0.75/4.35					
Chlorides	mg/l	35,500	35,500					
Tot. Hardness	mg/l	880	880			X X		400
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1					
LGS/HGS	ppb	9.04/30.83	9.04/30.83					
ASG	SG	3.686	3.686					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add ALDACIDE G to surface volume to inhibit bacterial growth.

Re-arrange sack room.

Make up new premix. Additions to be charged at the start of the sidetrack section.

Dress shakers for maximum solids control efficiency for drilling out cement.

Rig Activity

Complete maintenance & housekeeping. Make up BOP test tool, RIH & flush wellhead. Pressure test as per program. POOH, lay out test tool, install diverter element. Service crown, top drive & dolly track.
Make up 8.5" PDC bit & slick BHA to 198 m. RIH to 1880 m. Check parameters & tag cement at 1896 m

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	12		1	11	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	110			110	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	104			104	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	23			23	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50	
VSM-300	20 20 20 210 210 210 210	0.5
VSM-300	20 20 20 175 175 175 175	0.5
VSM-300	20 20 20 175 175 175 175	0.5

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	3.0
Rig	21.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	417.8	Base		Fluid Dumped	
Pipe Cap	102.3	Drill Water		Transferred	
Active Pits	320.0	Dewatering		SCE	
Total Hole	896.1	Sea Water		Evaporation	
Total Circ	840.1	Whole Mud		Trips	
Reserve	899.9	Barite		Other	
Prev Vol	2115.9	Chemicals	0.1	Total Surface	
Net Change	0.1	Other		Downhole	
Total Vol	2116.0	Total	0.1	Total Losses	

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A173.09	Total Daily Cost	$A1,713.09
Cumulative Products Cost	$A633,397.69	Total Cumulative Cost	$A775,077.69

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No **52A**

Daily Drilling Fluid Report

Date 19/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Rig Service		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	in
Make/Type	
Jets	
TFA	sq-in
Jets Velocity	ft/sec
Jet Impact Force	lbf
Bit HHSI	hhp/in2
Press Drop @ Bit	psi
Bit Depth	m
ECD @ Csg Shoe	ppg
ECD @ Bit	ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Flow Line					
Time		15:50	6:00					
Depth	m	1,970	1,970					
FL Temp	Deg C		45					
Density @ Deg C	ppg	9.40 @ 35	9.40 @ 36				9.00	10.00
FV @ Deg C	sec/qt	55 @ 35	51 @ 36					
PV @ Deg C	cP	21 @ 49	22 @ 49					
YP	lbs/100 ft2	36	29					
GELS	lbs/100 ft2	9/14/17	8/12/16					
600/300		78.0/57.0	73.0/51.0					
200/100		47.0/36.0	40.0/27.0					
6/3		9.0/8.0	9.0/7.0					
API Filt	ml/30 min	4.8	4.7					5.0
HTHP @ Deg C	ml/30 min	9.5 @ 49	9.5 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.1	3.0					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		11.50 @ 22	11.50 @ 22			X X	8.50	9.50
ALK Mud	Pm	6.50	6.30					
ALK Filt	Pf/Mf	1.50/5.40	1.40/5.20					
Chlorides	mg/l	35,000	36,000					
Tot. Hardness	mg/l	1,240	1,200			X X		400
LGS/HGS	% by Vol	1.0/2.1	0.9/2.1					
LGS/HGS	ppb	9.44/30.80	8.63/30.87					
ASG	SG	3.670	3.702					
Additional Properties								
KCl %	-	6.40	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Whilst drilling out cement continue w/ short system (sandtraps by-passed) to minimise the volume of fluid contaminated w/ cement.
Add water whilst circulating to offset loss f/ evaporaton.

Complete making up further premix volume - to be charged off against ST-1.
Note: Calcium carbonate bridging agents, which are stripped out by SCE, will be added upon kicking off sidetrack. This will reduce API Filtrate loss.
Awaiting arrival of citric acid & sodium bicarbonate to treat pH & hardness respectively.

Rig Activity

Drill out cement.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	11			11	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	110			110	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	104			104	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	23			23	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14		48	62	
SOURSCAV	25 kg pail	32			32	

Daily Products Cost	$A0.00	Total Daily Cost	$A1,540.00
Cumulative Products Cost	$A633,397.69	Total Cumulative Cost	$A776,617.69

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50	
VSM-300	20 20 20 210 210 210 210	6.0
VSM-300	20 20 20 175 175 175 175	6.0
VSM-300	20 20 20 175 175 175 175	6.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	6.0
Trips	6.0
Rig	5.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	17.5
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	2.0	Transferred	-0.1
Active Pits	226.5	Dewatering		SCE	-19.5
Total Hole	955.9	Sea Water		Evaporation	-6.0
Total Circ	226.5	Whole Mud		Trips	
Reserve	890.0	Barite		Other	-20.0
Prev Vol	2116.0	Chemicals		Total Surface	
Net Change	-43.6	Other		Downhole	
Total Vol	2072.4	Total	2.0	Total Losses	-45.6

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 052B

Daily Drilling Fluid Report

Date 19/01/2010		Depth 1,964.0 m	
Spud Date 30/11/2009		Rig Activity Cont RIH 5" DP	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,964.0	m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit	9.40	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,802.2
Drill Pipe	5.000	3.000	132.1
Drill Collar	6.750	2.875	29.6
Riser	19.750		100.0

in Casing m

	OD	Set	MD
	30.000	@	158.0
	13.375	@	961.0
	9.625	@	1,964.0
Leak Off ppg			14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties

		Hyd 1	2	3	4
Source		Pit #2	Pit #2		
Time		20:00	22:00		
Depth	m	1,964	1,964		
FL Temp	Deg C				
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25		
FV @ Deg C	sec/qt	56 @ 35	56 @ 25		
PV @ Deg C	cP	22 @ 49	22 @ 49		
YP	lbs/100 ft2	30	30		
GELS	lbs/100 ft2	9/13/16	9/13/16		
600/300		74.0/52.0	74.0/52.0		
200/100		41.0/27.0	41.0/27.0		
6/3		9.0/8.0	9.0/8.0		
API Filt	ml/30 min	4.6	4.6		
HTHP @ Deg C	ml/30 min	9.8 @ 49	9.7 @ 49		
Cake API/HTHP	32nd in	1/2	1/2		
Corr Solid	% by Vol	3.0	3.0		
NAP/Water	% by Vol	-/94.0	-/94.0		
Sand	% by vol	0.25	2.50		
MBT	ppb Eq.	7.5	7.5		
pH @ Deg C		11.50 @ 22	11.50 @ 22		
ALK Mud	Pm	6.20	6.30		
ALK Filt	Pf/Mf	1.30/5.30	1.30/5.40		
Chlorides	mg/l	36,000	36,000		
Tot. Hardness	mg/l	1,280	1,240		
LGS/HGS	% by Vol	0.9/2.1	0.9/2.1		
LGS/HGS	ppb	8.63/30.87	8.63/30.87		
ASG	SG	3.702	3.702		
Additional Properties					
KCl %	-	6.50	6.50		

Targets | Program

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

First Mud Report for Rockhopper 1 ST-1

Carry over 1713.9 bbl of fluid from previous fluid set to new fluid set
8 1/2" ST-1 KCl/Polymer. Noticed A decrease in volume in Pill Pit, all master valves checked, continuing to problem solve. Cont to use short system as agreed w/ Co Men until KCl- PHPA fluid treated. Chemicals & screens to arrive tomorrow.

Rig Activity

M/U HUGHES A841A9GT5 Bit, scribe motor, installed probes & cont to RIH w/ BHA - 216 m. Shallow test Sperry tools @ 120 spm - 600 gpm - 1400 psi. Cont RIH f/ 216 m on 5" DP - 795 m fill pipe @ 30 spm 280 psi 220 stks, cont RIH f/ 795 1373 m fill pipe @ 30 spm 280psi 265 stks cont RIH on 5" DP f/ 1373 - 1964 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	54		4	50	$A6,038.28
Techmesh 175 (API 100)	1 each box	8		8		$A4,479.68
BARAZAN D PLUS	25 kg bag	110		6	104	$A1,292.04
Techmesh 210 (API 120)	1 each box	6		2	4	$A1,170.80
PAC-L	25 kg bag	23		6	17	$A961.92
EZ-MUD	25 kg pail	120		10	110	$A949.90
DEXTRID LTE	25 kg sack	104		12	92	$A635.76
Circal 60/16	25 kg bag	215		40	175	$A507.20
ALDACIDE G	25 kg can	11			11	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50	2.0
VSM-300	20 20 20 210 210 210	5.0
VSM-300	20 20 20 175 175 175	5.0
VSM-300	20 20 20 175 175 175	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	6.5
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	431.0	Base		Fluid Dumped	
Pipe Cap	107.3	Drill Water	110.0	Transferred	
Active Pits	433.5	Dewatering		SCE	-8.6
Total Hole	538.3	Sea Water		Evaporation	
Total Circ	971.8	Whole Mud	1773.9	Trips	
Reserve	915.0	Barite		Other	
Prev Vol		Chemicals	11.5	Total Surface	
Net Change	1886.8	Other		Downhole	
Total Vol	1886.8	Total	1895.4	Total Losses	-8.6

Fluid Types Vol bbl

Deviation Information

Survey MD	1,529.4	m
Survey TVD	1,529.4	m
Angle	0.61	Deg
Direction	57	
Horiz Displ.	1.3	m

Daily Products Cost	$A16,035.58	Total Daily Cost	$A17,575.58
Cumulative Products Cost	$A649,433.27	Total Cumulative Cost	$A794,193.27

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Baroid Fluid Services

Report No 053

Daily Drilling Fluid Report

Date 20/01/2010		Depth 2,065.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity	188	ft/sec
Jet Impact Force	491.4	lbf
Bit HHSI	1.64	hhp/in2
Press Drop @ Bit	295	psi
Bit Depth	2,065.0	m
ECD @ Csg Shoe	9.98	ppg
ECD @ Bit	10.02	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,903.2
Drill Pipe	5.000	3.000	132.1
Drill Collar	6.750	2.875	29.6
Riser	19.750		100.0
Open Hole	8.500		100.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	55	0	53
gpm|bbl/min	276 | 6.57		266 | 6.33
Total GPM	542	AV, Riser 36.4	Circ Press psi 1930
Total Circ Time	63	AV min DP 243.3	Tot Pres Loss 1339
BU Time , min	35	AV max DC 497.5	Press Drop DP 650
Total Strokes	6,802	BU Strokes 3,733	Press Drop An 254

Properties

		1	2	3	Hyd 4	Targets				Program	
Source		Flow Line	Flow Line	Pit #2	Pit #2						
Time		7:40	15:20	3:00	21:30						
Depth	m	1,995	2,021	1,991	2,043						
FL Temp	Deg C	47	48	37	48						
Density @ Deg C	ppg	9.30 @ 43	9.30 @ 48	9.30 @ 37	9.30 @ 48					9.00	9.50
FV @ Deg C	sec/qt	57 @ 43	68 @ 48	57 @ 37	66 @ 48						
PV @ Deg C	cP	22 @ 49	21 @ 49	18 @ 49	21 @ 49						
YP	lbs/100 ft2	17	36	33	36						
GELS	lbs/100 ft2	8/13/16	10/16/19	10/13/17	11/17/20						
600/300		61.0/39.0	78.0/57.0	69.0/51.0	78.0/57.0						
200/100		30.0/20.0	47.0/35.0	41.0/31.0	47.0/35.0						
6/3		9.0/7.0	11.0/9.0	9.0/7.0	11.0/9.0						
API Filt	ml/30 min	4.4	4.3	4.5	4.3						4.5
HTHP @ Deg C	ml/30 min	9.5 @ 49	8.5 @ 49	9.3 @ 49	8.8 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.3	3.3	3.1	3.6						
NAP/Water	% by Vol	-/93.8	-/93.8	-/93.9	-/93.5						
Sand	% by vol	0.25	0.25	0.25	0.25						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		11.50 @ 22	9.50 @ 22	11.50 @ 22	9.50 @ 22	X		X		8.50	9.50
ALK Mud	Pm	6.30	1.60	5.80	0.80						
ALK Filt	Pf/Mf	1.50/5.90	0.60/3.50	1.40/5.20	0.40/2.60						
Chlorides	mg/l	35,500	36,000	36,000	36,000						
Tot. Hardness	mg/l	1,200	360	1,200	280	X		X			400
LGS/HGS	% by Vol	2.1/1.1	2.1/1.1	1.9/1.2	2.7/0.8						
LGS/HGS	ppb	19.57/16.86	19.17/16.89	17.31/18.37	24.73/12.47						
ASG	SG	3.157	3.165	3.234	2.981						
Additional Properties											
KCl %	-	6.40	6.50	6.50	6.50	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Reduce pH w/ citric acid. Reduce Hardness w/ sodium bicarbonate.
Add BARAZAN D PLUS to maintain programmed low end rheology.
Add EZ-MUD to maintain PHPA concentration.
*Note, LGS concentration includes 5 ppb Calcium Carbonate bridging agents. Change out scalping screens on shakers 2,3 & 4 to API 40 mesh to promote more efficient solids control & increase lower deck lifespan. Prepare BAROLIFT sweep as per program. Maintained properties in pit 3. Conducted a chemical & mud lab inventory.

Rig Activity

Break circ- CBU. Drill f/ 1970 - 1990 m. Drill directional hole f/ 1990 - 2065 m, as / DD's instruction.

Product Name

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Generic Mesh 40 (API 40)	1 each box	24		9	15	$A5,268.60
potassium chloride	1000 kg bag	18		3	15	$A4,450.56
citric acid	25 kg bag		80	33	47	$A2,514.60
EZ-MUD	25 kg pail	110		17	93	$A1,614.83
BARAZAN D PLUS	25 kg bag	104		6	98	$A1,292.04
sodium bicarbonate	25 kg bag		96	27	69	$A762.75
N-DRIL HT PLUS	50 lb bag	68		5	63	$A744.25
BAROLIFT	15 lb box	15		2	13	$A636.04
Techmesh 210 (API 120)	1 each box	4		1	3	$A585.40
Circal 60/16	25 kg bag	175		20	155	$A253.60
ALDACIDE G	25 kg can	11			11	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	50			50	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	92			92	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	17			17	
potassium hydroxide	20 kg pail	71			71	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50 50	
VSM-300	40 40 40 210 210 210 210	24.0
VSM-300	40 40 40 175 175 175 175	24.0
VSM-300	40 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	23.5
Circulating	0.5
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	23.5
ROP	14.1
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	445.8	Base		Fluid Dumped	
Pipe Cap	113.1	Drill Water	25.0	Transferred	
Active Pits	253.5	Dewatering		SCE	-104.1
Total Hole	558.9	Sea Water		Evaporation	-30.0
Total Circ	812.4	Whole Mud		Trips	-17.0
Reserve	937.0	Barite		Other	-31.0
Prev Vol	1886.8	Chemicals	19.7	Total Surface	
Net Change	-137.4	Other		Downhole	
Total Vol	1749.4	Total	44.7	Total Losses	-182.1

Fluid Types Vol bbl

Deviation Information

Survey MD	1,529.4 m
Survey TVD	1,529.4 m
Angle	0.61 Deg
Direction	57
Horiz Displ.	1.3 m

Daily Products Cost	$A18,122.67	Total Daily Cost	$A21,202.67
Cumulative Products Cost	$A667,555.94	Total Cumulative Cost	$A815,395.94

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 054

Daily Drilling Fluid Report

Date 21/01/2010		Depth 2,112.0 m	
Spud Date 30/11/2009		Rig Activity RIH w/ GEOPILOT 8.5' ST-1	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.35	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		147.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	Hyd 3	4	Targets				Program	
Source		Flow Line	Pit #3	Pit #3	Pit #2						
Time		8:20	14:00	21:40	3:50						
Depth	m	2,112	2,112	2,112	2,102						
FL Temp	Deg C	52			47						
Density @ Deg C	ppg	9.35 @ 43	9.35 @ 35	9.35 @ 25	9.30 @ 47					9.00	9.50
FV @ Deg C	sec/qt	65 @ 43	67 @ 35	58 @ 25	68 @ 47						
PV @ Deg C	cP	18 @ 47	18 @ 47	18 @ 47	21 @ 47						
YP	lbs/100 ft2	31	30	31	37						
GELS	lbs/100 ft2	8/13/17	8/13/16	9/14/17	11/16/19						
600/300		67.0/49.0	66.0/48.0	67.0/49.0	79.0/58.0						
200/100		43.0/31.0	40.0/29.0	41.0/30.0	48.0/36.0						
6/3		9.0/7.0	9.0/7.0	10.0/8.0	12.0/10.0						
API Filt	ml/30 min	4.4	4.4	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	9.0 @ 49	8.8 @ 49	9.1 @ 49	9.3 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.5	3.5	3.6	3.6						
NAP/Water	% by Vol	-/93.5	-/93.6	-/93.5	-/93.5						
Sand	% by vol	0.20	0.25	0.25	0.25						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	1.40	1.60	1.50	0.40						
ALK Filt	Pf/Mf	0.60/2.85	0.75/3.00	0.70/2.80	0.25/2.20						
Chlorides	mg/l	37,000	36,000	36,000	36,000						
Tot. Hardness	mg/l	360	380	340	240						400
LGS/HGS	% by Vol	2.3/1.2	2.1/1.3	2.3/1.2	2.7/0.8						
LGS/HGS	ppb	20.51/18.06	19.46/19.46	21.31/17.98	24.73/12.47						
ASG	SG	3.164	3.212	3.149	2.981						
Additional Properties											
KCl %	-	6.60	6.60	6.50	6.50	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Pump BAROLIFT sweep at 2112 m. No increase in cuttings visible.

Prepare & pump slug for POOH. Add ALDACIDE G Bacteriacide prior to POOH. Add OXYGON corroion inhibitor as per program. Incorporate all 5 sandtraps into active system. Maintain properties of premix. Identify leak in mixing line & patch as necessary. Calibrated Mud Balances. Checked shaker screens & repaired where necessary. All shaker screens are now in mesh size as opposed to API standard as requested by Co Man.

Rig Activity

Cont Drill 8.5" ST-1 interval f/ 2065 - 2112 m. Circ, pump 15 bbl BAROLIFT Pill as per program. POOH f/ 2096 - 1951 m pump 10.8 ppg Slug as per Co Man request, POOH to surface. MWD installed sources & test tools, cont RIH w/ GEOPILOT assy. Test @ 244 m failed. POOH remove source, change Jt. RIH plug in, install sources.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	17	80	9	88	$A1,442.88
Techmesh 210 (API 120)	1 each box	3		2	1	$A1,170.80
BARAZAN D PLUS	25 kg bag	98		3	95	$A646.02
OXYGON	50 lb can	7		1	6	$A572.03
EZ-MUD	25 kg pail	93		6	87	$A569.94
DEXTRID LTE	25 kg sack	92		8	84	$A423.84
sodium bicarbonate	25 kg bag	69		7	62	$A197.75
ALDACIDE G	25 kg can	11		1	10	$A173.09
potassium hydroxide	20 kg pail	71		1	70	$A132.11
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	13			13	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	155			155	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	50			50	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	63			63	
potassium chloride	1000 kg bag	15			15	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 84 84 84 84	
VSM-300	40 40 40 210 210 210 210	20.0
VSM-300	40 40 40 175 175 175 175	20.0
VSM-300	40 40 40 175 175 175 175	20.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	7.5
Circulating	1.0
Trips	10.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	5.0
Total	24.0
Rotating	7.5
ROP	20.6
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	200.0	Transferred	
Active Pits	672.0	Dewatering		SCE	-21.5
Total Hole	631.2	Sea Water		Evaporation	-4.4
Total Circ	672.0	Whole Mud		Trips	
Reserve	622.0	Barite		Other	-2.0
Prev Vol	1749.4	Chemicals	3.8	Total Surface	
Net Change	175.9	Other		Downhole	
Total Vol	1925.2	Total	203.8	Total Losses	-27.9

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	1,529.4	m
Survey TVD	1,529.4	m
Angle	0.61	Deg
Direction	57	
Horiz Displ.	1.3	m

Daily Products Cost	$A5,328.46	Total Daily Cost	$A8,408.46
Cumulative Products Cost	$A672,884.40	Total Cumulative Cost	$A823,804.40

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 055

Daily Drilling Fluid Report

Date 22/01/2010	**Depth** 2,368.0 m		
Spud Date 30/11/2009	**Rig Activity** Drilling 8.5" ST-1 Interval		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	113 ft/sec
Jet Impact Force	288.2 lbf
Bit HHSI	0.58 hhp/in2
Press Drop @ Bit	107 psi
Bit Depth	2,368.0 m
ECD @ Csg Shoe	9.93 ppg
ECD @ Bit	10.02 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,154.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		403.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0
Leak Off ppg		14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	52	53	0
gpm|bbl/min	261 | 6.21	266 | 6.33	
Total GPM	527	AV, Riser 35.4	Circ Press psi 1816
Total Circ Time	107	AV min DP 236.5	Tot Pres Loss 1201
BU Time , min	39	AV max DC 483.7	Press Drop DP 699
Total Strokes	11,233	BU Strokes 4,084	Press Drop An 267

Properties		1	2	Hyd 3	4	Targets				Program	
Source		Flow Line	Flow Line	Pit #2	Pit #3						
Time		7:45	14:15	21:25	3:00						
Depth	m	2,112	2,195	2,344	2,112						
FL Temp	Deg C	45	49	53							
Density @ Deg C	ppg	9.40 @ 35	9.40 @ 43	9.35 @ 53	9.35 @ 25					9.00	9.50
FV @ Deg C	sec/qt	65 @ 35	55 @ 43	66 @ 53	61 @ 25						
PV @ Deg C	cP	18 @ 49	18 @ 49	18 @ 49	18 @ 49						
YP	lbs/100 ft2	28	29	30	31						
GELS	lbs/100 ft2	8/13/16	8/12/15	9/13/16	9/14/17						
600/300		64.0/46.0	65.0/47.0	66.0/48.0	67.0/49.0						
200/100		39.0/29.0	40.0/29.0	41.0/30.0	41.0/30.0						
6/3		9.0/7.0	9.0/7.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.4	4.3	4.4						4.5
HTHP @ Deg C	ml/30 min	8.0 @ 49	8.5 @ 49	8.8 @ 49	9.1 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.5	3.6	3.0	3.0						
NAP/Water	% by Vol	-/93.5	-/93.5	-/94.0	-/94.0						
Sand	% by vol	0.20	0.20	0.15	0.25						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	2.10	2.00	1.80	1.60						
ALK Filt	Pf/Mf	0.80/2.20	0.70/2.45	0.65/2.35	0.75/2.90						
Chlorides	mg/l	36,500	35,500	36,000	36,000						
Tot. Hardness	mg/l	360	320	280	340						400
LGS/HGS	% by Vol	1.9/1.6	2.0/1.6	1.3/1.7	1.3/1.7						
LGS/HGS	ppb	17.50/23.53	18.30/23.46	12.05/25.36	12.05/25.36						
ASG	SG	3.327	3.308	3.505	3.505						
Additional Properties											
KCl %	-	6.50	6.50	6.50	6.50	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add EZ-MUD to maintain PHPA concentration.
Add sodium bicarbonate to control hardness.
Build further premix volume & bleed into active to maintain properties & volume. Run centrifuge to control solids.
Change out damaged screens as necessary & patch older screens.
Continue to maintain properties in active system.

Rig Activity

RIH f/ 38 - 1845 m filling every 20 stds. Wash 1945 - 1970 m breaking in GEOPILOT as per DD' instruction. Logging 1970 - 2112 m @ 60 m/hr. Take SCR's, downlink, break in bit pattern & drill 8.5" ST-1 hole f/ 2112 - 2368 m MD. Ream f/ 2331 - 2350 m 30/40 & drag w/ pipe rotation, 5 K w/out rotation.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	50		12	38	$A18,114.84
potassium chloride	1000 kg bag	15		5	10	$A7,417.60
Techmesh 260(API 140)	1 each box	20		4	16	$A2,341.60
EZ-MUD	25 kg pail	87		14	73	$A1,329.86
PAC-L	25 kg bag	88		6	82	$A961.92
DEXTRID LTE	25 kg sack	84		17	67	$A900.66
BARAZAN D PLUS	25 kg bag	95		4	91	$A861.36
Circal 60/16	25 kg bag	155		60	95	$A760.80
Techmesh 210 (API 120)	1 each box	1		1		$A585.40
sodium bicarbonate	25 kg bag	62		8	54	$A226.00
soda ash	25 kg bag	62		1	61	$A30.42
ALDACIDE G	25 kg can	10			10	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	13			13	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	63			63	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	24.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	4.0
518	4,000	80.00	3.0

Time

Drilling	15.5
Circulating	
Trips	4.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	15.5
ROP	54.2
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	487.8	Base		Fluid Dumped	
Pipe Cap	128.8	Drill Water	200.0	Transferred	
Active Pits	725.0	Dewatering		SCE	-132.0
Total Hole	616.6	Sea Water		Evaporation	-24.0
Total Circ	1341.6	Whole Mud	125.0	Trips	-15.3
Reserve	737.0	Barite		Other	-41.0
Prev Vol	1925.2	Chemicals	40.6	Total Surface	
Net Change	153.3	Other		Downhole	
Total Vol	2078.6	Total	365.6	Total Losses	-212.3

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	1,529.4 m
Survey TVD	1,529.4 m
Angle	0.61 Deg
Direction	57
Horiz Displ.	1.3 m

Daily Products Cost	$A33,530.46	Total Daily Cost	$A36,610.46
Cumulative Products Cost	$A706,414.86	Total Cumulative Cost	$A860,414.86

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 056

Daily Drilling Fluid Report

Date	23/01/2010	**Depth**	2,706.0 m
Spud Date	30/11/2009	**Rig Activity**	Drilling 8.5" ST-1 Interval

Operator	ADA DRILLING	**Report For**	Bryan Houston / Kevin Monkhouse
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Brian Meechan / Geoff Chapman
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	132 ft/sec
Jet Impact Force	395.4 lbf
Bit HHSI	0.93 hhp/in2
Press Drop @ Bit	146 psi
Bit Depth	2,706.0 m
ECD @ Csg Shoe	10.03 ppg
ECD @ Bit	10.16 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,492.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		741.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	59	64	0
gpm|bbl/min	296 | 7.05	321 | 7.64	
Total GPM	617	AV, Riser	41.4
Total Circ Time	96	AV min DP	277.0
BU Time , min	37	AV max DC	566.7
Total Strokes	11,851	BU Strokes	4,499
Circ Press psi	2275		
Tot Pres Loss	1679		
Press Drop DP	1005		
Press Drop An	364		

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Flow Line	Flow Line	Pit #2						
Time		4:35	8:40	13:45	20:35						
Depth	m	2,419	2,482	2,547	2,642						
FL Temp	Deg C	58	52	52	68						
Density @ Deg C	ppg	9.40 @ 58	9.40 @ 47	9.40 @ 48	9.35 @ 49					9.00	9.50
FV @ Deg C	sec/qt	68 @ 58	65 @ 47	58 @ 48	66 @ 49						
PV @ Deg C	cP	20 @ 49	18 @ 49	19 @ 49	19 @ 49						
YP	lbs/100 ft2	29	33	30	34						
GELS	lbs/100 ft2	9/14/17	8/13/17	9/13/15	12/16/21						
600/300		69.0/49.0	69.0/51.0	68.0/49.0	72.0/53.0						
200/100		42.0/31.0	43.0/31.0	41.0/30.0	45.0/32.0						
6/3		11.0/9.0	9.0/7.0	9.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	8.9 @ 49	8.5 @ 49	9.0 @ 49	9.1 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.6	3.4	3.4	3.0						
NAP/Water	% by Vol	-/93.5	-/93.6	-/93.6	-/94.0						
Sand	% by vol	0.20	0.20	0.25	0.25						1.0
MBT	ppb Eq.	5.0	5.0	7.5	10.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	1.30	1.80	2.30	1.90						
ALK Filt	Pf/Mf	0.55/2.20	0.60/2.40	0.75/2.40	0.60/2.10						
Chlorides	mg/l	36,000	37,000	37,000	37,000						
Tot. Hardness	mg/l	280	360	320	280						400
LGS/HGS	% by Vol	2.0/1.6	1.7/1.7	1.7/1.7	1.2/1.7						
LGS/HGS	ppb	17.90/23.49	15.24/25.04	15.24/25.04	11.24/25.43						
ASG	SG	3.317	3.407	3.407	3.534						
Additional Properties											
KCl %	-	6.50	6.70	6.70	6.65	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add Radiagreen EME at a concentration of 0.5% vol to reduce torque. Maintain PHPA concentration w/ addition of EZ-MUD.
Build pre-mix & bleed into active to maintain properties & volume.
Pump BAROLIFT sweep - minimal increase in cuttings seen at shakers.
Add Sodium Bicarbonate to reduce hardness.

Rig Activity

Cont Drill 8.5" ST-1 f/ 2368 - 2706 m MD & 2635.3 TVD.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Radiagreen EME-Salt	175 kg drum	25		8	17	$A17,679.84
CLAYSEAL PLUS	55 gal drum	38		6	32	$A9,057.42
potassium chloride	1000 kg bag	10		3	7	$A4,450.56
BARAZAN D PLUS	25 kg bag	91		13	78	$A2,799.42
Techmesh 260(API 140)	1 each box	16		4	12	$A2,341.60
EZ-MUD	25 kg pail	73		11	62	$A1,044.89
PAC-L	25 kg bag	82		6	76	$A961.92
ALDACIDE G	25 kg can	10		1	9	$A173.09
sodium bicarbonate	25 kg bag	54		6	48	$A169.50
BARA-DEFOAM W300	25 l can	7		1	6	$A125.82
Amodrill 1235	1 bbl bulk	19.400			19.400	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	13			13	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	95			95	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	67			67	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	63			63	
OXYGEN	50 lb can	6			6	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	5.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	24.0

Time

Drilling	24.0
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	24.0
ROP	46.2
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	537.4	Base		Fluid Dumped	
Pipe Cap	148.0	Drill Water	164.0	Transferred	
Active Pits	730.0	Dewatering		SCE	-150.5
Total Hole	685.4	Sea Water		Evaporation	-36.0
Total Circ	1415.4	Whole Mud	91.0	Trips	-5.0
Reserve	734.0	Barite		Other	-14.1
Prev Vol	2078.6	Chemicals	21.5	Total Surface	
Net Change	70.9	Other		Downhole	
Total Vol	2149.4	Total	276.5	Total Losses	-205.6

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	2,684.9 m
Survey TVD	2,607.9 m
Angle	36.05 Deg
Direction	180
Horiz Displ.	1.2 m

Daily Products Cost	$A38,804.06	Total Daily Cost	$A41,884.06
Cumulative Products Cost	$A745,218.92	Total Cumulative Cost	$A902,298.92

Baroid Representatives Kosta Georgiou Mike Lawrance
Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555
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Baroid Fluid Services

Report No 057

Daily Drilling Fluid Report

Date 24/01/2010		Depth 2,973.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	132 ft/sec
Jet Impact Force	395.4 lbf
Bit HHSI	0.93 hhp/in2
Press Drop @ Bit	146 psi
Bit Depth	2,973.0 m
ECD @ Csg Shoe	10.06 ppg
ECD @ Bit	10.23 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,759.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		1,008.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	62	61	0
gpm|bbl/min	311 | 7.41	306 | 7.29	
Total GPM	617	AV, Riser 41.4	Circ Press psi 2462
Total Circ Time	96	AV min DP 277.0	Tot Pres Loss 1836
BU Time , min	39	AV max DC 566.7	Press Drop DP 1099
Total Strokes	11,862	BU Strokes 4,827	Press Drop An 427

Properties		Hyd 1	2	3	4	Targets				Program	
Source		Pit #2	Flow Line	Flow Line	Pit #2						
Time		4:00	10:00	13:45	20:30						
Depth	m	2,769	2,809	2,871	2,928						
FL Temp	Deg C	57	58	60	64						
Density @ Deg C	ppg	9.35 @ 48	9.40 @ 52	9.40 @ 54	9.35 @ 48					9.00	9.50
FV @ Deg C	sec/qt	66 @ 48	64 @ 52	59 @ 54	65 @ 48						
PV @ Deg C	cP	20 @ 49	20 @ 49	21 @ 49	21 @ 49						
YP	lbs/100 ft2	36	36	37	39						
GELS	lbs/100 ft2	10/14/17	10/14/17	10/14/19	12/15/18						
600/300		76.0/56.0	76.0/56.0	79.0/58.0	81.0/60.0						
200/100		47.0/34.0	47.0/34.0	48.0/36.0	50.0/38.0						
6/3		10.0/8.0	11.0/9.0	11.0/9.0	12.0/10.0						
API Filt	ml/30 min	4.4	4.1	4.2	4.4						4.5
HTHP @ Deg C	ml/30 min	9.0 @ 49	7.8 @ 49	8.0 @ 49	9.1 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.0	3.6	3.6	3.0						
NAP/Water	% by Vol	-/94.0	-/93.4	-/93.4	-/94.0						
Sand	% by vol	0.25	0.25	0.25	0.25						1.0
MBT	ppb Eq.	10.0	7.5	7.5	10.0						25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	0.55	0.75	0.60	0.55						
ALK Filt	Pf/Mf	0.18/2.90	0.35/2.80	0.20/3.20	0.90/2.90						
Chlorides	mg/l	36,000	37,000	36,500	36,000						
Tot. Hardness	mg/l	320	360	320	320						400
LGS/HGS	% by Vol	1.3/1.7	2.1/1.5	2.1/1.5	1.3/1.7						
LGS/HGS	ppb	12.05/25.36	18.95/22.09	19.35/22.06	12.05/25.36						
ASG	SG	3.505	3.271	3.262	3.505						
Additional Properties											
KCl %	-	6.60	6.70	6.70	6.60	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add Radiagreen EME to maintain 0.5% vol concentration in active. Maintain PHPA concentration w/ the addition of EZ-MUD. Control hardness w/ additon of soda ash. Maintain pH w/ addition of caustic potash. Add OXYGON corrosion inhibitor as per program.
Build pre-mix volume pit 1& bleed into active to maintain properties & volume. Continue to Build new Volume pit 3. Pumped a 17 bbl BAROLIFT pill at 2100 hrs on 3 rig pumps & boosted riser. Pill came over @ 2146 hrs slight increase in cuttings load. Continued to run on 3 rig pumps (BOOST) for 11 mins, until 2157 hrs.

Rig Activity

Cont drill 8.5" ST-1 hole f/ 2706 - 2856 m. Pump 20 bbl BAROLIFT Pill @ 2784 m & pump out. Cont drill f/ 2856 - 2926 m. R/B std f/ 2926 - 2897 m. C/O saver sub & disks in TDS. Wash f/ 2897 - 2926 m, Cont drill f/ 2926 - 2973 m pump 17 bbl BAROLIFT pill @ 2926, well clean. Max gas 13.9 %, background 3 %.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	32		4	28	$A6,038.28
Radiagreen EME-Salt	175 kg drum	17		2	15	$A4,419.96
EZ-MUD	25 kg pail	62		16	46	$A1,519.84
potassium hydroxide	20 kg pail	70		8	62	$A1,056.88
BAROLIFT	15 lb box	13		2	11	$A636.04
OXYGON	50 lb can	6		1	5	$A572.03
DEXTRID LTE	25 kg sack	67		7	60	$A370.86
soda ash	25 kg bag	61		6	55	$A182.52
ALDACIDE G	25 kg can	9			9	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	78			78	
barite	1 tons bulk	147.000			147.000	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	95			95	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	63			63	
PAC-L	25 kg bag	76			76	
potassium chloride	1000 kg bag	7			7	

Daily Products Cost	$A14,796.41	Total Daily Cost	$A17,876.41
Cumulative Products Cost	$A760,015.33	Total Cumulative Cost	$A920,175.33

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	8.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	24.0

Time

Drilling	23.5
Circulating	
Trips	
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	23.5
ROP	37.3
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	576.5	Base		Fluid Dumped	
Pipe Cap	163.2	Drill Water	150.0	Transferred	
Active Pits	677.0	Dewatering		SCE	-110.0
Total Hole	739.7	Sea Water		Evaporation	-24.0
Total Circ	1416.7	Whole Mud	152.6	Trips	-3.0
Reserve	901.0	Barite		Other	-6.8
Prev Vol	2149.4	Chemicals	9.5	Total Surface	
Net Change	168.3	Other		Downhole	
Total Vol	2317.7	Total	312.1	Total Losses	-143.8

Fluid Types — Vol bbl

Deviation Information

Survey MD	2,944.7 m
Survey TVD	2,819.0 m
Angle	35.81 Deg
Direction	175
Horiz Displ.	422.2 m

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 058

Daily Drilling Fluid Report

Date 25/01/2010		Depth 3,158.0 m	
Spud Date 30/11/2009		Rig Activity POOH 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	127 ft/sec
Jet Impact Force	363.9 lbf
Bit HHSI	0.82 hhp/in2
Press Drop @ Bit	135 psi
Bit Depth	2,492.0 m
ECD @ Csg Shoe	10.06 ppg
ECD @ Bit	10.18 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,278.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		1,193.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	67	51	0
gpm|bbl/min	336 | 8.00	256 | 6.09	
Total GPM	592	AV, Riser 39.7	Circ Press psi 2020
Total Circ Time	92	AV min DP 265.8	Tot Pres Loss 1547
BU Time , min	36	AV max DC 543.6	Press Drop DP 908
Total Strokes	10,816	BU Strokes 4,236	Press Drop An 348

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Flow Line	Flow Line	Pit #2			
Time		4:00	8:15	13:30	20:05			
Depth	m	3,014	3,062	3,121	3,158			
FL Temp	Deg C	57	62	65				
Density @ Deg C	ppg	9.35 @ 48	9.35 @ 54	9.40 @ 53	9.35 @ 30		9.00	9.50
FV @ Deg C	sec/qt	66 @ 48	64 @ 54	65 @ 53	56 @ 30			
PV @ Deg C	cP	21 @ 49	20 @ 49	20 @ 49	19 @ 49			
YP	lbs/100 ft2	36	39	38	40			
GELS	lbs/100 ft2	10/14/17	10/14/17	10/15/18	10/13/15			
600/300		78.0/57.0	79.0/59.0	78.0/58.0	78.0/59.0			
200/100		37.0/33.0	49.0/37.0	47.0/34.0	47.0/34.0			
6/3		10.0/9.0	11.0/9.0	11.0/9.0	10.0/9.0			
API Filt	ml/30 min	4.3	4.2	4.1	4.3			4.5
HTHP @ Deg C	ml/30 min	8.8 @ 49	8.0 @ 49	7.5 @ 49	8.8 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	3.0	3.5	3.8	3.0			
NAP/Water	% by Vol	-/94.0	-/93.5	-/93.2	-/94.0			
Sand	% by vol	0.25	0.20	0.20	0.25			1.0
MBT	ppb Eq.	7.5	7.5	7.5	10.0			25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	1.40	1.40	1.60	1.50			
ALK Filt	Pf/Mf	0.25/2.30	0.35/3.20	0.45/2.90	0.35/2.80			
Chlorides	mg/l	36,500	37,000	37,000	36,500			
Tot. Hardness	mg/l	320	320	280	240			400
LGS/HGS	% by Vol	1.3/1.7	2.3/1.2	2.5/1.3	1.3/1.7			
LGS/HGS	ppb	11.64/25.39	20.51/18.06	22.66/19.14	11.64/25.39			
ASG	SG	3.519	3.164	3.149	3.519			
Additional Properties								
KCl %	-	6.70	6.80	6.80	6.70	X X X X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add Circal Y & Circal 60/16 sized Calcium Carbonate bridging agents to compensate for used fluid f/ solids control equipment & maintain tight filtration. Add Soda ash to reduce hardness. Add Caustic Potash to maintain pH. Build premix & bleed into active to maintain volume/properties. Add Radiagreen EME to active to maintain 0.5%vol concentration. Pump 15 bbl BAROLIFT sweep at 3157 m. Minimal increase in solids observed. Centrifuge 2 had leaking hoses & was shut down early for repairs. Cont to maintain shaker screens.

Rig Activity

Cont drill 8.5" ST-1 f/ 2973 - 3158 m. Pump 15 bbl BAROLIFT pill & circ same out of hole, while boosting riser w/ 3 M/P. Halliburton MWD attempted to reset down load tool, neg. F/C, static. POOH f/ 3158 - 2492 wet, pumping & back reaming all 30 K over tight spots. 0000 hrs POOH depth, 2492 MD - 2451 TVD.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	28		8	20	$A12,076.56
potassium chloride	1000 kg bag	7		6	1	$A8,901.12
Radiagreen EME-Salt	175 kg drum	15		1	14	$A2,209.98
EZ-MUD	25 kg pail	46		16	30	$A1,519.84
N-DRIL HT PLUS	50 lb bag	63		10	53	$A1,488.50
PAC-L	25 kg bag	76		9	67	$A1,442.88
Circal 60/16	25 kg bag	95		95		$A1,204.60
Circal Y	25 kg bag	75		43	32	$A1,157.13
BARAZAN D PLUS	25 kg bag	78		4	74	$A861.36
potassium hydroxide	20 kg pail	62		6	56	$A792.66
soda ash	25 kg bag	55		16	39	$A486.72
DEXTRID LTE	25 kg sack	60		4	56	$A211.92
ALDACIDE G	25 kg can	9		1	8	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGEN	50 lb can	5			5	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	5.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	19.0
518	4,000	80.00	13.0

Time

Drilling	17.0
Circulating	1.0
Trips	4.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	2.0
Total	24.0
Rotating	17.0
ROP	35.7
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	506.0	Base		Fluid Dumped	
Pipe Cap	135.8	Drill Water	150.0	Transferred	
Active Pits	650.0	Dewatering		SCE	-308.0
Total Hole	795.2	Sea Water		Evaporation	-48.0
Total Circ	1291.8	Whole Mud	151.3	Trips	-43.0
Reserve	797.0	Barite		Other	-22.0
Prev Vol	2317.7	Chemicals	44.2	Total Surface	
Net Change	-75.5	Other		Downhole	
Total Vol	2242.2	Total	345.5	Total Losses	-421.0

Fluid Types Vol bbl

Deviation Information

Survey MD	2,944.7 m
Survey TVD	2,819.0 m
Angle	35.81 Deg
Direction	175
Horiz Displ.	422.2 m

Daily Products Cost	$A32,526.36	Total Daily Cost	$A35,606.36
Cumulative Products Cost	$A792,541.69	Total Cumulative Cost	$A955,781.69

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 059

Daily Drilling Fluid Report

Date 26/01/2010		Depth 3,158.0 m	
Spud Date 30/11/2009		Rig Activity RIH 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	89 ft/sec
Jet Impact Force	179.1 lbf
Bit HHSI	0.28 hhp/in2
Press Drop @ Bit	66 psi
Bit Depth	2,525.0 m
ECD @ Csg Shoe	9.85 ppg
ECD @ Bit	9.95 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,311.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		1,193.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	42	41	0
gpm|bbl/min	211 | 5.02	206 | 4.90	
Total GPM	416	AV, Riser 28.0	Circ Press psi 1250
Total Circ Time	138	AV min DP 187.0	Tot Pres Loss 972
BU Time , min	52	AV max DC 382.4	Press Drop DP 539
Total Strokes	11,492	BU Strokes 4,277	Press Drop An 274

Properties

		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Flow Line						
Time		10:00	15:00	3:00	22:40						
Depth	m	3,158	3,158	3,158	3,158						
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 45	9.35 @ 43	9.35 @ 48	9.30 @ 25					9.00	9.50
FV @ Deg C	sec/qt	67 @ 45	66 @ 43	56 @ 48	57 @ 25						
PV @ Deg C	cP	20 @ 49	19 @ 49	22 @ 49	19 @ 25						
YP	lbs/100 ft2	36	35	34	34						
GELS	lbs/100 ft2	10/15/17	9/13/16	10/14/17	9/13/16						
600/300		76.0/56.0	73.0/54.0	78.0/56.0	72.0/53.0						
200/100		47.0/33.0	44.0/32.0	47.0/31.0	43.0/31.0						
6/3		11.0/9.0	10.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.2	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	8.0 @ 49	8.5 @ 49	8.9 @ 49	9.1 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.7	3.5	3.0	3.0						
NAP/Water	% by Vol	-/93.3	-/93.5	-/94.0	-/94.0						
Sand	% by vol	0.20	0.20	0.20	0.20						1.0
MBT	ppb Eq.	7.5	7.5	10.0	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	1.30	1.10	1.40	1.00						
ALK Filt	Pf/Mf	0.45/3.10	0.30/3.20	0.30/2.90	0.29/3.30						
Chlorides	mg/l	37,000	37,000	37,000	37,000						
Tot. Hardness	mg/l	280	240	240	240						400
LGS/HGS	% by Vol	2.3/1.4	2.3/1.2	1.2/1.7	1.6/1.4						
LGS/HGS	ppb	20.80/20.62	20.51/18.06	11.24/25.43	14.65/19.92						
ASG	SG	3.208	3.164	3.534	3.331						
Additional Properties											
KCl %	-	6.80	6.80	6.80	6.80	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Cont to maintain properties in active pit 2. Start premix in pit 1. 317 bbl of brine brought into leg f/ boat. used two 15 bbl 9.3 ppg BAROLIFT pills & 19 bbl 11.3 ppg KCl- PHPA slug. Conducted a full chem inventory. Maintained screens at shakers & patched repairable screens.

Rig Activity

Cont POOH 8.5 BHA " ST-1 f/ 2492 m - surface. P/U & M/U bit, GEOpilot, MWD tools & upload. RIH - 239 m. Shallow test tools, 600 gpm_400 psi. Test Good. Cont RIH f/ 239 - 2525 MD_2478 TVD.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
N-DRIL HT PLUS	50 lb bag	53		12	41	$A1,786.20
BARAZAN D PLUS	25 kg bag	74		8	66	$A1,722.72
PAC-L	25 kg bag	67		5	62	$A801.60
potassium hydroxide	20 kg pail	56		4	52	$A528.44
sodium bicarbonate	25 kg bag	48		15	33	$A423.75
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	20			20	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	56			56	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	30			30	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGON	50 lb can	5			5	
potassium chloride	1000 kg bag	1	12		13	
Radiagreen EME-Salt	175 kg drum	14			14	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	2.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	12.0
518	4,000	80.00	12.0

Time

Drilling	
Circulating	
Trips	21.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	3.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	510.8	Base		Fluid Dumped	
Pipe Cap	137.7	Drill Water		Transferred	
Active Pits	724.0	Dewatering		SCE	-60.6
Total Hole	794.3	Sea Water		Evaporation	-4.0
Total Circ	1372.5	Whole Mud		Trips	-16.0
Reserve	647.0	Barite		Other	
Prev Vol	2242.2	Chemicals	3.8	Total Surface	
Net Change	-76.8	Other		Downhole	
Total Vol	2165.3	Total	3.8	Total Losses	-80.6

Fluid Types Vol bbl

Deviation Information

Survey MD	2,944.7 m
Survey TVD	2,819.0 m
Angle	35.81 Deg
Direction	175
Horiz Displ.	422.2 m

Daily Products Cost	$A5,262.71	Total Daily Cost	$A8,342.71
Cumulative Products Cost	$A797,804.40	Total Cumulative Cost	$A964,124.40
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 060

Daily Drilling Fluid Report

Date 27/01/2010	**Depth** 3,195.0 m		
Spud Date 30/11/2009	**Rig Activity** Down Load MWD Tools.		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500	1,230.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets				Program	
Source		Pit #2	Flow Line	Pit #2	Pit #2						
Time		3:00	7:00	13:10	21:40						
Depth	m	3,158	3,171	3,194	3,195						
FL Temp	Deg C		64	66							
Density @ Deg C	ppg	9.30 @ 44	9.40 @ 52	9.40 @ 51	9.30 @ 25					9.00	9.50
FV @ Deg C	sec/qt	56 @ 44	63 @ 52	62 @ 51	58 @ 25						
PV @ Deg C	cP	18 @ 25	20 @ 25	19 @ 25	19 @ 25						
YP	lbs/100 ft2	37	38	37	36						
GELS	lbs/100 ft2	10/14/17	11/15/18	10/16/19	10/14/17						
600/300		73.0/55.0	78.0/58.0	75.0/56.0	74.0/55.0						
200/100		44.0/33.0	47.0/37.0	47.0/35.0	46.0/34.0						
6/3		10.0/8.0	12.0/10.0	12.0/9.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.2	4.1	4.3						4.5
HTHP @ Deg C	ml/30 min	9.1 @ 49	7.5 @ 49	6.5 @ 49	8.9 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.0	3.5	3.4	3.0						
NAP/Water	% by Vol	-/94.0	-/93.4	-/93.5	-/94.0						
Sand	% by vol	0.20	0.20	0.20	0.20						1.0
MBT	ppb Eq.	7.5	7.5	7.5	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	1.00	0.95	0.80	0.70						
ALK Filt	Pf/Mf	0.30/3.20	0.30/3.30	0.15/3.20	1.20/3.10						
Chlorides	mg/l	37,000	37,500	37,500	37,000						
Tot. Hardness	mg/l	240	240	280	240						400
LGS/HGS	% by Vol	1.6/1.4	2.0/1.5	1.8/1.6	1.6/1.4						
LGS/HGS	ppb	14.65/19.92	18.54/22.13	16.69/23.61	14.65/19.92						
ASG	SG	3.331	3.280	3.347	3.331						
Additional Properties											
KCl %	-	6.80	6.85	6.85	6.80	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Increased Radiagreen EME concentration to 1% per active volume. Bled over mix into active system for volume. Built new KCL- PHPA premix in pit 1. Centrifuging sandtraps to condition mud. Maintained all shakers, screens & repaired screens to increase longevity. Maintained properties in active system. Added Barite to inventory to have coresponding figures w/ Control Room.

Rig Activity

RIH f/ 2525 - 3158 m. Establish parameters f/ MWD tools & re-Log 3140 - 3156 m. Cont drill 8.5" ST-1 hole f/ 3156 - 3195 m. Circ & boost riser w/ 3 M/P. POOH f/ 3195 - 1965 m, max 10 K over pull, F/C OK. Cont POOH f/ 1965 - Surface. Remove sources & down load tools.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Radiagreen EME-Salt	175 kg drum	14		7	7	$A15,469.86
CLAYSEAL PLUS	55 gal drum	20		4	16	$A6,038.28
N-DRIL HT PLUS	50 lb bag	41		16	25	$A2,381.60
BARAZAN D PLUS	25 kg bag	66		4	62	$A861.36
PAC-L	25 kg bag	62		4	58	$A641.28
DEXTRID LTE	25 kg sack	56		4	52	$A211.92
EZ-MUD	25 kg pail	30		2	28	$A189.98
soda ash	25 kg bag	39		1	38	$A30.42
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	147.000	12.000		159.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGON	50 lb can	5			5	
potassium chloride	1000 kg bag	13			13	
potassium hydroxide	20 kg pail	52			52	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	2.0
VSM-300	20 40 40 210 210 210 210	18.0
VSM-300	20 40 40 175 175 175 175	18.0
VSM-300	20 40 40 175 175 175 175	18.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	13.0
518	4,000	80.00	13.0

Time

Drilling	5.0
Circulating	4.5
Trips	10.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	5.0
ROP	24.3
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	150.0	Transferred	
Active Pits	710.0	Dewatering		SCE	-161.0
Total Hole	880.6	Sea Water		Evaporation	-20.0
Total Circ	710.0	Whole Mud	9.4	Trips	-8.4
Reserve	553.0	Barite		Other	
Prev Vol	2165.3	Chemicals	8.3	Total Surface	
Net Change	-21.7	Other		Downhole	
Total Vol	2143.6	Total	167.7	Total Losses	-189.4

Fluid Types Vol bbl

Deviation Information

Survey MD	3,185.2 m
Survey TVD	3,016.1 m
Angle	35.7 Deg
Direction	178
Horiz Displ.	559.2 m

Daily Products Cost	$A25,824.70	Total Daily Cost	$A28,904.70
Cumulative Products Cost	$A823,629.10	Total Cumulative Cost	$A993,029.10

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 061

Daily Drilling Fluid Report

Date 28/01/2010		Depth 3,213.0 m	
Spud Date 30/11/2009		Rig Activity POOH 8.5" Core Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	CORPRO/8.5" X 4" MCP	
Jets		
TFA	1.310	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,087.0	m
ECD @ Csg Shoe	9.35	ppg
ECD @ Bit	9.35	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	875.4
Drill Pipe	5.000	3.000	93.9
Drill Collar	6.375	2.875	85.5
Drill Collar	8.250	5.250	32.2
Riser	19.750		100.0
Open Hole	8.500		1,248.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	Hyd 4	Targets			Program	
Source		Pit #2	Pit #2	Flow Line	Pit #2					
Time		3:30	9:40	14:45	21:10					
Depth	m	3,195	3,195	3,200	3,213					
FL Temp	Deg C			54						
Density @ Deg C	ppg	9.35 @ 25	9.35 @ 41	9.35 @ 48	9.35 @ 25				9.00	9.50
FV @ Deg C	sec/qt	56 @ 25	57 @ 41	64 @ 48	58 @ 25					
PV @ Deg C	cP	19 @ 25	18 @ 25	17 @ 25	17 @ 25					
YP	lbs/100 ft2	37	33	30	31					
GELS	lbs/100 ft2	10/14/17	9/13/15	9/13/16	10/14/17					
600/300		75.0/56.0	69.0/51.0	64.0/47.0	65.0/48.0					
200/100		47.0/35.0	43.0/32.0	39.0/29.0	40.0/30.0					
6/3		11.0/9.0	9.0/8.0	9.0/8.0	10.0/8.0					
API Filt	ml/30 min	4.3	4.2	4.3	4.4					4.5
HTHP @ Deg C	ml/30 min	8.8 @ 49	7.5 @ 49	7.8 @ 49	8.9 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2					
Corr Solid	% by Vol	3.0	3.2	3.3	2.9					
NAP/Water	% by Vol	-/94.0	-/93.7	-/93.6	-/94.0					
Sand	% by vol	0.20	0.15	0.15	0.25					1.0
MBT	ppb Eq.	10.0	5.0	5.0	5.0					25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.70	0.95	0.65	0.70					
ALK Filt	Pf/Mf	1.00/3.10	0.30/2.80	0.15/3.10	0.20/3.30					
Chlorides	mg/l	37,000	37,500	37,500	38,000					
Tot. Hardness	mg/l	240	320	360	320					400
LGS/HGS	% by Vol	1.2/1.7	1.8/1.4	2.0/1.3	1.1/1.7					
LGS/HGS	ppb	11.24/25.43	16.39/21.05	18.25/19.57	10.42/25.51					
ASG	SG	3.534	3.309	3.238	3.564					
Additional Properties										
KCl %	-	6.80	6.90	6.90	7.00	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Treated active KCl- PHPA system to maintain fluid properties. Prepared new KCl- PHPA premix in pit 4. Continued to maintain shaker screens& change out as required. Continued to run centrifuges to assist in solids control.Conducted a Chem/Bulk inventory.

Rig Activity

P/U & M/U Core bit, core bbls & RIH - 3182 m on 5" DP. Wash f/ 3182 - 3196 m & take SCR's. L/O single, drop ball & establish parameters. Ball landed w/ 120 psi. Cut core f/ 3196 - 3213 m. Torque went flat, no penetration. F/C_static pump slug, Cont POOH w/ cores f/ 1935 - 1087 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
N-DRIL HT PLUS	50 lb bag	25		6	19	$A893.10
potassium hydroxide	20 kg pail	52		2	50	$A264.22
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	62			62	
barite	1 tons bulk	159.000			159.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	16			16	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	52			52	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	28			28	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGON	50 lb can	5			5	
PAC-L	25 kg bag	58			58	
potassium chloride	1000 kg bag	13			13	
Radiagreen EME-Salt	175 kg drum	7			7	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	38			38	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 140 140 140 140	12.0
VSM-300	20 40 40 140 140 140 140	12.0
VSM-300	20 40 40 175 175 175 175	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	18.0
518	4,000	80.00	18.0

Time

Drilling	
Circulating	
Trips	14.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	4.0
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	6.0
Total	24.0
Rotating	4.0
ROP	14.8
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	275.5	Base		Fluid Dumped	
Pipe Cap	57.7	Drill Water	210.0	Transferred	
Active Pits	675.0	Dewatering		SCE	-218.8
Total Hole	843.3	Sea Water		Evaporation	-16.0
Total Circ	1008.2	Whole Mud	100.6	Trips	-13.0
Reserve	689.0	Barite		Other	
Prev Vol	2143.6	Chemicals	0.7	Total Surface	
Net Change	63.5	Other		Downhole	
Total Vol	2207.3	Total	311.3	Total Losses	-247.8

Fluid Types Vol bbl

Deviation Information

Survey MD	3,203.4 m
Survey TVD	3,031.4 m
Angle	35.56 Deg
Direction	179
Horiz Displ.	569.7 m

Daily Products Cost	$A1,157.32	Total Daily Cost	$A4,237.32
Cumulative Products Cost	$A824,786.42	Total Cumulative Cost	$A997,266.42

Baroid Representatives Kosta Georgiou Mike Lawrance
Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555
Warehouse c/o of Esso Australia Ltd Telephone 61-3-56-881-445

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Baroid Fluid Services

Report No 062

Daily Drilling Fluid Report

Date 29/01/2010		Depth 3,234.0 m	
Spud Date 30/11/2009		Rig Activity Drill 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	3x15|3x12	
TFA	0.849	sq-in
Jets Velocity	219	ft/sec
Jet Impact Force	620.9	lbf
Bit HHSI	2.42	hhp/in2
Press Drop @ Bit	404	psi
Bit Depth	3,213.0	m
ECD @ Csg Shoe	9.93	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,999.3
Drill Pipe	5.000	3.000	142.6
Drill Collar	6.750	2.875	71.1
Riser	19.750		100.0
Open Hole	8.500		1,269.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	58	58	0
gpm|bbl/min	291 6.93	291 6.93	
Total GPM	582	AV, Riser	39.1
Total Circ Time	104	AV min DP	261.3
BU Time , min	44	AV max DC	534.4
Total Strokes	12,044	BU Strokes	5,120
Circ Press psi	2233		
Tot Pres Loss	1891		
Press Drop DP	995		
Press Drop An	344		

Properties		1	2	3	Hyd 4	Targets			Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2					
Time		3:00	7:50	15:00	21:00					
Depth	m	3,213	3,213	3,213	3,213					
FL Temp	Deg C									
Density @ Deg C	ppg	9.30 @ 25	9.35 @ 32	9.35 @ 25	9.40 @ 25				9.00	9.50
FV @ Deg C	sec/qt	59 @ 25	62 @ 32	60 @ 25	62 @ 25					
PV @ Deg C	cP	17 @ 25	15 @ 25	15 @ 25	15 @ 25					
YP	lbs/100 ft2	30	24	23	25					
GELS	lbs/100 ft2	9/13/16	9/12/15	8/13/15	10/15/17					
600/300		64.0/47.0	54.0/39.0	53.0/38.0	55.0/40.0					
200/100		39.0/29.0	33.0/25.0	33.0/24.0	35.0/26.0					
6/3		10.0/8.0	9.0/8.0	9.0/7.0	11.0/9.0					
API Filt	ml/30 min	4.4	4.3	4.4	4.3					4.5
HTHP @ Deg C	ml/30 min	8.9 @ 49	7.8 @ 49	8.0 @ 49	8.9 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2					
Corr Solid	% by Vol	3.0	3.4	3.4	2.9					
NAP/Water	% by Vol	-/94.0	-/93.5	-/93.5	-/94.0					
Sand	% by vol	0.20	0.15	0.10	0.15					1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.50 @ 22				8.50	9.50
ALK Mud	Pm	0.60	0.55	0.95	0.80					
ALK Filt	Pf/Mf	0.45/2.90	0.25/3.40	0.40/3.25	0.28/2.90					
Chlorides	mg/l	37,000	37,500	38,000	38,000					
Tot. Hardness	mg/l	280	320	320	280					400
LGS/HGS	% by Vol	1.6/1.4	2.2/1.2	2.2/1.2	0.8/2.1					
LGS/HGS	ppb	14.65/19.92	20.10/18.09	19.69/18.13	7.01/31.02					
ASG	SG	3.331	3.173	3.181	3.772					
Additional Properties										
KCl %	-	6.90	6.90	6.90	7.00	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Valve repaired on Red mix line. Add Radiagreen directly to active to maintain 1% vol concentration. Cont to maintain PHPA concentration by adding EZ MUD. Cont to maintain fluid loss properties by adding PAC LE & N-DRILL HT PLUS. Continue to maintain properties in both premixes, pits 1 & 4. Centrifuge to control solids in drilling fluid & maintain MWt. Transferring volume across f/ pit 1 to maintain volume in active, pit 2. Change out shaker screens to maximise solids control continue to patch screens where necessary.

Rig Activity

Cont POOH core barrel f/ 1087 - 370 m & F/C_ static. Cont POOH f/ 370 - 32 m. HTBT check gas level_ok, remove inner core barrel. Service TDS & travelling equipment. HTBT P/U 8.5" BHA M/U BHA. Upload tools & install R/A source. RIH w/ BHA - 215 m. Shallow test & down link tools_ok. Cont RIH f/ 215 - 3132 m. Break circ, take SCR's, wash f/ 3123 - 3161 m, Log w/ Sperry f/ 3175 - 3213 m. Drill f/ 3213 - 3234 m as / DD instruction.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	16		10	6	$A15,095.70
PAC-L	25 kg bag	58		21	37	$A3,366.72
Radiagreen EME-Salt	175 kg drum	7		1	6	$A2,209.98
BARAZAN D PLUS	25 kg bag	62		8	54	$A1,722.72
DEXTRID LTE	25 kg sack	52		24	28	$A1,271.52
EZ-MUD	25 kg pail	28		13	15	$A1,234.87
N-DRIL HT PLUS	50 lb bag	19		8	11	$A1,190.80
potassium hydroxide	20 kg pail	50		8	42	$A1,056.88
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	159.000			159.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGON	50 lb can	5			5	
potassium chloride	1000 kg bag	13			13	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	38			38	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 140 140 140 140	24.0
VSM-300	20 40 40 140 140 140 140	6.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	16.0
518	4,000	80.00	16.0

Time

Drilling	2.5
Circulating	0.5
Trips	13.0
Rig	1.5
Surveys	
Fishing	
Run Casing	
Coring	2.5
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	5.0
ROP	13.8
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	611.5	Base		Fluid Dumped	
Pipe Cap	176.9	Drill Water		Transferred	
Active Pits	650.0	Dewatering		SCE	-75.0
Total Hole	793.3	Sea Water		Evaporation	-6.0
Total Circ	1438.4	Whole Mud	1.3	Trips	-13.5
Reserve	692.0	Barite		Other	
Prev Vol	2207.3	Chemicals	21.8	Total Surface	
Net Change	-71.4	Other		Downhole	
Total Vol	2135.3	Total	23.1	Total Losses	-94.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,203.4	m
Survey TVD	3,031.4	m
Angle	35.56	Deg
Direction	179	
Horiz Displ.	569.7	m

Daily Products Cost	$A27,149.19	Total Daily Cost	$A30,229.19
Cumulative Products Cost	$A851,935.61	Total Cumulative Cost	$A1,027,495.61
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 063

Daily Drilling Fluid Report

Date 30/01/2010		Depth 3,283.0 m	
Spud Date 30/11/2009		Rig Activity POOH 8.5" interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information			Drill String (in) / (m)				in Casing m			Circulation/Hydraulics Data			
				OD	ID	Length	OD	Set	MD				
Bit Size	8.500	in	Drill Pipe	5.000	4.276	913.4	30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type	CORPRO/8.5" X 4" MCP		Drill Pipe	5.000	3.000	93.9	13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets			Drill Collar	6.375	2.875	85.5	9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	1.310	sq-in	Drill Collar	8.250	5.250	32.2				Eff(%)	97	97	97
Jets Velocity		ft/sec								bbl/strk	0.119	0.119	0.119
Jet Impact Force		lbf								SPM	0	0	0
Bit HHSI		hhp/in2								gpm|bbl/min			
Press Drop @ Bit		psi								Total GPM		AV, Riser	Circ Press psi
Bit Depth	1,125.0	m	Riser	19.750		100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	9.35	ppg	Open Hole	8.500		1,318.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	9.35	ppg					Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	Hyd 4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2	Pit #2							Fluid Type 8 1/2" ST-1 KCl/Polymer
Time		3:45	9:30	13:45	19:40							Continue running centrifuges to maintain solids content as low as possible. Add KOH to maintain pH level. Change out shaker screens to maintain optimal solids control, repaired screens where necessary. Altered bulk figures to be in line w/ Control Room figures/volumes.
Depth	m	3,256	3,284	3,284	3,284							
FL Temp	Deg C	68										
Density @ Deg C	ppg	9.35 @ 50	9.40 @ 47	9.40 @ 39	9.35 @ 25					9.00	9.50	
FV @ Deg C	sec/qt	66 @ 50	64 @ 47	62 @ 39	58 @ 25							
PV @ Deg C	cP	20 @ 25	20 @ 25	18 @ 25	18 @ 25							
YP	lbs/100 ft2	34	32	30	33							
GELS	lbs/100 ft2	11/14/17	9/14/17	9/13/16	10/14/17							
600/300		74.0/54.0	72.0/52.0	66.0/48.0	69.0/51.0							
200/100		45.0/33.0	43.0/33.0	39.0/30.0	43.0/31.0							
6/3		10.0/8.0	11.0/8.0	10.0/8.0	10.0/8.0							
API Filt	ml/30 min	4.4	4.4	4.4	4.4						4.5	
HTHP @ Deg C	ml/30 min	8.9 @ 49	8.2 @ 49	8.0 @ 49	8.9 @ 49						13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2							
Corr Solid	% by Vol	2.9	3.5	3.5	2.8							
NAP/Water	% by Vol	-/94.0	-/93.3	-/93.3	-/94.0							
Sand	% by vol	0.20	0.20	0.15	0.20						1.0	
MBT	ppb Eq.	10.0	7.5	7.5	10.0						25.0	
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.50 @ 22					8.50	9.50	
ALK Mud	Pm	0.60	0.95	0.85	0.85							
ALK Filt	Pf/Mf	0.28/3.10	0.35/3.30	0.25/3.50	0.24/3.30							
Chlorides	mg/l	38,000	39,000	39,000	38,500							
Tot. Hardness	mg/l	240	280	360	320						400	
LGS/HGS	% by Vol	1.1/1.7	2.1/1.4	2.1/1.4	1.1/1.7							
LGS/HGS	ppb	10.42/25.51	19.18/20.78	19.18/20.78	10.01/25.55							
ASG	SG	3.564	3.242	3.242	3.580							
Additional Properties												Rig Activity
KCl %	-	7.00	6.95	6.95	7.00		X	X		7.00	7.00	Drill 8.5" f/ 3234 - 3283 m. Circ btms up while boosting riser w/ 3 MP. POOH f/ 3283 - shoe. Service TDS. Cont POOH f/ 1965 - surface. L/O Halliburton sources & down load, R/B same & clean floor. HTBT, ran outter barrel f/ derrick 7 P/U inner bbl f/ deck. Secure premier cg control hoses to prevent damage after wind shift. RIH core bbls on BHA f/ 32 - 1125 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	13		5	8	$A7,417.60
potassium hydroxide	20 kg pail	42		10	32	$A1,321.10
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	54			54	
barite	1 tons bulk	159.000			159.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	6			6	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	28			28	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	15			15	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	11			11	
OXYGON	50 lb can	5			5	
PAC-L	25 kg bag	37			37	
Radiagreen EME-Salt	175 kg drum	6			6	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	38			38	

Solids Control Equipment				
Shaker		Screens		Hrs
VSM-300		20 40 40 260 260 260 260		
VSM-300		20 40 40 140 140 140 140		10.0
VSM-300		20 40 40 140 140 140 140		10.0
VSM-300		20 40 40 175 175 175 175		10.0
Hydrocyclone	Cones	Screens		Hrs
Centrifuge	Speed	Feed Rate		Hrs
518	4,000	80.00		18.0
518	4,000	80.00		18.0

Time	
Drilling	7.0
Circulating	0.5
Trips	14.5
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.5
Total	24.0
Rotating	7.0
ROP	23.0
Dil Rate	0.00

Fluid Volume Breakdown		8 1/2" ST-1 KCl/Polymer			
Active	bbl	Additions	bbl	Losses	bbl
Annulus	282.0	Base		Fluid Dumped	-1.9
Pipe Cap	59.8	Drill Water		Transferred	
Active Pits	676.0	Dewatering		SCE	-53.6
Total Hole	858.4	Sea Water		Evaporation	-6.0
Total Circ	1017.8	Whole Mud		Trips	
Reserve	556.0	Barite		Other	
Prev Vol	2135.3	Chemicals	16.7	Total Surface	
Net Change	-44.8	Other		Downhole	
Total Vol	2090.4	Total	16.7	Total Losses	-61.5

Fluid Types	Vol bbl

Deviation Information		
Survey MD	3,203.4	m
Survey TVD	3,031.4	m
Angle	35.56	Deg
Direction	179	
Horiz Displ.	569.7	m

Daily Products Cost	$A8,738.70	Total Daily Cost	$A11,818.70
Cumulative Products Cost	$A860,674.31	Total Cumulative Cost	$A1,039,314.31
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 064

Daily Drilling Fluid Report

Date 31/01/2010		Depth 3,298.0 m	
Spud Date 30/11/2009		Rig Activity POOH 8.5" 2 nd core Interval.	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.35	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,333.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		7:30	14:00	4:00	19:25						
Depth	m	3,293	3,293	3,283	3,298						
FL Temp	Deg C	56									
Density @ Deg C	ppg	9.40 @ 39	9.35 @ 34	9.40 @ 25	9.35 @ 25					9.00	9.50
FV @ Deg C	sec/qt	69 @ 39	67 @ 34	75 @ 25	65 @ 25						
PV @ Deg C	cP	19 @ 25	18 @ 25	18 @ 25	18 @ 25						
YP	lbs/100 ft2	34	33	33	34						
GELS	lbs/100 ft2	10/14/18	9/13/17	10/14/17	10/13/16						
600/300		72.0/53.0	69.0/51.0	69.0/51.0	70.0/52.0						
200/100		42.0/31.0	41.0/32.0	43.0/31.0	42.0/33.0						
6/3		10.0/9.0	10.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.4	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	7.5 @ 49	8.0 @ 49	8.9 @ 49	8.6 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.7	3.4	3.9	3.4						
NAP/Water	% by Vol	-/93.2	-/93.5	-/93.0	-/93.5						
Sand	% by vol	0.20	0.15	0.20	0.20						1.0
MBT	ppb Eq.	7.5	7.5	10.0	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	0.55	0.45	0.65	0.50						
ALK Filt	Pf/Mf	0.25/3.40	0.15/2.85	0.26/3.30	0.25/3.00						
Chlorides	mg/l	38,500	38,500	38,000	38,000						
Tot. Hardness	mg/l	280	240	240	240						400
LGS/HGS	% by Vol	2.4/1.3	2.1/1.2	2.8/1.1	2.2/1.2						
LGS/HGS	ppb	21.44/19.26	19.29/18.17	25.56/16.27	19.69/18.13						
ASG	SG	3.172	3.189	3.052	3.181						
Additional Properties											
KCl %	-	6.95	6.95	7.00	7.00	X	X			7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Maintained properties in active system. Continued to centrifuge to maintain solids & MWt. Maintained screens to assist in solids control. Calibrated mud balances. Maintained chemical inventory.

Rig Activity

RIH f/ 1125 - 3236 m. Wash f/ 3236 - 3283 m. Space out, P/U pup, L/O single, drop ball & seat same. Core f/ 3283 - 3298 m, torque went flat. No penetration. Circ 15 min, pull back 1 std L/O pup. F/C_static. Pump slug, POOH f/ 3236 - surface.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	159.000		17.000	142.000	$A12,419.86
potassium hydroxide	20 kg pail	32		11	21	$A1,453.21
BAROLIFT	15 lb box	11		2	9	$A636.04
OXYGON	50 lb can	5		1	4	$A572.03
ALDACIDE G	25 kg can	8		1	7	$A173.09
EZ-MUD	25 kg pail	15		1	14	$A94.99
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	54			54	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	6			6	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	28			28	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	11			11	
PAC-L	25 kg bag	37			37	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	6			6	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	38			38	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 140 140 140 140	7.0
VSM-300	20 40 40 140 140 140 140	7.0
VSM-300	20 40 40 175 175 175 175	3.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	18.0
518	4,000	80.00	18.0

Time

Drilling	
Circulating	0.5
Trips	20.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	3.0
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	0.5
Total	24.0
Rotating	3.0
ROP	16.4
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	641.0	Dewatering		SCE	-18.0
Total Hole	904.3	Sea Water		Evaporation	-2.7
Total Circ	641.0	Whole Mud		Trips	-3.0
Reserve	550.0	Barite	25.5	Other	
Prev Vol	2090.4	Chemicals	1.3	Total Surface	
Net Change	3.1	Other		Downhole	
Total Vol	2095.3	Total	26.8	Total Losses	-23.7

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,203.4	m
Survey TVD	3,031.4	m
Angle	35.56	Deg
Direction	179	
Horiz Displ.	569.7	m

Daily Products Cost	$A15,349.22	Total Daily Cost	$A18,429.22
Cumulative Products Cost	$A876,023.53	Total Cumulative Cost	$A1,057,743.53

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 065

Daily Drilling Fluid Report

Date 01/02/2010		Depth 3,309.0 m	
Spud Date 30/11/2009		Rig Activity POOH w/ Core Head & BBLS # 3.	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	CORPRO/8.5" X 4" MCP	
Jets		
TFA	1.310	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	316.0	m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit	9.40	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	104.4
Drill Pipe	5.000	3.000	93.9
Drill Collar	6.375	2.875	85.5
Drill Collar	8.250	5.250	32.2
Riser	19.750		100.0
Open Hole	8.500		1,344.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		3:50	8:00	14:00	20:00						
Depth	m	3,298	3,298	3,309	3,309						
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 25	9.35 @ 38	9.40 @ 41	9.40 @ 25					9.00	9.50
FV @ Deg C	sec/qt	55 @ 25	67 @ 38	69 @ 41	68 @ 25						
PV @ Deg C	cP	18 @ 25	15 @ 25	19 @ 25	19 @ 25						
YP	lbs/100 ft2	34	24	35	34						
GELS	lbs/100 ft2	9/13/15	9/13/16	10/14/17	10/14/17						
600/300		70.0/52.0	54.0/39.0	73.0/54.0	72.0/53.0						
200/100		42.0/33.0	33.0/27.0	45.0/34.0	44.0/33.0						
6/3		10.0/8.0	9.0/8.0	11.0/9.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	9.0 @ 49	7.7 @ 49	8.0 @ 49	9.0 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.9	3.4	3.8	3.9						
NAP/Water	% by Vol	-/93.0	-/93.5	-/93.1	-/93.0						
Sand	% by vol	0.20	0.15	0.15	0.20						1.0
MBT	ppb Eq.	10.0	7.5	7.5	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	0.45	0.55	0.85	0.75						
ALK Filt	Pf/Mf	0.24/2.90	0.15/3.35	0.20/3.40	0.20/3.10						
Chlorides	mg/l	38,000	38,500	38,500	38,000						
Tot. Hardness	mg/l	240	360	200	240						400
LGS/HGS	% by Vol	2.8/1.1	2.1/1.2	2.6/1.2	2.8/1.1						
LGS/HGS	ppb	25.56/16.27	19.29/18.17	23.30/17.79	25.56/16.27						
ASG	SG	3.052	3.189	3.114	3.052						
Additional Properties											
KCl %	-	7.00	6.95	6.95	7.00		X	X		7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Cont to centrifuge sand traps & active pit 2 in order to maintain solids content. Cont to maintain volume & properties in active.

Rig Activity

Cont L/O core singles. P/U new inner core barrel. RIH 32 - 547 m. Cut & slip drill line. Cont RIH f/ 547 - 3236 m. M/U TDS was down f/ 3236 - 3298.5 m space out & drop ball. Establish parameters & cut core # 3 f/ 3289.5 - 3309 m. P/U record depth, circ & boost riser. P/B f/ 3309 - 3256 m, F/C_static. Pump slug. Cont POOH f/ 3256 - 316 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	21		11	10	$A1,453.21
soda ash	25 kg bag	38		4	34	$A121.68
ALDACIDE G	25 kg can	7			7	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	54			54	
barite	1 tons bulk	142.000			142.000	
BAROLIFT	15 lb box	9			9	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	6			6	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	28			28	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	14			14	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	11			11	
OXYGON	50 lb can	4			4	
PAC-L	25 kg bag	37			37	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	6			6	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 140 140 140 140	10.0
VSM-300	20 40 40 140 140 140 140	10.0
VSM-300	20 40 40 175 175 175 175	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	20.0
518	4,000	80.00	20.0

Time

Drilling	
Circulating	0.5
Trips	18.5
Rig	2.0
Surveys	
Fishing	
Run Casing	
Coring	2.0
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.0
Total	24.0
Rotating	2.0
ROP	18.0
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	144.5	Base		Fluid Dumped	
Pipe Cap	13.7	Drill Water		Transferred	
Active Pits	649.0	Dewatering		SCE	-66.4
Total Hole	886.0	Sea Water		Evaporation	-3.0
Total Circ	807.2	Whole Mud		Trips	
Reserve	492.0	Barite		Other	
Prev Vol	2095.3	Chemicals	1.2	Total Surface	
Net Change	-68.2	Other		Downhole	
Total Vol	2027.0	Total	1.2	Total Losses	-69.4

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	3,203.4	m
Survey TVD	3,031.4	m
Angle	35.56	Deg
Direction	179	
Horiz Displ.	569.7	m

Daily Products Cost	$A1,574.89	Total Daily Cost	$A4,654.89
Cumulative Products Cost	$A877,598.42	Total Cumulative Cost	$A1,062,398.42

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 066

Daily Drilling Fluid Report

Date 02/02/2010		Depth 3,357.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" ST-1 Interval.	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	SECURITY DBS/FMS3653
Jets	3x15|3x12
TFA	0.849 sq-in
Jets Velocity	225 ft/sec
Jet Impact Force	653.5 lbf
Bit HHSI	2.61 hhp/in2
Press Drop @ Bit	425 psi
Bit Depth	3,357.0 m
ECD @ Csg Shoe	9.99 ppg
ECD @ Bit	10.15 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,143.3
Drill Pipe	5.000	3.000	142.6
Drill Collar	6.750	2.875	71.1
Riser	19.750		100.0
Open Hole	8.500		1,392.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	59	60	0
gpm|bbl/min	296 | 7.05	301 | 7.17	
Total GPM	597	AV, Riser 40.1	Circ Press psi 2310
Total Circ Time	102	AV min DP 268.0	Tot Pres Loss 2030
BU Time , min	45	AV max DC 548.2	Press Drop DP 1055
Total Strokes	12,197	BU Strokes 5,297	Press Drop An 405

Properties		1	2	3	Hyd 4	Targets			Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2					
Time		1:45	9:00	13:00	17:30					
Depth	m	3,309	3,309	3,309	3,317					
FL Temp	Deg C				68					
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 33	9.40 @ 31	9.40 @ 49				9.00	9.50
FV @ Deg C	sec/qt	66 @ 25	71 @ 33	73 @ 31	68 @ 49					
PV @ Deg C	cP	19 @ 25	16 @ 25	18 @ 25	15 @ 25					
YP	lbs/100 ft2	35	28	28	30					
GELS	lbs/100 ft2	10/14/17	9/13/17	9/14/18	11/13/17					
600/300		73.0/54.0	60.0/44.0	64.0/46.0	60.0/45.0					
200/100		45.0/34.0	37.0/28.0	39.0/28.0	38.0/29.0					
6/3		11.0/9.0	9.0/8.0	10.0/8.0	11.0/9.0					
API Filt	ml/30 min	4.4	4.3	4.4	4.4					4.5
HTHP @ Deg C	ml/30 min	9.0 @ 121	7.8 @ 121	8.2 @ 121	8.6 @ 121					13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2					
Corr Solid	% by Vol	3.9	3.7	3.5	4.0					
NAP/Water	% by Vol	-/93.0	-/93.2	-/93.4	-/93.0					
Sand	% by vol	0.20	0.15	0.20	0.20					1.0
MBT	ppb Eq.	10.0	7.5	7.5	10.0					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.80	0.70	0.55	0.60					
ALK Filt	Pf/Mf	0.21/3.20	0.20/3.15	0.15/3.35	0.17/3.10					
Chlorides	mg/l	38,000	38,000	38,000	37,500					
Tot. Hardness	mg/l	240	200	240	280					400
LGS/HGS	% by Vol	2.8/1.1	2.4/1.3	2.0/1.5	2.8/1.1					
LGS/HGS	ppb	25.56/16.27	21.85/19.22	18.14/22.17	25.96/16.23					
ASG	SG	3.052	3.164	3.289	3.046					
Additional Properties										
KCl %	-	7.00	6.95	6.95	6.90		X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add Radiagreen EME to increase concentration to 1% /Volume. Added Circal 60/16 & Circal Y to maintain concentration of bridging agents in both active & premixes to assist in preventing fluid loss. Cont to maintain properties as per program. Prepared premix in pit 1. Maintain fluid volume in active via transfers. Cont to maintain & repair shaker screens as required. Mud filtrate, mud cake & drilling fluid provided to Geologist & MWD's. Off loaded chemical f/ Far Fosna & entered into inventory.

Rig Activity

Cont pull out 374 - 32 m w/ C/bbls. L/O C/bbls inner & outer. Run GeoPilot std f/ derrick & M/U bit. P/U HOC, BAT & ACAL. Down load sperry tools & install sources. RIH w/ 8.5" BHA - 160 m. L/O drilling jar & replace w/ Low Ha jars, cont RIH - 221 m. Shallow test MWD tools. Cont RIH f/ 221 - 1658 m, filling pipe every 20 std's. Cont RIH w/ 8.5" drilling assy - 9 5/8" shoe @ 1965 m. Break circ, space out. Function test BOP - ok, F/C_static, take SCR's. Cont RIH - 3260 m. Log, ream f/ 3260 - 3309 m.
Cont drill 8.5" ST-1 interval f/ 3309 -3357 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Radiagreen EME-Salt	175 kg drum	6		6		$A13,259.88
potassium chloride	1000 kg bag	8		5	3	$A7,417.60
EZ-MUD	25 kg pail	14	32	15	31	$A1,424.85
BARAZAN D PLUS	25 kg bag	54		6	48	$A1,292.04
Circal Y	25 kg bag	32	192	48	176	$A1,291.68
PAC-L	25 kg bag	37		8	29	$A1,282.56
potassium hydroxide	20 kg pail	10		6	4	$A792.66
N-DRIL HT PLUS	50 lb bag	11		5	6	$A744.25
Circal 60/16	25 kg bag		280	50	230	$A634.00
ALDACIDE G	25 kg can	7		2	5	$A346.18
soda ash	25 kg bag	34		4	30	$A121.68
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	142.000			142.000	
BAROLIFT	15 lb box	9			9	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	6	8		14	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	28			28	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGEN	50 lb can	4			4	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 140 140 140 140	15.0
VSM-300	20 40 40 140 140 140 140	15.0
VSM-300	20 40 40 175 175 175 175	15.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	23.0
518	4,000	80.00	23.0

Time

Drilling	5.0
Circulating	1.0
Trips	10.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	3.5
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	8.5
ROP	31.5
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	632.6	Base		Fluid Dumped	
Pipe Cap	185.1	Drill Water	122.0	Transferred	
Active Pits	639.0	Dewatering		SCE	-6.0
Total Hole	817.8	Sea Water		Evaporation	-1.0
Total Circ	1456.8	Whole Mud	8.1	Trips	
Reserve	720.0	Barite		Other	
Prev Vol	2027.0	Chemicals	26.7	Total Surface	
Net Change	149.8	Other		Downhole	
Total Vol	2176.8	Total	156.8	Total Losses	-7.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,324.8 m
Survey TVD	3,130.2 m
Angle	36.06 Deg
Direction	179
Horiz Displ.	640.5 m

Daily Products Cost	$A28,607.38	Total Daily Cost	$A31,687.38
Cumulative Products Cost	$A906,205.80	Total Cumulative Cost	$A1,094,085.80

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 067

Daily Drilling Fluid Report

Date	03/02/2010	**Depth**	3,482.0 m
Spud Date	30/11/2009	**Rig Activity**	POOH 8.5" ST-1 Interval

Operator	ADA DRILLING	**Report For**	Bryan Houston / Kevin Monkhouse
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Brian Meechan / Ole Andreasen
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	3x15|3x12	
TFA	0.849	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,965.0	m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit	9.30	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,751.3
Drill Pipe	5.000	3.000	142.6
Drill Collar	6.750	2.875	71.1
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		1:15	7:00	13:30	19:30						
Depth	m	3,364	3,408	3,479	3,482						
FL Temp	Deg C	69	69	69							
Density @ Deg C	ppg	9.40 @ 49	9.40 @ 55	9.35 @ 52	9.30 @ 33					9.00	9.50
FV @ Deg C	sec/qt	67 @ 49	57 @ 55	57 @ 52	59						
PV @ Deg C	cP	15 @ 25	19 @ 25	20 @ 25	20 @ 25						
YP	lbs/100 ft2	29	36	36	35						
GELS	lbs/100 ft2	11/14/18	10/15/19	10/14/19	10/14/19						
600/300		59.0/44.0	74.0/55.0	76.0/56.0	75.0/55.0						
200/100		38.0/29.0	46.0/34.0	47.0/35.0	46.0/34.0						
6/3		10.0/8.0	11.0/8.0	11.0/9.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.3	4.2	4.3						4.5
HTHP @ Deg C	ml/30 min	8.1 @ 121	7.2 @ 121	6.8 @ 121	7.5 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	4.0	3.7	3.4	3.9						
NAP/Water	% by Vol	-/93.0	-/93.2	-/93.5	-/93.0						
Sand	% by vol	0.20	0.15	0.20	0.25						1.0
MBT	ppb Eq.	10.0	7.5	7.5	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	0.65	0.45	0.65	0.60						
ALK Filt	Pf/Mf	0.22/2.90	0.15/3.25	0.20/3.30	0.21/3.40						
Chlorides	mg/l	37,500	38,500	37,500	38,000						
Tot. Hardness	mg/l	280	200	160	200						400
LGS/HGS	% by Vol	2.8/1.1	2.4/1.3	2.2/1.2	3.6/0.4						
LGS/HGS	ppb	25.96/16.23	21.44/19.26	20.10/18.09	32.38/5.24						
ASG	SG	3.046	3.172	3.173	2.746						
Additional Properties											
KCl %	-	6.90	7.00	6.95	6.90	X		X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Maintained properties in active. Made premix in pit 4. Continue to run centrifuges to prevent solids build in fluid. Change out & repair shaker screens as required. Conducted a full screen & chem inventory for back load. Provided Geologist & SLB w/ filtrate, mud cake & mud samples. Had small issue w/ barite hopper. Charged off all bulks both Brine & Barite, so figure correlate w/ Control Room figures.

Rig Activity

Drill 8.5" ST-1 f/ 3357 - 3482 m. Circ, F/C_static. Pump 20 bbl BAROLIFT pill, circ shakers clean. F/C_static. POOH f/ 3482 - 3309 m. RIH f/ 3309 - 3482 m. CIrc hole clean while reciprocating pipe. F/C for 15 mins_static. P/B - 3300 m. Pump 16 bbl, 11.1 ppg slug. POOH - 9 5/8" csg shoe 1965 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	142.000		8.000	134.000	$A5,844.64
Techmesh 260(API 140)	1 each box	12		6	6	$A3,512.40
CLAYSEAL PLUS	55 gal drum	14		2	12	$A3,019.14
PAC-L	25 kg bag	29		16	13	$A2,565.12
OXYGON	50 lb can	4		4		$A2,288.12
BARAZAN D PLUS	25 kg bag	48		8	40	$A1,722.72
potassium chloride	1000 kg bag	3		1	2	$A1,483.52
DEXTRID LTE	25 kg sack	28		28		$A1,483.44
EZ-MUD	25 kg pail	31		15	16	$A1,424.85
Circal Y	25 kg bag	176		48	128	$A1,291.68
N-DRIL HT PLUS	50 lb bag	6		6		$A893.10
soda ash	25 kg bag	30		21	9	$A638.82
Circal 60/16	25 kg bag	230		45	185	$A570.60
potassium hydroxide	20 kg pail	4		4		$A528.44
ALDACIDE G	25 kg can	5		3	2	$A519.27
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BAROLIFT	15 lb box	9			9	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	8.0
VSM-300	20 40 40 100 100 100 100	19.0
VSM-300	20 40 40 260 260 260 260	19.0
VSM-300	20 40 40 260 260 260 260	19.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	23.0
518	4,000	80.00	23.0

Time

Drilling	14.5
Circulating	3.0
Trips	5.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.0
Total	24.0
Rotating	14.5
ROP	28.3
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	428.6	Base		Fluid Dumped	
Pipe Cap	105.8	Drill Water	134.0	Transferred	
Active Pits	597.0	Dewatering		SCE	-58.0
Total Hole	883.7	Sea Water		Evaporation	-9.8
Total Circ	1131.4	Whole Mud		Trips	-8.0
Reserve	788.0	Barite	12.0	Other	
Prev Vol	2176.8	Chemicals	21.9	Total Surface	
Net Change	92.1	Other		Downhole	
Total Vol	2268.7	Total	167.9	Total Losses	-75.8

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A27,785.86	Total Daily Cost	$A30,865.86
Cumulative Products Cost	$A933,991.66	Total Cumulative Cost	$A1,124,951.66

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 068

Daily Drilling Fluid Report

Date 04/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity CMR Wire Line Logs ST-1	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		4:00	10:00	14:00	22:00			
Depth	m	3,482	3,482	3,482	3,482			
FL Temp	Deg C							
Density @ Deg C	ppg	9.30 @ 25	9.30 @ 32	9.30 @ 23	9.30 @ 23		9.00	9.50
FV @ Deg C	sec/qt	57 @ 25	63 @ 32	65 @ 23	63 @ 23			
PV @ Deg C	cP	20 @ 25	18 @ 25	18 @ 25	18 @ 25			
YP	lbs/100 ft2	35	38	33	34			
GELS	lbs/100 ft2	10/14/19	10/14/17	9/13/16	10/14/17			
600/300		75.0/55.0	74.0/56.0	69.0/51.0	70.0/52.0			
200/100		46.0/34.0	45.0/33.0	42.0/30.0	43.0/31.0			
6/3		10.0/8.0	10.0/9.0	10.0/8.0	10.0/8.0			
API Filt	ml/30 min	4.3	4.3	4.3	4.3			4.5
HTHP @ Deg C	ml/30 min	7.2 @ 121	6.8 @ 121	7.0 @ 121	7.3 @ 121			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	3.9	3.2	3.2	3.9			
NAP/Water	% by Vol	-/93.0	-/93.7	-/93.7	-/93.0			
Sand	% by vol	0.25	0.15	0.15	0.20			1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	0.60	0.60	0.55	0.60			
ALK Filt	Pf/Mf	0.23/3.00	0.20/3.25	0.15/3.45	0.18/3.30			
Chlorides	mg/l	38,000	38,000	38,000	38,000			
Tot. Hardness	mg/l	200	120	80	120			400
LGS/HGS	% by Vol	3.6/0.4	2.1/1.1	2.1/1.1	3.6/0.4			
LGS/HGS	ppb	32.38/5.24	19.40/15.57	19.40/15.57	32.38/5.24			
ASG	SG	2.746	3.131	3.131	2.746			
Additional Properties								
KCl %	-	6.90	7.00	7.00	6.90	X X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Continue to Maintain KCl- PHPA properties. Begin to load Chem into containers, for back load. Cont to conduct inventories. Inventories will be adjusted once chem/containers are on the boat.

Rig Activity

F/C_static. Service TDS. Cont POOH 1965 - 375 m, F/C_static pull BHA - 212 m. Remove Sperry R/A sources & shut down tools. L/O 8.5" stab, Float Stab, A CAL, HOC, Bat Sonic, PWD, CTN, ALD tab, B/O bit, L/O DGR & EWR, RLL Stab, NM Flex Jt, & GEOPILOT. HTBT R/U - wireline & P/U CMR tools. Log down - 4380 m. Log Up f/ 3480 - 195 m. Process data - RIH f/ 1965 - 3135 m. Correlate & tune tools. RIH f/ 3135 - 3330 m. Log up repeat. Log up main.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	12		3	9	$A4,528.71
Circal 60/16	25 kg bag	185		11	174	$A139.48
ALDACIDE G	25 kg can	2			2	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	40			40	
barite	1 tons bulk	134.000			134.000	
BAROLIFT	15 lb box	9			9	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	128			128	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
PAC-L	25 kg bag	13			13	
potassium chloride	1000 kg bag	2			2	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	9			9	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
STEELSEAL 100	50 lb sack	40			40	
STEELSEAL 400	50 lb sack	40			40	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 100 100 100 100	2.0
VSM-300	20 40 40 260 260 260 260	2.0
VSM-300	20 40 40 260 260 260 260	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	3.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	14.5
Dir Work	
Repair	
Other	6.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	150.0	Transferred	
Active Pits	604.0	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	-9.5
Total Circ	604.0	Whole Mud		Trips	-15.0
Reserve	848.0	Barite		Other	
Prev Vol	2268.7	Chemicals	4.6	Total Surface	
Net Change	130.1	Other		Downhole	
Total Vol	2398.7	Total	154.6	Total Losses	-24.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A4,668.19	Total Daily Cost	$A7,748.19
Cumulative Products Cost	$A938,659.85	Total Cumulative Cost	$A1,132,699.85
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 069

Daily Drilling Fluid Report

Date 05/02/2010	**Depth** 3,482.0 m		
Spud Date 30/11/2009	**Rig Activity** MDT Wire Line Logs ST-1		
Operator ADA DRILLING	**Report For** Bryan Houston / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard/Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
			OD	ID	Length	OD	Set	MD				
Bit Size	in					30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type						13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets						9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in								Eff(%)	97	97	97
Jets Velocity	ft/sec								bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf								SPM	0	0	0
Bit HHSI	hhp/in2								gpm|bbl/min			
Press Drop @ Bit	psi								Total GPM		AV, Riser	Circ Press psi
Bit Depth	3,482.0 m	Riser	19.750		100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	9.30 ppg	Open Hole	8.500		1,517.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg					Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	Hyd 4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2	Pit #2							**Fluid Type** 8 1/2" ST-1 KCl/Polymer
Time		3:45	9:45	14:00	21:30							Continue to maintain properties a per program. Transfer KCL- PHPA reserve fluid into active to maintain volume & MWt. Mi Swaco centrifuge hand performed PM's on equipment. Continue to check chem & backload onto Far Fosna.
Depth	m	3,482	3,482	3,482	3,482							
FL Temp	Deg C											
Density @ Deg C	ppg	9.30 @ 23	9.30 @ 21	9.30 @ 20	9.30 @ 25					9.00	9.50	
FV @ Deg C	sec/qt	62 @ 23	66 @ 21	68 @ 20	66 @ 25							
PV @ Deg C	cP	18 @ 25	18 @ 25	18 @ 25	19 @ 25							
YP	lbs/100 ft2	35	28	33	32							
GELS	lbs/100 ft2	10/14/17	9/13/16	10/14/18	10/14/19							
600/300		71.0/53.0	64.0/46.0	69.0/51.0	70.0/51.0							
200/100		44.0/31.0	37.0/29.0	42.0/33.0	42.0/33.0							
6/3		10.0/8.0	9.0/8.0	10.0/9.0	10.0/8.0							
API Filt	ml/30 min	4.3	4.2	4.2	4.3						4.5	
HTHP @ Deg C	ml/30 min	7.2 @ 121	6.6 @ 121	6.8 @ 121	7.0 @ 121						13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2							
Corr Solid	% by Vol	2.9	3.1	3.1	2.9							
NAP/Water	% by Vol	-/94.0	-/93.7	-/93.7	-/94.0							
Sand	% by vol	0.20	0.20	0.20	0.25						1.0	
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0	
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50	
ALK Mud	Pm	0.60	0.60	0.45	0.40							
ALK Filt	Pf/Mf	0.18/3.20	0.20/2.95	0.15/3.05	0.20/3.00							
Chlorides	mg/l	38,000	38,500	38,500	38,000							
Tot. Hardness	mg/l	120	160	120	120						400	
LGS/HGS	% by Vol	1.5/1.4	2.1/1.1	2.1/1.1	1.5/1.4							
LGS/HGS	ppb	13.83/20.00	18.99/15.61	18.99/15.61	13.83/20.00							
ASG	SG	3.356	3.140	3.140	3.356							
Additional Properties												
KCl %	-	6.90	6.95	6.95	6.90	X	X	X	X	7.00	7.00	

Rig Activity

Cont W/L log # 1 - 3480.5 m. POOH - surface. SLB remove R/A sources & tools. SLB M/U tool head & tools for run # 2. L/O logging tools. RIH w/ SLB MDT string # 2 - 2135 m. Drop off test. Take pressure points between 2135 - 3320 m. Tool String = XPT, GR, ECRD,LEHQT.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	2		1	1	$A1,483.52
BARAZAN D PLUS	25 kg bag	40		1	39	$A215.34
ALDACIDE G	25 kg can	2			2	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6				
barite	1 tons bulk	134.000			134.000	
BAROLIFT	15 lb box	9				
BARO-SEAL FINE	40 lb bag	40				
BARO-SEAL MEDIUM	40 lb bag	70				
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	128			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	9			5	
CON DET	5 gal can	32				
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	9			9	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
STEELSEAL 100	50 lb sack	40				
STEELSEAL 400	50 lb sack	40				

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	5.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	18.5
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	624.0	Dewatering		SCE	-15.0
Total Hole	946.7	Sea Water		Evaporation	-1.0
Total Circ	624.0	Whole Mud		Trips	-4.0
Reserve	811.3	Barite		Other	
Prev Vol	2398.7	Chemicals	3.3	Total Surface	
Net Change	-16.7	Other		Downhole	
Total Vol	2382.0	Total	3.3	Total Losses	-20.0

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A1,698.86	Total Daily Cost	$A4,778.86
Cumulative Products Cost	$A940,358.71	Total Cumulative Cost	$A1,137,478.71
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 070

Daily Drilling Fluid Report

Date 06/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity Wireline Run 3 Quick Silver Probe MDT	
Operator ADA DRILLING	Report For Bryan Houston / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	3,482.0	m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	Hyd 3	4	Targets			Program	
Source		Pit #2	Pit #2	Pit #2						
Time		8:00	14:00	20:00						
Depth	m	3,482	3,482	3,482						
FL Temp	Deg C									
Density @ Deg C	ppg	9.30 @ 23	9.30 @ 21	9.30 @ 20					9.00	9.50
FV @ Deg C	sec/qt	69 @ 23	70 @ 21	72 @ 20						
PV @ Deg C	cP	15 @ 25	16 @ 25	16 @ 25						
YP	lbs/100 ft2	27	26	27						
GELS	lbs/100 ft2	9/13/15	9/13/16	9/13/15						
600/300		57.0/42.0	58.0/42.0	59.0/43.0						
200/100		36.0/27.0	37.0/29.0	38.0/30.0						
6/3		9.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.2	4.3						4.5
HTHP @ Deg C	ml/30 min	6.8 @ 121	7.0 @ 121	7.0 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2						
Corr Solid	% by Vol	3.4	3.1	3.4						
NAP/Water	% by Vol	-/93.5	-/93.7	-/93.5						
Sand	% by vol	0.15	0.15	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	1.45	1.60	1.50						
ALK Filt	Pf/Mf	0.45/3.55	0.45/3.30	0.45/3.00						
Chlorides	mg/l	38,000	38,500	38,000						
Tot. Hardness	mg/l	160	160	160						400
LGS/HGS	% by Vol	2.5/0.9	2.1/1.1	2.5/0.9						
LGS/HGS	ppb	23.11/12.62	18.99/15.61	23.11/12.62						
ASG	SG	3.004	3.140	3.004						
Additional Properties										
KCl %	-	6.95	6.95	6.90		X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Received KOH off Far Fosna & maintained pH of fluid in Pit 3 & 4. Continued maintaining properties in Active pit 2 as/ program. Begin to clean empty Pit 1 w/ sea water, after transferring remaining KCl- PHPA volume over to active. Cont to maintain volume in active using Pits 3 & 4.
Changed shaker 1,3 & 4 to 140 mesh screens. Shaker 2 has 100 mesh on btms.

Rig Activity

Cont - log # 2 taking pressure points f/ 3320 - 2135.5 m. Correlate tools @ 3303 m string # 2 = XPT, GR, ECRD & LEHQT. POOH w/ string # 2 & R/D same. SLB R/U & test string # 3 Quick Silver Probe MDT. RIH - 1965 m Enter O/H - difficulties getting down 2 K over. Correlate tools. Drop off test. Start sampling @ 2941 m. Correlate & POOH - 2772 m & start sampling. RIH - 3435 m start sampling @ 3409 - 2415 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail		32	12	20	$A1,585.32
BARAZAN D PLUS	25 kg bag	39		2	37	$A430.68
ALDACIDE G	25 kg can	2			2	
Amodrill 1235	1 bbl bulk	19.400			19.400	
barite	1 tons bulk	134.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
potassium chloride	1000 kg bag	1			1	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	9			9	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 140 140 140 140	
VSM-300	20 40 40 100 100 100 100	
VSM-300	20 40 40 140 140 140 140	
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	5.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	19.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	704.0	Dewatering		SCE	-30.0
Total Hole	946.7	Sea Water		Evaporation	-5.5
Total Circ	704.0	Whole Mud		Trips	
Reserve	697.0	Barite		Other	
Prev Vol	2382.0	Chemicals	1.2	Total Surface	
Net Change	-34.3	Other		Downhole	
Total Vol	2347.7	Total	1.2	Total Losses	-35.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A2,016.00	Total Daily Cost	$A5,096.00
Cumulative Products Cost	$A942,374.71	Total Cumulative Cost	$A1,142,574.71
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 071

Daily Drilling Fluid Report

Date 07/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity W/L QUICK SILVER PROBE MDT Run 3	
Operator ADA DRILLING	Report For Bryan Houston / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	3,482.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		14:00	9:30					
Depth	m	3,482	3,482					
FL Temp	Deg C							
Density @ Deg C	ppg	9.30 @ 19	9.30 @ 20				9.00	9.50
FV @ Deg C	sec/qt	74 @ 19	71 @ 20					
PV @ Deg C	cP	16 @ 25	15 @ 25					
YP	lbs/100 ft2	25	26					
GELS	lbs/100 ft2	9/13/16	9/12/15					
600/300		57.0/41.0	56.0/41.0					
200/100		36.0/27.0	35.0/26.0					
6/3		9.0/8.0	9.0/8.0					
API Filt	ml/30 min	4.4	4.3					4.5
HTHP @ Deg C	ml/30 min	7.2 @ 121	7.0 @ 121					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.0					
NAP/Water	% by Vol	-/93.8	-/93.8					
Sand	% by vol	0.15	0.15					1.0
MBT	ppb Eq.	5.0	5.0					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.70	0.85					
ALK Filt	Pf/Mf	0.20/2.90	0.25/3.15					
Chlorides	mg/l	38,500	38,500					
Tot. Hardness	mg/l	160	120					400
LGS/HGS	% by Vol	1.9/1.2	1.9/1.2					
LGS/HGS	ppb	17.13/17.09	17.13/17.09					
ASG	SG	3.211	3.211					
Additional Properties								
KCl %	-	6.95	6.95			X X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

175 bbl Sea Water used to clean pit 1 treated to sea. Cont to maintain KCl-PHPA properties.

Rig Activity

Cont SLB W/L Quick Silver Probe MDT run 3, f/ 3410 - 3183.2 m sampling.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	1		1		$A1,483.52
potassium hydroxide	20 kg pail	20		2	18	$A264.22
ALDACIDE G	25 kg can	2		1	1	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	9			9	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	704.0	Dewatering		SCE	-175.0
Total Hole	946.7	Sea Water		Evaporation	-5.5
Total Circ	704.0	Whole Mud		Trips	
Reserve	520.0	Barite		Other	
Prev Vol	2347.7	Chemicals	3.5	Total Surface	
Net Change	-177.0	Other		Downhole	
Total Vol	2170.7	Total	3.5	Total Losses	-180.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A1,920.83	Total Daily Cost	$A5,000.83
Cumulative Products Cost	$A944,295.54	Total Cumulative Cost	$A1,147,575.54

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 072

Daily Drilling Fluid Report

Date 08/02/2010	**Depth** 3,482.0 m		
Spud Date 30/11/2009	**Rig Activity** POOH Run 4 FMI-OSI Wireline		
Operator ADA DRILLING	**Report For** Bryan Houston / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard/Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in						30.000	@	158.0
Make/Type							13.375	@	961.0
Jets							9.625	@	1,965.0
TFA	sq-in								
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	3,482.0 m	Riser	19.750		100.0				
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,517.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		2:00	8:00	14:00	22:00						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C										
Density @ Deg C	ppg	9.30 @ 21	9.30 @ 18	9.30 @ 17	9.30 @ 18					9.00	9.50
FV @ Deg C	sec/qt	70 @ 21	72 @ 18	75 @ 17	77 @ 18						
PV @ Deg C	cP	16 @ 25	15 @ 25	15 @ 25	15 @ 25						
YP	lbs/100 ft2	27	27	28	29						
GELS	lbs/100 ft2	9/13/15	9/13/17	9/13/18	10/14/19						
600/300		59.0/43.0	57.0/42.0	58.0/43.0	59.0/44.0						
200/100		35.0/28.0	36.0/27.0	36.0/28.0	37.0/29.0						
6/3		10.0/8.0	9.0/8.0	9.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	7.1 @ 121	6.8 @ 121	7.2 @ 121	7.8 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.1	3.0	3.0	3.4						
NAP/Water	% by Vol	-/93.8	-/93.8	-/93.8	-/93.5						
Sand	% by vol	0.20	0.15	0.15	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	0.60	1.55	0.95	1.00						
ALK Filt	Pf/Mf	0.20/3.00	0.35/3.15	0.25/3.05	0.20/2.90						
Chlorides	mg/l	38,000	38,500	38,500	38,000						
Tot. Hardness	mg/l	160	120	160	160						400
LGS/HGS	% by Vol	1.9/1.2	1.9/1.2	1.9/1.2	2.5/0.9						
LGS/HGS	ppb	17.54/17.05	17.13/17.09	17.13/17.09	23.11/12.62						
ASG	SG	3.201	3.211	3.211	3.004						
Additional Properties											
KCl %	-	6.90	6.95	6.95	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Whilst boosting riser add potassium hydroxide(KOH) to maintain pH & soda ash to reduce hardness. Conduct full used screen inventory.

Rig Activity

SLB W/L Cont run 3 f/ 3183 - 3109 m. POOH run 3 - surface. L/O tools. Test & M/U FMI - OSI tools for Run 4. RIH - 1965 m. Log down f/ 1965 - 3375 m. Log up f/ 3365 - 1965 m shoe. POOH w/ FMI - OSI W/L run 4 - surface.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	18		2	16	$A264.22
soda ash	25 kg bag	9		1	8	$A30.42
ALDACIDE G	25 kg can	1			1	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	4.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	17.5
Dir Work	
Repair	
Other	2.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	704.0	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	-0.3
Total Circ	704.0	Whole Mud		Trips	
Reserve	520.0	Barite		Other	
Prev Vol	2170.7	Chemicals	0.2	Total Surface	
Net Change	-0.1	Other		Downhole	
Total Vol	2170.7	Total	0.2	Total Losses	-0.3

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A294.64	Total Daily Cost	$A3,374.64
Cumulative Products Cost	$A944,590.18	Total Cumulative Cost	$A1,150,950.18
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 073

Daily Drilling Fluid Report

Date 09/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity SLB W/L Under Tension.	
Operator ADA DRILLING	Report For Bryan Houston / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in						30.000	@	158.0
Make/Type							13.375	@	961.0
Jets							9.625	@	1,965.0
TFA	sq-in								
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	3,482.0 m	Riser	19.750		100.0				
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,517.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		3:00	9:00	14:00	21:00						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C										
Density @ Deg C	ppg	9.30 @ 18	9.30 @ 19	9.30 @ 19	9.30 @ 18					9.00	9.50
FV @ Deg C	sec/qt	77 @ 18	77 @ 19	79 @ 19	78 @ 19						
PV @ Deg C	cP	14 @ 25	15 @ 25	15 @ 25	15 @ 25						
YP	lbs/100 ft2	31	25	24	25						
GELS	lbs/100 ft2	10/14/19	8/12/16	9/12/15	10/14/18						
600/300		59.0/45.0	55.0/40.0	54.0/39.0	55.0/40.0						
200/100		38.0/29.0	34.0/26.0	33.0/26.0	34.0/27.0						
6/3		10.0/8.0	9.0/7.0	9.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	7.2 @ 121	7.0 @ 121	7.2 @ 121	7.1 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.4	3.0	3.0	3.4						
NAP/Water	% by Vol	-/93.5	-/93.8	-/93.8	-/93.5						
Sand	% by vol	0.20	0.15	0.15	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.00 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	0.45	0.45	0.35	0.40						
ALK Filt	Pf/Mf	0.25/2.90	0.15/3.35	0.10/3.30	0.10/3.00						
Chlorides	mg/l	38,000	38,500	38,500	38,000						
Tot. Hardness	mg/l	160	80	120	160						400
LGS/HGS	% by Vol	2.5/0.9	1.9/1.2	1.9/1.2	2.5/0.9						
LGS/HGS	ppb	23.11/12.62	17.13/17.09	17.13/17.09	23.11/12.62						
ASG	SG	3.004	3.211	3.211	3.004						
Additional Properties											
KCl %	-	0.00	6.95	6.95	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

6 ALDACIDE G added to inventory came off Far Fosna. Cont maintain properties fluid to targets.

Rig Activity

HTBT R/D FMI string 4. Slb W/L R/U Seismic string 5. Guns in water on stbd crane. SLB W/L RIH w/ Seismic string 5 - 3370 m. Log out 3370 - 1600 m. POOH - surface. L/O seismic string 5 tools. M/U MSCT string 6 tools. RIH MSCT logging string 6 - 3420 m, correlate. Core 3420 - 3316 m, correlate log. Core f/ 3300 - 3137 m core # 26. SLB W/L under tension. Attempt to wok loose.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	16		4	12	$A528.44
ALDACIDE G	25 kg can	1	6	1	6	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	8			8	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 50 50 50 50	
VSM-300	20 40 40 100 100 100 100	
VSM-300	20 40 40 50 50 50 50	
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	10.0
Dir Work	
Repair	
Other	7.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	649.0	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	-4.4
Total Circ	649.0	Whole Mud		Trips	-3.0
Reserve	568.0	Barite		Other	
Prev Vol	2170.7	Chemicals	0.5	Total Surface	
Net Change	-6.9	Other		Downhole	
Total Vol	2163.7	Total	0.5	Total Losses	-7.4

Fluid Types	Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A701.53	Total Daily Cost	$A3,781.53
Cumulative Products Cost	$A945,291.71	Total Cumulative Cost	$A1,154,731.71
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 074

Daily Drilling Fluid Report

Date 10/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity POOH W/ Fishing Assy	
Operator ADA DRILLING	Report For Bryan Houston / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	7.500	in
Make/Type	N/A/F.S. Overshot	
Jets		
TFA	1.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	954.0	m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit	9.30	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.184	951.1
Drill Collar	4.688	2.500	2.9
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		3:00	12:15	16:00	22:40						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C		38	48							
Density @ Deg C	ppg	9.30 @ 19	9.35 @ 25	9.35 @ 32	9.30 @ 26					9.00	9.50
FV @ Deg C	sec/qt	78 @ 19	75 @ 25	77 @ 32	69 @ 26						
PV @ Deg C	cP	15 @ 25	17 @ 25	18 @ 25	18 @ 25						
YP	lbs/100 ft2	23	31	38	37						
GELS	lbs/100 ft2	8/12/15	10/14/18	11/15/21	11/15/21						
600/300		53.0/38.0	65.0/48.0	74.0/56.0	73.0/55.0						
200/100		32.0/24.0	40.0/31.0	48.0/37.0	47.0/36.0						
6/3		9.0/7.0	11.0/8.0	12.0/10.0	11.0/9.0						
API Filt	ml/30 min	4.3	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	7.2 @ 121	7.0 @ 121	7.5 @ 121	7.7 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.0	3.4	3.4	2.9						
NAP/Water	% by Vol	-/93.8	-/93.5	-/93.5	-/94.0						
Sand	% by vol	0.15	0.15	0.15	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.00 @ 22	8.50 @ 22	8.50 @ 22	8.50 @ 22					8.50	9.50
ALK Mud	Pm	0.35	0.15	0.20	0.20						
ALK Filt	Pf/Mf	0.10/3.35	0.05/3.15	0.05/3.34	0.10/3.55						
Chlorides	mg/l	38,500	38,500	38,000	38,000						
Tot. Hardness	mg/l	80	120	240	280						400
LGS/HGS	% by Vol	1.9/1.2	2.1/1.2	2.2/1.2	1.5/1.4						
LGS/HGS	ppb	17.13/17.09	19.29/18.17	19.69/18.13	13.83/20.00						
ASG	SG	3.211	3.189	3.181	3.356						
Additional Properties											
KCl %	-	6.95	6.95	6.90	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

On circulating @ shoe add potassium hydroxide to maintain pH.
Change out lower deck screens to coarser mesh to avoid stripping out calcium carbonate bridging agents. Divert bottom's up return to empty pit for treatment. Replace volume with in-spec surface fluid. Add soda ash to reduce hardness. Add ALDACIDE G to inhibit bacterial growth. Prepare slug.

Rig Activity

SLB held tension on W/L & attempt to free. Attach "t" bars to W/L & TDS & pull. W/L shear pin broke free @ 10 K O/P. POOH W/ SLB W/L, R/D SLB. P/U o'shot assy & M/U to std # 1. Service TDS. TOFS- dropped object survey TDS. RIH w/ fishing assy - 1965 m. Estab circ & increased 700 gpm, 140 spm, 1630 psi. Cont RIH f/ 1965 - 3110 m. Circ & condition mud, take SCR's. Reduce stks, lower O/S fish, engage fish. Shut down pump, P/U O/S 3117 m, confirm fish engaged. F/C pump slug & POOH - shoe. F/C_static. Service TDS. Cont POOH w/ fishing assy - 954 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	12		6	6	$A792.66
ALDACIDE G	25 kg can	6		1	5	$A173.09
soda ash	25 kg bag	8		1	7	$A30.42
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	4.0
VSM-300	20 40 40 100 100 100 100	4.0
VSM-300	40 40 40 80 80 80 80	4.0
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	13.5
Rig	1.0
Surveys	
Fishing	1.5
Run Casing	
Coring	
Reaming	
Testing	
Logging	3.0
Dir Work	
Repair	
Other	5.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	261.8	Base		Fluid Dumped	
Pipe Cap	53.7	Drill Water		Transferred	
Active Pits	663.0	Dewatering		SCE	-37.0
Total Hole	921.2	Sea Water		Evaporation	-2.1
Total Circ	978.5	Whole Mud		Trips	-5.0
Reserve	536.0	Barite		Other	
Prev Vol	2163.7	Chemicals	0.7	Total Surface	
Net Change	-43.4	Other		Downhole	
Total Vol	2120.2	Total	0.7	Total Losses	-44.1

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A996.17	Total Daily Cost	$A4,076.17
Cumulative Products Cost	$A946,287.88	Total Cumulative Cost	$A1,158,807.88

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 075

Daily Drilling Fluid Report

Date 11/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity Wash & Ream.	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity	192	ft/sec
Jet Impact Force	515.3	lbf
Bit HHSI	1.75	hhp/in2
Press Drop @ Bit	309	psi
Bit Depth	3,482.0	m
ECD @ Csg Shoe	9.96	ppg
ECD @ Bit	10.14	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	3.000	3,310.9
Drill Pipe	3.450	3.000	141.7
Drill Collar	6.750	3.000	27.9
Other	8.125	0.000	1.5
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600			
Bore in	6.500	6.500	6.500			
Strokes in	12.000	12.000	12.000			
Eff(%)	97	97	97			
bbl/strk	0.119	0.119	0.119			
SPM	55	55	0			
gpm|bbl/min	276	6.57	276	6.57		
Total GPM	552	AV, Riser	37.0	Circ Press psi	1630	
Total Circ Time	103	AV min DP	224.1	Tot Pres Loss	4157	
BU Time , min	50	AV max DC	506.8	Press Drop DP	3310	
Total Strokes	11,379	BU Strokes	5,533	Press Drop An	407	

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		3:00	9:00	14:00	22:00						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C				68						
Density @ Deg C	ppg	9.30 @ 20	9.30 @ 25	9.35 @ 20	9.40 @ 50					9.00	9.50
FV @ Deg C	sec/qt	77 @ 20	72 @ 25	70 @ 20	65 @ 50						
PV @ Deg C	cP	18 @ 25	16 @ 25	16 @ 25	16 @ 25						
YP	lbs/100 ft2	39	33	28	29						
GELS	lbs/100 ft2	11/15/21	11/14/17	8/12/14	9/13/15						
600/300		75.0/57.0	65.0/49.0	60.0/44.0	61.0/45.0						
200/100		49.0/38.0	40.0/31.0	37.0/28.0	38.0/29.0						
6/3		11.0/9.0	10.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.4	4.5	4.5						4.5
HTHP @ Deg C	ml/30 min	7.7 @ 121	7.2 @ 121	8.0 @ 121	7.7 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	2.9	3.0	3.2	2.8						
NAP/Water	% by Vol	-/94.0	-/93.8	-/93.5	-/94.0						
Sand	% by vol	0.20	0.20	0.20	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		8.50 @ 22	8.50 @ 22	8.50 @ 20	8.50 @ 20					8.50	9.50
ALK Mud	Pm	0.20	0.25	0.20	0.25						
ALK Filt	Pf/Mf	0.90/3.40	0.10/3.20	0.10/2.80	0.10/3.40						
Chlorides	mg/l	38,000	38,500	40,000	39,000						
Tot. Hardness	mg/l	280	240	320	280						400
LGS/HGS	% by Vol	1.5/1.4	1.9/1.2	2.0/1.2	0.7/2.1						
LGS/HGS	ppb	13.83/20.00	17.13/17.09	18.06/18.30	6.19/31.11						
ASG	SG	3.356	3.211	3.217	3.811						
Additional Properties											
KCl %	-	6.90	6.90	6.90	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Prepared 8.8 ppg Lo-Weight and 10.3 ppg Hi Weight pills as per prog.
Prepared 10.3 ppg slug. Conditioned & Maintained active system w/ bridging agents & PAC LE. Treated active mud w/ KOH for alkalinity.
Diverted heavy contaminated mud w/ CO2 into pit 1. Maintain active mud weight at 9.3 ppg w/ premix from pit 4. Radiagreen - 1.4 %

Rig Activity

Cont POOH w/ fish assy f/ 954 - surface. F/C_static prior - pulling pipe through BHA.SLB L/O fish (100%), L/O o' shot & fish assy. Run BHA f/ derrick, P/U stab, bit sub, 8.5" bit, 1 stg stb - 89 m. Jet WH w/ bit f/ 89 - 174 m. M/U BHA test assy & RIH . L/O in WH @ 95 m w/ 40K under. HTBT, BOP test / Maersk precedures. Unseat BOP test tool, POOH - 174 m, L/O assy & install diverter packer. RIH f/ 174 - 1965 m. Estab circ @ shoe, cont RIH f/ 1965 - 3470 m. Circ btms up f/ 3150 - 3470 & worked tight spots, up & down.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	13		4	9	$A641.28
potassium hydroxide	20 kg pail	6		1	5	$A132.11
Circal 60/16	25 kg bag	174		6	168	$A76.08
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	7			7	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	6.0
VSM-300	20 40 40 100 100 100 100	10.0
VSM-300	40 40 40 80 80 80 80	10.0
VSM-300	20 40 40 140 140 140 140	7.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	6.0
Rig	5.0
Surveys	
Fishing	4.5
Run Casing	
Coring	
Reaming	3.0
Testing	
Logging	
Dir Work	
Repair	
Other	3.5
Total	24.0
Rotating	3.0
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	660.8	Base		Fluid Dumped	
Pipe Cap	100.2	Drill Water		Transferred	
Active Pits	598.0	Dewatering		SCE	-37.0
Total Hole	761.1	Sea Water		Evaporation	-12.0
Total Circ	1359.1	Whole Mud		Trips	-9.0
Reserve	690.0	Barite		Other	-13.9
Prev Vol	2120.2	Chemicals	0.8	Total Surface	
Net Change	-71.1	Other		Downhole	
Total Vol	2049.1	Total	0.8	Total Losses	-71.9

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A849.47	Total Daily Cost	$A3,929.47
Cumulative Products Cost	$A947,137.35	Total Cumulative Cost	$A1,162,737.35

Baroid Representatives	Kosta Georgiou	Jay Wan	
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Baroid Fluid Services

Report No 076

Daily Drilling Fluid Report

Date 12/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity SLB W/L Dual Packer Run # 7	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		2:45	9:00	14:00	22:00						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 50	9.30 @ 30	9.30 @ 20	9.30 @ 25					9.00	9.50
FV @ Deg C	sec/qt	60 @ 50	65 @ 30	70 @ 20	71 @ 25						
PV @ Deg C	cP	15 @ 25	17 @ 49	17 @ 49	17 @ 49						
YP	lbs/100 ft2	30	28	29	30						
GELS	lbs/100 ft2	9/13/17	8/12/15	8/12/15	9/13/17						
600/300		60.0/45.0	62.0/45.0	63.0/46.0	64.0/47.0						
200/100		38.0/30.0	37.0/27.0	37.0/27.0	38.0/27.0						
6/3		10.0/8.0	9.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.5	4.5	4.5	4.5						4.5
HTHP @ Deg C	ml/30 min	7.8 @ 121	7.6 @ 121	7.8 @ 121	7.8 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.3	3.5	3.5	3.4						
NAP/Water	% by Vol	-/93.5	-/93.5	-/93.5	-/93.5						
Sand	% by vol	0.20	0.20	0.20	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		8.50 @ 20	8.50 @ 20	8.50 @ 20	8.50 @ 20					8.50	9.50
ALK Mud	Pm	0.10	0.20	0.20	0.25						
ALK Filt	Pf/Mf	0.20/3.45	0.15/2.70	0.15/2.80	0.20/2.70						
Chlorides	mg/l	39,000	37,000	37,000	38,000						
Tot. Hardness	mg/l	240	280	280	240						400
LGS/HGS	% by Vol	1.7/1.6	2.6/0.9	2.6/0.9	2.5/0.9						
LGS/HGS	ppb	15.47/23.73	23.92/12.54	23.92/12.54	23.11/12.62						
ASG	SG	3.379	2.992	2.992	3.004						
Additional Properties											
KCl %	-	6.90	6.60	6.50	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Moved chemicals into containers wait on back load. Packing mud lab equipment in progress. Conditioned & treated contaminated mud f/ hole. Maintained properties in active pit 2. Prepared unused shaker screens for back load.

Rig Activity

Wash & ream f/ 3470 - 3482 m.Circ btms up. Pump 20 bbl Low Wt 8.9 ppg pill, followed by High Wt 10.3 ppg pill. Cont circ 2 x btms up until Mud Eng'rs instruction. F/C_static. POOH to surface. HTBT, R/U w/ WL Dual Packer. M/U WL Dual Packer run # 7. RIH - 3400 m. Tight hole @ 2740 & 2793 m. Correlate, POOH - 3302. Tight @ 3396 - 3350 m. Sample @ 3302 (2nd Station) RIH - 3340 m. Log up f/ 3340 3294.2 m. Sample @ 3294.2 m (2nd Station).

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	9		4	5	$A641.28
potassium hydroxide	20 kg pail	5		1	4	$A132.11
Circal 60/16	25 kg bag	168		6	162	$A76.08
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	7			7	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	7.0
VSM-300	20 40 40 100 100 100 100	7.0
VSM-300	40 40 40 80 80 80 80	7.0
VSM-300	20 40 40 140 140 140 140	7.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.5
Trips	9.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	1.5
Testing	
Logging	7.5
Dir Work	
Repair	
Other	3.0
Total	24.0
Rotating	1.5
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	100.0	Transferred	
Active Pits	639.0	Dewatering		SCE	-3.0
Total Hole	946.7	Sea Water		Evaporation	-3.0
Total Circ	639.0	Whole Mud		Trips	-2.1
Reserve	556.0	Barite		Other	
Prev Vol	2049.1	Chemicals	0.8	Total Surface	
Net Change	92.7	Other		Downhole	
Total Vol	2141.7	Total	100.8	Total Losses	-8.1

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A849.47	Total Daily Cost	$A3,929.47
Cumulative Products Cost	$A947,986.82	Total Cumulative Cost	$A1,166,666.82

Baroid Representatives	Kosta Georgiou	Jay Wan	
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Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 077

Daily Drilling Fluid Report

Date 13/02/2010	**Depth** 3,482.0 m		
Spud Date 30/11/2009	**Rig Activity** SLB W/L Dual Packer Run # 7		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard/Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in								
Make/Type							30.000	@	158.0
Jets							13.375	@	961.0
TFA	sq-in						9.625	@	1,965.0
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	3,482.0 m	Riser	19.750		100.0				
ECD @ Csg Shoe	9.30 ppg	Open Hole	8.500		1,517.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	Hyd 2	3	4	Targets		Program	
Source		Pit #2	Pit #2						
Time		8:30	21:00						
Depth	m	3,482	3,482						
FL Temp	Deg C								
Density @ Deg C	ppg	9.30 @ 20	9.30 @ 18					9.00	9.50
FV @ Deg C	sec/qt	70 @ 20	71 @ 18						
PV @ Deg C	cP	18 @ 49	18 @ 49						
YP	lbs/100 ft2	28	27						
GELS	lbs/100 ft2	7/11/14	7/11/14						
600/300		64.0/46.0	63.0/45.0						
200/100		37.0/27.0	36.0/26.0						
6/3		9.0/8.0	9.0/8.0						
API Filt	ml/30 min	4.5	4.5						4.5
HTHP @ Deg C	ml/30 min	7.8 @ 121	7.5 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2						
Corr Solid	% by Vol	3.5	3.4						
NAP/Water	% by Vol	-/93.5	-/93.5						
Sand	% by vol	0.20	0.20						1.0
MBT	ppb Eq.	5.0	5.0						25.0
pH @ Deg C		8.50 @ 20	8.50 @ 20					8.50	9.50
ALK Mud	Pm	0.10	1.20						
ALK Filt	Pf/Mf	0.15/2.70	0.16/2.80						
Chlorides	mg/l	37,000	37,500						
Tot. Hardness	mg/l	280	280						400
LGS/HGS	% by Vol	2.6/0.9	2.6/0.9						
LGS/HGS	ppb	23.92/12.54	23.51/12.58						
ASG	SG	2.992	2.998						
Additional Properties									
KCl %	-	6.50	6.60			X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

General packing & housekeeping at mud lab. Transferred unused shaker screens into container OPC 437 for backload. Radiagreen conc. @ 1.42%.

Rig Activity

Cont Sample @ 3294.2 m (3rd station). Correlate up - 3230 m, positioned f/ @ 3214.4 m & sample. Stuck @ 3214.4 m, work free turning packer on & off. POOH - 3205 m correlate & sample station 5 @ 3205 m. POOH - 3110 m & sample station 6. RIH - 3140 m & sample station 7.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	162			162	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	5			5	
potassium hydroxide	20 kg pail	4			4	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	7			7	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	639.0	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	
Total Circ	639.0	Whole Mud		Trips	
Reserve	556.0	Barite		Other	
Prev Vol	2141.7	Chemicals		Total Surface	
Net Change		Other		Downhole	
Total Vol	2141.7	Total		Total Losses	

Fluid Types Vol bbl

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A947,986.82	Total Cumulative Cost	$A1,169,746.82

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Baroid Representatives Kosta Georgiou Jay Wan

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Warehouse c/o of Esso Australia Ltd Telephone 61-3-56-881-445

HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 078

Daily Drilling Fluid Report

Date 14/02/2010	**Depth** 3,482.0 m		
Spud Date 30/11/2009	**Rig Activity** POOH w/ W/L Dual Packer Run # 7		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard/Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	in									Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type							30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets							13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	sq-in						9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity	ft/sec									bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf									SPM	0	0	0
Bit HHSI	hhp/in2									gpm|bbl/min			
Press Drop @ Bit	psi									Total GPM		AV, Riser	Circ Press psi
Bit Depth	3,482.0 m	Riser	19.750		100.0					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,517.0					BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg					Leak Off ppg			14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2									**Fluid Type** 8 1/2" ST-1 KCl/Polymer
Time		9:00	21:30									General housekeeping & packing in mud lab.
Depth	m	3,482	3,482									Radiagreen concentration = 1.4%.
FL Temp	Deg C											Prepared 9.3 ppg, 55 bbl Hi-vis BARAZAN D
Density @ Deg C	ppg	9.30 @ 20	9.30 @ 16							9.00	9.50	PLUS in slug, for P&A job.
FV @ Deg C	sec/qt	68 @ 20	73 @ 17									
PV @ Deg C	cP	17 @ 49	17 @ 49									
YP	lbs/100 ft2	29	30									
GELS	lbs/100 ft2	7/11/13	8/12/14									
600/300		63.0/46.0	64.0/47.0									
200/100		37.0/27.0	38.0/27.0									
6/3		9.0/8.0	9.0/8.0									
API Filt	ml/30 min	4.5	4.5								4.5	
HTHP @ Deg C	ml/30 min	7.6 @ 121	7.6 @ 121								13.0	
Cake API/HTHP	32nd in	1/2	1/2									
Corr Solid	% by Vol	3.5	3.4									
NAP/Water	% by Vol	-/93.5	-/93.5									
Sand	% by vol	0.20	0.20								1.0	
MBT	ppb Eq.	5.0	5.0								25.0	
pH @ Deg C		8.50 @ 20	8.50 @ 20							8.50	9.50	
ALK Mud	Pm	0.20	0.15									
ALK Filt	Pf/Mf	0.15/2.70	0.15/2.70									
Chlorides	mg/l	37,000	37,500									
Tot. Hardness	mg/l	280	280								400	
LGS/HGS	% by Vol	2.6/0.9	2.6/0.9									
LGS/HGS	ppb	23.92/12.54	23.51/12.58									
ASG	SG	2.992	2.998									
Additional Properties												
KCl %	-	6.50	6.60			X	X			7.00	7.00	

Rig Activity

Cancelled station # 8 @ 3312.8 m. Correlated up f/ 3140 m. Sampling @ station # 9, 3184.6 m. POOH - 3083 m & pressure test @ station # 10. RIH - 3172 m & pressure test @ station # 11 - 3172 m. RIH - 3331 m & pressure test station # 12. POOH - 3312 m. Correlate & pressure test station # 13.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	37		2	35	$A430.68
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	162			162	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	5			5	
potassium hydroxide	20 kg pail	4			4	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	7			7	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	586.2	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	
Total Circ	586.2	Whole Mud		Trips	
Reserve	609.0	Barite		Other	
Prev Vol	2141.7	Chemicals	0.2	Total Surface	
Net Change	0.2	Other		Downhole	
Total Vol	2141.9	Total	0.2	Total Losses	

Fluid Types	Vol bbl

Daily Products Cost	$A430.68	Total Daily Cost	$A3,510.68
Cumulative Products Cost	$A948,417.50	Total Cumulative Cost	$A1,173,257.50

Deviation Information	
Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Baroid Representatives	Kosta Georgiou	Jay Wan	
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Baroid Fluid Services

Report No 079

Daily Drilling Fluid Report

Date 15/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity P & A Set Plug # 1C	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	2.875	in
Make/Type	DUMMY/2 7/8 Open End	
Jets		
TFA	10.000	sq-in
Jets Velocity	19	ft/sec
Jet Impact Force	55.8	lbf
Bit HHSI	0.17	hhp/in2
Press Drop @ Bit	3	psi
Bit Depth	3,162.0	m
ECD @ Csg Shoe	9.85	ppg
ECD @ Bit	9.93	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	2.750	2,993.0
Drill Pipe	2.875	2.375	169.0
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	60	0
gpm|bbl/min	301 | 7.17	301 | 7.17	
Total GPM	602	AV, Riser 40.4	Circ Press psi 1600
Total Circ Time	101	AV min DP 230.6	Tot Pres Loss 5999
BU Time , min	43	AV max DC	Press Drop DP 5514
Total Strokes	12,176	BU Strokes 5,209	Press Drop An 322

Properties		1	Hyd 2	3	4	Targets		Program	
Source		Pit #2	Pit #2						
Time		10:00	21:20						
Depth	m	3,482	3,482						
FL Temp	Deg C								
Density @ Deg C	ppg	9.30 @ 20	9.30 @ 20					9.00	9.50
FV @ Deg C	sec/qt	70 @ 20	70 @ 20						
PV @ Deg C	cP	17 @ 49	17 @ 49						
YP	lbs/100 ft2	29	30						
GELS	lbs/100 ft2	7/10/13	8/11/14						
600/300		63.0/46.0	64.0/47.0						
200/100		37.0/27.0	38.0/28.0						
6/3		9.0/7.0	9.0/7.0						
API Filt	ml/30 min	4.5	4.5						4.5
HTHP @ Deg C	ml/30 min	7.8 @ 121	8.0 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2						
Corr Solid	% by Vol	3.5	3.4						
NAP/Water	% by Vol	-/93.5	-/93.5						
Sand	% by vol	0.20	0.20						1.0
MBT	ppb Eq.	5.0	5.0						25.0
pH @ Deg C		8.50 @ 20	8.50 @ 20					8.50	9.50
ALK Mud	Pm	0.15	0.15						
ALK Filt	Pf/Mf	0.10/2.80	0.15/2.70						
Chlorides	mg/l	37,000	37,500						
Tot. Hardness	mg/l	280	280						400
LGS/HGS	% by Vol	2.6/0.9	2.6/0.9						
LGS/HGS	ppb	23.92/12.54	23.51/12.58						
ASG	SG	2.992	2.998						
Additional Properties									
KCl %	-	6.50	6.60			X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Mixed 55 bbl Hi-vis @ 9.5 ppg FV 198 sec/qt. Circ & Conditioned mud balance at 9.5 ppg. Plug 1A Diverted & treated out , 73.1 bbl contaminated mud/DW/traces of cement @ 9.35 ppg. Started placing non essential, packed lab equipment on pallet ready for back load.

Rig Activity

Cont - pressure test station # 13 @ 3312 m. POOH w/ SLB tool string, L/O & R/D W/L. Slip & cut drlg line. R/U 2 7/8" handling equipment & RIH - 168 m. RIH 5" DP f/ 168 - 1961 m. Service TDS. Cont RIH f/ 1961 - 3482 m & tag btm. Circ & condition mud. HTBT, M/U cmt assy. Proceed w/ cmt plug # 1A / program. R/D cmt assy. POOH f/ 3482 - 3322 m. Pump plug 1B. Circ 1.5 btms up, treated out 33 bbl of cont mud. HTBT, R/U cmt line & press Test_ ok. Mix & pump 195 Sx "G" class cmt w/ 24 bbl H2O @ 15.8 ppg. Displace w/ drillwater. Check flow back + 1.5 bbl. POOH f/ 3322 - 3162 m, circ btms up. treated out 19 bbl of cont mud. Test lines & set plug # 1C /

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	5		5		$A801.60
potassium hydroxide	20 kg pail	4		4		$A528.44
soda ash	25 kg bag	7		7		$A212.94
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	35			35	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	162			162	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
sapp	25 kg bag	18			18	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	13.0
VSM-300	20 40 40 100 100 100 100	13.0
VSM-300	40 40 40 80 80 80 80	13.0
VSM-300	20 40 40 140 140 140 140	13.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	8.5
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	0.5
Dir Work	
Repair	
Other	12.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	622.1	Base		Fluid Dumped	
Pipe Cap	75.2	Drill Water		Transferred	
Active Pits	757.0	Dewatering		SCE	-73.1
Total Hole	771.0	Sea Water		Evaporation	
Total Circ	1454.3	Whole Mud		Trips	
Reserve	542.0	Barite		Other	
Prev Vol	2141.9	Chemicals	1.3	Total Surface	
Net Change	-71.8	Other		Downhole	
Total Vol	2070.0	Total	1.3	Total Losses	-73.1

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A1,542.98	Total Daily Cost	$A4,622.98
Cumulative Products Cost	$A949,960.48	Total Cumulative Cost	$A1,177,880.48

Baroid Representatives Kosta Georgiou Jay Wan

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Baroid Fluid Services

Report No 080

Daily Drilling Fluid Report

Date 16/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity P & A	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	2.875	in
Make/Type	DUMMY/2 7/8 Open End	
Jets		
TFA	10.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,730.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	2.750	1,561.0
Drill Pipe	2.875	2.375	169.0
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2									Fluid Type 8 1/2" ST-1 KCl/Polymer
Time		8:00	20:00									Plug 1b - Diverted 19 bbl contaminated mud w/ traces of cmt.
Depth	m	3,482	3,482									Plug 1c - Diverted 10.5 bbl contaminated mud w/ traces of cmt.
FL Temp	Deg C											Plug 2 - Diverted 9 bbl contaminated mud w/ traces of cmt.
Density @ Deg C	ppg	9.50 @ 30	9.40 @ 30							9.00	9.50	Mixed 60 bbl 10.6 ppg Slug.
FV @ Deg C	sec/qt	65 @ 30	66 @ 30									Plug 3 - Diverted 21 bbl contaminated mud/Drill water @ 9.2 ppg - traces of cmt.
PV @ Deg C	cP	17 @ 49	18 @ 49									Cement in hole - 187.2 bbl
YP	lbs/100 ft2	26	24									Mud properties not in specs due to cement contamination & no treatment.
GELS	lbs/100 ft2	8/11/13	7/10/12									Mud engineering cost for Kosta ends 16 Feb 2010.
600/300		60.0/43.0	60.0/42.0									
200/100		35.0/24.0	35.0/26.0									
6/3		9.0/7.0	9.0/7.0									
API Filt	ml/30 min	5.1	5.5			X	X				4.5	
HTHP @ Deg C	ml/30 min	8.2 @ 121	8.4 @ 121								13.0	
Cake API/HTHP	32nd in	1/2	1/2									
Corr Solid	% by Vol	4.5	4.2									
NAP/Water	% by Vol	-/92.7	-/93.0									
Sand	% by vol	0.20	0.10								1.0	
MBT	ppb Eq.	5.0	5.0								25.0	
pH @ Deg C		10.00 @ 20	10.00 @ 20			X	X			8.50	9.50	
ALK Mud	Pm	0.20	0.20									
ALK Filt	Pf/Mf	0.20/3.10	0.20/2.90									
Chlorides	mg/l	34,500	35,000									
Tot. Hardness	mg/l	720	880			X	X				400	
LGS/HGS	% by Vol	3.0/1.5	3.1/1.1									
LGS/HGS	ppb	27.09/22.61	27.96/16.05									
ASG	SG	3.145	3.019									
Additional Properties												
KCl %	-	6.10	5.80			X	X			7.00	7.00	

Rig Activity

Halliburton cementing pumped cement plugs 1B, 1C, 2 as per P & A program. Excess DP were laid down. TOC was tagged @ 2768m. 25 bbl h-ivis was pumped & diplaced @ 2115 m. Cement plug # 3 was pumped & displaced as per program. Excess DP was laid down.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	35			35	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	162			162	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
sapp	25 kg bag	18			18	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	12.0
VSM-300	20 40 40 100 100 100 100	12.0
VSM-300	40 40 40 80 80 80 80	12.0
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	4.0
Trips	10.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	10.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	404.8	Base		Fluid Dumped	
Pipe Cap	40.7	Drill Water		Transferred	
Active Pits	613.0	Dewatering		SCE	
Total Hole	854.4	Sea Water		Evaporation	
Total Circ	1058.4	Whole Mud		Trips	
Reserve	543.1	Barite		Other	-59.5
Prev Vol	2070.0	Chemicals		Total Surface	
Net Change	-59.5	Other		Downhole	
Total Vol	2010.5	Total		Total Losses	-59.5

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A949,960.48	Total Cumulative Cost	$A1,180,960.48

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 081

Daily Drilling Fluid Report

Date 17/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity P & A	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in							Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets					13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	sq-in				9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500	1,517.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2							Fluid Type 8 1/2" KCl/Polymer
Time		9:00	16:00							Plug 3A - Mud return @ 9.3 ppg. No cement return.
Depth	m	3,482	3,482							
FL Temp	Deg C									Cement in hole - 216.2 bbl
Density @ Deg C	ppg	9.40 @ 30	9.40 @ 30					9.00	10.00	Mud properties not in spec due to cement contamination & no treatment.
FV @ Deg C	sec/qt	65 @ 30	67 @ 30							Chemicals backload to Far Scimitar.
PV @ Deg C	cP	17 @ 49	18 @ 49							Shaker screens backload to Far Scimitar.
YP	lbs/100 ft2	26	25							Mud lab equipment backload to Far Scimitar.
GELS	lbs/100 ft2	7/10/12	7/10/12							6 bags damaged Circal 60/16 - inventory correction.
600/300		60.0/43.0	61.0/43.0							
200/100		34.0/24.0	35.0/24.0							
6/3		8.0/6.0	9.0/7.0							
API Filt	ml/30 min	5.8	6.2			X	X		5.0	
HTHP @ Deg C	ml/30 min	9.2 @ 121	10.2 @ 121						13.0	
Cake API/HTHP	32nd in	1/2	1/2							
Corr Solid	% by Vol	3.6	3.6							
NAP/Water	% by Vol	-/93.5	-/93.5							
Sand	% by vol	0.10	0.10						1.0	**Rig Activity**
MBT	ppb Eq.	5.0	5.0						25.0	WOC. P/ tested csg - failed. RIH & tagged TOC
pH @ Deg C		10.00 @ 20	10.00 @ 20			X	X	8.50	9.50	@ 1978 m. Circ. M/U cement head & pumped
ALK Mud	Pm	0.20	0.20							19 bbl cmt plug # 3A. POOH to 1701 m & circ.
ALK Filt	Pf/Mf	0.20/3.00	0.20/3.10							WOC. P/Test csg to 2000 psi/15 min - ok. POOH
Chlorides	mg/l	35,000	35,000							& laid down DP. Retrieved wear bushing.
Tot. Hardness	mg/l	1,000	920			X	X		400	
LGS/HGS	% by Vol	2.1/1.6	2.1/1.6							
LGS/HGS	ppb	18.70/23.42	18.70/23.42							
ASG	SG	3.299	3.299							
Additional Properties										
KCl %	-	5.80	5.50							

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Circal 60/16	25 kg bag	162		6		$A76.08
ALDACIDE G	25 kg can	5				
Amodrill 1235	1 bbl bulk	19.400				
BARAZAN D PLUS	25 kg bag	35				
barite	1 tons bulk	80.000				
bentonite	1000 kg bulk	19.000				
Circal Y	25 kg bag	32				
citric acid	25 kg bag	47				
CLAYSEAL PLUS	55 gal drum	5				
EZ SPOT	55 gal drum	5				
EZ-MUD	25 kg pail	16				
Generic mesh 24 (API 20)	1 each box	12				
Generic Mesh 40 (API 40)	1 each box	15				
mica	25 kg bag	10				
sapp	25 kg bag	18				
sodium bicarbonate	25 kg bag	33				
SOURSCAV	25 kg pail	32				
Techmesh 110 (API 60)	1 each box	12				
Techmesh 140 (API 80)	1 each box	15				
Techmesh 260(API 140)	1 each box	6				
Techmesh 84 (API 50)	1 each box	3				

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	10.0
VSM-300	20 40 40 100 100 100 100	10.0
VSM-300	40 40 40 80 80 80 80	10.0
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	6.0
Trips	10.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	8.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	543.0	Dewatering		SCE	-5.7
Total Hole	946.7	Sea Water		Evaporation	
Total Circ	543.0	Whole Mud	2010.5	Trips	
Reserve	515.1	Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Change	2004.8	Other		Downhole	
Total Vol	2004.8	Total	2010.5	Total Losses	-5.7

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,290.0 m
Survey TVD	3,019.0 m
Angle	42.18 Deg
Direction	356
Horiz Displ.	m

Daily Products Cost	$A76.08	Total Daily Cost	$A1,616.08
Cumulative Products Cost	$A950,036.56	Total Cumulative Cost	$A1,182,576.56

Baroid Representatives Jay Wan

Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555

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Baroid Fluid Services

Report No 082

Daily Drilling Fluid Report

Date 18/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity P & A	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	in
Make/Type	
Jets	
TFA	sq-in
Jets Velocity	ft/sec
Jet Impact Force	lbf
Bit HHSI	hhp/in2
Press Drop @ Bit	psi
Bit Depth	m
ECD @ Csg Shoe	ppg
ECD @ Bit	ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	0.000		
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program		
Source		Pit #2							
Time		12:00							
Depth	m	0							
FL Temp	Deg C								
Density @ Deg C	ppg	9.40 @ 25					9.00	10.00	
FV @ Deg C	sec/qt	65 @ 25							
PV @ Deg C	cP	18 @ 49							
YP	lbs/100 ft2	25							
GELS	lbs/100 ft2	7/10/12							
600/300		61.0/43.0							
200/100		35.0/24.0							
6/3		9.0/7.0							
API Filt	ml/30 min	6.2				X		5.0	
HTHP @ Deg C	ml/30 min	10.2 @ 121						13.0	
Cake API/HTHP	32nd in	1/2							
Corr Solid	% by Vol	3.6							
NAP/Water	% by Vol	-/93.5							
Sand	% by vol	0.10						1.0	
MBT	ppb Eq.	5.0						25.0	
pH @ Deg C		10.00 @ 20				X	8.50	9.50	
ALK Mud	Pm	0.20							
ALK Filt	Pf/Mf	0.20/3.10							
Chlorides	mg/l	35,000							
Tot. Hardness	mg/l	920				X		400	
LGS/HGS	% by Vol	2.1/1.6							
LGS/HGS	ppb	18.70/23.42							
ASG	SG	3.299							
Additional Properties									
KCL %	% by vol	5.5							

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Last mud report for Rockhopper - 1.

611 bbl mud left in hole.
Disposed 1393.8 bbl mud.

Rig Activity

M/U EZSV / bridge plug assy. Set bridge plug at 205m. Cont laying down excess DP. M/U 9 5/8" csg cutter assy & RIH. Cut csg @ 153m. Retrieved csg as per prog. N/D BOP & marine riser in progress.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	1.0
Trips	11.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	12.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	-242.6
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	-611.0
Prev Vol	2004.8	Chemicals		Total Surface	
Net Change	-853.6	Other		Downhole	
Total Vol		Total		Total Losses	-853.6

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	3,290.0 m
Survey TVD	3,019.0 m
Angle	42.18 Deg
Direction	356
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A1,540.00
Cumulative Products Cost	$A950,036.56	Total Cumulative Cost	$A1,184,116.56

Baroid Representatives Jay Wan
Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555
Warehouse c/o of Esso Australia Ltd Telephone 61-3-56-881-445

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APPENDIX 19: WATER ANALYSIS & PVT REPORTS

PETROLAB

Company : Origin Energy Resources Ltd.
Well : Rockhopper -1 File : O - 10006a

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TRANSFER DETAILS

Transferred on January 8 & 9, 2010 @ 6000 psig & 60 °C

Sample ID #	MDT MPSR #	Depth MDRT (metres)	Reservoir Pressure (psia)	Reservoir Temp. (ºC)	Opening Pressure (psig)	Transferred to Petrolab Cylinder	Volume Transferred	Fluid Phase Transferred
1	56	3402.5	4857.3	133.8	4000	812602	370	GAS COND
2	487	3325.0	4553.6	134.2	3720	0826-B1-F	370	OIL
3	2040	3325.0	4553.6	134.2	3840	810348	375	OIL
4	2105	3338.5	4987.6	135.1	2100	812676	310	GAS COND
5	2602	3245.0	4445.9	131.9	4100	812496	380	GAS COND
6	2668	3245.0	4445.9	131.9	4100	80239	370	GAS COND
7	3305	3235.0	4463.2	133.0	3320	0833-B1-F	375	OIL
8	3347	3235.0	4463.2	133.0	4000	0322-B1-F	380	OIL
9	2499	3202.0	4453.1	119.1	3600	812417	370	GAS COND
10	3356	3202.0	4453.1	119.1	3390	170196	360	GAS COND
11	4083	3202.0	4453.1	119.1	3530	9214 / 45	360	GAS COND
12.1	132	3424.5	4882.2	128.6	400	812416	735	OIL / WATER
12.2	132	3424.5	4882.2	128.6	400	812436	720	OIL / WATER
12.3	132	3424.5	4882.2	128.6	400	812429	740	OIL / WATER
12.4	132	3424.5	4882.2	128.6	400	812435	720	OIL / WATER
12.5	132	3424.5	4882.2	128.6	400	812451	280	OIL / WATER

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 812602 EX MPSR 56

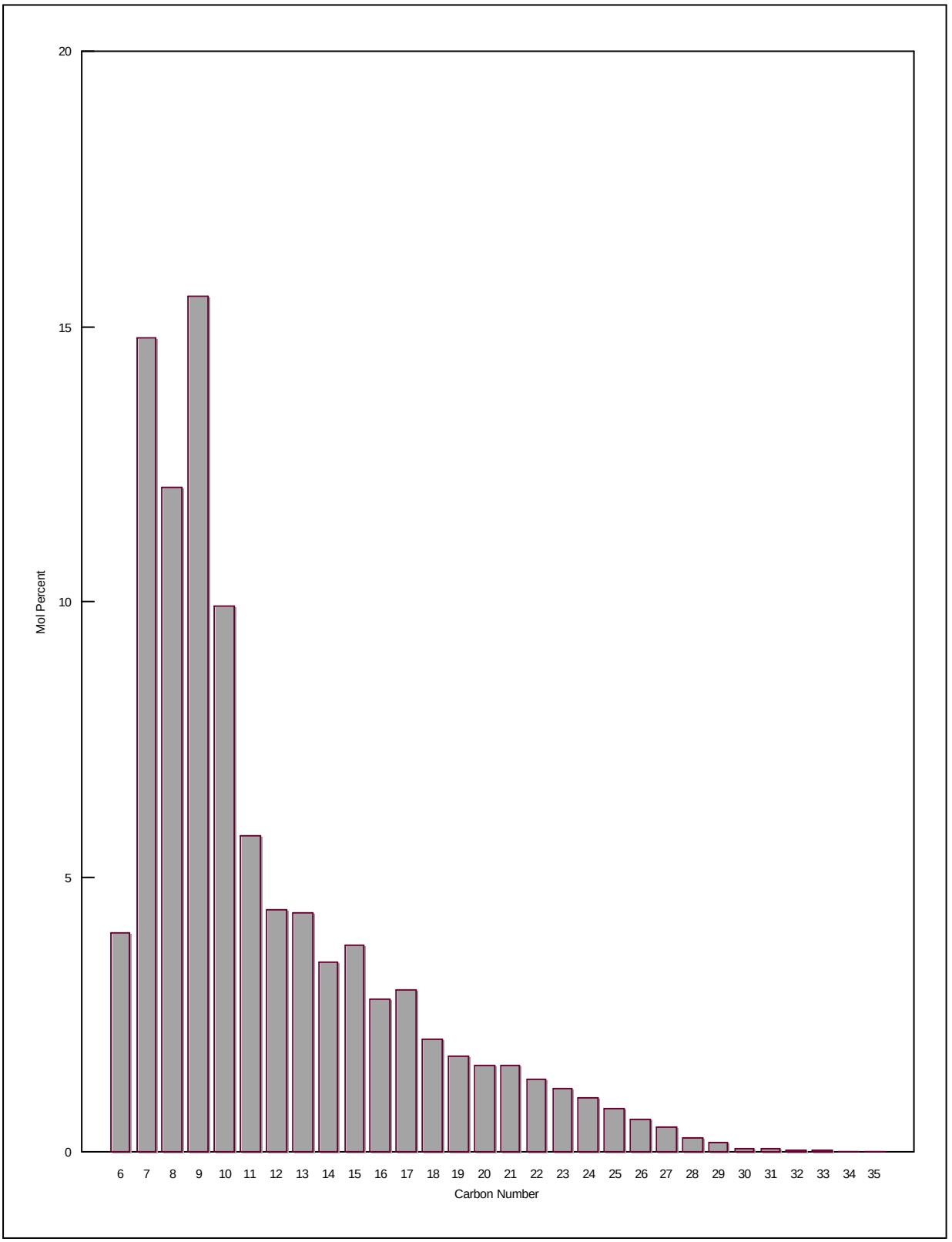
Component		Mol %
Hexanes minus	C6-	3.37
Hexanes	C6	3.98
Heptanes	C7	14.81
Octanes	C8	12.09
Nonanes	C9	15.56
Decanes	C10	9.92
Undecanes	C11	5.75
Dodecanes	C12	4.41
Tridecanes	C13	4.34
Tetradecanes	C14	3.45
Pentadecanes	C15	3.75
Hexadecanes	C16	2.77
Heptadecanes	C17	2.94
Octadecanes	C18	2.04
Nonadecanes	C19	1.73
Eicosanes	C20	1.56
Heneicosanes	C21	1.58
Docosanes	C22	1.31
Tricosanes	C23	1.16
Tetracosanes	C24	0.98
Pentacosanes	C25	0.80
Hexacosanes	C26	0.59
Heptacosanes	C27	0.45
Octacosanes	C28	0.27
Nonacosanes	C29	0.18
Triacontanes	C30	0.07
Hentriacontanes	C31	0.07
Dotriacontanes	C32	0.03
Tritriacontanes	C33	0.02
Tetratriacontanes	C34	0.01
Pentatriacontanes Plus	C35+	0.01
TOTAL		100.00

Molecular Weight Calculated *	:	154.6
Density @ 60 °F Calculated *	:	0.7955
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7955

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 812602 EX MPSR 56



PETROLAB

Company : Origin Energy Resources Ltd.	Page : 4 of 43
Well : Rockhopper -1	File : O - 10006a

COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 812602 EX MPSR 56

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.09	5.80	5.63
Nitrogen	N2	0.00	0.38	0.37
Methane	C1	0.43	73.63	71.47
Ethane	C2	0.39	10.98	10.67
Propane	C3	0.63	4.91	4.78
Iso-Butane	iC4	0.19	0.59	0.58
N-Butane	nC4	0.47	1.01	0.99
Iso-Pentane	iC5	0.47	0.38	0.38
N-Pentane	nC5	0.59	0.37	0.38
Hexanes	C6	3.98	0.71	0.81
Heptanes	C7	14.83	0.84	1.25
Octanes	C8	12.10	0.27	0.62
Nonanes	C9	15.58	0.11	0.57
Decanes	C10	9.93	0.02	0.31
Undecanes	C11	5.76	0.00	0.17
Dodecanes Plus	C12+	34.56	0.00	1.02
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0294	0.9706	1.0000
Mass Ratio	:	0.1670	0.8330	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	22700 SCF	--
Stream Properties				
Molecular Weight	:	153.7	23.26	27.10
Density obs. (gm/cc)	:	0.7960 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	46.1 °API @ 60 °F	0.810	--
GHV (BTU/scf)	:	--	1254	--
Hexanes Plus Properties				
Mol %	:	96.74	1.95	4.75
Molecular Weight	:	157.2	95.0	132.3
Density (gm/cc @ 60 °F)	:	0.8000	0.6823	0.7623
Gravity (°API @ 60 °F)	:	45.2	75.7	53.9
Heptanes Plus Properties				
Mol %	:	92.75	1.24	3.94
Molecular Weight	:	160.3	101.2	142.3
Density (gm/cc @ 60 °F)	:	0.8030	0.6907	0.7756
Gravity (°API @ 60 °F)	:	44.5	73.2	50.8
Decanes Plus Properties				
Mol %	:	50.25	0.02	1.50
Molecular Weight	:	204.4	133.9	203.5
Density (gm/cc @ 60 °F)	:	0.8319	0.7277	0.8309
Gravity (°API @ 60 °F)	:	38.4	62.8	38.6
Undecanes Plus Properties				
Mol %	:	40.32	0.00	1.19
Molecular Weight	:	221.7	--	221.7
Density (gm/cc @ 60 °F)	:	0.8406	--	0.8406
Gravity (°API @ 60 °F)	:	36.7	--	36.7
Dodecanes Plus Properties				
Mol %	:	34.56	0.00	1.02
Molecular Weight	:	234.1	--	234.1
Density (gm/cc @ 60 °F)	:	0.8464	--	0.8464
Gravity (°API @ 60 °F)	:	35.5	--	35.5

Measured Dew Point 5940 psig at 280 °F

* (P)ressure : 4867 psig * (T)emperature : 280 °F

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 812676 EX MPSR 2105

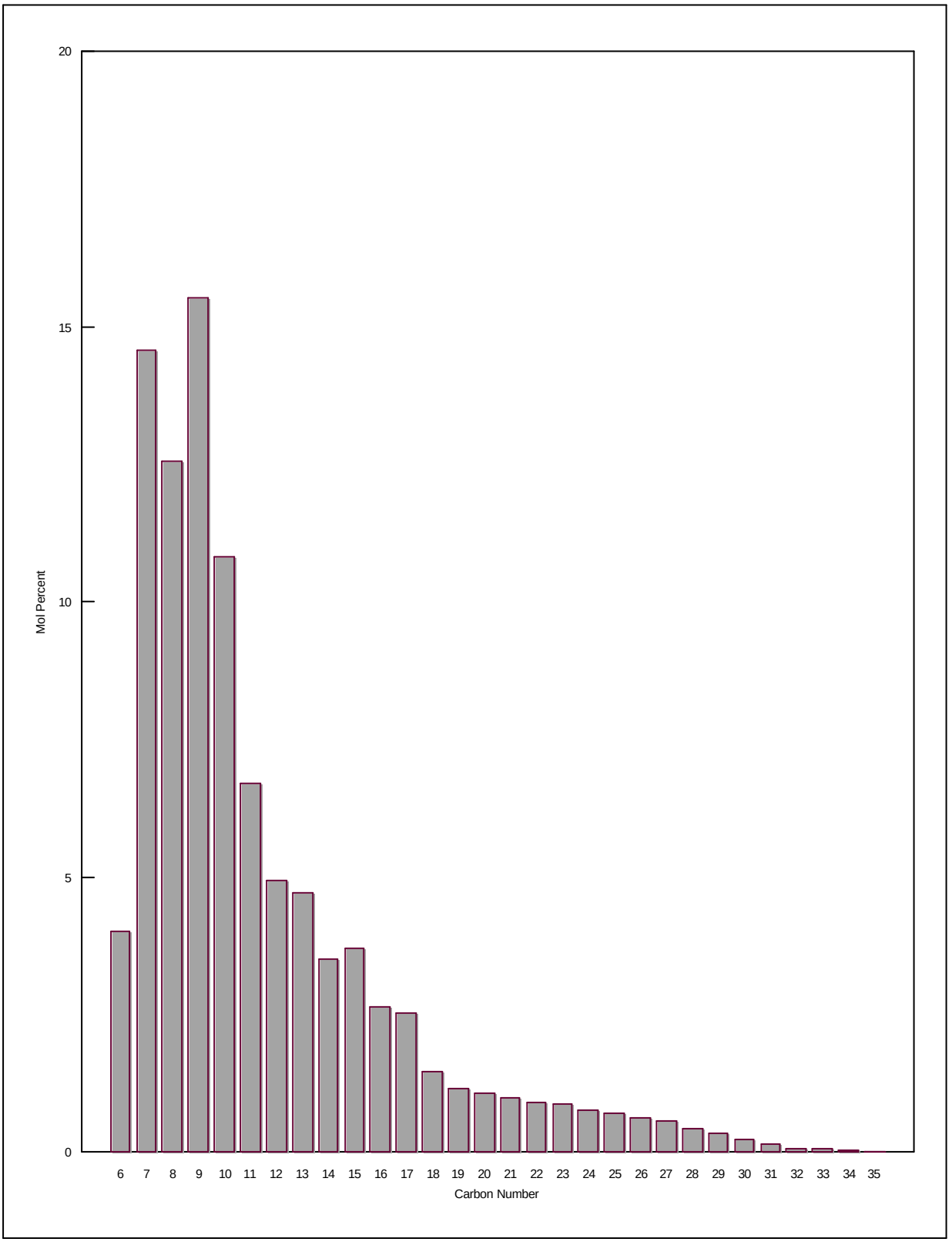
Component		Mol %
Hexanes minus	C6-	3.48
Hexanes	C6	4.01
Heptanes	C7	14.56
Octanes	C8	12.55
Nonanes	C9	15.52
Decanes	C10	10.82
Undecanes	C11	6.69
Dodecanes	C12	4.94
Tridecanes	C13	4.70
Tetradecanes	C14	3.50
Pentadecanes	C15	3.71
Hexadecanes	C16	2.64
Heptadecanes	C17	2.52
Octadecanes	C18	1.45
Nonadecanes	C19	1.15
Eicosanes	C20	1.08
Heneicosanes	C21	0.98
Docosanes	C22	0.91
Tricosanes	C23	0.87
Tetracosanes	C24	0.77
Pentacosanes	C25	0.71
Hexacosanes	C26	0.61
Heptacosanes	C27	0.55
Octacosanes	C28	0.41
Nonacosanes	C29	0.35
Triacontanes	C30	0.22
Hentriacontanes	C31	0.15
Dotriacontanes	C32	0.07
Tritriacontanes	C33	0.05
Tetratriacontanes	C34	0.03
Pentatriacontanes Plus	C35+	0.00
TOTAL		100.00

Molecular Weight Calculated *	:	151.6
Density @ 60 °F Calculated *	:	0.7928
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7928

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 812676 EX MPSR 2105



PETROLAB

Company : Origin Energy Resources Ltd.	Page : 7 of 43
Well : Rockhopper -1	File : O - 10006a

COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 812676 EX MPSR 2105

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.15	10.35	10.08
Nitrogen	N2	0.00	0.60	0.58
Methane	C1	0.38	66.59	64.82
Ethane	C2	0.33	9.75	9.50
Propane	C3	0.70	5.85	5.71
Iso-Butane	iC4	0.34	1.15	1.13
N-Butane	nC4	0.73	1.69	1.66
Iso-Pentane	iC5	0.70	0.62	0.62
N-Pentane	nC5	0.90	0.62	0.63
Hexanes	C6	3.98	0.94	1.02
Heptanes	C7	14.45	1.08	1.44
Octanes	C8	12.45	0.40	0.72
Nonanes	C9	15.40	0.20	0.61
Decanes	C10	10.74	0.06	0.35
Undecanes	C11	6.64	0.07	0.25
Dodecanes Plus	C12+	32.12	0.03	0.88
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0268	0.9732	1.0000
Mass Ratio	:	0.1361	0.8639	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	25548 SCF	--

Stream Properties				
Molecular Weight	:	149.9	26.19	29.5
Density obs. (gm/cc)	:	0.7923 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	46.9 °API @ 60 °F	0.910	--
GHV (BTU/scf)	:	--	1293	--

Hexanes Plus Properties				
Mol %	:	95.77	2.78	5.27
Molecular Weight	:	154.1	98.2	125.4
Density (gm/cc @ 60 °F)	:	0.7974	0.6867	0.7489
Gravity (°API @ 60 °F)	:	45.8	74.3	57.3

Heptanes Plus Properties				
Mol %	:	91.79	1.84	4.25
Molecular Weight	:	157.1	105.5	135.4
Density (gm/cc @ 60 °F)	:	0.8004	0.6962	0.7629
Gravity (°API @ 60 °F)	:	45.1	71.6	53.8

Decanes Plus Properties				
Mol %	:	49.49	0.16	1.48
Molecular Weight	:	198.8	146.4	192.0
Density (gm/cc @ 60 °F)	:	0.8289	0.7395	0.8206
Gravity (°API @ 60 °F)	:	39.0	59.7	40.8

Undecanes Plus Properties				
Mol %	:	38.76	0.10	1.13
Molecular Weight	:	216.7	153.9	210.7
Density (gm/cc @ 60 °F)	:	0.8383	0.7461	0.8317
Gravity (°API @ 60 °F)	:	37.1	58.0	38.5

Dodecanes Plus Properties				
Mol %	:	32.12	0.03	0.88
Molecular Weight	:	231.1	169.9	228.8
Density (gm/cc @ 60 °F)	:	0.8453	0.7592	0.8429
Gravity (°API @ 60 °F)	:	35.7	54.7	36.2

Measured Dew Point 6610 psig at 277 °F

* (P)ressure : 4435 psig * (T)emperature : 277 °F

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 812496 EX MPSR 2602

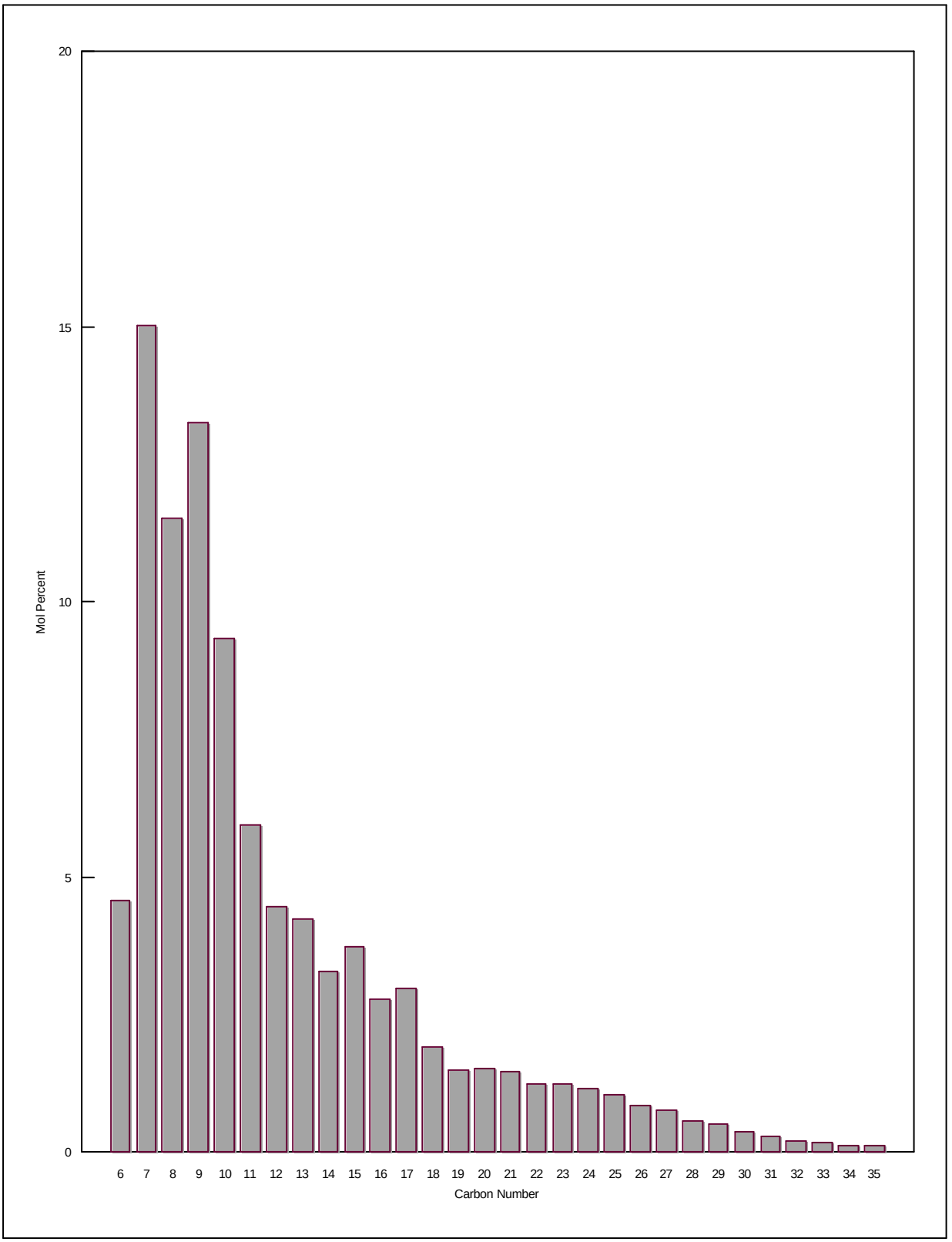
Component		Mol %
Hexanes minus	C6-	3.89
Hexanes	C6	4.58
Heptanes	C7	15.02
Octanes	C8	11.53
Nonanes	C9	13.24
Decanes	C10	9.34
Undecanes	C11	5.94
Dodecanes	C12	4.46
Tridecanes	C13	4.23
Tetradecanes	C14	3.27
Pentadecanes	C15	3.74
Hexadecanes	C16	2.79
Heptadecanes	C17	2.97
Octadecanes	C18	1.90
Nonadecanes	C19	1.48
Eicosanes	C20	1.52
Heneicosanes	C21	1.47
Docosanes	C22	1.25
Tricosanes	C23	1.25
Tetracosanes	C24	1.14
Pentacosanes	C25	1.04
Hexacosanes	C26	0.85
Heptacosanes	C27	0.77
Octacosanes	C28	0.57
Nonacosanes	C29	0.50
Triacontanes	C30	0.36
Hentriacontanes	C31	0.29
Dotriacontanes	C32	0.20
Tritriacontanes	C33	0.17
Tetratriacontanes	C34	0.12
Pentatriacontanes Plus	C35+	0.12
TOTAL		100.00

Molecular Weight Calculated *	:	160.8
Density @ 60 °F Calculated *	:	0.8012
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.8012

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 812496 EX MPSR 2602



COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 812496 EX MPSR 2602

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.22	15.31	14.63
Nitrogen	N2	0.00	0.44	0.42
Methane	C1	0.35	60.15	57.45
Ethane	C2	0.33	9.51	9.10
Propane	C3	0.93	7.47	7.18
Iso-Butane	iC4	0.43	1.37	1.33
N-Butane	nC4	0.99	2.19	2.14
Iso-Pentane	iC5	0.88	0.73	0.74
N-Pentane	nC5	1.19	0.77	0.79
Hexanes	C6	4.51	0.85	1.02
Heptanes	C7	14.79	0.84	1.47
Octanes	C8	11.36	0.25	0.75
Nonanes	C9	13.04	0.10	0.68
Decanes	C10	9.20	0.02	0.43
Undecanes	C11	5.85	0.00	0.26
Dodecanes Plus	C12+	35.91	0.00	1.61
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0451	0.9549	1.0000
Mass Ratio	:	0.2122	0.7878	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	14236 SCF	--
Stream Properties				
Molecular Weight	:	158.2	27.75	33.64
Density obs. (gm/cc)	:	0.7998 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	45.2 °API @ 60 °F	0.960	--
GHV (BTU/scf)	:	--	1256	--
Hexanes Plus Properties				
Mol %	:	94.67	2.06	6.22
Molecular Weight	:	164.0	94.0	141.9
Density (gm/cc @ 60 °F)	:	0.8059	0.6809	0.7762
Gravity (°API @ 60 °F)	:	43.9	76.1	50.6
Heptanes Plus Properties				
Mol %	:	90.15	1.21	5.20
Molecular Weight	:	168.0	101.0	153.2
Density (gm/cc @ 60 °F)	:	0.8095	0.6904	0.7896
Gravity (°API @ 60 °F)	:	43.1	73.3	47.5
Decanes Plus Properties				
Mol %	:	50.96	0.02	2.30
Molecular Weight	:	214.5	133.9	213.8
Density (gm/cc @ 60 °F)	:	0.8380	0.7277	0.8373
Gravity (°API @ 60 °F)	:	37.2	62.8	37.3
Undecanes Plus Properties				
Mol %	:	41.76	0.00	1.87
Molecular Weight	:	232.2	--	232.2
Density (gm/cc @ 60 °F)	:	0.8463	--	0.8463
Gravity (°API @ 60 °F)	:	35.5	--	35.5
Dodecanes Plus Properties				
Mol %	:	35.91	0.00	1.61
Molecular Weight	:	246.1	--	246.1
Density (gm/cc @ 60 °F)	:	0.8523	--	0.8523
Gravity (°API @ 60 °F)	:	34.4	--	34.4

Measured Dew Point 5695 psig at 273 °F

* (P)ressure : 4431 psig * (T)emperature : 273 °F

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

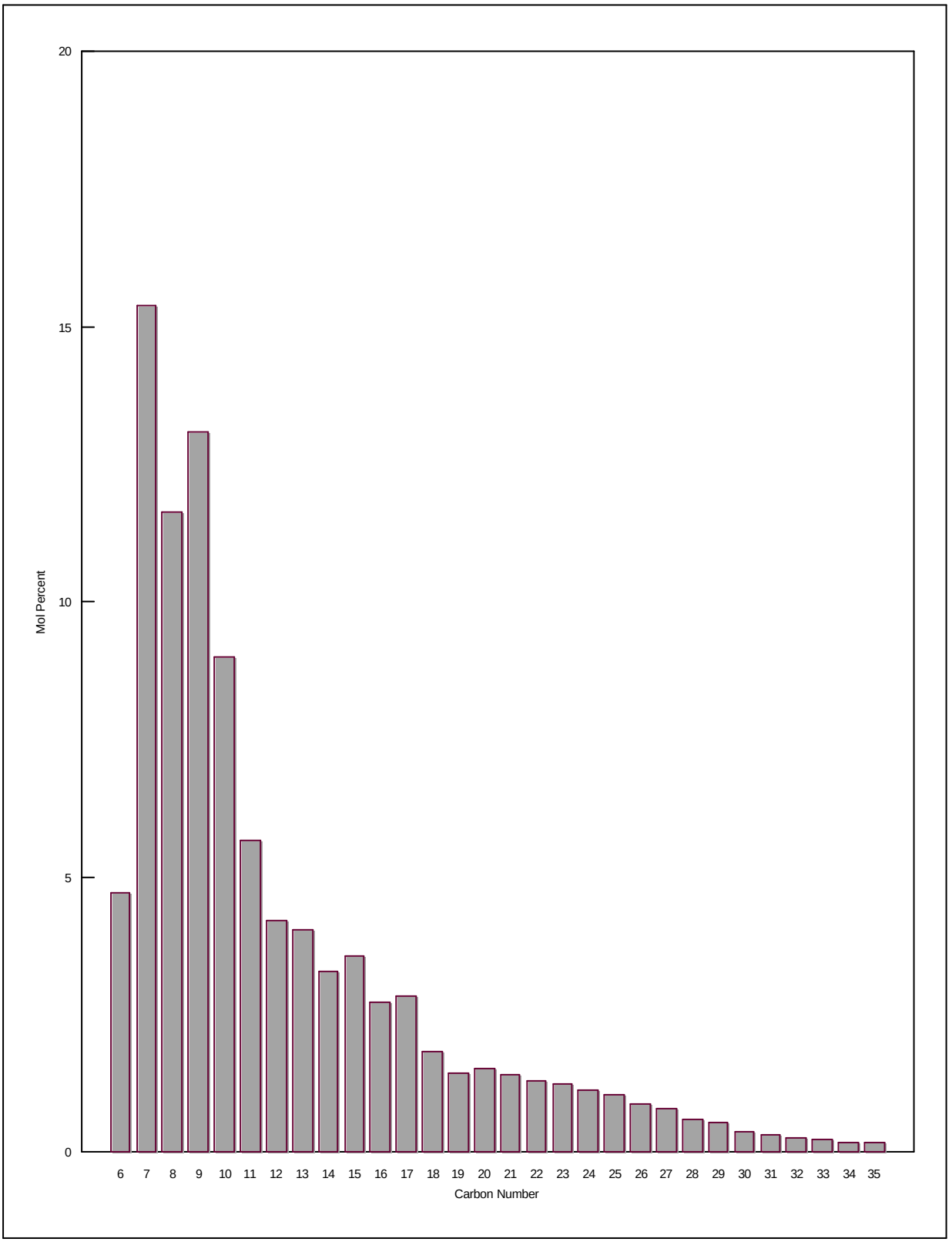
On STT Liquid flashed from cylinder # 80239 EX MPSR 2668

Component		Mol %
Hexanes minus	C6-	4.73
Hexanes	C6	4.70
Heptanes	C7	15.39
Octanes	C8	11.63
Nonanes	C9	13.09
Decanes	C10	9.00
Undecanes	C11	5.66
Dodecanes	C12	4.22
Tridecanes	C13	4.05
Tetradecanes	C14	3.29
Pentadecanes	C15	3.55
Hexadecanes	C16	2.72
Heptadecanes	C17	2.83
Octadecanes	C18	1.82
Nonadecanes	C19	1.44
Eicosanes	C20	1.52
Heneicosanes	C21	1.41
Docosanes	C22	1.28
Tricosanes	C23	1.24
Tetracosanes	C24	1.12
Pentacosanes	C25	1.04
Hexacosanes	C26	0.87
Heptacosanes	C27	0.78
Octacosanes	C28	0.58
Nonacosanes	C29	0.54
Triacontanes	C30	0.37
Hentriacontanes	C31	0.32
Dotriacontanes	C32	0.25
Tritriacontanes	C33	0.23
Tetratriacontanes	C34	0.16
Pentatriacontanes Plus	C35+	0.17
TOTAL		100.00

Molecular Weight Calculated *	:	160.1
Density @ 60 °F Calculated *	:	0.8002
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.8002

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On STT Liquid flashed from cylinder # 80239 EX MPSR 2668



COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 80239 EX MPSR 2668

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.23	15.46	14.78
Nitrogen	N2	0.00	0.54	0.52
Methane	C1	0.35	59.57	56.92
Ethane	C2	0.32	9.18	8.78
Propane	C3	0.93	7.44	7.15
Iso-Butane	iC4	0.43	1.36	1.32
N-Butane	nC4	0.97	2.14	2.09
Iso-Pentane	iC5	0.87	0.72	0.73
N-Pentane	nC5	1.20	0.78	0.80
Hexanes	C6	4.67	1.08	1.24
Heptanes	C7	15.30	1.09	1.73
Octanes	C8	11.56	0.36	0.86
Nonanes	C9	13.01	0.17	0.74
Decanes	C10	8.95	0.04	0.44
Undecanes	C11	5.63	0.02	0.27
Dodecanes Plus	C12+	35.59	0.05	1.63
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0447	0.9553	1.0000
Mass Ratio	:	0.2073	0.7927	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	14342 SCF	--
Stream Properties				
Molecular Weight	:	158.6	28.38	34.20
Density obs. (gm/cc)	:	0.8002 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	45.2 °API @ 60 °F	0.990	--
GHV (BTU/scf)	:	--	1284	--
Hexanes Plus Properties				
Mol %	:	94.70	2.81	6.91
Molecular Weight	:	164.3	96.5	138.0
Density (gm/cc @ 60 °F)	:	0.8063	0.6844	0.7691
Gravity (°API @ 60 °F)	:	43.8	75.0	52.3
Heptanes Plus Properties				
Mol %	:	90.03	1.73	5.67
Molecular Weight	:	168.4	104.4	149.8
Density (gm/cc @ 60 °F)	:	0.8100	0.6947	0.7836
Gravity (°API @ 60 °F)	:	43.0	72.0	48.9
Decanes Plus Properties				
Mol %	:	50.16	0.11	2.34
Molecular Weight	:	217.0	152.7	213.3
Density (gm/cc @ 60 °F)	:	0.8394	0.7451	0.8358
Gravity (°API @ 60 °F)	:	36.9	58.2	37.6
Undecanes Plus Properties				
Mol %	:	41.22	0.07	1.90
Molecular Weight	:	235.0	163.4	231.9
Density (gm/cc @ 60 °F)	:	0.8477	0.7540	0.8450
Gravity (°API @ 60 °F)	:	35.3	56.0	35.8
Dodecanes Plus Properties				
Mol %	:	35.59	0.05	1.63
Molecular Weight	:	248.9	170.0	246.4
Density (gm/cc @ 60 °F)	:	0.8536	0.7592	0.8514
Gravity (°API @ 60 °F)	:	34.1	54.7	34.5

Measured Dew Point 5680 psig at 273 °F

* (P)ressure : 4431 psig * (T)emperature : 273 °F

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 812417 EX MPSR 2499

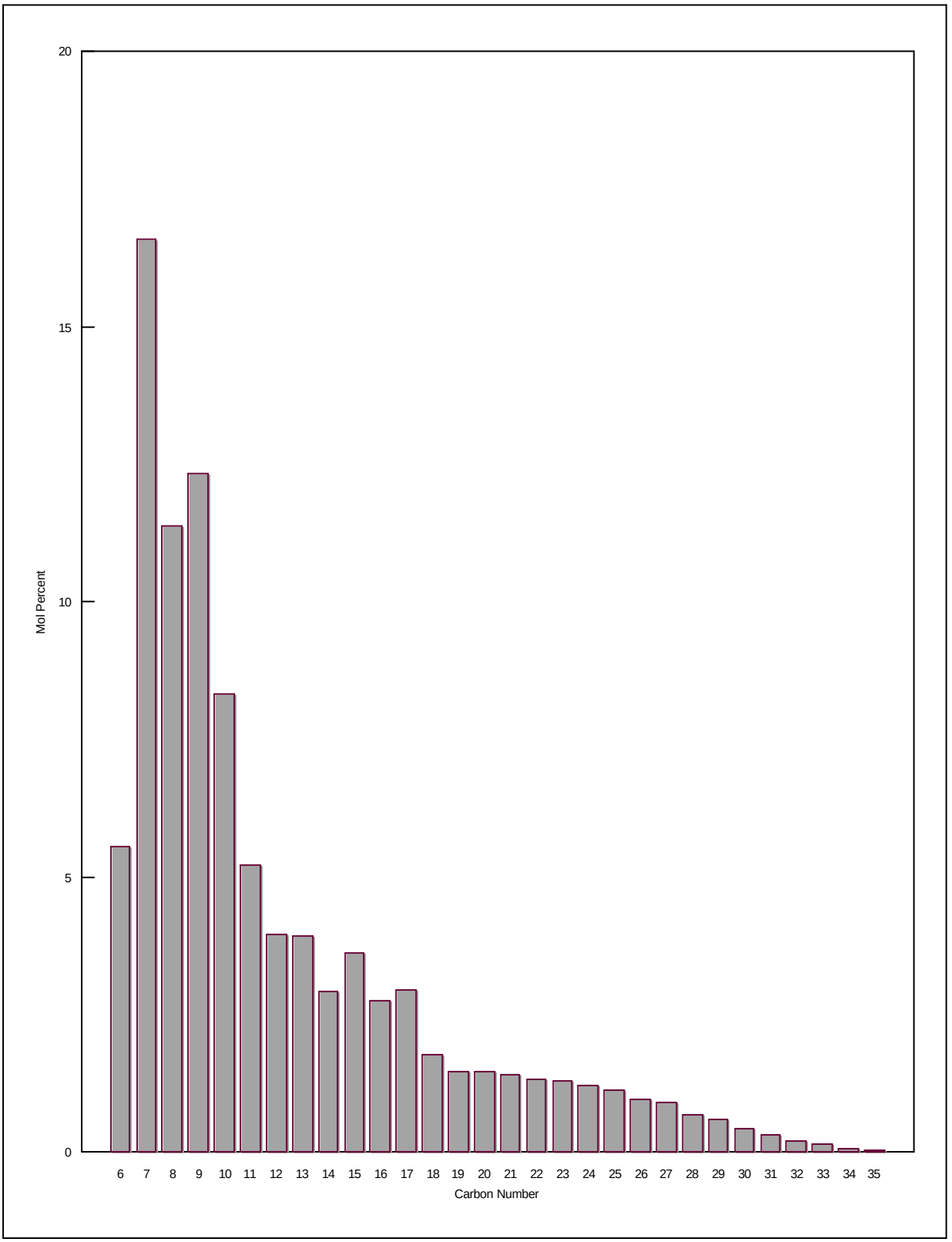
Component		Mol %
Hexanes minus	C6-	5.14
Hexanes	C6	5.56
Heptanes	C7	16.59
Octanes	C8	11.39
Nonanes	C9	12.34
Decanes	C10	8.31
Undecanes	C11	5.21
Dodecanes	C12	3.97
Tridecanes	C13	3.92
Tetradecanes	C14	2.92
Pentadecanes	C15	3.62
Hexadecanes	C16	2.76
Heptadecanes	C17	2.94
Octadecanes	C18	1.78
Nonadecanes	C19	1.47
Eicosanes	C20	1.47
Heneicosanes	C21	1.40
Docosanes	C22	1.31
Tricosanes	C23	1.29
Tetracosanes	C24	1.20
Pentacosanes	C25	1.13
Hexacosanes	C26	0.96
Heptacosanes	C27	0.90
Octacosanes	C28	0.66
Nonacosanes	C29	0.59
Triacontanes	C30	0.41
Hentriacontanes	C31	0.31
Dotriacontanes	C32	0.19
Tritriacontanes	C33	0.15
Tetratriacontanes	C34	0.07
Pentatriacontanes Plus	C35+	0.04
TOTAL		100.00

Molecular Weight Calculated *	:	159.0
Density @ 60 °F Calculated *	:	0.7990
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7990

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 812417 EX MPSR 2499



PETROLAB

Company : Origin Energy Resources Ltd. | Page : 16 of 43
Well : Rockhopper -1 | File : O - 10006a

COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 812417 EX MPSR 2499

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.20	14.02	13.15
Nitrogen	N2	0.00	0.26	0.24
Methane	C1	0.36	62.07	58.17
Ethane	C2	0.33	9.89	9.29
Propane	C3	0.95	7.92	7.48
Iso-Butane	iC4	0.31	1.03	0.98
N-Butane	nC4	0.74	1.72	1.66
Iso-Pentane	iC5	0.65	0.58	0.58
N-Pentane	nC5	0.87	0.60	0.62
Hexanes	C6	5.60	0.86	1.16
Heptanes	C7	16.72	0.74	1.75
Octanes	C8	11.48	0.21	0.92
Nonanes	C9	12.44	0.08	0.86
Decanes	C10	8.37	0.02	0.55
Undecanes	C11	5.25	0.00	0.33
Dodecanes Plus	C12+	35.73	0.00	2.26
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0632	0.9368	1.0000
Mass Ratio	:	0.2846	0.7154	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	9948 SCF	--
Stream Properties				
Molecular Weight	:	158.7	26.90	35.22
Density obs. (gm/cc)	:	0.8004 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	45.1 °API @ 60 °F	0.930	--
GHV (BTU/scf)	:	--	1245	--
Hexanes Plus Properties				
Mol %	:	95.59	1.91	7.83
Molecular Weight	:	163.5	93.3	147.5
Density (gm/cc @ 60 °F)	:	0.8055	0.6799	0.7846
Gravity (°API @ 60 °F)	:	44.0	76.4	48.7
Heptanes Plus Properties				
Mol %	:	89.99	1.05	6.67
Molecular Weight	:	168.5	100.8	158.5
Density (gm/cc @ 60 °F)	:	0.8100	0.6902	0.7970
Gravity (°API @ 60 °F)	:	43.0	73.3	45.9
Decanes Plus Properties				
Mol %	:	49.35	0.02	3.14
Molecular Weight	:	219.3	133.9	218.8
Density (gm/cc @ 60 °F)	:	0.8405	0.7277	0.8400
Gravity (°API @ 60 °F)	:	36.7	62.8	36.8
Undecanes Plus Properties				
Mol %	:	40.98	0.00	2.59
Molecular Weight	:	236.7	--	236.7
Density (gm/cc @ 60 °F)	:	0.8484	--	0.8484
Gravity (°API @ 60 °F)	:	35.1	--	35.1
Dodecanes Plus Properties				
Mol %	:	35.73	0.00	2.26
Molecular Weight	:	249.9	--	249.9
Density (gm/cc @ 60 °F)	:	0.8539	--	0.8539
Gravity (°API @ 60 °F)	:	34.0	--	34.0

Measured Dew Point 4855 psig at 271 °F

* (P)ressure : 4439 psig * (T)emperature : 271 °F

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 170196 EX MPSR 3356

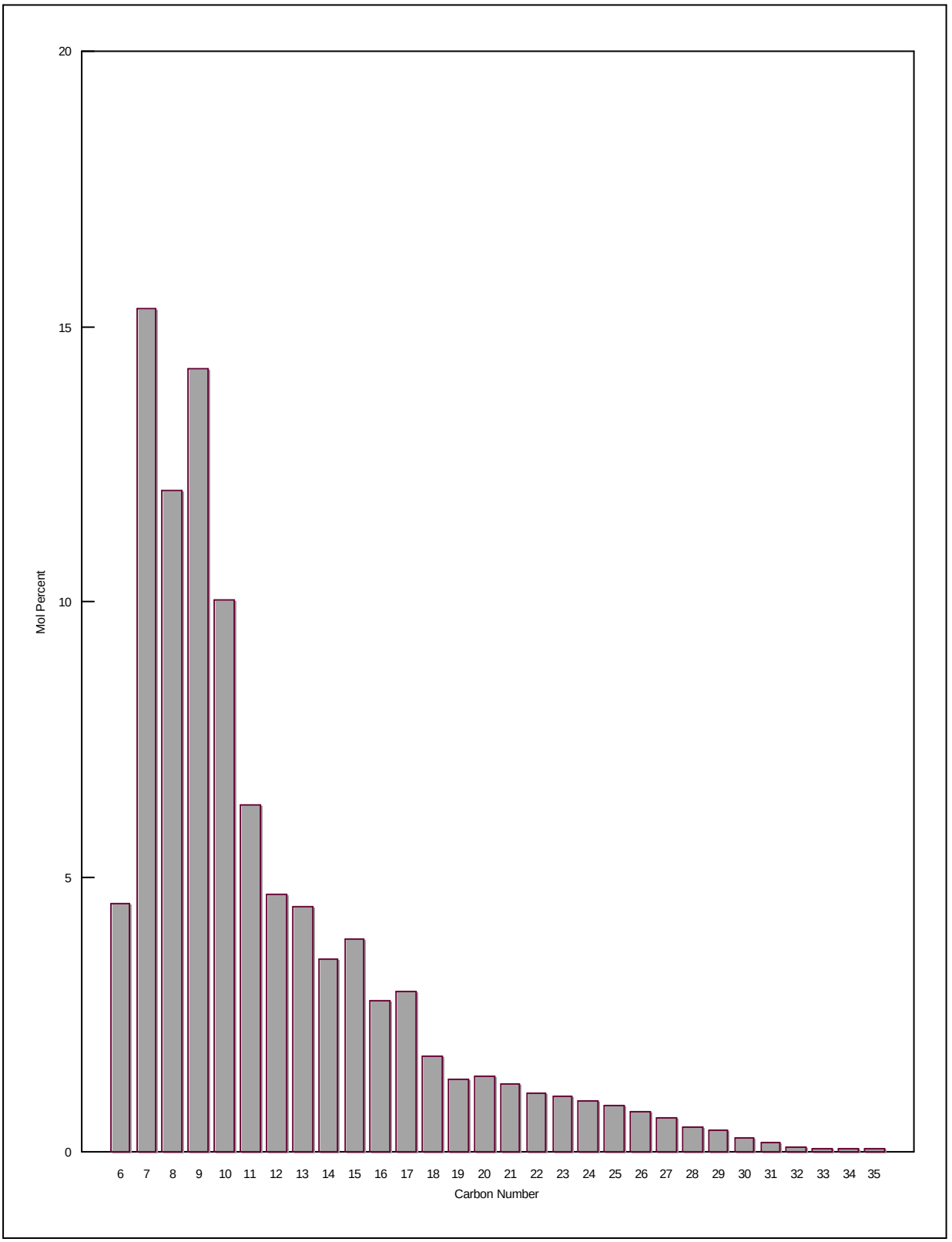
Component		Mol %
Hexanes minus	C6-	2.97
Hexanes	C6	4.51
Heptanes	C7	15.32
Octanes	C8	12.01
Nonanes	C9	14.23
Decanes	C10	10.04
Undecanes	C11	6.32
Dodecanes	C12	4.68
Tridecanes	C13	4.45
Tetradecanes	C14	3.51
Pentadecanes	C15	3.86
Hexadecanes	C16	2.75
Heptadecanes	C17	2.92
Octadecanes	C18	1.75
Nonadecanes	C19	1.33
Eicosanes	C20	1.37
Heneicosanes	C21	1.24
Docosanes	C22	1.06
Tricosanes	C23	1.01
Tetracosanes	C24	0.93
Pentacosanes	C25	0.85
Hexacosanes	C26	0.72
Heptacosanes	C27	0.63
Octacosanes	C28	0.45
Nonacosanes	C29	0.39
Triacontanes	C30	0.25
Hentriacontanes	C31	0.18
Dotriacontanes	C32	0.08
Tritriacontanes	C33	0.07
Tetratriacontanes	C34	0.06
Pentatriacontanes Plus	C35+	0.06
TOTAL		100.00

Molecular Weight Calculated *	:	156.1
Density @ 60 °F Calculated *	:	0.7971
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7971

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 170196 EX MPSR 3356



COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 170196 EX MPSR 3356

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.20	13.87	13.28
Nitrogen	N2	0.00	0.33	0.32
Methane	C1	0.35	60.51	57.92
Ethane	C2	0.31	9.30	8.91
Propane	C3	0.89	7.59	7.30
Iso-Butane	iC4	0.42	1.42	1.38
N-Butane	nC4	0.95	2.27	2.21
Iso-Pentane	iC5	0.83	0.76	0.76
N-Pentane	nC5	1.13	0.81	0.82
Hexanes	C6	4.41	1.17	1.31
Heptanes	C7	14.99	1.22	1.81
Octanes	C8	11.75	0.42	0.91
Nonanes	C9	13.92	0.23	0.82
Decanes	C10	9.82	0.07	0.49
Undecanes	C11	6.18	0.01	0.28
Dodecanes Plus	C12+	33.85	0.02	1.48
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0431	0.9569	1.0000
Mass Ratio	:	0.1954	0.8046	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	15359 SCF	--
Stream Properties				
Molecular Weight	:	152.8	28.35	33.72
Density obs. (gm/cc)	:	0.7949 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	46.3 °API @ 60 °F	0.980	--
GHV (BTU/scf)	:	--	1326	--
Hexanes Plus Properties				
Mol %	:	94.93	3.14	7.10
Molecular Weight	:	158.0	96.3	131.9
Density (gm/cc @ 60 °F)	:	0.8008	0.6841	0.7607
Gravity (°API @ 60 °F)	:	45.0	75.1	54.3
Heptanes Plus Properties				
Mol %	:	90.52	1.97	5.79
Molecular Weight	:	161.6	103.6	142.7
Density (gm/cc @ 60 °F)	:	0.8043	0.6938	0.7751
Gravity (°API @ 60 °F)	:	44.3	72.3	50.9
Decanes Plus Properties				
Mol %	:	49.86	0.10	2.25
Molecular Weight	:	205.6	142.5	202.5
Density (gm/cc @ 60 °F)	:	0.8329	0.7359	0.8295
Gravity (°API @ 60 °F)	:	38.2	60.6	38.9
Undecanes Plus Properties				
Mol %	:	40.03	0.03	1.76
Molecular Weight	:	223.1	162.3	221.9
Density (gm/cc @ 60 °F)	:	0.8417	0.7531	0.8404
Gravity (°API @ 60 °F)	:	36.5	56.2	36.7
Dodecanes Plus Properties				
Mol %	:	33.85	0.02	1.48
Molecular Weight	:	237.0	169.9	236.1
Density (gm/cc @ 60 °F)	:	0.8481	0.7592	0.8471
Gravity (°API @ 60 °F)	:	35.2	54.7	35.4

Measured Dew Point 4635 psig at 271 °F

* (P)ressure : 4439 psig * (T)emperature : 271 °F

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 9214 / 45 EX MPSR 4083

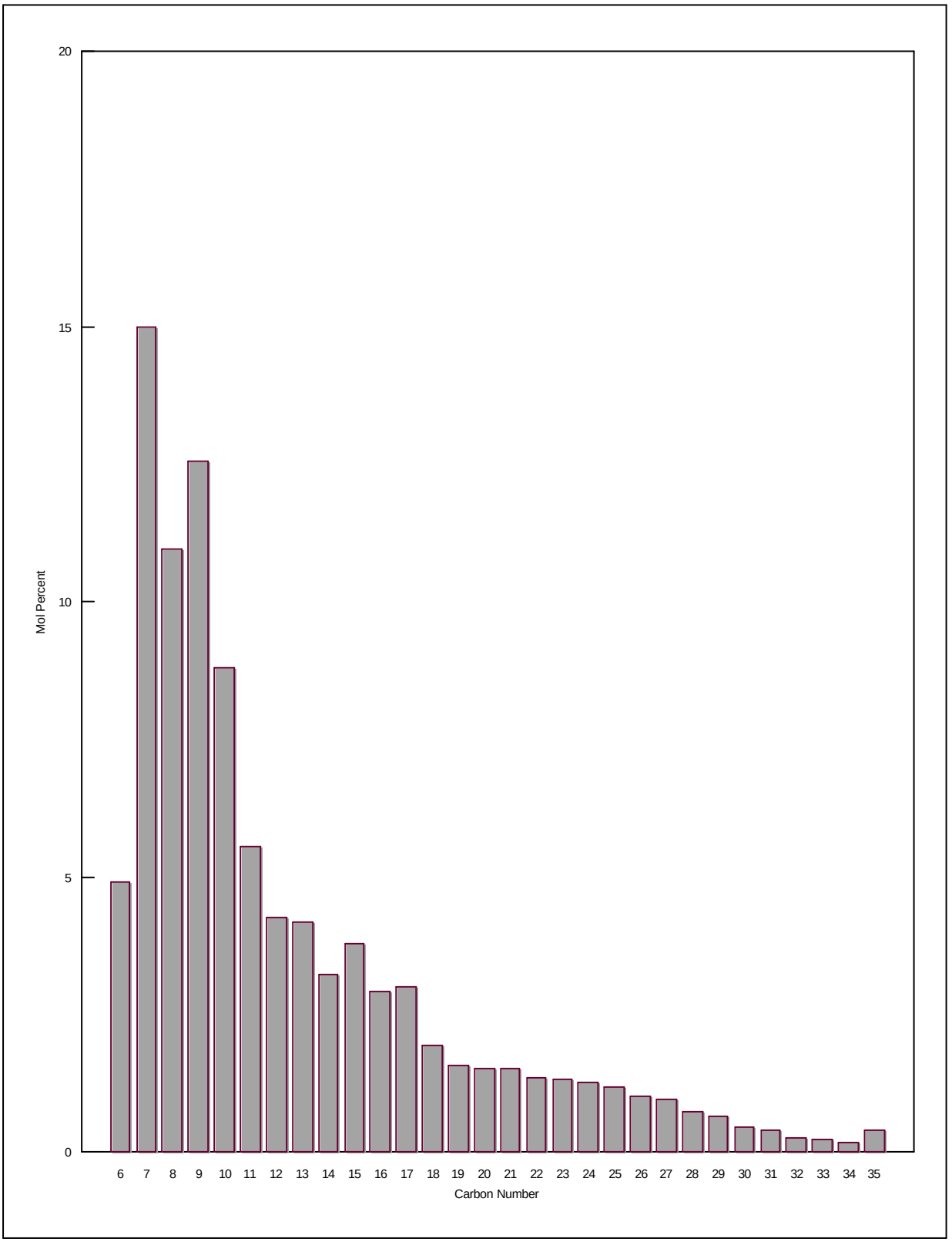
Component		Mol %
Hexanes minus	C6-	3.95
Hexanes	C6	4.92
Heptanes	C7	14.98
Octanes	C8	10.97
Nonanes	C9	12.56
Decanes	C10	8.79
Undecanes	C11	5.55
Dodecanes	C12	4.27
Tridecanes	C13	4.18
Tetradecanes	C14	3.22
Pentadecanes	C15	3.79
Hexadecanes	C16	2.93
Heptadecanes	C17	3.00
Octadecanes	C18	1.95
Nonadecanes	C19	1.56
Eicosanes	C20	1.51
Heneicosanes	C21	1.51
Docosanes	C22	1.34
Tricosanes	C23	1.32
Tetracosanes	C24	1.26
Pentacosanes	C25	1.19
Hexacosanes	C26	1.00
Heptacosanes	C27	0.96
Octacosanes	C28	0.72
Nonacosanes	C29	0.65
Triacontanes	C30	0.46
Hentriacontanes	C31	0.40
Dotriacontanes	C32	0.26
Tritriacontanes	C33	0.23
Tetratriacontanes	C34	0.18
Pentatriacontanes Plus	C35+	0.39
TOTAL		100.00

Molecular Weight Calculated *	:	165.7
Density @ 60 °F Calculated *	:	0.8052
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.8052

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 9214 / 45 EX MPSR 4083



PETROLAB

Company : Origin Energy Resources Ltd. | Page : 22 of 43
Well : Rockhopper -1 | File : O - 10006a

COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 9214 / 45 EX MPSR 4083

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.20	14.15	13.44
Nitrogen	N2	0.00	0.26	0.25
Methane	C1	0.35	60.09	57.03
Ethane	C2	0.32	9.53	9.06
Propane	C3	0.93	7.74	7.39
Iso-Butane	iC4	0.44	1.46	1.41
N-Butane	nC4	1.04	2.42	2.35
Iso-Pentane	iC5	0.95	0.84	0.85
N-Pentane	nC5	1.29	0.89	0.91
Hexanes	C6	4.84	1.05	1.24
Heptanes	C7	14.74	0.99	1.69
Octanes	C8	10.79	0.33	0.87
Nonanes	C9	12.36	0.17	0.79
Decanes	C10	8.65	0.05	0.49
Undecanes	C11	5.46	0.02	0.30
Dodecanes Plus	C12+	37.66	0.01	1.93
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0512	0.9488	1.0000
Mass Ratio	:	0.2375	0.7625	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	12164 SCF	--
Stream Properties				
Molecular Weight	:	162.9	28.23	35.12
Density obs. (gm/cc)	:	0.8039 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	44.3 °API @ 60 °F	0.980	--
GHV (BTU/scf)	:	--	1314	--
Hexanes Plus Properties				
Mol %	:	94.49	2.62	7.31
Molecular Weight	:	169.1	95.6	144.2
Density (gm/cc @ 60 °F)	:	0.8102	0.6831	0.7776
Gravity (°API @ 60 °F)	:	43.0	75.4	50.3
Heptanes Plus Properties				
Mol %	:	89.65	1.57	6.07
Molecular Weight	:	173.7	103.4	156.5
Density (gm/cc @ 60 °F)	:	0.8141	0.6935	0.7918
Gravity (°API @ 60 °F)	:	42.2	72.4	47.0
Decanes Plus Properties				
Mol %	:	51.77	0.08	2.72
Molecular Weight	:	222.3	141.7	219.9
Density (gm/cc @ 60 °F)	:	0.8423	0.7352	0.8400
Gravity (°API @ 60 °F)	:	36.3	60.8	36.8
Undecanes Plus Properties				
Mol %	:	43.12	0.03	2.23
Molecular Weight	:	240.1	154.6	238.9
Density (gm/cc @ 60 °F)	:	0.8501	0.7467	0.8492
Gravity (°API @ 60 °F)	:	34.8	57.8	35.0
Dodecanes Plus Properties				
Mol %	:	37.66	0.01	1.93
Molecular Weight	:	253.6	169.8	253.1
Density (gm/cc @ 60 °F)	:	0.8557	0.7591	0.8553
Gravity (°API @ 60 °F)	:	33.7	54.7	33.8

Measured Dew Point 4900psig at 271 °F

* (P)ressure : 4439 psig * (T)emperature : 271 °F

Validity Check on Cylinder 0826-B1-F ex MPSR 487

Saturation Pressure : 3626 @ 79 °F

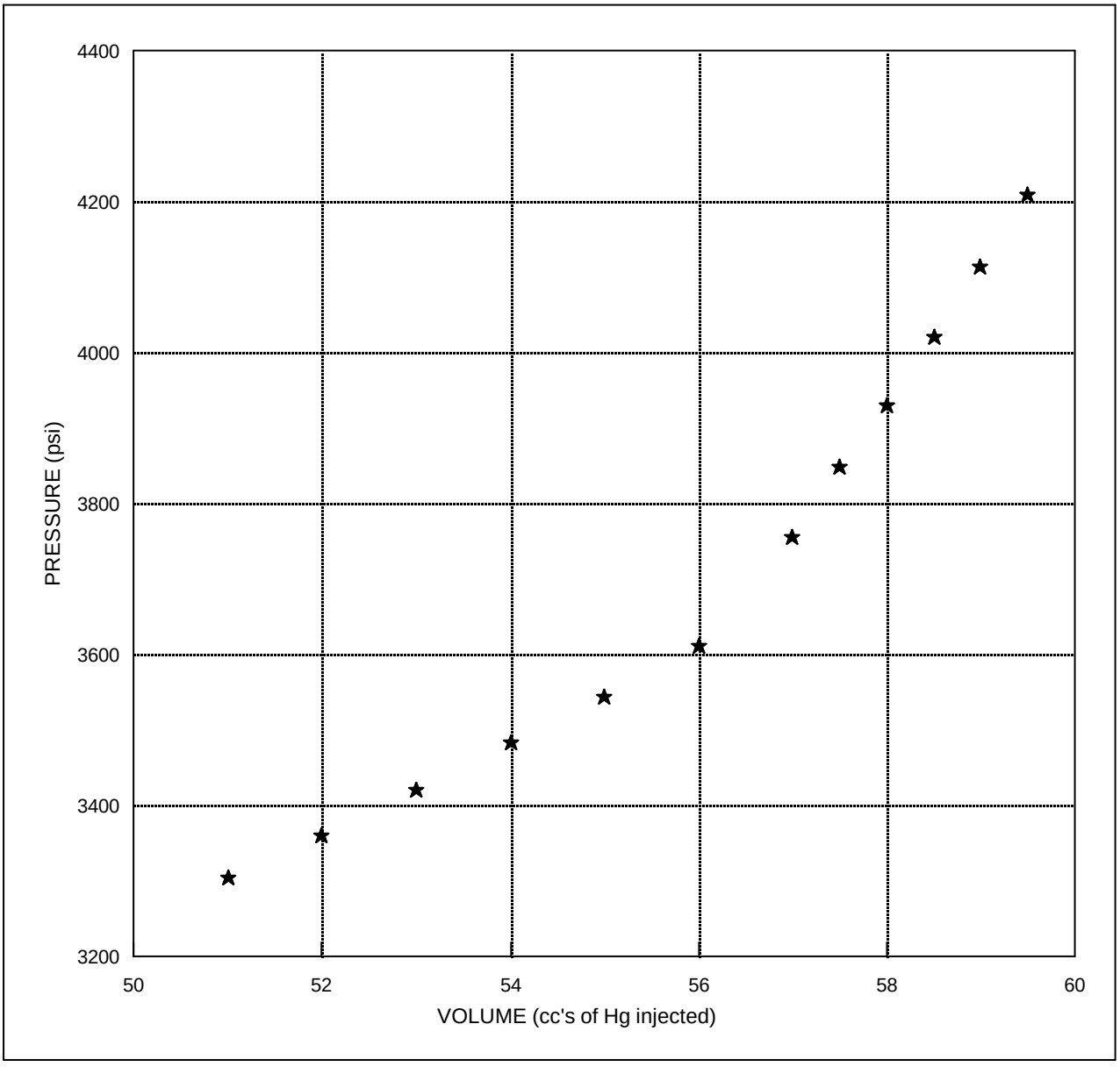
Sample # 2

Transfer Conditions

Transferred	:	January 09, 2010
Sampler ID	:	MPSR 487
	:	

Transferred into Cylinder #	:	0826-B1-F
Amount Transferred (ccs)	:	370
Transfer Pressure (psig)	:	6000

Volume (cc's)	Pressure (psi)
51.0	3303
52.0	3360
53.0	3419
54.0	3482
55.0	3544
56.0	3612
57.0	3755
57.5	3848
58.0	3929
58.5	4021
59.0	4112
59.5	4209



FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 0826-B1-F ex MPSR 487

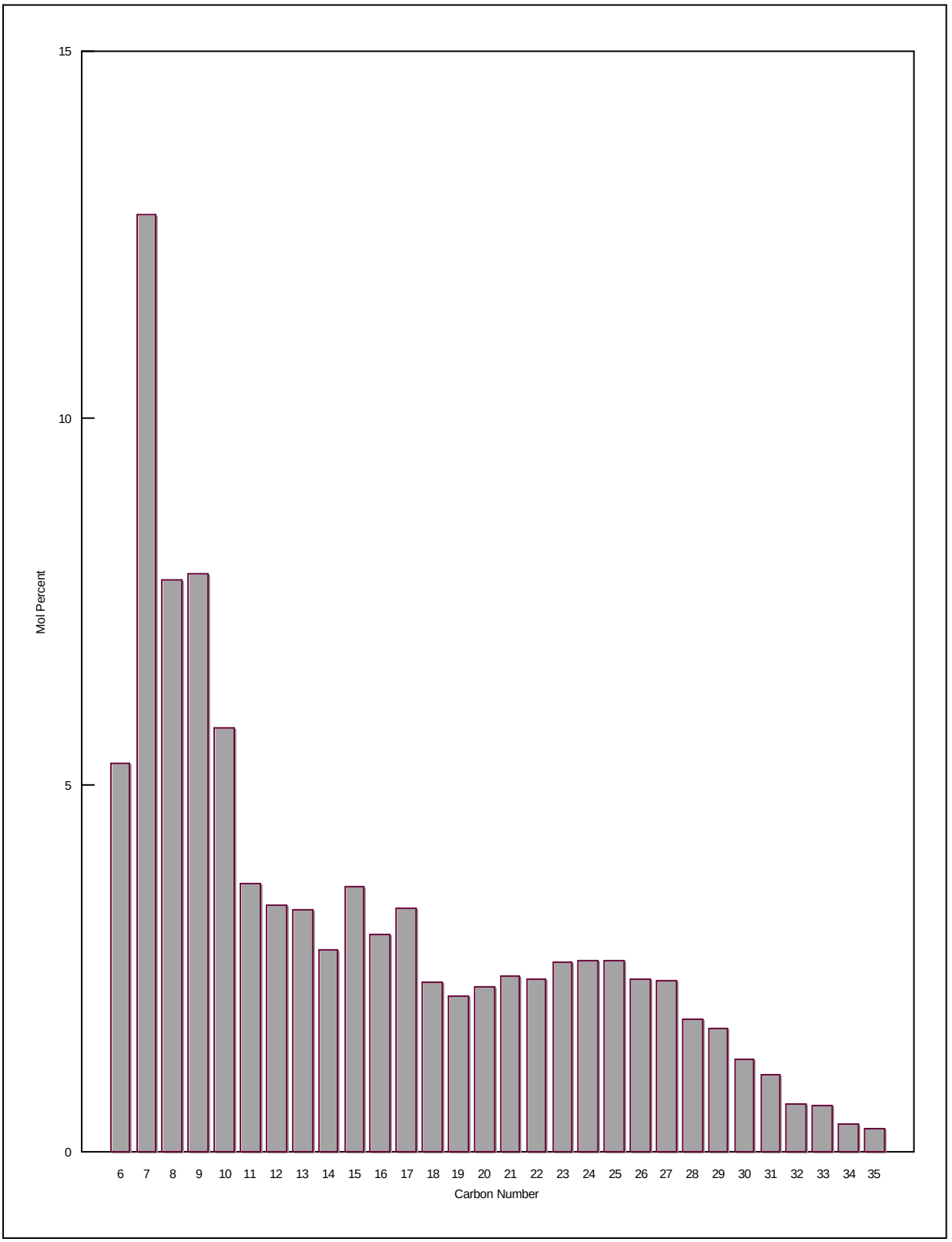
Component		Mol %
Hexanes minus	C6-	5.73
Hexanes	C6	5.29
Heptanes	C7	12.77
Octanes	C8	7.80
Nonanes	C9	7.89
Decanes	C10	5.78
Undecanes	C11	3.66
Dodecanes	C12	3.37
Tridecanes	C13	3.30
Tetradecanes	C14	2.75
Pentadecanes	C15	3.61
Hexadecanes	C16	2.96
Heptadecanes	C17	3.33
Octadecanes	C18	2.32
Nonadecanes	C19	2.12
Eicosanes	C20	2.25
Heneicosanes	C21	2.40
Docosanes	C22	2.35
Tricosanes	C23	2.58
Tetracosanes	C24	2.60
Pentacosanes	C25	2.61
Hexacosanes	C26	2.36
Heptacosanes	C27	2.34
Octacosanes	C28	1.82
Nonacosanes	C29	1.69
Triacontanes	C30	1.27
Hentriacontanes	C31	1.05
Dotriacontanes	C32	0.66
Tritriacontanes	C33	0.64
Tetratriacontanes	C34	0.39
Pentatriacontanes Plus	C35+	0.31
TOTAL		100.00

Molecular Weight Calculated *	:	197.9
Density @ 60 °F Calculated *	:	0.8280
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.8276

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 0826-B1-F ex MPSR 487



COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 0826-B1-F ex MPSR 487

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.21	14.64	11.78
Nitrogen	N2	0.00	0.50	0.40
Methane	C1	0.32	55.90	44.90
Ethane	C2	0.35	10.49	8.48
Propane	C3	1.10	9.40	7.76
Iso-Butane	iC4	0.57	1.96	1.69
N-Butane	nC4	1.28	3.05	2.70
Iso-Pentane	iC5	1.17	1.07	1.09
N-Pentane	nC5	1.48	1.06	1.14
Hexanes	C6	5.25	0.94	1.79
Heptanes	C7	12.67	0.74	3.10
Octanes	C8	7.74	0.18	1.68
Nonanes	C9	7.83	0.06	1.60
Decanes	C10	5.73	0.01	1.14
Undecanes	C11	3.63	0.00	0.72
Dodecanes Plus	C12+	50.67	0.00	10.03
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.1979	0.8021	1.0000
Mass Ratio	:	0.6243	0.3757	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	2.0315 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	2278 SCF	--
Stream Properties				
Molecular Weight	:	195.9	29.08	62.1
Density obs. (gm/cc)	:	0.8276 @ 60 °F	--	0.6543 @ PT*
Gravity (AIR = 1.000)	:	39.3 °API @ 60 °F	1.010	84.6
GHV (BTU/scf)	:	--	1344	--
Hexanes Plus Properties				
Mol %	:	93.52	1.93	20.06
Molecular Weight	:	205.5	92.2	196.7
Density (gm/cc @ 60 °F)	:	0.8346	0.6783	0.8277
Gravity (°API @ 60 °F)	:	37.9	76.9	39.3
Heptanes Plus Properties				
Mol %	:	88.27	0.99	18.27
Molecular Weight	:	212.7	99.9	207.8
Density (gm/cc @ 60 °F)	:	0.8389	0.6890	0.8351
Gravity (°API @ 60 °F)	:	37.0	73.7	37.8
Decanes Plus Properties				
Mol %	:	60.03	0.01	11.89
Molecular Weight	:	262.9	133.9	262.9
Density (gm/cc @ 60 °F)	:	0.8604	0.7277	0.8603
Gravity (°API @ 60 °F)	:	32.8	62.8	32.8
Undecanes Plus Properties				
Mol %	:	54.30	0.00	10.75
Molecular Weight	:	276.6	--	276.6
Density (gm/cc @ 60 °F)	:	0.8651	--	0.8651
Gravity (°API @ 60 °F)	:	31.9	--	31.9
Dodecanes Plus Properties				
Mol %	:	50.67	0.00	10.03
Molecular Weight	:	285.8	--	285.8
Density (gm/cc @ 60 °F)	:	0.8681	--	0.8681
Gravity (°API @ 60 °F)	:	31.3	--	31.3

* (P)ressure : 5000 psig * (T)emperature : 79 °F

Validity Check on Cylinder 810348 ex MPSR 2040

Saturation Pressure : 3654 @ 79 °F

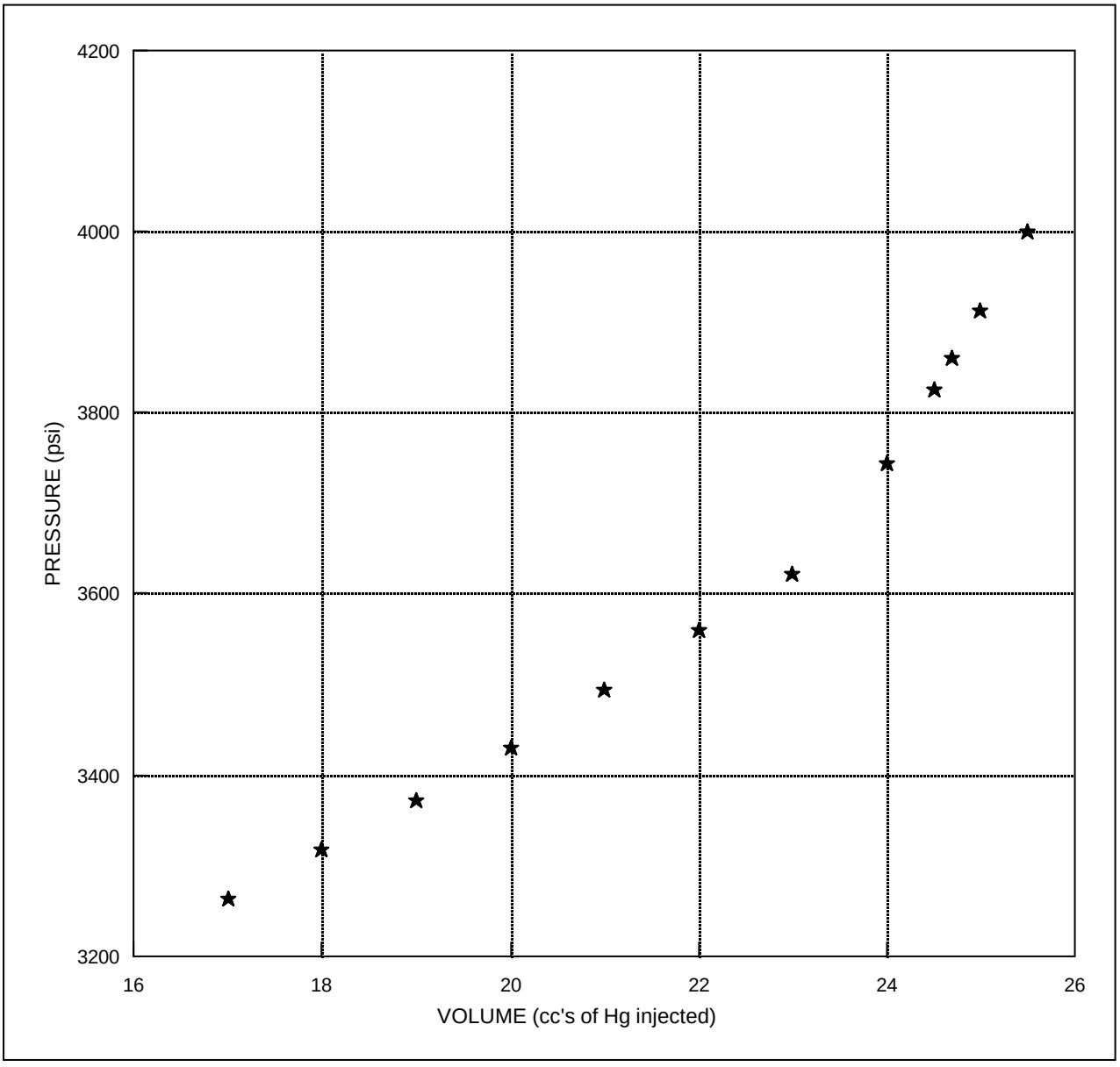
Sample # 3

Transfer Conditions

Transferred	:	January 09, 2010
Sampler ID	:	MPSR 2040
	:	

Transferred into Cylinder #	:	810348
Amount Transferred (ccs)	:	375
Transfer Pressure (psig)	:	6000

Volume (cc's)	Pressure (psi)
17.0	3263
18.0	3318
19.0	3372
20.0	3431
21.0	3494
22.0	3559
23.0	3622
24.0	3744
24.5	3825
24.7	3860
25.0	3913
25.5	4000



FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 810348 ex MPSR 2040

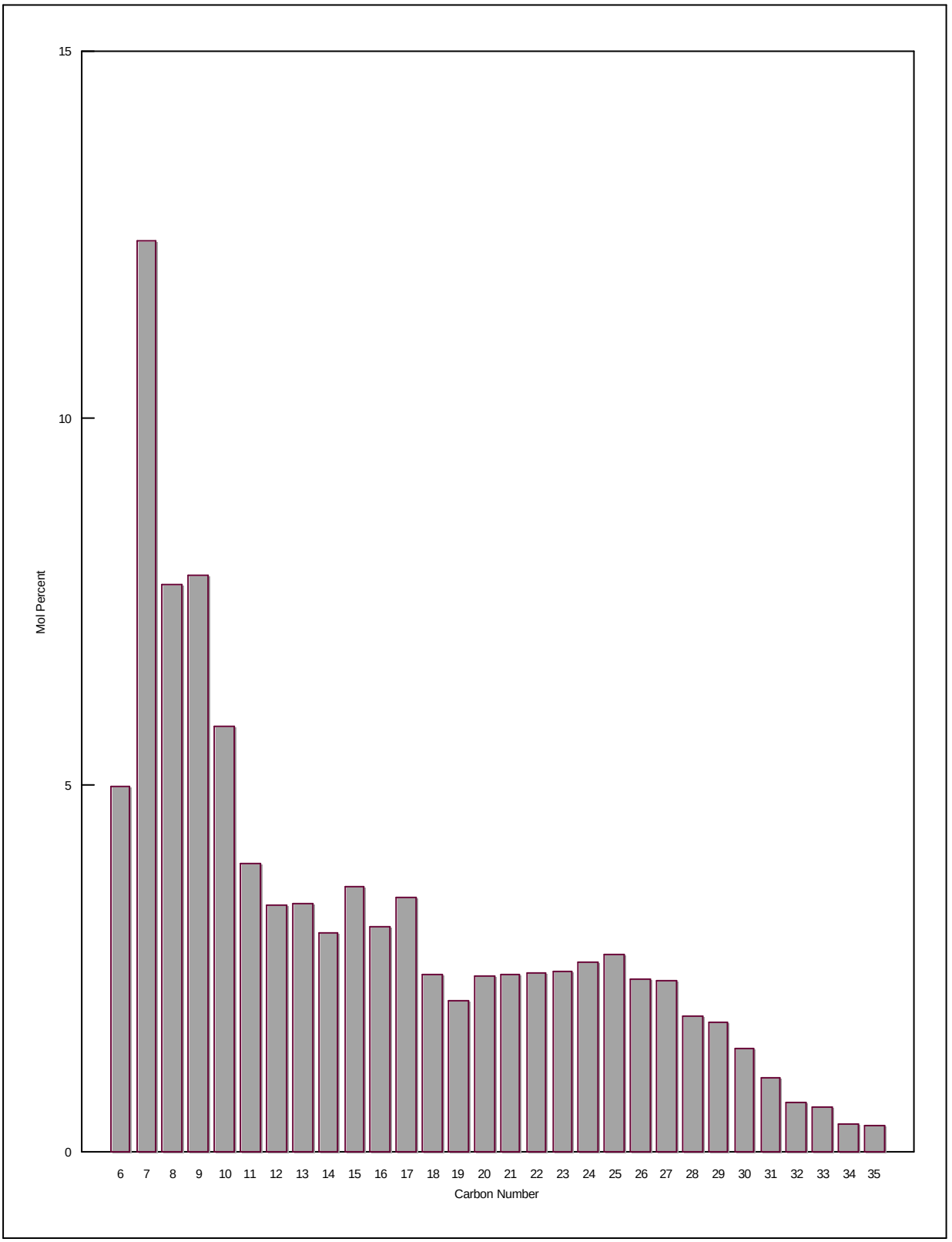
Component		Mol %
Hexanes minus	C6-	5.15
Hexanes	C6	4.98
Heptanes	C7	12.43
Octanes	C8	7.73
Nonanes	C9	7.86
Decanes	C10	5.80
Undecanes	C11	3.93
Dodecanes	C12	3.36
Tridecanes	C13	3.38
Tetradecanes	C14	2.98
Pentadecanes	C15	3.61
Hexadecanes	C16	3.07
Heptadecanes	C17	3.47
Octadecanes	C18	2.42
Nonadecanes	C19	2.07
Eicosanes	C20	2.39
Heneicosanes	C21	2.42
Docosanes	C22	2.44
Tricosanes	C23	2.47
Tetracosanes	C24	2.59
Pentacosanes	C25	2.69
Hexacosanes	C26	2.35
Heptacosanes	C27	2.34
Octacosanes	C28	1.85
Nonacosanes	C29	1.76
Triacontanes	C30	1.41
Hentriacontanes	C31	1.01
Dotriacontanes	C32	0.68
Tritriacontanes	C33	0.61
Tetratriacontanes	C34	0.39
Pentatriacontanes Plus	C35+	0.36
TOTAL		100.00

Molecular Weight Calculated *	:	200.1
Density @ 60 °F Calculated *	:	0.8294
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.8218

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 810348 ex MPSR 2040



COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 810348 ex MPSR 2040

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.20	14.64	11.80
Nitrogen	N2	0.00	0.52	0.42
Methane	C1	0.32	56.14	45.17
Ethane	C2	0.34	10.49	8.50
Propane	C3	1.07	9.34	7.72
Iso-Butane	iC4	0.56	1.95	1.68
N-Butane	nC4	1.23	3.01	2.66
Iso-Pentane	iC5	1.11	1.04	1.05
N-Pentane	nC5	1.38	1.02	1.09
Hexanes	C6	4.92	0.90	1.69
Heptanes	C7	12.29	0.68	2.96
Octanes	C8	7.64	0.19	1.66
Nonanes	C9	7.77	0.07	1.58
Decanes	C10	5.74	0.01	1.14
Undecanes	C11	3.89	0.00	0.76
Dodecanes Plus	C12+	51.54	0.00	10.12
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.1966	0.8034	1.0000
Mass Ratio	:	0.6255	0.3745	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	2.0361 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	2279 SCF	--
Stream Properties				
Molecular Weight	:	197.7	28.95	62.1
Density obs. (gm/cc)	:	0.8287 @ 60 °F	--	0.6535 @ PT*
Gravity (AIR = 1.000)	:	39.1 °API @ 60 °F	1.010	84.8
GHV (BTU/scf)	:	--	1337	--
Hexanes Plus Properties				
Mol %	:	93.79	1.85	19.91
Molecular Weight	:	207.0	92.4	198.4
Density (gm/cc @ 60 °F)	:	0.8354	0.6787	0.8288
Gravity (°API @ 60 °F)	:	37.7	76.8	39.1
Heptanes Plus Properties				
Mol %	:	88.87	0.95	18.22
Molecular Weight	:	213.8	100.4	209.0
Density (gm/cc @ 60 °F)	:	0.8394	0.6897	0.8358
Gravity (°API @ 60 °F)	:	36.9	73.5	37.6
Decanes Plus Properties				
Mol %	:	61.16	0.01	12.02
Molecular Weight	:	262.6	133.9	262.5
Density (gm/cc @ 60 °F)	:	0.8602	0.7277	0.8602
Gravity (°API @ 60 °F)	:	32.8	62.8	32.8
Undecanes Plus Properties				
Mol %	:	55.43	0.00	10.88
Molecular Weight	:	275.9	--	275.9
Density (gm/cc @ 60 °F)	:	0.8648	--	0.8648
Gravity (°API @ 60 °F)	:	32.0	--	32.0
Dodecanes Plus Properties				
Mol %	:	51.54	0.00	10.12
Molecular Weight	:	285.6	--	285.6
Density (gm/cc @ 60 °F)	:	0.8681	--	0.8681
Gravity (°API @ 60 °F)	:	31.4	--	31.4

* (P)ressure : 5000 psig * (T)emperature : 81 °F

Validity Check on Cylinder 0833-B1-F ex MPSR 3305

Saturation Pressure : 3280 @ 79 °F

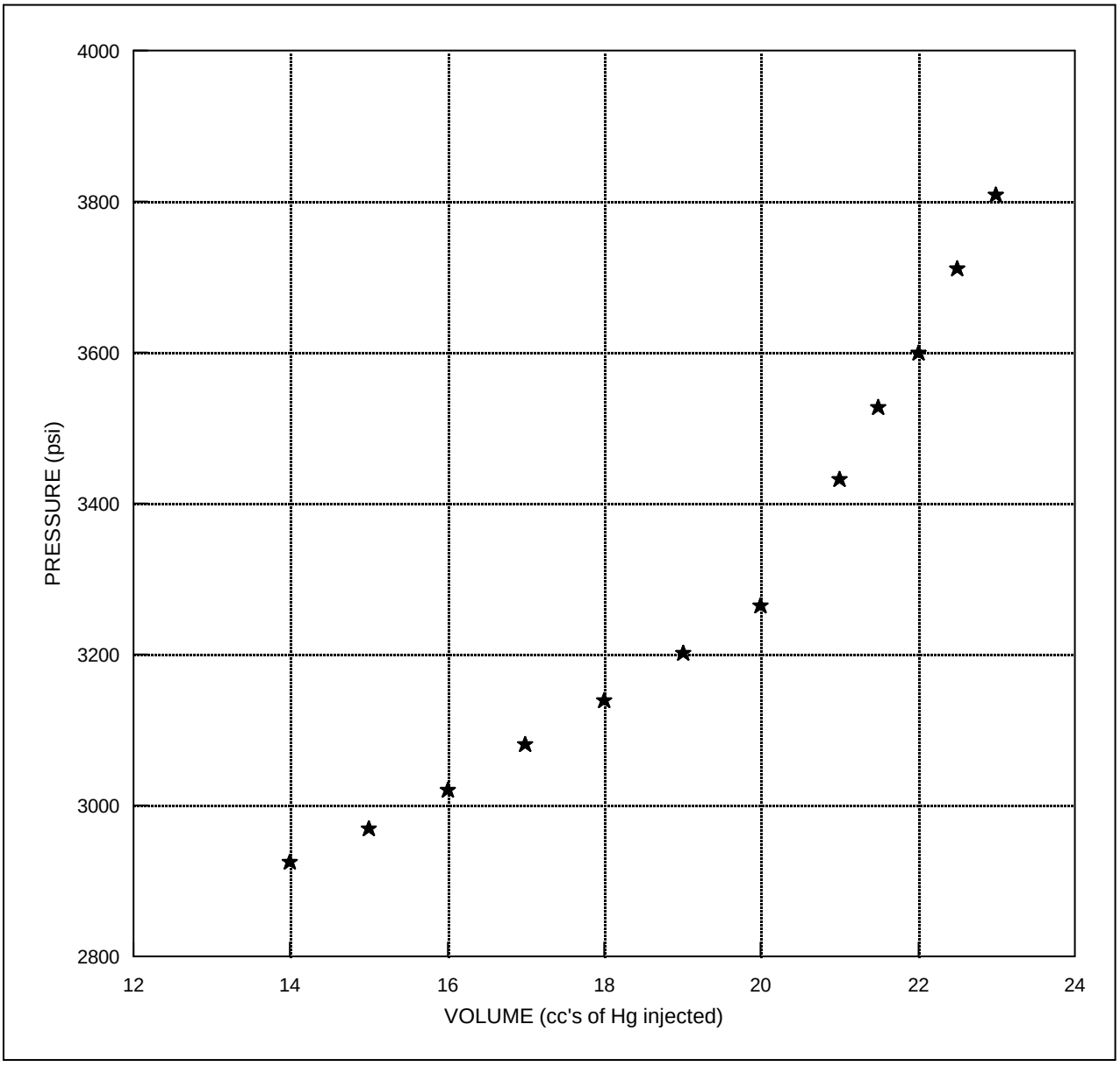
Sample # 7

Transfer Conditions

Transferred	:	January 09, 2010
Sampler ID	:	MPSR 3305

Transferred into Cylinder #	:	0833-B1-F
Amount Transferred (ccs)	:	375
Transfer Pressure (psig)	:	6000

Volume (cc's)	Pressure (psi)
14.0	2925
15.0	2970
16.0	3021
17.0	3081
18.0	3140
19.0	3201
20.0	3264
21.0	3431
21.5	3526
22.0	3600
22.5	3710
23.0	3809



FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 0833-B1-F ex MPSR 3305

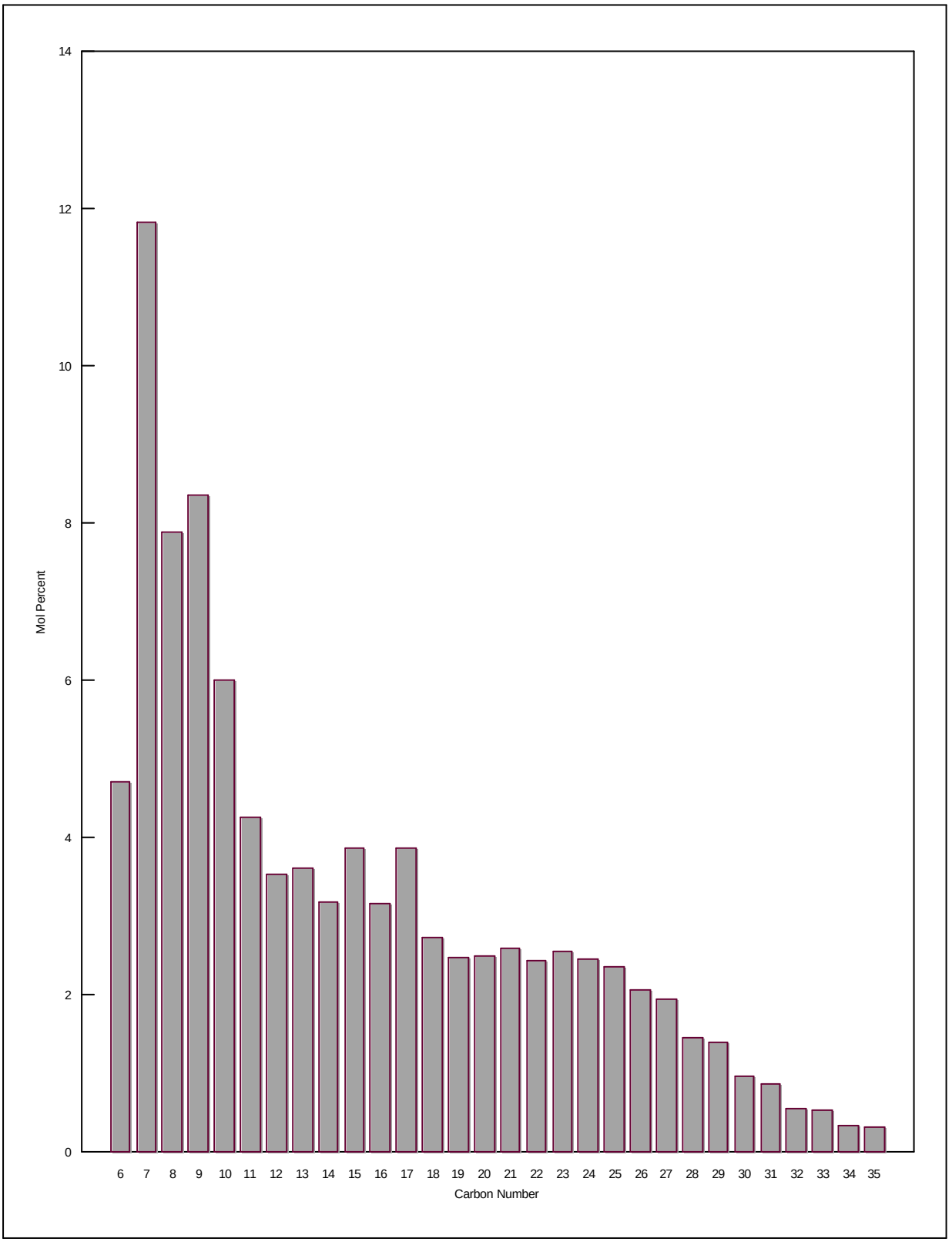
Component		Mol %
Hexanes minus	C6-	5.29
Hexanes	C6	4.70
Heptanes	C7	11.83
Octanes	C8	7.88
Nonanes	C9	8.35
Decanes	C10	6.00
Undecanes	C11	4.25
Dodecanes	C12	3.54
Tridecanes	C13	3.62
Tetradecanes	C14	3.18
Pentadecanes	C15	3.86
Hexadecanes	C16	3.16
Heptadecanes	C17	3.86
Octadecanes	C18	2.72
Nonadecanes	C19	2.47
Eicosanes	C20	2.49
Heneicosanes	C21	2.58
Docosanes	C22	2.44
Tricosanes	C23	2.56
Tetracosanes	C24	2.45
Pentacosanes	C25	2.36
Hexacosanes	C26	2.06
Heptacosanes	C27	1.95
Octacosanes	C28	1.45
Nonacosanes	C29	1.39
Triacontanes	C30	0.96
Hentriacontanes	C31	0.86
Dotriacontanes	C32	0.56
Tritriacontanes	C33	0.54
Tetratriacontanes	C34	0.33
Pentatriacontanes Plus	C35+	0.31
TOTAL		100.00

Molecular Weight Calculated *	:	195.3
Density @ 60 °F Calculated *	:	0.8262
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.8169

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 0833-B1-F ex MPSR 3305



COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 0833-B1-F ex MPSR 3305

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.18	12.92	10.55
Nitrogen	N2	0.00	0.33	0.27
Methane	C1	0.32	55.61	45.32
Ethane	C2	0.37	11.11	9.11
Propane	C3	1.15	9.79	8.18
Iso-Butane	iC4	0.60	2.05	1.78
N-Butane	nC4	1.36	3.26	2.91
Iso-Pentane	iC5	1.21	1.11	1.13
N-Pentane	nC5	1.58	1.13	1.21
Hexanes	C6	4.63	1.23	1.86
Heptanes	C7	11.64	1.00	2.98
Octanes	C8	7.76	0.30	1.69
Nonanes	C9	8.22	0.12	1.63
Decanes	C10	5.91	0.03	1.12
Undecanes	C11	4.18	0.01	0.79
Dodecanes Plus	C12+	50.89	0.00	9.47
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.1861	0.8139	1.0000
Mass Ratio	:	0.5980	0.4020	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	2.1511 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	2495 SCF	--
Stream Properties				
Molecular Weight	:	192.4	29.57	59.9
Density obs. (gm/cc)	:	0.8250 @ 60 °F	--	0.6439 @ PT*
Gravity (AIR = 1.000)	:	39.8 °API @ 60 °F	1.030	88.0
GHV (BTU/scf)	:	--	1418	--
Hexanes Plus Properties				
Mol %	:	93.22	2.69	19.54
Molecular Weight	:	202.2	93.5	190.0
Density (gm/cc @ 60 °F)	:	0.8324	0.6802	0.8223
Gravity (°API @ 60 °F)	:	38.3	76.3	40.4
Heptanes Plus Properties				
Mol %	:	88.60	1.46	17.68
Molecular Weight	:	208.4	101.4	201.2
Density (gm/cc @ 60 °F)	:	0.8362	0.6910	0.8303
Gravity (°API @ 60 °F)	:	37.5	73.1	38.8
Decanes Plus Properties				
Mol %	:	60.98	0.04	11.38
Molecular Weight	:	254.5	137.2	254.1
Density (gm/cc @ 60 °F)	:	0.8568	0.7309	0.8566
Gravity (°API @ 60 °F)	:	33.5	61.9	33.5
Undecanes Plus Properties				
Mol %	:	55.07	0.01	10.26
Molecular Weight	:	267.4	146.9	267.3
Density (gm/cc @ 60 °F)	:	0.8615	0.7399	0.8614
Gravity (°API @ 60 °F)	:	32.6	59.6	32.6
Dodecanes Plus Properties				
Mol %	:	50.89	0.00	9.47
Molecular Weight	:	277.3	--	277.3
Density (gm/cc @ 60 °F)	:	0.8650	--	0.8650
Gravity (°API @ 60 °F)	:	31.9	--	31.9

* (P)ressure : 5000 psig * (T)emperature : 79 °F

Validity Check on Cylinder 0322-B1-F ex MPSR 3347

Saturation Pressure : 3250 @ 79 °F

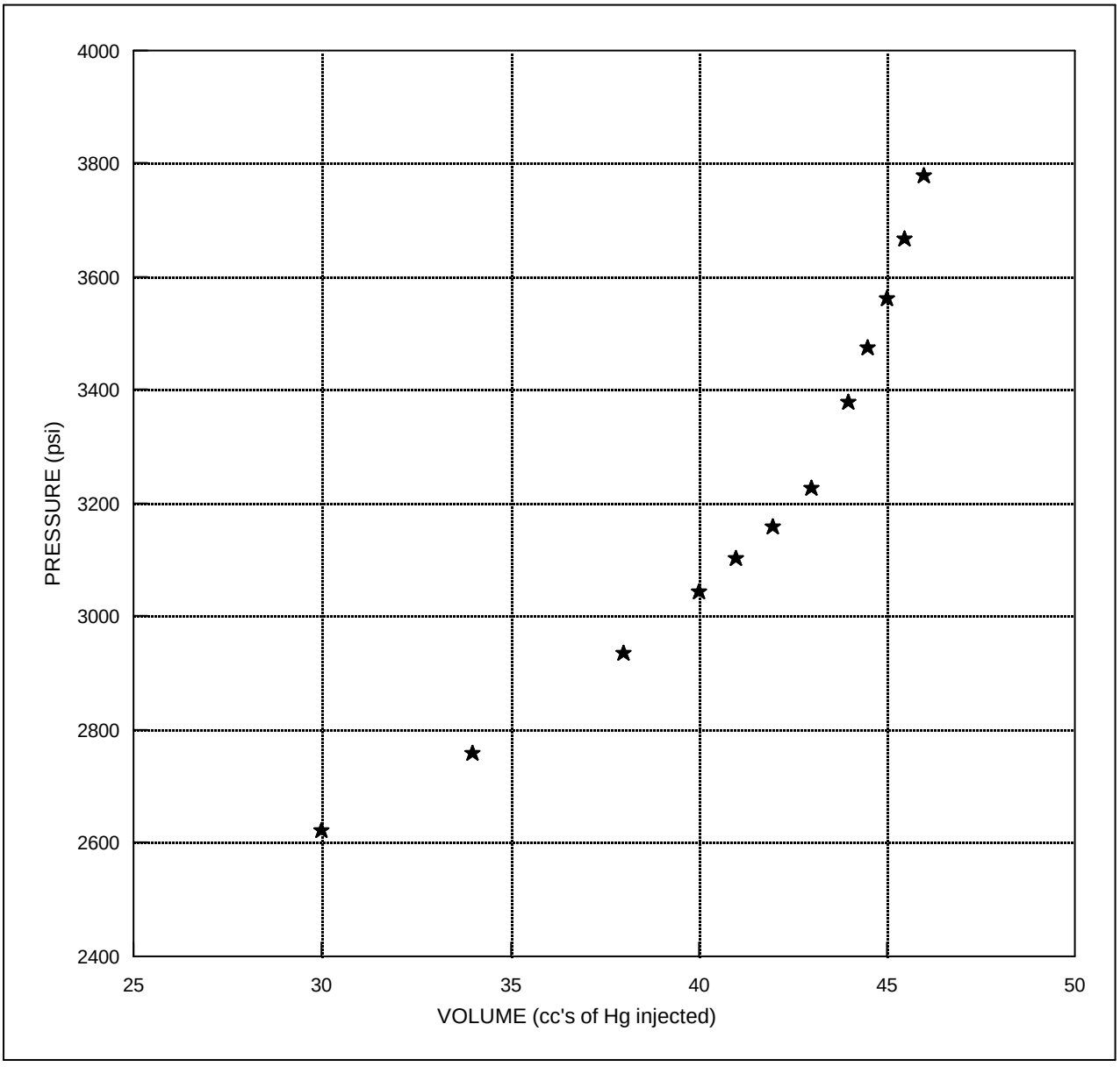
Sample # 8

Transfer Conditions

Transferred	:	January 09, 2010
Sampler ID	:	MPSR 3347

Transferred into Cylinder #	:	0322-B1-F
Amount Transferred (ccs)	:	380
Transfer Pressure (psig)	:	6000

Volume (cc's)	Pressure (psi)
30.0	2623
34.0	2759
38.0	2935
40.0	3044
41.0	3102
42.0	3158
43.0	3226
44.0	3380
44.5	3475
45.0	3560
45.5	3667
46.0	3777



FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 0322-B1-F ex MPSR 3347

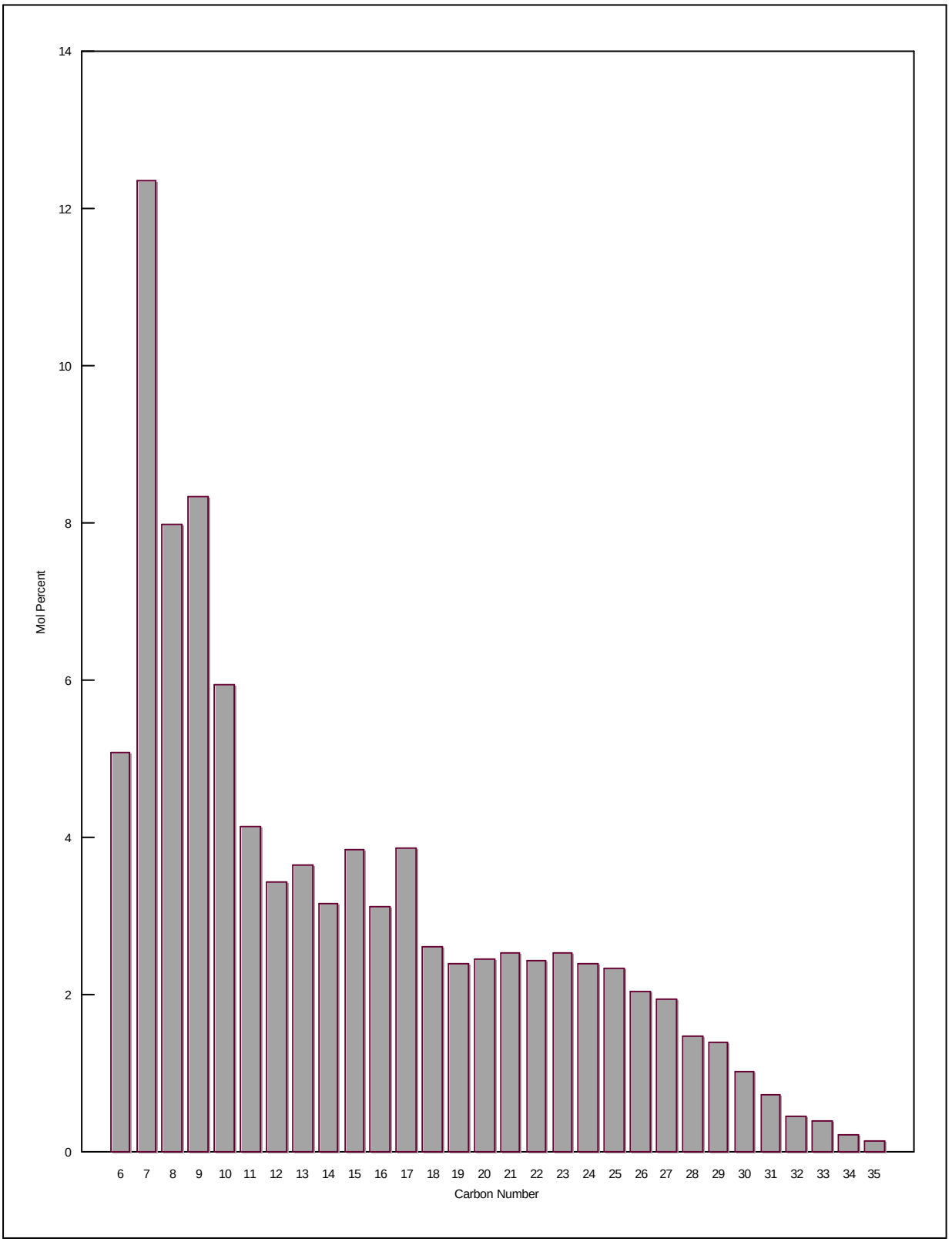
Component		Mol %
Hexanes minus	C6-	5.56
Hexanes	C6	5.08
Heptanes	C7	12.36
Octanes	C8	7.99
Nonanes	C9	8.34
Decanes	C10	5.94
Undecanes	C11	4.14
Dodecanes	C12	3.43
Tridecanes	C13	3.66
Tetradecanes	C14	3.16
Pentadecanes	C15	3.84
Hexadecanes	C16	3.12
Heptadecanes	C17	3.87
Octadecanes	C18	2.61
Nonadecanes	C19	2.39
Eicosanes	C20	2.45
Heneicosanes	C21	2.54
Docosanes	C22	2.44
Tricosanes	C23	2.53
Tetracosanes	C24	2.39
Pentacosanes	C25	2.34
Hexacosanes	C26	2.04
Heptacosanes	C27	1.94
Octacosanes	C28	1.48
Nonacosanes	C29	1.40
Triacontanes	C30	1.02
Hentriacontanes	C31	0.72
Dotriacontanes	C32	0.46
Tritriacontanes	C33	0.39
Tetratriacontanes	C34	0.22
Pentatriacontanes Plus	C35+	0.15
TOTAL		100.00

Molecular Weight Calculated *	:	192.2
Density @ 60 °F Calculated *	:	0.8241
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.8162

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On STT Liquid flashed from cylinder # 0322-B1-F ex MPSR 3347



COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 0322-B1-F ex MPSR 3347

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.18	12.81	10.37
Nitrogen	N2	0.00	0.32	0.26
Methane	C1	0.32	55.45	44.81
Ethane	C2	0.37	11.11	9.04
Propane	C3	1.15	9.83	8.16
Iso-Butane	iC4	0.61	2.09	1.80
N-Butane	nC4	1.40	3.36	2.98
Iso-Pentane	iC5	1.26	1.15	1.17
N-Pentane	nC5	1.65	1.18	1.27
Hexanes	C6	5.01	1.28	2.00
Heptanes	C7	12.18	0.99	3.15
Octanes	C8	7.87	0.28	1.75
Nonanes	C9	8.22	0.12	1.68
Decanes	C10	5.85	0.02	1.15
Undecanes	C11	4.08	0.01	0.80
Dodecanes Plus	C12+	49.85	0.00	9.61
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.1930	0.8070	1.0000
Mass Ratio	:	0.6043	0.3957	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	2.1148 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	2417 SCF	--
Stream Properties				
Molecular Weight	:	189.4	29.66	60.5
Density obs. (gm/cc)	:	0.8229 @ 60 °F	--	0.6457 @ PT*
Gravity (AIR = 1.000)	:	40.3 °API @ 60 °F	1.030	87.4
GHV (BTU/scf)	:	--	1425	--
Hexanes Plus Properties				
Mol %	:	93.05	2.70	20.14
Molecular Weight	:	199.2	93.0	187.7
Density (gm/cc @ 60 °F)	:	0.8306	0.6796	0.8208
Gravity (°API @ 60 °F)	:	38.7	76.5	40.7
Heptanes Plus Properties				
Mol %	:	88.05	1.42	18.14
Molecular Weight	:	205.7	101.2	199.1
Density (gm/cc @ 60 °F)	:	0.8347	0.6906	0.8291
Gravity (°API @ 60 °F)	:	37.9	73.2	39.0
Decanes Plus Properties				
Mol %	:	59.78	0.03	11.56
Molecular Weight	:	252.7	138.3	252.5
Density (gm/cc @ 60 °F)	:	0.8560	0.7320	0.8558
Gravity (°API @ 60 °F)	:	33.6	61.6	33.7
Undecanes Plus Properties				
Mol %	:	53.93	0.01	10.41
Molecular Weight	:	265.6	146.9	265.5
Density (gm/cc @ 60 °F)	:	0.8607	0.7399	0.8606
Gravity (°API @ 60 °F)	:	32.7	59.6	32.8
Dodecanes Plus Properties				
Mol %	:	49.85	0.00	9.61
Molecular Weight	:	275.3	--	275.3
Density (gm/cc @ 60 °F)	:	0.8641	--	0.8641
Gravity (°API @ 60 °F)	:	32.1	--	32.1

* (P)ressure : 5000 psig * (T)emperature : 79 °F

COMPOSITIONAL ANALYSIS OF SOLUTION GAS IN WATER SAMPLE

FROM CYLINDER # 812416 EX MDT 132 Depth 3424.5 m MDRT

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	79.36	
Nitrogen	N2	10.67	
Methane	C1	2.46	
Ethane	C2	2.74	0.733
Propane	C3	2.32	0.640
Iso-Butane	iC4	0.26	0.085
N-Butane	nC4	0.53	0.167
Iso-Pentane	iC5	0.12	0.044
N-Pentane	nC5	0.12	0.043
Hexanes	C6	0.25	0.097
Heptanes	C7	0.56	0.236
Octanes	C8	0.28	0.127
Nonanes	C9	0.14	0.070
Decanes	C10	0.08	0.044
Undecanes	C11	0.05	0.030
Dodecanes Plus	C12+	0.06	0.044
TOTAL		100.00	2.360

Pressure Base	:	14.696
Zsc	:	0.996
Mol Weight	:	42.29
Gas Gravity	:	1.466
Pc	:	963.6
Tc	:	520.1
Mol Weight C6+	:	105.8
Density C6+	:	0.6966
Mol Weight C7+	:	110.5
Density C7+	:	0.7022
Mol Weight C10+	:	150.4
Density C10+	:	0.7430
Mol Weight C11+	:	162.3
Density C11+	:	0.7531
Mol Weight C12+	:	175.0
Density C12+	:	0.7631
Heating Value (BTU/ft3)		
Gross	:	251
Nett	:	231
Wobbe Index	:	207
Zpt *	:	1.000

Laboratory Opening Pressure : 400 psig @ : 140 °F

Gas Water Ratio: 8 Scf / Bbl

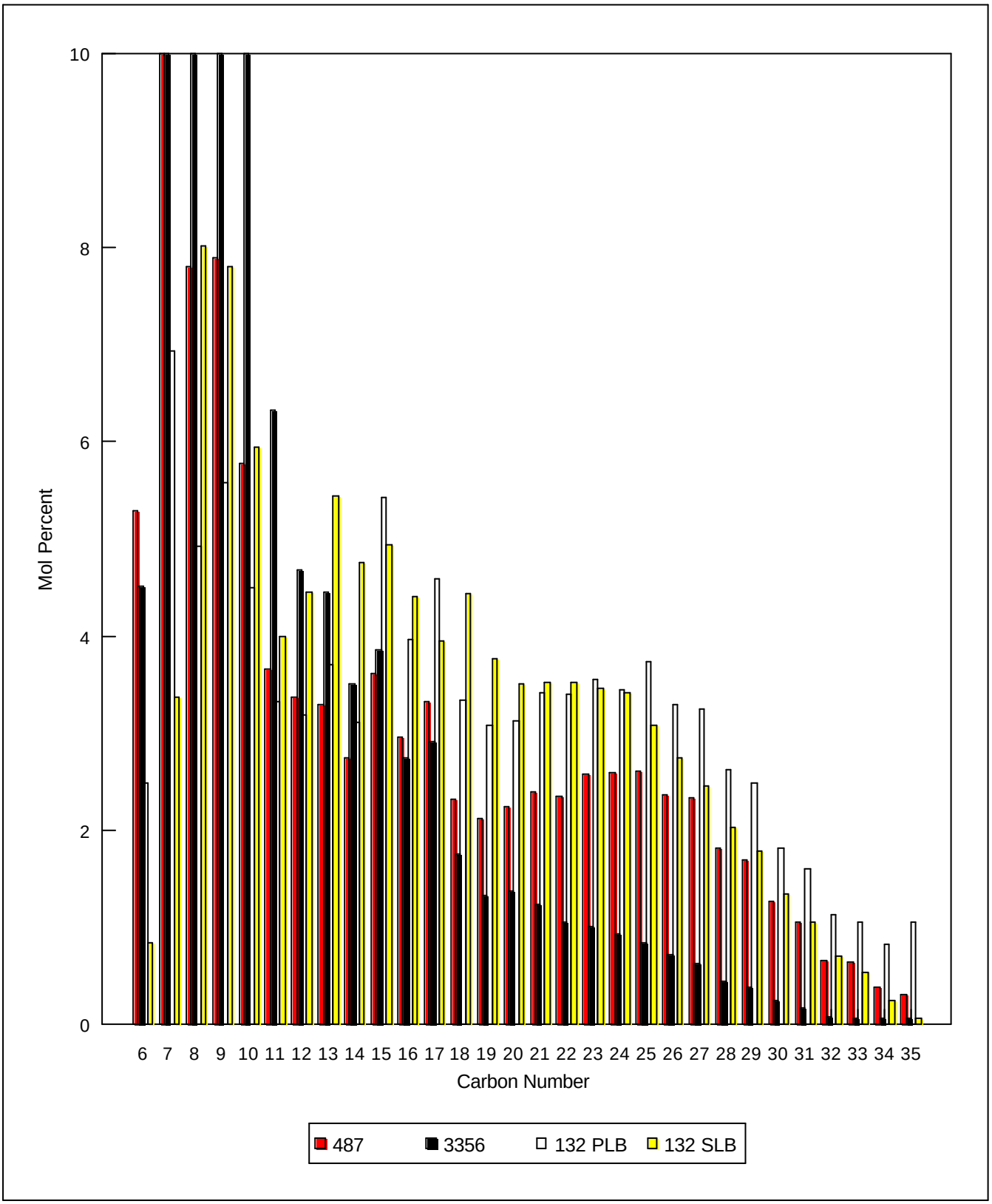
FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

				Petrolab	Schlumberger
	Cylinder #	0826-B1-F	170196	812435	MDT Tool
	MDT	487	3356	132 PLB	132 SLB
	Depth	3325	3390	3424.5	3424.5
	Approx GOR	2000	15000	51	residue
Component		Mol %	Mol %	Mol %	Mol %
Hexanes minus	C6-	5.72	3.00	2.05	0.43
Hexanes	C6	5.29	4.51	2.48	0.85
Heptanes	C7	12.78	15.29	6.94	3.37
Octanes	C8	7.80	12.01	4.93	8.01
Nonanes	C9	7.89	14.23	5.58	7.80
Decanes	C10	5.78	10.04	4.50	5.94
Undecanes	C11	3.66	6.32	3.33	4.00
Dodecanes	C12	3.37	4.68	3.18	4.45
Tridecanes	C13	3.30	4.45	3.71	5.44
Tetradecanes	C14	2.75	3.51	3.11	4.76
Pentadecanes	C15	3.61	3.86	5.42	4.94
Hexadecanes	C16	2.96	2.75	3.96	4.40
Heptadecanes	C17	3.33	2.92	4.59	3.95
Octadecanes	C18	2.32	1.75	3.34	4.43
Nonadecanes	C19	2.12	1.33	3.08	3.76
Eicosanes	C20	2.25	1.37	3.12	3.50
Heneicosanes	C21	2.40	1.24	3.41	3.52
Docosanes	C22	2.35	1.06	3.40	3.52
Tricosanes	C23	2.58	1.01	3.55	3.46
Tetracosanes	C24	2.60	0.93	3.44	3.41
Pentacosanes	C25	2.61	0.85	3.74	3.08
Hexacosanes	C26	2.36	0.72	3.29	2.75
Heptacosanes	C27	2.34	0.63	3.24	2.46
Octacosanes	C28	1.82	0.45	2.62	2.03
Nonacosanes	C29	1.69	0.39	2.49	1.79
Triacontanes plus	C30	1.27	0.25	1.82	1.34
Hentriacontanes	C31	1.05	0.18	1.61	1.06
Dotriacontanes	C32	0.66	0.08	1.13	0.70
Tritriacontanes	C33	0.64	0.07	1.06	0.53
Tetratriacontanes	C34	0.39	0.06	0.83	0.25
Pentatriacontanes Plus	C35+	0.31	0.06	1.05	0.07
TOTAL		100.00	100.00	100.00	100.00

Molecular Weight Calculated *	:	197.9	156.1	240.4
Density @ 60 °F Calculated *	:	0.8280	0.7971	0.8512

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY



PETROLAB

STOCK TANK WATER ANALYSIS

SAMPLE FROM CYLINDER NUMBER 812429 Ex MPSR 132

Resistivity	:	0.077	Ohm.M @ 25 °C
Conductivity (E.C)	:	133197	micro-S/cm @ 25 °C
pH	:	6.8	
Density	:	1.0610	gm/cc @ 25 °C
Total alkalinity	:	2500	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	250.0	12.48
Magnesium	(Mg):	45.0	3.70
Sodium	(Na):	6400.0	278.38
Potassium	(K):	39000.0	997.44

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	3048.3	49.96
Sulphate	(SO4):	220.0	4.58
Chloride	(Cl):	42000.0	1184.77
Nitrate	(NO3):	<0.1	0.00

Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	89502
From Conductivity	:	82290
Salinity	:	75810

Hardness

Carbonate	:	810
Non-Carbonate	:	0
Total	:	810

BTEX ANALYSIS

Cylinder #	MPSR #	Depth (mMRT)	LIQUID MOL %					GAS MOL %					RECOMBINED MOL %			
			B	T	E	X	Molar Ratio	B	T	E	X	Molar Ratio	B	T	E	X
812602	56	3402.5	1.332	5.093	1.282	7.207	0.002	0.042	0.062	0.000	0.036	0.999	0.080	0.210	0.038	0.247
812676	2105	3338.5	0.604	4.012	0.660	6.859	0.004	0.157	0.150	0.000	0.059	0.996	0.169	0.254	0.018	0.241
812496	2602	3245	0.400	2.864	0.577	5.466	0.015	0.094	0.151	0.000	0.073	0.985	0.108	0.274	0.026	0.316
80239	2668	3245	0.463	3.613	0.534	5.568	0.017	0.072	0.112	0.000	0.071	0.983	0.089	0.269	0.024	0.317
812417	2499	3202	0.494	3.847	0.526	5.396	0.001	0.089	0.175	0.000	0.180	0.999	0.114	0.407	0.033	0.510
170196	3356	3202	0.415	3.682	0.615	6.009	0.011	0.056	0.092	0.000	0.027	0.989	0.071	0.246	0.027	0.285
9214/45	4083	3202	0.421	3.540	0.522	5.386	0.017	0.066	0.109	0.000	0.088	0.983	0.084	0.285	0.027	0.359
Trace	132 PLB	3424.5	1.690	4.246	0.486	4.768		0.278	0.142	0.000	0.000					

NOTE: Initials B, T, E, X are Benzene, Toluene, Ethyl-Benzene and Xylene respectively