TREFOIL 1

T/18P OFFSHORE BASS BASIN

WELL COMPLETION REPORT
BASIC DATA

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GENERAL DATA

Surface Location:	Latitude:	39°51'44.12"S
(GDA 94)	Longitude:	145°22'30.73"E
(UTM Zone 55)	Easting:	361 026.14m
	Northing:	5 586 267.85m
Elevation:	WD:	68.9 m
	RT:	39.9 m
Date spudded:	30/10/2004	01:00 hours
Date TD reached:	23/11/2004	20:45 hours
Date Rig release:	25/12/2004	07:45 hours

Status:	Cased & Suspended	
Total Depth:	Driller:	3545mMD
	Logger:	3527mMD
Plugs:	#1: 2990 – 3030mMD	
	#2: 2224 – 2264mMD	
	#3: 861 – 901mMD	
Casing:	Size:	Shoe:
(a) Surface	20"	215 mRT
(b) Intermediate	13.375"	657 mRT
	9.625"	2421 mRT
(c) Production	6.625"	3458 mRT

WIRELINE LOGS

Log	Run	Interval (from / to) m	BHT / Time
PEX-HRLA-CMR-SP-GR	1	2420.1 - 3418.3 m	117°C/after 13 hrs 35 mins
VSI-GR	2	319 – 3419 m	119°C/after 29 hrs 0 mins
MDT-GR (1)	3	2626 – 3390 m	133°C/after 66 hrs 51 mins
WIPER TRIP			
MSCT (1)	4	2812 – 3046 m	115°C
MDT-GR (2)	5	2926 – 3524 m	
MSCT (2)	6	2968.3 – 3018.2 m	128°C
MSCT (3)	7	3009 – 3414 m	128°C
FMI-DSI-HNGS	8	2420.1 – 3527 m	133°C

PRESSURE TESTING AND FLUID SAMPLING

Suite#	Run#	Type	Interval (mMDRT)	Total Tests	Valid Tests	Supercharged	Tight Tests	Failed	Pump outs	Samples Collected
1	3	MDT	3390 – 2626	79	45	31	1	5	4	6
1	5	MDT	3528.7 - 2926	33	16	3	12	2	6	6

DRILL STEM TESTS

Depth Interval (mMD)	Gas Flow Rate (mmscf/d)	Oil/ Condensate Flow Rate (bbls/day)	FWHP (psia)	Choke Size (in)	WHSP (psia)	Gauge Depth (mTVDSS)	Mid perf. Depth (mTVDSS)	Bottom Hole Flowing pressure @ gauge depth (psia)	Bottom Hole Shut-in pressure @ gauge depth (psia)
3141 – 3150	14.4	12.4	2004.0	36/64	3485	2943.58	3145.5	3106	4356
3040.5 – 3046.5	9.5	26.2	646.0	56/64	1734	2943.58	3043.5	1575	4266

FULL HOLE CORES

No.	Interval (mRT)	Formation	Cut (m)	Rec.(m)
1	2735.0 – 2742.25	EVCM "P5 sand"	8.2	7.3 (89%)

PERFORATIONS

Interval (mRT)	Formation	SPF	Perforating Guns
3141 – 3150	CHDST#1	12	4.5 "TCP 34JL 22 g HTX 45/135 degree phasing
3040.5–3046.5	CHDST#2	6	1 11/16 Enerjet 8g HMX

SIDEWALL CORES (MSCT)

Depth (m)	Lithology
MSCT	**RUN #1**
2812	Aborted – core motor stalled
2810	Aborted – core motor stalled
2805	Aborted – core motor stalled
2964.5	Aborted – core motor stalled
2968.3	Sandstone
2979	Aborted – core motor stalled
2982	Aborted – core motor stalled
2986.8	Aborted – core motor stalled
2987.8	Sandstone
2988.8	Aborted – core motor stalled
	Extra Marker Dropped
2989.8	Argillaceous/micaceous Sandstone
2990.8	Sandstone
2991.8	Sandstone
2992.8	Sandstone
2993.8	Sandstone
2994.8	Sandstone
2995.8	Sandstone
2996.8	Sandstone
2997.8	empty
2998.8	empty
2999.8	empty
3000.8	empty
3002.1	empty
3002.8	empty
3003.8	empty
3008.8	empty
3010.8	empty
3026.7	empty
3040.5	empty
3041.5	empty
3042.5	empty
3043.5	empty
3044.5	empty
3045.0	empty

Depth (m)	Lithology
MSCT	**RUN #2**
2968.3	Sandstone
2970.0	Sandstone
2971.0	Sandstone
2977.7	Sandstone
2980.0	Sandstone
2981.0	Sandstone
2982.0	Sandstone
2986.0	Sandstone
2987.8	Sandstone
2988.8	Sandstone
2990.8	Sandstone
2991.8	Sandstone
2992.8	Sandstone
2993.8	Sandstone
2994.8	Sandstone
2995.8	Sandstone
2996.8	Sandstone
2997.8	Sandstone
2999.2	Sandstone
3000.2	Sandstone
3001.2	Sandstone
3002.1	Sandstone
3003.8	Sandstone
3006.7	Sandstone
MSCT	**RUN #3**
3009.1	empty
3018.2	empty
3009.0	Sandstone
3018.4	Matrix supported Pebble Conglomerate
3020.1	Sandstone
3021.2	Sandstone
3026.7	Sandstone
3028.0	empty
3027.9	Sandstone
3040.5	Partial recovery
3042.5	empty
3043.5	empty
3045.0	empty
3414.0	Basalt

1. WELL SUMMARY SHEET

Well Name:	Trefoil 1	
Permit:	T/18P Offshore Bass Basin	
Well Path:	Vertical	
Top Hole Location:	Latitude:	039° 51' 44.12" South
	Longitude:	145° 22' 30.73" East
	Easting:	361 026.14 metres
	Northing:	5 586 267.85 metres
	(GDA 94; AMG Zone 55, Central Meridian 147° East)	
Seismic Location:	78.18m on a bearing of 182.4 degrees from Shelduck 2D Seismic Survey, Line ORS01-13, SP 1492.	
Elevation:	39.9m (RT-sea level)	
Water Depth:	68.9m LAT	
Total Depth Driller:	3545m MDRT	
(TVD) Driller:	3544.95m MDRT	
Rig on tow:	22:00hrs	16/10/2004
Rig on Location:	23:15hrs	28/10/2004
Spud:	01:00hrs	30/10/2004
Reached TD:	20:45hrs	23/11/2004
Rig Released:	07:45hrs	25/12/2004
Total Rig Days:	69.4 days	
Well Status:	Cased and Suspended	
Permit Interests:	Origin Energy Resources Ltd* (*OPERATOR)	41.4%
	AWE Petroleum Pty Ltd	22.6%
	CalEnergy Gas (Australia) Ltd	23.5%
	Wandoo Petroleum Pty Ltd	12.5%
Rig Name:	ENSCO 102 (Jack-up Rig)	
Drilling Contractor:	ENSCO Australia Pty Ltd	
Approx. Well Cost:	A$24,961,090.	

2. FINAL DRILLING REPORT

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

2.1 Drilling Summary By Interval

2.1.1 Rig Mobilisation

The ENSCO 102 jack up rig was mobilised from the Yolla A platform on 16 October 2004. Prior to commencing preloading operations at the Trefoil location the legs of the Ensco 102 were inspected for damage due to the problems associated with recovering the legs at Yolla. Damage was noted to 2 span brackets, chords A and C, and the vent line valve stem was broken off. The damage was not considered severe enough to delay preloading operations at Trefoil.

Preloading operations commenced on 17 October 2004 and the Bow leg reached a penetration of 44ft with a 100% preload. Preloading of the Port leg then commenced with a penetration of 20ft reached with a 100% preload (full load was held for 3 hrs). Preloading operations on the Starboard leg achieved a 100% preload with a 20ft leg penetration. The preload was dumped and the rig was jacked down to a 10ft draft. The rig was jacked up to a 5ft air gap to assist in pulling the Port leg free. During this operation penetration on the Starboard leg increased to 32ft and penetration on the Port leg increased to 28ft (Bow leg remained at 44ft). The rig was jacked down and the Port leg pulled free. The Port leg was cycled several times between a 20ft and 2ft draft using wave action to work the leg. Leg penetrations at the completion of these cycles were as follows: Bow = 46ft, Starboard = 47ft, Port = 33 ft.

A decision was made to rotate the rig on the Bow leg to a heading of 53° so that the Port leg could enter the hole created by the Starboard leg. Preloading operations commenced on the Starboard leg and a 100% preload was held on the leg for 2.5hrs. The load was dumped and the hull jacked down and all three legs pulled free. The hull was then jacked up and the penetration on the Port and Bow legs were 46ft and Starboard leg 45ft. All legs were preloaded to a 100% load and the final leg penetrations for all legs were 46ft (14m).

The cantilever was skidded out and secured with the rotary table being located 14.5ft past the transom. The PCU was lowered and pinned into position and the foxhole installed. The tensioner rams were measured and stroked out (minimum = 15.34m and maximum = 16.56m from the rotary table).

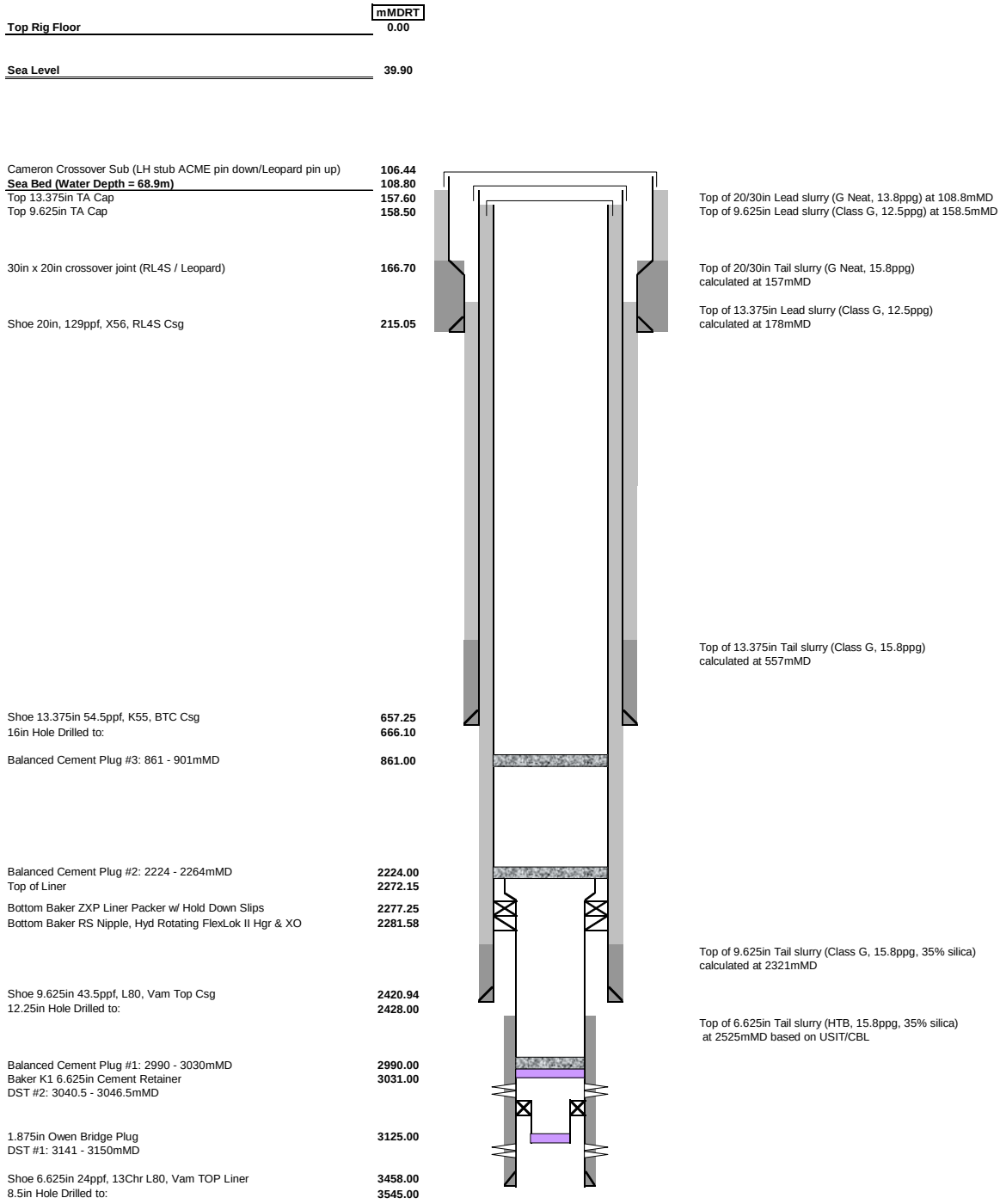


Figure 1: Trefoil 1 Casing and Cement Schematic

2.1.2 Drilling 26/36" Hole & Cementing 20/30" Casing

The BHA consisting of a 26in bit and 36in hole opener was made up and RIH to the mudline at 108.8mMD. The well was spudded at 0100hrs on 30 October and the 26/36in hole was drilled to 218mMD with 40bbls of PHG pumped each single drilled and 75bbls spotted around the BHA prior to each connection. At section TD the hole was displaced with 600bbls of PHG and a wiper trip conducted (a tight spot was encountered at 196mMD, 40klbs

overpull). The BHA was run back to bottom, a totco survey conducted (0° inclination) and a further 600bbls of PHG pumped. The BHA was POOH and racked back.

The conductor string composed of 4 joints of 20in casing (129ppf, X56, RL4S) and 5 joints of 30in casing (310ppf, X52, Leopard) was RIH to 215mMD. A further 10 joints of 30in casing was run and acted as a riser during the drilling operations of the Trefoil 1 well (Figure 1). The conductor string was cemented by mixing and pumping 186bbls (636 sacks) of lead slurry at 13.8ppg and 76bbls (361 sacks) of tail slurry at 15.8ppg. A 3.5in cement stinger was made up and run into the 30/36in annulus with ROV assistance. A top-up cement job was conducted with a further 55bbls of 15.8ppg neat slurry (262 sacks) mixed and pumped.

2.1.3 Drilling 16" Hole & Cementing 13 3/8" Casing

The 16in BHA comprised of a MX-1 tricone bit and downhole mud motor was made up and RIH to the top of cement at 214mMD. The cement was drilled out and new hole was drilled with 30bbls of PHG being pumped every single and 50bbls of PHG being spotted around the BHA prior to connections. At 641mMD downhole losses of 5 to 6bbls/min were encountered and 2 PHG/PHPA Hi-Vis sweeps (100bbls and 115bbls) were pumped. Drilling continued to section TD at 666.1mMD with downhole losses of 5 to 6bbls/min continuing. LCM pill, PHG and inhibited pills were pumped prior to POOH of the BHA. Whilst POOH losses of up to 5bbls/min continued and further LCM pills were pumped in an attempt to cure same.

At surface the 16in BHA was racked back and 13.375in casing (54ppf, K55, BTC) was RIH to 657.25mMD. This land out depth was 3.5m higher than prognosed. Attempts were made to run the casing deeper by firstly turning the casing 0.25 turn to the left with the rig tongs and secondly applying 120klbs of weight to the casing. These attempts were unsuccessful and a decision was made to cement the 13.375in casing in place. The casing was cemented by mixing and pumping 150bbls of 12.5ppg lead slurry and 56bbls of 15.8ppg tail slurry.

A window was cut in the 30in conductor string at the cellar deck level and the 13.375in landing string was laid down. The welder cut and dressed off the 13.375in stump and the Cameron 13.625in 5000psi unitised wellhead was installed.

It was assumed that the losses encountered whilst drilling the 16in hole section were caused by an insufficient volume of cement in the 30/36in annulus (leak path in 30/36in annulus). Therefore a secondary top-up cement job was conducted on the 30/36in annulus with 55bbls of 15.8ppg neat slurry being pumped. Following this top-up cement job the rigs 18.75in 15,000psi BOP stack was made up and successfully pressure tested.

2.1.4 Drilling 12 ¼" Hole & Cementing 9 5/8" Casing

The 12.25in BHA comprised of a RSX162 PDC bit, MWD tool and downhole mud motor was made up and RIH. The well path, plan view and vertical section view as measured by the MWD are shown in Figures 2 and 3. The directional survey data can be found in Appendix 7. Cement was tagged at 629mMD and drilled out whilst displacing to a Drispac-Polymer mud system. For more information on the mud components used in the well see Table 1 and Appendix 18 which is the mud engineering report. A total of 5m of new hole was drilled to 671mMD and an FIT conducted to an EMW of 10.5ppg (MW = 8.6ppg, 202psi surface pressure).

R#	Date - Time	Type	Depth m	Tmp C°	MW sg	VIS sec/qt	PV cp	YP lb/100ft²	Gel10s (lb/100ft²) / 10m (lb/100ft²)	F.L. API cc/30min	F.L. hthp cc/30min	Sols %	Sand	MBT	PH	Cl mg/l	Hard mg/l	KCl %	Daily Cost $
13	28 Oct 2004 -		0	0	0	0	0	0	0 / 0	0	0	0		0	0	0	0	0	15466
14	29 Oct 2004 -	PHG	108.0	0	1.05	120	0	0	0 / 0	0	0	0		0	0	0	0	0	14040
15	30 Oct 2004 - 06:00	PHG Spud Mud	199.0	16	1.05	180	14	69	57 / 62	0	0	0		0	0	0	0	0	2162
16	31 Oct 2004 - 06:00	PHG Spud Mud	199.0	16	1.05	180	14	69	57 / 62	0	0	0		0	0	0	0	0	5979
17	01 Nov 2004 - 06:00	PHG Spud Mud	199.0	16	1.05	180	14	69	57 / 62	0	0	0		0	0	0	0	0	11840
18	02 Nov 2004 - 05:00	PHG Spud Mud	320.0	16	1.05	180	14	69	0 / 0	0	0	0		0	0	0	0	0	6870
19	03 Nov 2004 - 05:00	PHG Spud Mud	320.0	16	1.05	180	14	69	0 / 0	0	0	0		0	0	0	0	0	12916
20	04 Nov 2004 -		0	0	0	0	0	0	0 / 0	0	0	0		0	0	0	0	0	22336
21	05 Nov 2004 -		0	0	0	0	0	0	0 / 0	0	0	0		0	0	0	0	0	28111
22	06 Nov 2004 - 23:15	Seawater/Drispac/Sol	888.0	25	1.03	107	21	26	0 / 0	0	0	0.9		0	9.5	18000	0	0	11049
23	07 Nov 2004 - 21:15	Seawater/Drispac/Sol	1316.0	44	1.05	115	27	37	6 / 8	5.2	15.4	2.1	0.1	6	9	18000	240	0	21015
24	08 Nov 2004 - 21:45	Seawater/Drispac/Sol	1996.0	49	1.08	114	33	40	7 / 10	4.8	14.2	3.5	0.1	5	8.7	18000	320	0	13230
25	09 Nov 2004 - 20:30	Seawater/Drispac/Sol	2407.0	55	1.10	88	34	42	6 / 8	4.4	12.8	4.4	0.1	10	9	19000	320	0	19529
26	10 Nov 2004 - 21:30	Seawater/Drispac/Sol	2428.0	35	1.13	116	35	38	5 / 7	4.2	12.4	5.5	0.1	10	8.8	18000	280	0	6181
27	11 Nov 2004 - 19:00	Seawater/Drispac/Sol	2428.0	30	1.14	107	32	39	4 / 7	4.1	12.0	6.5	0.1	12	9	19000	280	0	2177
28	12 Nov 2004 - 19:30	Seawater/Drispac/Sol	2428.0	42	1.15	136	43	45	6 / 8	3.8	11.2	7.5	0.25	14	8.7	18000	280	0	2579
29	13 Nov 2004 - 19:30	Seawater/Drispac/Sol	2428.0	33	1.14	112	37	41	6 / 8	4.0	11.0	6.5	0.1	13	8.6	19000	240	0	1493
30	14 Nov 2004 - 22:00	Seawater/Drispac/Sol	2428.0	20	1.10	140	31	35	3 / 6	4.2	11.8	4.5	0.1	12	8.7	18000	240	0	1406
31	15 Nov 2004 - 23:15	Seawater/Drispac/Sol	2532.0	46	1.10	125	41	44	5 / 7	4.6	14.0	4.5	0.1	10	9	18000	280	0	6168
32	16 Nov 2004 - 22:00	Seawater/Drispac/Sol	2735.0	45	1.10	200	47	53	7 / 11	4.1	13.6	5	0.1	10	9	18500	180	0	7540
33	17 Nov 2004 - 20:30	Seawater/Drispac/Sol	2743.0	40	1.10	200	48	49	5 / 7	4.0	14.4	5	0.1	10	8.9	18000	160	0	1495
34	18 Nov 2004 - 22:30	Seawater/Drispac/Sol	2923.0	59	1.10	137	51	47	4 / 6	4.5	14.2	5	0.1	9	8.9	18000	140	0	5498
35	19 Nov 2004 - 20:00	Seawater/Drispac/Sol	3092.0	58	1.13	135	52	38	5 / 6	3.8	12.8	5.9	0.1	9.5	8.8	18000	160	0	6744
36	20 Nov 2004 - 20:00	Seawater/Drispac/Sol	3285.0	61	1.13	115	46	34	4 / 6	4.0	12.6	6	0.05	9	8.8	18000	0	0	4050
37	21 Nov 2004 - 19:00	Seawater/Drispac/Sol	3442.0	60	1.13	120	50	38	4 / 6	3.8	12.7	5.9	0.02	10	9.4	18000	100	0	2548
38	22 Nov 2004 - 10:30	Seawater/Drispac/Sol	3442.0	41	1.14	172	51	40	4 / 5	3.6	12.2	6	0.02	9.5	9.4	18000	90	0	6932
39	23 Nov 2004 - 20:00	Seawater/Drispac/Sol	3541.0	62	1.13	144	49	51	4 / 7	3.8	12.2	5.9	0.02	10	9.3	18000	80	0	1858
40	24 Nov 2004 - 13:00	Seawater/Drispac/Sol	3545.0	62	1.14	174	51	51	5 / 6	3.4	12.4	5.9	0.02	10	9.4	19500	120	0	1406

41	25 Nov 2004 - 13:00	Seawater/Drispac/Sotex	3545.0	0	1.13	238	52	53	3 / 4	3.3	12.8	6	.05	10	9.5	19000	90	0	1406
42	26 Nov 2004 - 13:00	Seawater/Drispac/Sotex	3545.0	0	1.13	236	54	53	4 / 5	3.4	12.6	6	.05	10	9.5	19000	90	0	1406
43	27 Nov 2004 - 10:30	Seawater/Drispac/Sotex	3545.0	29	1.13	229	54	56	4 / 5	3.5	12.8	6	.02	10	9.4	18500	80	0	1406
44	28 Nov 2004 - 07:45	Seawater/Drispac/Sotex	3545.0	60	1.13	133	56	59	5 / 9	3.6	12.8	6.3	.02	10.5	9.2	18500	110	0	2108
45	29 Nov 2004 - 22:00	Seawater/Drispac/Sotex	3545.0	25	1.13	150	54	47	3 / 4	3.8	12.6	6.2	.02	10	9.2	18500	120	0	1406
46	30 Nov 2004 - 21:00	Seawater/Drispac/Sotex	3545.0	25	1.13	160	52	56	3 / 4	3.8	12.7	6.3	.02	10	9.1	18500	100	0	1406
47	01 Dec 2004 - 22:00	Seawater/Drispac/Sotex	3545.0	25	1.13	160	55	55	2 / 3	3.7	12.9	6.2	.02	10	9	18500	100	0	1406
48	02 Dec 2004 - 23:00	Seawater/Drispac/Sotex	3545.0	55	1.13	170	52	51	7 / 9	3.6	12.9	6	.05	10	8.8	18500	120	0	1965
49	03 Dec 2004 - 21:00	Seawater/Drispac/Sotex	3545.0	30	1.13	170	45	36	4 / 6	3.7	12.8	6	.05	10	8.8	18500	100	0	1651
50	04 Dec 2004 - 08:30	Seawater/Drispac/Sotex	3545.0	40	1.13	165	48	30	4 / 8	3.5	13.2	6	.05	10	8.8	18000	140	0	6316
51	05 Dec 2004 - 08:30	Seawater/Drispac/Sotex	3545.0	40	1.13	165	48	30	4 / 8	3.5	13.2	6	.05	10	8.8	18000	140	0	7014
52	06 Dec 2004 - 13:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	57000	0	0	7104
53	07 Dec 2004 - 13:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	57000	0	0	1406
54	08 Dec 2004 - 13:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	57000	0	0	703
55	09 Dec 2004 - 13:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	57000	0	0	703
56	10 Dec 2004 - 13:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	57000	0	0	4036
57	11 Dec 2004 - 13:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	57000	0	0	3976
58	12 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	4166
59	13 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	703
60	14 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	703
61	15 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	1119
62	16 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	3861
63	17 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	1204
64	18 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	703
65	19 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	703
66	20 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	1553
67	21 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	703
68	22 Dec 2004 - 20:00	NaCl Brine	3545.0	20	1.07	0	0	0	0 / 0	0	0	0		0	0	0	0	0	703
69	23 Dec 2004 -		0	0	0	0	0	0	0 / 0	0	0	0		0	0	0	0	0	703
70	24 Dec 2004 -		0	0	0	0	0	0	0 / 0	0	0	0		0	0	0	0	0	703
71	25 Dec 2004 -		0	0	0	0	0	0	0 / 0	0	0	0		0	0	0	0	0	703

Table 1: Trefoil 1 Mud Recap Record

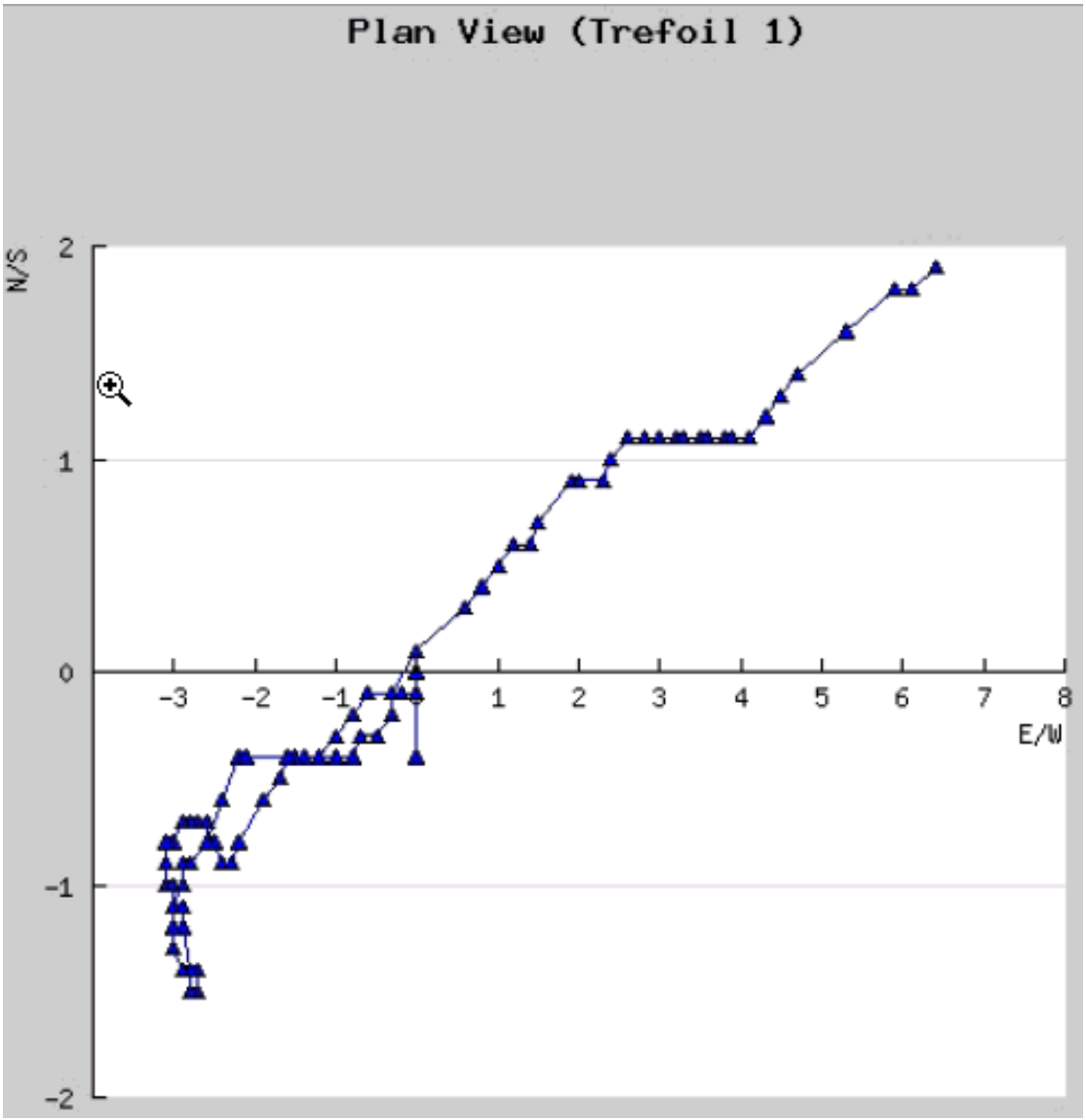


Figure 2: Trefoil 1 Well Path Plan View. X & Y axis units are in metres.

The 12.25in hole section was drilled to section TD at 2428mMD. The following points should be noted:

- The Trefoil 1 well was designed to place the 13.375in casing shoe safely above the top of a seismic anomaly (predicted volcanics) that were predicted at approximately 700mSS. Whilst drilling through this section with the 12.25in BHA no gas was encountered.
- A suspected hard dolomite stringer was encountered at 1937mMD and the drillstring stalled. The string was worked free with 35klbs overpull.
- At 2036mMD the mud weight was increased from 8.8ppg to 9.0ppg due to signs of blocky cuttings over the shakers.
- A gas peak of 77 units was recorded at 2113mMD.
- Traces of H2S (1ppm) were detected from 2037mMD to 2066mMD.

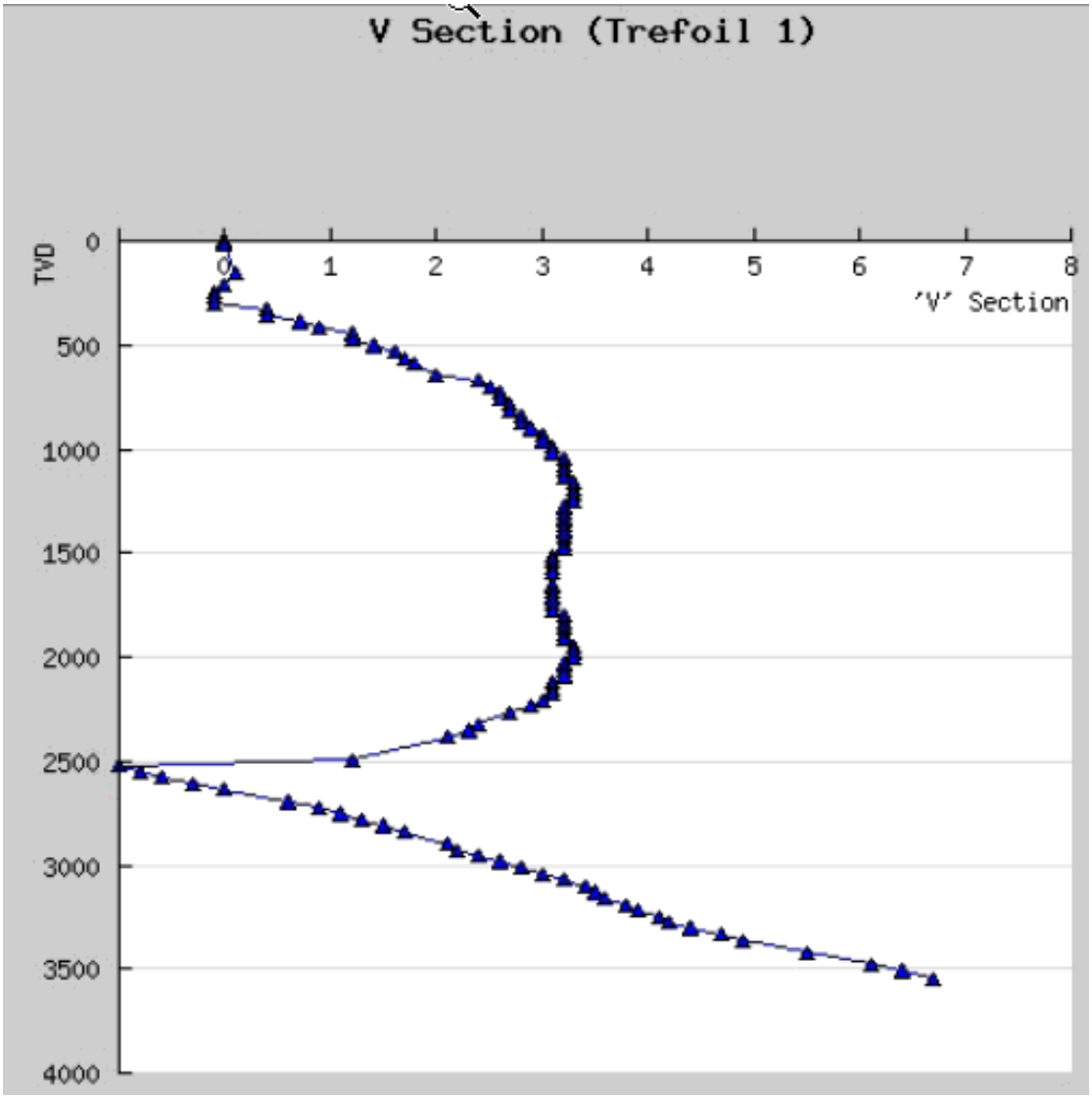


Figure 3: Trefoil 1 Well Path Vertical Section View. X & Y axis units are in metres.

At section TD a 40bbl weighted pill (12ppg) was pumped. On bottoms-up a large increase of rounded cuttings were observed. A second weighted pill was pumped with a +/-50% reduction in rounded cuttings observed. Following a further 3 bottoms-up cycles the volume of cuttings observed at the shakers was deemed sufficiently low to allow POOH operations to commence.

Whilst POOH of the 12.25in BHA tight hole was encountered throughout the section with overpulls of up to 25klbs recorded. At various stages backreaming and pumping out of hole was required. A 30bbl Barolift sweep was pumped and a 100% increase in large blocky cuttings was noticed on bottoms-up. A wiper trip was conducted with the BHA having to be washed and reamed from 2385mMD to 2428mMD. At TD a total of 5 bottoms-up cycles were pumped (including 2 x 30bbl Barolift pills). Once again backreaming and pumping was required whilst POOH.

With the BHA at surface the MWD tool was downloaded and the wellhead hang-off area cleaned with a jetting assembly. The 9.625in shoe track and casing (43.5ppf, L80, VT) was RIH to 650mMD on 150T side door elevators. At this depth the elevators were rigged down and 500T spider elevators made up. The 9.625in casing was RIH to 2388mMD where 30-40klbs of

weight was taken. Circulation was broken and the casing was washed down to 2421mMD. The 9.625in casing was cemented in place by mixing and pumping 441bbls of lead slurry (12.5ppg) and 42bbls of tail slurry (15.8ppg).

The 9.625in casing was rough cut 3.5ft inside the diverter housing and the cut piece was laid out. The diverter was recovered and holes were cut in the 9.625in casing stump. Tuggers were attached to the casing, the wellhead Fastloc connector broken out and the BOP raised to access the 9.625in casing. Furmanite made an internal cut on the 9.625in casing and the casing stump was dressed. The BOP was lowered and stabbed onto the wellhead and the seal assembly was set in the seal bore (successfully tested to 3000psi). Prior to testing the BOP a leak was noticed on the wellhead Fastloc connector weep hole. The ring gasket was recovered and upon inspection damage to the sealing surface was noted. The gasket was changed out and all BOP components were subsequently successfully pressure tested.

2.1.5 Drilling 8 ½" Hole & Cementing 6 5/8" Casing

The 8.5in in BHA comprised of a PDC bit (MA74EPX) and MWD/LWD tools (nuclear sources) was made up and RIH. No mud motor was included in the BHA as there was a requirement to have the MWD/LWD sensors as close to the bit as possible to assist in picking core points. The top plug was tagged at 2395mMD and the cement/shoetrack drilled out as well as 3m of new hole. An FIT was conducted to an EMW of 12.5ppg (MW = 9.2ppg, 1360psi surface pressure) at 2431mMD.

The 8.5in hole was drilled ahead to core point #1 at 2735mMD. Several drilling breaks were encountered (>50m/hr ROP) throughout this section and flow checks made. Gas readings of up to 194 units were recorded through the various sand packages drilled. On POOH tight hole requiring back reaming and pumping was encountered between 2735mMD and 2394mMD. At surface the BHA was racked back and the coring assembly made up.
A 36m coring assembly was made up and RIH to 2735mMD and core #1 was cut from 2735mMD. At 2743mMD there was an indication of jamming and the weight on the coring assembly was increased to 30klbs in order to recommence coring. This proved to be unsuccessful and the coring BHA was POOH to surface. A total of 7.3m of core was successfully recovered.

The 8.5in BHA was RIH with a tight spot encountered at 2676mMD. The BHA was washed and light reamed through this section and continued to RIH to 2735mMD. The cored section was reamed through and the 8.5in hole was drilled ahead to 3442mMD. Throughout this section flow checks were conducted as numerous gas peaks of up to 1724 units were recorded. A decision was made to POOH and make a bit change due to poor ROP. As a result of tight hole problems the BHA was:

- Pumped out of hole from 3168mMD to 3150mMD.
- Light back reamed from 3150mMD to 2892mMD.
- Pumped out of hole from 2859mMD to 2453mMD.
- Back reamed from 2755mMD to 2505mMD.

The PDC bit was replaced with an MX20HDX tricone bit and a mud motor was included in the BHA (no further coring planned). The BHA was RIH and the 8.5in hole drilled ahead to TD at 3545mMD. A total of 2 bottoms up

circulations were conducted and a single stand of pipe was POOH and racked back. A further bottoms up circulation was conducted and the BHA was POOH with minor back reaming required through tight spots/ledges.

Wireline logging assembly #1 (PEX-HRLA-CMR-SP-GR) was made up and RIH to a hang up depth of 3416mMD. Attempts to pass the hang up depth were made without success (1300lbs overpull) and logs were recorded from this depth up to 814mMD. Logging assembly #2 (VSI-GR) was made up and RIH to 3419mMD and guns were concurrently lowered into the water by the rig crane. Once all VSI data had been recorded logging assembly #2 was POOH and assembly #3 (MDT-GR-LEH-QT) made up. Assembly #3 was RIH and pre-tests were taken from 3057.2mMD to 3109.9mMD. The MDT tool failed at the 3109.9mMD sample point (damaged O-ring seal in MDT tool). A rerun was made with assembly #3 and additional pre-tests taken from 3109.9mMD to 3418mMD. A third MDT run was made with samples being taken at 3386.5mMD, 3264mMD, 3142.5mMD, 3057mMD and 2968.7mMD. Pump outs were recorded at 3162mMD, 3045.2mMD, 3006.5mMD and 2977.8mMD.

A decision was made to conduct a wiper trip prior to making any further logging runs. A BHA was made up and RIH to TD without any significant problems. A total of 3 bottoms up were circulated at TD and the BHA was POOH.

Logging assembly #4 (MSCT-GR) was made up and RIH with a total of 33 cores attempted and 27 cores successfully cut. Assembly #4 was POOH and wireline logging assembly #5 (MDT-LEH-GR-QT) made up and RIH to 2307mMD. The MDT tool failed at this point and the assembly was POOH and the fluid analyser component was changed out. Assembly #5 was rerun to 3528.7mMD where the tool stood up. A total of 8 pre-tests, 4 samples and 5 pump outs were recorded on this run. Assembly #5 was POOH and logging assembly #6 (MSCT-GR) made up and RIH with a total of 26 cores attempted and 26 cores successfully cut. Logging assembly #7 (MSCT-GR) was made up and RIH with a total of 12 cores attempted and 8 cores successfully cut. Logging assembly #8 (FMI-DSI-HNGS-LEH-QT) was made up and RIH to 3487mMD. The well was logged up to 1630mMD and assembly #8 POOH.

Following a review of the logging data a decision was made to run a 6.625in liner and test the well. A BHA was made up and RIH to wipe the wellbore prior to running the liner. Whilst RIH the BHA stood up at 3515mMD and was washed and reamed from 3515mMD to 3545mMD. At TD the well was circulated 3 times bottoms up and the BHA was POOH.

Rubber mats were placed in the V-door and the 6.625in shoetrack was made up. The liner (24ppf, L80, Fox K) was RIH to 1176mMD and the Baker Flexloc liner hanger made up to the liner string. The 6.625in liner was RIH on drill pipe to 3458mMD and the liner hanger set 2281.58mMD. The liner was cemented in place by mixing and pumping 119bbls of 15.8ppg HTB cement slurry (no downhole losses were observed during the cement job). Following the cement job the ZXP packer/PBR was set at 2277.25mMD (top of the liner at 2272.15mMD). A scraper assembly comprising a 5.75in bit, 6.625in scraper, PBR mill and 9.625in scraper was made up and RIH to 3399.5mMD. Sweeps of Condet, Barakleen and Hi-vis were pumped to clean the wellbore and reduce the NTU readings. The BHA was POOH and preparations were made to run the USIT-CBL. The USIT-CBL was RIH to 3495mMD and recorded data showed a good cement bond across all hydrocarbon bearing zones (no cement in liner lap).

2.1.6 Production Testing & Well Suspension

A permanent packer with TCP guns was RIH and set at 3120.2mMD with the top shot being placed at 3141mMD and the bottom shot at 3150mMD. The DST test string was made up and RIH on 3.5in PH-6 tubing and 4.5in pup joints (Figure 4). The 6.625in Positrieve packer was set and the test string was spaced out to position the EZ valve slick joint in the 5in drill pipe rams. All surface lines were checked and tested and all ESD valves checked. The diesel cushion was pumped downhole and TCP guns were fired. A maximum gas rate of 14.5mscf/d was recorded through a 36/64ths choke (80% condensate) during the sampling and final flow period of DST#1. A 1.875in Owen bridge plug was RIH and set at 3125mMD (tail pipe of packer) to isolate the perforated interval.

A 1-11/16in PJ Enerjet gun assembly was made up and RIH to 3075mMD. The guns were correlated on depth and the well perforated from 3040.5mMD to 3046.5mMD. A maximum gas rate of 9.8mscf/d on a 56/64ths choke (95% condensate) was recorded during DST #2. The well was killed and the test string recovered to surface. A Baker K1 6.625in cement retainer was RIH and set at 3031mMD and a balanced cement plug set from 3030mMD to 2990mMD. Further balanced cement plugs were set from 2264mMD to 2224mMD and 901mMD to 861mMD. A 3.5in stinger was RIH into the crater around the 30in conductor and 41bbls of HTB slurry (15.8ppg) was pumped to ensure all the annular space around the 30in conductor was full of cement.

The 9.625in casing was cut at 27m below the rotary table with the Baker 8.25in multi string casing cutter and attempts were made to recover the casing without success. The casing cutter was rerun and the casing was cut at 144mMD. The Tri-State Type B casing spear was RIH and the 9.625in casing was recovered to surface (9 full joints and 2 cut off joints recovered).

The Cameron compact housing running tool was RIH and engaged the wellhead. The wellhead housing and 13.375in casing was pulled to surface and secured in the rotary table. The 13.375in casing was cut below the wellhead and 10 joints of 13.375in casing laid out. Temporary abandonment caps for the 9.625in and 13.375in casing strings were made up and set at 158.5mMD and 157.6mMD respectively. The 30in riser was backed out from the LH stub ACME in the wellhead housing at the mudline. A total of 8 full joints and 2 pups of 30in were recovered to surface. A suspension cap was RIH on drillpipe/guidewires and was set on top of the 30in casing with ROV assistance.

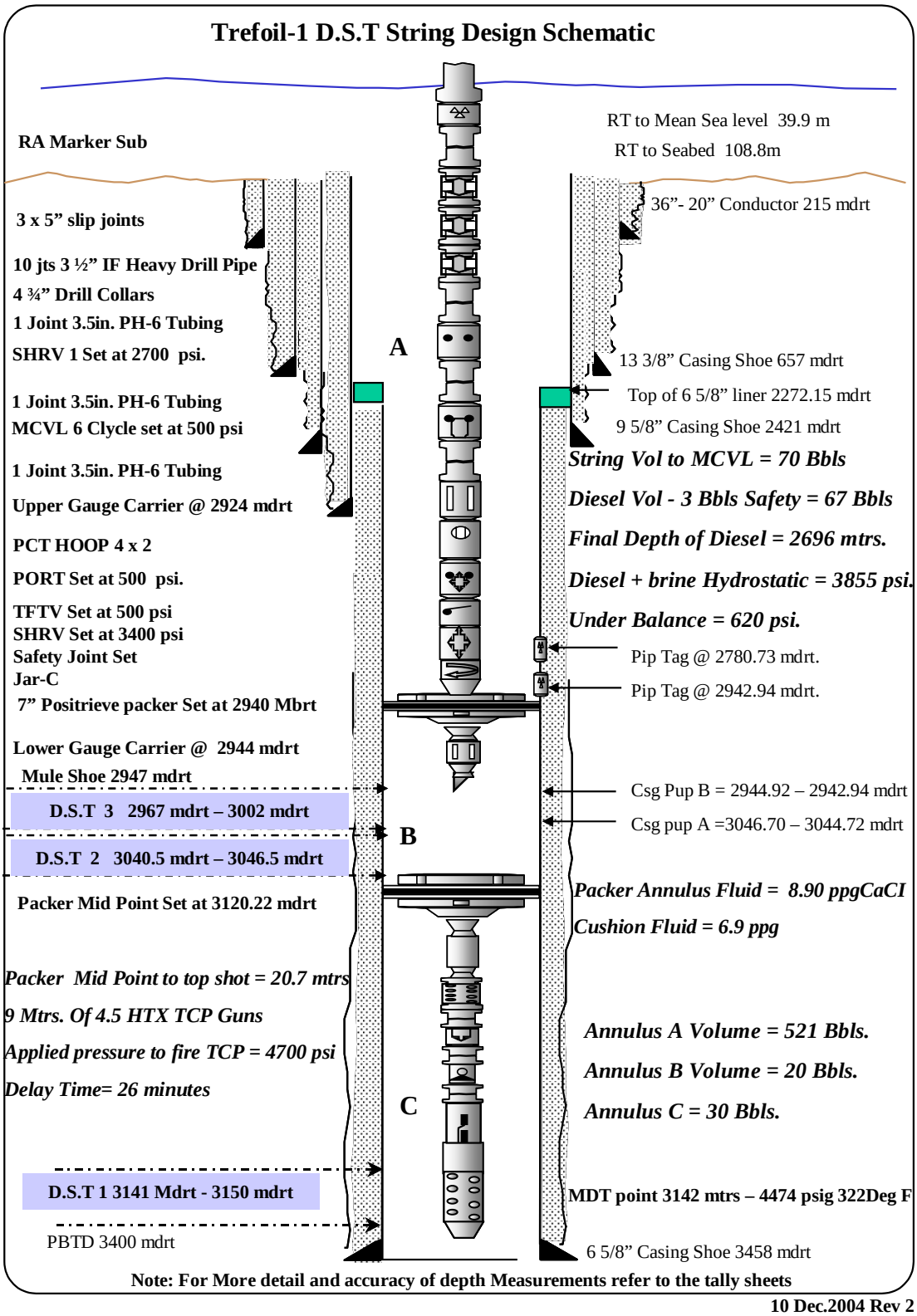


Figure 4: Trefoil 1 DST String Design Schematic

2.1.7 Rig Demobilisation

All drill pipe in the derrick was laid down, the PCU lifted into position for skidding, the fox hole laid down and all walkways secured. The cantilever was skidded back into the tow position and all loads on the rig decks were secured. Due to combined wave and swell heights of up to 4m jacking operations could not commence. When sea state conditions moderated sufficiently the Port leg was freed on 24 December 2004. However whilst attempting to free the Bow and Starboard legs the combined sea and swell heights increased to 3m and the rig had to be jacked up to a 15ft air gap. On December 25 2004 the sea state conditions moderated and all legs were worked free. The rig was towed to 1nm from the Trefoil 1 location and handed over to Esso Australia Ltd.

2.2 Time Analysis

The jack up rig ENSCO 102 was released from the Yolla program at 2200hr on 16 October 2004 and handed over to Esso Australia Ltd 69.4 days later at 0745hr on 25 December 2004 (once the rig had reached a point 1 nautical mile from Trefoil 1). During the ensuing time 289.25 hours (12.05 days) were spent positioning and preparing the rig to drill, 1303.75 hours (54.32 days) were spent drilling and testing the Trefoil 1 well and 72.75 hours (3.03 days) were spent rigging down and demobilising the rig from the Trefoil 1 location.

Of the 12.05 days spent mobilising the rig 4.34 days were spent on planned activities. The additional time was spent conducting repeated preloading operations on the legs due to the weaker than predicted sea bed soils (4.65 days), waiting on weather (1.79 days) and carrying out unplanned activities such as inspecting the rig legs (1.27 days).

Of the 3.03 days spent demobilising the rig 1.51 days were spent conducting planned operations. The majority of the additional time was spent waiting on weather (1.50 days).

Of the 54.32 days spent on the Trefoil 1 well 45.78 days were spent on planned activities. A total of 2.01 days were lost due to non-productive time. The most significant lost time events related to:

- Attempting to run a 1.75in drift during the testing phase (5.25hrs)
- An MDT tool failure (4.5hrs)
- Backreaming through tight hole sections (4.25hrs).

A further 1.29 days were lost whilst waiting on weather predominantly during the testing phase of the well. An additional 5.17 days were spent on unplanned operations on the Trefoil 1 well. The majority of this time (72hrs) was spent drilling the well beyond the originally programmed TD of 3114mMD to 3545mMD.

A detailed breakdown of the above activities can be found in Table 2 and a histogram of the time breakdown for each activity is displayed in Figure 5.

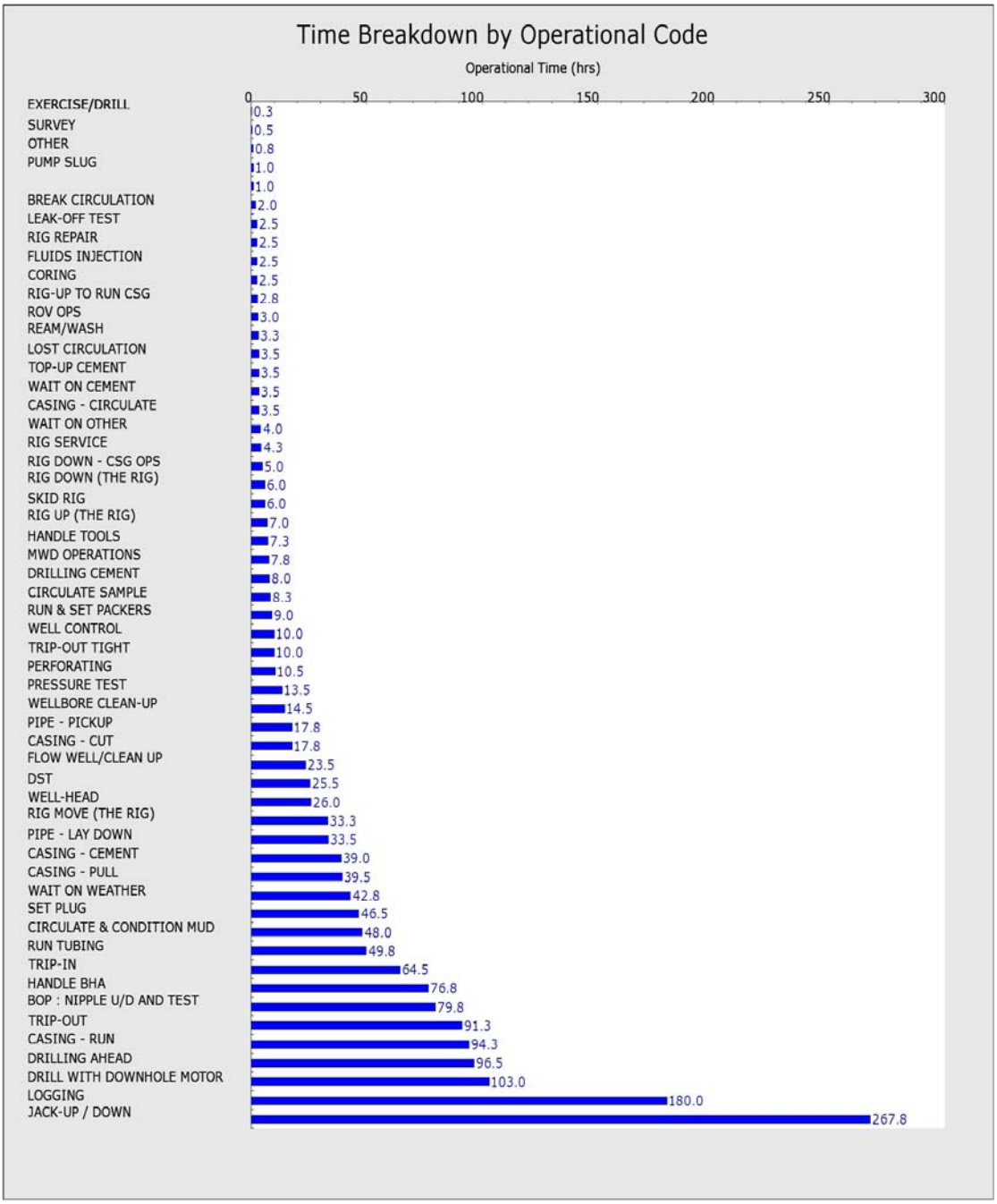


Figure 5: Trefoil 1 Time Breakdown by Operation

WELL PHASE	ACTUAL TOTAL HOURS	ACTUAL PHASE HOURS	ACTUAL TOTAL DAYS	ACTUAL PHASE DAYS	PHASE CODE	COMMENTS
RIG MOBILISATION: From rig departure from the Yolla platform to securing cantilever and lowering PCU at Trefoil location.	289.25	104.25	12.05	4.34	P	No comment.
		111.50		4.65	TP (No WOW)	Trouble time related to multiple preloading attempts. After 7 unsuccessful preloading cycles (Bow leg at 46ft, Stb at 54ft, Port at 33ft) a decision was made to reposition the rig. Raised the Stb and Port legs until clear of mud line. Rotated rig around the Bow leg to a heading of 53°. Jacked Port leg into old Stb hole. Successfully preloaded all legs.
		43.00		1.79	TP (WOW)	Preloading operations delayed due to sea state conditions.
		0.00		0.00	TU	No comment.
		30.50		1.27	U	Most unplanned activities spent visually inspecting legs and cross braces prior to jacking/preloading operations.
TREFOIL 1 WELL: Includes all drilling, evaluation and production testing operations on Trefoil 1.	1,303.75	1,098.75	54.32	45.78	P	No comment.
		48.25		2.01	TP (No WOW)	3.5hrs lost due to tight/corroded bolts when attempting to install bolts on squnch joint connector. Further time lost due to hole conditioning/losses and a BOP leak on the Fastloc connector weep hole. A total of 4.25hrs was lost on POOH tight - backreaming was required. A total of 4.5hrs was lost due to an MDT failure (damaged "o" ring seal). During production testing 5.25hrs was lost attempting to RIH with the 1.75in drift.
		31.00		1.29	TP (WOW)	24hrs lost due to high winds during testing operations.
		1.75		0.07	TU	Pumped a 100bbl LCM pill, 300bbl PHG and 100bbl inhibited pill.
		124.00		5.17	U	The AFE total depth was 3114m. An additional 72hrs was spent drilling the well to 3545m. Prior to POOH to run 9.625in casing 4.5hrs was spent circulating the hole. A total of 11.25hrs was spent running the MDT tool.
RIG DEMOBILISATION: From end of Y4 well until rig 1 nautical mile from Yolla Platform.	72.75	36.25	3.03	1.51	P	No comment.
		0.50		0.02	TP (No WOW)	Repaired damaged hydraulic hose on PRS.
		36.00		1.50	TP (WOW)	Sea state conditions delayed jacking down operations.
		0.00		0.00	TU	No comment.
		0.00		0.00	U	No comment.

DEFINITIONS:
P = Planned operations (also productive time)
TP = Trouble during Planned operations
TU = Trouble during Unplanned operations.
U = Unplanned operations.
WOW = Wait On Weather.

Table 2: Trefoil 1 Well Time Breakdown Analysis (including Rig Mob and Demob)

2.3 CONCLUSIONS & RECOMMENDATIONS

2.3.1 Rig Mobilisation

Soil conditions at the Trefoil location were found to be considerably weaker than the core samples indicated. Soil experts are still investigating the reason why actual soil strengths proved to be much weaker than penetrometer testing predicted, but future jacking operations at the site should be informed of the punch through conditions and deeper than anticipated spud can penetrations.

2.3.2 Weather Down Time

Future operations should recognise and appreciate the occasional adverse weather conditions of the area, particularly during the early stages of a well when large quantities of equipment and materials frequently need to be handled offshore. Sea states inside the Bass Strait never reach the enormous sea states seen just outside the Bass Strait, but are never the less severe enough to prevent safe rig jacking and boat loading/offloading operations. Wind velocity also shut down crane operations and/or slowed normal equipment handling operations on the rig. The severe weather systems proved to last approximately 1 to 3 days and generally returned on a more or less weekly cycle. This was also borne out by a wave riding buoy which had been anchored at the platform location for a number of months prior to platform installation.

2.3.3 Bit Selection

Previous wells had used PDC bits but none were able to drill an entire hole section. Improvements in bit design since that time allowed the well to be drilled with only one bit in each hole section (although a tricone bit was required to drill the final 103m of the 8.5in hole section). See Table 3 for the Trefoil 1 bit record.

Well: Trefoil 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 (sg)	I	O1	D	L	B	G	O2	R
29 Oct 2004	30 Oct 2004	111	1	26.00	D74635	REED	Y11C	3 x 30 1 x 20	1.5217	108.8	218.0	109.2	7	15.6	560	425	3.80	45	1.07	1	1	NO	A	1	I	NO	TD
01 Nov 2004	03 Nov 2004	115	2RR2	16.00	6023745	HUGHES	MX1	3 x 30	2.071	218.0	666.1	448.1	14.8	30.28	2480	990	5.00	46	1.06	2	2	WT	A	E	I	NO	TD
06 Nov 2004	11 Nov 2004		3	12.25	206574	REED	RSX162DGSW	6 x 23	1.491	666.1	2428.0	1761.9	68	25.91	3430	873	13.00	93	1.08	1	1	NO	A	X	I	NO	TD
14 Nov 2004	17 Nov 2004		4	8.50	JT3368	SMITH	MA74EPX	3 x 20 3 x 23	2.118	2428.0	2735.0	307	16.8	18.27	2555	512	11.80	95	1.08	1	1	CT	S	X	I	NO	CP
18 Nov 2004	22 Nov 2004		4 RR1	8.50	JT3368	SMITH	MA74EPX	3 x 20 3 x 23	2.138	2743.0	3442.0	699	72.3	9.67	3346	548	20.20	96	1.09	2	3	FC	S	X	I	CT	PR
17 Nov 2004	17 Nov 2004		5	8.50	7981361	SECURITY-DBS	CD93		0	2735.0	2743.0	8	1	8	1246	206	12.00	73	1.10	1	1	WT	A	X	I	PN	FM
22 Nov 2004	24 Oct 2004	517	6	8.50	6024175	HUGHES	MX20HDX	3 x 23	0.746	3442.0	3545.0	103	20.3	5.07	3972	529	37.50	60	1.09	1	1	WT	A	E	I	NO	TD
27 Nov 2004	28 Nov 2004	216	7	8.50	6010646	HUGHES	ATJ-G8	3 x 30	2.104	3545.0	3545.0	0	0		3200	550	2.00	50	1.10	1	1	NO	A	0	I	NO	LOG
02 Dec 2004	03 Dec 2004	216	7 RR1	8.50	6010646	HUGHES	ATJ-G8	3 x 30	2.104	3545.0	3545.0	0	0		3200	550	2.00	50	1.10	1	1	NO	A	E	I	NO	TD
05 Dec 2004	07 Dec 2004		8 RR5	5.75	W19JM	HUGHES	STR-1		0	3545.0	3545.0	0	0		0	0	0	0	1.10	1	1	NO	A	E	I	NO	TD

Table 3: Trefoil 1 Bit Record

2.3.4 Coring

One 36m coring assembly was RIH to 2735mMD and 8m of core cut. Of this core cut 7.3m was recovered to surface. On the Yolla 4 well 27m coring assemblies successfully cut and recovered 27m of core. Therefore it was felt that the success at Yolla 4 would allow for an additional barrel to be placed in the coring assembly at Trefoil 1. However due to a hard stringer at 2743mMD the corehead jammed and no further coring was possible. If future Trefoil wells are drilled 36m coring assemblies should be considered now that the geological conditions are better understood.

2.3.5 Rig Operations

The rig operated under a strict safety case regime which no doubt contributed to the well being drilled without any lost time injuries. However, this in turn appears to delay operations and should be considered when preparing future cost and time estimates. The rig was also observed to be slow in making up unusual tubular assemblies and in the picking up and running of casing and tubing, but this was in turn deemed to be due to the rig having a highly automated pipe racking system (which ran casing and tubing at approximately half the rate observed by manual rigs).

2.4 Daily Drilling Operations Summary

#	Date	Depth	24 Hour Summary
1	16 Oct 2004	0m	Departed Yolla location for Trefoil 1 at 22:00 on 16th Oct 2004
2	17 Oct 2004	0m	Towed rig to location. Cleaned and inspected legs and spud cans. Completed tow to location. Soft pinned rig and commenced preload.
3	18 Oct 2004	0m	Completed preloading Bow leg. Preloaded Port leg.
4	19 Oct 2004	0m	Preloaded Stbd leg, insufficient penetration. Extended preload on Bow leg. Commence dynamic preload on Port leg.
5	20 Oct 2004	0m	Continued dynamic preload on Port leg. Increased penetration on Stbd leg +12 ft and Port leg +8 ft.
6	21 Oct 2004	0m	Cycled Port leg. Penetrations at 24 hrs were as follows: Bow = 46 ft, Stbd = 44 ft, Port = 31 ft.
7	22 Oct 2004	0m	Continued preloading/jacking operations. Penetrations at 24:00 hrs were: Stbd = 54 ft, Bow = 46 ft, Port = 33 ft.
8	23 Oct 2004	0m	Cycled Port leg. Unloaded Invincible Tide. Waited on Weather prior to rotating rig.
9	24 Oct 2004	0m	Waited on Weather prior to rotating the rig. Made two attempts to free legs- unsuccessful. Jacked back up and continued to wait on weather.
10	25 Oct 2004	0m	Rotated aft end of rig to Stbd. Jacked Port and Bow legs in to existing spud can holes. Jacked down Stbd leg and commenced preload operations. Jacked hull down to free Stbd leg and check high RPD. Jacked up and continued preload activities on Stbd leg.
11	26 Oct 2004	0m	Jacked up rig and held full preload on Stbd for 1.25 hours. Dumped Stbd preload and jacked up 7.5 ft (2.3 m) air gap. Took on Port leg preload to 100% and held for 6 hours. Dumped Port leg preload. Took full preload onto Bow leg. Held Bow leg preload while taking on Stbd preload.
12	27 Oct 2004	0m	Held full preload on Bow and Stbd legs for 7 hours. Jacked hull clear of high seas. Commenced preloading rig with Port deepwell.
13	28 Oct 2004	0m	Completed final 24 hour preload cycle. Leg penetrations 46 ft (14 m) on all legs. Jacked up hull and checked RPD readings. WOW for 3.5 hours. Released tow bridle from Ray J Hope. Jacked hull to 62 ft (18.9 m) air gap. Skidded cantilever 30 ft (9.1 m) and lowered PCU. Continued to prepare for spud.
14	29 Oct 2004	108.8m	Picked up 24 stands of 5 in drill pipe. Made up cement stand and racked back. Made up BHA. Prepared rig for spud. Tagged mudline. Jacked down 0.9 m. Chocked rig legs. Skidded out and connected cantilever. Tagged mudline at 108.8 m with 18 m air gap. ROV operations.
15	30 Oct 2004	218.0m	Drilled 26 / 36 in hole to 218 m / 159m. Displaced hole to PHG. Wiped hole to 138 m. RIH tagged 4 m fill. Circulated clean & displaced to PHG. POOH. R/U and 20 in casing and 30 in Conductor.
16	31 Oct 2004	218.0m	Ran and landed 30/20 in conductor. Ran cement stinger. Cemented Conductor. WOC
17	01 Nov 2004	218.0m	Completed cement top up. Pulled cement stinger. Installed 30" squnch jt mandrel. Installed diverter overshot. Installed diverter housing. P/U and ran 16" BHA.
18	02 Nov 2004	666.1m	Drilled to 641 m, observed downhole losses. Attempted to cure losses. Drilled to 666 m. Pumped LCM & Gel. POOH to Shoe. Monitored losses on trip tank. WOW to run casing.
19	03 Nov 2004	666.1m	WOW. RIH and wipe hole to TD. Displaced hole to PHG & Inhibited mud. POOH to shoe, pumped 100 bbl LCM pill. Flow checked. POOH. R/U and ran 13.375 in casing.
20	04 Nov 2004	666.1m	Ran and cemented 13.375 in casing. Laid down 13.375 in landing string and released 30 in squench connector. Commenced making up Cameron wellhead.
21	05 Nov 2004	666.1m	Made up Cameron wellhead to 13.375 in casing. Conducted top-up cement job #2 on 36 x 30 in annulus. Nippled up BOP's.
22	06 Nov 2004	671.0m	Nippled up and tested BOP's. Tested casing to 1500 psi and laid down 16 in BHA. Made up and RIH 12.25 in BHA. Drilled 5 m of new formation to 671 mMD.
23	07 Nov 2004	1398.0m	Conducted FIT to EMW of 10.5 ppg. Drilled 12.25 in hole from 671 mMD to 1398 mMD.
24	08 Nov 2004	2036.0m	Drilled 12.25 in hole from 1398 mMD to 2036 mMD.
25	09 Nov 2004	2428.0m	Drilled 12.25 in hole to section TD at 2428 mMD. Circulated hole clean prior to POOH.
26	10 Nov 2004	2428.0m	Circulated bottoms-up at section TD and POOH to 13.375 in shoe. RIH BHA to TD and circulated bottoms up.
27	11 Nov 2004	2428.0m	POOH and racked back 12.25 in BHA. Jetted MLS hang-off area. Pulled wearbushing and rigged up to run casing. Ran 9.625 in casing to 193 mMD.
28	12 Nov 2004	2428.0m	Ran 9.625 in casing (43.5 ppf, L80, VT) to 2421 mMD. Cemenetd and pressure tested casing.

29	13 Nov 2004	2428.0m	Pressure tested 9.625 in casing to 3500 psi - OK. Cut 9.625 in casing and nippled up BOP. Made up and RIH seal assembly. Tested same.
30	14 Nov 2004	2428.0m	Pressure tested BOP's and laid down 12.25 in BHA. Made up and RIH 8.5 in BHA.
31	15 Nov 2004	2539.0m	RIH 8.5 in BHA and drilled out shoetrack. Conducted FIT to 12.5 ppg and drilled ahead to 2539 mMD.
32	16 Nov 2004	2735.0m	Drilled to core point #2 (P5 sand) at 2735 mMD. POOH BHA for coring operations.
33	17 Nov 2004	2743.0m	POOH 8.5 in BHA and made up coring BHA #1. RIH coring BHA to 2735 mMD and cut core to 2743 mMD. POOH and laid down inner and outer core barrels.
34	18 Nov 2004	2834.0m	Made up and RIH 8.5 in BHA. Drilled ahead from 2743 mMD to 2834 mMD.
35	19 Nov 2004	3148.0m	Drilled 8.5 in hole from 2834 mMD to 3148 mMD.
36	20 Nov 2004	3407.0m	Drilled 8.5 in hole from 3148 mMD to 3407 mMD.
37	21 Nov 2004	3442.0m	Drilled 8.5 in hole from 3407 mMD to 3442 mMD. POOH to change bit.
38	22 Nov 2004	3442.0m	POOH BHA and broke out PDC bit. Laid down outer core barrels and made up 8.5 in BHA (motor and tricone bit). RIH BHA to 3442 mMD.
39	23 Nov 2004	3545.0m	Drilled 8.5 in hole to TD at 3545 mMD. Commenced POOH with BHA.
40	24 Nov 2004	3545.0m	POOH with 8.5 in BHA and laid down MWD tools. Rigged up to run wireline and RIH with logging assembly #1.
41	25 Nov 2004	3545.0m	Ran Log #2 VSI. M/U and Ran MDT.
42	26 Nov 2004	3545.0m	Ran Log assembly #3 MDT-GR-LEH-QT. Completed 56 pre-tests and commenced sampling.
43	27 Nov 2004	3545.0m	Completed Log run #3. L/D wireline. M/U BHA and RIH to shoe circulated B/U. RIH to 2825 m circulated out 51% gas.
44	28 Nov 2004	3545.0m	RIH hole circ'd B/U at 3115 m & 3260 m. Washed and reamed from 3376 m to 3545 m. Circulated B/U x 3. POOH. R/U to log and ran Log #4 MSCT-GR.
45	29 Nov 2004	3545.0m	Ran Log #4 MSCT. POOH. P/U and Ran Log #5 MDT to 2307 m. Tool failed, POOH and replaced module. Ran Log #5 MDT.
46	30 Nov 2004	3545.0m	Completed Log #5 MDT-LEH-GR-QT.
47	01 Dec 2004	3545.0m	P/U and ran MSCT to 2968 m. Cut cores from 2968 to 3018 m. Tool jammed. POOH. Redressed MSCT. RIH. cut cores. POOH. P/U & ran FMI-DSI-HNGS-LEH-QT.
48	02 Dec 2004	3545.0m	Completed Logging run #8 FMI-DSI-HNGS-LEH-QT. POOH & L/D tools. R/D wireline equipment. P/U Bit and BHA. RIH, circulated out gas cut mud. Reamed from 3515 to 3545 m. Circulated B/U.
49	03 Dec 2004	3545.0m	POOH. Rigged up and ran liner.
50	04 Dec 2004	3545.0m	RIH with liner to shoe circ contents. RIH with liner, tagged at 3456 m. Washed to 3461 m. Set liner at 3458 m. Cement liner, set packer. Reverse circ. POOH.
51	05 Dec 2004	3545.0m	L/D liner running tool. Reconfigured BOP rams. Pressure tested BOP and surface equipment. P/U casing clean up BHA. commenced P/U 3½" DP.
52	06 Dec 2004	3545.0m	RIH with clean out assy to shoe tested liner lap to 2000 psi. RIH to 3400 m, scraped packer areas. Polished PBR. Pumped clean up sweeps and circulated wellbore clean.
53	07 Dec 2004	3545.0m	Displaced to brine. Pressure tested liner/csg. POOH. P/U Flowhead and spaced out. R/U wireline and ran USIT-CBL.
54	08 Dec 2004	3545.0m	Completed USIT-CBL. Run Gauge ring / Junk Basket. Tested BOP. R/U and ran TCP guns and permanent packer. WOW.
55	09 Dec 2004	3545.0m	Wait on Weather to 17.00. P/U retrievable packer and DST tools. Ran BHA to 273 m.
56	10 Dec 2004	3545.0m	P/U slip joints. Pressure tested DST tools & BHA to 5000 psi. P/U and ran 3½" PH-6 tubing. Tested DST string to 5000 psi. P/U EZ valve.
57	11 Dec 2004	3545.0m	P/Test string. M/U FCH. Set packer. P/Test annulus & surface equipment. Held Fire / Adandon drill. Cycled tools. Displaced to diesel. Function tested ESD. Perforated well. Monitored Initial B/U. Flowed well for Clean up & Main flow.
58	12 Dec 2004	3545.0m	Completed testing and sampling operations on DST #1.
59	13 Dec 2004	3545.0m	Set 1.875 in Owen bridge plug at 3125 mMD. Made up and RIH with 1-11/16 in Enerjet gun assembly.
60	14 Dec 2004	3545.0m	Perforated well from 3040.5 mMD to 3046.5 mMD and conducted DST #2. Closed in well for build-up period. Made preparations for well kill operations.
61	15 Dec 2004	3545.0m	Completed well kill operations and commenced POOH with 3.5 in tubing to 2416 mMD.
62	16 Dec 2004	3545.0m	POOH with DST string and laid down same.
63	17 Dec 2004	3545.0m	Ran in hole and set 6.625 in retainer at 3031m, set and tested cement plug, Pulled out of hole and layed out excess drill pipe.

64	18 Dec 2004	3545.0m	Laid down 5"drill pipe, Set cement suspension plugs #2 & #3, Spotted inhibited brine, Laid down 3-1/2"drill pipe.
65	19 Dec 2004	3545.0m	Pulled out of hole, Pulled W/B, Topped up cement around conductor, Changed rams & rigged down diverter & BOP's, Pulled riser, Pulled seal assy, Cut 9-5/8 "casing.
66	20 Dec 2004	3545.0m	Cut 9-5/8", Pulled and laid out 9-5/8, Removed well head hsg and laid out 13-3/8 casing.
67	21 Dec 2004	3545.0m	Washed mud line hgr, Ran & set 9-5/8" & 13-3/8" TA caps, Released and laid out 30"conductor, Laid out Baker & CIW tools from derrick.
68	22 Dec 2004	3545.0m	Installed 30" trash cap, Released & recovered guide lines, Laid out all tubulars from derrick, Rigged down service lines, Picked up PCU, Secured rig for skidding.
69	23 Dec 2004	3545.0m	Skidded cantilever in & secured, Jacked down to 10' air gap, WOW.
70	24 Dec 2004	3545.0m	WOW, Connect tow boat,Jack down & jet stern legs free, Jack up, WOW.
71	25 Dec 2004	3545.0m	Waited on weather.

3. FORMATION SAMPLING & ANALYSIS

3.1 Cuttings

Cuttings were collected over the interval 218 – 3545mRT. Sampling intervals varied due to variable ROP (fast drilling). The sampling intervals were as follows:

218 – 520 mRT: 20 to 40 metre intervals
520 – 1990 mRT: 10 to 20 metre intervals
1990 – 2430 mRT: 6 to 9 metre intervals
2430 – 3545 mRT: 3 to 6 metre intervals

Cuttings were very poor during the cored interval and descriptions through this zone are generated from core chip descriptions (Appendix 3).

A detailed collection and distribution list for all ditch cutting samples collected from Trefoil 1 is included in the Geoservices End of Well Report (Appendix 6). Cuttings lithological descriptions are presented in Appendix 1. A complete set of Daily Geological Reports (which include cuttings descriptions summary) are included in Appendix 17.

3.2 Sidewall Cores

Three runs of rotary sidewall cores (MSCT) were cut in Trefoil 1. The MSCTs were run numbers 4, 6 and 7 of Suite 1 logs. Of the 35 cores attempted in run 4 (first MSCT run), only 10 were accepted. In run 6 (the second MSCT run), 24 cores were accepted out of a total of 26 attempted. In the final MSCT run (logging run #7), 12 cores were attempted and 8 accepted. Cores cut are summarised in the Table 4 and detailed descriptions and photographs are supplied in Appendix 2.

MSCT #	Depth (mRT)	Core Acceptance	Reason Rejected
	2812	Rejected	Aborted – core motor stalled
	2810	Rejected	Aborted – core motor stalled
	2805	Rejected	Aborted – core motor stalled
	2964.5	Rejected	Aborted – core motor stalled
1/1	2968.3	Accepted	
	2979	Rejected	Aborted – core motor stalled
	2982	Rejected	Aborted – core motor stalled
	2986.8	Rejected	Aborted – core motor stalled
1/2	2987.8	Accepted	
	2988.8	Rejected	Aborted – core motor stalled
			Extra Marker Dropped
1/3	2989.8	Accepted	
1/4	2990.8	Accepted	
1/5	2991.8	Accepted	
1/6	2992.8	Accepted	
1/7	2993.8	Accepted	
1/8	2994.8	Accepted	
1/9	2995.8	Accepted	
1/10	2996.8	Accepted	
	2997.8	Rejected	empty
	2998.8	Rejected	empty
	2999.8	Rejected	empty

	3000.8	Rejected	empty
	3002.1	Rejected	empty
	3002.8	Rejected	empty
	3003.8	Rejected	empty
	3008.8	Rejected	empty
	3010.8	Rejected	empty
	3026.7	Rejected	empty
	3040.5	Rejected	empty
	3041.5	Rejected	empty
	3042.5	Rejected	empty
	3043.5	Rejected	empty
	3044.5	Rejected	empty
	3045.0	Rejected	empty
2/1	2968.3	Accepted	
2/2	2970.0	Accepted	
2/3	2971.0	Accepted	
2/4	2977.7	Accepted	
2/5	2980.0	Accepted	
2/6	2981.0	Accepted	
2/7	2982.0	Accepted	
2/8	2986.0	Accepted	
2/9	2987.8	Accepted	
2/10	2988.8	Accepted	
2/11	2990.8	Accepted	
2/12	2991.8	Accepted	
2/13	2992.8	Accepted	
2/14	2993.8	Accepted	
2/15	2994.8	Accepted	
2/16	2995.8	Accepted	
2/17	2996.8	Accepted	
2/18	2997.8	Accepted	
2/19	2999.2	Accepted	
2/20	3000.2	Accepted	
2/21	3001.2	Accepted	
2/22	3002.1	Accepted	
2/23	3003.8	Accepted	
2/24	3006.7	Accepted	
	3009.1	Rejected	empty
	3018.2	Rejected	empty
3/1	3009.0	Accepted	
3/2	3018.4	Accepted	
3/3	3020.1	Accepted	
3/4	3021.2	Accepted	
3/5	3026.7	Accepted	
	3028.0	Rejected	empty
3/6	3027.9	Accepted	Partial recovery
3/7	3040.5	Accepted	Partial recovery
	3042.5	Rejected	empty
	3043.5	Rejected	empty
	3045.0	Rejected	empty
3/8	3414.0	Accepted	Partial core from bit

Table 4: Summary of Rotary Sidewall Cores cut in Trefoil 1.

3.3 Conventional Cores

One conventional core was cut in Trefoil 1. A summary of the cored interval is included in Table 5 below. Detailed core chip descriptions are in Appendix 3. Routine core analysis and core photographs are supplied in Appendix 4.

Core #	Interval (mMDRT)	Cut (m)	Rec (m)
1	2735.0 – 2742.25	8.2	7.3 (89%)

Table 5: Summary of Conventional Cores cut in Trefoil 1.

3.4 Palynology

Twenty-seven cuttings, one core and one MSCT samples were selected for post-drill palynological studies. In addition, 6 cuttings samples were sent for "hotshot" urgent palynological analysis to assist with a total depth decision while drilling. These studies were undertaken by Morgan Palaeo Associates and the palynological basic data report and range charts are presented in Appendix 13. The sample depths selected for analysis are shown in Table 6.

3.5 Geochemistry

Ten cuttings samples were selected for vitrinite reflectance (Vr) determination. Keiraville Konsultants undertook this analysis. The depths at which the Vr was determined are shown in Table 6. The results of this work are included in the interpretive volume of the Trefoil 1 Well Completion report in Appendix 5.

Ten cuttings samples and two condensate samples were selected for geochemical analysis (Table 6). The condensate samples were sourced from DST #1 which was performed between 3141 – 3150mRT and DST#2 which was perforated between 3040.5 – 3046.5mRT. All geochemical analysis is presented in the interpretive volume of the Trefoil 1 Well Completion report in Appendix 4.

Depth (mRT)	Sample Type	Palynology	Vitrinite Reflectance	Geochemistry
1700	cuttings	NO	YES	NO
1890	cuttings	NO	YES	NO
2136	cuttings	NO	YES	NO
2322	cuttings	YES	YES	NO
2433	cuttings	YES	NO	NO
2508	cuttings	YES	YES	NO
2559	cuttings	YES	NO	NO
2616	cuttings	YES	NO	NO
2685	cuttings	YES	NO	NO
2694	cuttings	YES	NO	NO
2712	cuttings	YES	YES	NO
2741.72	core	YES	NO	NO
2775	cuttings	YES	NO	NO
2868	cuttings	YES	NO	NO
2892	cuttings	NO	YES	NO
2901	cuttings	YES	NO	YES
2925	cuttings	YES	NO	YES
2973	cuttings	NO	NO	YES
2994.8	MSCT	YES	NO	NO
2997	cuttings	NO	NO	YES
3042	cuttings	YES	NO	YES
3048	cuttings	YES	NO	NO
3060	cuttings	YES	NO	NO
3078	cuttings	YES	NO	NO
3093	cuttings	YES	NO	YES
3105	cuttings	YES	YES	NO
3132	cuttings	YES	NO	NO
3156	cuttings	YES	NO	YES
3264	cuttings	YES	NO	YES
3324	cuttings	YES	YES	YES
3360	cuttings	YES	NO	NO
3375	cuttings	YES	NO	YES
3390	cuttings	YES	NO	NO
3492	cuttings	YES	YES	NO
3513	cuttings	YES	NO	NO

Table 6: Trefoil 1: Cuttings Sample depths at which Palynology, Vitrinite reflectance and Geochemical Analysis was undertaken.

3.6 Petrology

Three MSCT's were sent to Reservoir Solutions Pty Ltd for petrology, X-ray diffraction analysis (XRD) and scanning electron microscopy (SEM). The petrology undertaken includes modal analysis, grain size analysis and photomicroscopy. The samples analysed are shown below in Table 7. The Petrology results can be found in the interpretive volume of the Trefoil 1 Well Completion report in Appendix 7.

Depth (mRT)	Sample Type	Sample #
2996.8	MSCT	MSCT 2/17
3000.2	MSCT	MSCT 2/21
3018.4	MSCT	MSCT 3/2

Table 7: Trefoil 1: Sample depths at which Petrology, XRD and SEM was undertaken.

3.7 Core Analysis

Routine Core Analysis (RCA) and Special Core Analysis (SCAL) was performed by ACS Laboratories Pty Ltd. The RCA report is presented in Appendix 4. Special Core Analysis (SCAL) report is included in the interpretive volume of the Trefoil 1 Well Completion report in Appendix 9.

4. FORMATION EVALUATION

4.1 Mudlogging

Mudlogging was provided by Geoservices Overseas SA over the interval 108.8 – 3545mRT. The Mudlogger's End of Well Report can be found in Appendix 6.

4.2 Logging While Drilling

Logging while drilling (LWD) services were provided by Sperry-Sun Drilling Services. In the top hole section the LWD comprised dual gamma ray (DGR) and four phase electromagnetic resistivity (EWR-P4) data. In the 8 ½" hole in addition to the gamma and resistivity logs, compensated neutron porosity (CNP) and stabilised litho-density (SLD) tools were also run. Sperry-Sun also provided a measurement while drilling (MWD) tool throughout the drilling of the well to collect directional data. A summary of each MWD run is shown in Table 8. Sperry-Sun provided an end-of well report detailing the LWD and MWD operations, which is presented in Appendix 7.

Hole Size (inches)	Interval (mMDRT)	MWD services	LWD services
16	215 - 666	DWD	none
12.25	666 – 2428	P4M-DIR-FE	DGR-EWR
8.5	2428 – 2735	P4M-DIR-FE-NUKE	DGR-EWR-CNP-SLD
8.5	2735 – 3442	P4M-DIR-FE-NUKE	DGR-EWR-CNP-SLD
8.5	3442 - 3545	P4M-DIR-FE-NUKE	DGR-EWR-CNP-SLD

Table 8: Summary of LWD & MWD runs in Trefoil 1.

4.3 Wireline Logging

The following wireline logs, shown in Table 9, were run at Trefoil 1 by Schlumberger Oilfield Australia Pty Ltd. The Wireline Service Quality Report by Schlumberger is presented in Appendix 8.

Suite #	Run #	Log	Interval (mMDRT)
1	1	PEX-HRLA-CMR-SP-GR	2420.1 - 3418.3 m
1	2	VSI-GR	319 – 3419 m
1	3	MDT-GR (1)	2626 – 3390 m
		WIPER TRIP	
1	4	MSCT (1)	2812 – 3046 m
1	5	MDT-GR (2)	2926 – 3524 m
1	6	MSCT (2)	2968.3 – 3018.2 m
1	7	MSCT (3)	3009 – 3414 m
1	8	FMI-DSI-HNGS	2420.1 – 3527 m

Table 9: Wireline logs run in Trefoil 1.

Suite	Run	Bit Size	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	1-6	8 ½"	Sea Water Drispac Soltex	9.4	49	3.8	9.3	0.206 @25°C	0.174 @25°C	0.280 @25°C

Table 10: Logging Parameters in Trefoil 1.

Suite #	Run #	Maximum Recorded Temperature (°C)	Bottom Hole Depth (mRT)	Time Circulation Stopped	Time Logger on bottom
1	1	117	3418.3	24/11/04 00:45	24/11/04 14:20
1	3	125	3390	24/11/04 00:45	26/11/04 11:04
1	4	115	3046.5	28/11/04 09:15	29/11/04 02:43
1	5	128	3524	28/11/04 09:15	29/11/04 11:50
1	6	Not recorded	3018.2	28/11/04 09:15	01/12/04 06:28
1	7	Not recorded	3414	28/11/04 09:15	01/12/04 12:43
1	8	133	3527	28/11/04 09:15	01/12/04 22:35

Table 11: Temperature data recorded during wireline logging in Trefoil 1.

4.4 Hydrocarbon Indications

Gas shows from cuttings are presented in Appendix 5 and fluorescence shows in cuttings, MSCT and core are detailed in Appendices 1, 2 and 3 respectively.

4.5 Velocity Survey

A VSP survey was recorded by Schlumberger over the interval 241-3411mRT using the Versatile Seismic Imager Tool (VSI-4). 157 shots were recorded. Checkshot data and VSP charts are enclosed in Appendix 9.

5. FORMATION TESTING

5.1 MDT Formation Pressure Testing & Fluid Sampling

The Trefoil 1 MDT programme consisted of 2 logging runs made with the logging assembly MDT-GR-LEH-QT. The first MDT run (logging run #3) had pre-tests taken from 2626mMD to 3109.9mMD. The MDT tool failed at the 3109.9mMD sample point (damaged O-ring seal in MDT tool). A rerun was made with the same assembly and additional pre-tests taken from 3109.9mMD to 3390mMD. A third MDT run was made with samples being taken at 3386.5mMD, 3264mMD, 3142.7mMD, 3057.2mMD, 3006.5mMD and 2968.7mMD. Pump outs were recorded at 3162mMD, 3045.2mMD, 2982.0mMD and 2977.8mMD.

During the first MDT program a total of 79 pre-tests (including sampling run) were attempted of which 45 were valid tests, 2 were failed and 32 were tight or supercharged.

The second MDT run (logging run #5) was RIH to 2307mMD. The MDT tool failed at this point and the assembly was POOH and the fluid analyser component was changed out. Assembly #5 was rerun to 3528.7mMD where the tool stood up. During this run fluid samples were taken at 3388.7mMD, 3100.5mMD(not recovered), 3028.0mMD, 2999.2 mMD, 2988.0mMD and 2933.0mMD. Pump outs were recorded at 3157.2mMD, 3085.0mMD, 3046.0mMD, 2991.5mMD, 2959.0mMD and 2926.5 mMD.

During the second MDT program a total of 33 pre-tests (including samples) were attempted of which 16 were valid tests, 2 were failed and 15 were tight or supercharged.

A summary of the MDT data is shown in table 12 and more details are included in Appendix 10 while sampling details are in Appendix 11.

Suite#	Run#	Type	Interval (mMDRT)	Total Tests	Valid Tests	Supercharged	Tight Tests	Failed	Pump outs	Samples Collected
1	3	MDT	3390 – 2626	79	45	31	1	5	4	6
1	5	MDT	3528.7 - 2926	33	16	3	12	2	6	6

Table 12: Summary of MDT pre-tests and sampling taken in Trefoil 1.

5.2 Drill Stem Testing

The intervals perforated in Trefoil 1 and their respective drill stem test results are presented in Table 13.

Zone	Interval (mMD)	Flow Test Results
CHDST#1 – FLOW #1	3141 – 3150	An average of 16.2 MMscfd of gas + 144 barrels of condensate per day (bcpd) at 1329 psi on a 48/64" choke.
CHDST#1 – FLOW #2	3141 – 3150	An average of 14.4 MMscfd of gas + 178 barrels of condensate per day (bcpd) at 2004 psi on a 36/64" choke.
CHDST#2 - Flow #1	3040.5–3046.5	An Average of 7.0 MMscfd of gas + 178 barrels of condensate per day (bcpd) at 1329 psi on a 32/64" choke.
CHDST#2 - Flow #2	3040.5–3046.5	An Average of 9.5 MMscfd of gas + 248 barrels of condensate per day (bcpd) at 2850 psi on a 56/64" choke.
Notes: *1. Gas flow rates during CHDST#2 was subjected to high skin which is believed to be due to a low efficient through tubing perforating gun system used for this interval.* *2. Condensate rates reported above are based on the test separator conditions.*		

Table 13: Cased Hole Drill Stem Test Intervals and Results in Trefoil 1.

The following drill stem test reports are included in Appendix 20:
A. Surface Data – Schlumberger Report
B. Fluid Sampling - Oilphase Report

Fluid samples including pressurised gas and condensate, stock tank condensate and water samples were taken during production tests. These samples have been analysed by Petrolab and Amdel. The results are presented in Appendix 19 which includes the following data:

A. Petrolab Report
B. Amdel Reports
C. Oilphase Onsite Analysis Report

APPENDIX 1: CUTTINGS DESCRIPTIONS

Depth mRT	% of Rock	Main Lithology	Modifier >20%	Lithological Descriptions
230	100	CALCARENITE	fossiliferous	CALCARENITE, fossiliferous, white, translucent & light grey coloured, moderately hard, irregular fracture, CALCAREOUS GRAINS: 10% clay, trace silt, 60% sand, CLASTIC GRAINS: 30% fine sand, well sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 20%, gastropods 3%, pelecypods 3%, POROSITY: 10%, inter-granular
250	100	CALCARENITE	fossiliferous	CALCARENITE, fossiliferous, white, clear, translucent, light grey coloured, moderately hard, irregular fracture, CALCAREOUS GRAINS: trace clay, 80% sand, CLASTIC GRAINS: 10% fine sand, 5% medium sand, 5% coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/trace, ACCESSORIES: bryozoans 20%, gastropods 5%, pelecypods trace, POROSITY: 10%, inter-granular
290	100	CRUD	bryozoans	CALCIRUDITE, brown, off white, light grey & slightly translucent coloured, moderately hard, irregular fracture, CALCAREOUS GRAINS: 70% sand, CLASTIC GRAINS: 15% fine sand, 15% medium sand, moderately sorted, sub-angular, elongate, CEMENTS/STRENGTHS: calcareous/trace, ACCESSORIES: gastropods 5%, pelecypods 5%, CALCIMETERY: 100% calcite, POROSITY: 15%, intraskeletal
320	100	CRUD	bryozoans	CALCIRUDITE, brown, off white-light grey/olive grey coloured, firm-moderately hard, irregular fracture, CALCAREOUS GRAINS: 5% clay, 75% sand, CLASTIC GRAINS: 15% fine sand, 5% medium sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/trace, ACCESSORIES: gastropods 5%, pelecypods 3% POROSITY: 15%, intraskeletal
350	40	CALCARENITE	fossiliferous	CALCARENITE, fossiliferous, light grey, translucent coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 100% sand, well sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/trace, POROSITY: 10%, inter-granular
	60	CRUD	bryozoans	CALCIRUDITE, brown, off white-light grey/olive grey coloured, firm-moderately hard, irregular fracture, CALCAREOUS GRAINS: 100% sand, moderately sorted,

				sub-angular, elongate, CEMENTS/STRENGTHS: calcareous/trace, ACCESSORIES: gastropods 15%, pelecypods 10% POROSITY: 15%, intraskeletal
370	30	CALCARENITE	fossiliferous	CALCARENITE, fossiliferous, light grey, translucent coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, trace silt, 80% sand, well sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/trace, POROSITY: 10%, inter-granular
	70	CRUD	bryozoans	CALCIRUDITE, brown, cream - off white coloured, firm, irregular fracture, CALCAREOUS GRAINS: 100% sand, poorly sorted, sub-rounded, elongate, CEMENTS/STRENGTHS: calcareous/trace, ACCESSORIES: gastropods 15%, pelecypods 5%, foraminifera 10%, POROSITY: 15%, intraskeletal
400	100	CALCARENITE	fossiliferous	CALCARENITE, fossiliferous, cream, off white, light orange/brown coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, 10% silt, 70% sand, poorly sorted, angular, sub-elongate, CEMENTS/STRENGTHS: siderite/weak, calcareous/trace, ACCESSORIES: bryozoans 15%, gastropods 5%, foraminifera 10%, POROSITY: 10%, inter-granular
420	100	CALCARENITE		CALCARENITE, cream & occasionally yellow/brown coloured, firm-moderately hard, irregular fracture, CALCAREOUS GRAINS: 20% clay, 80% sand, poorly sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/trace, siderite/trace, ACCESSORIES: gastropods 3%, pelecypods 3%, foraminifera trace, POROSITY: 10%, inter-granular
440	100	CALCARENITE		CALCARENITE, cream-light brown, occasionally yellow coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, 80% sand, poorly sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/trace, siderite/trace, ACCESSORIES: gastropods 3%, pelecypods 3%, foraminifera trace, POROSITY: 10%, inter-granular
460	100	CALCARENITE		CALCARENITE, cream-light brown, occasionally yellow coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, 90% sand, poorly sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/trace, siderite/trace, ACCESSORIES: gastropods 3%,

				pelecypods 3%, foraminifera trace, POROSITY: 10%, inter-granular
480	100	CALCARENITE		CALCARENITE, cream, light brown, grey, yellow/orange coloured, firm-moderately hard, irregular fracture, CALCAREOUS GRAINS: 10% clay, 90% sand, poorly sorted, sub-angular, elongate, CEMENTS/STRENGTHS: calcareous/weak, siderite/trace, ACCESSORIES: pelecypods 5%, gastropods 3%, foraminifera 5%, POROSITY: 10%, inter-granular
500	100	CALCARENITE		CALCARENITE, cream-light brown & grey, yellow coloured, firm-moderately hard, irregular fracture, CALCAREOUS GRAINS: 10% clay, 90% sand, poorly sorted, sub-angular, elongate, CEMENTS/STRENGTHS: calcareous/weak, siderite/trace, ACCESSORIES: pelecypods 5%, gastropods 3%, foraminifera 5%, POROSITY: 10%, inter-granular
520	100	CALCARENITE		CALCARENITE, cream-light brown & grey, yellow coloured, friable-firm, irregular fracture, CALCAREOUS GRAINS: 100% sand, poorly sorted, angular, elongate, CEMENTS/STRENGTHS: calcareous/moderate, siderite/weak, ACCESSORIES: pelecypods 10%, bryozoans 5%, foraminifera 3%, POROSITY: 20%, inter-granular
530	100	CALCARENITE	fossiliferous	CALCARENITE, fossiliferous, cream-light brown & grey, yellow coloured, loose, irregular fracture, CALCAREOUS GRAINS: 100% sand, poorly sorted, very angular, very elongate, CEMENTS/STRENGTHS: calcareous/strong, siderite/weak, ACCESSORIES: pelecypods 10%, bryozoans 10%, fossils 10%, POROSITY: 20%, inter-granular
540	100	CALCARENITE		CALCARENITE, medium grey, dark grey, orange brown coloured, loose, irregular fracture, CALCAREOUS GRAINS: 100% sand, moderately sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/strong, siderite/trace, ACCESSORIES: bryozoans 5%, foraminifera 3%, fossils 5%, POROSITY: 20%, inter-granular
550	100	CALCARENITE		CALCARENITE, medium grey, dark grey, orange brown coloured, loose, irregular fracture, CALCAREOUS GRAINS: 100% sand, moderately sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/strong, siderite/trace, ACCESSORIES: bryozoans 5%, foraminifera 3%, fossils 5%, POROSITY: 20%, inter-granular

560	100	CALCARENITE		CALCARENITE, medium grey, white, dark grey coloured, loose, irregular fracture, CALCAREOUS GRAINS: 100% sand, moderately sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: foraminifera 10%, bryozoans 3%, fossils 3%, POROSITY: 20%, inter-granular
570	100	CALCARENITE		CALCARENITE, medium grey, white, dark grey coloured, loose, irregular fracture, CALCAREOUS GRAINS: 100% sand, moderately sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: foraminifera 10%, bryozoans 3%, fossils 3%, POROSITY: 20%, inter-granular
580	100	CALCARENITE		CALCARENITE, medium grey, white, dark grey coloured, loose, irregular fracture, CALCAREOUS GRAINS: 100% sand, moderately sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: foraminifera 3% POROSITY: 20%, inter-granular
590	100	CALCARENITE		CALCARENITE, medium grey, white, dark grey coloured, loose, irregular fracture, CALCAREOUS GRAINS: 100% sand, moderately sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: bryozoans 5%, foraminifera 3% POROSITY: 20%, inter-granular
600	100	CALCARENITE		CALCARENITE, medium grey, white, dark grey coloured, friable-firm, irregular fracture, CALCAREOUS GRAINS: 20% silt, 80% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 7%, foraminifera 3%, fossils 3%, POROSITY: 15%, inter-granular
	tr	SILTSTONE		SILTSTONE, brown-grey, black laminations coloured, soft-friable, fissile fracture, CLASTIC GRAINS: 100% silt, CEMENTS/STRENGTHS: silica/moderate
610	100	CALCARENITE		CALCARENITE, medium grey, white, dark grey coloured, friable-firm, irregular fracture, CALCAREOUS GRAINS: 20% silt, 80% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 7%, foraminifera 3%, fossils 3%, POROSITY: 15%, inter-granular
	tr	SILTSTONE		SILTSTONE, brown-grey, black laminations coloured, soft-friable, fissile fracture, CLASTIC GRAINS: 100% silt, CEMENTS/STRENGTHS: silica/moderate

620	90	CALCARENITE		CALCARENITE, medium grey, white, dark grey coloured, friable-firm, irregular fracture, CALCAREOUS GRAINS: 20% silt, 80% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 7%, foraminifera 3%, fossils 3%, POROSITY: 20%, inter-granular
	10	SILTSTONE		SILTSTONE, brown-grey, black laminations coloured, soft-friable, fissile fracture, CLASTIC GRAINS: 100% silt, CEMENTS/STRENGTHS: silica/moderate
	tr	COAL		COAL, dark brown, black coloured, soft-friable, sub-fissile fracture
630	100	CALCARENITE		CALCARENITE, medium grey, white, dark grey coloured, friable-firm, irregular fracture, CALCAREOUS GRAINS: 10% silt, 90% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: foraminifera 5%, fossils 3%, POROSITY: 15%, inter-granular
640	100	CALCARENITE		CALCARENITE, medium grey, white, dark grey coloured, friable-firm, irregular fracture, CALCAREOUS GRAINS: 10% silt, 90% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: foraminifera 5%, fossils 3%, POROSITY: 15%, inter-granular
650	100	CALCARENITE		CALCARENITE, medium grey, white coloured, friable-firm, irregular fracture, CALCAREOUS GRAINS: 30% silt, 70% sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pellets 20%, bryozoans 15%, fossils 15%, POROSITY: 25%, inter-granular
	tr	SILTSTONE		SILTSTONE, brown-grey, black laminations coloured, soft-friable, fissile fracture, CALCAREOUS GRAINS: 100% silt, CEMENTS/STRENGTHS: silica/moderate
660	100	CALCARENITE		CALCARENITE, medium grey, white coloured, friable-firm, irregular fracture, CALCAREOUS GRAINS: 30% silt, 70% sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pellets 20%, bryozoans 15%, fossils 15%, POROSITY: 25%, inter-granular
	tr	SILTSTONE		SILTSTONE, brown-grey, black laminations coloured, soft-friable, fissile fracture, CLASTIC GRAINS: 100% silt, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: quartz

				trace
666	100	CALCARENITE		CALCARENITE, medium grey, white coloured, friable-firm, irregular fracture, CALCAREOUS GRAINS: 30% silt, 70% sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pellets 20%, bryozoans 15%, fossils 15%, POROSITY: 25%, inter-granular
	tr	SILTSTONE		SILTSTONE, brown-grey, black laminations coloured, soft-friable, fissile fracture, CLASTIC GRAINS: 100% silt, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: quartz trace
670	70	CEMENT		CEMENT
	10	CALCARENITE		CALCARENITE, light grey-cream/off white coloured, firm, blocky fracture, CALCAREOUS GRAINS: 30% clay, trace silt, 70% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: foraminifera trace, bryozoans trace POROSITY: 10%, inter-granular
	20	SILTSTONE	siderite	SILTSTONE, sideritic, medium-ochre brown coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 30% clay, CLASTIC GRAINS: 5% clay, 60% silt, 5% coarse sand, ACCESSORIES: quartz 5%
680	100	CALCARENITE		CALCARENITE, cream-very light brown coloured, loose, irregular fracture, CALCAREOUS GRAINS: 20% clay, 10% silt, 70% sand, CLASTIC GRAINS: trace coarse sand, poorly sorted, angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: bryozoans trace, fossils trace POROSITY: trace, inter-granular
	tr	SILTSTONE	siderite	SILTSTONE, sideritic, medium-ochre brown coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 30% clay, CLASTIC GRAINS: 5% clay, 60% silt, 5% coarse sand, ACCESSORIES: quartz 5%
690	95	CALCARENITE		CALCARENITE, off white-very light grey, translucent coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 20% silt, 60% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans trace, foraminifera trace POROSITY: 10%, inter-granular
	5	SILTSTONE		SILTSTONE, red/brown-grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 10% clay, 70% silt, trace coarse sand, ACCESSORIES:

				quartz trace
700	60	CALCARENITE		CALCARENITE, off white-very light grey, translucent coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 20% silt, 60% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans trace, foraminifera trace POROSITY: 10%, inter-granular
	40	VOLCANIC TUFF		VOLCANIC TUFF, dark green-blue/green, mottled white, black coloured, hard, blocky fracture, ACCESSORIES: quartz trace
710	60	CALCARENITE	bryozoans	CALCARENITE, brown, light grey to off white & translucent coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 20% silt, 60% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: foraminifera trace POROSITY: 10%, inter-granular
	40	VOLCANIC TUFF		VOLCANIC TUFF, dark green-blue/green, mottled white, black coloured, hard, blocky fracture, ACCESSORIES: quartz trace
720	80	VOLCANIC	crystalline	VOLCANIC, crystalline, medium grey-blue/grey coloured, moderately hard-hard, blocky fracture
	20	CALCARENITE		CALCARENITE, light grey to off white & translucent coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 20% silt, 60% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: foraminifera trace POROSITY: 10%, inter-granular
730	90	VOLCANIC	crystalline	VOLCANIC, crystalline, medium grey-blue/grey coloured, moderately hard-hard, blocky fracture
	10	CALCARENITE		CALCARENITE, light grey to off white & translucent coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 20% silt, 60% sand, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: foraminifera trace POROSITY: 10%, inter-granular
740	90	CALCARENITE		CALCARENITE, cream to off white, slightly light brown coloured, loose, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 10% silt, 60% sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: siderite/trace, calcareous/weak, ACCESSORIES: fossils trace POROSITY: 10%, inter-granular

	10	VOLCANIC	crystalline	VOLCANIC, crystalline, medium grey-blue/grey coloured, moderately hard-hard, blocky fracture
750	100	CALCARENITE		CALCARENITE, very light brown-cream coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 30% silt, 50% sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: foraminifera trace, siderite 3%, CALCIMETERY: 100% calcite, POROSITY: 5%, inter-granular
760	100	CALCARENITE		CALCARENITE, very light brown-cream coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 30% silt, 50% sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: foraminifera trace, siderite 3%, POROSITY: 5%, inter-granular
770	100	CALCISILTITE		CALCISILTITE, light grey, light grey/brown to off white coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 50% silt, 20% sand
780	100	CALCISILTITE		CALCISILTITE, light grey-pale green grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 40% silt, 30% sand, CLASTIC GRAINS: trace coarse sand, moderately sorted, sub-angular, sub-spherical, ACCESSORIES: bryozoans trace, quartz trace
790	60	CALCISILTITE		CALCISILTITE, light grey-pale green grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 50% silt, 20% sand, CLASTIC GRAINS: trace coarse sand, moderately sorted, sub-angular, sub-spherical, ACCESSORIES: bryozoans trace, quartz trace
	40	CALCARENITE		CALCARENITE, very light brown-cream coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 30% silt, 50% sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/weak
800	70	CALCARENITE		CALCARENITE, light grey to light brown grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 10% silt, 60% sand, CLASTIC GRAINS: trace coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: quartz trace POROSITY: trace, inter-granular
	30	CALCISILTITE		CALCISILTITE, white-light brown & cream coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 40% silt, 30% sand

810	100	CALCARENITE		CALCARENITE, light brown, cream & clear coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 20% silt, 50% sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: fossils trace, POROSITY: trace, inter-granular
820	100	CALCARENITE		CALCARENITE, light brown-light grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 30% silt, 50% sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: quartz trace, CALCIMETERY: 93% calcite, POROSITY: trace, inter-granular
830	100	CALCARENITE		CALCARENITE, light grey to light grey brown coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 30% silt, 40% sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: quartz trace POROSITY: trace, inter-granular
840	100	CALCARENITE		CALCARENITE, light grey to light grey brown coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 40% silt, 30% sand, CLASTIC GRAINS: trace clay, CEMENTS/STRENGTHS: calcareous/weak
850	100	CLAYSTONE		CLAYSTONE, light grey to off white coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, CEMENTS/STRENGTHS: calcareous/weak, CALCIMETERY: 18% calcite, 3% dolomite
860	100	CLAYSTONE		CLAYSTONE, light grey, very light grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, CEMENTS/STRENGTHS: calcareous/weak
870	100	CLAYSTONE		CLAYSTONE, grey to light grey, trace cream/light brown coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: fossils trace
880	100	CLAYSTONE		CLAYSTONE, light grey, off white-pale brown coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: fossils trace
890	100	CLAYSTONE		CLAYSTONE, light grey to light medium grey coloured, very soft, sub-blocky

				fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, CEMENTS/STRENGTHS: argillaceous/weak, calcareous/weak, ACCESSORIES: sandy trace, CALCIMETERY: 25% calcite
900	100	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light grey to light medium grey coloured, very soft, sub-blocky fracture, CALCAREOUS GRAINS: 40% clay, 10% silt, CLASTIC GRAINS: 30% clay, 20% silt, CEMENTS/STRENGTHS: argillaceous/weak, calcareous/weak, ACCESSORIES: fossils trace
910	100	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light grey to off white coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 40% clay, 10% silt, CLASTIC GRAINS: 30% clay, 20% silt, CEMENTS/STRENGTHS: argillaceous/trace, calcareous/moderate, ACCESSORIES: fossils trace, CALCIMETERY: 25% calcite
920	100	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, pale, light to medium grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 40% clay, 10% silt, CLASTIC GRAINS: 30% clay, 20% silt, CEMENTS/STRENGTHS: argillaceous/trace, calcareous/moderate, ACCESSORIES: fossils trace
930	100	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light grey, green grey, brown grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 40% clay, 10% silt, CLASTIC GRAINS: 30% clay, 20% silt, CEMENTS/STRENGTHS: argillaceous/weak, calcareous/weak, ACCESSORIES: fossils trace
940	100	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light grey, green grey, brown grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 40% clay, 10% silt, CLASTIC GRAINS: 30% clay, 20% silt, CEMENTS/STRENGTHS: argillaceous/trace, calcareous/weak, ACCESSORIES: fossils trace
950	100	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, medium olive grey to light grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 10% silt, CLASTIC GRAINS: 50% clay, 20% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, pyrite trace, CALCIMETERY: 25% calcite
960	100	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, medium olive grey to light grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, CLASTIC GRAINS: 50% clay, 20% silt, CEMENTS/STRENGTHS:

				argillaceous/weak, calcareous/weak, ACCESSORIES: fossils trace, pyrite trace
970	90	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, olive grey - dark green grey coloured, soft, fissile fracture, CALCAREOUS GRAINS: 45% clay, CLASTIC GRAINS: 45% clay, 10% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: fossils 5%, CALCIMETERY: 15% calcite
	10	DOLOMITE		DOLOMITE, brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak
980	100	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, medium olive grey to light grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 45% clay, CLASTIC GRAINS: 40% clay, 15% silt, CEMENTS/STRENGTHS: argillaceous/weak, calcareous/weak, ACCESSORIES: fossils trace, pyrite trace, CALCIMETERY: 20% calcite
990	80	CALCAREOUS CLAYSTONE	fossiliferous	CALCAREOUS CLAYSTONE, fossiliferous, olive grey - dark green grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 40% silt, CLASTIC GRAINS: 50% clay, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: shell fragments 15%, bryozoans 5%, coal trace, CALCIMETERY: 18% calcite
	20	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, medium olive grey to light grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 40% clay, CLASTIC GRAINS: 30% clay, 30% silt
1000	70	CLAYSTONE	fossiliferous	CLAYSTONE, fossiliferous, olive grey - dark green grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 50% clay, 20% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/weak, ACCESSORIES: shell fragments 15%, bryozoans 5%, coal trace, CALCIMETERY: 18% calcite
	30	CLAYSTONE		CLAYSTONE, medium olive grey to light grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt
1010	100	CLAYSTONE		CLAYSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 10% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: shell fragments 10%, bryozoans 5%, coal trace, CALCIMETERY: 18% calcite, 2% dolomite

1020	100	CLAYSTONE		CLAYSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 10% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: shell fragments 10%, bryozoans 5%, coal trace
1030	90	CLAYSTONE		CLAYSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 40% clay, 40% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 10%, bryozoans 5%, coal 3%
	10	DOLOMITE		DOLOMITE, brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak
1040	98	CLAYSTONE		CLAYSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 5%, bryozoans 5%, coal trace
	2	DOLOMITE		DOLOMITE, yellow-grey to brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak
1050	100	CLAYSTONE		CLAYSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: bryozoans 10%, shell fragments 3%, coal trace, CALCIMETERY: 18% calcite, 2% dolomite
1060	90	CLAYSTONE		CLAYSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 5%, bryozoans 5%, coal trace
	10	DOLOMITE		DOLOMITE, yellow-grey to brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: bryozoans 5%, shell fragments 3%, coal trace
1070	98	CLAYSTONE		CLAYSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: bryozoans 3%, shell fragments 3%

	2	DOLOMITE		DOLOMITE, red-brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak
1080	50	CLAYSTONE		CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 70% clay, 10% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 5%, calcite 9%
	50	SILTSTONE		SILTSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 10% clay, 70% silt, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: shell fragments 3%
1090	80	SILTSTONE		SILTSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% silt, CLASTIC GRAINS: 90% silt, CEMENTS/STRENGTHS: calcareous/weak
	20	CLAYSTONE		CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 15% silt, CLASTIC GRAINS: 40% clay, 45% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 5%
1100	60	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, olive grey - dark green grey coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 10% silt, CLASTIC GRAINS: 50% clay, 10% silt, CEMENTS/STRENGTHS: calcareous/weak, CALCIMETERY: 28% calcite, 2% dolomite
	38	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 45% clay, CLASTIC GRAINS: 20% clay, 35% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 3%
	2	DOLOMITE		DOLOMITE, yellow-grey to brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: bryozoans 5%, shell fragments 3%, coal trace
1110	80	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 40% clay, 5% silt, CLASTIC GRAINS: 40% clay, 15% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 5%, coal trace, pyrite trace
	20	CALCAREOUS		CALCAREOUS CLAYSTONE, medium

		CLAYSTONE		olive grey to light grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 40% clay, CLASTIC GRAINS: 40% clay, 20% silt, CEMENTS/STRENGTHS: calcareous/strong
1120	80	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 30% clay, 10% silt, CLASTIC GRAINS: 50% clay, 20% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 5%, coal trace, pyrite trace
	20	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, medium olive grey to light grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 40% clay, CLASTIC GRAINS: 40% clay, 20% silt, CEMENTS/STRENGTHS: calcareous/moderate
1130	80	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 40% silt, CLASTIC GRAINS: 60% silt, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: shell fragments 5%
	20	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, light olive to light brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 30% silt, CLASTIC GRAINS: 70% silt, CEMENTS/STRENGTHS: calcareous/moderate
1140	80	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 40% silt, CLASTIC GRAINS: 60% silt, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: shell fragments 5%
	20	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 30% silt, CLASTIC GRAINS: 70% silt, CEMENTS/STRENGTHS: calcareous/moderate
1150	90	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 10% clay, 20% silt, CLASTIC GRAINS: 40% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: shell fragments 5%, CALCIMETERY: 28% calcite, 2% dolomite
	10	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS:

				calcareous/moderate, ACCESSORIES: shell fragments 10%
1160	90	CLAYSTONE		CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 80% clay, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: shell fragments 5%, CALCIMETERY: 12% calcite, 2% dolomite
	10	CLAYSTONE		CLAYSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% silt, CLASTIC GRAINS: 90% clay, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: shell fragments 10%
1170	90	CLAYSTONE		CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 60% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 3%
	10	CLAYSTONE		CLAYSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% silt, CLASTIC GRAINS: 90% clay, CEMENTS/STRENGTHS: calcareous/moderate
1180	90	CLAYSTONE		CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 3%, CALCIMETERY: 9% calcite
	10	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% silt, CLASTIC GRAINS: 90% silt, CEMENTS/STRENGTHS: calcareous/moderate
1190	100	CLAYSTONE		CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 80% clay, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite 3%
1200	100	CLAYSTONE		CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 80% clay, CEMENTS/STRENGTHS: calcareous/moderate, CALCIMETERY: 12% calcite, 2% dolomite
1210	95	CLAYSTONE		CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 80% clay, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell

				fragments 3%, dolomite 3%
	5	CLAYSTONE		CLAYSTONE, yellow-grey to brown-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 100% clay, CEMENTS/STRENGTHS: calcareous/weak
1220	98	CLAYSTONE		CLAYSTONE, light-green-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 40% clay, 40% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 3%
	2	CLAYSTONE		CLAYSTONE, yellow-grey to brown-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 100% clay, CEMENTS/STRENGTHS: calcareous/weak
1230	90	CLAYSTONE		CLAYSTONE, light-olive-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, 50% silt, CLASTIC GRAINS: 20% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 3%, dolomite 3%
	10	CLAYSTONE		CLAYSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 50% silt, CLASTIC GRAINS: 20% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate
1240	90	CLAYSTONE		CLAYSTONE, light-olive-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, 50% silt, CLASTIC GRAINS: 20% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 3%, CALCIMETERY: 11% calcite
	10	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 60% silt, 20% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate
1250	90	CLAYSTONE		CLAYSTONE, light-olive-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 10% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 3%, dolomite 3%
	10	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 10% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate

1260	90	CLAYSTONE		CLAYSTONE, light-olive-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 10% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 3%, dolomite 3%
	10	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 10% clay, 75% silt, CEMENTS/STRENGTHS: calcareous/moderate
1270	90	CLAYSTONE		CLAYSTONE, light-olive-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 80% clay, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 3%
	10	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 10% clay, 50% silt, 20% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate
1280	90	CLAYSTONE		CLAYSTONE, light-olive-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 20% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: bryozoans 3%
	10	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 10% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate
1290	80	CLAYSTONE		CLAYSTONE, light-green-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: shell fragments trace
	20	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 10% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate
1300	80	CLAYSTONE		CLAYSTONE, light-green-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay,

				CLASTIC GRAINS: 70% clay, 10% silt, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pyrite 3%, dolomite 3%
	20	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 10% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate
1310	80	CLAYSTONE		CLAYSTONE, light-green-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pyrite 3%, dolomite 5% CALCIMETERY: 12% calcite
	20	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 15% silt, CLASTIC GRAINS: 15% clay, 70% silt, CEMENTS/STRENGTHS: calcareous/moderate
1320	85	CLAYSTONE		CLAYSTONE, light-green-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 80% clay, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pyrite 3%, dolomite 5%, shell fragments trace
	15	SILTSTONE		SILTSTONE, light olive to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate
1330	70	CLAYSTONE		CLAYSTONE, light-green-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 5% clay, CLASTIC GRAINS: 75% clay, 10% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pyrite 3%, dolomite 5%
	30	SILTSTONE		SILTSTONE, olive-green to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 15% silt, CLASTIC GRAINS: 5% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate
1340	70	CLAYSTONE		CLAYSTONE, light-green-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 10% silt, 10% very fine sand, CEMENTS/STRENGTHS:

				calcareous/moderate, ACCESSORIES: pyrite 3%, coal trace, shell fragments 3%
	30	SILTSTONE		SILTSTONE, olive-green to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 50% silt, 30% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate
1350	70	CLAYSTONE		CLAYSTONE, light-green-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 10% clay, 65% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pyrite 3%, dolomite 5%
	30	SILTSTONE		SILTSTONE, olive-green to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% silt, CLASTIC GRAINS: 90% silt, CEMENTS/STRENGTHS: calcareous/moderate
1360	60	CLAYSTONE		CLAYSTONE, light-green-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 65% clay, 10% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pyrite 3%, shell fragments 5%, coal 3%
	40	SILTSTONE		SILTSTONE, olive-green to light-brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 80% silt, CEMENTS/STRENGTHS: calcareous/moderate
1370	90	CLAYSTONE		CLAYSTONE, brown to light-olive-grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 70% clay, 20% silt, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite 3%, glauconite trace CALCIMETERY: 14% calcite
	10	SILTSTONE		SILTSTONE, light-green-grey to olive-grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 80% silt, CEMENTS/STRENGTHS: calcareous/moderate
1380	100	CLAYSTONE		CLAYSTONE, light grey to medium grey & grey brown coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 45% clay, 20% silt, 20% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite 5%
1390	100	CLAYSTONE		CLAYSTONE, light grey to medium grey & grey brown coloured, soft, sub-blocky

				fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 45% clay, 20% silt, 20% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite trace
1400	100	CLAYSTONE		CLAYSTONE, light grey to medium grey & grey brown coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 45% clay, 20% silt, 20% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite trace
1410	100	CLAYSTONE		CLAYSTONE, light grey to medium grey & grey brown coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 45% clay, 20% silt, 20% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite trace
1420	30	CLAYSTONE		CLAYSTONE, light grey to light grey brown/olive brown coloured, very soft, amorphous fracture, CLASTIC GRAINS: 70% clay, 20% silt, 10% very fine sand, ACCESSORIES: kaolinite 10%, CALCIMETERY: 7% calcite
	70	SILTSTONE		SILTSTONE, medium-light grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 20% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite trace
1430	80	SILTSTONE		SILTSTONE, medium-light grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 10% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite trace
	20	CLAYSTONE		CLAYSTONE, light grey to light grey brown/olive brown coloured, very soft, amorphous fracture, CLASTIC GRAINS: 70% clay, 20% silt, 10% very fine sand, ACCESSORIES: kaolinite 10%
1450	60	SILTSTONE		SILTSTONE, light to medium grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 25% clay, 50% silt, 5% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite trace
	40	CLAYSTONE		CLAYSTONE, cream, very light grey to light grey coloured, very soft, amorphous fracture, CLASTIC GRAINS: 70% clay, 20% silt, 10% very fine sand, ACCESSORIES: kaolinite 10%

1460	60	SILTSTONE		SILTSTONE, light to medium grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 5% clay, 15% silt, CLASTIC GRAINS: 25% clay, 50% silt, 5% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite trace
	40	CLAYSTONE		CLAYSTONE, cream, very light grey to light grey coloured, very soft, amorphous fracture, CLASTIC GRAINS: 70% clay, 20% silt, 10% very fine sand, ACCESSORIES: kaolinite 10%
1470	60	SILTSTONE		SILTSTONE, light to medium grey coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 15% silt, CLASTIC GRAINS: 5% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite trace
	40	CLAYSTONE		CLAYSTONE, cream, very light grey to light grey coloured, very soft, amorphous fracture, CLASTIC GRAINS: 70% clay, 20% silt, 10% very fine sand, ACCESSORIES: kaolinite 10%
1480	60	CLAYSTONE		CLAYSTONE, light olive grey to off white & cream coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 70% clay, 20% silt, ACCESSORIES: quartz trace CALCIMETERY: 13% calcite
	40	SILTSTONE		SILTSTONE, light to medium grey, brown/grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, trace silt, CLASTIC GRAINS: 10% clay, 50% silt, 20% very fine sand, trace fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite trace
1490	70	CLAYSTONE		CLAYSTONE, light olive grey to off white & cream coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 45% clay, 20% silt, 20% very fine sand, ACCESSORIES: quartz trace CALCIMETERY: 18% calcite
	30	CLAYSTONE		CLAYSTONE, light to medium brown/grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 50% clay, 20% silt, 20% very fine sand, trace fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite trace, fossils trace
1500	50	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light to medium brown/grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 10% silt, CLASTIC GRAINS: 40% clay, 20% silt, 10% very

				fine sand, trace fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite 3%, fossils trace CALCIMETERY: 34% calcite
	50	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light grey to off white, very light brown coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, 10% silt, CLASTIC GRAINS: 40% clay, 20% silt, 10% very fine sand, ACCESSORIES: kaolinite 10%
1510	70	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, medium brown/grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% silt, CLASTIC GRAINS: 30% clay, 40% silt, 20% very fine sand, trace fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: glauconite 3%, fossils trace, pyrite trace, CALCIMETERY: 34% calcite
	30	CLAYSTONE		CLAYSTONE, light grey to off white, very light brown coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 10% clay, 5% silt, CLASTIC GRAINS: 50% clay, 30% silt, 5% very fine sand, ACCESSORIES: kaolinite 10%, dolomite 3%
1520	90	SILTSTONE		SILTSTONE, medium brown to grey brown coloured, firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% silt, 30% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: gastropods trace, dolomite trace, glauconite trace, CALCIMETERY: 36% calcite
	10	CLAYSTONE		CLAYSTONE, pale brown - cream coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 10% clay, 5% silt, CLASTIC GRAINS: 50% clay, 30% silt, 5% very fine sand, ACCESSORIES: kaolinite 10%
1540	50	SILTSTONE		SILTSTONE, medium brown to grey brown coloured, firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% silt, 30% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: gastropods trace, fossils trace, glauconite trace
	40	CLAYSTONE		CLAYSTONE, cream, light brown coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 60% clay, 20% silt, 5% very fine sand, ACCESSORIES: kaolinite 10%, carbonaceous matter trace, dolomite 3%
	10	CLAYSTONE		CLAYSTONE, light blue grey coloured, moderately hard, blocky fracture,

				CLASTIC GRAINS: 60% clay, 40% silt
1550	80	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, medium grey coloured, firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, 10% silt, CLASTIC GRAINS: 50% silt, 20% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: glauconite trace
	20	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, cream, light brown coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 15% clay, 10% silt, CLASTIC GRAINS: 50% clay, 20% silt, 5% very fine sand, ACCESSORIES: kaolinite 10%, carbonaceous matter trace
1560	60	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, medium grey coloured, firm, blocky fracture, CALCAREOUS GRAINS: 30% clay, CLASTIC GRAINS: 50% silt, 20% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: glauconite trace, gastropods trace, dolomite 5%, CALCIMETERY: 39% calcite
	40	CLAYSTONE		CLAYSTONE, light grey to light brown grey coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 60% clay, 20% silt, 10% very fine sand
1580	60	SILTSTONE		SILTSTONE, medium grey coloured, firm, blocky fracture, CALCAREOUS GRAINS: 40% clay, CLASTIC GRAINS: 60% silt, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: glauconite trace, dolomite trace
	40	CLAYSTONE		CLAYSTONE, light grey to light brown grey coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 30% clay, CLASTIC GRAINS: 30% clay, 30% silt, 10% very fine sand, trace coarse sand, ACCESSORIES: quartz trace
1590	60	CLAYSTONE		CLAYSTONE, light grey to grey brown, slightly off white coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 40% clay, 20% silt, 15% very fine sand, 5% fine sand, ACCESSORIES: kaolinite 5%
	40	SILTSTONE		SILTSTONE, light to medium brown/grey coloured, firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% silt, 30% very fine sand, trace fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: glauconite trace, fossils trace
1600	40	SILTSTONE		SILTSTONE, light to medium brown/grey coloured, firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% silt, 30% very fine sand, trace fine sand,

				CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: glauconite trace, fossils trace, CALCIMETERY: 28% calcite
	60	CLAYSTONE		CLAYSTONE, light grey to grey brown, slightly off white coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 40% clay, 20% silt, 15% very fine sand, 5% fine sand, ACCESSORIES: kaolinite 5%
1610	70	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, medium-light brown & brown grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 30% silt, CLASTIC GRAINS: 20% clay, 40% silt, CEMENTS/STRENGTHS: calcareous/weak
	30	CALCAREOUS CLAYSTONE		CALCAREOUS CLAYSTONE, light grey to grey brown, slightly off white coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, 10% silt, CLASTIC GRAINS: 30% clay, 20% silt, 15% very fine sand, 5% fine sand, ACCESSORIES: kaolinite 5%
1620	90	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, medium-light brown & brown grey coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 20% silt, CLASTIC GRAINS: 40% silt, 20% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: glauconite trace CALCIMETERY: 28% calcite
1630	50	CALCAREOUS SILTSTONE		CALCAREOUS SILTSTONE, brown grey to olive grey coloured, firm, blocky fracture, CALCAREOUS GRAINS: 10% clay, 20% silt, CLASTIC GRAINS: 30% silt, 30% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: glauconite trace
	50	CLAYSTONE		CLAYSTONE, light brown-very pale grey coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt
1640	40	CLAYSTONE		CLAYSTONE, light brown-very pale grey coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt
	60	SILTSTONE		SILTSTONE, medium-light brown/grey, slightly pale blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 20% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: fossils trace
1650	30	SILTSTONE		SILTSTONE, medium-light brown/grey,

				slightly pale blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 20% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: fossils trace, pyrite trace CALCIMETERY: 16% calcite
	70	CLAYSTONE		CLAYSTONE, very pale light grey to light brown coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 5% clay, CLASTIC GRAINS: 80% clay, 15% silt, trace very fine sand
1670	30	CLAYSTONE		CLAYSTONE, very pale light grey to light brown coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 5% clay, CLASTIC GRAINS: 80% clay, 15% silt, trace very fine sand
	60	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pyrite trace, dolomite 3%
	10	CLAYSTONE		CLAYSTONE, medium grey-blue/grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 70% clay, 20% silt
1680	50	CLAYSTONE		CLAYSTONE, light & pale brown coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 5% clay, CLASTIC GRAINS: 80% clay, 10% silt, 5% very fine sand, ACCESSORIES: carbonaceous matter trace CALCIMETERY: 10% calcite
	40	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pyrite trace
	10	CLAYSTONE		CLAYSTONE, medium grey-blue/grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 70% clay, 20% silt
1690	70	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: pyrite trace, fossils trace

	20	CLAYSTONE		CLAYSTONE, light & pale brown coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 5% clay, CLASTIC GRAINS: 80% clay, 10% silt, 5% very fine sand, ACCESSORIES: carbonaceous matter trace
	10	CLAYSTONE		CLAYSTONE, medium grey-blue/grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 70% clay, 20% silt
1700	80	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 40% silt, 30% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite trace, fossils trace
	10	CLAYSTONE		CLAYSTONE, light & pale brown coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 80% clay, 10% silt
	10	CLAYSTONE		CLAYSTONE, medium grey-blue/grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 70% clay, 20% silt
1710	60	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 40% silt, 30% very fine sand, 10% fine sand, trace medium sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: fossils trace, dolomite 3%, pyrite trace, CALCIMETERY: 9% calcite
	30	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 60% clay, 30% silt
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 5% clay, CLASTIC GRAINS: 80% clay, 15% silt
1720	60	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 60% clay, 30% silt, ACCESSORIES: glauconite trace, carbonaceous matter trace
	40	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 40% silt, 30% very fine sand, 10% fine sand, trace medium sand, CEMENTS/STRENGTHS:

				calcareous/moderate, ACCESSORIES: fossils trace, dolomite trace
1730	70	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 60% clay, 30% silt, ACCESSORIES: glauconite trace, carbonaceous matter trace
	20	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 40% silt, 30% very fine sand, 10% fine sand, trace medium sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: fossils trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 5% clay, CLASTIC GRAINS: 80% clay, 15% silt
1740	50	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 60% clay, 30% silt, ACCESSORIES: glauconite trace, carbonaceous matter trace
	30	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 40% silt, 30% very fine sand, 10% fine sand, trace medium sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: fossils trace
	20	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 80% clay, 5% silt
1750	50	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 5% clay, 75% silt, trace medium sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite 5%, glauconite 1%, pyrite 3%
	20	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 20% silt, ACCESSORIES: shell fragments 3%
	20	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 55% clay, 30%

				silt
1760	70	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 80% silt, trace medium sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: dolomite 5%, glauconite 1%, pyrite 3%
	20	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: shell fragments 3%
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt
1770	70	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 20% clay, 60% silt, trace medium sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite 3%, pyrite trace
	20	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: shell fragments trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 75% clay, 10% silt, CEMENTS/STRENGTHS: calcareous/moderate
1780	70	CLAYSTONE		CLAYSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 30% clay, 50% silt, trace medium sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite 3%, pyrite trace, CALCIMETERY: 4% calcite
	20	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 50% clay, 40% silt, ACCESSORIES: shell fragments trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/moderate

1790	60	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 5% silt, CLASTIC GRAINS: 20% clay, 65% silt, trace medium sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite 3%, pyrite trace
	30	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: shell fragments trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/moderate
1800	40	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 5% silt, CLASTIC GRAINS: 20% clay, 65% silt, trace medium sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite 3%, pyrite trace
	40	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: shell fragments trace
	20	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/moderate
1810	60	SILTSTONE		SILTSTONE, medium-light brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 5% silt, CLASTIC GRAINS: 20% clay, 55% silt, 10% very fine sand, trace medium sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: dolomite 3%, pyrite trace
	30	CLAYSTONE		CLAYSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: shell fragments trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/moderate

1820	70	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 70% silt, 10% very fine sand
	20	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 3%, pyrite trace
	10	CLAYSTONE		CLAYSTONE, light-brown coloured, very soft, sub-fissile fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 80% clay
1830	70	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 70% silt, 10% very fine sand
	20	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 60% clay, 10% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 3%, pyrite trace
	10	CLAYSTONE		CLAYSTONE, light-brown coloured, very soft, sub-fissile fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 80% clay
1840	75	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 80% silt
	20	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 50% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell fragments 3%, pyrite trace
	10	CLAYSTONE		CLAYSTONE, light-brown coloured, very soft, sub-fissile fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 80% clay
1850	75	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 20% silt, CLASTIC GRAINS: 70% silt, 10% very fine sand
	20	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 80% clay, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: shell

				fragments 3%, pyrite trace
	10	CLAYSTONE		CLAYSTONE, light-brown coloured, very soft, sub-fissile fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 80% clay
1860	70	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% silt, CLASTIC GRAINS: 90% silt, ACCESSORIES: dolomite 5%, calcareous trace, fossils trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 80% clay, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: shell fragments 3%, pyrite trace
	20	CLAYSTONE		CLAYSTONE, light-brown coloured, very soft, sub-fissile fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 90% clay
1870	85	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% silt, CLASTIC GRAINS: 90% silt, ACCESSORIES: dolomite 10%, calcareous trace, fossils trace
	15	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 90% clay, CEMENTS/STRENGTHS: calcareous/trace, ACCESSORIES: shell fragments 3%, pyrite trace
1880	85	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 10% silt, CLASTIC GRAINS: 80% silt, 10% very fine sand, ACCESSORIES: dolomite 10%, calcareous trace, fossils trace
	15	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 90% clay, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: shell fragments 3%, pyrite trace
1890	70	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 20% very fine sand, 10% fine sand, ACCESSORIES: dolomite 10%, calcareous trace,
	20	SILTSTONE		SILTSTONE, light-yellow-brown coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, CEMENTS/STRENGTHS:

				silica/moderate, ACCESSORIES: shell fragments 3%, pyrite trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CLASTIC GRAINS: 90% clay, 10% silt, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: shell fragments 3%, pyrite trace
1900	90	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: dolomite 10%, calcareous trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 20% silt, ACCESSORIES: shell fragments 3%, pyrite trace
1910	80	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: dolomite 10%, calcareous trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 20% silt, ACCESSORIES: shell fragments 3%, pyrite trace
	10	DOLOMITE		DOLOMITE, yellow-grey to red-brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak
1920	70	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: dolomite 10%, calcareous trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 15% clay, 5% silt, CLASTIC GRAINS: 60% clay, 20% silt, ACCESSORIES: fossils 3%, pyrite trace
	20	DOLOMITE		DOLOMITE, yellow-grey to red-brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak
1930	70	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS:

				silica/moderate, ACCESSORIES: dolomite 10%, calcareous trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 20% silt, ACCESSORIES: fossils 3%, pyrite trace
	20	DOLOMITE		DOLOMITE, yellow-grey to red-brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak
1940	75	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: dolomite 10%, calcareous trace
	10	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 20% silt, ACCESSORIES: fossils 3%, pyrite trace
	15	DOLOMITE		DOLOMITE, yellow-grey to red-brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak
1950	95	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 50% silt, 25% very fine sand, 15% fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: dolomite 5%, shell fragments 5%, CALCIMETRY: 2% calcite
	5	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 50% clay, 20% silt, 10% very fine sand, ACCESSORIES: fossils 3%, pyrite trace
1960	95	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 50% silt, 25% very fine sand, 15% fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: dolomite trace, shell fragments trace
	5	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 15% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: fossils trace, pyrite trace
1970	95	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 50% silt, 25% very fine sand,

				15% fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: dolomite trace, shell fragments trace
	5	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 15% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: fossils trace, pyrite trace
1980	80	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 5% clay, CLASTIC GRAINS: 10% clay, 50% silt, 20% very fine sand, 15% fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: dolomite trace, shell fragments trace
	18	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 15% clay, 50% silt, 15% very fine sand, trace fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: fossils trace, pyrite trace, coal trace
	2	DOLOMITE		DOLOMITE, yellow-grey to red-brown-grey coloured, hard-very hard, massive fracture, CEMENTS/STRENGTHS: calcareous/weak
1980	95	SILTSTONE		SILTSTONE, light to medium brown & light grey brown coloured, soft-friable, sub-blocky fracture, CALCAREOUS GRAINS: 5% clay, CLASTIC GRAINS: 10% clay, 50% silt, 20% very fine sand, 15% fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: dolomite trace, shell fragments trace
	5	CLAYSTONE		CLAYSTONE, light grey-blue grey coloured, friable-firm, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 20% clay, 50% silt, 10% very fine sand, trace fine sand, CEMENTS/STRENGTHS: calcareous/weak, ACCESSORIES: fossils trace, pyrite trace, coal trace
1990	90	SILTSTONE		SILTSTONE, medium-dark grey, dark brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, trace fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace, CALCIMETRY: 4% calcite
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 20% silt, ACCESSORIES: fossils trace
2007	50	SILTSTONE		SILTSTONE, medium-dark grey, dark

				brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, trace fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	40	CLAYSTONE		CLAYSTONE, medium-dark brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, trace fine sand
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 20% silt, ACCESSORIES: fossils trace
2013	70	SILTSTONE		SILTSTONE, predominantly dark & slightly medium brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 50% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	25	CLAYSTONE		CLAYSTONE, medium-dark brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, trace fine sand
	5	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt
2019	70	CLAYSTONE		CLAYSTONE, medium brown-olive brown coloured, very soft, amorphous fracture, CLASTIC GRAINS: 50% clay, 20% silt, 20% very fine sand, 10% fine sand
	25	SILTSTONE		SILTSTONE, predominantly dark & slightly medium brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 50% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	5	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: fossils trace, dolomite trace
2025	80	SILTSTONE		SILTSTONE, medium-dark brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, trace fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	15	CLAYSTONE		CLAYSTONE, medium brown-olive brown coloured, very soft, amorphous fracture, CLASTIC GRAINS: 50% clay, 20% silt, 20% very fine sand, 10% fine sand
	5	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20%

				clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: fossils trace
2031	30	SILTSTONE		SILTSTONE, medium-dark brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, trace fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	50	CLAYSTONE		CLAYSTONE, medium-olive brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 50% clay, 30% silt, 10% very fine sand, trace fine sand
	20	CLAYSTONE	calc	CLAYSTONE, calcareous, medium grey to light grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: dolomite 3%, fossils trace
2037	20	CLAYSTONE	calc	CLAYSTONE, calcareous, medium grey to light grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: dolomite 3%, fossils trace
	30	CLAYSTONE		CLAYSTONE, medium-olive brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 50% clay, 30% silt, 10% very fine sand, trace fine sand
	50	SILTSTONE		SILTSTONE, dark grey-dark grey brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 40% silt, 30% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: quartz 15%, pyrite trace
2043	20	CLAYSTONE	calc	CLAYSTONE, calcareous, medium grey to light grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: dolomite 3%, fossils trace
	50	CLAYSTONE		CLAYSTONE, medium-olive brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 50% clay, 30% silt, 10% very fine sand, trace fine sand
	30	SILTSTONE		SILTSTONE, dark grey-dark grey brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 40% silt, 30% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: quartz 15%, pyrite trace
2052	80	SILTSTONE		SILTSTONE, dark grey brown, occasionally medium-light brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 40% silt, 30% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite 16%, quartz trace

	15	CLAYSTONE		CLAYSTONE, medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 50% clay, 30% silt, 20% very fine sand, trace fine sand
	5	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 60% clay, 20% silt, 5% very fine sand
2058	80	SILTSTONE		SILTSTONE, dark grey brown, occasionally medium-light brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 40% silt, 30% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite 16%, quartz trace
	10	CLAYSTONE		CLAYSTONE, medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 50% clay, 30% silt, 20% very fine sand, trace fine sand
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 10% silt, 10% very fine sand
2067	70	SILTSTONE		SILTSTONE, dark grey brown, occasionally medium-light brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 40% silt, 30% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite 16%, quartz trace, dolomite 3%
	20	CLAYSTONE		CLAYSTONE, medium brown to off white coloured, very soft, amorphous fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, ACCESSORIES: kaolinite 15%
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light & pale grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 30% clay, CLASTIC GRAINS: 60% clay, 10% silt
2073	70	SILTSTONE		SILTSTONE, dark grey brown to medium brown coloured, firm, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 30% clay, 50% silt, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: dolomite 5%
	20	CLAYSTONE		CLAYSTONE, medium brown to off white coloured, very soft, amorphous fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, ACCESSORIES: kaolinite 15%
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light & pale grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 10%

				silt, 10% very fine sand, ACCESSORIES: gastropods trace
2082	90	SILTSTONE		SILTSTONE, dark grey brown to medium brown, slightly light brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 50% silt, 5% very fine sand, 5% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: dolomite 5%, pyrite trace
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light & pale grey coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: bryozoans trace
2088	60	SILTSTONE		SILTSTONE, dark medium grey brown, occasionally light brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 50% silt, 5% very fine sand, 5% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, pyrite trace
	30	CLAYSTONE		CLAYSTONE, medium brown to off white coloured, very soft, amorphous fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light & pale grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 75% clay, 10% silt
2094	50	CLAYSTONE		CLAYSTONE, light to medium brown/grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 50% clay, 40% silt, 10% very fine sand
	30	CLAYSTONE	calc	CLAYSTONE, calcareous, light & pale grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 10% silt, ACCESSORIES: dolomite trace
	20	SILTSTONE		SILTSTONE, dark medium grey brown, occasionally light brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 50% silt, 5% very fine sand, 5% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
2103	40	SILTSTONE		SILTSTONE, off white-light green & light to medium brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 40% silt, 30% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: kaolinite 10%, glauconite 5%
	60	CLAYSTONE		CLAYSTONE, light grey-green grey, brown/grey coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 50% clay, 40% silt, ACCESSORIES: glauconite trace
2112	30	SANDSTONE		SANDSTONE, light medium grey brown, cream, green brown coloured, friable-firm,

				sub-blocky fracture, CLASTIC GRAINS: 10% clay, 20% silt, 50% very fine sand, 20% fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: glauconite 5% POROSITY: 5%, inter-granular
	70	CLAYSTONE		CLAYSTONE, cream, light to medium brown, green grey coloured, very soft, amorphous fracture, CALCAREOUS GRAINS: trace clay, CLASTIC GRAINS: 50% clay, 40% silt, 10% very fine sand, ACCESSORIES: carbonaceous matter trace, coal 3%, fossils trace
2118	30	CLAYSTONE	calc	CLAYSTONE, calcareous, light & pale grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 20% silt, ACCESSORIES: fossils trace, CALCIMETRY: 4% calcite
	70	SILTSTONE		SILTSTONE, light brown-translucent, medium grey coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 40% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, calcareous/trace, ACCESSORIES: carbonaceous matter trace
2127	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light & pale grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace
	30	SILTSTONE		SILTSTONE, light brown-translucent, medium grey coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 50% silt, 30% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, calcareous/trace, ACCESSORIES: carbonaceous matter trace
	60	CLAYSTONE		CLAYSTONE, cream-light brown coloured, soft, amorphous fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, ACCESSORIES: calcareous trace
2133	70	CLAYSTONE		CLAYSTONE, cream-light brown coloured, soft, amorphous fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, ACCESSORIES: calcareous trace
	25	SILTSTONE		SILTSTONE, medium-light brown, occasionally dark brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, ACCESSORIES: carbonaceous matter trace, coal trace
	5	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS:

				20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace, dolomite trace
2136	30	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace, dolomite trace
	10	SILTSTONE		SILTSTONE, medium-light brown, occasionally dark brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, ACCESSORIES: carbonaceous matter trace, coal trace
	60	CLAYSTONE		CLAYSTONE, light to medium occasionally off white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, ACCESSORIES: calcareous trace, glauconite trace
2148	70	SILTSTONE		SILTSTONE, medium brown, black specks coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter 3%, glauconite trace
	20	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace
	10	SANDSTONE		SANDSTONE, clear, translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 40% coarse sand, 50% very coarse sand, 10% granular, poorly sorted, sub-angular, sub-spherical, POROSITY: 20%, inter-granular
2154	50	SILTSTONE		SILTSTONE, medium brown, black specks coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter 3%
	20	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: fossils trace
	30	CLAYSTONE		CLAYSTONE, light to medium occasionally off white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, ACCESSORIES: calcareous trace
2160	50	SILTSTONE		SILTSTONE, medium brown, black specks coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 30%

				clay, 50% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace
	20	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: fossils trace
	30	CLAYSTONE		CLAYSTONE, light to medium occasionally off white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, ACCESSORIES: calcareous trace
2166	80	SILTSTONE		SILTSTONE, dark to medium grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 70% clay, 10% silt, ACCESSORIES: fossils trace
	10	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 40% medium sand, 30% coarse sand, 30% very coarse sand, poorly sorted, angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, POROSITY: 15%, inter-granular
2172	80	SANDSTONE		SANDSTONE, light yellow brown-clear & translucent coloured, hard, blocky fracture, CLASTIC GRAINS: 40% very fine sand, 20% fine sand, 30% medium sand, 10% coarse sand, poorly sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/strong, calcareous/trace, POROSITY: 15%, inter-granular. HYDROCARBON FLUORESCENCE: 60% dull orange direct fluorescence, no cut. Oil staining on grains.
	20	SILTSTONE		SILTSTONE, dark to medium grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, coal trace
2178	80	SANDSTONE		SANDSTONE, light yellow brown-clear & translucent coloured, hard, blocky fracture, CLASTIC GRAINS: 40% very fine sand, 20% fine sand, 30% medium sand, 10% coarse sand, poorly sorted,

				angular, sub-spherical, CEMENTS/STRENGTHS: silica/strong, calcareous/trace, POROSITY: 15%, inter-granular. HYDROCARBON FLUORESCENCE: 60% dull orange direct fluorescence, no cut. Oil staining on grains.
	20	SILTSTONE		SILTSTONE, dark to medium grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, coal trace
2184	30	CLAYSTONE	calc	CLAYSTONE, calcareous, light blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace, CALCIMETRY: 3% calcite
	60	SILTSTONE		SILTSTONE, medium brown-dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 15% clay, 70% silt, 10% very fine sand, 5% fine sand, ACCESSORIES: carbonaceous matter trace, coal trace
	10	SANDSTONE		SANDSTONE, light yellow brown-clear & translucent coloured, hard, blocky fracture, CLASTIC GRAINS: 40% very fine sand, 20% fine sand, 30% medium sand, 10% coarse sand, poorly sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/strong, calcareous/trace, POROSITY: 15%, inter-granular.
2190	70	SILTSTONE		SILTSTONE, medium brown-dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 15% clay, 70% silt, 10% very fine sand, 5% fine sand, ACCESSORIES: carbonaceous matter trace
	30	CLAYSTONE	calc	CLAYSTONE, calcareous, light blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace
2196	70	SILTSTONE		SILTSTONE, medium brown-dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 15% clay, 70% silt, 10% very fine sand, 5% fine sand, ACCESSORIES: carbonaceous matter trace
	30	CLAYSTONE	calc	CLAYSTONE, calcareous, light blue grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, CLASTIC GRAINS: 30% clay, 30% silt, ACCESSORIES: fossils trace
2202	40	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to

				light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 20% silt
	60	SILTSTONE		SILTSTONE, cream-light brown & medium brown-grey brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 15% very fine sand, 5% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
2208	100	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, carbonaceous matter trace, sandy trace
2214	80	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, carbonaceous matter trace
	20	CLAYSTONE		CLAYSTONE, off white-light grey, brown grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 60% clay, 30% silt, 10% very fine sand, ACCESSORIES: kaolinite 10%
2220	80	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, carbonaceous matter trace
	20	SANDSTONE		SANDSTONE, off white-light grey, brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 20% silt, 70% very fine sand, trace very coarse sand, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: kaolinite 10%
2226	80	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, carbonaceous matter trace
	10	SANDSTONE		SANDSTONE, off white-light grey, brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 20% silt, 70% very fine sand, trace very coarse sand, moderately sorted, sub-rounded, sub-spherical,

				ACCESSORIES: kaolinite 10%
	10	CLAYSTONE		CLAYSTONE, pale-grey to off-white coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% silt, ACCESSORIES: kaolinite 10%
2232	80	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, carbonaceous matter trace
	10	SANDSTONE		SANDSTONE, off white-light grey, brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: kaolinite 10%
	10	CLAYSTONE		CLAYSTONE, pale-grey to off-white coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% silt, ACCESSORIES: kaolinite 10%
2238	40	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, carbonaceous matter trace
	30	SANDSTONE		SANDSTONE, off white-light grey, brown grey coloured, friable, CLASTIC GRAINS: 10% silt, 90% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
	30	CLAYSTONE		CLAYSTONE, pale-grey to off-white coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% silt, ACCESSORIES: kaolinite 10%
2244	30	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, carbonaceous matter trace
	40	SANDSTONE		SANDSTONE, off white-light grey, brown grey coloured, friable, CLASTIC GRAINS: 10% silt, 90% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
	20	CLAYSTONE		CLAYSTONE, pale-grey to off-white coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% silt, trace coarse sand, ACCESSORIES: kaolinite 10%
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard,

				blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 60% clay, 30% silt, ACCESSORIES: fossils trace
2250	20	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace, carbonaceous matter trace
	30	SANDSTONE		SANDSTONE, off white-light grey, brown grey coloured, friable, CLASTIC GRAINS: 10% silt, 90% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
	10	CLAYSTONE		CLAYSTONE, pale-grey to off-white coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% silt, trace coarse sand, ACCESSORIES: kaolinite 10%
	40	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace
2256	70	CLAYSTONE		CLAYSTONE, pale-grey to off-white coloured, soft, amorphous fracture, CLASTIC GRAINS: 60% clay, 20% silt, 20% very fine sand, trace coarse sand, ACCESSORIES: kaolinite 15%
	15	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace
	10	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: fossils trace
	5	SANDSTONE		SANDSTONE, off white-light grey, brown grey coloured, friable, CLASTIC GRAINS: 10% silt, 90% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
2262	70	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	15	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS:

				argillaceous/moderate, ACCESSORIES: fossils trace
	15	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace
2268	55	SANDSTONE		SANDSTONE, off white-light grey, light brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
	20	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace
	20	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%
	5	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: pyrite 3%, siderite 3%
2274	90	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	5	SANDSTONE		SANDSTONE, off white-light grey, light brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
	5	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace
2280	50	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	30	CLAYSTONE		CLAYSTONE, off white-light grey, light brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: calcareous/moderate
	20	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS:

				15% clay, CLASTIC GRAINS: 55% clay, 30% silt, ACCESSORIES: fossils trace
2286	40	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%, glauconite trace
	30	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	20	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 15% clay, CLASTIC GRAINS: 55% clay, 30% silt, ACCESSORIES: fossils trace
	10	SANDSTONE		SANDSTONE, off white-light grey, light brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
2292	55	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	20	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 50% clay, 30% silt, ACCESSORIES: fossils trace
	15	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	10	SANDSTONE		SANDSTONE, off white-light grey, light brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
2298	75	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS:

				15% clay, CLASTIC GRAINS: 55% clay, 30% silt, ACCESSORIES: fossils trace
	5	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	10	SANDSTONE		SANDSTONE, off white-light grey, light brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
2304	40	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	20	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 75% clay, 15% silt, 10% very fine sand, ACCESSORIES: fossils trace
	20	SANDSTONE		SANDSTONE, off white-light grey, light brown grey coloured, friable, CLASTIC GRAINS: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, well sorted, sub-rounded, sub-spherical
	10	CLAYSTONE	calc	CLAYSTONE, calcareous, light grey to light blue grey coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 20% clay, CLASTIC GRAINS: 40% clay, 40% silt, ACCESSORIES: fossils trace
2310	40	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	15	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 75% clay, 15% silt, 10% very fine sand, ACCESSORIES: fossils trace
	15	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
2316	40	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 70% clay, 15% silt, 10% very fine sand, ACCESSORIES: fossils trace
	10	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture,

				CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
2322	50	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica trace
	40	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 70% clay, 15% silt, 10% very fine sand, ACCESSORIES: fossils trace
2328	50	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica trace
	40	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 70% clay, 15% silt, 10% very fine sand, ACCESSORIES: fossils trace
2334	60	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture CLASTIC GRAINS: 70% clay, 15% silt, 10% very fine sand, ACCESSORIES: fossils trace
	30	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
2340	60	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 70% clay, 15% silt, 10% very fine sand, ACCESSORIES: fossils trace

	30	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
2346	50	COAL		COAL, black coloured, friable-firm, conchoidal fracture
	40	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand, ACCESSORIES: fossils trace
	10	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
2352	60	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	20	COAL		COAL, black coloured, friable-firm, conchoidal fracture
	15	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand, ACCESSORIES: fossils trace
	10	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
2358	80	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand,

				ACCESSORIES: fossils trace
	10	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	tr	COAL		COAL, black coloured, friable-firm, conchoidal fracture
2364	90	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	COAL		COAL, black coloured, friable-firm, conchoidal fracture
2370	60	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	40	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
2376	50	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	50	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
2382	50	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	40	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 55% clay, 15% silt, 15% very

				fine sand, 15% coarse sand, ACCESSORIES: fossils trace
2388	85	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand, ACCESSORIES: fossils trace
	5	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
2394	85	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand, ACCESSORIES: fossils trace
	5	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, moderately sorted, sub-rounded, sub-spherical, ACCESSORIES: siderite 3%, pyrite trace
2400	90	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand, ACCESSORIES: fossils trace
2406	100	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
2412	100	SILTSTONE		SILTSTONE, grey brown to medium

				brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
2418	90	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand, ACCESSORIES: fossils trace
2424	90	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
	10	CLAYSTONE		CLAYSTONE, white-pale-grey coloured, soft, amorphous fracture, CLASTIC GRAINS: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand, ACCESSORIES: fossils trace
2430	100	SILTSTONE		SILTSTONE, grey brown to medium brown, light grey brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%, mica 10%
2433	70	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 5%
	30	SANDSTONE		SANDSTONE, clear coloured, loose, CLASTIC GRAINS: 10% coarse sand, 80% very coarse sand, 10% granular, poorly sorted, sub-angular, sub-spherical, POROSITY: 20%, inter-granular
2436	60	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 5%

	35	SANDSTONE		SANDSTONE, white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica trace POROSITY: 5%, inter-granular
	5	SANDSTONE		SANDSTONE, clear coloured, loose, CLASTIC GRAINS: 10% coarse sand, 80% very coarse sand, 10% granular, poorly sorted, sub-angular, sub-spherical, POROSITY: 20%, inter-granular
2439	50	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 5%
	50	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica trace POROSITY: 3%, inter-granular
2442	60	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 5%
	30	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica trace POROSITY: 3%, inter-granular
	10	CLAYSTONE		CLAYSTONE, white-cream coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% coarse sand, CEMENTS/STRENGTHS: argillaceous/strong
2445	60	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 5%
	30	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica trace POROSITY: 5%, inter-granular
	10	CLAYSTONE		CLAYSTONE, white-cream coloured,

				soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% coarse sand, CEMENTS/STRENGTHS: argillaceous/strong
2448	75	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 5%
	20	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica trace POROSITY: 5%, inter-granular
	5	CLAYSTONE		CLAYSTONE, white-cream coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% coarse sand, CEMENTS/STRENGTHS: argillaceous/strong
2451	50	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 5%
	50	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: % POROSITY: 5%, inter-granular
2454	70	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 5%
	30	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 5%, inter-granular
2457	70	SANDSTONE		SANDSTONE, clear coloured, loose, CLASTIC GRAINS: 5% coarse sand, 80% very coarse sand, 15% granular, poorly sorted, sub-angular, sub-spherical, ACCESSORIES: chert trace, POROSITY: 20%, inter-granular
	30	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 90% very fine sand, 10% fine

				sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate
2460	70	SANDSTONE		SANDSTONE, clear coloured, loose, CLASTIC GRAINS: 5% coarse sand, 80% very coarse sand, 15% granular, very poorly sorted, sub-angular, sub-spherical, ACCESSORIES: sandy 10%, POROSITY: 20%, inter-granular
	20	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 90% very fine sand, 10% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate
	10	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
2463	80	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
	10	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: glauconite trace, POROSITY: 5%, inter-granular
	10	SANDSTONE		SANDSTONE, clear coloured, loose, CLASTIC GRAINS: 5% coarse sand, 80% very coarse sand, 15% granular, poorly sorted, sub-angular, sub-spherical, POROSITY: 20%, inter-granular
2466	60	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
	35	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: glauconite trace, POROSITY: 3%, inter-granular
	5	SANDSTONE		SANDSTONE, clear coloured, loose, CLASTIC GRAINS: 5% coarse sand, 80% very coarse sand, 15% granular,

				poorly sorted, sub-angular, sub-spherical, POROSITY: 20%, inter-granular
2469	80	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 5%, inter-granular
	20	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%
2472	30	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 10% silt, 80% very fine sand, 10% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: chert trace, POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: 10% dull yellow direct fluorescence with slow even cut, trace dim green crush cut, bright blue thin residual ring.
	70	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%
2475	80	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 10% silt, 80% very fine sand, 10% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: 5% dull yellow direct fluorescence with slow even cut, trace dim green crush cut, bright blue thin residual ring.
	20	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%
2478	60	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 10% silt, 80% very fine sand, 10% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 5%, inter-granular. HYDROCARBON

				FLUORESCENCE: 5% dull yellow direct fluorescence with slow even cut, trace dim green crush cut, bright blue thin residual ring.
	40	SILTSTONE		SILTSTONE, light grey-brown coloured, friable-firm, splintery fracture, CLASTIC GRAINS: 70% silt, 30% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%
2481	90	SILTSTONE		SILTSTONE, light grey-brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
	10	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, silica/weak, ACCESSORIES: kaolinite 5% POROSITY: 3%, inter-granular
2484	75	SILTSTONE		SILTSTONE, light grey-brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
	25	SANDSTONE		SANDSTONE, clear-white coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 15% silt, 80% very fine sand, 5% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, silica/weak, ACCESSORIES: kaolinite 10% POROSITY: trace, inter-granular
2487	80	SILTSTONE		SILTSTONE, light grey-brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
	20	CLAYSTONE		CLAYSTONE, white-cream coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% coarse sand, CEMENTS/STRENGTHS: argillaceous/strong
2490	60	SILTSTONE		SILTSTONE, light grey-brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%

	20	CLAYSTONE		CLAYSTONE, white-cream coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% coarse sand, CEMENTS/STRENGTHS: argillaceous/strong
	20	SANDSTONE		SANDSTONE, clear-white-pale-brown coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 5% clay, 20% silt, 70% very fine sand, 5% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, silica/weak, ACCESSORIES: kaolinite 10% POROSITY: trace, inter-granular
2493	80	SILTSTONE		SILTSTONE, light grey-brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
	20	SANDSTONE		SANDSTONE, clear-white-pale-brown coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 5% clay, 20% silt, 70% very fine sand, 5% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, silica/weak, ACCESSORIES: kaolinite 10% POROSITY: 5%, inter-granular
	tr	CLAYSTONE		CLAYSTONE, white-cream coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% coarse sand, CEMENTS/STRENGTHS: argillaceous/strong
2496	80	SILTSTONE		SILTSTONE, light grey-brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
	20	SANDSTONE		SANDSTONE, clear-white-pale-brown coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 5% clay, 20% silt, 70% very fine sand, 5% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, silica/weak, ACCESSORIES: kaolinite 10% POROSITY: 5%, inter-granular
	tr	CLAYSTONE		CLAYSTONE, white-cream coloured, soft, amorphous fracture, CLASTIC GRAINS: 90% clay, 10% coarse sand, CEMENTS/STRENGTHS: argillaceous/strong
2499	50	SILTSTONE		SILTSTONE, light grey-brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-

				spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 5%, mica 5%
	50	SANDSTONE		SANDSTONE, clear-white-pale-brown coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 5% clay, 20% silt, 70% very fine sand, 5% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, silica/weak, ACCESSORIES: kaolinite 10% POROSITY: 5%, inter-granular
2502	70	SILTSTONE		SILTSTONE, brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%, chlorite trace
	20	SANDSTONE		SANDSTONE, clear-white-pale-brown coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 5% clay, 20% silt, 70% very fine sand, 5% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, silica/weak, ACCESSORIES: kaolinite 10% POROSITY: 5%, inter-granular
	10	SILTSTONE		SILTSTONE, white coloured, soft, amorphous fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/strong
2505	90	SILTSTONE		SILTSTONE, brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
	10	SANDSTONE		SANDSTONE, clear-white-pale-brown coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 5% clay, 20% silt, 70% very fine sand, 5% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, silica/weak, ACCESSORIES: kaolinite 10% POROSITY: 5%, inter-granular
2508	95	SILTSTONE		SILTSTONE, brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 15%, mica 5%
	5	SANDSTONE		SANDSTONE, clear-white-pale-brown coloured, friable-firm, irregular fracture, CLASTIC GRAINS: 5% clay, 20% silt,

				70% very fine sand, 5% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, silica/weak, ACCESSORIES: kaolinite 10%, POROSITY: 5%, inter-granular
2511	100	SILTSTONE		SILTSTONE, brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
2514	100	SILTSTONE		SILTSTONE, brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 15%, mica 5%
2517	100	SILTSTONE		SILTSTONE, brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
2520	100	SILTSTONE		SILTSTONE, brown coloured, firm-moderately hard, splintery fracture, CLASTIC GRAINS: 80% silt, 20% very fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: carbonaceous matter 10%, mica 5%
2523	90	SILTSTONE		SILTSTONE, medium-dark brown coloured, friable-firm, blocky fracture, CLASTIC GRAINS: 20% clay, 60% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 5%, mica 5%
	10	SILTSTONE		SILTSTONE, off white, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 15% very fine sand, 5% fine sand, CEMENTS/STRENGTHS: silica/moderate, argillaceous/weak, ACCESSORIES: kaolinite 15%
2526	90	SILTSTONE		SILTSTONE, medium-dark brown coloured, friable-firm, blocky fracture, CLASTIC GRAINS: 20% clay, 60% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 5%, mica 5%
	10	SILTSTONE		SILTSTONE, off white, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 15% very fine sand, 5% fine sand, CEMENTS/STRENGTHS:

				silica/moderate, argillaceous/weak, ACCESSORIES: kaolinite 15%
2529	80	SILTSTONE		SILTSTONE, medium-dark brown coloured, friable-firm, blocky fracture, CLASTIC GRAINS: 20% clay, 60% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 5%, mica 5%
	20	SANDSTONE		SANDSTONE, translucent, clear, off white, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 30% silt, 30% very fine sand, 15% fine sand, 5% medium sand, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: silica/strong, argillaceous/weak, ACCESSORIES: kaolinite 15% POROSITY: 3%, inter-granular
2532	70	SILTSTONE		SILTSTONE, medium brown-grey brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 3%, mica 5%
	30	SILTSTONE		SILTSTONE, light brown, cream coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 50% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: kaolinite 20%
2535	70	SILTSTONE		SILTSTONE, medium brown-grey brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 50% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 3%, mica 5%
	30	SILTSTONE		SILTSTONE, light brown, cream, light grey coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 50% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: kaolinite 20%
2538	90	SILTSTONE		SILTSTONE, medium brown-grey brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 3%
	10	SILTSTONE		SILTSTONE, light brown-cream coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 50% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES:

				kaolinite 20%
2541	80	SILTSTONE		SILTSTONE, medium brown-grey brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 3%
	20	SILTSTONE		SILTSTONE, light brown-cream coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 40% silt, 20% very fine sand, trace medium sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: kaolinite 20%
2544	70	SILTSTONE		SILTSTONE, medium brown-grey brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 3%, coal trace, pyrite trace
	30	SILTSTONE		SILTSTONE, light brown-cream coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 40% silt, 30% very fine sand, trace medium sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: kaolinite 20%
2547	40	SANDSTONE		SANDSTONE, cream-light brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 30% very fine sand, 20% fine sand, trace medium sand, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: kaolinite 15%, POROSITY: trace, inter-granular
	60	SILTSTONE		SILTSTONE, light to medium brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 3%, mica 5%
2550	60	SANDSTONE		SANDSTONE, cream-light brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 30% very fine sand, 20% fine sand, trace medium sand, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: kaolinite 10%, POROSITY: 3%, inter-granular
	40	SILTSTONE		SILTSTONE, light to medium brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay,

				70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 3%, mica 5%, coal trace,
2553	50	SANDSTONE		SANDSTONE, cream-light brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 30% very fine sand, 20% fine sand, trace medium sand, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: kaolinite 10%, pyrite trace, POROSITY: 3%, inter-granular
	50	SILTSTONE		SILTSTONE, light to medium brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 3%, mica 5%, coal trace
2556	80	SILTSTONE		SILTSTONE, light to medium brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, mica trace
	20	SANDSTONE		SANDSTONE, cream-light brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 30% very fine sand, 20% fine sand, trace medium sand, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: kaolinite 10% POROSITY: 3%, inter-granular
2559	90	SILTSTONE		SILTSTONE, light to medium brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, mica trace, coal trace
	10	SANDSTONE		SANDSTONE, cream-light brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 30% very fine sand, 20% fine sand, trace medium sand, trace very coarse sand, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: kaolinite 10%, pyrite trace POROSITY: trace, inter-granular
2562	70	SILTSTONE		SILTSTONE, light to medium brown, cream coloured, soft-friable, sub-blocky

				fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace, pyrite trace, coal trace
	30	SANDSTONE		SANDSTONE, light brown, clear, translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 10% medium sand, 20% coarse sand, 40% very coarse sand, 30% granular, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: silica/trace, ACCESSORIES: kaolinite trace, POROSITY: 20%, inter-granular
2565	50	SANDSTONE		SANDSTONE, light brown, clear, translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 30% medium sand, 40% coarse sand, 20% very coarse sand, 10% granular, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: silica/trace, ACCESSORIES: kaolinite trace, POROSITY: 20%, inter-granular
	50	SILTSTONE		SILTSTONE, light to medium brown, cream coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace, coal trace
2568	80	SANDSTONE		SANDSTONE, light brown, clear, translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 30% medium sand, 40% coarse sand, 20% very coarse sand, 10% granular, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: silica/trace, ACCESSORIES: kaolinite trace, POROSITY: 20%, inter-granular
	20	SILTSTONE		SILTSTONE, light to medium brown, cream coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace, coal trace
2571	10	SANDSTONE		SANDSTONE, light brown, clear, translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 30% medium sand, 40% coarse sand, 20% very coarse sand, 10% granular, poorly sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: silica/trace, ACCESSORIES: kaolinite trace POROSITY: 20%, inter-granular
	90	SILTSTONE		SILTSTONE, light to medium brown, cream coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand,

				CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace, coal trace
2574	100	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light grey to light grey brown, cream, white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 40% silt, 20% very fine sand, 10% fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace
2577	100	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, cream-light brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 40% silt, 20% very fine sand, 10% fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace
2580	100	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, cream-light brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 40% silt, 20% very fine sand, 10% fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace
2583	100	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, cream-light brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 40% silt, 20% very fine sand, 10% fine sand, trace coarse sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace
2586	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown grey, cream coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 30% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: 3%, inter-granular
	40	SILTSTONE		SILTSTONE, medium grey to grey brown coloured, friable-firm, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, ACCESSORIES: mica trace
2589	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown grey, cream coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 30% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: 3%, inter-granular
	30	SILTSTONE		SILTSTONE, medium grey to grey brown coloured, friable-firm, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, ACCESSORIES: mica trace
2592	90	SILTSTONE		SILTSTONE, dark to medium grey brown coloured, firm-moderately hard, blocky

				fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter 3%, mica trace, pyrite trace
	10	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown grey, cream coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 30% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: 3%, inter-granular
2595	90	SILTSTONE		SILTSTONE, dark to medium grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter 3%, mica trace, pyrite trace
	10	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown grey, cream coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 30% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: 3%, inter-granular
2598	80	SILTSTONE		SILTSTONE, medium-dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter 3%, pyrite trace
	20	SANDSTONE		SANDSTONE, clear-translucent, off white, cream coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 20% clay, 10% silt, 20% very fine sand, 10% medium sand, 20% coarse sand, 20% very coarse sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, ACCESSORIES: kaolinite 10% POROSITY: 10%, inter-granular
2601	20	SILTSTONE		SILTSTONE, medium-dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter 3%, pyrite trace
	80	SANDSTONE		SANDSTONE, light brown, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 10% very fine sand, 10% fine sand, 30% medium sand, 30% coarse sand, 20% very coarse sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, POROSITY: 20%, inter-granular
2604	70	SANDSTONE		SANDSTONE, light brown, clear & translucent coloured, loose, dispersive

				fracture, CLASTIC GRAINS: 10% very fine sand, 10% fine sand, 30% medium sand, 30% coarse sand, 20% very coarse sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, POROSITY: 20%, inter-granular
	30	SILTSTONE		SILTSTONE, medium-dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter 3%
2607	60	SANDSTONE		SANDSTONE, light brown-cream coloured, loose-soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 20% silt, 10% very fine sand, 10% medium sand, 20% coarse sand, 10% very coarse sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, ACCESSORIES: glauconite trace POROSITY: 10%, inter-granular
	40	SILTSTONE		SILTSTONE, medium-dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter 3%, pyrite trace, coal 3%
2610	40	SILTSTONE		SILTSTONE, medium & dark brown, occasionally light brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, ACCESSORIES: carbonaceous matter 3%, pyrite trace
	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream-light brown, clear, translucent coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 30% clay, 20% silt, 10% very fine sand, 20% medium sand, 10% coarse sand, 10% very coarse sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: glauconite trace POROSITY: 10%, inter-granular
2613	30	SILTSTONE		SILTSTONE, medium & dark brown, occasionally light brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, ACCESSORIES: carbonaceous matter 3%, pyrite trace
	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream-light brown, clear, translucent coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 10% clay, 30% silt, 40% very fine sand, 5% medium sand, 10% coarse sand, 5% very coarse sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS:

				argillaceous/weak, ACCESSORIES: glauconite trace, POROSITY: 5%, inter-granular
2616	90	SILTSTONE		SILTSTONE, dark grey brown to medium brown coloured, moderately hard-hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, ACCESSORIES: pyrite trace
	10	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream-light brown, clear, translucent coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 30% clay, 20% silt, 40% very fine sand, 5% medium sand, 5% coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: glauconite trace, POROSITY: 5%, inter-granular
2619	50	SILTSTONE		SILTSTONE, dark grey brown to medium brown coloured, moderately hard-hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, ACCESSORIES: pyrite trace
	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream-light brown, clear, translucent coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 30% clay, 20% silt, 40% very fine sand, 5% medium sand, 5% coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: glauconite trace POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow even cut, no crush cut, dim yellow thick residual ring.
2622	70	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 10% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: coal trace
	30	SANDSTONE		SANDSTONE, translucent-light brown coloured, loose, dispersive fracture, CLASTIC GRAINS: 20% fine sand, 30% medium sand, 30% coarse sand, 20% very coarse sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, POROSITY: 20%, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow even cut, no crush cut, dim yellow thick residual ring.
2625	60	SANDSTONE		SANDSTONE, light brown-translucent coloured, firm, blocky fracture, CLASTIC GRAINS: 10% clay, 60% fine sand, 20% medium sand, 10% coarse sand, trace

				very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, POROSITY: 10%, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow even cut, no crush cut, dim yellow thick residual ring.
	40	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 10% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: coal trace
2628	100	SILTSTONE		SILTSTONE, medium-dark brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2631	100	SILTSTONE		SILTSTONE, medium-dark brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2634	100	SILTSTONE		SILTSTONE, medium-dark brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2637	100	SILTSTONE		SILTSTONE, medium-dark brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2640	100	SILTSTONE		SILTSTONE, medium-dark brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2643	40	SILTSTONE		SILTSTONE, medium-dark brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite 3%
	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey

				coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow even cut, no crush cut, dim yellow thick residual ring.
2646	40	SILTSTONE		SILTSTONE, medium-dark brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 60% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite 3%
	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow even cut, no crush cut, dim yellow thick residual ring.
2649	50	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow even cut, no crush cut, dim yellow thick residual ring.
2652	50	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey

				coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thick residual ring.
2655	60	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	40	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thick residual ring.
2658	50	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	40	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thick residual ring.
2661	30	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS:

				argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular
2664	20	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thick residual ring.
2667	20	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thick residual ring.
2670	20	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES:

				carbonaceous matter trace
	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thick residual ring.
2673	10	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thick residual ring.
2676	10	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thick residual ring.
2679	20	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-

				blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thick residual ring.
2682	70	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	30	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-grey-white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2685	70	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, coal trace
	30	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-grey-white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thin residual ring.
2688	80	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, CEMENTS/STRENGTHS:

				argillaceous/moderate, ACCESSORIES: pyrite 5%, carbonaceous matter trace
	20	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-grey-white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2691	90	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite 5%, carbonaceous matter trace
	10	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-grey-white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2694	70	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite 5%, carbonaceous matter trace
	30	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-grey-white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2697	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace pale green direct fluorescence with slow patchy cut, no crush cut, dim yellow thin residual ring.
	20	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 10%

				clay, 70% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite 5%, carbonaceous matter trace
2700	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace, POROSITY: trace, inter-granular
	30	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, silica/trace, ACCESSORIES: pyrite 5%, carbonaceous matter trace
2703	30	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace, POROSITY: trace, inter-granular
	70	SILTSTONE		SILTSTONE, medium-light brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: pyrite 5%, carbonaceous matter trace
2706	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace, POROSITY: trace, inter-granular
	10	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-grey-white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: pyrite trace

2709	100	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, dark-olive-brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: pyrite trace
2712	100	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, dark-olive-brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: pyrite trace
2715	100	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, dark-olive-brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: pyrite trace
2718	100	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, dark-olive-brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: pyrite trace
2721	95	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, dark-olive-brown coloured, firm, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: pyrite trace
	5	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: pyrite trace
2724	100	SILTSTONE		SILTSTONE, light to medium grey coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica trace
2727	100	SILTSTONE		SILTSTONE, light to medium grey coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand,

				CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica trace
2730	95	SILTSTONE		SILTSTONE, light to medium grey coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica trace
	5	SANDSTONE		SANDSTONE, white - clear coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, 20% silt, 40% very fine sand, 30% fine sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, POROSITY: 10%, inter-granular
2733	90	SILTSTONE		SILTSTONE, light to medium grey coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 80% silt, 15% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica trace
	10	SANDSTONE		SANDSTONE, white - clear coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 20% silt, 40% very fine sand, 30% fine sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, POROSITY: 10%, inter-granular
2735	90	SILTSTONE		SILTSTONE, light grey-slightly brown grey coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: kaolinite 3%
	10	SANDSTONE		SANDSTONE, clear, white & very pale brown coloured, moderately hard-hard, blocky fracture, CLASTIC GRAINS: 10% clay, 20% silt, 40% very fine sand, 30% fine sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/strong, POROSITY: 10%, inter-granular
2735				CORE # 1
2742				CORE # 1
2745	80	SILTSTONE		SILTSTONE, dark-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 30% clay, 70% silt, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: pyrite 3%
	20	SANDSTONE	mica	SANDSTONE, micaceous, white & very pale brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% silt, 30% very fine sand, 40% fine sand, 20% medium sand, moderately

				sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 20%, POROSITY: trace, inter-granular
2748	90	SILTSTONE		SILTSTONE, dark-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 30% clay, 70% silt, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: pyrite 3%
	10	SANDSTONE	mica	SANDSTONE, micaceous, white & very pale brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% silt, 30% very fine sand, 40% fine sand, 20% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 20%, POROSITY: trace, inter-granular
2751	90	SILTSTONE		SILTSTONE, medium-dark-brown-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 30% clay, 70% silt, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: pyrite trace
	5	SANDSTONE	mica	SANDSTONE, micaceous, white & very pale brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% silt, 30% very fine sand, 40% fine sand, 20% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 20%, POROSITY: trace, inter-granular
	5	SANDSTONE		SANDSTONE, white - cream coloured, friable, fissile fracture, CLASTIC GRAINS: 20% fine sand, 80% medium sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 10%, inter-granular
2754	90	SILTSTONE		SILTSTONE, medium-dark-brown-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 30% clay, 70% silt, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: pyrite trace
	10	SANDSTONE		SANDSTONE, white - cream coloured, friable, fissile fracture, CLASTIC GRAINS: 20% fine sand, 80% medium sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 10%, inter-granular
2757	90	SILTSTONE		SILTSTONE, medium-dark-brown-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 30% clay, 70% silt, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: pyrite trace
	10	SANDSTONE		SANDSTONE, white - cream coloured,

				friable, fissile fracture, CLASTIC GRAINS: 20% fine sand, 80% medium sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 10%, inter-granular
2760	90	SILTSTONE		SILTSTONE, light-medium-grey-light-brown coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 15%, pyrite trace
	10	SANDSTONE	mica	SANDSTONE, micaceous, white & very pale brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% silt, 30% very fine sand, 40% fine sand, 20% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 20%, POROSITY: trace, inter-granular
2763	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 15%, pyrite trace
2766	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 15%, pyrite trace
2769	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 15%, pyrite trace
2772	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 10%, pyrite trace
2775	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 10%, pyrite trace
2778	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 5%, pyrite trace
2781	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture,

				CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 5%, pyrite trace
2784	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 5%, pyrite trace
2787	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 5%, pyrite trace
2790	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 3%, pyrite trace
2793	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 3%, pyrite trace
2796	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 3%,
2799	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 5%, C757
2802	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 10%, %
2805	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 5%,
2808	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 3%, C760
2811	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture,

				CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 5%,
2814	100	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 5%,
2817	60	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 10%,
	40	SILTSTONE		SILTSTONE, pale-grey-white coloured, soft-friable, sub-fissile fracture, CLASTIC GRAINS: 10% clay, 40% silt, 50% very fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: mica 5%,
2820	50	SILTSTONE		SILTSTONE, medium-grey coloured, hard-very hard, massive fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: mica 10%,
	50	SILTSTONE		SILTSTONE, pale-grey-white coloured, soft-friable, sub-fissile fracture, CLASTIC GRAINS: 10% clay, 40% silt, 50% very fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: mica 5%,
2823	50	SANDSTONE		SANDSTONE, white-clear-opaque coloured, soft-friable, fissile fracture, CLASTIC GRAINS: 80% fine sand, 20% medium sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/strong
	50	SILTSTONE		SILTSTONE, light-medium-brown to light-grey coloured, soft-friable, sub-fissile fracture, CLASTIC GRAINS: 10% clay, 40% silt, 50% very fine sand, CEMENTS/STRENGTHS: silica/moderate, ACCESSORIES: mica 5%
2826	60	SANDSTONE		SANDSTONE, light brown to light grey brown, trace medium brown coloured, soft-friable, blocky fracture, CLASTIC GRAINS: 10% clay, 10% silt, 20% very fine sand, 40% fine sand, 20% medium sand, moderately sorted, sub-rounded, spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/moderate, ACCESSORIES: kaolinite 10%, coal trace POROSITY: 5%, inter-granular
	40	SILTSTONE		SILTSTONE, light to medium grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay,

				70% silt, 10% very fine sand, ACCESSORIES: mica trace, carbonaceous matter trace
2829	70	SILTSTONE		SILTSTONE, light to medium grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, ACCESSORIES: mica trace, carbonaceous matter trace
	30	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, medium brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, sub-rounded, spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, ACCESSORIES: coal trace POROSITY: 3%, inter-granular
2832	100	SILTSTONE		SILTSTONE, light to medium grey, grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 15% very fine sand, 5% fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter 3%, coal trace
2835	70	SILTSTONE		SILTSTONE, light to medium grey, grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 15% very fine sand, 5% fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter 3%, coal trace
	30	SANDSTONE		SANDSTONE, light medium brown, translucent coloured, soft, dispersive fracture, CLASTIC GRAINS: 10% clay, 10% silt, 50% very fine sand, 30% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, ACCESSORIES: kaolinite 10% POROSITY: 5%, inter-granular
2838	40	SILTSTONE		SILTSTONE, light to medium brown, slightly grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 15% very fine sand, 5% fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter 3%, coal trace
	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream, very light brown, off white coloured, soft, dispersive fracture, CLASTIC GRAINS: 30% clay, 10% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: 20% pale yellow direct fluorescence with fast patchy cut, dull yellow bleeding crush cut, moderately

				bright yellow thin residual ring.
2841	80	SILTSTONE		SILTSTONE, light to medium brown, slightly grey brown coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 15% very fine sand, 5% fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter 3%, coal trace
	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream, very light brown, off white coloured, soft, dispersive fracture, CLASTIC GRAINS: 30% clay, 10% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: trace, inter-granular
2844	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream-light & medium brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 10% silt, 10% very fine sand, 30% fine sand, 20% medium sand, trace coarse sand, poorly sorted, rounded, spherical, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter 3%, coal trace POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: 20% pale yellow direct fluorescence with fast patchy cut, dull yellow bleeding crush cut, moderately bright yellow thin residual ring.
	20	SILTSTONE		SILTSTONE, light to medium brown, slightly grey brown coloured, firm, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, ACCESSORIES: carbonaceous matter trace
2847	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream, off white, translucent coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 20% clay, 10% very fine sand, 40% fine sand, 30% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, ACCESSORIES: coal trace, carbonaceous matter trace POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: 50% dim white direct fluorescence with moderately fast patchy cut, dull white bleeding crush cut, pale white thin residual ring.
	20	SILTSTONE		SILTSTONE, light to medium brown, slightly grey brown coloured, firm, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, ACCESSORIES: carbonaceous matter trace
2850	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream, off white, translucent coloured, loose-soft,

				dispersive fracture, CLASTIC GRAINS: 20% clay, 10% very fine sand, 40% fine sand, 30% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, ACCESSORIES: coal trace, carbonaceous matter trace POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: 40% dim white direct fluorescence with moderately fast patchy cut, dull white bleeding crush cut, pale white thin residual ring.
	10	SILTSTONE		SILTSTONE, light to medium brown, slightly grey brown coloured, firm, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, ACCESSORIES: carbonaceous matter trace
2853	80	SILTSTONE		SILTSTONE, medium grey to medium grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, ACCESSORIES: carbonaceous matter trace
	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream, off white, translucent coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 20% clay, 10% very fine sand, 40% fine sand, 30% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, ACCESSORIES: coal trace, carbonaceous matter trace
2856	100	SILTSTONE		SILTSTONE, medium grey to medium grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, ACCESSORIES: carbonaceous matter trace, sandy trace
2859	40	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, translucent coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% very fine sand, 30% fine sand, 40% medium sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular. HYDROCARBON FLUORESCENCE: 20% dim white direct fluorescence with moderately fast patchy cut, dull white bleeding crush cut, pale white thin residual ring.
	60	SILTSTONE		SILTSTONE, medium grey to medium grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, ACCESSORIES: carbonaceous matter

				trace, sandy trace
2866	40	SILTSTONE		SILTSTONE, light grey to light & medium brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter 3%
	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, translucent coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% very fine sand, 30% fine sand, 40% medium sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: trace dim white direct fluorescence with moderately fast patchy cut, dull white bleeding crush cut, pale white thin residual ring.
2871	70	SILTSTONE		SILTSTONE, light grey to light & medium brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 20% very fine sand, 10% fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter 3%
	30	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown, cream, translucent coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% very fine sand, 30% fine sand, 40% medium sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: trace dim white direct fluorescence with moderately fast patchy cut, dull white bleeding crush cut, pale white thin residual ring.
2877	100	SILTSTONE		SILTSTONE, medium-dark grey, medium grey brown coloured, moderately hard-hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, ACCESSORIES: coal trace, carbonaceous matter trace, sandy trace
2883	30	SILTSTONE		SILTSTONE, medium-dark grey, medium grey brown coloured, moderately hard-hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, ACCESSORIES: coal trace, carbonaceous matter trace
	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream-light brown, light grey brown coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 30% clay, 10% silt, 30% very fine sand, 20% fine sand, 10% medium

				sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: trace dim white direct fluorescence with moderately fast patchy cut, dull white bleeding crush cut, pale white thin residual ring.
2889	100	SILTSTONE		SILTSTONE, medium & dark grey, trace light grey coloured, hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: coal trace
2895	90	SANDSTONE		SANDSTONE, light brown, translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 10% clay, 10% very fine sand, 50% fine sand, 30% medium sand, trace coarse sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, ACCESSORIES: coal 5%, POROSITY: 10%, inter-granular. HYDROCARBON FLUORESCENCE: 40% dull yellow direct fluorescence with slow patchy cut, pale green blooming crush cut, dim yellow thin residual ring.
	10	SILTSTONE		SILTSTONE, medium & dark grey, trace light grey coloured, hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace
2901	70	SANDSTONE		SANDSTONE, light brown, translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 10% clay, 10% very fine sand, 50% fine sand, 30% medium sand, trace coarse sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, ACCESSORIES: coal 5%, POROSITY: 10%, inter-granular. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow direct fluorescence with moderately fast patchy cut, dim white bleeding crush cut, dull green thin residual ring.
	30	SILTSTONE		SILTSTONE, medium & dark grey, trace light grey coloured, hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace
2907	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream, light brown-translucent coloured, very soft, dispersive fracture, CLASTIC GRAINS: 30% clay, 10% very fine sand, 30% fine

				sand, 20% medium sand, 10% coarse sand, poorly sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: coal trace, POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow direct fluorescence with moderately fast patchy cut, pale white blooming crush cut, dull green thin residual ring.
	10	SILTSTONE		SILTSTONE, medium & dark grey, trace light grey coloured, hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: carbonaceous matter trace
2913	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream, light brown-translucent coloured, very soft, dispersive fracture, CLASTIC GRAINS: 30% clay, 10% very fine sand, 30% fine sand, 20% medium sand, 10% coarse sand, poorly sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, ACCESSORIES: coal trace, POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow direct fluorescence with moderately fast patchy cut, pale white blooming crush cut, dull green thin residual ring.
2919	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, off white, translucent, clear coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 5% very fine sand, 5% fine sand, 10% medium sand, 60% coarse sand, 20% very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, POROSITY: 15%, inter-granular. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow direct fluorescence with moderately fast patchy cut, pale white blooming crush cut, dull green thin residual ring.
2925	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, off white, translucent, clear coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 5% very fine sand, 5% fine sand, 10% medium sand, 60% coarse sand, 20% very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, POROSITY: 15%, inter-granular. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow direct fluorescence with moderately fast patchy cut, pale white blooming crush cut, dull green thin

				residual ring.
	40	SILTSTONE		SILTSTONE, light to medium grey coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 60% silt, 20% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter trace
2928	80	SILTSTONE		SILTSTONE, light to medium grey coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 60% silt, 20% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter trace
	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, off white, translucent, clear coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 5% very fine sand, 5% fine sand, 10% medium sand, 60% coarse sand, 20% very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, POROSITY: 15%, inter-granular. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow direct fluorescence with moderately fast patchy cut, pale white blooming crush cut, dull green thin residual ring.
2931	40	SILTSTONE		SILTSTONE, light to medium grey coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 60% silt, 20% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter trace
	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream-light brown coloured, loose-soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% silt, 40% very fine sand, 30% fine sand, trace coarse sand, moderately sorted, sub-rounded, sub-spherical, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow direct fluorescence with moderately fast patchy cut, pale white blooming crush cut, dull green thin residual ring.
2934	40	SILTSTONE		SILTSTONE, light to medium grey coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 60% silt, 20% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter trace
	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream-light brown coloured, loose-soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% silt, 40% very fine sand, 30% fine sand, trace coarse sand, moderately sorted, sub-rounded, sub-spherical, POROSITY: trace, inter-granular
2937	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream-light

				brown coloured, loose-soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% silt, 40% very fine sand, 30% fine sand, trace coarse sand, moderately sorted, sub-rounded, sub-spherical, POROSITY: trace, inter-granular
	80	SILTSTONE		SILTSTONE, light grey brown, light grey coloured, friable-firm, blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter trace
2940	80	SILTSTONE		SILTSTONE, medium-dark grey, grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
	20	SANDSTONE		SANDSTONE, light brown-translucent coloured, loose-soft, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 20% very fine sand, 40% fine sand, 30% medium sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, argillaceous/weak, ACCESSORIES: kaolinite 10%, POROSITY: 10%, inter-granular
2943	50	SILTSTONE		SILTSTONE, medium-dark grey, grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
	50	SANDSTONE		SANDSTONE, light brown-translucent coloured, loose-soft, sub-blocky fracture, CLASTIC GRAINS: 10% clay, 20% very fine sand, 40% fine sand, 30% medium sand, well sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, argillaceous/weak, ACCESSORIES: kaolinite 10%, POROSITY: 10%, inter-granular
2946	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown-cream coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% silt, 40% very fine sand, 30% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	30	SILTSTONE		SILTSTONE, off white to light grey brown coloured, firm, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
2949	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown-cream coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% silt, 40% very fine sand, 30% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular

	30	SILTSTONE		SILTSTONE, off white to light grey brown coloured, firm, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
2952	100	SILTSTONE		SILTSTONE, dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
2955	60	SILTSTONE		SILTSTONE, dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	40	SANDSTONE		SANDSTONE, clear opaque white coloured, friable, CLASTIC GRAINS: 30% fine sand, 10% medium sand, 10% coarse sand, 40% very coarse sand, 10% granular, very poorly sorted, sub-angular, sub-spherical, POROSITY: 10%, inter-granular
2958	40	SILTSTONE		SILTSTONE, dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	40	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-grey-white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 5% clay, 75% silt, 20% medium sand, CEMENTS/STRENGTHS: silica/moderate
	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, clear coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 70% fine sand, 30% medium sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, ACCESSORIES: coal trace, POROSITY: 5%, inter-granular
2961	60	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, POROSITY: 20%, inter-granular
	40	SILTSTONE		SILTSTONE, dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
2964	100	SILTSTONE		SILTSTONE, dark grey brown coloured,

				firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
2967	90	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, POROSITY: 20%, inter-granular
	10	SILTSTONE		SILTSTONE, dark grey brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
2970	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown to cream to pale-yellow to pale-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 70% fine sand, 30% medium sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	20	SILTSTONE		SILTSTONE, light grey, brown, grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	10	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, POROSITY: 20%, inter-granular
2973	50	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	30	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 80% very coarse sand, 20% granular, POROSITY: 20%, inter-granular
	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, clear coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 70% fine sand, 30% medium sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
2976	50	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand,

				CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
	30	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 90% very coarse sand, 10% granular, POROSITY: 20%, inter-granular
	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, clear coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 70% fine sand, 30% medium sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
2979	90	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 90% very coarse sand, 10% granular, POROSITY: 20%, inter-granular
	10	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
2982	90	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 90% very coarse sand, 10% granular, poorly sorted, sub-angular, sub-elongate, POROSITY: 20%, inter-granular
	10	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
2985	70	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 90% very coarse sand, 10% granular, poorly sorted, sub-angular, sub-elongate, POROSITY: 20%, inter-granular
	30	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
2988	90	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 50% very coarse sand, 50% granular, moderately sorted, sub-angular, sub-elongate, POROSITY: 25%, inter-granular
	10	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-

				moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
2991	100	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 30% coarse sand, 20% very coarse sand, 30% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
2994	100	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 30% medium sand, 30% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
2997	90	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	10	SILTSTONE		SILTSTONE, clear, opaque coloured, friable, CLASTIC GRAINS: 40% fine sand, 50% medium sand, 10% coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%, POROSITY: 5%, inter-granular
3000	95	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	5	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, clear coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 70% fine sand, 30% medium sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
3003	80	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	20	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-grey-white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 75% silt, 5% fine sand, 20% medium sand, CEMENTS/STRENGTHS: silica/moderate
3006	80	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 60% coarse sand, 20% very coarse sand, poorly sorted, sub-

				angular, elongate, POROSITY: 25%, inter-granular
	20	SANDSTONE	mc	SANDSTONE, micaceous, light-brown-white coloured, friable-firm CLASTIC GRAINS: 10% clay, 70% very fine sand, 20% fine sand, poorly sorted, sub-angular, elongate, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: mica 20%, POROSITY: trace, inter-granular
3009	90	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	10	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-grey-white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 75% silt, 5% fine sand, 20% medium sand, CEMENTS/STRENGTHS: silica/moderate
3012	50	CLAYSTONE		CLAYSTONE, pale-orange coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 60% clay, 40% silt, CLASTIC GRAINS: trace very fine sand, CEMENTS/STRENGTHS: calcareous/moderate, ACCESSORIES: calcareous 10%, CALCIMETRY: 9% calcite
	30	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
	20	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3015	80	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
	10	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	10	CLAYSTONE		CLAYSTONE, pale-orange coloured, soft,

				amorphous fracture, CALCAREOUS GRAINS: 60% clay, 40% silt, CLASTIC GRAINS: trace very fine sand, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: calcareous 20%
3018	55	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
	40	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	5	CLAYSTONE		CLAYSTONE, pale-orange coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 60% clay, 40% silt, CLASTIC GRAINS: trace very fine sand, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: calcareous 20%
3021	85	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	10	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
	5	CLAYSTONE		CLAYSTONE, pale-orange coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 60% clay, 40% silt, CLASTIC GRAINS: trace very fine sand, CEMENTS/STRENGTHS: calcareous/strong, ACCESSORIES: calcareous 20%
3024	50	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	30	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS:

				argillaceous/moderate, ACCESSORIES: mica 3%
	20	SANDSTONE		SANDSTONE, light-brown-white coloured, friable-firm, CLASTIC GRAINS: 10% clay, 70% very fine sand, 20% fine sand, poorly sorted, sub-angular, elongate, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: mica 20%, POROSITY: trace, inter-granular
3027	50	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	50	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
3030	60	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
	40	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3033	80	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
	20	SANDSTONE		SANDSTONE, light-brown-white coloured, friable-firm CLASTIC GRAINS: 10% clay, 70% very fine sand, 20% fine sand, poorly sorted, sub-angular, elongate, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: mica 20%, POROSITY: trace, inter-granular
3036	70	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS:

				argillaceous/moderate, ACCESSORIES: mica 3%
	30	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3039	80	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
	20	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3042	50	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: mica 3%
	50	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3045	80	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	20	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3048	90	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	10	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly

				sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3051	90	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	10	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 70% very fine sand, 30% fine sand, poorly sorted, sub-angular, elongate, CEMENTS/STRENGTHS: argillaceous/strong, POROSITY: 10%, inter-granular
3054	90	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	10	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter 10%, mica 5%, coal trace, POROSITY: 10%, inter-granular
3057	70	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter 10%, mica 5%, coal trace, POROSITY: 10%, inter-granular
	20	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	10	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3060	70	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter 10%, mica 5%, coal trace, POROSITY: 10%, inter-granular

	30	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
3063	70	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter 10%, mica 5%, coal trace, POROSITY: 10%, inter-granular
	30	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
3066	50	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter 10%, mica 5%, coal trace, POROSITY: 10%, inter-granular
	50	SILTSTONE		SILTSTONE, light grey, medium grey, dark grey, light grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
3069	70	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	30	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, POROSITY: 5%, inter-granular
3072	50	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	30	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately

				sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, POROSITY: 5%, inter-granular
	20	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3075	70	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	30	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, POROSITY: 5%, inter-granular
3078	80	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	20	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, POROSITY: 5%, inter-granular
3081	50	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	50	SANDSTONE		SANDSTONE, white, cream coloured, friable-firm CLASTIC GRAINS: 40% very fine sand, 40% fine sand, 20% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, POROSITY: 5%, inter-granular
3084	60	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	40	SANDSTONE		SANDSTONE, white, cream coloured,

				friable-firm CLASTIC GRAINS: 60% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, POROSITY: 5%, inter-granular
3087	80	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	20	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3090	80	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	20	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3093	80	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	20	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 15%, inter-granular
3096	30	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	70	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3099	90	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate,

				POROSITY: 20%, inter-granular
	10	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
3102	100	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 15%, inter-granular
3105	50	SANDSTONE		SANDSTONE, white, cream coloured, friable CLASTIC GRAINS: 50% very fine sand, 40% fine sand, 10% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 3%, inter-granular
	40	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	10	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 20%, inter-granular
3108	50	SANDSTONE		SANDSTONE, white, cream coloured, friable CLASTIC GRAINS: 50% very fine sand, 40% fine sand, 10% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 3%, inter-granular
	40	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
	10	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
3111	50	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	40	SANDSTONE		SANDSTONE, white, cream coloured, friable CLASTIC GRAINS: 50% very fine sand, 40% fine sand, 10% medium sand,

				moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 3%, inter-granular
	10	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3114	60	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	20	SANDSTONE		SANDSTONE, white, cream coloured, friable CLASTIC GRAINS: 50% very fine sand, 40% fine sand, 10% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 3%, inter-granular
	20	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3117	70	SILTSTONE		SILTSTONE, grey-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 60% silt, 30% very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate
	20	SANDSTONE		SANDSTONE, white, cream coloured, friable CLASTIC GRAINS: 50% very fine sand, 40% fine sand, 10% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 3%, inter-granular
	10	SANDSTONE		SANDSTONE, clear opaque white coloured, loose, CLASTIC GRAINS: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub-angular, elongate, POROSITY: 25%, inter-granular
3123	60	SANDSTONE		SANDSTONE, off white-light grey & translucent coloured, friable-firm, blocky fracture, CLASTIC GRAINS: 10% clay, 30% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, argillaceous/weak, ACCESSORIES: kaolinite 10%, POROSITY: 10%, inter-granular
	40	SILTSTONE		SILTSTONE, light to medium grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay,

				80% silt, ACCESSORIES: kaolinite 10%, carbonaceous matter 3%
3129	60	SANDSTONE		SANDSTONE, off white-light grey & translucent coloured, friable-firm, blocky fracture, CLASTIC GRAINS: 10% clay, 30% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, argillaceous/weak, ACCESSORIES: kaolinite 10%, POROSITY: 10%, inter-granular
	40	SILTSTONE		SILTSTONE, light to medium grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, ACCESSORIES: kaolinite 10%, carbonaceous matter 3%
3135	10	SILTSTONE		SILTSTONE, light to medium grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, ACCESSORIES: kaolinite 10%, carbonaceous matter 3%
	90	SANDSTONE		SANDSTONE, very light grey & clear-light brown coloured, loose, dispersive fracture, CLASTIC GRAINS: 10% fine sand, 20% medium sand, 40% coarse sand, 30% very coarse sand, trace granular, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, POROSITY: 20%, inter-granular
3138	100	SANDSTONE		SANDSTONE, very light grey & clear-light brown coloured, loose, dispersive fracture, CLASTIC GRAINS: 10% fine sand, 20% medium sand, 40% coarse sand, 30% very coarse sand, trace granular, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, POROSITY: 20%, inter-granular
3141	100	SANDSTONE		SANDSTONE, very light grey & clear-light brown coloured, loose, dispersive fracture, CLASTIC GRAINS: 10% fine sand, 20% medium sand, 40% coarse sand, 30% very coarse sand, trace granular, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, POROSITY: 20%, inter-granular
3144	100	SANDSTONE		SANDSTONE, very light grey & clear-light brown coloured, loose, dispersive fracture, CLASTIC GRAINS: 10% fine sand, 20% medium sand, 40% coarse sand, 30% very coarse sand, trace granular, moderately sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/trace, POROSITY: 20%, inter-granular
3147	100	SANDSTONE		SANDSTONE, very light grey & clear-light brown coloured, loose, dispersive fracture, CLASTIC GRAINS: 5% clay, 5%

				very fine sand, 10% fine sand, 20% medium sand, 40% coarse sand, 15% very coarse sand, 5% granular, very poorly sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace, POROSITY: 15%, inter-granular
3150	50	SANDSTONE		SANDSTONE, very light grey & clear-light brown coloured, loose, dispersive fracture, CLASTIC GRAINS: 5% clay, 5% very fine sand, 10% fine sand, 20% medium sand, 40% coarse sand, 15% very coarse sand, 5% granular, very poorly sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace, POROSITY: 15%, inter-granular
	50	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light to medium grey coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 60% silt, 10% very fine sand, ACCESSORIES: carbonaceous matter trace
3156	30	SANDSTONE		SANDSTONE, very light grey & clear-light brown coloured, loose, dispersive fracture, CLASTIC GRAINS: 5% clay, 5% very fine sand, 10% fine sand, 20% medium sand, 40% coarse sand, 15% very coarse sand, 5% granular, very poorly sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace, POROSITY: 15%, inter-granular
	70	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, predominantly cream & off white coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 40% silt, 30% very fine sand, 10% fine sand
3162	70	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 20% fine sand, 50% medium sand, 30% coarse sand, trace very coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
	30	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light to medium grey coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand
3168	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream, light brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 10% silt, 50% very fine sand, 10% fine sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, POROSITY: 5%, inter-granular
	10	SILTSTONE		SILTSTONE, light to medium grey coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS:

				argillaceous/moderate, ACCESSORIES: carbonaceous matter trace
3177	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, cream, light brown coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 10% silt, 50% very fine sand, 10% fine sand, trace very coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, POROSITY: 5%, inter-granular
	20	SILTSTONE		SILTSTONE, light to medium grey coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, coal trace
3183	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light grey to light brown & cream coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, POROSITY: 5%, inter-granular
	10	SILTSTONE		SILTSTONE, light to medium grey coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, trace very fine sand, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, coal trace
3189	40	SILTSTONE		SILTSTONE, light to medium grey & blue grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter trace, coal trace
	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light grey to light brown & cream coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, POROSITY: 5%, inter-granular
3195	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light grey, translucent, light brown coloured, loose-soft, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 10% silt, 30% very fine sand, 40% fine sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/trace, POROSITY: 5%, inter-granular
	20	SILTSTONE		SILTSTONE, light to medium grey & blue grey coloured, firm-moderately hard,

				blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter trace
3201	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, off white-light brown/cream coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 10% silt, 40% very fine sand, 10% fine sand, well sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: trace, inter-granular
	10	SILTSTONE		SILTSTONE, light to medium grey & blue grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 70% silt, 20% very fine sand, trace fine sand, ACCESSORIES: carbonaceous matter trace
3207	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, off white-light brown/cream coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 10% silt, 40% very fine sand, 10% fine sand, well sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 5%, inter-granular
3213	10	SILTSTONE		SILTSTONE, light to medium grey, slightly brown grey coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 50% silt, 20% very fine sand, ACCESSORIES: carbonaceous matter trace
	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, off white-light brown/cream coloured, soft, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 10% silt, 40% very fine sand, 10% fine sand, well sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 5%, inter-granular
3216	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, well sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, POROSITY: 5%, inter-granular
3222	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, well sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, coal trace POROSITY: 5%, inter-granular
	10	SILTSTONE		SILTSTONE, light grey to light brown

				grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3228	20	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
	80	SANDSTONE		SANDSTONE, light grey to off white, translucent coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 10% clay, 30% very fine sand, 30% fine sand, 20% medium sand, CEMENTS/STRENGTHS: argillaceous/trace, silica/trace, ACCESSORIES: coal trace, carbonaceous matter trace, POROSITY: 10%, inter-granular
3234	90	SANDSTONE		SANDSTONE, clear, translucent-light brown coloured, loose-soft, dispersive fracture, CLASTIC GRAINS: 10% clay, 50% very fine sand, 30% fine sand, 10% medium sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace, argillaceous/trace, ACCESSORIES: kaolinite 10%, coal trace, POROSITY: 10%, inter-granular
	10	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3234	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, well sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: 10%, inter-granular
3237	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: 5%, inter-granular
3240	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace,

				POROSITY: 5%, inter-granular
	20	SANDSTONE		SANDSTONE, clear-white coloured, friable, fissile fracture, CLASTIC GRAINS: 70% very fine sand, 30% fine sand, well sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: kaolinite 10%, POROSITY: 3%, inter-granular
3246	40	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: 5%, inter-granular
	40	SANDSTONE		SANDSTONE, clear-white coloured, friable, fissile fracture, CLASTIC GRAINS: 70% very fine sand, 30% fine sand, well sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: kaolinite 10% POROSITY: 3%, inter-granular
	20	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3249	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: 5%, inter-granular
	20	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 20% fine sand, 50% medium sand, 30% coarse sand, trace very coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
	20	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3252	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES:

				carbonaceous matter trace, coal trace, POROSITY: 5%, inter-granular
	10	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 20% fine sand, 50% medium sand, 30% coarse sand, trace very coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
	20	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3255	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: 5%, inter-granular
	10	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 20% fine sand, 50% medium sand, 30% coarse sand, trace very coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
	40	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3258	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: 5%, inter-granular
	10	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 20% fine sand, 50% medium sand, 30% coarse sand, trace very coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
	40	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3261	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand,

				moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: 5%, inter-granular
	10	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 20% fine sand, 50% medium sand, 30% coarse sand, trace very coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
	30	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3264	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: 5%, inter-granular
	20	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 20% fine sand, 50% medium sand, 30% coarse sand, trace very coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
	30	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3267	45	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: 5%, inter-granular
	40	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 20% fine sand, 50% medium sand, 30% coarse sand, trace very coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
	15	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3270	100	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture,

				CLASTIC GRAINS: 20% coarse sand, 30% very coarse sand, 50% granular, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
3273	50	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 20% coarse sand, 30% very coarse sand, 50% granular, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: trace, inter-granular
3276	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: trace, inter-granular
	30	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3279	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: trace, inter-granular
3282	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: trace, inter-granular
	20	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3285	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured,

				soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: trace, inter-granular
3288	60	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: trace, inter-granular
	40	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
3291	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown/cream-light grey/off white coloured, soft-friable, amorphous fracture, CLASTIC GRAINS: 20% clay, 20% silt, 40% very fine sand, 20% fine sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: carbonaceous matter trace, coal trace, POROSITY: trace, inter-granular
	40	SILTSTONE		SILTSTONE, light grey to light brown grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
	10	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: trace clay, 20% fine sand, 50% medium sand, 30% coarse sand, trace very coarse sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace
3294	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 70% fine sand, 30% medium sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	20	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3297	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse

				sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
3300	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
3303	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
3306	45	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
	50	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak,
	5	CALCITE		CALCITE, light-pink coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 70% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/very strong
3309	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
	20	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3312	60	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
	40	SANDSTONE		SANDSTONE, clear & translucent coloured, loose, dispersive fracture, CALCAREOUS GRAINS: 20% coarse sand, 30% very coarse sand, 50%

				granular, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/trace, POROSITY: 20%, inter-granular
3315	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
	50	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3321	60	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
	40	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
3324	50	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
	50	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 10% coarse sand, 70% very coarse sand, 20% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
3327	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	20	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
	10	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 10% coarse sand, 70% very coarse sand, 20% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular

3330	90	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	5	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	5	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3333	90	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	5	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	5	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3336	50	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	40	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	10	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3339	50	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	40	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-

				brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	10	SILTSTONE		SILTSTONE, dark grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3342	50	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	40	SANDSTONE		SANDSTONE, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
	10	SILTSTONE		SILTSTONE, black coloured, hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3345	90	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 10% coarse sand, 50% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	10	SILTSTONE		SILTSTONE, black coloured, hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3348	90	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 10% coarse sand, 50% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	10	SILTSTONE		SILTSTONE, black coloured, hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3351	100	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 10% coarse sand, 50% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
3354	50	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular

	40	SANDSTONE		SANDSTONE, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
	10	SILTSTONE		SILTSTONE, light-brown-grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3357	50	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	40	SANDSTONE		SANDSTONE, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
	10	SILTSTONE		SILTSTONE, light-brown-grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3360	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	50	SILTSTONE		SILTSTONE, light-brown-grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3363	30	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	30	SANDSTONE		SANDSTONE, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 10%, inter-granular
	40	SILTSTONE		SILTSTONE, light-brown-grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt,

				trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3366	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular
	20	SILTSTONE		SILTSTONE, light-brown-grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3369	40	SILTSTONE		SILTSTONE, dark grey brown coloured, moderately hard-hard, blocky fracture, CLASTIC GRAINS: 40% clay, 60% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
	30	SILTSTONE		SILTSTONE, light-brown-grey coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
	30	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
3372	100	SILTSTONE		SILTSTONE, dark-grey-dark-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3375	100	SILTSTONE		SILTSTONE, dark-grey-dark-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3378	100	SILTSTONE		SILTSTONE, dark-grey-dark-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3381	100	SILTSTONE		SILTSTONE, dark-grey-dark-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3382	40	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular
	30	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, clear-white-light-brown coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 60% fine sand, 30% medium sand, 10% coarse sand, well sorted, sub-angular, sub-

				elongate, CEMENTS/STRENGTHS: argillaceous/weak, silica/trace, POROSITY: 5%, inter-granular. HYDROCARBON FLUORESCENCE: in mud streaming bright pale green to pale yellow direct fluorescence with instant even bright cut, bright yellow streaming crush cut, bright green thick residual ring.
	30	SILTSTONE		SILTSTONE, dark-grey-dark-brown coloured, firm-moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand, CEMENTS/STRENGTHS: silica/weak
3385	50	VOL		VOLCANIC, green-white coloured, soft
	40	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 60% very coarse sand, 40% granular, poorly sorted, angular, sub-elongate, POROSITY: 20%, inter-granular. HYDROCARBON FLUORESCENCE: in mud streaming bright pale green to pale yellow direct fluorescence with instant even bright cut, bright yellow streaming crush cut, bright green thick residual ring.
	10	CALCITE		CALCITE, light-pink coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 70% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/very strong
3388	90	VOL		VOLCANIC, green-white coloured, soft
	10	CALCITE		CALCITE, light-pink coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 70% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/very strong
3391	90	VOL		VOLCANIC, green-white coloured, soft
	10	CALCITE		CALCITE, light-pink coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 70% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/very strong
3394	90	VOL		VOLCANIC, green-white coloured, soft
	10	CALCITE		CALCITE, light-pink coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 70% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/very strong
3396	100	ALTERED VOLCANICS	calc	ALTERED VOLCANICS, calcareous, mottled white, green, black, trace tan-red coloured, firm-moderately hard, blocky fracture, ACCESSORIES: feldspar 15%, crystalline 10%
3399	100	ALTERED VOLCANICS	calc	ALTERED VOLCANICS, calcareous, mottled white, green, black, trace tan-red coloured, firm-moderately hard, blocky fracture, ACCESSORIES: feldspar 15%, crystalline 10%
3402	70	ALTERED VOLCANICS	calc	ALTERED VOLCANICS, calcareous, mottled white, green, black, trace tan-red coloured, firm-moderately hard, blocky

				fracture, ACCESSORIES: feldspar 15%, crystalline 10%
	30	SANDSTONE		SANDSTONE, white to off white coloured, friable-firm, sub-blocky fracture, CALCAREOUS GRAINS: 10% clay, CLASTIC GRAINS: 20% clay, trace silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, angular, sub-elongate, CEMENTS/STRENGTHS: calcareous/moderate, argillaceous/weak, POROSITY: trace, inter-granular
3405	100	VOL	crystalline	VOLCANIC, crystalline, black, green, dark grey, trace clear coloured, moderately hard, blocky fracture, ACCESSORIES: feldspar 15%, calcareous trace
3408	100	VOL	crystalline	VOLCANIC, crystalline, black, green, dark grey, trace clear coloured, moderately hard, blocky fracture, ACCESSORIES: feldspar 15%, calcareous trace
3411	100	ALTERED VOLCANICS	calc	ALTERED VOLCANICS, calcareous, mottled white, green, black, trace tan-red coloured, firm-moderately hard, blocky fracture, ACCESSORIES: feldspar 15%, crystalline 10%
3414	100	ALTERED VOLCANICS		ALTERED VOLCANICS, predominantly light grey, occasionally green & black coloured, moderately hard-hard, blocky fracture, ACCESSORIES: crystalline 10%, calcareous trace
3417	60	VOL	Fe	VOLCANIC, black, dark grey, red-pink, green, light grey coloured, hard-very hard, irregular fracture, ACCESSORIES: crystalline 10%
	40	SANDSTONE		SANDSTONE, light brown-brown grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: trace clay, CLASTIC GRAINS: 30% clay, 20% silt, 10% very fine sand, 30% fine sand, 10% medium sand, trace coarse sand, poorly sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/moderate, POROSITY: trace, inter-granular
3420	60	ALTERED VOLCANICS	calc	ALTERED VOLCANICS, calcareous, mottled white, green, black, trace tan-red coloured, firm-moderately hard, irregular fracture, ACCESSORIES: feldspar 15%, crystalline 10%
	40	SANDSTONE		SANDSTONE, light brown-brown grey coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: trace clay, CLASTIC GRAINS: 30% clay, 20% silt, 10% very fine sand, 30% fine sand, 10% medium sand, trace coarse sand, poorly sorted, angular, sub-elongate, CEMENTS/STRENGTHS: silica/moderate, POROSITY: trace, inter-granular

3423	80	VOL	calc	VOLCANIC, calcareous, black, green, mottled dark grey-white, tan coloured, hard, irregular fracture, ACCESSORIES: feldspar 10%, crystalline 10%
	20	SILTSTONE		SILTSTONE, light grey to light brown coloured, CLASTIC GRAINS: 30% clay, 40% silt, 20% very fine sand, 10% fine sand, ACCESSORIES: pyrite trace
3429	20	VOL	calc	VOLCANIC, calcareous, black, green, mottled dark grey-white, tan coloured, hard, irregular fracture, ACCESSORIES: feldspar 10%, crystalline 10%
	80	SANDSTONE	arg	SANDSTONE, argillaceous, light brown coloured, loose-soft, sub-blocky fracture, CLASTIC GRAINS: 30% clay, 10% silt, 20% very fine sand, 30% fine sand, 10% medium sand, poorly sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: trace, inter-granular
3432	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, off white-light brown, translucent coloured, loose, dispersive fracture, CALCAREOUS GRAINS: 20% clay, 10% silt, 20% very fine sand, 30% fine sand, 20% medium sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: trace, inter-granular
	10	VOL		VOLCANIC, green, black, dark grey coloured
3435	90	SILTSTONE		SILTSTONE, dark brown, dark grey brown coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, 90% silt, trace very fine sand
	5	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, off white-light brown, translucent coloured, loose, dispersive fracture, CLASTIC GRAINS: 20% clay, 10% silt, 20% very fine sand, 30% fine sand, 20% medium sand, moderately sorted, angular, sub-elongate, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: trace, inter-granular
	5	VOL		VOLCANIC, green, black, dark grey coloured
3438	95	SILTSTONE		SILTSTONE, dark brown, dark grey brown coloured, moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, 90% silt, trace very fine sand
	5	ALTERED VOLCANICS		ALTERED VOLCANICS, black coloured, very hard, massive fracture, CLASTIC GRAINS: 90% clay, 10% silt
3441	60	SILTSTONE		SILTSTONE, dark brown, dark grey brown coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, trace very fine sand
	30	CALCITE		CALCITE, light-pink coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 70% clay, 30% silt,

				CEMENTS/STRENGTHS: calcareous/very strong ACCESSORIES: calcite crystals 20%
	10	ALTERED VOLCANICS		ALTERED VOLCANICS, black coloured, very hard, massive fracture, CLASTIC GRAINS: 90% clay, 10% silt, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: crystalline 25%
3444	70	VOL	crystalline	VOLCANIC, crystalline, black-very dark, ferrous coloured, hard, irregular fracture
	20	SILTSTONE		SILTSTONE, very dark brown-dark grey coloured, hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, ACCESSORIES: pyrite trace
	10	SANDSTONE		SANDSTONE, light brown to off white, translucent coloured, firm-moderately hard, blocky fracture, CALCAREOUS GRAINS: 10% clay, 10% silt, 30% very fine sand, 40% fine sand, 10% medium sand, moderately sorted, sub-rounded, sub-spherical, CEMENTS/STRENGTHS: silica/strong, POROSITY: 3%, inter-granular
3447	100	VOL	crystalline	VOLCANIC, crystalline, black, white feldspar, green, ferrous coloured, ACCESSORIES: feldspar 15%
3459	60	VOL	crystalline	VOLCANIC, crystalline, black, white feldspar, green, ferrous coloured, ACCESSORIES: feldspar 15%, calcareous trace
	40	SILTSTONE		SILTSTONE, medium brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, CEMENTS/STRENGTHS: argillaceous/moderate
3462	40	SILTSTONE		SILTSTONE, medium brown coloured, friable-firm, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, CEMENTS/STRENGTHS: argillaceous/moderate
	30	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown to off white coloured, soft, sub-blocky fracture, CALCAREOUS GRAINS: 30% clay, 20% very fine sand, 30% fine sand, 20% medium sand, trace coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: 5%, inter-granular
	30	VOL		VOLCANIC, black, dark brown, green, clear coloured, hard, irregular fracture, ACCESSORIES: crystalline 10%, calcareous trace
3465	20	VOL		VOLCANIC, black, dark brown, green, clear coloured, hard, irregular fracture, ACCESSORIES: crystalline 10%, calcareous trace
	80	SILTSTONE		SILTSTONE, even medium brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20%

				clay, 80% silt, CEMENTS/STRENGTHS: argillaceous/moderate
3468	10	VOL		VOLCANIC, black, dark brown, green, clear coloured, hard, irregular fracture, ACCESSORIES: crystalline 10%, calcareous trace
	30	SILTSTONE		SILTSTONE, even medium brown coloured, firm-moderately hard, sub-blocky fracture, CALCAREOUS GRAINS: 20% clay, 80% silt, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 10%
	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, light brown-cream to off white coloured, soft, amorphous fracture, CLASTIC GRAINS: 40% clay, 10% very fine sand, 30% fine sand, 20% medium sand, trace coarse sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/weak, POROSITY: 5%, inter-granular
3471	30	VOL		VOLCANIC, black, dark brown, green, clear coloured, hard, irregular fracture, ACCESSORIES: crystalline 10%, calcareous trace
	70	CALCITE		CALCITE, light-pink coloured, soft, amorphous fracture, CALCAREOUS GRAINS: 70% clay, 30% silt, CEMENTS/STRENGTHS: calcareous/very strong, ACCESSORIES: calcite crystals 20%
3474	70	SILTSTONE		SILTSTONE, soft, white-cream coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 60% silt, CEMENTS/STRENGTHS: argillaceous/moderate
	20	SILTSTONE		SILTSTONE, even medium brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 10%
	10	ALTERED VOLCANICS		ALTERED VOLCANICS, black coloured, very hard, massive fracture, CLASTIC GRAINS: 90% clay, 10% silt, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: crystalline 25%
3477	80	SANDSTONE		SANDSTONE, clear, opaque, white coloured, loose, CLASTIC GRAINS: 10% medium sand, 10% coarse sand, 70% very coarse sand, 10% granular, poorly sorted, sub-angular, sub-spherical, POROSITY: 20%, inter-granular. HYDROCARBON FLUORESCENCE: in mud 25% moderately bright green direct fluorescence with moderately fast even moderately bright cut, brown streaming crush cut, moderately bright green film residue.

	10	SILTSTONE		SILTSTONE, soft, white-cream coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 60% silt, CEMENTS/STRENGTHS: argillaceous/moderate
	10	ALTERED VOLCANICS		ALTERED VOLCANICS, black coloured, very hard, massive fracture, CLASTIC GRAINS: 90% clay, 10% silt, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: crystalline 25%
3480	90	SANDSTONE		SANDSTONE, clear, opaque, white coloured, loose, CLASTIC GRAINS: 10% medium sand, 10% coarse sand, 70% very coarse sand, 10% granular, poorly sorted, sub-angular, sub-spherical, POROSITY: 20%, inter-granular. HYDROCARBON FLUORESCENCE: in mud 15% moderately bright green direct fluorescence with moderately fast even moderately bright cut, green streaming crush cut, moderately bright green film residue.
	10	ALTERED VOLCANICS		ALTERED VOLCANICS, black coloured, very hard, massive fracture, CLASTIC GRAINS: 90% clay, 10% silt, CEMENTS/STRENGTHS: silica/strong, ACCESSORIES: crystalline 25%
3483	40	SILTSTONE		SILTSTONE, soft, white-cream coloured, soft-friable, sub-blocky fracture, CLASTIC GRAINS: 40% clay, 60% silt, CEMENTS/STRENGTHS: argillaceous/moderate
	40	SILTSTONE		SILTSTONE, even medium brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 10%
	20	SANDSTONE		SANDSTONE, clear, opaque, white coloured, loose, CLASTIC GRAINS: 10% medium sand, 10% coarse sand, 70% very coarse sand, 10% granular, poorly sorted, sub-angular, sub-spherical, POROSITY: 20%, inter-granular
3486	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular
	20	SILTSTONE		SILTSTONE, even medium brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%
3489	80	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream

				coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular
	20	SILTSTONE		SILTSTONE, even medium brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%
3492	40	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular
	40	SILTSTONE		SILTSTONE, even medium brown coloured, firm-moderately hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 80% silt, CEMENTS/STRENGTHS: argillaceous/moderate, ACCESSORIES: carbonaceous matter 15%
	20	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-brown-grey coloured, soft-friable, splintery fracture, CLASTIC GRAINS: 20% clay, 50% silt, 30% very fine sand, ACCESSORIES: carbonaceous matter 10%
3495	60	SILTSTONE		SILTSTONE, white coloured, soft CLASTIC GRAINS: 10% clay, 50% very fine sand, 20% fine sand, 10% medium sand, 10% coarse sand, ACCESSORIES: carbonaceous matter 15%
	30	SILTSTONE		SILTSTONE, light-brown-cream-white coloured, soft-friable, CLASTIC GRAINS: 10% clay, 20% silt, 50% very fine sand, 20% fine sand, ACCESSORIES: carbonaceous matter 15%
	10	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular
3498	70	SILTSTONE		SILTSTONE, white coloured, soft, CLASTIC GRAINS: 10% clay, 50% very fine sand, 20% fine sand, 10% medium sand, 10% coarse sand, ACCESSORIES: carbonaceous matter 15%
	30	SILTSTONE	kaolinite	SILTSTONE, kaolinitic, light-brown-grey coloured, soft-friable, splintery fracture,

				CLASTIC GRAINS: 20% clay, 50% silt, 30% very fine sand, ACCESSORIES: carbonaceous matter 10%
3501	80	SILTSTONE		SILTSTONE, white coloured, soft, CLASTIC GRAINS: 10% clay, 50% very fine sand, 20% fine sand, 10% medium sand, 10% coarse sand, ACCESSORIES: carbonaceous matter 15%
	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular
3504	70	SILTSTONE		SILTSTONE, white coloured, soft, CLASTIC GRAINS: 10% clay, 50% very fine sand, 20% fine sand, 10% medium sand, 10% coarse sand, ACCESSORIES: carbonaceous matter 15%
	30	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular
3507	80	SILTSTONE		SILTSTONE, white coloured, soft, CLASTIC GRAINS: 10% clay, 50% very fine sand, 20% fine sand, 10% medium sand, 10% coarse sand, ACCESSORIES: carbonaceous matter 15%
	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: in mud 15% bright pale green-white direct fluorescence with instant cut, green streaming crush cut, dull green-yellow thin residual ring.
3510	60	SILTSTONE		SILTSTONE, white coloured, soft, CLASTIC GRAINS: 10% clay, 50% very fine sand, 20% fine sand, 10% medium sand, 10% coarse sand, ACCESSORIES: carbonaceous matter 15%
	20	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS:

				argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: in mud 15% bright pale green-white direct fluorescence with instant cut, green streaming crush cut, dull green-yellow thin residual ring.
	20	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 10% very fine sand, 60% fine sand, 30% medium sand, well sorted, sub-angular, sub-spherical, POROSITY: 15%, inter-granular
3513	50	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: in mud 15% bright pale green-white direct fluorescence with instant cut, green streaming crush cut, dull green-yellow thin residual ring.
	50	SANDSTONE		SANDSTONE, clear-opaque coloured, loose, CLASTIC GRAINS: 10% very fine sand, 60% fine sand, 30% medium sand, well sorted, sub-angular, sub-spherical, POROSITY: 15%, inter-granular
3516	70	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular. HYDROCARBON FLUORESCENCE: in mud 15% pale brown direct fluorescence with fast patchy moderately bright cut, green streaming crush cut, moderately bright green thin residual ring.
	30	SILTSTONE		SILTSTONE, grey-light-brown coloured, friable CLASTIC GRAINS: 5% clay, 15% silt, 60% very fine sand, 20% fine sand
3519	100	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular. FLUORESCENCE: in mud 15% pale brown direct fluorescence with fast patchy moderately bright cut, green streaming crush cut, moderately bright green thin residual ring.

3522	90	SANDSTONE	kaolinite	SANDSTONE, kaolinitic, white, cream coloured, friable, sub-blocky fracture, CLASTIC GRAINS: 20% very fine sand, 40% fine sand, 40% medium sand, moderately sorted, sub-angular, sub-spherical, CEMENTS/STRENGTHS: argillaceous/strong, ACCESSORIES: kaolinite 25%, lithics 5%, POROSITY: trace, inter-granular. FLUORESCENCE: in mud 15% pale brown direct fluorescence with fast patchy moderately bright cut, green streaming crush cut, moderately bright green thin residual ring.
	10	SILTSTONE		SILTSTONE, grey-light-brown coloured, friable, CLASTIC GRAINS: 5% clay, 15% silt, 60% very fine sand, 20% fine sand
3525	30	SANDSTONE		SANDSTONE, clear, opaque coloured, loose, CLASTIC GRAINS: 30% very fine sand, 50% fine sand, 10% coarse sand, 10% very coarse sand, moderately sorted, sub-angular, spherical, POROSITY: 15%, inter-granular. FLUORESCENCE: in mud 15% pale brown direct fluorescence with fast patchy moderately bright cut, green streaming crush cut, moderately bright green thin residual ring.
	70	VOLCANIC		VOLCANIC, green-white-cream coloured, firm, sub-blocky fracture, ACCESSORIES: feldspar 10%, crystalline 5%
3528	70	VOLCANIC		VOLCANIC, green-white-cream coloured, firm, sub-blocky fracture, ACCESSORIES: feldspar 10%, crystalline 5%
	30	SANDSTONE		SANDSTONE, clear, opaque coloured, loose, CLASTIC GRAINS: 30% very fine sand, 50% fine sand, 10% coarse sand, 10% very coarse sand, moderately sorted, sub-angular, spherical, POROSITY: 15%, inter-granular
3531	70	VOLCANIC		VOLCANIC, green-white-cream coloured, firm, sub-blocky fracture, ACCESSORIES: feldspar 10%, crystalline 5%
	30	SANDSTONE		SANDSTONE, clear, opaque coloured, loose, CLASTIC GRAINS: 30% very fine sand, 50% fine sand, 10% coarse sand, 10% very coarse sand, moderately sorted, sub-angular, spherical, POROSITY: 15%, inter-granular
3534	100	VOLCANIC		VOLCANIC, green-white-cream coloured, firm, sub-blocky fracture, CLASTIC GRAINS: ACCESSORIES: feldspar 10%, crystalline 5%
3537	70	VOLCANIC		VOLCANIC, green-white-cream coloured, firm, sub-blocky fracture, ACCESSORIES: feldspar 10%, crystalline 5%
	30	CLAYSTONE		CLAYSTONE, light-brown-light-grey

				coloured, soft-friable, blocky fracture, CALCAREOUS GRAINS: 70% clay, 30% silt
3540	60	VOLCANIC		VOLCANIC, green-white-cream coloured, firm, sub-blocky fracture, ACCESSORIES: feldspar 10%, crystalline 5%
	40	CLAYSTONE		CLAYSTONE, light-brown-light-grey coloured, soft-friable, blocky fracture, CALCAREOUS GRAINS: 70% clay, 30% silt
3543	60	CLAYSTONE		CLAYSTONE, light-brown-light-grey coloured, soft-friable, blocky fracture, CLASTIC GRAINS: 70% clay, 30% silt
	40	VOLCANIC		VOLCANIC, green-white-cream coloured, firm, sub-blocky fracture, ACCESSORIES: feldspar 10%, crystalline 5%

APPENDIX 2: MSCT DESCRIPTIONS & PHOTOS

MSCT No.	MSCT Description
1/1: 2968.30m	**SANDSTONE:** 90% white with orange/brown tinge. 10% white with grey tinge and translucent grains, hard, medium grain size, sub angular, moderate to well sorted, moderate strength matrix. Sample is cut by a thin (1mm), micaceous lamination.
1/3: 2989.80m	**ARGILLACEOUS/MICACEOUS SANDSTONE:** 100% very fine grain size, no intergranular porosity. Moderate strength argillaceous matrix, coarse muscovite and biotite mica concentrated along argillaceous laminae.
1/4: 2990.80m	**SANDSTONE:** 100% white with yellow tinge, hard, upper-medium to coarse grain size, moderate sorting, rounded grains, 1% visual intergranular porosity, moderate strength matrix.
1/5: 2991.80m	**SANDSTONE:** 100% white with yellow tinge, hard, upper medium to lower-very-coarse grain size, predominantly upper medium grain size, moderate to poor sorting, sub rounded grains, some lithic fragments present. 5% visual intergranular porosity, moderate strength matrix.
1/6: 2992.80m	**SANDSTONE:** 100% white with yellow tinge, hard, upper medium to lower-very coarse grain size, predominantly upper coarse grain size, sub angular, poor sorting, some lithic fragments present. 5% visual intergranular porosity, moderate strength matrix
1/7: 2993.80m	**SANDSTONE:** 100% white with yellow tinge, hard, upper medium to lower-very coarse grain size, predominantly lower very coarse grain size, moderate to poor sorting, sub rounded, some lithic fragments present. 5% visual intergranular porosity, moderate strength matrix.
1/8: 2994.80m	**SANDSTONE:** 90% white with some grayish sections, 10% dark grey siltstone laminae, hard, upper fine grain size, moderately well sorted, sub rounded grains, sporadic concentrations of mica rich sandstone which form grey coloured patches. Siltstone laminae are distinctive with interlaminated mica rich sandstone. No visual intergranular porosity.
1/9: 2995.80m	**SANDSTONE:** 100% yellowish/white colour, hard, upper fine to lower medium grain size, moderately to well sorted, sub rounded grain shape, matrix in low abundance but moderately strong, some trace lithic fragments, 2% visual intergranular porosity.
1/10: 2996.80m	**SANDSTONE:** 100% yellowish/white colour, hard, upper fine to upper medium grain size, predominantly lower medium grain size, moderate to well sorting, sub angular grain shape, single, styolitic argillaceous siltstone lamination (a 1mm approx thickness).
2/1: 2968.30m	**SANDSTONE:** 100% white with orange tinge, translucent grains, hard, medium to lower coarse grain size, moderate to well sorted, sub angular grain shape, matrix in low abundance but strong, 2% intergranular porosity.
2/2: 2970.00m	**SANDSTONE:** 100% yellowish/white colour, hard, upper fine to lower medium grain size, predominantly lower medium grain size, moderate to well sorting, sub angular grain shape, argillaceous laminae (a 1mm approximate thickness).
2/3: 2971.00m	**SANDSTONE:** 100% white with yellowish tinge, translucent grains, hard to very hard, coarse to upper very coarse grain size, moderate to poor sorting sub rounded grains, strong matrix, some lithic fragments present, single, thin argillaceous lamination. 10% visual intergranular porosity.
2/4: 2977.70m	**SANDSTONE:** 100% very light brown with slight orange tinge, moderately hard, lower fine to upper fine grain size, well sorted, sub rounded, some fine lithic fragments present.
2/5: 2980.00m	**SANDSTONE:** 90% very light brown with slight orange tinge. 10% very light brown, moderately hard, lower fine to lower very coarse grain size. Predominantly medium grain size, poorly sorted, sub rounded, strong matrix. 5% intergranular porosity.
2/6: 2981.00m	**SANDSTONE:** 100% very light brown with slight orange tinge, upper fine to upper very coarse grain size, predominantly medium grain size, very poorly sorted, sub angular grain shape, common matrix present, lithic fragments present.

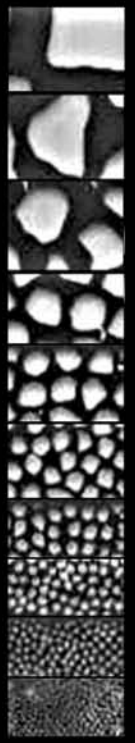
2/7: 2982.00m	**SANDSTONE:** 100% very light brown with orange tinge, very hard, upper fine to very coarse upper grain size, predominantly medium grain size, poorly sorted, sub angular grain, strong matrix. 10% slightly argillaceous sandstone.
2/8: 2986.00m	**SANDSTONE:** 100% white with slight yellow/grey tinge, hard, upper fine to upper very coarse grained, predominately upper medium grain size. Very poorly sorted, sub angular, strong matrix, some lithic fragments present.
2/9: 2987.80	**SANDSTONE:** 100% white with slight grey tinge, hard, lower medium to upper coarse grain size, predominantly upper medium grain size, moderate to poorly sorted, sub rounded, strong matrix, some lithic fragments present.
2/10: 2988.80m	**SANDSTONE:** 100% very light brown with slight orange tinge, hard, lower medium to upper coarse grain size, predominantly lower coarse grain size, moderately sorted, sub angular, strong matrix, some lithic fragments present.
2/11: 2990.80m	**SANDSTONE:** 100% very light grey, very hard, upper medium to lower very coarse grain size, predominately coarse grain size, moderately to poorly sorted, sub angular, scarce lithic fragments, strong matrix.
2/12: 2991.80m	**SANDSTONE:** 100% very light brown with slight yellow tinge, very hard, upper medium to lower very coarse grain size, moderately sorted, sub angular, strong matrix, 5% visual intergranular porosity.
2/13: 2992.80m	**SANDSTONE:** 100% light brown with slight yellow tinge, very hard, upper fine to pebble-sized grains, predominantly medium grain size, very poorly sorted, sub angular, sub spherical grains, very fine grain supporting matrix, moderately strong matrix, 2% intergranular porosity.
2/14: 2993.80m	**SANDSTONE:** 100% very light brown with slight yellow tinge, hard, upper fine to granule-sized grains, predominately very coarse grain size, poorly sorted, sub angular, strong matrix, sparse lithic fragments present.
2/15: 2994.80m	**SANDSTONE:** 100% very light brown with slight yellow tinge, hard, very fine grain size to very coarse grain size, predominately medium grain size, poorly sorted, sub angular, moderately strong matrix.
2/16: 2995.80m	**SANDSTONE:** 100% very light brown, with slight yellow tinge, hard, very fine to lower coarse grain size, predominately medium grain size, moderately sorted, sub rounded, sub spherical, moderate strong matrix.
2/17: 2996.80m	**SANDSTONE:** 100% white with slight yellow tinge, hard, very fine to upper coarse grain size, predominately upper medium grain size, moderately sorted, sub rounded, sub spherical, moderately strong matrix.
2/18: 2997.80m	**SANDSTONE:** 100% white with slight orange tinge and dark laminae, hard lower fine to upper medium grain size predominately lower medium grain size, well sorted, sub angular and sub spherical grains. Sporadic, thin, argillaceous/micaceous laminae. Strong matrix, trace lithic fragments.
2/19: 2999.20m	**SANDSTONE:** 100% white with slight brownish tinge, hard, very fine to upper coarse grain size, predominately mediumgrain size, poorly sorted, sub angular and sub spherical, moderately strong matrix, sparse lithic fragments.
2/20: 3001.20m	**SANDSTONE:** 100% white with slight yellow tinge, hard, lower fine to pebble-sized grains, very poorly sorted, sub rounded, moderately strong matrix, 2% visual intergranular porosity.
2/21: 3000.20m	**SANDSTONE:** 100% white with yellow/brownish tinge, hard, lower fine grain to pebble-sized grains, very poorly sorted, sub angular and sub spherical, moderately strong matrix.
2/22: 3002.10m	**SANDSTONE:** 100% white with light brownish tinge, hard, massive coarse to very coarse grained, moderately sorted, sub angular, moderately strong matrix, little visual intergranular porosity.

2/23: 3003.80m	**SANDSTONE:** 100% white with orange tinge, hard, lower medium grain size, well sorted, moderately strong matrix. Widely spaced, thin micaceous laminae.
2/24: 3006.70m	**SANDSTONE:** 100% white, hard, lower medium to lower very coarse, predominately medium grain size, moderately sorted, sub angular, sub spherical, moderately strong matrix.
3/1: 3009.00m	**SANDSTONE:** 100% very light brown with slight orange tinge, hard, lower medium to lower very coarse grain size, predominately upper medium grain size, moderately sorted, sub rounded, sub spherical, moderately strong matrix, 2% visual intergranular porosity.
3/2: 3018.40m	**MATRIX SUPPORTED PEBBLE CONGLOMERATE:** 100% light brown with a yellow tinge, hard, clast size from 3mm to 12mm with majority of clasts being around 5mm. Upper very fine, sandy matrix, very poor sorting, sub rounded clasts, sub spherical to sub equant clasts, predominately sub spherical quartz clasts
3/3: 3020.10m	**SANDSTONE:** 100% white with a tinge of light brown, hard, upper fine to upper medium grain size, predominately lower medium grain size. Moderately well sorted. Sub angular, sub spherical grains. Moderately strong matrix, sporadic, thin, micaceous laminae.
3/4: 3021.20m	**SANDSTONE:** 100% very light brown, hard, lower medium grain size, well sorted, sub angular, moderately strong matrix.
3/5: 3026.70m	**SANDSTONE:** 100% very light brown, lower fine to upper medium grain size, predominately upper fine grain size, sub angular, sub spherical, moderately strong matrix.
3/6: 3027.90m	**SANDSTONE:** 100% very light brown, hard, upper fine to lower medium grain size, moderately well sorted
3/9: 3414.00m	**BASALT:** 100% black, very hard, very fine grained crystals, evenly spaced phenocrysts, no visible porosity.

MSCT Photography
TREFOIL - 1

MSCT 1/1 2968.30m

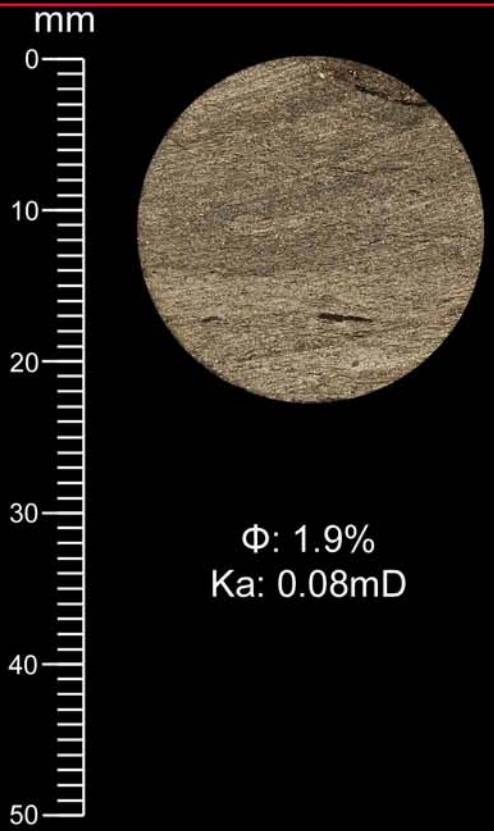
Φ: 17.5%
Ka: 413mD



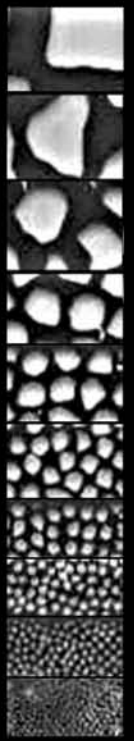
SANDSTONE: 90% white with orange/brown tinge. 10% white with grey tinge and translucent grains, hard, medium grain size, sub angular, moderate to well sorted, moderate strength matrix. Sample is cut by a thin (1mm), micaceous lamination.

MSCT Photography
TREFOIL - 1

MSCT 1/3 2989.80m



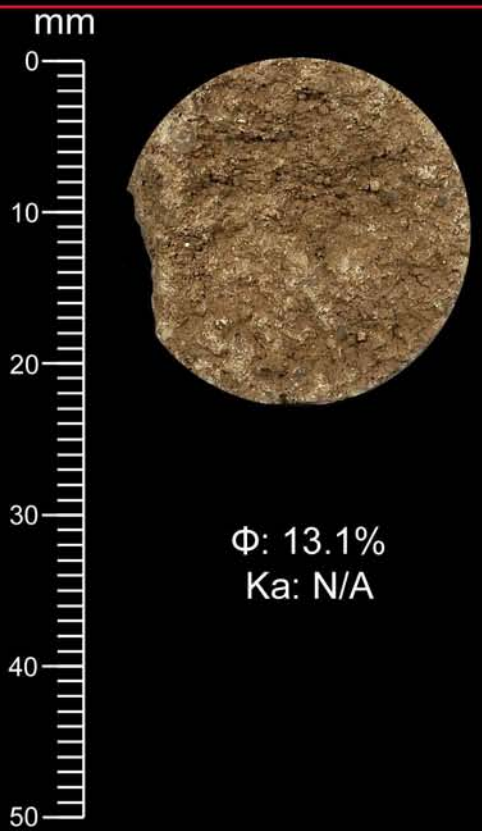
Φ: 1.9%
Ka: 0.08mD



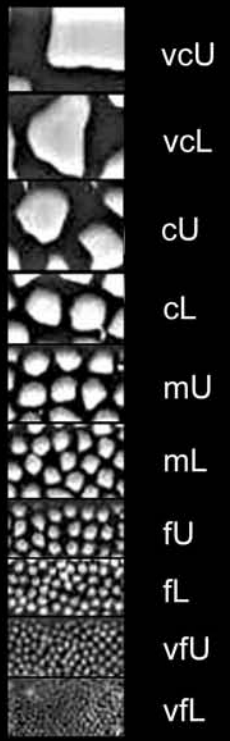
ARGILLACEOUS/MICACEOUS SANDSTONE: 100% very fine grain size, no intergranular porosity. Moderate strength argillaceous matrix, coarse muscovite and biotite mica concentrated along argillaceous laminae.

MSCT Photography
TREFOIL - 1

MSCT 1/4 2990.80m



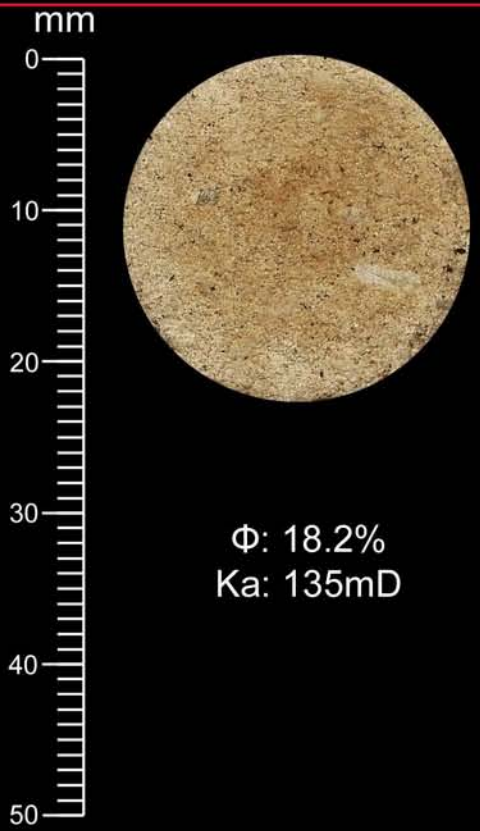
Φ: 13.1%
Ka: N/A



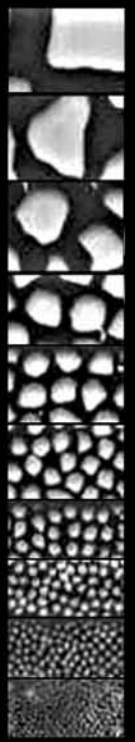
SANDSTONE: 100% white with yellow tinge, hard, upper-medium to coarse grain size, moderate sorting, rounded grains, 1% visual intergranular porosity, moderate strength matrix.

MSCT Photography
TREFOIL - 1

MSCT 1/5 2991.80m



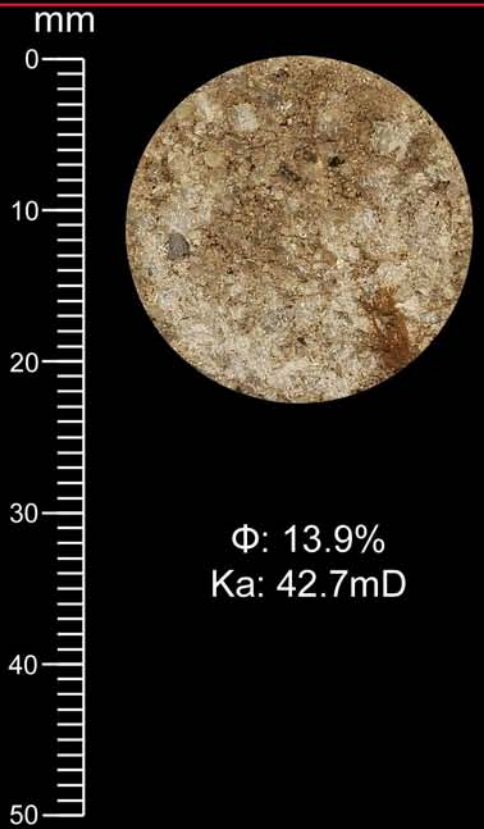
Φ: 18.2%
Ka: 135mD



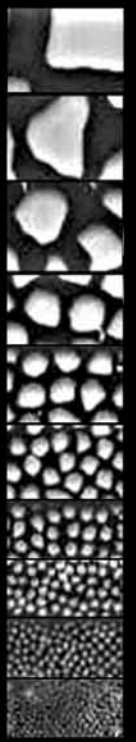
SANDSTONE: 100% white with yellow tinge, hard, upper medium to lower-very-coarse grain size, predominantly upper medium grain size, moderate to poor sorting, sub rounded grains, some lithic fragments present. 5% visual intergranular porosity, moderate strength matrix.

MSCT Photography
TREFOIL - 1

MSCT 1/6 2992.80m



Φ: 13.9%
Ka: 42.7mD

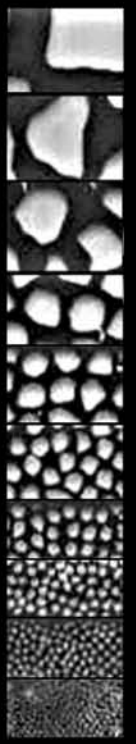


SANDSTONE: 100% white with yellow tinge, hard, upper medium to lower-very coarse grain size, predominantly upper coarse grain size, sub angular, poor sorting, some lithic fragments present. 5% visual intergranular porosity, moderate strength matrix

MSCT Photography
TREFOIL - 1

MSCT 1/7 2993.80m

Φ: 14.5%
Ka: 151mD

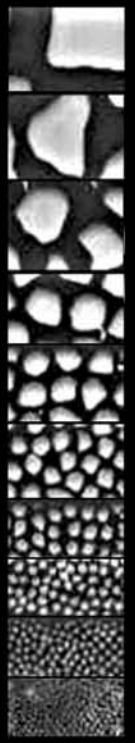


SANDSTONE: 100% white with yellow tinge, hard, upper medium to lower-very coarse grain size, predominantly lower very coarse grain size, moderate to poor sorting, sub rounded, some lithic fragments present. 5% visual intergranular porosity, moderate strength matrix.

MSCT Photography
TREFOIL - 1

MSCT 1/8 2994.80m

Φ: 7.0%
Ka: 0.39mD

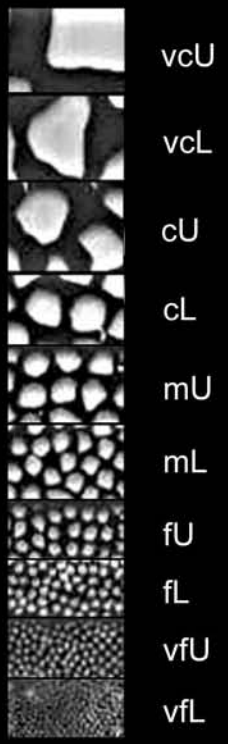


SANDSTONE: 90% white with some grayish sections, 10% dark grey siltstone laminae, hard, upper fine grain size, moderately well sorted, sub rounded grains, sporadic concentrations of mica rich sandstone which form grey coloured patches. Siltstone laminae are distinctive with interlaminated mica rich sandstone. No visual intergranular porosity.

MSCT Photography
TREFOIL - 1

MSCT 1/9 2995.80m

Φ: 12.2%
Ka: 2.69mD

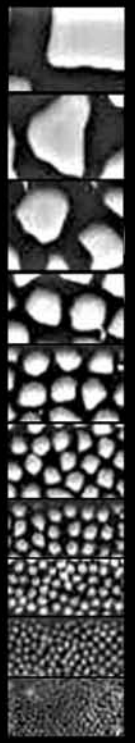


SANDSTONE: 100% yellowish/white colour, hard, upper fine to lower medium grain size, moderately to well sorted, sub rounded grain shape, matrix in low abundance but moderately strong, some trace lithic fragments, 2% visual intergranular porosity.

MSCT Photography
TREFOIL - 1

MSCT 1/10 2996.80m

Φ: 10.0%
Ka: N/A

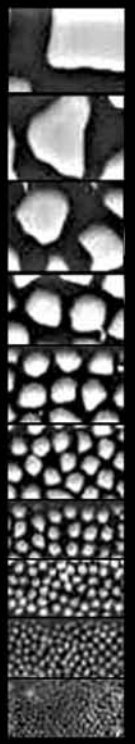


SANDSTONE: 100% yellowish/white colour, hard, upper fine to upper medium grain size, predominantly lower medium grain size, moderate to well sorting, sub angular grain shape, single, styolitic argillaceous siltstone lamination (1mm approx thickness).

MSCT Photography
TREFOIL - 1

MSCT 2/1 2968.30m

Φ: 16.9%
Ka: 336mD

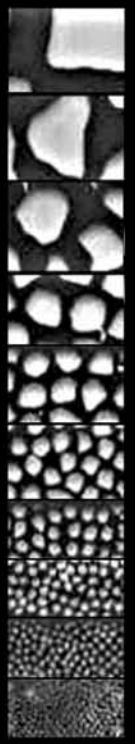


SANDSTONE: 100% white with orange tinge, translucent grains, hard, medium to lower coarse grain size, moderate to well sorted, sub angular grain shape, matrix in low abundance but strong, 2% intergranular porosity.

MSCT Photography
TREFOIL - 1

MSCT 2/2 2970.00m

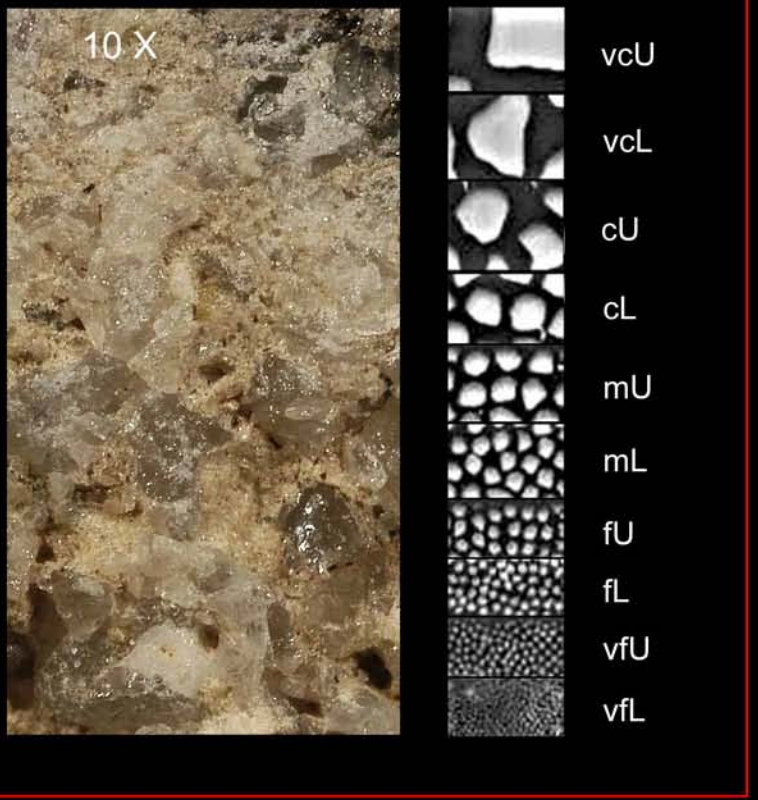
Φ: 9.6%
Ka: 0.70mD



SANDSTONE: 100% yellowish/white colour, hard, upper fine to lower medium grain size, predominantly lower medium grain size, moderate to well sorting, sub angular grain shape, argillaceous laminae (a 1mm approximate thickness).

MSCT Photography
TREFOIL - 1

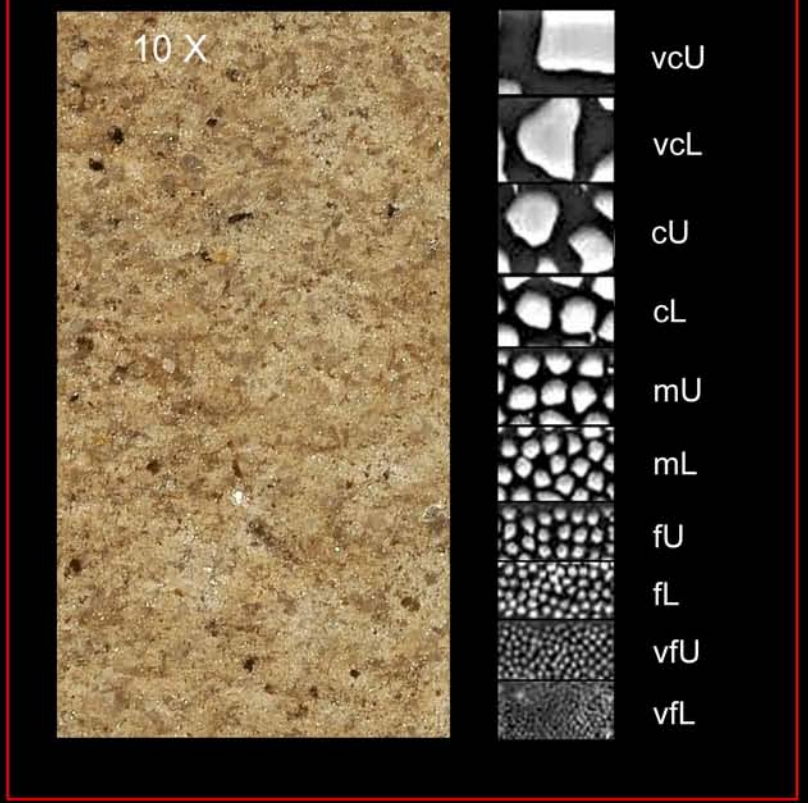
MSCT 2/3 2971.00m



SANDSTONE: 100% white with yellowish tinge, translucent grains, hard to very hard, coarse to upper very coarse grain size, moderate to poor sorting sub rounded grains, strong matrix, some lithic fragments present, single, thin argillaceous lamination. 10% visual intergranular porosity.

MSCT Photography
TREFOIL - 1

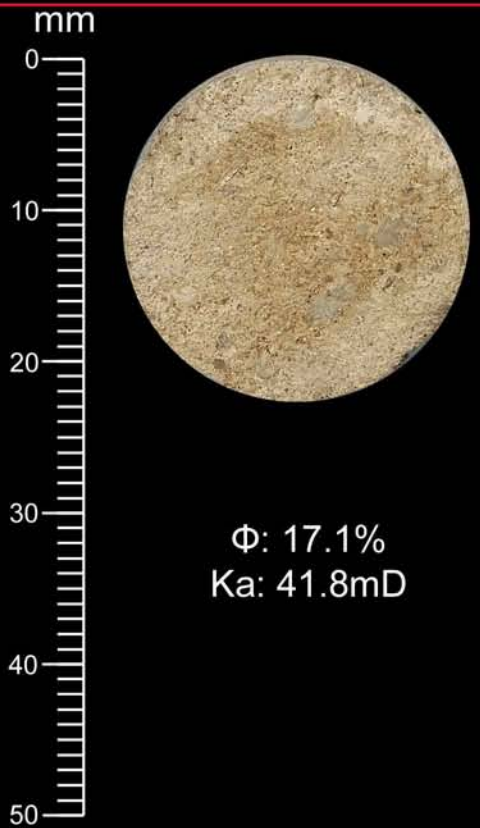
MSCT 2/4 2977.70m



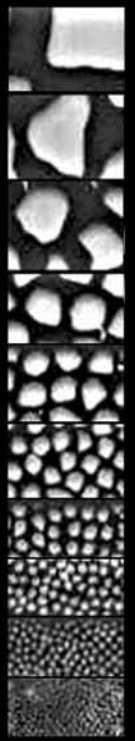
SANDSTONE: 100% very light brown with slight orange tinge, moderately hard, lower fine to upper fine grain size, well sorted, sub rounded, some fine lithic fragments present.

MSCT Photography
TREFOIL - 1

MSCT 2/5 2980.00m



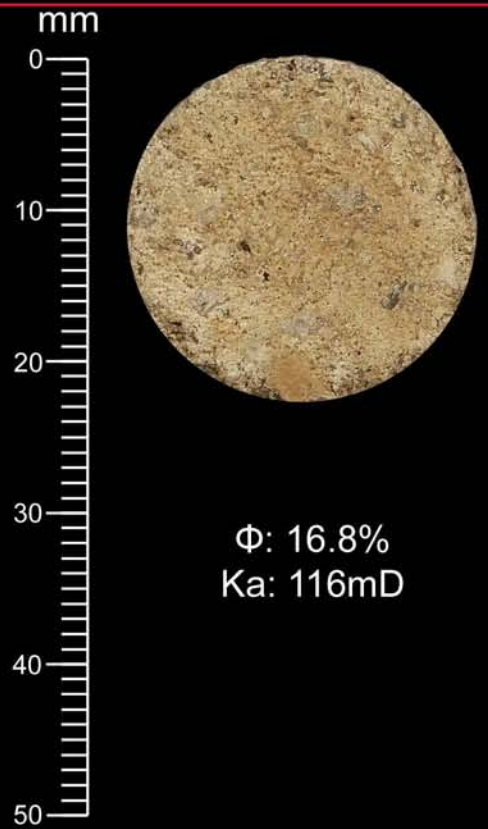
Φ: 17.1%
Ka: 41.8mD



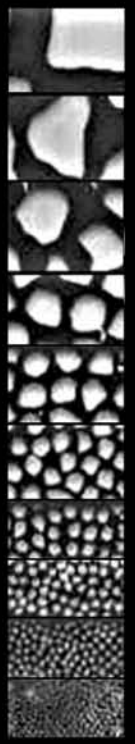
SANDSTONE: 90% very light brown with slight orange tinge. 10% very light brown, moderately hard, lower fine to lower very coarse grain size. Predominantly medium grain size, poorly sorted, sub rounded, strong matrix. 5% intergranular porosity.

MSCT Photography
TREFOIL - 1

MSCT 2/6 2981.00m



Φ: 16.8%
Ka: 116mD

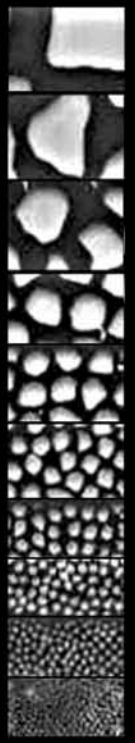


SANDSTONE: 100% very light brown with slight orange tinge, upper fine to upper very coarse grain size, predominantly medium grain size, very poorly sorted, sub angular grain shape, common matrix present, lithic fragments present.

MSCT Photography
TREFOIL - 1

MSCT 2/7 2982.00m

Φ: 15.4%
Ka: 356mD

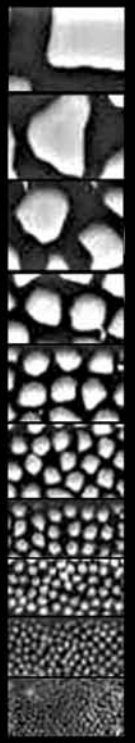


SANDSTONE: 100% very light brown with orange tinge, very hard, upper fine to very coarse upper grain size, predominantly medium grain size, poorly sorted, sub angular grain, strong matrix. 10% slightly argillaceous sandstone.

MSCT Photography
TREFOIL - 1

MSCT 2/8 2986.00m

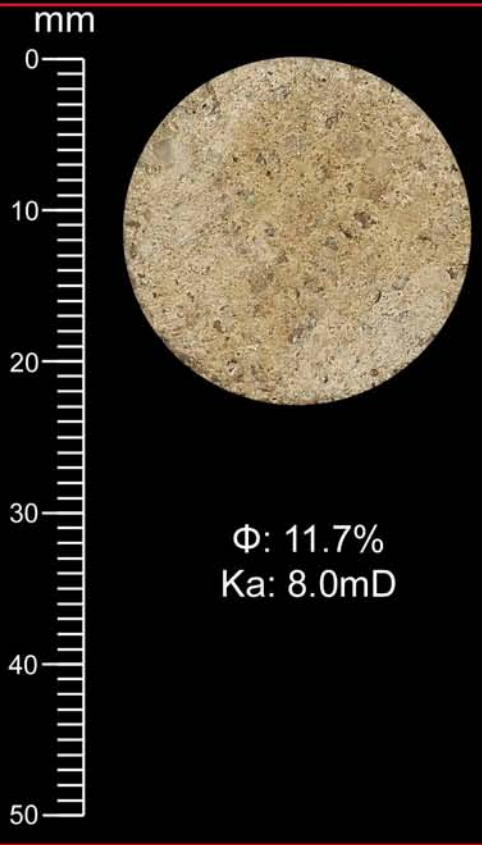
Φ: 16.0%
Ka: 32.6mD



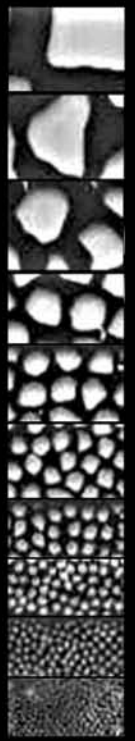
SANDSTONE: 100% white with slight yellow/grey tinge, hard, upper fine to upper very coarse grained, predominately upper medium grain size. Very poorly sorted, sub angular, strong matrix, some lithic fragments present.

MSCT Photography
TREFOIL - 1

MSCT 2/9 2987.80m



Φ: 11.7%
Ka: 8.0mD

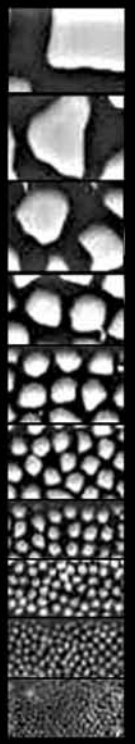


SANDSTONE: 100% white with slight grey tinge, hard, lower medium to upper coarse grain size, predominantly upper medium grain size, moderate to poorly sorted, sub rounded, strong matrix, some lithic fragments present.

MSCT Photography
TREFOIL - 1

MSCT 2/10 2988.80m

Φ: 16.2%
Ka: 145mD

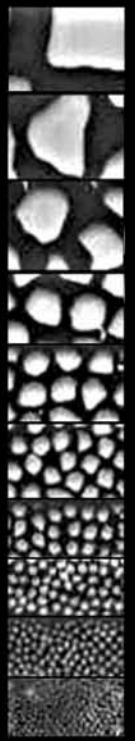


SANDSTONE: 100% very light brown with slight orange tinge, hard, lower medium to upper coarse grain size, predominantly lower coarse grain size, moderately sorted, sub angular, strong matrix, some lithic fragments present.

MSCT Photography
TREFOIL - 1

MSCT 2/11 2990.80m

Φ: 12.5%
Ka: 3.00mD

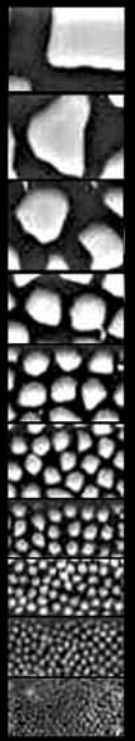


SANDSTONE: 100% very light grey, very hard, upper medium to lower very coarse grain size, predominately coarse grain size, moderately to poorly sorted, sub angular, scarce lithic fragments, strong matrix.

MSCT Photography
TREFOIL - 1

MSCT 2/12 2991.80m

Φ: 13.1%
Ka: 32.4mD

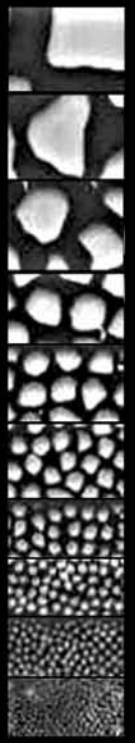


SANDSTONE: 100% very light brown with slight yellow tinge, very hard, upper medium to lower very coarse grain size, moderately sorted, sub angular, strong matrix, 5% visual intergranular porosity.

MSCT Photography
TREFOIL - 1

MSCT 2/13 2992.80m

Φ: 13.8%
Ka: 392mD

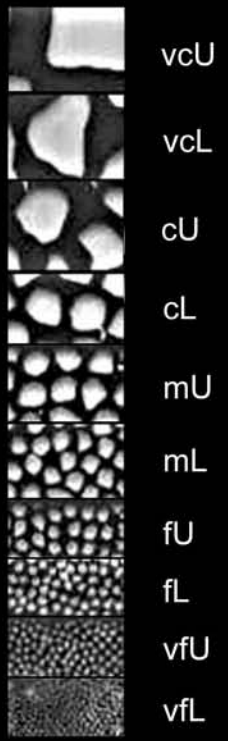


SANDSTONE: 100% light brown with slight yellow tinge, very hard, upper fine to pebble-sized grains, predominantly medium grain size, very poorly sorted, sub angular, sub spherical grains, very fine grain supporting matrix, moderately strong matrix, 2% intergranular porosity.

MSCT Photography
TREFOIL - 1

MSCT 2/14 2993.80m

Φ: 13.0%
Ka: 87.3mD

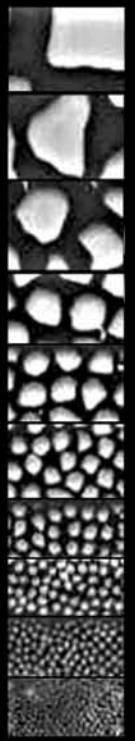


SANDSTONE: 100% very light brown with slight yellow tinge, hard, upper fine to granule-sized grains, predominately very coarse grain size, poorly sorted, sub angular, strong matrix, sparse lithic fragments present.

MSCT Photography
TREFOIL - 1

MSCT 2/15 2994.80m

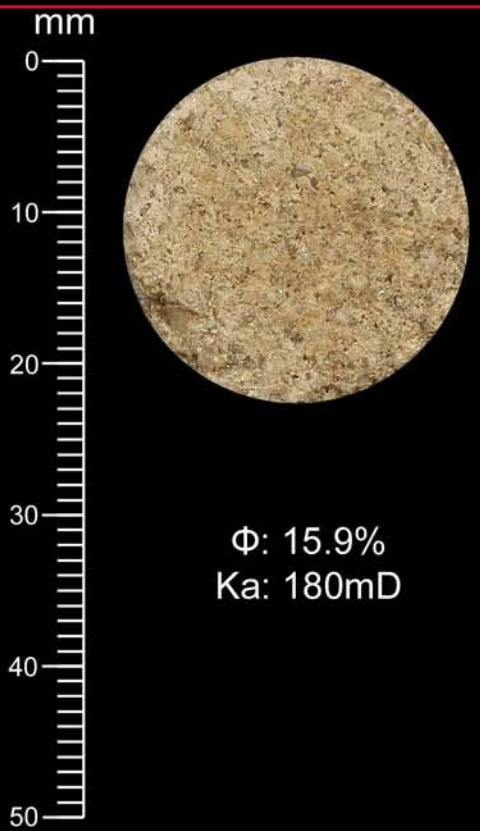
Φ: 14.1%
Ka: 53.8mD



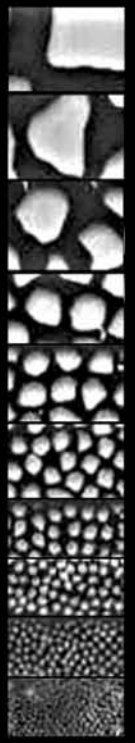
SANDSTONE: 100% very light brown with slight yellow tinge, hard, very fine grain size to very coarse grain size, predominately medium grain size, poorly sorted, sub angular, moderately strong matrix.

MSCT Photography
TREFOIL - 1

MSCT 2/16 2995.80m



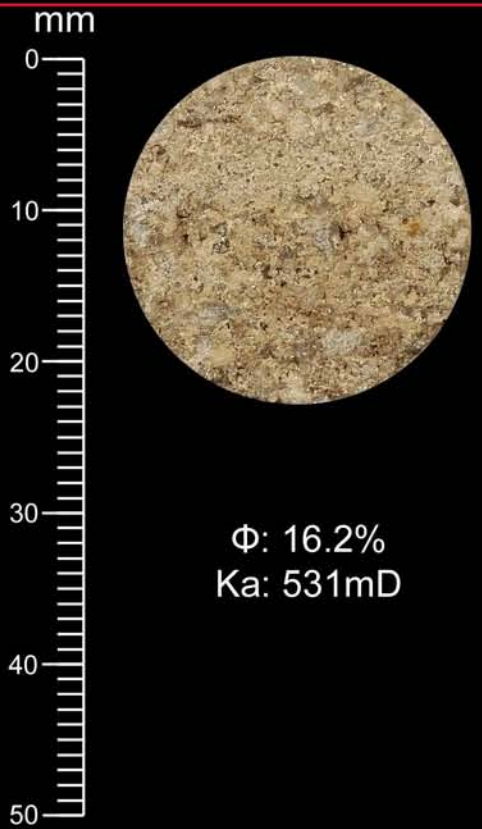
Φ: 15.9%
Ka: 180mD



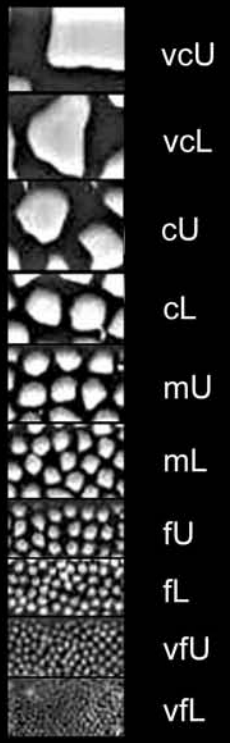
SANDSTONE: 100% very light brown, with slight yellow tinge, hard, very fine to lower coarse grain size, predominately medium grain size, moderately sorted, sub rounded, sub spherical, moderate strong matrix.

MSCT Photography
TREFOIL - 1

MSCT 2/17 2996.80m



Φ: 16.2%
Ka: 531mD

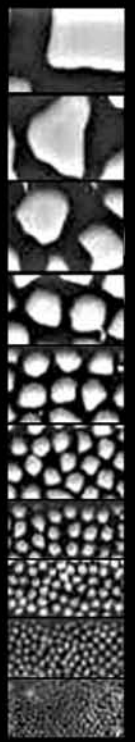


SANDSTONE: 100% white with slight yellow tinge, hard, very fine to upper coarse grain size, predominately upper medium grain size, moderately sorted, sub rounded, sub spherical, moderately strong matrix.

MSCT Photography
TREFOIL - 1

MSCT 2/18 2997.80m

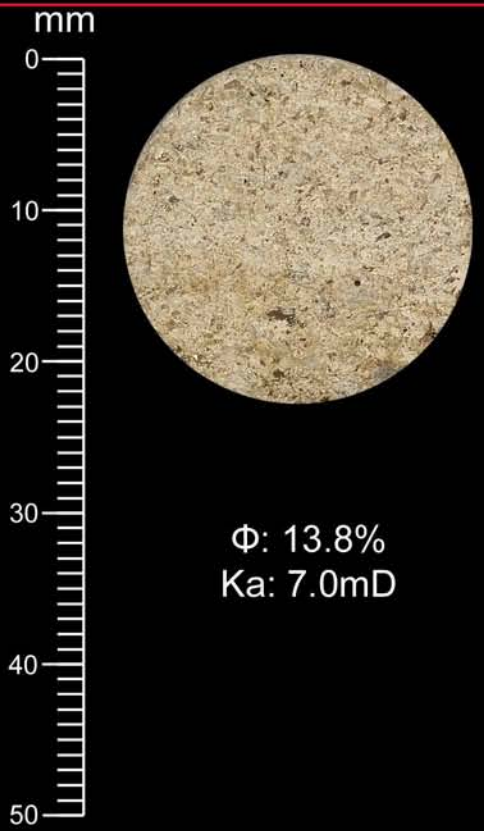
Φ: 9.1%
Ka: 2.15mD



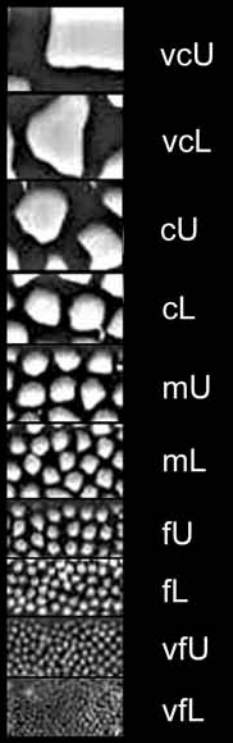
SANDSTONE: 100% white with slight orange tinge and dark laminae, hard lower fine to upper medium grain size predominately lower medium grain size, well sorted, sub angular and sub spherical grains. Sporadic, thin, argillaceous/micaceous laminae. Strong matrix, trace lithic fragments.

MSCT Photography
TREFOIL - 1

MSCT 2/19 2999.20m



Φ: 13.8%
Ka: 7.0mD

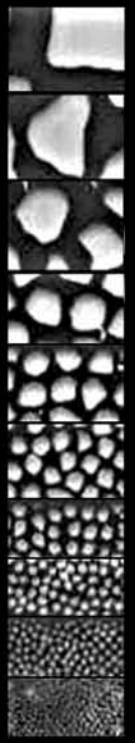


SANDSTONE: 100% white with slight brownish tinge, hard, very fine to upper coarse grain size, predominately medium grain size, poorly sorted, sub angular and sub spherical, moderately strong matrix, sparse lithic fragments.

MSCT Photography
TREFOIL - 1

MSCT 2/20 3001.20m

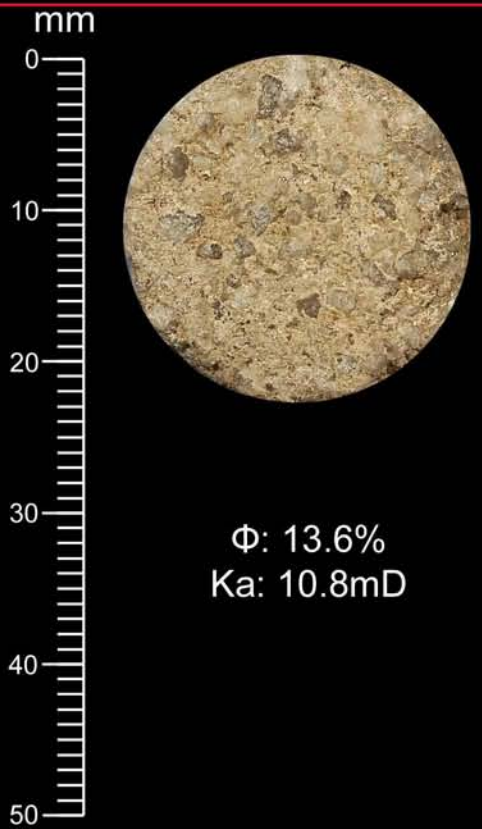
Φ: 12.5%
Ka: 30.3mD



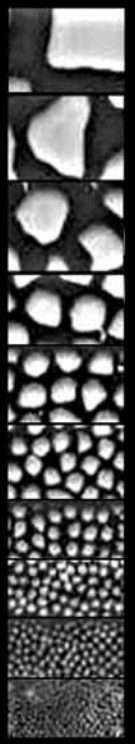
SANDSTONE: 100% white with slight yellow tinge, hard, lower fine to pebble-sized grains, very poorly sorted, sub rounded, moderately strong matrix, 2% visual intergranular porosity.

MSCT Photography
TREFOIL - 1

MSCT 2/21 3000.20m



Φ: 13.6%
Ka: 10.8mD

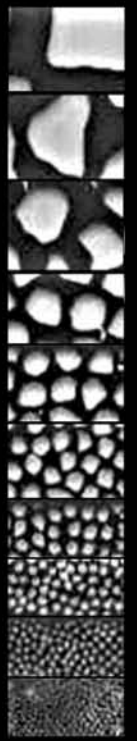


SANDSTONE: 100% white with yellow/brownish tinge, hard, lower fine grain to pebble-sized grains, very poorly sorted, sub angular and sub spherical, moderately strong matrix.

MSCT Photography
TREFOIL - 1

MSCT 2/22 3002.10m

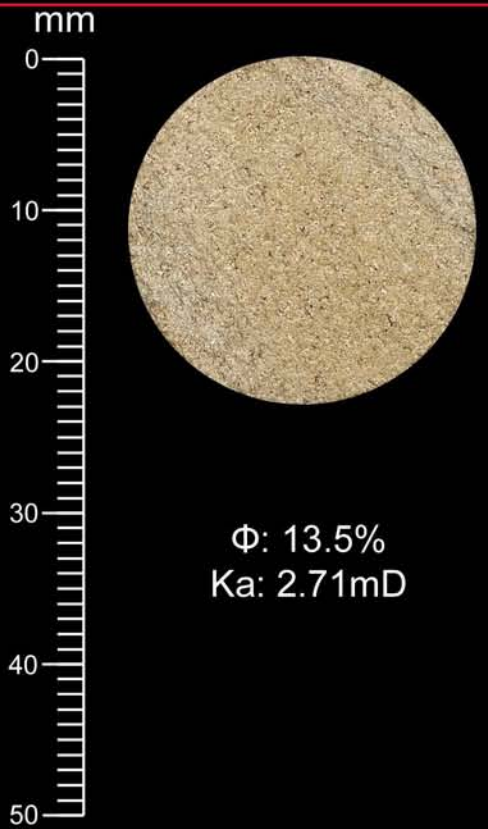
Φ: 14.3%
Ka: 59.1mD



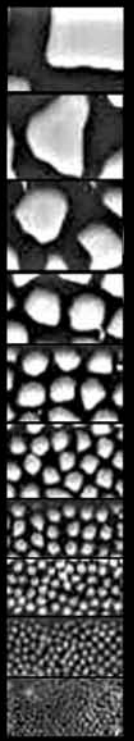
SANDSTONE: 100% white with light brownish tinge, hard, massive coarse to very coarse grained, moderately sorted, sub angular, moderately strong matrix, little visual intergranular porosity.

MSCT Photography
TREFOIL - 1

MSCT 2/23 3003.80m



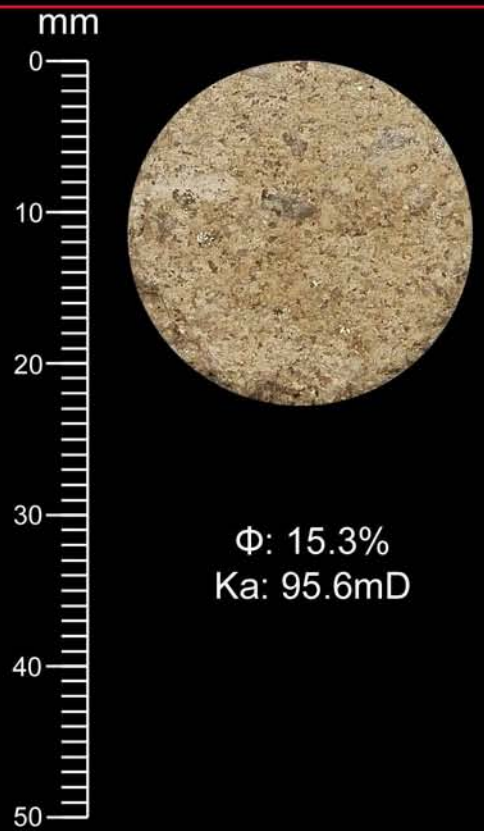
Φ: 13.5%
Ka: 2.71mD



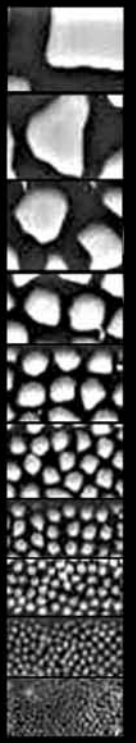
SANDSTONE: 100% white with orange tinge, hard, lower medium grain size, well sorted, moderately strong matrix. Widely spaced, thin micaceous laminae.

MSCT Photography
TREFOIL - 1

MSCT 2/24 3006.70m



Φ: 15.3%
Ka: 95.6mD

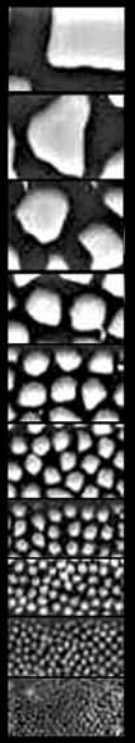


SANDSTONE: 100% white, hard, lower medium to lower very coarse, predominately medium grain size, moderately sorted, sub angular, sub spherical, moderately strong matrix.

MSCT Photography
TREFOIL - 1

MSCT 3/1 3009.00m

Φ: 14.8%
Ka: 34.6mD

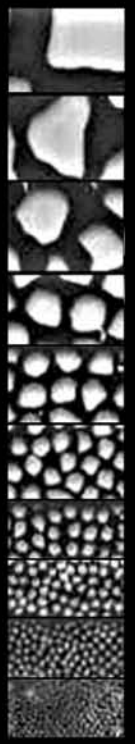


SANDSTONE: 100% very light brown with slight orange tinge, hard, lower medium to lower very coarse grain size, predominately upper medium grain size, moderately sorted, sub rounded, sub spherical, moderately strong matrix, 2% visual intergranular porosity.

MSCT Photography
TREFOIL - 1

MSCT 3/2 3018.40m

Φ: 9.3%
Ka: 1.10mD

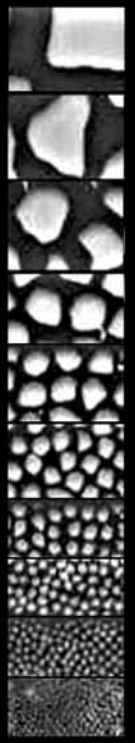


MATRIX SUPPORTED PEBBLE CONGLOMERATE: 100% light brown with a yellow tinge, hard, clast size from 3mm to 12mm with majority of clasts being around 5mm. Upper very fine, sandy matrix, very poor sorting, sub rounded clasts, sub spherical to sub equant clasts, predominately sub spherical quartz clasts

MSCT Photography
TREFOIL - 1

MSCT 3/3 3020.10m

Φ: 10.7%
Ka: 8.9mD

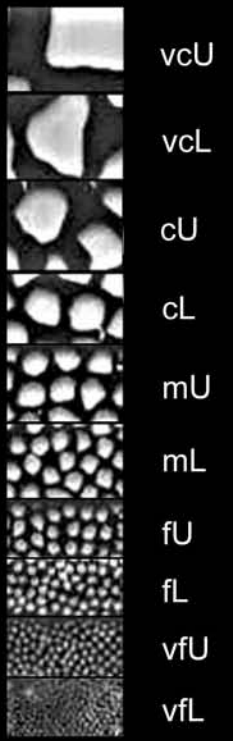


SANDSTONE: 100% white with a tinge of light brown, hard, upper fine to upper medium grain size, predominately lower medium grain size. Moderately well sorted. Sub angular, sub spherical grains. Moderately strong matrix, sporadic, thin, micaceous laminae.

MSCT Photography
TREFOIL - 1

MSCT 3/4 3021.20m

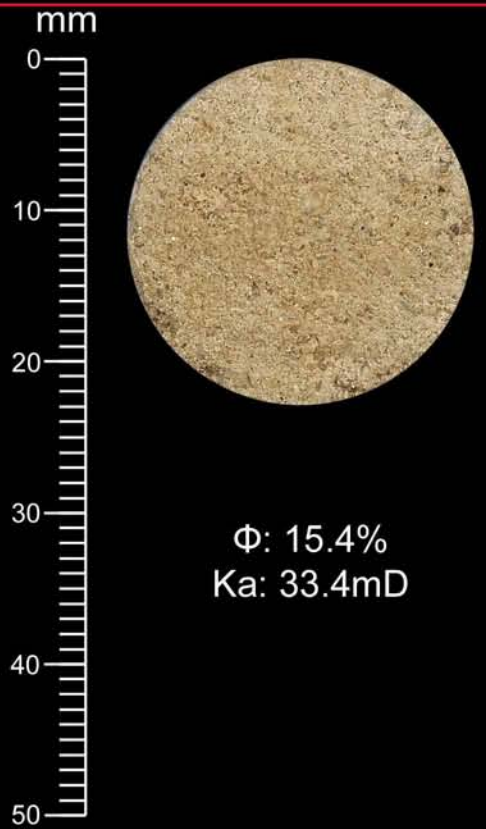
Φ: 14.4%
Ka: 36.7mD



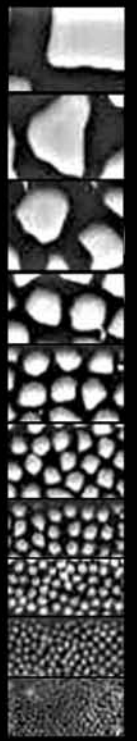
SANDSTONE: 100% very light brown, hard, lower medium grain size, well sorted, sub angular, moderately strong matrix.

MSCT Photography
TREFOIL - 1

MSCT 3/5 3026.70m



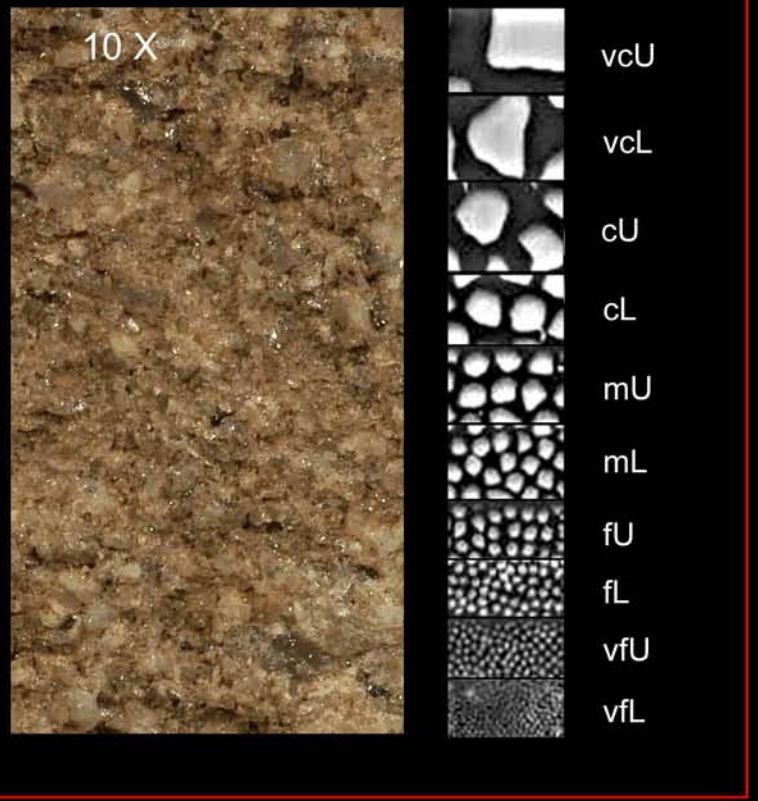
Φ: 15.4%
Ka: 33.4mD



SANDSTONE: 100% very light brown, lower fine to upper medium grain size, predominately upper fine grain size, sub angular, sub spherical, moderately strong matrix.

MSCT Photography
TREFOIL - 1

MSCT 3/6 3027.90m

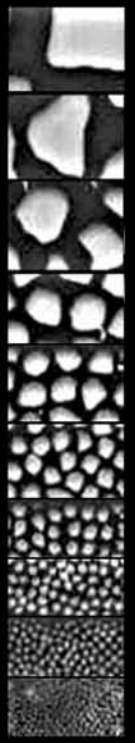


SANDSTONE: 100% very light brown, hard, upper fine to lower medium grain size, moderately well sorted

MSCT Photography
TREFOIL - 1

MSCT 3/9 3414.00m

Φ: 1.0%
Ka: N/A



BASALT: 100% black, very hard, very fine grained crystals, evenly spaced phenocrysts, no visible porosity.

APPENDIX 3: CONVENTIONAL CORE CHIP DESCRIPTIONS

Core #1: EVCM P5 Sand
Depth Interval Cored: 2735m – 2742.25m MDRT
Cut 8.2m recovered 7.3m (89%)

Depth mMDRT	Lithology Description
2735	SANDSTONE, very pale brown, white brown, white to clear, opaque coloured, friable, moderately hard, blocky fracture, CLASTIC GRAINS: 40% very fine sand, 60% fine sand, well sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, POROSITY: inter-granular, 15%. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow, moderately fast even direct cut; trace dim white crush cut; thin dull yellow residue
2736	SANDSTONE, very pale brown, white brown, translucent coloured, friable, moderately hard, blocky fracture, CLASTIC GRAINS: 40% very fine sand, 60% fine sand, very well sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, POROSITY: inter-granular, 15%. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow, moderately fast even direct cut; trace dim white crush cut; thin dull yellow residue
2737	SANDSTONE, very pale brown, white brown, translucent coloured, moderately hard, blocky fracture, CLASTIC GRAINS: 40% very fine sand, 60% fine sand, very well sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/moderate, POROSITY: inter-granular, 15%. HYDROCARBON FLUORESCENCE: 50% moderately bright yellow, moderately fast even direct cut; trace dim white crush cut; thin dull yellow residue
2738	SANDSTONE, translucent, light brown & yellow brown coloured, hard, blocky fracture, CLASTIC GRAINS: 70% very fine sand, 30% fine sand, very well sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/strong, POROSITY: inter-granular, 10%. HYDROCARBON FLUORESCENCE: 40% moderately bright yellow, moderately fast even direct cut; trace dim white crush cut; thin dull yellow residue
2739	SANDSTONE, translucent, light brown & yellow brown coloured, moderately hard-hard, blocky fracture, CLASTIC GRAINS: 40% very fine sand, 60% fine sand, trace medium sand, well sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/strong, POROSITY: inter-granular, 10%. HYDROCARBON FLUORESCENCE: 20% moderately bright yellow, slow patchy direct cut; trace dim white crush cut; thin dull yellow residue
2740	SANDSTONE, translucent, light brown & yellow brown coloured, moderately hard-hard, blocky fracture, CLASTIC GRAINS: 40% very fine sand, 60% fine sand, trace medium sand, well sorted, angular, sub-spherical, CEMENTS/STRENGTHS: silica/very strong, POROSITY: inter-granular, 3%. HYDROCARBON FLUORESCENCE: 20% moderately bright yellow, slow patchy direct cut; trace dim white crush cut; thin dull yellow residue
2741	SILTSTONE, dark brown coloured, hard-very hard, blocky fracture, CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, trace fine sand.
2742	SILTSTONE, dark grey - dark grey brown coloured, very hard, blocky fracture, CLASTIC GRAINS: 10% clay, 90% silt, ACCESSORIES: mica 3%.

APPENDIX 4: ROUTINE CORE ANALYSIS & PHOTOS

ROUTINE CORE ANALYSIS FINAL REPORT

of

TREFOIL-1

for

ORIGIN ENERGY RESOURCES LIMITED

by

ACS LABORATORIES PTY LTD

31st January, 2005

Origin Energy Resources Limited
John Oxley Centre
339 Coronation Drive
MILTON QLD 4064

Attention: Mr Andy Hall

FINAL REPORT: 0363-02
TREFOIL-1

CLIENT REFERENCE: Purchase Order O4831

MATERIAL: 4" Diameter Whole Core

LOCALITY: Trefoil-1

WORK REQUIRED: Routine Core Analysis

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

KEVIN H. FLYNN
General Manager

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IV. **CORE PLOT**
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CHAPTER 1

INTRODUCTION

1. INTRODUCTION

This final report presents the results from a routine core analysis study performed on a core from the Trefoil-1 well. The study was undertaken as per instructions received from Origin Energy Resources Limited.

The following report includes tabular data of ambient and overburden permeability to air, helium injection porosity and grain density. Data presented graphically includes a core log plot of the above porosity, permeability and core gamma.

CHAPTER 2

STUDY AIMS

2. STUDY AIMS

The analyses were performed with the following aims:

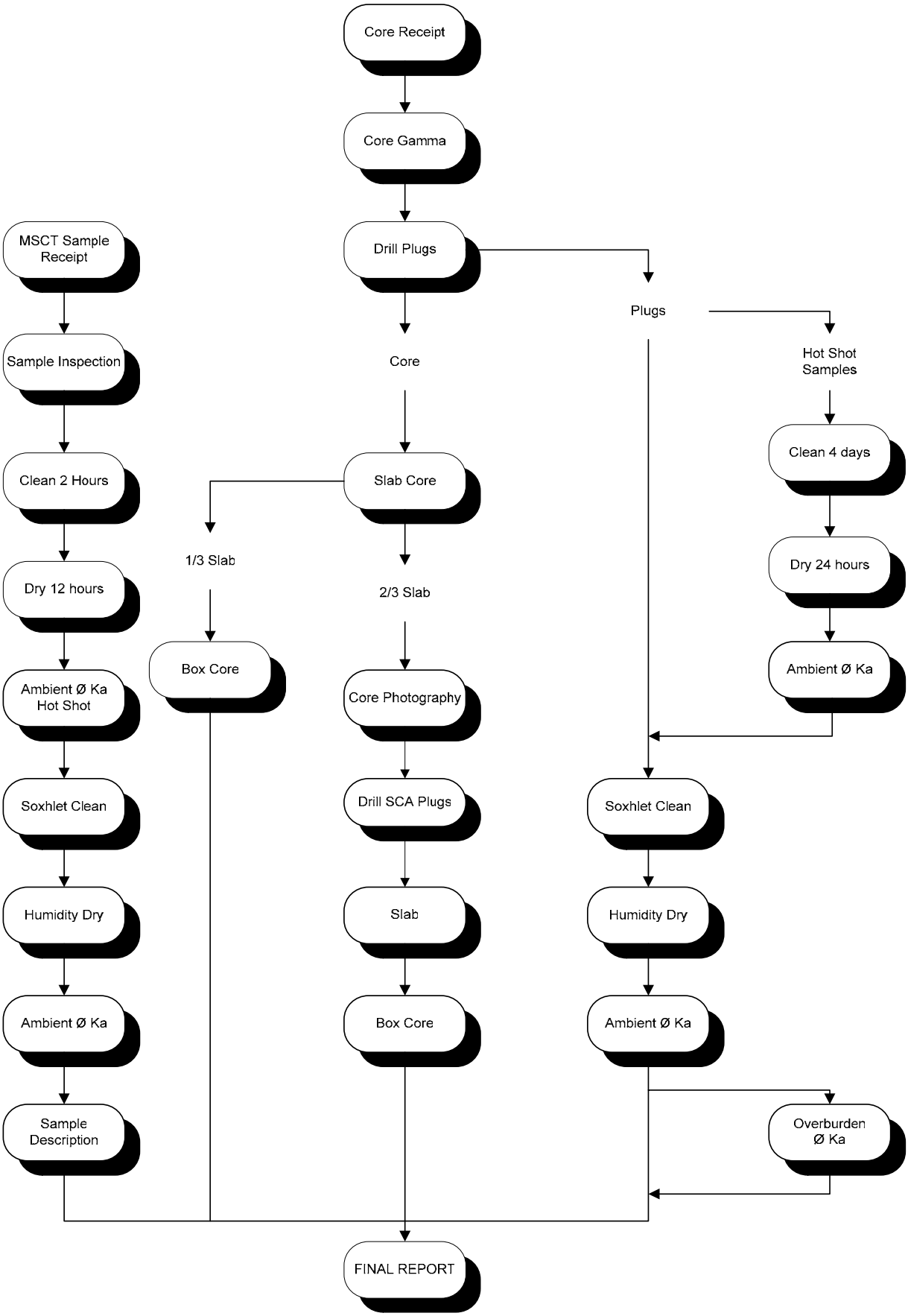
1. To provide depth correlation through the provision of a continuous core gamma log over the cored interval.

2. To provide air permeability, helium injection porosity and density data at ambient conditions.

3. To investigate the effect on porosity and permeability due to overburden stress.

4. To provide a permanent record of the core through core photography.

FLOW CHART


Core Receipt
Core Gamma
Drill Plugs
MSCT Sample Receipt
Sample Inspection
Clean 2 Hours
Dry 12 hours
Ambient Ø Ka Hot Shot
Soxhlet Clean
Humidity Dry
Ambient Ø Ka
Sample Description
Core
Slab Core
1/3 Slab
2/3 Slab
Box Core
Core Photography
Drill SCA Plugs
Slab
Box Core
Plugs
Hot Shot Samples
Clean 4 days
Dry 24 hours
Ambient Ø Ka
Soxhlet Clean
Humidity Dry
Ambient Ø Ka
Overburden Ø Ka
FINAL REPORT

CHAPTER 3

SAMPLING

3. SAMPLING

3.1 Routine Core Analysis Samples

Twenty-three 1½" diameter horizontal core plug samples were cut at approximately 30cm intervals throughout the core using brine as the bit lubricant. Six vertical plugs were cut at approximately 1m intervals. All plugs were trimmed to right cylinders and off-cuts were bagged labelled for possible future analysis.

3.2 Core Slabbing

Upon completion of plug drilling the core was slabbed longitudinally into two sections (1/3 : 2/3) using brine as the blade cooling and lubricating medium. On completion of core photography the 2/3 section of core was slabbed into two 1/3 sections.

CHAPTER 4

SAMPLE PREPARATION

4. SAMPLE PREPARATION

4.1 Soxhlet Cleaning

Cleaning was performed in a modified soxhlet system using a 3:1 Cloroform:Methanol azeotrope. Cleaning continued until tests for oil (fluorescence under UV light) and salt (silver nitrate precipitation) showed negative.

4.2 Sample Drying

The clean samples were dried to constant weight in a humidity oven at 60°C and 40% relative humidity. Once dried, the samples were cooled to room temperature in individual airtight containers.

CHAPTER 5

TEST PROCEDURES

5. TEST PROCEDURES

5.1 Continuous Core Gamma

The core was laid out according to depth markings, and a continuous core gamma trace produced by passing the core beneath a gamma radiation detector. The detector is protected from extraneous radiation by a lead tunnel. The detector signal is amplified and digitised to produce a gamma trace for comparison with the down hole log.

5.2 Porosity

The clean and dry 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 difference between the grain volume and the bulk volume is the pore volume. The porosity is calculated as the volume percentage of pore space with respect to the bulk volume.

$$P_1 V_1 = P_2 V_2$$

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

$$Vp = Vb - Vg$$

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

The porosity (and permeability) at simulated overburden stress was measured on every 3rd sample by mounting each sample individually into a thick walled rubber sleeve and then loading the assembly into a hydrostatic cell. With an 'ambient' confining stress of 400 psi applied to the sample, helium held at 100 psi reference pressure was released into the samples pore space. The new pressure is then recorded. The confining stress is then increased to the required pressure of 5000 psi, as supplied by Origin, and the pore pressure noted at equilibrium. The changes in pore pressure, together with the previously determined parameters in the ambient analyses, allow the calculation of porosity at overburden conditions, as follows.

$$\text{Overburden Porosity \%} = \frac{Vp - \Delta Vp}{Vb - \Delta Vp} \times 100\%$$

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)*

5.3 Permeability to Air

The plugs were placed into a Hassler cell (Appendix VI) 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)*

Every 3rd sample was mounted in to a hydrostatic cell with a confining pressure of 5000 psi applied and the above procedure repeated to give permeability at overburden conditions.

5.4 Apparent 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)*

5.5 Core Photography

The core photography was carried out on the 2/3 slab of core.

Photographs were taken with a digital camera in 5 metre format under white light. On completion, photographs were edited and reported on conventional photographic paper and electronically.

CHAPTER 6

SAMPLE DISTRIBUTION AND STORAGE

6. SAMPLE DISTRIBUTION AND STORAGE

The centre 1/3 slab of core is currently stored at ACS Laboratories, Brisbane facility.

One 1/3 slab of core was sent to Mineral Resources Tasmania, 30 Gordons Hill Road, Rosny Park, Tasmania 7018 on 25th January, 2005.

One 1/3 slab of core was sent to Geosciences Australia, AGSO Petroleum Data Repository, Cnr Jerrabomberra Ave & Hindmarsh Dr, Symonstan, ACT 2609 on 25th January, 2005.

All RCA samples and off-cuts are currently being stored at ACS Laboratories Pty Ltd, Brisbane.

The MSCT samples are currently stored at ACS Laboratories Pty Ltd, Brisbane. Sample 1/8 was sent to Origin on 8th February and samples 2/17, 2/21 and 3/2 are with Reservoir Solutions for petrology.

All SCA samples are currently stored at ACS Laboratories Pty Ltd, Brisbane.

Sample Number	Depth (metres)	Sample Number	Depth (metres)
S1	2735.25	S7	2737.35
S2	2738.56	S8	2737.66
S3	2735.83	S9	2737.94
S4	2736.20	S10	2738.29
S5	2736.47	S11	2738.53
S6	2736.77	S12	2738.83

APPENDIX I

AMBIENT TEST RESULTS

CORE ANALYSIS FINAL REPORT

Client	: Origin Energy Resources Limited	**Date**	: 26/11/2004
Well	: Trefoil-1	**File**	: 0363-02
Field	:	**Location**	:
Core Int	: 2735.00 - 2742.25m	**Analysts**	: kw, me

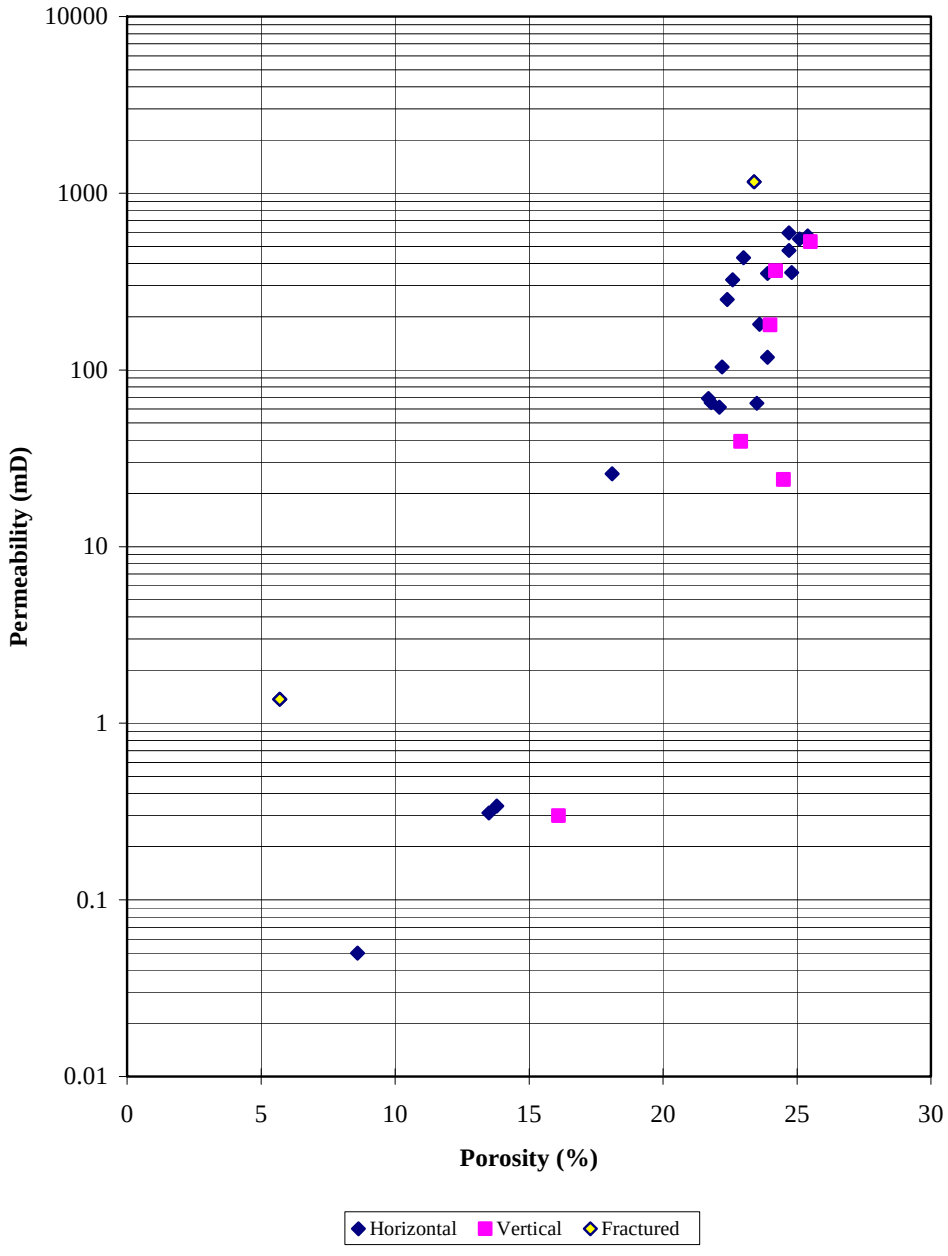
Sample Number	Depth *(m)*	Dir	Porosity Helium *(percent)*	Grain Density *(g/cm^3)*	Permeability to Air *(mD)*	Remarks
1	2735.12	H	23.0	2.65	431	
2	2735.40	H	24.7	2.66	596	
3	2735.71	H	22.6	2.65	324	
4	2735.94	H	24.7	2.66	474	
5	2736.31	H	22.4	2.66	250	
6	2736.61	H	23.9	2.65	351	
7	2736.90	H	25.1	2.66	551	
8	2737.20	H	25.4	2.65	572	
9	2737.50	H	24.8	2.66	355	
10	2737.80	H	23.6	2.66	181	
11	2738.15	H	22.2	2.67	104	
12	2738.40	H	22.1	2.69	61.6	
13	2738.71	H	21.8	2.68	65.3	
14	2738.92	H	23.9	2.67	118	
15	2739.17	H	23.5	2.68	64.7	
16	2739.59	H	21.7	2.66	68.8	
17	2739.78	H	23.4	2.70	1159	Frac
18	2740.13	H	18.1	2.73	25.8	
19	2740.43	H	13.8	2.73	0.34	
20	2740.72	H	13.5	2.68	0.31	
21	2741.04	H	8.6	2.93	0.05	
22	2741.72	H	5.7	2.67	1.37	Frac
23	2741.91	H				Failed
1V	2735.04	V	24.2	2.65	364	
2V	2736.05	V	24.0	2.66	180	
3V	2737.05	V	25.5	2.65	532	
4V	2738.05	V	22.9	2.69	39.4	
5V	2738.97	V	24.5	2.67	24.0	
6V	2740.03	V	16.1	2.73	0.30	S.P.

POROSITY vs PERMEABILITY

Client: Origin Energy Resources Limited

Well: Trefoil-1

Depth: 2735.00m to 2742.25m



APPENDIX II

AMBIENT TEST RESULTS
MSCT SAMPLES

CORE ANALYSIS FINAL REPORT

Client	: Origin Energy Resources Limited	**Date**	: 9/12/2004
Well	: Trefoil-1	**File**	: 0363-02
Field	:	**Location**	:
		Analysts	: khf, kw, me

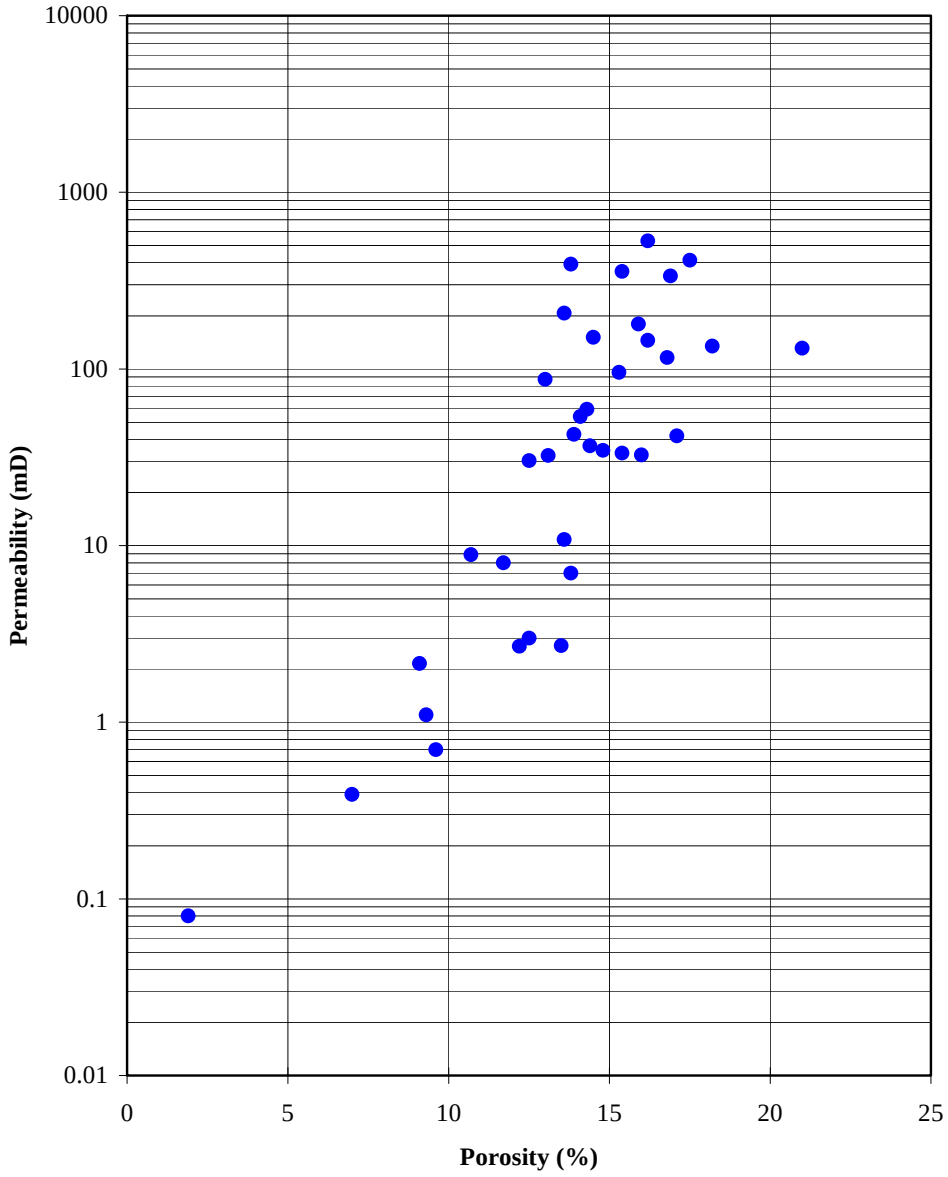
Sample Number	Depth *(m)*	Dir	Porosity Helium *(percent)*	Grain Density *(g/cm^3)*	Permeability to Air *(mD)*	Remarks
1/1	2968.30	MSCT	17.5	2.65	413	S.P.
1/3	2989.80	MSCT	1.9	2.76	0.08	
1/4	2990.80	MSCT	13.1	2.66		Irreg
1/5	2991.80	MSCT	18.2	2.67	135	
1/6	2992.80	MSCT	13.9	2.62	42.7	S.P.
1/7	2993.80	MSCT	14.5	2.64	151	
1/8	2994.80	MSCT	7.0	2.65	0.39	Lam
1/9	2995.80	MSCT	12.2	2.67	2.69	Irreg
1/10	2996.80	MSCT	10.0	2.65		Irreg
2/1	2968.30	MSCT	16.9	2.64	336	
2/2	2970.00	MSCT	9.6	2.64	0.70	
2/3	2971.00	MSCT	13.6	2.62	207	
2/4	2977.70	MSCT	21.0	2.64	131	
2/5	2980.00	MSCT	17.1	2.63	41.8	
2/6	2981.00	MSCT	16.8	2.71	116	
2/7	2982.00	MSCT	15.4	2.62	356	
2/8	2986.00	MSCT	16.0	2.62	32.6	
2/9	2987.80	MSCT	11.7	2.64	8.0	
2/10	2988.80	MSCT	16.2	2.64	145	
2/11	2990.80	MSCT	12.5	2.70	3.00	
2/12	2991.80	MSCT	13.1	2.63	32.4	
2/13	2992.80	MSCT	13.8	2.63	392	Irreg
2/14	2993.80	MSCT	13.0	2.64	87.3	
2/15	2994.80	MSCT	14.1	2.64	53.8	
2/16	2995.80	MSCT	15.9	2.63	180	
2/17	2996.80	MSCT	16.2	2.63	531	
2/18	2997.80	MSCT	9.1	2.63	2.15	

Sample Number	Depth (m)	Dir	Porosity Helium (percent)	Grain Density (g/cm^3)	Permeability to Air (mD)	Remarks
2/19	2999.20	MSCT	13.8	2.64	7.0	
2/20	3001.20	MSCT	12.5	2.63	30.3	
2/21	3000.20	MSCT	13.6	2.68	10.8	
2/22	3002.10	MSCT	14.3	2.63	59.1	
2/23	3003.80	MSCT	13.5	2.69	2.71	
2/24	3006.70	MSCT	15.3	2.62	95.6	S.P.
3/1	3009.00	MSCT	14.8	2.63	34.6	
3/2	3018.40	MSCT	9.3	2.67	1.10	
3/3	3020.10	MSCT	10.7	2.64	8.9	
3/4	3021.20	MSCT	14.4	2.64	36.7	
3/5	3026.70	MSCT	15.4	2.62	33.4	S.P.
3/6	3027.90	MSCT	16.1	2.68		Irreg
3/9	3414.00	MSCT	1.0	2.79		Irreg

POROSITY vs PERMEABILITY
MSCT

Client: Origin Energy Resources Limited

Well: Trefoil-1



APPENDIX III

OVERBURDEN TEST RESULTS

OVERBURDEN CORE ANALYSIS FINAL REPORT

Client	: Origin Energy Resources Limited	**Date**	: 26/11/2004
Well	: Trefoil-1	**File**	: 0363-02
Field	:	**Location**	:
Core Int.	: 2735.00 - 2742.25m	**Analysts**	: kw, me

Overburden Pressure 1: 5000 psi

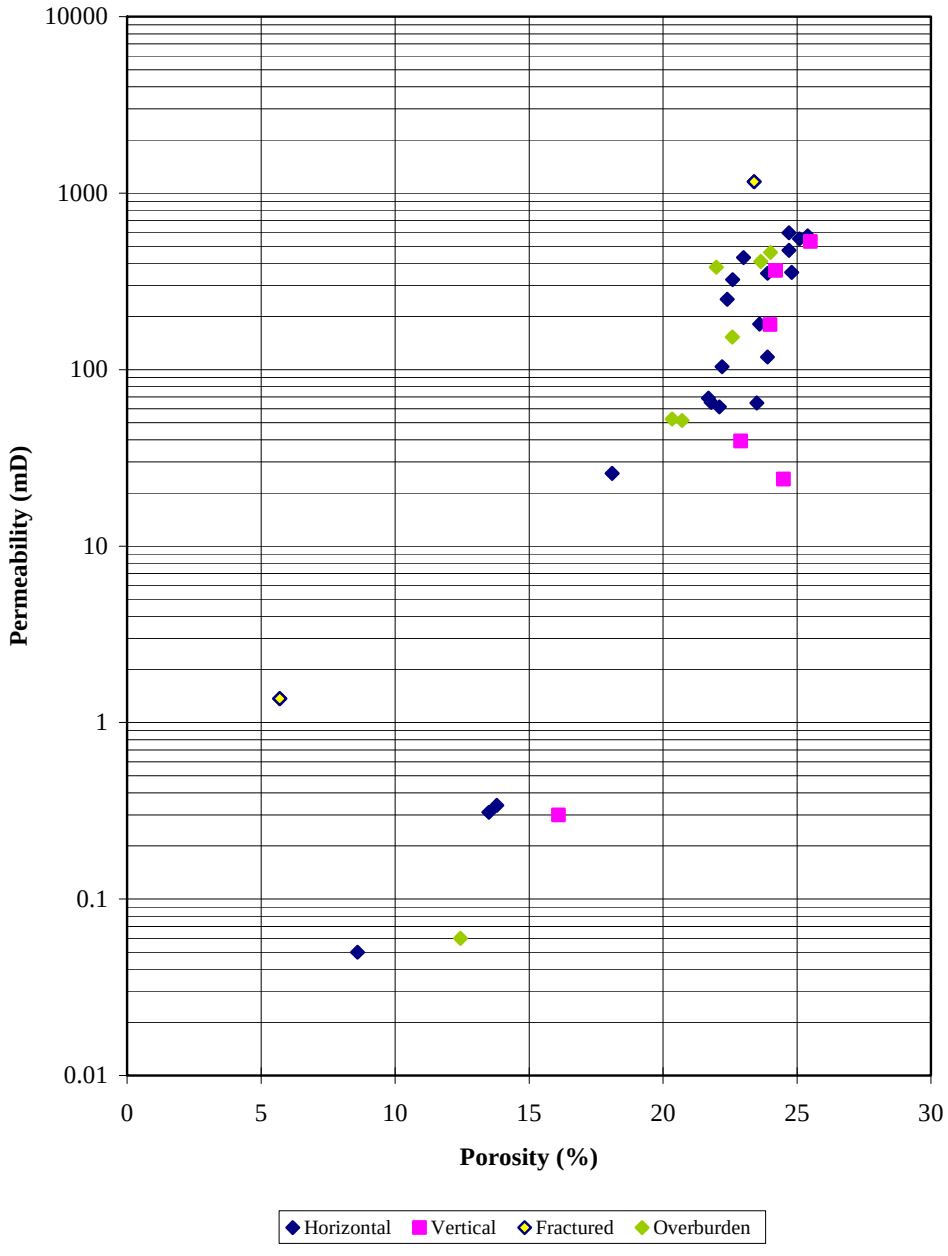
Sample Number	Depth	Dir	Ambient Porosity	OB1 Porosity	Ambient Permeability	OB1 Permeability
1	2735.12	H	23.0	22.0	431	380
4	2735.94	H	24.7	23.7	474	410
7	2736.90	H	25.1	24.0	551	461
10	2737.80	H	23.6	22.6	181	153
13	2738.71	H	21.8	20.7	65.3	51.4
16	2739.59	H	21.7	20.3	68.8	52.5
19	2740.43	H	13.8	12.4	0.34	0.06
21	2741.04	H	8.6	8.2	0.05	< 0.01

POROSITY vs PERMEABILITY

Client: Origin Energy Resources Limited

Well: Trefoil-1

Depth: 2735.00m to 2742.25m

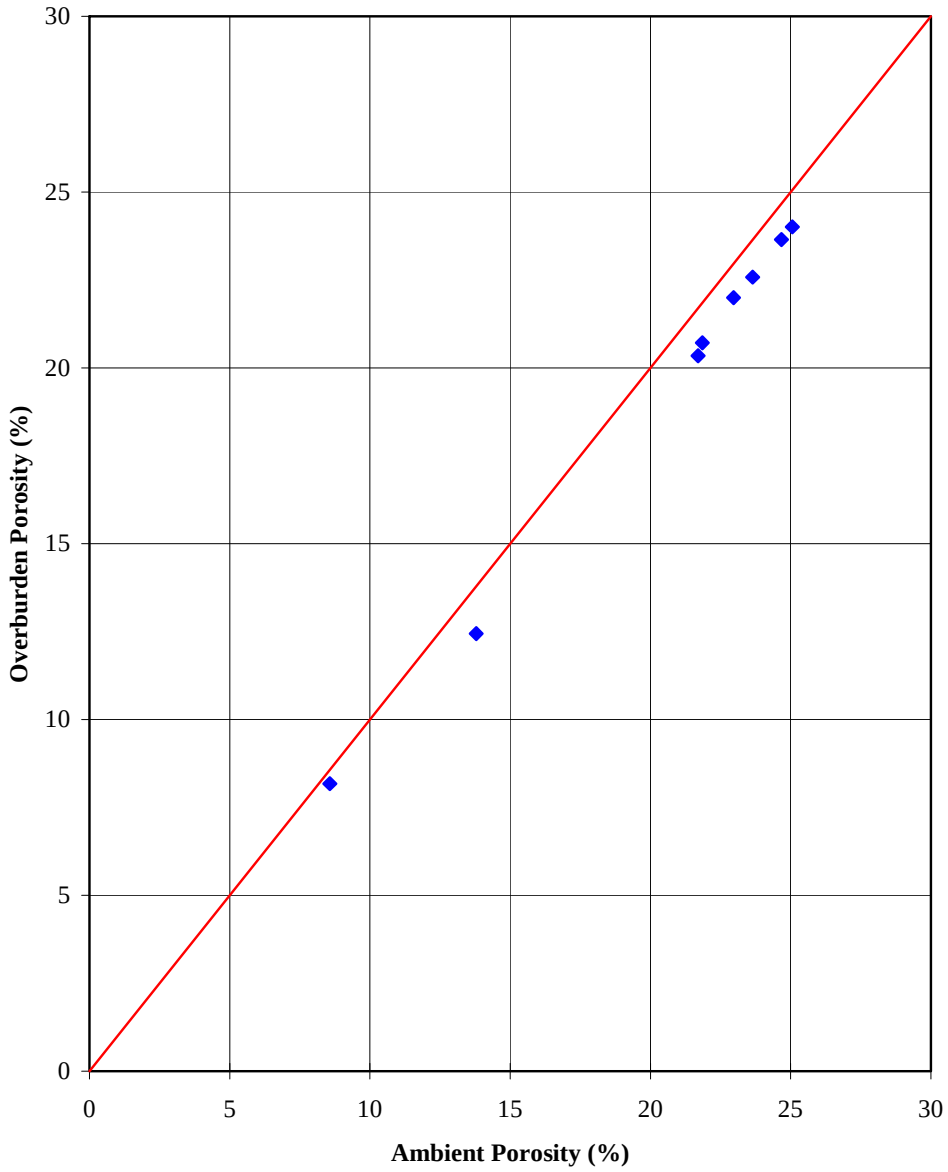


POROSITY COMPARISON

Client: Origin Energy Resources Limited

Well: Trefoil-1

Depth: 2735.00m to 2742.25m

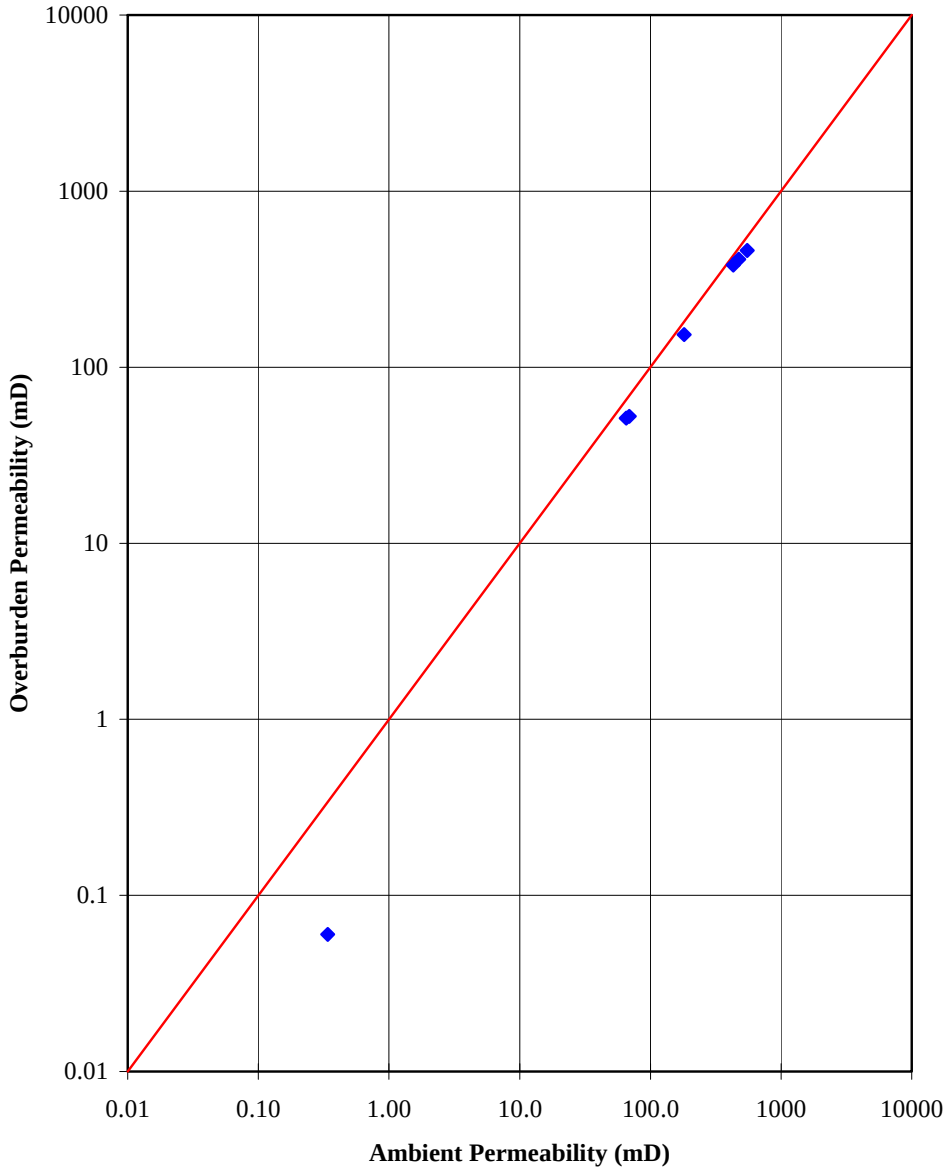


PERMEABILITY COMPARISON

Client: Origin Energy Resources Limited

Well: Trefoil-1

Depth: 2735.00m to 2742.25m



APPENDIX IV

CORE PLOT

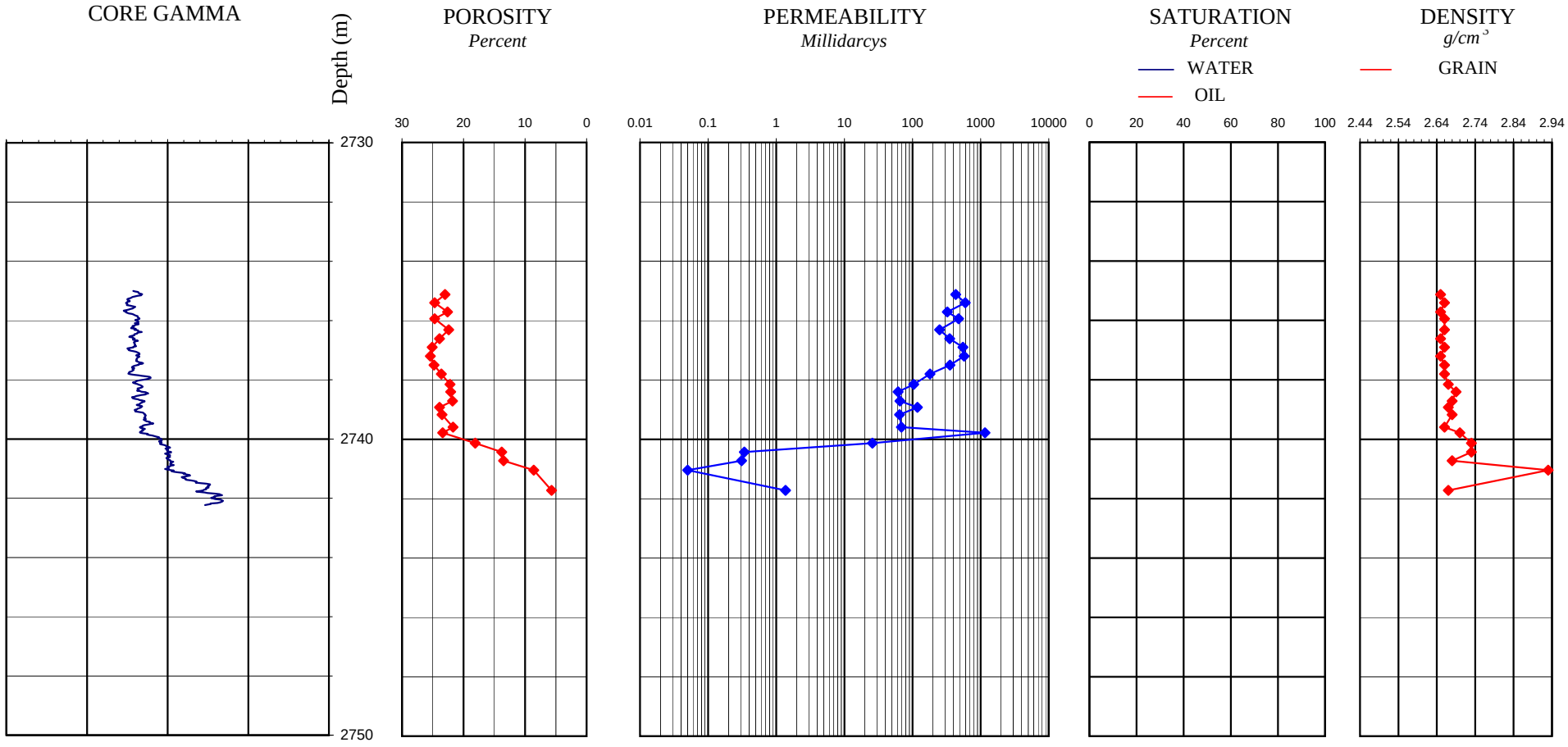
CORE PLOT

Scale 1:200

ACS LABORATORIES PTY. LTD.

Client: Origin Energy Resources Limited
Well: Trefoil-1
File No.: 0363-02

Core Int: 2735.00 - 2742.25m



APPENDIX V

SUMMARY

CORE ANALYSIS FINAL REPORT

Client	: Origin Energy Resources Limited	**Date**	: 9/12/2004
Well	: Trefoil-1	**File**	: 0363-02
Field	:	**Location**	:
		Analysts	: khf, kw, me

Sample Number	Depth *(m)*	Dir	Porosity Helium *(percent)*	Grain Density *(g/cm^3)*	Permeability to Air *(mD)*	Remarks
1V	2735.04	V	24.2	2.65	364	
1	2735.12	H	23.0	2.65	431	
2	2735.40	H	24.7	2.66	596	
3	2735.71	H	22.6	2.65	324	
4	2735.94	H	24.7	2.66	474	
2V	2736.05	V	24.0	2.66	180	
5	2736.31	H	22.4	2.66	250	
6	2736.61	H	23.9	2.65	351	
7	2736.90	H	25.1	2.66	551	
3V	2737.05	V	25.5	2.65	532	
8	2737.20	H	25.4	2.65	572	
9	2737.50	H	24.8	2.66	355	
10	2737.80	H	23.6	2.66	181	
4V	2738.05	V	22.9	2.69	39.4	
11	2738.15	H	22.2	2.67	104	
12	2738.40	H	22.1	2.69	61.6	
13	2738.71	H	21.8	2.68	65.3	
14	2738.92	H	23.9	2.67	118	
5V	2738.97	V	24.5	2.67	24.0	
15	2739.17	H	23.5	2.68	64.7	
16	2739.59	H	21.7	2.66	68.8	
17	2739.78	H	23.4	2.70	1159	Frac
6V	2740.03	V	16.1	2.73	0.30	S.P.
18	2740.13	H	18.1	2.73	25.8	
19	2740.43	H	13.8	2.73	0.34	

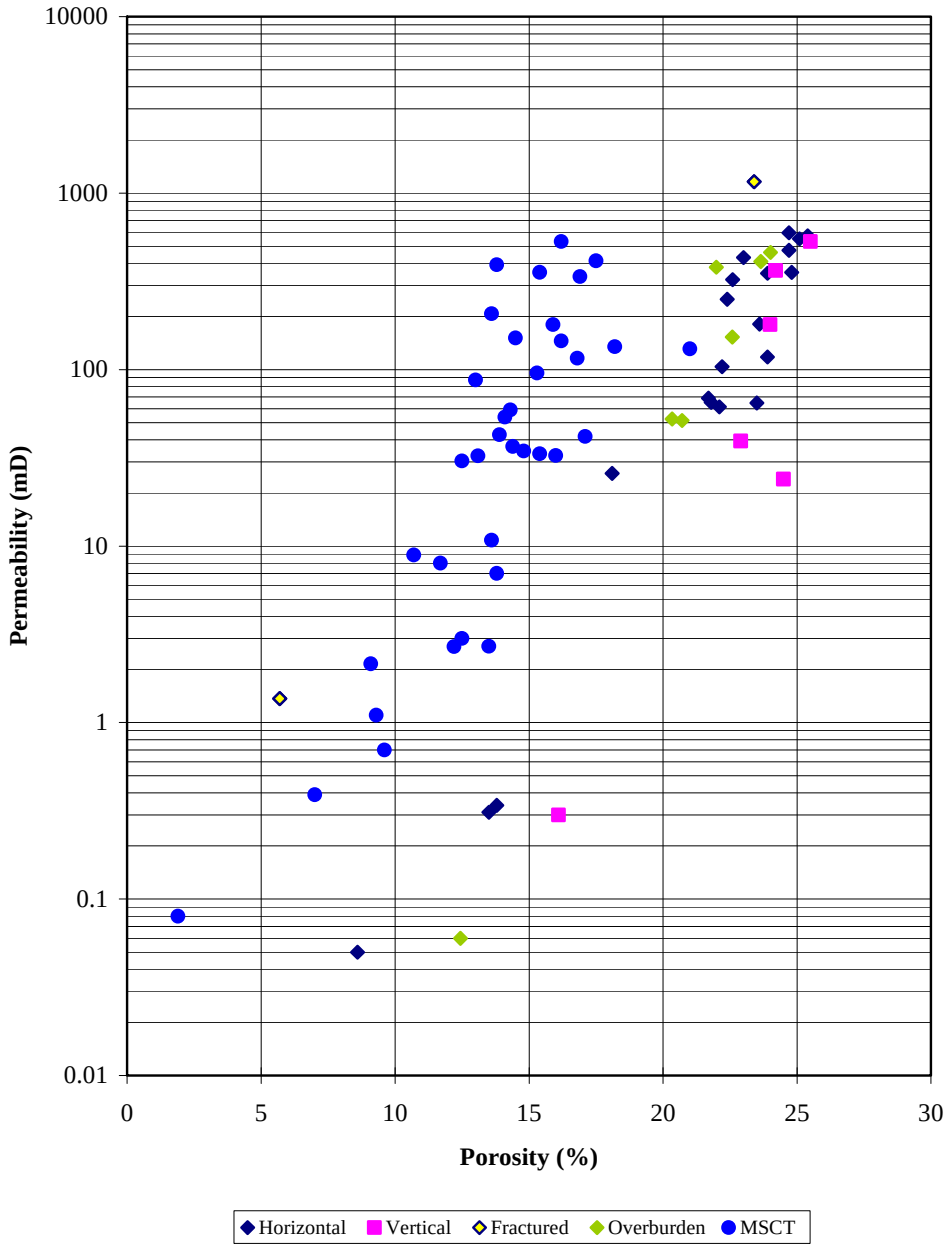
Sample Number	Depth (m)	Dir	Porosity Helium (percent)	Grain Density (g/cm^3)	Permeability to Air (mD)	Remarks
20	2740.72	H	13.5	2.68	0.31	
21	2741.04	H	8.6	2.93	0.05	
22	2741.72	H	5.7	2.67	1.37	Frac
23	2741.91	H				Failed
1/1	2968.30	MSCT	17.5	2.65	413	S.P.
2/1	2968.30	MSCT	16.9	2.64	336	
2/2	2970.00	MSCT	9.6	2.64	0.70	
2/3	2971.00	MSCT	13.6	2.62	207	
2/4	2977.70	MSCT	21.0	2.64	131	
2/5	2980.00	MSCT	17.1	2.63	41.8	
2/6	2981.00	MSCT	16.8	2.71	116	
2/7	2982.00	MSCT	15.4	2.62	356	
2/8	2986.00	MSCT	16.0	2.62	32.6	
2/9	2987.80	MSCT	11.7	2.64	8.0	
2/10	2988.80	MSCT	16.2	2.64	145	
1/3	2989.80	MSCT	1.9	2.76	0.08	
1/4	2990.80	MSCT	13.1	2.66		Irreg
2/11	2990.80	MSCT	12.5	2.70	3.00	
1/5	2991.80	MSCT	18.2	2.67	135	
2/12	2991.80	MSCT	13.1	2.63	32.4	
1/6	2992.80	MSCT	13.9	2.62	42.7	S.P.
2/13	2992.80	MSCT	13.8	2.63	392	Irreg
1/7	2993.80	MSCT	14.5	2.64	151	
2/14	2993.80	MSCT	13.0	2.64	87.3	
1/8	2994.80	MSCT	7.0	2.65	0.39	Lam
2/15	2994.80	MSCT	14.1	2.64	53.8	
1/9	2995.80	MSCT	12.2	2.67	2.69	Irreg
2/16	2995.80	MSCT	15.9	2.63	180	
1/10	2996.80	MSCT	10.0	2.65		Irreg
2/17	2996.80	MSCT	16.2	2.63	531	
2/18	2997.80	MSCT	9.1	2.63	2.15	
2/19	2999.20	MSCT	13.8	2.64	7.0	
2/21	3000.20	MSCT	13.6	2.68	10.8	
2/20	3001.20	MSCT	12.5	2.63	30.3	
2/22	3002.10	MSCT	14.3	2.63	59.1	
2/23	3003.80	MSCT	13.5	2.69	2.71	
2/24	3006.70	MSCT	15.3	2.62	95.6	S.P.

Sample Number	Depth *(m)*	Dir	Porosity Helium *(percent)*	Grain Density *(g/cm^3)*	Permeability to Air *(mD)*	Remarks
3/1	3009.00	MSCT	14.8	2.63	34.6	
3/2	3018.40	MSCT	9.3	2.67	1.10	
3/3	3020.10	MSCT	10.7	2.64	8.9	
3/4	3021.20	MSCT	14.4	2.64	36.7	
3/5	3026.70	MSCT	15.4	2.62	33.4	S.P.
3/6	3027.90	MSCT	16.1	2.68		Irreg
3/9	3414.00	MSCT	1.0	2.79		Irreg

POROSITY vs PERMEABILITY

Client: Origin Energy Resources Limited

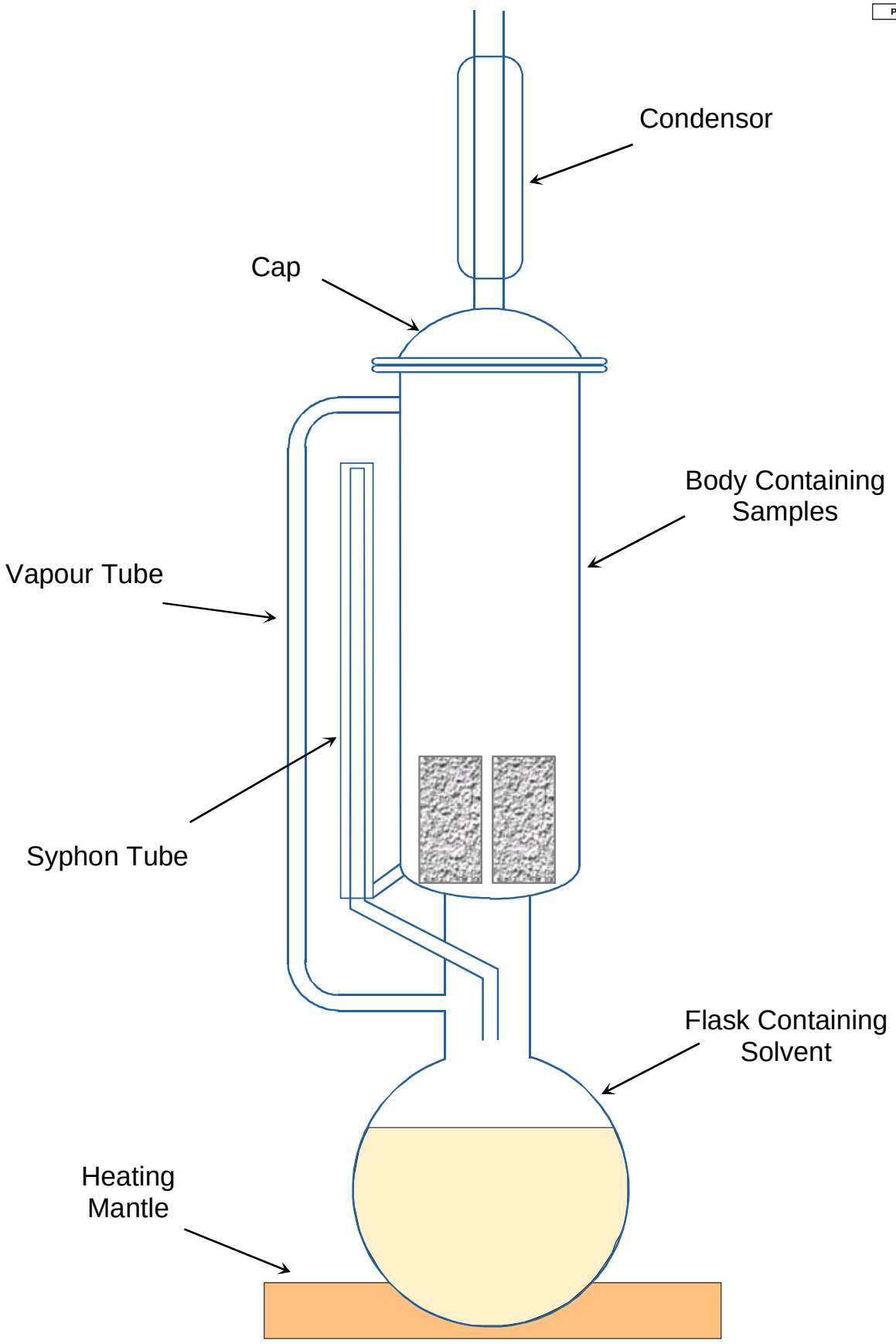
Well: Trefoil-1



APPENDIX VI

EQUIPMENT SCHEMATICS

SOXHLET CLEANING APPARATUS



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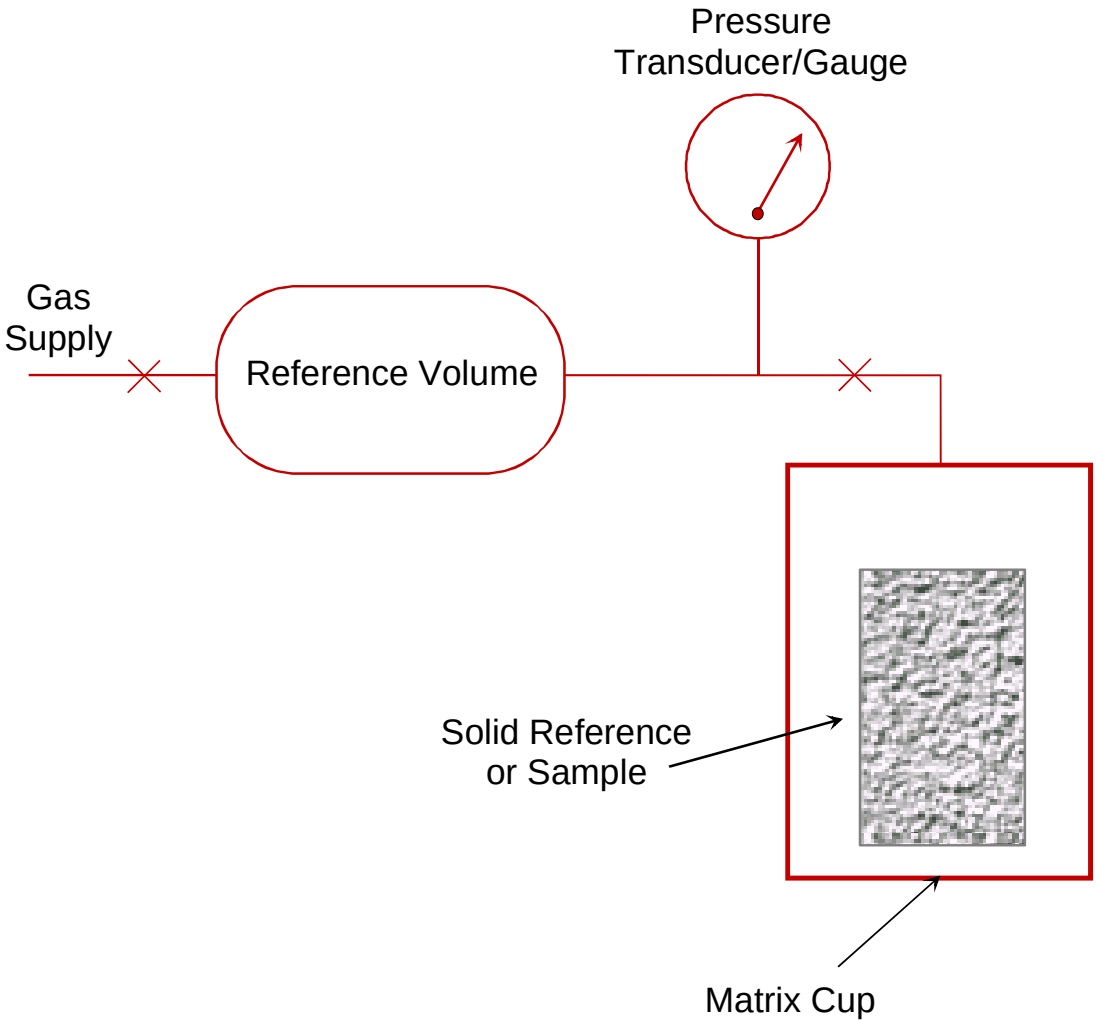
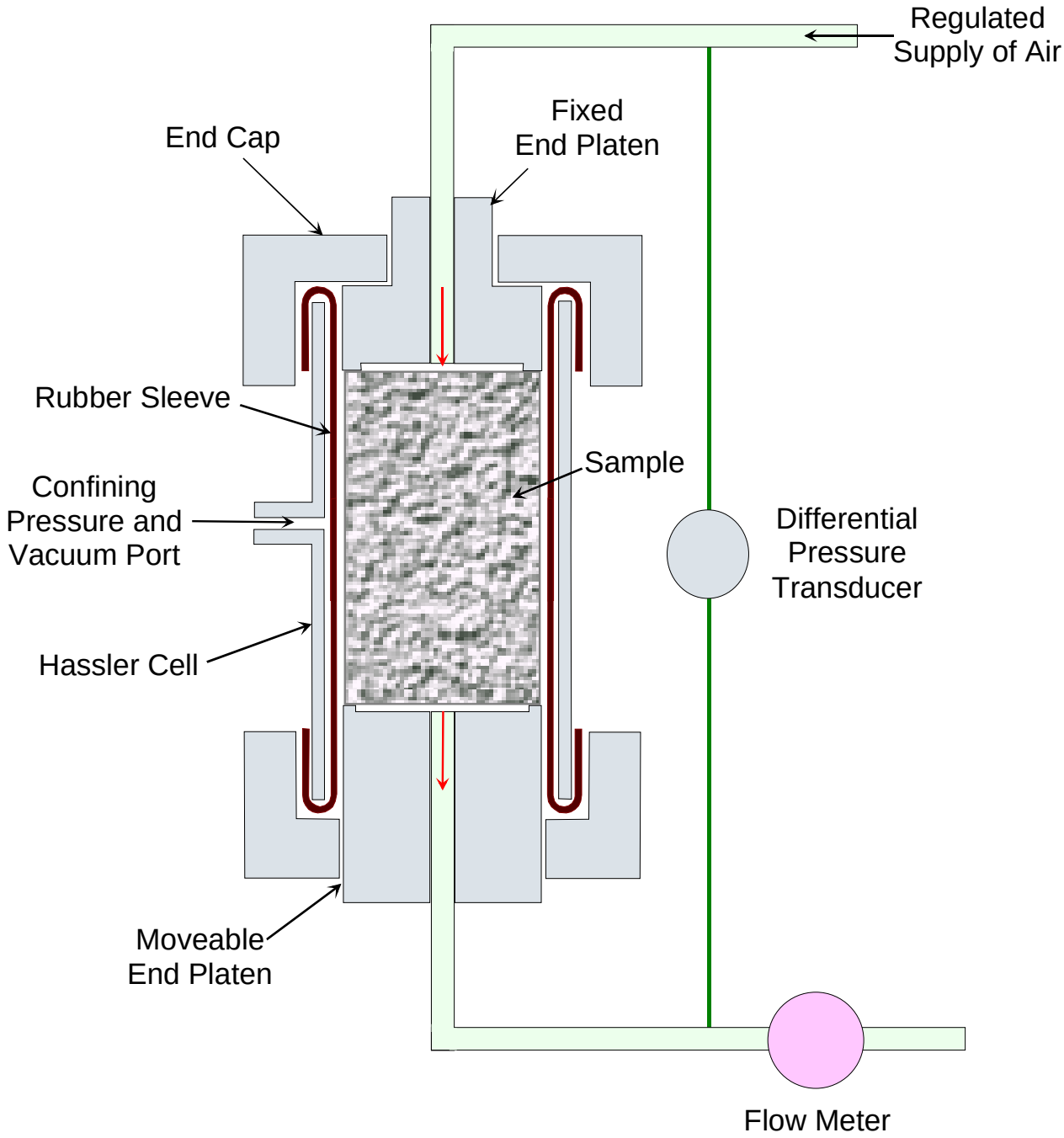
POROSIMETER SCHEMATIC



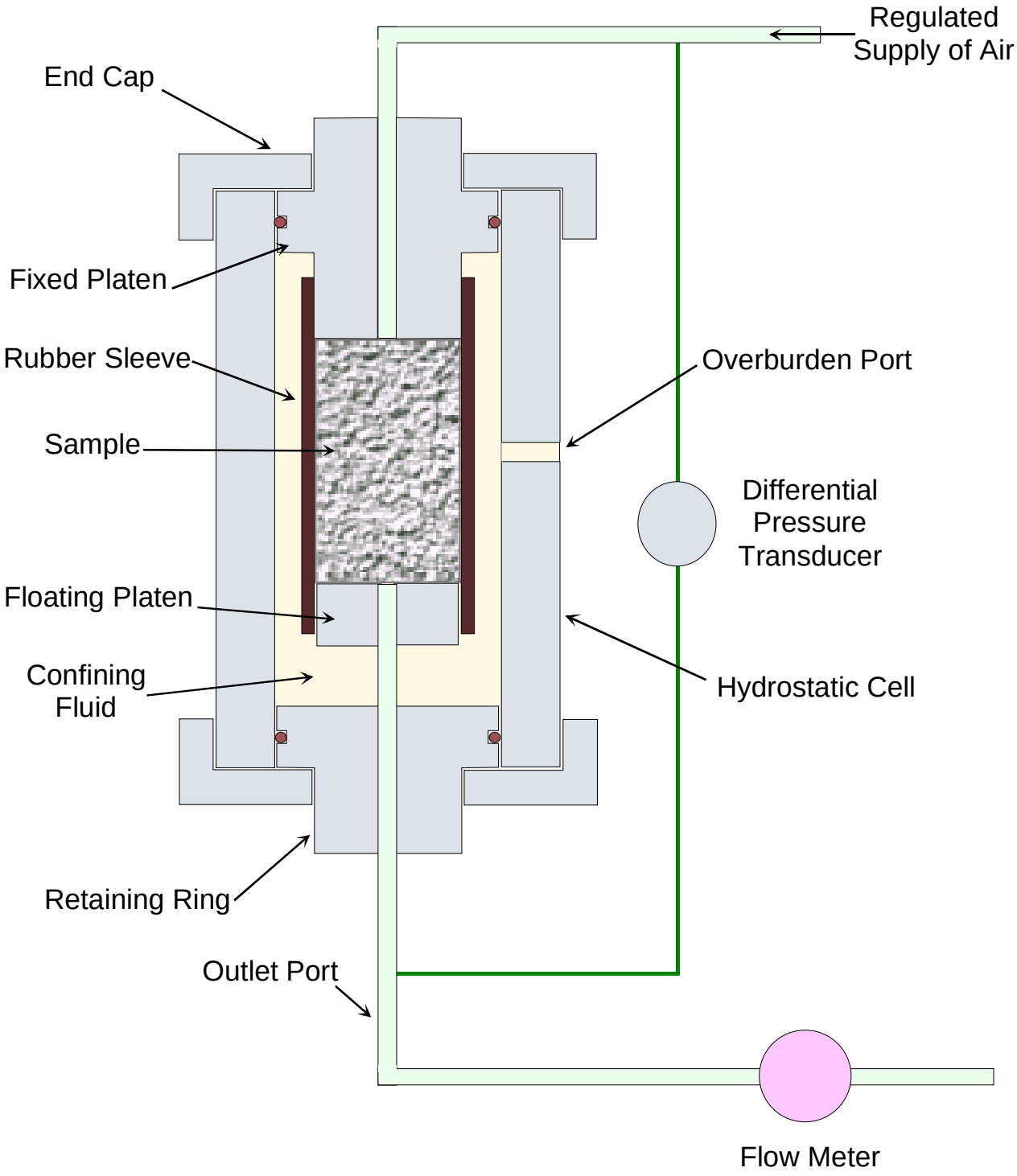
P1.V1 (reference) = P2.V2 (sample)

GAS PERMEAMETER SCHEMATIC (Hassler)



ACS Laboratories Pty Ltd
ABN: 81 008 273 005

GAS PERMEAMETER SCHEMATIC (Hydrostatic)



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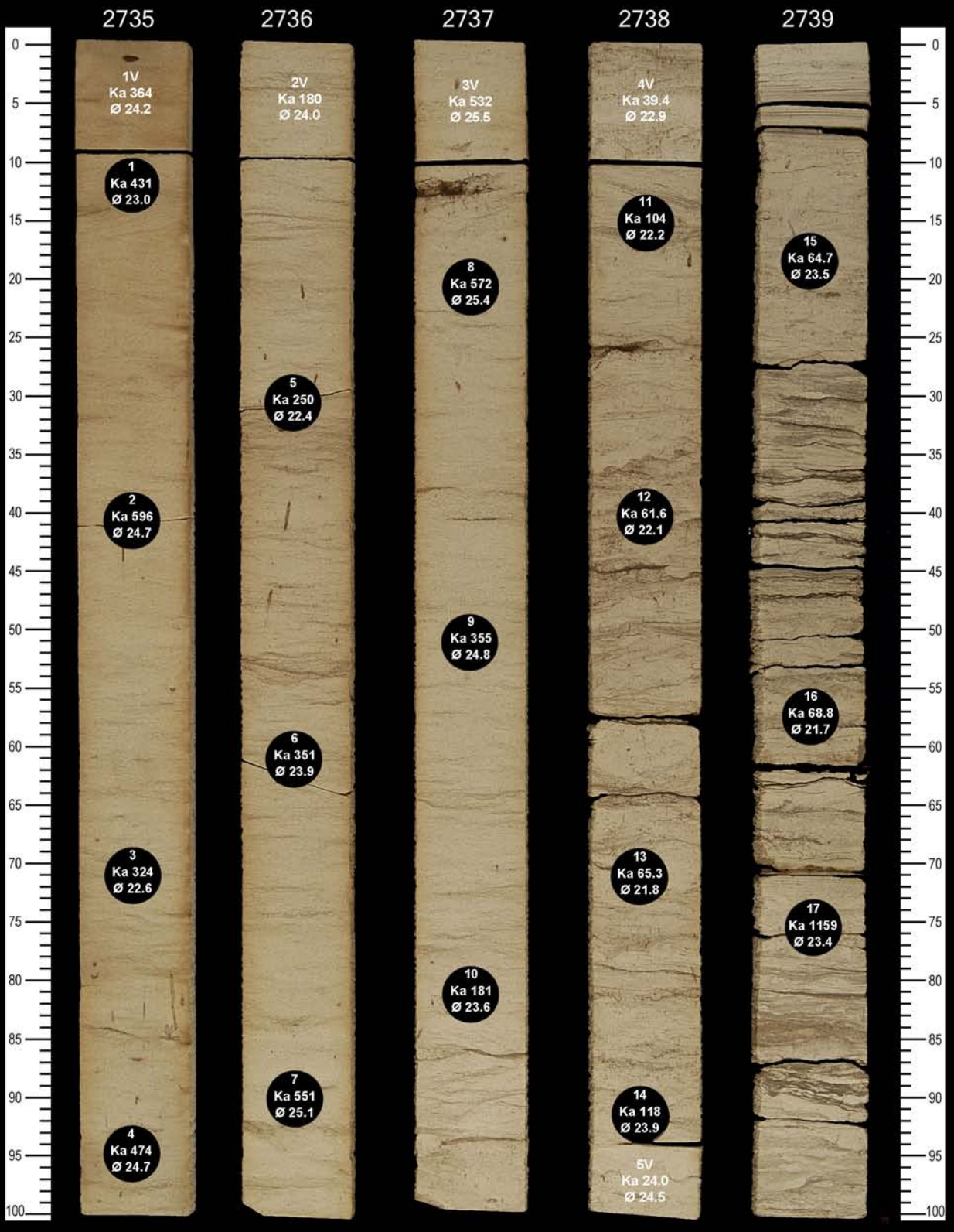
TREFOIL-1

CORE No. 1

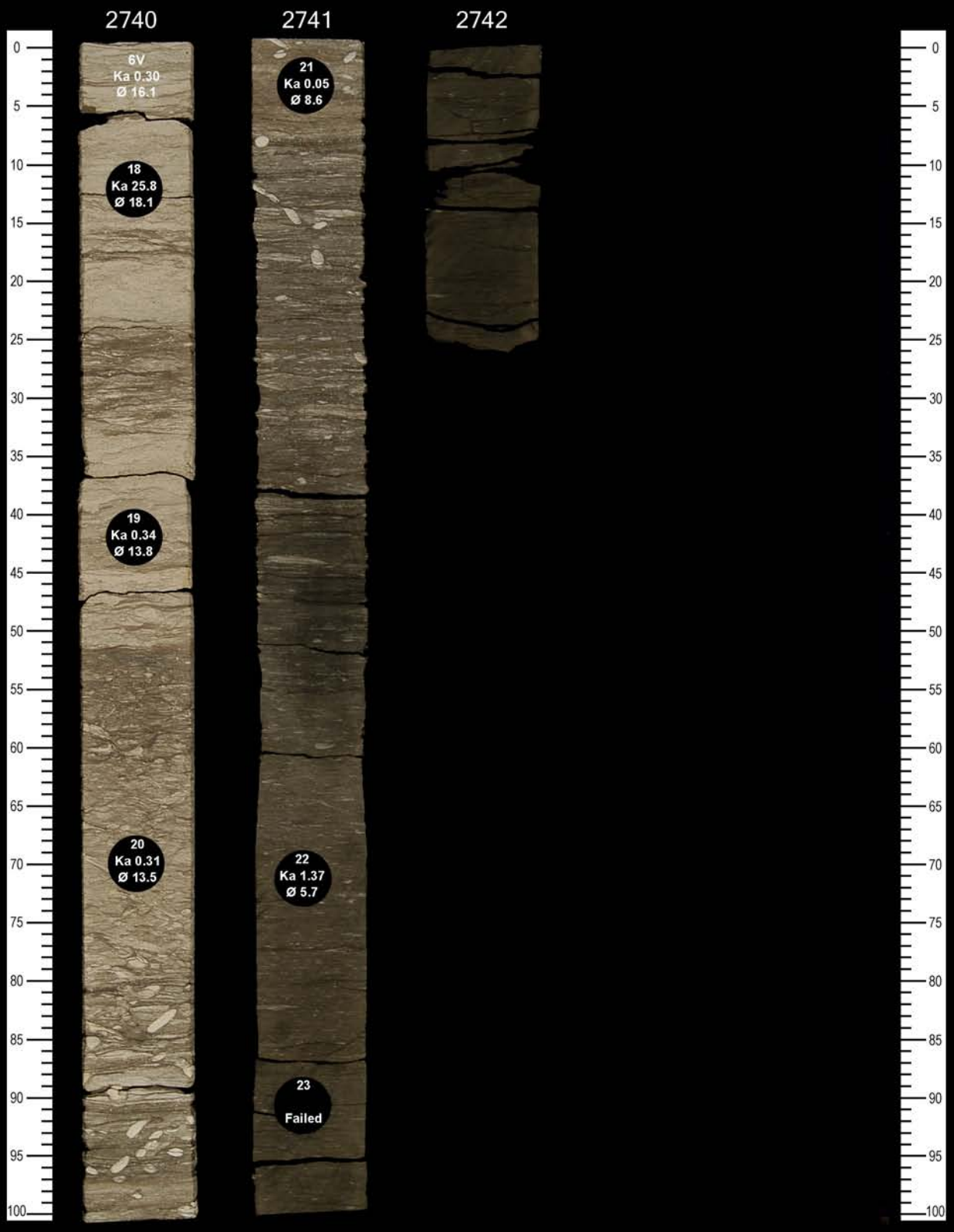


GREY SCALE

COLOUR REFERENCE

TREFOIL-1

CORE No. 1



GREY SCALE

COLOUR REFERENCE

APPENDIX 5: CUTTINGS GAS SUMMARY

Sourced from Daily Geological Reports

Depth Interval (mMDRT)	Total Gas (units)	C1 (ppm)	C2 (ppm)	C3 (ppm)	C4 (ppm)	C5 (ppm)
666 - 671	.005	1	-	-	-	-
671 – 731	.0025	0.5	-	-	-	-
731 - 884	1.1	223	-	-	-	-
884 - 930	3.6	722	-	-	-	-
930 - 990	6.8	1360	-	-	-	-
990 - 1130	10	2010	-	-	-	-
1130 - 1342	12.7	2460	0	3	2	2
1342 - 1398	18.4	3458	-	8	2	1
1398 - 1520	29.5	5465	14	13	5	2
1520 - 1740	40	7424	35	18	9	5
1740 - 1780	42	7380	58	22	10	4
1780 - 1859	34	6390	63	25	11	4
1859 - 1937	35	6357	76	31	15	5
1937 - 2036	27	4807	92	35	18	6
2036 - 2097	17	2980	75	38	23	6
2097 - 2134	2	410	9	5	4	1
2134 - 2182	6	1026	21	15	15	8
2182 - 2266	9	1291	29	24	27	20
2266 - 2382	10	1461	43	31	28	14
2382 - 2428	18	2555	121	77	62	26
2428 - 2433	7	1115	54	27	19	8
2433 - 2439	13	1971	95	37	22	8
2439 - 2457	13	2034	104	42	25	8
2457 - 2466	9	1435	75	34	22	6
2466 - 2539	12	1906	95	36	23	9
2538 - 2568	10	1430	91	41	25	11
2568 - 2602	14	2118	108	48	30	14
2602 - 2629	22	3488	135	61	41	19
2629 - 2663	31	4349	207	134	106	47
2663 - 2702	42	6017	296	223	140	57
2702 - 2732	45	6005	547	402	156	49
2732 - 2735	129	13351	1674	1829	953	248
2735 - 2741	134	14944	1780	2019	1046	261
2741 - 2743	140	16528	1876	1976	944	228
2743 - 2762	31	3790	430	310	110	35
2762 - 2819	25	3350	370	200	55	15
2819 - 2834	85	11668	1054	634	232	54
2834 - 2873	128	18251	1508	947	399	105
2873 - 2907	107	16598	1190	546	214	67
2907 - 2916	74	11599	638	301	131	47
2916 - 3024	424	60651	4783	2168	946	272
3024 - 3136	131	18086	1213	491	274	119
3025	1201	173045	12466	4438	1824	505
3027	757	118202	7687	2650	1064	285
3042	1045	149048	11250	5353	2347	646
3056	733	113939	7147	2900	1397	404
3099	683	104688	6898	2524	1091	329
3108	468	73583	4514	1558	684	212
3120	679	106785	6385	2083	913	272
3125	640	98724	6698	2163	974	307
3136	1106	161549	11863	3047	1194	359
3136 - 3148	1102	159226	12622	3477	1423	428

Depth Interval (mMDRT)	Total Gas (units)	C1 (ppm)	C2 (ppm)	C3 (ppm)	C4 (ppm)	C5 (ppm)
3138	1220	175381	12795	3254	1268	386
3144	1526	208199	16507	4418	1826	568
3145	1559	210666	16846	4524	1884	596
3148 - 3289	95	14126	941	326	165	76
3289 - 3305	45	6741	392	153	71	32
3305 - 3370	39	5774	322	127	63	29
3370 - 3382	57	8887	469	159	69	27
3382 - 3388	824	91155	12091	5200	1588	673
3384	1723	192430	25131	12360	5684	1803
3388 - 3407	31	8794	1022	549	288	106
3407 - 3430	12	1606	84	27	14	11
3417	25	2525	352	220	140	62
3430 - 3435	31	24292	2416	1167	459	115
3432	302	43424	4245	2040	804	201
3435 - 3442	31	1463	196	119	61	25
3442 - 3480	8	1516	93	33	15	8
3479	33	5570	399	101	23	7
3480 - 3507	14	2187	220	68	25	9
3481	31	5187	383	99	21	6
3507 - 3545	13	2101	129	47	23	9
3510	31	5000	332	107	40	13

APPENDIX 6: MUDLOGGERS REPORT

Trefoil - 1

FINAL WELL REPORT

Prepared by

Overseas Oilfield Services S.A.

Engineers: P.Mc Gilveray, G. Doczy, T. Platt, M. Boyd, D. van der Aa.

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DRILLING LOG -- 1:1000 scale from 112 to 3545 metres

GAS RATIO LOG -- 1:500 scale from 1000 to 3545 metres

BORE HOLE STABILITY LOG -- 1:1000 scale from 125 to 3545 metres

Section 1
General Well Summary

WELL DATA

Operator : Origin Energy Resources Ltd
Well name : Trefoil - 1
Country : Australia
Location : Offshore Bass Basin - Tasmania
Structure : Fault Bounded Anticline
Field : Yolla
Permit : T / P18

Location AMG co-ordinates : 5 586 268.98 m N 361 025.73 m E

Location local co-ordinates : Lat: 39° 51' 44.06" S Long: 145° 22' 30.72" E

Profile : Vertical
Reference depth : Rotary Table
RT to Seabed : 108.8 metres
RT above M.S.L. : 39.9 metres
Sea-water depth : 68.9 metres
Proposed total depth : 3527.0 metres
Actual total depth : 3545.0 metres
True vertical depth : 3544.9 metres
Spudded on : 30th October 2004
Total depth reached on : 23rd November 2004

Drilling Contractor
Drilling Contractor : Ensco Australia
Rig name : Ensco 102
Rig type : Jackup

Drilling Phases

Diameter (inch)	From (m)	To (m)	Mud Type
26/36"	108.8	218.0	Flocculated Bentonite / Seawater
16"	218.0	666.0	Flocculated Bentonite / Seawater
12¼"	666.0	2428.0	Seawater / Drispac / Soltex / PHPA
8½"	2428.0	3545.0	Seawater / Drispac / Soltex / PHPA

Cased Hole

Casing Diameter (inch)	Casing Type	Shoe Depth (m)
20/30"	Conductor	215.00 MDRT
$13^{3}/_{8}$"	Surface	657.30 MDRT
$9^{5}/_{8}$"	Intermediate	2421.00 MDRT
$6^{5}/_{8}$"	Production	3458.00 MDRT

MUD LOGGING

Logging Unit Number: 171

Engineers: G. Doczy, T. Platt, M. Boyd, D. van der Aa.
Mudloggers: V.B.Jagarlamudi, N. Elliott, S. Prosser, A. Morris
Sample Catchers: L. Dower, S. S. Quadri

Sampling Interval

Trefoil - 1

Sample Type	Number of sets	Quantity per set	Sampling interval	From (m)	To (m)
Washed and Dried	4	100 grams	10 metres	666	1998
Unwashed and Dried	1	500 grams	10 metres	666	1998
Washed and Dried	4	100 grams	3-6 metres	1998	3545 TD
Unwashed and Dried	1	500 grams	3-6 metres	1998	3545 TD

Cuttings Distribution

Company	Unwashed and Dried Samples
Origin Australia	1

Company	Washed and Dried Samples
Origin Australia	2
Mineral Resources Tasmania	1
Geoscience Australia	1

Company	Set of Samplex Trays
Origin Australia	2

WELL SUMMARY

Trefoil-1 is located in permit T/ P18 in the Bass Basin between Victoria and Tasmania. Trefoil-1 is located on the flank of the Yolla trough. Trefoil-1 was drilled as a vertical exploration well. The well is located 37 km west off the Yolla gas field of Bass Basin in 68 m of water. The Trefoil prospect was an Eastern View Coal measure anticlinal play within the Yolla trough.
The well was drilled using the ENSCO 102 jack up drilling rig and was spudded @ 01^{H}00 on the 30th of October 2004 and drilled to a Total Depth of 3545mMD on the 23rd November 2004, in a 4 Phase programme over 25 days.

26 / 36" PHASE

A Reed Y11C Tri-cone 26" Bit and a 36" Hole Opener were used to drill the 26 / 36" Phase. It washed and drilled from the Mud line at 108.8 m to the section TD of 218 m. All returns for this section went to the seabed.
A total of 109 m of 26" hole to 218 m was drilled (with 36" hole to 156.5 m) in 6.5 on bottom hours resulting in an average ROP of 16 m/hr.
The hole was circulated and conditioned and a wiper trip was made.
The 20 / 36" casing was run and set at 215 mMDRT. (215 mTVD) and was cemented. A top cement job was also done.

16" PHASE

A Hughes MX-1 Tri-cone 16" Bit and a 9 5/8" SperryDrill mud motor (0.13 rev/gal) were used to drill the 16" Phase. The cement was tagged at 214m, drilled out, and the casing shoe cleaned out. All returns for this section were to the seabed. The hole was drilled ahead from 218 - 322m. Sweeps were pumped to clean the hole to 641m where downhole losses began. The pump rate was reduced and sweeps were pumped while the loss rate was monitored, section TD was at 666m, with losses at 6bbls/min.

A total of 448m of 16" hole to 666m was drilled in 10.1 on bottom hours resulting in an average ROP of 44.4 m/hr.

LCM and HiVis pills were pumped before pulling back to the shoe for a wiper trip. The bit was run back to bottom, keeping the hole full with water from the trip tanks. A 100 bbl LCM PILL and a 10 bbl HiVis pill were pumped and spotted at the shoe where losses initially decreased to 1bbl/min before increasing again to 5-6 bbl/min. HiVis mud was slowly pumped to keep the hole full and the losses decreased to 3 bbl/min. The 16" BHA was pulled out of hole and racked back before rigging up to run 13?" casing as per tally.

The 13?" casing was run and landed 3m high with a shoe depth of 657.3mMDRT (657.3mTVD).

12¼" PHASE

A Reed 12¼" RSX162DGSW bit in conjunction with the 9$^{5}/_{8}$" SperryDrill was run to drill out the shoe track, casing shoe (657.3m) and 12¼" rat hole to 671m. A FIT was performed resulting in a EMW of 10.5 ppg.

The 12 ¼ " hole was drilled to 2428m where bottoms up was circulated followed by a 40bbl sweep pill of 12.0ppg mud. A significant amount of cavings were observed at the shakers with the pill returns. A second pill was pumped and cavings were returned after the full circulation. A further 3 bottoms up was circulated to clean the hole before a flow check was performed and showed the hole to be static. 5 stands were pulled before pumping a slug and continuing to POOH from 2288m.

Tight spots were encountered at 1675m and 1591m with o/pull of 30Klbs, the pipe was rotated and worked through. At 1533m and o/pull of 30Klbs was recorded and 3bbls was swabbed into the well bore. The pipe was run back to 1620m and bottoms up was circulated with maximum gas recorded as 108 units. A flow check was performed which showed the well to be static.

The string was then pulled out of the hole from 1620m with tight spots at 1466, 1435 and 1185m, where 5bbls was swabbed into the well-bore. The string was run back in hole to 1243m where bottoms up was circulated. A flow check was performed which showed the well to be static.

The string was pulled out of hole to 1150m where an over-pull of 25Klbs was encountered. The string was pumped out of hole from 1150m to 1079m where the hole packed off. Rotating and working the pipe regained circulation. With tight spots between 794m and 784m, the hole was back-reamed to the 13?" shoe. A HiVis sweep was pumped and the hole circulated clean while servicing the top drive and PRS.

The string was then run back in hole for a wiper trip to 1300m where the string was washed down to 1500m. Continue to RIH and the last stand was washed down and bottoms up was circulated. The recorded gas was a maximum 216 units. A HiVis sweep was pumped with cavings observed at the shakers on return. Two bottoms up circulations were performed before a flow check showed the well to be static.

POOH to 1843m where an over-pull of 10Klb was encountered. Pulling out continued to 1823m with a 10Klb over-pull and 5bbl was swabbed into the well bore. The string was run back into hole to 1910m and bottoms up was circulated out. A maximum gas peak of 50 units was recorded. A flow check was done which showed the well to be static. The string was pulled out of the hole to 1823m where over-pull of 30Klb was encountered. The string was then pumped out to 1387m with tight spots worked through at 1733m and 1641m, both recorded as a 30Klb over-pull. The string was then pulled out of the hole from 1387m to surface with no further resistance encountered. The 12¼" BHA was racked back and a wash tool was run into the hole to the 9?" hang off point, which was jetted clean. The wash tool was the pulled out of the hole and the 9?" casing handling gear was rigged up in preparation for the 9?" casing run.

A total of 1762m of 12¼" hole were drilled in 51.2 on bottom hours resulting in an average ROP of 34.4m/hr.

The 9?" casing shoe was set at 2421.00mMD (2420.91mTVD).

8½" PHASE

The 8½" hole was drilled with a Smith MA 74 EPX PDC bit and rotary assembly down to the Core # 1 depth. The cement float and shoe was drilled from 2395m to 2428m. The rat-hole was drilled to 2431m prior to performing a leak off test to a 12.5 ppg EMW. Drilling continued down to the core point at 2735m in the P5 Sand of the Eastern View Coal Measures. There were no losses while drilling. Tight hole was encountered pulling out at 2678m, with 1½ bbl swabbed from the hole and the string was run back in hole to 2735m. The hole was circulated with 6 units of gas recorded. The string was pumped out of hole and pulled tight at 2646 m. This spot was worked through and the string was then pumped out of hole until inside the 9?" casing shoe and then pulled out of hole to surface.
Bit # 4 drilled 307m of 8½" hole in 11.5 on bottom hours resulting in an average ROP of 26.7 m/hr.

A core barrel and a BBS CD93 PDC core head was run and a core cut from 2735 m to 2743 m. The core jammed off with 8m cut, with ROP dropping off and the flow rate increasing from 200 gpm to 300 gpm. The hole was circulated clean with a drilled maximum gas peak of 155 Units. The coring assembly was pulled to surface, with 89% recovery of the core on surface.
This core head cored 8m of 8½" hole in 2.6 on bottom hours resulting in an average ROP of 3.1 m/hr.

The previous rotary drilling assembly was then rerun with the rerun Smith MA 74 EPX PDC bit and drilling continued through the Palaeocene and into the Cretaceous zones of the Eastern View Coal Measures to a depth of 3442m. ROP dropped to below 1 m/hr and bit was pulled out for a bit change. Tight hole was encountered at numerous spots on the trip out of hole. These tight spots were at 3168m, 3143m, 3111m, 3086m, 3051m, 3405m, 3029m, 2996m, 2967m, 2926m, 2892m, 2755m, 2718m, 2690m, 2678m, 2645m and 2505m. Over-pull for these tight spots ranged between 30 and 50 klbs, and the string was worked and reamed over each tight spot.
Bit # 4RR drilled 699m of 8½" hole in 58.4 on bottom hours resulting in an average ROP of 12.0 m/hr.

A new 8½" drilling assembly with an Hughes MX20 HDX tri-cone bit and a 6¾" SperryDrill mud motor (0.29 rev/gal) was made up and run in hole to 3418m and reamed to bottom at 3442m. A trip gas of 10800 ppm (54 units) was seen. Drilling proceeded to 3443m where a flow check was made due to an apparent increase in flow out. On the flow check the well was static and drilling continued to 3478m where a drilling break was checked for flow. The well was static and drilling continued to TD at 3454mMD.

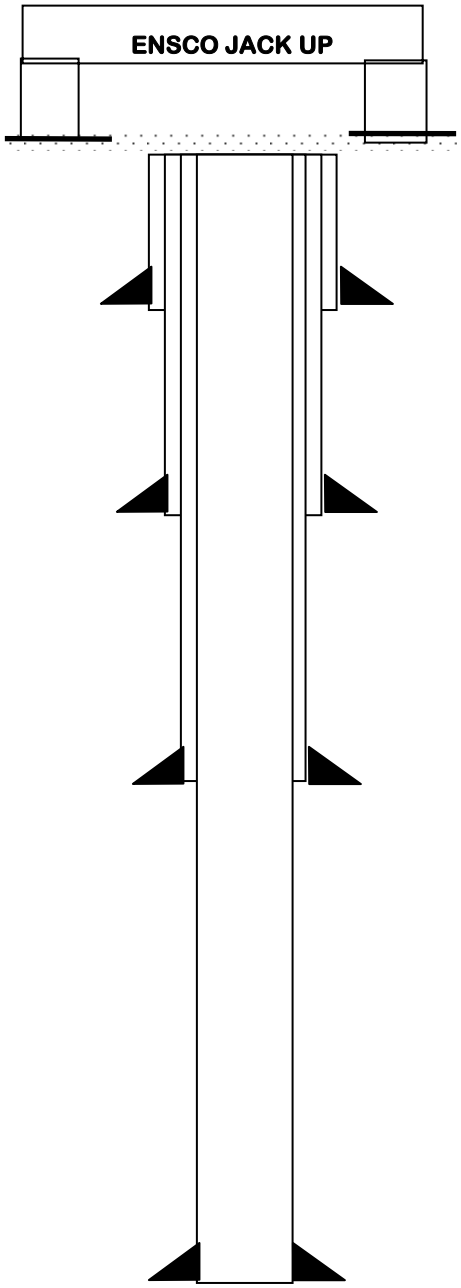
Circulation continued for 3 x bottoms up and after a flow check the string was pulled wet from 3545-3481m and a slug was pumped and a flow check performed. Pulling out continued to a tight spot at 3412m with over-pull of 50 klbs, which was back-reamed. Pulling out continued with tight spots at 3374, 3365 and 3331m which all had over-pull of around 50 Klb and were back-reamed. A further tight spot at 2725m of 15 Klb over-pull was worked through and the string was pulled out of hole without further incident. The Sperry-Sun tools were laid down and downloaded and Schlumberger was rigged up to commence TD logging.
Bit # 5 drilled 103m of 8½" hole in 18.5 on bottom hours resulting in an average ROP of 5.6 m/hr.

Suite #1 wireline logs were as follows:

Run # 1, PEX-HRLA-CMR-SP-GR-LEH-QT
Run # 2, VSI-GR
Run # 3, MDT-GR- LEH-QT
Run # 4, MSCT-GR-LEH-QT
Run # 5, MDT-GR- LEH-QT
Run # 6, MSCT-GR-LEH-QT
Run # 7, MSCT-GR-LEH-QT
Run # 8, FMI-DSI-HNGS-ECS-LEH-QT

Trefoil-1 was completed with $6^{5}/_{8}$" production casing and tested.

WELL PROFILE



Rotary Table to MSL 42.8 m
Water Depth 68.9 m
Rotary Table to Sea Bed 108.8 m

Spudded Trefoil-1
11th October 2004

20/30" Conductor at 215.0 mRT

26/36" Hole
108.8 – 218.0 m

13 3/8" Casing Set at 657.3 mRT

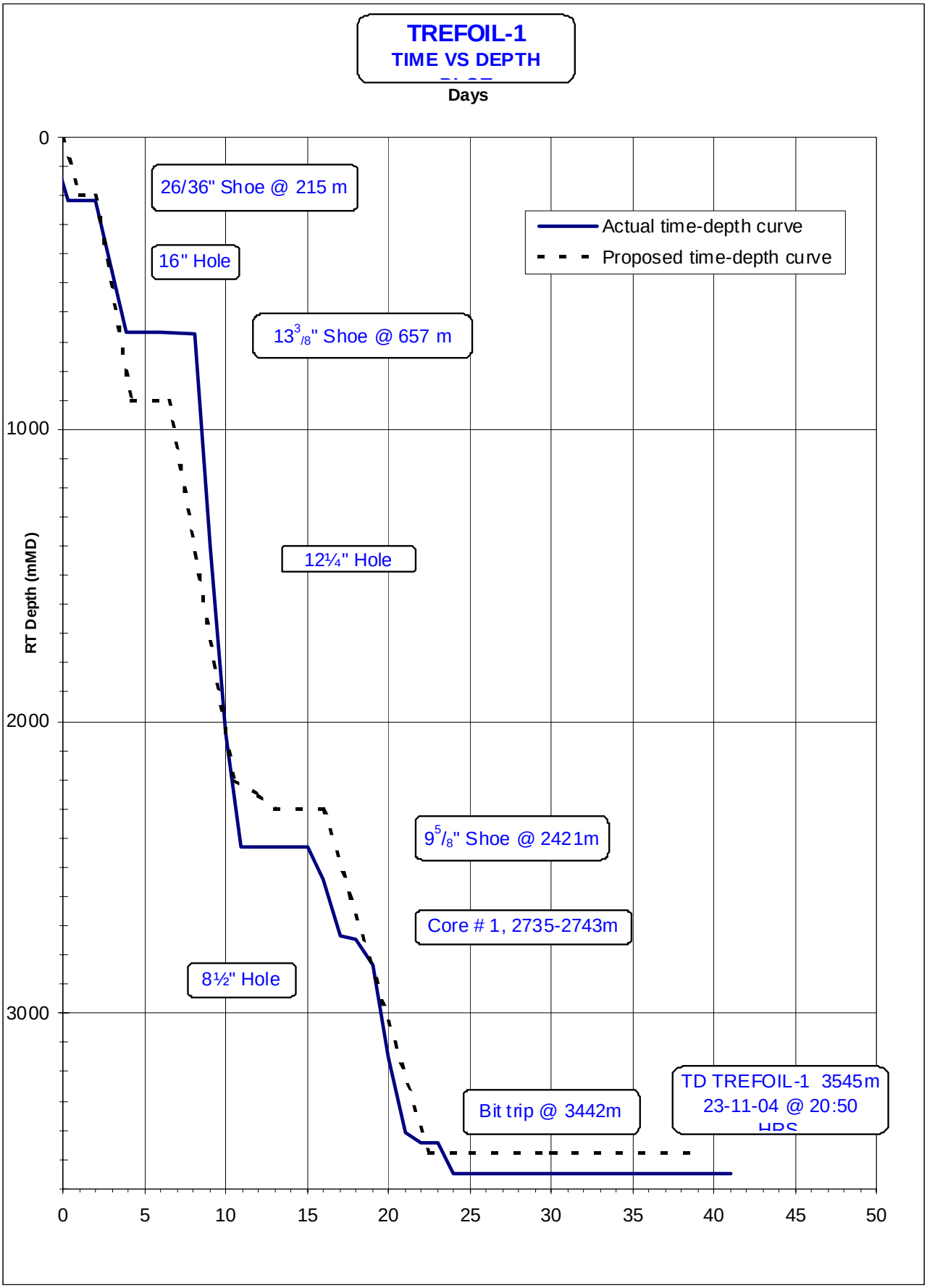
16" hole
218.0 – 666.0 m

9 5/8" Casing Set at 2421 mRT

12¼" Hole
666.0 m - 2428.0 m
Mud Weight 8.8+ - 9.2+ ppg

6 5/8" Production casing at 3458 mRT

8½" Hole
2428m - 3545 mRT TD
Mud Weight 9.1+ - 9.4+ ppg


TREFOIL-1
TIME VS DEPTH
Days
RT Depth (mMD)
0
1000
2000
3000
0
5
10
15
20
25
30
35
40
45
50
26/36" Shoe @ 215 m
16" Hole
13 3/8" Shoe @ 657 m
12¼" Hole
9 5/8" Shoe @ 2421m
Core # 1, 2735-2743m
8½" Hole
Bit trip @ 3442m
TD TREFOIL-1 3545m
23-11-04 @ 20:50
HRS
Actual time-depth curve
Proposed time-depth curve

BIT RUN SUMMARY

BIT	Size (")	Type	Jets	In (m)	Out	Hours	Condition
1	26	Reed Y11C	3 x 24 1 x 16	108.8	218	6.5	1-1-No-A-1-In-No-TD
2	16	Hughes MX-1	3 x 24	218	666	10.1	2-2-WT-A-E-I-No-TD
3	12¼	Reed RSX162	6 x 18	666	2428	51.2	1-1-NO-A-X-I-NO-TD
4	8½	Smith MA74 EPX	3 x 18 3 x 16	2428	2735	11.5	1-1-NO-A-X-I-NO-CP
-	8½	DBS CD93 PDC Core head	-	2735	2743	2.6	
4RR	8½	Smith MA74 EPX	3 x 18 3 x 16	2743	699	58.4	2-3-FC-S-X-I-CT-PR
5	8½	Hughes MX20 HDX	3 x 18	3442	3545	18.5	2-2-CT-M2-E-I-NO-TD
6	8½	Hughes ATJ-68	3 x 24	3545	3545		1-1-NO-N/A-E-I-NO-LOG

CASING DATA

Type	**Size** (Inches)	**Weight** (lb/ft)	**Grade**	**Thread**	**Depth** (mMDRT)
Conductor	20 / 30"	133 / 310	X56 / X52	RL4S / Leopard	215.0
Surface	13?"	54.5	K55	BTC	657.3
Intermediate 12¼" Hole	9?"	43.5	L80	Vam Top	2421.0
Production	6?"	24	L80	Fox K	3458.0

CEMENTING DATA

20 / 30" Conductor casing

Casing details	**Cement Type**	**Dry Cement Volume** (sx)	**Cement Additives**	**Mix Water** (bbls)	**Slurry Vol** (bbls)	**Slurry Density** (ppg)	**Top of Cement** (mMDRT)	**Casing Press Test** (psi)
Lead Slurry	G	638	1% BWOC D020 2% BWOC $CaCl_2$	131 Seawater / 2% $CaCl_2$	186	13.8	108 m	
Tail Slurry	G	361		46 Seawater	76	15.8	157 m	

13 3/8" Surface casing

Casing details	**Cement Type**	**Dry Cement Volume** (sx)	**Cement Additives**	**Mix Water** (bbls)	**Slurry Vol** (bbls)	**Slurry Density** (ppg)	**Top of Cement** (mMDRT)	**Casing Pressure Test** (psi)
Lead Slurry	G	399	2.5% BWOC D20 0.01 gal/sk D47	114Drl water	150	12.5	178	
Tail Slurry	G	244	0.01 gal/sk D47	30 Drl water	56	15.8	557	1500

CEMENTING DATA (Cont'd)

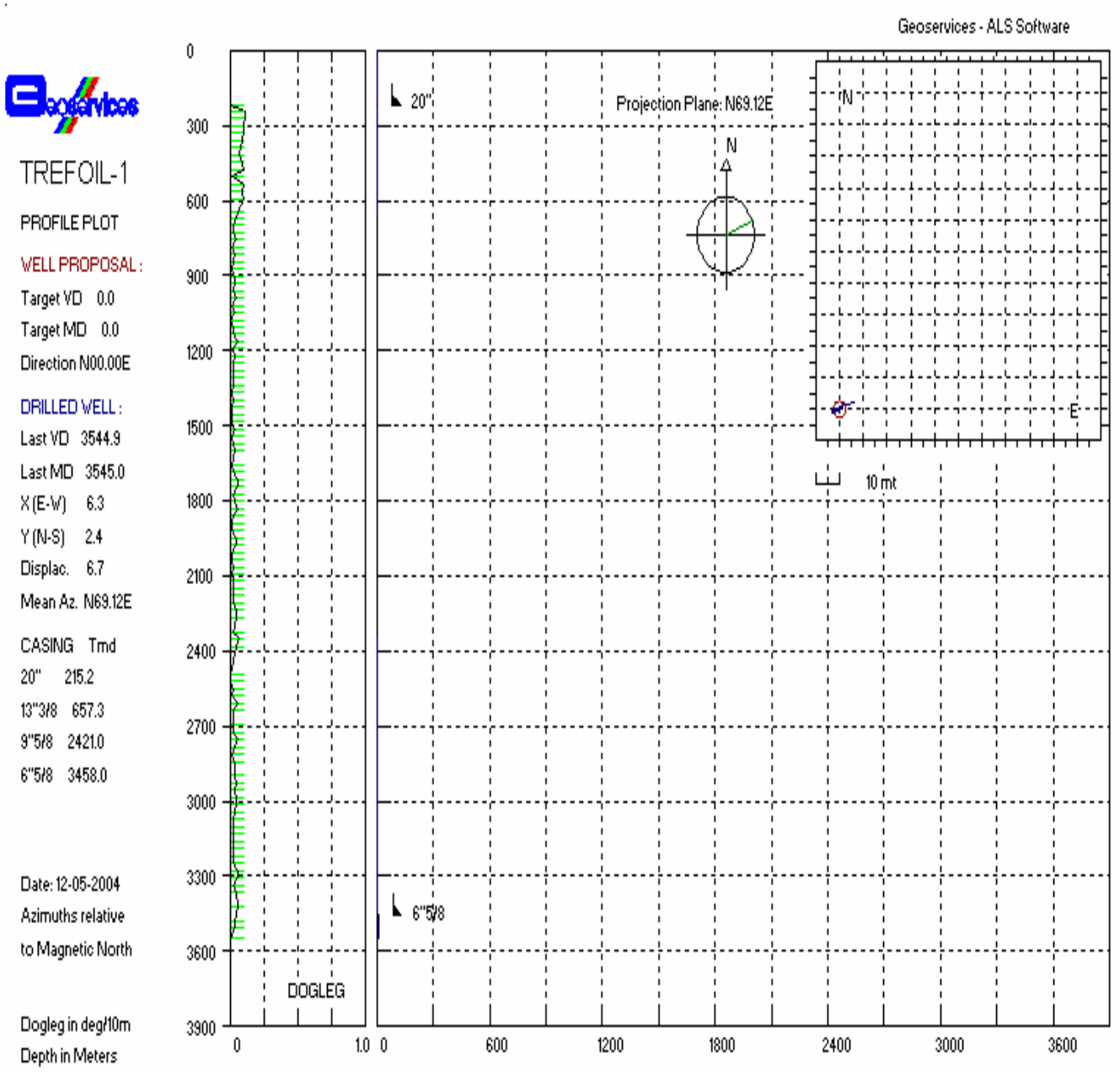
9 5/8" Intermediate casing

Casing details	**Cement Type**	**Dry Cement Volume** (sx)	**Cement Additives**	**Mix Water** (bbls)	**Slurry Volume** (bbls)	**Slurry Density** (ppg)	**Top of Cement** (mMDRT)	**Casing Pressure Test** (psi)
Lead Slurry	G	1162	2.5% BWOC Pre-Hyd Bentonite 0.05 gal/sk D110 0.01 gal/sk D 47	335 Drl Water	441	12.5	Mudline	
Tail Slurry	G	144	0.9 gal/sk D300 0.1 gal/sk D145A 0.03 gal/sk D47 35% BWOC D66	22 Drl Water	42	15.8	2321 m	3500

6 1/2" Intermediate casing

Casing details	**Cement Type**	**Dry Cement Volume** (sx)	**Cement Additives**	**Mix Water** (bbls)	**Slurry Volume** (bbls)	**Slurry Density** (ppg)	**Top of Cement** (mMDRT)	**Casing Pressure Test** (psi)
Lead Slurry	G	436	2.5% BWOC Pre-Hyd Bentonite 0.05 gal/sk D110 0.01 gal/sk D 47	119 Drl Water	119	15.8		

WELL DIRECTIONAL PROFILE



WELL DIARY

30th Oct 2004 Jump ROV in preparation to spud well. Spud Trefoil-1 at 01:00 hrs and drill ahead from 109m to 218m. Circulate and condition hole. Perform wiper trip, condition hole and POOH. Pick up and RIH with 20" casing, make up X/O and RIH with 30" casing.

31st Oct 2004 Continue to RIH with 30" casing. Make up 5" DP cement stinger and RIH. Stab into receptacle in float shoe and rig up to cement. Pressure test cementing lines. Circulate 100 bbl of seawater. Mix and pump cement and displace as per program. Wait on cement. Remove landing joint.

01st Nov 2004 Continue to remove landing joint. Nipple up riser. Run in hole on 5" drill pipe with stinger for cement top up job. Pump cement top up. Pull out of hole and wait on cement. Function test valves on Riser. Pick up and make up 16" BHA. Continue to mix mud. Run in hole with 16" BHA, shallow test downhole motor and directional tool. Tag cement at 214m. Wipe casing shoe x 2. Drill cmt and Drill ahead from 218 - 322m. Continue to drill, pumping sweeps, to 641m. Downhole losses occurred at 641m. Circulate at reduced pump rate, pump sweeps and monitor losses. Continue to drill ahead to 16" TD section at 666m. Losses at 6 bbl/min. Monitor well to determine rate of loss. Pump LCM and HiVis pills, pull out of hole to shoe for wiper trip. Average losses 5 - 6 bbl/min.

02nd Nov 2004 Continue to run in hole. Tag cement at 214m. Wipe casing shoe x 2. Drill cement and Drill ahead from 218 - 322m. Continue to drill, pumping sweeps to 641m. Downhole losses at 641m. Circulate at reduced pump rate, pump sweeps and monitor losses. Continue to drill ahead to TD section at 666m. Losses at 6 bbl/min. Monitor well to determine rate of loss. Pump LCM and HiVis, pull out of hole to shoe for wiper trip. Average losses 5 - 6 bbl/min.

03rd Nov 2004 RIH to TD, keeping the hole full with water from the trip tanks, while monitoring losses. Pump 100 bbl LCM and chase with 10 bbl HiVis and spot at shoe. Monitor losses. Losses slowed to 1 bbl/min then increased to 5 - 6 bbl/min again. Pump 100 bbl LCM and chase with 10 bbl HiVis. Observe losses. Slowly pump HiVis to keep hole full. Monitor hole on trip tank - 3 bbl/min. POOH and rack back BHA, set 17¾" diverter insert. Rig up to run casing. Make up shoe track and check float. Run 13?" casing as per tally. Pull 17¾" diverter insert on joint 29. Install Cameron mud line suspension system.

04th Nov 2004 Continue to run 13?" casing. Land casing 3m high. Install cement head and circulate casing. Test lines, line up Dowell and pump cement as per program. Line up and pressure test casing. Pull landing joint and cut casing. Rig up to run in hole with cement stinger for top up job on 30" surface casing.

05th Nov 2004 Continue install Cameron compact wellhead housing and pressure test seals. Meanwhile run in with cement stinger into 36"/30" annulus and tag up at 116m and perform top-up job with 15.8 ppg slurry. Prepare to nipple up BOPs and hold safety meeting. Lift BOP from stump to well centre and nipple up.

06th Nov 2004 Continue to nipple up BOPs. P/U equipment and Test BOPs. Lay down 16" BHA, pick up 12¼" BHA. RIH and shallow test MWD. RIH and tag cement at 633m. Drill float, cement and perform SCRs before drill out of shoe. Drill shoe, clean out rat-hole and drill 5m new formation. Condition mud.

07th Nov 2004 Continue to drill 12¼" hole from 671m - 1398m

08th Nov 2004 Continue to drill 12¼" hole from 1398m - 2036m

09th Nov 2004 Continue to drill 12¼" hole from 2036m - 2428m. Circulate while decide if casing point. Circulate 2 x HiVis sweeps

10th Nov 2004 Continue to circulate and condition mud until the shakers came clean, flow check-OK, POOH to 2288m, pump slug, POOH to 1533m : tight spots @ 1675, 1591, 1533m. RIH to 1620m and circ B/U. Max gas recorded 108 units. Flow check-OK. POOH from 1620-1185m. Tight spots at 1466, 1435 and 1185m. RIH from1185-1243m. Circulate B/U. Attempt POOH: O/P 25 Klb at 1150m. Pump out of hole from 1150-1079m. Pack-off at 1079m and regain full circulation. Back-ream from 1079m to 13?" shoe. Tight hole from 794-784m. Wipe out. Pump sweep and circulate clean. Service top drive, redress PS21 and service PRS. RIH for wiper trip to 1300m, wash down to 1500m. Continue to RIH and wash down last stand. Circulate bottoms up. Max trip gas of 216units recorded.

11th Nov 2004 Pump sweep and circulate B/U x 2. Flow check - OK. POOH from 2428 - 1823m: Tight (10 Klb) 1843 - 1823m. Swab 5 bbl. RIH to 1910m and circ B/U: Max gas 50 units. Flow check - OK. 30 Klb O/P at 1823m. Pump out of hole from 1823 - 1387m: Tight spots at 1733, 1641m - 30 Klb O/P. Pump out from 1823 – 1387m. POOH from 1387m - surface. Rack back 12¼" BHA. RIH and wash 9?" hang-off point. POOH wash tool and prepare to run 9?" casing. Begin to RIH 9?" casing.

12th Nov 2004 Continue to RIH 9?" joints to 1095m, run doubles from derrick as per tally. Run MLS tool with running tool and landing joint, land hanger at 157.5m. Rig down filling tool, rig up cement head and surface lines. Circulate 1.5 x casing volume with rig pumps, line up to cement unit, mix and pump cement as per program. Displace cement with rig pumps.

13th Nov 2004 Continue to displace cement using rig pumps. Bump plug with 3500psi, displace annulus above hanger to seawater, pump sugar water, set and pressure test the integrity of the MLS seals to 3500psi. Rig down 9?" casing handling tools. Cut 9?" casing and nipple up BOP stack and diverters. Make up and RIH seal assembly. Test same to 3000 psi - OK.

14th Nov 2004 Pressure test stack. Leak in wellhead. Nipple down BOP stack to check for leak. Change out seal assembly, pressure test to 5000psi - OK. Install diverters, run wear bushing, lay down 12¼" BHA, M/U 8½" BHA.

15th Nov 2004 Continue making up 8½" BHA. Shallow test MWD. Continue making up 8½" BHA. RIH 5" drill pipe to 1250 m, filling pipe as required. Wash down from 2376m. Perform kick drill, record SCRs, fan bottom for 5 minutes before drill out plugs and shoe track. Shoe track reamed twice before drilling 3m of new formation to 2431m. Pull back to shoe and circulate and condition mud to 9.2ppg in/out. FIT performed with a surface pressure of 1360psi (EMW 12.5ppg). Test IBOPs, Drill ahead 8½" hole from 2431m. Positive drilling break at 2458m, flow check - OK. Circulate drill beak- OK. Drill ahead from 2458m. Drilling break at 2499m, circulate out samples, drill break at 2516m, flow check - OK. Drill ahead from 2516m – 2539m. Flow check connection – OK.

16th Nov 2004

Drill ahead 8½" hole to 2457m. Flow check - OK. Drill ahead, drill break at 2561m. Flow check - OK. Drill ahead, drilling break at 2568m, circulate out sample. Drill ahead, drilling break at 2589m, flow check - OK. Drill ahead, drilling break at 2604m, circulate sample out. Drill ahead, drilling break at 2617m. Flow check, circulate out sample. Drill ahead, drilling break at 2640m, flow check - OK. Drill ahead, slight increase in flow out percentage at 2701m, flow check - OK. Drill ahead to 2735m, drill break from 30m/hr to 55m/hr, circ out samples, maximum gas 61 units AUX, 195 units MAIN, wait on town for core point decision, POOH to tight spot at 2678m, 30Klb o/pull, swabbed 1.5bbl, RIH to TD, flow check-static, circulate B/U, maximum gas 6 units on AUX. Flow check - static. POOH wet to tight spot from 2640m onwards. Rotate and reciprocate pipe through tight spots to 9?" shoe, flow check- static. Service Top drive, pump slug, Continue to POOH.

17th Nov 2004

Continue to POOH 8½". Make up 8½" BHA of core barrel #1. RIH to 2722m, wash down and circulate and condition mud. Max bottoms up gas recorded as 16 units. Tag bottom with core head at 2735m TD and cut core to 2743m. No ROP, increase flow rate from 200gpm to 300gpm. Circulate 1.5 x bottoms up. Max drilled gas recorded as 155 units. Flow check - static, POOH to inside 9?" shoe, flow check - static. Pump slug, POOH, rack back HWDP and collars. Break out core barrel and lay down on pipe deck, check core for recovery. Make up 8½" drilling assy.

18th Nov 2004

Continue to make up 8½" drilling assembly. RIH to tight spot at 2676m. Work through, wash and ream from 2676 - 2684m. RIH from 2684 - 2713m. Wash and ream from 2713 - 2735m. Log down slowly from 2735 - 2743m at 40m/hr. Drill ahead 8½" section from 2743 - 2748m. Drilling break, flow check - OK. Drill to 2821m, drilling break. Flow check - OK. Drill to 2834m.

19th Nov 2004

Drill ahead to 2835m, Flow check small drilling break - OK. Drill ahead from 2835 - 2842m, drilling break, flow check - OK. Drill to 2876m, trouble shoot top drive, circulate whilst making repairs. Drill ahead to 2919m, drilling break, flow check - OK. Drill to 2945m, gas peak at lag depth 2932m of 762 units. Circulate gas out of hole, flow check - OK. Background gas 50 units. Small gas peak began rising just prior to flow check reached 124 Units during flow check. Circulate hole and increase mud weight, gas peak of 270 units from lag depth of 2942m. Background gas of 20 units when BU circulated out of hole. Circulate and condition mud, raised mud weight to 9.4ppg. Drill to 2973m, flow check - OK. Circulate sample to surface, peaked at 2967m with 1195 Units. Perform dummy connection at 2973m (No Conn gas seen from this) and drill ahead. Flow check at 2991m (Gas 1095 units from 2975m) - OK. Drill to 2996m and flow check (Gas 1100 units from 2982m) - OK. Drill from 2996 - 3005m (Max gas 1136 units from 2991m) and circulate for sample - drill break at 3005m. Decide to drill 3m more and circ for sample. Drill from 3008 - 3017m and trouble shoot Top Drive. Drill ahead (Background gas 65 units, peak of 684 units from 3017m) from 3017 - 3033m. Flow check (Flow out increase of 9%) at 3033m - OK. Drill from 3033 - 3056m with background gas of 92 units. Flow check (Flow out increase of 10%, max gas 1046 units) at 3056m - OK. Drill from 3056-3098m with background gas of 85 units. Flow check (drilling break) - OK. Drill from 3098 - 3100m. Drilling break, circulate for sample, max gas 690 units. Drill from 3100 - 3141m, flow check - OK. Drill from 3141 - 3145m, Flow check (Flow out increase of 10%, max gas 636 units) at 3145m. Drill from 3145-3148m.

20th Nov 2004

Drill from 3148 - 3151m. Increase gas and flow out. Flow check at 3151m: max gas 1220 units. Drill from 3151 - 3155m, Increased gas and flow out. Max gas 1559 units. Drill from 3155 - 3159m. Drilling break at 3159m, flow check - OK. Drill from 3159 - 3180m. Drilling break at 3180m, flow check - OK. Drill from 3180 - 3197m. Drilling break at 3197m, flow check - OK. Drill from 3197 - 3246m. Drilling break at 3244m, flow check - OK. Drill from 3246 - 3329m, drilling break, flow check - OK. Drill from 3329 - 3384m, drilling break, flow check - OK. Circulate sample up, max gas 1724 units. Drill ahead from 3384 - 3403m, drilling break, flow check - OK. Drill ahead from 3403 - 3407m.

21st Nov 2004 Drill from 3407 - 3418m. Flow check drilling break - OK. Drill from 3418 - 3430m. Flow check drilling break - OK. Drill from 3430 - 3442m. Poor ROP, circ B/U and flow check - OK. POOH for bit trip. Pulled tight at 3168m. Work string, back-ream and pump out of hole from 3168 - 2452m. Tight spots with between 30 and 50 Klb O/P at 3168, 3143, 3111, 3086, 3051, 3045, 3029, 2996, 3967, 2962, 2892, 2755, 2718, 2690, 2678, 2645 and 2505m.

22nd Nov 2004 Pull bit into casing, slip and cut drill line and service Top Drive. Continue to POOH for new bit. Make up new 8½" bit and BHA and run in hole to 2402m. Service top drive. Continue to run in hole to 3418m. Ream down from 3418 - 3442m.

23rd Nov 2004 Drill ahead from 3442m. Trip gas 54 units. Flow check at 3443m due to apparent increase in flow out - OK. Drill ahead to 3478m and flow check drilling break - OK. Drill from 3478 - 3454m TD. Circulate 3 x bottoms up. Flow check - OK. Pull out of hole 5 stands wet from 3545 - 3418m. Pump slug. Flow check. Pull out of hole from 3481 - 3389m. Tight spot at 3412m – 50 Klb O/P. (Backreamed).

24th Nov 2004 Continue POOH from 3389m. Tight spots at 3374, 3365 and 3331m had 50 Klb O/P. Back-reamed these spots. Tight spot at 2725m had 15 Klb O/P. Work through. Continue POOH from 2725m to surface. Rack back BHA, lay out MWD. Rig up for wireline logging. RIH with Wireline Run #1: PEX-HRLA-CMR-SP-GR-LEH-QT. Unable to log down past 3410m. Log back to shoe then repeat section. Log GR to surface through casing and pull tools to surface.

25th Nov 2004 Down load Sperry-Sun radioactive sources and lay down tools. Pick up tools for log run #2 :VSI-GR and RIH. Run log #2. Complete run #2 and run Log #3: MDT-GR-LEH-QT.

26th Nov 2004 Continue MDT logging. Tool fails, pull to surface. Repair tool and run back in hole and resume MDT logging.

27th Nov 2004 Continue MDT logging. Pull MDT tools to surface and clean. JSA- Rig down Schlumberger. M/U 8½" BHA and RIH for wiper trip. Circ 2 x B/U at shoe : Max gas 24% (1200 units). Flow check and RIH to 2824 m, circulate bottoms up.

28th Nov 2004 Circulate at 2825 m – 51% gas (2550 u) max gas. Run in hole, 3115 m, circulate – 64% gas peak. RIH 3260 m – 20.7% gas. RIH 3376 m, wash and ream to 3545 m, no fill. Circulate 3 x bottoms up. Flow check. POOH. Flow check at 2409 m & 204 m. Lay out BHA-Bit. Clean floor. JSA-rig up wireline and tools. Monitor well on Trip tank. RIH schlumberger - MSCT-GR.

29th Nov 2004 Continue to log MSCT. 33 cores – recover 27. POOH, make up MDT and RIH, tool failed 2312 m. POOH to check, RIH, log to 3100 m.

30th Nov 2004 Continue to log and sample MDT tool. POOH for log run #6.

01st Dec 2004 Rig down MDT tool. Rig up Run log #6 : MSCT-GR-LEH-QT and RIH and core. POOH, 26 cores, 24 recovered. Clean and dress, make up new barrell and run log #7 : MSCT-GR-LEH-QT, 8 samples. POOH and rig up for log run #8 : FMI-DSI-HNGS-ECS-LEH-QT. RIH and log down.

02nd Dec 2004 Continue to log 3487 to 1630 m and to surface. Lay down tool, make up 8 ½" Bit and BHA, run in hole 10 74 m, fill every 20 stands. Circulate bottoms up @ 1074 m, 2% gas peak. RIH to shoe 2420 m, circulate, 12% gas peak. RIH to 2685 m, circulate, 51% gas peak. Flow check. RIH to 2900 m, circulate bottoms up, 55% gas peak. RIH to 3193 m, circulate bottoms up, 59% gas peak. RIH to 3515 m, tight hole, wash and ream to bottom, 3545 m, circulate and condition mud for Liner, 3% gas peak.

03rd Dec 2004 Circulate, flow check, POOH. Pump slug, continue to POOH. Flow checks at 2409 m & 203 m as POOH. Change bails-elevators, rig up weatherford tongs and unit, PJSM for liner and rig up and run liner. Run shoe-float and run liner in hole.

04th Dec 2004 Run Liner, run in hole on drill pipe. Unable to get to bottom, set casing 3458 m, circulate. Cement operations. Prepare to pressure test BOP and run completions and test string.

Section 2
Geological Summary

FORMATION TOPS

DESCRIPTION	MDRT (m)	TVDSS (m)	PROG. TOP MDRT (m)	PROG. TOP TVDSS (m)	HIGH / LOW (m)
WATER BOTTOM	108.8	-68.9	107.9	-68	
TORQUAY GROUP	108.8	-68.9	107.9	-68	
SEISMIC ANOMALY	702.5	-662.5	700	-660	2.5m Low
LWR MIOCENE MARL	884	-844	857	-817	27m Low
ANGAHOOK	1342	-1302	1335	-1295	7m Low
DEMONS BLUFF	1859	-1819	1820	-1780	39m Low
Top EVCM	2097	-2057	2117	-2077	20m high
E1 Reservoir Zone	2602	-2562	2546	-2506	56m Low
P5 Reservoir Zone	Absent		2666.9	-2627.9	
P4 Reservoir Zone	2733	-2693	2740	-2700	7m Low
P3 Reservoir Zone	2819	-2779	2814	-2774	5m Low
P2 Reservoir Zone	2857	-2817	2865	-2825	8m Low
P1 Reservoir Zone	3009	-2969	3005	-2965	4m Low
CRETACEOUS	3119	-3079	3144	-3104	25m High
C1 Reservoir Zone	3119	-3079	3144	-3104	25m High
Top BASALT	3382	-3342			
Cretaceous U/C			3487	-3447	
TOTAL DEPTH	3545	-3505	3527	-3487	18m Low

Sea Depth 68.9 m
MSL to RT 39.9 m

GEOLOGICAL SUMMARY

All returns to sea from spud to 218.0 metres as there was no riser to the rig.

Interval (m)			**ROP (avg)**	**Lithology Description** **Calcirudite and interbedded Calcarenite**
218	-	395	25-69 (51)	CALCIRUDITE: bryozoans, off white to light grey and olive grey, firm to moderately hard, irregular fracture, calcareous grains: 5% clay (grey calcilutite), moderately sorted, sub angular, equant, fragments, trace weak calcareous cement, accessories: gastropods 15%, pelecypods 10%, 15%, interskeletal porosity. CALCARENITE: fossiliferous, light grey, translucent, moderately hard, blocky, calcareous grains: trace clay, 90% sand grains, well sorted, angular, sub sperical grains, Trace calcareous cement, 10% intergranular porosity.

Gas average	**(ppm) :**	average	**Composition (ppm)**	C1	C2	C3	C4	C5	-
Show Details	No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Sideritic Calcarenite**						
395	-	594	11 – 89 (48)	CALCARENITE: cream to light yellow brown and yellow, grey firm to moderately hard, irregular fracture, calcareous grains: 10% clay (grey calcilutite), 90% sand grains, poorly sorted, sub angular, equant, weak calcareous and sideritic cements, accessories: pelecypods 5%, gastropods 3%, foraminifera 5%, 10% intergranular porosity.						
Gas average			**(ppm) :**		**Composition (ppm)**	C1	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Calcarenite with minor Siltstone**						
594	-	666	11 – 53 (30)	CALCARENITE: medium grey, white, friable to firm, irregular fracture, 30% silt, 70% sand, well sorted, sub angular, sub equant, moderately strong calcareous cement, accessories: pelecypods 20%, bryozoans 5%, fossils 5%, 20% intergranular porosity. SILTSTONE: brown to grey, black laminae, soft to firm, fissile fracture, moderately strong silicious cement.						
Gas average			**(ppm) :**		**Composition (ppm)**	C1	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description 5m New formation – Siltstone and Calcarenite**							
666	-	671	63-34 (45)	CALCARENITE: light grey, cream/off white, firm, blocky, calcareous grains: 30% clay, trace silt, 70% sand, moderately sorted, angular, sub spherical, moderately strong calcareous cement, accessories: trace foraminifera, trace bryozoans porosity: 10%, inter granular. SILTSTONE: sideritic, medium brown to ochre brown, moderately hard, blocky, calcareous grains: 30% clay, clastic grains: 5% clay, 60% silt, 5% coarse sand, accessories: quartz grain 5%.							
Gas average			**(ppm) :** 1	average	**Composition (ppm)**	C1 1	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Calcarenite And Interbedded Siltstone						
671	-	702.5	34-87 (65)	CALCARENITE: off white to light grey, translucent, firm, sub blocky, calcareous grains: 20% clay, 20% silt, 60% sand, moderately sorted, angular, sub spherical grains, moderately strong calcareous cement, accessories: trace bryozoans, trace foraminifera, porosity: 10%, inter granular. SILTSTONE: red/brown grey, moderately hard, blocky, calcareous grains: 20% clay, clastic grains: 10% clay, 70% silt, traces coarse sand, accessories: quartz grains.						
Gas average			**(ppm) :**	0.5	**Composition (ppm)**	C1 0.5	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows							

Interval (m)			ROP (avg)	Lithology Description Altered And Crystalline Mafic Volcanics Top Volcanics – 702.5m MD, -662.5m TVDSS						
702.5	-	731	14-74 (39)	ALTERED VOLCANICS: dark green to blue/green, mottled white with black specks, hard, blocky, trace quartz, weathered i/p, VOLCANICS, crystalline, medium grey to blue/grey, moderately hard to hard, blocky.						
Gas average			**(ppm) :**	0.5	**Composition (ppm)**	C1 0.5	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows							

Interval (m)			ROP (avg)	Lithology Description Calcarenite Grading To Calcisiltite						
731	-	884	13-93 (42)	CALCARENITE: light brown, cream & clear, soft, sub blocky, calc grains: 30% clay, 20% silt, 50% sand ,poorly sorted, sub angular, sub spherical, weak calcareous cement, accessories: trace fossils, porosity: trace, intergranular. CALCISILTITE: grey to light grey, trace cream/light brown, soft, sub blocky, calc grains: 20% clay, 30% silt, 20% sand, clastic grains: 10% clay, 10% silt, 10% very fine sand, weak calcareous cement, accessories: trace fossils.						
Gas average			**(ppm) :**	223	**Composition (ppm)**	C1 223	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows							

Interval (m)			ROP (avg)	Lithology Description Marl Top Lower Miocene Marl – 884m MD, 844m TVDSS						
884	-	930	25-83 (50)	MARL: pale to light-med grey, soft, sub blocky fracture, calcareous grains: 40% clay, 10% silt, clastic grains: 10% clay, 30% silt, 10% very fine sand, argillaceous and trace calcareous cement, accessories: trace fossils.						
Gas average			**(ppm) :**	722	**Composition (ppm)**	C1 722	C2	C3	C4	C5	-

Show Details			No Hydrocarbon Shows							
Interval (m)			**ROP (avg)**	**Lithology Description Marl With Dolomite Streaks**						
930	-	990	38-87 (63)	MARL: olive grey - dark green grey, soft, sub-blocky fracture, calcareous grains: 80% clay, clastic grains: 20% silt, calcareous cement, accessories: fossils 5%. DOLOMITE: brown-red-grey, hard-very hard, massive, weak calcareous cement.						
Gas average			**(ppm) :**	1360	**Composition (ppm)**	C1 1360	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows							

Interval (m)			**ROP (avg)**	**Lithology Description Marl Grading To Calcilutite With Dolomite Streaks**						
990	-	1130	19-94 (58)	CALCILUTITE: fossiliferous, olive grey - dark green grey, soft, sub-blocky fracture, calcareous grains: 40% clay, silici-clastic grains: 50% clay, 10% very fine sand, very calcareous to moderately calcareous cement, accessories: shell fragments 15%, bryozoan 5%, trace coal. DOLOMITE: brown-red-grey, hard-very hard, moderate fracture, weak calcareous cement. MARL: med olive grey-light grey, friable-firm, sub blocky, calcareous grains: 70% clay, clastic grains: 30% silt, strong calcareous cement.						
Gas average			**(ppm) :**	2010	**Composition (ppm)**	C1 2010	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows							

Interval (m)			**ROP (avg)**	**Lithology Description Calcilutite With Minor Siltstone**						
1130	-	1342	21-93 (51)	CALCILUTITE: light-green-grey, soft, amorphous, calcareous grains: 40% silt, clastic grains: 60% silt, moderately calcareous cement, accessories: 5% shell fragments. SILTSTONE: light olive-light-brown, soft-friable, sub blocky, calc grains: 30% silt, clastic grains: 70% silt, moderately calcareous cement.						
Gas average			**(ppm) :**	2533	**Composition (ppm)**	C1 2460	C2 0	C3 3	C4 2	C5 2	-
Show Details			No Hydrocarbon Shows							

Interval (m)	**ROP (avg)**	**Lithology Description Calcareous Siltstone Top Angahook Formation - 1342m MD, 1302m TVDSS**

1342	-	1398	16-71 (45)	SILTSTONE: brown-light-olive-grey, friable to firm, sub-blocky, calcareous grains: 60% silt, clastic grains: 40% silt, moderately calcareous cement, accessories: dolomite 3%, glauconite trace. CALCILUTITE: light-green-grey-olive-grey, soft, amorphous, calcareous grains: 30% clay, 40% silt, clastic grains: 20% silt, 10% very fine sand, moderately calcareous cement.							
Gas average			**(ppm) :**	3679	**Composition (ppm)**	C1 3458	C2	C3 8	C4 2	C5 1	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone Grading To Claystone**							
1398	-	1520	21-81 (54)	CALCAREOUS SILTSTONE: medium brown-grey brown, firm, blocky fracture, moderately calcareous, glauconitic in part, siliceous texture in part, trace fossils, trace pyrite, trace glauconite, 34 % calcite. CLAYSTONE: cream, light brown coloured, very soft, amorphous, minor calcareous cement, common siliceous matrix, 10% kaolinite, trace carbonaceous material, minor loose Dolomite: orange-red-brown, hard, blocky.							
Gas average			**(ppm) :**	5900 (29.5 u)	**Composition (ppm)**	C1 5465	C2 14	C3 13	C4 5	C5 2	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone Grading To Claystone**							
1520	-	1740	16-83 (39)	30-90% SILTSTONE: medium brown-grey brown, firm, blocky fracture, moderately calcareous, glauconitic in part, siliceous texture in part, trace fossils, trace pyrite. 10-50% CLAYSTONE: cream, light brown coloured, very soft, amorphous, minor calcareous cement, common siliceous matrix, 10% kaolinite, trace carbonaceous material, minor loose Dolomite: orange-red-brown, hard, blocky. 0-10% CLAYSTONE: medium grey-blue-grey, moderately hard.							
Gas average			**(ppm) :**	7900 (40 units)	**Composition (ppm)**	C1 7424	C2 35	C3 18	C4 9	C5 5	-
Show Details			No Hydrocarbon Shows								

Interval (m)	**ROP (avg)**	**Lithology Description Calcareous Siltstone with Interbedded Claystone**

1740	-	1780	22-71 (46)	50-70% CALCAREOUS SILTSTONE: medium brown to grey, friable to firm, sub - blocky fracture, siliceous cement in part, abundant calcareous cement, trace very fine sand, minor glauconite, 3%, fossils, trace pyrite. 10-20% CLAYSTONE: light grey-off white, very light brown, very soft, amorphous, minor calcareous cement, siliceous matrix, trace very fine sand, common kaolinite, minor dolomite. 10-20% CALCAREOUS CLAYSTONE: light grey-blue grey, firm to moderately hard, blocky fracture, calcareous cement, minor siliceous matrix.							
Gas average			**(ppm) :**	8340 (42 units)	**Composition (ppm)**	C1 7380	C2 58	C3 22	C4 10	C5 4	-
Show Details			No Hydrocarbon Shows								
Interval (m)			**ROP (avg)**	**Lithology Description Siltstone With Graded And Interbedded Claystone**							
1780	-	1859	14-57 (31)	40-75% SILTSTONE: medium-light brown, firm, blocky fracture, minor calcareous cement, siliceous matrix, trace very fine sand, trace dolomite, trace pyrite. 10-40% CLAYSTONE: light to med brown & light grey brown, soft to firm, sub-blocky fracture, calcareous cement, siliceous matrix, trace shell fragments. 10-20% CLAYSTONE: light blue-grey, friable to firm, calcareous to very calcareous, grades to MARL, trace shell fragments, trace pyrite.							
Gas average			**(ppm) :**	6800 (34 Units)	**Composition (ppm)**	C1 6390	C2 63	C3 25	C4 11	C5 4	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone Grading To Claystone With Interbedded Dolomite (Top Demons Bluff Formation – 1859m MD, - 1819m TVDSS)**							
1859	-	1937	14-52 (32)	70-95% SILTSTONE: medium-light brown, firm, blocky fracture, minor calcareous cement, siliceous matrix, trace very fine sand, trace dolomite, trace pyrite. 10-15% CLAYSTONE: light grey-blue grey, friable to firm, blocky, calcareous cement, trace fossils, trace pyrite, grades to CALCAREOUS CLAYSTONE. 0-20% DOLOMITE: yellow-grey-red-brown, hard - very hard, slightly calcareous.							
Gas average			**(ppm) :**	6925 (35 units)	**Composition (ppm)**	C1 6357	C2 76	C3 31	C4 15	C5 5	-
Show Details			No Hydrocarbon Shows								

Interval (m)	**ROP (avg)**	**Lithology Description Siltstone And Minor Calcareous Claystone**

1937	-	2036	10-39 (25.5)	75-95% SILTSTONE: light to medium brown & light grey brown coloured, soft to friable, sub blocky fracture, clastic grains: 10% clay, 50% silt, 25% very fine sand, 15% fine sand, moderately strong siliceous cement, accessories: trace dolomite, trace shell fragments. 5-20% CALCAREOUS CLAYSTONE: light grey to blue grey coloured, friable to firm, blocky, calcareous grains: 15% clay, clastic grains: 15% clay, 60% silt, 10% very fine sand, weak calcareous cement, accessories: trace fossils, trace pyrite.							
Gas average			**(ppm) :**	5375 (27 units)	**Composition (ppm)**	C1 4807	C2 92	C3 35	C4 18	C5 6	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description** **Siltstone Grading To Claystone With Minor Calcareous Claystone**							
2036	-	2097	13-41 (29)	SILTSTONE: dark grey brown, occasionally medium to light brown, firm, sub blocky, clastic grains: 20% clay, 40% silt, 30% very fine sand, 10% fine sand, cements/strengths: argillaceous/moderate, accessories: pyrite 15%, trace quartz. CLAYSTONE: medium grey coloured, soft, sub blocky, clastic grains: 50% clay, 30% silt, 20% very fine sand, trace fine sand. CALCAREOUS CLAYSTONE: light grey to light blue grey coloured, moderately hard, blocky, calcareous grains: 25% clay, clastic grains: 60% clay, 10% silt, 5% very fine sand.							
Gas average			**(ppm) :**	3448 (17 units)	**Composition (ppm)**	C1 2980	C2 75	C3 38	C4 23	C5 6	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description** **Claystone Grading To Siltstone** **(Top EVCM – 2097mMD, -2057mTVDSS)**							
2097	-	2134	19-74 (46)	CLAYSTONE: cream, light to medium brown and green grey coloured, very soft, amorphous, calcareous grains: trace clay, clastic grains: 50% clay, 40% silt, 10% very fine sand, accessories: trace carbonaceous, coal 3%, trace fossils. SILTSTONE: light brown to translucent, medium grey coloured, friable to firm, sub blocky fracture, clastic grains: 30% clay, 40% silt, 20% very fine sand, 10% fine sand, cements/strengths: argillaceous/moderate, calcareous/trace, accessories: trace carbonaceous.							
Gas average			**(ppm) :**	514 (2 units)	**Composition (ppm)**	C1 410	C2 9	C3 5	C4 4	C5 1	-
Show Details			No Hydrocarbon Shows								

Interval (m)	**ROP (avg)**	**Lithology Description** **Sandstone Grading To Siltstone And Claystone**

2134	-	2182	11-58 (27)	SANDSTONE: light yellow brown to clear translucent, hard, blocky, clastic grains: 40% very fine sand, 20% fine sand, 30% medium sand, 10% coarse sand, poorly sorted, amorphous, sub sperical, cements/strengths: siliceous/strong, calcareous/trace, porosity: 15%, intergranular. SILTSTONE: dark to medium grey brown coloured, firm to moderately hard, blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: trace carbonaceous, trace coal. CLAYSTONE: light to medium, occasionally off white coloured, soft, sub blocky, clastic grains: 60% clay, 30% silt, 10% very fine sand, accessories: trace calcareous.							
Gas average			**(ppm) :**	1271 (6 Units)	**Composition (ppm)**	C1 1026	C2 21	C3 15	C4 15	C5 8	-
Show Details			65% fluorescence at 2772, 2778 m samples. No live oil shows.								

Interval (m)			**ROP (avg)**	**Lithology Description** **Siltstone With Occasional Claystone And Minor Sandstone**							
2182	-	2266	5-34 (21)	SILTSTONE: grey brown to medium brown, light grey brown coloured, firm to moderately hard, sub blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, cements/strengths: argillaceous/moderate, accessories: trace fossils, trace carbonaceous, trace sandy. CLAYSTONE: off white to light grey, brown grey coloured, soft, amorphous, clastic grains: 60% clay, 30% silt, 10% very fine sand, accessories: kaolinite 10%. SANDSTONE: micaceous, off white to light grey, brown grey coloured, friable, fracture clastic grains: 10% clay, 20% silt, 70% very fine sand, trace very coarse sand, moderately sorted, sub rounded, sub spherical, accessories: kaolinite 10%.							
Gas average			**(ppm) :**	1794 (9 units)	**Composition (ppm)**	C1 1291	C2 29	C3 24	C4 27	C5 20	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description** **Sandstone Grading To Siltstone And Claystone**							
2266	-	2382	6-49 (24)	SILTSTONE: grey brown to medium brown, light grey brown coloured, firm to moderately hard, sub blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, cements/strengths: argillaceous/moderate, accessories: carbonaceous 15%, micaceous 10%. SANDSTONE: off white light grey, light brown grey coloured, friable, clastic grains: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, well sorted, sub rounded, sub spherical, accessories: siderite 3%, trace pyrite. CLAYSTONE: white pale grey coloured, soft, amorphous, clay clastic grains: 70% clay, 15% silt, 10% very fine sand, accessories: trace fossils.							
Gas average			**(ppm) :**	2050 (10 units)	**Composition (ppm)**	C1 1461	C2 43	C3 31	C4 28	C5 14	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone With Minor Claystone**						
2382	-	2428	15-37 (21)	SILTSTONE: grey brown to medium brown, light grey brown coloured, firm to moderately hard, sub blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, cements/strengths: argillaceous/moderate, accessories: carbonaceous 15%, micaceous 10%. CLAYSTONE: white to pale grey coloured, soft, amorphous, clay clastic grains: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand, accessories: trace fossils.						
Gas average			**(ppm) :**	3606 (18 units)	**Composition (ppm)**	C1 2555	C2 121	C3 77	C4 62	C5 26	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone**						
2428	-	2433	7-19 (15)	100% SILTSTONE: light grey medium brown , firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding , minor mica .						
Gas average			**(ppm) :**	1461 ppm (7 units)	**Composition (ppm)**	C1 1115	C2 54	C3 27	C4 19	C5 8	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone with interbedded Coarse Sandstone**						
2433	-	2439	21-47 (35)	50-70% SILTSTONE: light grey medium brown, firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding, minor mica. 5-50% SANDSTONE: clear to opaque, translucent, loose, grains: 80% very coarse, 10% coarse sand, 10% Granular, poorly sorted, sub sperical, cements/strengths: common coating of very fine sandstone: 20%, intergranular porosity.						
Gas average			**(ppm) :**	2627 (13 Units)	**Composition (ppm)**	C1 1971	C2 95	C3 37	C4 22	C5 8	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone with minor interbedded Fine Sandstone**

2439	-	2457	19-53 (33)	50-75% SILTSTONE: light grey medium brown, firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding, minor mica. 20-50% SANDSTONE: clear-white coloured, friable-firm, irregular fracture Clastic Grains: 80% very fine sand, 20% fine sand, well sorted, sub-angular, Cement: argillaceous/moderate, Trace Mica Porosity: 3%, intergranular.							
Gas average			**(ppm) :**	2557 (13 Units)	**Composition (ppm)**	C1 2034	C2 104	C3 42	C4 25	C5 8	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description** **Interbedded Coarse and Fine Sandstones with Siltstones**							
2457	-	2466	13-57 (33)	5-70% SANDSTONE: clear to opaque, translucent, loose, grains: 80% very coarse, 10% coarse sand, 10% Granular, poorly sorted, sub sperical, cements/strengths: common coating of very fine sandstone: 20%, intergranular porosity. 10-35% SILTSTONE: light grey medium brown, firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding, minor mica. 10-35% SANDSTONE: clear-white coloured, friable-firm, irregular fracture Clastic Grains: 80% very fine sand, 20% fine sand, well sorted, sub-angular, Cements: argillaceous/moderate, Trace Mica Porosity: 3-5 %, intergranular.							
Gas average			**(ppm) :**	1849 (9 Units)	**Composition (ppm)**	C1 1435	C2 75	C3 34	C4 22	C5 6	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description** **Siltstone With Interbedded Sandstone**							
2466	-	2539	8-60 (30)	SILTSTONE: light grey medium brown, firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding, trace mica. SANDSTONE: clear-white coloured, friable-firm, irregular fracture CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, Trace Mica POROSITY: 3%, intergranular.							
Gas average			**(ppm) :**	2422 (12 units)	**Composition (ppm)**	C1 1906	C2 95	C3 36	C4 23	C5 9	-
Show Details			5% fluorescence at 2472m . No live oil shows.								

Interval (m)			**ROP (avg)**	**Lithology Description Interbedded Siltstones and Sandstones**						
2539	-	2568	7-45 (22)	SANDSTONE; cream to light brown, friable to firm, fine to very fine, trace medium, grading to silt size, poorly sorted, sub-rounded, sub-spherical, argillaceous cement (kaolinite) , sub-blocky, 3 % visual porosity . SILTSTONE: med brown-grey brown coloured, mod-hard, brittle fracture, moderate argillaceous cement, carbonaceous, micaceous. SILTSTONE: light brown, cream coloured, firm-mod hard, sub fracture, strong argillaceous cement (Kaolinite) , clay matrix, trace very fine sandy matrix						
Gas average			**(ppm) :**	1990 ppm (10 units)	**Composition (ppm)**	C1 1430	C2 91	C3 41	C4 25	C5 11	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone with minor interbedded Coarse Sandstone**						
2568	-	2597	12-37 (27)	SILTSTONE: light-medium brown, cream coloured, soft - friable, common very fine sand and clay matrix, weakly argillaceous, carbonaceous. Trace COAL. SILTSTONE: cream-light brown coloured, soft, sub-blocky fracture, very fine sand and clay matrix, minor argillaceous, carbonaceous, trace pyrite. SANDSTONE: light brown, clear, translucent, loose, dispersive, med-coarse, minor v coarse to granular, poorly sorted, sub-rounded, sub-spherical, trace siliceous cement, trace kaolinite, 20% visual porosity.						
Gas average			**(ppm) :**	2831 (14 Units)	**Composition (ppm)**	C1 2118	C2 108	C3 48	C4 30	C5 14	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Sandstone with minor interbedded Siltstones**						
2597	-	2629	14-55 (34)	SANDSTONE: cream-light brown, clear, translucent, loose-soft, dispersive fracture, CLASTIC GRAINS: 40% clay, 30% silt, 10% very fine sand, 5% medium sand, 10% coarse sand, 5% very coarse sand, poorly sorted, sub-angular, sub-spherical, weak argillaceous cement, trace glauconite, 5% visual porosity. SILTSTONE: medium & dark brown, occas. light brown coloured, firm-mod hard, brittle fracture CLASTIC GRAINS: 10% clay, 80% silt, 10% very fine sand, ACCESSORIES: carbonaceous 3%, pyrite tr%.						
Gas average			**(ppm) :**	4442 (22 Units)	**Composition (ppm)**	C1 3488	C2 135	C3 61	C4 41	C5 19	-
Show Details			No Hydrocarbon Shows								

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone with minor interbedded Sandstones**						
2629	-	2663	21-68 (37)	SILTSTONE: medium-light brown coloured, firm-mod hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, moderate argillaceous cement, carbonaceous. SANDSTONE: light brown, cream, occas medium grey coloured, soft, sub-blocky fracture CLASTIC GRAINS: 20% clay, 20% silt, 30% very fine sand, 15% fine sand, 5% medium sand, tr% very coarse sand, moderately well sorted, sub-angular, sub-spherical, moderate argillaceous cement, trace pyrite, trace visual porosity.						
Gas average			**(ppm) :**	6089 (31 Units)	**Composition (ppm)**	C1 4349	C2 207	C3 134	C4 106	C5 47	-
Show Details			No Hydrocarbon Shows							

Interval (m)			**ROP (avg)**	**Lithology Description Sandstone With Interbedded Siltstone**						
2663	-	2702	13-58 (38)	SANDSTONE: light brown, cream, occasionally medium grey coloured, soft, sub-blocky fracture CLASTIC GRAINS: 20% clay, 20% silt, 30% very fine sand, 15% fine sand, 5% medium sand, tr% very coarse sand, moderately well sorted, sub-angular, sub-spherical, moderate argillaceous cement, trace pyrite, trace visual porosity. SILTSTONE: medium-light brown coloured, firm-mod hard, sub-blocky fracture, CLASTIC GRAINS: 20% clay, 70% silt, 10% very fine sand, moderate argillaceous cement, carbonaceous.						
Gas average			**(ppm) :**	8292 (42 units)	**Composition (ppm)**	C1 6017	C2 296	C3 223	C4 140	C5 57	-
Show Details			No Hydrocarbon Shows							

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone With Trace Sandstone**						
2702	-	2735	13-41 (33)	SILTSTONE: light grey medium brown, firm to mod hard, sub blocky fracture, clastic grains: 10% clay, 80% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding, minor mica. SANDSTONE: clear-white coloured, friable-firm, irregular fracture CLASTIC GRAINS: 10% very fine sand, 30% fine sand, 70% medium sand, trace coarse sand, well sorted, sub-angular, argillaceous cement, 5 % visual porosity.						
Gas average			**(ppm) :**	9197 (45 units)	**Composition (ppm)**	C1 6005	C2 547	C3 402	C4 156	C5 49	-
Show Details			No Hydrocarbon Shows							

Interval (m)			**ROP (avg)**	**CORE #1 - Cuttings Lithology Description Sandstone**						
2735	-	2741	2-19 (13.5)	SANDSTONE: very pale brown, white brown, translucent coloured, moderately hard, blocky, clastic grains: 40% very fine sand, 60% fine sand, very well sorted, angular, sub spherical, cements/strengths: siliceous/moderate, porosity: intergranular, 15%.						
Gas average			**(ppm)**	26893 (10 units)	**Composition (ppm)**	C1 14944	C2 1780	C3 2019	C4 1046	C5 261	-
Show Details			Fluorescence: 50-20%, moderately bright, yellow/green, moderately fast at 50% distribution, slow at 20%, even to patchy, direct cut on core chip, thin dull yellow ring residue, poor dull crush cut. Gas Peak at 2736m: Total gas – 33696 (20259 / 2456 / 2769 / 1508 / 411).							

Interval (m)			**ROP (avg)**	**CORE #1 - Cuttings Lithology Description Siltstone**						
2741	-	2743	18-19 (18.5)	SILTSTONE: dark brown coloured, hard to very hard, blocky, clastic grains: 10% clay, 80% silt, 10% very fine sand, tr% fine sand.						
Gas average			**(ppm)**	28004 (14 Units)	**Composition (ppm)**	C1 16528	C2 1876	C3 1976	C4 944	C5 228	-
Show Details			No Hydrocarbon Shows							

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone with minor Sandstone**						
2743	-	2762	0.8-17 (8.0)	90% SILTSTONE: medium to dark brown coloured, hard to very hard, blocky, clastic grains: 30% clay, 70% silt, trace pyrite. 5% SANDSTONE: micaceous, white to very pale brown, firm to moderately hard, clastic grains: 30% very fine sand, 40% fine sand, 20% medium sand, moderately well sorted, angular, sub spherical, argillaceous cement, trace intergranular porosity. 5% SANDSTONE: white to cream coloured, friable, clastic grains: 20% fine sand, 80% medium sand, well sorted, sub-angular, sub-spherical, argillaceous cement, 10% visual porosity.						
Gas average			**(ppm)**	6200 (31 units)	**Composition (ppm)**	C1 3790	C2 430	C3 310	C4 110	C5 35	-
Show Details			No Hydrocarbon Shows							

Interval (m)	**ROP (avg)**	**Lithology Description Siltstone**

2762	-	2819	6-16 (11)	100% SILTSTONE: medium-dark grey coloured, hard to very hard, blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, common mica, trace pyrite.						
Gas average			**(ppm)**	5100 (25 Units)	**Composition (ppm)**	C1 3350	C2 370	C3 200	C4 55	C5 15	-
Show Details			No Hydrocarbon Shows							

Interval (m)			**ROP (avg)**	**Lithology Description** **Top P3 Sand 2819m** **Siltstone With Subordinate Interbedded Sandstone**						
2819	-	2834	9-16 (12)	SILTSTONE: light to medium grey coloured, firm to moderately hard, blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, accessories: trace mica, carbonaceous traces. SANDSTONE: kaolinitic, light brown, cream, medium brown coloured, soft, sub blocky fracture clastic grains: 20% clay, 10% silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, sub rounded, spherical, cements/strengths: argillaceous / weak, siliceous / trace, accessories: trace coal, porosity: 3%, intergranular.						
Gas average			**(ppm)**	16 911 (85 Units)	**Composition (ppm)**	C1 11668	C2 1054	C3 634	C4 232	C5 54	-
Show Details			Gas Peak at 2822m: Total Gas 40154 (201 units), Breakdown (30071/2410/1421/521/112).							

Interval (m)			**ROP (avg)**	**Lithology Description** **Sandstone And Interbedded Siltstone**						
2834	-	2873	10-50 (24)	SANDSTONE: kaolinitic, clear-white, clastic grains: 70% fine sand, 30% medium sand, moderately well sorted, sub-angular, sub spherical, argillaceous cement, 5% intergranular porosity, trace COAL. SILTSTONE: medium-dark grey-brown coloured, hard to very hard, blocky, clastic grains: 20% clay, 80% silt, trace very fine sand, carbonaceous. SILTSTONE: light grey-white coloured, soft, sub-blocky, clastic grains: 5% clay, 75% silt, trace very fine sand, carbonaceous.						
Gas average			**(ppm)**	25536 (127u)	**Composition (ppm)**	C1 18251	C2 1508	C3 947	C4 399	C5 105	-
Show Details			Fluorescence: In mud, 2835-53m; 2859-2968m; pale yellow/ green slow bleeding cut, thin residual ring 2853-59m 20% patchy, dim white fluorescence, moderately fast cut, dull white crush cut, thin white residual ring. Gas Peaks:							

	Depth	TG	C1	C2	C3	iC4	nC4	iC5	nC5
	2844	35491	21332	1966	1306	279	263	78	53
	2858	42842	30660	2534	1682	372	350	107	72
	2862	50159	35390	2971	2012	455	433	137	94

Interval (m)			**ROP (avg)**	**Lithology Description** **Top P2 Sand – 2873m** **Interbedded Siltstone And Sandstone**						
2873	-	2907	18-41 (23)	SILTSTONE: medium-brown to light grey coloured, firm to hard, brittle fracture, clastic grains: 10% clay, 60% silt, 20% very fine sand, argillaceous cement, carbonaceous in part. SANDSTONE: kaolinitic, clear-white, light brown, clastic grains: 70% fine sand, 40% medium sand, moderately well sorted, sub-angular, sub spherical, argillaceous cement, 5% intergranular porosity.						
Gas average			**(ppm)**	21492 (107 u)	**Composition (ppm)**	C1 16598	C2 1190	C3 546	C4 214	C5 67	-
Show Details			Fluorescence: 2892-2907m: In mud, pale yellow green, slow bleeding cut, thin residual ring								

Interval (m)			**ROP (avg)**	**Lithology Description** **Sandstone**						
2907	-	2916	30-44 (37)	SANDSTONE: kaolinitic, light brown, cream, medium brown coloured, soft, sub blocky fracture clastic grains: 20% clay, 10% silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, sub rounded, spherical, cements/strengths: argillaceous / weak, siliceous / trace, accessories: trace coal, porosity: 5%, intergranular.						
Gas average			**(ppm)**	14739 (73 units)	**Composition (ppm)**	C1 11599	C2 638	C3 301	C4 131	C5 47	-
Show Details			Fluorescence: 40% under black light; slow, dull, yellow, patchy direct cut; blooming, pale green crush cut; thin, dim, yellow ring residue. Gas Peak: 2912m, 16984ppm / 85 units, (13633 / 724 / 331 / 141 / 51)								

Interval (m)			**ROP (avg)**	**Lithology Description** **Siltstone With Subordinate Interbedded Sandstone**						
2916	-	3024	7-68 (28)	SILTSTONE: light to medium grey coloured, firm to moderately hard, blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, accessories: trace mica, carbonaceous traces. SANDSTONE: clear-opaque-white, loose, clastic grains: 20% medium 40% coarse, 20% very coarse, 20 % Cobble size, poorly sorted, sub rounded, sub-spherical, bit fractured, porosity: 20 %, intergranular.						
Gas average			**(ppm)**	84857 (424 u)	**Composition (ppm)**	C1 60651	C2 4783	C3 2168	C4 946	C5 272	-
Show Details			Fluorescence: 2916-31m: In mud, pale yellow green, slow bleeding cut, thin residual ring 2913-2919m, 2925-31m: 50%, patchy, moderately bright yellow, moderately fast cut, pale white blooming crush cut, dull green residual ring. Gas Peak: 2967m, 239592 / 1198 units, (160150 / 13832 / 6879 / 3206 / 916) 2979m, 220464 / 1102 units, (156046 / 12504 / 4945 / 2117 / 601).								

Interval (m)			ROP (avg)	Lithology Description Top P1 Sand - 3024m Interbedded Siltstone and Sandstone
3024	-	3136	13-71 (28)	SILTSTONE: grey to brown coloured, firm to moderately hard, blocky, clastic grains: 10% clay, 60% silt, 30% very fine sand, cements/strengths: argillaceous/moderate. SANDSTONE: clear to opaque white coloured, loose, clastic grains: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub angular, equant, porosity: 25%, intergranular.

Gas average	(ppm)	26285 (131 u)	Composition (ppm)	C1 18086	C2 1213	C3 491	C4 274	C5 119	-

Show Details	No fluorescence. Gas Peak: 3056m, 146524ppm / 570 units, (113939 / 7147 / 2900 / 1497 / 404) 3043m, 205008 / 1025units (149048 / 11250 / 5345 / 2347 / 655)

Interval (m)			ROP (avg)	Lithology Description Top C1 Sand - 3136m Sandstone
3136	-	3148	18-78 (41)	SANDSTONE: (3136-3158m), very light grey & clear to light brown coloured, loose, dispersive, clastic grains: 10% fine sand, 20% medium sand, 40% coarse sand, 30% very coarse sand, trace granular, moderately sorted, angular, sub spherical, cements/strengths: siliceous/trace, porosity: 20%, intergranular.

Gas average	(ppm)	220490 (421 u)	Composition (ppm)	C1 159226	C2 12622	C3 3477	C4 1423	C5 428	-

Show Details	No fluorescence. Gas Peak: 3145m, 311761ppm / 1559 units, (210666 / 16846 / 4524 / 1884 / 596)

Interval (m)			ROP (avg)	Lithology Description Sandstones with minor Interbedded Siltstone
3148	-	3289	6-50 (20)	SANDSTONE: light grey-light brown, loose, very poor sorting, angular, sub-elongate, trace siliceous cement, 15 % visual porosity. SANDSTONE: kaolinitic, light brown, cream, medium brown coloured, soft, sub blocky fracture clastic grains: 20% clay, 10% silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, sub rounded, spherical, cements/strengths: argillaceous/weak, siliceous/trace, accessories: trace coal, porosity: 5%, intergranular. SILTSTONE: light grey to light brown, firm to moderately hard, blocky, clastic grains: 10% clay, 90% silt, trace very fine sand.

Gas average	(ppm)	19009 (95 units)	Composition (ppm)	C1 14126	C2 941	C3 326	C4 165	C5 76	-

Show Details	No Hydrocarbon Shows

Interval (m)	ROP (avg)	Lithology Description Sandstone

3289	-	3305	10-33 (45)	SANDSTONE: kaolinitic, light brown, cream, white, light brown coloured, loose, medium to cobble size grain , poorly sorted, sub angular, sub-elongate, weak argillaceous cement, moderate siliceous cement, 10 %, intergranular porosity.						
Gas average			**(ppm)**	8988 (45 units)	**Composition (ppm)**	C1 6741	C2 392	C3 153	C4 71	C5 32	-
Show Details			No Hydrocarbon Shows							

Interval (m)			**ROP (avg)**	**Lithology Description** **Interbedded Siltstone and Sandstone**						
3305	-	3370	8-32 (15)	SILTSTONE: grey to brown coloured, firm to moderately hard, blocky, clastic grains: 10% clay, 60% silt, 30% very fine sand, cements/strengths: argillaceous/moderate. SANDSTONE: kaolinitic, light brown, cream, white, light brown coloured, loose, medium to cobble size grain , poorly sorted, sub angular, sub-elongate, weak argillaceous cement, moderate siliceous cement, 10%, intergranular porosity.						
Gas average			**(ppm)**	7789 (39 units)	**Composition (ppm)**	C1 5774	C2 322	C3 127	C4 63	C5 29	-
Show Details			No Hydrocarbon Shows							

Interval (m)			**ROP (avg)**	**Lithology Description** **Siltstone**						
3370	-	3382	4-15 (7)	SILTSTONE: dark grey to dark brown coloured, firm to moderately hard, blocky, clastic grains: 30% claystone, 70% siltstone, cements/strengths: argillaceous/siliceous moderate.						
Gas average			**(ppm)**	11342 (57 units)	**Composition (ppm)**	C1 8887	C2 469	C3 159	C4 69	C5 27	-
Show Details			No Hydrocarbon Shows							

Interval (m)	**ROP (avg)**	**Lithology Description** **Volcanics, Sandstones, Minor Interbedded Siltstone** **Top Volcanics – 3382m**

3382	-	3388	1-56 (21)	IGNEOUS: green to white coloured, soft with associated calcite, light pink coloured, soft, amorphous fracture. SANDSTONE: clear to opaque, loose, very poor sorting, angular, sub-elongate, trace siliceous cement, 20% visual porosity. SANDSTONE: kaolinitic, light brown, cream, white, light brown coloured, loose, fine to coarse, well sorted, sub angular, sub-spherical, weak argillaceous cement, moderate siliceous cement, 20%, visual intergranular porosity. SLTSTONE: dark-grey-dark-brown coloured, firm-mod hard, brittle fracture clastic grains: 10% clay, 90% silt, tr% very fine sand, weak siliceous cement.							
Gas average			**(ppm)**	164,904 (824 u)	**Composition (ppm)**	C1 91155	C2 12091	C3 5200	C4 1588	C5 673	-
Show Details			Fluorescence in mud (solvent cut fluor): Streaming bright pale green to pale yellow fluorescence with instant cut. Gas Peak: 344700ppm / 1723 units (192430 / 25131 / 12360 / 5684 / 1803).								

Interval (m)			**ROP (avg)**	**Lithology Description Altered And Crystalline Volcanics , Minor Sandstone**							
3388	-	3407	2-30 (12)	VOLCANICS: altered and calcareous, mottled white, green, black coloured with trace tan to red calcite, possibly from veins, firm to moderately hard, blocky, accessories: feldspar 15%, crystalline 10%. SANDSTONE: white to off white coloured, friable to firm, sub blocky fracture, calc grains: 10% clay, clastic grains: 20% clay, tr% silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, angular, sub equant, cements/strengths: calcareous/moderate, argillaceous/weak, porosity: trace, intergranular. VOLCANICS: crystalline, black, green, dark grey, trace clear coloured, moderately hard, blocky, accessories: feldspar 15%, trace calcareous.							
Gas average			**(ppm)**	6181 (31 units)	**Composition (ppm)**	C1 8794	C2 1022	C3 549	C4 288	C5 106	-
Show Details			No Hydrocarbon Shows.								

Interval (m)			**ROP (avg)**	**Lithology Description Altered And Ferrous Volcanics with Minor Sandstone**							
3407	-	3430	3-16 (9)	ALTERED VOLCANICS: calcareous, mottled white, green, black, with trace tan to red coloured vein calcite, firm to moderately hard, irregular fracture, accessories: feldspar 15%, crystalline 10%. VOLCANICS: ferrous, black, dark grey, red to pink, green, light grey, hard to very hard, irregular fracture, 10% crystalline. SANDSTONE: light brown to grey, firm to mod hard, very fine to coarse grained, poorly sorted, angular, sub-equant grains, siliceous cement, trace calcareous cement, trace porosity.							
Gas average			**(ppm)**	2476 (12 units)	**Composition (ppm)**	C1 1606	C2 84	C3 27	C4 14	C5 11	-
Show Details			Gas Peak: 3417m, 4995ppm / 25 units (2525 / 352 / 220 / 140 / 62)								

Interval (m)			**ROP (avg)**	**Lithology Description Sandstone with minor Volcanics**						
3430	-	3435	3-21 (10)	SANDSTONE: kaolinitic, off white, light brown, translucent, loose, very fine to medium grained, moderately well sorted, angular, sub equant grains, cements/strengths: argillaceous/weak, porosity: trace, intergranular. VOLCANICS: crystalline, black, green, dark grey, moderately hard, blocky, accessories: feldspar 15%, trace calcareous.						
Gas average			**(ppm)**	34,849 (31 units)	**Composition (ppm)**	C1 24292	C2 2416	C3 1167	C4 459	C5 115	-
Show Details			Gas Peak: 3432m, 60350ppm / 302 units (43424 / 4245 / 2040 / 804 / 201)							

Interval (m)			**ROP (avg)**	**Lithology Description Siltstone with minor Volcanics**						
3435	-	3442	0.8-3.8 (2.6)	SILTSTONE: dark brown, dark grey brown, moderately hard, blocky, common loose calcite (10-30%). ALTERED VOLCANICS: black, siliceous, re-crystallized texture, very hard. VOLCANICS, crystalline, black, very hard.						
Gas average			**(ppm)**	2878 (31 units)	**Composition (ppm)**	C1 1463	C2 196	C3 119	C4 61	C5 25	-
Show Details			No Hydrocarbon Shows.							

Interval (m)			**ROP (avg)**	**Cuttings Lithology Description Volcanics with interbedded Sandstone and Siltstone**						
3442	-	3480	2-24 (5)	SILTSTONE: medium-brown coloured, friable-firm, sub-blocky fracture, 20% clay, 80% silt, moderately argillaceous. SANDSTONE: kaolinitic, light brown to off white coloured, soft, sub-blocky fracture, 30% clay, 10% very fine sand, 30% fine sand, 20% medium sand, tr% coarse sand, moderately well sorted, sub-angular, sub-spherical, weakly argillaceous, trace to 5% visual porosity. VOLCANICS: black, dark brown, green, coloured, hard, irregular fracture, 10% crystalline material, trace calcareous material.						
Gas average			**(ppm)**	1557 (8 units)	**Composition (ppm)**	C1 1516	C2 93	C3 33	C4 15	C5 8	-
Show Details			Fluorescence: in mud at 3475-3490m, bright, pale green-white instant cut, dull green yellow ring residue. Gas Peak: 3479m, 6576 / 33 units (5570 / 399 / 101 / 23 / 7).							

Interval (m)			**ROP (avg)**	**Cuttings Lithology Description Sandstone with Siltstone**

3480	-	3507	4-18 (7)	SANDSTONE: kaolinitic, white to cream, friable, sub-blocky, very fine to medium grained, very well sorted, sub-angular, sub-spherical, argillaceous cement, common lithic grains, trace visual porosity. SILTSTONE: medium-brown coloured, friable to firm, sub-blocky fracture , 20% clay, 80% silt, moderately strong argillaceous cement.							
Gas average			**(ppm)**	2875 (14 units)	**Composition (ppm)**	C1 2187	C2 220	C3 68	C4 25	C5 9	-
Show Details			Gas Peak: 3481m, 6221 / 31units (5187 / 383 / 99 / 21 / 6).								

Interval (m)			**ROP (avg)**	**Cuttings Lithology Description Volcanics with interbedded Sandstone and Siltstone**							
3507	-	3545	4-30 (11)	SANDSTONE: clear, opaque coloured, loose clastic grains: 30% very fine sand, 50% fine sand, 10% coarse sand, 10% very coarse sand, moderately sorted, sub-angular, porosity: 15%, intergranular. VOLCANICS: green white to cream coloured, firm, sub blocky, accessories: feldspar 10%, crystalline 5%.							
Gas average			**(ppm)**	2662 (13 units)	**Composition (ppm)**	C1 2101	C2 129	C3 47	C4 23	C5 9	-
Show Details			Fluorescence: in mud at 3507-3527m, bright, pale green-white instant cut, dull green yellow ring residue. Gas Peak: 3510m, 6100ppm / 31 units, (5000 / 332 / 107 / 40 / 13)								

GAS REPORT

Trefoil-1 was drilled with returns going to the seabed prior to reaching 218m.
(Please note that depths in this section are all mMDRT)
After the conductor casing was set returns were via the flow-line. On exiting surface casing from 218m, and until 642m only 0 to trace (0-10 ppm) amounts of background gas were present. At 642m a total gas of 136 ppm was recorded and another “peak” of 110 ppm was seen at 664m. However for these depths C1 remained at 0 to trace amounts (0-30 ppm). The total gas was thought to be from contaminated mud and/or consisted of heavier gases than C5 and thus not seen in the breakdown. This total gas seen on the Reserval was not readily seen in the auxiliary total gas curve, but this apparatus is not as sensitive to low gases as the Reserval (and this “peak’ equated to only 0.5 units). Methane (C1) was dominant, with traces of heavier gases, remaining at a low concentration until approximately 936m where the gas concentrations began to increase. After 1400m, concentrations of heavier gases increased with depth, up to the Demons Bluff formation at 1859m, then gas levels dropped. Mud weight through this section was 8.8 ppg and after 1960m this was increased to 9.0 ppg and can be seen to reflect in lower gas levels after this depth. Gas levels increased again once in the reservoir zones after 2600m. A core was taken after entering the P4 reservoir zone (2733m) and fluorescence was seen in the core samples. The main peak was recorded at 2735m with increased heavier gases. Minor fluorescence was seen in the cuttings as drilling continued, as also did peaks with increased heavier gas shows, (as recorded below 2735m), with the main peak and oil shows at 2932m, in the P2 reservoir.

Background gas levels continued to increase in the P2 and P1 reservoir zones down through the Cretaceous, C1 Reservoir and top Basalt (3382m) with good gas peaks recorded with dominantly C1 (methane). Maximum gas was recorded in the top Basalt sand – Base C1 reservoir.
Gas levels gradually dropped off in the Basalt, with no main peaks after 3432m, with heavy gases disappearing after 3521m.

Gas Peaks listed below are from the Reserval gas equipment. An FCP-FGP backup gas system was also run. The gas ratio plots show the same trends with variation in the gas recorded. (1% = 50 units = 10000 ppm). The Reserval gas is more analytical of gas readings and picks up more background heavy gas and has a constant flow of mud through its sample chamber. The Backup GZII degasser has a higher mud flow through it and liberates more gas from the mud to the chamber and so during gas zones tends to saturate with gas and tends to give a lot higher readings from the FCP-FGP. The calibrations were checked during the well and are very accurate with the FCP-FGP calibrated to 99 % Methane. These have been double checked by the well site geologist in situ. Trip gases were reported using the auxiliary FCP-FGP gas system.

Gas Peaks (from Reserval)

Depth metres	**Total Gas** Peak units	**C_1 ppm**	**C_2 ppm**	**C_3 ppm**	**iC_4 ppm**	**nC_4 ppm**	**iC_5 ppm**	**nC_5 ppm**
936.0	7	1351						
953.0	9	1803						
1134.0	18	3220						
1191.0	19	3608						
1252.0	23	4404						
1277.0	29	4762						
1341.0	32	5976	0	12	2	2	2	1
1424.0	36	6548	0	13	3	2	2	1
1478.0	43	7472	0	18	5	3	3	1
1668.0	47	8381	48	22	6	3	4	1
1775.0	53	8656	72	27	7	3	3	1
2347.0	24	3662	163	95	48	27	20	9
2607.0	41	6564	276	110	36	23	16	8
2663.0	58	7843	446	345	155	121	73	44
	Total Gas Peak units	**C_1 ppm**	**C_2 ppm**	**C_3 ppm**	**iC_4 ppm**	**nC_4 ppm**	**iC_5 ppm**	**nC_5 ppm**
2735.0	195	20259	2472	2773	809	699	251	160
2822.0	201	30071	2410	1421	265	256	67	45
2836.0	226	32835	2790	1753	358	347	101	69
2845.0	283	41239	3321	2087	439	408	121	82
2858.0	214	30660	2534	1682	372	357	114	78
2862.0	251	35390	2971	2012	455	433	137	94
2893.0	223	36198	2441	928	155	142	48	31
2932.0	762	103006	9020	6106	1248	1311	348	274
2942.0	275	41707	3005	1502	376	295	106	64
2957.0	453	68709	4942	2327	564	458	173	107
2967.0	1198	160150	13832	6879	1639	1502	555	365
2979.0	1102	156046	12504	4945	1090	1027	361	240
2991.0	1136	161870	13494	5303	989	1087	328	238
3025.0	1201	173045	12466	4438	963	861	308	197
3042.0	1045	149048	11250	5353	1164	1183	378	268
3056.0	733	113939	7147	2900	747	650	248	156
3070.0	368	60480	3503	1287	289	286	114	81
3099.0	683	104688	6898	2524	564	527	199	130
3120.0	679	106785	6385	2083	487	426	168	104
3138.0	1220	175381	12795	3254	661	607	237	150
3145.0	1559	210666	16846	4524	973	911	368	228
3156.0	610	99837	6395	1523	307	289	115	73
3384.0	1724	192430	25131	12360	2726	2958	1071	732
3432.0	302	43424	4245	2040	384	420	118	83

DRILLING LOG

FROM :(mt) 100 TO :(mt) 3560 SCALE : 1/ 1000

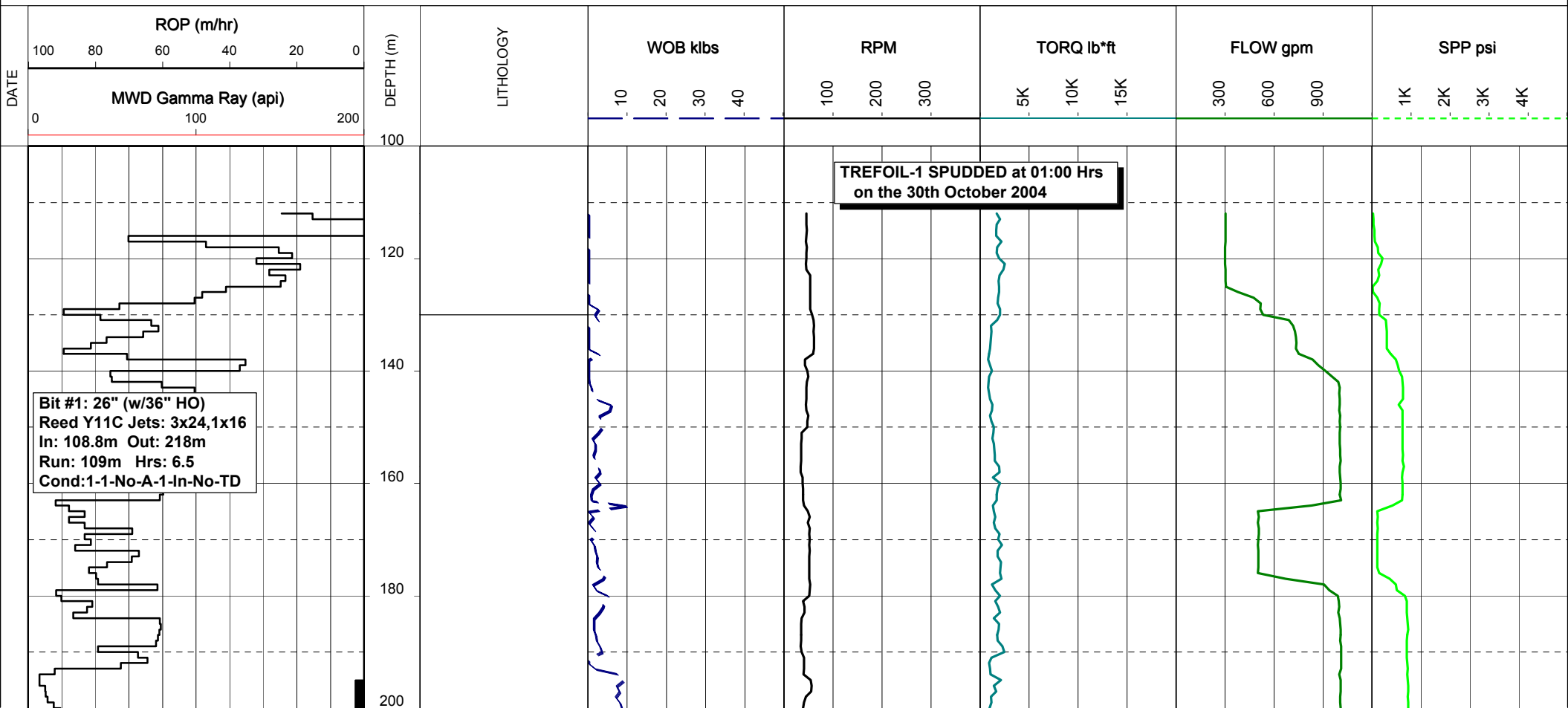
Well Name : TREFOIL-1
Company : Origin energy

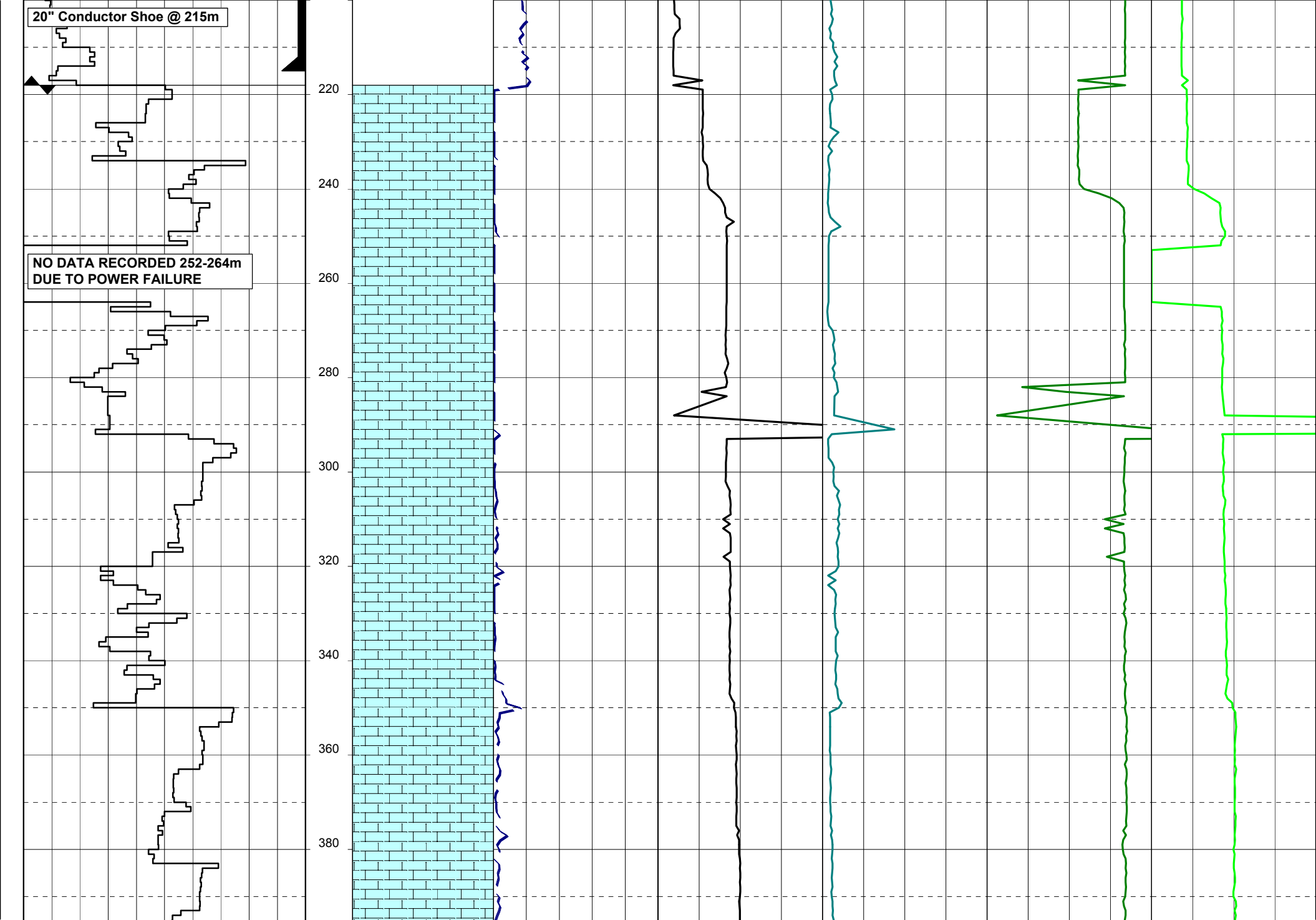
Country : Australia

RT-MSL : 39.9m
RT-SEABED : 108.8

Final TD : 3545.0 mRT
Final TVD : 3544.9 mRT

Generated by ALS Package

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DUE TO POWER FAILURE
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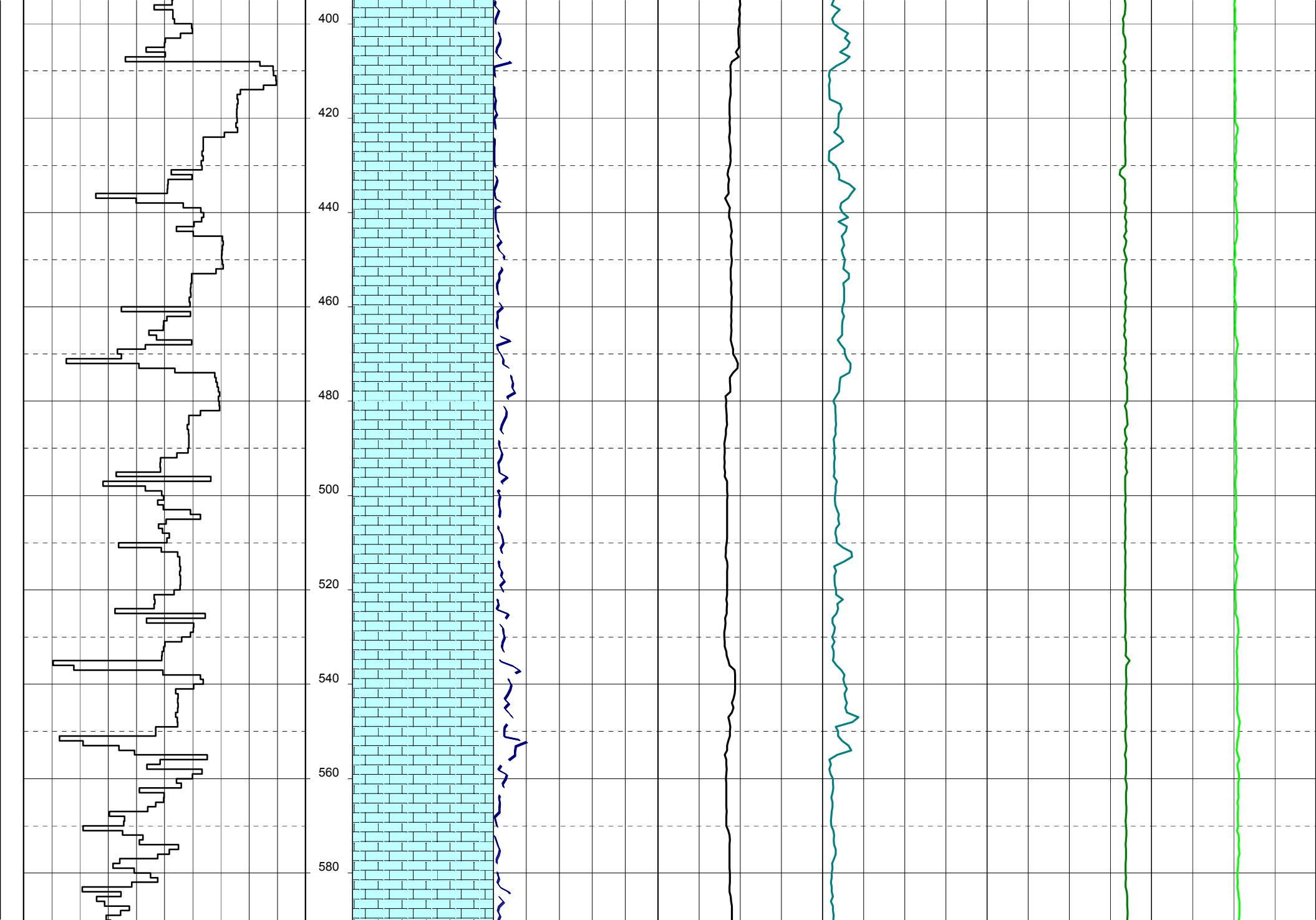
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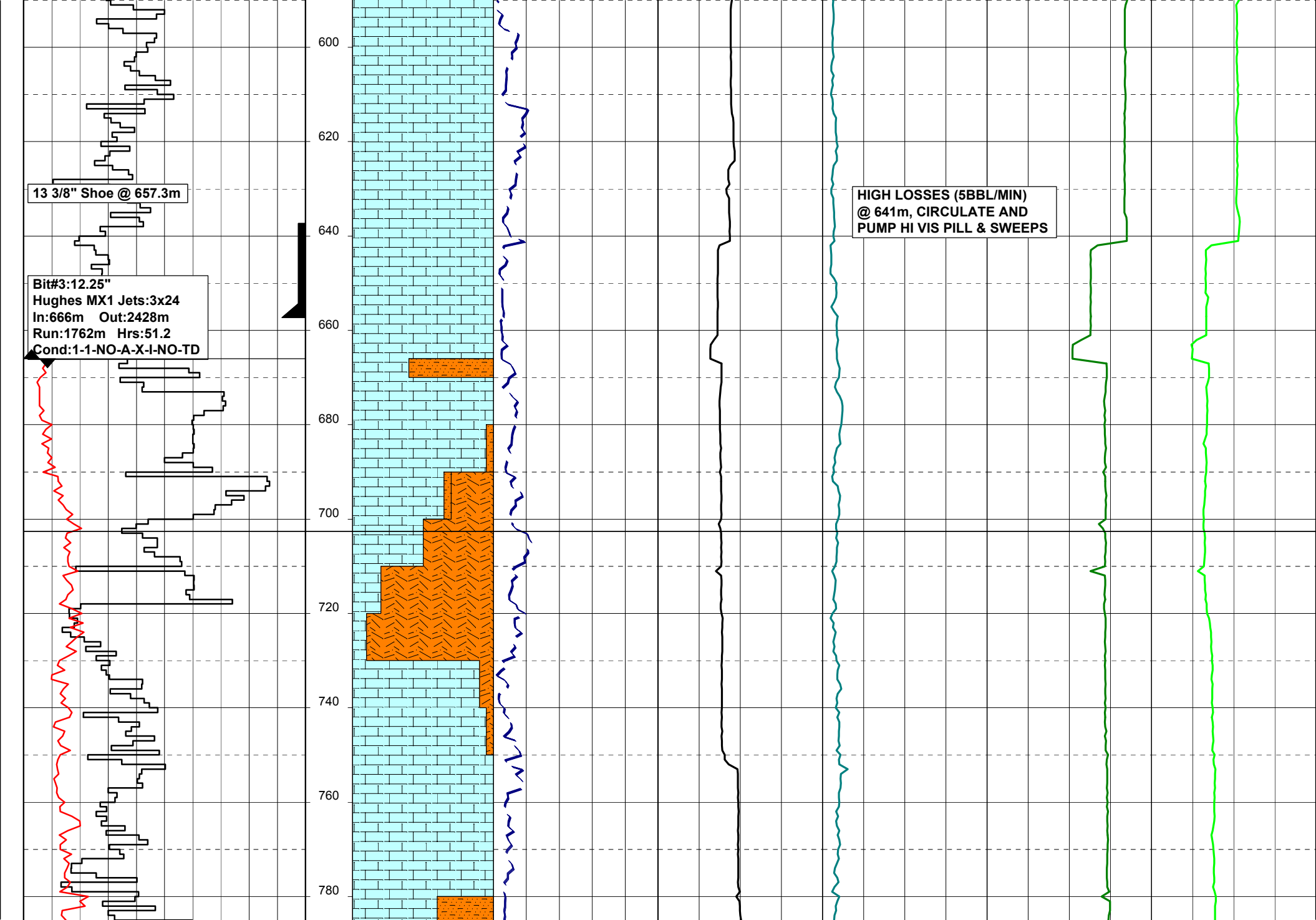
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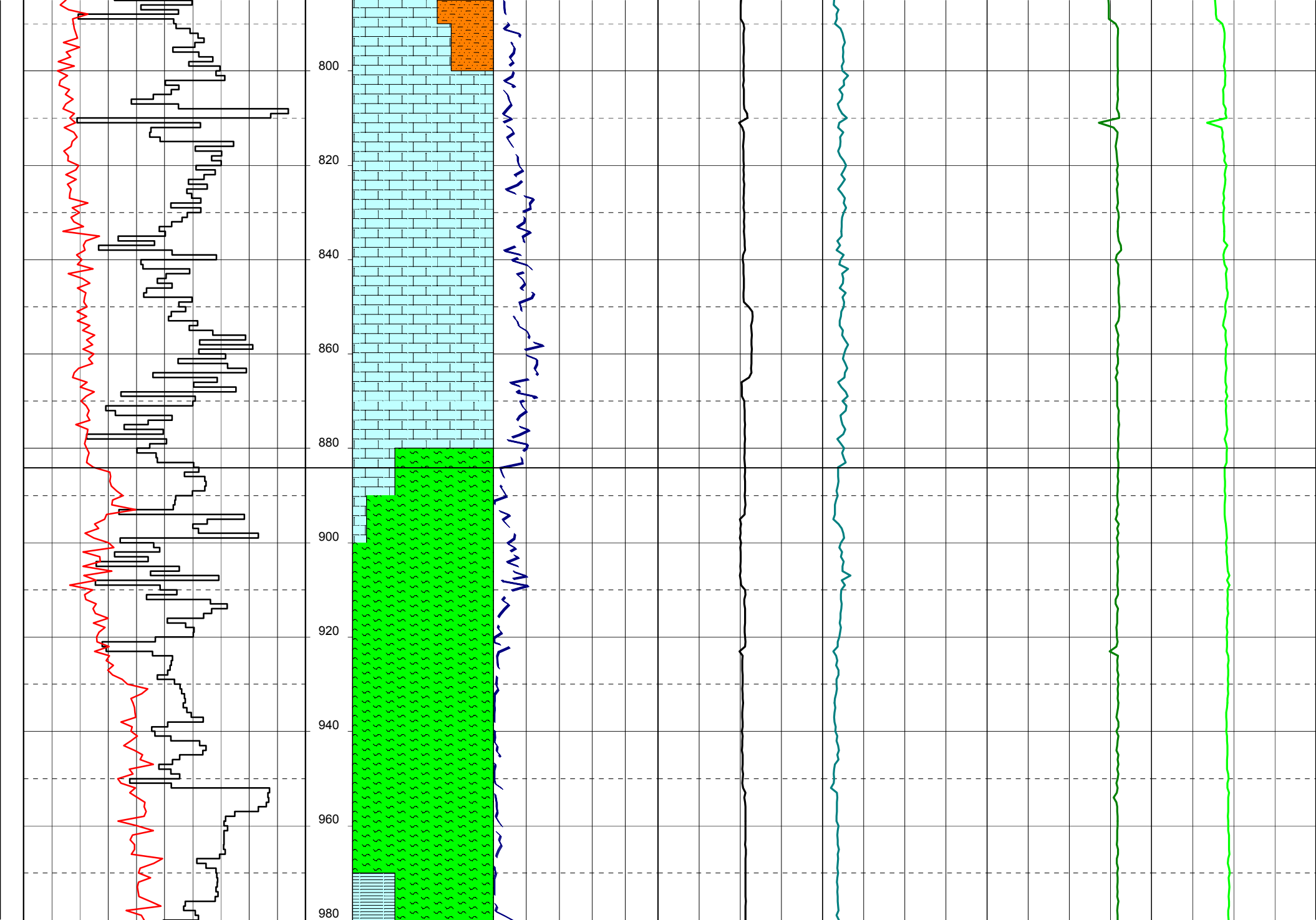
620
640
660
680
700
720
740
760
780
13 3/8" Shoe @ 657.3m
Bit#3:12.25"
Hughes MX1 Jets:3x24
In:666m Out:2428m
Run:1762m Hrs:51.2
Cond:1-1-NO-A-X-I-NO-TD
HIGH LOSSES (5BBL/MIN)
@ 641m, CIRCULATE AND
PUMP HI VIS PILL & SWEEPS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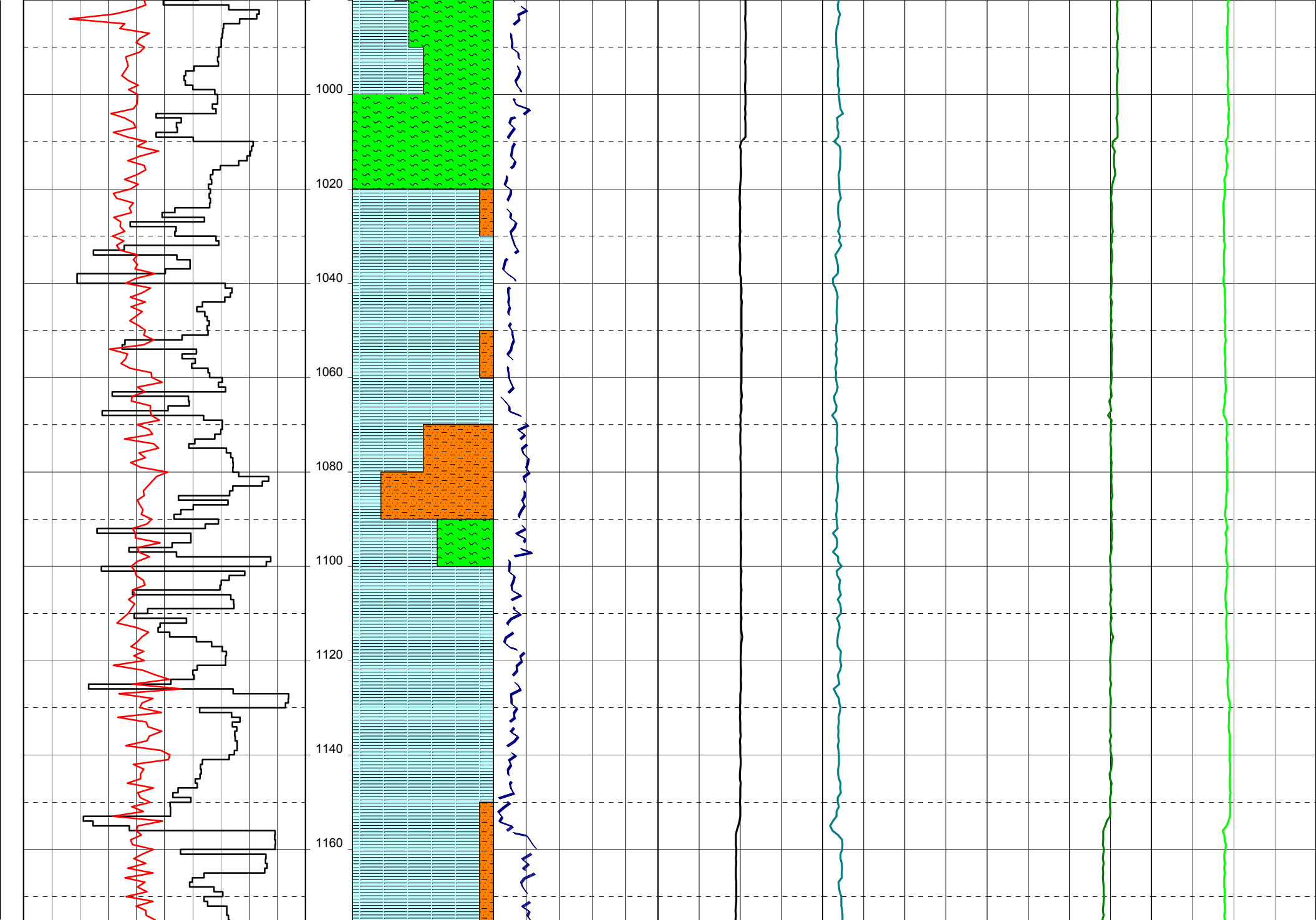
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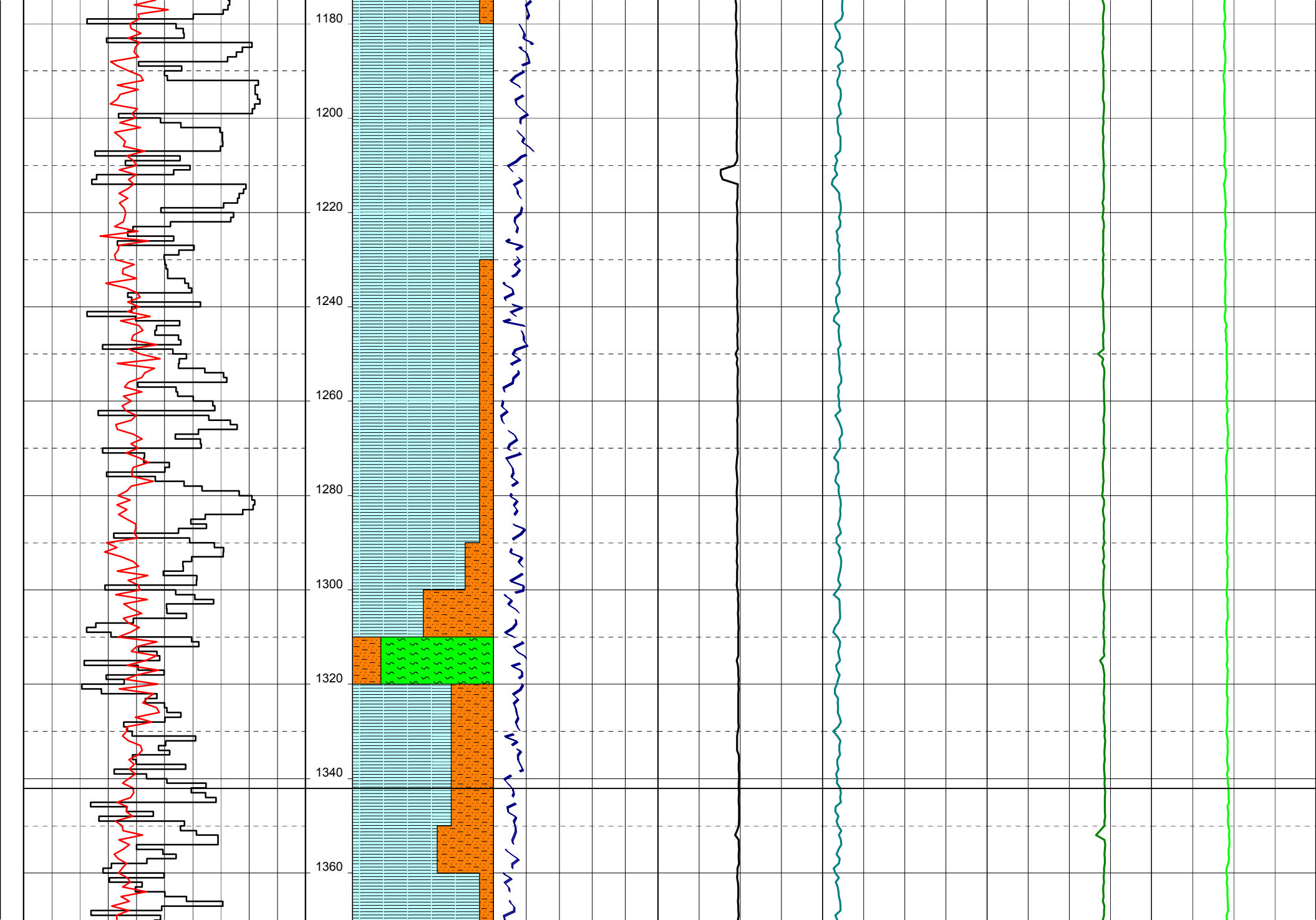
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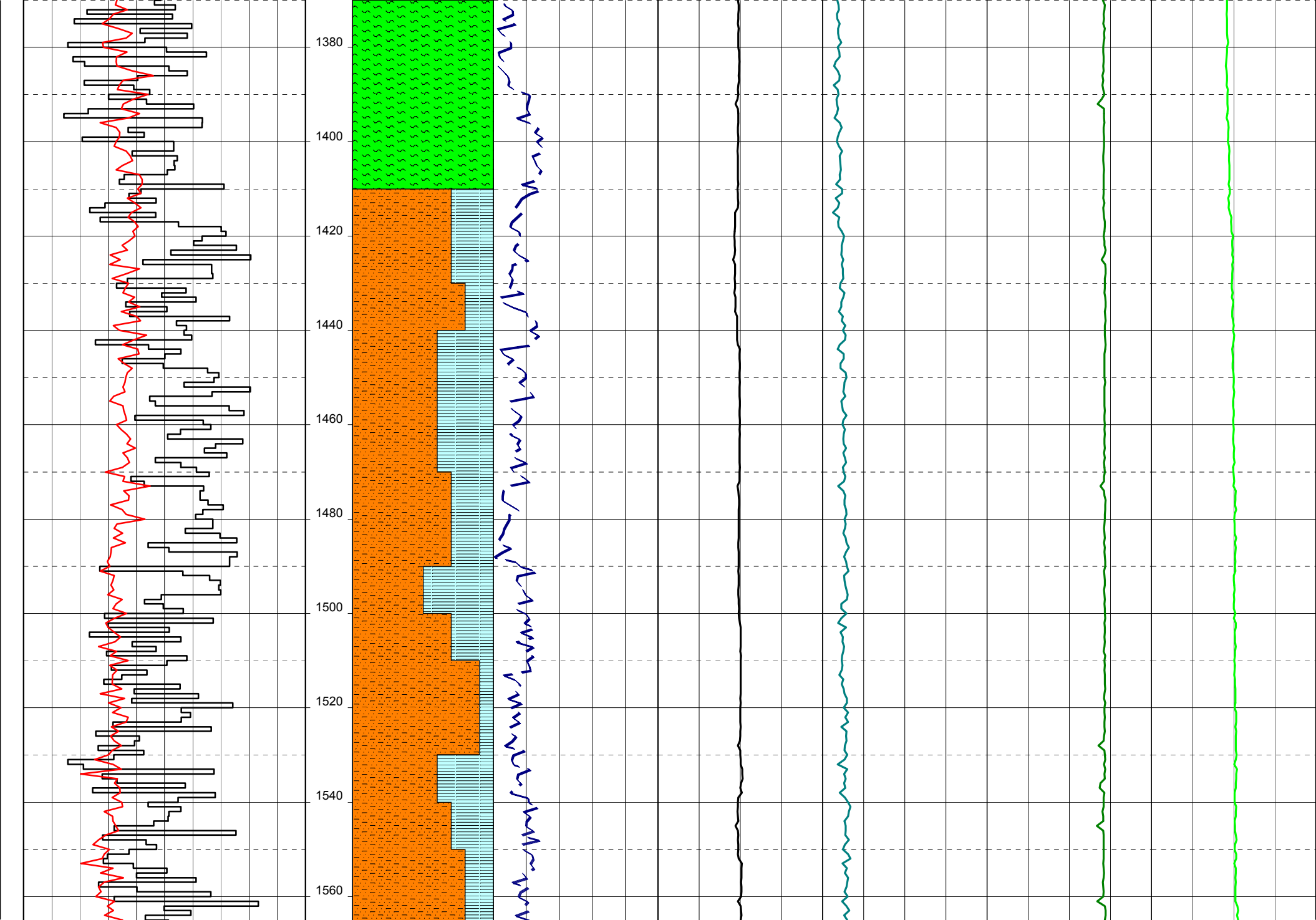
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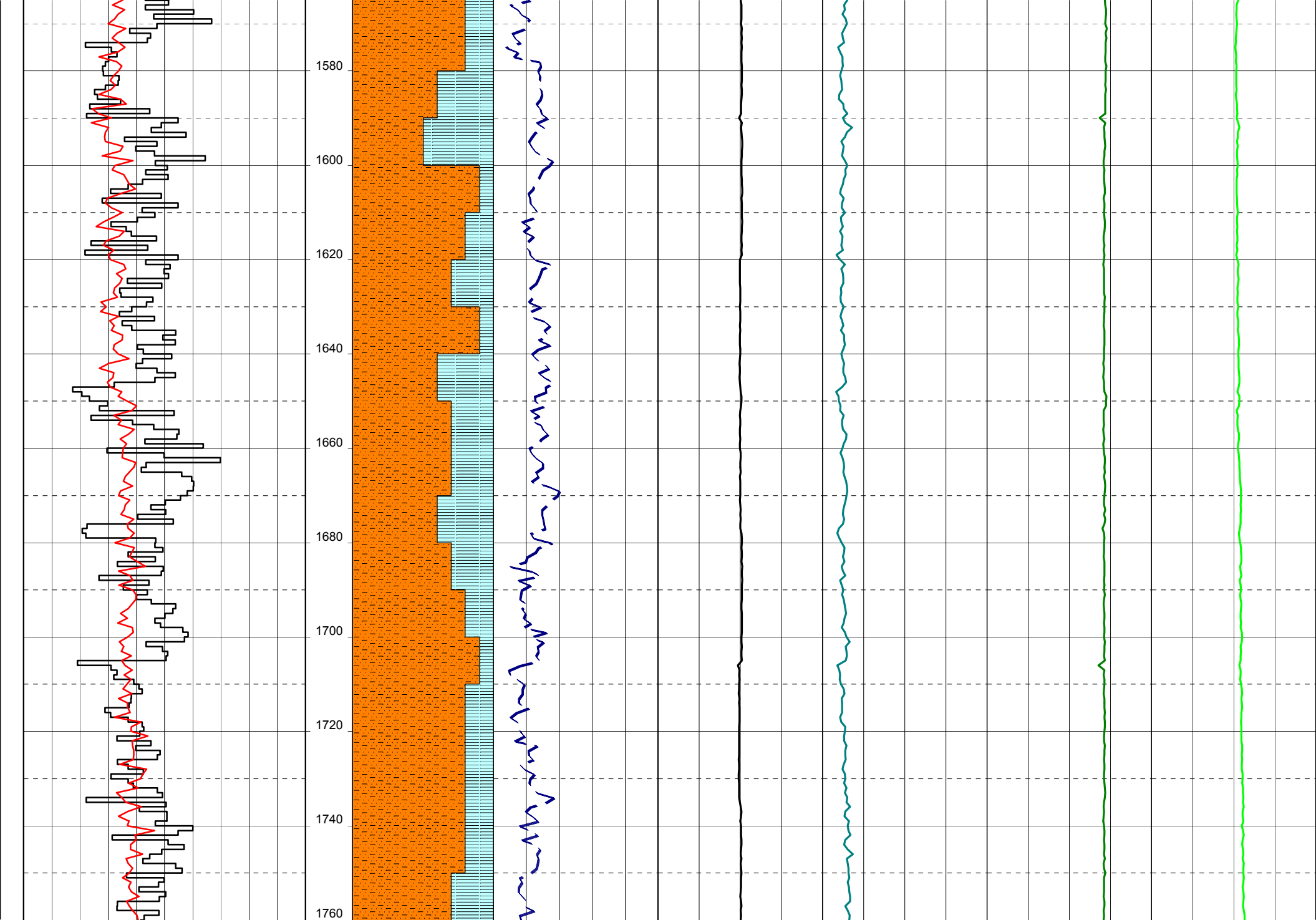
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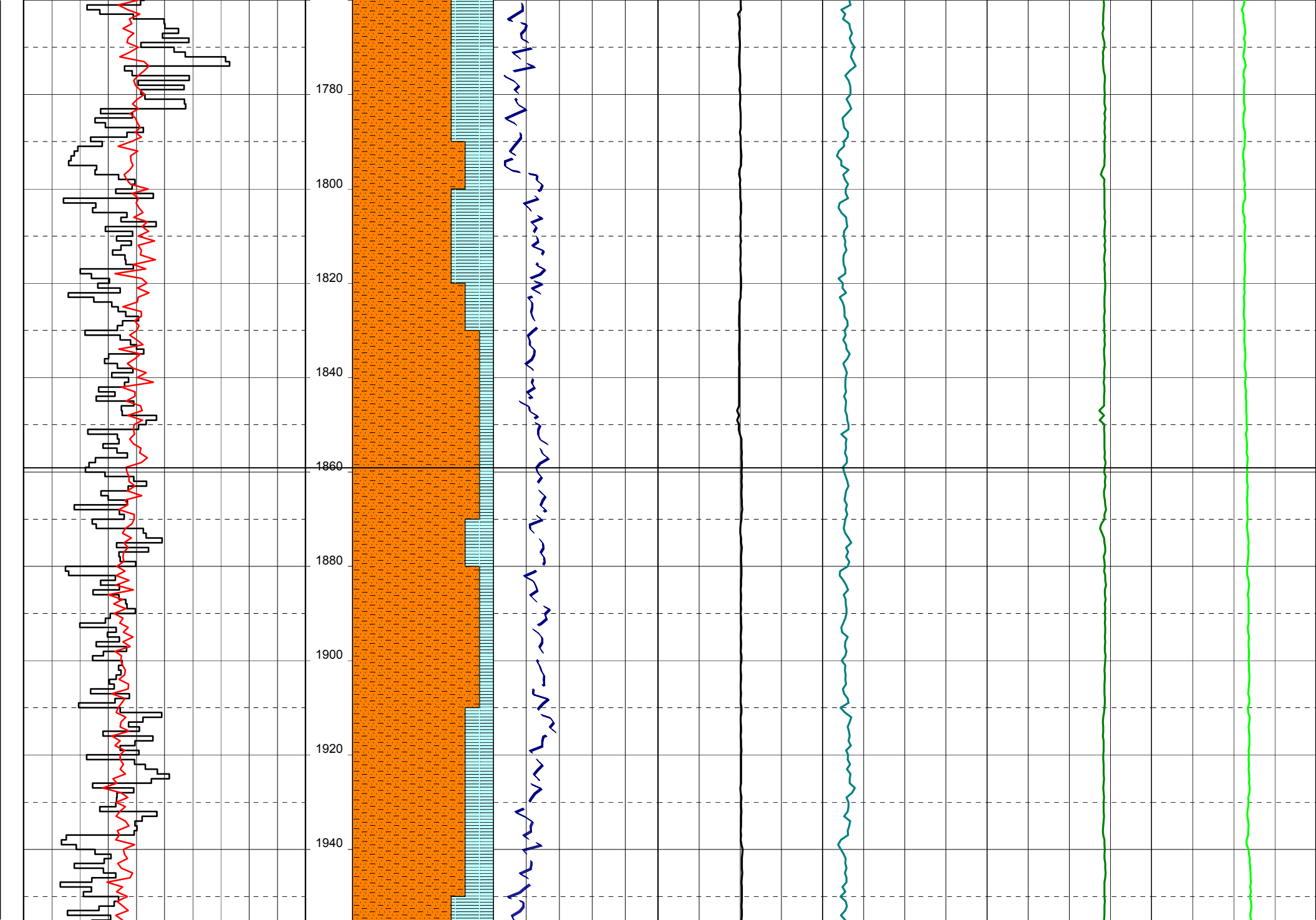
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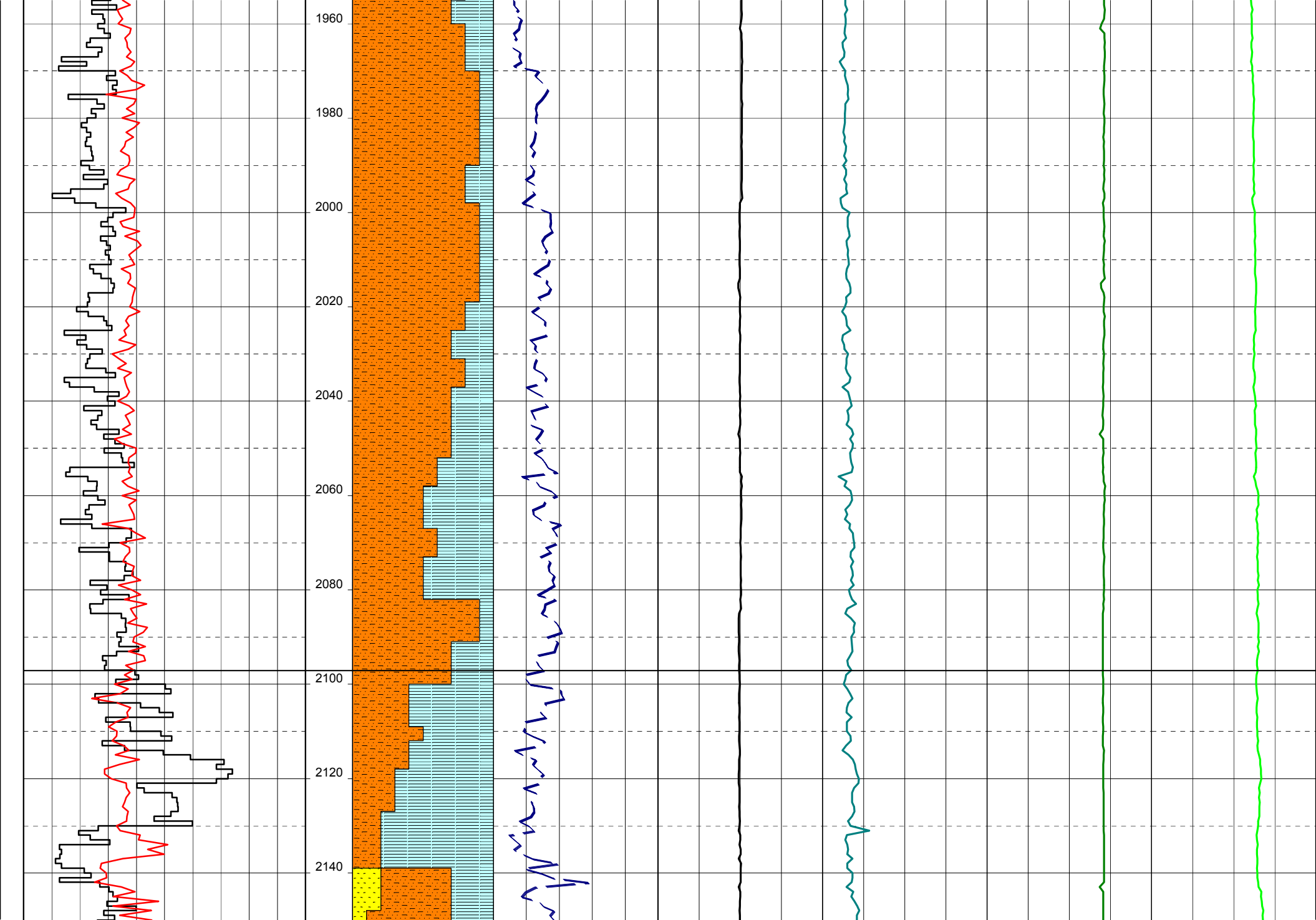
1960
1980
2000
2020
2040
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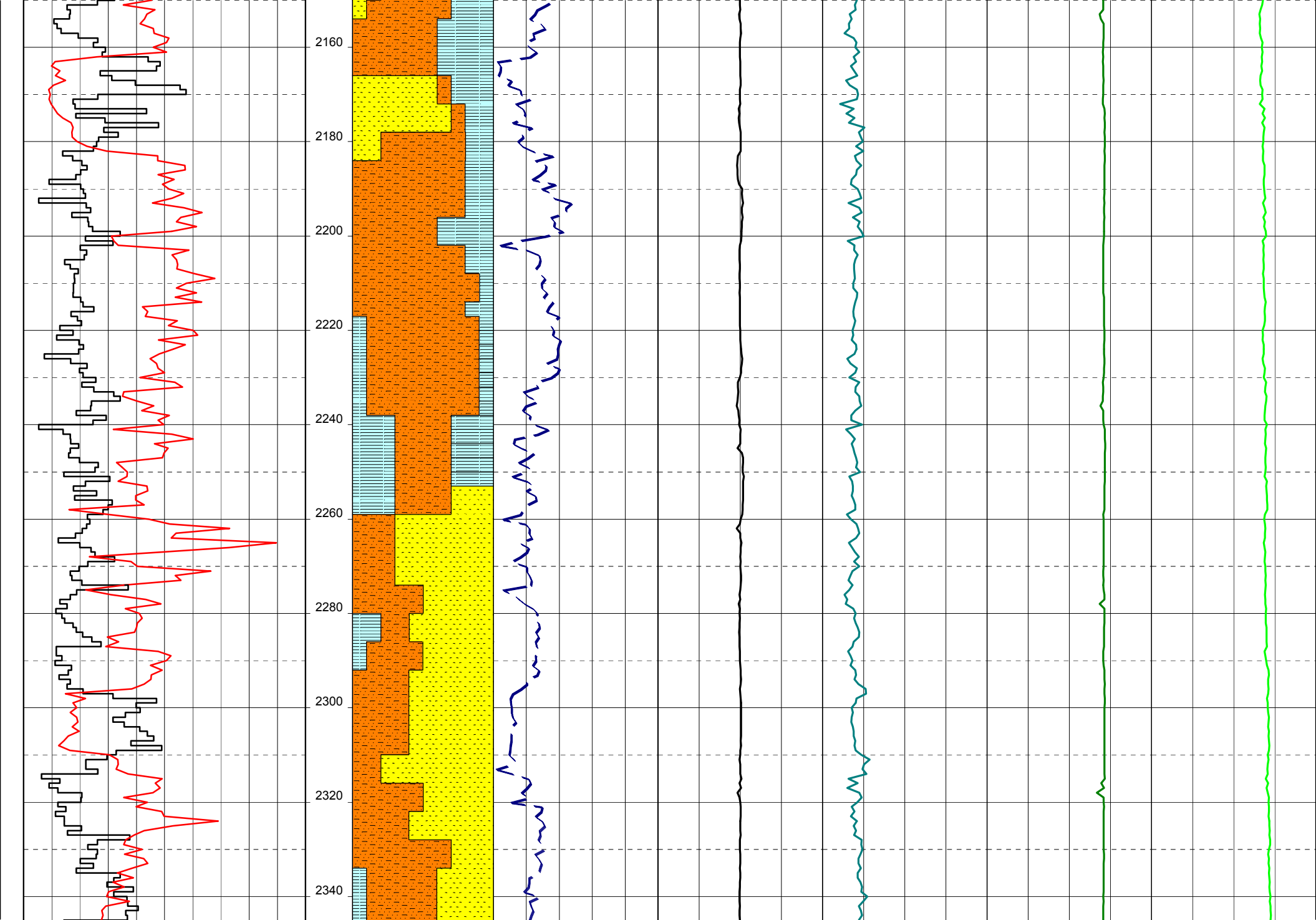
2100
2120
2140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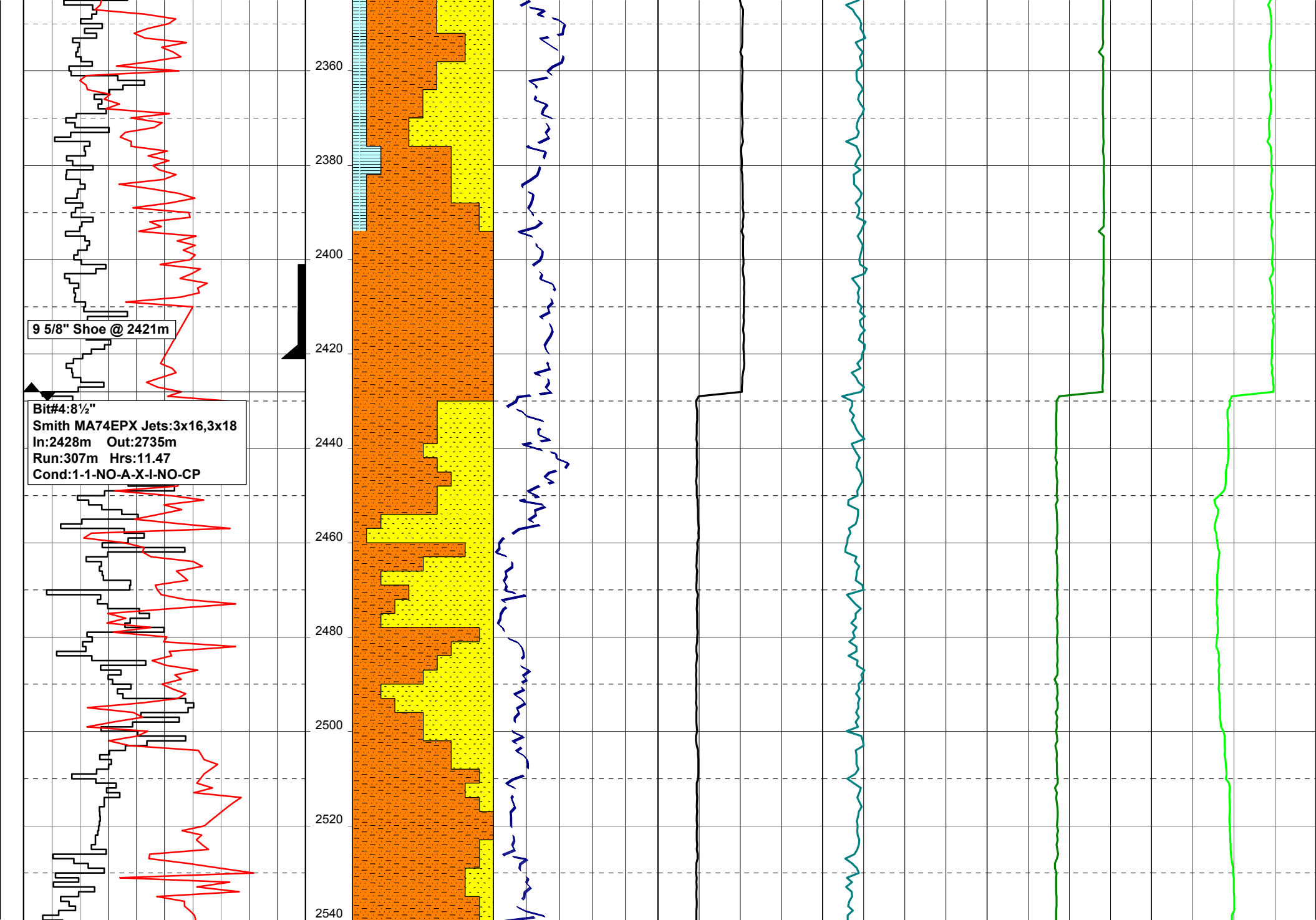
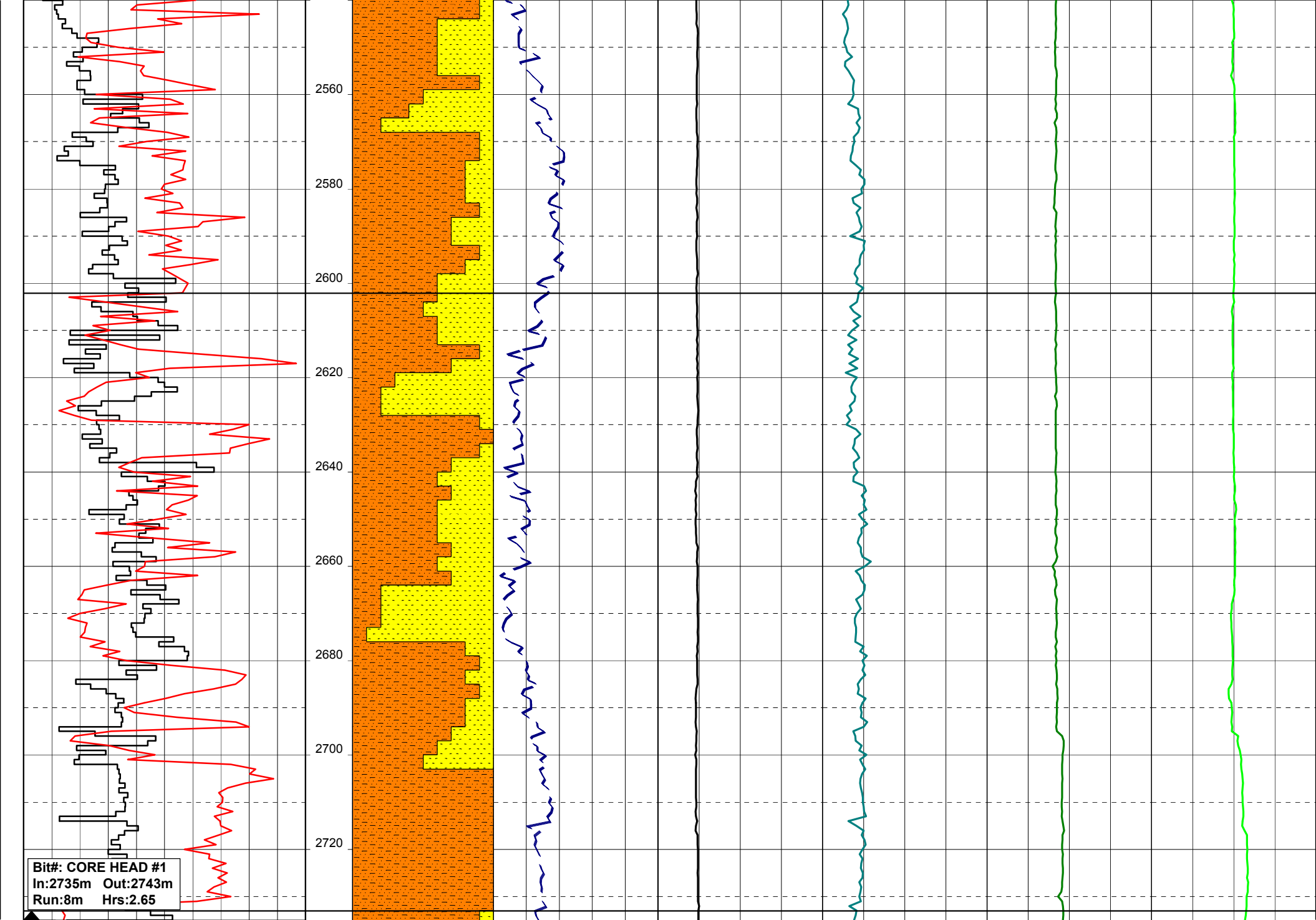

2360
2380
2400
2420
2440
2460
2480
2500
2520
2540
9 5/8" Shoe @ 2421m
Bit#4:8½"
Smith MA74EPX Jets:3x16,3x18
In:2428m Out:2735m
Run:307m Hrs:11.47
Cond:1-1-NO-A-X-I-NO-CP


2560
2580
2600
2620
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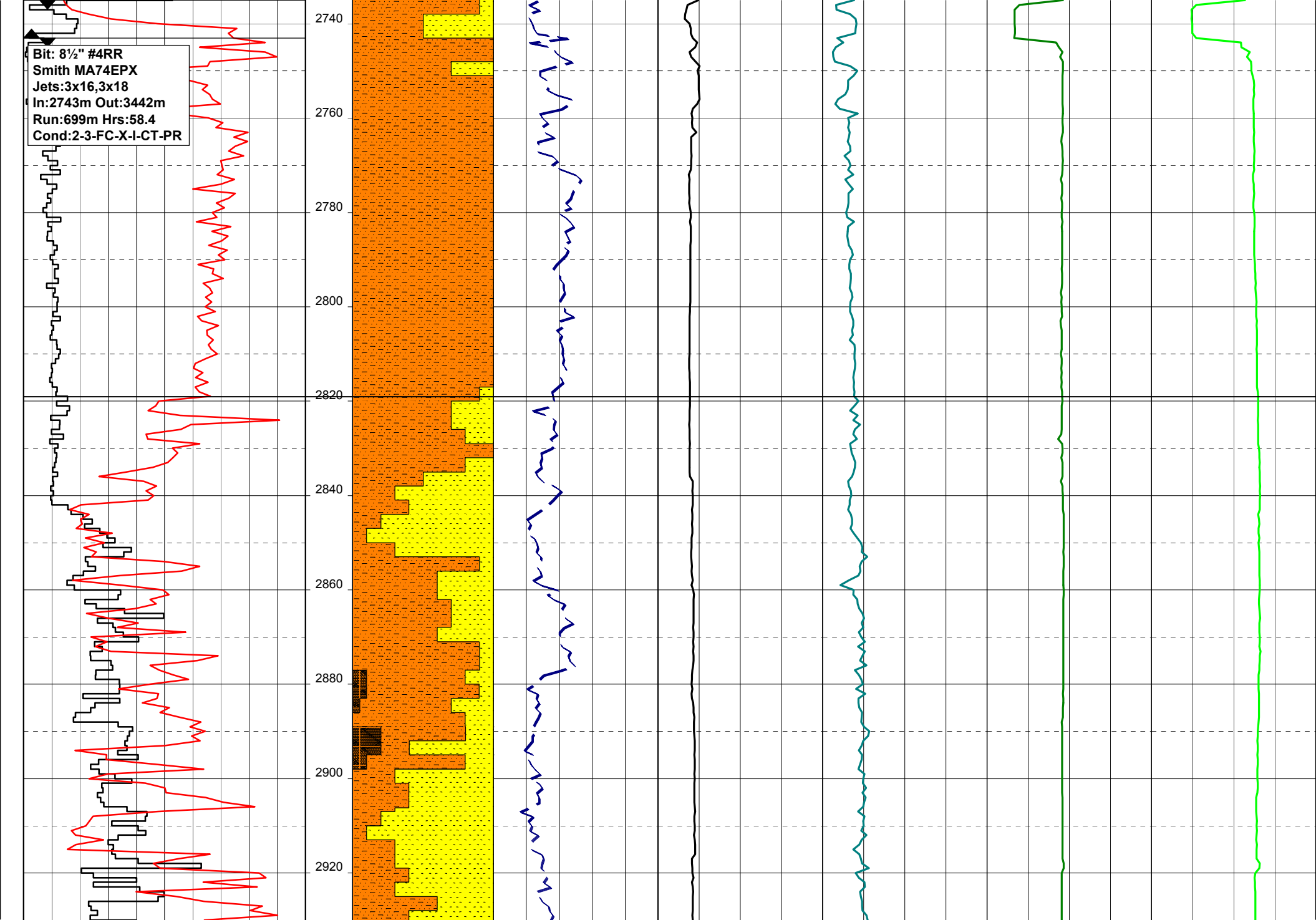
2660
2680
2700
2720
Bit#: CORE HEAD #1
In:2735m Out:2743m
Run:8m Hrs:2.65


Bit: 8½" #4RR
Smith MA74EPX
Jets:3x16,3x18
In:2743m Out:3442m
Run:699m Hrs:58.4
Cond:2-3-FC-X-I-CT-PR
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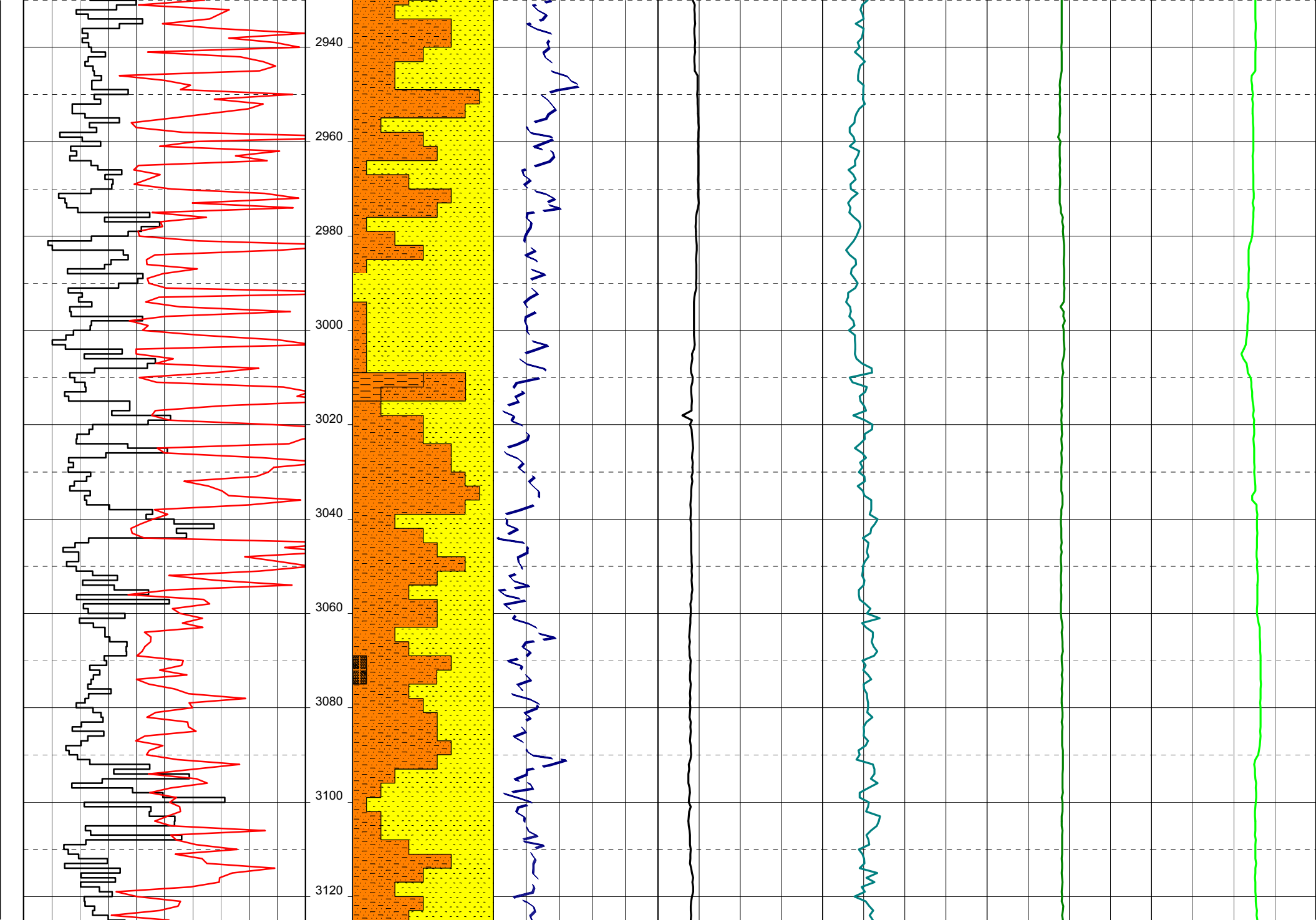
2760
2780
2800
2820
2840
2860
2880
2900
2920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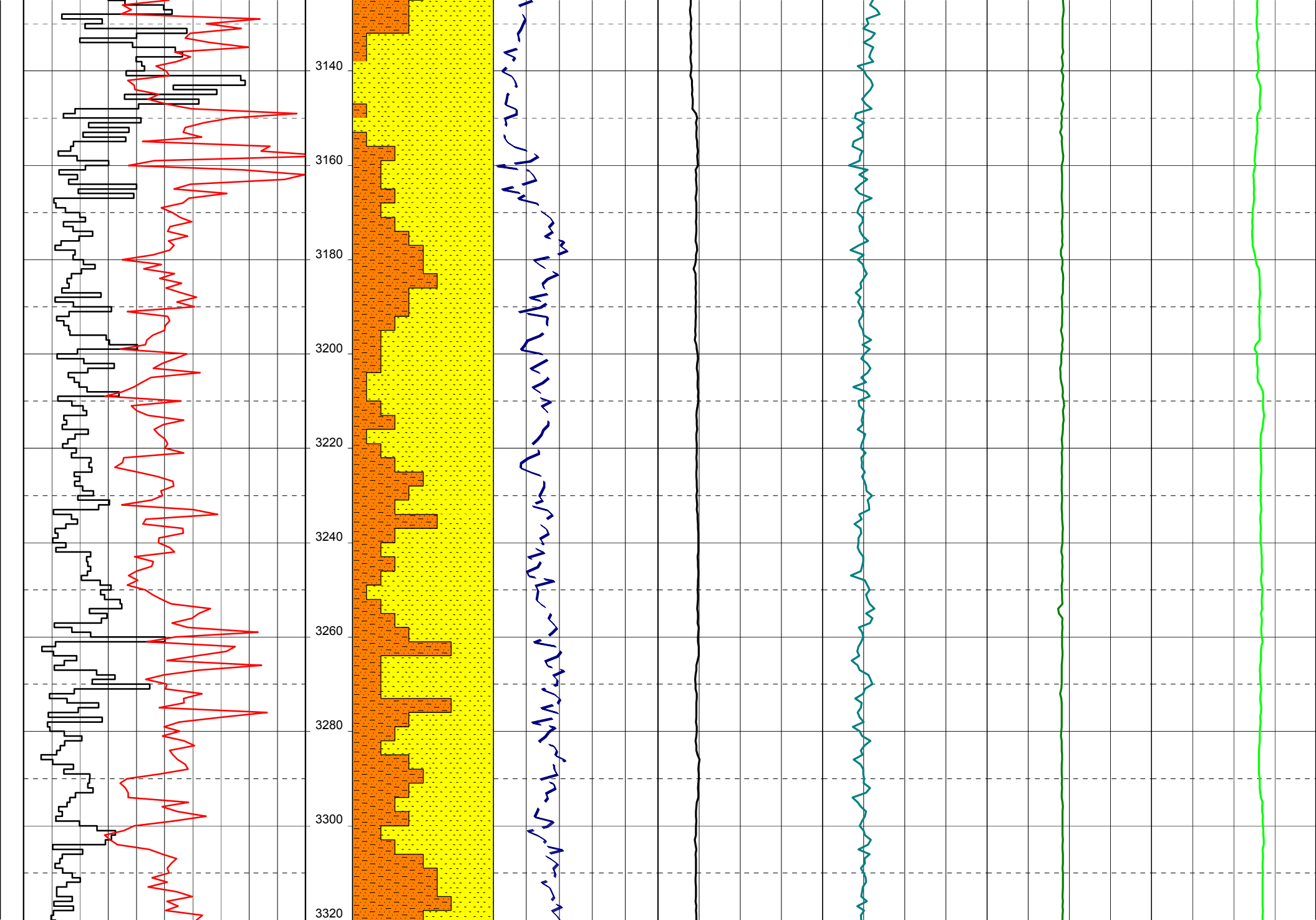
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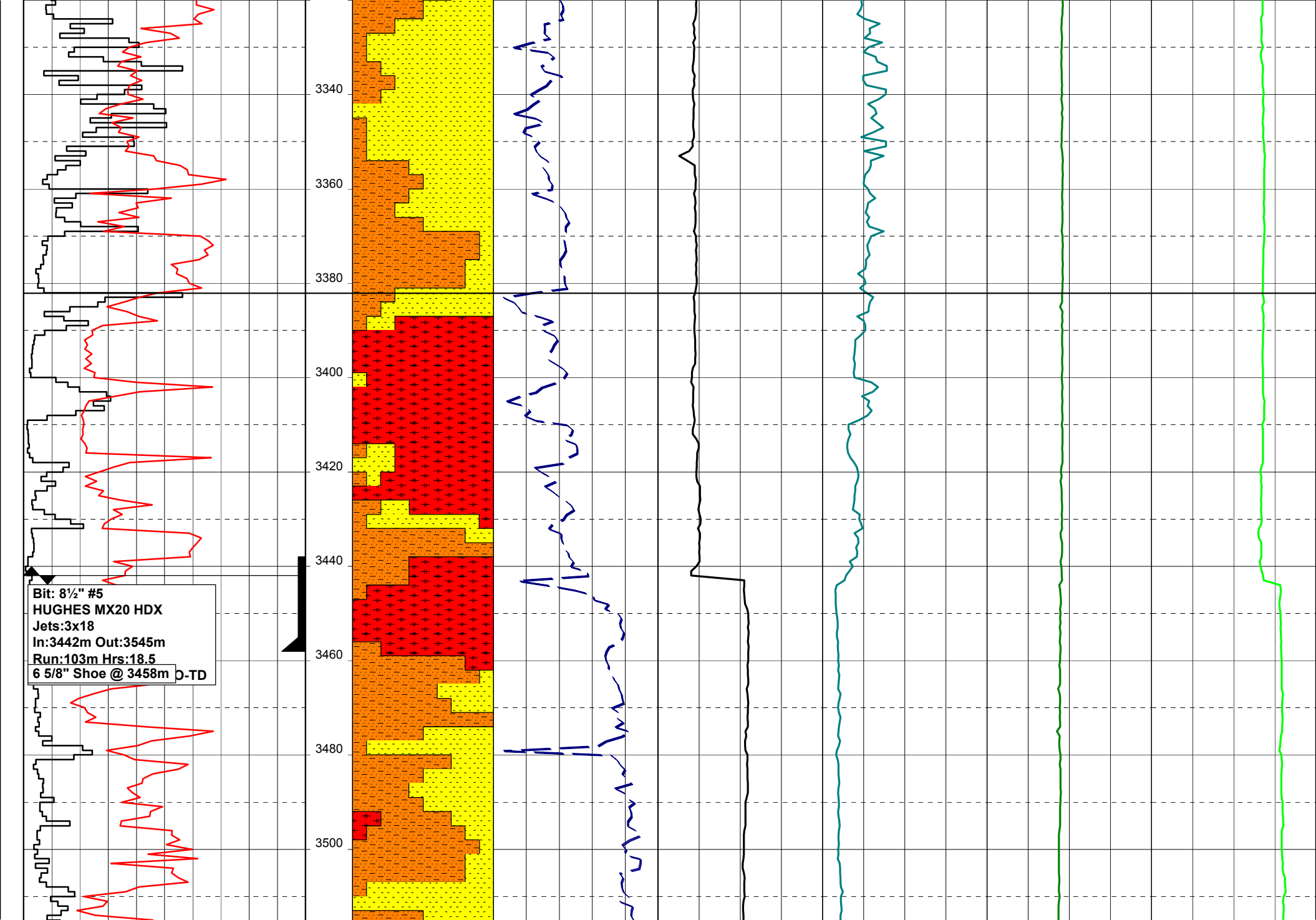
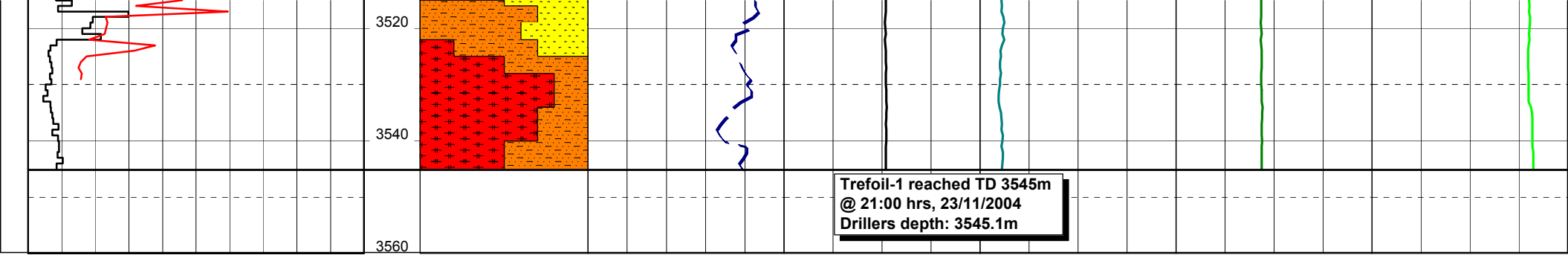
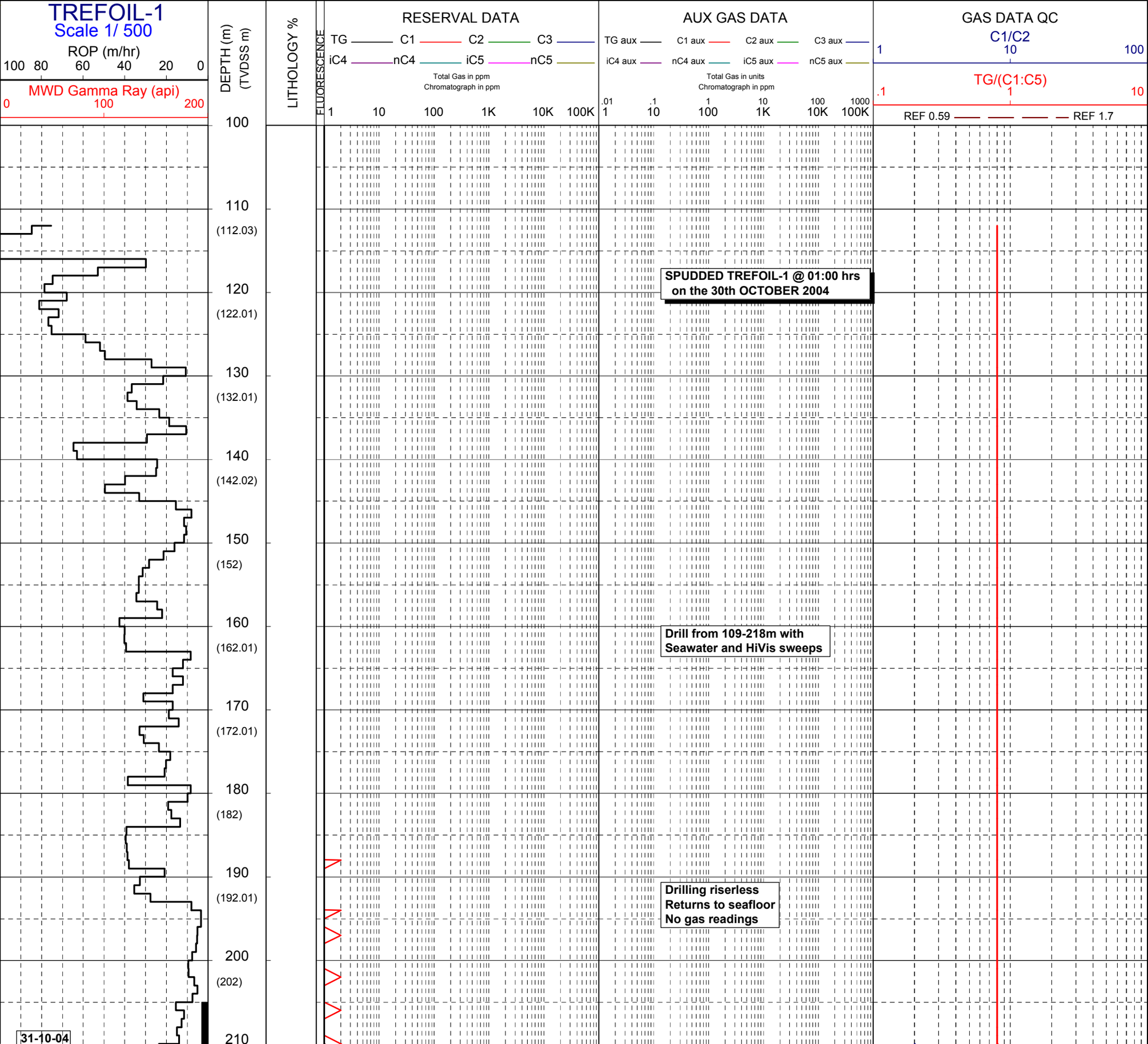
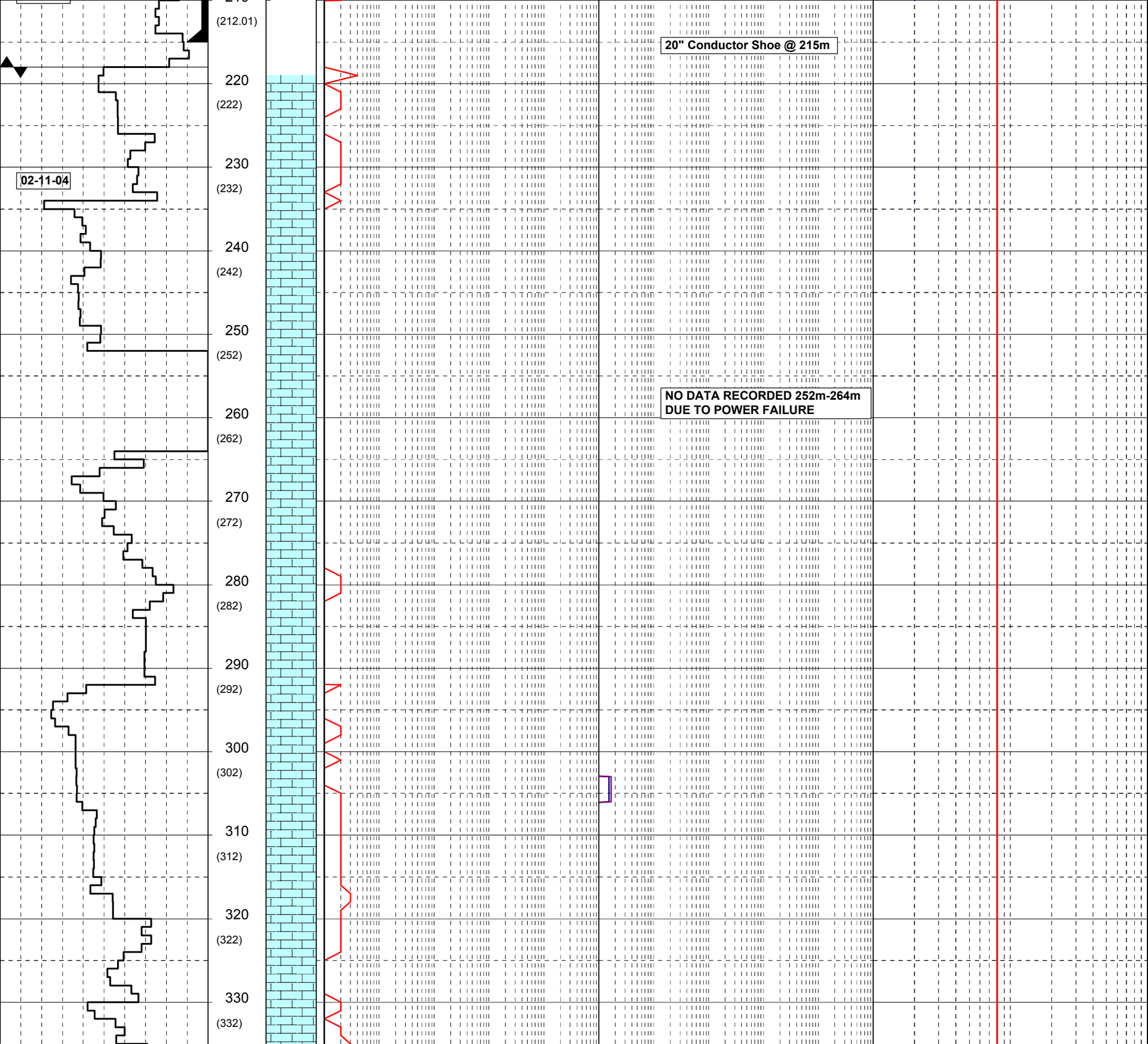

3340
3360
3380
3400
3420
3440
3460
3480
3500
Bit: 8½" #5
HUGHES MX20 HDX
Jets:3x18
In:3442m Out:3545m
Run:103m Hrs:18.5
6 5/8" Shoe @ 3458m
O-TD


3520
3540
3560
Trefoil-1 reached TD 3545m
@ 21:00 hrs, 23/11/2004
Drillers depth: 3545.1m


TREFOIL-1
Scale 1/ 500
ROP (m/hr)
100 80 60 40 20 0
MWD Gamma Ray (api)
0 100 200
DEPTH (m)
(TVDSS m)
LITHOLOGY %
FLUORESCENCE
RESERVAL DATA
TG C1 C2 C3
iC4 nC4 iC5 nC5
Total Gas in ppm
Chromatograph in ppm
1 10 100 1K 10K 100K
AUX GAS DATA
TG aux C1 aux C2 aux C3 aux
iC4 aux nC4 aux iC5 aux nC5 aux
Total Gas in units
Chromatograph in ppm
.01 .1 1 10 100 1000
1 10 100 1K 10K 100K
GAS DATA QC
C1/C2
1 10 100
TG/(C1:C5)
.1 1 10
REF 0.59 REF 1.7
100
110
(112.03)
120
(122.01)
130
(132.01)
140
(142.02)
150
(152)
160
(162.01)
170
(172.01)
180
(182)
190
(192.01)
200
(202)
210
SPUDDED TREFOIL-1 @ 01:00 hrs
on the 30th OCTOBER 2004
Drill from 109-218m with
Seawater and HiVis sweeps
Drilling riserless
Returns to seafloor
No gas readings
31-10-04


(212.01)
220
(222)
230
02-11-04
(232)
240
(242)
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(262)
270
(272)
280
(282)
290
(292)
300
(302)
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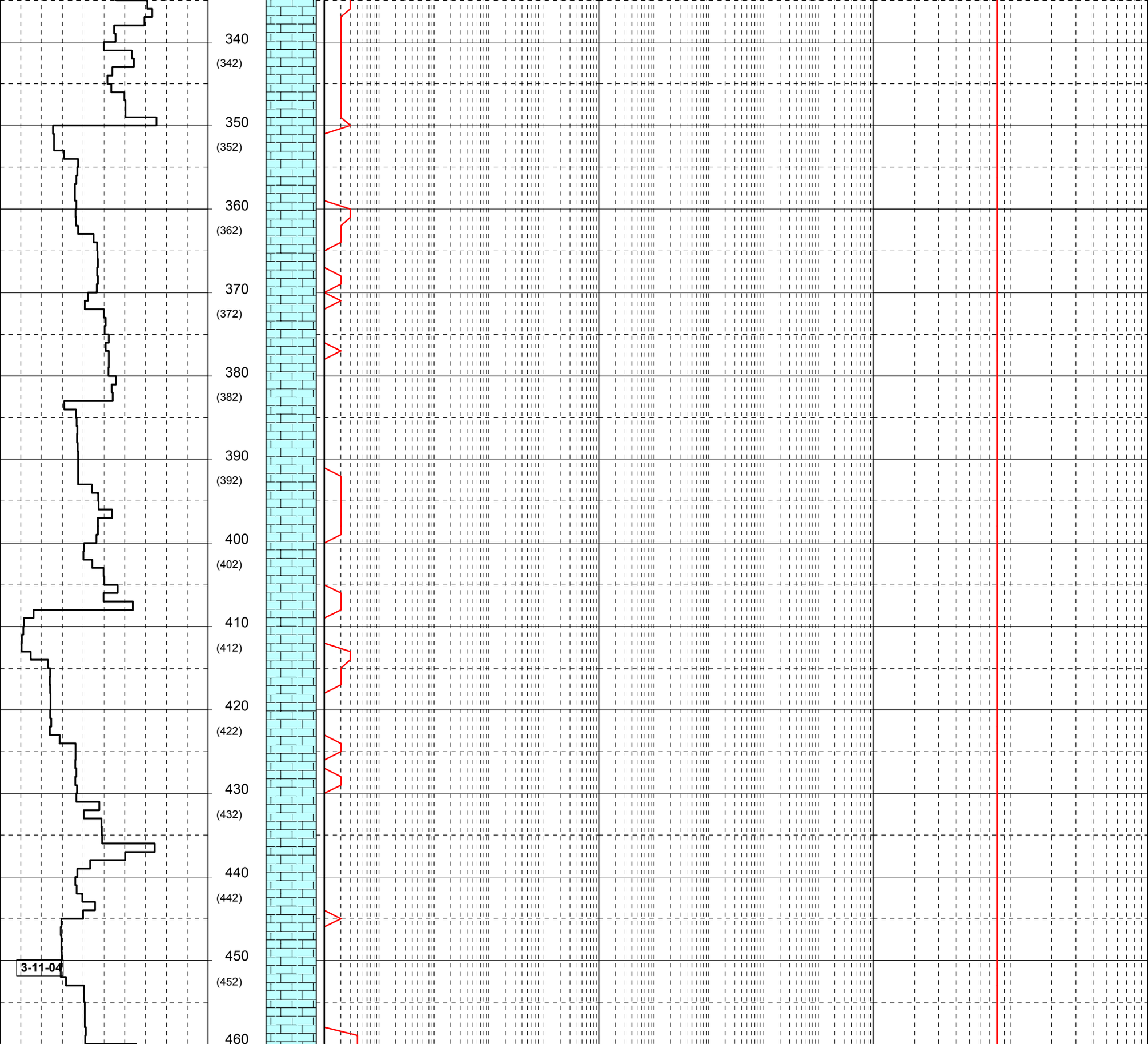
320
(322)
330
(332)
20" Conductor Shoe @ 215m
NO DATA RECORDED 252m-264m
DUE TO POWER FAILURE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430
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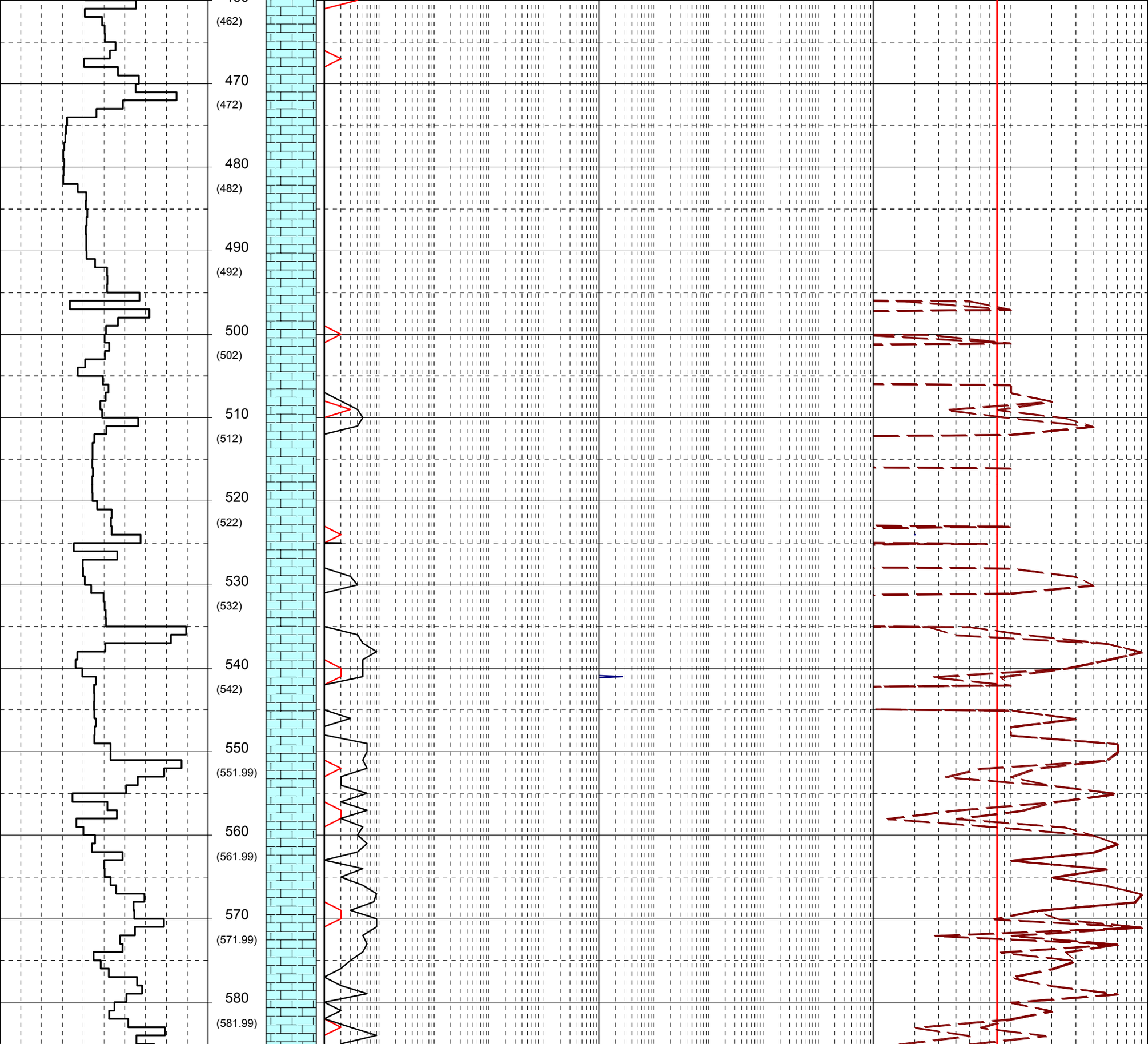
450
(452)
460
3-11-04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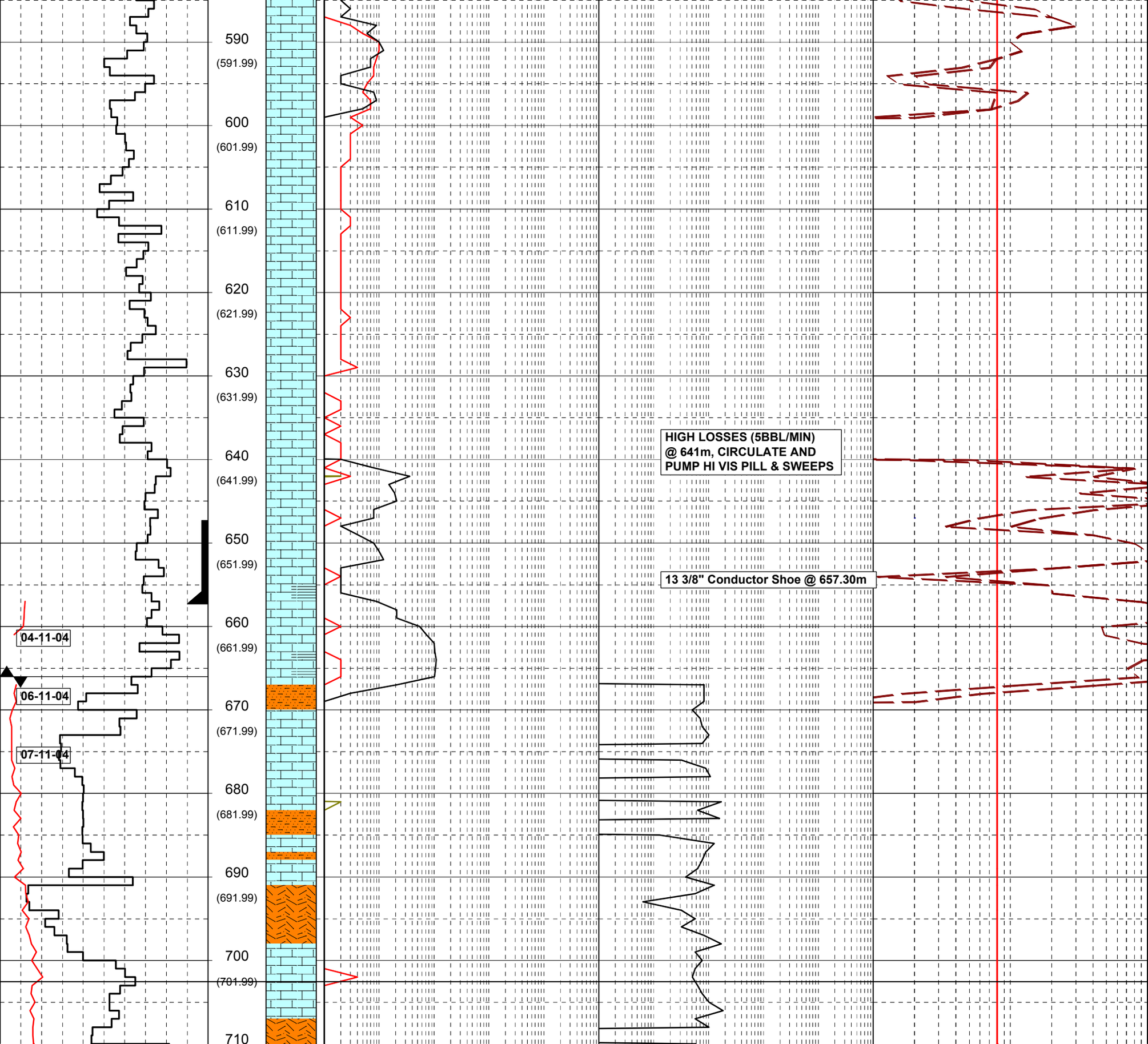
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700
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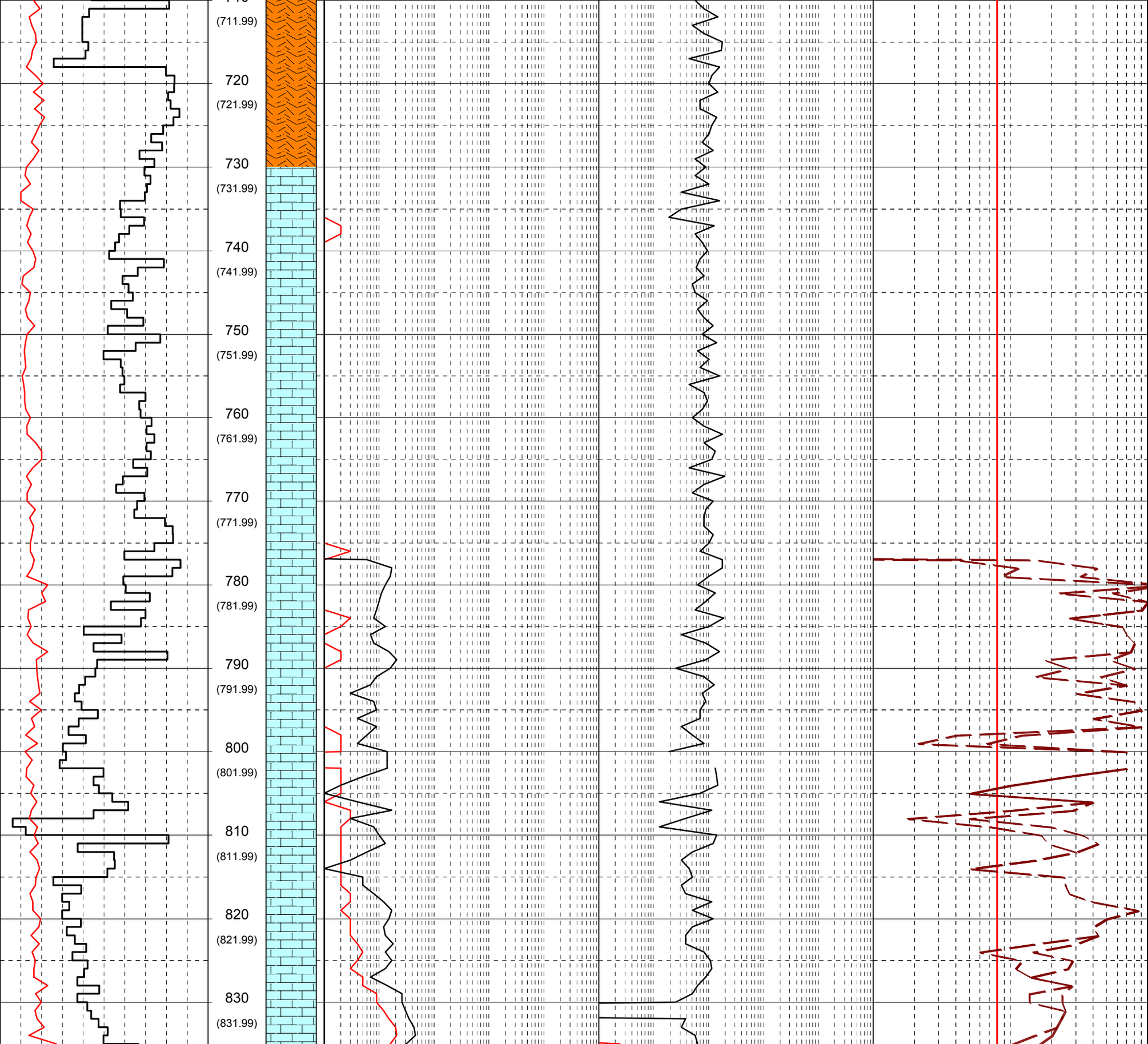
710
HIGH LOSSES (5BBL/MIN)
@ 641m, CIRCULATE AND
PUMP HI VIS PILL & SWEEPS
13 3/8" Conductor Shoe @ 657.30m
04-11-04
06-11-04
07-11-04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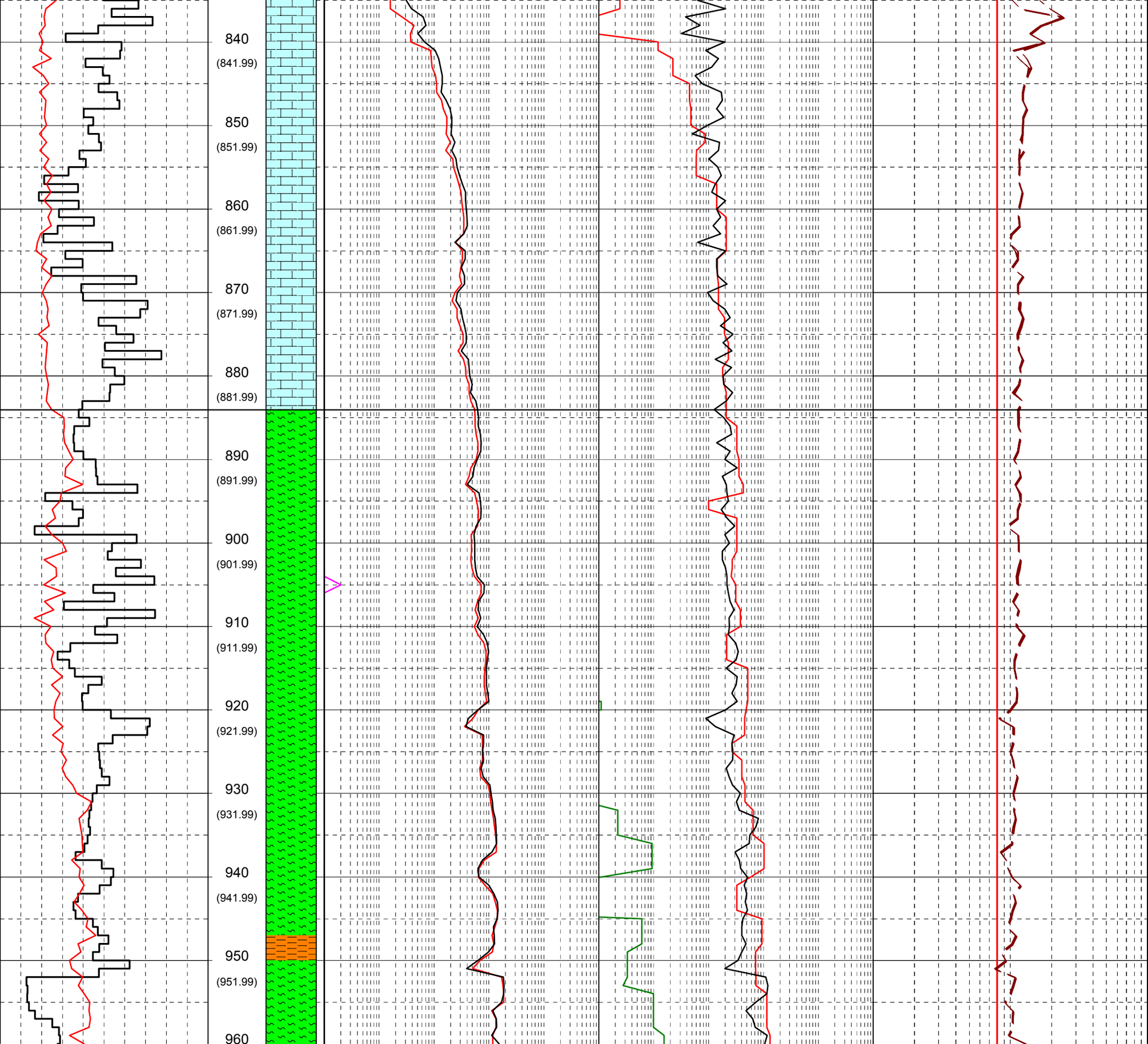
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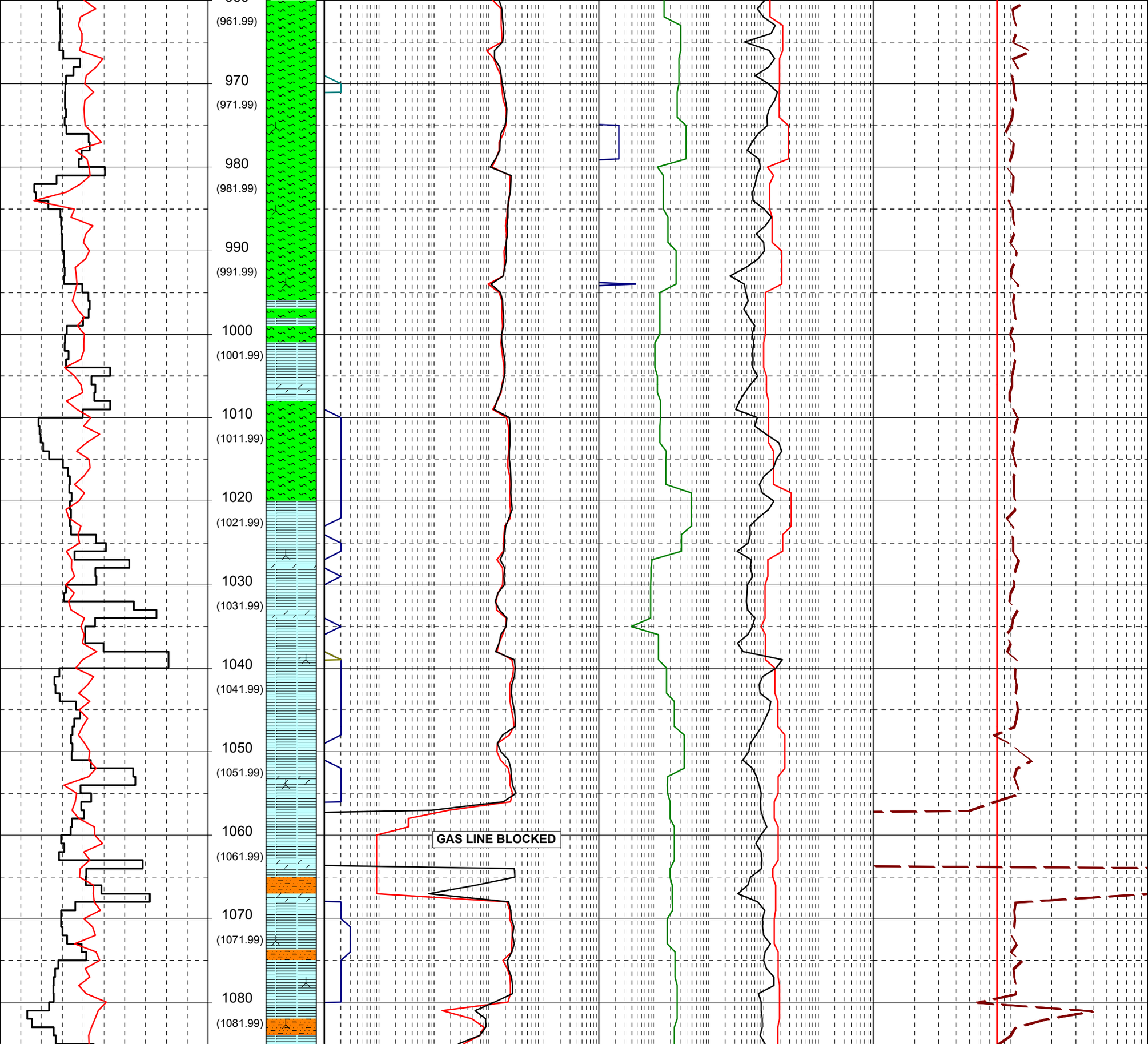
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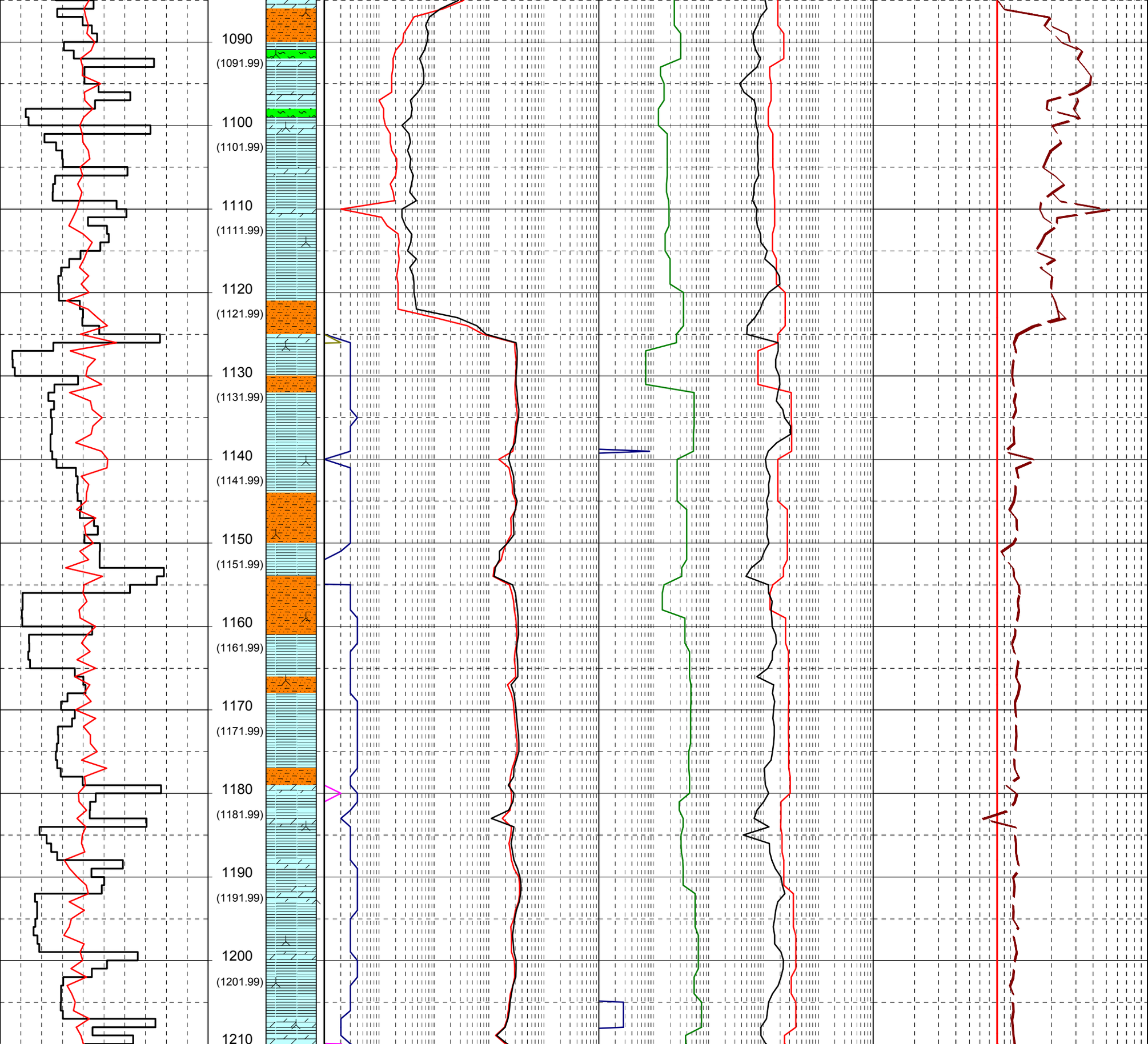
GAS LINE BLOCKED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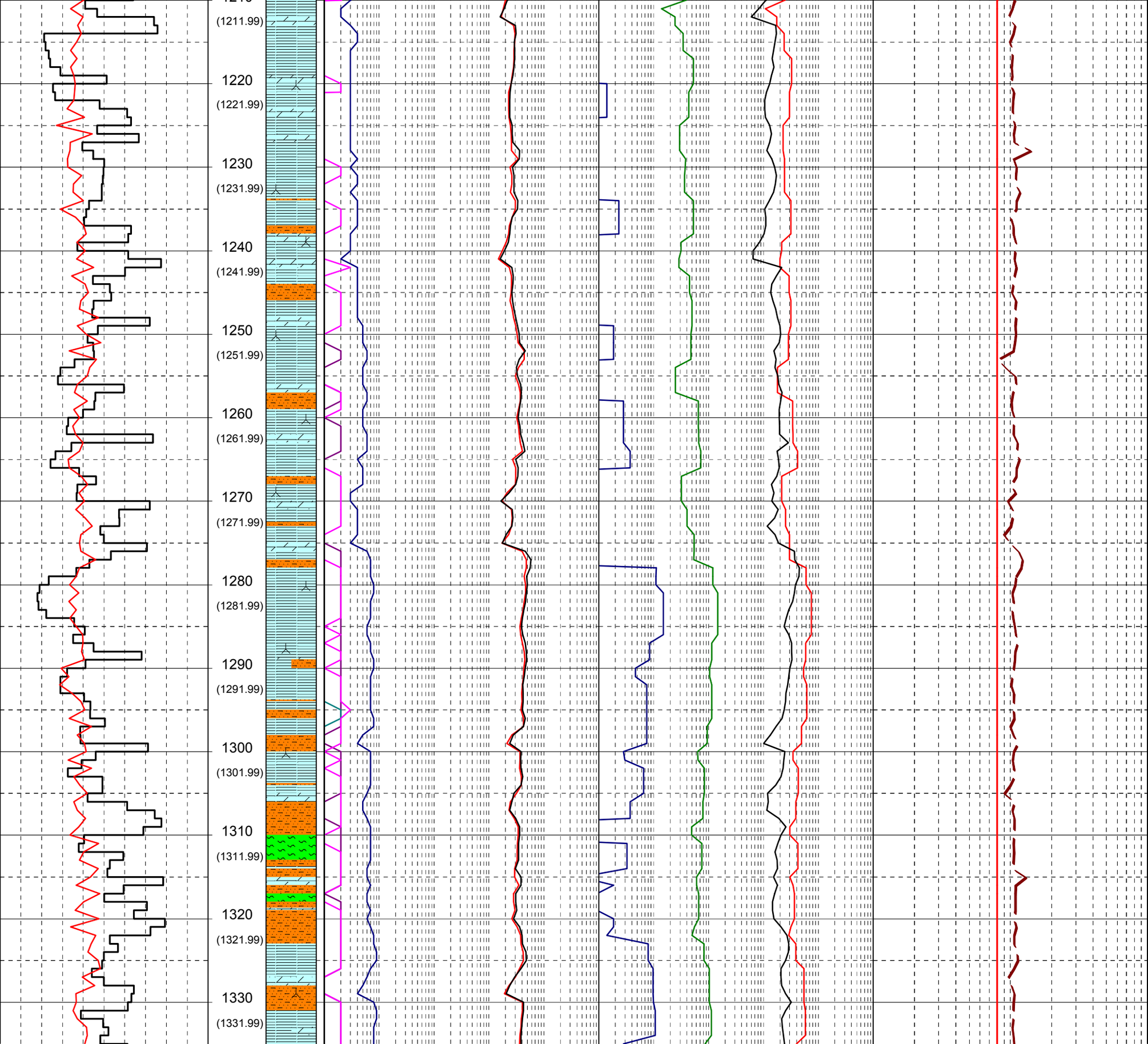
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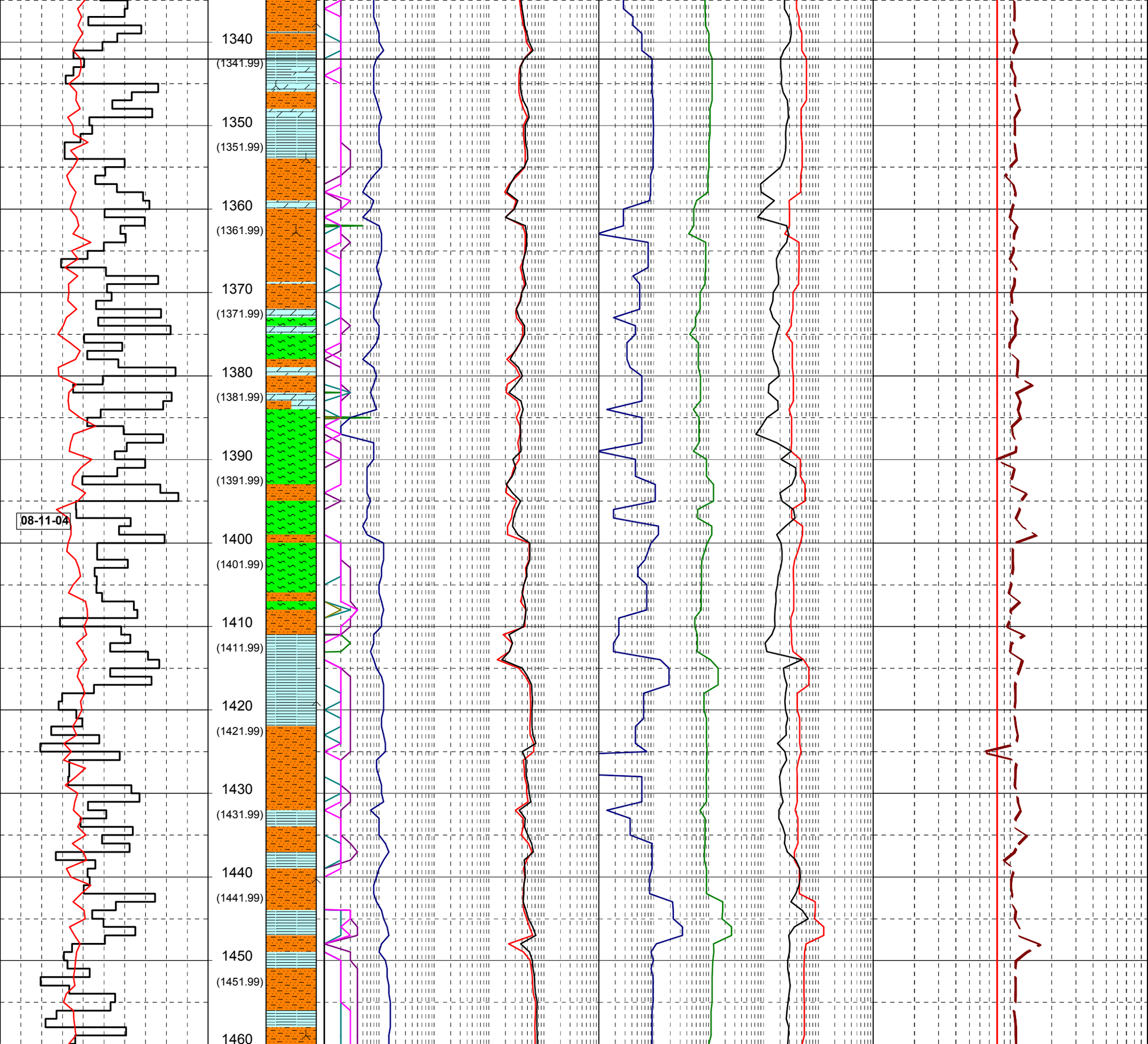
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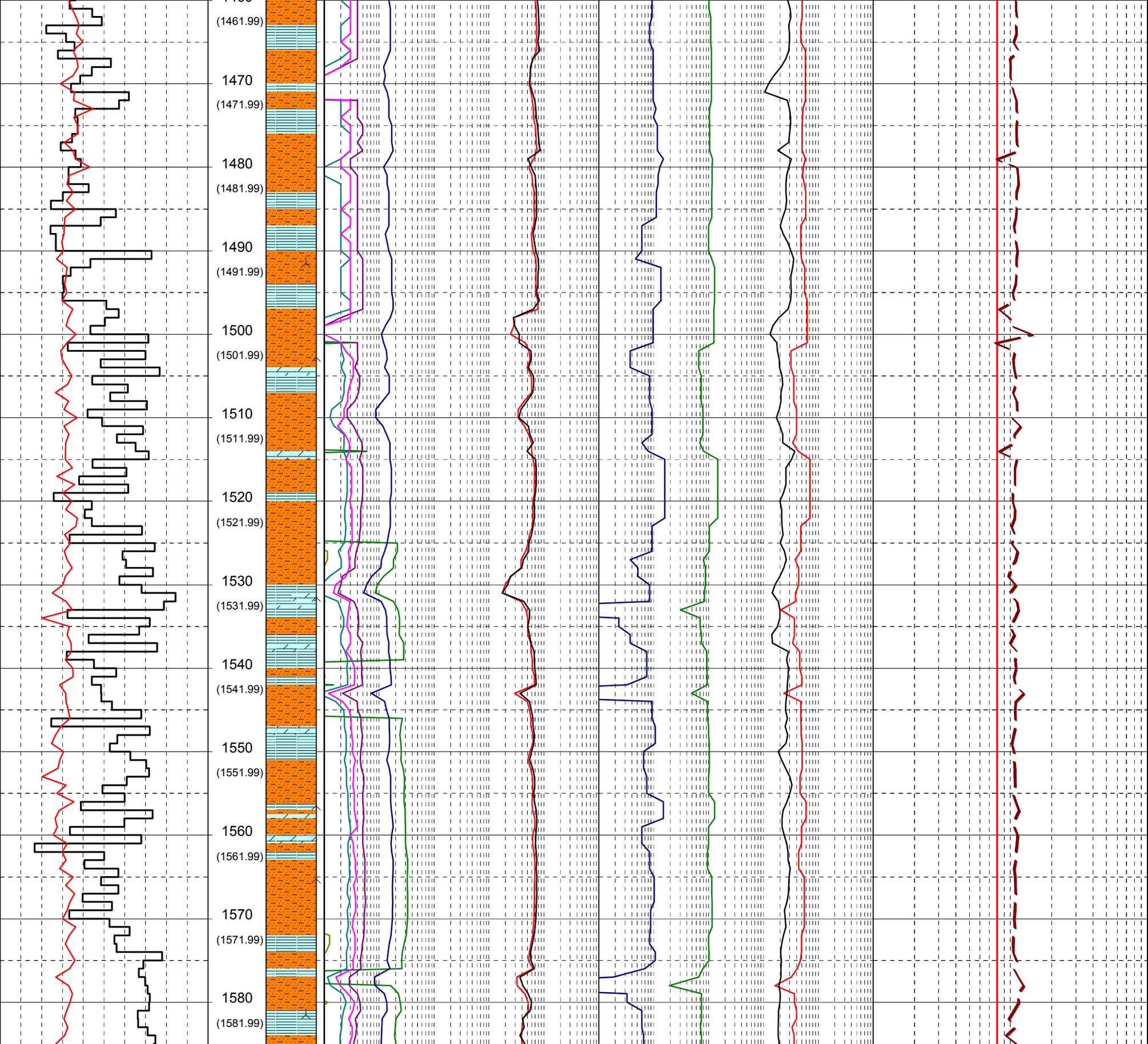
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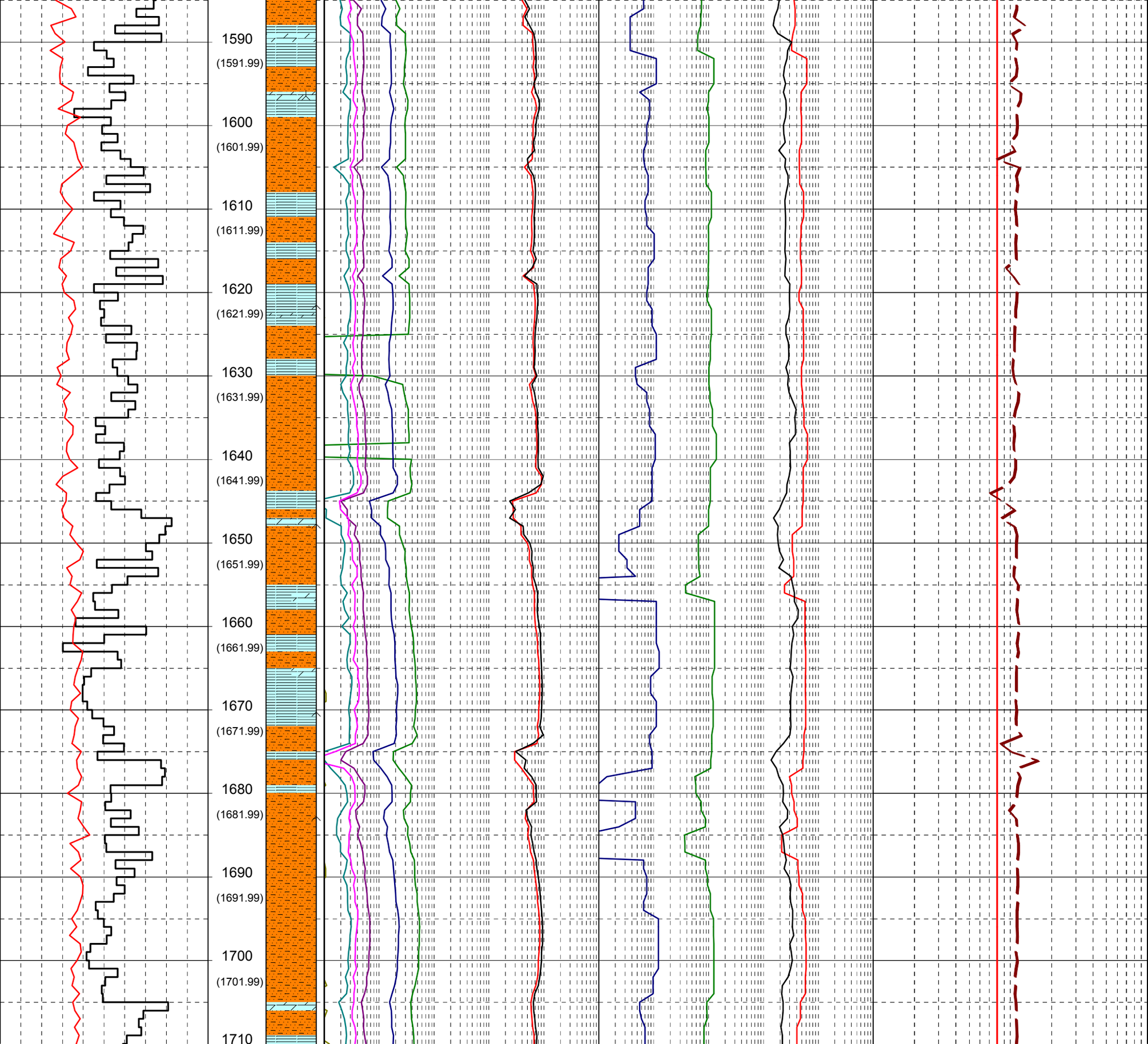
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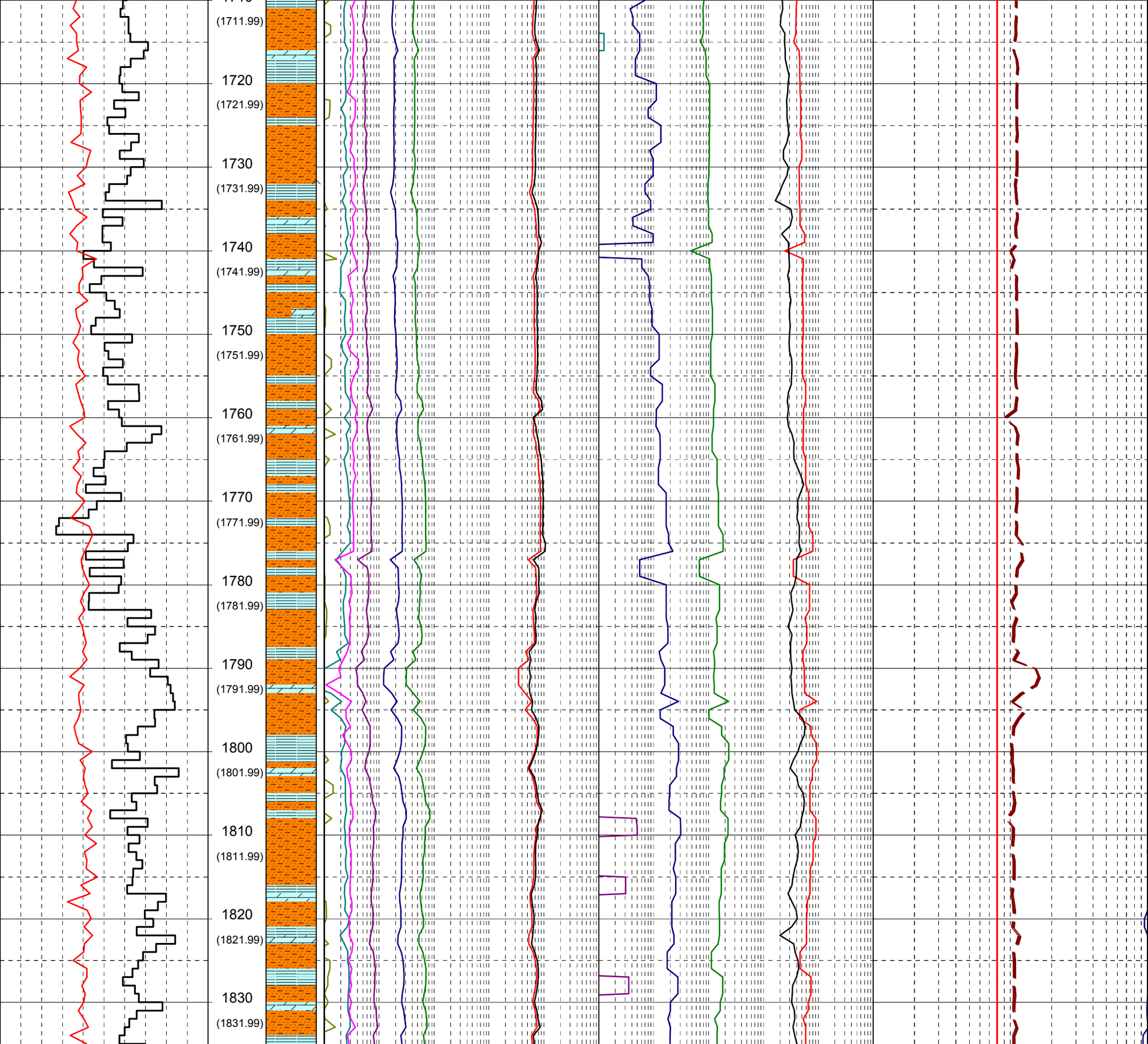
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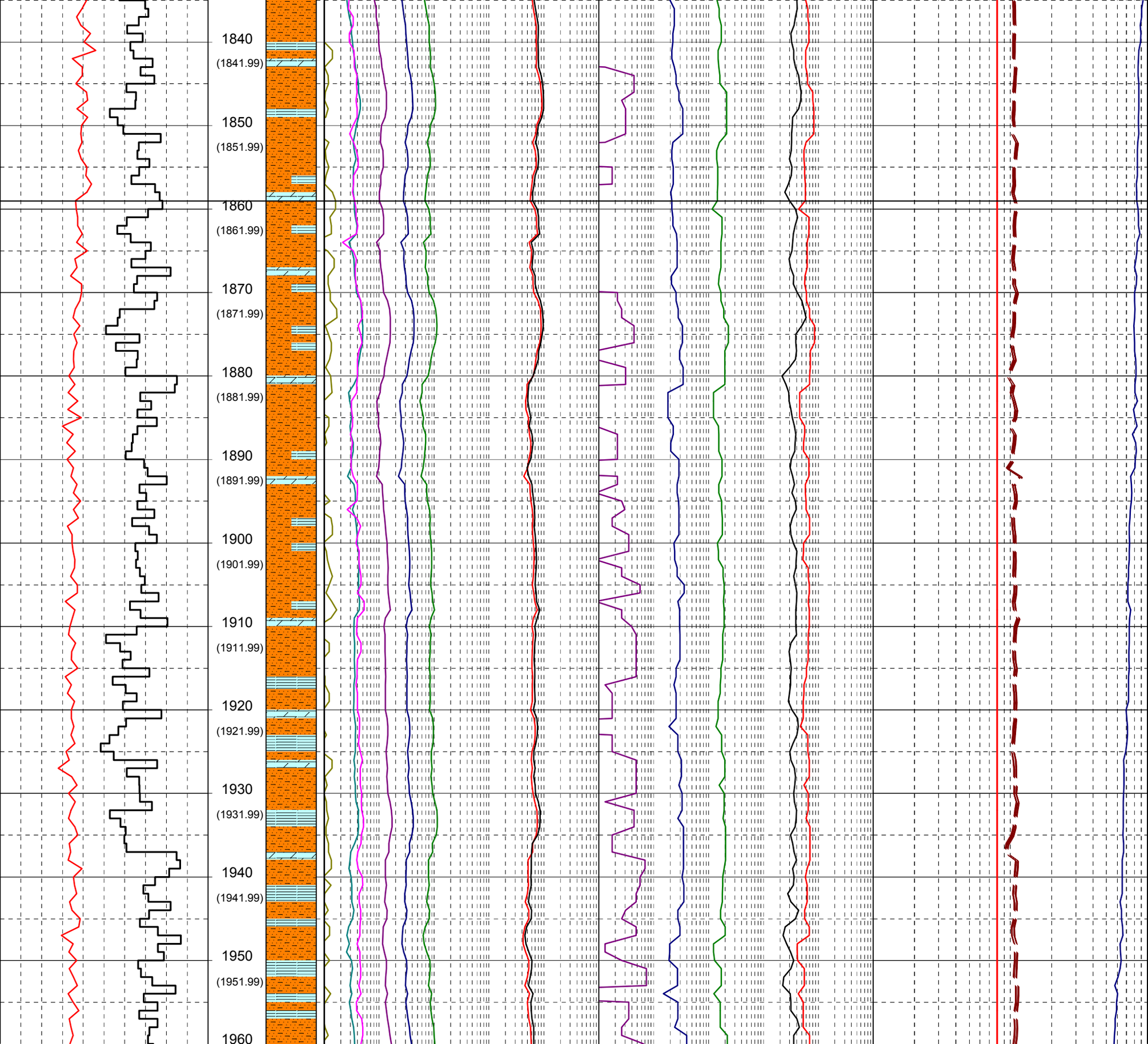
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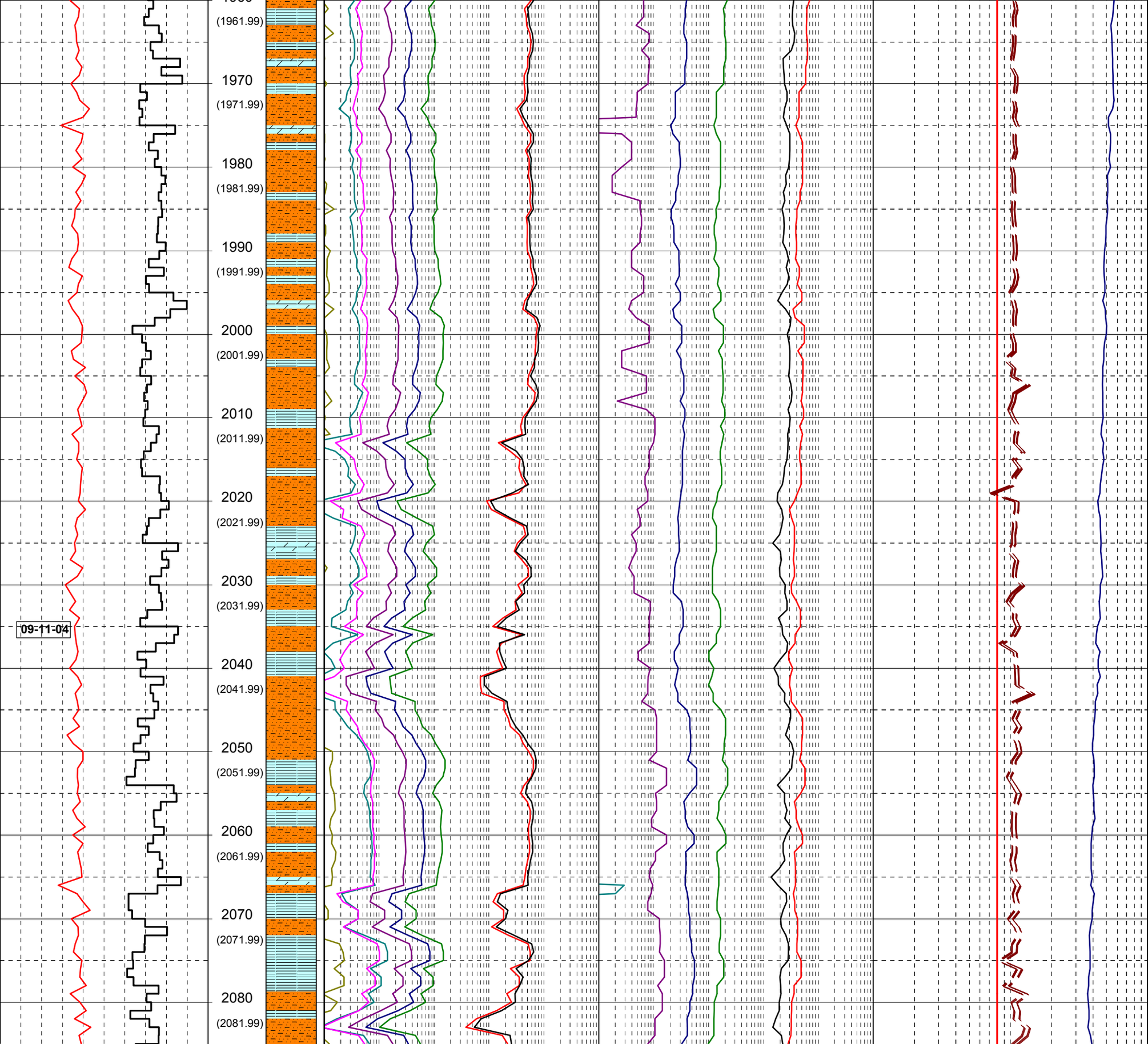
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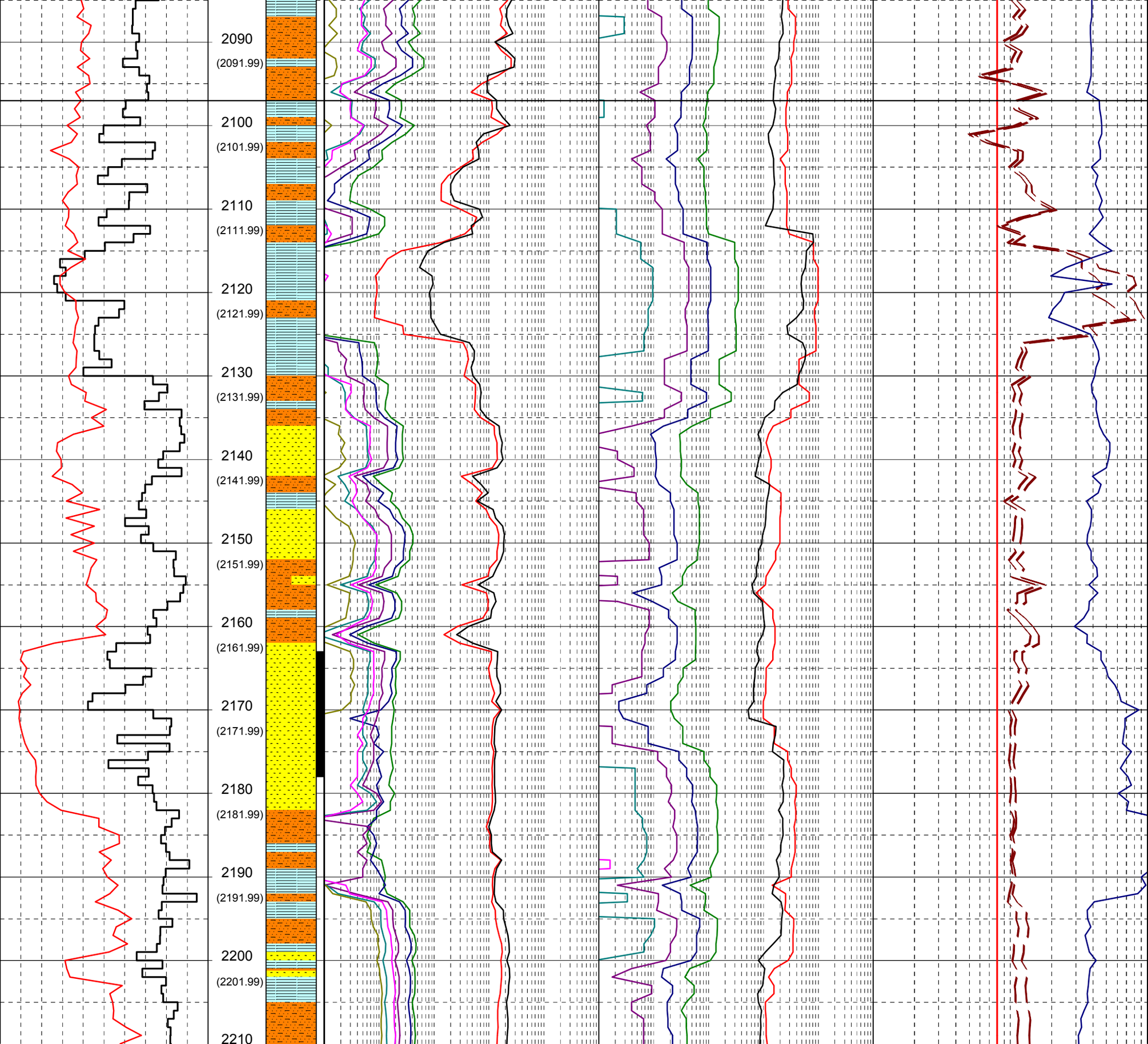
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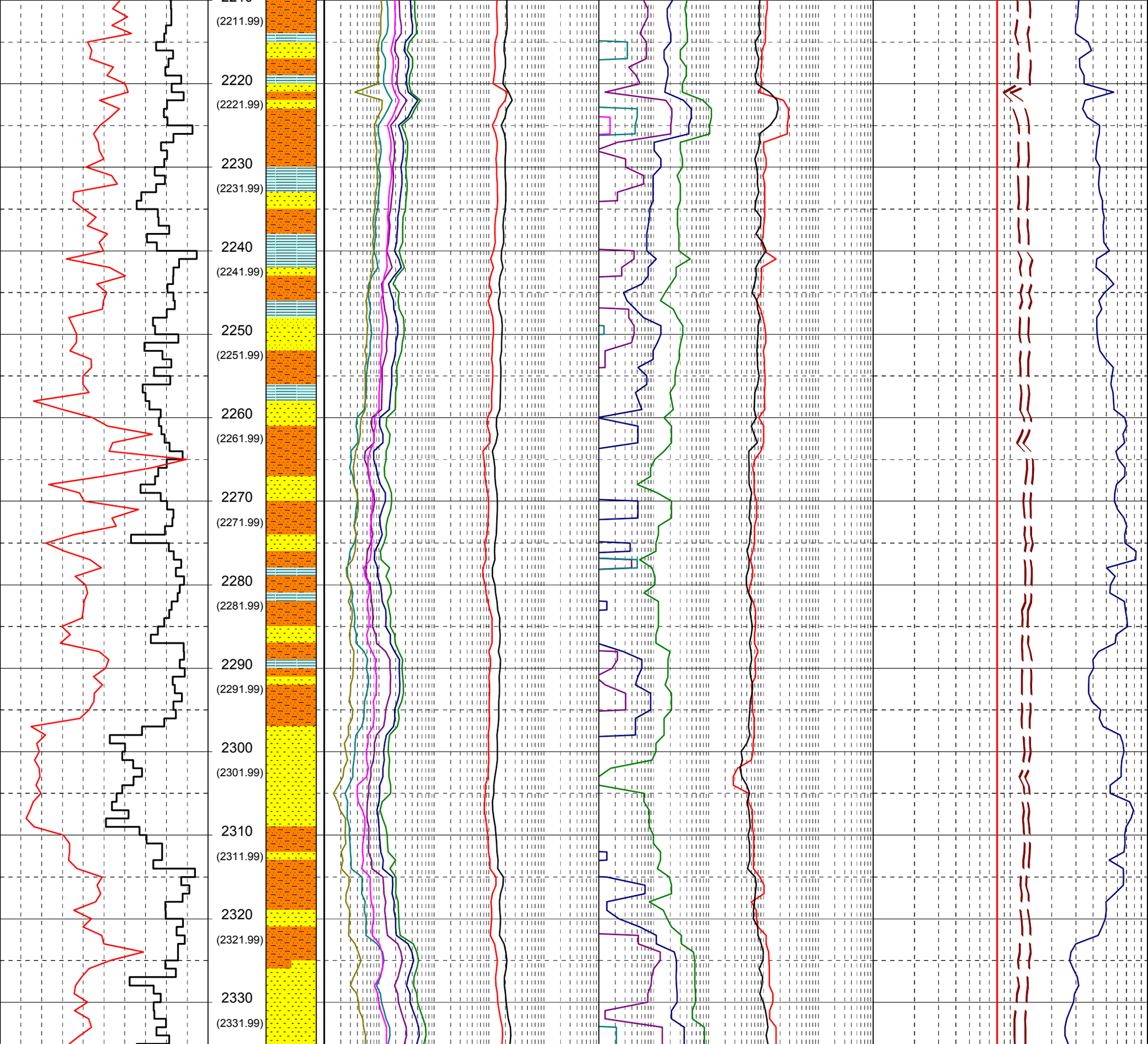
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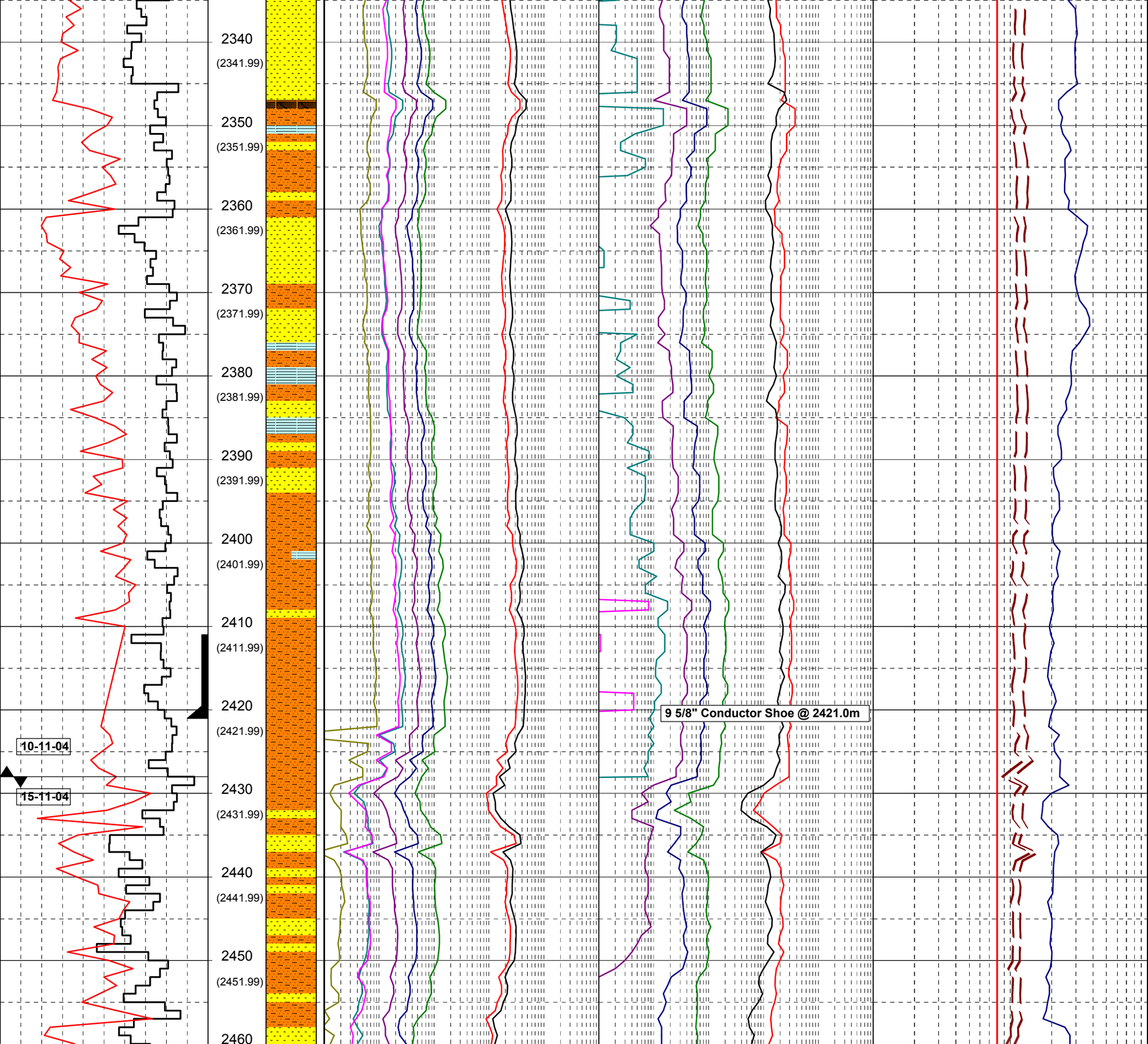
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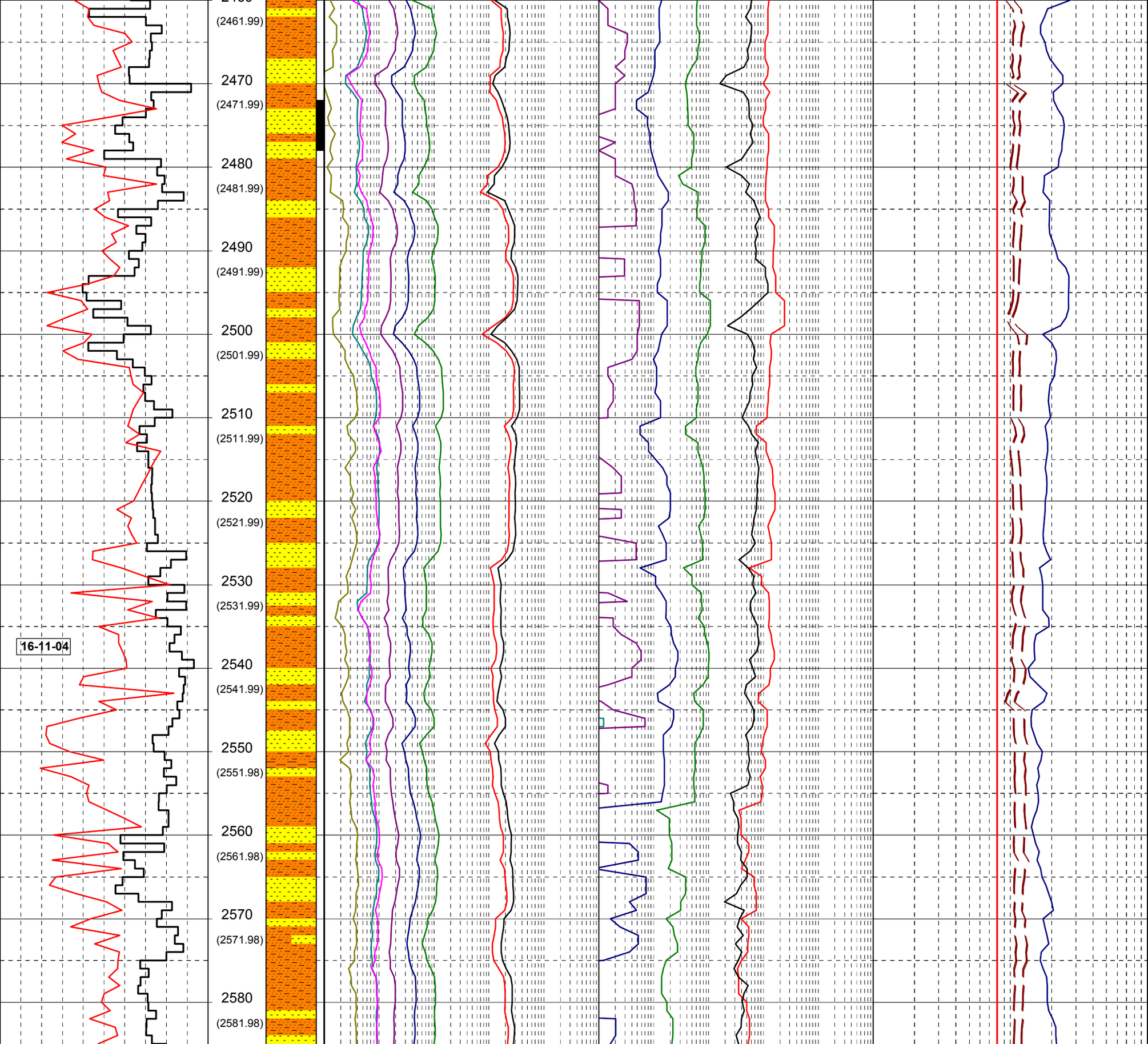
9 5/8" Conductor Shoe @ 2421.0m
10-11-04
15-11-04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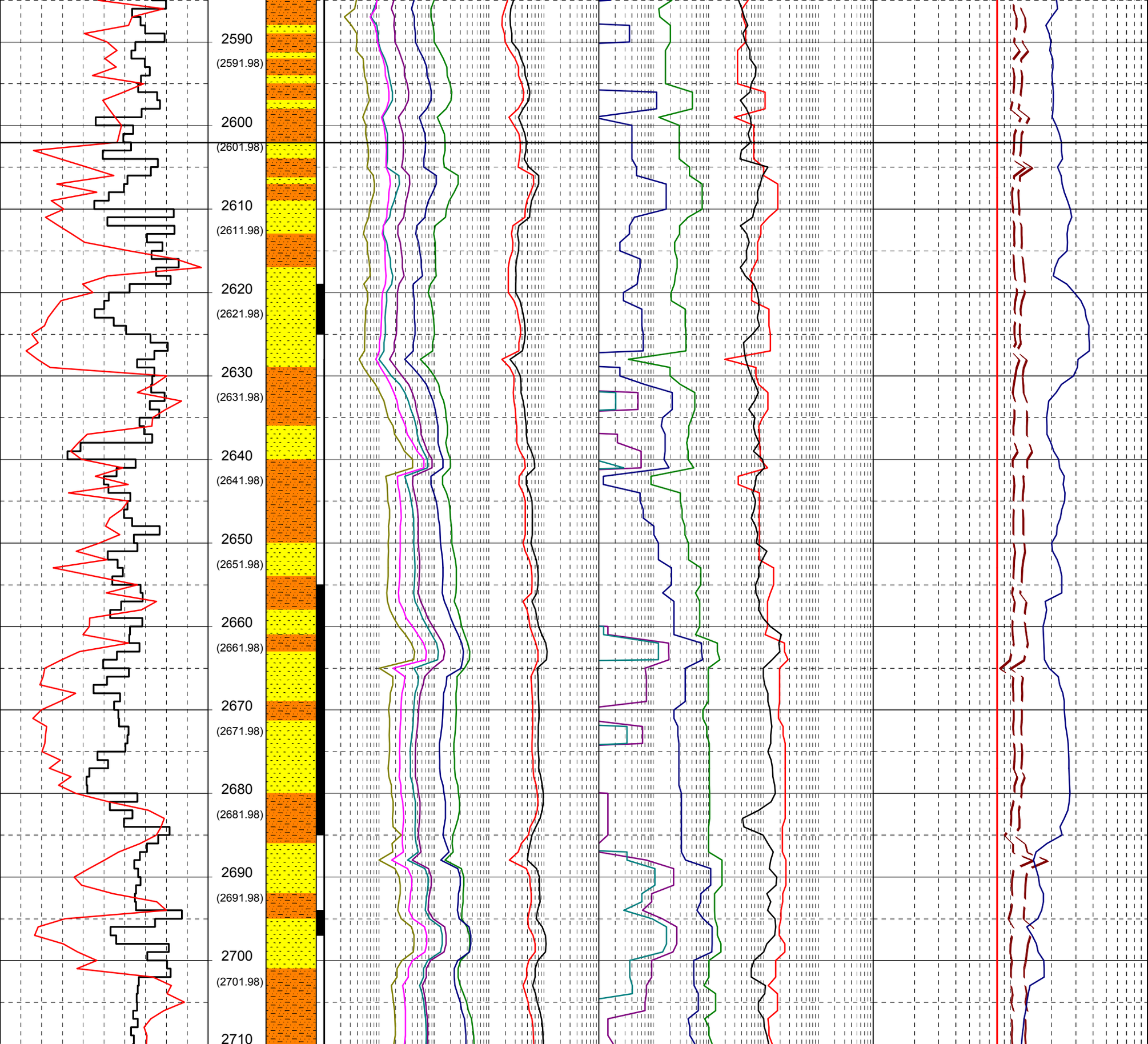
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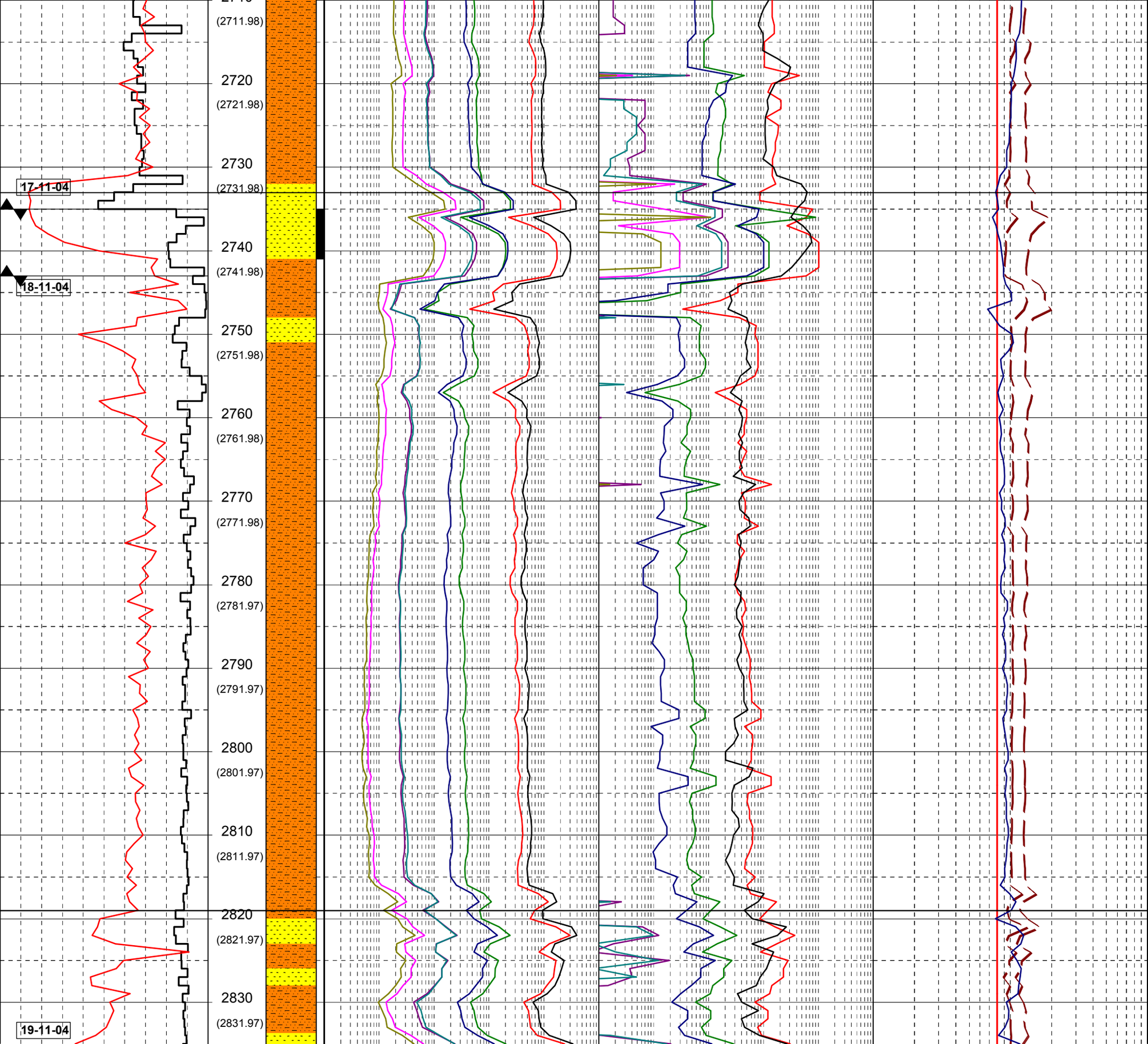
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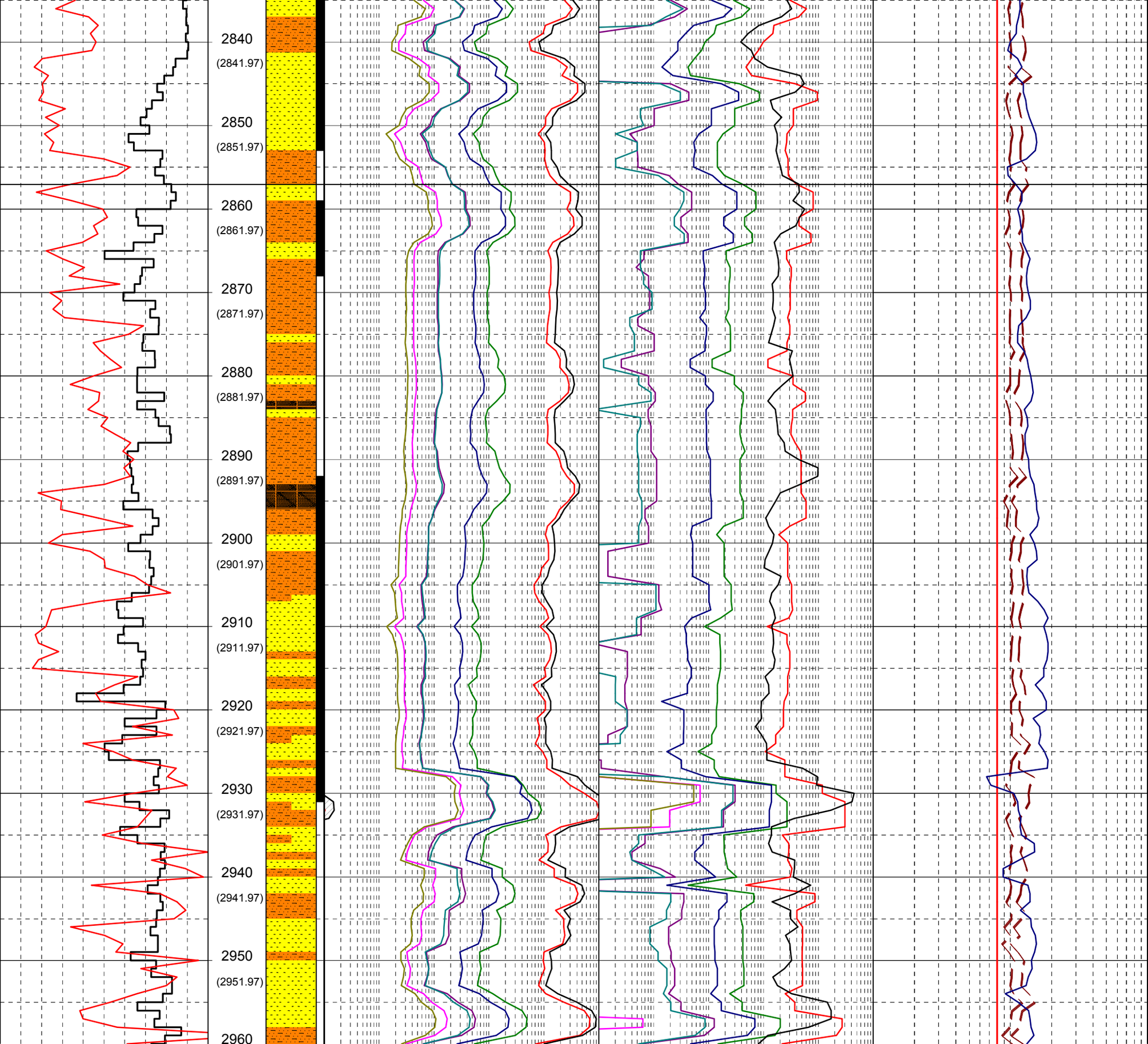
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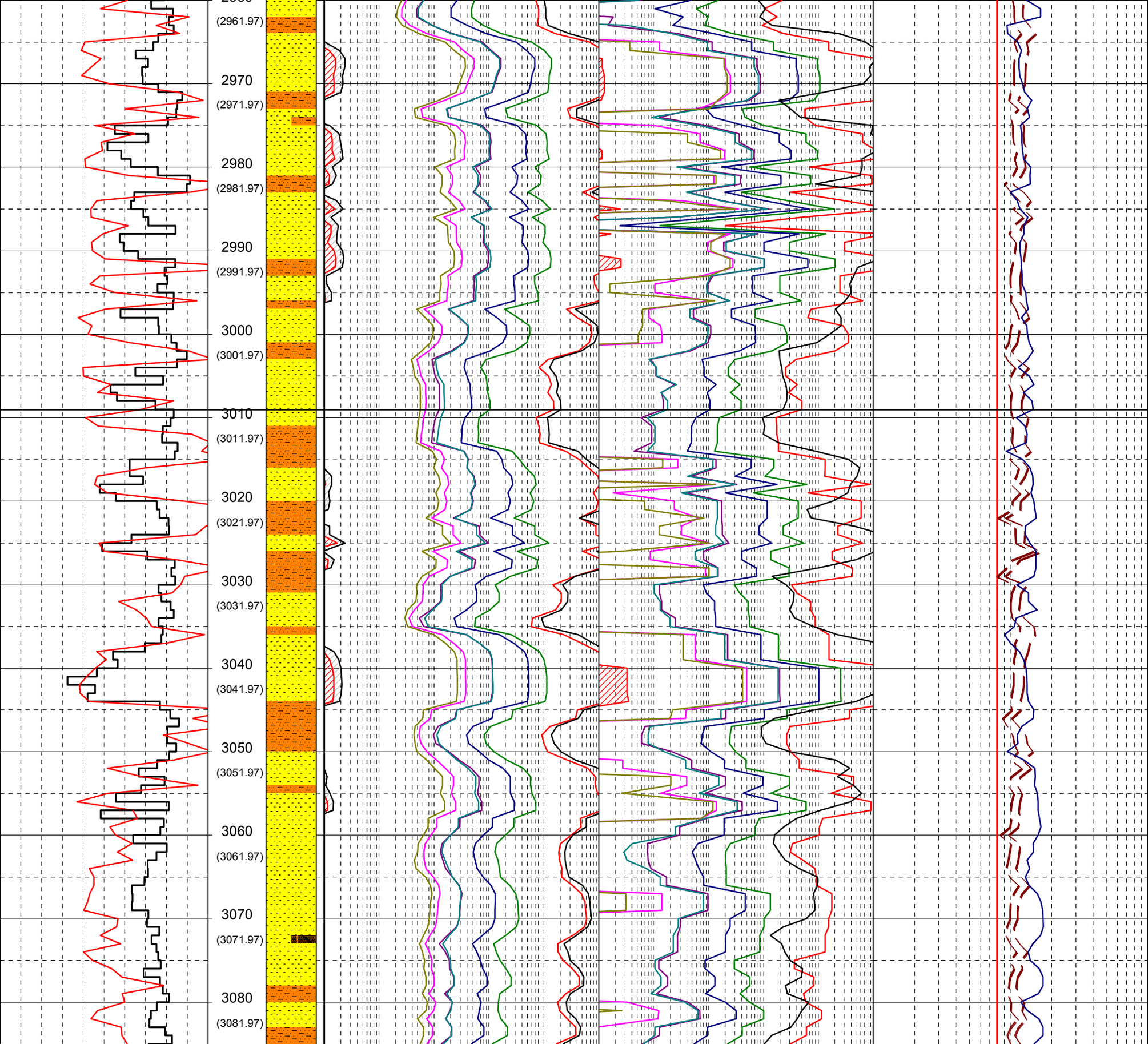
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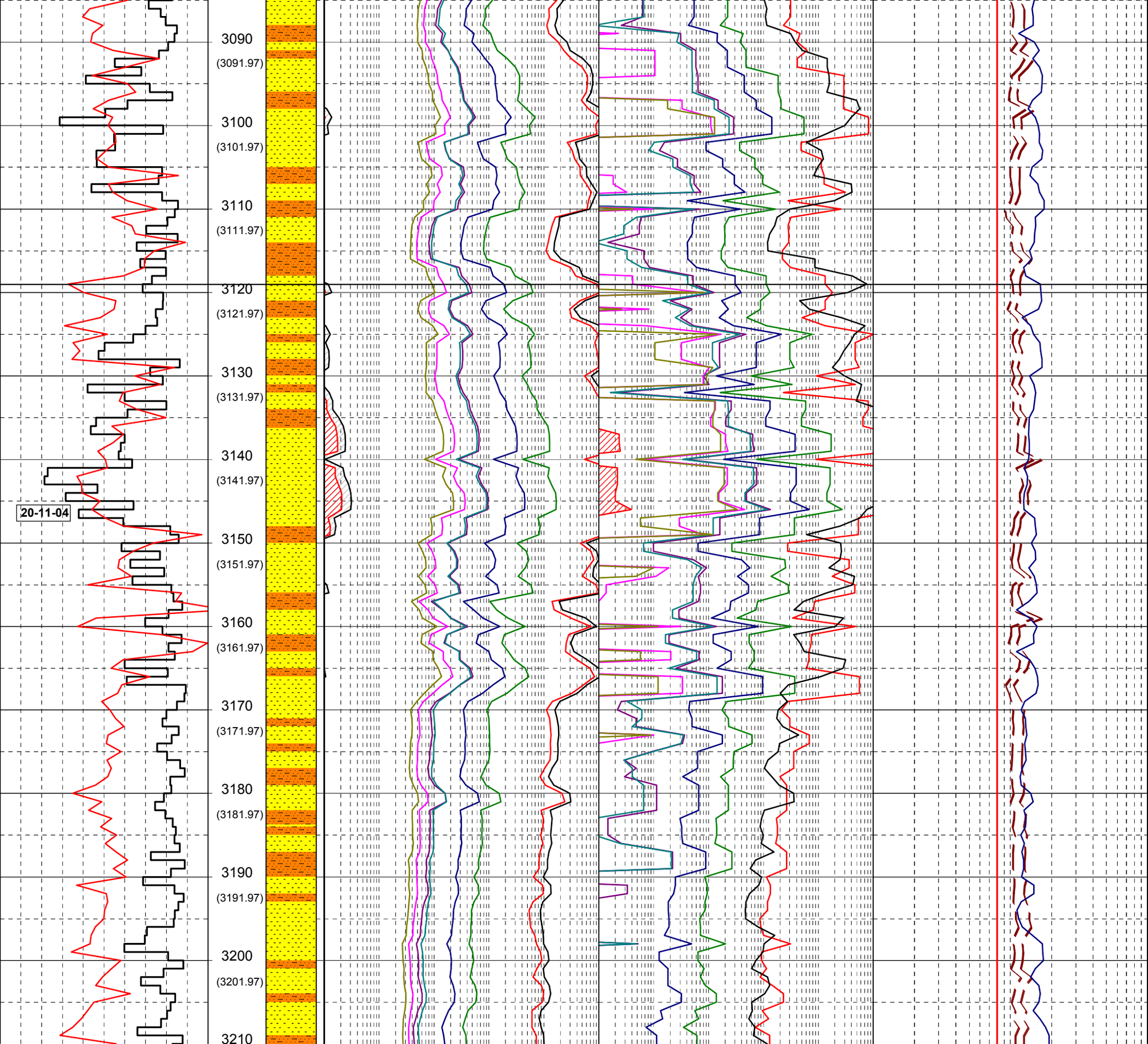
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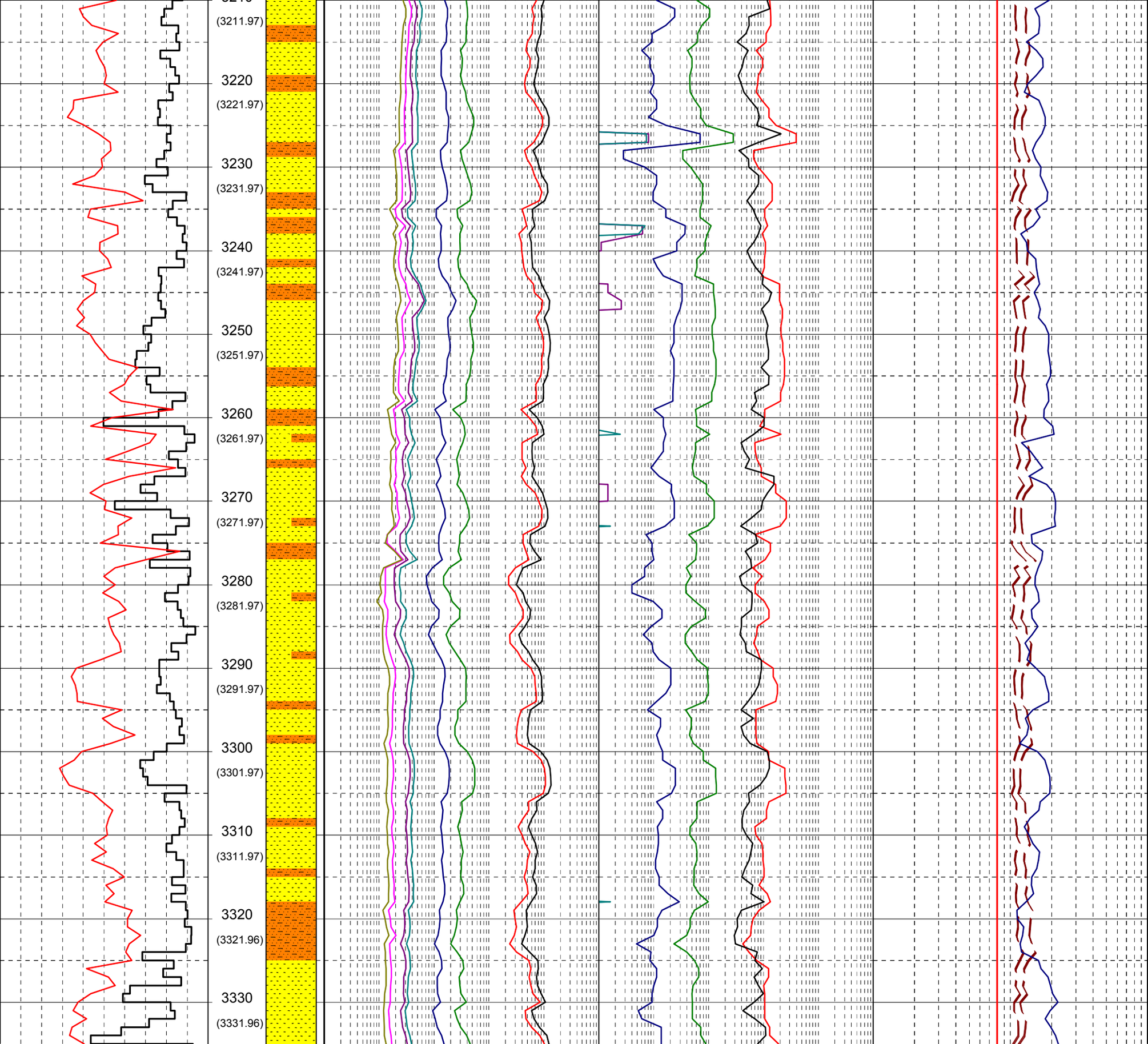
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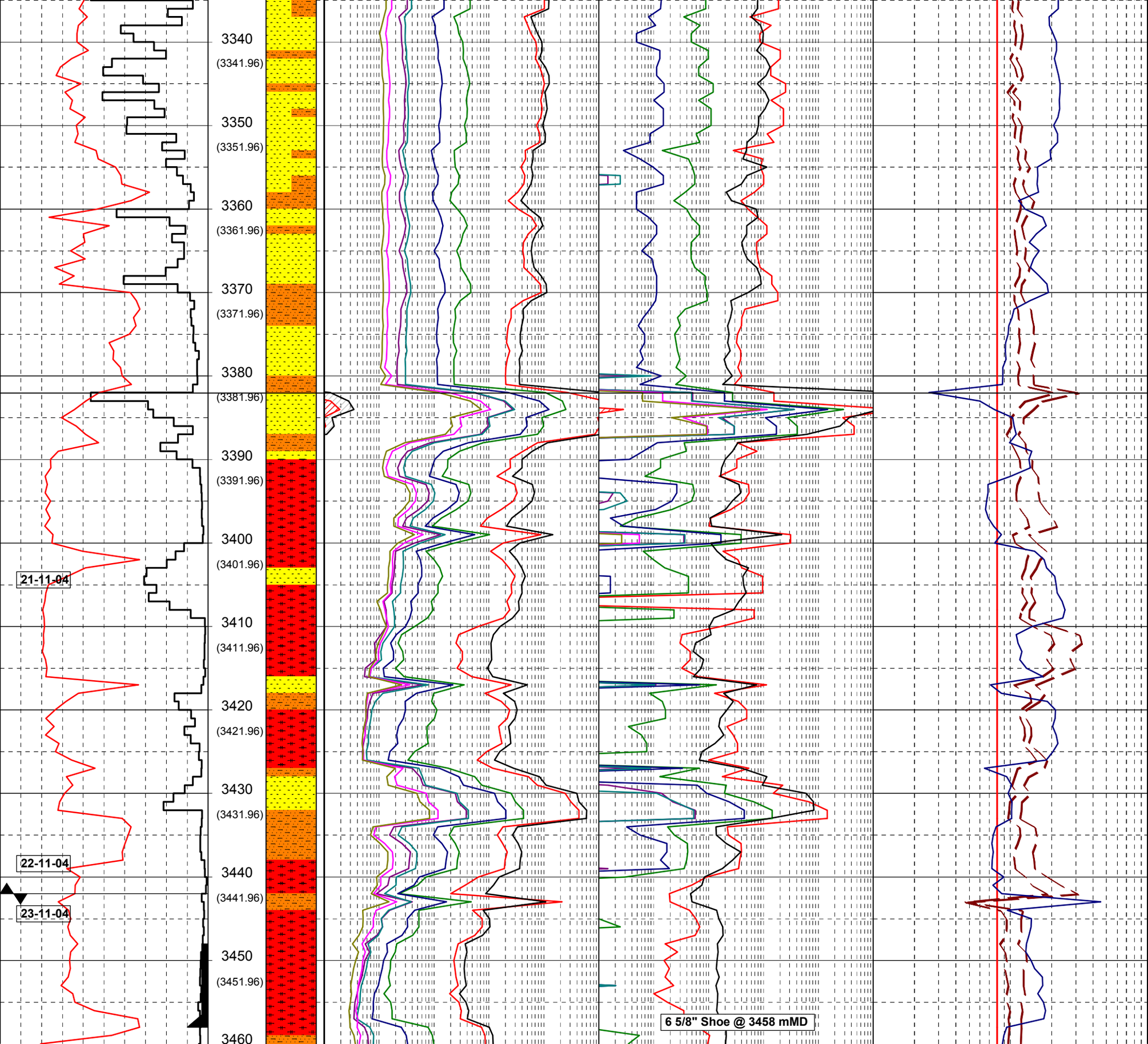
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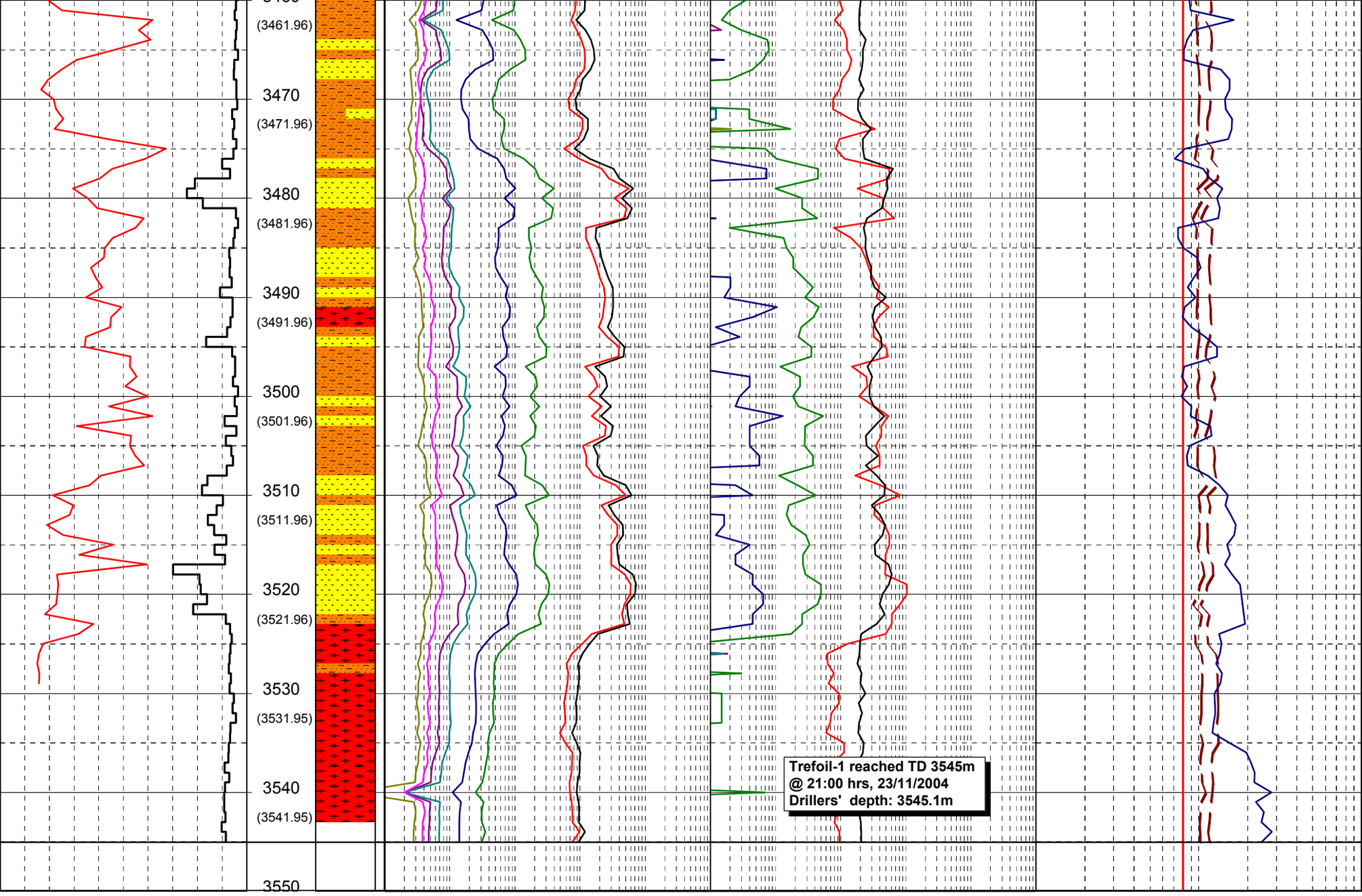
6 5/8" Shoe @ 3458 mMD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3510
(3511.96)
3520
(3521.96)
3530
(3531.95)
3540
(3541.95)
3550
Trefoil-1 reached TD 3545m
@ 21:00 hrs, 23/11/2004
Drillers' depth: 3545.1m

HOLE STABILITY LOG

WELL : TREFOIL-1

FROM (m): 100 TO (m): 3560 SCALE: 1/ 1000

Country	: Australia	**POSITION**		**CASING**	
State	: Tasmania	Latitude	: 39° 51' 41.06"S	16" Hole to (mMDRT)	: 666m
Field	:	Longitude	: 145° 22' 30.72"E	12 1/4" Shoe @ (mMDRT)	: 2428m
Permit	: T/P18	UTM	: 361,025.73m E	8 1/2" Hole to (mMDRT)	: 3545m
Well Type	: Exploration	UTM	: 5,586,268.98m N	20" Shoe at (mMDRT)	: 215m
Rig Name	: ENSCO 102	RT-MSL (mRT)	: 39.9m	13 3/8" Shoe (mMDRT)	: 657.3m
		RT-Seabed (m)	: 108.8	9 5/8" Shoe at (mMDRT)	: 2421.0m

Spud Date	: 30-10-2004	
TD Date	: 23-11-2004	
TD (mMDRT)	: 3545.0 mRT	
TVD (mTVDSS)	: 3544.9 mRT	
Status	: Run 6 5/8"Liner	

ABBREVIATIONS

MW MUD WEIGHT
FV FUNNEL VISCOSITY
PV PLASTIC VISCOSITY
YP YIELD POINT
FC FILTER CAKE
SOL SOLIDS
WL FILTRATE
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
CR CIRCULATE RETURNS
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

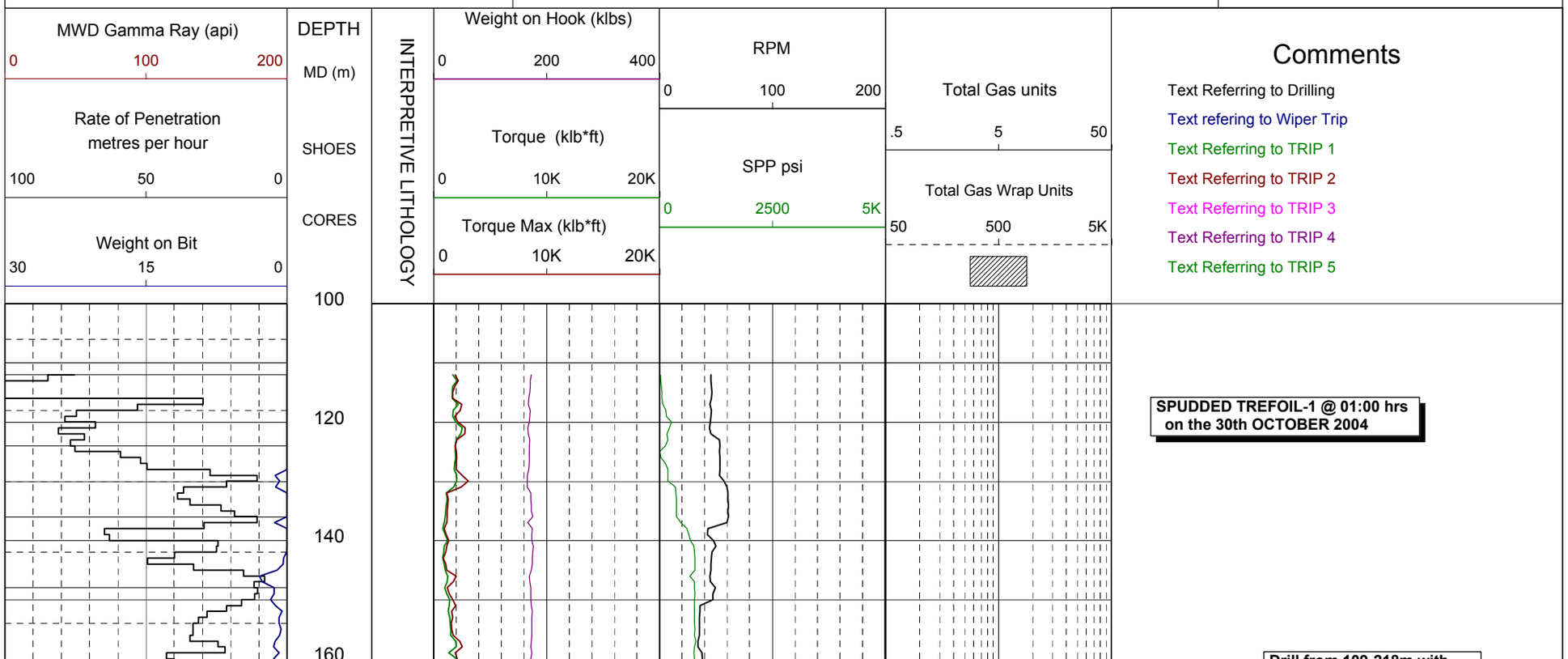
Claystone
Siltstone
Fine SST
Medium SST
Coarse SST
Conglomerate
Clay, Sand Lime
Limestone

Dolomite
Chert
bitum. Shale (b
Coal
Bryozoa
Calcareous
Iron Minerals
Corals

Foraminifera
Volcanics b
Carb Fragments
Tintinnids
Intrusives
Glauconite
Pyrite
Cement

ENGINEERING LEGEND

Core
RFT
Mud gain
Mud loss
Shoe
Deviation survey
Sidewall Core
Volc Modifier

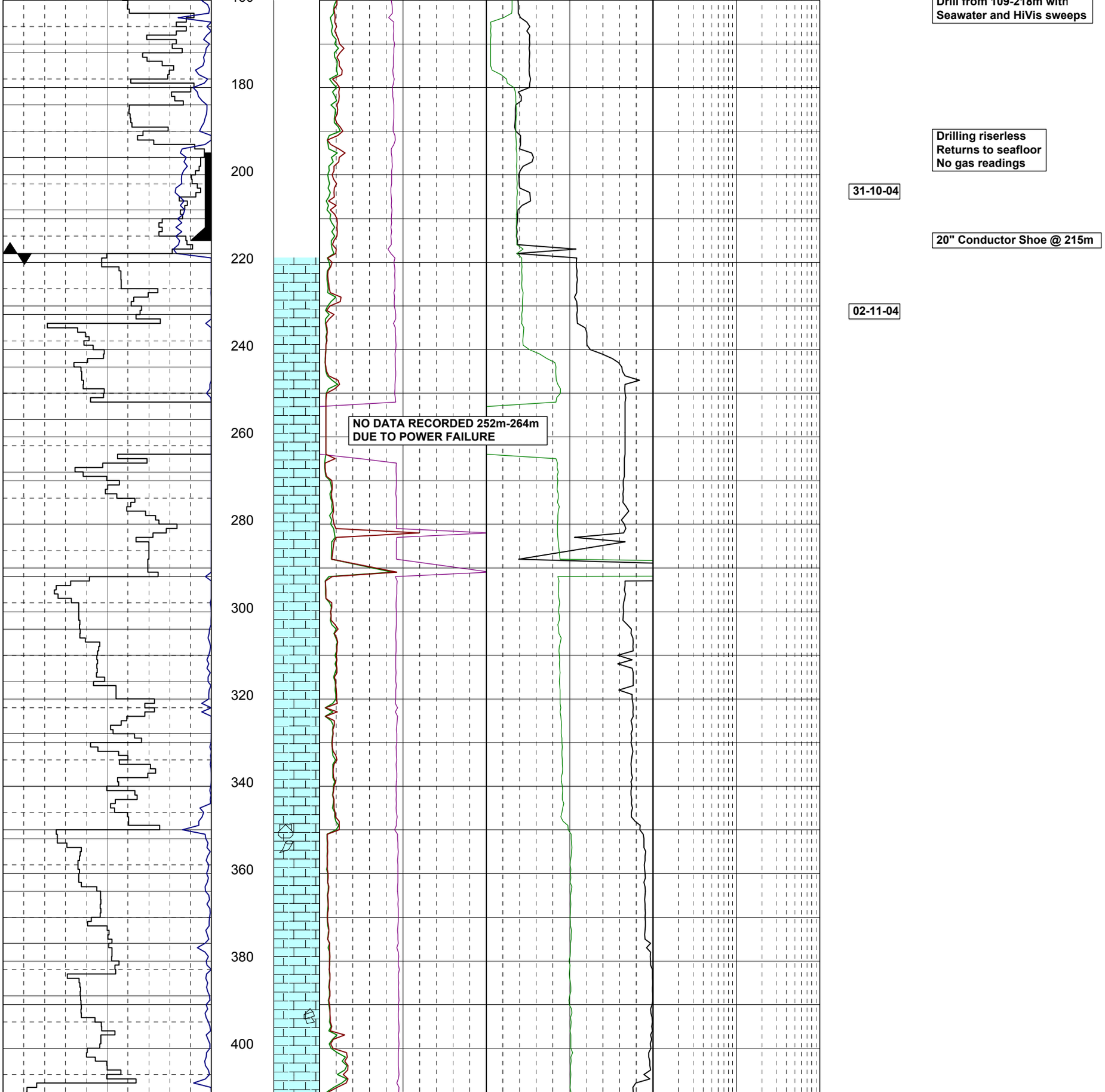


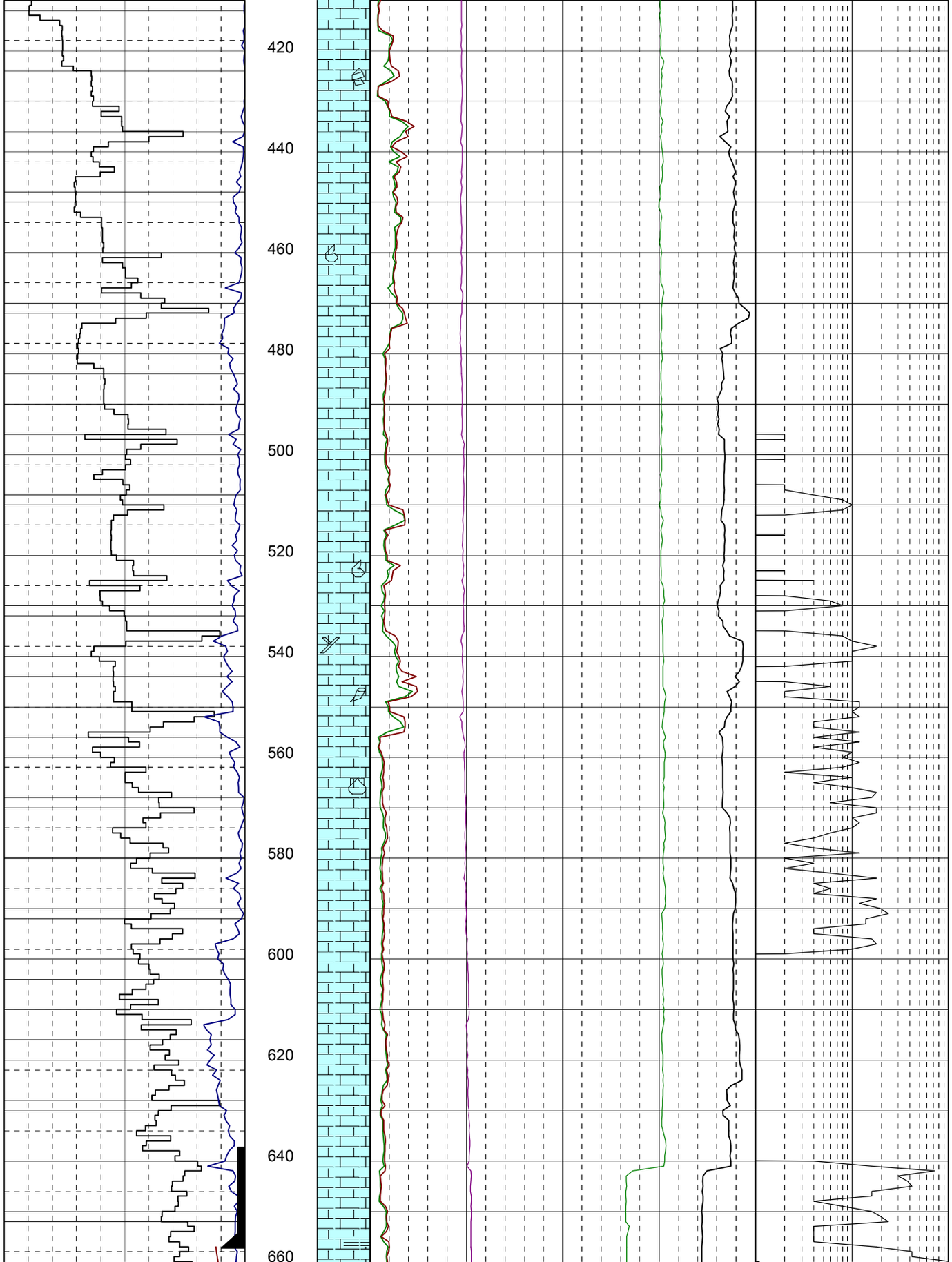
Comments

Text Referring to Drilling
Text refering to Wiper Trip
Text Referring to TRIP 1
Text Referring to TRIP 2
Text Referring to TRIP 3
Text Referring to TRIP 4
Text Referring to TRIP 5

SPUDDED TREFOIL-1 @ 01:00 hrs on the 30th OCTOBER 2004

Drill from 100-218m with

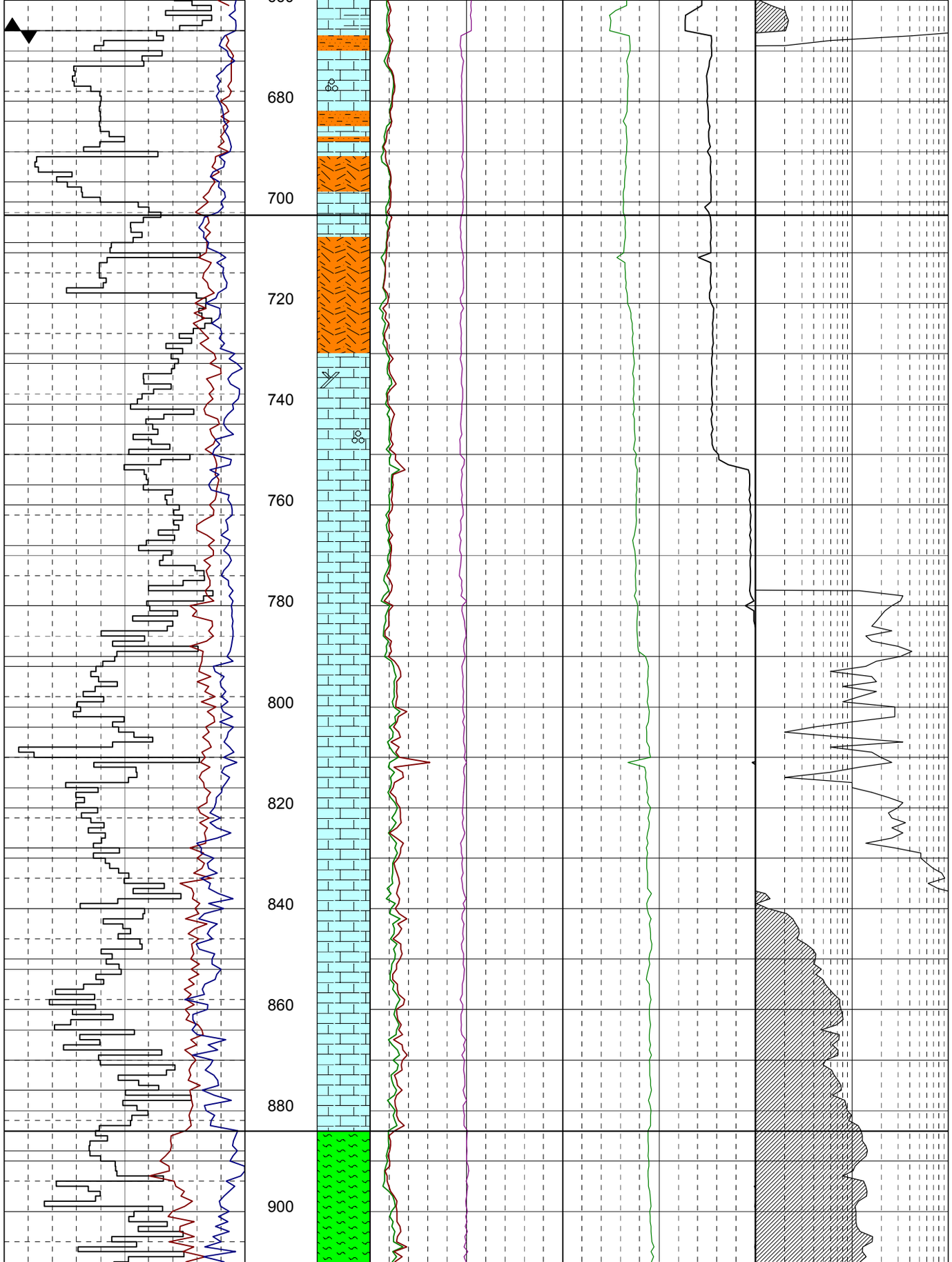

Drill from 109-218m with
Seawater and HiVis sweeps
Drilling riserless
Returns to seafloor
No gas readings
31-10-04
20" Conductor Shoe @ 215m
02-11-04
NO DATA RECORDED 252m-264m
DUE TO POWER FAILURE
180
200
220
240
260
280
300
320
340
360
380
400



3-11-04

HIGH LOSSES (5BBL/MIN)
@ 641m, CIRCULATE AND
PUMP HI VIS PILL & SWEEPS

13 3/8" Conductor Shoe @ 657.30m

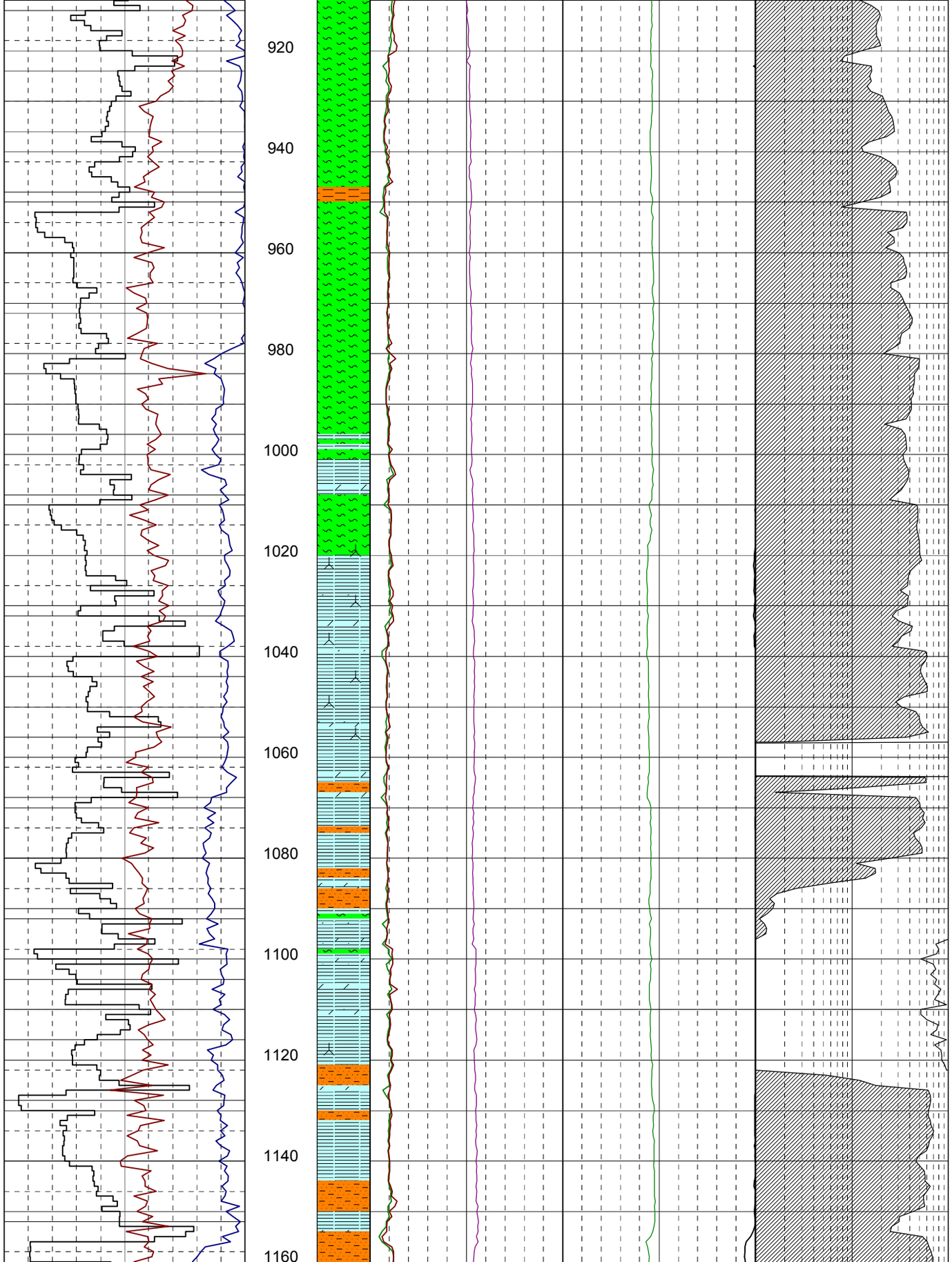


04-11-04

06-11-04

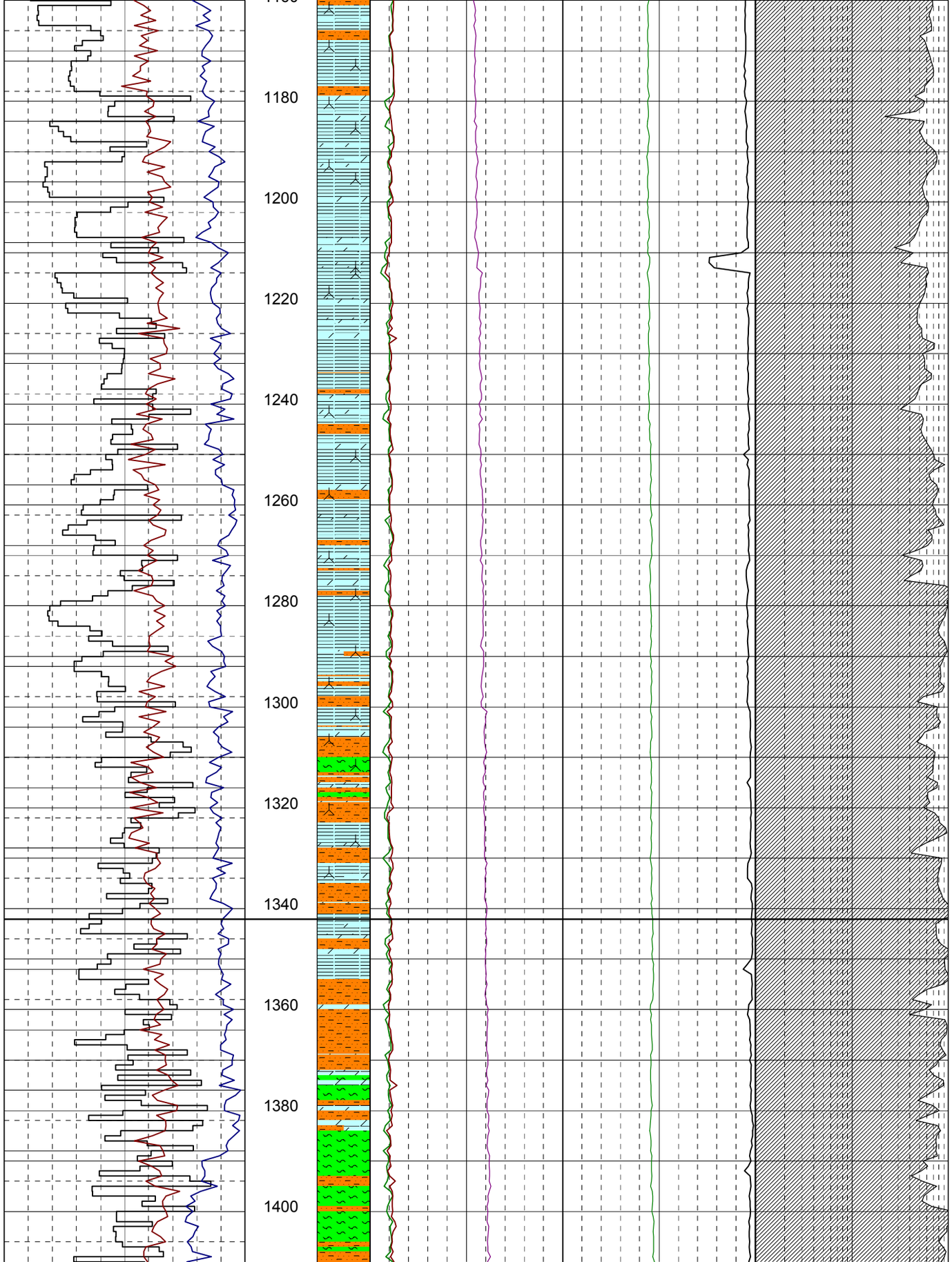
07-11-04

Tight spot at 794-784m
worked and reamed through

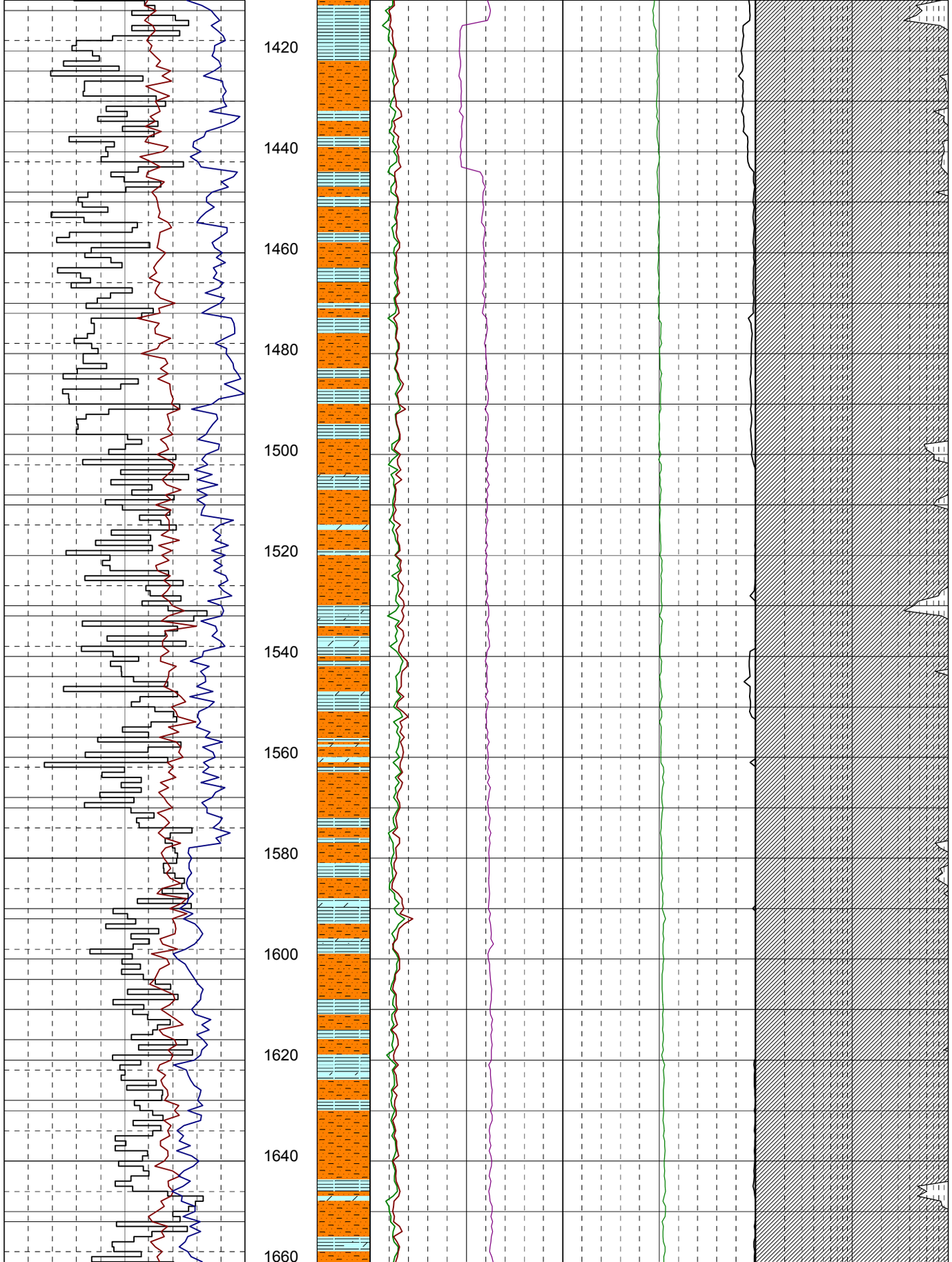


Hole packed off at 1079m
Regained full circulation

Tight spot at 1150m
25k max overpull
worked and reamed through



Tight spot at 1240m
15k max overpull
worked and reamed through



Tight spot at 1435m
25k max overpull
worked and reamed through

Tight spot at 1466m
30k max overpull
worked and reamed through

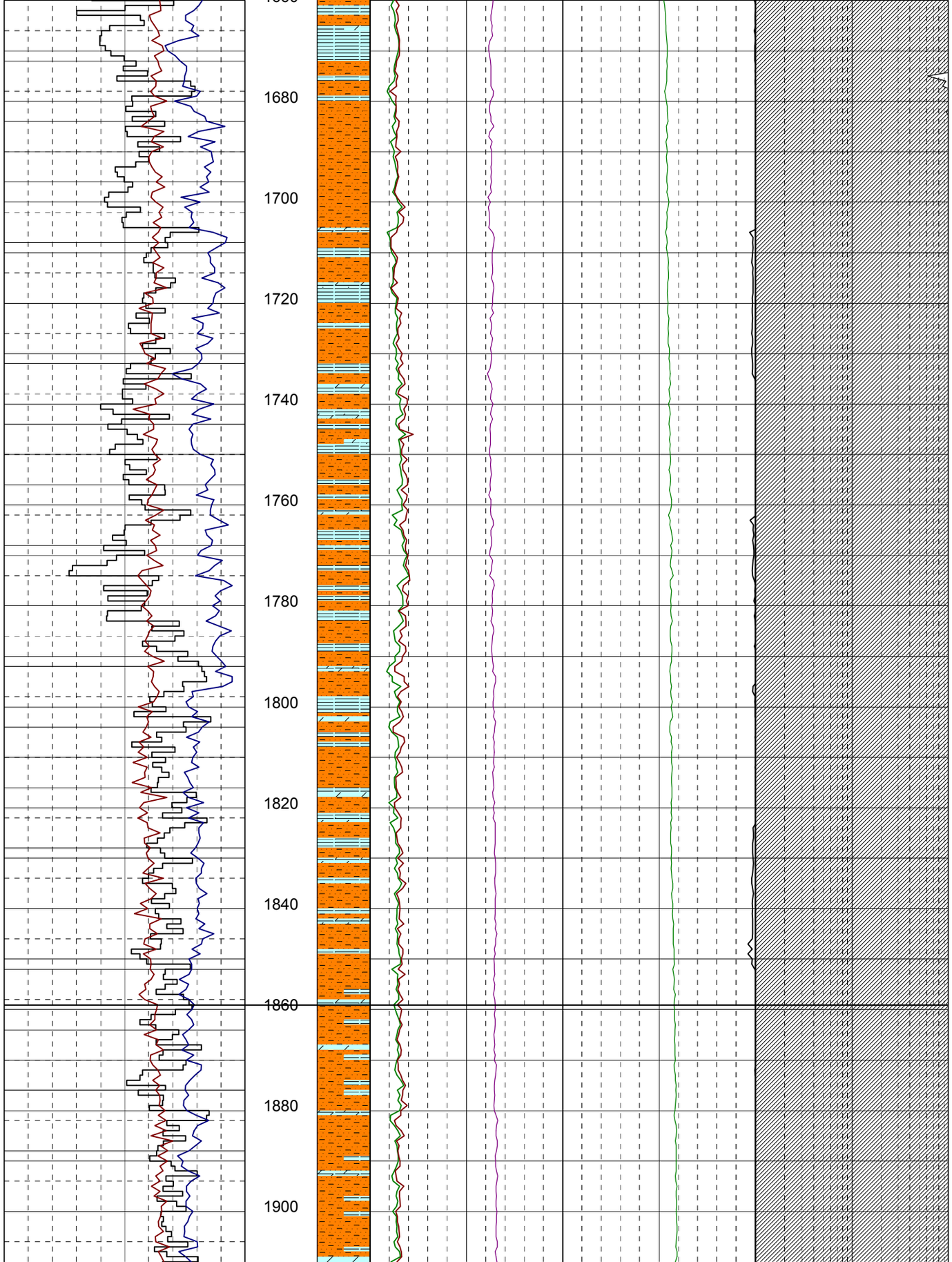
Tight spot at 1500m
20k max overpull
worked and reamed through

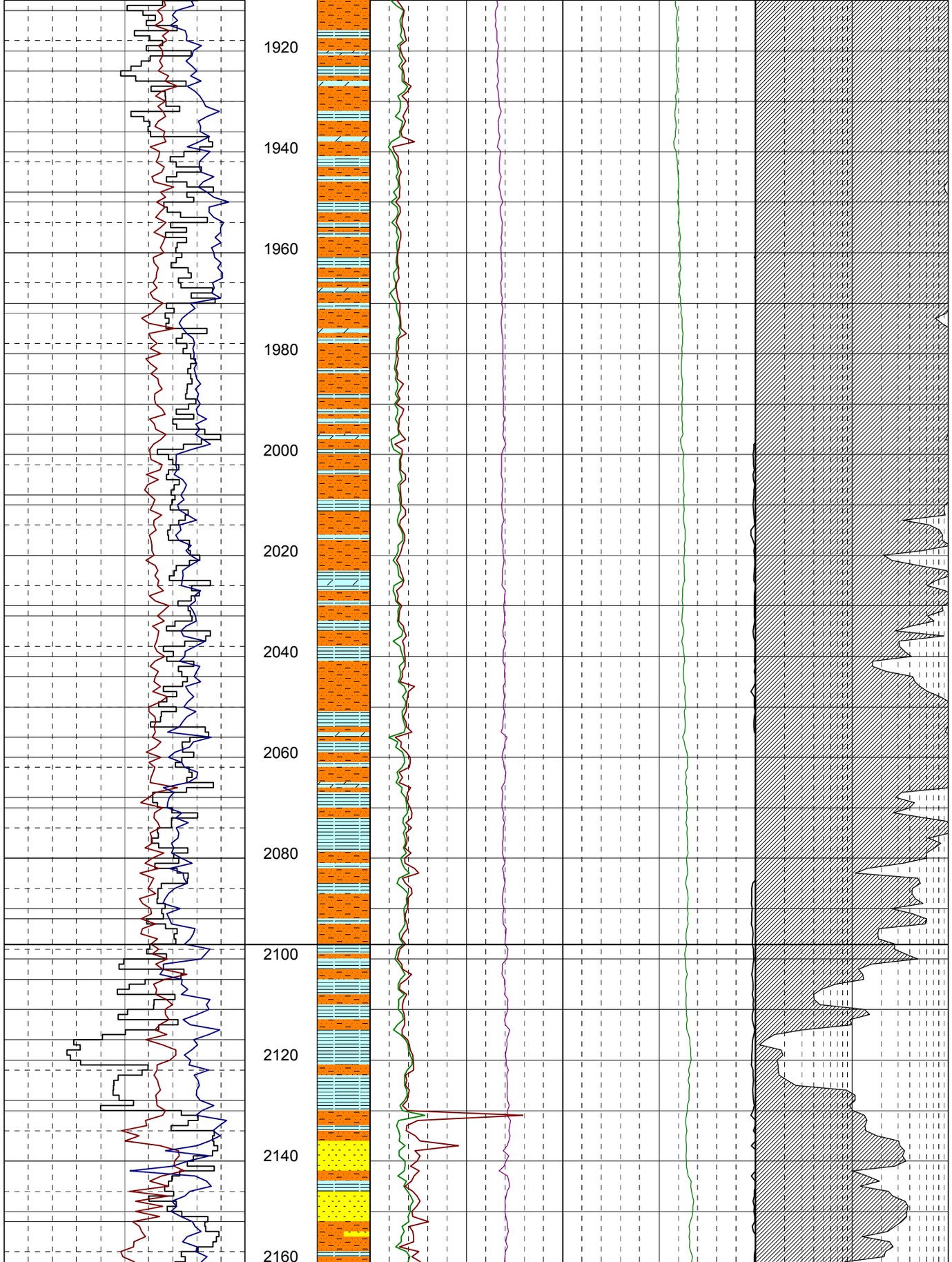
Tight spot at 1533m
30k max overpull
worked and reamed through

Tight spot at 1591m
Worked and reamed through

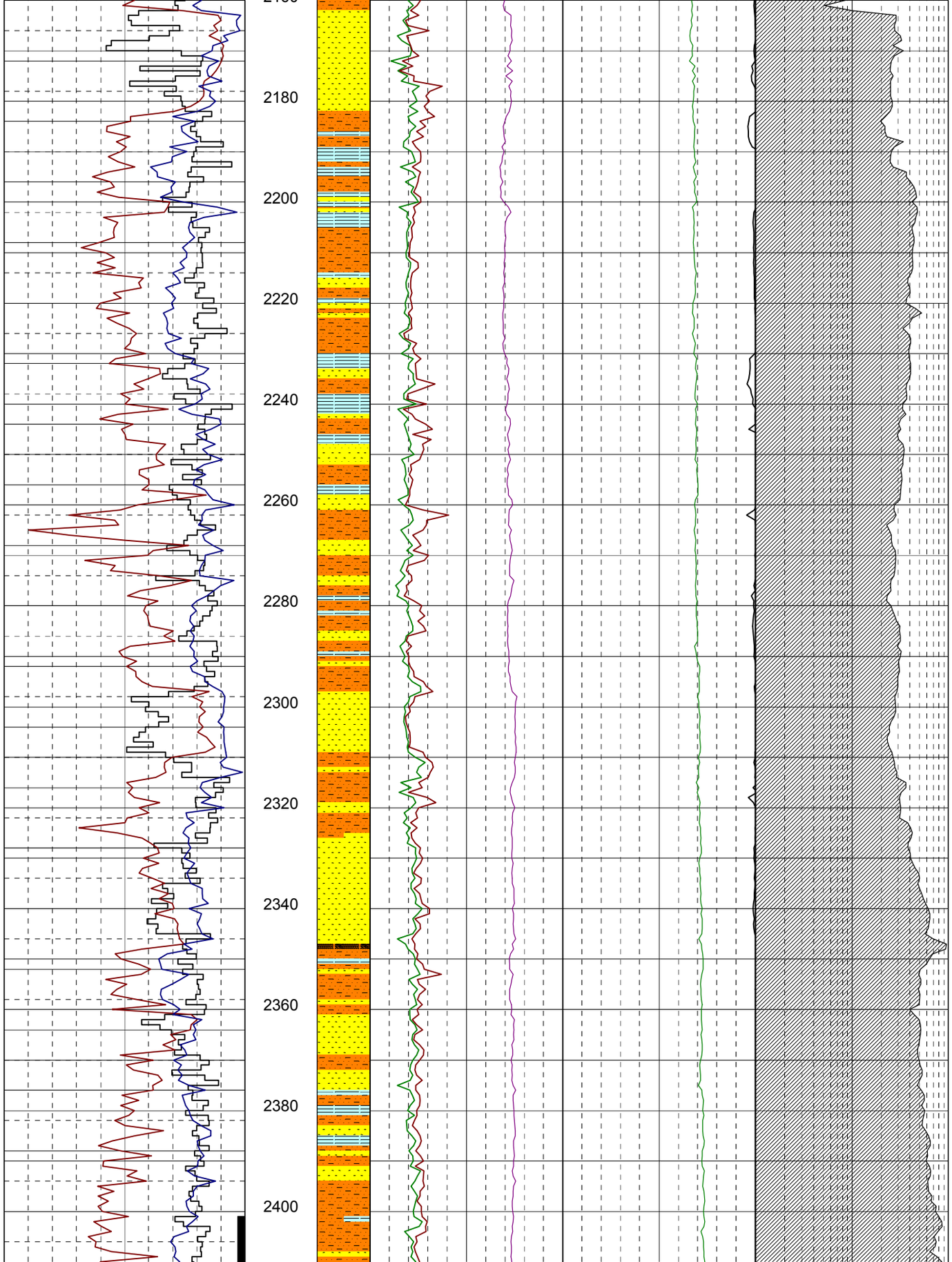
Tight spot 1620-1600m
1bbl swabbed in, 108units at Bup

Tight spot at 1660m

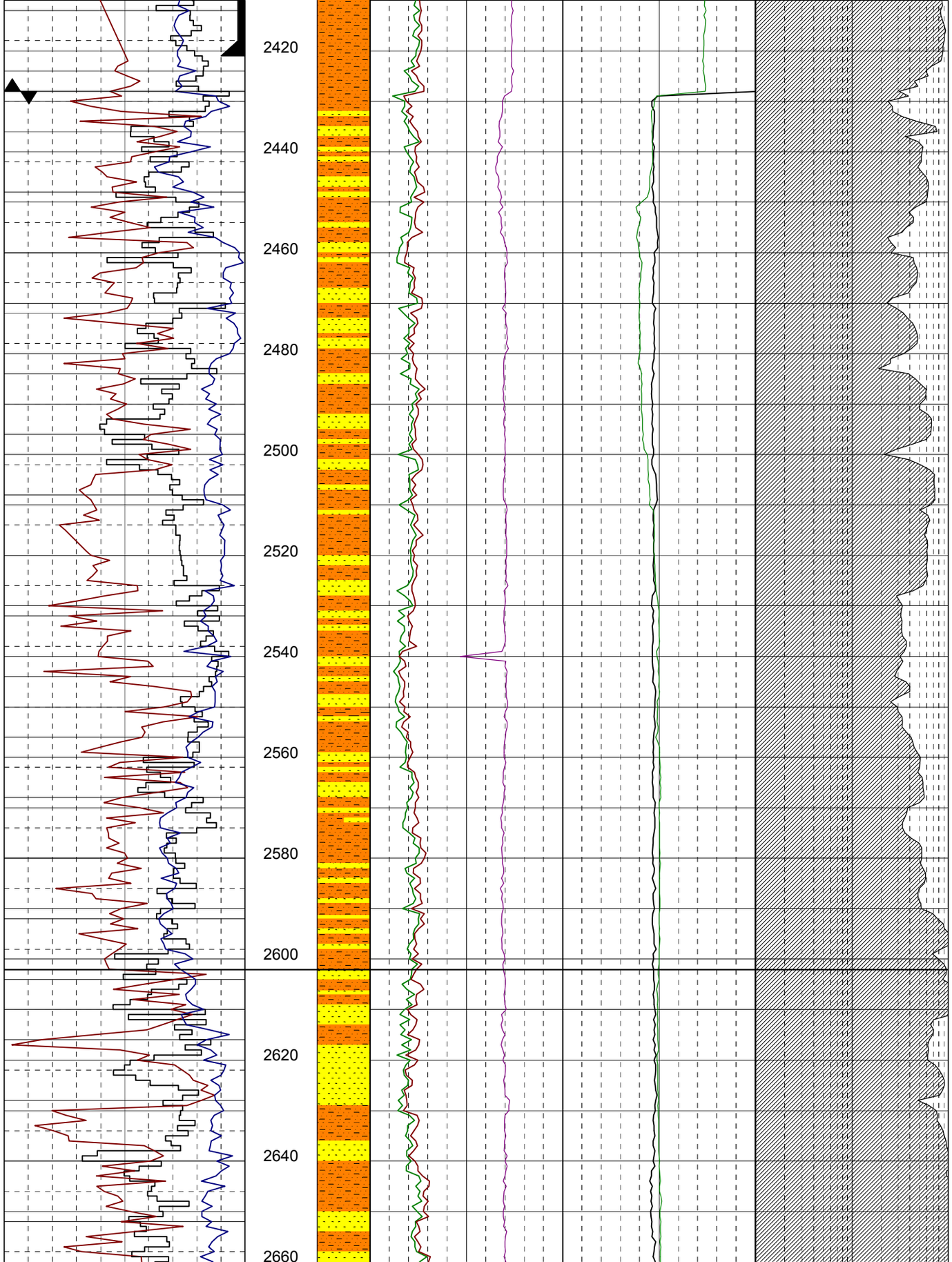

1680
1700
1720
1740
1760
1780
1800
1820
1840
1860
1880
1900
30k max overpull
worked and reamed through
Tight spot at 1675m
worked and reamed through
Tight spot at 1843m
30k Overpull



Torqued up @ 1938 m
Pull free with 35 klb



Torqued up @ 2175 m

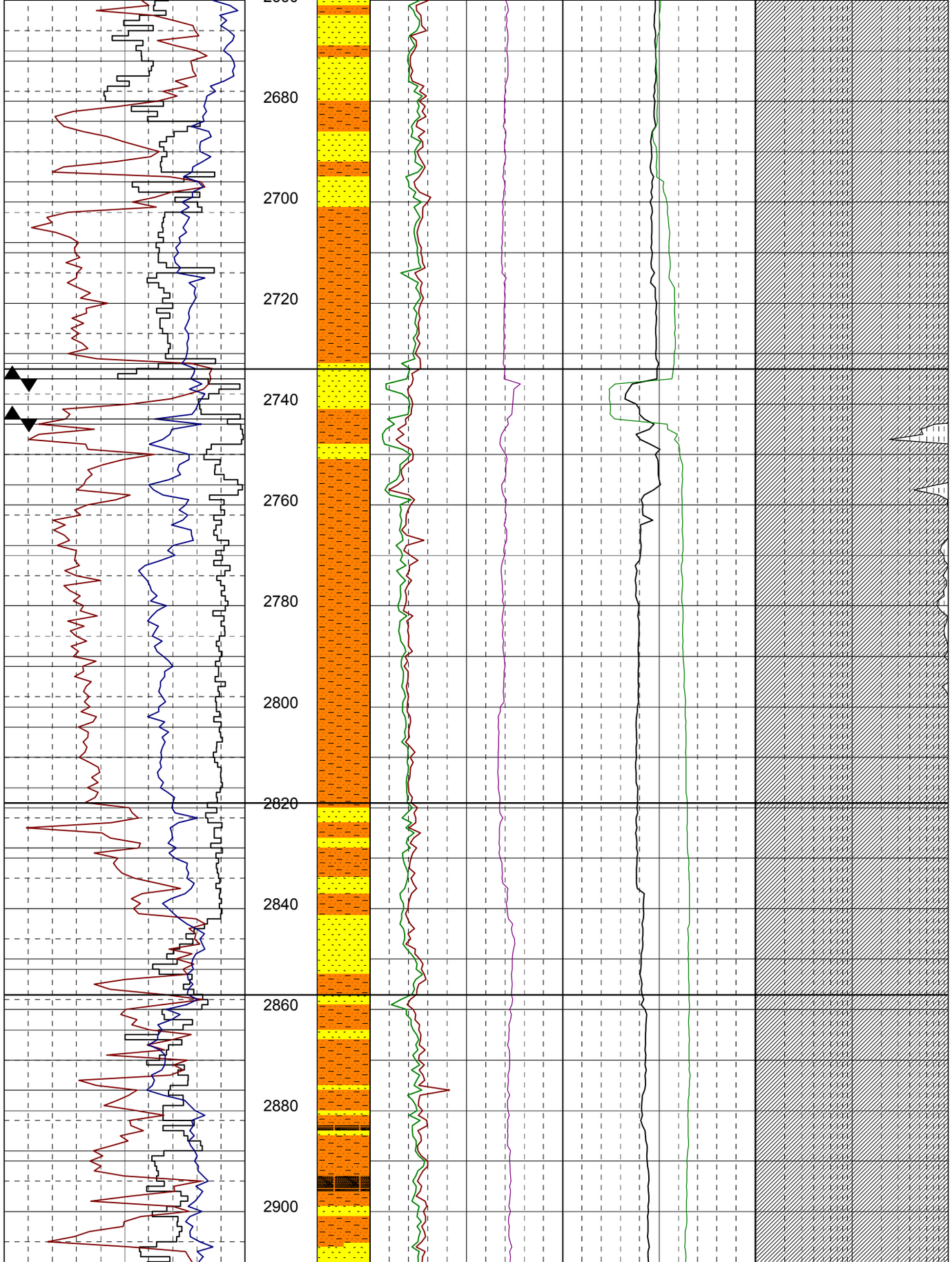


9 5/8" Conductor Shoe @ 2421.0m

Tight spot at 2505 m. Worked through, washed and reamed

Tight spot at 2646m. Worked pipe and pumped out of hole to 9 5/8" casing shoe.

Tight spot at 2645 m. Worked through, washed and reamed



Tight spot at 2678 m - Max 30 klb overpull. Swabbed 1.5 bbls. Run back to bottom.

Tight spot at 2678 m. Worked through, washed and reamed 2676 - 2684m.

Tight spots at 2678, 2690 m. Worked through, washed and reamed

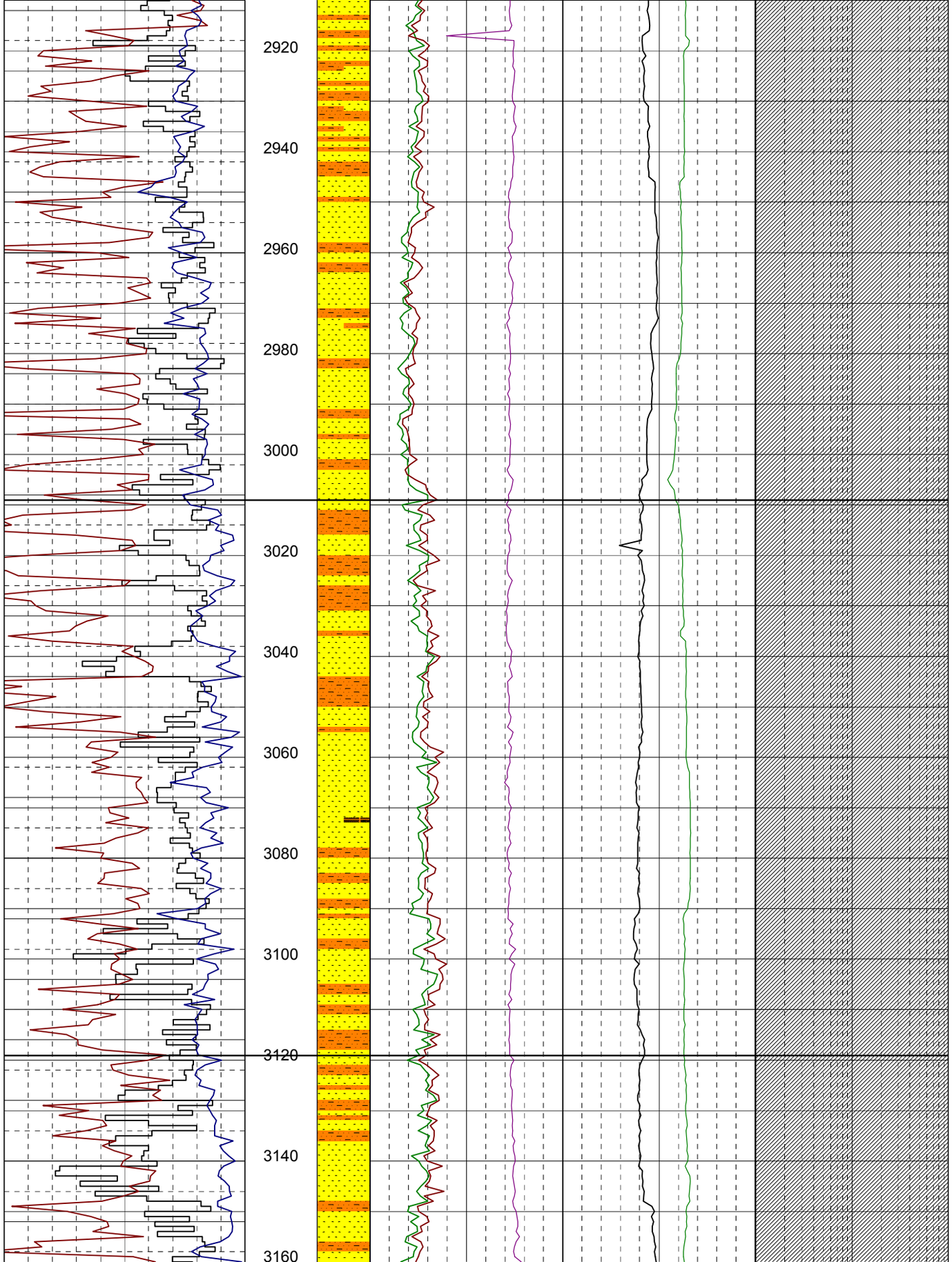
Tight spot at 2718 m. Worked through, washed and reamed

Tight spot at 2725 m. 15 Klb O/P Worked through

CORE # 1 : 2735m-2743m

Tight spot at 2755 m. Worked through, washed and reamed

Tight spot at 2892 m. Worked through, washed and reamed



Tight spot at 2926 m. Worked through, washed and reamed

Tight spot at 2967 m. Worked through, washed and reamed

Tight spot at 2996 m. Worked through, washed and reamed

Tight spot at 3029 m. Worked through, washed and reamed

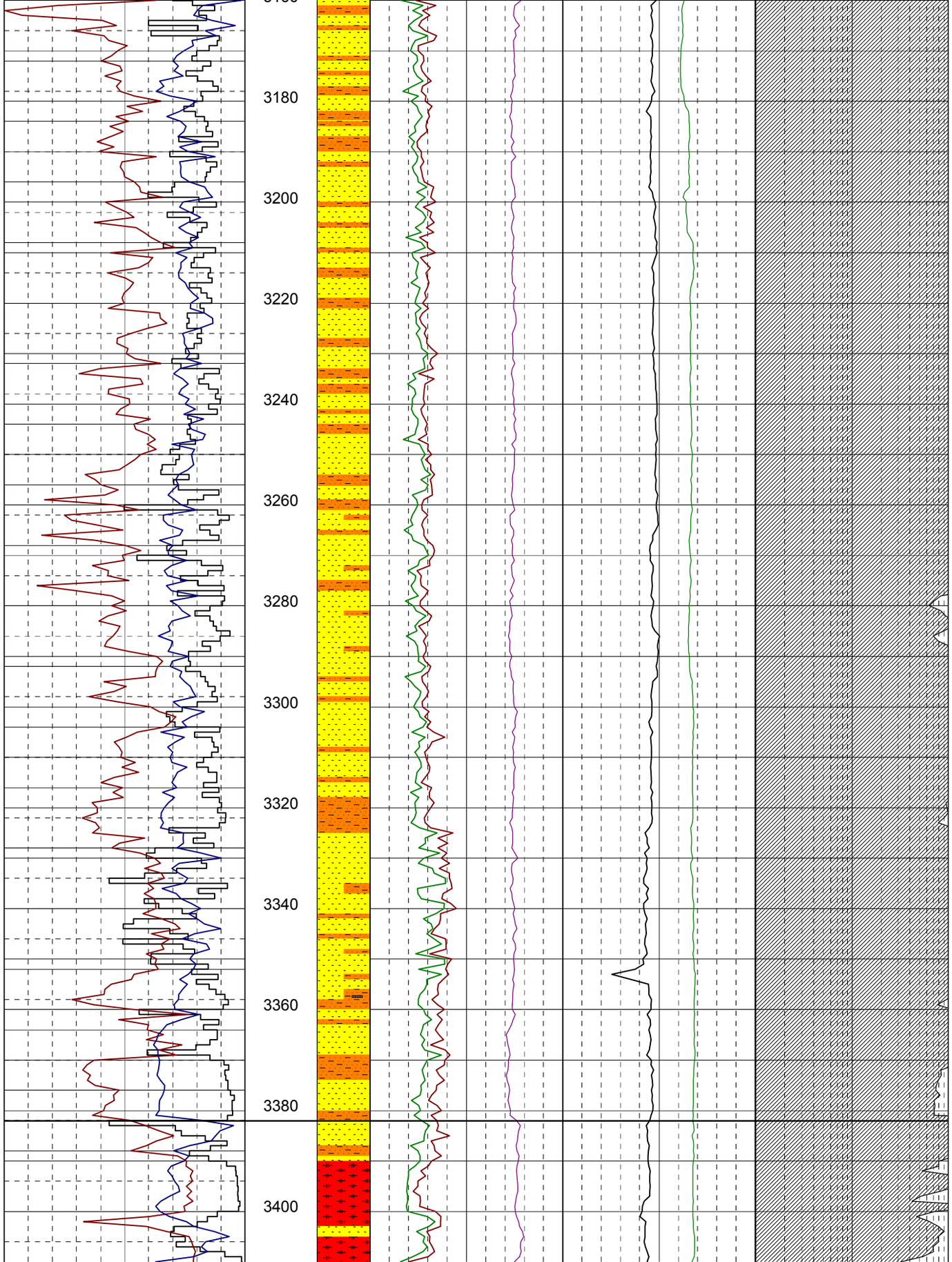
Tight spot at 3045 m. Worked through, washed and reamed

Tight spot at 3051 m. Worked through, washed and reamed

Tight spot at 3086 m. Worked through, washed and reamed

Tight spot at 3111 m. Worked through, washed and reamed

Tight spot at 3143 m. Worked through, washed and reamed

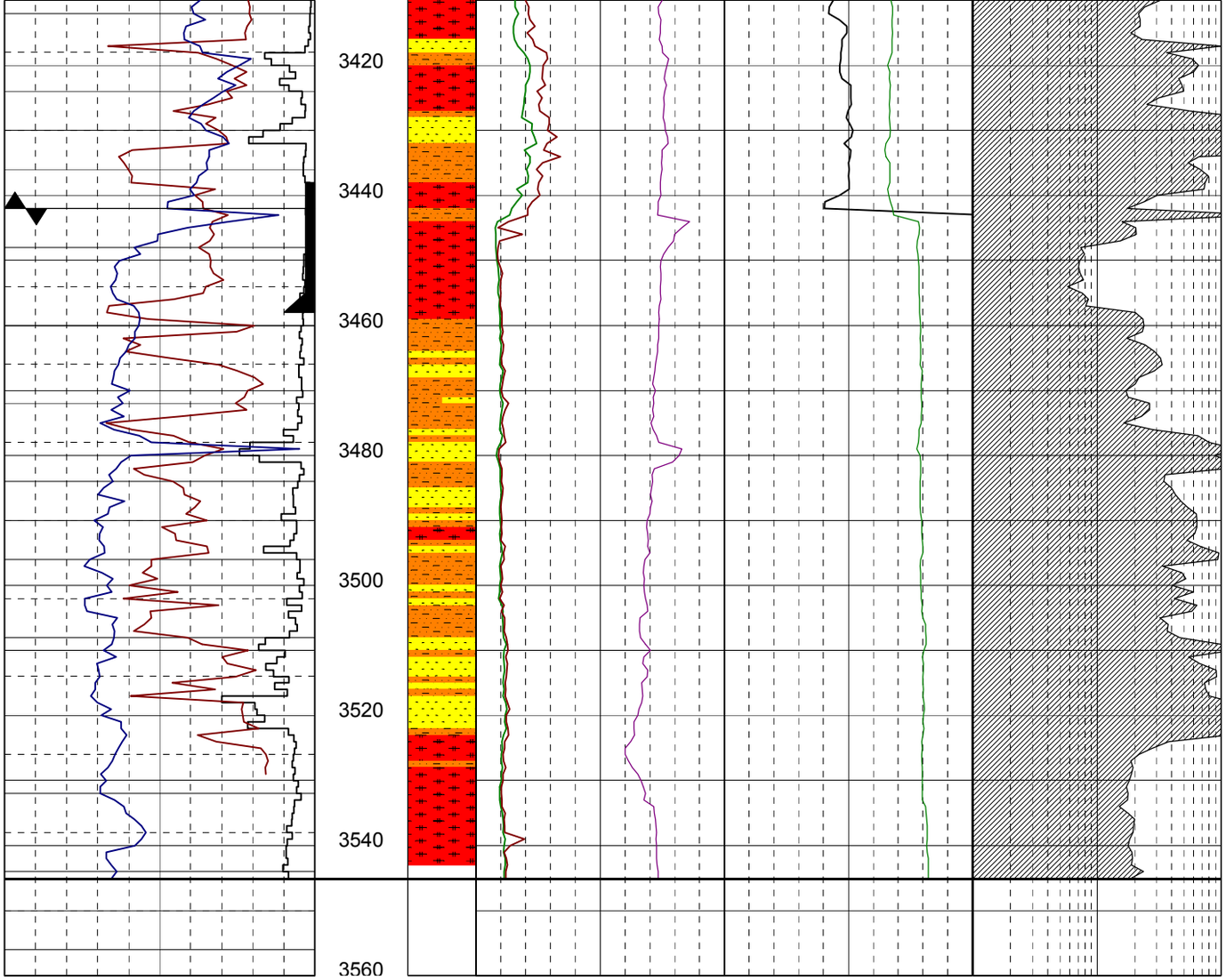


Tight spot at 3168 m. Worked through, washed and reamed

Tight spot at 3331m. 50 Klb O/P Backreamed through

Tight spot at 3365m. 50 Klb O/P Backreamed through

Tight spot at 3374m. 50 Klb O/P Backreamed through



Tight spot at 3412m. 50 Klb O/P
Backreamed through

6 5/8" Liner Shoe @ 3458m

Trefoil-1 reached TD 3545m
@ 21:00 hrs on 23/11/2004
Drillers depth: 3545.1m

MASTERLOG
TREFOIL-1

GENERAL
Country : Australia
Permit : T/P18
Field :
Basin : BASS BASIN
Well Type : Exploration
Rig Name : ENSCO 102

POSITION
Latitude : 39° 51' 41.06"S
Longitude : 145° 22' 30.72"E
UTM Co-ord X : 361,025.73m E
UTM Co-ord Y : 5,586,268.98m N
RT to MSL : 39.9m
RT to Sea Bed : 108.8

HOLE / CASING INFO
16" Hole to (mMDRT) : 666m
12 1/4" Hole to (mMDRT) : 2428m
8 1/2" Hole to (mMDRT) : 3545m
20" Conductor @ (mMDRT) : 215m
13 3/8" Shoe @ (mMDRT) : 657.3m
9 5/8" Shoe @ (mMDRT) : 2421.0m

DATE / DEPTH
Spud Date : 30-10-2004
Total Depth Date : 23-11-2004
Total Depth : 3545.0 mRT
True Vertical Depth : 3544.9 mRT
Log Scale : 1/ 500
Final Status : Run 6 5/8"Liner

ENGINEERS
Matt Boyd
Tom Platt
Gideon Doczy
Daniel van der Aa

ABBREVIATIONS

MW	Mud Weight	WOB	Weight on Bit (klbs)
FV	Funnel Viscosity	RPM	Rotations Per Min
PV	Plastic Viscosity	FLW	Flow Rate (gpm)
YP	Yield Point	SPP	Pump Pressure (psi)
Gel	Gel Strength	RR	Re-Run Bit
WL	Water Loss	TG	Trip Gas
KCl	Potassium Chloride	CG	Connection Gas
Cl	Chlorides	BG	Background Gas
Incl	Inclination	DGP	Drilled Gas Peak
Az	Azimuth	MM	Mud Motor

LITHOLOGY LEGEND
Claystone
Siltstone
Fine SST
Medium SST
Coarse SST
bitum. Shale (b
Clay, Sand Lime
Limestone
Dolomite
Chert
Conglomerate
Coal
Bryozoa
Calcareous
Iron Minerals
Corals
Foraminifera
Tintinnids
Carb Fragments
Volcanics
Intrusives
Glauconite
Pyrite
Cement

ENGINEERING LEGEND
Shoe
Mud loss
Mud gain
Deviation survey
Sidewall Core
Volc Modifier
Core
MDT POINTS:
RFT
FIT
DST
Cement

ROP (m/hr) 100 80 60 40 20 0
WOB (klbs) 50 25 0
MWD Gamma Ray (api) 0 100 200
DEPTH (m) (TVD)
CUTTINGS LITHOLOGY % 0 100
INTERPRETIVE
RESERVAL TG & CHROMATOGRAPH
C1 C2 C3 iC4 nC4 iC5 nC5 TG
Total Gas in ppm
Chromatograph in ppm
1 10 100 1K 10K 100K
CALCIMETRY % 0 100
DIRECT FLUOR poor fair good
LITHOLOGY DESCRIPTIONS and REMARKS

100
110
120
130
140
150

SPUDDED TREFOIL-1 @ 01:00 hrs on the 30th OCTOBER 2004

Bit#1:26:(w/36" HO)
Reed Y11C Jets:3x24,1x16
In:108.8m Out:218m
Run:109m Hrs:6.5
Cond:1-1-No-A-I-In-No-TD

WOB:0-10 Klb

Drill from 109-218m with

RPM:35-60
SPP:27-940
FLW:300-1005 gpm

160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
360

31-10-04

02-11-04

WOB:0-10 Klb
RPM:180
SPP:2550 psi
FLW:1020 gpm

NO DATA RECORDED 252m-264m
DUE TO POWER FAILURE

WOB:0-10 Klb
RPM:180
SPP:2610 psi

Survey: 157.93mMD (157.9mTVD)
0.24°Az 111.58°Inc

NO GAS

Survey: 242.92mMD (242.9mTVD)
0.31°Az 216.07°Inc

NO GAS

Survey: 271.90mMD (271.9mTVD)
0.26°Az 284.04°Inc

NO GAS

Survey: 300.92mMD (300.9mTVD)
0.17°Az 201.71°Inc

Survey: 330.00mMD (330.0mTVD)
0.41°Az 230.28°Inc

NO GAS

Survey: 359.06mMD (359.0mTVD)

Seawater and HiVis sweeps

Drilling riserless
Returns to seafloor
No gas readings

20" Conductor Shoe @ 215m

Bit#2:16"
Hughes MX1 Jets:3x24
In:218m Out:666m
Run:548m Hrs:10.1
Cond:2-2-WT-A-E-I-No-TD

CALCARENITE:wh-transl,lt gy, com foss,sh frags,ga,br,fo,med gr,a,wk calc cmt,f-mhd,sb-b.

Drill with Seawater and HiVis sweeps

CALCIRUDITE:off wh,lt gy,tr med gy,f-mhd,reg frac,abdt br, com ga,occ pl,tr clr qtz grs, b-sb.

DUMPING SAND TRAP REGULARLY TO LOWER MUD WEIGHT

CALCIRUDITE:off wh-lt olv/gy, f-mhd,irreg frac,a frag,pred br, occ ga,pl,fo,calc grs i/p.

FLW:1020 gpm

370

380

NO GAS

Survey: 388.11mMD (388.1mTVD)
0.22°Az 245.94°Inc

390

400

CALCARENITE:crm-lt org/bn,pl bn/gy,foss,a,calc cmt,com sid,occ br,ga,fo,f-mhd,b-sb.

410

Survey: 417.14mMD (417.1mTVD)
0.34°Az 274.84°Inc

420

430

440

CALCARENITE:lt org/bn,pl bn/gy,foss,a,calc cmt,com sid,occ br,ga,fo,f-mhd,b-sb.

Survey: 446.14mMD (446.1mTVD)
0.37°Az 235.59°Inc

03-11-04

450

WOB:0-10 Klb
RPM:180
SPP:2620 psi
FLW:1020 gpm

460

470

Survey: 475.16mMD (475.1mTVD)
0.40°Az 278.8°Inc

480

NO GAS

490

500

Survey: 504.18mMD (504.1mTVD)
0.41°Az 282.84°Inc

510

NO GAS

520

530

Survey: 533.18mMD (533.1mTVD)
0.31°Az 240.27°Inc

540

WOB:3-10 Klb
RPM:180
SPP:2670 psi
FLW:1025 gpm

550

CALCARENITE:crm-lt org/bn, pl bn/gy,foss,a,calc cmt,br,ga, fo,tr CLUT,f-mhd,s-sb.

560

Survey: 562.18mMD (669.8mTVD)
0.18°Az 291.63°Inc

570

580
590
600
610
620
630
640
650
660
670
680
690
700
710
720
730
740
750
760
770
780

WOB:8-10 Klb
RPM:177
SPP:2600 psi
FLW:1115 gpm

WOB:5-8 Klb
RPM:145
SPP:1675 psi
FLW:760 gpm

04-11-04
06-11-04
07-11-04

MW: 8.80
FV: 150
PV: 27
YP: 37
GEL 6/8
pH: 9.0
Cl: 18K

WOB:1-5 Klb
RPM:195
SPP:1910 psi
FLW:870 gpm

NO GAS

Survey: 591.14mMD (591.1mTVD)
0.22°Az 204.81°Inc

Survey: 641.65mMD (641.6mTVD)
0.35°Az 259.13°Inc

Survey: 669.83mMD (669.8mTVD)
0.22°Az 257.56°Inc

Survey: 698.86mMD (698.8mTVD)
0.26°Az 268.76°Inc

Survey: 728.56mMD (728.5mTVD)
0.19°Az 269.22°Inc

Survey: 756.58mMD (756.5mTVD)
0.19°Inc 307.61°Az

CALCARENITE:crm-lt org/bn, pl bn/gy,abdt foss,a,calc cmt, br,ga,fo,tr CLUT,f-mhd,b-sb.

CALCARENITE:lt gy,f-med,arg mtx,abdt foss,abdt aggs,f-frm.

HIGH LOSSES (5BBL/MIN) OBSERVED @ 641m, DUMP SAND TRAP REGULARLY. CIRCULATE AND PUMP HI VIS PILL AND SWEEPS.

13 3/8" Conductor Shoe @ @ 657.30 mMDRT.

CALCARENITE:lt gy,f,arg/slty mtx,com foss,abdt aggs,tr SLTST,fri-f.

SILTSTONE(TR):dk gy,f-hd,b.

ABUNDANT CEMENT IN SAMPLE.

CALCARENITE:wh-v lt gy,transl i/p,f-mhd,tr br & fo,tr calc mtx.

Bit#3:12.25"
Hughes MX1 Jets:3x24
In:666m Out:2428m
Run:1762m Hrs:51.2
Cond:1-1-NO-A-X-I-NO-TD

SILTSTONE:dk gy-rd bn,hd-vhd, sid,sb-b.

TOP VOLCANIC EXTRUSIVES
702.5 mRT 662.5 mSSTVD

VOLCANICS:dsky gn-gysh gn, mnr blk,glassy spks,mhd-vhd i/p.

VOLCANICS: mod gy-blu gy,occ xln,hd-vhd i/p,b.

CALCARENITE: wh-v lt gy, transl i/p,f-mhd,rr br & fo frags, tr calc mtx.

CALCISILTITE: lt gy-lt gy bn,off wh,s,sb,calc clay mtx.

WOB:2-6 Klb
RPM:210
SPP:2124 psi
FLW:940 gpm

WOB:5-9 Klb
RPM:210
SPP:2279 psi
FLW:953 gpm

WOB:1-3 Klb
RPM:207
SPP:2330 psi
FLW:951 gpm

790
800
810
820
830
840
850
860
870
880
890
900
910
920
930
940
950
960
970
980
990

100 / 0 / Tr

Survey: 786.17mMD (786.1mTVD)
0.16°Inc 314.47°Az

Survey: 815.11mMD (815.1mTVD)
0.10°Inc 284.44°Az

Survey: 844.16mMD (844.1mTVD)
0.12°Inc 314.77°Az

Survey: 872.84mMD (872.8mTVD)
0.12°Inc 295.00°Az

Survey: 902.16mMD (902.1mTVD)
0.18°Inc 266.56°Az

Survey: 931.24mMD (931.2mTVD)
0.18°Inc 236.49°Az

Survey: 960.31mMD (960.3mTVD)
0.14°Inc 220.66°Az

Survey: 989.40mMD (989.4mTVD)
0.11°Inc 280.8°Az

CALCARENITE: lt gy-gysh bn, crm,f-hd,tr sid,com slty,tr fo, sb.

CALCISILTITE:pred lt gy,occ med gy,tr lt gy bn,s-f,mnr mhd, sb,calc clay mtx.

CALCISILTITE: lt gy-med gy, pred mhd,occ f,sb-b.

CALCISILTITE: lt gy-med gy, pred mhd,occ grd to CAREN i/p, occ f,sb-b.

LOWER MIOCENE MARL
884.0 mBRT -844.0 TVDSS

CALCAREOUS CLAYSTONE:lt gy-med gy,calc cmt,clay mtx,occ sand grs,pred s,occ f,sb-a.

CALCAREOUS CLAYSTONE:lt gy-med gy,calc cmt,clay mtx,occ sand grs,pred s,occ f,sb-a.

CALCAREOUS CLAYSTONE:lt gy-med gy,pred s,occ f,calc cmt, rr sand grs,b-a.

1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
1200

100 / 0 / Tr

Survey: 1018.03mMD (1018.0mTVD)
0.10°Inc 263.65°Az

Survey: 1046.97mMD (1046.9mTVD)
0.04°Inc 218.89°Az

Gasline Blocked

Survey: 1076.06mMD (1076.0mTVD)
0.04°Inc 210.61°Az

GZG gastrap probe partly blocked
Pumping less mud 1085-1125m

Survey: 1105.0mMD (1105.0mTVD)
0.11°Inc 202.29°Az

Survey: 1134.08mMD (1134.0mTVD)
0.11°Inc 229.2°Az

100 / 0 / Tr

Survey: 1163.21mMD (1163.2mTVD)
0.04°Inc 91.07°Az

Survey: 1192.06mMD (1192.0mTVD)
0.04°Inc 217.57°Az

WOB:1-5 Klb
RPM:207
SPP:2330 psi
FLW:951 gpm

WOB:5-10 Klb
RPM:190
SPP:2216 psi
FLW:851 gpm

CLAYSTONE:lt gy-med gy,pred s,occ f,calc cmt,rr sand grs, b-a.

CLAYSTONE:lt gy-med gy,pred s,occ f,calc cmt,rr sand grs, b-a.

DOLOMITE(TR)bff-med bn,slty, f-hd,b,

CLAYSTONE:gy-tr med gy,slty i/p,calc,com foss det,tr dol,s-f, sb-a.

CLAYSTONE:lt gy-med gy,calc, com foss det,tr dol,s-f,sb-a.

DOLOMITE(TR)bff-med bn,slty, f-hd,b,

CALCAREOUS CLAYSTONE:lt gy-med gy,pred s,occ f,calc, com foss det,tr dol,grd to SLTST i/p,s-f,sb-a.

CALCAREOUS CLAYSTONE:lt gy-med gy,pred s,occ f,calc, com foss det,tr dol,s-f,sb-a.

1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410

100 / 0 / Tr

WOB:5-10 Klb
RPM:190
SPP:2386 psi
FLW:851 gpm

Survey: 1221.26mMD (1221.2mTVD)
0.04°Inc 44.16°Az

Survey: 1250.02mMD (1250.0mTVD)
0.04°Inc 130.95°Az

Survey: 1278.99mMD (1278.9mTVD)
0.04°Inc 15.22°Az

Survey: 1308.18mMD (1308.1mTVD)
0.04°Inc 135.36°Az

Survey: 1337.26mMD (1337.2mTVD)
0.10°Inc 149.36°Az

DOLOMITE(TR)bff-med bn,slty, f-hd,b,

SILTY CLAYSTONE:lt-med gy, pred s,occ f,calc,com foss det, tr dol,sb-a.

CLAYSTONE:lt-med gy,pred s,occ f,com foss det,tr dol, grd to SLTST i/p,sb-a.

CLAYSTONE:lt-med gy,pred s,occ f,com foss det,tr dol, grd to SLTST i/p,sb-a.

DOLOMITE(TR)bff-med bn,slty, f-hd,b,

SILTY CLAYSTONE:lt-med gy, pred s,occ f,com foss det,tr dol,grd to CLYST i/p,sb-a.

ANGAHOOK FORMATION
1342.0 mRT -1302.1 mTVDSS

100 / 0 / Tr

WOB:5-10 Klb
RPM:196
SPP:2345 psi
FLW:860 gpm

Survey: 1366.26mMD (1366.2mTVD)
0.10°Inc 170.95°Az

Survey: 1395.17mMD (1395.1mTVD)
0.09°Inc 144.86°Az

CLAYSTONE:lt-med gy,pred s,occ f,com foss det,tr dol,grd to SLTST i/p,sb-a.

CLAYSTONE:lt-med gy,pred s,occ f,com foss det,tr dol,grd to SLTST i/p,sb-a.

08-11-04

MW: 8.80
FV: 150
PV: 27
YP: 37
GEL 6/8

pH: 9.0
Cl: 18K

1420
1430
1440
1450
1460
1470
1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620

WOB:2-7 Klb
RPM:198
SPP:2446 psi
FLW:860 gpm

WOB:4-8 Klb
RPM:200
SPP:2545 psi
FLW:860 gpm

WOB:8-14 Klb
RPM:204
SPP:2590 psi
FLW:860 gpm

100 / 0 / TR

99 / 1 / Tr

Survey: 1424.33mMD (1424.3mTVD)
0.06°Inc 136.27°Az

Survey: 1453.35mMD (1453.3mTVD)
0.05°Inc 88.56°Az

Survey: 1482.62mMD (1482.6mTVD)
0.05°Inc 114.69°Az

Survey: 1511.65mMD (1511.6mTVD)
0.13°Inc 148.50°Az

Survey: 1540.65mMD (1540.6mTVD)
0.13°Inc 153.08°Az

Survey: 1569.66mMD (1569.6mTVD)
0.07°Inc 139.36°Az

Survey: 1598.46mMD (1598.4mTVD)
0.16°Inc 142.24°Az

DOLOMITE(TR)bff-med bn,slty, f-hd,b,

ARGILLACEOUS SILTSTONE: gnsh gy-lt gy,com aren & grd to CLYST i/p,tr glauc spks,s-f, mhd i/p,sb.

SILTSTONE:gn gy-olv gy,bn i/p, dom aren & grd to vf SST,tr arg, rr glauc spks,s-mhd,sb.

CLAYSTONE:lt-med gy,bn/gy,f, sl calc,sb.

SILTSTONE:glt bn,blu gy,lt-dk olv gy,com aren,occ arg,sl-mod calc,rr glauc spks,s-mhd sb.

SILTSTONE:lt bn-med bn,bnsh gy-olv gy,tr blu gy,f-mhd,sft i/p,pred aren,mod calc,tr DOL, sb.

DOLOMITE(TR)bff-med bn,slty, f-hd,b.

SILTSTONE:lt bn-med bn,tr blu gy,olv gy,pred aren,com calc, f-mhd,occ s,sb.

CLAYSTONE:crm,lt bn,v sft,tr carb spks,calc,sb.

SILTSTONE:lt bn-med bn,tr blu gy,olv gy,pred aren,com calc, tr DOL,frm-mod hd,occ sft, sb.

SILTSTONE:lt bn-med bn,tr blu gy,olv gy,pred aren,com calc, frm-mhd,occ s,tr DOL,sb.

DOLOMITE(TR)bff-med bn,slty, f-hd,b.

CLAYSTONE:(1)crm,lt bn,vs, tr carb spks,calc,sb.
(2)gn gy-blu gy,frm,occ mhd, non calc,sb.

1630
1640
1650
1660
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830

99 / 1 / Tr

99 / 1 / Tr

WOB:10-14 Klb
RPM:200
SPP:2610 psi
FLW:847 gpm

WOB:7-11 Klb
RPM:200
SPP:2780 psi
FLW:860 gpm

WOB:10-15 Klb
RPM:200
SPP:2900 psi
FLW:870 gpm

Survey: 1656.39mMD (1656.3mTVD)
0.18°Inc 132.60°Az

Survey: 1685.50mMD (1685.4mTVD)
0.15°Inc 157.44°Az

Survey: 1714.59mMD (1714.5mTVD)
0.02°Inc 350.18°Az

Survey: 1743.68mMD (1743.6mTVD)
0.15°Inc 253.46°Az

Survey: 1772.72mMD (1772.7mTVD)
0.09°Inc 271.9°Az

Survey: 1801.66mMD (1801.6mTVD)
0.02°Inc 223.84°Az

SILTSTONE:lt bn-med bn,tr blu gy,olv gy,pred aren,com calc, f-mhd,occ s,sb.

SILTSTONE:lt bn-med bn,tr blu gy,olv gy,pred aren,com calc, f-mhd,occ s,sb.

CLAYSTONE:pl bn,crm,s,occ f, sb-a.

DOLOMITE(TR)bff-med bn,slty, f-hd,b,

SILTSTONE:lt bn-med bn,tr blu gy,olv gy,pred arg,mod calc,f-mhd,occ s,sb.

CLAYSTONE:pl bn,crm,s,occ f, sb-a.

CLAYSTONE:blu gy-gn gy,tr dol, f-mhd i/p,sb-b.

SILTSTONE:lt bn-med bn,tr blu gy,olv gy,pred arg,mod calc,f-mhd,occ s,sb.

CLAYSTONE:pl bn,crm,s,occ f, sb-a.

DOLOMITE(TR)bff-med bn,slty, f-hd,b,

CLAYSTONE:blu gy-gn gy,tr dol, f-mhd i/p,sb-b.

SILTSTONE:med bn-dk bn,pred arg,sl calc,tr nod pyr,tr dol,f-mhd,sb-b.

CLAYSTONE:pl brn,crm,s,occ f, sb-a.

0.15°Inc 316.18°Az

CLAYSTONE:blu gy-gn gy,tr dol, f-mhd i/p,sb-b.

1840

DOLOMITE(TR)med-dk bn,slty, f-hd,b.

1850

SILTSTONE:med bn-dk bn,pred arg,sl calc,tr nod pyr,tr dol,f-mhd,sb-b.

1860

DEMONS BLUFF FORMATION
1859.0 mRT -1819.1 mTVDSS

Survey: 1859.47mMD (1859.4mTVD)
0.08°Inc 329.16°Az

1870

98 / 1 / 1

CLAYSTONE:pl bn,crm,s,occ f, disp,sb-a.

1880

CLAYSTONE:(TR)blu gy-gn gy, f-mhd i/p,sb-b.

Survey: 1888.51mMD (1888.5mTVD)
0.08°Inc 300.76°Az

1890

DOLOMITE(TR)med-dk bn,slty, f-hd,b.

WOB:10-15 Klb
RPM:200
SPP:2950 psi
FLW:860 gpm

1900

SILTSTONE:med bn-dk bn,pred arg,sl calc,tr nod pyr,tr dol,f-mhd,sb-b.

1910

1920

Survey: 1917.61mMD (1917.6mTVD)
0.11°Inc 284.0°Az

CLAYSTONE:pl brn,crm,s,occ f, sb-a.

1930

SILTSTONE:med-dk bn,arg,occ aren,com lith,tr nod pyr,sl calc, f-hd,disp,sb.

1940

Survey: 1946.67mMD (1946.6mTVD)
0.01°Inc 141.29°Az

CLAYSTONE:blu gy-gn gy,tr dol, f-mhd i/p,sb-b.

1950

1960

SILTSTONE:med-dk bn,arg,mnr aren,com lith,tr nod pyr,sl calc f-hd,disp,sb.

1970

WOB:10-15 Klb
RPM:200
SPP:3130 psi
FLW:855 gpm

Survey: 1975.72mMD (1975.7mTVD)
0.11°Inc 344.70°Az

97 / 2 / 1

1980

DOLOMITE(TR)med-dk bn,slty, f-hd,b.

1990

2000

SILTSTONE:med-dk bn,arg,mnr aren,com lith,tr nod pyr,sl calc, f-hd,disp i/p,sb.

Survey: 2004.82mMD (2004.8mTVD)
0.07°Inc 333.35°Az

2010

2020

MW: 9.00
FV: 114
PV: 33
YP: 40
GEL 7/10
pH: 8.7
Cl: 18K

SILTSTONE:med-dk bn,arg,mnr aren,com lith,tr nod pyr,sl calc f-hd,disp i/p,sb.

2030

09-11-04

Survey: 2033.84mMD (2033.8mTVD)
0.06°Inc 42.54°Az

2040

CLAYSTONE:(1)lt gn/gy,frm,sl aren & grd to SLTST,sl calc,sb-b.

(2)lt brn-crm,vs-disp,a-sb.

2050

96 / 2 / 1 / 1

SILTSTONE:med-dk bn,arg,mnr aren,com lith,tr nod pyr,sl calc, f-hd,occ disp,sb.

2060

Survey: 2062.96mMD (2062.9mTVD)
0.10°Inc 354.28°Az

WOB:11-16 Klb
RPM:203
SPP:3240 psi
FLW:860 gpm

2070

CLAYSTONE:(1)lt gn/gy,frm,sl aren & grd to SLTST,sl calc, sb-b.
(2)lt bn-crm,v sft,disp,a.

2080

2090

Survey: 2091.93mMD (2091.9mTVD)
0.09°Inc 5.90°Az

TOP EVCM
2097.0 mRT -2057.1 mTVDSS

2100

CLAYSTONE:crm,lt med brn,gn/gy,vs,tr calc,tr carb spks,a.

2110

GZG gastrap pump rubber failure

2120

WOB:7-12 Klb
RPM:200
SPP:3280 psi
FLW:850 gpm

Survey: 2121.13mMD (2121.1mTVD)
0.14°Inc 11.21°Az

CLAYSTONE:(1)lt gn/gy,frm,sl aren & grd to SLTST,sl calc, sb-b.
(2)lt brn-crm,vs,disp,a-sb.

2130

2140

SANDSTONE:clr-transl,crs lse grs,a-sa,pr srt,pr vis por,pr-fr inf por.

93 / 3 / 2 / 2

2150

Survey: 2150.14mMD (2150.1mTVD)
0.09°Inc 37.57°Az

2160

SILTSTONE:lt bn-med bn,dk bn i/p,aren-arg,tr nod pyr,f-mhd, mnr hd,sb.

Reduced mudflow through GZG gastrap

2170

FLUOR:2163-2178m, dll, org/pl bn oil stn.

2180

Survey: 2179.32mMD (2179.3mTVD)
0.16°Inc 36.77°Az

2190

CLAYSTONE(1):lt gnsh gy,s-f, mod calc,sb.
(2):lt bn,crm,s,occ disp,sli aren i/p,a.

92 / 3 / 2 / 2 / 1

2200

WOB:10-15 Klb
RPM:202
SPP:3373 psi
FLW:854 gpm

Survey: 2208.29mMD (2208.2mTVD)
0.19°Inc 58.16°Az

2210

SILTSTONE:med-dk bn,occ lt gry,pred aren,kaol i/p,loc micro carb spks,pred f-mhd, occ fri,sb.

2220

SANDSTONE:clr,wh,w srt, sucrosic,fri-lse,wk sil cmt, abdt arg mtx,pr-ti vis por,no fluor.

2230

CLAYSTONE:crm-bff,s,disp,a.

Survey: 2237.39mMD (2237.3mTVD)
0.30°Inc 45.52°Az

2240

SANDSTONE(TR):clr,wh,vf,w srt, sucrosic,fri-lse,wk sil cmt, abdt arg mtx,pr-ti vis por,no fluor.

2250

SILTSTONE:lt gry-off wh aren-

WOB:9-13 Klb
RPM:207
SPP:3500 psi
FLW:857 gpm

WOB:10-15 Klb
RPM:201
SPP:3500 psi
FLW:857 gpm

WOB:10-16 Klb
RPM:205
SPP:3612 psi
FLW:850 gpm

MW: 9.20
FV: 88
PV: 34
YP: 42
GEL 6/8
pH: 9.0
Cl: 19K

WOB:12-17 Klb
RPM:205
SPP:3705 psi
FLW:845 gpm

10-11-04

15-11-04

MW: 9.20
FV: 140
PV: 31
YP: 35
GEL 3/6
pH: 8.7
Cl: 18K

2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460

Survey: 2266.43mMD (2266.4mTVD)
0.38°Inc 58.15°Az

91 / 4 / 2 / 2 / 1

Survey: 2324.5mMD (2324.4mTVD)
0.30°Inc 41.24°Az

Survey: 2353.51mMD (2353.4mTVD)
0.43°Inc 63.46°Az

Survey: 2382.51mMD (2382.4mTVD)
0.31°Inc 63.76°Az

89 / 5 / 3 / 2 / 1

88 / 4 / 2 / 1 / 5

92 / 5 / 2 / 1

grd to vf SST,arg,grd to kaol CLYST,mhd-brit,fri i/p,sb.

SANDSTONE:clr-trnsl-bn,crs-cong,pr srt,a-r,w/frac,cln,lse, fr inf por,no fluor.

SILTSTONE:lt bn-lt gy bn,arg, aren i/p,micmic,com lith,f-s, disp i/p,sb.

SANDSTONE:clr-wh,vf,w srt, sucrosic,fri-lse,wk sil cmt, abdt arg mtx,pr-ti vis por,no fluor.

SANDSTONE:clr,transl,bn, crs-v crs,pr srt,a-r w/frac,cln, lse,fr inf por,no fluor.

SILTSTONE:lt bn-lt gy bn,arg, aren i/p,micmic,com lith,f-s, disp i/p,sb.

SANDSTONE:clr,transl,bn,crs-v crs,pr srt,sa-r, w/frac,cln, cln,lse,fr inf por,no fluor.

SILTSTONE:off wh-med bn,pred a grd to aren,micmic,tr carb incl, f-s,disp i/p,sb.

CLAYSTONE:wh-lt gy,kaol,tr carb,com lse vf qtz gr,s,disp.

SILTSTONE:off wh-med bn,pred arg,grd to aren,micmic,tr carb,f-s,disp i/p,sb.

COAL:blk,shny,vit,ang-conch frac.

CLAYSTONE:wh-lt gy,kaol,tr carb,com lse vf qtz gr,s,disp.

SANDSTONE:clr-wh,vf,w srt, sucrosic,fri-lse,wk sil cmt, abdt arg mtx,pr-ti vis por,no fluor.

SILTSTONE:off wh-med bn,pred arg,grd to aren,micmic,tr carb,f-s,disp i/p,sb.

SANDSTONE:clr-trnsl-bn,crs-v crs,pr srt,a-r w frac,cln, lse,fr inf por,no fluor.

CLAYSTONE:wh-lt gy,kaol,tr carb,com lse vf qtz gr,s,disp.

SILTSTONE:med-dk bn,pred aren grd to vf SST i/beds,micmic, tr-com carb,f-hd,b-sb.

9 5/8" Casing Shoe @ 2421.0m

LOT @ 2431m: 12.5ppg EMW

SILTSTONE:med-dk bn,pred aren grd to vf SST i/beds, micmic,tr-com carb,f-hd,sb-sf.

Bit#4:8½"
Smith MA74EPX Jets:3x16,3x18
In:2428m Out:2735m
Run:307m Hrs:11.47
Cond:1-1-NO-A-X-I-NO-CP

SANDSTONE:wh-clr,vf-crs,pr-mod srt,sa-sr,wk sil cmt,com arg/kaol mtx in aggs,lse w/com vf aggs,pr-fr inf & vis por,no fluor.

WOB:2-6 Klb
RPM:91
SPP:1975 psi
FLW:510 gpm

WOB:3-15 Klb
RPM:92-98
SPP:2340-2510 psi
FLW:500 gpm

16-11-04

MW: 9.20
FV: 125
PV: 41
YP: 44
GEL 5/7
pH: 9.0
Cl: 18K

WOB:11-23 Klb
RPM:95
SPP:2520 psi
FLW:500 gpm

WOB:4-16 Klb
RPM:95
SPP:2435-2495 psi
FLW:500 gpm

WOB:3-11 Klb
RPM:90-95
SPP:2505-2550 psi
FLW:500 gpm

2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670

93 / 4 / 2 / 1 / 1

92 / 5 / 2 / 1 / Tr

90 / 6 / 2 / 2 / Tr

91 / 5 / 2 / 1 / 1

90 / 4 / 4 / 1 / 1

92 / 5 / 2 / 1 / Tr

93 / 4 / 2 / 1 / Tr

95 / 3 / 1 / 1 / Tr

88 / 4 / 3 / 3 / 2

87 / 5 / 4 / 3 / 1

Survey: 2493.19mMD (2493.1mTVD)
0.42°Inc 64.03°Az

Survey: 2522.35mMD (2522.3mTVD)
0.43°Inc 64.82°Az

Survey: 2551.47mMD (2551.4mTVD)
0.45°Inc 74.18°Az

Survey: 2580.56mMD (2580.5mTVD)
0.45°Inc 70.93°Az

Survey: 2609.65mMD (2609.6mTVD)
0.60°Inc 70.66°Az

Survey: 2638.47mMD (2638.4mTVD)
0.67°Inc 69.43°Az

SILTSTONE:med-bn,pred aren grd to vf SST i/beds,micmic, tr carb,f-hd,sb-sf.

SANDSTONE:wh,vf-f,w srt,sa-sr,wk sil cmt,com aggs,arg/kaol mtx,pr-ti vis por,fluor.

FLUOR:10%,2472-2478m,dll yel gn,slw cut,slw crsh cut,thn brt blu ring res.

SILTSTONE:med gy-gy bn occ rd bn,arg,com cht,f-hd,b-sf.

SANDSTONE:wh,vf-f,w srt,sa-sr,wk sil cmt,com aggs,arg/kaol mtx,pr-ti vis por,no fluor.

SILTSTONE:med gy-gy bn,arg, com cht,f-hd,b-sf.

SANDSTONE:wh-off wh,occ transl,vf-f,rr crs,p srt,sa-pred sr,wk-mod sil cmt,com-loc abdt wh arg/kaol mtx, fri-occ mhd,pr-ti vis por,no fluor.

SILTSTONE:med-dk gy,med gy, arg,vf aren i/p grd to SST lams,tr cht,occ carb spks & flks,f-occ mhd,sb-b.

SANDSTONE:wh-off wh,vf-occ f, mod wl srt,sa-sr,wk sil cmt, com-loc abdt wh arg/kaol mtx, fri,tr mhd,pr-ti vis por,no fluor.

CARBONACEOUS SILTSTONE (TR):dk gy,blk,arg,f,sb-pred sf.

SILTSTONE:(1) med gy bn,med-dk bn,arg,vf aren i/p,occ carb, com carb spks & flks,occ pyr nods,f-occ mhd,sb-b,occ sf.
(2) off wh,arg grad to kaol SST mtx,s-disp,a.

SANDSTONE:clr,transl,mnr mlky, mnr f,occ med,pred crs,occ v crs,sa-pred sr,ss-se,mnr e,wk sil cmt,l,v gd inf por,no fluor.

SANDSTONE:off wh-wh,vf-f,mod srt,sa-sr,wk sil cmt,com-abdt wh arg/kaol mtx,fri-mnr mhd, pr-ti vis por,no fluor.

SILTSTONE:med-dk bn,dk gy bn, arg,occ vf aren,carb i/p,occ-loc com carb spks & flks,tr pyr nods,f,sb-b,occ sf.

TOP E1 SAND
2602.0 mRT -2562.0 mTVDSS

SANDSTONE:(1)off wh-wh,vf-f,mod srt,sa-sr,wk sil cmt,com-abdt wh arg/kaol mtx,fri-mnr mhd,pr-ti vis por,no fluor,grad i/p to (2).
(2)clr,trnsl,occ off wh,med-pred crs,occ v crs,mod p srt,sa-sr,ss-se,occ e,wk sil cmt,occ wh arg/kaol mtx,l,occ fri,fr-pred gd inf por,pr-fr vis por,no fluor.

FLUOR:2619-2625m,pl yel/gn in fluid,slw bldng cut,thk r/r.

SANDSTONE:off wh-wh,occ mott wh/bn,occ med-dk bn,clr,transl grs,vf-f,com med-crs,rr v crs, pr srt,sa-sr,mnr va,ss-se,wk sil cmt,com-loc abdt wh arg/kaol mtx loc com bn slty mtx,tr pyr mtx, tr mic flks,com l,pred fri,fr-gd inf por,fr vis por.

SILTSTONE:(1) med-dk bn,arg,vf aren i/p,occ-loc com carb spks & flks,tr-occ pyr nods,f,mnr mhd rr ga foss,sb-b,occ sf.
(2) off wh,arg grd to kaol SST mtx,tr-occ glauc,s-disp,a.

SANDSTONE:off wh-wh,clr,transl grs,com vf,pred f-med,rr crs, mod srt,sa-sr,ss-se,wk sil cmt, occ-loc abdt wh arg/kaol mtx, tr mic flks,pred l,com fri,gd inf por,pr-fr vis por,tr FLUOR.

FLUOR:2655-2685m,pl yel/gn in fluid,slw bldng cut,thk r/r.

CARBONACEOUS SILTSTONE

2680
2690
2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840
2850
2860
2870
2880

93 / 4 / 2 / 1 / Tr

Survey: 2696.63mMD (2696.6mTVD)
0.54°Inc 66.62°Az

84 / 5 / 6 / 4 / 1

WOB:8-16 Klb
RPM:90
SPP:2430-2760 psi
FLW:500-550 gpm

84 / 8 / 5 / 2 / 1

MW: 9.15
FV: 168
PV: 44
YP: 46
GEL 4/6
pH: 8.8
Cl: 18K

Survey: 2725.43mMD (2725.4mTVD)
0.56°Inc 70.87°Az

17-11-04

74 / 9 / 10 / 5 / 2

CORE RUN #1

18-11-04

85 / 7 / 5 / 2 / 1

Survey: 2754.41mMD (2754.3mTVD)
0.42°Inc 59.49°Az

WOB:15-25 Klb
RPM:75
SPP:3110 psi
FLW:545 gpm

85 / 7 / 5 / 2 / 1

Survey: 2783.57mMD (2783.5mTVD)
0.34°Inc 64.20°Az

Survey: 2811.73mMD (2811.7mTVD)
0.34°Inc 63.34°Az

85 / 8 / 5 / 2 / Tr

WOB:10-20 Klb
RPM:78
SPP:3220 psi
FLW:550 gpm

87 / 7 / 4 / 2 / Tr

MW: 9.20
FV: 137
PV: 51
YP: 47
GEL 4/6
pH: 8.9
Cl: 18K

19-11-04

87 / 7 / 4 / 2 / Tr

Survey: 2841.41mMD (2841.3mTVD)
0.44°Inc 69.81°Az

INCREASE MW TO 9.4

87 / 7 / 4 / 2 / Tr

85 / 7 / 5 / 2 / 1

WOB:10-23 Klb
RPM:80-88
SPP:3250-3310 psi
FLW:555 gpm

(TR):blk,arg,f,sb-sf.

SILTSTONE:(1) lt gy,med bn-gy br arg,mnr vf aren,tr-occ carb spks, occ pyr nods,occ bn liths,tr cht, s-f,rr mhd,sb-b,occ sf.
(2) off wh,arg grd to kaol SST mtx,s-disp,a.
SANDSTONE:off wh-wh,vf-f,tr me mod w srt,sa-sr,ss-s,wk sil cmt, tr sid cmt,abdt wh arg/kaol mtx, fri,tr mhd,pr-ti vis por,tr FLUOR.

FLUOR:2694-2697m,dll yel/gn slw bldng cut,thn r/r.

SILTSTONE:(1) lt-med gy,med gy arg,mnr vf aren,loc com carb spks tr pyr nods,sft-f,mnr mhd,sb-b, occ sf.
(2)TR:off wh,arg grad to kaol SST mtx,s-disp,a.

TOP P4 SAND
2733.0 mRT -2693.0 mTVDSS

SANDSTONE:lt bn-wh,transl,vf-f, v w srt,mod-stg sil cmt,mnr sil ovgths,fr-gd vis por,FLUOR.

Bit#: CORE HEAD #1
In:2735m Out:2743m
Run:8m Hrs:2.65

FLUOR:20-50%,2735-2741m bri yel evn fluor,m fst dir cut,tr wh c/c,thn yel r/r.

SILTSTONE:dk bn,sil,com mic, hd-v hd,blky,tr conch fract.

SANDSTONE:wh-lt gy,vf-f occ med,w srt,sr,mod sil cmt,com fri aggs,grd to mic SLTST i/p, arg mtx,com mic,fr-ti por,no fluor.

Bit: 8½" #4RR
Smith MA74EPX
Jets:3x16,3x18
In:2743m Out:3442m
Run:699m Hrs:58.4
Cond:2-3-FC-X-I-CT-PR

SILTSTONE:dk bn-dk gy,arg,sil, mic,hd-f,sb-b.

SILTSTONE:dk bn-dk gy,arg,sil, micmic,hd-f,sb-b.

SILTSTONE:dk bn-dk gy,arg,sil, micmic,hd-frm,sb-b.

SANDSTONE:wh-lt gy,vf-f occ med,w srt,sr,mod sil cmt,com fri aggs,g/t mic SLTST i/p,arg mtx,com mic,occ qtz o/gths,fr-ti por,no fluor.

TOP P3 SAND
2819.0 mRT -2779.0 mTVDSS

SILTSTONE:med gy,med-dk bn, occ lt gy,pred vf aren,occ grad to slty SST i/p,arg i/p,occ-lc, com carb spks & flks,mnr carb micrlams,occ bn & wh liths,f,sb sf.

SANDSTONE:off wh-wh,occ lt gy,mnr lt gy bn,vf-f,w srt,sa-sr, ss-s,wk sil cmt,com-loc abdt wh arg mtx,mnr gy-bn slty mtx,occ thn carb lams grad to carb SLTST i/p,tr mic flks,v pr vis por,tr FLUOR.

FLUOR:2835-2853m,pl yel/gn in mud,slw bldng cut,thn r/r.

CARBONACEOUS SILTSTONE (TR-10%)dk bn-pred blk,arg,occ aren i/p,grad to carb lams i/p,f, sb-sf,occ f.

SANDSTONE:off wh-wh,occ lt gy,mnr lt gy bn,vf-f,w srt,sa-sr,ss -s,wk sil cmt,com-loc abdt wh arg mtx,mnr gy-bn slty mtx,tr carb micrlams & spks,tr rd liths, tr mic flks,vp vis por,no fluor.

FLUOR:2859-2868m,20% dll wh, slw ptchy fluor,dll wh bldg c/c, pl wh thn r/r.

TOP P2 SAND
2857.0 mRT -2817.0 mTVDSS

SANDSTONE:off wh-wh,occ lt gy bn,lr,trnsl,pred vf-f,com med-v crs,mod pr srt,sa-sr,pred sa crs, ss-s,mnr se,wk sil cmt,com-loc

WOB:8-18 Klb
RPM:80-90
SPP:3130-3290 psi
FLW:555 gpm

WOB:8-19 Klb
RPM:100
SPP:3070-3100 psi
FLW:520-535 gpm

MW: 9.40
FV: 129
PV: 49
YP: 42
GEL 4/5
pH: 8.7
Cl: 19K

WOB:9-13 Klb
RPM:88
SPP:2930-2950 psi
FLW:545-565 gpm

WOB:4-11 Klb
RPM:78-84
SPP:3195-3310 psi
FLW:539-550 gpm

MW: 9.40
FV: 135

2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040
3050
3060
3070
3080
3090

90 / 6 / 3 / 1 / Tr

Survey: 2899.47mMD (2899.4mTVD)
0.28°Inc 70.57°Az

91 / 6 / 2 / 1 / Tr

92 / 5 / 2 / 1 / Tr

Survey: 2928.59mMD (2928.5mTVD)
0.38°Inc 81.57°Az

85 / 7 / 5 / 2 / Tr

89 / 7 / 3 / 1 / Tr

89 / 7 / 3 / 1 / Tr

Survey: 2957.61mMD (2957.5mTVD)
0.45°Inc 76.30°Az

87 / 7 / 4 / 2 / Tr

89 / 7 / 3 / 1 / Tr

Survey: 2983.90mMD (2983.8mTVD)
0.39°Inc 63.39°Az

88 / 8 / 3 / 1 / Tr

89 / 7 / 3 / 1 / Tr

90 / 6 / 3 / 1 / Tr

Survey: 3015.37mMD (3015.3mTVD)
0.34°Inc 80.22°Az

88 / 7 / 3 / 2 / Tr

Survey: 3044.33mMD (3044.2mTVD)
0.38°Inc 92.33°Az

91 / 6 / 2 / 1 / Tr

92 / 5 / 2 / 1 / Tr

Survey: 3069.85mMD (3069.8mTVD)
0.38°Inc 83.94°Az

abdt wh arg mtx,mnr gy bn slty mtx,mnr-loc occ carb spks & flks, tr carbmicrlams,fri,com lse,vp vis& pr-fr inf por,tr FLUOR.

COAL:blk,dll-ea,mnr sbvit,f-brit,sb-b,occ sf,ang-unevn.

SILTSTONE:lt-dk gy,arg,occ vf aren,loc com carb spks,mnr carb micrlams,occ micmic,occ wh liths,f,sb-sf.

FLUOR:2892-2928m,pl yel/gn in mud,slw bldng cut,thn r/r.

SANDSTONE:off wh-wh,occ lt gy clr,transl,pred vf-f,com med,mnr crs-v crs,mod srt,sa-sr,sa-a crs, ss-s,tr se,wk sil cmt,com-loc abdt wh arg mtx,mnr gy bn slty mtx,mnr-loc occ carb spks & flks,tr carb micrlams,fri,com lse,vp vis & pr-fr inf por,FLUOR.

FLUOR: 2907-2910m,40% dll yell, ptchy d/c,pl gn,blmng c/c. dim yel thn r/r.

SANDSTONE:off wh-wh,clr,transl, com vf-f,mnr med-crs,occ v crs, sa-sr,sa-a crs,ss-s,occ se,wk sil sil cmt,com-loc abdt wh arg mtx, mnr-loc occ carb spks & flks,fri, pred lse,com fri,vp-pr vis por, fr-gd inf por,FLUOR.

FLUOR:2916-2920m,50% mbri yel mod fst d/c, dim wh blmg c/c, dll gn thn r/r.

FLUOR:2928-2931m,50% mbri yel mod fst,ptchy d/c,pl wh blmg c/c, dll gn thn r/r.

SANDSTONE:off wh-wh,clr,transl, vf-f,com med,rr crs-v crs,mod srt,sa-sr,ss-s,wk sil cmt,com-loc abdt wh arg mtx,tr carb spks,lse-fri,vp vis por,fr-occ gd inf por,no fluor.

SILTSTONE:med gy,arg,vf aren i/p occ carb spks,occ micmic & biot flks,f,sb-b.

SANDSTONE:clr,transl,mnr crm-pl yel,off wh-wh aggs,com vf-f, pred med-v crs,mod srt,sa-pred sr,se-pred ss,wk sil cmt,mnr-loc abdt wh arg mtx,tr-loc com biot flks,tr carb spks,pred lse, com fri,vp-fr vis por,fr-gd inf por,no fluor.

SANDSTONE:clr-transl,mnr wh-crm,pred crs-v crs,mnr f-med, mod srt,sr-sa,wk loc sil cmt, tr wh arg mtx,tr biot flks,tr carb flks,dom lse,tr fri-mod hd aggs,pr vis & inf por,tr FLUOR.

SANDSTONE:pred clr-transl,tr crm-wh aggs,crs-v crs grs,tr f-med,pr-mod srt,sr-sa,occ ang, wk loc sil cmt,tr-rr wh arg mtx, tr carb spks,dom lse,tr-fri aggs,pr vis por,fr inf por,no fluor.

SANDSTONE:clr,transl,wh-crm, tr yel,pred crs-v crs,occ f-med,pr srt,sr-sa,dom lse,tr fri aggs,pr-fr vis & inf por, no fluor.

TOP P1 SAND
3009.0 mRT (-2969.0 mTVDSS)

SILTSTONE:med gy-dk gy,occ bnsh gy,pred arg,mnr aren,occ micmic,tr carb spks,mhd,sb-sf.

SANDSTONE:clr,trnsl,wh-crm, tr yel,pred crs-v crs,occ f-med,pr srt,sr-sa,dom lse,tr fri aggs,pr-fr vis & inf por, tr fluor.

SILTSTONE:pred med gy,bnsh gy-pl bn,pred arg,com loc micmic,carb spks,sb-sf,mhd.

SANDSTONE:clr-transl,wh,com lse crs grs,f-med,pr-mod srt, mnr off wh arg mtx,rr carb spks,pred lse,tr-mnr fri-mod hd aggs,fr vis & inf por,no fluor.

SANDSTONE:pred off wh-v pl bn,clr,transl,com f-m,mnr crs-v crs,mod srt,sr,sa i/p,wk loc sil cmt,mnr off wh arg mtx,tr carb spks,com lse,mhd aggs,fr inf & vis por,no fluor.

SILTSTONE:gy/bn-off wh,pred aren & grd to vf SST i/p,com carb spks & lams,occ micmic,sb, mhd.

COAL:blk,sli slty,brit-fri,b-sb, occ splntry.

SILTSTONE:gy/bn-off wh,pred aren & grd to vf SST i/p,com carb spks & lams,occ micmic,sb, mhd.

SANDSTONE:clr-trnsl,off wh, dom lse crs-v crs grs,tr-mnr

PV: 52
YP: 38
GEL 3/5
pH: 8.9
Cl: 18K

WOB:6-16 Klb
RPM:74-80
SPP:3120-3170 psi
FLW:545-552 gpm

20-11-04

WOB:3-8 Klb
RPM:80-95
SPP:3180-3310 psi
FLW:540-560 gpm

WOB:7-21 Klb
RPM:87-97
SPP:3130-3290 psi
FLW:530-550 gpm

MW: 9.40
FV: 138
PV: 48
YP: 38
GEL 3/4
pH: 8.8
Cl: 18K

WOB:8-16 Klb
RPM:93-98
SPP:3220-3390 psi
FLW:545-560 gpm

WOB:11-22 Klb
RPM:90-100
SPP:3280-3330 psi
FLW:520-550 gpm

3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260
3270
3280
3290
3300

91 / 6 / 2 / 1 / Tr

Survey: 3102.61mMD (3102.6mTVD)
0.31°Inc 89.57°Az

92 / 5 / 2 / 1 / Tr

Survey: 3131.71mMD (3131.6mTVD)
0.25°Inc 91.08°Az

91 / 7 / 2 / Tr / Tr

90 / 7 / 2 / 1 / Tr

Survey: 3160.75mMD (3160.7mTVD)
0.32°Inc 87.86°Az

90 / 6 / 2 / 1 / 1

90 / 6 / 3 / 1 / Tr

Survey: 3189.89mMD (3189.8mTVD)
0.28°Inc 92.69°Az

91 / 6 / 2 / 1 / Tr

Survey: 3218.90mMD (3218.8mTVD)
0.33°Inc 85.93°Az

91 / 6 / 2 / 1 / Tr

90 / 6 / 2 / 1 / 1

Survey: 3247.89mMD (3247.8mTVD)
0.28°Inc 78.16°Az

93 / 4 / 2 / 1 / Tr

93 / 4 / 2 / 1 / Tr

Survey: 3276.89mMD (3276.8mTVD)
0.41°Inc 87.73°Az

92 / 5 / 2 / 1 / Tr

f-med,mod srt,sr-sa,wk sil cmt, tr wh arg mtx i/p,mnr carb spks & flks,rr fri-mhd aggs,fr inf por,no fluor.

SANDSTONE:clr-transl,off wh, f-med,mod srt,sr-sa,wk sil cmt, tr wh arg mtx i/p,mnr carb spks & flks,abdt crs lse grs,com fri-mhd aggs,fr inf por,no fluor.

SILTSTONE:lt gy-med gy,bnsh gy,pred aren grd to vf SST,com carb spks,mnr carb lams,fri-mhd,sb-sf.

TOP C1 SAND
3119.0 mRT -3079.0 mTVDSS

SANDSTONE:off wh-wh,clr,transl, rr med gn grs,vf-f,occ med-v crs,mod w srt,sa-sr,occ crs a, ss-s,wk-mod sil cmt,occ wh arg mtx,occ carb spks & flks,fri-occ mhd,pr vis por,pr-fr inf por,no fluor.

SANDSTONE:clr,transl,tr trnsl yel,rr transl pnk,off wh-wh, com vf-f,pred med-v crs,pr srt, sr-pred sa,tr a,ss-se,wk sil cmt,tr wh arg mtx,lse,occ fri, pr vis por,fr-gd inf por,no fluor.

SILTSTONE:med-dk gy,arg,vf aren i/p,grd to slty SST i/p,occ-loc com carb spks & flks,mnr carb micrlams,occ wh liths,occ loc com biot flks,f,sb-sf.

SANDSTONE:clr,transl,mlky,tr yel & pnk,off wh-wh,vf-med,occ crs,rr v crs,mod w srt,sr-pred sa,com a,ss-se,occ ve,wk-loc mod sil cmt,mnr-loc com wh arg mtx,tr gy slty mtx,tr biot flks, tr carb spks,flks & micrlams, lse,com fri,mnr mhd,pr vis por, pr-fr inf por,no fluor.

SANDSTONE:off wh-lt gy,clr, transl,tr pnk-rd grs,vf-f,rr med-crs,pred w srt,sa-sr,rr a crs,wk-mnr loc mod sil cmt, com-loc abdt wh arg mtx,occ gy slty mtx,occ liths,occ-loc com carb spks & flks,mnr carb micrlams,com lse,pred fri-occ mhd,v pr-pr vis por,pr-fr inf por,no fluor.

SILTSTONE:lt-med gy,lt gy bn, mnr dk gy,mnr arg,pred vf aren,occ grad to slty SST,occ-loc com carb spks & flks,tr carb micrlams,f,occ mhd,sb-b, occ sf.

SANDSTONE:(1)off wh-wh,clr, transl,tr gn & transl bn grs,vf-f, occ med-crs,mod w srt,sa-sr, mnr crs a,ss-s,mnr se,wk sil cmt, pred abdt wh arg mtx,occ loc carb spks & flks,mnr loc biot flks,pred lse,mnr fri,pr vis por, pr-fr inf por,no fluor.

OCC(2)lt gy,vf-f,grad to slty SST, wl srt,sa-sr,ss-s,wk sil cmt,abdt gy slty mtx,com carb spks,flks,tr carb micrlams,occ biot flks,fri, v pr vis por,no fluor.

SILTSTONE:lt-med gy-gy bn, pred vf aren,occ grad to slty SST,mnr arg,tr sil,occ-loc com carb spks & flks,occl liths,tr biot flks,f,tr hd,sb-b.

SANDSTONE:off wh-wh,occ lt gy, clr,transl,vf-f,com med-v crs, mod srt,sa-sr,mnr a,ss-s,wk sil cmt,com-loc abdt wh arg mtx,occ gy slty mtx,occ carb spks & flks, occ carb micrlams,lse-fri,v pr vis & pr-fr inf por,no fluor.

SILTSTONE:med-dk gy,med gy bn,pred vf aren,tr sil,occ grad to slty SST,mnr arg,occ-loc com carb spks,flks & micrlams, occ liths,occ biot flks,mnr loc micmic,f,tr hd,sb-b.

SILTSTONE:med-dk gy,mnr med gy bn,com arg,vf aren,tr-loc com carb spks & flks,mnr carb micrlams,f,sb-b.

SANDSTONE:clr,trnsl,rr dk gn & rd grs,off wh-wh,vf-f,pred med crs,com v crs,pr srt,sr-pred sa, com a,ss-se,wk sil cmt,occ wh arg mtx,mnr biot & musc flks, rr carb spks,lse,occ fri,v pr vis por,pr inf por,no fluor.

SILTSTONE:lt-med gy,mnr gy bn, vf aren,grad to slty SST,occ-loc com carb spks & flks,tr carb micrlams,f,sb-b.

SANDSTONE:wh-v lt gy,clr-transl i/p,f-med,occ crs-v crs, pr-mod srt,pred sa,wk sil cmt, com wh kaol mtx,com lse grs, abdt fri-sft aggs,mnr carb spks & flks,pr inf & vis por,no fluor.

WOB:15-21 Klb
RPM:88-93
SPP:3330-3385
FLW:540-555 gpm

WOB:20-22 Klb
RPM:90-94
SPP:3385-3420
FLW:545-555 gpm

MW: 9.40
FV: 115
PV: 46
YP: 34
GEL 3/5
pH: 8.8
Cl: 18K

21-11-04

WOB:4-25 Klb
RPM:85-100
SPP:3360-3425
FLW:545-550 gpm

22-11-04

23-11-04

Bit: 8½" #5
HUGHES MX20 HDX
Jets:3x18
In:3442m Out:3545m
Run:103m Hrs:18.5
Cond:2-2-CT-M2-E-I-NO-TD

WOB:7-39 Klb
RPM:54-220
SPP:3410-3990
FLW:530-550 gpm

MW: 9.40
FV: 140
PV: 51
YP: 40
GEL 4/6
pH: 9.0
Cl: 18K

WOB:38-45 Klb

3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
3470
3480
3490
3500
3510

92 / 5 / 2 / 1 / Tr

Survey: 3302.14mMD (3302.1mTVD)
0.39°Inc 69.02°Az

94 / 4 / 1 / 1 / Tr

Survey: 3334.87mMD (3334.8mTVD)
0.45°Inc 62.58°Az

92 / 5 / 2 / 1 / Tr

Survey: 3363.86mMD (3363.8mTVD)
0.53°Inc 53.76°Az

CARBIDE LAG CHECK @ 3380M
THEO. STKS: 5188
ACT. STKS: 5420
HOLE O.G: 3%

81 / 11 / 5 / 2 / 1

CARBIDE PEAK COINCIDES WITH DRILLED GAS PEAK, C2 COMPONENT ARTIFICIALLY HIGH

82 / 10 / 5 / 3 / 1

76 / 11 / 7 / 4 / 2

76 / 11 / 7 / 4 / 2

Survey: 3421.00mMD (3420.9mTVD)
0.76°Inc 77.25°Az

86 / 8 / 4 / 2 / Tr

97 / 2 / 1 / Tr / Tr

TRIP GAS

85 / 10 / 3 / 1 / 1

Survey: 3478.23mMD (3478.2mTVD)
0.52°Inc 74.50°Az

91 / 7 / 2 / Tr

90 / 7 / 2 / 1 / Tr

Survey: 3508.66mMD (3508.6mTVD)
0.45°Inc 83.89°Az

91 / 6 / 2 / 1 / Tr

SILTSTONE:lt-med gy,mnr gy bn, vf aren,grad to slty SST,occ-loc com carb spks & flks,tr carb micrlams,f,sb-b.

SANDSTONE:wh-v lt gy,clr-transl i/p,f-med,occ crs-v crs,pr-mod srt,pred sa,wk sil cmt,com wh kaol mtx,com lse grs,abdt fri aggs,mnr carb spks & flks,pr inf & vis por,no fluor.

SILTSTONE:pred med gy,lt bnsh gy,vf aren & grd to slty SST, mnr loc carb lams,com carb spks,occ micmic,mhd,sb-b.

SANDSTONE:wh-v lt gy,clr-transl i/p,f-med,occ crs-v crs,pr-mod srt,pred sa,wk sil cmt,com wh kaol mtx,com lse grs,abdt fri aggs,mnr carb spks & flks,pr inf & vis por, no fluor.

SANDSTONE:clr-trnsl,occ wh-crm,pred crs-v crs lse grs, mnr f-med,pr srt,sa,occ sr, wk sil cmt,tr wh kaol mtx i/p, mnr-com carb spks & mat,tr carb microlams,pred lse,mnr fri aggs,pr-fr vis & inf por, no fluor.

SILTSTONE:pred med gy,lt bnsh gy,vf aren & grd to slty SST, mnr loc carb lams,com carb spks,occ micmic,mhd,sb-b.

SILTSTONE:med gy-dk gy,occ bnsh gy,dom arg,tr carb spks, tr micmic,mhd-hd,b-sb.

SILTSTONE:med gy-dk gy,lt gy i/p,com aren grd to vf SST,com carb spks,mhd,sb.

SANDSTONE:clr-transl,wh-lt bn, med-crs,occ v crs,pr srt,sa-a, occ sr,wk sil cmt,mod off wh kaol mtx i/p,rr-tr carb mat, abdt lse qtz grs,mnr fri aggs, tr mhd,fr vis & inf por,no fluor.

TOP BASALT
3382.0 mRT -3342.0 mTVDSS

VOLCANIC:gysh gn-dsky gn,mott wh/gn gy,off wh-pnk i/p,occ rd bn-rd,volalt,f-med xln,loc abdt calc vns,b,fri-pred hd,vhd i/p.

VOLCANICS:gysh gn,med-dk gy, dk bn-rd bn,occ off wh,volalt i/p,vf-f xln,occ calc vns,occ gn med-v crs min grs,b,hd-v hd i/p.

SILTSTONE:dk gy,med-dk bn,dk rd bn,arg,sil i/p,occ micmic,hd-v hd i/p,sb-sf.

SANDSTONE:off wh,clr,transl, clr,transl,f-med,rr crs,mod w srt, occ sa,wk sil cmt,occ-loc com wh arg mtx,lse-fri,pr vis & inf por,no fluor.

SILTSTONE:med-dk gy,med gy bn,arg,tr-occ carb spks & mnr flks,occ micmic,f,mhd i/p,sb-sf.

VOLCANICS:v dk gy-blk,occ v dk gy gn,vf-f xln,com mod calc, mnr dk gn min incls,mnr off wh calc vns,hd-v hd,splntry-sb.

6 5/8" Shoe @ 3458 mMD

SILTSTONE:pl bn,med-dk bn,arg, com calc,tr carb spks,sft-f,occ mhd,sb-sf.

SANDSTONE:off wh-pl gy bn, occ clr,trnsl gns,vf-f,tr med,w srt,sa-sr,wk-loc strg sil cmt,occ wh arg-gy bn slty mtx,occ calc incls,tr felds,rr rd liths,occ lse-fri,com mhd-hd,v pr-ti vis por,pr inf por,no fluor.

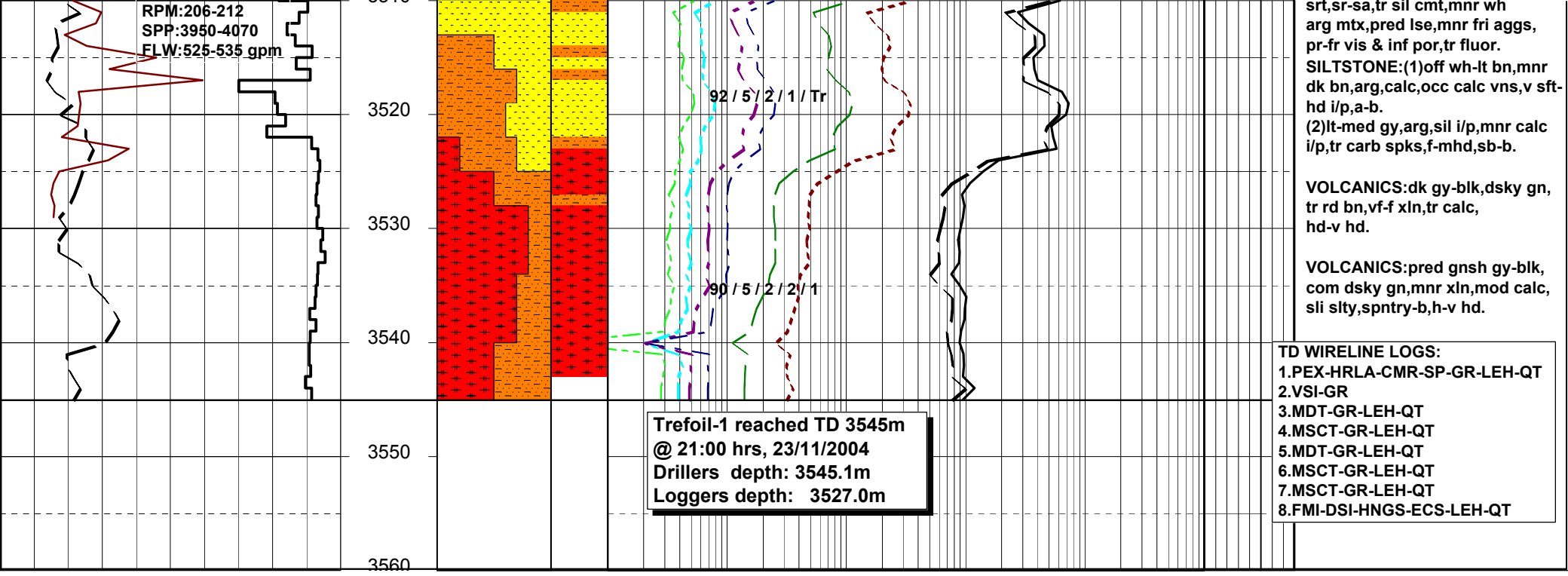
SILSTONE:(1)off wh-lt bn,mnr dk bn,arg,calc,occ calc vns,v sft-hd i/p,a-b.
(2)lt-med gy,arg,sil i/p,mnr calc i/p,tr carb spks,f-mhd,sb-b.

SANDSTONE:clr,transl,mnr off wh,f-crs,occ v crs,pred med-crs, pr srt,sa-sr,mnr a,ss-se,wk sil cmt,wk sil cmt,mnr wk calc cmt, tr wh arg mtx,lse,mnr fri,pr vis por,pr-fr inf por,no fluor.

VOLCANICS:dk gy-blk,tr rd bn, vf-f xln,tr calc,hd-v hd.

SILTSTONE:bnsh gy-med gy,arg, occ slty,mnr carb spks,mhd-hd, occ v hd,sb-b.

SANDSTONE:clr-trnsl,mnr off wh,pred med-crs,occ f,mod wl



srt,sr-sa,tr sil cmt,mnr wh arg mtx,pred lse,mnr fri aggs, pr-fr vis & inf por,tr fluor.
SILTSTONE:(1)off wh-lt bn,mnr dk bn,arg,calc,occ calc vns,v sft-hd i/p,a-b.
(2)lt-med gy,arg,sil i/p,mnr calc i/p,tr carb spks,f-mhd,sb-b.

VOLCANICS:dk gy-blk,dsky gn, tr rd bn,vf-f xln,tr calc, hd-v hd.

VOLCANICS:pred gnsh gy-blk, com dsky gn,mnr xln,mod calc, sli slty,spntry-b,h-v hd.

TD WIRELINE LOGS:
1.PEX-HRLA-CMR-SP-GR-LEH-QT
2.VSI-GR
3.MDT-GR-LEH-QT
4.MSCT-GR-LEH-QT
5.MDT-GR-LEH-QT
6.MSCT-GR-LEH-QT
7.MSCT-GR-LEH-QT
8.FMI-DSI-HNGS-ECS-LEH-QT

APPENDIX 7: MWD-LWD REPORT

Sperry-Sun

End of Well Report
for
Origin Energy Resources

Rig:	ENSCO 102
Well:	Trefoil-1
Field:	Exploration
Country:	Australia
Job No:	AU-FE-0003279677
Date:	01-Nov-04
API No:	

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	
Rig:	ENSCO 102	
Well:	Trefoil-1	
Field:	Exploration	
Country:	Australia	
API Number:		
Sperry-Sun Job Number:	AU-FE-0003279677	
Job start date:	01-Nov-04	
Job end date:	24-Nov-04	
North reference:	Grid	
Declination:	12.547	deg
Dip angle:	-70.529	deg
Total magnetic field:	61120	nT
Date of magnetic data:	31-Oct-04	
Wellhead coordinates N:	39 deg. 51 min 44.12 sec South	
Wellhead coordinates E:	145 deg. 22 min 30.73 sec East	
Vertical section direction:	Closure	deg
MWD Engineers:	M. Lee	S. Sweet
	A. Oraekwuotu	
Company Representatives:	M. Jackson	W. Jakimczuk
	M. Nasarczyk	H. Amos
Company Geologist:	M. Tindale	D. Cohen
Lease Name:	T/P18	
Unit Number:	040602	
State:	Tasmania	
County:		

Operational Overview

Sperry-Sun Drilling Services were contracted by Origin Energy Resources to provide Logging While Drilling (LWD) services for the drilling of the Trefoil-1 well from the jackup drilling rig ENSCO 102.

16" Hole Section:
This section was drilled in one bit run using Sperry-Sun's Directional While Drilling (DWD) tool suite with a Pressure Case Directional (PCD-R) sonde for deviation control. The section was drilled to T at 666.0 mMDRT.

12¼" Hole Section:
This section was drilled in one bit run using Sperry-Sun's P4M Formation Evaluation While Drilling (FEWD) tool suite, comprising of a Dual Gamma Ray (DGR) and Four Phase Electromagnetic Wave Resistivity (EWR-P4) tools for logging purposes, with a Position Monitor (PM) for deviation control. The section was drilled to TD at 2428.0 mMDRT.

8½" Hole Section:
This section was drilled in three bit runs using Sperry-Sun's P4M Triple Combo tool suite, comprising of a Dual Gamma Ray (DGR), Four Phase Electromagnetic Wave Resistivity (EWR-P4 Compensated Neutron Porosity (CNP) and Stabilised Litho-Density (SLD) tools for logging purposes, with a Position Monitor (PM) for deviation control. The first run was drilled to core point at 2735.0 mMDRT. The second run logged the cored section to 2743.0 mMDRT and continued to drill to 3442.0 mMDRT. The third run drilled to well TD at 3545.0 mMDRT.

Summary of MWD runs

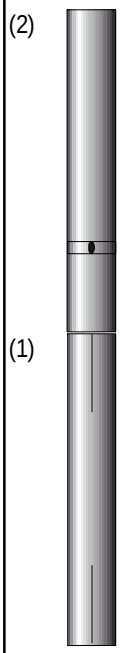
Run No.	Bit No.	Hole Size (in)	MWD Service	Start Depth (m)	End Depth (m)	Drill/Wipe Distance (m)	Run Start Date Time	Run End Date Time	BRT Hrs.	Oper. Hrs.	Circ. Hrs.	Max. Temp. (degC)	Serv. Int.	Trip for MWD	Failure Type
0100	2	16.00	DIR	215.00	666.00	451.00	01-Nov-04 21:30	03-Nov-04 14:00	40.50	40.50	16.50	28.10	No	No	
0200	3	12.25	DIR-FE	666.00	2428.00	1762.00	06-Nov-04 17:17	11-Nov-04 15:13	117.94	117.94	84.98	92.00	No	No	
0300	4	8.50	DIR-FE-NUKE	2428.00	2735.00	307.00	14-Nov-04 23:16	17-Nov-04 00:18	49.03	49.03	26.82	96.00	No	No	
0400	6	8.50	DIR-FE-NUKE	2735.00	3442.00	707.00	18-Nov-04 00:56	22-Nov-04 08:35	103.66	103.66	79.19	96.00	No	No	
0500	7	8.50	DIR-FE-NUKE	3442.00	3545.00	103.00	22-Nov-04 14:43	24-Nov-04 09:17	42.57	42.57	23.50	120.00	No	No	
TOTALS ==>						3330.00			353.70	353.70	230.99		0	0	

HALLIBURTON Sperry-Sun

Bitrun Summary

Run Time Data		Drilling Data			Mud Data				
MWD Run :	0100	Start Depth :	215.00	m	Mud Type :	Seawater/sw			
Rig Bit No:	2	End Depth :	666.00	m	Weight / Visc :	8.75	ppg /	28.00	spqt
Hole Size :	16.00 in	Footage :	451.00	m	Chlorides :	N/A	ppm		
Run Start :	01-Nov-04 21:30	Avg. Flow Rate :	1000.00	gpm	PV / YP :	N/A	cp /	N/A	pa
Run End :	03-Nov-04 14:00	Avg. RPM :	70.00	rpm	Solids/Sand :	N/A	% /	N/A	%
BRT Hrs :	40.50	Avg. WOB :	8.00	klb	%Oil / O:W :	N/A	% /	N/A	
Circ. Hrs :	16.50	Avg. ROP :	35.00	m/hr	pH/Fluid Loss:	N/A	pH /	N/A	cptm
Oper. Hrs :	40.50	Avg. SPP :	2200.00	psig	Max. Temp. :	28.10	degC		

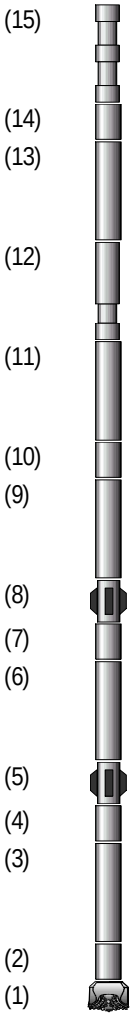
MWD Schematics



2. Positive Pulser
   SN : 10608154

1. PCD
   SN : 538
   20.49 m From Bit

BHA Schematics



	Component	Length (m)	O.D. (in)	I.D. (in)
15.	9 x HWDP	84.29	5.000	3.000
14.	Cross Over Sub	1.09	6.688	3.063
13.	2 x Drill Collar	19.02	8.500	2.880
12.	Drilling Jars	9.70	8.250	3.125
11.	3 x Drill Collar	28.58	8.500	2.875
10.	Cross Over Sub	0.80	8.250	2.938
09.	4 x Drill Collar	37.71	9.500	3.000
08.	Integral Blade Stabilizer	2.12	9.625	3.063
07.	Hang Off Sub	3.11	9.500	3.250
06.	NMDC	8.38	9.500	3.250
05.	Integral Blade Stabilizer	1.92	9.688	3.060
04.	Float Sub	0.85	9.630	3.250
03.	9-5/8" SperryDrill Lobe 6/7	8.54	9.625	6.135
02.	Cross Over Sub	0.31	9.500	3.000
01.	Hughes MX-1	0.40	16.000	3.000

Comments

The 16" hole was drilled to section TD at 666.0 mMDRT. Good detection throughout run.

MWD Performance

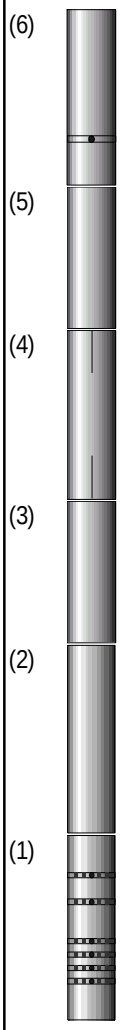
Tool OD / Type :	9.50	in /	DWD	
MWD Real-time%:	100.00	%		
MWD Recorded%:	100.00	%		
Min. Inc. :	0.17	deg /	300.92	m
Max. Inc. :	0.41	deg /	504.18	m
Final Az. :	259.13	deg		
Max Op. Press. :	99	psig		

HALLIBURTON Sperry-Sun

Bitrun Summary

Run Time Data		Drilling Data			Mud Data				
MWD Run :	0200	Start Depth :	666.00	m	Mud Type :	Drispac/Soltex			
Rig Bit No:	3	End Depth :	2428.00	m	Weight / Visc :	9.10	ppg /	98.00	spqt
Hole Size :	12.25 in	Footage :	1762.00	m	Chlorides :	18000	ppm		
Run Start :	06-Nov-04 17:17	Avg. Flow Rate :	850.00	gpm	PV / YP :	35.00	cp /	43.00	pa
Run End :	11-Nov-04 15:13	Avg. RPM :	85.00	rpm	Solids/Sand :	4.2	% /	0.10	%
BRT Hrs :	117.94	Avg. WOB :	15.00	klb	%Oil / O:W :	0	% /	0:94.8	
Circ. Hrs :	84.98	Avg. ROP :	34.00	m/hr	pH/Fluid Loss:	8.80	pH /	4.40	cptm
Oper. Hrs :	117.94	Avg. SPP :	3550.00	psig	Max. Temp. :	92.00	degC		

MWD Schematics



6. Positive Pulser
SN : 8099

5. TM
SN : 163824

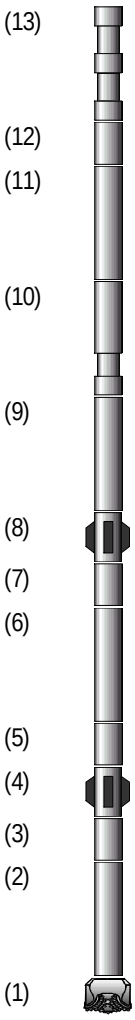
4. PM
SN : 97847
20.83 m From Bit

3. HCIM
SN : 108149

2. DGR
SN : 050437
17.46 m From Bit

1. EWR-P4
SN : 77242
14.47 m From Bit

BHA Schematics



	Component	Length (m)	O.D. (in)	I.D. (in)
13.	HWDP	84.29	5.000	3.000
12.	9 x HWDP	1.09	8.250	2.880
11.	Drill Collar	19.02	8.250	2.813
10.	2 x Drill Collar	9.70	8.250	3.000
09.	Drill Collar	57.06	8.250	2.810
08.	6 x Drill Collar	2.24	8.000	3.000
07.	Hang Off Sub	3.11	8.000	1.920
06.	MWD	9.82	8.000	1.920
05.	Float Sub	0.74	8.000	3.000
04.	Integral Blade Stabilizer	1.71	8.000	2.875
03.	Cross Over Sub	1.20	9.500	3.000
02.	9-5/8" SperryDrill Lobe 6/7	8.52	9.630	3.000
01.	Reed RSX 162	0.25	12.250	2.750

Comments

The 12¼" hole was drilled to section TD at 2428.0 mMDRT. Good detection throughout run. All recorded data recovered at surface.

MWD Performance

Tool OD / Type :	8.00	in /	P4M	
MWD Real-time%:	97.67	%		
MWD Recorded%:	100.00	%		
Min. Inc. :	0.01	deg /	1946.67	m
Max. Inc. :	0.43	deg /	2353.51	m
Final Az. :	63.76	deg		
Max Op. Press. :	3769	psig		

HALLIBURTON Sperry-Sun

Bitrun Summary

Run Time Data

MWD Run :	0300
Rig Bit No:	4
Hole Size :	8.50 in
Run Start :	14-Nov-04 23:16
Run End :	17-Nov-04 00:18
BRT Hrs :	49.03
Circ. Hrs :	26.82
Oper. Hrs :	49.03

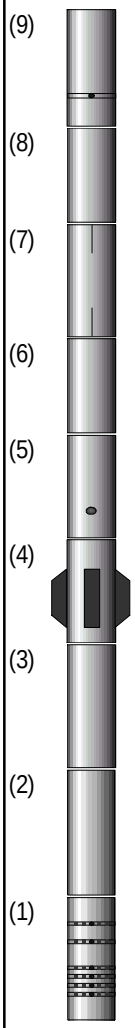
Drilling Data

Start Depth :	2428.00	m
End Depth :	2735.00	m
Footage :	307.00	m
Avg. Flow Rate :	550.00	gpm
Avg. RPM :	95.00	rpm
Avg. WOB :	10.00	klb
Avg. ROP :	26.79	m/hr
Avg. SPP :	2900.00	psig

Mud Data

Mud Type :	Drispac/Soltex			
Weight / Visc :	9.20	ppg /	125.00	spqt
Chlorides :	18000	ppm		
PV / YP :	41.00	cp /	44.00	pa
Solids/Sand :	4.5	% /	0.05	%
%Oil / O:W :	0	% /	0:94.5	
pH/Fluid Loss:	9.00	pH /	4.60	cptm
Max. Temp. :	96.00	degC		

MWD Schematics



9. Positive Pulser
SN: 8213

8. TM
SN: 134334

7. PM
SN: 34827
16.07 m From Bit

6. HCIM
SN: 76895

5. CNP
SN: 75464
11.73 m From Bit

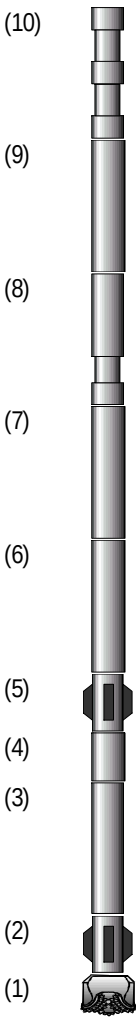
4. SLD
SN: 54290
8.46 m From Bit

3. DDS
SN: 0
0.00 m From Bit

2. DGR
SN: 77713
6.65 m From Bit

1. EWR-P4
SN: 61101
3.65 m From Bit

BHA Schematics



	Component	Length (m)	O.D. (in)	I.D. (in)
10.	9 x HWDP	84.29	5.000	3.000
09.	2 x Drill Collar	18.64	6.750	2.813
08.	Drilling Jars	9.35	6.500	2.750
07.	8 x Drill Collar	74.87	6.750	2.810
06.	NMDC	8.64	6.750	2.813
05.	Integral Blade Stabilizer	1.31	6.500	2.813
04.	Hang Off Sub	3.06	6.875	1.920
03.	MWD	15.89	6.750	1.920
02.	Near Bit Stabilizer	1.29	6.500	2.313
01.	Smith MA74EPX	0.31	8.500	2.000

Comments

Drilled 8½" hole to 2735.0m and POOH for coring run. Occasional poor detection and all recorded data recovered at surface.

MWD Performance

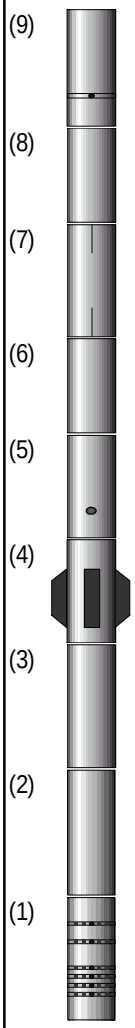
Tool OD / Type :	6.75	in /	P4M	
MWD Real-time%:	95.00	%		
MWD Recorded%:	100.00	%		
Min. Inc. :	0.42	deg /	2493.19	m
Max. Inc. :	0.67	deg /	2638.47	m
Final Az. :	66.62	deg		
Max Op. Press. :	4291	psig		

HALLIBURTON Sperry-Sun

Bitrun Summary

Run Time Data		Drilling Data			Mud Data				
MWD Run :	0400	Start Depth :	2735.00	m	Mud Type :	Drispac/Soltex			
Rig Bit No:	6	End Depth :	3442.00	m	Weight / Visc :	9.40	ppg /	115.00	spqt
Hole Size :	8.50 in	Footage :	707.00	m	Chlorides :	18000	ppm		
Run Start :	18-Nov-04 00:56	Avg. Flow Rate :	540.00	gpm	PV / YP :	46.00	cp /	34.00	pa
Run End :	22-Nov-04 08:35	Avg. RPM :	90.00	rpm	Solids/Sand :	6.0	% /	0.05	%
BRT Hrs :	103.66	Avg. WOB :	13.20	klb	%Oil / O:W :	0	% /	0:93.0	
Circ. Hrs :	79.19	Avg. ROP :	11.95	m/hr	pH/Fluid Loss:	8.80	pH /	4.00	cptm
Oper. Hrs :	103.66	Avg. SPP :	2974.00	psig	Max. Temp. :	96.00	degC		

MWD Schematics



9. Positive Pulser
SN: 8213

8. TM
SN: 134334

7. PM
SN: 34827
16.07 m From Bit

6. HCIM
SN: 76895

5. CNP
SN: 75464
11.73 m From Bit

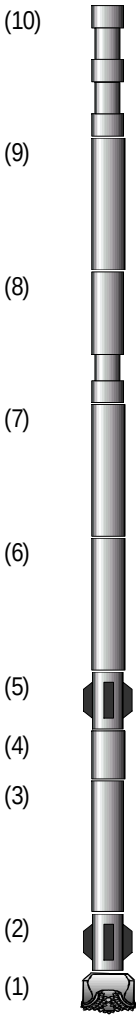
4. SLD
SN: 54290
8.46 m From Bit

3. DDS
SN: 0
0.00 m From Bit

2. DGR
SN: 77713
6.65 m From Bit

1. EWR-P4
SN: 61101
3.65 m From Bit

BHA Schematics



	Component	Length (m)	O.D. (in)	I.D. (in)
10.	9 x HWDP	84.29	5.000	3.000
09.	2 x Drill Collar	18.64	6.750	2.813
08.	Drilling Jars	9.35	6.500	2.750
07.	8 x Drill Collar	74.87	6.750	2.810
06.	NMDC	8.64	6.750	2.813
05.	Integral Blade Stabilizer	1.31	6.500	2.813
04.	Hang Off Sub	3.06	6.875	1.920
03.	MWD	15.89	6.750	1.920
02.	Near Bit Stabilzer	1.29	6.500	2.313
01.	Smith MA74EPX	0.31	8.500	2.000

Comments

Drilled 8½" hole to 3442.0m and POOH for bit and pulser change. Good detection throughout run and all recorded data recovered at surface.

MWD Performance

Tool OD / Type :	6.75	in /	P4M	
MWD Real-time%:	99.00	%		
MWD Recorded%:	100.00	%		
Min. Inc. :	0.25	deg /	3131.71	m
Max. Inc. :	0.73	deg /	3421.00	m
Final Az. :	77.25	deg		
Max Op. Press. :	5520	psig		

HALLIBURTON Sperry-Sun

Bitrun Summary

Run Time Data

MWD Run :	0500
Rig Bit No:	7
Hole Size :	8.50 in
Run Start :	22-Nov-04 14:43
Run End :	24-Nov-04 09:17
BRT Hrs :	42.57
Circ. Hrs :	23.50
Oper. Hrs :	42.57

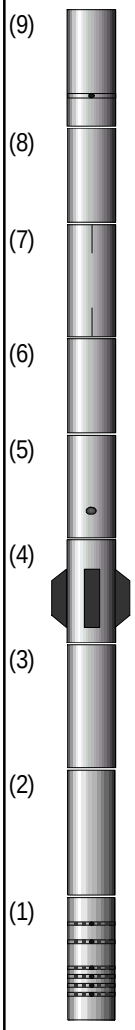
Drilling Data

Start Depth :	3442.00	m
End Depth :	3545.00	m
Footage :	103.00	m
Avg. Flow Rate :	530.00	gpm
Avg. RPM :	60.00	rpm
Avg. WOB :	38.00	klb
Avg. ROP :	5.56	m/hr
Avg. SPP :	3980.00	psig

Mud Data

Mud Type :	Drispac/Soltex			
Weight / Visc :	9.40	ppg /	140.00	spqt
Chlorides :	18000	ppm		
PV / YP :	51.00	cp /	40.00	pa
Solids/Sand :	5.8	% /	0.05	%
%Oil / O:W :	0	% /	0:93.2	
pH/Fluid Loss:	9.00	pH /	3.10	cptm
Max. Temp. :	120.00	degC		

MWD Schematics



9. Positive Pulser
SN: 8447

8. TM
SN: 163824

7. PM
SN: 34827
24.47 m From Bit

6. HCIM
SN: 76895

5. CNP
SN: 75464
20.13 m From Bit

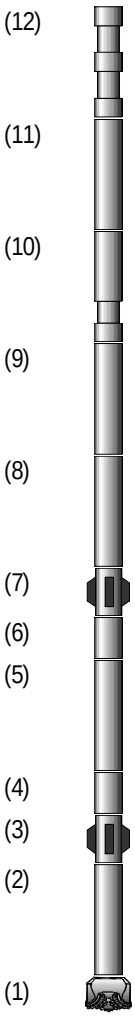
4. SLD
SN: 54290
16.86 m From Bit

3. DDS
SN: 0
0.00 m From Bit

2. DGR
SN: 77713
15.05 m From Bit

1. EWR-P4
SN: 61101
12.05 m From Bit

BHA Schematics



	Component	Length (m)	O.D. (in)	I.D. (in)
12.	9 x HWDP	84.29	5.000	3.000
11.	2 x Drill Collar	18.64	6.750	2.813
10.	Drilling Jars	9.35	6.500	2.750
09.	11 x Drill Collar	103.14	6.750	2.810
08.	NMDC	8.64	6.750	2.813
07.	Integral Blade Stabilizer	1.32	6.500	2.813
06.	Hang Off Sub	3.16	6.875	1.920
05.	MWD	15.89	6.750	1.920
04.	Float Sub	0.77	6.500	2.845
03.	Integral Blade Stabilizer	1.31	6.500	2.313
02.	6-3/4" SperryDrill Lobe 6/7	7.68	6.750	4.498
01.	Hughes MX-20HDX	0.24	8.500	2.000

Comments

Drilled 8½" hole to 3545.0m, well TD and POOH for logging. Good detection throughout run and all recorded data recovered at surface.

MWD Performance

Tool OD / Type :	6.75	in /	P4M	
MWD Real-time%:	99.00	%		
MWD Recorded%:	100.00	%		
Min. Inc. :	0.45	deg /	3508.66	m
Max. Inc. :	0.52	deg /	3478.23	m
Final Az. :	83.89	deg		
Max Op. Press. :	5685	psig		

Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
14.93	0.28	227.56	14.93	0.02 S	0.03 W	-0.02	TIE-IN
157.93	0.24	111.58	157.93	0.37 S	0.01 W	-0.11	0.09
242.92	0.31	216.07	242.92	0.62 S	0.03 E	-0.15	0.15
271.90	0.26	284.04	271.90	0.67 S	0.08 W	-0.27	0.33
300.92	0.17	201.71	300.92	0.69 S	0.16 W	-0.35	0.30
330.00	0.41	230.28	330.00	0.79 S	0.26 W	-0.47	0.29
359.06	0.41	266.92	359.06	0.87 S	0.45 W	-0.67	0.27
388.11	0.22	245.94	388.11	0.90 S	0.60 W	-0.83	0.22
417.14	0.34	274.84	417.14	0.91 S	0.74 W	-0.97	0.19
446.14	0.37	235.59	446.14	0.96 S	0.91 W	-1.14	0.25
475.16	0.40	278.80	475.16	1.00 S	1.08 W	-1.32	0.30
504.18	0.41	282.84	504.17	0.96 S	1.28 W	-1.50	0.03
533.18	0.31	240.27	533.17	0.97 S	1.45 W	-1.67	0.29
562.18	0.18	291.63	562.17	0.99 S	1.57 W	-1.78	0.25
591.14	0.22	204.81	591.13	1.03 S	1.63 W	-1.85	0.29
641.65	0.35	259.13	641.64	1.14 S	1.82 W	-2.07	0.17
669.83	0.22	257.56	669.82	1.17 S	1.96 W	-2.21	0.14
698.86	0.26	268.76	698.85	1.19 S	2.08 W	-2.33	0.06
728.56	0.19	269.22	728.55	1.19 S	2.19 W	-2.44	0.07
756.58	0.19	307.61	756.57	1.16 S	2.28 W	-2.51	0.13
786.17	0.16	314.47	786.16	1.10 S	2.35 W	-2.56	0.04
815.11	0.10	284.44	815.10	1.06 S	2.40 W	-2.60	0.09
844.16	0.12	314.77	844.15	1.04 S	2.44 W	-2.64	0.06
872.84	0.12	295.00	872.83	1.01 S	2.49 W	-2.67	0.04
902.16	0.18	266.56	902.15	1.00 S	2.56 W	-2.74	0.10
931.24	0.18	236.49	931.23	1.02 S	2.65 W	-2.83	0.10
960.31	0.14	220.66	960.30	1.07 S	2.71 W	-2.90	0.06
989.40	0.11	280.20	989.39	1.10 S	2.76 W	-2.95	0.13
1018.08	0.10	263.65	1018.07	1.09 S	2.81 W	-3.00	0.03
1046.97	0.04	218.89	1046.96	1.10 S	2.84 W	-3.04	0.08
1076.06	0.04	210.61	1076.05	1.12 S	2.85 W	-3.05	0.01
1105.00	0.11	202.29	1104.99	1.15 S	2.87 W	-3.08	0.07
1134.08	0.11	229.21	1134.07	1.20 S	2.90 W	-3.12	0.05
1163.21	0.04	91.07	1163.20	1.22 S	2.91 W	-3.14	0.14
1192.06	0.04	217.57	1192.05	1.22 S	2.91 W	-3.14	0.08
1221.26	0.04	44.16	1221.25	1.23 S	2.91 W	-3.14	0.09
1250.02	0.04	130.95	1250.01	1.22 S	2.89 W	-3.12	0.06
1278.99	0.04	15.22	1278.98	1.22 S	2.88 W	-3.11	0.07
1308.18	0.04	135.36	1308.17	1.22 S	2.87 W	-3.10	0.07
1337.26	0.10	149.36	1337.25	1.25 S	2.85 W	-3.09	0.06

Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
1366.26	0.10	170.95	1366.25	1.29 S	2.84 W	-3.09	0.04
1395.17	0.09	144.86	1395.16	1.34 S	2.82 W	-3.08	0.05
1424.33	0.06	136.27	1424.32	1.37 S	2.80 W	-3.07	0.03
1453.35	0.05	88.56	1453.34	1.38 S	2.77 W	-3.05	0.05
1482.62	0.05	114.69	1482.61	1.39 S	2.75 W	-3.03	0.02
1511.65	0.13	148.50	1511.64	1.42 S	2.72 W	-3.01	0.09
1540.65	0.13	153.08	1540.64	1.47 S	2.69 W	-3.00	0.01
1569.66	0.07	139.36	1569.65	1.51 S	2.67 W	-2.98	0.07
1598.46	0.16	142.24	1598.45	1.56 S	2.63 W	-2.96	0.10
1656.39	0.18	132.60	1656.38	1.68 S	2.52 W	-2.89	0.02
1685.50	0.15	157.44	1685.49	1.75 S	2.47 W	-2.86	0.08
1714.59	0.02	350.18	1714.58	1.78 S	2.45 W	-2.85	0.18
1743.68	0.15	253.46	1743.67	1.79 S	2.49 W	-2.89	0.16
1772.72	0.09	271.90	1772.71	1.80 S	2.55 W	-2.95	0.07
1801.66	0.02	223.84	1801.65	1.80 S	2.57 W	-2.97	0.08
1830.56	0.15	316.18	1830.55	1.77 S	2.60 W	-2.99	0.16
1859.47	0.08	329.16	1859.46	1.73 S	2.64 W	-3.02	0.07
1888.51	0.08	300.76	1888.50	1.70 S	2.67 W	-3.04	0.04
1917.61	0.11	284.00	1917.60	1.68 S	2.71 W	-3.08	0.04
1946.67	0.01	141.29	1946.66	1.68 S	2.74 W	-3.10	0.12
1975.72	0.11	344.70	1975.71	1.65 S	2.74 W	-3.10	0.12
2004.82	0.07	333.35	2004.81	1.61 S	2.76 W	-3.10	0.04
2033.84	0.06	12.54	2033.83	1.58 S	2.76 W	-3.10	0.05
2062.96	0.10	354.28	2062.95	1.54 S	2.76 W	-3.08	0.05
2091.93	0.09	5.90	2091.92	1.49 S	2.76 W	-3.07	0.02
2121.13	0.14	11.21	2121.12	1.44 S	2.75 W	-3.05	0.05
2150.14	0.09	37.57	2150.13	1.38 S	2.73 W	-3.01	0.07
2179.32	0.16	36.77	2179.31	1.33 S	2.69 W	-2.96	0.06
2208.29	0.19	58.16	2208.28	1.27 S	2.63 W	-2.88	0.08
2237.39	0.30	45.52	2237.38	1.20 S	2.53 W	-2.77	0.12
2266.43	0.38	58.15	2266.42	1.09 S	2.40 W	-2.61	0.12
2324.50	0.30	41.24	2324.49	0.88 S	2.14 W	-2.30	0.07
2353.51	0.43	63.46	2353.50	0.77 S	1.99 W	-2.13	0.20
2382.51	0.31	63.76	2382.50	0.69 S	1.82 W	-1.94	0.12
2493.19	0.42	64.03	2493.17	0.38 S	1.19 W	-1.25	0.03
2522.35	0.43	64.82	2522.33	0.29 S	1.00 W	-1.04	0.01
2551.47	0.45	74.18	2551.45	0.21 S	0.79 W	-0.82	0.08
2580.56	0.45	70.93	2580.54	0.14 S	0.57 W	-0.59	0.03
2609.65	0.60	70.66	2609.63	0.06 S	0.32 W	-0.32	0.15
2638.47	0.67	69.43	2638.45	0.05 N	0.02 W	0.00	0.08

Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
2696.63	0.54	66.62	2696.61	0.28 N	0.55 E	0.61	0.07
2725.43	0.56	70.87	2725.40	0.38 N	0.81 E	0.88	0.05
2754.41	0.42	60.49	2754.38	0.48 N	1.03 E	1.13	0.17
2783.57	0.34	64.20	2783.54	0.57 N	1.21 E	1.32	0.08
2811.73	0.34	63.34	2811.70	0.65 N	1.36 E	1.48	0.01
2841.41	0.44	69.81	2841.38	0.73 N	1.54 E	1.68	0.11
2899.47	0.28	70.57	2899.44	0.85 N	1.89 E	2.05	0.08
2928.59	0.38	81.57	2928.56	0.89 N	2.05 E	2.22	0.12
2957.61	0.45	75.30	2957.58	0.93 N	2.25 E	2.42	0.09
2983.90	0.39	63.39	2983.87	1.00 N	2.44 E	2.62	0.12
3015.37	0.34	80.22	3015.34	1.06 N	2.62 E	2.82	0.11
3044.33	0.38	92.33	3044.30	1.07 N	2.81 E	2.99	0.09
3069.85	0.38	83.94	3069.82	1.08 N	2.98 E	3.16	0.07
3102.61	0.31	89.57	3102.58	1.09 N	3.17 E	3.35	0.07
3131.71	0.25	91.08	3131.68	1.09 N	3.32 E	3.49	0.06
3160.75	0.32	87.86	3160.72	1.09 N	3.47 E	3.63	0.07
3189.89	0.28	92.69	3189.85	1.09 N	3.62 E	3.78	0.05
3218.90	0.33	85.93	3218.86	1.09 N	3.77 E	3.93	0.07
3247.89	0.28	78.16	3247.85	1.11 N	3.92 E	4.08	0.07
3276.89	0.41	87.73	3276.85	1.13 N	4.10 E	4.25	0.15
3302.14	0.39	69.02	3302.10	1.17 N	4.27 E	4.42	0.16
3334.87	0.45	62.58	3334.83	1.27 N	4.48 E	4.66	0.07
3363.86	0.53	53.76	3363.82	1.40 N	4.69 E	4.89	0.11
3421.00	0.73	77.25	3420.96	1.63 N	5.26 E	5.50	0.17
3478.23	0.52	74.50	3478.18	1.78 N	5.87 E	6.13	0.11
3508.66	0.45	83.89	3508.61	1.83 N	6.12 E	6.39	0.11
3545.00	0.45	83.89	3544.95	1.86 N	6.40 E	6.67	0.00

Directional Survey Data

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 CLOSURE OF 73.78 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 3545.00 METRES
IS 6.67 METRES ALONG 73.78 DEGREES (GRID)

The first two surveys were taken inside casing so azimuths are invalid.
RT-MSL = 39.9m
Final survey is projected to TD.

WELL INFORMATION

MWD Run Number	100	200	300	400	500
Date run completed	03-Nov-04	11-Nov-04	17-Nov-04	22-Nov-04	24-Nov-04
Rig Bit Number	2	3	4	6	7
Bit Size (in)	16	12.25	8.5000	8.5000	8.5000
Tool Nominal OD (in)	9.5	8	6.75	6.75	6.75
Log Start Depth (MD, m)	215.00	666.00	2,428.00	2,735.00	3,442.00
Log End Depth (MD, m)	666.00	2,428.00	2,735.00	3,442.00	3,545.00
Drill or Wipe	Drilling	Drilling	Drilling	Drilling	Drilling
Drill/Wipe Start Date and Time	02-Nov-04 02:00	06-Nov-04 23:17	15-Nov-04 12:03	18-Nov-04 07:26	22-Nov-04 23:40
Drill/Wipe End Date and Time	02-Nov-04 20:00	09-Nov-04 21:38	16-Nov-04 11:59	21-Nov-04 14:46	23-Nov-04 20:50
Min Inc (deg) @ Depth (MD, m)	0.17 @ 300.92	0.01 @ 1,946.67	0.42 @ 2,493.19	0.25 @ 3,131.71	0.45 @ 3,508.66
Max Inc (deg) @ Depth (MD, m)	0.41 @ 504.18	0.43 @ 2,353.51	0.67 @ 2,638.47	0.73 @ 3,421.00	0.52 @ 3,478.23
Bit TFA(in2) / Bit Type	1.325 / Hughes MX-1	1.491 / Reed RSX 162	1.335 / Smith MA74EPX	1.3350 / Smith MA74EPX	0.746 / Hughes MX-20HDX
Flow Rate (gpm)	1000	850	550	540	530
Max AV (mpm) / CV (mpm) @ MWD	9.4 / N/A	23.6 / 250.0	154.2 / 252.0	164.0 / 245.0	148.2 / 292.2
Fluid Type	Seawater/Sweeps	Drispac/Soltex	Drispac/Soltex	Drispac/Soltex	Drispac/Soltex
Density (ppg) / Viscosity (spqt)	8.8 / 28	9.1 / 98	9.2 / 79	9.4 / 115	9.4 / 140
Filtrate CL (ppm)	N/A	18,000.00	18,000.00	18,000.00	18,000.00
pH / Fluid Loss (cptm)	N/A / N/A	8.8 / 8.8	9.0 / 4.6	8.8 / 4.0	9.0 / 9.0
PV (cp) / YP (pa)	N/A / N/A	35 / 43	41 / 23	46 / 34	51 / 40
% Solids / % Sand	N/A / N/A	4.2 / 0.10	4.5 / 0.05	6.0 / 0.05	5.8 / 0.05
% Oil / Oil:Water Ratio	N/A / N/A	0 / 0:94.8	0 / 0:94.5	0 / 0:93.0	0 / 0:93.2
Rm @ Measured Temp (degC)	N/A @ N/A	0.19 @ 19.00	0.20 @ 20.50	0.26 @ 19.40	0.23 @ 22.00
Rmf @ Measured Temp (degC)	N/A @ N/A	0.18 @ 19.00	0.16 @ 20.50	0.20 @ 19.40	0.16 @ 22.00
Rmc @ Measured Temp (degC)	N/A @ N/A	0.20 @ 19.00	0.30 @ 20.50	0.40 @ 19.40	0.30 @ 22.00
Max Tool Temp (degC) / Source	28.10 / PCD-R	92.00 / EWR-P4	96.00 / EWR-P4	96.00 / EWR-P4	120.00 / EWR-P4
Rm @ Max Tool Temp (degC)	N/A @ N/A	0.07 @ 92.00	0.07 @ 96.00	0.09 @ 96.00	0.07 @ 120.00
Lead MWD Engineer	M. Lee	M. Lee	M. Lee	M. Lee	M. Lee
Customer Representative	M. Jackson	W. Jakimczuk	W. Jakimczuk	W. Jakimczuk	W. Jacimczuk

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCD	HCIM	HCIM	HCIM	HCIM
Software Version	3.32	66.37	67.88	67.88	67.88
Sub Serial Number	10599306	182692	145273	145273	145273
Insert Serial Number	538	108149	76895	76895	76895
Logging String Serial Number	N/A	90047857H1GR8	90061810XH1NLGR6	90061810XH1NLGR6	90061810XH1NLGR6
Date and Time Initialized	01-Nov-04 21:30	06-Nov-04 17:19	14-Nov-04 23:19	18-Nov-04 00:58	22-Nov-04 14:45
Date and Time Read	03-Nov-04 14:00	11-Nov-04 17:13:00	17-Nov-04 00:18:00	22-Nov-04 08:35:00	24-Nov-04 09:17:00

Directional Sensor Information

Tool Type	PCD	PM	PM	PM	PM
Distance From Bit (m)	20.49	20.83	16.07	16.07	24.47
Software Version	3.32	N/A	N/A	N/A	N/A
Sub Serial Number	10599306	61119	95764	95764	95764
Sonde Serial Number	538	97847	34827	34827	34827
Sensor ID Number	538	688	500	500	500
Survey String Serial Number	538	DM90047862M8	DM90047859M6	DM90047859M6	DM90047859M6
Toolface Offset (deg)	228	N/A	N/A	N/A	N/A

Gamma Ray Sensor Information

Tool Type		DGR	DGR	DGR	DGR
Distance From Bit (m)		17.46	6.65	6.65	15.05
Recorded Sample Period (sec)		12	12	12	12
Software Version		N/A	N/A	N/A	N/A
Sub Serial Number		106149	176037	176037	176037
Insert/Sonde Serial Number		050437	77713	77713	77713

Resistivity Sensor Information

Tool Type		EWR-P4	EWR-P4	EWR-P4	EWR-P4
Distance From Bit (m)		14.47	3.65	3.65	12.05
Recorded Sample Period (sec)		14	12	12	12
Software Version		1.38	1.38	1.38	1.38
Sub Serial Number		96508	65267	65267	65267
Receiver Insert Serial Number		77242	61101	61101	61101
Transmitter Insert Serial Number		135158	77011	77011	77011
Receiver Orientation		Down	Down	Down	Down

Neutron Sensor Information

Tool Type			CNP	CNP	CNP
Distance From Bit (m)			11.73	11.73	20.13
Recorded Sample Period (sec)			14	14	14
Sub Serial Number			168841	168841	168841
Insert Serial Number			75464	75464	75464
Source Serial Number			1403NN	1403NN	1403NN
Source Factor			1.1890	1.1890	1.1890
Pin Orientation			Down	Down	Down

Density Sensor Information

Tool Type			SLD	SLD	SLD
Distance From Bit (m)			8.46	8.46	16.86
Recorded Sample Period (sec)			14	14	14
Software Version			11.00	11.00	11.00
Sub Serial Number			H0351	H0351	H0351
Insert Serial Number			54290	54290	54290
Sensor ID Number			351	351	351
Source Serial Number			3139	3139	3139
Pin Orientation			Down	Down	Down
Stabilizer Blade O.D. (in)			8.250	8.250	8.250
DPA Offset			N/A	N/A	N/A

REMARKS

1. All depths are bit depths and referenced to the drillers pipe tally.

2. AV/CV is calculated at the MWD collar using the Power Law for water based muds and the Binghams Plastic Law for oil based muds.

3. Curve mnemonics are :

SGRC - Smoothed Gamma Ray Combined, api
SEXP - Smoothed Extra Shallow Phase-Shift Derived Resistivity, ohm-m
SESP - Smoothed Shallow Phase-Shift Derived Resistivity, ohm-m
SEMP - Smoothed Medium Phase-Shift Derived Resistivity, ohm-m
SEDP - Smoothed Deep Phase-Shift Derived Resistivity, ohm-m
SROP - Smoothed Rate of Penetration, m/hr
SFXE - Smoothed Resistivity Formation Exposure Time, hr
STEM - Smoothed Temperature from Resistivity tool, degrees C
SBD2 - Smoothed Best Bin Bulk Density Compensated, g/cc
SCO2 - Smoothed Best Bin Stand-off Correction, g/cc
SNP2 - Smoothed Best Bin Near Photoelectric Effect, b/e
NUCL - Smoothed Porosity (Limestone Matrix) corrected for Salinity, Temperature and Pressure, v/v
SHSI - Smoothed SLD Rapid Sample Hole Size Indicator, in

4. CNP data processed using the CNP-E algorithim using the following parameters and is based on a Limestone Matrix:

MW = 9.20 - 9.40 ppg
Formation Salinity = 50,000 ppm Cl
Mud Salinity = 17,500 - 18,500 ppm Cl
Matrix Density = 2.71 g/cc
Fluid Density = 1.00 g/cc

5. CNP data has been reprocessed using SHSI data from the Density tool for borehole diameter.

6. Interval 2410.0 to 2421.0 mMDRT logged after casing.

7. Run 400 wiped over the cored interval from 2735.0 to 2743.0 mMDRT before drilling ahead.

WARRANTY

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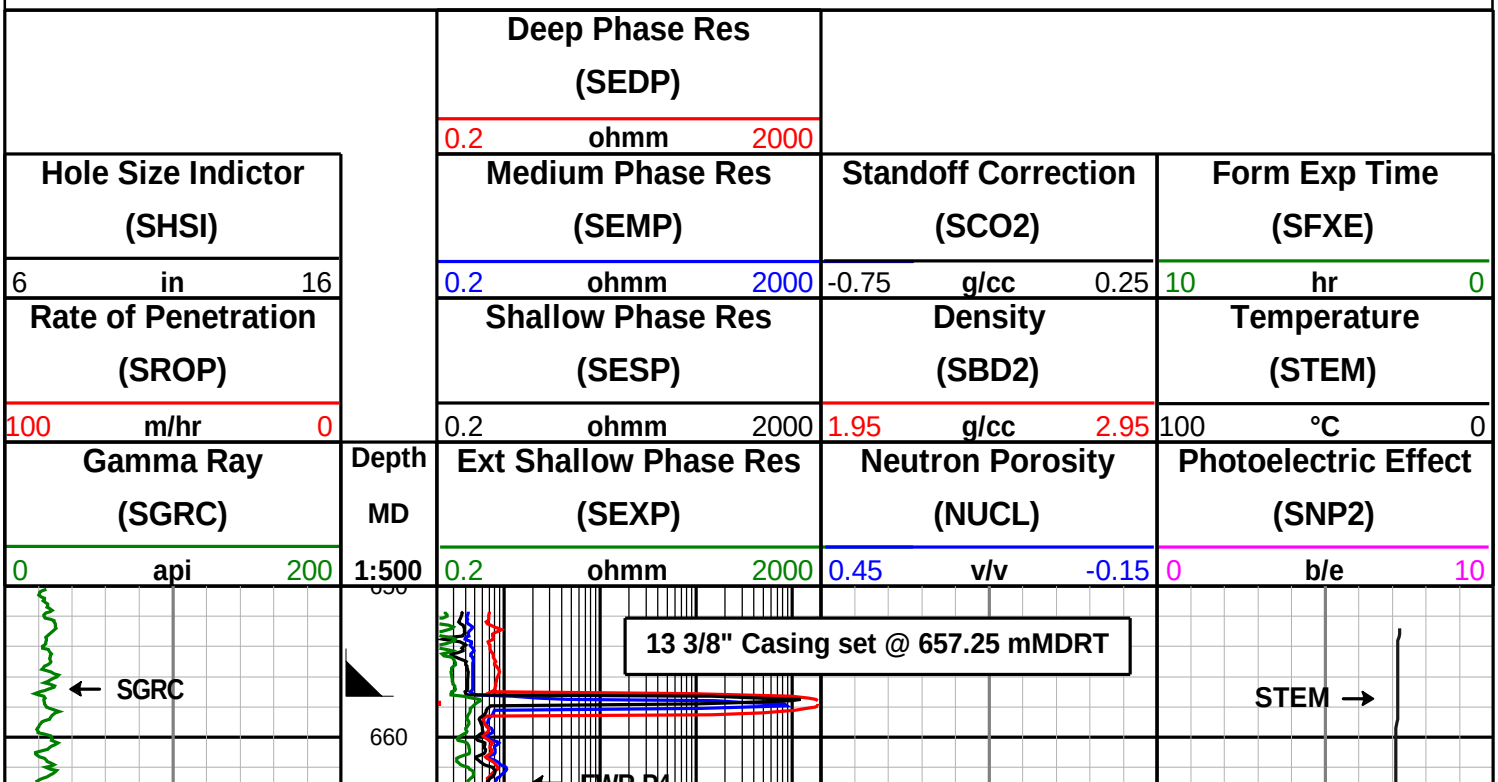

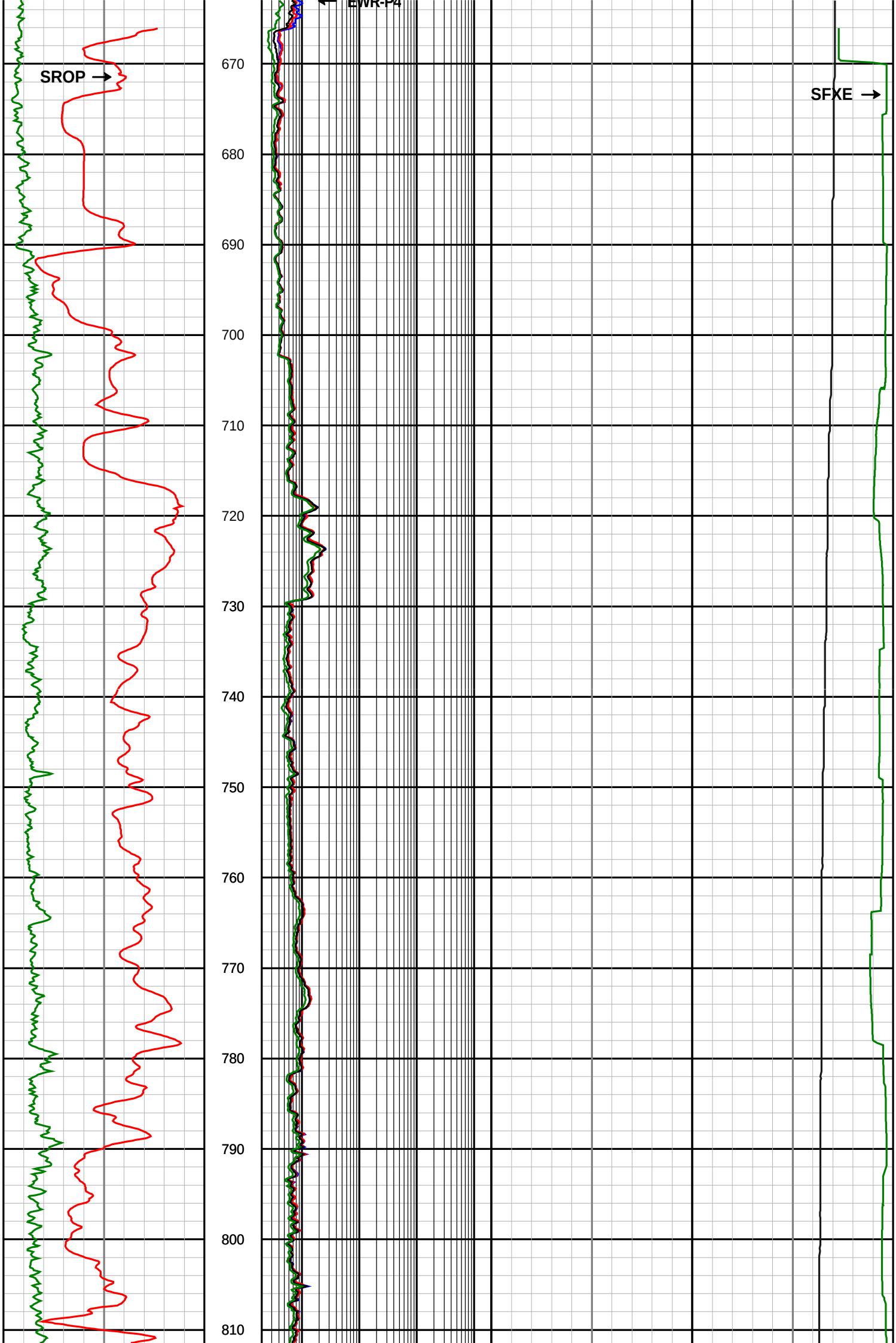
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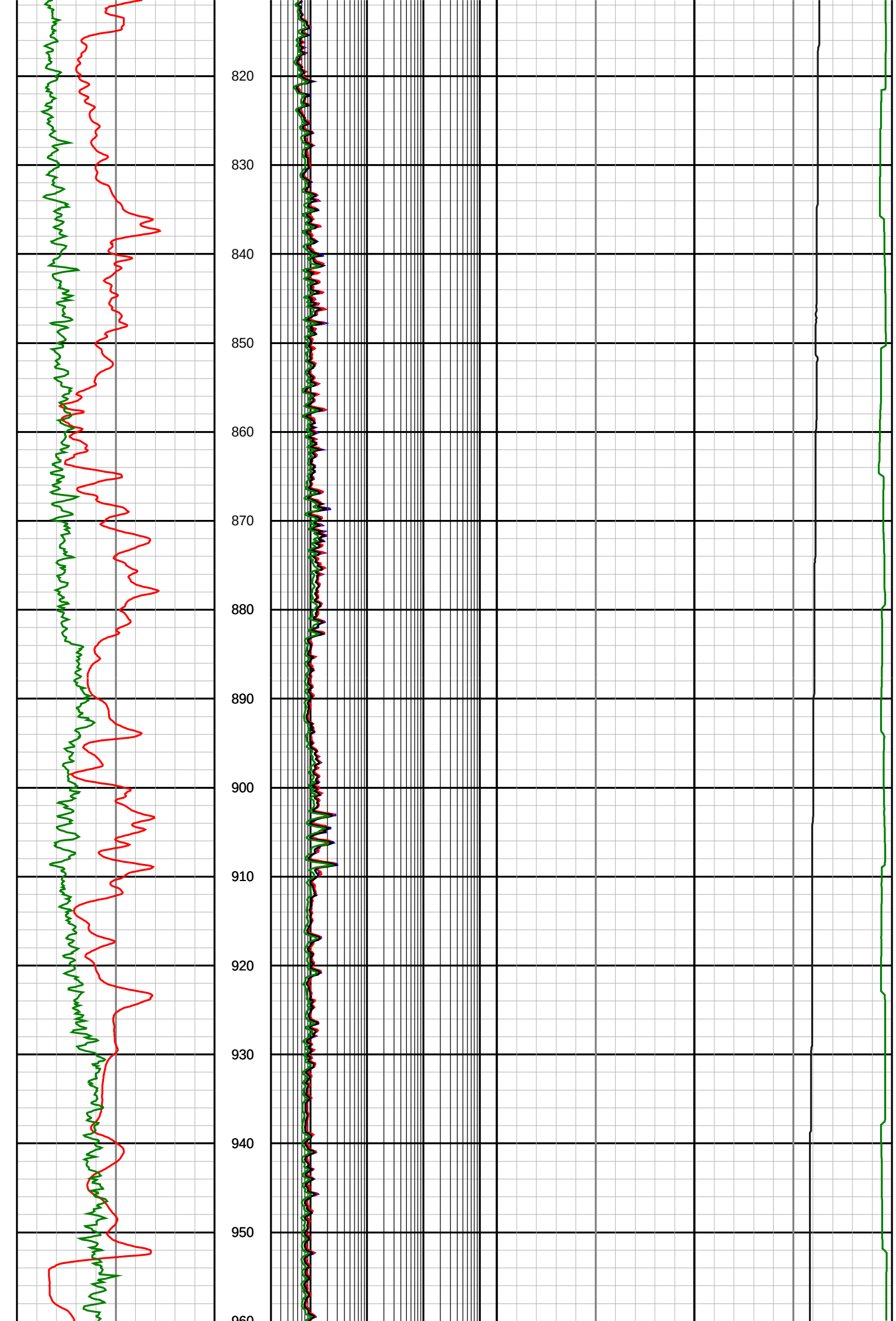
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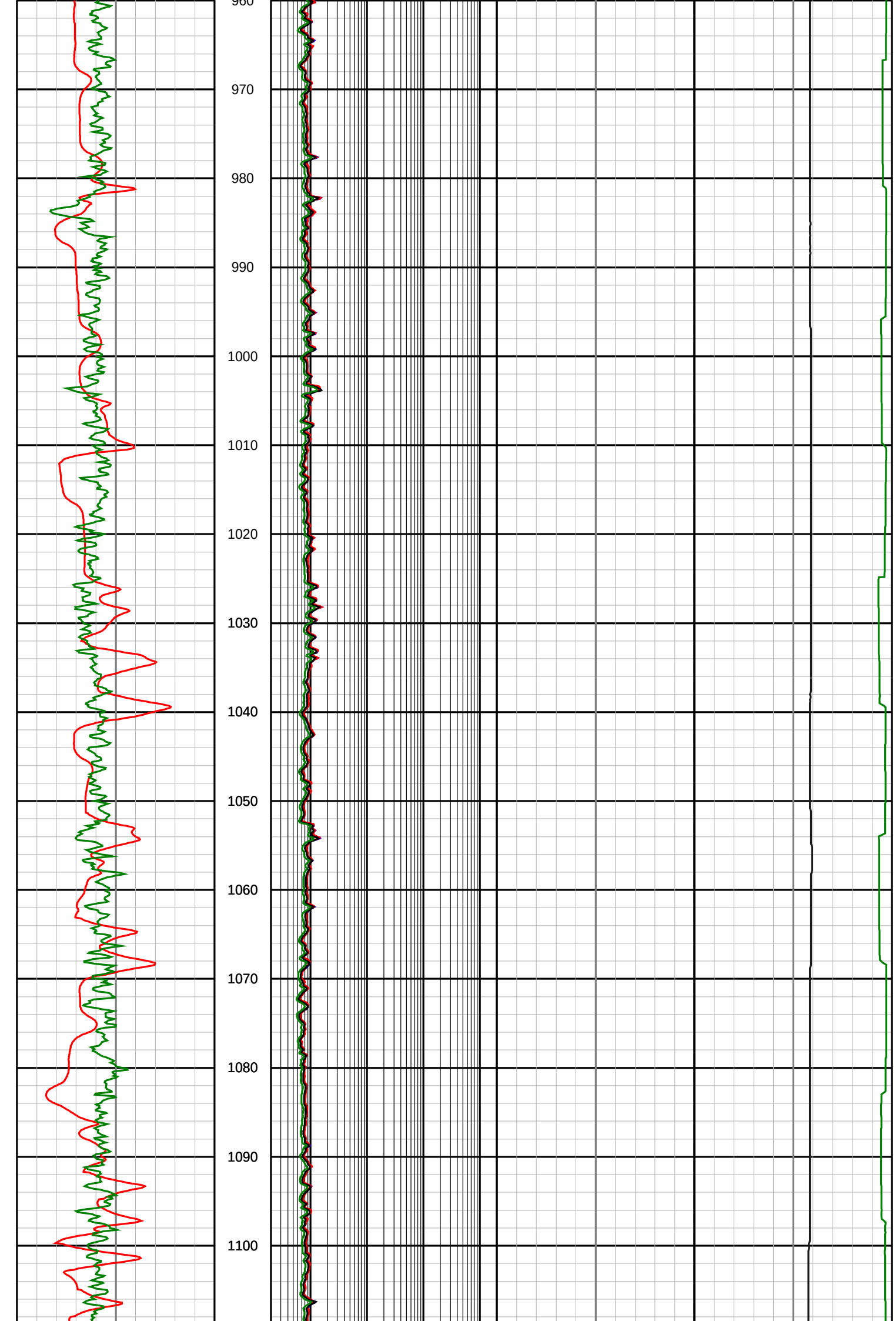
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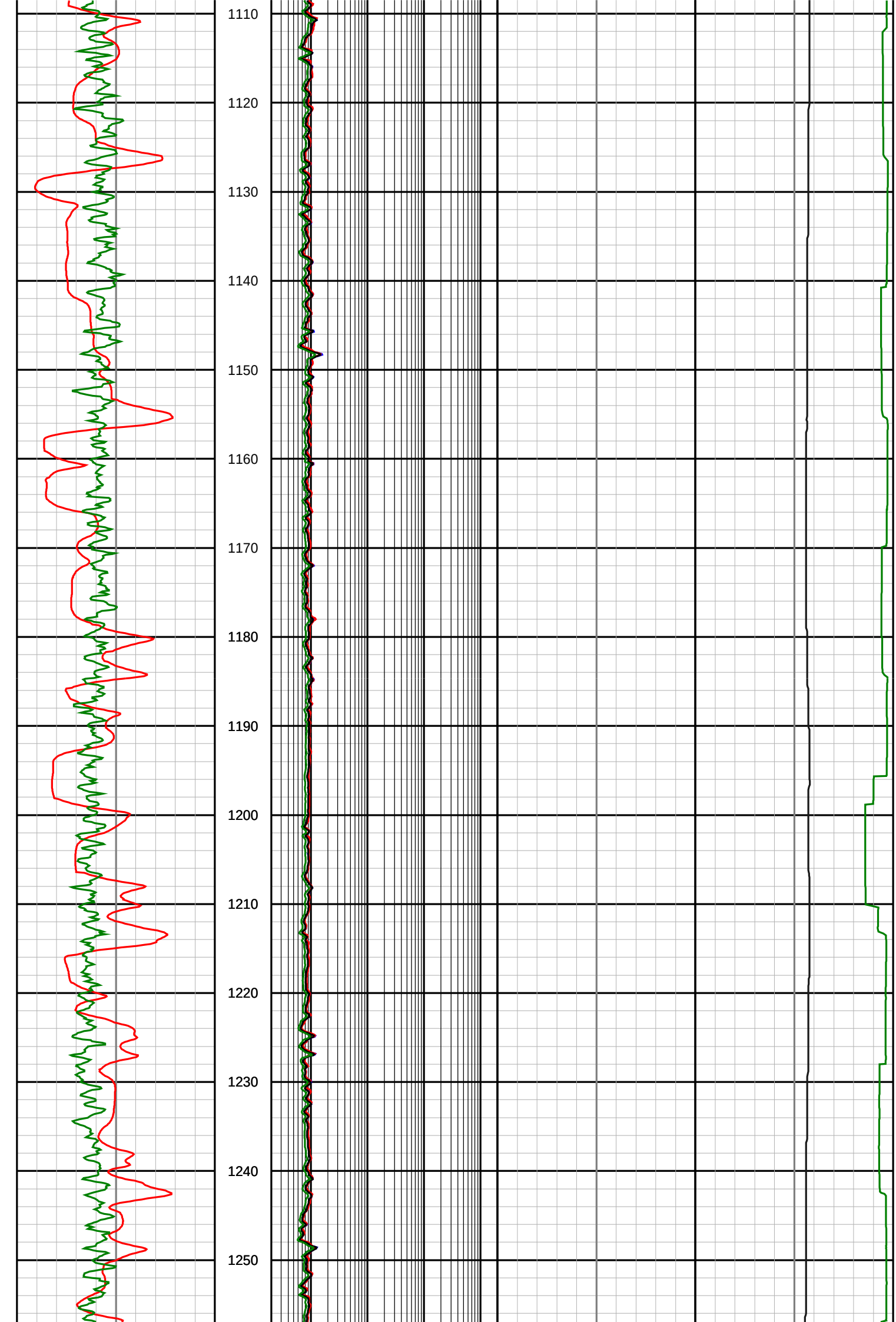
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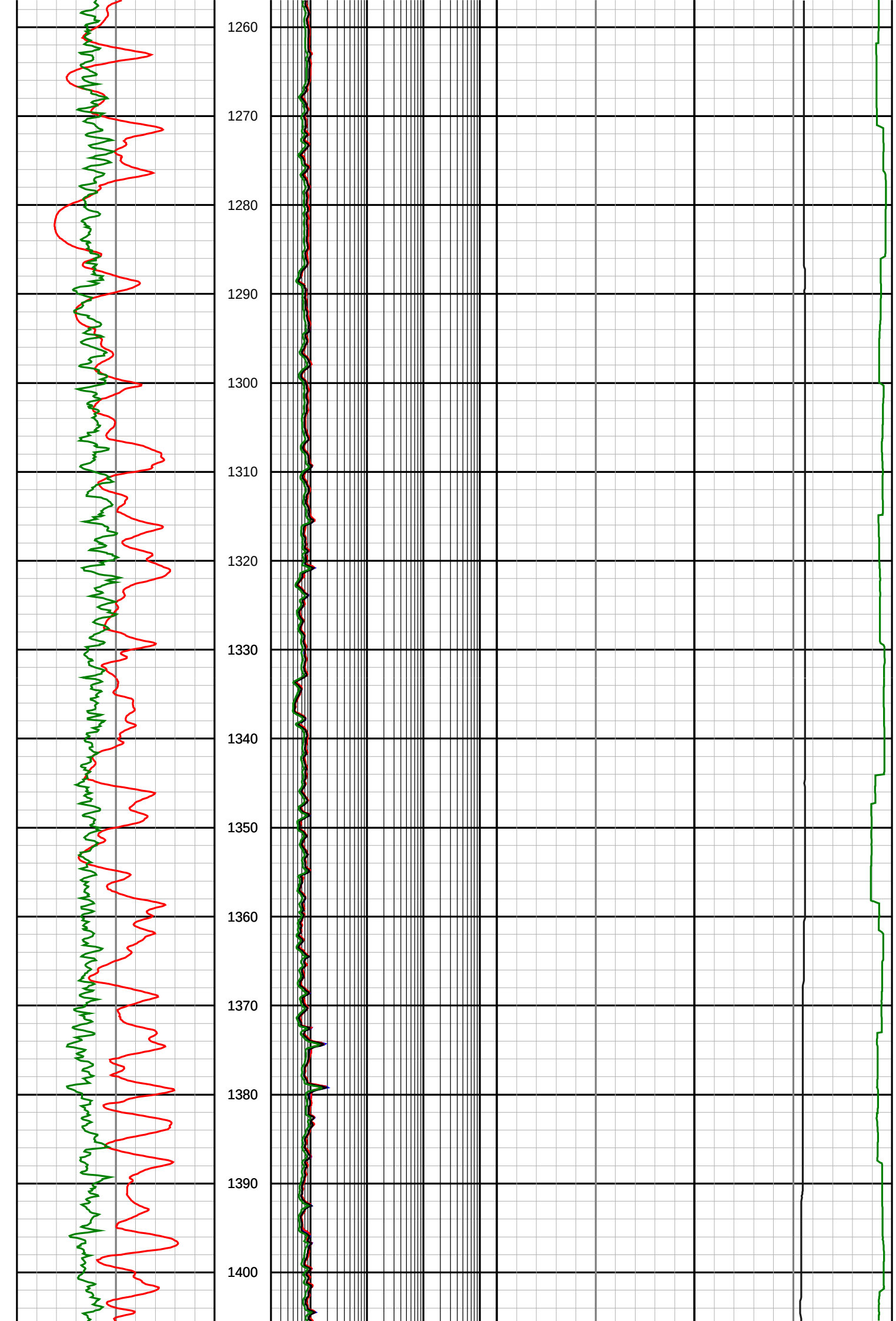
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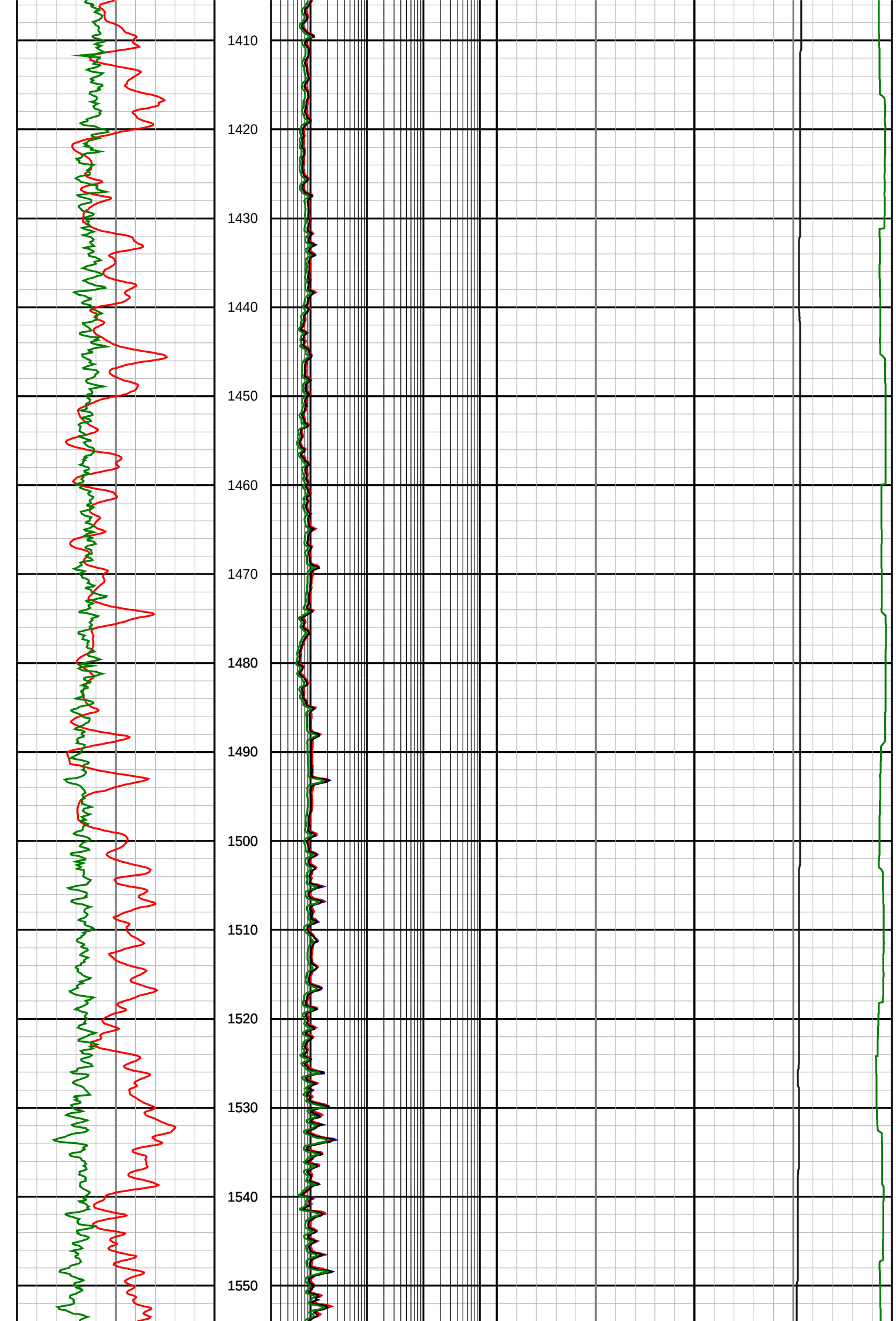
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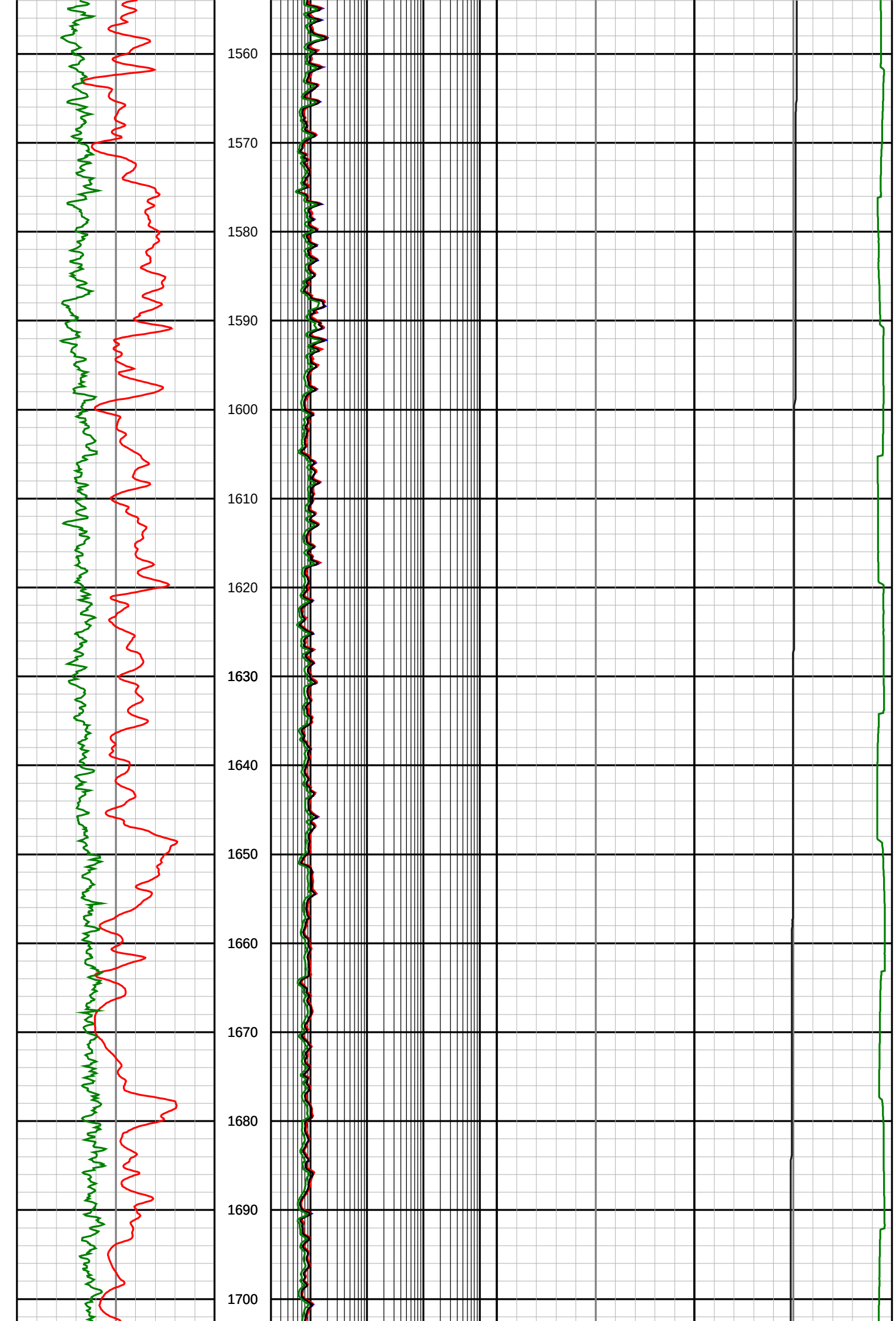
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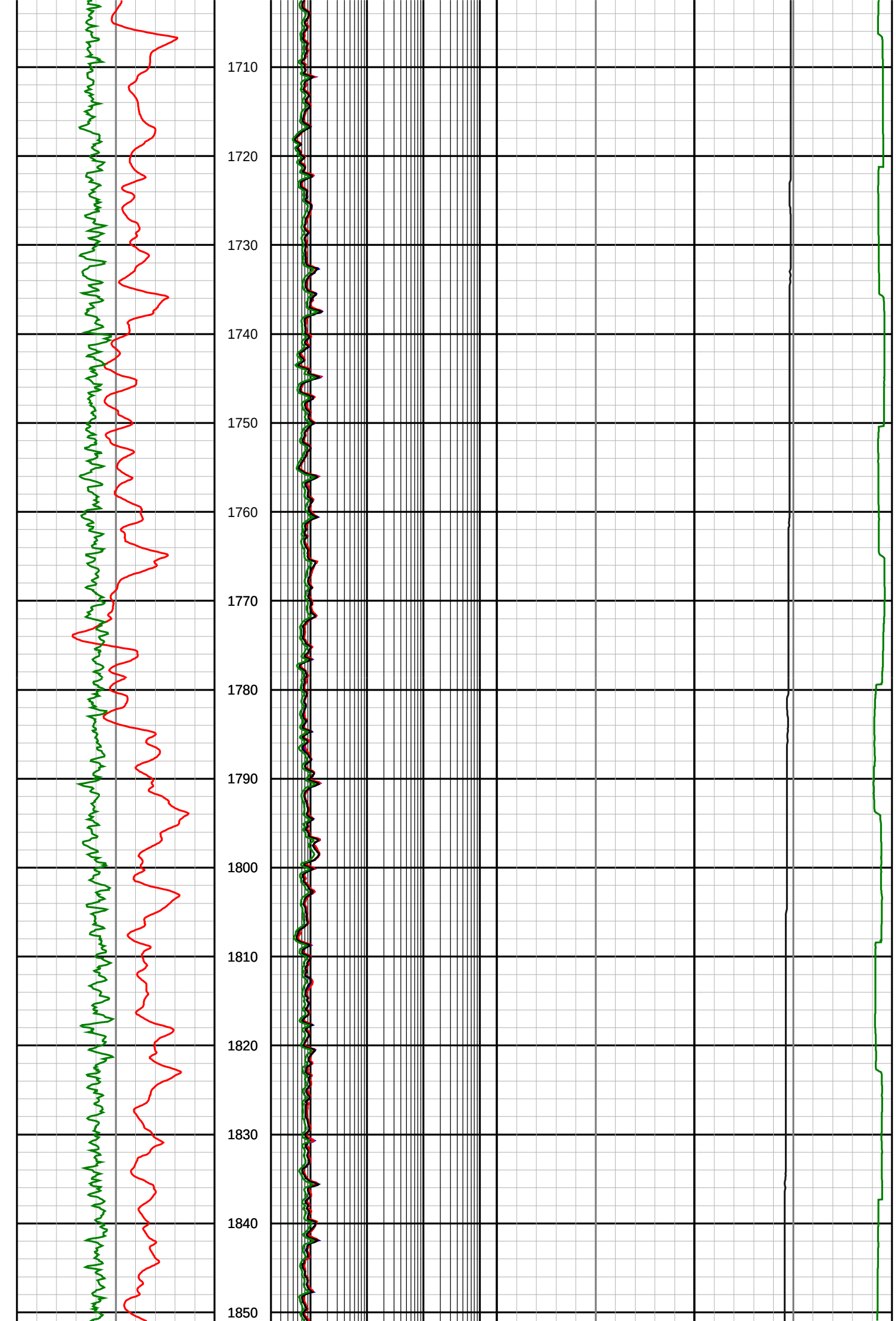
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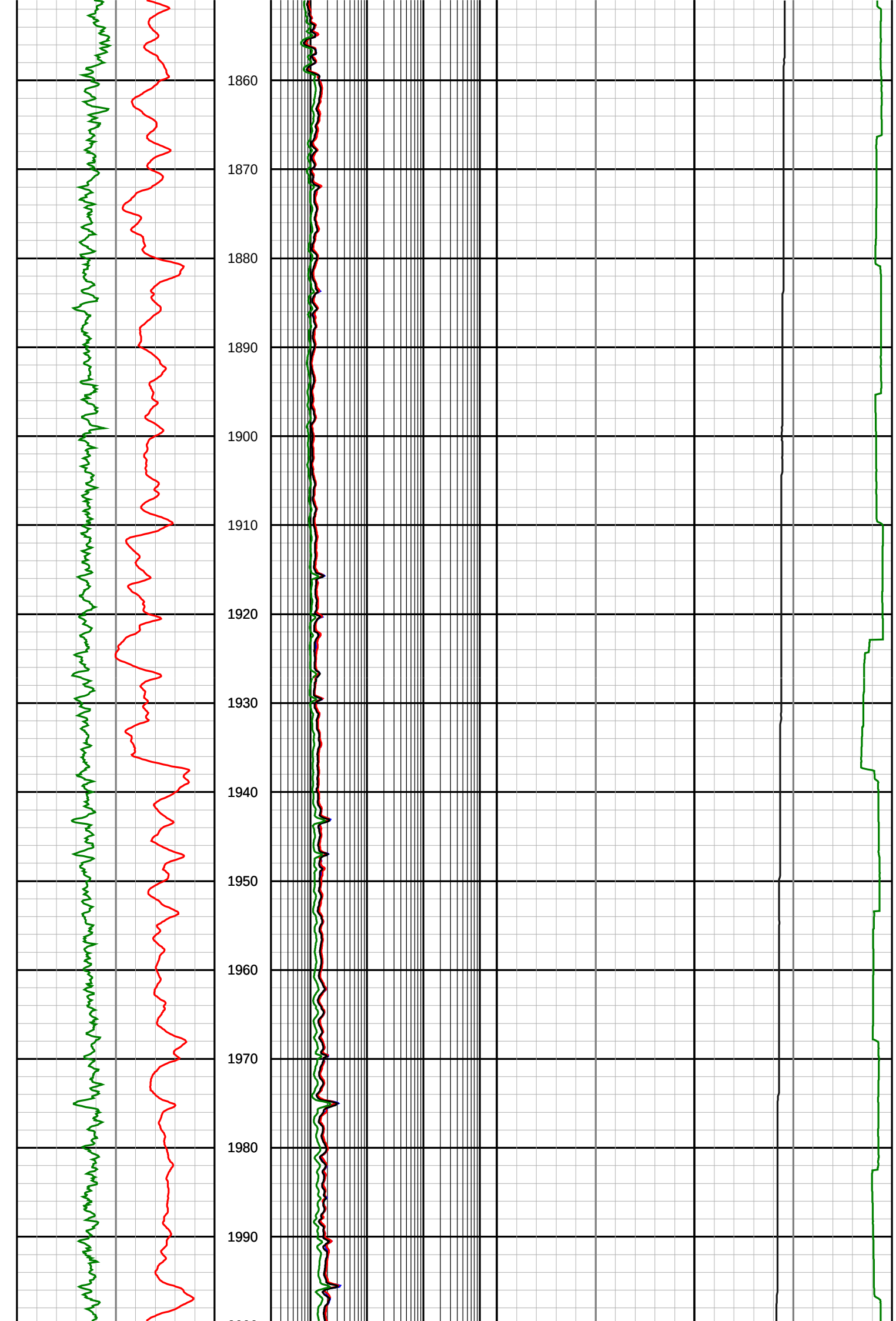
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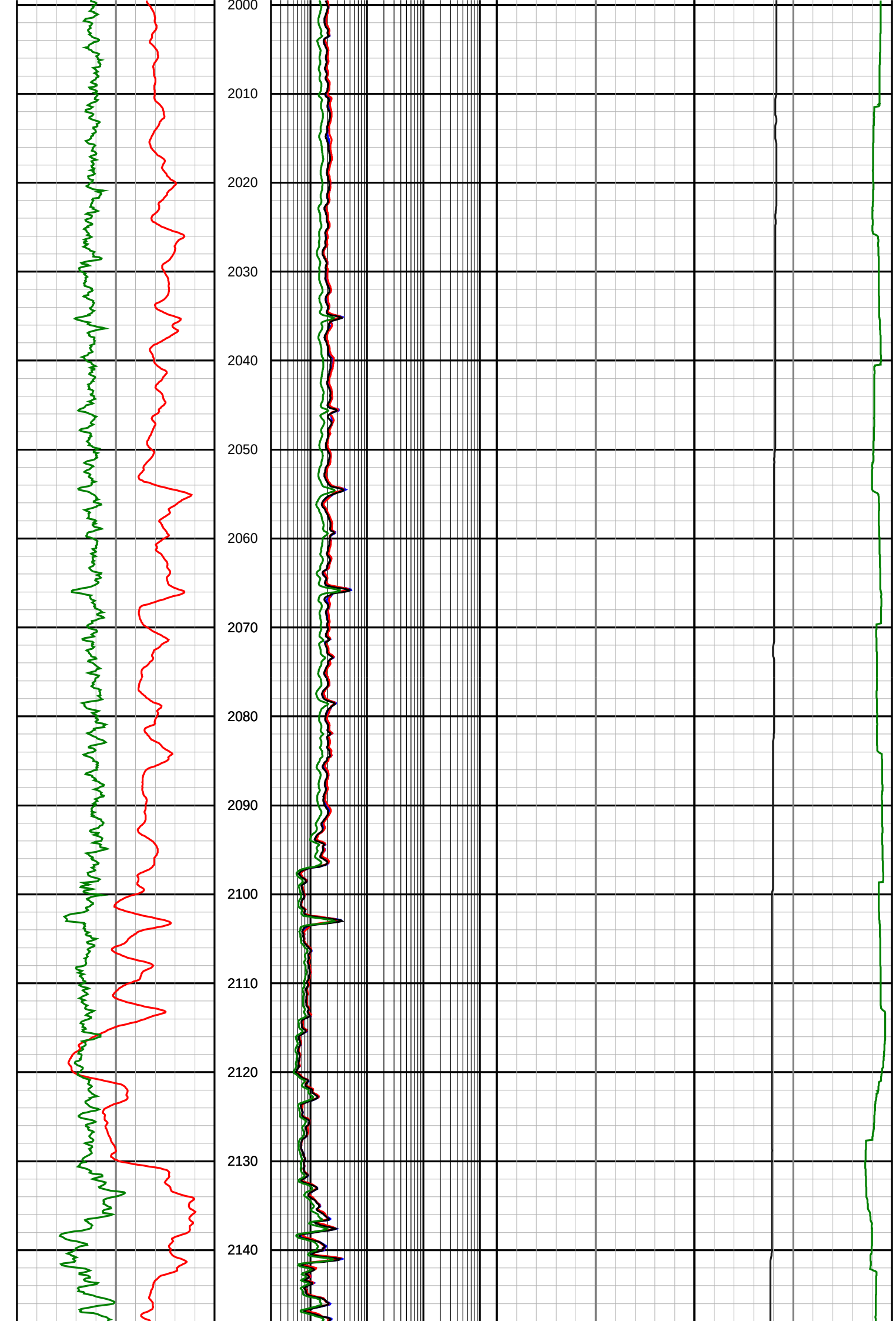
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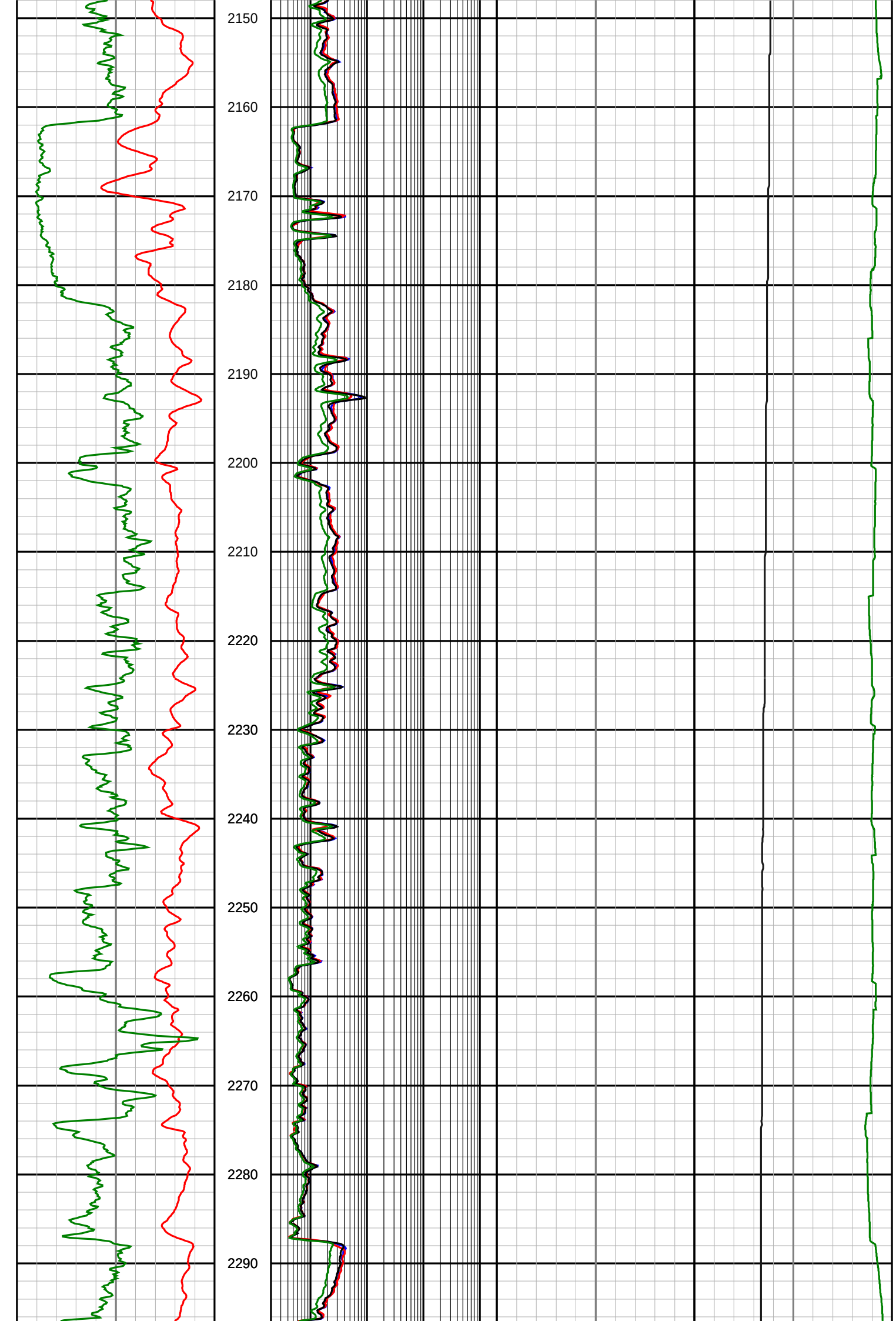
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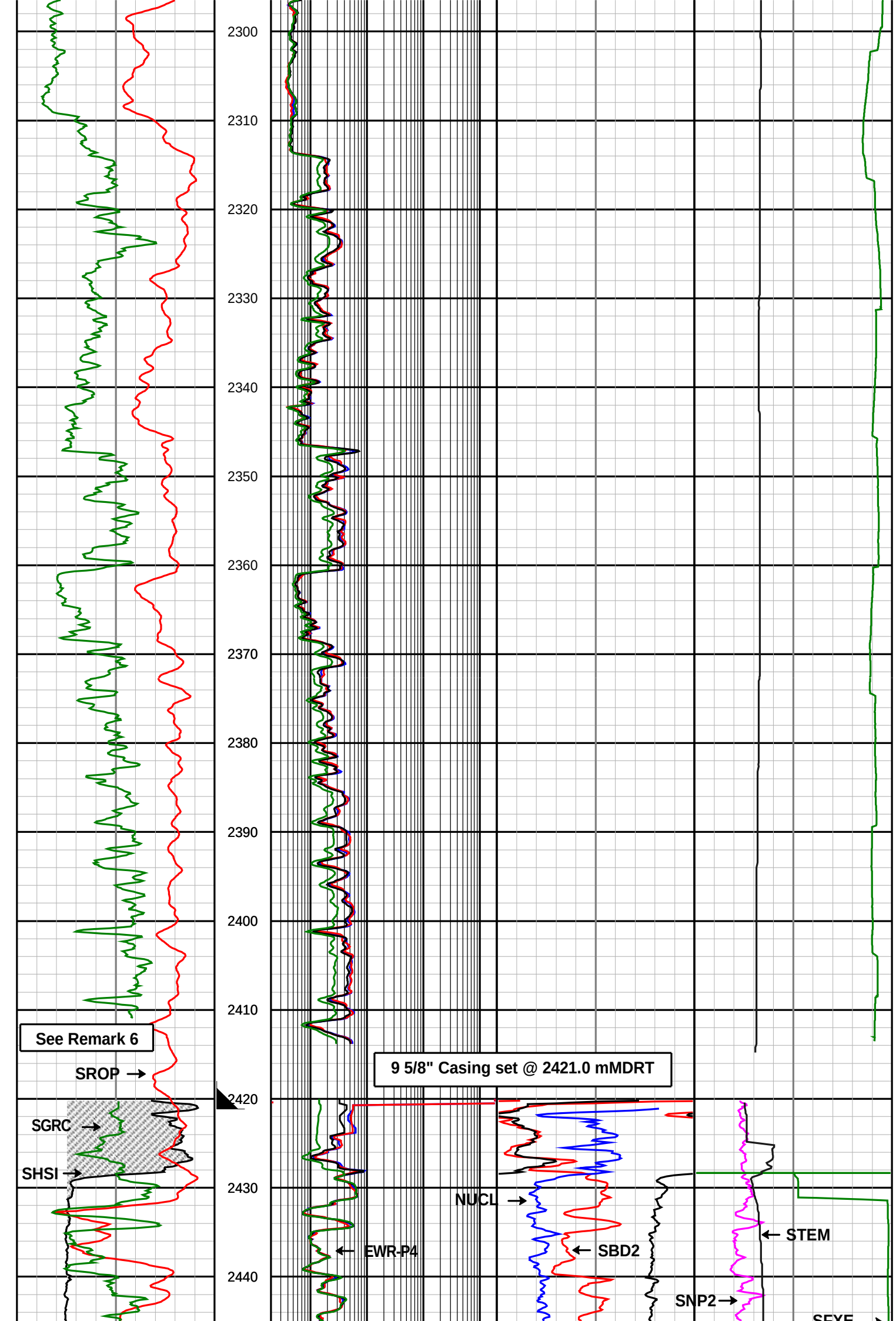
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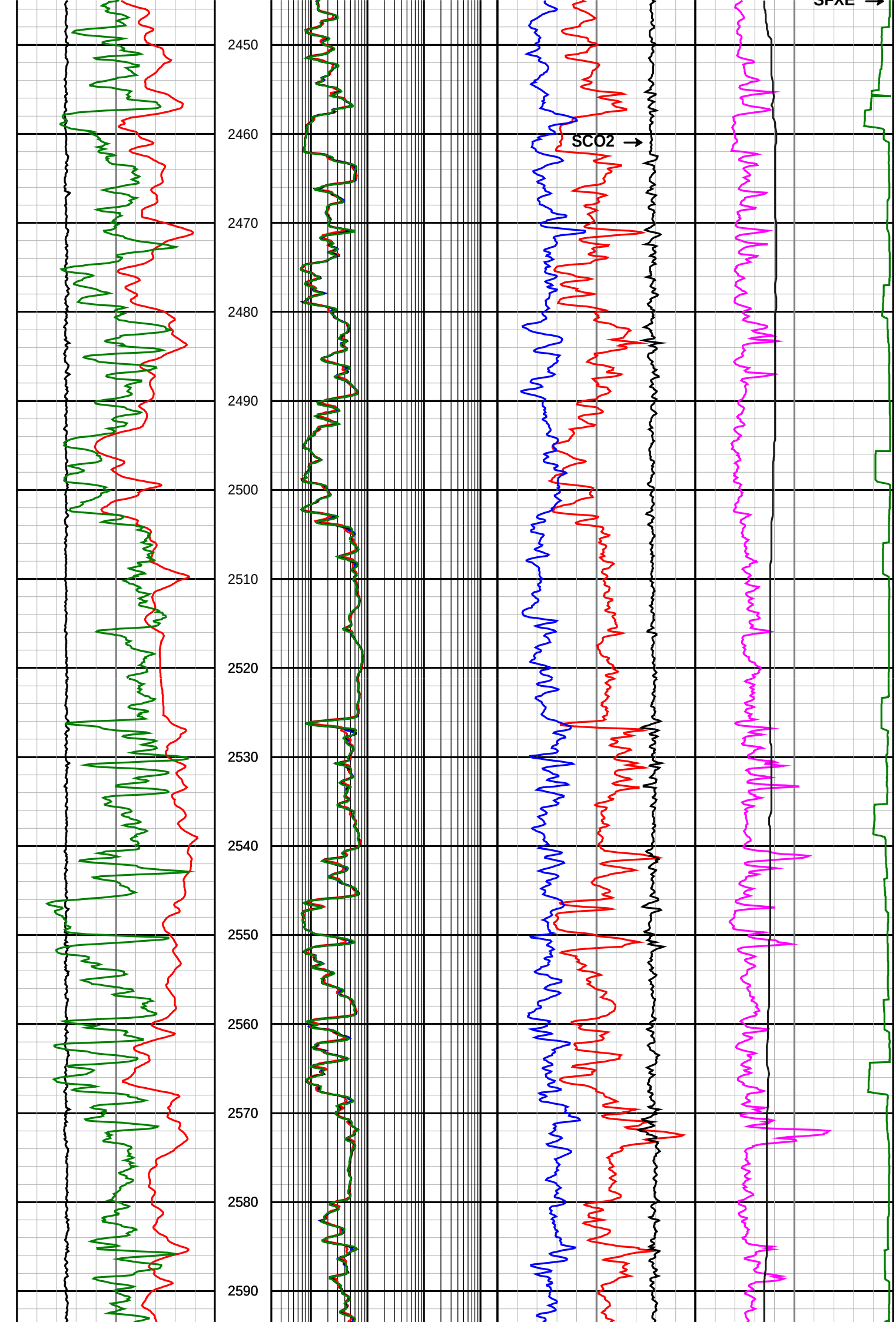
See Remark 6
SROP
SGRC
SHSI
9 5/8" Casing set @ 2421.0 mMDRT
EWR-P4
NUCL
SBD2
STEM
SNP2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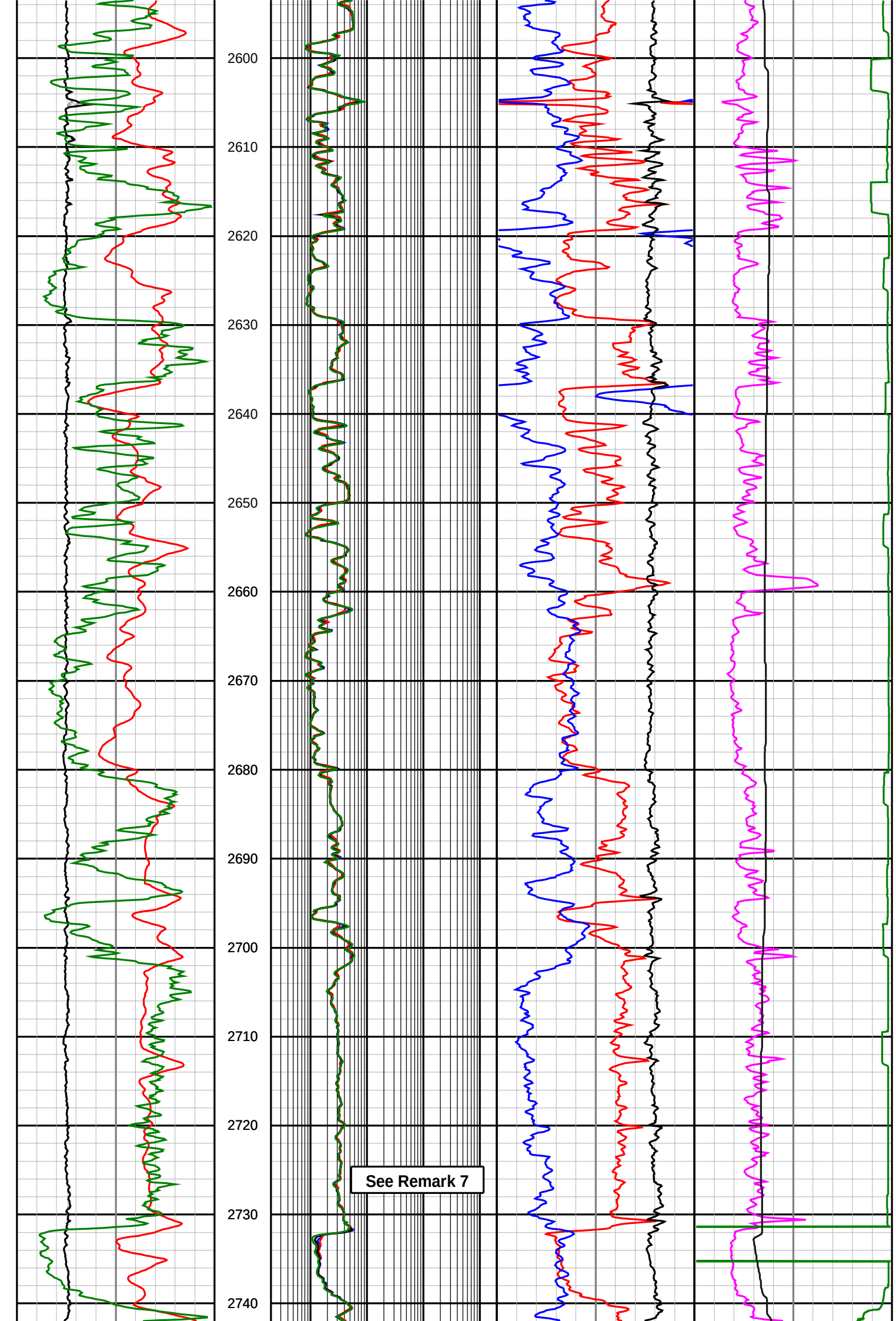
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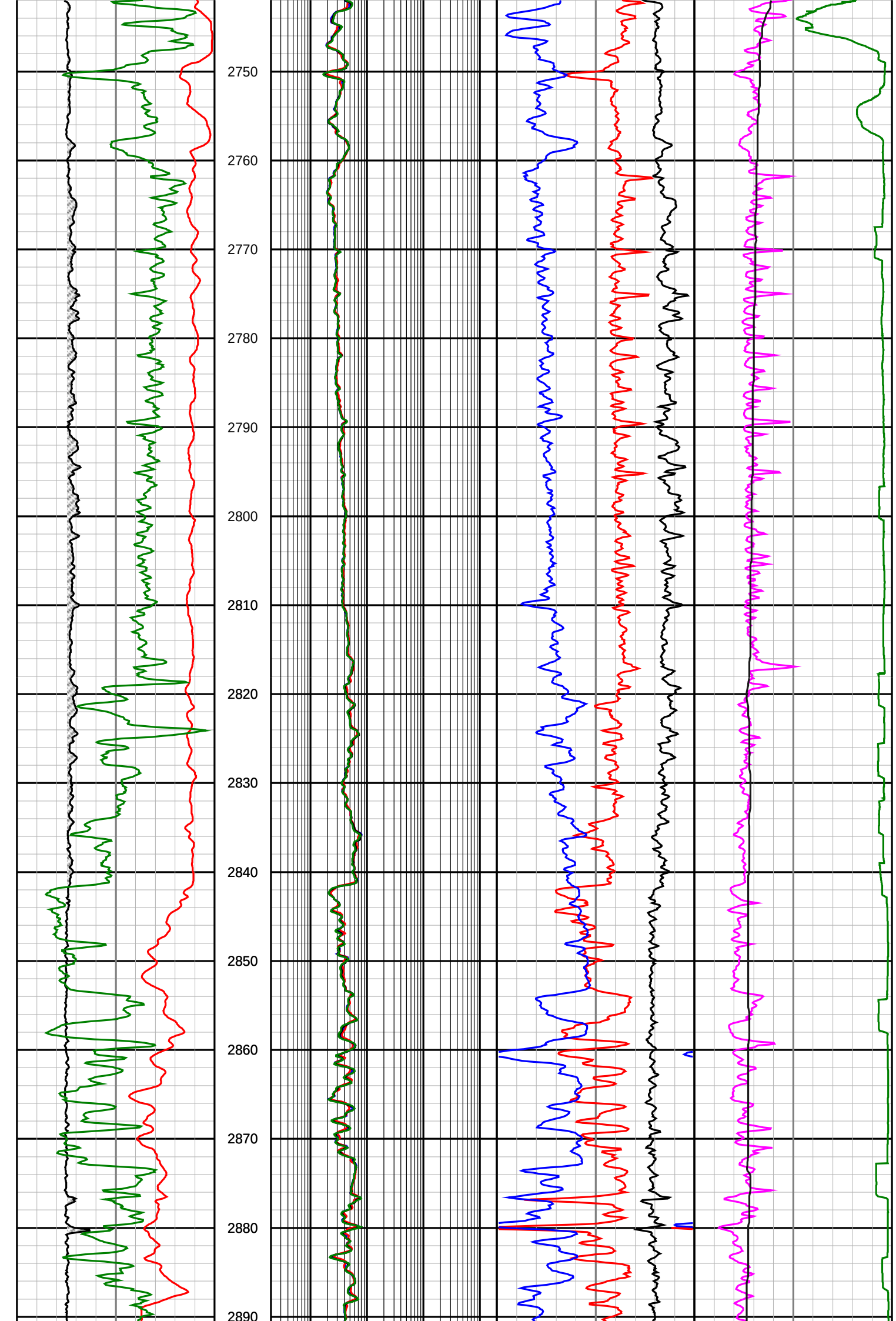
See Remark 7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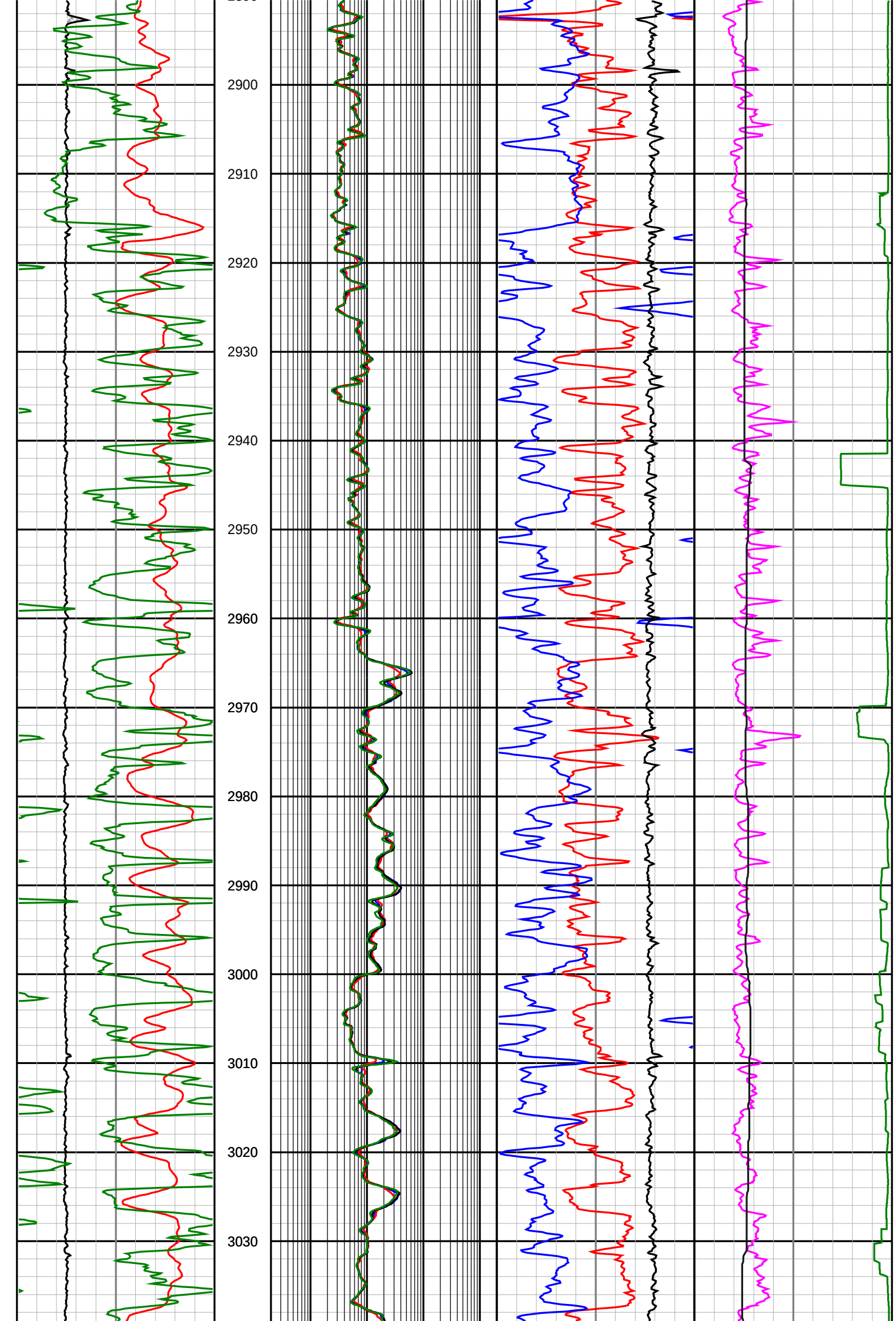
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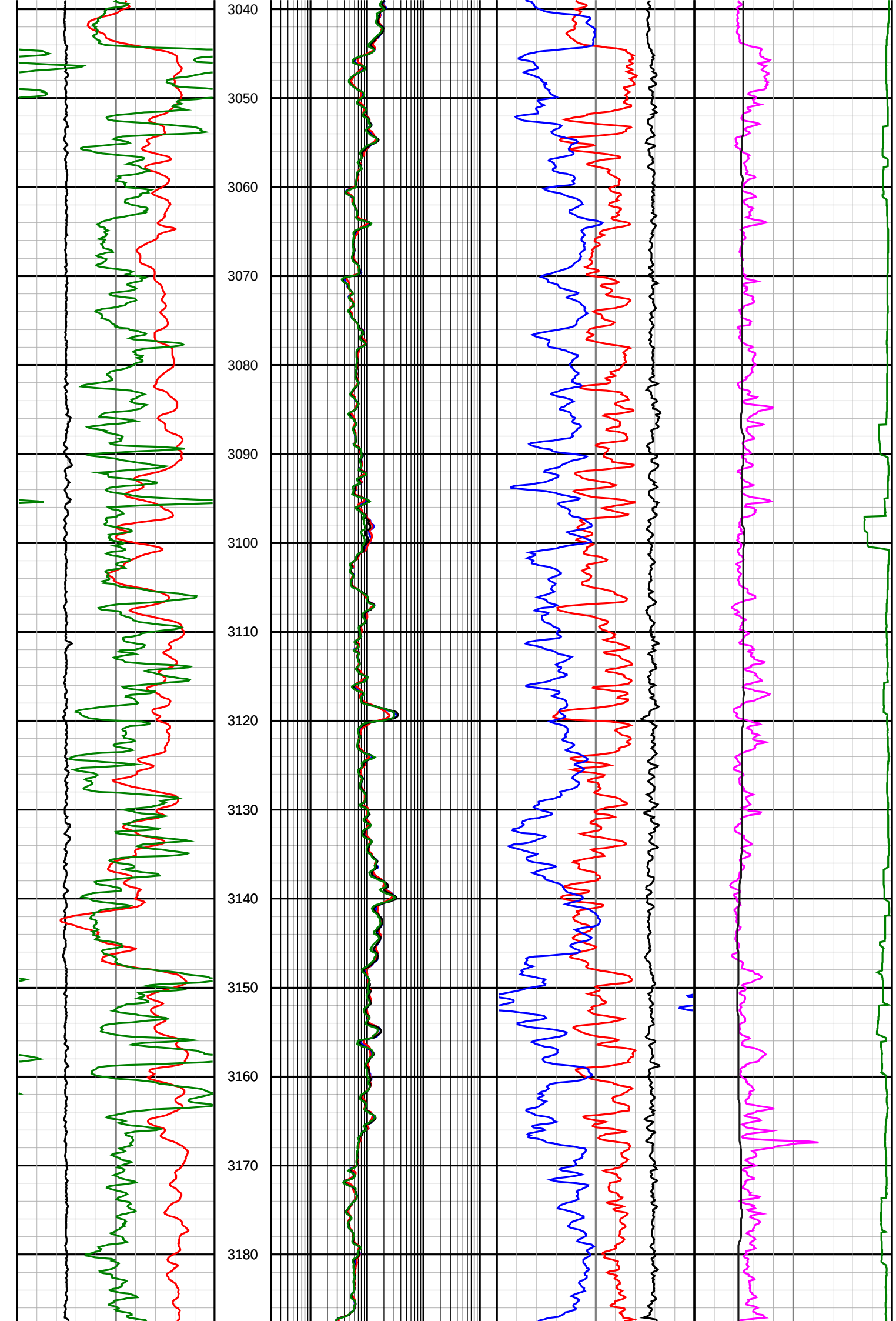
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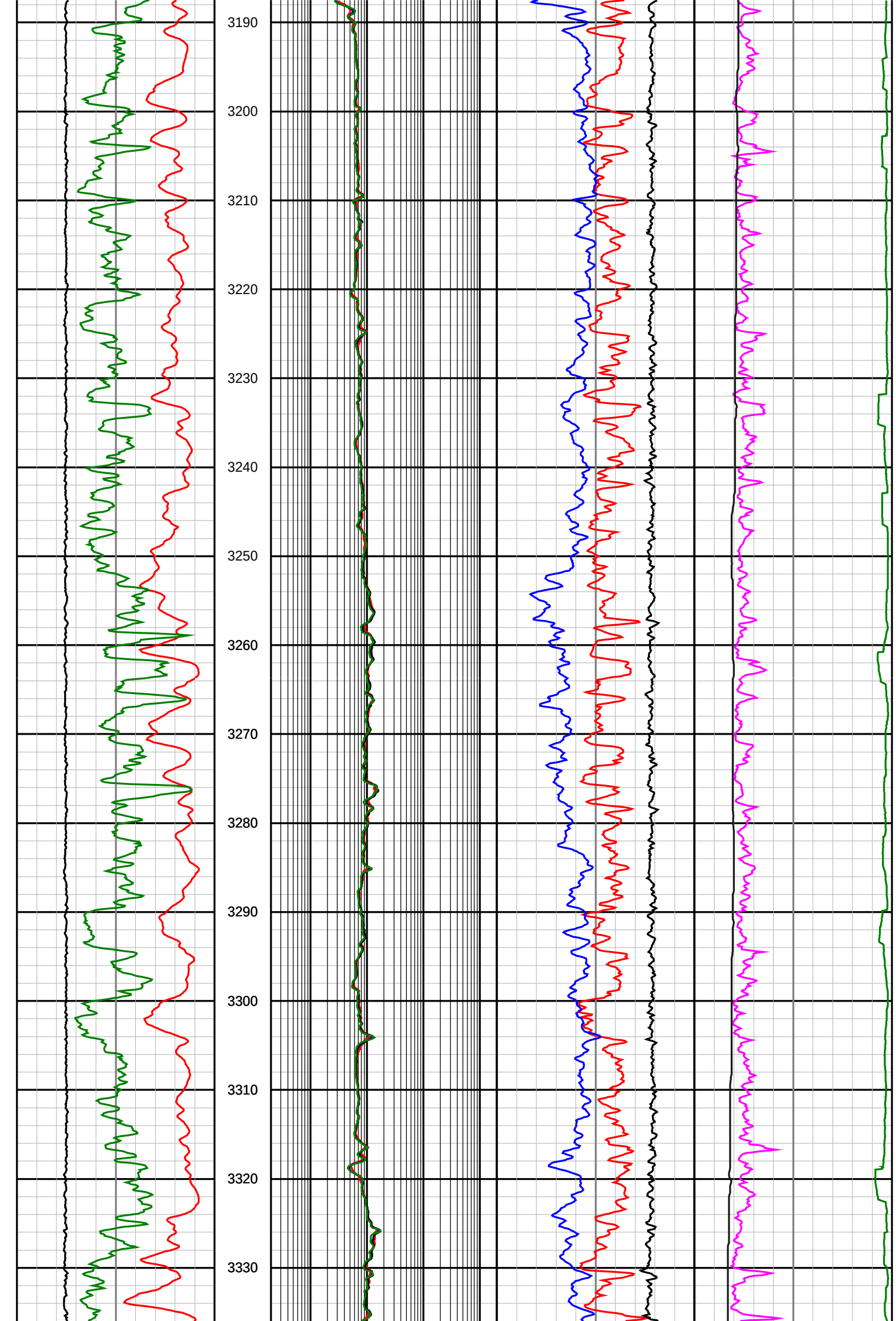
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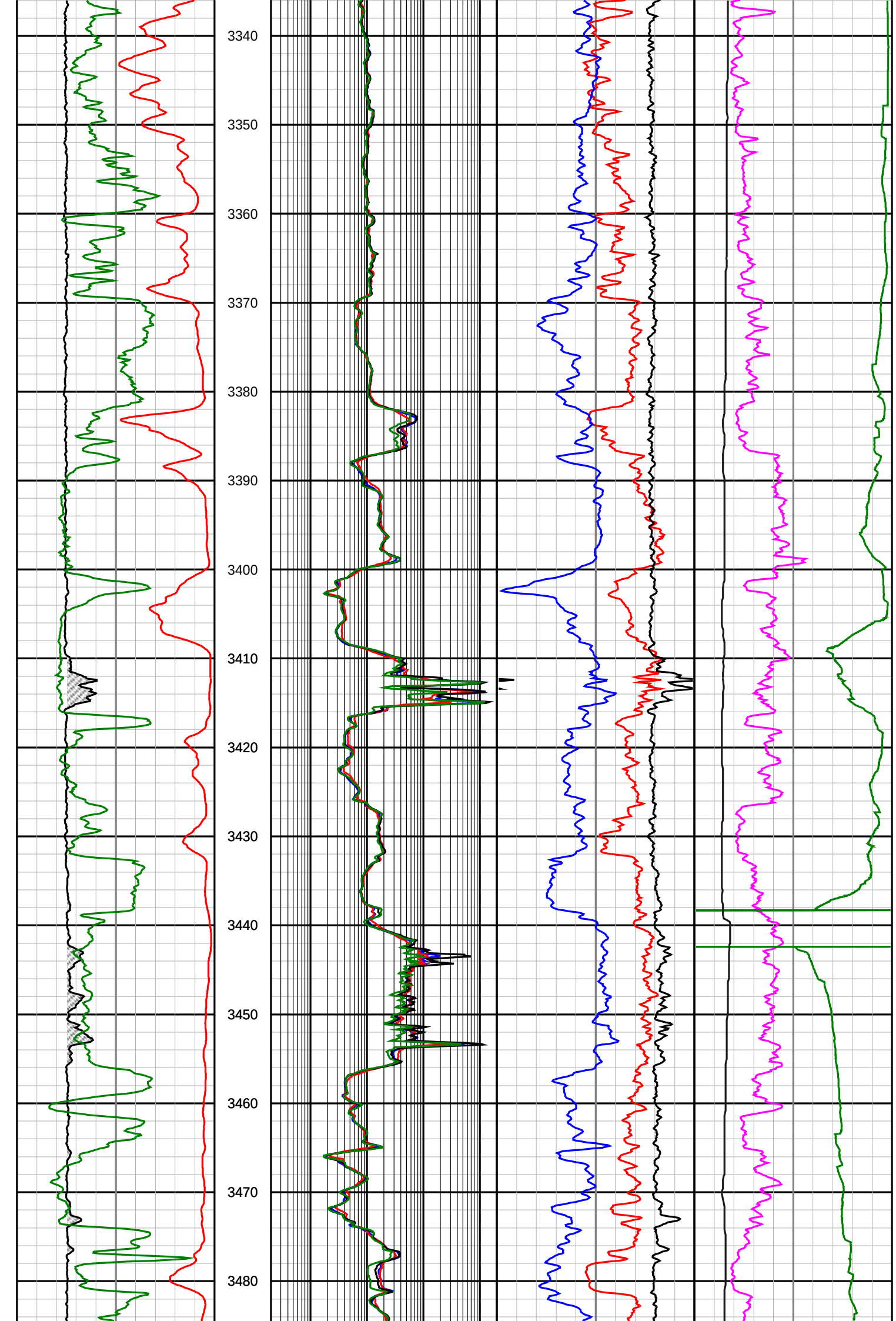
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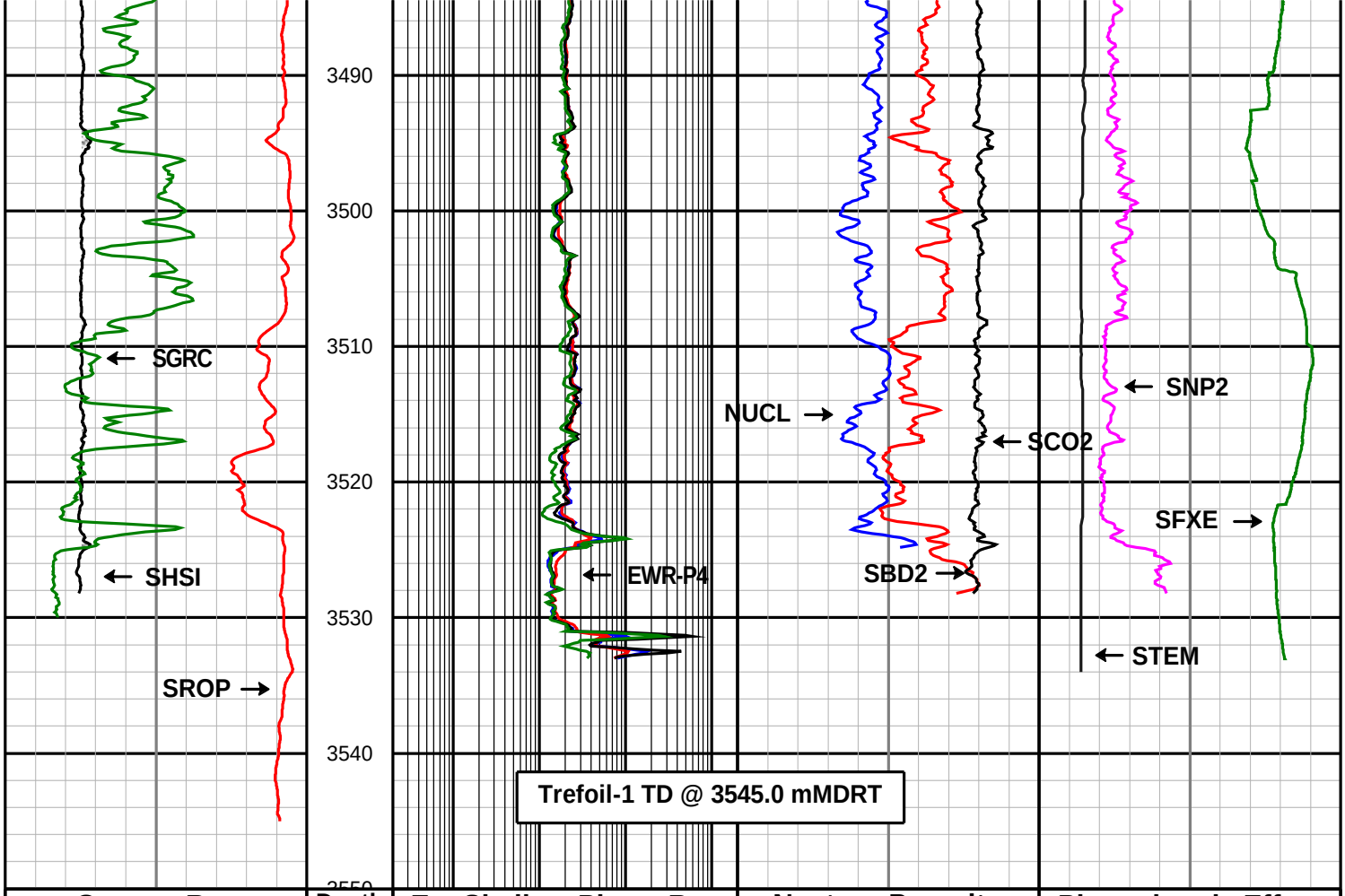


Gamma Ray (SGRC)	Depth	Ext Shallow Phase Res (SEXP)	Neutron Porosity (NUCL)	Photoelectric Effect (SNP2)
0 api 200	MD 1:500	0.2 ohmm 2000	0.45 v/v -0.15	0 b/e 10
Rate of Penetration (SROP)		**Shallow Phase Res (SESP)**	**Density (SBD2)**	**Temperature (STEM)**
100 m/hr 0		0.2 ohmm 2000	1.95 g/cc 2.95	100 °C 0
Hole Size Indictor (SHSI)		**Medium Phase Res (SEMP)**	**Standoff Correction (SCO2)**	**Form Exp Time (SFXE)**
6 in 16		0.2 ohmm 2000	-0.75 g/cc 0.25	10 hr 0
		Deep Phase Res (SEDP)		
		0.2 ohmm 2000		

DIRECTIONAL SURVEY REPORT

Origin Energy Resources
Trefoil-1
Exploration
Tasmania
Australia
AU-FE-0003279677
Final survey is projected to TD.

Measured Depth (metres)	*Inclination (degrees)*	*Direction (degrees)*	*Vertical Depth (metres)*	*Latitude (metres)*	*Departure (metres)*	*Vertical Section (metres)*	*Dogleg (deg/30m)*

Trefoil-1

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
0.000	0.00	0.00	0.000	0.000 N	0.000 E	0.000	TIE-IN
14.930	0.28	227.56	14.930	0.025 S	0.027 W	-0.033	0.56
157.930	0.24	111.58	157.929	0.371 S	0.006 W	-0.110	0.09
242.920	0.31	216.07	242.919	0.619 S	0.026 E	-0.148	0.15
271.900	0.26	284.04	271.898	0.665 S	0.084 W	-0.267	0.33
300.920	0.17	201.71	300.918	0.688 S	0.165 W	-0.351	0.30
330.000	0.41	230.28	329.998	0.794 S	0.261 W	-0.473	0.29
359.060	0.41	266.92	359.057	0.867 S	0.446 W	-0.671	0.27
388.110	0.22	245.94	388.107	0.896 S	0.602 W	-0.828	0.22
417.140	0.34	274.84	417.136	0.912 S	0.741 W	-0.966	0.19
446.140	0.37	235.59	446.136	0.958 S	0.905 W	-1.137	0.25
475.160	0.40	278.80	475.155	0.995 S	1.083 W	-1.318	0.30
504.180	0.41	282.84	504.174	0.957 S	1.285 W	-1.501	0.03
533.180	0.31	240.27	533.174	0.973 S	1.454 W	-1.668	0.29
562.180	0.18	291.63	562.174	0.994 S	1.565 W	-1.781	0.25
591.140	0.22	204.81	591.134	1.027 S	1.632 W	-1.854	0.29
641.650	0.35	259.13	641.643	1.144 S	1.824 W	-2.070	0.17
669.830	0.22	257.56	669.823	1.172 S	1.961 W	-2.210	0.14
698.860	0.26	268.76	698.852	1.185 S	2.080 W	-2.328	0.06
728.560	0.19	269.22	728.552	1.187 S	2.194 W	-2.438	0.07
756.580	0.19	307.61	756.572	1.159 S	2.276 W	-2.510	0.13
786.170	0.16	314.47	786.162	1.100 S	2.346 W	-2.559	0.04
815.110	0.10	284.44	815.102	1.065 S	2.399 W	-2.601	0.09
844.160	0.12	314.77	844.152	1.038 S	2.444 W	-2.637	0.06
872.840	0.12	295.00	872.832	1.005 S	2.491 W	-2.673	0.04
902.160	0.18	266.56	902.152	0.995 S	2.564 W	-2.740	0.10
931.240	0.18	236.49	931.231	1.023 S	2.646 W	-2.827	0.10
960.310	0.14	220.66	960.301	1.074 S	2.707 W	-2.899	0.06
989.400	0.11	280.20	989.391	1.096 S	2.758 W	-2.954	0.13
1018.080	0.10	263.65	1018.071	1.093 S	2.811 W	-3.005	0.03
1046.970	0.04	218.89	1046.961	1.104 S	2.843 W	-3.038	0.08
1076.060	0.04	210.61	1076.051	1.121 S	2.855 W	-3.054	0.01
1105.000	0.11	202.29	1104.991	1.155 S	2.870 W	-3.079	0.07
1134.080	0.11	229.21	1134.071	1.198 S	2.901 W	-3.121	0.05
1163.210	0.04	91.07	1163.201	1.216 S	2.913 W	-3.136	0.14
1192.060	0.04	217.57	1192.051	1.225 S	2.910 W	-3.136	0.08
1221.260	0.04	44.16	1221.251	1.225 S	2.909 W	-3.135	0.09
1250.020	0.04	130.95	1250.011	1.224 S	2.894 W	-3.121	0.06
1278.990	0.04	15.22	1278.981	1.221 S	2.884 W	-3.110	0.07
1308.180	0.04	135.36	1308.171	1.220 S	2.874 W	-3.100	0.07
1337.260	0.10	149.36	1337.251	1.248 S	2.854 W	-3.089	0.06
1366.260	0.10	170.95	1366.251	1.295 S	2.837 W	-3.086	0.04
1395.170	0.09	144.86	1395.161	1.339 S	2.820 W	-3.082	0.05
1424.330	0.06	136.27	1424.321	1.370 S	2.795 W	-3.066	0.03
1453.350	0.05	88.56	1453.341	1.381 S	2.773 W	-3.048	0.05
1482.620	0.05	114.69	1482.611	1.386 S	2.750 W	-3.028	0.02
1511.650	0.13	148.50	1511.641	1.418 S	2.723 W	-3.011	0.09
1540.650	0.13	153.08	1540.641	1.473 S	2.692 W	-2.997	0.01
1569.660	0.07	139.36	1569.651	1.514 S	2.667 W	-2.984	0.07
1598.460	0.16	142.24	1598.451	1.559 S	2.631 W	-2.962	0.10
1656.390	0.18	132.60	1656.381	1.683 S	2.516 W	-2.886	0.02
1685.500	0.15	157.44	1685.490	1.750 S	2.468 W	-2.859	0.08
1714.590	0.02	350.18	1714.580	1.780 S	2.454 W	-2.854	0.18
1743.680	0.15	253.46	1743.670	1.785 S	2.491 W	-2.891	0.16
1772.720	0.09	271.90	1772.710	1.795 S	2.549 W	-2.949	0.07
1801.660	0.02	223.84	1801.650	1.798 S	2.574 W	-2.973	0.08
1830.560	0.15	316.18	1830.550	1.774 S	2.603 W	-2.995	0.16
1859.470	0.08	329.16	1859.460	1.729 S	2.640 W	-3.017	0.07
1888.510	0.08	300.76	1888.500	1.701 S	2.668 W	-3.037	0.04
1917.610	0.11	284.00	1917.600	1.683 S	2.713 W	-3.075	0.04
1946.670	0.01	141.29	1946.660	1.678 S	2.739 W	-3.099	0.12
1975.720	0.11	344.70	1975.710	1.654 S	2.744 W	-3.097	0.12
2004.820	0.07	333.35	2004.810	1.613 S	2.759 W	-3.100	0.04
2033.840	0.06	12.54	2033.830	1.581 S	2.764 W	-3.096	0.05
2062.960	0.10	354.28	2062.950	1.541 S	2.763 W	-3.084	0.05

HALLIBURTON

Trefoil-1

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
2091.930	0.09	5.90	2091.920	1.493 S	2.763 W	-3.070	0.02
2121.130	0.14	11.21	2121.120	1.436 S	2.754 W	-3.046	0.05
2150.140	0.09	37.57	2150.130	1.383 S	2.733 W	-3.010	0.07
2179.320	0.16	36.77	2179.310	1.332 S	2.694 W	-2.959	0.06
2208.290	0.19	58.16	2208.280	1.275 S	2.629 W	-2.880	0.08
2237.390	0.30	45.52	2237.379	1.196 S	2.534 W	-2.767	0.12
2266.430	0.38	58.15	2266.419	1.093 S	2.399 W	-2.608	0.12
2324.500	0.30	41.24	2324.488	0.878 S	2.136 W	-2.296	0.07
2353.510	0.43	63.46	2353.497	0.773 S	1.990 W	-2.126	0.20
2382.510	0.31	63.76	2382.497	0.690 S	1.823 W	-1.943	0.12
2493.190	0.42	64.03	2493.174	0.382 S	1.192 W	-1.251	0.03
2522.350	0.43	64.82	2522.334	0.289 S	0.998 W	-1.039	0.01
2551.470	0.45	74.18	2551.453	0.211 S	0.789 W	-0.817	0.08
2580.560	0.45	70.93	2580.542	0.142 S	0.571 W	-0.588	0.03
2609.650	0.60	70.66	2609.631	0.055 S	0.320 W	-0.322	0.15
2638.470	0.67	69.43	2638.449	0.054 N	0.021 W	-0.005	0.08
2696.630	0.54	66.62	2696.605	0.282 N	0.548 E	0.605	0.07
2725.430	0.56	70.87	2725.404	0.382 N	0.806 E	0.881	0.05
2754.410	0.42	60.49	2754.383	0.481 N	1.034 E	1.127	0.17
2783.570	0.34	64.20	2783.543	0.572 N	1.207 E	1.319	0.08
2811.730	0.34	63.34	2811.702	0.647 N	1.357 E	1.484	0.01
2841.410	0.44	69.81	2841.381	0.726 N	1.544 E	1.685	0.11
2899.470	0.28	70.57	2899.440	0.850 N	1.888 E	2.050	0.08
2928.590	0.38	81.57	2928.560	0.888 N	2.050 E	2.216	0.12
2957.610	0.45	75.30	2957.579	0.931 N	2.254 E	2.425	0.09
2983.900	0.39	63.39	2983.868	0.998 N	2.435 E	2.617	0.12
3015.370	0.34	80.22	3015.338	1.062 N	2.625 E	2.817	0.11
3044.330	0.38	92.33	3044.297	1.073 N	2.807 E	2.995	0.09
3069.850	0.38	83.94	3069.816	1.078 N	2.977 E	3.159	0.07
3102.610	0.31	89.57	3102.576	1.090 N	3.175 E	3.353	0.07
3131.710	0.25	91.08	3131.675	1.090 N	3.319 E	3.492	0.06
3160.750	0.32	87.86	3160.715	1.092 N	3.466 E	3.633	0.07
3189.890	0.28	92.69	3189.855	1.091 N	3.618 E	3.779	0.05
3218.900	0.33	85.93	3218.864	1.094 N	3.772 E	3.927	0.07
3247.890	0.28	78.16	3247.854	1.114 N	3.924 E	4.079	0.07
3276.890	0.41	87.73	3276.853	1.133 N	4.096 E	4.249	0.15
3302.140	0.39	69.02	3302.103	1.167 N	4.266 E	4.422	0.16
3334.870	0.45	62.58	3334.832	1.266 N	4.484 E	4.659	0.07
3363.860	0.53	53.76	3363.821	1.397 N	4.691 E	4.895	0.11
3421.000	0.73	77.25	3420.958	1.632 N	5.258 E	5.505	0.17
3478.230	0.52	74.50	3478.184	1.782 N	5.866 E	6.130	0.11
3508.660	0.45	83.89	3508.613	1.832 N	6.118 E	6.387	0.11
3545.000	0.45	83.89	3544.952	1.863 N	6.402 E	6.668	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 CLOSURE OF 73.78 DEGREES (GRID)
A TOTAL CORRECTION OF 11.51 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 3545.000 METRES
IS 6.668 METRES ALONG 73.78 DEGREES (GRID)

MWD RUN 100 - BHA

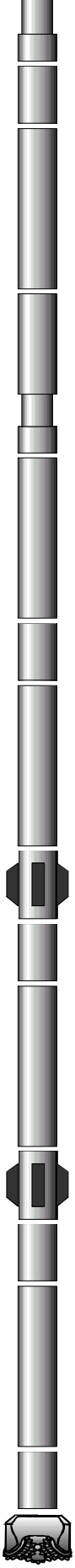
MWD RUN 100 - MWD

Component Length (m)

HWDP

84.290

Sensor Measure Point Distance To Bit (m)



Sub	1.090
Drill Collar	19.020
Jar	9.700
Drill Collar	28.580
Sub	.800
Drill Collar	37.710
Stabilizer	2.120
Sub	3.110
Drill Collar	8.380
Stabilizer	1.920
Sub	.850
Motor	8.540
Sub	.310
Bit	.400

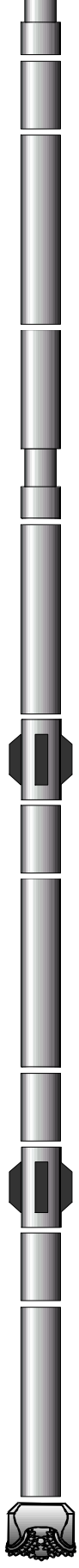
MWD RUN 200 - BHA

Positive Pulser	
PCD	20.490

MWD RUN 200 - MWD

	Component Length (m)
HWDP	84.290

	Sensor Measure Point Distance To Bit (m)
Positive Pulser	



	Component Length (m)
Sub	1.090
Drill Collar	19.020
Jar	9.700
Drill Collar	57.060
Stabilizer	2.240
Sub	3.110
MWD	9.820
Sub	.740
Stabilizer	1.710
Sub	1.200
Motor	8.520
Bit	.250

MWD RUN 300 - BHA

	Sensor Measure Point Distance To Bit (m)
TM	
PM	20.830
HCIM	
DGR	17.460
EWR-P4	14.470

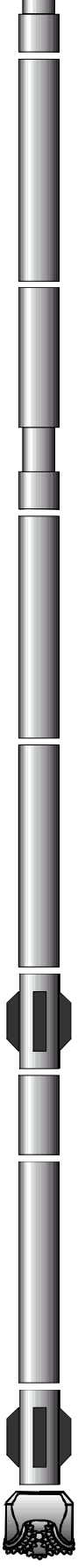
MWD RUN 300 - MWD

	Component Length (m)
HWDP	84.290

	Sensor Measure Point Distance To Bit (m)
Positive Pulser	

MWD RUN 400 - BHA

	Component Length (m)
HWDP	84.290
Drill Collar	18.640
Jar	9.350
Drill Collar	74.870
Drill Collar	8.640
Stabilizer	1.310
Sub	3.060
MWD	15.890
Stabilizer	1.290
Bit	.310



MWD RUN 400 - MWD

	Sensor Measure Point Distance To Bit (m)
Positive Pulser	
TM	
PM	16.070
HCIM	
CNP	11.730
SLD	8.460
DDS	0
DGR	6.650
EWR-P4	3.650

Drill Collar	18.640
Jar	9.350
Drill Collar	74.870
Drill Collar	8.640
Stabilizer	1.310
Sub	3.060
MWD	15.890
Stabilizer	1.290
Bit	.310

MWD RUN 500 - BHA

TM	
PM	16.070
HCIM	
CNP	11.730
SLD	8.460
DDS	0
DGR	6.650
EWR-P4	3.650

MWD RUN 500 - MWD

	Component Length (m)
Jar	9.350

	Sensor Measure Point Distance To Bit (m)
Positive Pulser	

Drill Collar	103.140
Drill Collar	8.640
Stabilizer	1.320
Sub	3.160
MWD	15.890
Sub	.770
Stabilizer	1.310
Motor	7.680
Bit	.240

TM	
PM	24.470
HCIM	
CNP	20.130
SLD	16.860
DDS	0
DGR	15.050
EWR-P4	12.050

Trefoil-1 Run 200

Realtime/Recorded Comparison Log

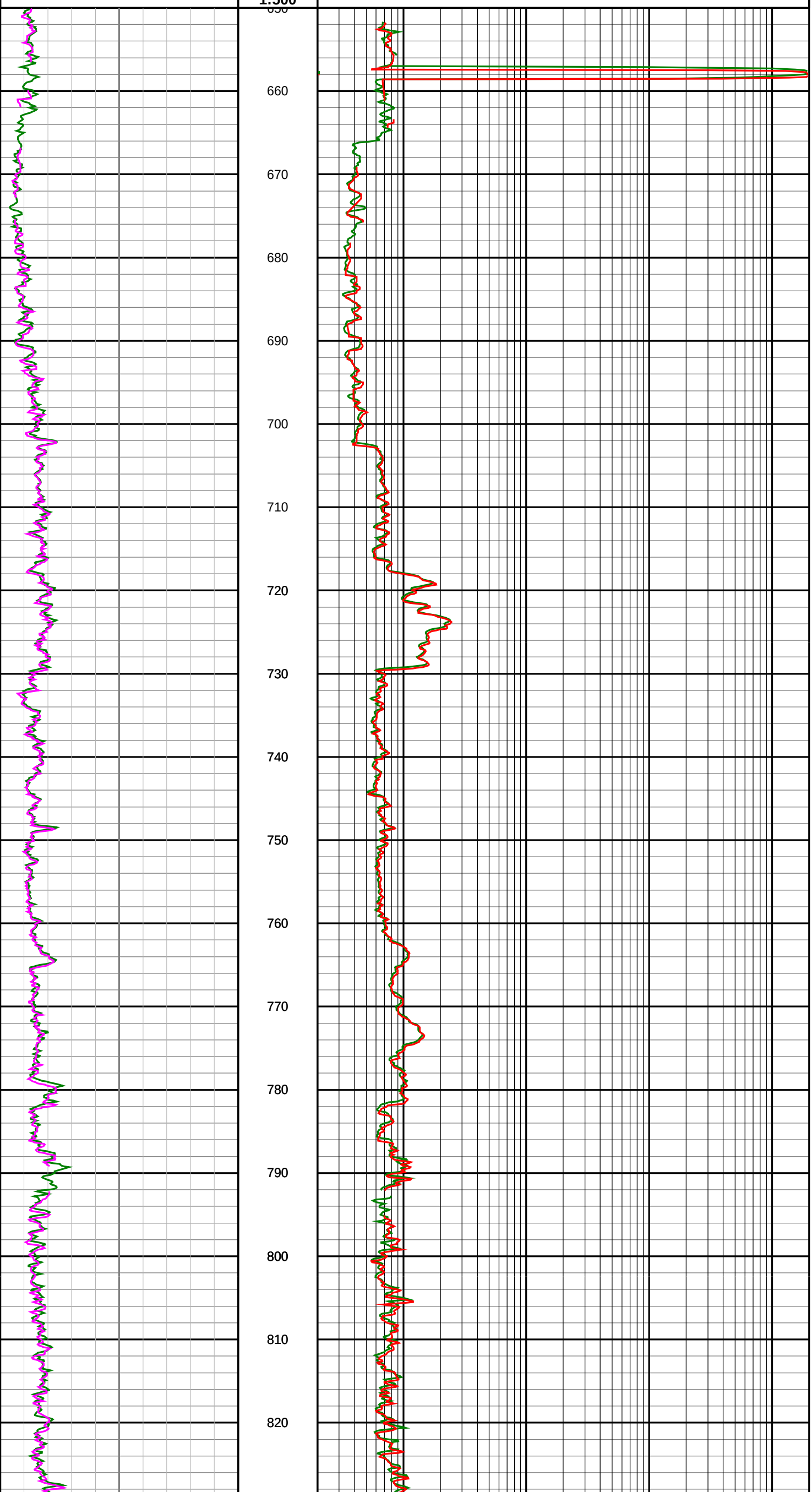
Gamma Ray RT
api
0 200

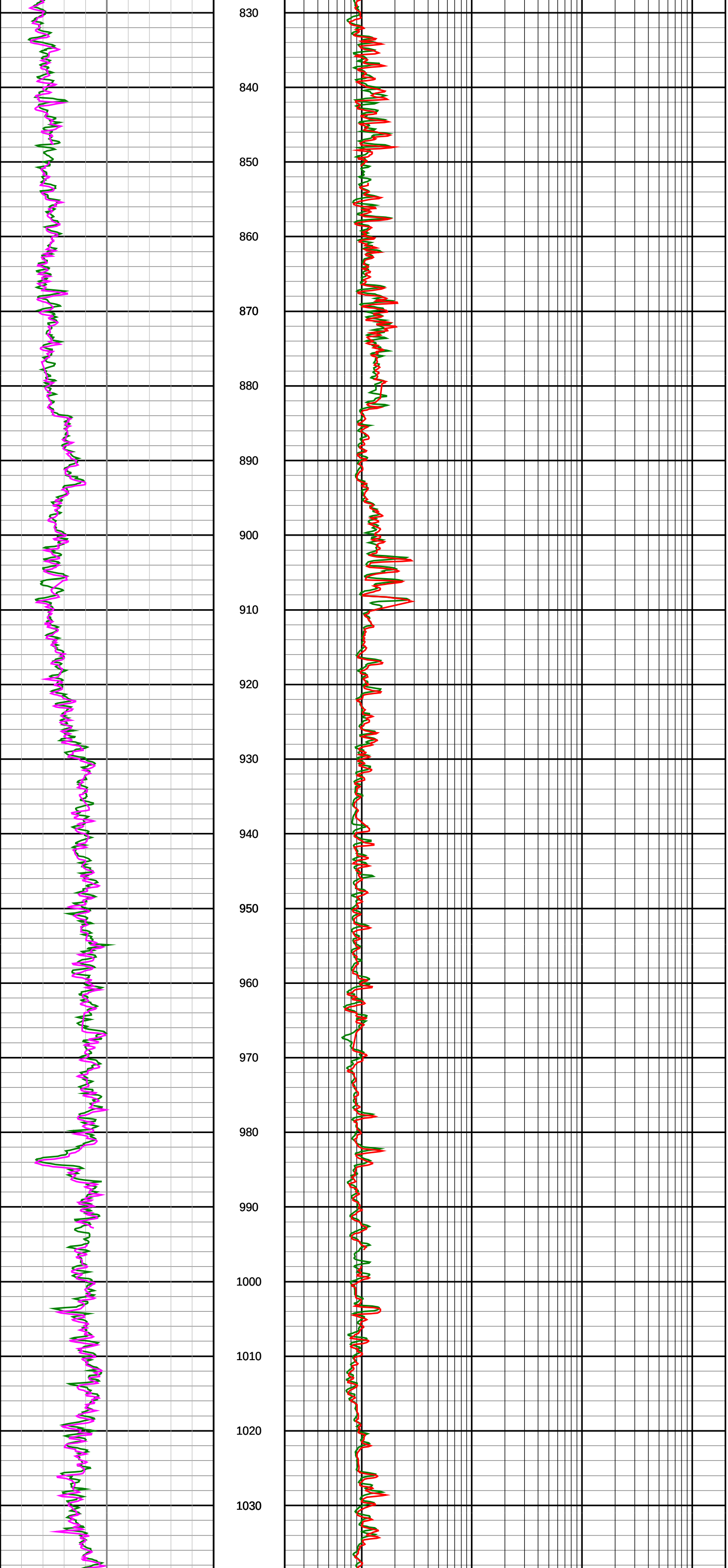
Deep Phase Res RT
ohm-metre
0.2 2000

Gamma Ray
api
0 200

DEPTH
MD
1:500

Deep Phase Res
ohm-metre
0.2 2000

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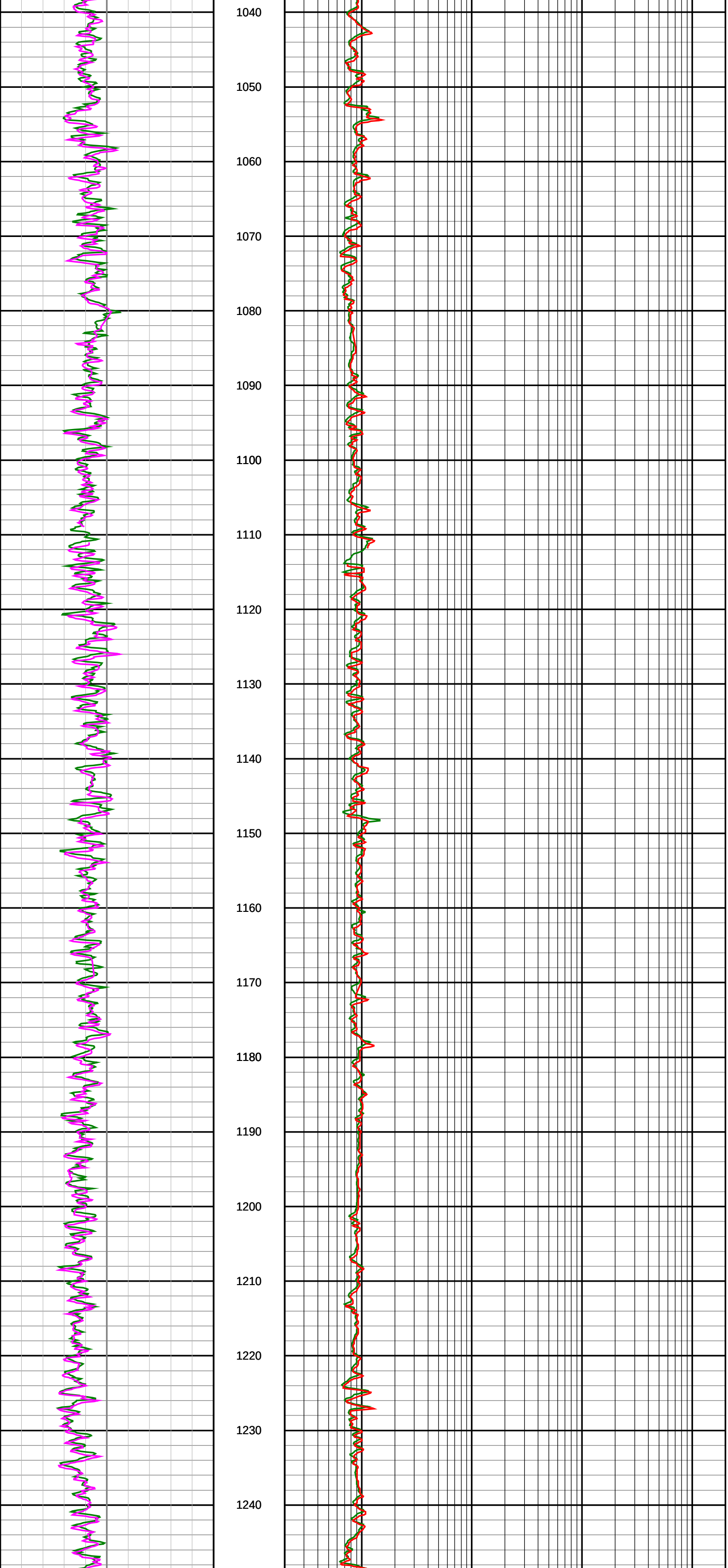
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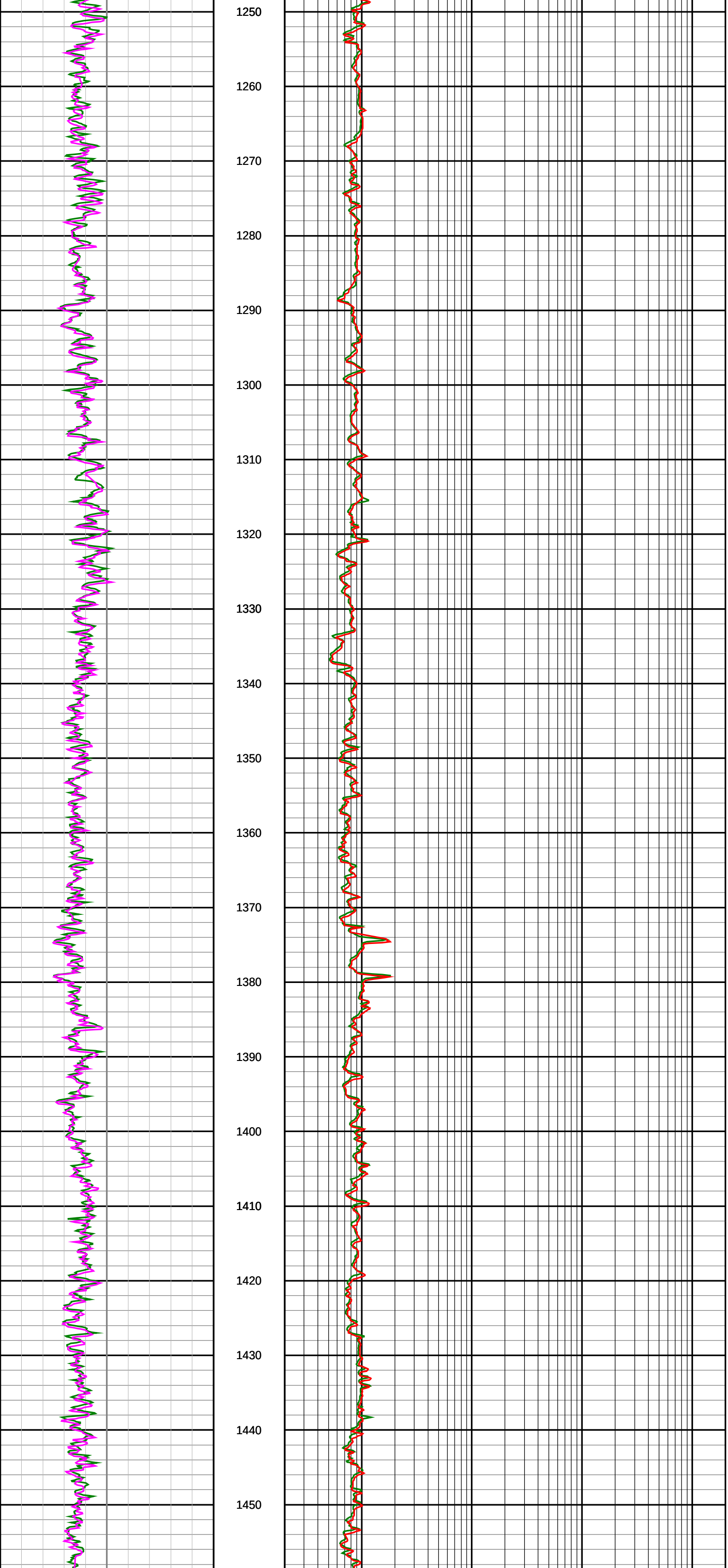
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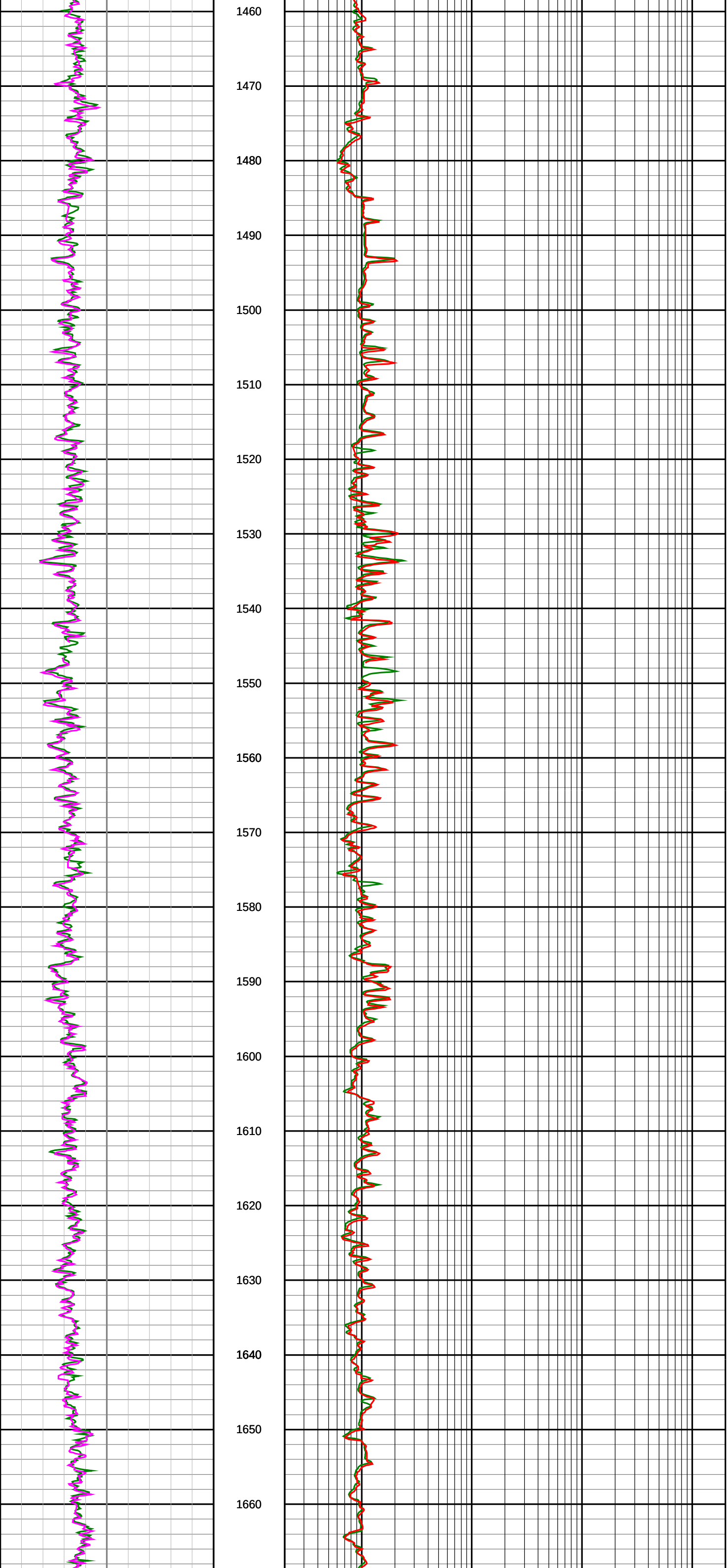
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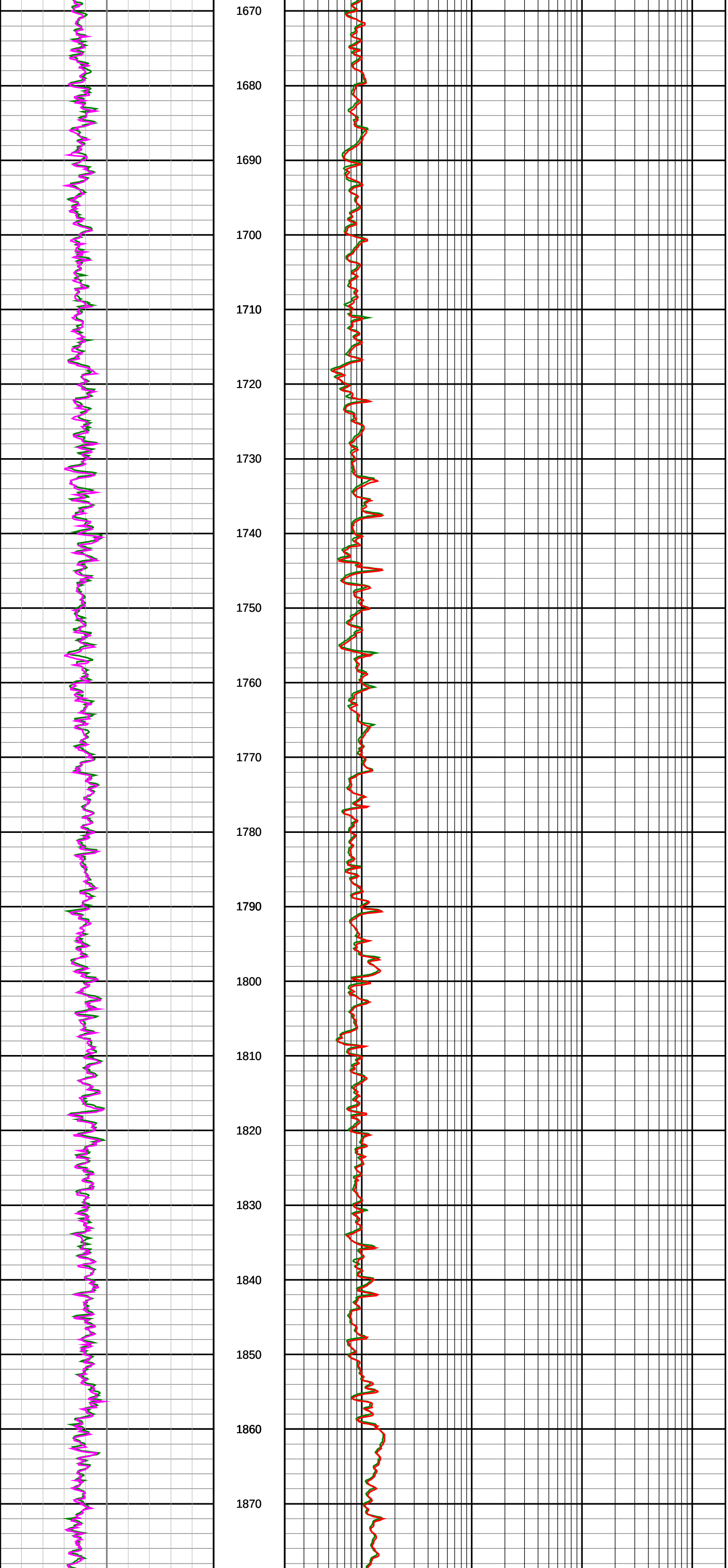
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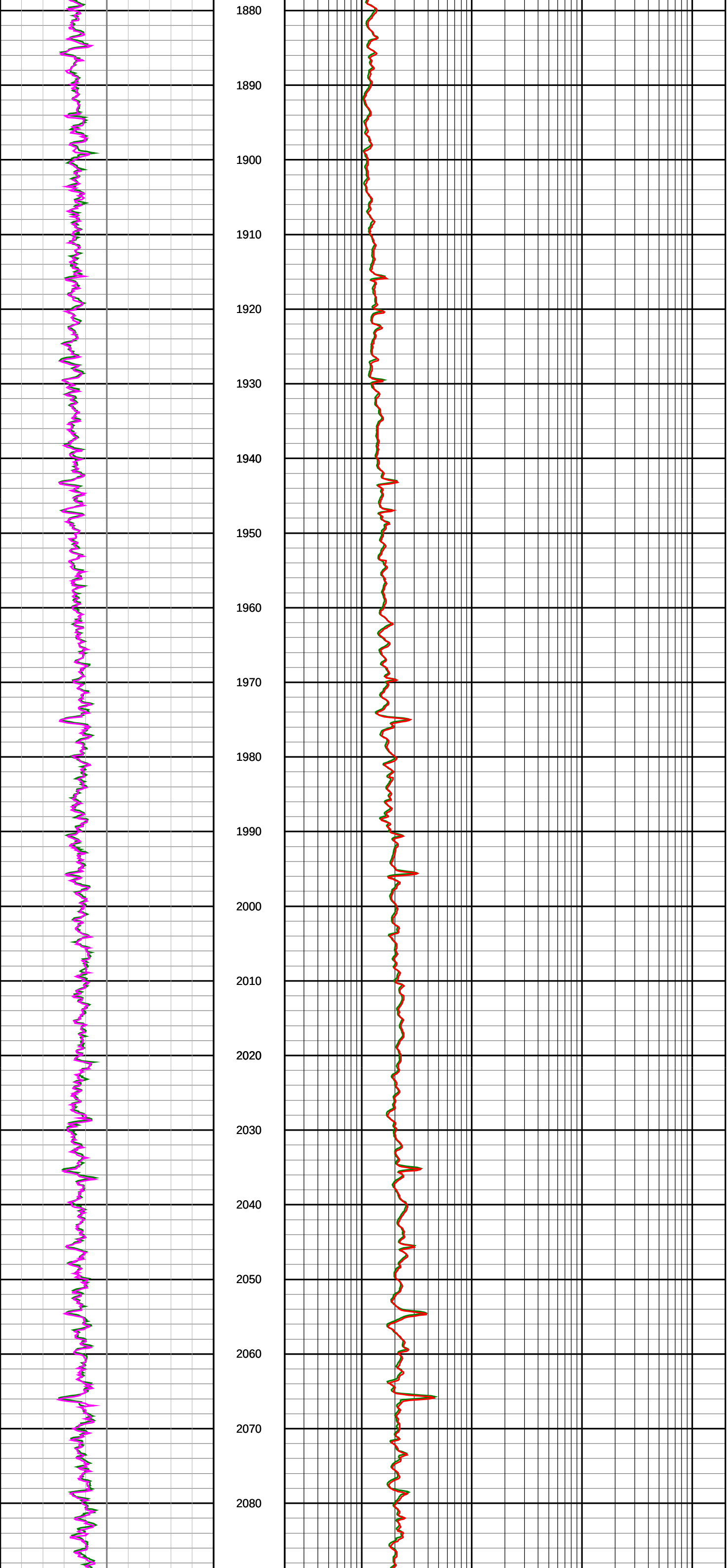
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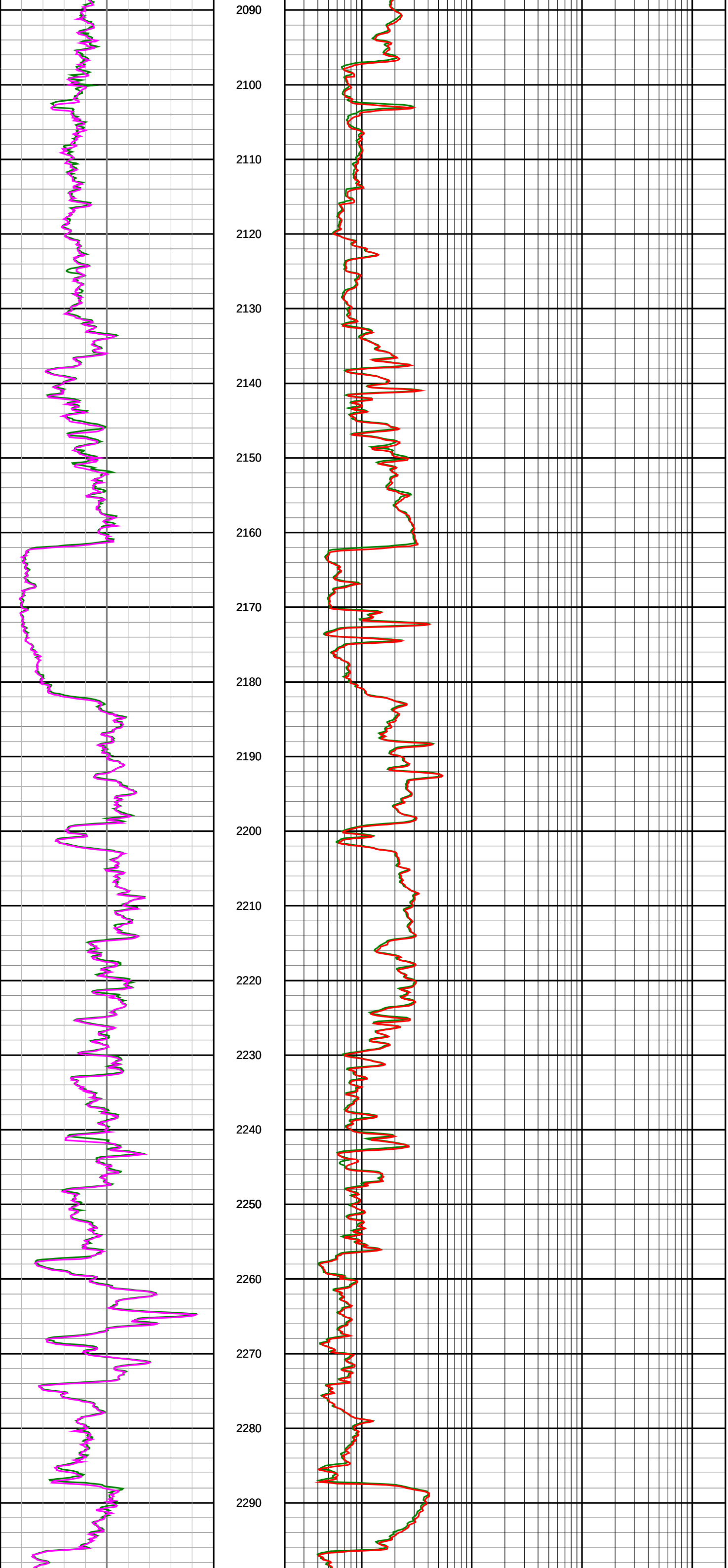
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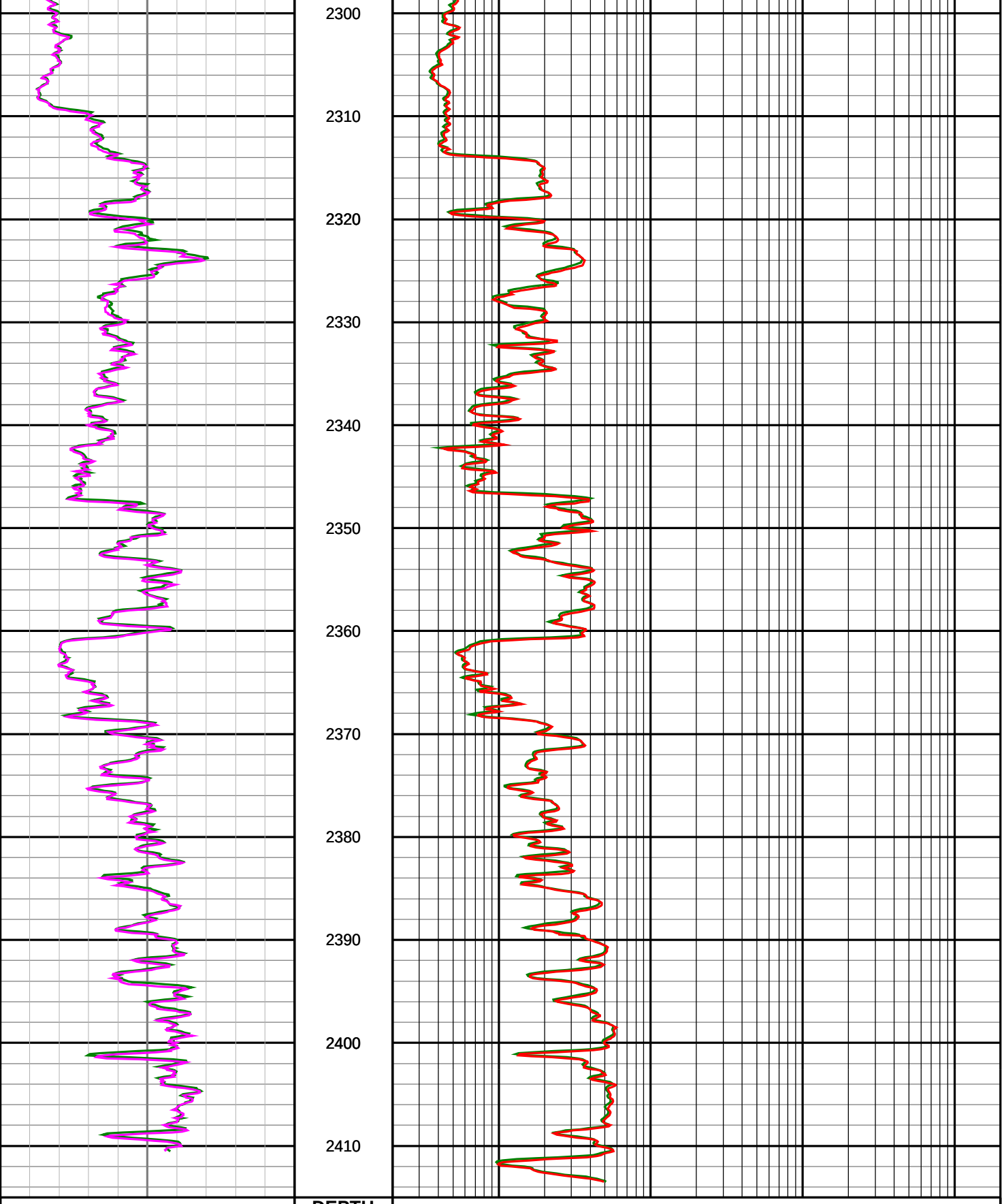


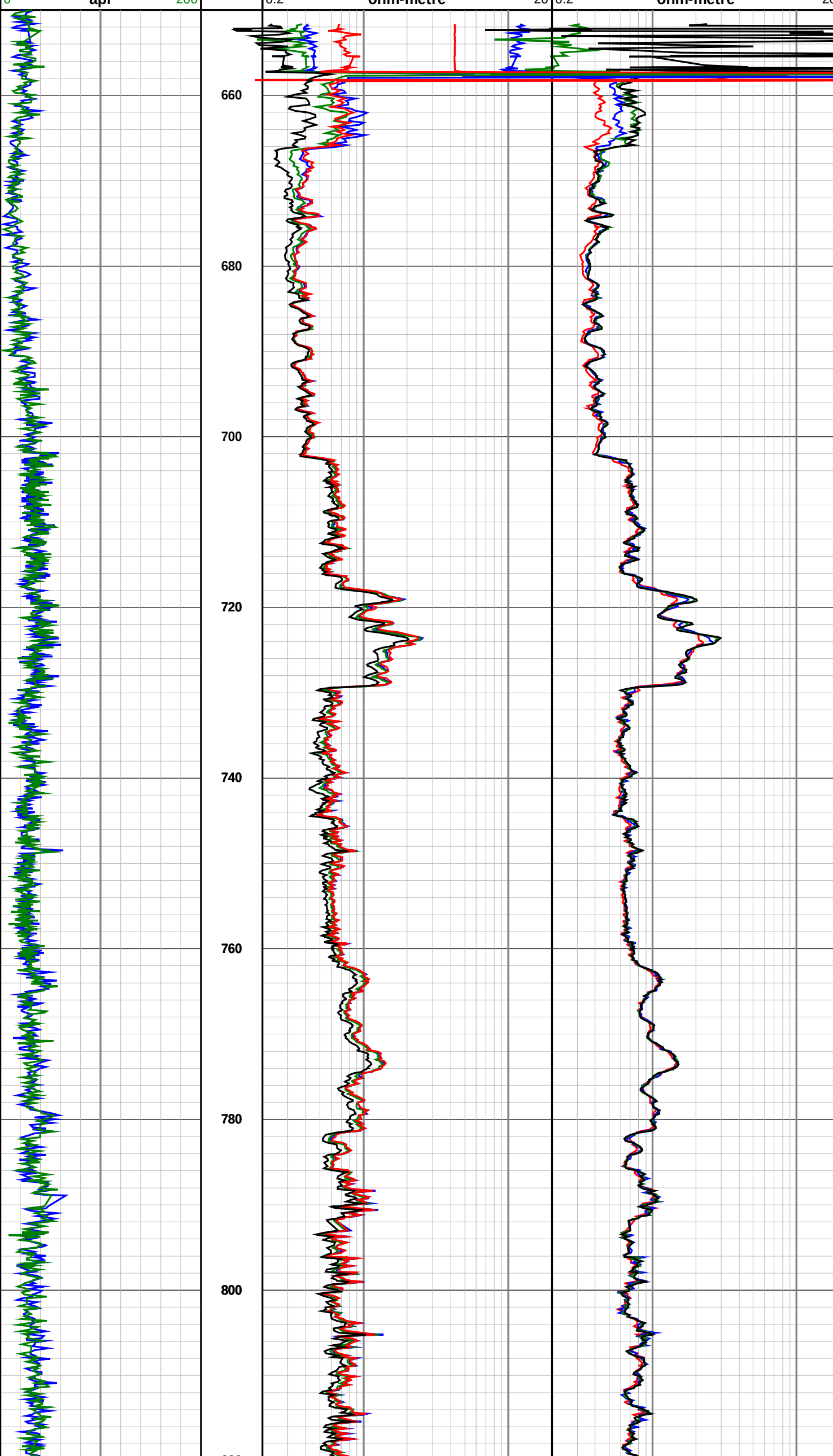
Gamma Ray api 0 200	DEPTH MD 1:500	Deep Phase Res ohm-metre 0.2 2000
Gamma Ray RT api 0 200		Deep Phase Res RT ohm-metre 0.2 2000

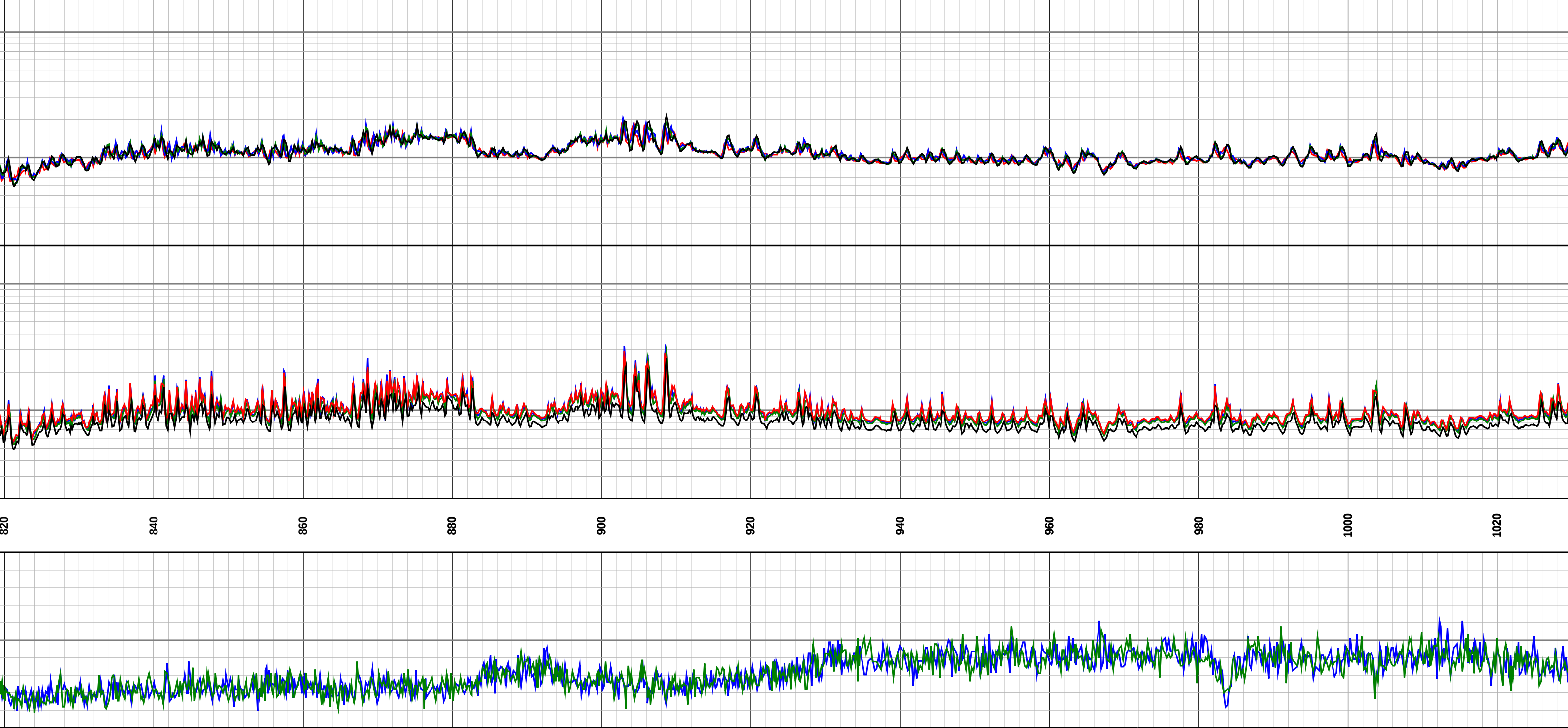
Trefoil-1 Run 200

DGR/EWR Log

QC 2

DGR Gamma Ray B		Deep Phase	Deep CPA
0 api 200		0.2 ohm-metre 20	0.2 ohm-metre 20
		Medium Phase	Medium CPA
		0.2 ohm-metre 20	0.2 ohm-metre 20
		Shallow Phase	Shallow CPA
		0.2 ohm-metre 20	0.2 ohm-metre 20
DGR Gamma Ray A	Depth	X-Shallow Phase	X-Shallow CPA
0 api 200		0.2 ohm-metre 20	0.2 ohm-metre 20

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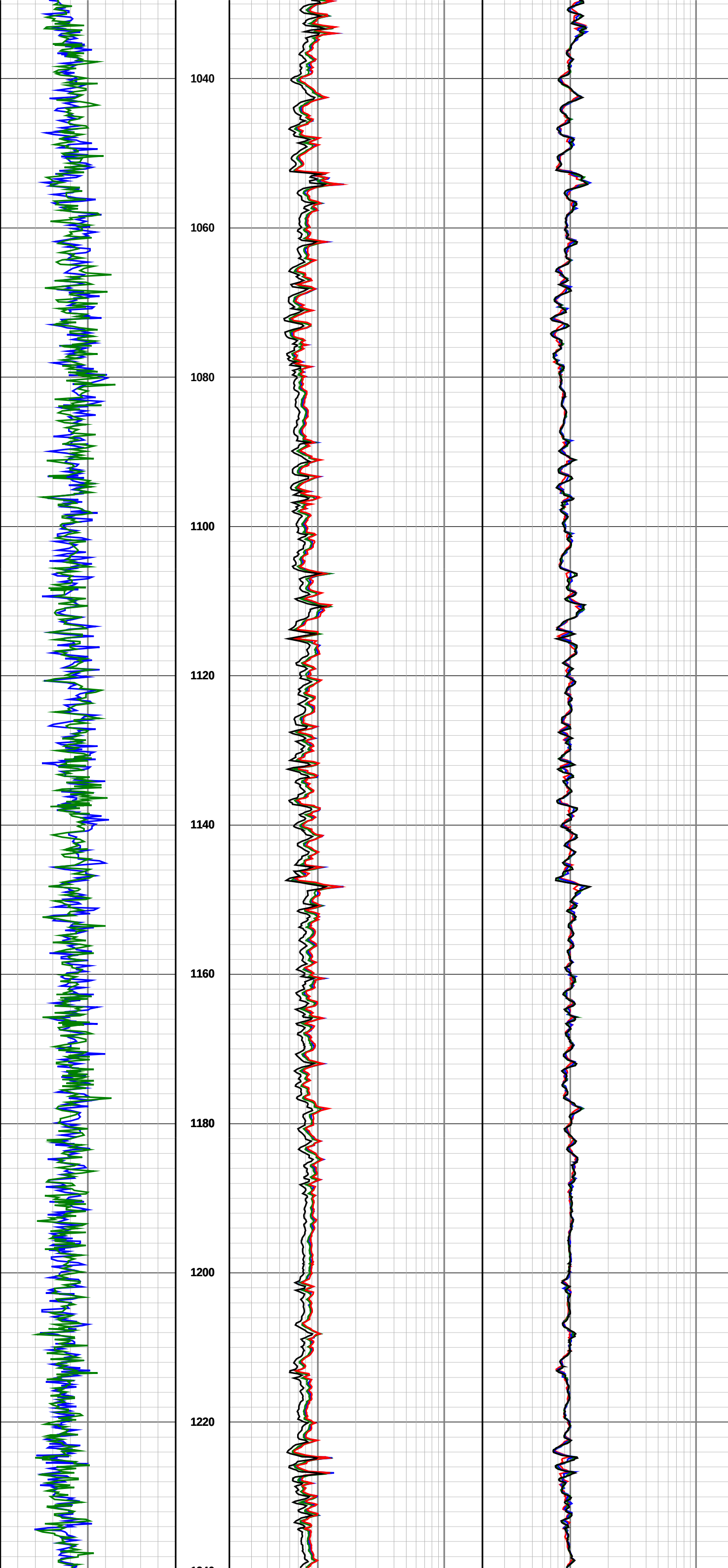
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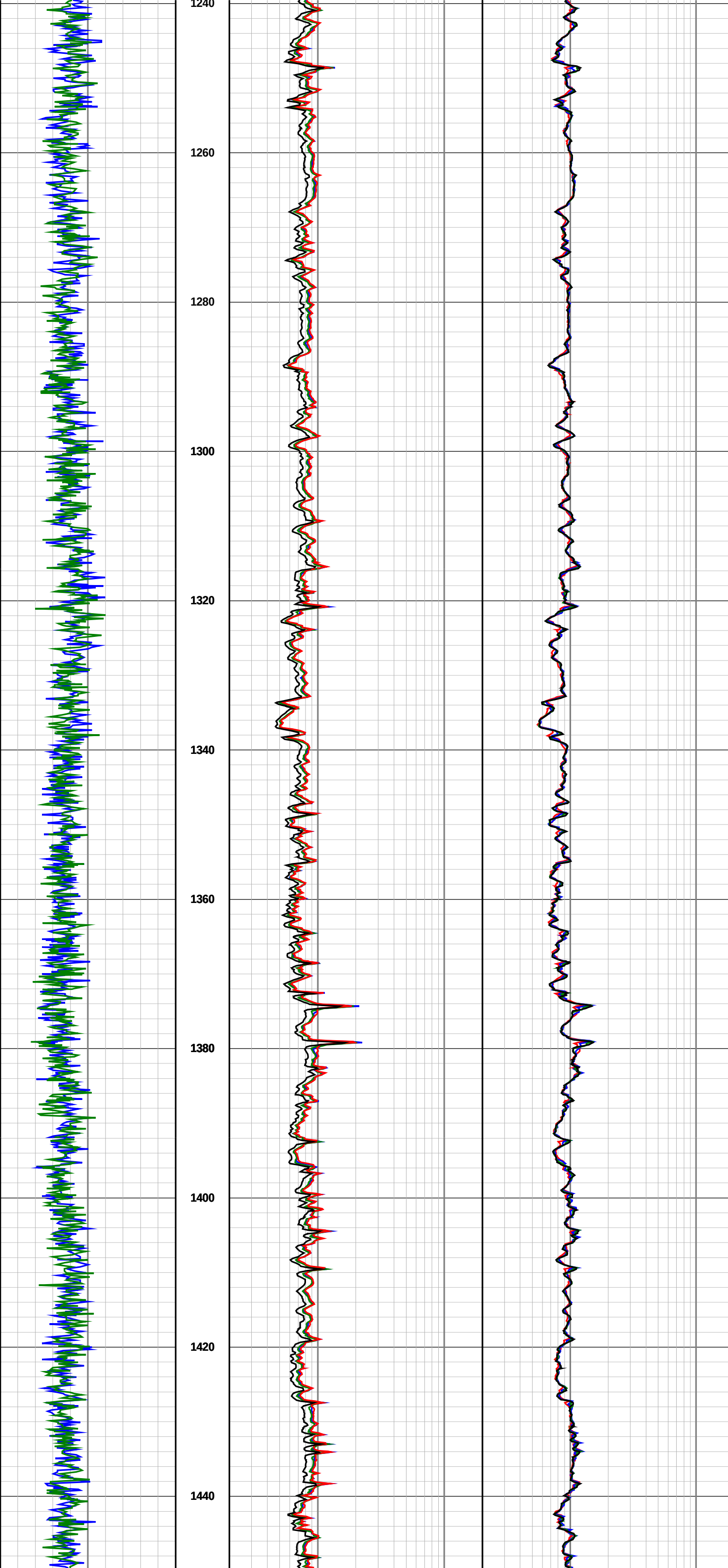
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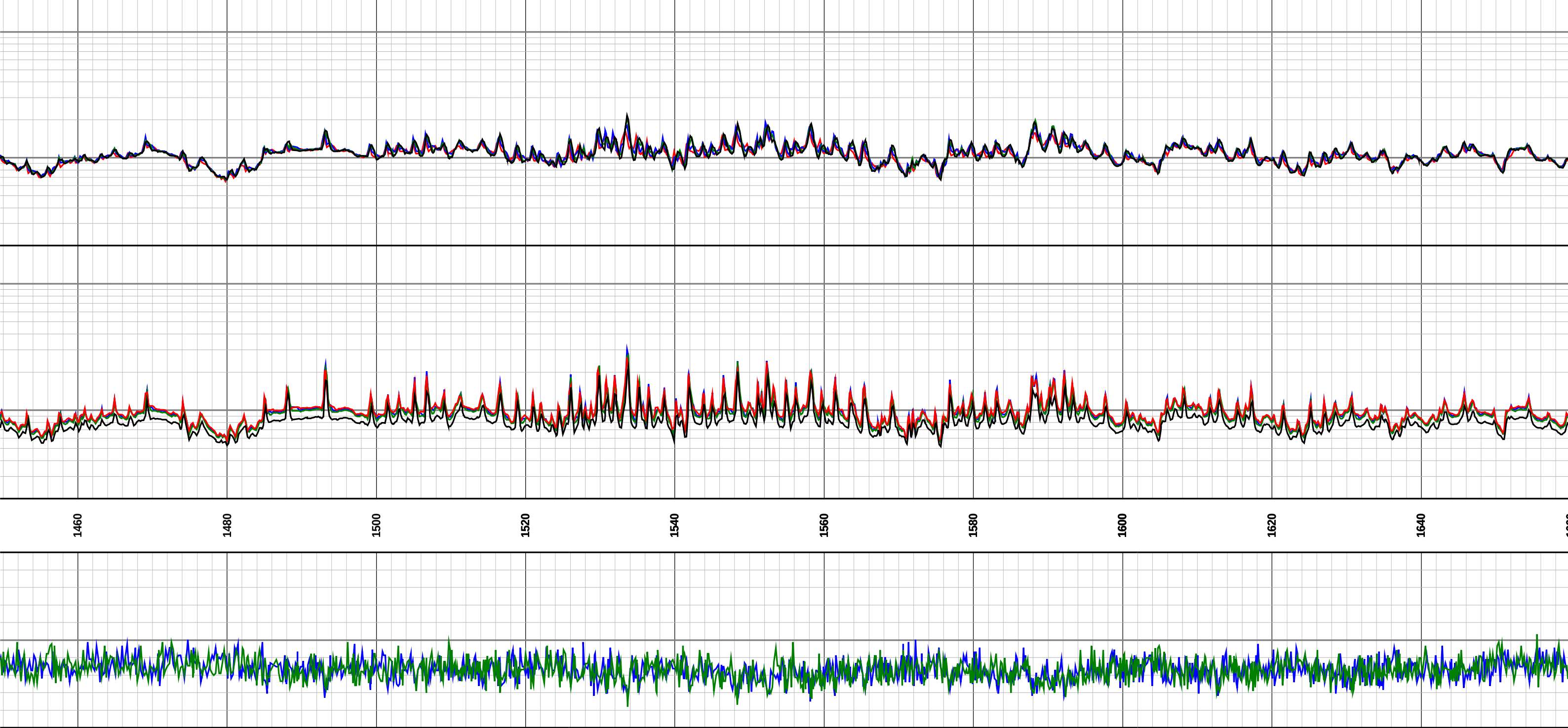
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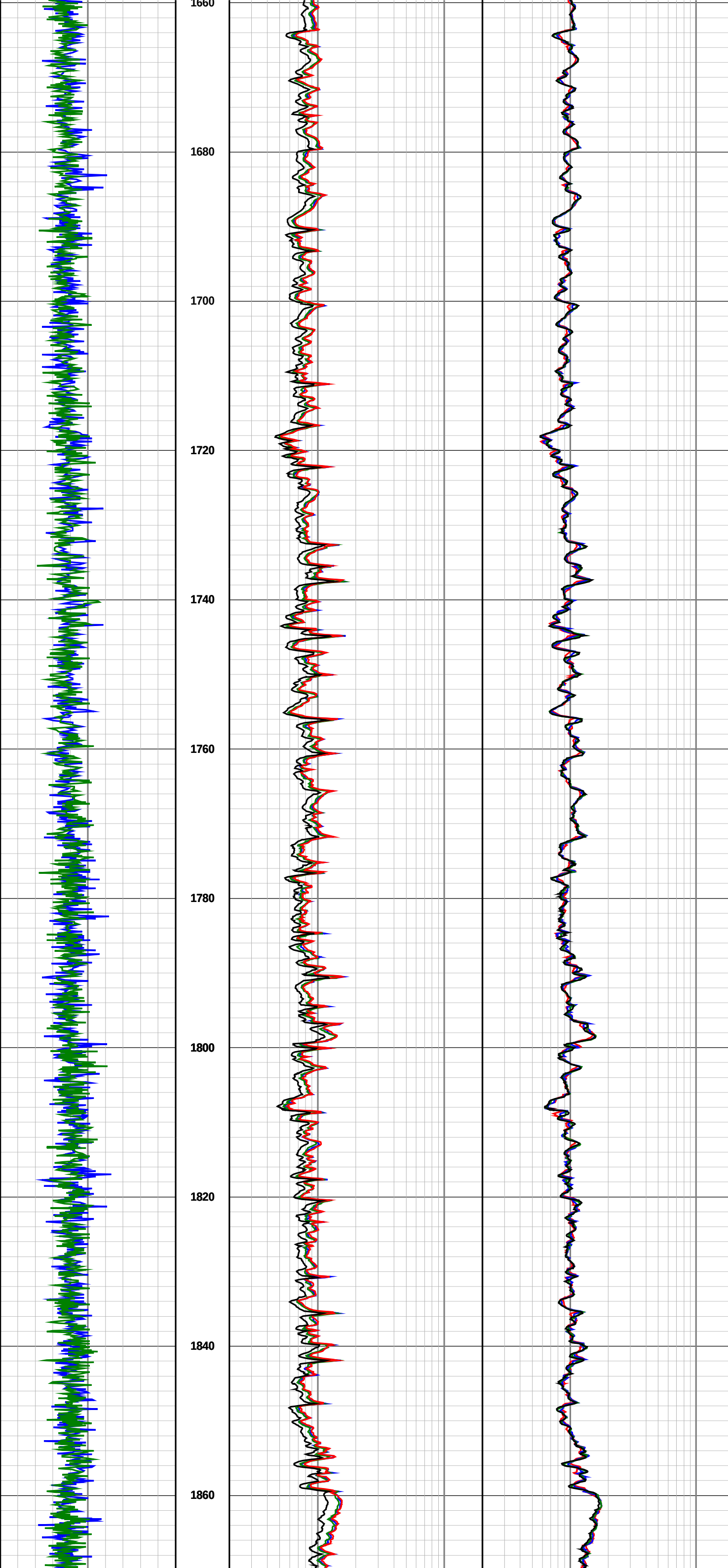
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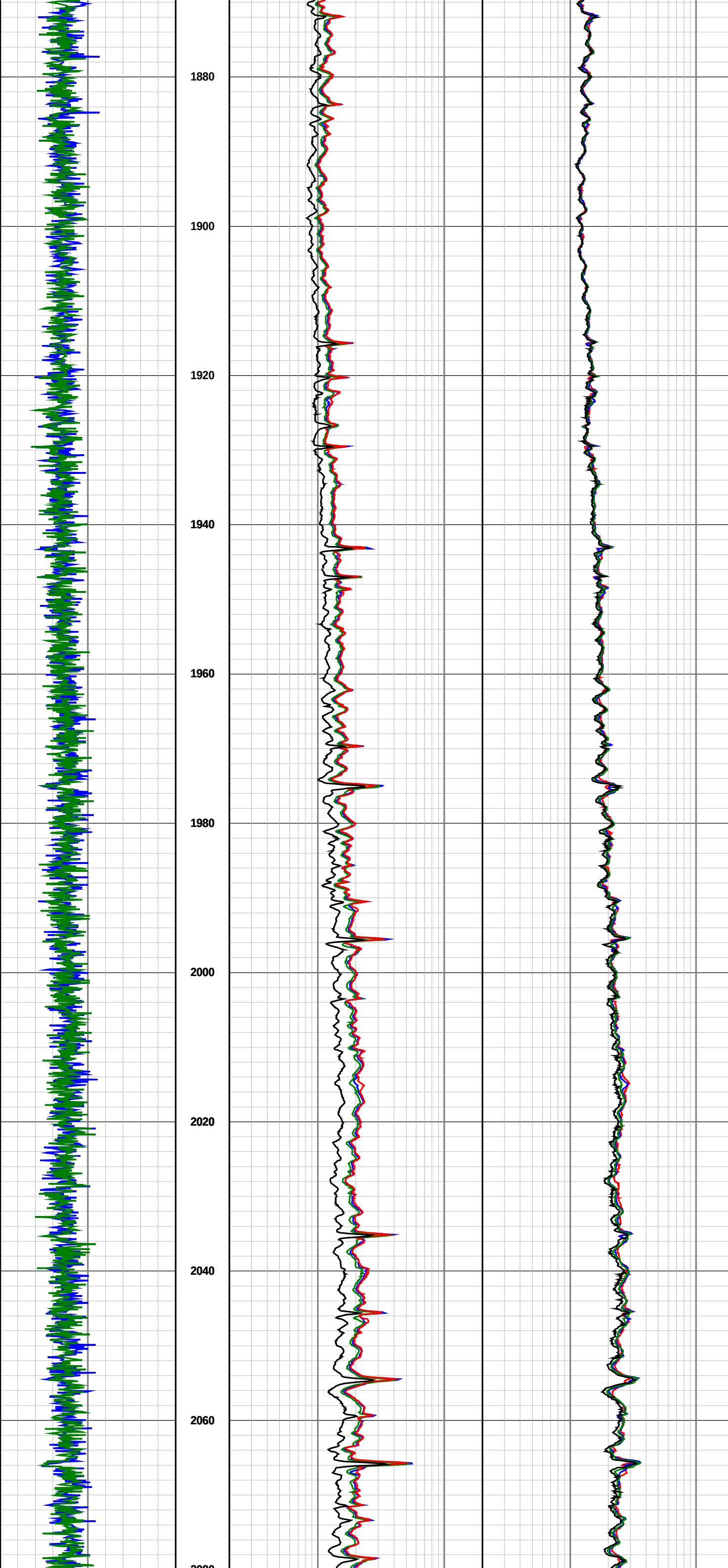
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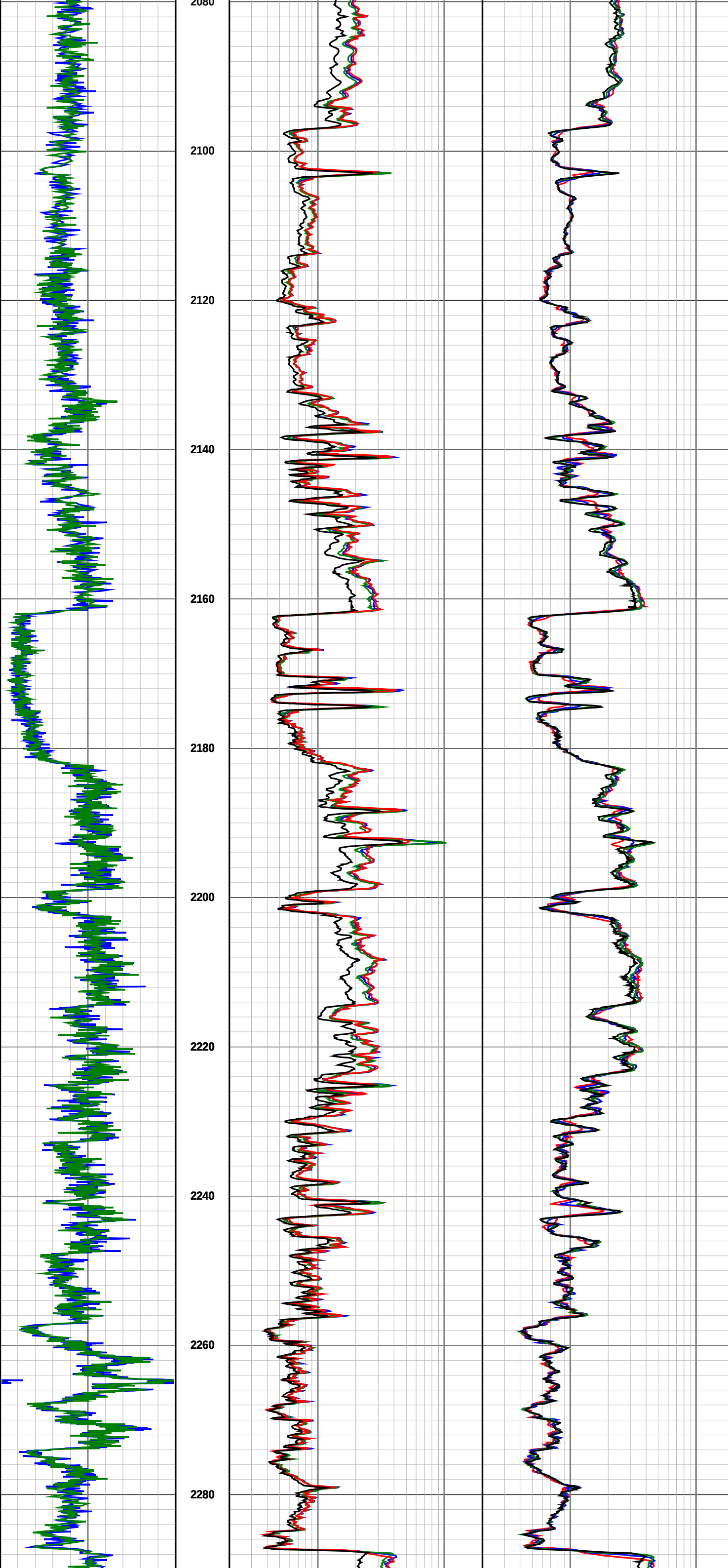
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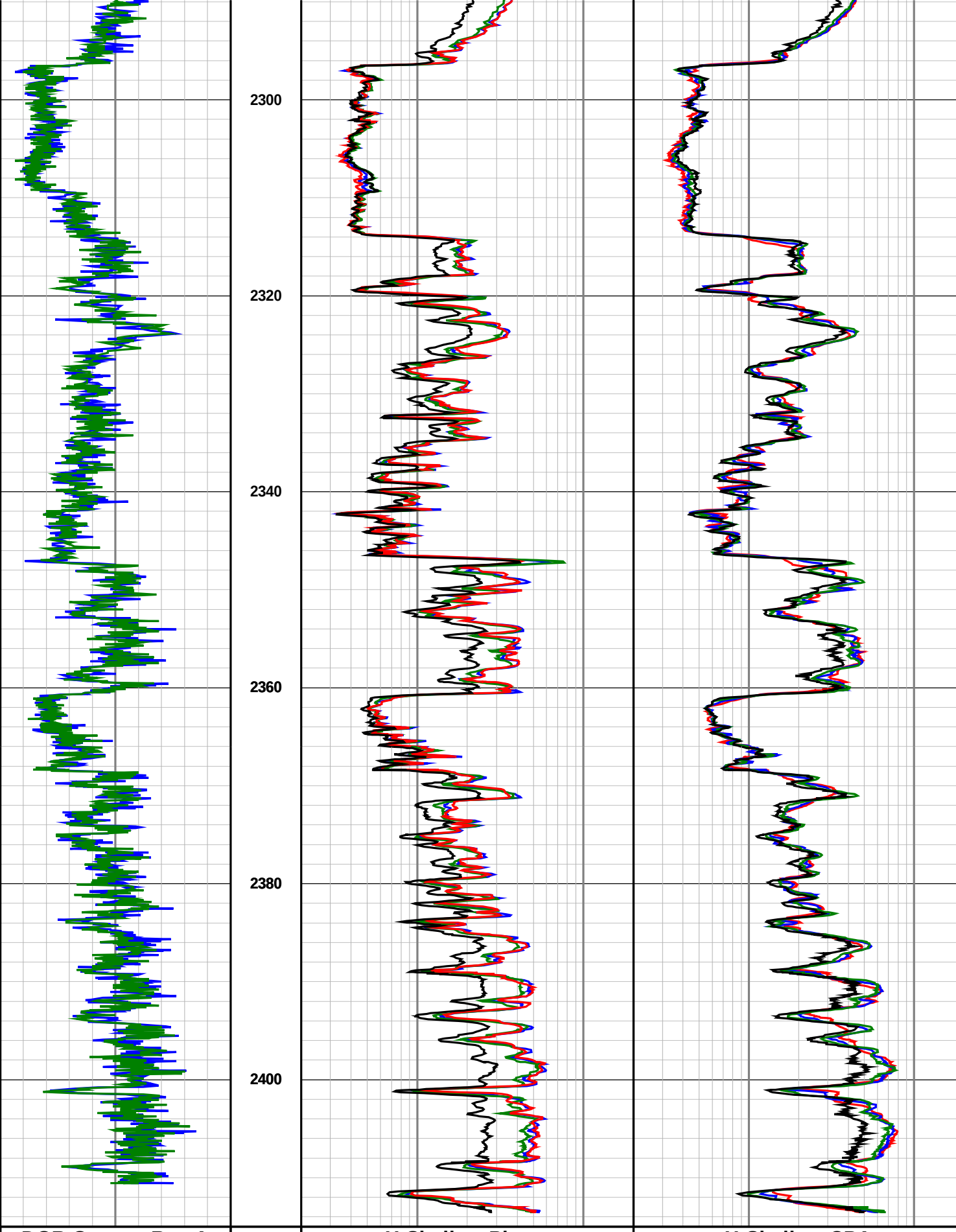


DGR Gamma Ray A	Depth	X-Shallow Phase	X-Shallow CPA
0 api 200		0.2 ohm-metre 20	0.2 ohm-metre 20
DGR Gamma Ray B		**Shallow Phase**	**Shallow CPA**
0 api 200		0.2 ohm-metre 20	0.2 ohm-metre 20
		Medium Phase	**Medium CPA**
		0.2 ohm-metre 20	0.2 ohm-metre 20
		Deep Phase	**Deep CPA**
		0.2 ohm-metre 20	0.2 ohm-metre 20

Trefoil-1 Run 300

Realtime/Recorded Comparison Log

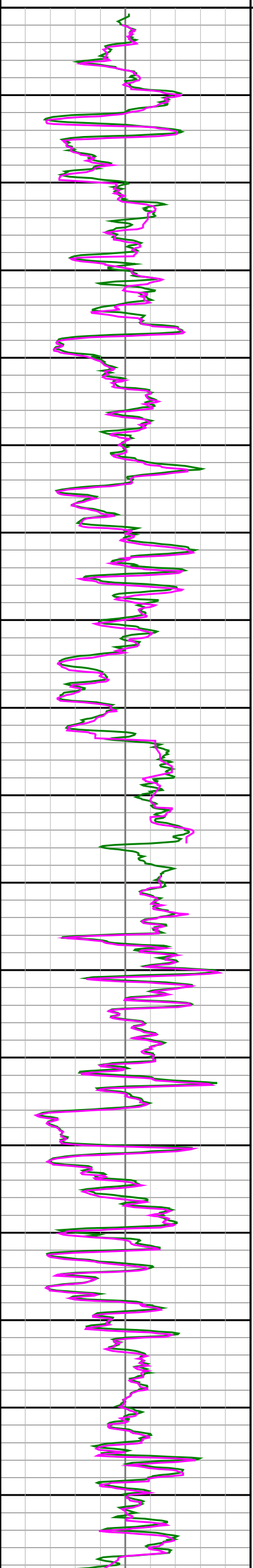
Gamma Ray RT
api
0 200

Deep Phase Res RT
ohm-metre
0.2 2000

Gamma Ray
api
0 200

DEPTH
MD
1:500

Deep Phase Res
ohm-metre
0.2 2000



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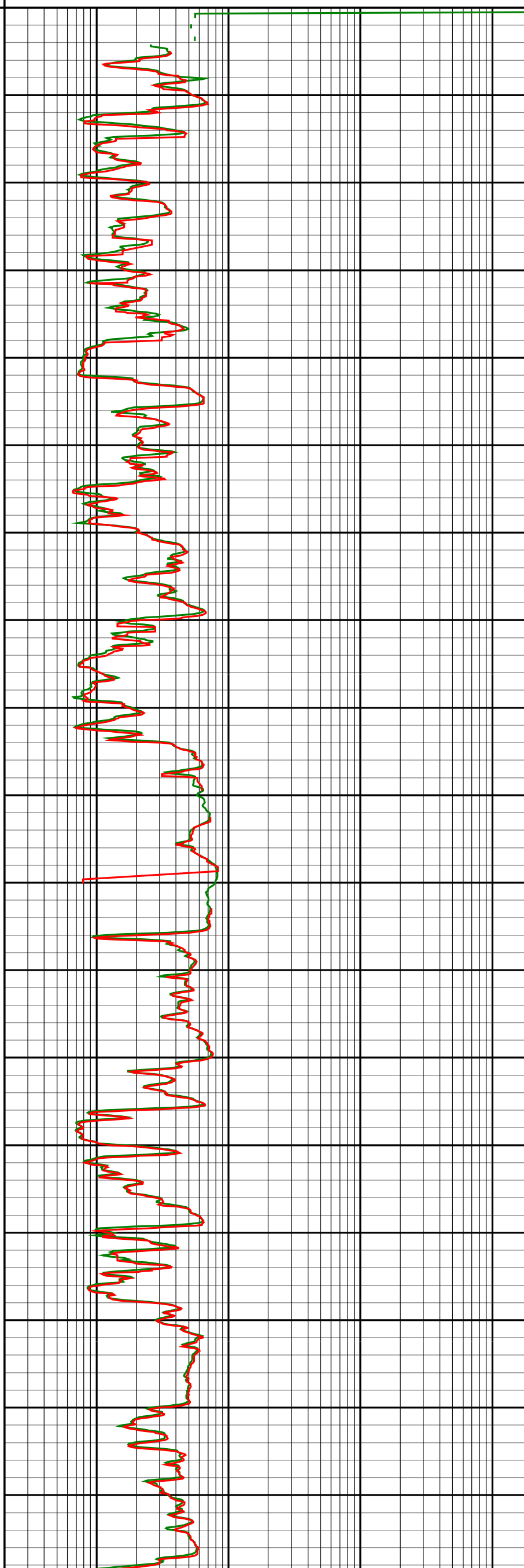
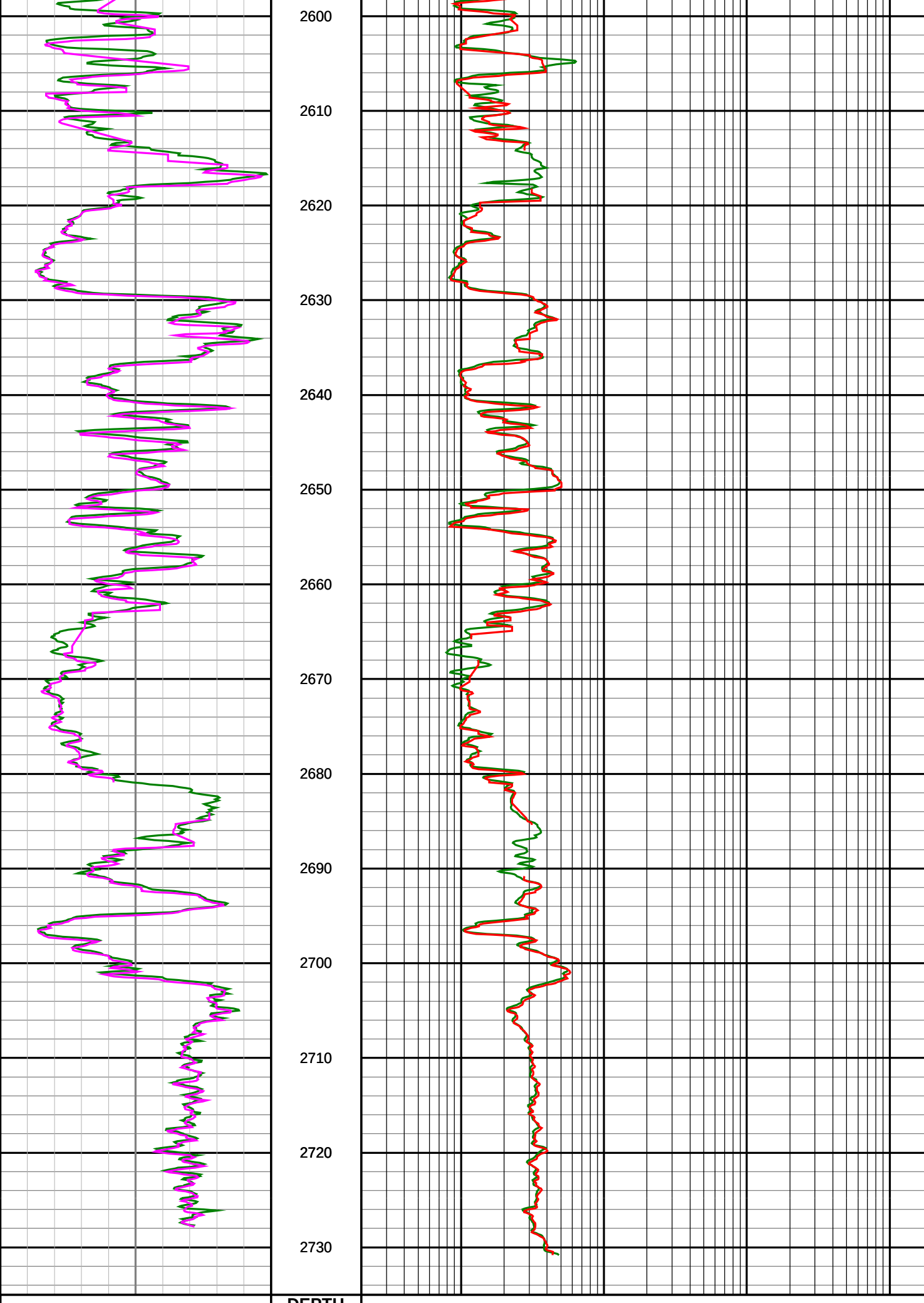




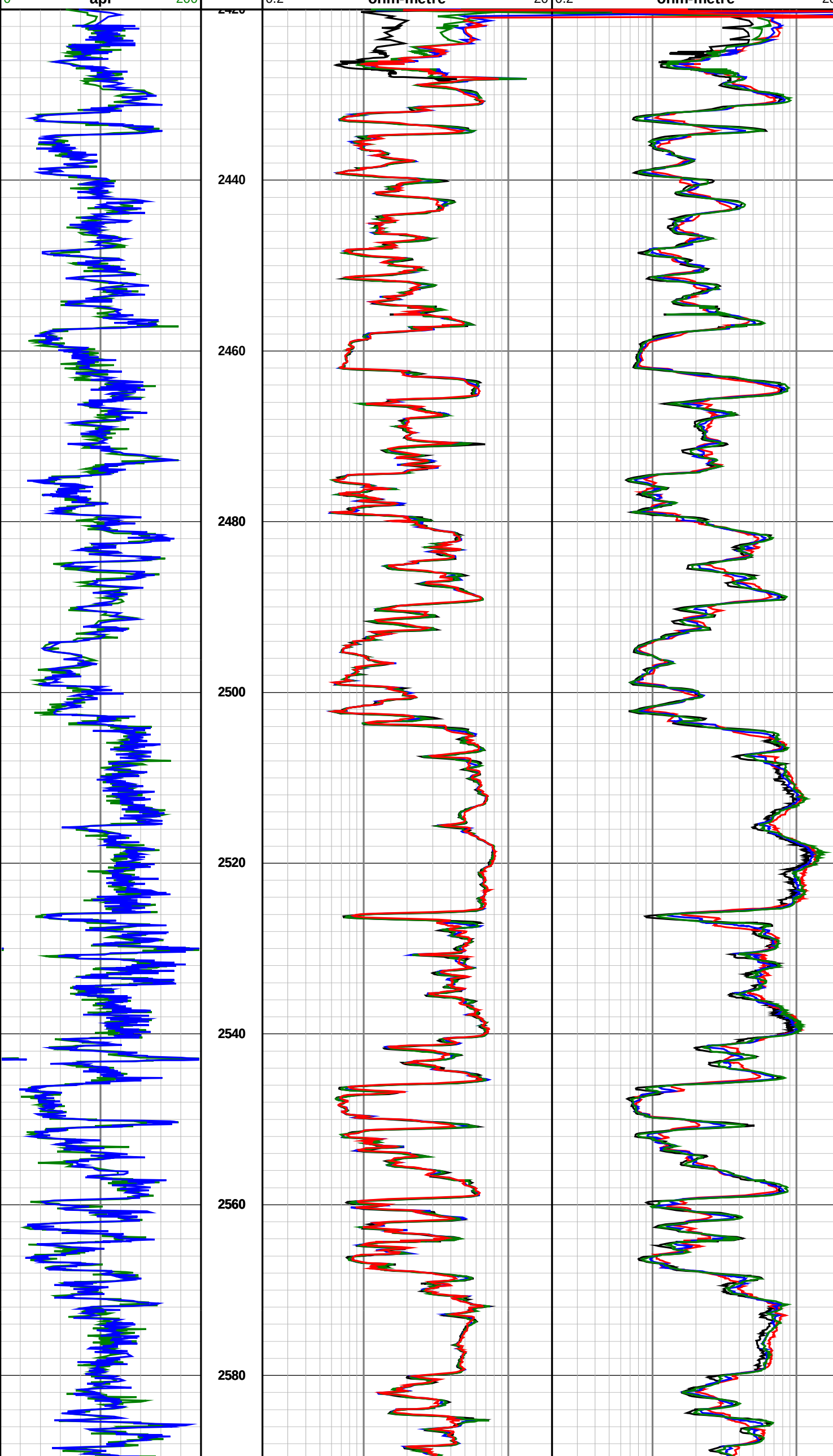
Gamma Ray api 0 200	DEPTH MD 1:500	Deep Phase Res ohm-metre 0.2 2000
Gamma Ray RT api 0 200		Deep Phase Res RT ohm-metre 0.2 2000

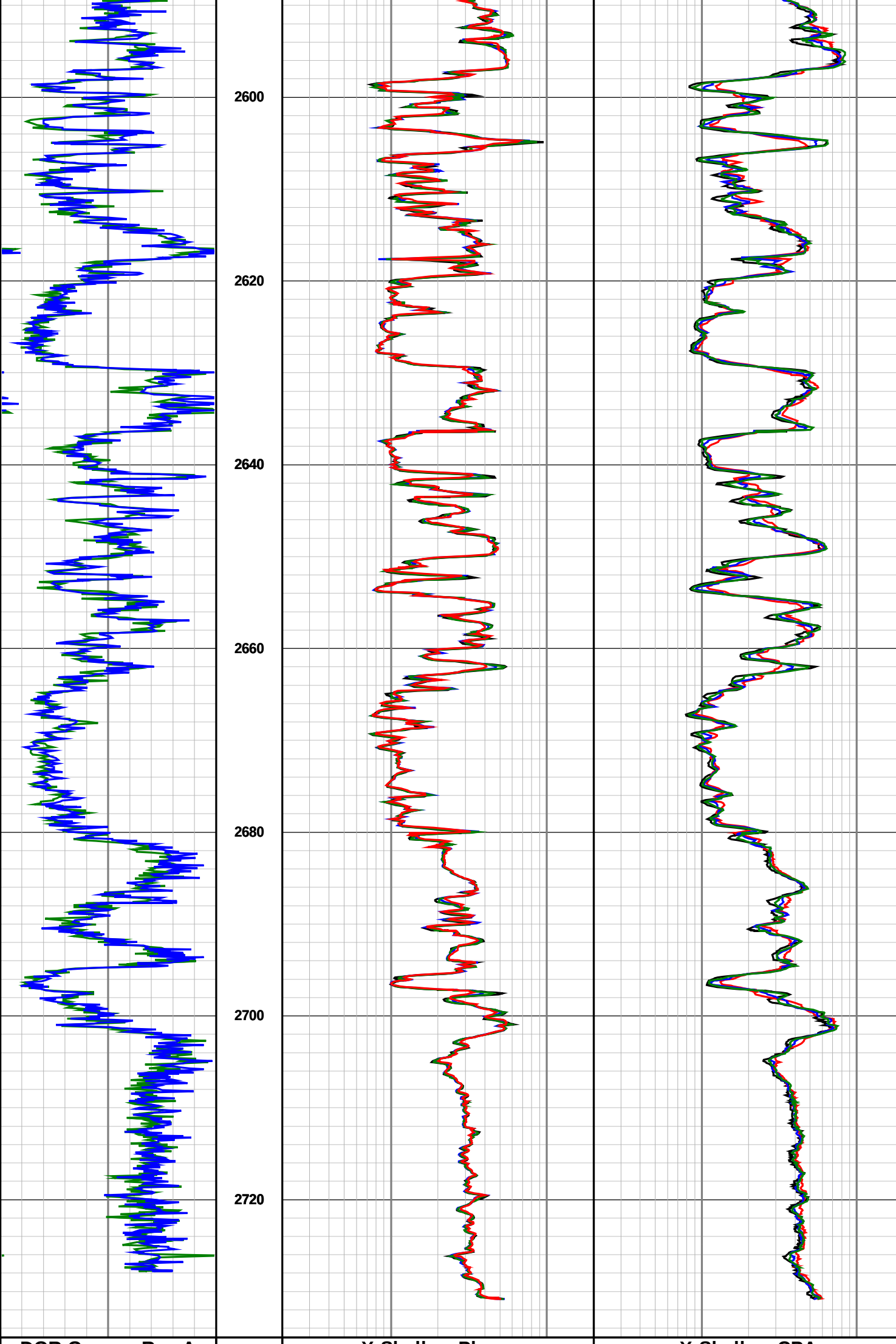
Trefoil-1 Run 300

DGR/EWR Log

QC 2

DGR Gamma Ray B		Deep Phase		Deep CPA	
0 api 200		0.2 ohm-metre 20		0.2 ohm-metre 20	
		Medium Phase		Medium CPA	
		0.2 ohm-metre 20		0.2 ohm-metre 20	
		Shallow Phase		Shallow CPA	
		0.2 ohm-metre 20		0.2 ohm-metre 20	
DGR Gamma Ray A	Depth	X-Shallow Phase		X-Shallow CPA	
0 api 200		0.2 ohm-metre 20		0.2 ohm-metre 20	





DGR Gamma Ray A	Depth	X-Shallow Phase	X-Shallow CPA
0 api 200		0.2 ohm-metre 20	0.2 ohm-metre 20
DGR Gamma Ray B		**Shallow Phase**	**Shallow CPA**
0 api 200		0.2 ohm-metre 20	0.2 ohm-metre 20
		Medium Phase	**Medium CPA**
		0.2 ohm-metre 20	0.2 ohm-metre 20
		Deep Phase	**Deep CPA**
		0.2 ohm-metre 20	0.2 ohm-metre 20

Trefoil-1 Run 300

QC-3 SLD-1

Resolution Near
0 50

Bulk Density
1.95 gram per cc 2.95

Resolution Far
0 percent 50

Gain Far
0 percent 100

Far Density
1.95 gram per cc 2.95

Far Peak Loc
190 210

Gain Near
0 percent 100

Near Density
1.95 gram per cc 2.95

Depth

Near Peak Loc
190 210

HV Gain
0 percent 100

SLD Rapid PE N2
0 barns/electron 10

2430
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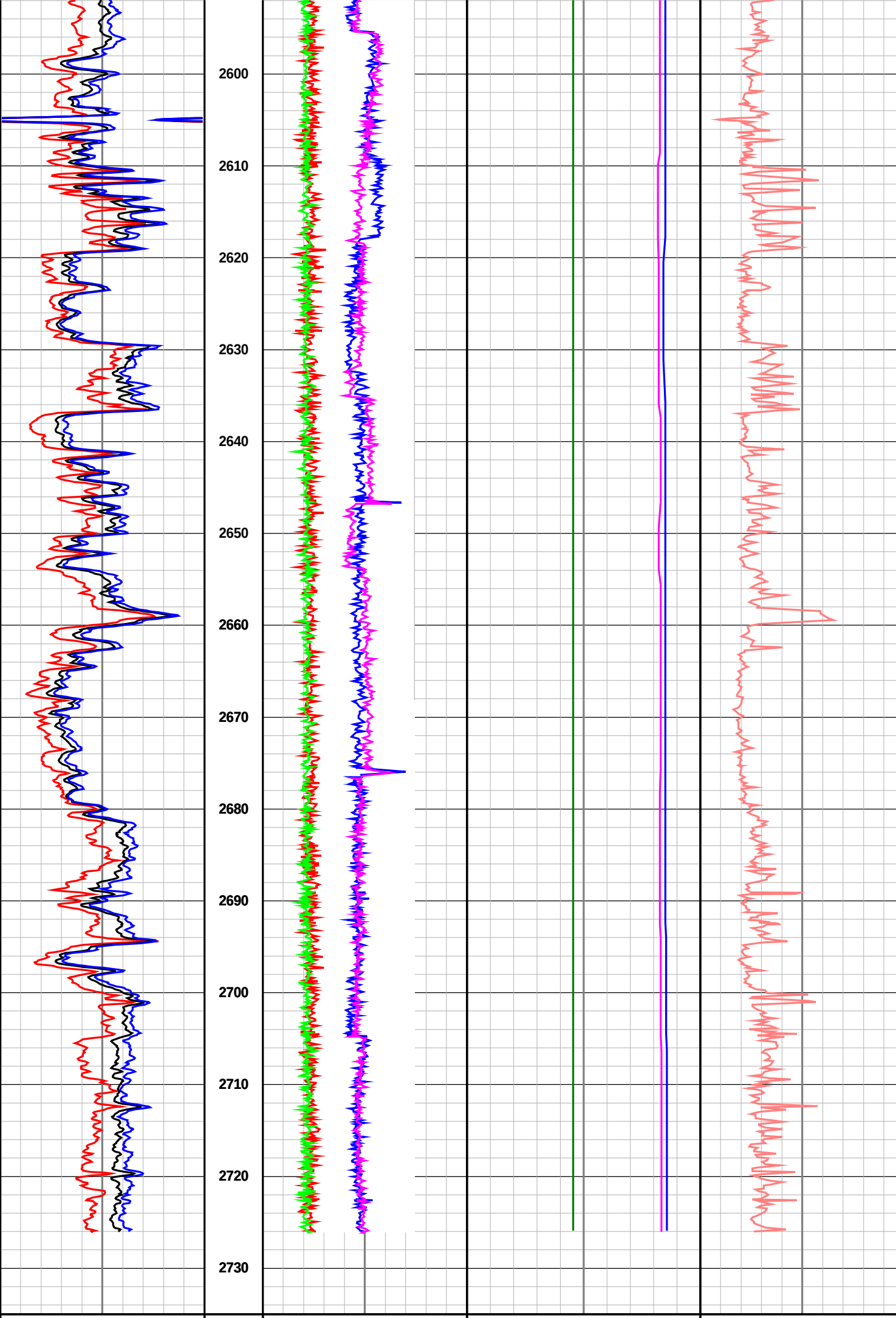
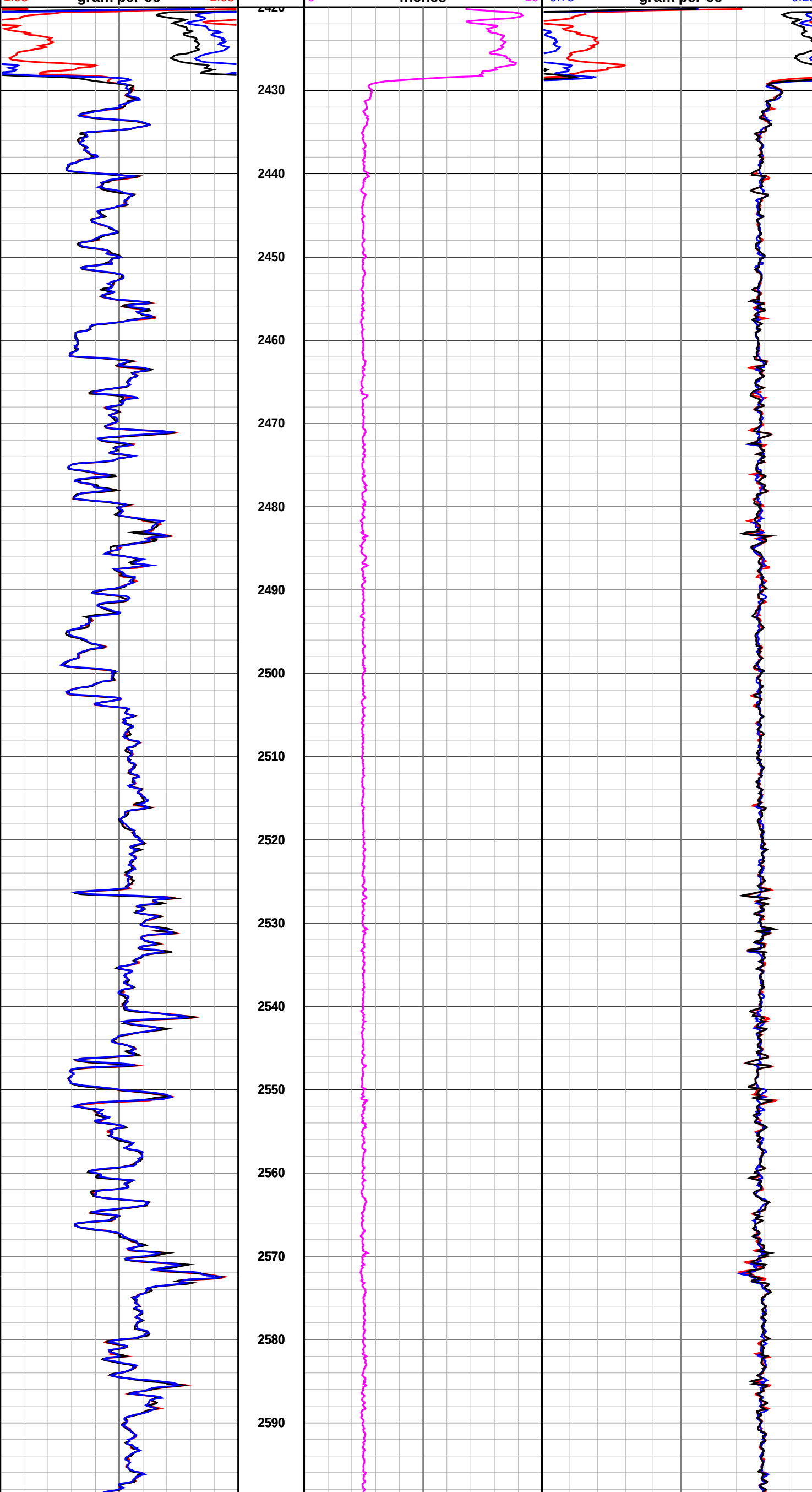


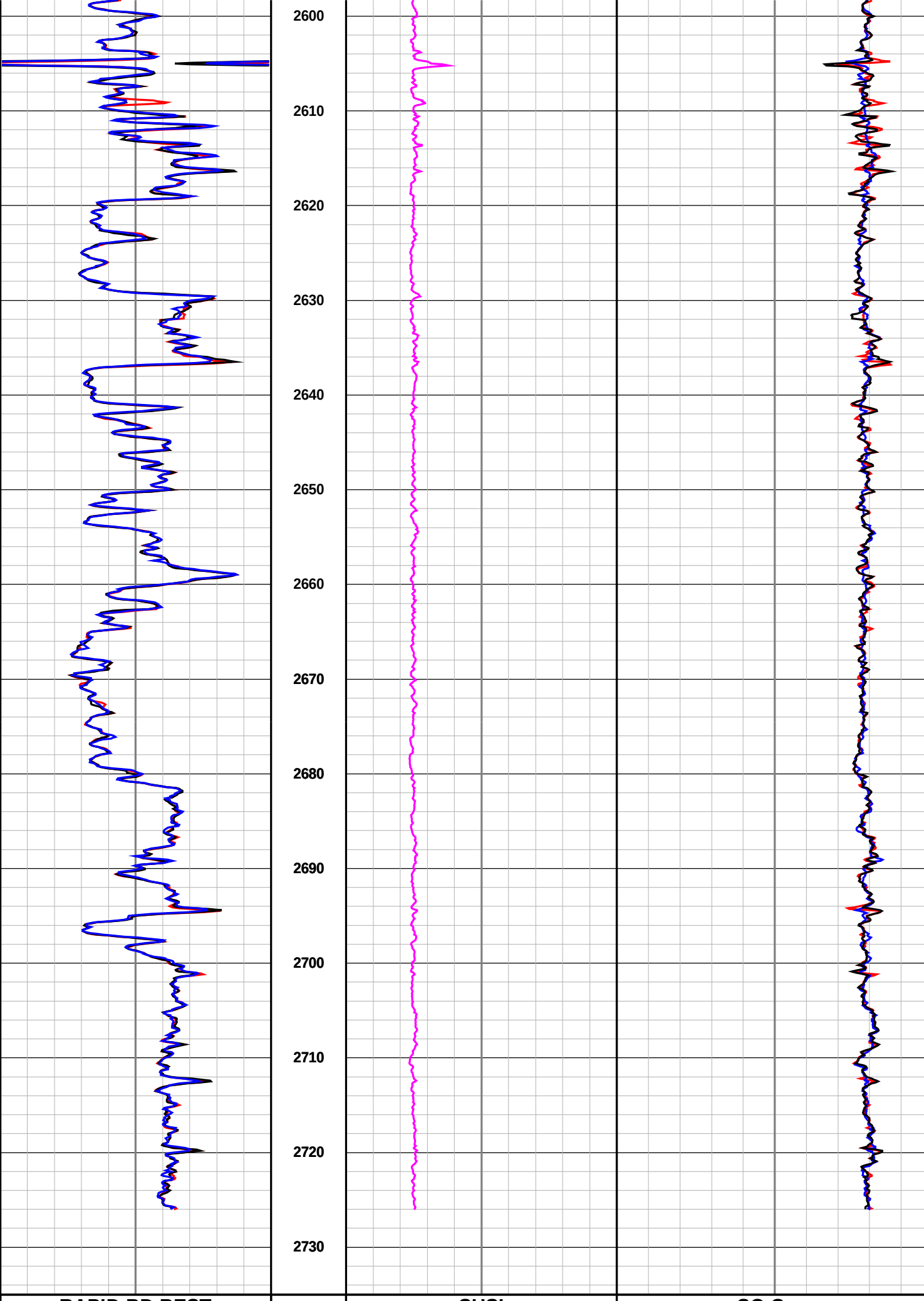
Near Density		Near Peak Loc		HV Gain		SLD Rapid PE N2
1.95 gram per cc 2.95	Depth	190 210		0 percent 100		0 barns/electron 10
Far Density		**Far Peak Loc**		**Gain Near**		
1.95 gram per cc 2.95		190 210		0 percent 100		
Bulk Density		**Resolution Far**		**Gain Far**		
1.95 gram per cc 2.95		0 percent 50		0 percent 100		
		Resolution Near				
		0 50				

Trefoil-1 Run 300

QC-4 SLD-2

Bulk Density		BDSO Best
1.95 gram per cc 2.95		-0.75 gram per cc 0.25
RAPID BD WORST		**BDSO Worst**
1.95 gram per cc 2.95		-0.75 gram per cc 0.25
RAPID BD BEST	**Depth**	**SHSI** / **SO Corr**
1.95 gram per cc 2.95		6 inches 16 / -0.75 gram per cc 0.25





RAPID BD BEST		Depth	SHSI		SO Corr	
1.95	gram per cc 2.95		6	inches 16	-0.75	gram per cc 0.25
RAPID BD WORST					**BDSO Worst**	
1.95	gram per cc 2.95				-0.75	gram per cc 0.25
Bulk Density					**BDSO Best**	
1.95	gram per cc 2.95				-0.75	gram per cc 0.25

Trefoil-1 Run 300

QC-5 CNP-DGR

DGR Bank B	Rec Porosity STP	Porosity Far	Near 0 CNP	Far 0 CNP
0 api 200	0.45 v/v -0.15	0.45 v/v -0.15	2000 counts/30 sec 4000	0 counts/30 sec 1000
DGR Bank A	**RT Porosity STP**	**Porosity Near**	**Near 1 CNP**	**Far 1 CNP**
0 api 200	0.45 v/v -0.15	0.45 v/v -0.15	2000 counts/30 sec 4000	0 counts/30 sec 1000

Depth

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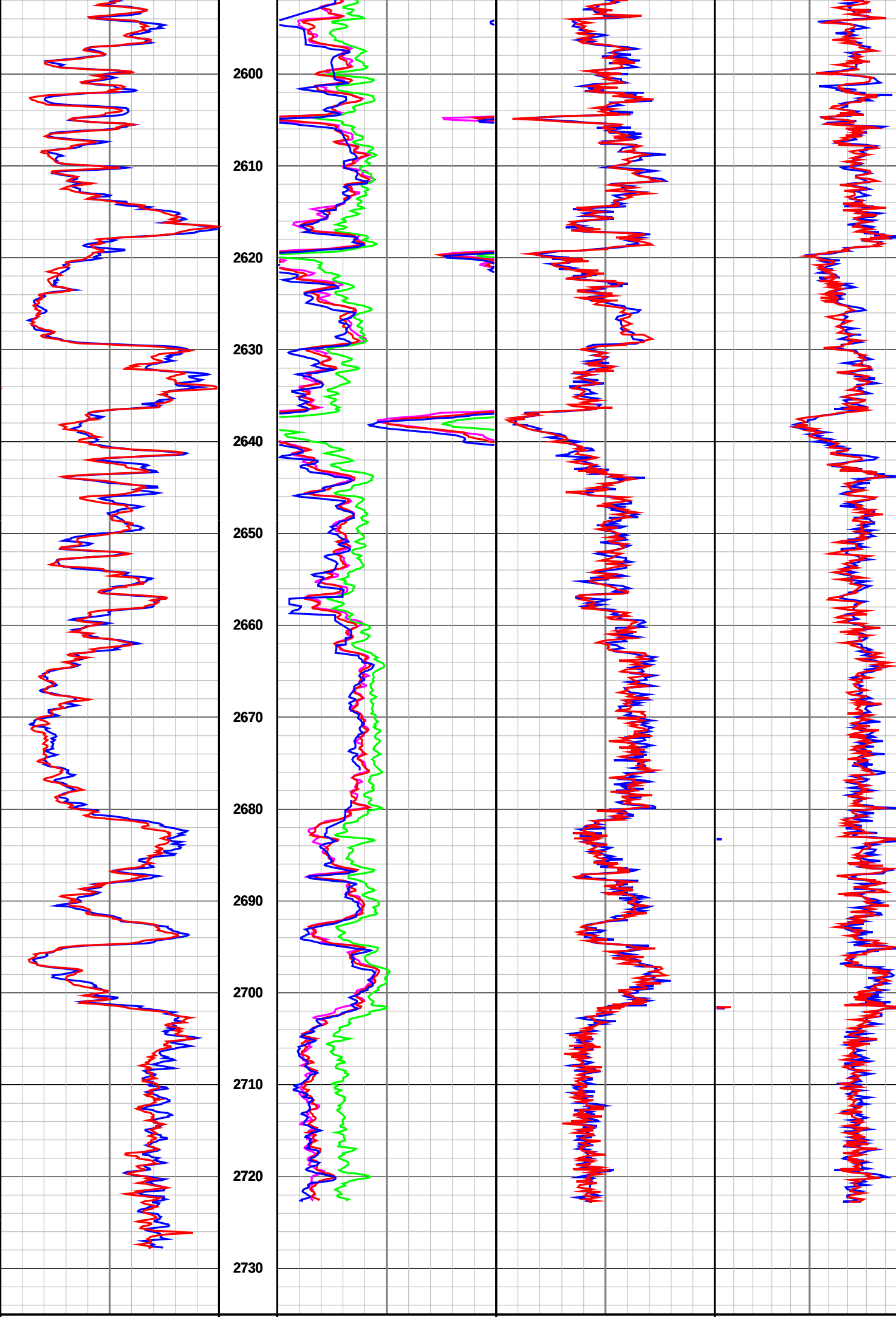


DGR Bank A		Porosity Near		Near 1 CNP		Far 1 CNP	
0 api 200	Depth	0.45 v/v -0.15		2000 counts/30 sec 4000		0 counts/30 sec 1000	
DGR Bank B		**Porosity Far**		**Near 0 CNP**		**Far 0 CNP**	
0 api 200		0.45 v/v -0.15		2000 counts/30 sec 4000		0 counts/30 sec 1000	
		RT Porosity STP					
		0.45 v/v -0.15					
		Rec Porosity STP					
		0.45 v/v -0.15					

Trefoil-1 Run 400

Realtime/Recorded Comparison Log

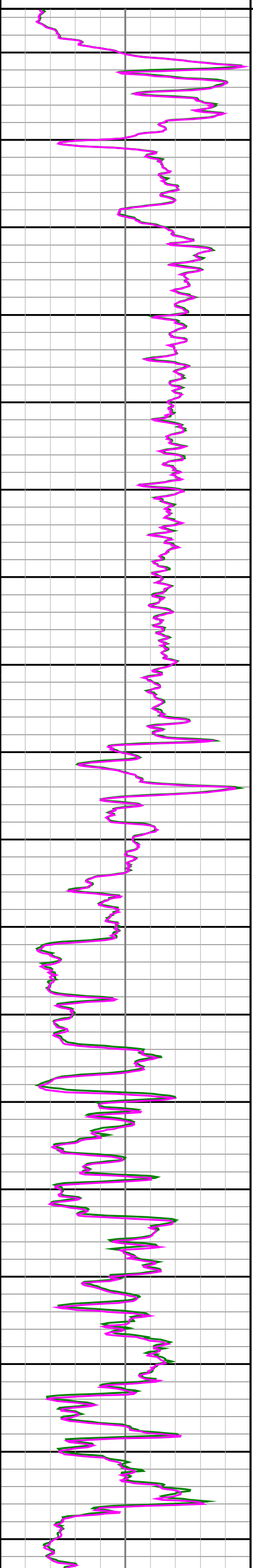
Gamma Ray RT
api
0 200

Deep Phase Res RT
ohm-metre
0.2 2000

Gamma Ray
api
0 200

DEPTH
MD
1:500

Deep Phase Res
ohm-metre
0.2 2000



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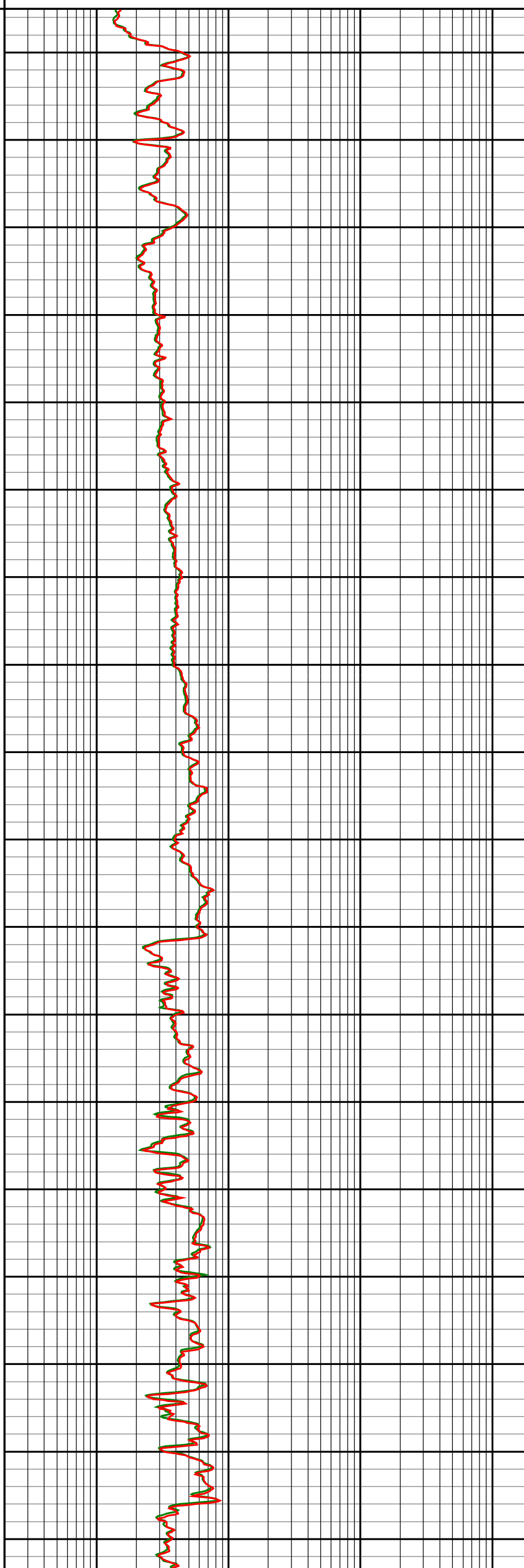

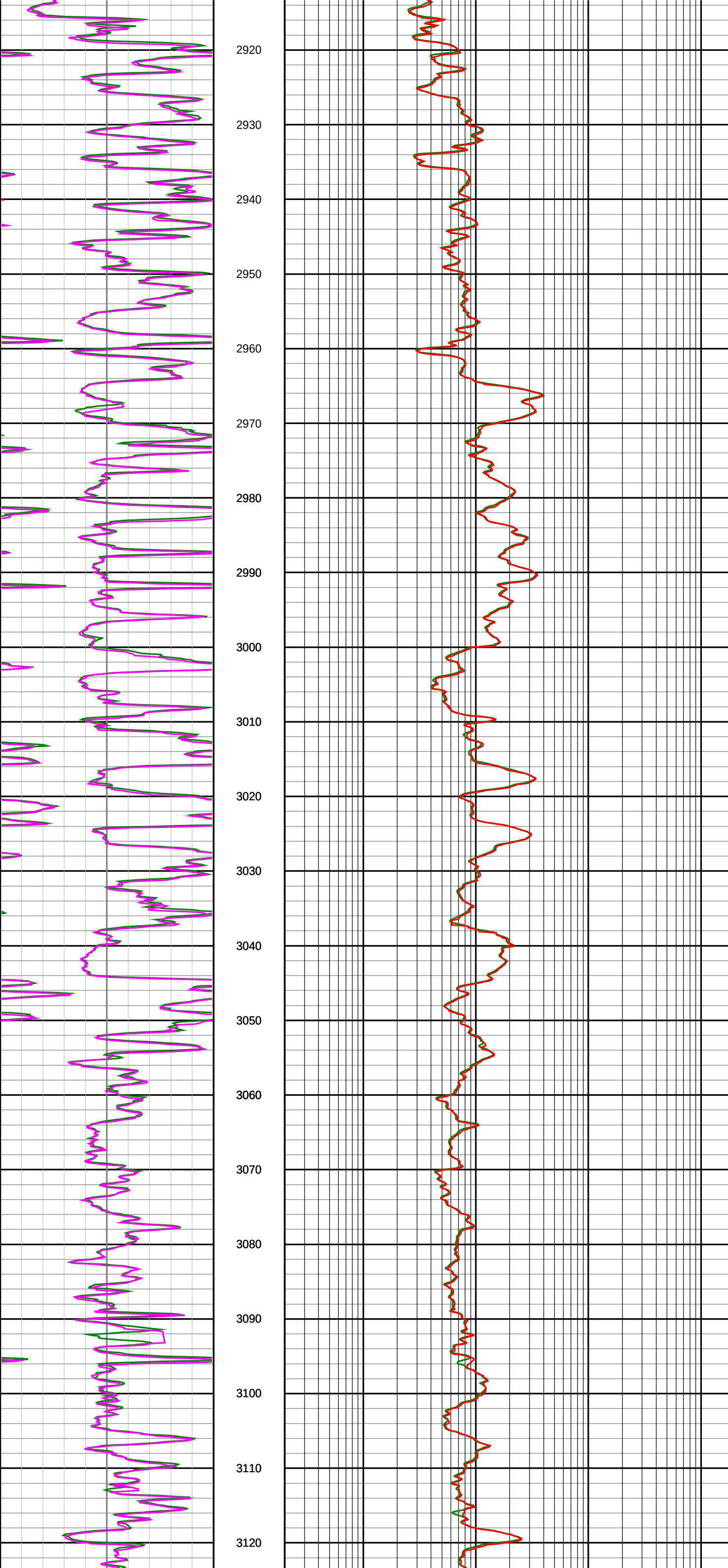
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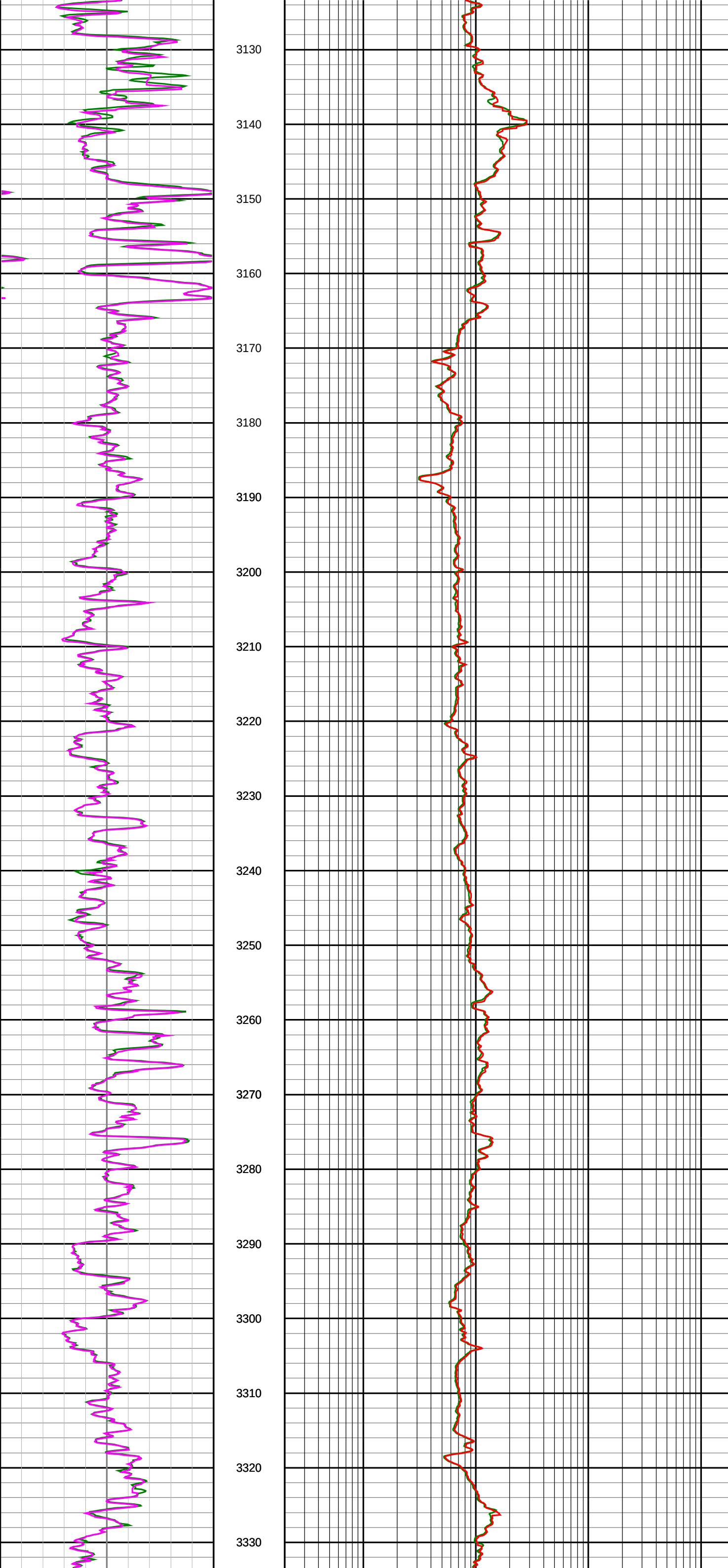
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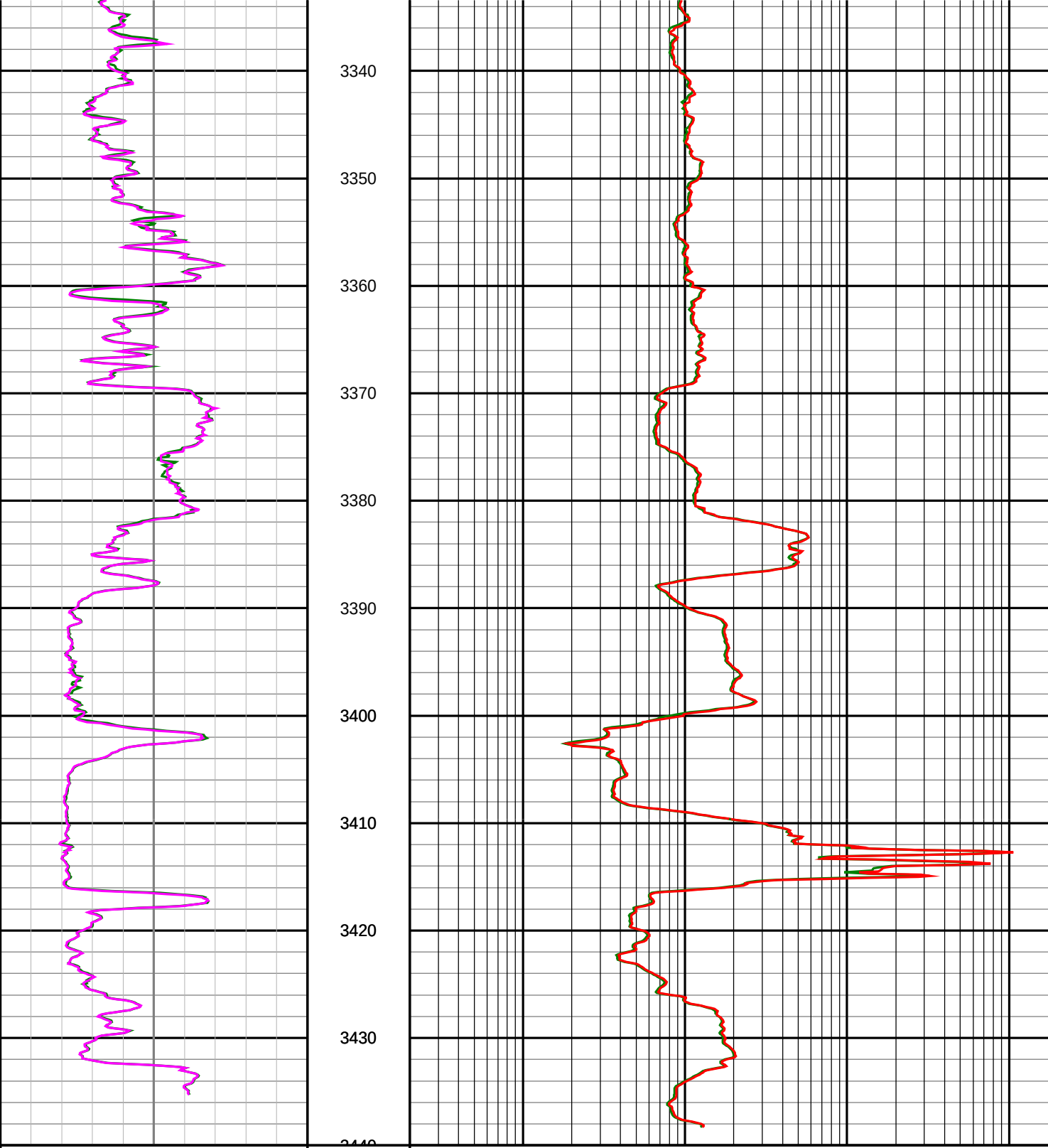


Gamma Ray api 0 200	DEPTH MD 1:500	Deep Phase Res ohm-metre 0.2 2000
Gamma Ray RT api 0 200		Deep Phase Res RT ohm-metre 0.2 2000

Trefoil-1 Run 400

DGR/EWR Log

QC 2

DGR Gamma Ray B
0 api 200

DGR Gamma Ray A
0 api 200

Depth

Deep Phase
0.2 ohm-metre 20

Medium Phase
0.2 ohm-metre 20

Shallow Phase
0.2 ohm-metre 20

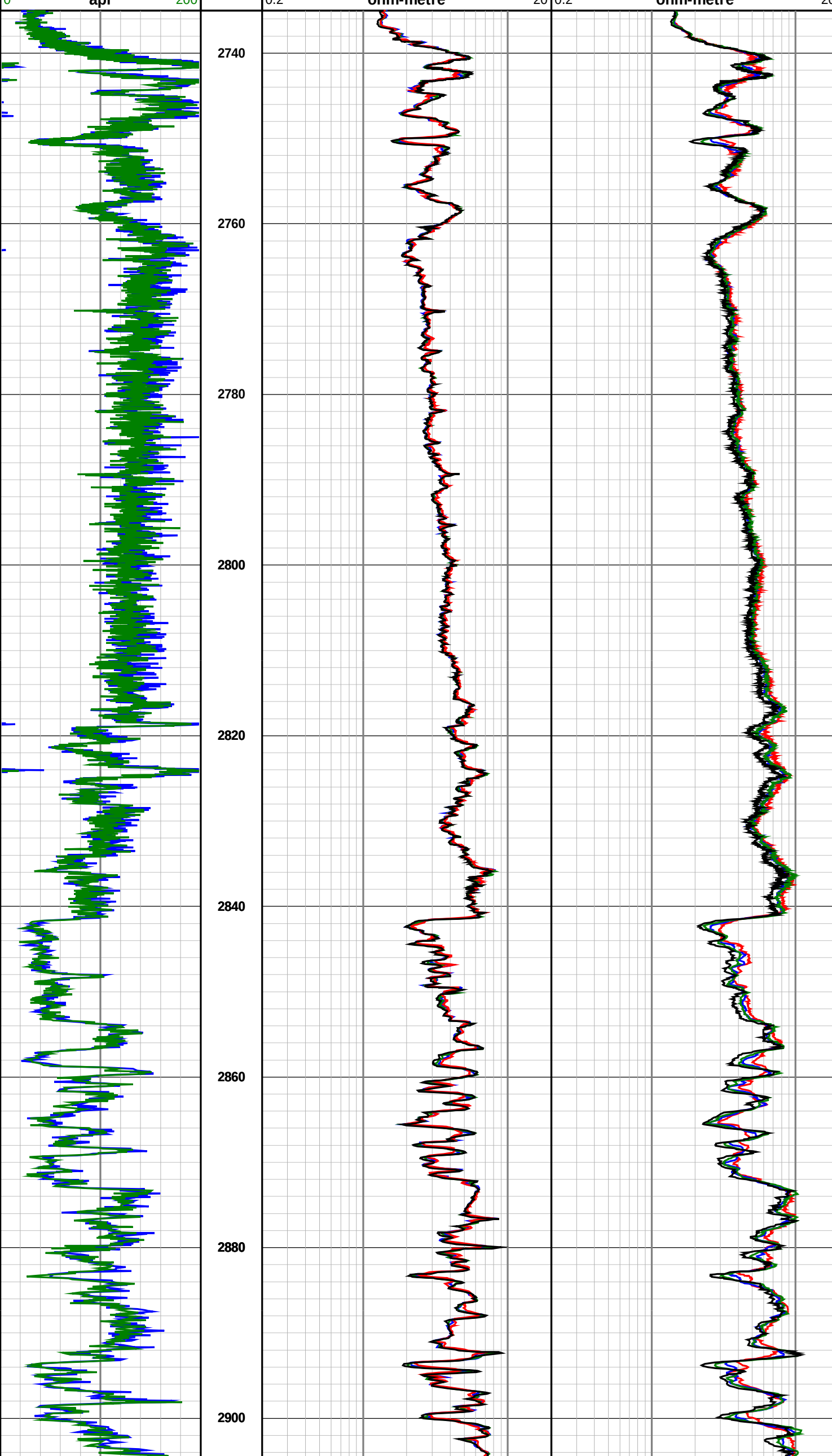
X-Shallow Phase
0.2 ohm-metre 20

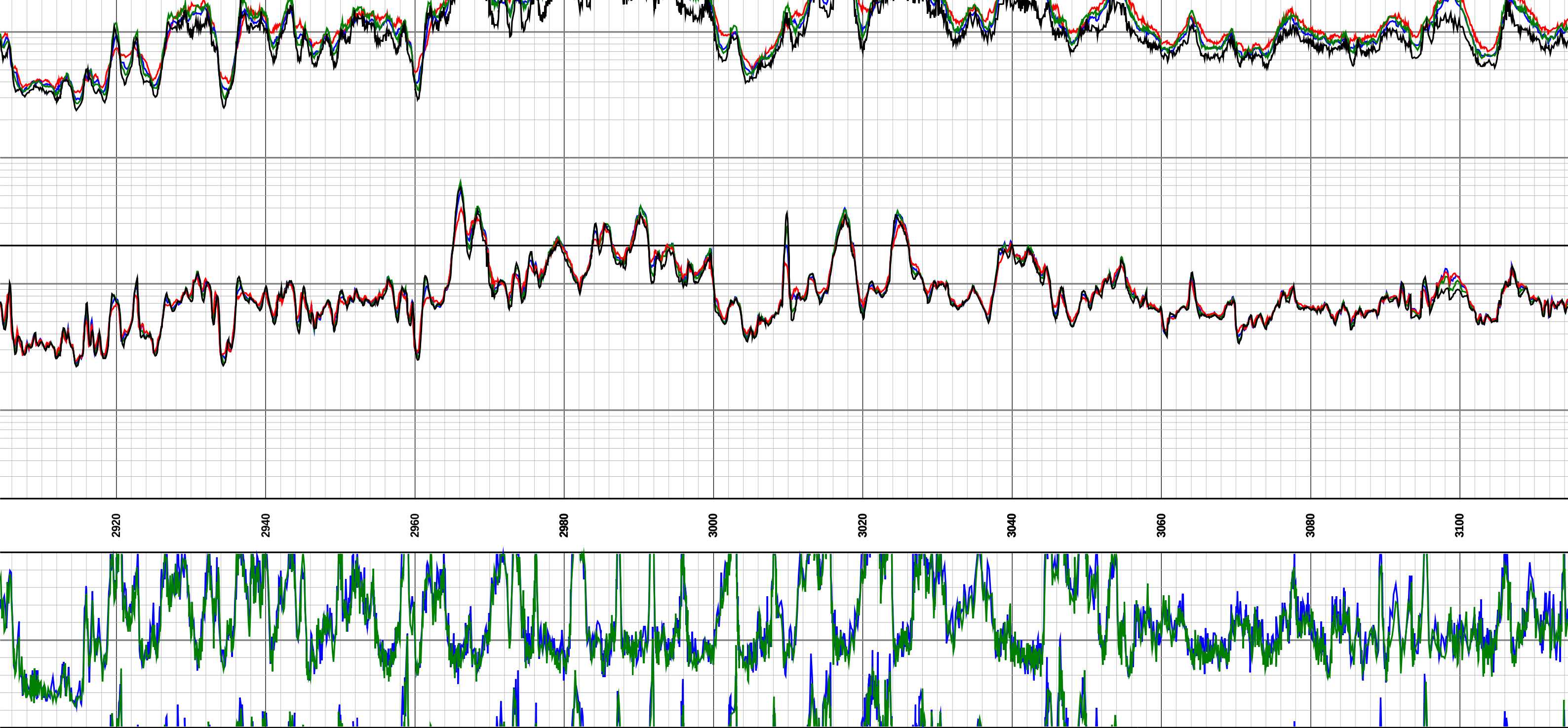
Deep CPA
0.2 ohm-metre 20

Medium CPA
0.2 ohm-metre 20

Shallow CPA
0.2 ohm-metre 20

X-Shallow CPA
0.2 ohm-metre 20

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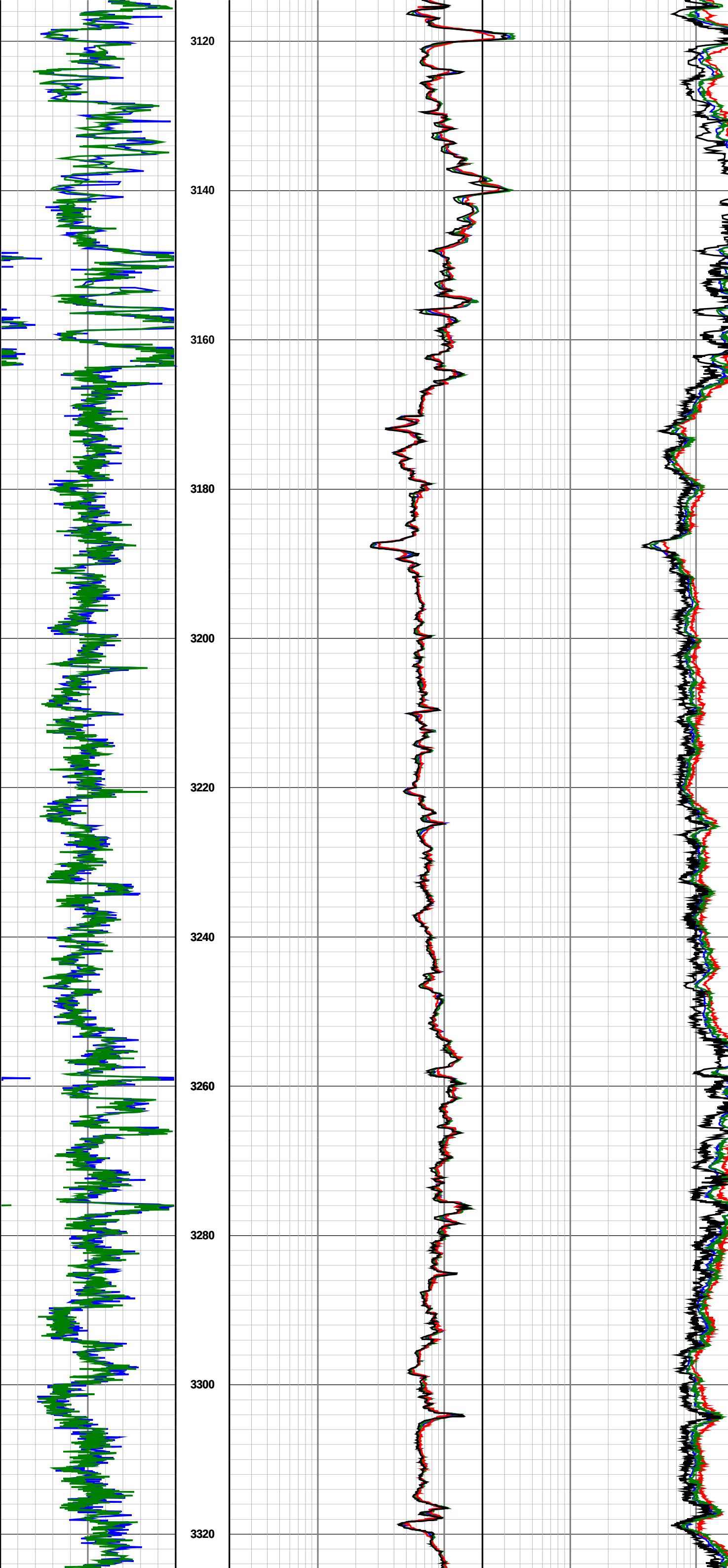
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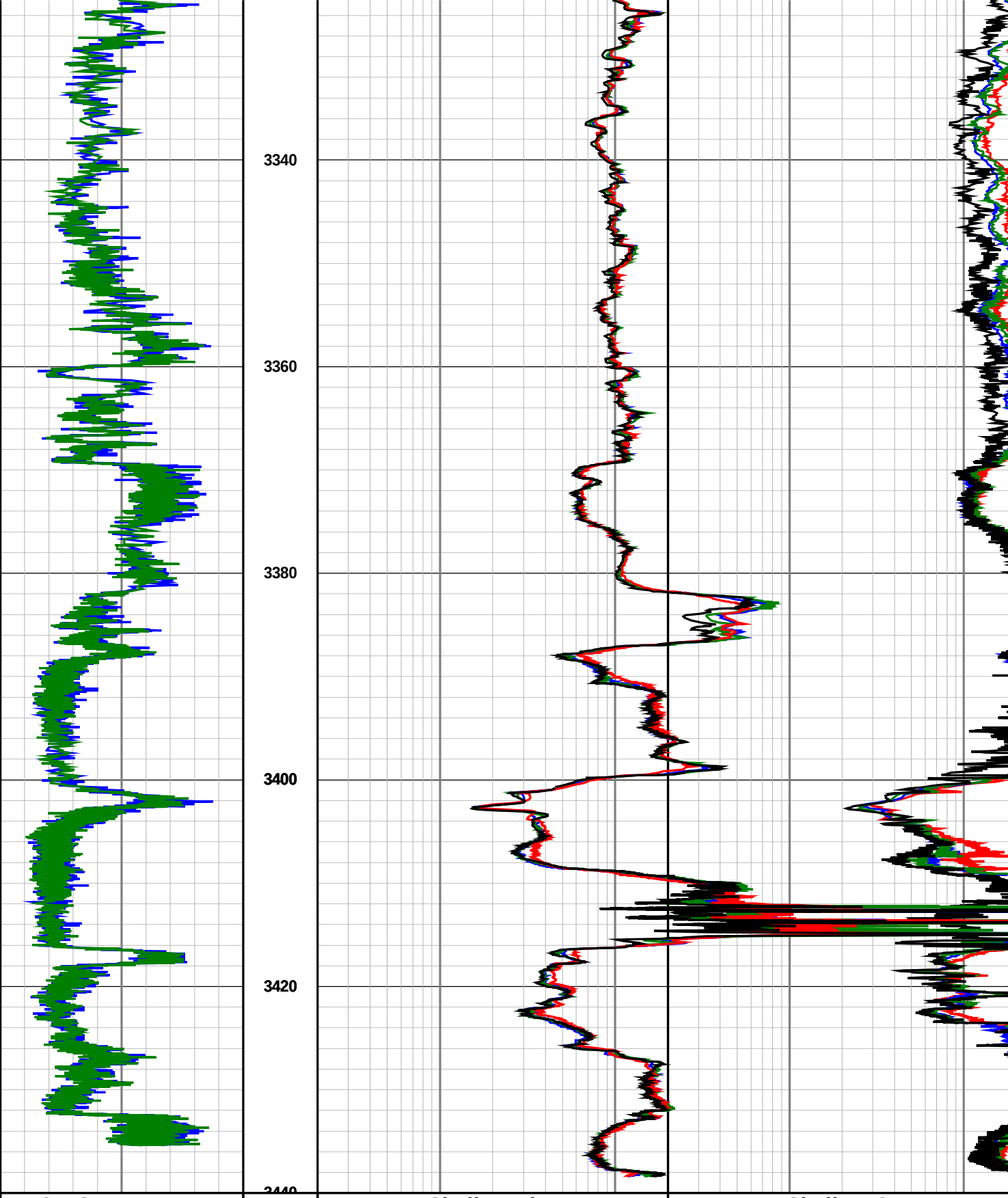

DGR Gamma Ray A	Depth	X-Shallow Phase	X-Shallow CPA
0 api 200		0.2 ohm-metre 20	0.2 ohm-metre 20
DGR Gamma Ray B		**Shallow Phase**	**Shallow CPA**
0 api 200		0.2 ohm-metre 20	0.2 ohm-metre 20
		Medium Phase	**Medium CPA**
		0.2 ohm-metre 20	0.2 ohm-metre 20
		Deep Phase	**Deep CPA**
		0.2 ohm-metre 20	0.2 ohm-metre 20

Trefoil-1 Run 400

QC-3 SLD-1

Bulk Density	Resolution Near	Gain Far	SLD Rapid PE N2
1.95 gram per cc 2.95	0 50	0 percent 100	0 barns/electron 10
Far Density	**Resolution Far**	**Gain Near**	
1.95 gram per cc 2.95	0 percent 50	0 percent 100	
Near Density	**Far Peak Loc**	**HV Gain**	
1.95 gram per cc 2.95	190 210	0 percent 100	
Depth	**Near Peak Loc**		
	190 210		

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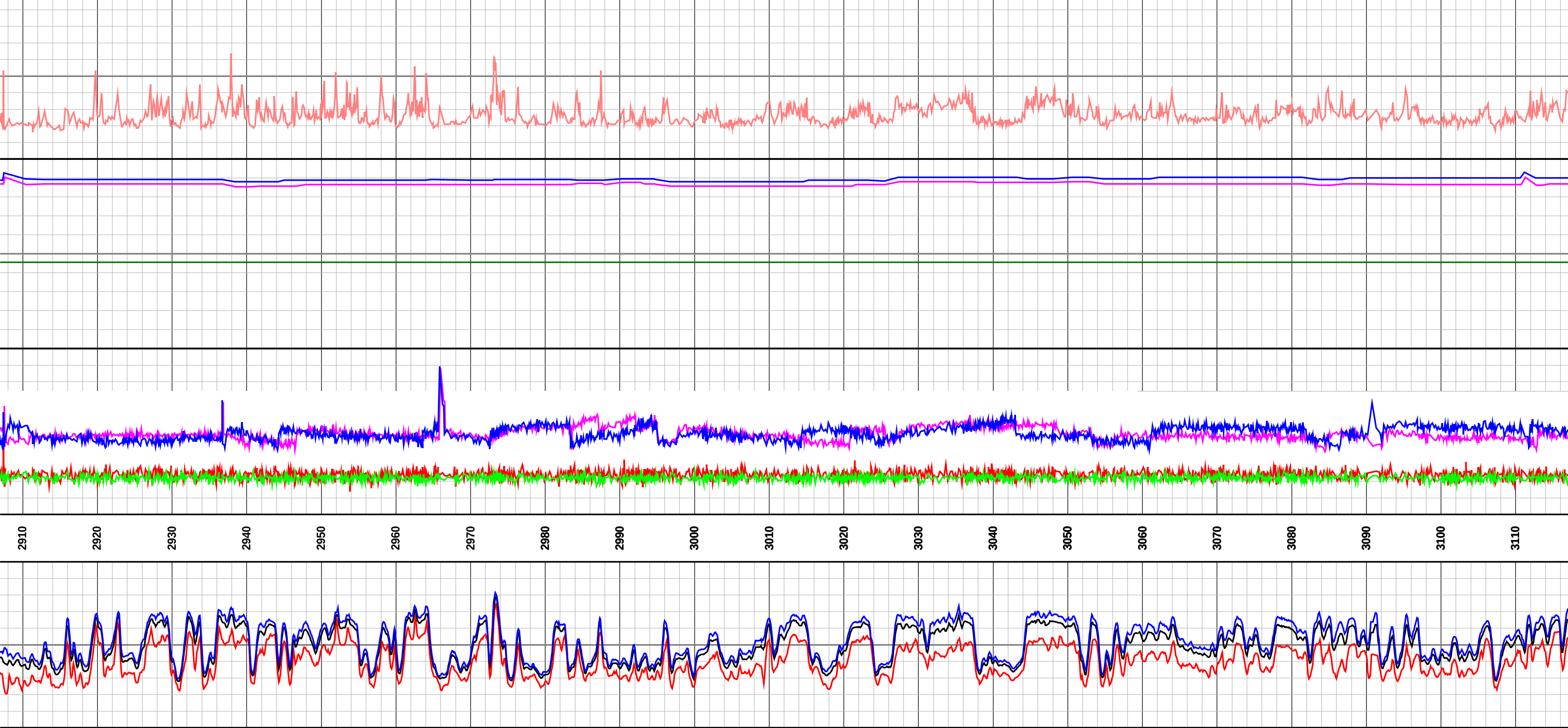
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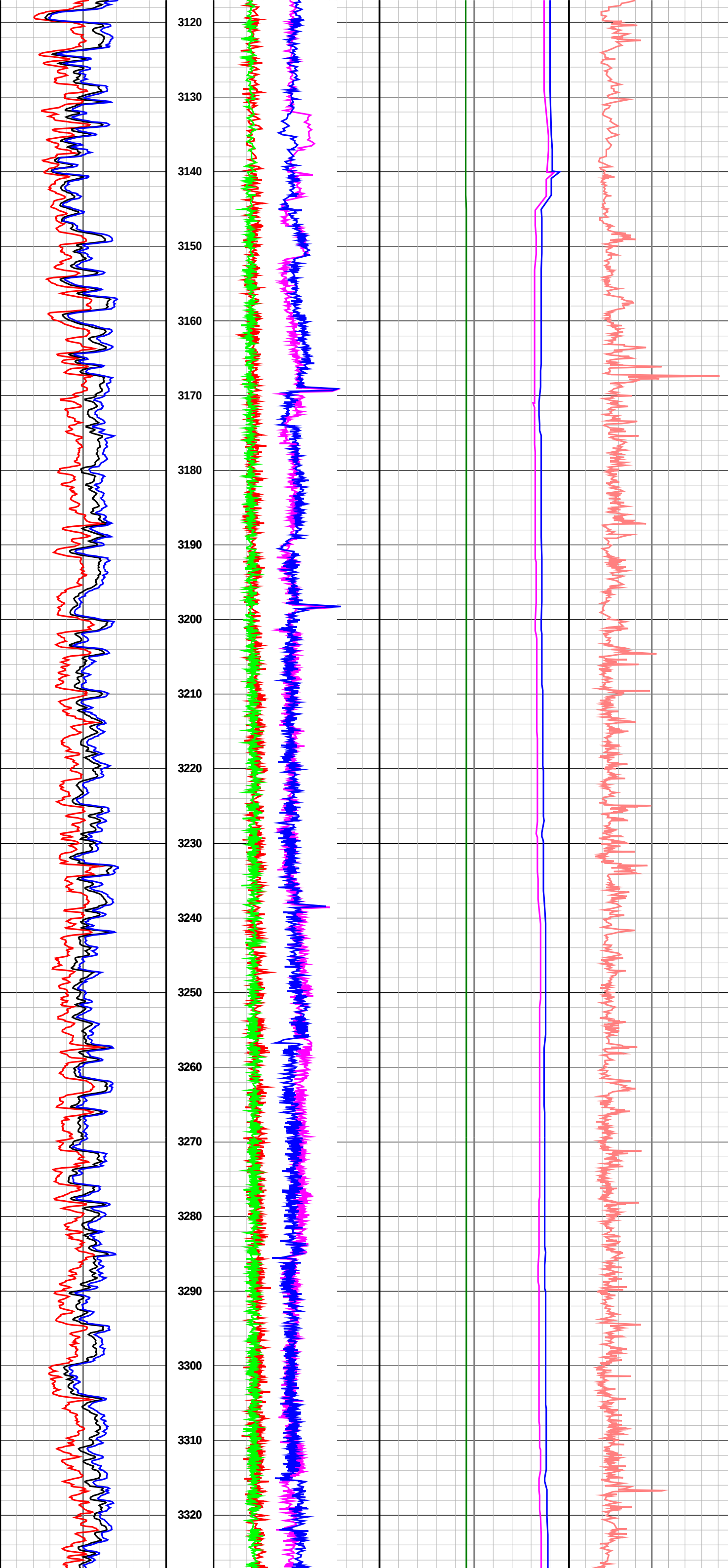
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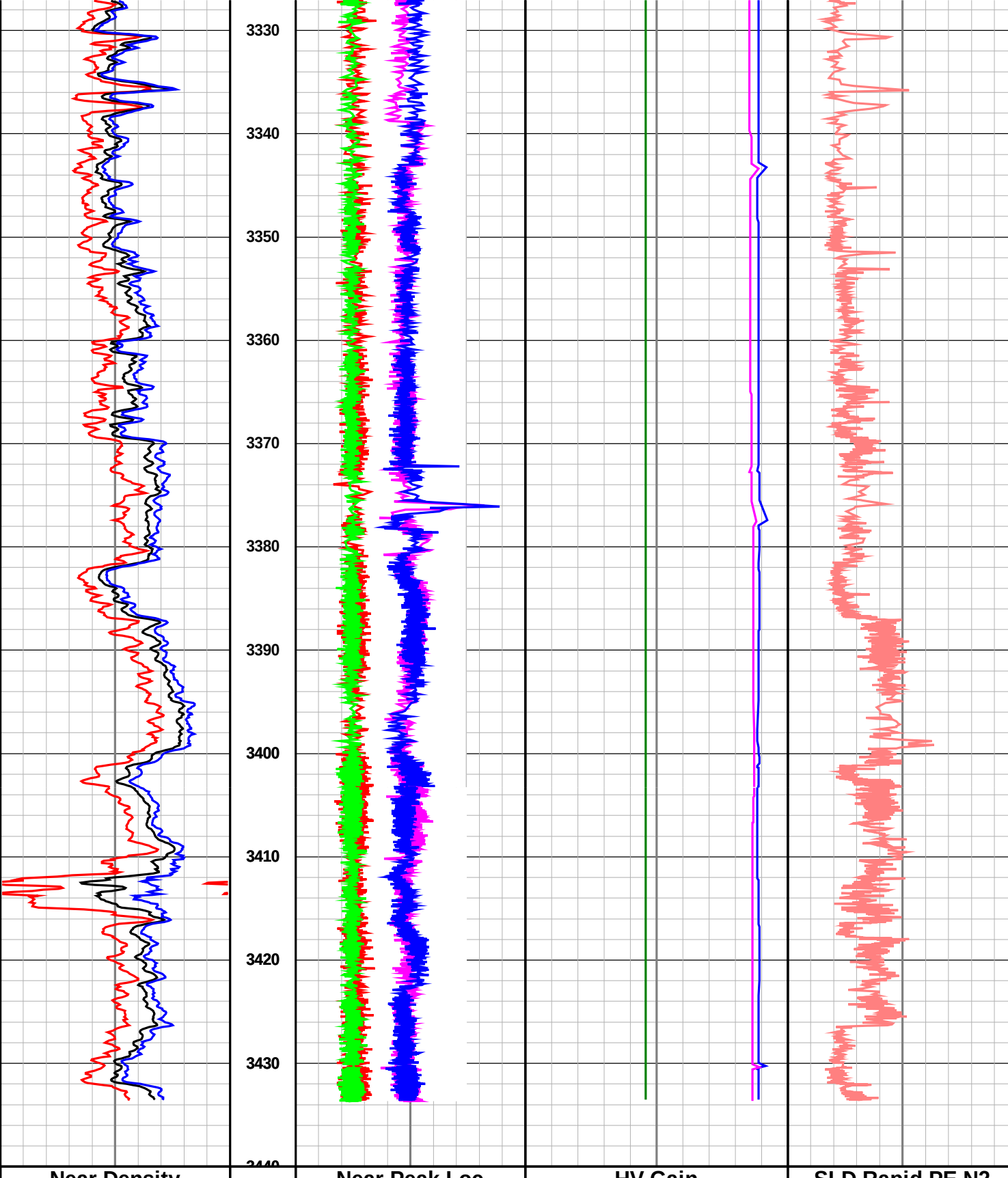
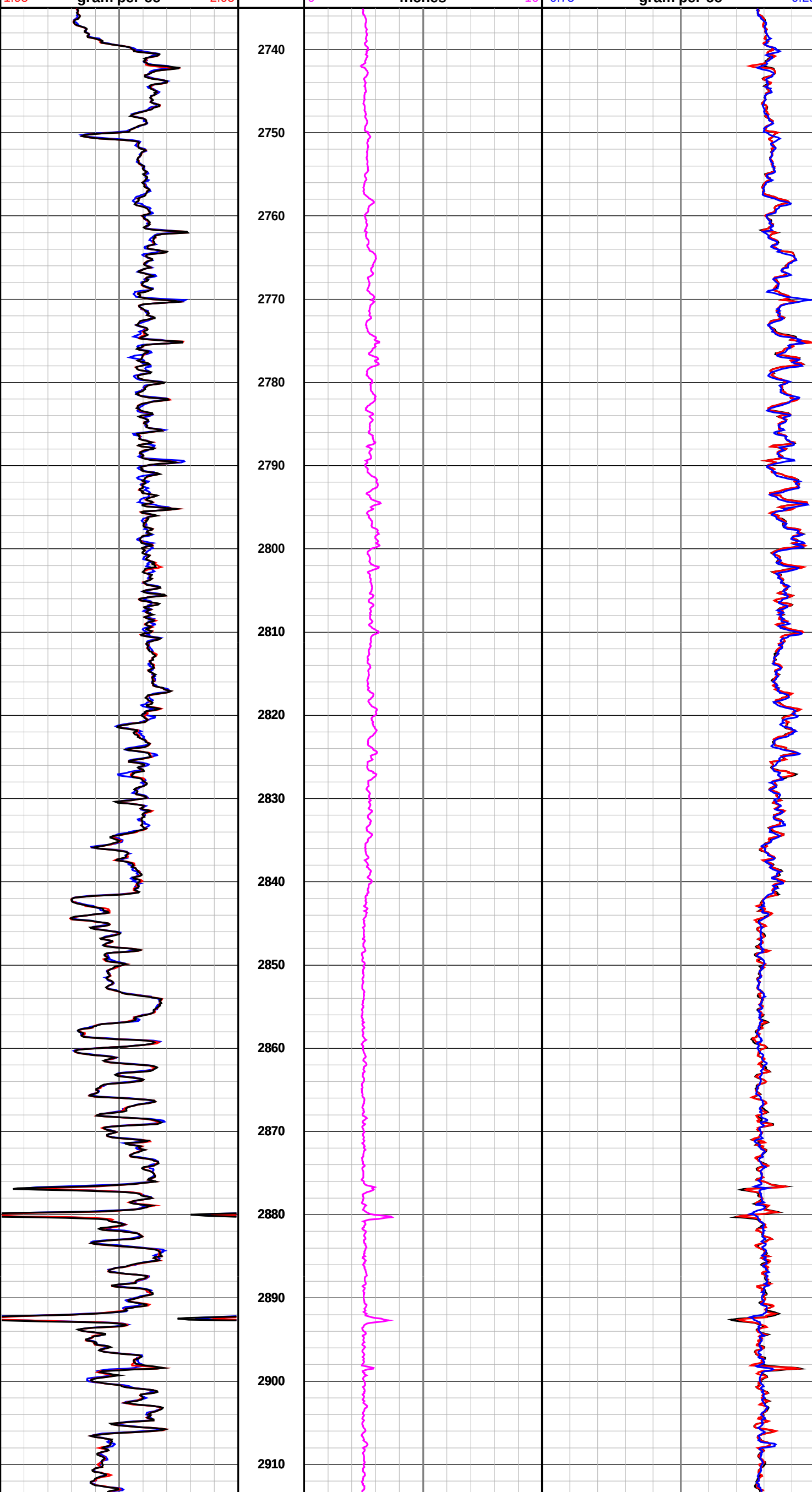


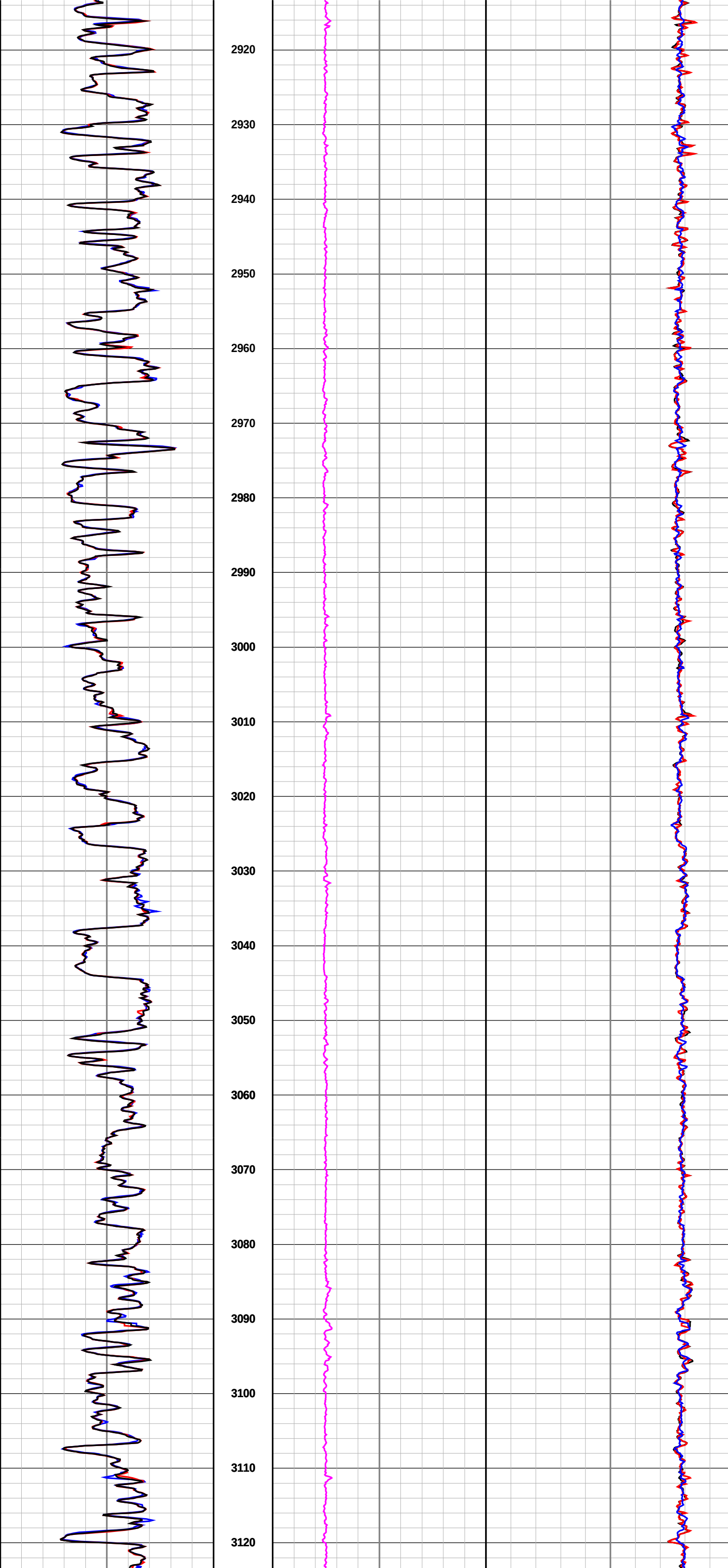
Near Density			Depth	Near Peak Loc		HV Gain			SLD Rapid PE N2		
1.95	gram per cc	2.95		190	210	0	percent	100	0	barns/electron	10
Far Density				**Far Peak Loc**		**Gain Near**					
1.95	gram per cc	2.95		190	210	0	percent	100			
Bulk Density				**Resolution Far**		**Gain Far**					
1.95	gram per cc	2.95		0	percent 50	0	percent	100			
				Resolution Near							
				0	50						

Trefoil-1 Run 400

QC-4 SLD-2

Bulk Density		BDSO Best
1.95 gram per cc 2.95		-0.75 gram per cc 0.25
RAPID BD WORST		**BDSO Worst**
1.95 gram per cc 2.95		-0.75 gram per cc 0.25
RAPID BD BEST	**Depth**	**SHSI** / **SO Corr**
1.95 gram per cc 2.95		6 inches 16 / -0.75 gram per cc 0.25

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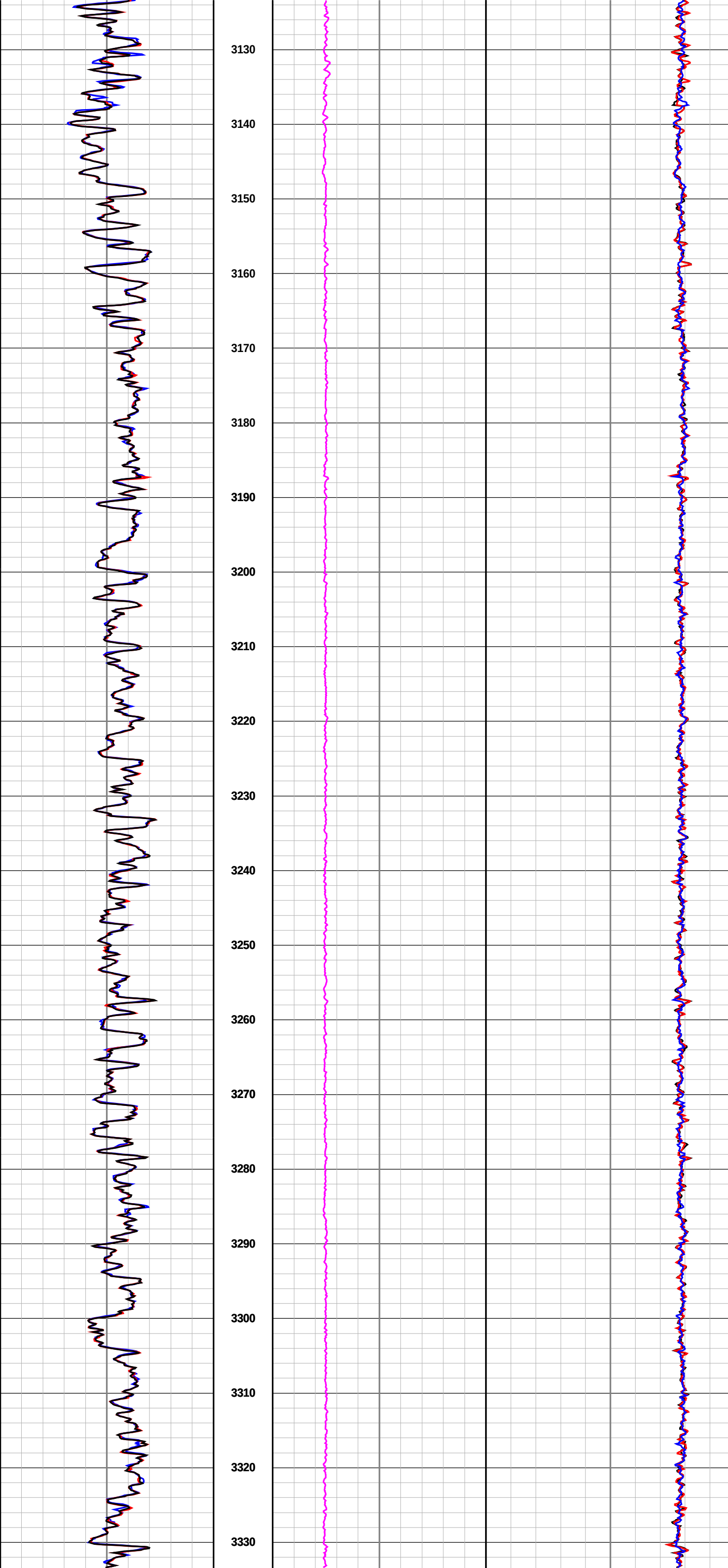
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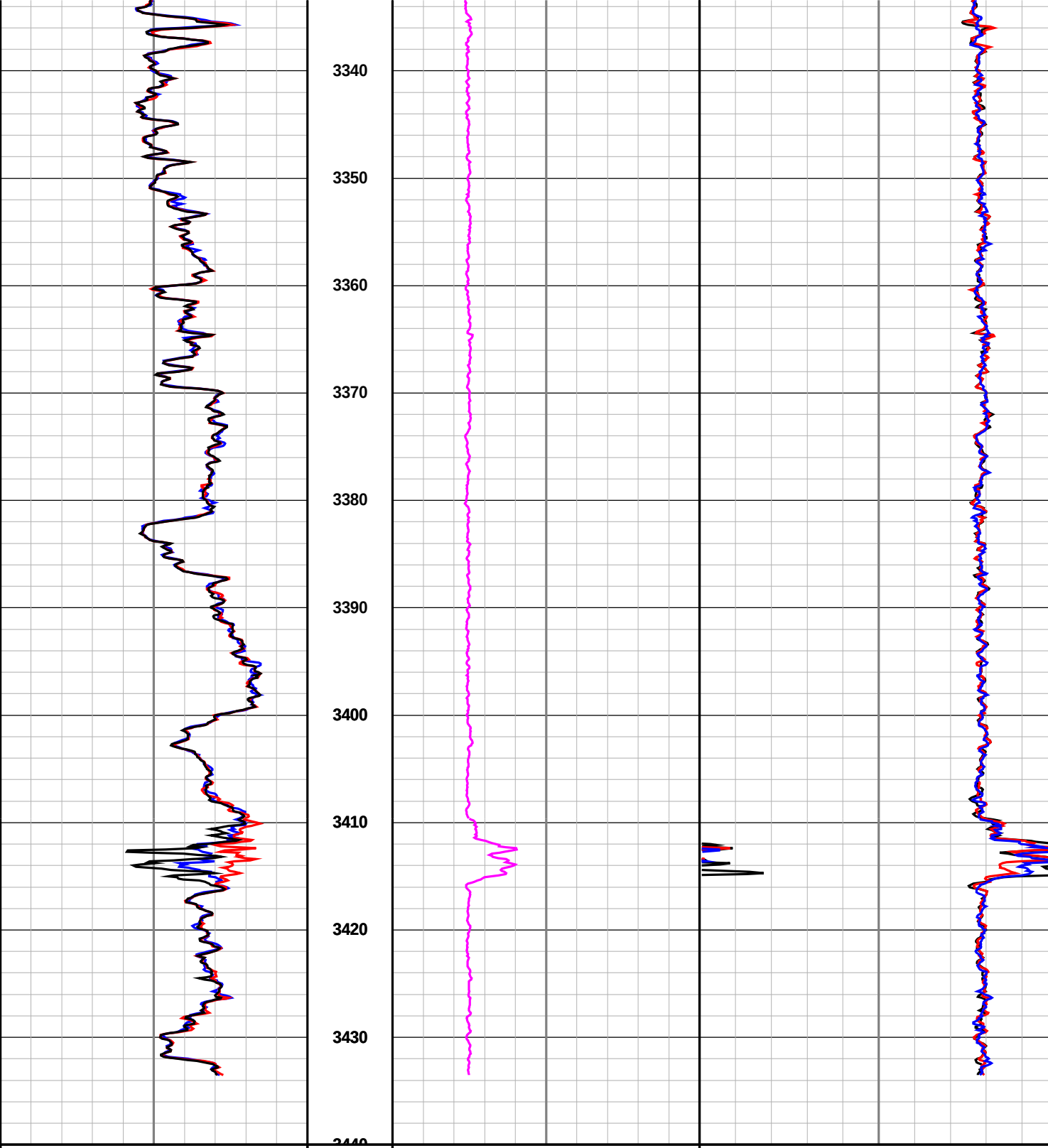
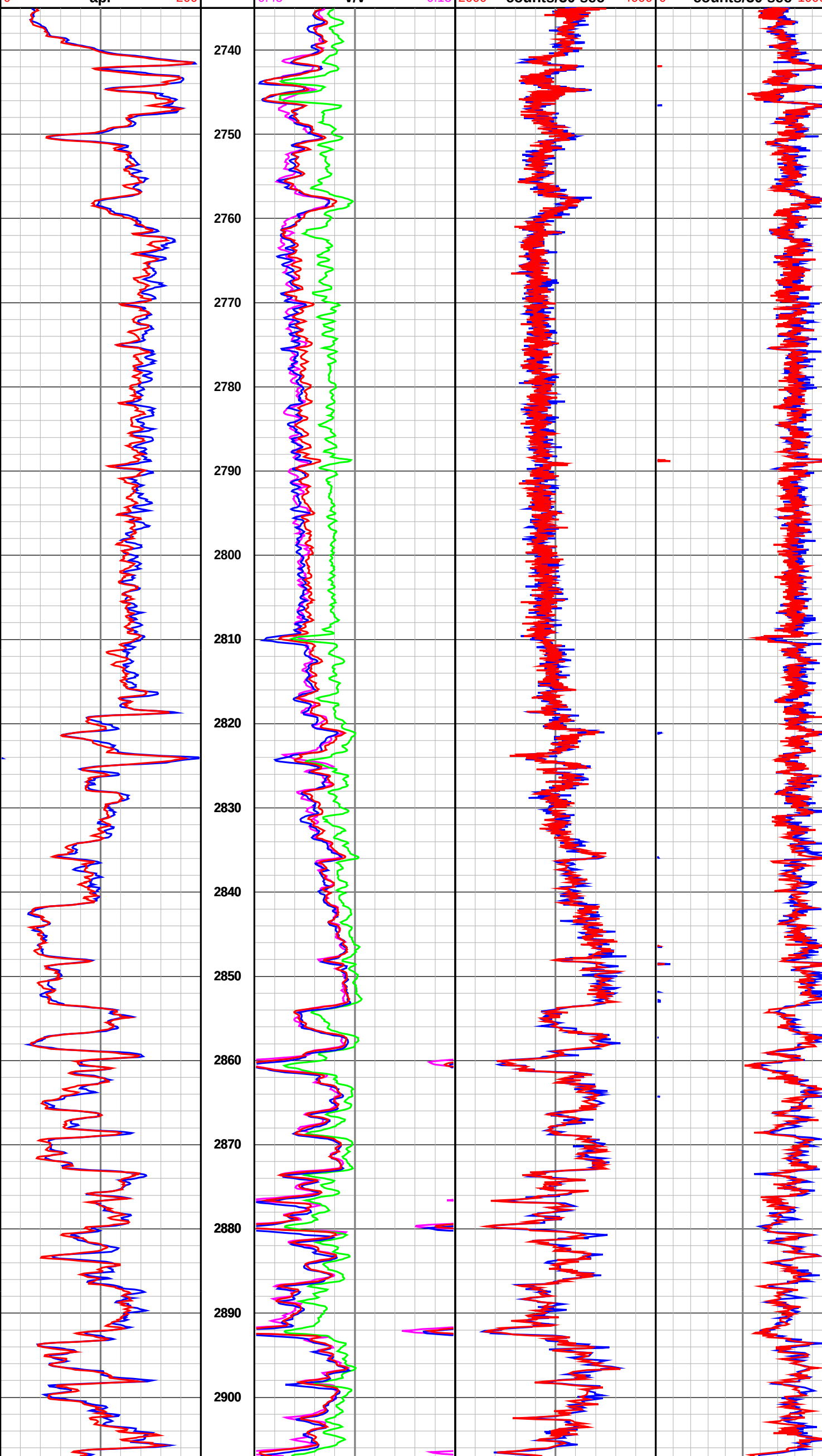


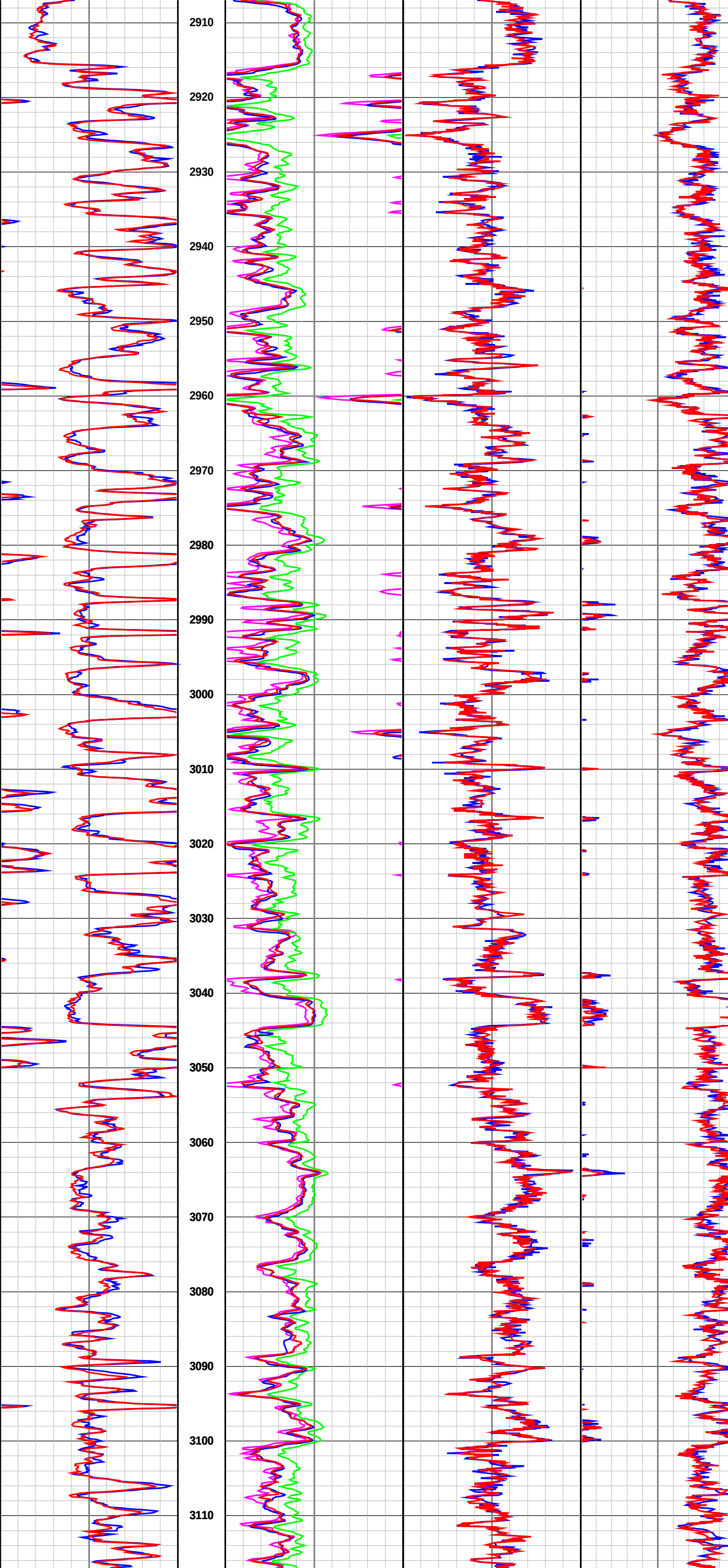
RAPID BD BEST			Depth	SHSI			SO Corr		
1.95	gram per cc	2.95		6	inches	16	-0.75	gram per cc	0.25
RAPID BD WORST							BDSO Worst		
1.95	gram per cc	2.95					-0.75	gram per cc	0.25
Bulk Density							BDSO Best		
1.95	gram per cc	2.95					-0.75	gram per cc	0.25

Trefoil-1 Run 400

QC-5 CNP-DGR

DGR Bank B	Rec Porosity STP	Near 0 CNP	Far 0 CNP
0 api 200	0.45 v/v -0.15	2000 counts/30 sec 4000	0 counts/30 sec 1000
DGR Bank A	**RT Porosity STP**	**Near 1 CNP**	**Far 1 CNP**
0 api 200	0.45 v/v -0.15	2000 counts/30 sec 4000	0 counts/30 sec 1000
	Porosity Far		
	0.45 v/v -0.15		
Depth	**Porosity Near**		
	0.45 v/v -0.15		

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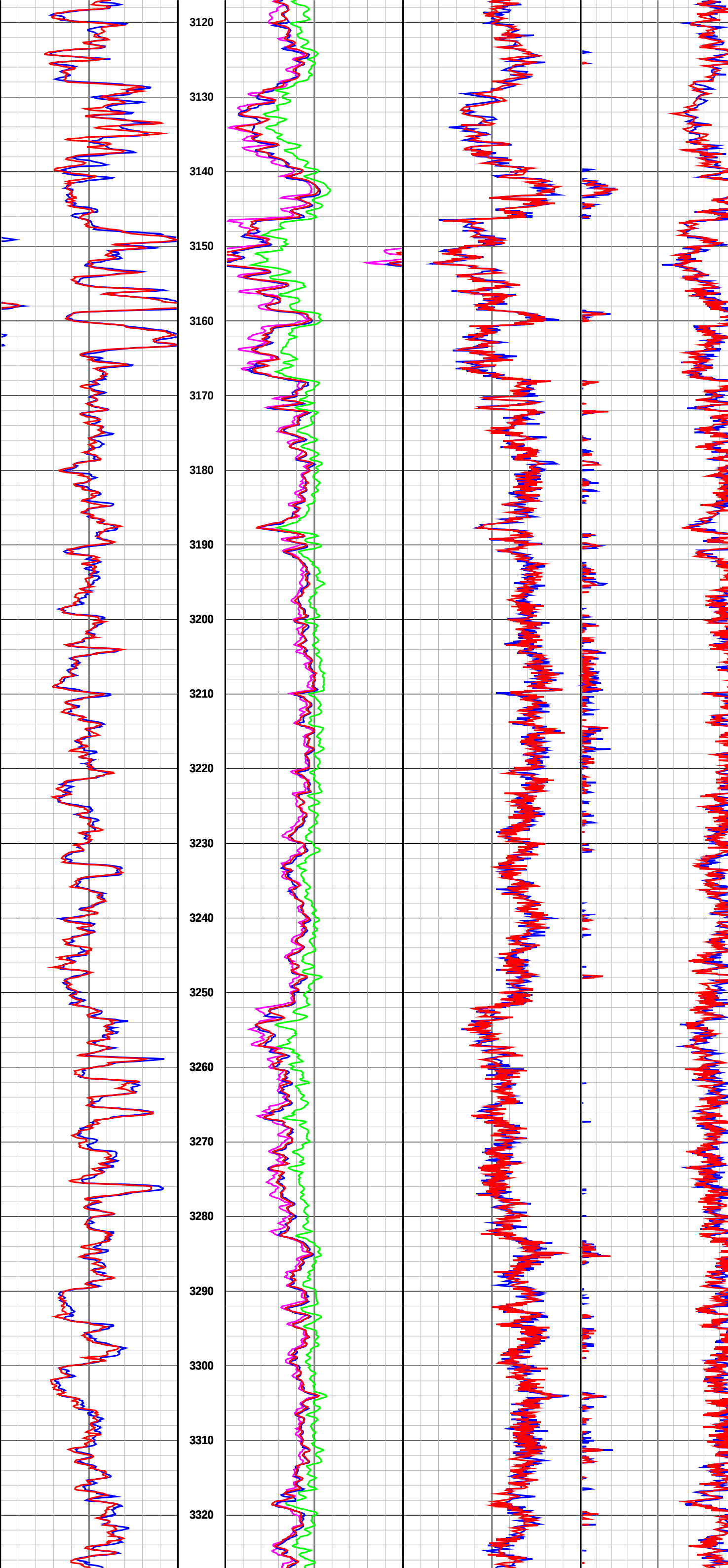
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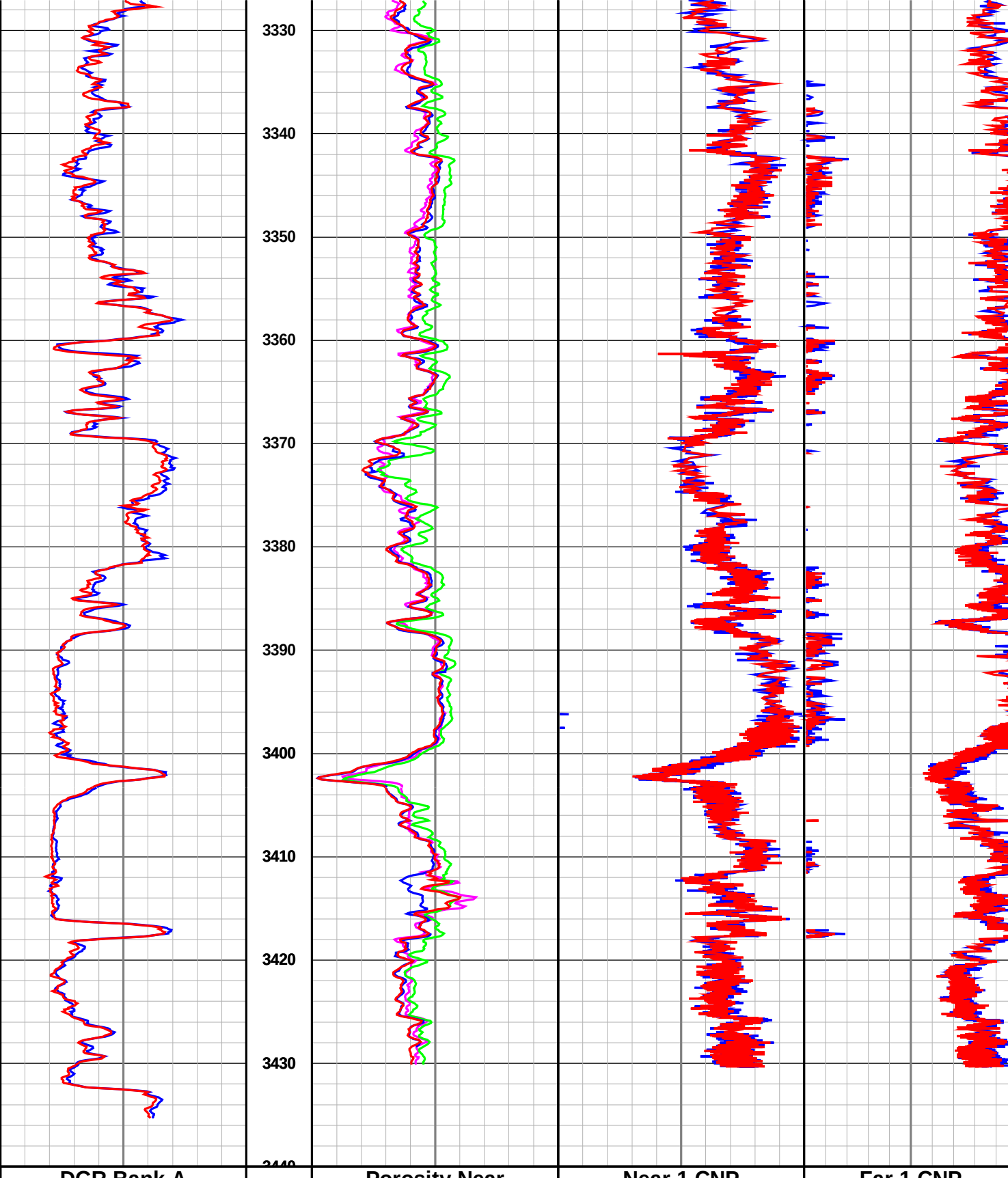
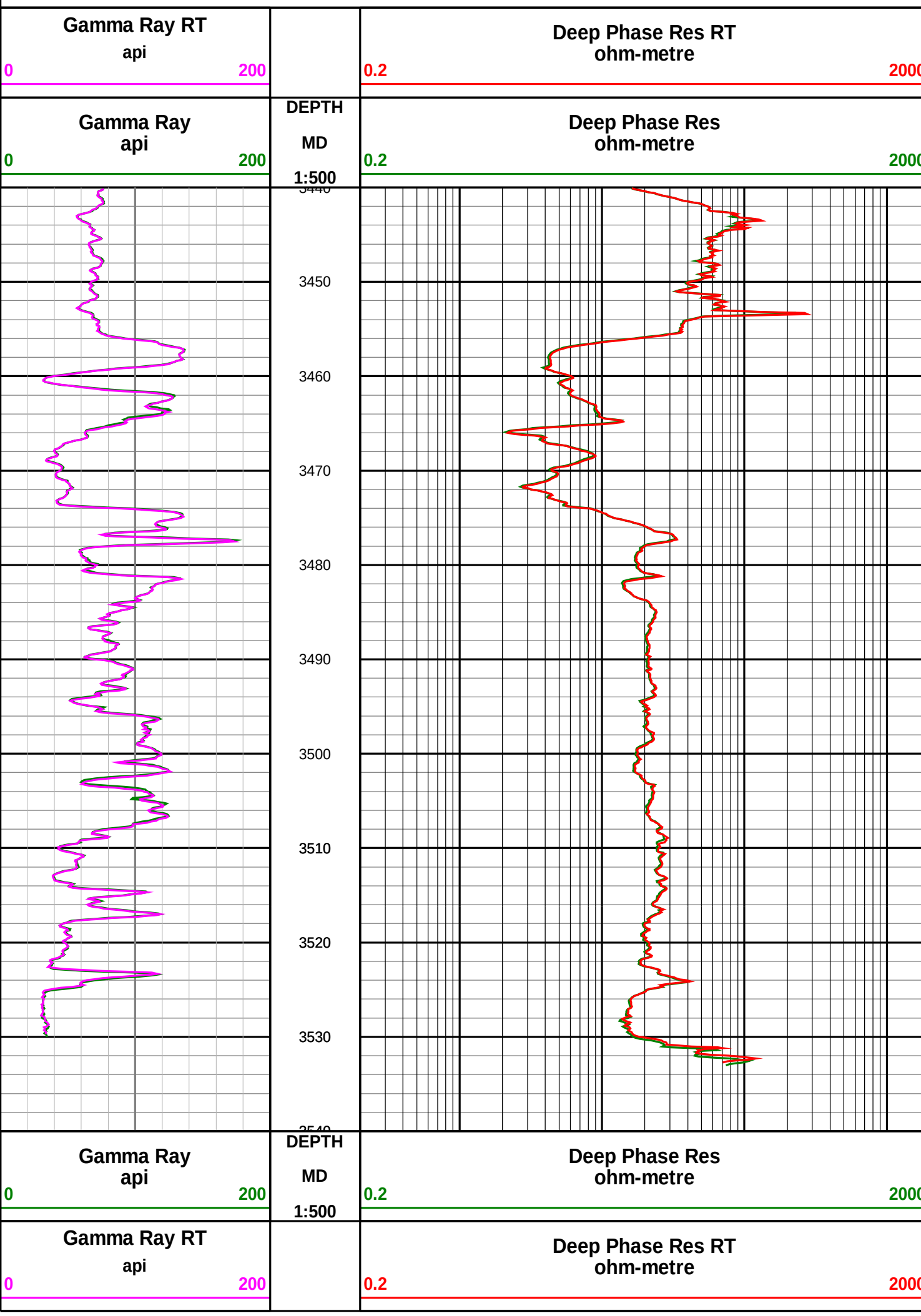


DGR Bank A			Depth	Porosity Near			Near 1 CNP			Far 1 CNP		
0	api	200		0.45	v/v	-0.15	2000	counts/30 sec	4000	0	counts/30 sec	1000
DGR Bank B				Porosity Far			Near 0 CNP			Far 0 CNP		
0	api	200		0.45	v/v	-0.15	2000	counts/30 sec	4000	0	counts/30 sec	1000
				RT Porosity STP								
				0.45	v/v	-0.15						
				Rec Porosity STP								
				0.45	v/v	-0.15						

Trefoil-1 Run 500

Realtime/Recorded Comparison Log

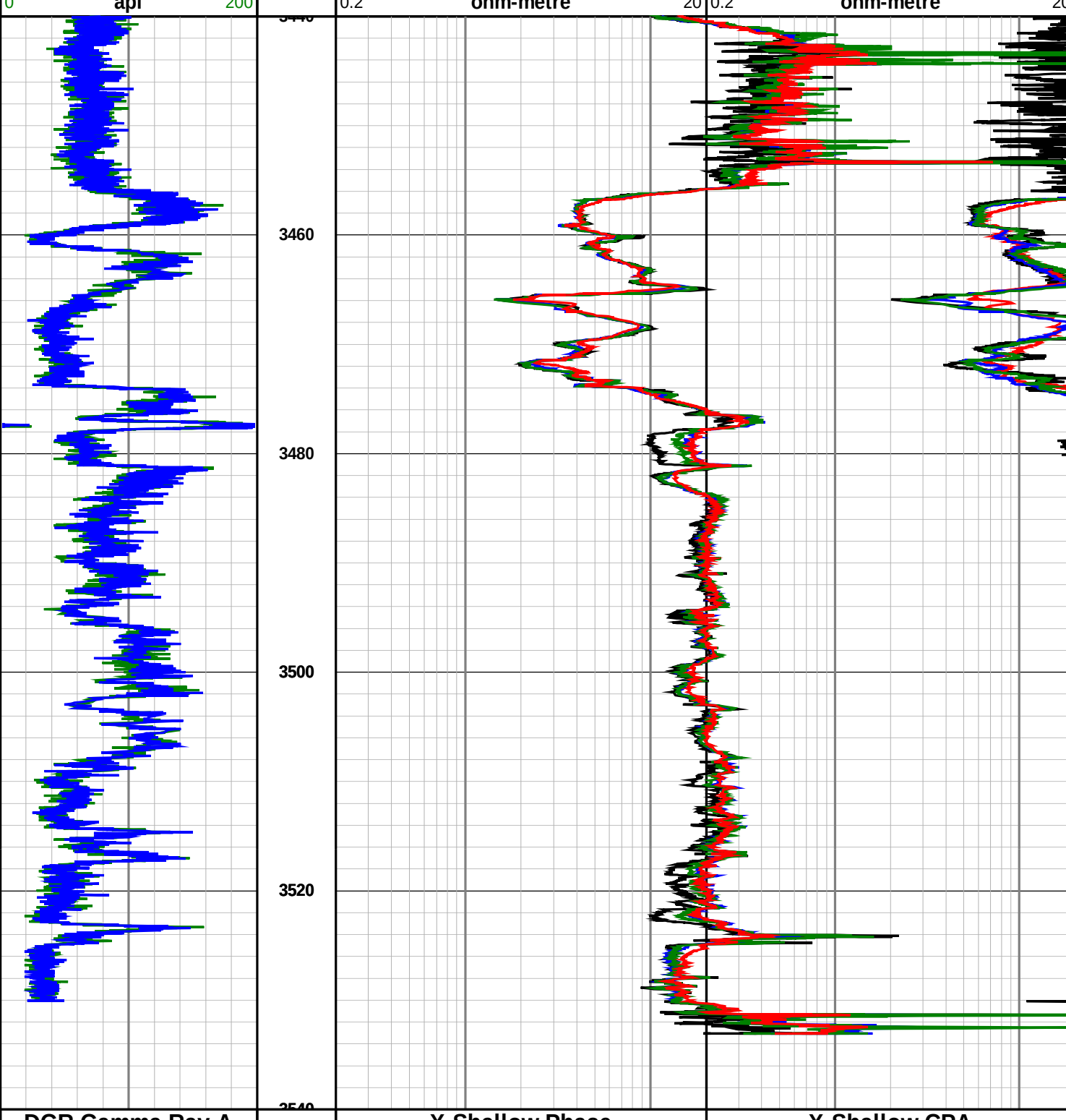


Trefoil-1 Run 500

DGR/EWR Log

QC 2

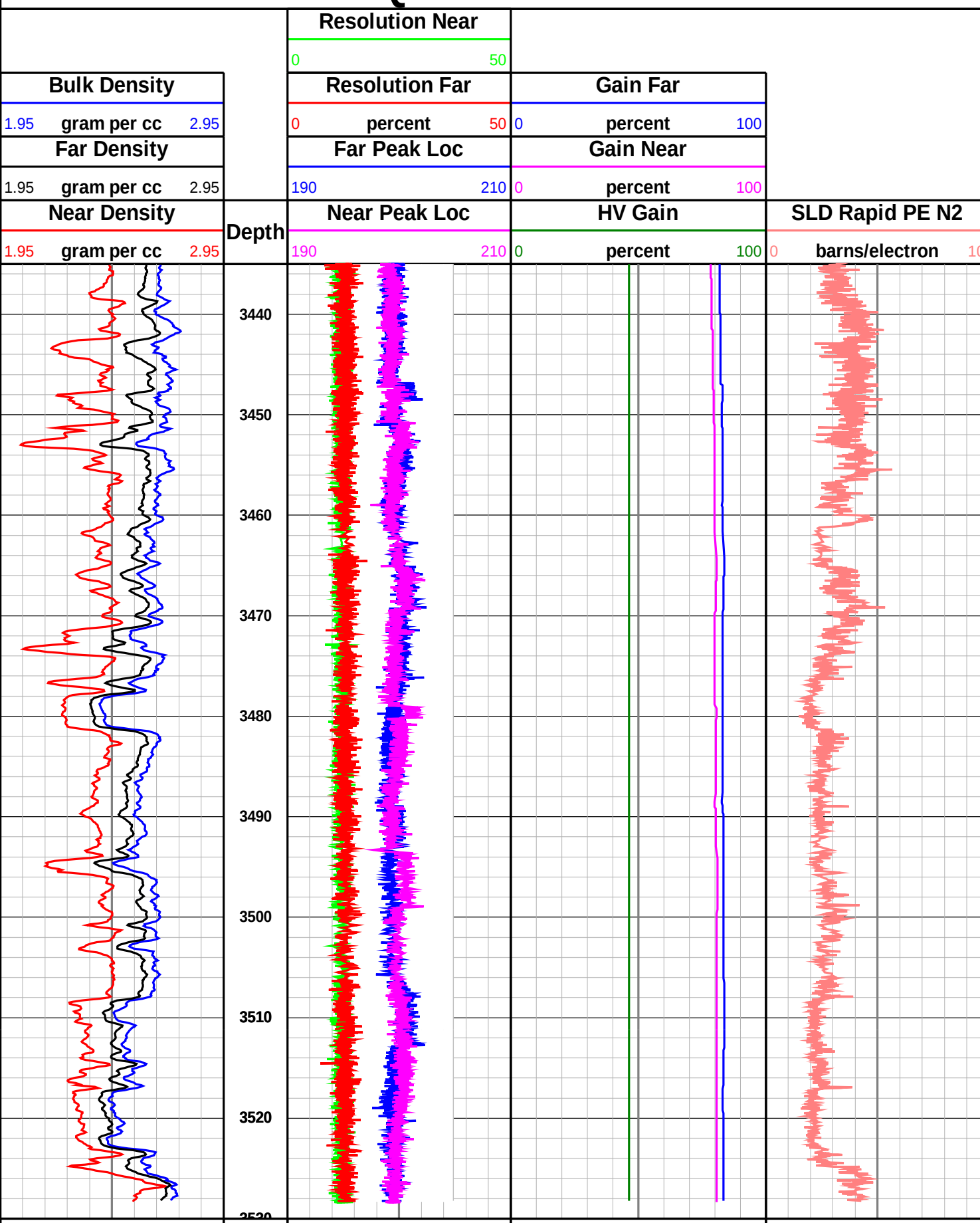
	Deep Phase	Deep CPA
	0.2 ohm-metre 20	0.2 ohm-metre 20
	Medium Phase	Medium CPA
	0.2 ohm-metre 20	0.2 ohm-metre 20
DGR Gamma Ray B	Shallow Phase	Shallow CPA
0 api 200	0.2 ohm-metre 20	0.2 ohm-metre 20
DGR Gamma Ray A	X-Shallow Phase	X-Shallow CPA
0 api 200	0.2 ohm-metre 20	0.2 ohm-metre 20



DGR Gamma Ray A	X-Shallow Phase	X-Shallow CPA
0 api 200	0.2 ohm-metre 20	0.2 ohm-metre 20
DGR Gamma Ray B	Shallow Phase	Shallow CPA
0 api 200	0.2 ohm-metre 20	0.2 ohm-metre 20
	Medium Phase	Medium CPA
	0.2 ohm-metre 20	0.2 ohm-metre 20
	Deep Phase	Deep CPA
	0.2 ohm-metre 20	0.2 ohm-metre 20

Trefoil-1 Run 500

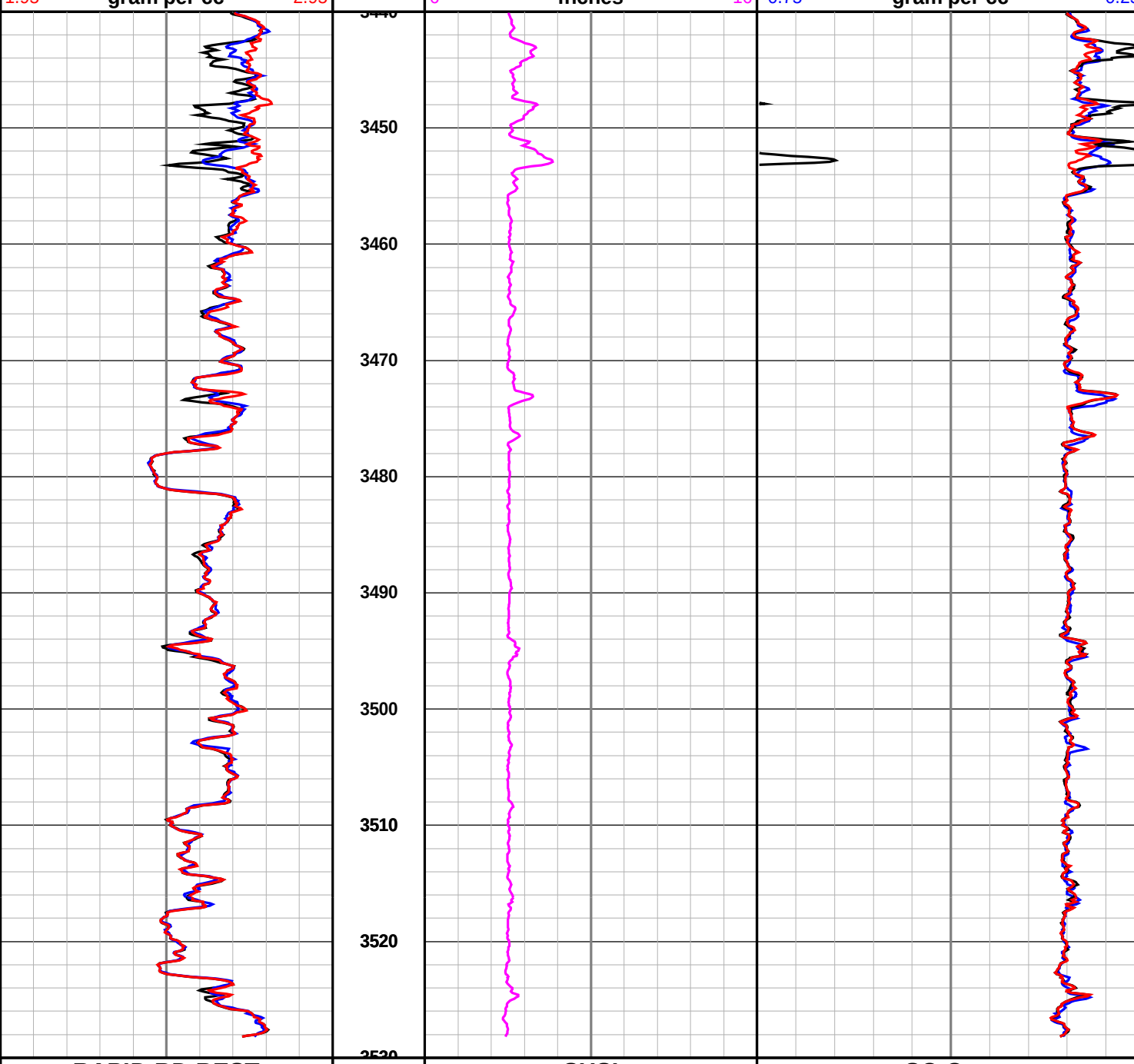
QC-3 SLD-1



Trefoil-1 Run 500

QC-4 SLD-2

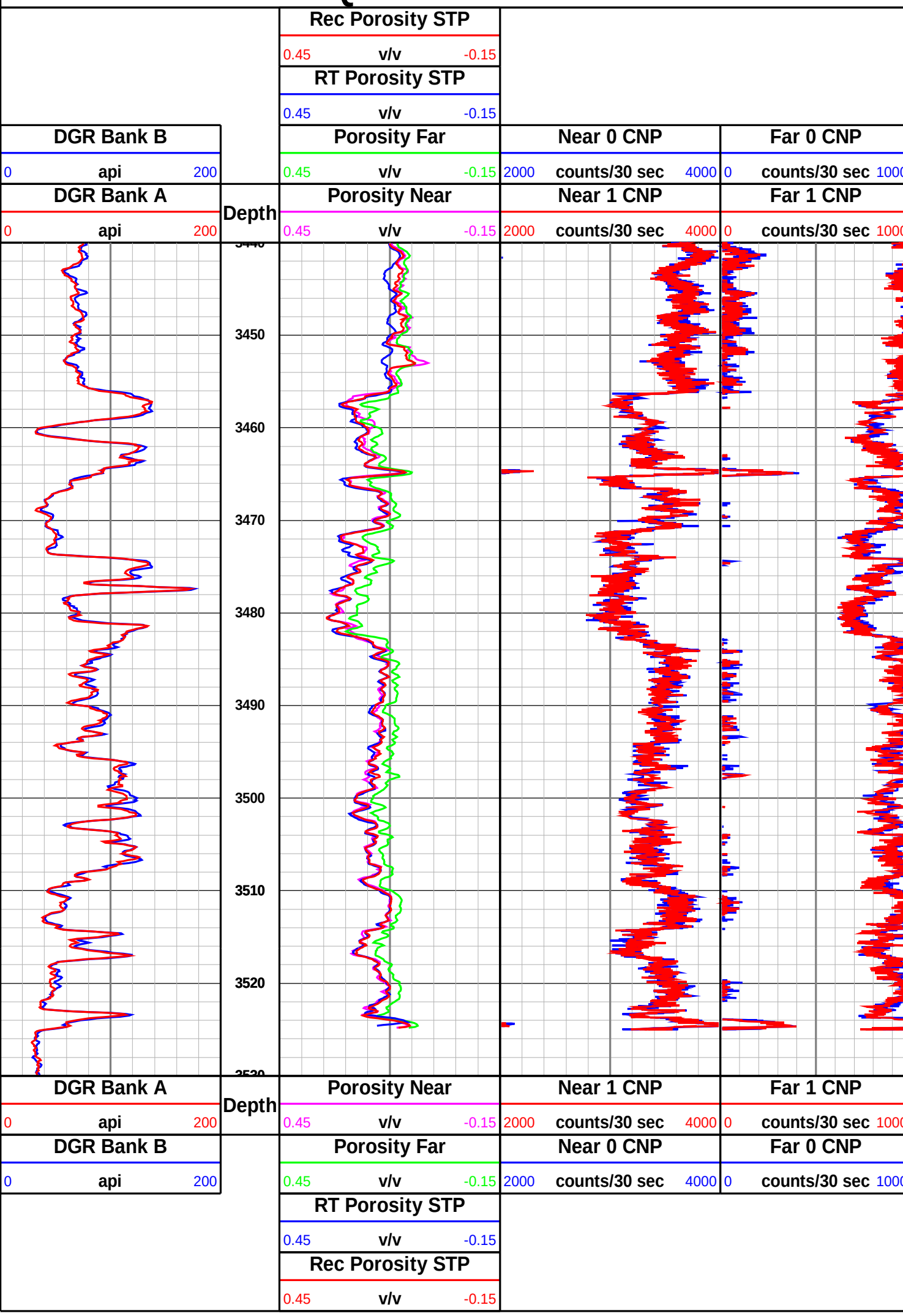
Bulk Density		BDSO Best
1.95 gram per cc 2.95		-0.75 gram per cc 0.25
RAPID BD WORST		**BDSO Worst**
1.95 gram per cc 2.95		-0.75 gram per cc 0.25
RAPID BD BEST	**Depth**	**SHSI** / **SO Corr**
1.95 gram per cc 2.95		6 inches 16 / -0.75 gram per cc 0.25



RAPID BD BEST	Depth	SHSI	SO Corr
1.95 gram per cc 2.95		6 inches 16	-0.75 gram per cc 0.25
RAPID BD WORST			**BDSO Worst**
1.95 gram per cc 2.95			-0.75 gram per cc 0.25
Bulk Density			**BDSO Best**
1.95 gram per cc 2.95			-0.75 gram per cc 0.25

Trefoil-1 Run 500

QC-5 CNP-DGR



DGR Bank A
0 api 200
Depth
Porosity Near
0.45 v/v -0.15
Near 1 CNP
2000 counts/30 sec 4000
Far 1 CNP
0 counts/30 sec 1000
DGR Bank B
0 api 200
Porosity Far
0.45 v/v -0.15
Near 0 CNP
2000 counts/30 sec 4000
Far 0 CNP
0 counts/30 sec 1000
RT Porosity STP
0.45 v/v -0.15
Rec Porosity STP
0.45 v/v -0.15

APPENDIX 8: WIRELINE LOGGING REPORT

1 Time Summary and Personnel

1.1 Time Analysis

Run	Operating Time (Hrs)	Lost Time (Hrs)
1: SP-HRLA-PEX150-CMR-GR-LEHQT	17.3	0
2: VSI-GR	11.0	0
3: MDT-GR (Pretests & Samples)	49.3	4.3
4: MSCT-GR	12.2	0
5: MDT-GR (Samples)	43.5	3.5
6: MSCT-GR	7.8	0
7: MSCT-GR	5.9	0
8: FMI-DSI-HNGS-LEHQT	18.8	0
9: USIT-CBL-VDL-GR-CCL	8.2	0
10: Junk Basket-Gauge Ring (5.775")	4.2	0
11: CPST (packer and TCP guns)	6.2	0
12: Drift Run (inside DST)	16.8	0
13: Owen bridge plug	6.0	0
14: Enerjet 1-11/16" (3040.5-3046.5m MD)	12.5	0
Total	**219.8**	**7.8**
Lost Time / Total Operating Time = 3.5%		

1.2 Crew Members

Open Hole Logging

Title	1st Crew	2nd Crew
Engineer	Josie Robertson	Carolina Bassignana
Trainee Engineer	Matthew Webb	
Crew Chief	Tony Goodwin	Ben Taylor
Operator	Luke Dooley	Rob Duncan
Operator (crew change)	Darren Watts	Eddie Mezenberg
Operator (crew change)	Tim Osler	
Seismic Specialist	Shoichi Nakanishi	
MDT Specialist	Richard de Groot	

Cased Hole Logging/Perforating

Title	1st Crew	2nd Crew
Engineer/Technician	Josie Robertson	Greg Ruthven
Crew Chief	Peter Battams	Ben Taylor
Operator	Tim Osler	Kevin Kerr
Operator (crew change)	Rick Murray	Tony Goodwin

2 Highlights & Lowlights

Highlights:

- All Wireline operations were completed safely with no incidents or injuries.
- A marked improvement in operating efficiency was achieved, with no lost time recorded during the well test phase after limited mobilisation and preparation time.
- As was seen on Yolla-4, after failing to reach TD on run #1 and the wiper trip being performed after run #3, hole conditions were excellent through the remainder of the logging runs.
- Excellent quality data was recorded, with high quality FMI images, DSI compressional and shear data, and USIT cement images among the highlights. Virtually all requested data was recorded – only 1 MDT sample and some sidewall cores could not be retrieved.
- The MDT was used to retrieve 8x450cc MPSR samples and 9x250cc SPMC samples, with a mixture of gas and water samples being retrieved as part of an extensive MDT program.
- During pre-job tool checks on the rig, an electronic failure in the HRLA cartridge was discovered. The back-up laterolog tool on the rig, the DLT, could not be combined with the CMR and would hence require the logging runs to be reconfigured. It was decided that special helicopters would be flown to return the HRLA cartridge to the Sale base for repair. However, excellent work by the personnel in the Sale base ensured that the fault was found (one of the circuit boards was found to have failed) and repaired, testing was performed and the tool was returned to the rig the following day, prior to the commencement of logging.

Lowlights:

- The logging tools were unable to reach TD during the early runs, hanging up at 3418.3m MD (127m above driller's TD) due to hole conditions. A wiper trip was performed after the first MDT run, after which the tools reached 3528.3m MD.
- During the first MDT run, the probe module leaked hydraulic oil past a damaged O-ring on one of the telescopic pistons. This probe module was very new and the O-ring groove had been incorrectly machined, a manufacturing defect that could not be easily detected during standard preventative maintenance procedures. As a result the O-ring became extruded over time and was damaged. This defect has since been repaired.
- During the second MDT run, communication was lost to some modules while running in hole. This was a recurrence of the failure seen on Yolla-3 that was caused by low pin retention force in the connection bulkheads between modules. All bulkheads had been replaced since the Yolla-3 job and the pin alignment and test equipment described in the Yolla-3 Wireline Service Quality Report was being used, but these measures failed to prevent this incident. Since the Trefoil-1 job, a new version of bulkhead has been released to the field, and all MDT modules in Australia have been upgraded.
- During the second MDT run, one 450cc MDT sample bottle failed to close properly, preventing retrieval of one sample. The piston did not move the full distance as the tail on the swivel of the release washer caught on caught on the resistor solder joint. Field tests for a new version of release washer are currently underway.

- Core recovery with the MSCT was lower than expected due to instances of marker discs jamming in the top of the core catcher. This can occur when debris enters the marker system, particularly after an unsuccessful coring attempt when there is no core to push the marker disc further into the catcher.
- Due to the limited preparation time that was available for the well testing programme, Schlumberger were unable to mobilise sufficient weight or a smaller ID cable to enable the cased hole tool strings to overcome the wellhead pressure. Additional weights became available after the initial mobilisation and were mobilised prior to rig up, but the test supervisor opted not to prepare the logging cable and head for these weights prior to rig up, against Schlumberger advice. When the tools failed to run in hole initially, this meant that a new rope socket needed to be built on the critical path. However, with the addition of these weights and by flowing the well the wellhead pressure was lowered sufficiently to allow the tool strings to run in hole.

APPENDIX 9: VELOCITY SURVEY REPORT

Schlumberger

Origin Energy Resources Ltd

TREFOIL-1

WELL SEISMIC PROCESSING REPORT

VSP / GEOGRAM

[See also Q-Borehole Survey Report]

FIELD:	Trefoil
COUNTRY:	Australia (Tasmania)
COORDINATES:	Latitude: 39 51' 41.58" S
:	Longitude: 145 22' 30.87" E
DATE OF SURVEY:	25-Nov-2004
SURVEY TYPE:	Rig Source VSP, Offshore, Airgun
REFERENCE NO:	DS 0305-02

Prepared by: L. Dahlhaus

Schlumberger Oilfield Australia Pty Ltd
Level 5, 256 St. Georges Terrace, Perth
WA 6000 Australia

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1 Introduction

A borehole seismic survey was recorded in one run in the vertical offshore well Trefoil-1 on 25 November 2004. This survey consisted of rig source VSP measurements in open and cased hole. The data were acquired using a 4 shuttle Versatile Seismic Imager Tool (VSI-4) downhole and a Parallel Dual Air gun source deployed from a crane on the boat.

Processing of the data consisted of performing VSP processing, Sonic calibration and Synthetic seismogram generation. This report describes the processing techniques used, the parameters chosen and presents the results of the data processing. There is a good match between Corridor Stack and Synthetic seismograms. A quick-look tie at target depth with the surface seismic data was obtained by shifting the surface seismic up using a –19ms ms bulk time shift.

2 Data Acquisition

The data were acquired in one logging run in both open and cased hole using a four shuttle three component Versatile Seismic Imager Tool (VSI-4) fitted with GAC accelerometers.

Two 150 cu in G-Gun Air guns were used as the source operating under 2000 psi. The guns were suspended from the rig beneath a buoy 4.3 m below sea level vertically above the center of the downhole array position.

A reference hydrophone was positioned at 6.5 m below the guns. Recording was made with the Macha TGS-8 gun controller system and Schlumberger VSI Workbench/WAVE borehole seismic system.

A depth correction of +2m was applied to tie the first reference logging run. Good VSP levels were acquired from 3411 m KB to 481 m KB at 20 m intervals. A minimum of 5 good shots was recorded for each level. Above 481 m KB more levels were acquired up to 241m KB, but these were only used for time-depth curve and not for VSP processing due to casing ringing.

Initial In-Field processing of the VSP data using Schlumberger's WAVE (Wellsite Acquisition, Validation and Evaluation) processing software was done. These results are reported in the separate "**Q-Borehole Survey Report**".

Elevation of KB/RT/DF	39.9 m above MSL
Elevation of GL	68.9 m below MSL
Well Deviation	max 0.7 deg
Energy Source	2x 150 cu in Sodera G-Guns (Parallel Cl)
Reference Sensor	TGS-8 PTB signal (S2)
Source & Hyd. Offset / Azimuth	55 m / 008 deg
Source Depth	4.3 m below MSL
Hydrophone Depth	10.8 m below MSL
Water Velocity	1524 m/s
Tool	4 Shuttle VSI-4 (20 m Spacing)
Sensor Type	3-C GAC – Geophone Accelerometer
Sampling Rate	1 ms.

Table 1. Survey Parameters

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
- Pick Reference Break times
- 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 good shots at each level were stacked, 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/76% damped geophone is applied to the GAC data. After stacking and transform 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

The data quality is good. For a detailed description of the shots please see the Q-Borehole Survey Report. The source signature is stable, showing little pressure and gun depth variations. The vertical component data shows excellent continuity and no significant shear contamination. The horizontal components show some converted shear energy, but are mainly are used for obtaining the transit times in the by casing ringing affected top interval. Only the vertical component was used for the VSP processing.

3.2 Transit Time Measurement

The measured transit time corresponds to a difference between the surface reference time and arrivals recorded by the downhole sensors. The reference time is the recorded Predicted Fire (PF) signal of the TGS-8 shooting system, which is the exact Time-Zero of the guns firing. The field PF picks have been corrected. First break picking algorithms were applied on the transformed and filtered geophone data using an inflection point tangent algorithm.

3.3 Stacking

After reordering and selecting the raw shots, a median stack was performed on the three component 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. If an even number of traces is input, the first is dropped and a median calculated. Then the last is dropped and another median found. The final output is the average of these two median values. The reference time breaks are used as the zero time for stacking. The break time of each trace is recomputed after stacking. The X, Y and Z component stacks are presented in Figures 2, 3 and 4.

VSP Processing Chain

The VSP data were processed using standard VSP processing techniques.

The following subsections describe the main aspects of the VSP processing chain:

• Survey Geometry / Datum corrections	:	Source position / MSL
• Bandpass Filter	:	Butterworth Zero Phase, 3-200Hz
• Spherical Divergence Correction	:	Exponent α = 1.38
• Trace Normalization	:	RMS Window 200 ms
• Wavefield Separation	:	Velocity Filter, 9x1 Median
• Waveshape Deconvolution	:	5-90 Hz Zero Phase, Window 1.75 s
• Upgoing Enhancement	:	Velocity Filter, 5x1 Tri Mean
• Corridor Stack	:	200 ms , 10 deepest traces

3.4 Survey Geometry / Datum corrections

Seismic Reference Datum (SRD) is at Mean Sea Level. A static shift of 2.8 ms was applied to the data to correct to SRD. This correction to SRD was calculated using a surface velocity of 1524 m/s. Survey geometry corrections for the lateral offset of the source position with respect to the downhole receiver in this well have been applied. Tidal variations during the survey were small (<1ms) and no tidal corrections have been applied.

3.5 Bandpass Filter

The effective bandwidth of the recorded data is evaluated by examining the amplitude spectrum of the stacked vertical component presented in Figure 1. The frequency content of this VSP dataset is very high. In order not to limit this initially a wide zero phase Butterworth Bandpass filter was applied to the data limiting the bandwidth to 3-200 Hz.

3.6 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:

$$Gain(T) = (T)^{\alpha}$$

where T is the recorded time and α = 1.38 was applied. This equation considers homogeneous spreading and attenuation effects within a gate starting from the shot time.

3.7 Trace Normalization

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 amplitude corrected vertical component wavefield is displayed in Figure 5.

3.8 Wavefield Separation

A velocity filter (coherency) technique was used to separate upgoing and downgoing wavefields.

The downgoing coherent compressional energy is estimated using a 9x1 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 first break aligned downgoing wavefield is displayed in Figure 6.

The residual wavefield is obtained by subtracting the estimated downgoing coherent energy from the total wavefield. The residual wavefield is dominated by reflected compressional events as shown in two way time in Figure 7.

3.9 Zero Phase Waveshape 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 downgoing wavefield using a design window length of 0.5 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 5-90 Hz. Once the design is made upon the downgoing wavefield, it is applied to the both downgoing and upgoing wavefields at the same level as displayed in Figures 8 and 9.

3.10 Upgoing Enhancement

A velocity filter (coherency) technique was used to enhance the zero phase upgoing wavefield.

The upgoing coherent compressional energy is estimated using a 5x1 level tri-mean velocity filter orthogonal 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. This enhanced upgoing wavefield is displayed in two way time (TWT) in Figure 10.

3.11 Corridor Stack

A corridor stack in two way time (TWT) was computed on the enhanced zero phase upgoing wavefield by designing a constant 200 ms timing window along the two-way time depth curve and stacking the data onto a single trace. The deepest 10 traces are stacked entirely. The resulting trace provides the seismic representation of the borehole in vertical two-way time. This corridor stack is also displayed in Figure 10 along with the enhanced upgoing wavefield in two way time.

3.12 Composite Displays of Results

A snapshot of the 25 cm/s composite display (PLOT-1) of VSP calibrated logs, VSP, Synthetic and Surface Seismic data is shown in figure 11.

Composite displays of the VSP Corridor Stack and part of a surface seismic section through the well location (Line ORS01-13, 79m south of Shot point 1489, Trace 1713) are shown in Figures 12a/b and 13a/b in both polarities. The polarity convention used (N: Increase in Acoustic Impedance is a Trough) is explained in Figure 17.

Composite displays of the VSP Corridor Stack, the Synthetics and the surface seismic section well trace at well location (Line ORS01-13, near Shot point 1489, CDP 899, Trace 929) are also shown in Figures 14a/b and 15a/b.

The composite displays show a good correlation between the surface seismic traces near the well location, the VSP Corridor Stack and the synthetic seismic data in the stated frequency range. To obtain a better match with the surface seismic section an additional corridor stack is provided where a Time Variant Filter using a series of 3rd order Butterworth band pass filters followed by a 500 ms AGC was applied. TVF filter coefficients used were; 0.5s: 5-100 Hz, 1s: 5-80 Hz, 1.5s: 5-60 Hz, 2s: 5-50 Hz, 2.5s: 5-45 Hz.

The surface seismic water bottom pick seems to come in too deep compared to the reported water depth and a velocity of 1524 m/s. To match the corridor stack /synthetic traces to the surface seismic data a time shift of -19 ms for the surface seismic is needed to tie the data at target level. This shift reduces to around 10 ms for the shallower part of the section.

4 Sonic Calibration Processing

4.1 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:

$$G = 1 + \frac{drift}{(\Delta t - \Delta t_{min})dZ}$$

Where drift is the drift over the interval to be corrected and the value $(\Delta t - \Delta t_{min})dZ$ 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: $\Delta t = G(\Delta t - \Delta t_{min}) + \Delta t_{min}$.

4.2 Open Hole Logs

The P&S mode compressional DT curve from both cased and open hole DSI data was used for drift computation. The log quality ranges from fair to good and required some editing.

A density log was available over a shorter interval as the sonic log. Other logs included as companion curves are: Gamma Ray, Resistivity, Neutron Porosity and Caliper.

4.3 Correction to Datum and Velocity Modeling

The sonic calibration processing has been referenced to Mean Sea Level which the seismic reference datum. Geometry corrections are applied to correct for well, source offset, source depth and SRD elevation.

4.4 Sonic Calibration Results

The checkshot near the top of the sonic log (1721m MD KB) is chosen as the origin for the calibration drift curve. The compressional sonic log was extended using the checkshot data only for the generation of the velocity and time/depth listings.

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 list of shifts used on the sonic data is given in A2 Listing (supplied in digital form on Final Results CD-ROM).

The Velocity Crossplot is presented in Figure 16 and as a separate plot.

5 Synthetic Seismogram Processing

GEOGRAM plots were generated using three different wavelets: 25 Hz, 35 Hz and 45 Hz (Dominant Frequency) zero phase Ricker wavelets.

The presentation includes composite plots on a time scale of 25 cm/sec in both normal and reverse polarity (Plots 1 and 2). The 45 Hz Ricker Synthetics show a good match with the Corridor Stack.

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

5.1 Depth to Time Conversion

Open hole logs are recorded from the bottom to top with a depth index. This data is converted to a two-way time index.

5.2 Primary Reflection Coefficients

Sonic and density data are averaged over chosen time intervals (normally 2 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.

5.3 Primaries with Transmission Losses

Transmission loss on two-way attenuation coefficients is computed using:

$$A_n = (1 - R_1^2).(1 - R_2^2).(1 - R_3^2)...(1 - R_n^2)$$

A set of primary reflection coefficients with transmission loss is generated using:

$$Primary_n = R_n.A_{n-1}$$

5.4 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.

5.5 Multiples Only

By subtracting previously calculated primaries form the above result we obtain multiples only.

5.6 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
User defined wavelet

Time variant Butterworth filtering can be applied after convolution.

5.7 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 17.

5.8 Convolution

The standard procedure of convolving the wavelet with reflection coefficients; the output is the synthetic seismogram.

FIGURES

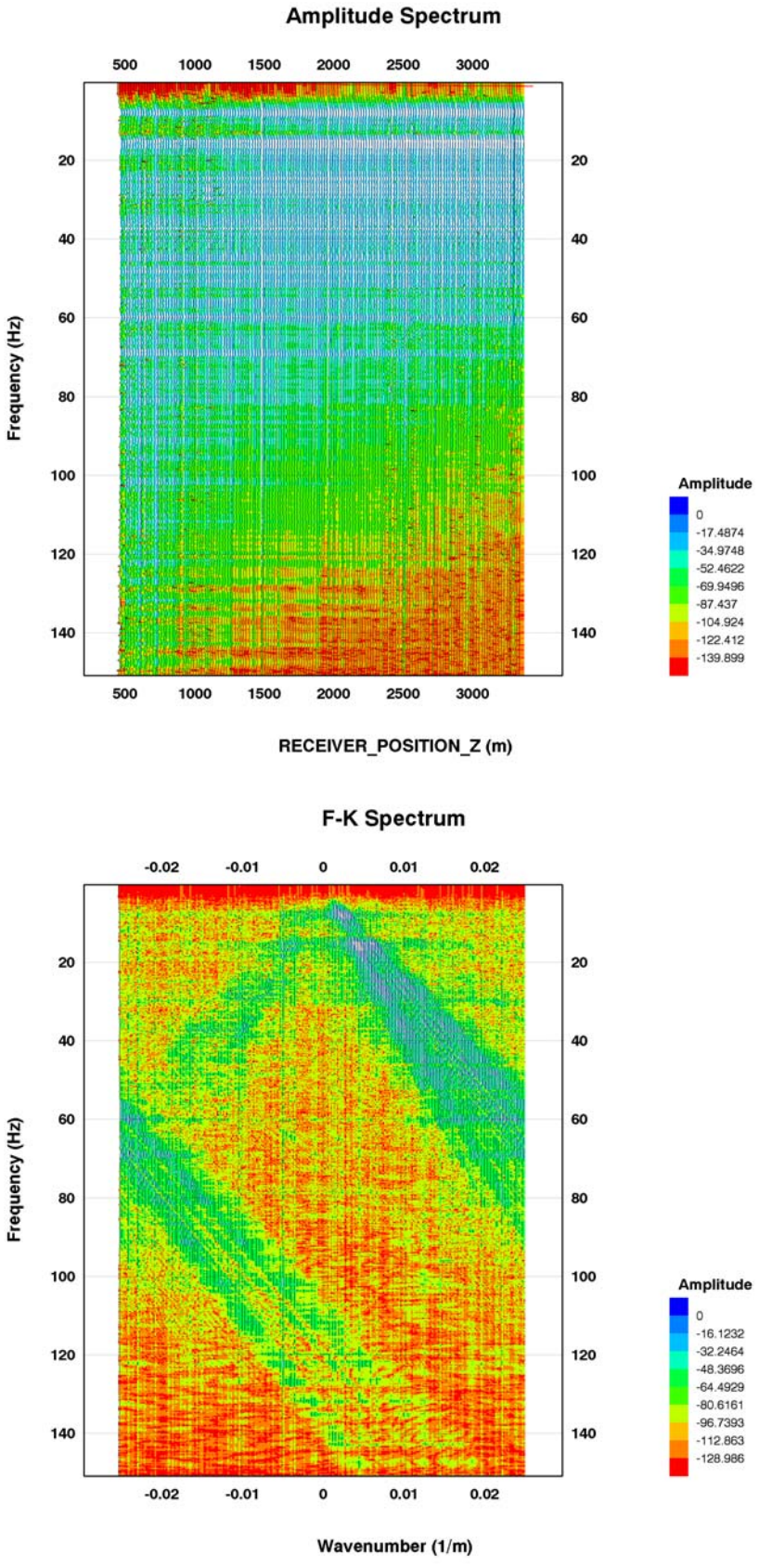


Figure 1. Amplitude and F-K Spectrum

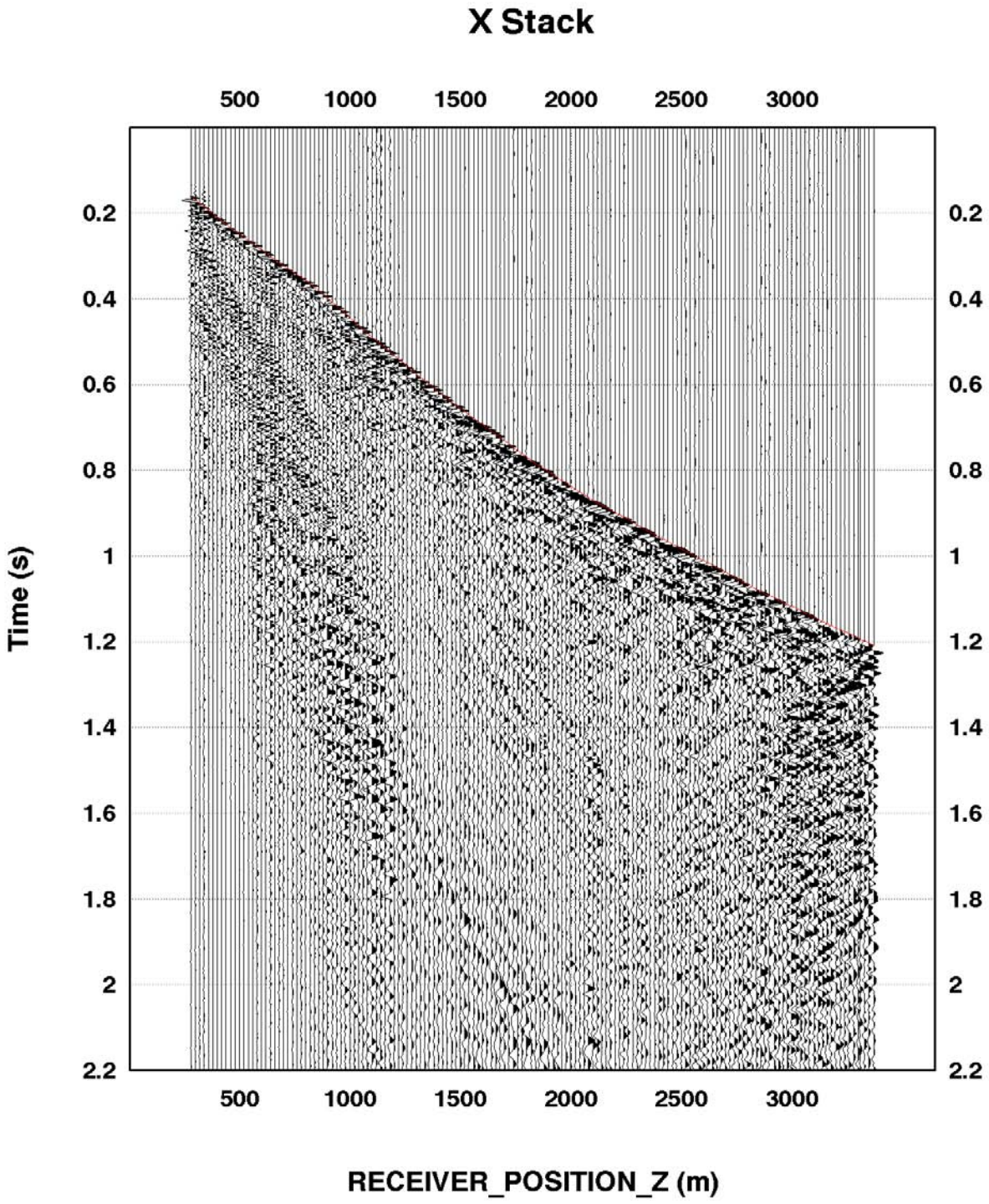


Figure 2. X Component Stack

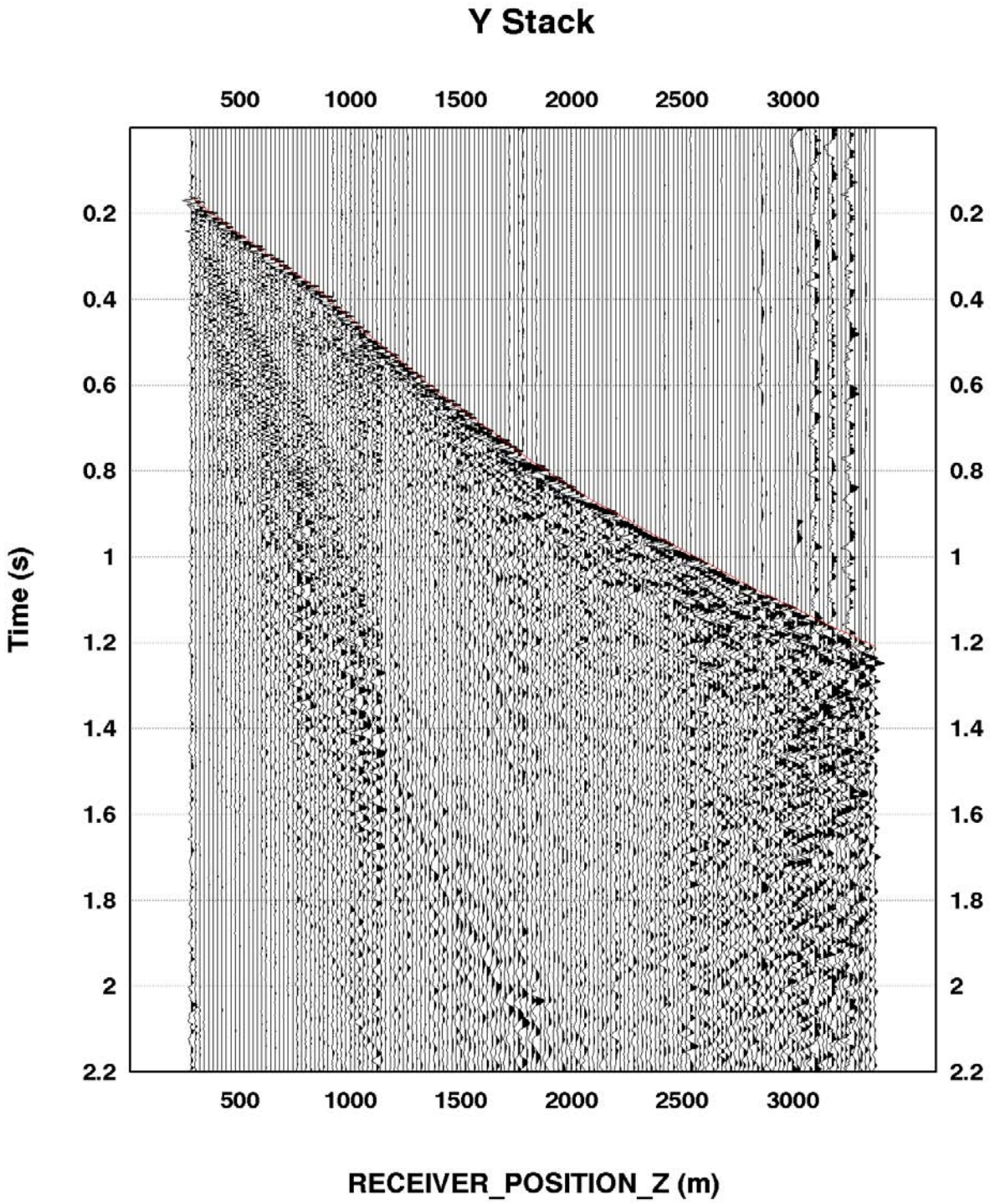


Figure 3. Y Component Stack

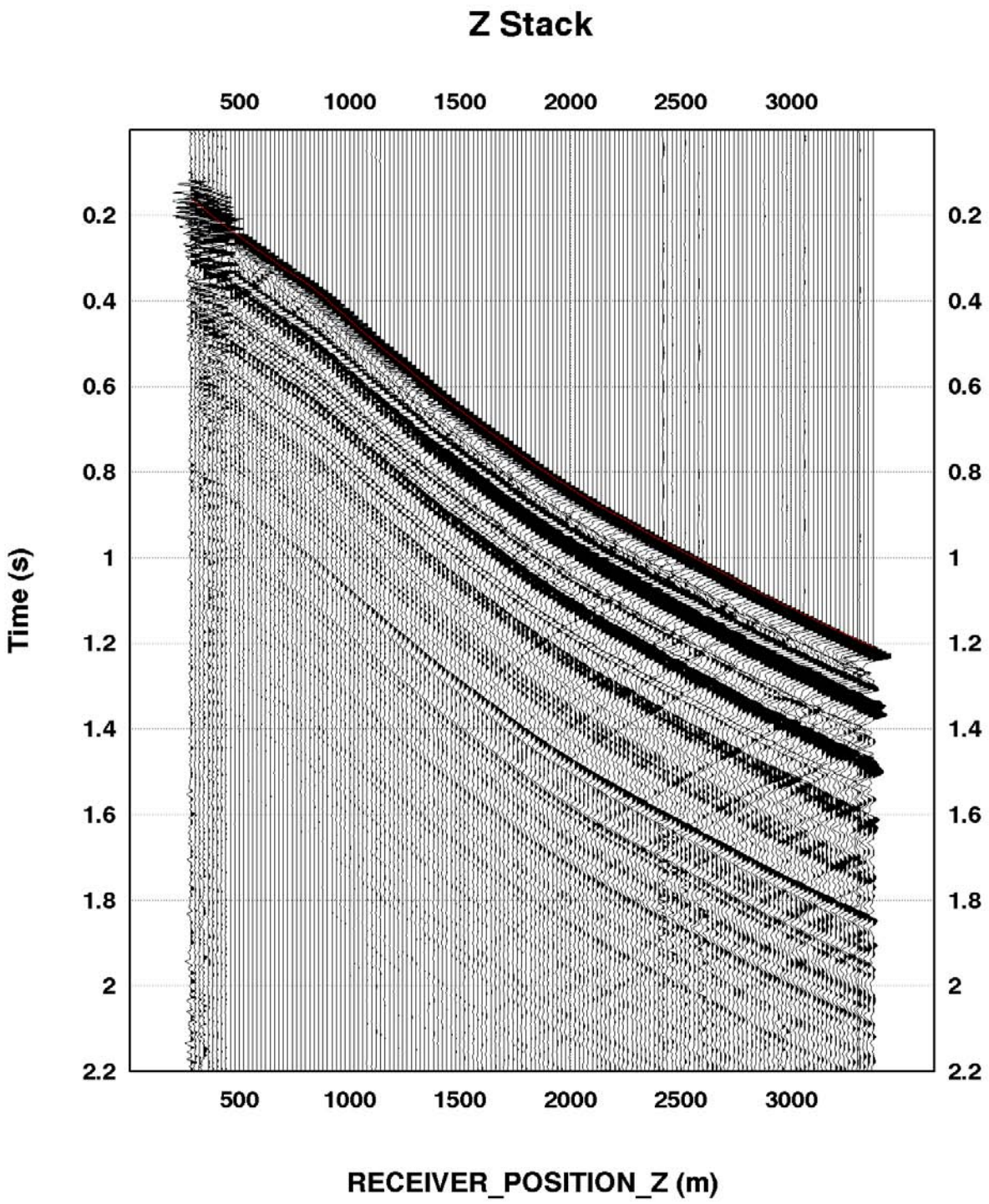


Figure 4. Z Component Stack

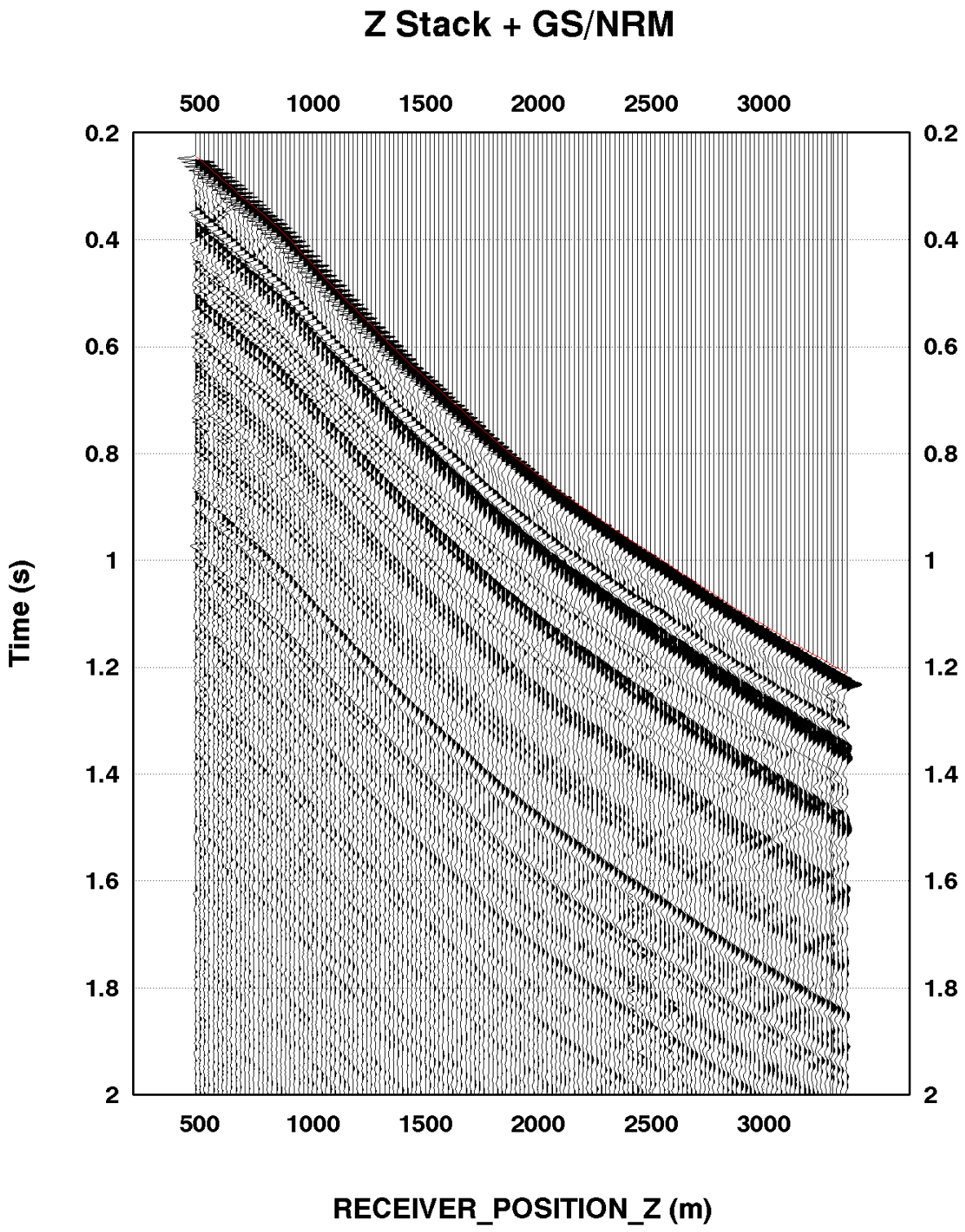


Figure 5. Z Component Stack for VSP processing

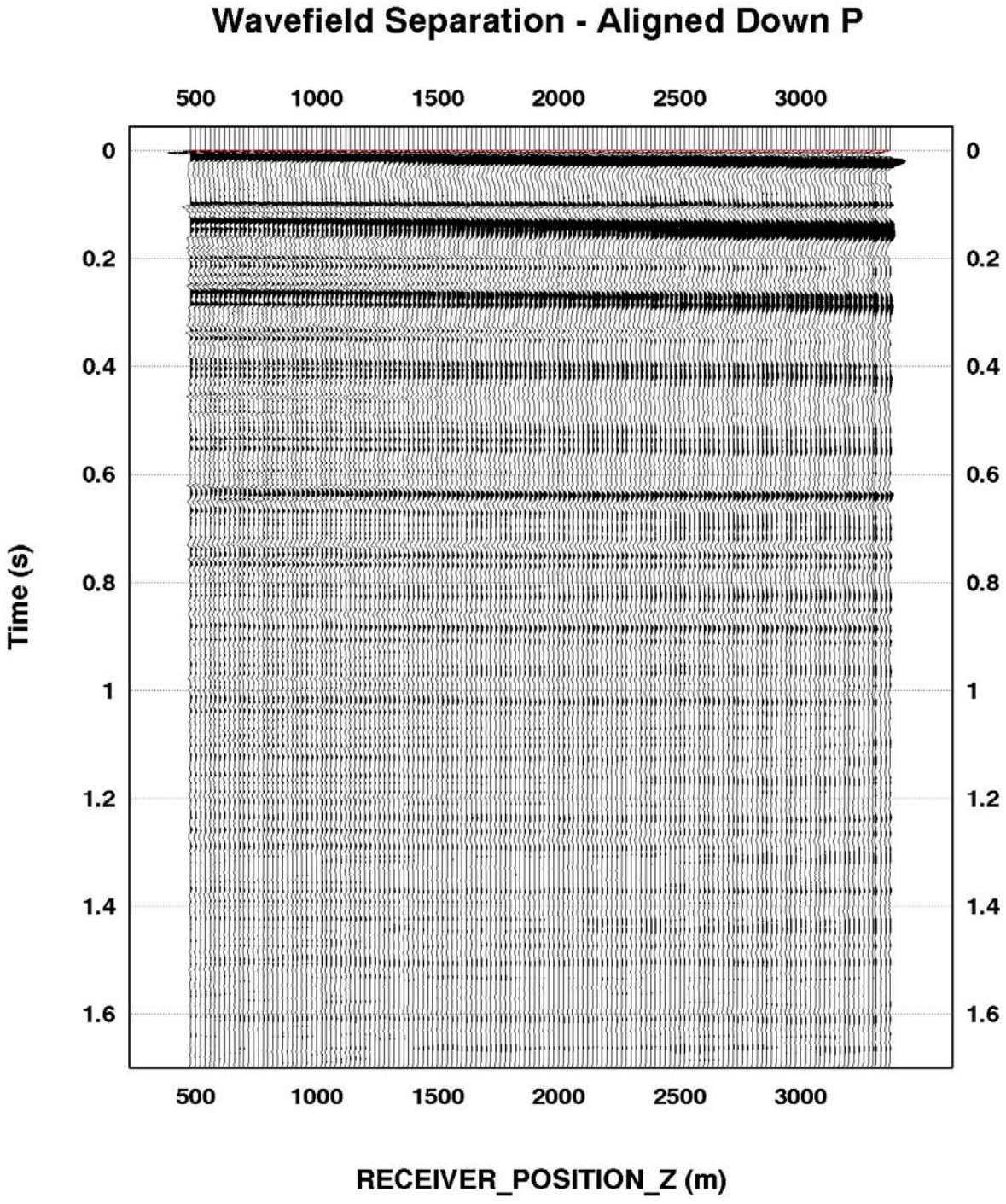


Figure 6. Downgoing Wavefield after Wavefield Separation

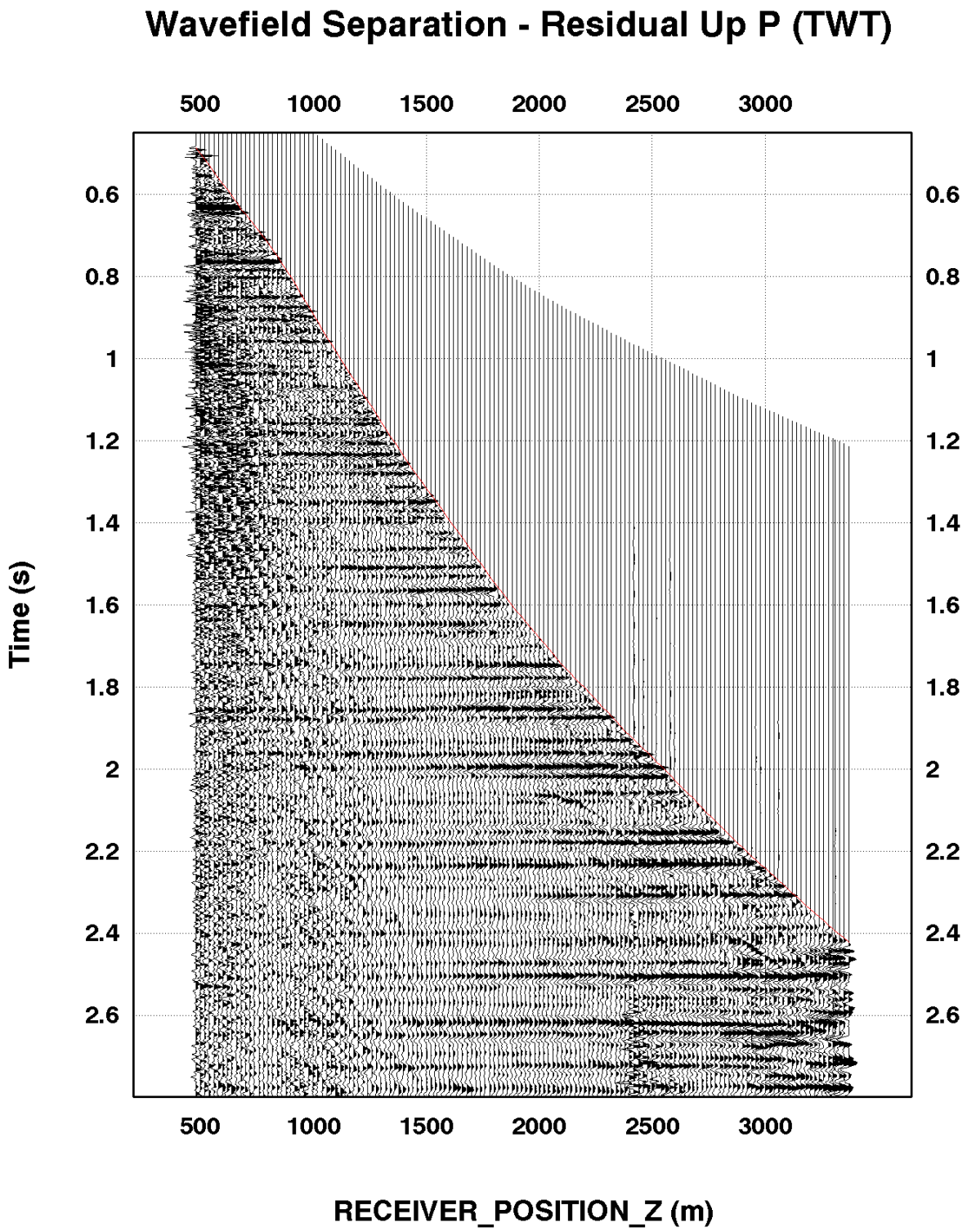


Figure 7. Upgoing Wavefield after Wavefield Separation

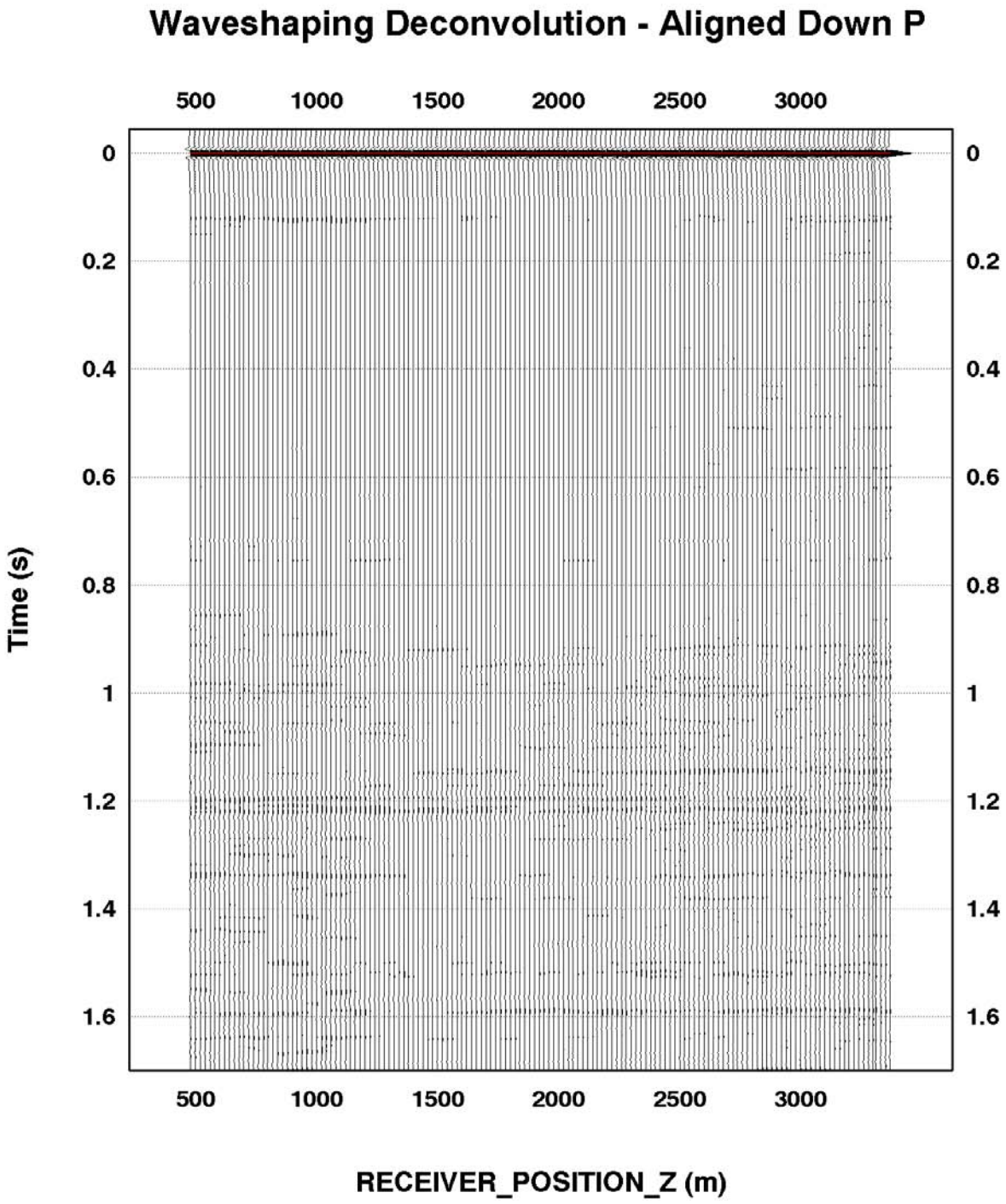


Figure 8. Downgoing Wavefield after Waveshaping Deconvolution

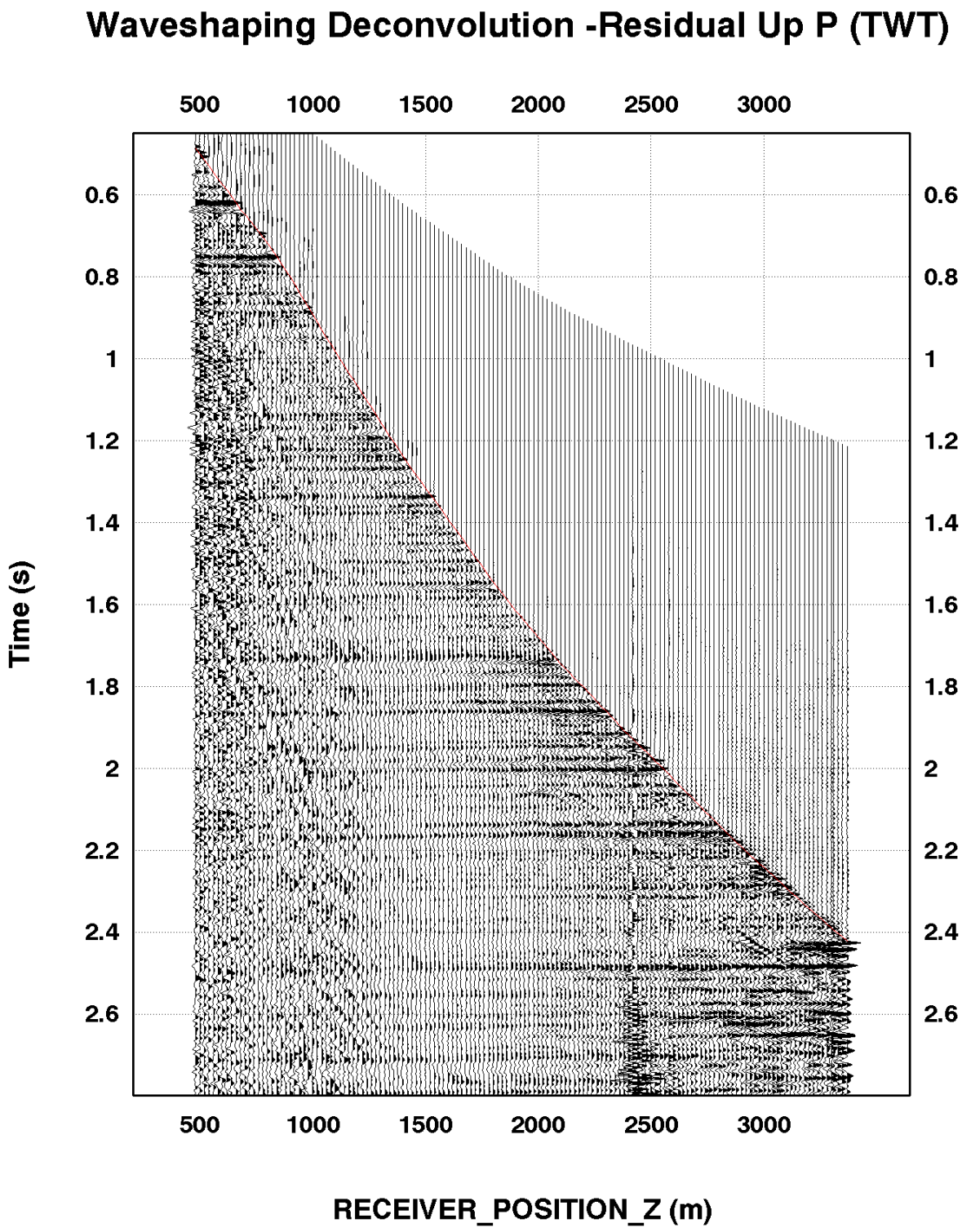


Figure 9. Upgoing Wavefield after Waveshaping Deconvolution

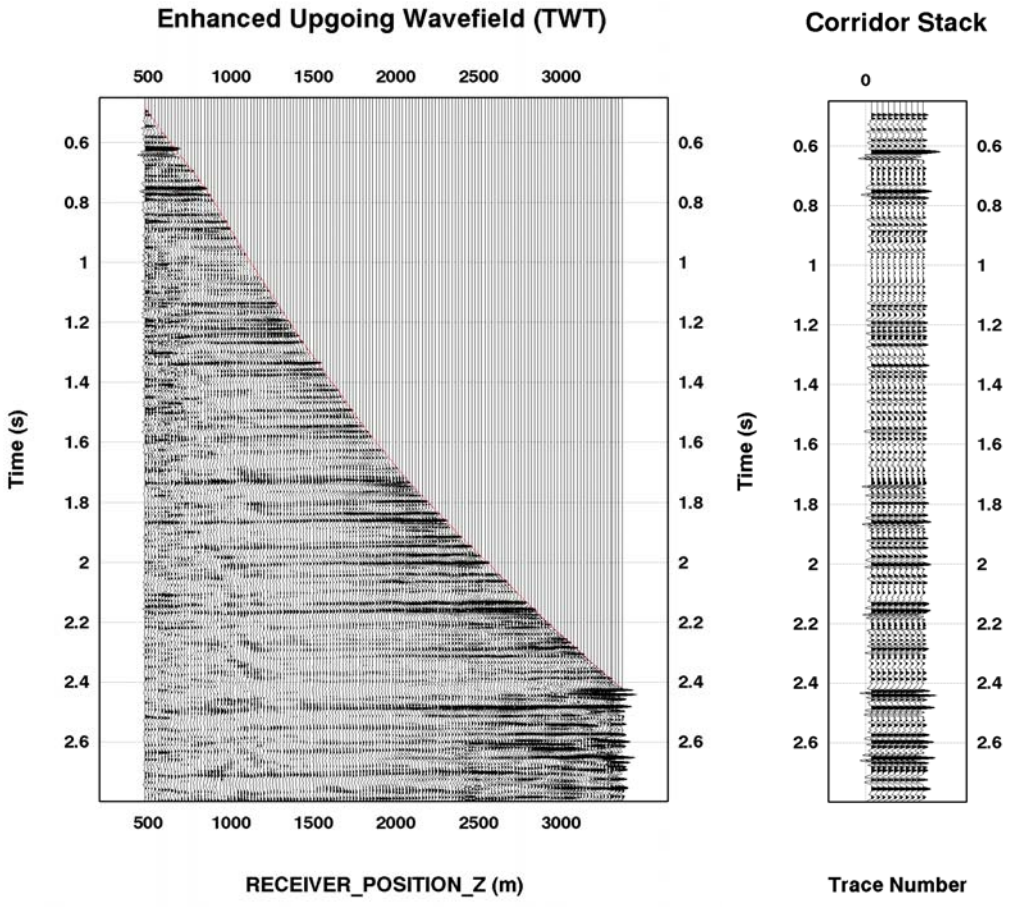


Figure 10. Enhanced Upgoing Wavefield and Corridor Stack

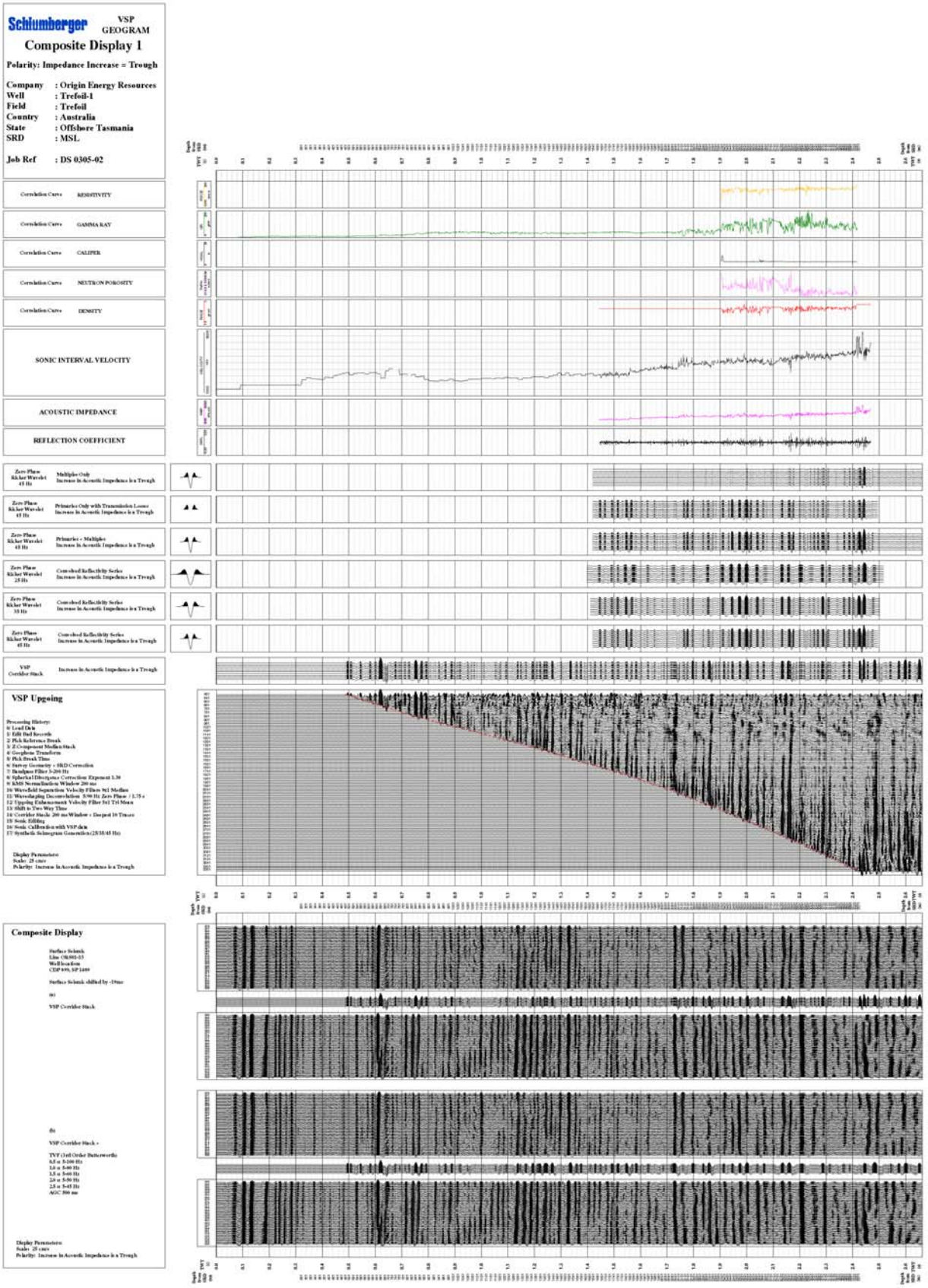


Figure 11. Composite Display (See Plots 1 and 2)

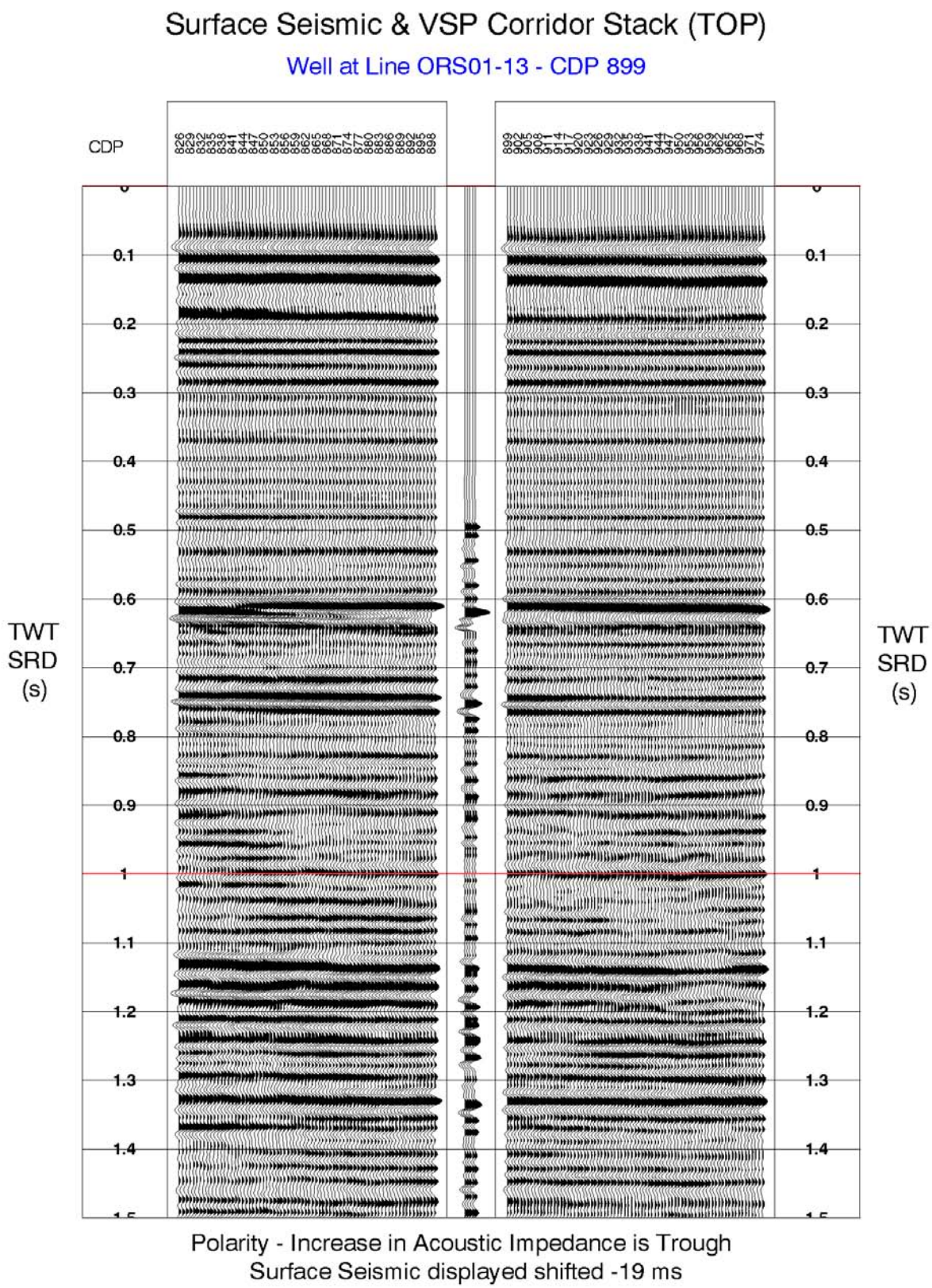


Figure 12a. Display of VSP Corridor Stack and Surface Seismic - Top (N)

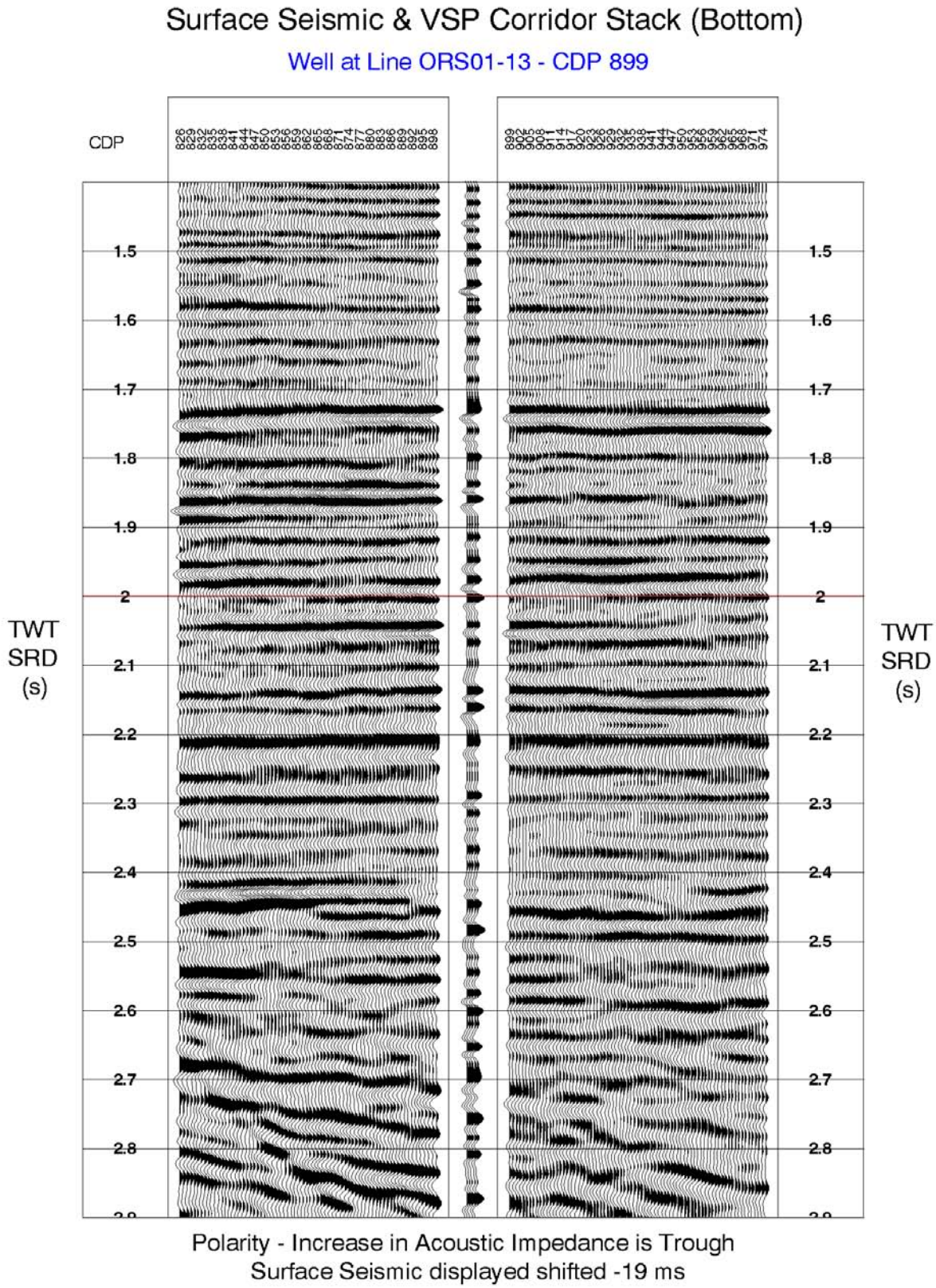


Figure 12b. Display of VSP Corridor Stack and Surface Seismic - Bottom (N)

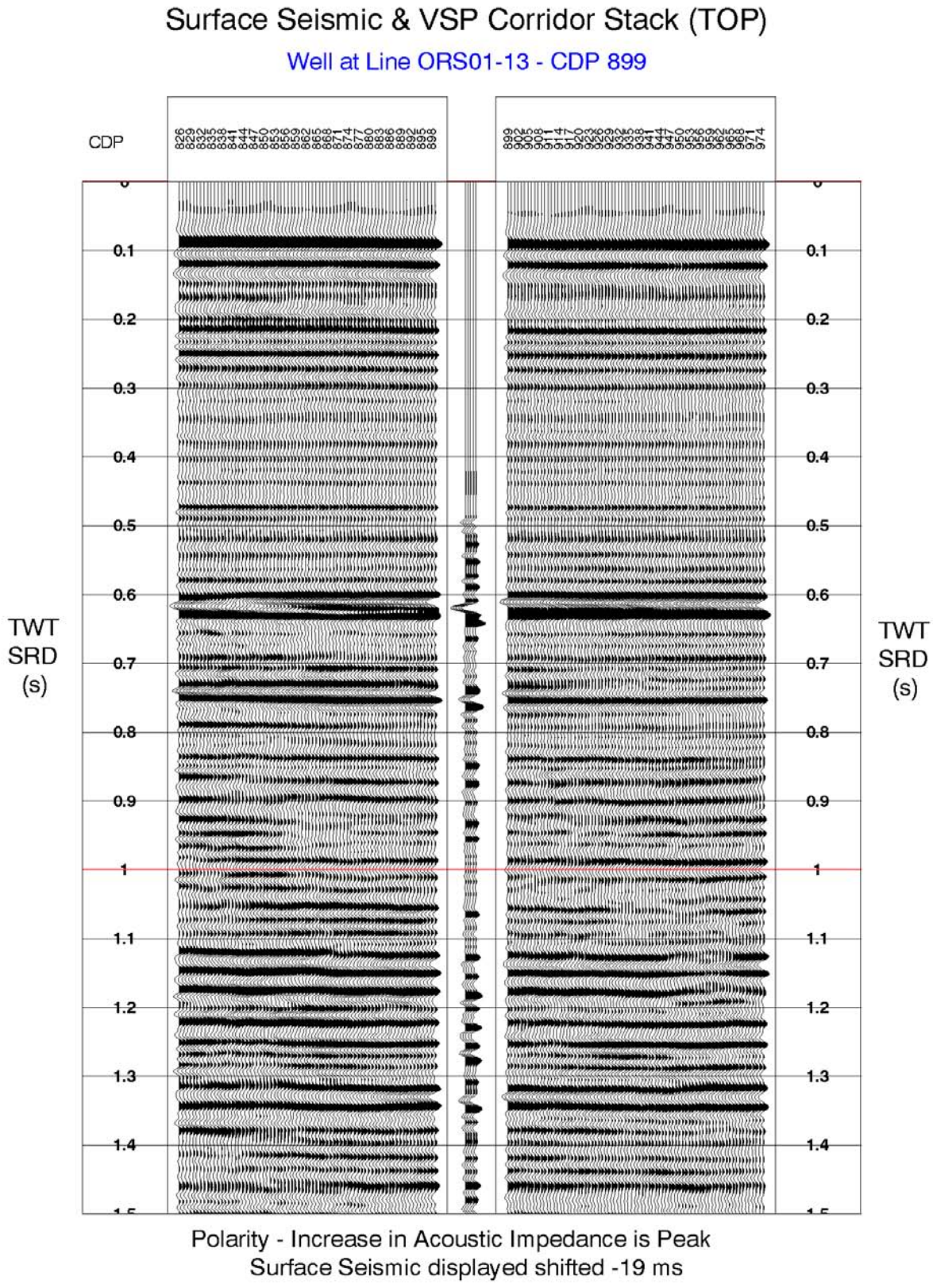


Figure 13a. Display of VSP Corridor Stack and Surface Seismic - Top (R)

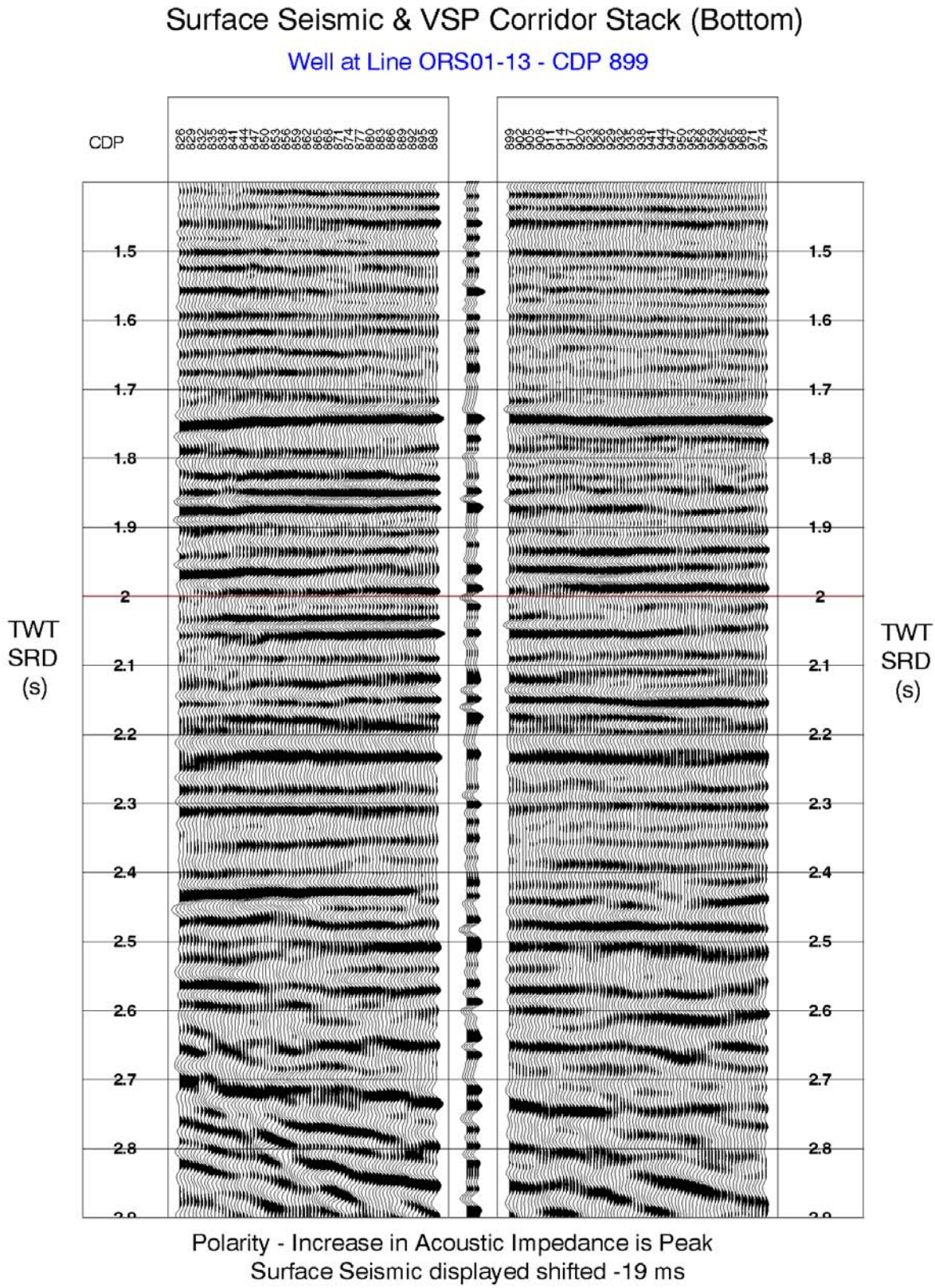


Figure 13b. Display of VSP Corridor Stack and Surface Seismic - Bottom (R)

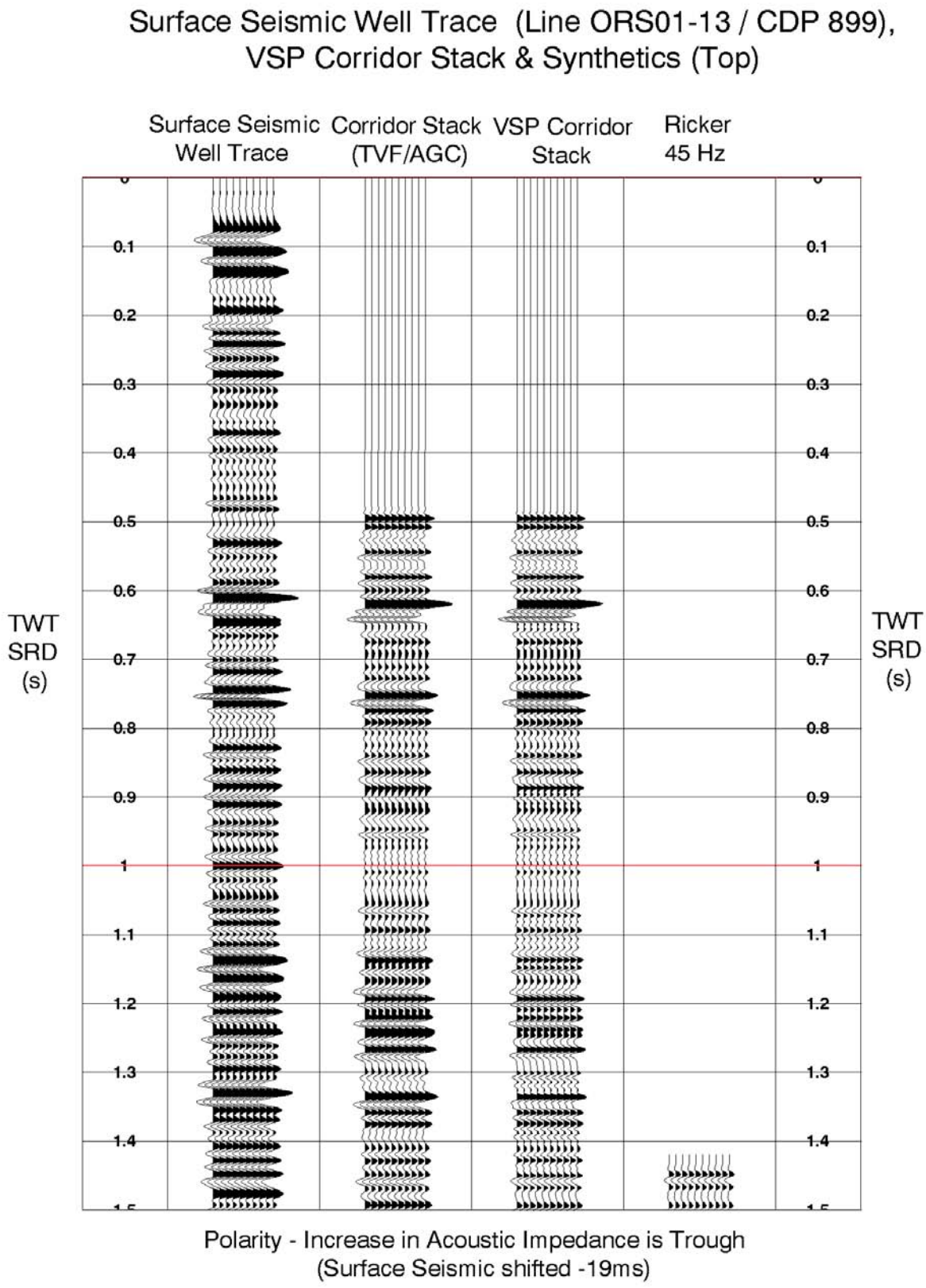


Figure 14a. Display of VSP Corridor Stack, Surface Seismic Welltrace and Synthetics – Top (N)

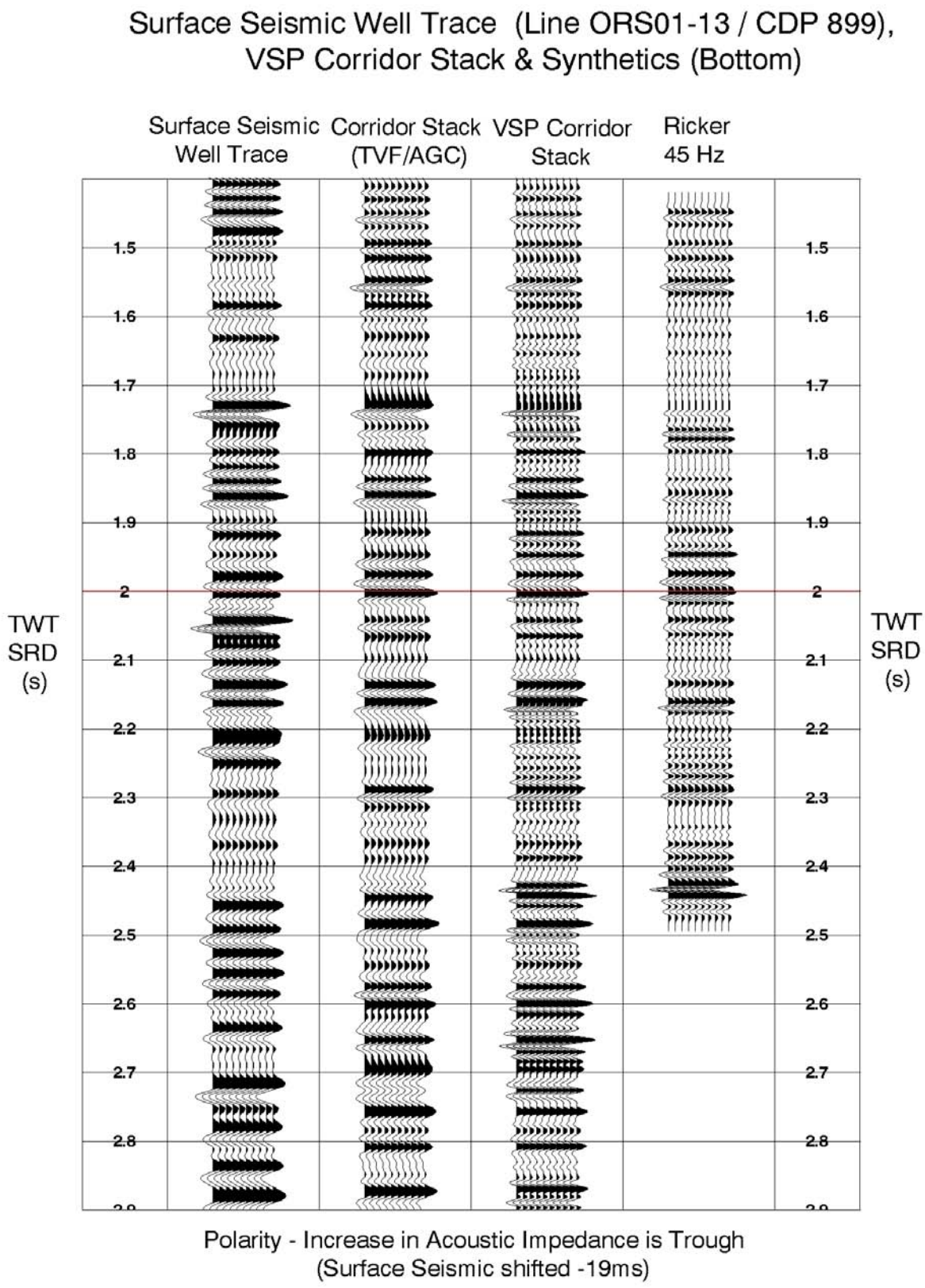


Figure 14b. Display of VSP Corridor Stack, Surface Seismic Welltrace and Synthetics – Bottom (N)

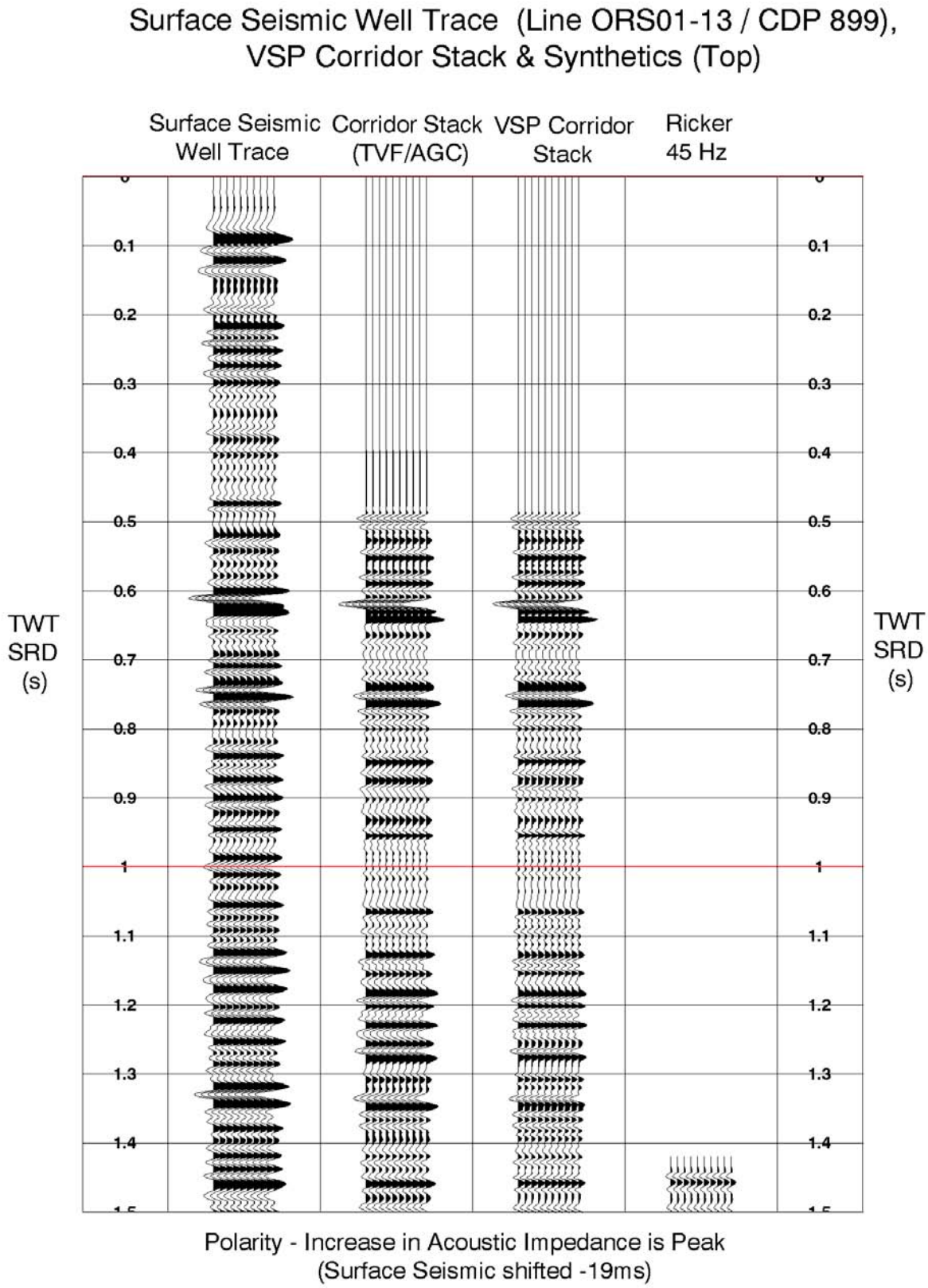


Figure 15a. Display of VSP Corridor Stack, Surface Seismic Welltrace and Synthetics – Top (R)

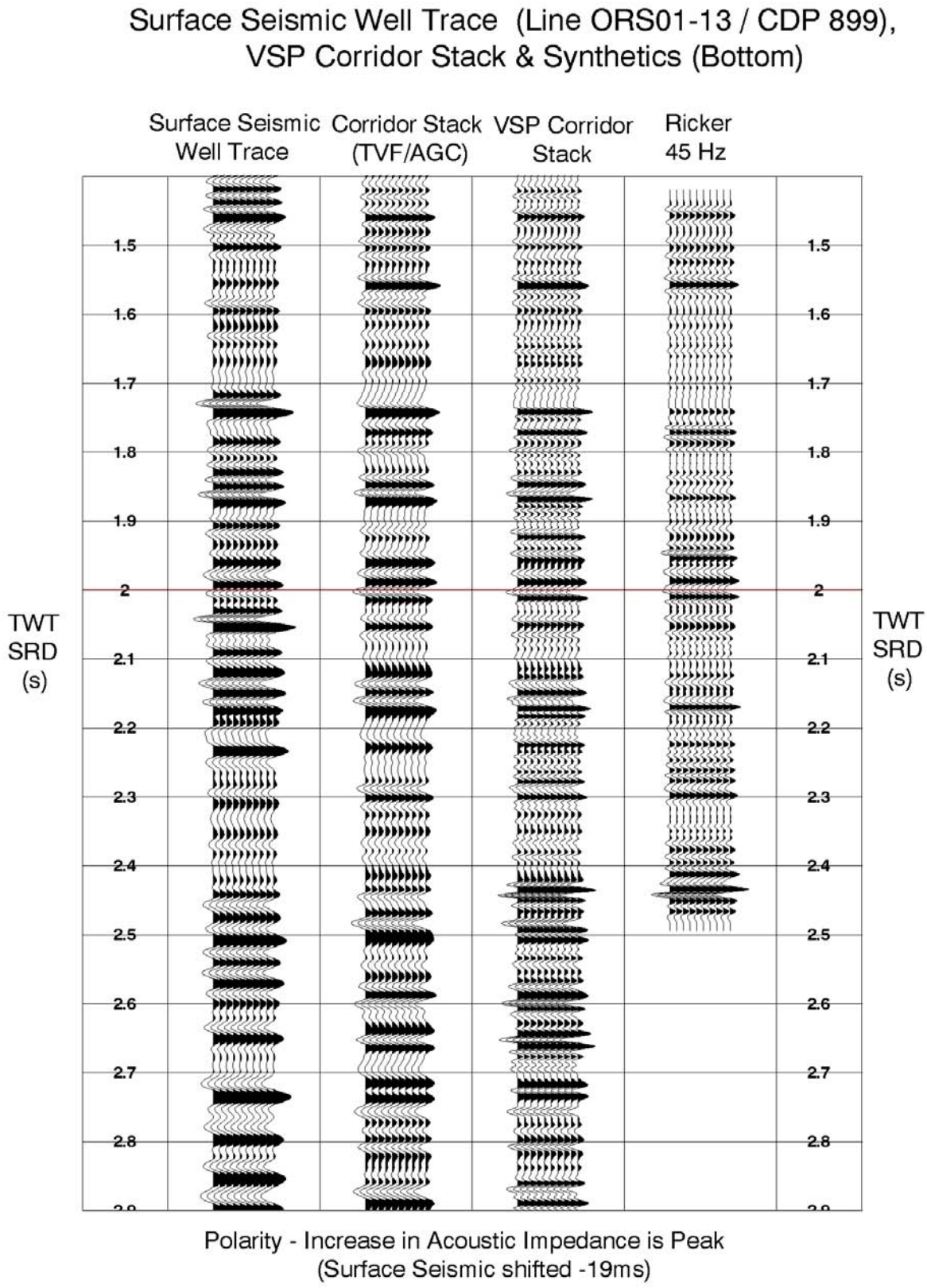


Figure 15b. Display of VSP Corridor Stack, Surface Seismic Welltrace and Synthetics – Bottom (R)

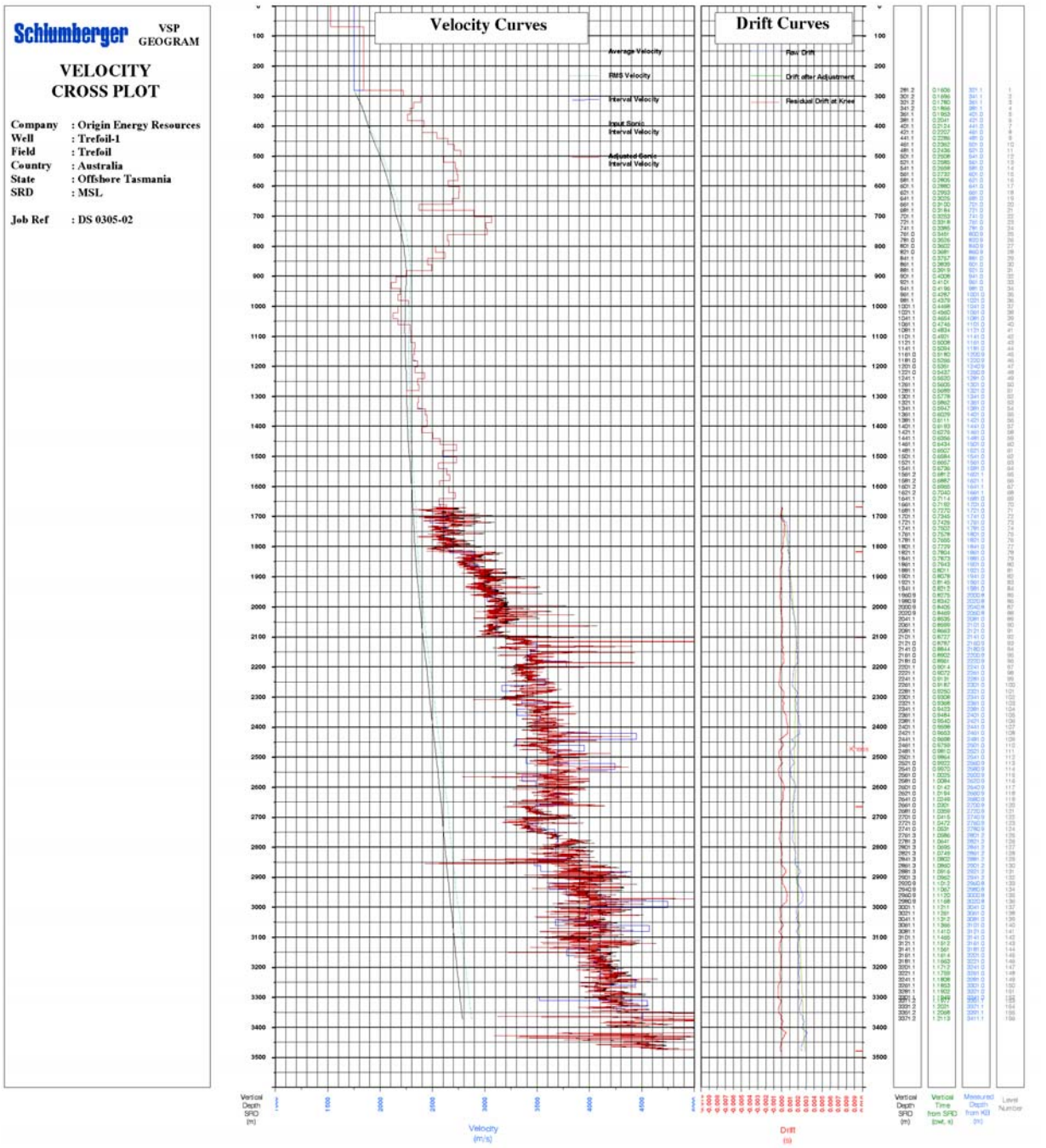


Figure 16. Velocity Crossplot (see Plot Vel 1)

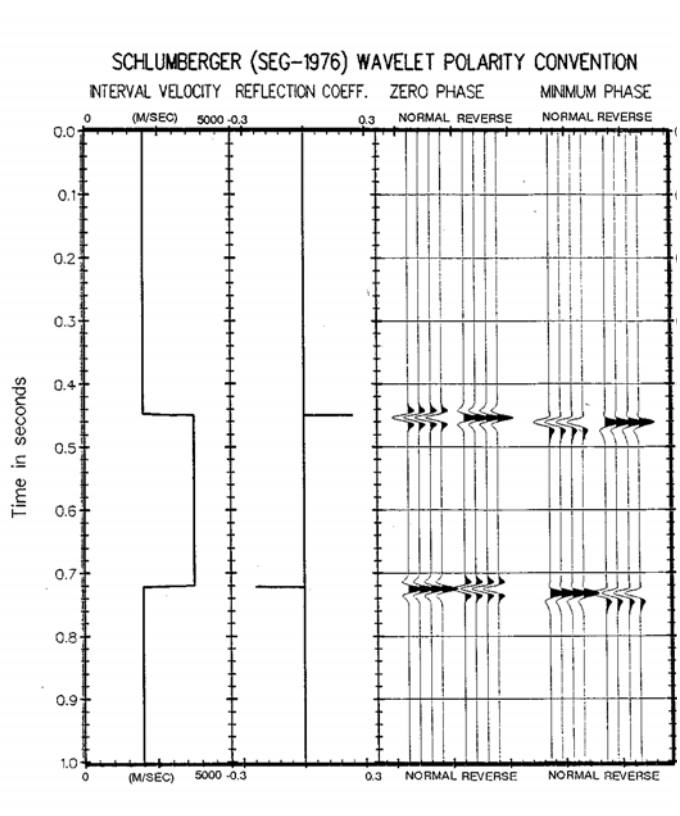


Figure 17. Schlumberger Wavelet Polarity Convention

Attachment 1: Summary of Geophysical Listings

Four geophysical data listings are appended to this report. 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.

3. Measured depth from KB: *dkb*, the depth in meters from KB.

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.

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 the checkshot level, shtm/dsrd

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 these knees will normally be zero.)

2. Measured depth from KB: the depth in meters from KB

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 4 of report for an explanation of Δt_{min}.

7. Reduction factor G: see section 4 of report.

8. Selected Drift Gradient: the gradient of the imposed drift curve.

Sonic Adjustment Data

1. Measured depth from KB: the depth in meters from KB

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

The data in this listing has been resampled in time.

1. 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.

2. Measured depth from KB: the depth from KB at each corresponding value of two way time.

3. Vertical depth from SRD: the vertical depth from SRD at each corresponding value of two way time.

4. Average velocity SRD to GEO: the vertical depth from SRD divided by half the two way time.

5. RMS velocity: the root mean square velocity from datum to the corresponding value of two way time.

$$v_{rms} = \sqrt{(\Sigma v_i^2 t_i / \Sigma t_i)}$$

where v_i is the velocity between each 2 ms interval.

6. 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

Attachment 2: A-1 Well Seismic Report

Client and Well Information

Country	**Australia**
State	**Offshore Tasmania**
Logging Date	**25-Nov-2004**
Company	**Origin Energy Resources Ltd**
Field	**Trefoil**
Well	**Trefoil-1**

Seismic Reference Datum : **MSL**

KB Elevation above MSL : 39.9 m

Water Velocity : 1524 m/s

Time Picking on Geophone Transformed GAC Stacks

Survey geometry corrections applied

Time picks above 321 m KB are masked by casing arrivals and have been excluded from time picking

Check Shot Data

LEVEL NUMBER	VERTICAL DEPTH FROM MSL m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL TRAVEL TIME MSL (OWT) s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s
1	0.0			0.0000				
							1751	
2	281.2	321.1	0.1608	0.1606				1751
					20.0	0.0090	2220	
3	301.2	341.1	0.1696	0.1696				1776
					20.0	0.0084	2389	
4	321.2	361.1	0.1777	0.1780				1805
					20.0	0.0086	2318	
5	341.2	381.1	0.1862	0.1866				1828
					19.9	0.0087	2286	
6	361.1	401.0	0.1947	0.1953				1849
					20.0	0.0088	2262	
7	381.1	421.0	0.2034	0.2041				1867
					20.0	0.0083	2418	
8	401.1	441.0	0.2116	0.2124				1888
					20.0	0.0083	2402	
9	421.1	461.0	0.2198	0.2207				1908

LEVEL NUMBER	VERTICAL DEPTH FROM MSL m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL TRAVEL TIME MSL (OWT) s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s
					20.0	0.0079	2541	
10	441.1	481.0	0.2276	0.2286				1929
					20.0	0.0076	2644	
11	461.1	501.0	0.2350	0.2362				1952
					20.0	0.0074	2707	
12	481.1	521.0	0.2423	0.2436				1975
					20.0	0.0072	2769	
13	501.1	541.0	0.2495	0.2508				1998
					20.0	0.0077	2606	
14	521.1	561.0	0.2571	0.2585				2016
					20.0	0.0074	2716	
15	541.1	581.0	0.2644	0.2658				2036
					20.0	0.0073	2731	
16	561.1	601.0	0.2717	0.2732				2054
					20.0	0.0073	2743	
17	581.1	621.0	0.2789	0.2805				2072
					20.0	0.0075	2651	
18	601.1	641.0	0.2864	0.2880				2087
					20.0	0.0073	2756	
19	621.1	661.0	0.2936	0.2953				2104
					20.0	0.0073	2749	
20	641.1	681.0	0.3008	0.3025				2119
					20.0	0.0074	2690	
21	661.1	701.0	0.3082	0.3100				2133
					20.0	0.0084	2369	
22	681.1	721.0	0.3166	0.3184				2139
					20.0	0.0069	2897	
23	701.1	741.0	0.3235	0.3253				2155
					20.0	0.0065	3068	
24	721.1	761.0	0.3300	0.3318				2173
					20.0	0.0066	3010	
25	741.1	781.0	0.3366	0.3385				2190
					19.9	0.0066	3021	
26	761.0	800.9	0.3431	0.3451				2205
					20.0	0.0076	2643	
27	781.0	820.9	0.3507	0.3526				2215
					20.0	0.0075	2652	
28	801.0	840.9	0.3582	0.3602				2224
					20.0	0.0079	2527	
29	821.0	860.9	0.3661	0.3681				2231
					20.1	0.0077	2618	
30	841.1	881.0	0.3737	0.3757				2238
					20.0	0.0082	2452	
31	861.1	901.0	0.3819	0.3839				2243
					20.0	0.0080	2491	
32	881.1	921.0	0.3899	0.3919				2248
					20.0	0.0089	2255	
33	901.1	941.0	0.3987	0.4008				2248
					20.0	0.0093	2152	
34	921.1	961.0	0.4080	0.4101				2246
					20.0	0.0095	2104	

LEVEL NUMBER	VERTICAL DEPTH FROM MSL m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL TRAVEL TIME MSL (OWT) s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s
35	941.1	981.0	0.4175	0.4196				2243
					20.0	0.0091	2191	
36	961.1	1001.0	0.4266	0.4287				2242
					20.0	0.0092	2171	
37	981.1	1021.0	0.4358	0.4379				2240
					20.0	0.0088	2269	
38	1001.1	1041.0	0.4446	0.4468				2241
					20.0	0.0092	2170	
39	1021.1	1061.0	0.4538	0.4560				2239
					20.0	0.0094	2119	
40	1041.1	1081.0	0.4632	0.4654				2237
					20.0	0.0092	2167	
41	1061.1	1101.0	0.4725	0.4746				2236
					20.0	0.0087	2289	
42	1081.1	1121.0	0.4812	0.4834				2237
					20.0	0.0087	2293	
43	1101.1	1141.0	0.4899	0.4921				2238
					20.0	0.0087	2289	
44	1121.1	1161.0	0.4986	0.5008				2238
					20.0	0.0086	2330	
45	1141.1	1181.0	0.5072	0.5094				2240
					19.9	0.0086	2328	
46	1161.0	1200.9	0.5157	0.5180				2241
					20.0	0.0086	2313	
47	1181.0	1220.9	0.5244	0.5266				2243
					20.0	0.0085	2360	
48	1201.0	1240.9	0.5328	0.5351				2245
					20.0	0.0086	2331	
49	1221.0	1260.9	0.5414	0.5437				2246
					20.1	0.0083	2422	
50	1241.1	1281.0	0.5497	0.5520				2249
					20.0	0.0085	2355	
51	1261.1	1301.0	0.5582	0.5605				2250
					20.0	0.0084	2369	
52	1281.1	1321.0	0.5666	0.5689				2252
					20.0	0.0089	2254	
53	1301.1	1341.0	0.5755	0.5778				2252
					20.0	0.0084	2366	
54	1321.1	1361.0	0.5839	0.5862				2254
					20.0	0.0085	2356	
55	1341.1	1381.0	0.5924	0.5947				2255
					20.0	0.0082	2432	
56	1361.1	1401.0	0.6006	0.6029				2257
					20.0	0.0082	2445	
57	1381.1	1421.0	0.6088	0.6111				2260
					20.0	0.0082	2450	
58	1401.1	1441.0	0.6169	0.6193				2262
					20.0	0.0083	2398	
59	1421.1	1461.0	0.6253	0.6276				2264
					20.0	0.0080	2503	
60	1441.1	1481.0	0.6332	0.6356				2267

LEVEL NUMBER	VERTICAL DEPTH FROM MSL m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL TRAVEL TIME MSL (OWT) s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s
					20.0	0.0078	2572	
61	1461.1	1501.0	0.6410	0.6434				2271
					20.0	0.0073	2729	
62	1481.1	1521.0	0.6483	0.6507				2276
					20.0	0.0077	2597	
63	1501.1	1541.0	0.6560	0.6584				2280
					20.0	0.0073	2730	
64	1521.1	1561.0	0.6634	0.6657				2285
					20.0	0.0078	2556	
65	1541.1	1581.0	0.6712	0.6736				2288
					20.1	0.0076	2636	
66	1561.2	1601.1	0.6788	0.6812				2292
					20.0	0.0075	2664	
67	1581.2	1621.1	0.6863	0.6887				2296
					20.0	0.0078	2565	
68	1601.2	1641.1	0.6941	0.6965				2299
					20.0	0.0075	2652	
69	1621.2	1661.1	0.7016	0.7040				2303
					19.9	0.0073	2717	
70	1641.1	1681.0	0.7089	0.7114				2307
					20.0	0.0078	2561	
71	1661.1	1701.0	0.7168	0.7192				2310
					20.0	0.0078	2571	
72	1681.1	1721.0	0.7245	0.7270				2313
					20.0	0.0075	2653	
73	1701.1	1741.0	0.7321	0.7345				2316
					20.0	0.0081	2474	
74	1721.1	1761.0	0.7401	0.7426				2318
					20.0	0.0076	2616	
75	1741.1	1781.0	0.7478	0.7502				2321
					20.0	0.0076	2644	
76	1761.1	1801.0	0.7553	0.7578				2324
					20.0	0.0077	2610	
77	1781.1	1821.0	0.7630	0.7655				2327
					20.0	0.0074	2694	
78	1801.1	1841.0	0.7704	0.7729				2330
					20.0	0.0075	2663	
79	1821.1	1861.0	0.7779	0.7804				2334
					20.0	0.0069	2907	
80	1841.1	1881.0	0.7848	0.7873				2339
					20.0	0.0070	2853	
81	1861.1	1901.0	0.7918	0.7943				2343
					20.0	0.0068	2942	
82	1881.1	1921.0	0.7986	0.8011				2348
					20.0	0.0068	2962	
83	1901.1	1941.0	0.8054	0.8078				2353
					20.0	0.0066	3020	
84	1921.1	1961.0	0.8120	0.8145				2359
					20.0	0.0067	2965	
85	1941.1	1981.0	0.8187	0.8212				2364
					19.7	0.0063	3110	

LEVEL NUMBER	VERTICAL DEPTH FROM MSL m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL TRAVEL TIME MSL (OWT) s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s
86	1960.9	2000.8	0.8251	0.8275				2369
					20.0	0.0066	3023	
87	1980.9	2020.8	0.8317	0.8342				2375
					20.0	0.0063	3159	
88	2000.9	2040.8	0.8380	0.8405				2381
					20.0	0.0064	3112	
89	2020.9	2060.8	0.8444	0.8469				2386
					20.2	0.0066	3081	
90	2041.1	2081.0	0.8510	0.8535				2391
					20.0	0.0064	3120	
91	2061.1	2101.0	0.8574	0.8599				2397
					20.0	0.0065	3099	
92	2081.1	2121.0	0.8638	0.8663				2402
					20.0	0.0064	3131	
93	2101.1	2141.0	0.8702	0.8727				2407
					20.0	0.0059	3359	
94	2121.0	2160.9	0.8762	0.8787				2414
					20.0	0.0057	3493	
95	2141.0	2180.9	0.8819	0.8844				2421
					20.0	0.0058	3438	
96	2161.0	2200.9	0.8877	0.8902				2428
					20.0	0.0059	3407	
97	2181.0	2220.9	0.8936	0.8961				2434
					20.1	0.0053	3777	
98	2201.1	2241.0	0.8989	0.9014				2442
					20.0	0.0058	3432	
99	2221.1	2261.0	0.9047	0.9072				2448
					20.0	0.0058	3426	
100	2241.1	2281.0	0.9105	0.9131				2454
					20.0	0.0056	3576	
101	2261.1	2301.0	0.9161	0.9187				2461
					20.0	0.0063	3161	
102	2281.1	2321.0	0.9224	0.9250				2466
					20.0	0.0058	3453	
103	2301.1	2341.0	0.9282	0.9308				2472
					20.0	0.0060	3350	
104	2321.1	2361.0	0.9342	0.9368				2478
					20.0	0.0056	3602	
105	2341.1	2381.0	0.9397	0.9423				2484
					20.0	0.0061	3306	
106	2361.1	2401.0	0.9458	0.9484				2490
					20.0	0.0057	3525	
107	2381.1	2421.0	0.9515	0.9540				2496
					20.0	0.0058	3478	
108	2401.1	2441.0	0.9572	0.9598				2502
					20.0	0.0055	3608	
109	2421.1	2461.0	0.9628	0.9653				2508
					20.0	0.0045	4448	
110	2441.1	2481.0	0.9672	0.9698				2517
					20.0	0.0061	3295	
111	2461.1	2501.0	0.9733	0.9759				2522

LEVEL NUMBER	VERTICAL DEPTH FROM MSL m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL TRAVEL TIME MSL (OWT) s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s
					20.0	0.0051	3949	
112	2481.1	2521.0	0.9784	0.9810				2529
					20.0	0.0054	3692	
113	2501.1	2541.0	0.9838	0.9864				2536
					19.9	0.0059	3392	
114	2521.0	2560.9	0.9897	0.9922				2541
					20.0	0.0047	4240	
115	2541.0	2580.9	0.9944	0.9970				2549
					20.0	0.0055	3630	
116	2561.0	2600.9	0.9999	1.0025				2555
					20.0	0.0060	3352	
117	2581.0	2620.9	1.0058	1.0084				2559
					20.0	0.0057	3487	
118	2601.0	2640.9	1.0116	1.0142				2565
					20.0	0.0053	3798	
119	2621.0	2660.9	1.0168	1.0194				2571
					20.0	0.0055	3654	
120	2641.0	2680.9	1.0223	1.0249				2577
					20.0	0.0052	3833	
121	2661.0	2700.9	1.0275	1.0301				2583
					20.0	0.0057	3480	
122	2681.0	2720.9	1.0333	1.0359				2588
					20.0	0.0057	3531	
123	2701.0	2740.9	1.0389	1.0415				2593
					20.0	0.0057	3513	
124	2721.0	2760.9	1.0446	1.0472				2598
					20.0	0.0059	3404	
125	2741.0	2780.9	1.0505	1.0531				2603
					20.4	0.0055	3670	
126	2761.3	2801.2	1.0560	1.0586				2608
					20.0	0.0054	3694	
127	2781.3	2821.2	1.0614	1.0641				2614
					20.0	0.0054	3684	
128	2801.3	2841.2	1.0669	1.0695				2619
					20.0	0.0054	3677	
129	2821.3	2861.2	1.0723	1.0749				2625
					20.0	0.0053	3788	
130	2841.3	2881.2	1.0776	1.0802				2630
					20.0	0.0058	3472	
131	2861.3	2901.2	1.0833	1.0860				2635
					20.0	0.0057	3535	
132	2881.3	2921.2	1.0890	1.0916				2639
					20.0	0.0045	4401	
133	2901.3	2941.2	1.0935	1.0962				2647
					19.6	0.0050	3909	
134	2920.9	2960.8	1.0986	1.1012				2653
					20.0	0.0055	3618	
135	2940.9	2980.8	1.1041	1.1067				2657
					20.0	0.0053	3779	
136	2960.9	3000.8	1.1094	1.1120				2663
					20.0	0.0048	4151	

LEVEL NUMBER	VERTICAL DEPTH FROM MSL m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL TRAVEL TIME MSL (OWT) s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s
137	2980.9	3020.8	1.1142	1.1168				2669
					20.1	0.0042	4746	
138	3001.1	3041.0	1.1184	1.1211				2677
					20.0	0.0050	3978	
139	3021.1	3061.0	1.1235	1.1261				2683
					20.0	0.0051	3958	
140	3041.1	3081.0	1.1285	1.1312				2688
					20.0	0.0054	3674	
141	3061.1	3101.0	1.1340	1.1366				2693
					20.0	0.0044	4567	
142	3081.1	3121.0	1.1383	1.1410				2700
					20.0	0.0056	3600	
143	3101.1	3141.0	1.1439	1.1465				2705
					20.0	0.0047	4242	
144	3121.1	3161.0	1.1486	1.1512				2711
					20.0	0.0049	4103	
145	3141.1	3181.0	1.1535	1.1561				2717
					20.1	0.0053	3783	
146	3161.1	3201.0	1.1588	1.1614				2722
					20.0	0.0048	4126	
147	3181.1	3221.0	1.1636	1.1663				2728
					20.0	0.0050	4034	
148	3201.1	3241.0	1.1686	1.1712				2733
					20.0	0.0047	4273	
149	3221.1	3261.0	1.1733	1.1759				2739
					20.0	0.0049	4096	
150	3241.1	3281.0	1.1781	1.1808				2745
					20.0	0.0045	4436	
151	3261.1	3301.0	1.1826	1.1853				2751
					20.0	0.0049	4051	
152	3281.1	3321.0	1.1876	1.1902				2757
					20.0	0.0046	4307	
153	3301.1	3341.0	1.1922	1.1949				2763
					10.0	0.0028	3521	
154	3311.2	3351.1	1.1951	1.1977				2765
					20.0	0.0044	4552	
155	3331.2	3371.1	1.1995	1.2021				2771
					20.0	0.0047	4258	
156	3351.2	3391.1	1.2042	1.2068				2777
					20.0	0.0044	4503	
157	3371.2	3411.1	1.2086	1.2113				2783

Attachment 3: Listing of Deliverables (CD-ROM)

Report:

VSP_report	VSP/Geogram Processing Report	PDF
QBH_report	Q-Borehole Survey Report	PDF

Graphics Displays:

comp1	Plot 1. Composite Display 1– Polarity: Trough	TIF / PDF / PDS / CGM
comp2	Plot 2. Composite Display 2 – Polarity: Peak	TIF / PDF / PDS / CGM
vel1	Plot 3. Velocity Crossplot	TIF / PDF / PDS / CGM

Data files plus Verification (.txt) listings:

Raw data is provided from VSI Workbench Field Data Acquisition		LDF
TR1_xstk.sgy	stacked x axis data	SEGY
TR1_ystk.sgy	stacked y axis data	SEGY
TR1_zstk.sgy	stacked z axis data	SEGY
TR1_upp.sgy	Zero Phase upgoing wavefield TWT	SEGY
TR1_corstk.sgy	Zero phase corridor stack	SEGY
TR1_corstkf.sgy	Zero phase corridor stack with Time Variant Filter / AGC	SEGY
TR1_synt_R45.sgy	Zero Phase Synthetic Seismograms – Ricker 45Hz	SEGY
TR1_synt_R35.sgy	Zero Phase Synthetic Seismograms – Ricker 35Hz	SEGY
TR1_synt_R25.sgy	Zero Phase Synthetic Seismograms – Ricker 25Hz	SEGY
logs_depth.las	Depth indexed Logs	ASCII (LAS)
logs_time.las	Time indexed Logs	ASCII (LAS)
synthetics.las	Synthetic Seismograms and Corridor Stack	ASCII (LAS)
logs_in_mdtvdtwt.xls	Corridor Stack resampled in MD, TVD, TWT (special request)	EXCEL

Listings:

A1	Well_Seismic_Report	EXCEL
A2	Drift_and_Sonic_Adjustment_Report	EXCEL
A3	Velocity_Report	EXCEL
A4	Time_to_Depth_Report	EXCEL

Schlumberger

VSP GEOGRAM

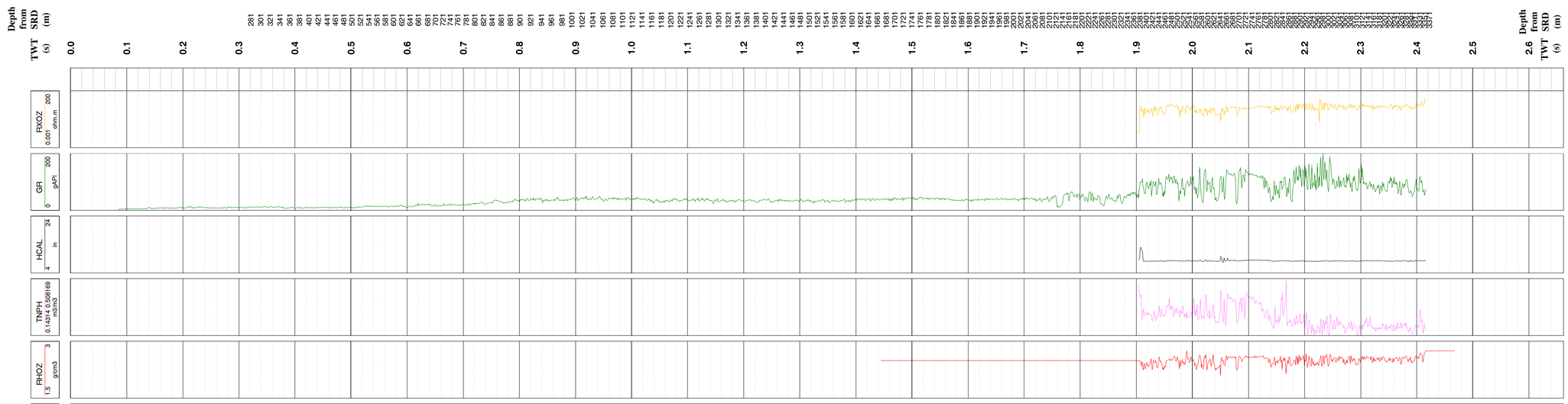
Composite Display 1

Polarity: Impedance Increase = Trough

Company : Origin Energy Resources
Well : Trefoil-1
Field : Trefoil
Country : Australia
State : Offshore Tasmania
SRD : MSL

Job Ref : DS 0305-02

Correlation Curve	RESISTIVITY
Correlation Curve	GAMMA RAY
Correlation Curve	CALIPER
Correlation Curve	NEUTRON POROSITY
Correlation Curve	DENSITY



SONIC INTERVAL VELOCITY	VELOCITY 1000 6000 m/s
ACOUSTIC IMPEDANCE	AIMP 2000 20000 kPa.s/m
REFLECTION COEFFICIENT	REFL -0.25 0.25

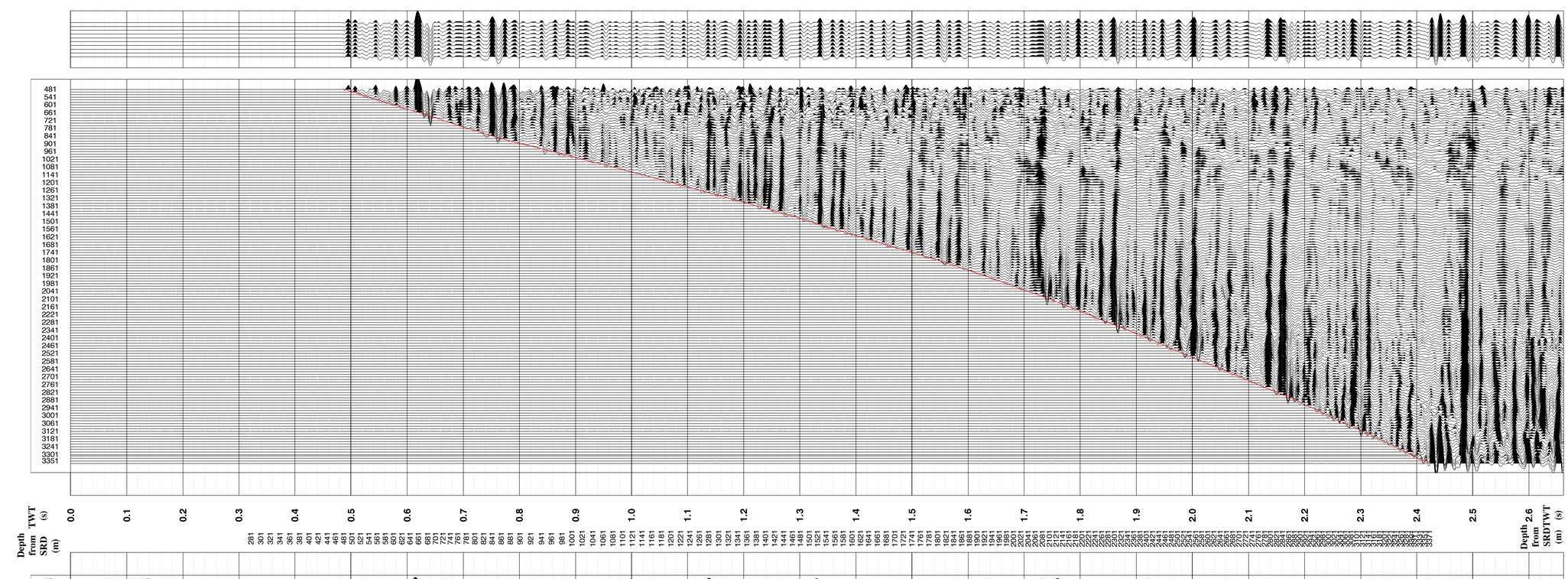
Zero Phase Ricker Wavelet 45 Hz	Multiples Only Increase in Acoustic Impedance is a Trough
Zero Phase Ricker Wavelet 45 Hz	Primaries Only with Transmission Losses Increase in Acoustic Impedance is a Trough
Zero Phase Ricker Wavelet 45 Hz	Primaries + Multiples Increase in Acoustic Impedance is a Trough
Zero Phase Ricker Wavelet 25 Hz	Convolved Reflectivity Series Increase in Acoustic Impedance is a Trough
Zero Phase Ricker Wavelet 35 Hz	Convolved Reflectivity Series Increase in Acoustic Impedance is a Trough
Zero Phase Ricker Wavelet 45 Hz	Convolved Reflectivity Series Increase in Acoustic Impedance is a Trough

VSP Corridor Stack	Increase in Acoustic Impedance is a Trough

VSP Upgoing

Processing History:
0/ Load Data
1/ Edit Bad Records
2/ Pick Reference Break
3/ Z Component Median Stack
4/ Geophone Transform
5/ Pick Break Time
6/ Survey Geometry + SRD Correction
7/ Bandpass Filter 3-200 Hz
8/ Spherical Divergence Correction: Exponent 1.38
9/ RMS Normalization: Window 200 ms
10/ Wavefield Separation: Velocity Filters 9x1 Median
11/ Waveshaping Deconvolution: 5/90 Hz Zero Phase / 1.75 s
12/ Upgoing Enhancement: Velocity Filter 5x1 Tri Mean
13/ Shift to Two Way Time
14/ Corridor Stack: 200 ms Window + Deepest 10 Traces
15/ Sonic Editing
16/ Sonic Calibration with VSP data
17/ Synthetic Seimogram Generation (25/35/45 Hz)

Display Parameters:
Scale: 25 cm/s
Polarity: Increase in Acoustic Impedance is a Trough



Composite Display

Surface Seismic
Line ORS01-13
Well location:
CDP 899, SP 1489

Surface Seismic shifted by -19ms

(a)

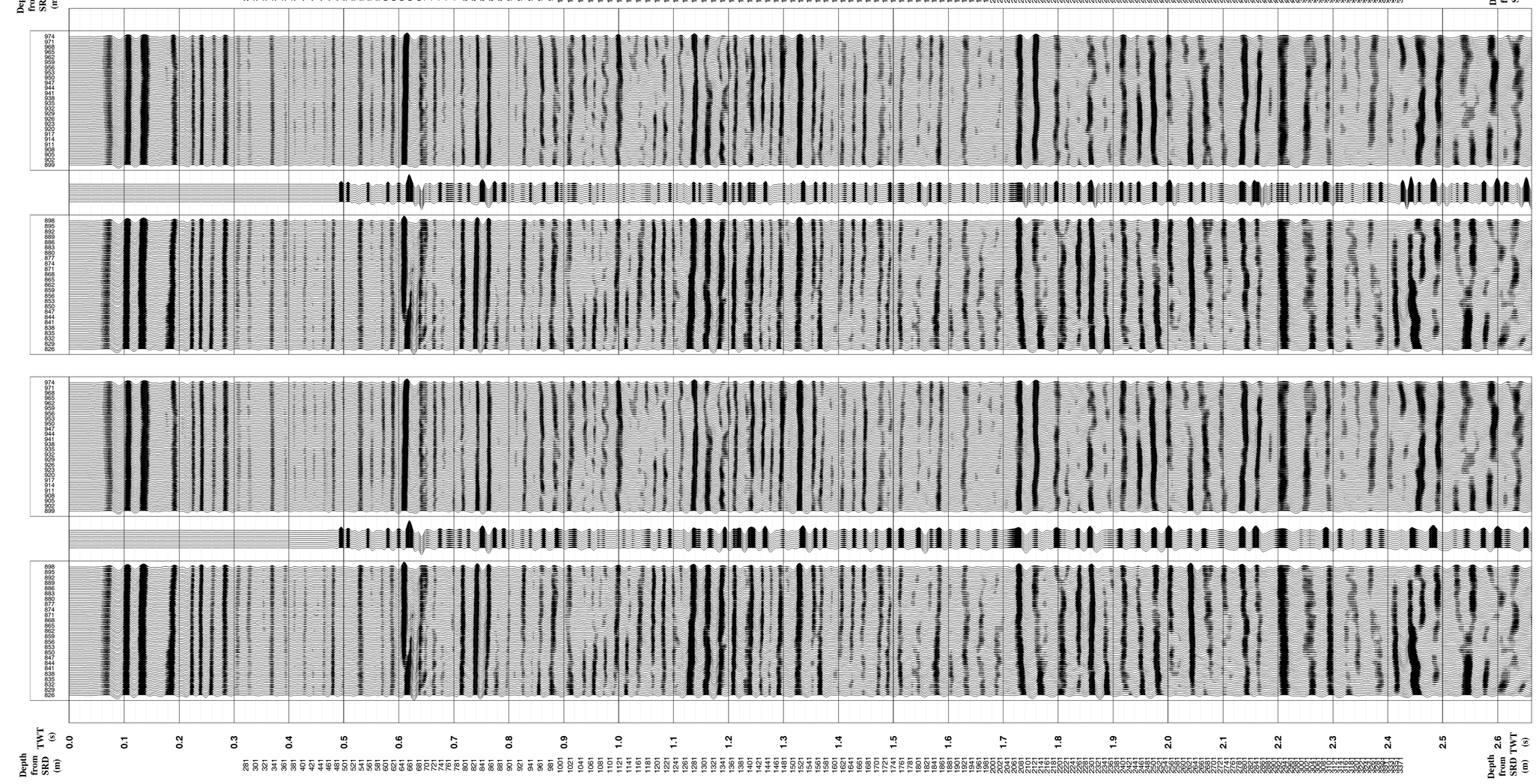
VSP Corridor Stack

(b)

VSP Corridor Stack +

TVF (3rd Order Butterworth)
0.5 s: 5-100 Hz
1.0 s: 5-80 Hz
1.5 s: 5-60 Hz
2.0 s: 5-50 Hz
2.5 s: 5-45 Hz
AGC 500 ms

Display Parameters:
Scale: 25 cm/s
Polarity: Increase in Acoustic Impedance is a Trough



Schlumberger

VSP
GEOGRAM

Composite Display 2

Polarity: Impedance Increase = Peak

Company : Origin Energy Resources
Well : Trefoil-1
Field : Trefoil
Country : Australia
State : Offshore Tasmania
SRD : MSL

Job Ref : DS 0305-02

Depth from SRD (m) / TWT (s)

RXOZ 0.001 – 200 ohm.m

Correlation Curve — **RESISTIVITY**

GR 0 – 200 gAPI

Correlation Curve — **GAMMA RAY**

HCAL 4 – 24 in

Correlation Curve — **CALIPER**

TNPH 0.1431 – 0.50169 m3/m3

Correlation Curve — **NEUTRON POROSITY**

RHOZ 1.5 – 3 g/cm3

Correlation Curve — **DENSITY**

SONIC INTERVAL VELOCITY — VELOCITY 1000 – 6000 m/s

ACOUSTIC IMPEDANCE — AIMP 2000 – 20000 kPa.s/m

REFLECTION COEFFICIENT — REFL -0.25 – 0.25

Zero Phase Ricker Wavelet 45 Hz — **Multiples Only**
Increase in Acoustic Impedance is a Peak

Zero Phase Ricker Wavelet 45 Hz — **Primaries Only with Transmission Losses**
Increase in Acoustic Impedance is a Peak

Zero Phase Ricker Wavelet 45 Hz — **Primaries + Multiples**
Increase in Acoustic Impedance is a Peak

Zero Phase Ricker Wavelet 25 Hz — **Convolved Reflectivity Series**
Increase in Acoustic Impedance is a Peak

Zero Phase Ricker Wavelet 35 Hz — **Convolved Reflectivity Series**
Increase in Acoustic Impedance is a Peak

Zero Phase Ricker Wavelet 45 Hz — **Convolved Reflectivity Series**
Increase in Acoustic Impedance is a Peak

VSP Corridor Stack — **Increase in Acoustic Impedance is a Peak**

VSP Upgoing

Processing History:
0/ Load Data
1/ Edit Bad Records
2/ Pick Reference Break
3/ Z Component Median Stack
4/ Geophone Transform
5/ Pick Break Time
6/ Survey Geometry + SRD Correction
7/ Bandpass Filter 3-200 Hz
8/ Spherical Divergence Correction: Exponent 1.38
9/ RMS Normalization: Window 200 ms
10/ Wavefield Separation: Velocity Filters 9x1 Median
11/ Waveshaping Deconvolution: 5/90 Hz Zero Phase / 1.75 s
12/ Upgoing Enhancement: Velocity Filter 5x1 Tri Mean
13/ Shift to Two Way Time
14/ Corridor Stack: 200 ms Window + Deepest 10 Traces
15/ Sonic Editing
16/ Sonic Calibration with VSP data
17/ Synthetic Seimogram Generation (25/35/45 Hz)

Display Parameters:
Scale: 25 cm/s
Polarity: Increase in Acoustic Impedance is a Peak

Composite Display

Surface Seismic
Line ORS01-13
Well location:
CDP 899, SP 1489

Surface Seismic shifted by -19ms

(a)

VSP Corridor Stack

(b)

VSP Corridor Stack +

TVF (3rd Order Butterworth)
0.5 s: 5-100 Hz
1.0 s: 5-80 Hz
1.5 s: 5-60 Hz
2.0 s: 5-50 Hz
2.5 s: 5-45 Hz
AGC 500 ms

Display Parameters:
Scale: 25 cm/s
Polarity: Increase in Acoustic Impedance is a Peak

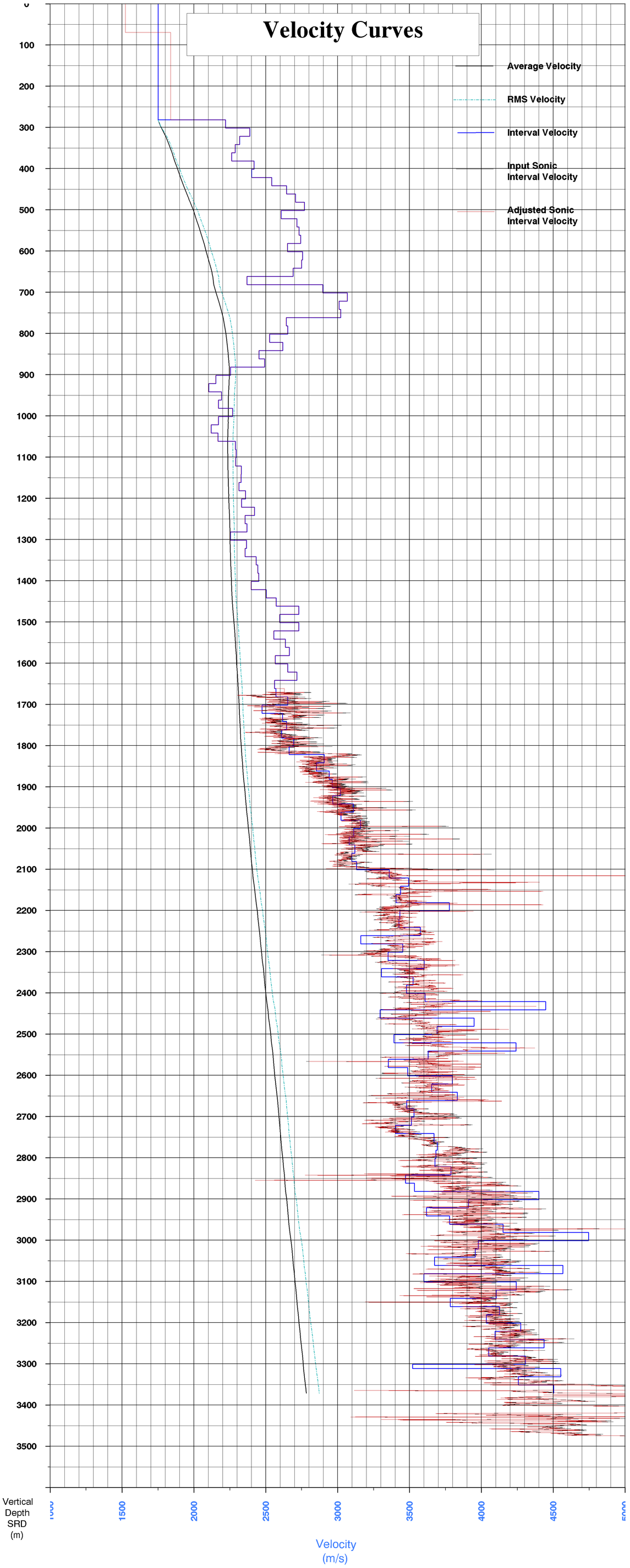
Schlumberger

VSP
GEOGRAM

VELOCITY CROSS PLOT

Company : Origin Energy Resources
Well : Trefoil-1
Field : Trefoil
Country : Australia
State : Offshore Tasmania
SRD : MSL

Job Ref : DS 0305-02



Vertical Depth SRD (m)	Vertical Time from SRD (owt, s)	Measured Depth from KB (m)	Level Number
281.2	0.1606	321.1	1
301.2	0.1696	341.1	2
321.2	0.1780	361.1	3
341.2	0.1866	381.1	4
361.1	0.1953	401.0	5
381.1	0.2041	421.0	6
401.1	0.2124	441.0	7
421.1	0.2207	461.0	8
441.1	0.2286	481.0	9
461.1	0.2362	501.0	10
481.1	0.2436	521.0	11
501.1	0.2508	541.0	12
521.1	0.2585	561.0	13
541.1	0.2658	581.0	14
561.1	0.2732	601.0	15
581.1	0.2805	621.0	16
601.1	0.2880	641.0	17
621.1	0.2953	661.0	18
641.1	0.3025	681.0	19
661.1	0.3100	701.0	20
681.1	0.3184	721.0	21
701.1	0.3253	741.0	22
721.1	0.3318	761.0	23
741.1	0.3385	781.0	24
761.0	0.3451	800.9	25
781.0	0.3526	820.9	26
801.0	0.3602	840.9	27
821.0	0.3681	860.9	28
841.1	0.3757	881.0	29
861.1	0.3839	901.0	30
881.1	0.3919	921.0	31
901.1	0.4008	941.0	32
921.1	0.4101	961.0	33
941.1	0.4196	981.0	34
961.1	0.4287	1001.0	35
981.1	0.4379	1021.0	36
1001.1	0.4468	1041.0	37
1021.1	0.4560	1061.0	38
1041.1	0.4654	1081.0	39
1061.1	0.4746	1101.0	40
1081.1	0.4834	1121.0	41
1101.1	0.4921	1141.0	42
1121.1	0.5008	1161.0	43
1141.1	0.5094	1181.0	44
1161.0	0.5180	1200.9	45
1181.0	0.5266	1220.9	46
1201.0	0.5351	1240.9	47
1221.0	0.5437	1260.9	48
1241.1	0.5520	1281.0	49
1261.1	0.5605	1301.0	50
1281.1	0.5689	1321.0	51
1301.1	0.5778	1341.0	52
1321.1	0.5862	1361.0	53
1341.1	0.5947	1381.0	54
1361.1	0.6029	1401.0	55
1381.1	0.6111	1421.0	56
1401.1	0.6193	1441.0	57
1421.1	0.6276	1461.0	58
1441.1	0.6356	1481.0	59
1461.1	0.6434	1501.0	60
1481.1	0.6507	1521.0	61
1501.1	0.6584	1541.0	62
1521.1	0.6657	1561.0	63
1541.1	0.6736	1581.0	64
1561.2	0.6812	1601.1	65
1581.2	0.6887	1621.1	66
1601.2	0.6965	1641.1	67
1621.2	0.7040	1661.1	68
1641.1	0.7114	1681.0	69
1661.1	0.7192	1701.0	70
1681.1	0.7270	1721.0	71
1701.1	0.7345	1741.0	72
1721.1	0.7426	1761.0	73
1741.1	0.7502	1781.0	74
1761.1	0.7578	1801.0	75
1781.1	0.7655	1821.0	76
1801.1	0.7729	1841.0	77
1821.1	0.7804	1861.0	78
1841.1	0.7873	1881.0	79
1861.1	0.7943	1901.0	80
1881.1	0.8011	1921.0	81
1901.1	0.8078	1941.0	82
1921.1	0.8145	1961.0	83
1941.1	0.8212	1981.0	84
1960.9	0.8275	2000.8	85
1980.9	0.8342	2020.8	86
2000.9	0.8405	2040.8	87
2020.9	0.8469	2060.8	88
2041.1	0.8535	2081.0	89
2061.1	0.8599	2101.0	90
2081.1	0.8663	2121.0	91
2101.1	0.8727	2141.0	92
2121.0	0.8787	2160.9	93
2141.0	0.8844	2180.9	94
2161.0	0.8902	2200.9	95
2181.0	0.8961	2220.9	96
2201.1	0.9014	2241.0	97
2221.1	0.9072	2261.0	98
2241.1	0.9131	2281.0	99
2261.1	0.9187	2301.0	100
2281.1	0.9250	2321.0	101
2301.1	0.9308	2341.0	102
2321.1	0.9368	2361.0	103
2341.1	0.9423	2381.0	104
2361.1	0.9484	2401.0	105
2381.1	0.9540	2421.0	106
2401.1	0.9598	2441.0	107
2421.1	0.9653	2461.0	108
2441.1	0.9698	2481.0	109
2461.1	0.9759	2501.0	110
2481.1	0.9810	2521.0	111
2501.1	0.9864	2541.0	112
2521.0	0.9922	2560.9	113
2541.0	0.9970	2580.9	114
2561.0	1.0025	2600.9	115
2581.0	1.0084	2620.9	116
2601.0	1.0142	2640.9	117
2621.0	1.0194	2660.9	118
2641.0	1.0249	2680.9	119
2661.0	1.0301	2700.9	120
2681.0	1.0359	2720.9	121
2701.0	1.0415	2740.9	122
2721.0	1.0472	2760.9	123
2741.0	1.0531	2780.9	124
2761.3	1.0586	2801.2	125
2781.3	1.0641	2821.2	126
2801.3	1.0695	2841.2	127
2821.3	1.0749	2861.2	128
2841.3	1.0802	2881.2	129
2861.3	1.0860	2901.2	130
2881.3	1.0916	2921.2	131
2901.3	1.0962	2941.2	132
2920.9	1.1012	2960.8	133
2940.9	1.1067	2980.8	134
2960.9	1.1120	3000.8	135
2980.9	1.1168	3020.8	136
3001.1	1.1211	3041.0	137
3021.1	1.1261	3061.0	138
3041.1	1.1312	3081.0	139
3061.1	1.1366	3101.0	140
3081.1	1.1410	3121.0	141
3101.1	1.1465	3141.0	142
3121.1	1.1512	3161.0	143
3141.1	1.1561	3181.0	144
3161.1	1.1614	3201.0	145
3181.1	1.1663	3221.0	146
3201.1	1.1712	3241.0	147
3221.1	1.1759	3261.0	148
3241.1	1.1808	3281.0	149
3261.1	1.1853	3301.0	150
3281.1	1.1902	3321.0	151
3301.1	1.1949	3341.0	152
3311.2	1.1977	3351.1	153
3331.2	1.2021	3371.1	154
3351.2	1.2068	3391.1	155
3371.2	1.2113	3411.1	156

Q-Borehole Survey Report

Schlumberger

Survey type:	Zero Offset VSP Survey
Company:	Origin Energy Resources Ltd.
Well:	Trefoil-1
Field:	Trefoil
Country:	Australia
Run:	Suite-1, Run 2
Date:	25-Nov-2004

Recorded by: J. Robertson/C. Bassignana/M.Webb/S.Nakanishi

Witnessed by: Dave Cohen/Mark Tindale

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Introduction

On the 25th of November 2004 a Zero Offset VSP survey using a rig source was carried out for Origin Energy Resources Ltd (Origin Energy) on the TREFOIL 1 well in the offshore T/18P Bass Basin, Tasmania.

A dual G-Gun cluster was deployed as a rig source using the Rig crane (port side), with an azimuth of 8 degrees with reference to North (Rig heading was 53 degrees). The offset of guns was fixed at 55 m from well head. The guns were submerged from a buoy to 4.3 meters below water surface. 2 hydrophones were deployed 6.5 meters below the center of the gun cluster.

Survey Results

Total acquisition time for the survey was recorded as 10 hrs 50 mins from rig up to full rig down. Tool was held up at 3419 mMD due to hole condition.

Data quality generally for the Zero Offset VSP considered to be good throughout the survey; data was recorded from 3409 m to 239m MD with 20 meters interval.. At least 5 good repeatable shots were recorded at each VSP level (3279 m to 519 m).

Casing arrivals were evident above on levels above 499 m on Z component signal. Transit-Time information is obtained through horizontal component signal (X or Y), from 479 to 319.1 m.

Macha TGS-8 Gun controller was used for the auto-tuning of cluster gun. Depth and Pressure of Cluster gun were monitored and recorded by TGS-8 at each shot for source QC purpose. This report includes Macha Gun delay statistic as well as the record of gun pressure and depth.

Depth correlation shows 2 meters shallower than reference log. Time-Depth listing in this report is not corrected by 2 meter offset.

Conclusions and Recommendations

Good quality VSP data was acquired providing accurate Time-Depth information and corridor Stack.

This VSP dataset can also be used as input for advance VSP Processing products. Recommended further processing options:

- Sonic Calibration and Synthetic Seismogram generation
- Surface seismic Composite Displays
- Phase Matching
- Q-Analysis

Well Information

Company	**Origin Energy Resources Ltd.**
Well	**Trefoil-1**
Field	**Trefoil**
Country	Australia
State	Tasmania
Logging Date	25-Nov-2004
Run Number	Suite-1, Run 2
Service Order	
Well Head (Latitude)	39 51' 41.58"S
Well Head (Longitude)	145 22' 30.87"E
Well Head (X Coordinate)	391028.0 UTM
Well Head (Y Coordinate)	5586346.0 UTM
Total Depth - Driller	3545.1 m
Total Depth - Logger	3419.0 m
Maximum Hole Deviation	0.7 deg
Azimuth of Maximum Deviation	
Program Version	12C0-301
Bit Size	8.500 in
Recorded by	J. Robertson/C. Bassignana/M.Webb/S.Naka
Witnessed by	Dave Cohen/Mark Tindale

Elevation Information

Permanent Datum	Mean Sea Level
Elevation Permanent Datum	0.0 m
Above Permanent Datum	39.9 m
Drilling Measured From	Drill Floor (RT)
Derrick Floor	39.9 m
Ground Level	-68.9 m
Kelly Bush	39.9 m
Log Measured From	Drill Floor (RT)
Elevation Log Zero	39.9 m

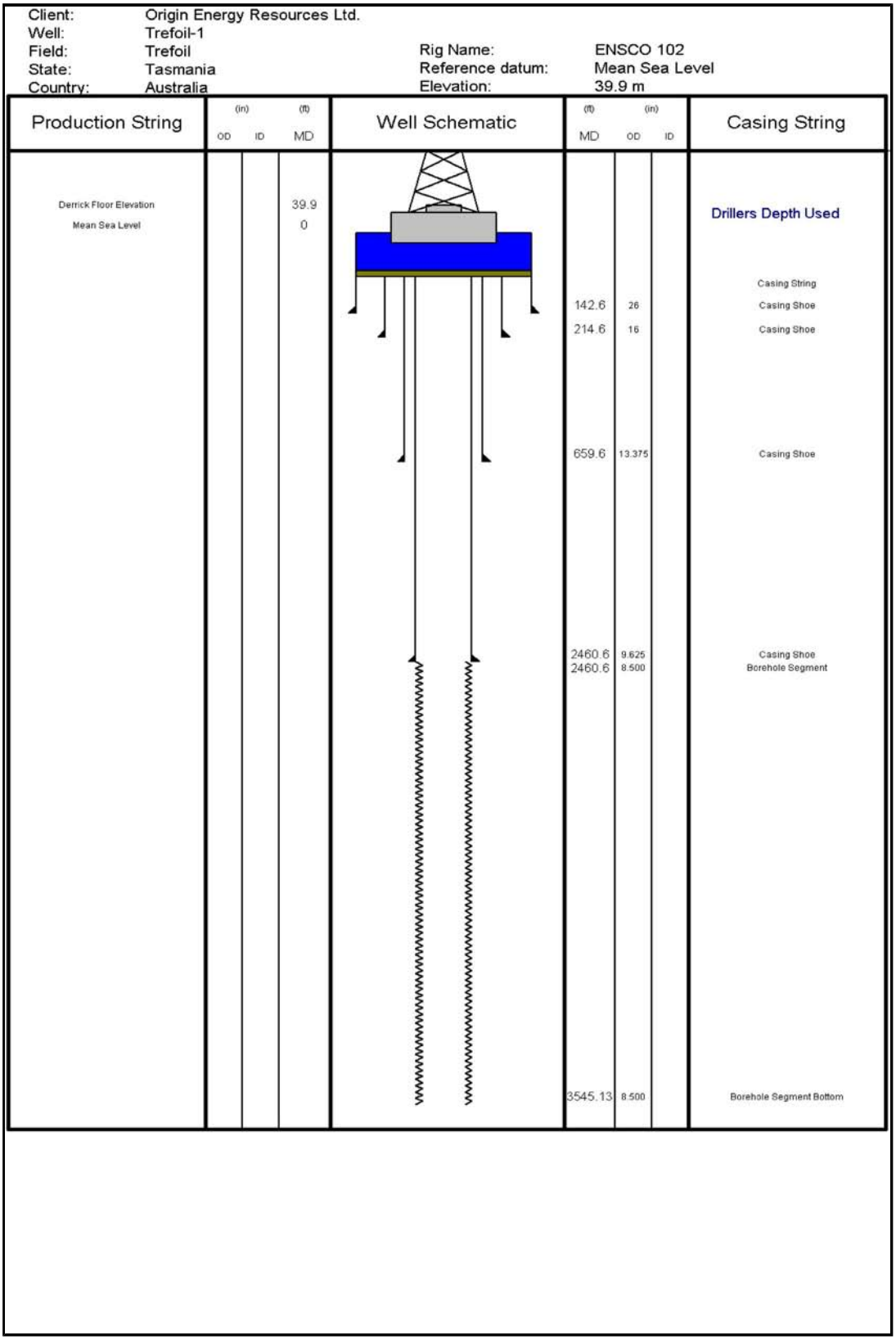
Depth Corrected Information

Water Velocity	1524.0 m/s
Seismic Reference Datum	0.0 m

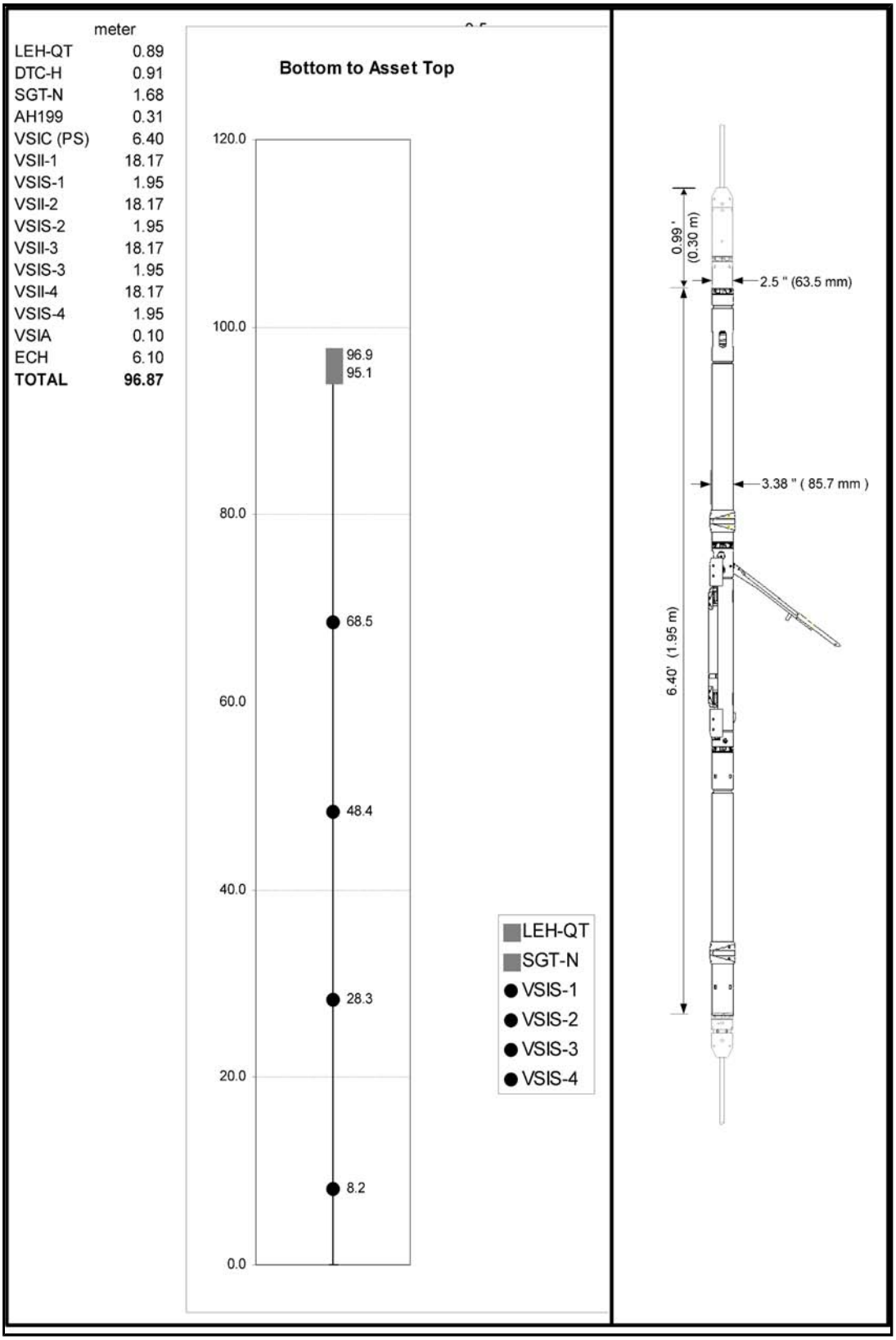
Remarks

Correlated to gamma ray from logging run#1 SP-HRLA-CMR-GR date 24 Nov 2004
Correlation log shows 2 meters shallow in VSP survey.
Time-Depth listing does not take account of 2 meter off depth.
Three thermometers run in logging head. Max recorded temperature
was 246degF, 246 degF and 247 degF @ 05:45 25 Nov 2004 at 3419 m.
Circulation Stopped 0:45 24 Nov 2004.

Well Sketch


Client: Origin Energy Resources Ltd.
Well: Trefoil-1
Field: Trefoil
State: Tasmania
Country: Australia
Rig Name: ENSCO 102
Reference datum: Mean Sea Level
Elevation: 39.9 m
Production String
(in) OD ID
(ft) MD
Well Schematic
(ft) MD
(in) OD ID
Casing String
Derrick Floor Elevation
Mean Sea Level
39.9
0
Drillers Depth Used
Casing String
142.6 26 Casing Shoe
214.6 16 Casing Shoe
659.6 13.375 Casing Shoe
2460.6 9.625 Casing Shoe
2460.6 8.500 Borehole Segment
3545.13 8.500 Borehole Segment Bottom

Tool Sketch


meter
LEH-QT 0.89
DTC-H 0.91
SGT-N 1.68
AH199 0.31
VSIC (PS) 6.40
VSII-1 18.17
VSIS-1 1.95
VSII-2 18.17
VSIS-2 1.95
VSII-3 18.17
VSIS-3 1.95
VSII-4 18.17
VSIS-4 1.95
VSIA 0.10
ECH 6.10
TOTAL 96.87
Bottom to Asset Top
120.0
100.0
80.0
60.0
40.0
20.0
0.0
96.9
95.1
68.5
48.4
28.3
8.2
LEH-QT
SGT-N
VSIS-1
VSIS-2
VSIS-3
VSIS-4
0.99 ' (0.30 m)
2.5 " (63.5 mm)
3.38 " (85.7 mm)
6.40' (1.95 m)

Operating Time Summary

DATE	Time Start	Time Taken Hr : min	OPERATION
25-Nov-04	2:00	0:50	Rig Up VSI
	2:50	0:10	Surface Check VSI
	3:00	0:15	RIH in hole
	3:15	0:15	VSI at 100m, perform system check
	3:30	0:50	RIN to 1729 m
	4:20	0:30	at 1729 m QCshot
	4:50	0:55	at 2331 m QCkshot
	5:45	0:45	VSI held up at 3419m (bottom depth)
	6:30	4:50	Start main survey from 3409 m
	11:20	0:30	End main survey at 319.1 m
	11:50	1:00	VSI at surface, commence rig down of VSI
	12:50		Rig down completed well released
		10:50	**HRS –TOTAL OPERATING TIME**

Well Information

Well Type	Vertical Exploration Well
Rig / Platform Type	ENSCO 102
Well Reference Azimuth (Magnetic, True, or Grid North)	Grid North

Elevation Information

Water Depth	68.9 meters

Sea Condition

Sea Condition	Clam
Wave Height	Less than 0.5 m
Tide Level	Low Tide –0.8 m @ 05:25 25Nov04 High Tide 1.1 m @ 09:59 25Nov04,

Velocity Information

Water Velocity	1524 m/sec used for static correction

Remarks:

- The tide level used “zero” for the static correction.
- Static correction of transit time does not use tide correction in this report.
- Tide Level obtains from King Island

Downhole Equipment Information

Tool Type	VSIT
Surface Equipment	WASM-AB sn838, TGS-8 sn118741
Combined Tool	DTC-H 9166, SGT-N 9901
Number of Shuttles	4
Nominal Receiver Spacing	20.0 m
Gimbaled (Y/N)	No
Downhole Geophone Type	GAC-D 3-axis orthogonal
Sensitivity	0.5 V/G 3%
Natural Frequency	20 Hz
Damping Factor	N/A
DC Resistance	1500 Ohms 3% @25 degC
Measurement Specification	
Dynamic range	> 105 dB at 36 dB
Distortion	< -90 dB
Analog Low-Cut filter	0.3 Hz, -6 dB/Oct
Digital Low-Cut filter	None
DC Offset removal	Averaging by surface software
Digital High-Cut filter	Linear phase at down hole
Pass band ripple	+- 0.01 dB
Stop band attenuation	< -130 dB
Bandwidth	80% of Nyquist frequency
Test Signal harmonic distortion	< -110 dB
Tool SN	
VSPC-AA	8074
VSCC-AA	8074
VSII-AB (18.17 m)	8235
Receiver #1 (VSIS-CA)	8315
VSII-AB (18.17 m)	8234
Receiver #2 (VSIS-CA)	8314
VSII-AB (18.17 m)	8233
Receiver #3 (VSIS-CA)	8312
VSII-AB (18.17 m)	8223
Receiver #4 (VSIS-CA)	8313
VSIA	8086

Note:

Extra weight is added at bottom of VSIA using
Shooting Bridle (1-42, 1.2m) / PEKB / AH-66 /ECH (3.2m) /Bottom Nose (hole-finder),
in order to aid descending.

General Information

Survey Type	Zero Offset VSP
Surface Recording Length	1000.0 ms
Suface Sampling Rate	1.0 ms
Downhole Recording Length	5000.0 ms
Downhole Sampling Rate	1.0 ms
Top of Survey	239.0 m
Bottom of Survey	3484.0 m
Number of Shots	220
Number of Downhole Traces	880
Number of Downhole Traces used for Processing	805

Source Configuration (Air Gun)

Source Location (Rig, Boat, Pit, Borehole)	Rig
Source Group ID (A, B, C, …)	ENSCO 102
Source Offset (for fixed offset)	55 m
Source Azimuth (for fixed offset)	8 deg
Source Depth from Surface	4.3 m
Source Depth from Logging Zero	44.2 m

Gun Controller Type	Macha TGS-8
Gun Controller Model Name	TGS-8
Gun Controller Serial Number	MWA 118741
Gun Type	G-Gun
Gun Serial Number(s)	37189, 371674
Gun Configuration (3 Gun Cluster, Gun Array, etc.)	2 Gun Parallel Cluster 90 cm spacing
Gun Chamber Volumes	2 x 150 cubic Inch
Gun Pit/Borehole Information	N/A
Compressor Type	Type30 H10T2 28 SCFM @280Bar
Compressor Flow Rate	28 SCFM
Air Regulator Pressure	1800 psi

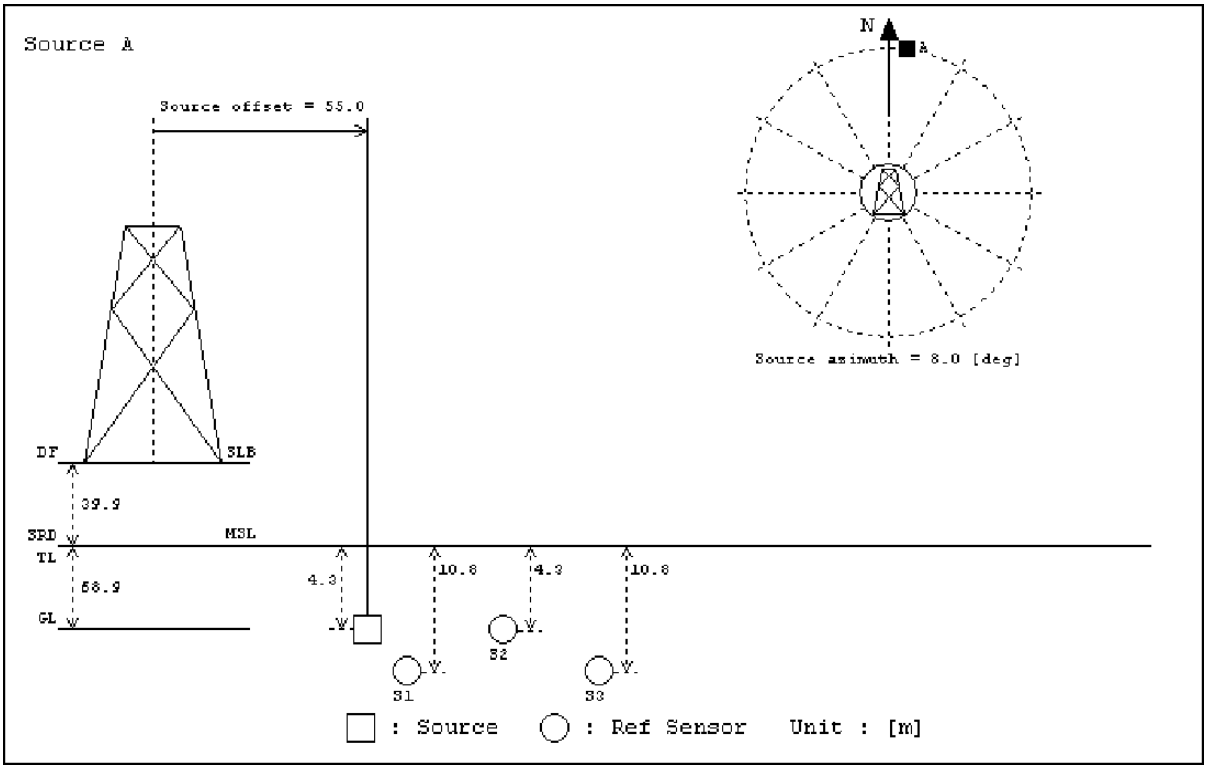
Surface Sensor Configuration

Number of Surface Reference Sensors	3
Surface Recording Length	1000 msec
Surface Sampling Rate	1 msec
Sensor Type (S1)	MP24-L3 (UH signal through TGS-8)
Sensor Type (S2)	PF signal provided by TGS-8
Sensor Type (S3)	MP24-L3
Sensor Depth from Surface (S1)	10.8m
Sensor Depth from Surface (S2)	4.3 m
Sensor Depth from Surface (S3)	10.8m
Sensor Depth from Logging Zero (S1)	50.7 m
Sensor Depth from Logging Zero (S2)	44.2 m
Sensor Depth from Logging Zero (S2)	50.7 m
Sensor Offset from Source (S1)	55 m
Sensor Offset from Source (S2)	55 m
Sensor Offset from Source (S3)	55 m

Remarks

- The Parallel Cluster Gun was suspended by floatation Buoys.
- Auto-tuning function by Gun Controller TGS-8 was utilized for two-gun cluster using M/P Time-Break sensor of each gun.
- Gun Pressure and Depth were recorded by TGS-8 system.

Source Geometry Sketch



Shot Summary Listing (1/6)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
319.1	1	47	-10.9	9.7	908.4	232
339.1	2	47	0.8	9.6	796.1	231, 232, 233
359.1	3	47	6.1	9.6	740.0	231, 232, 233
379.1	4	47	6.2	9.6	753.8	231, 232, 233
399.0	1	46	-11.0	9.6	917.8	228, 229, 230
419.0	2	46	1.3	9.6	791.1	228, 229, 230
439.0	3	46	5.9	9.6	732.8	228, 229, 230
459.0	4	46	5.9	9.6	745.2	228, 229, 230
479.0	1	45	-11.5	9.6	905.2	223, 224, 225, 226, 227
499.0	2	45	4.2	9.6	794.6	223, 224, 225, 226, 227
519.0	3	45	6.8	9.6	736.0	223, 224, 225, 226, 227
539.0	4	45	8.7	9.6	742.4	223, 224, 225, 226, 227
559.0	1	44	-11.6	9.6	901.9	217, 218, 219, 220, 221
579.0	2	44	-3.9	9.6	781.8	217, 218, 219, 220, 221
599.0	3	44	8.1	9.6	731.0	217, 218, 219, 220, 221
619.0	4	44	8.9	9.6	719.1	217, 218, 219, 220, 221
639.0	1	43	-9.1	9.6	889.0	212, 213, 214, 215, 216
659.0	2	43	3.8	9.6	779.4	212, 213, 214, 215, 216
679.0	3	43	6.6	9.6	714.7	212, 213, 214, 215, 216
699.0	4	43	8.6	9.5	720.4	212, 213, 214, 215, 216
719.0	1	42	-6.9	9.5	887.9	207, 208, 209, 210, 211
739.0	2	42	0.3	9.6	753.7	207, 208, 209, 210, 211
759.0	3	42	6.2	9.6	703.5	207, 208, 209, 210, 211
779.0	4	42	5.7	9.5	706.5	207, 208, 209, 210, 211
798.9	1	41	-6.8	9.6	887.2	202, 203, 204, 205, 206
818.9	2	41	-2.8	9.5	753.4	202, 203, 204, 205, 206
838.9	3	41	3.7	9.6	712.1	202, 203, 204, 205, 206
858.9	4	41	10.7	9.6	685.8	202, 203, 204, 205, 206

Shot Summary Listing (2/6)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
879.0	1	40	-12.5	9.6	876.9	197, 198, 199, 200, 201
899.0	2	40	-1.9	9.6	753.9	197, 198, 199, 200, 201
919.0	3	40	3.7	9.6	704.4	197, 198, 199, 200, 201
939.0	4	40	7.9	9.6	709.6	197, 198, 199, 200, 201
959.0	1	39	-7.7	9.6	866.4	192, 193, 194, 195, 196
979.0	2	39	3.1	9.6	752.4	192, 193, 194, 195, 196
999.0	3	39	3.3	9.6	689.6	192, 193, 194, 195, 196
1019.0	4	39	5.3	9.6	691.4	192, 193, 194, 195, 196
1039.0	1	38	-7.5	9.6	870.9	187, 188, 189, 190, 191
1059.0	2	38	-4.6	9.5	751.9	187, 188, 189, 190, 191
1079.0	3	38	3.1	9.6	688.2	187, 188, 189, 190, 191
1099.0	4	38	8.0	9.5	666.2	187, 188, 189, 190, 191
1119.0	1	37	-17.3	9.6	855.2	182, 183, 184, 185, 186
1139.0	2	37	1.0	9.6	744.2	182, 183, 184, 185, 186
1159.0	3	37	3.0	9.6	682.0	182, 183, 184, 185, 186
1179.0	4	37	8.1	9.5	674.4	182, 183, 184, 185, 186
1198.9	1	36	-7.6	9.6	851.7	177, 178, 179, 180, 181
1218.9	2	36	-0.0	9.5	740.9	177, 178, 179, 180, 181
1238.9	3	36	3.0	9.6	677.7	177, 178, 179, 180, 181
1258.9	4	36	5.6	9.5	675.7	177, 178, 179, 180, 181
1279.0	1	35	-7.6	9.6	855.7	172, 173, 174, 175, 176
1299.0	2	35	-1.2	9.5	724.1	172, 173, 174, 175, 176
1319.0	3	35	5.4	9.5	650.3	172, 173, 174, 175, 176
1339.0	4	35	7.7	9.5	641.8	172, 173, 174, 175, 176
1359.0	1	34	-20.9	9.6	838.6	167, 168, 169, 170, 171
1379.0	2	34	-1.9	9.5	725.6	167, 168, 169, 170, 171
1399.0	3	34	5.6	9.5	655.9	167, 168, 169, 170, 171
1419.0	4	34	4.5	9.5	662.7	167, 168, 169, 170, 171

Shot Summary Listing (3/6)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
1439.0	1	33	-19.2	9.6	844.7	162, 163, 164, 165, 166
1459.0	2	33	-2.7	9.5	718.4	162, 163, 164, 165, 166
1479.0	3	33	5.7	9.6	645.8	162, 163, 164, 165, 166
1499.0	4	33	0.2	9.5	658.5	162, 163, 164, 165, 166
1519.0	1	32	-19.1	9.6	838.2	157, 158, 159, 160, 161
1539.0	2	32	-1.3	9.5	721.7	157, 158, 159, 160, 161
1559.0	3	32	9.8	9.6	632.2	157, 158, 159, 160, 161
1579.0	4	32	12.3	9.5	636.0	157, 158, 159, 160, 161
1599.1	1	31	-8.4	9.6	822.2	152, 153, 154, 155, 156
1619.1	2	31	-2.6	9.5	691.7	152, 153, 154, 155, 156
1639.1	3	31	9.6	9.5	622.5	152, 153, 154, 155, 156
1659.1	4	31	11.7	9.5	632.3	152, 153, 154, 155, 156
1679.0	1	30	-6.9	9.6	811.9	147, 148, 149, 150, 151
1699.0	2	30	-9.2	9.5	685.9	147, 148, 149, 150, 151
1719.0	3	30	3.4	9.6	615.4	147, 148, 149, 150, 151
1739.0	4	30	7.8	9.5	611.1	147, 148, 149, 150, 151
1759.0	1	29	-19.6	9.5	820.0	142, 143, 144, 145, 146
1779.0	2	29	-3.3	9.5	687.7	142, 143, 144, 145, 146
1799.0	3	29	5.6	9.6	620.1	142, 143, 144, 145, 146
1819.0	4	29	5.2	9.5	599.4	142, 143, 144, 145, 146
1839.0	1	28	-19.8	9.5	791.3	137, 138, 139, 140, 141
1859.0	2	28	-8.0	9.5	656.8	137, 138, 139, 140, 141
1879.0	3	28	9.6	9.5	612.1	137, 138, 139, 140, 141
1899.0	4	28	4.4	9.5	586.7	137, 138, 139, 140, 141
1919.0	1	27	-14.3	9.5	781.0	132, 133, 134, 135, 136
1939.0	2	27	-2.3	9.5	645.5	132, 133, 134, 135, 136
1959.0	3	27	9.4	9.5	599.5	132, 133, 134, 135, 136
1979.0	4	27	2.7	9.5	565.5	132, 133, 134, 135, 136

Shot Summary Listing (4/6)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
1998.8	1	26	-5.3	9.5	763.0	127, 128, 129, 130, 131
2018.8	2	26	-10.0	9.5	637.8	127, 128, 129, 130, 131
2038.8	3	26	9.9	9.5	584.3	127, 128, 129, 130, 131
2058.8	4	26	-0.6	9.5	566.6	127, 128, 129, 130, 131
2079.0	1	25	-9.1	9.5	778.8	122, 123, 124, 125, 126
2099.0	2	25	-8.3	9.5	630.8	122, 123, 124, 125, 126
2119.0	3	25	6.8	9.6	589.7	122, 123, 124, 125, 126
2139.0	4	25	-5.8	9.5	584.6	122, 123, 124, 125, 126
2158.9	1	24	-8.3	9.5	763.7	117, 118, 119, 120, 121
2178.9	2	24	29.0	9.5	640.3	117, 118, 119, 120, 121
2198.9	3	24	6.8	9.5	571.1	117, 118, 119, 120, 121
2218.9	4	24	-12.1	9.4	564.4	117, 118, 119, 120, 121
2239.0	1	23	8.4	9.5	734.3	112, 113, 114, 115, 116
2259.0	2	23	118.8	9.5	627.2	112, 113, 114, 115, 116
2279.0	3	23	16.0	9.5	581.8	112, 113, 114, 115, 116
2299.0	4	23	-28.1	9.4	546.4	112, 113, 114, 115, 116
2319.0	1	22	13.7	9.6	764.6	107, 108, 109, 110, 111
2339.0	2	22	143.1	9.5	627.2	107, 108, 109, 110, 111
2359.0	3	22	18.1	9.5	584.3	107, 108, 109, 110, 111
2379.0	4	22	-44.1	9.5	539.9	107, 108, 109, 110, 111
2399.0	1	21	-2.1	9.5	749.6	102, 103, 104, 105, 106
2419.0	2	21	-1.0	13.4	623.8	102, 103, 104, 105, 106
2439.0	3	21	0.6	9.1	573.6	102, 103, 104, 105, 106
2459.0	4	21	11.5	9.1	552.6	102, 103, 104, 105, 106
2479.0	1	20	-14.8	9.2	729.8	96, 97, 98, 99, 100, 101
2499.0	2	20	-11.4	9.1	606.8	96, 97, 98, 99, 100, 101
2519.0	3	20	14.1	9.2	566.7	96, 97, 98, 99, 100, 101
2539.0	4	20	5.2	9.2	553.5	96, 97, 98, 99, 100, 101

Shot Summary Listing (5/6)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
2558.9	1	19	-7.0	9.1	698.2	90, 91, 92, 93, 94, 95
2578.9	2	19	-6.3	9.2	614.0	90, 91, 92, 93, 94, 95
2598.9	3	19	0.9	9.2	533.8	90, 91, 92, 93, 94, 95
2618.9	4	19	-5.6	9.1	529.5	90, 91, 92, 93, 94, 95
2638.9	1	18	147.5	9.1	698.6	83, 84, 85, 86, 87, 88, 89
2658.9	2	18	-118.3	9.1	588.5	83, 84, 85, 86, 87, 88, 89
2678.9	3	18	22.1	9.1	525.7	83, 84, 85, 86, 87, 88, 89
2698.9	4	18	21.7	9.2	535.6	83, 84, 85, 86, 87, 88, 89
2718.9	1	17	-9.5	9.3	731.3	77, 78, 79, 80, 81, 82
2738.9	2	17	-3.5	9.2	581.3	77, 78, 79, 80, 81, 82
2758.9	3	17	7.9	9.4	566.7	77, 78, 79, 80, 81, 82
2778.9	4	17	-3.2	9.2	535.9	77, 78, 79, 80, 81, 82
2799.2	1	16	-11.7	9.5	714.3	70, 71, 72, 73, 74, 75, 76
2819.2	2	16	4.5	9.5	590.0	70, 71, 72, 73, 74, 75, 76
2839.2	3	16	-0.3	9.4	538.4	70, 71, 72, 73, 74, 75, 76
2859.2	4	16	-2.9	9.1	479.6	70, 71, 72, 73, 74, 75, 76
2879.2	1	14	-2.9	9.3	683.2	63, 64, 65, 66, 67, 68
2899.2	2	14	3.7	9.1	584.5	63, 64, 65, 66, 67, 68
2919.2	3	14	-1.1	9.1	537.8	63, 64, 65, 66, 67, 68
2939.2	4	14	-12.8	9.2	529.9	63, 64, 65, 66, 67, 68
2958.8	1	13	-28.8	9.2	701.3	58, 59, 60, 61, 62
2978.8	2	13	0.8	9.0	558.4	58, 59, 60, 61, 62
2998.8	3	13	-1.9	9.1	539.7	58, 59, 60, 61, 62
3018.8	4	13	10.7	9.0	497.0	58, 59, 60, 61, 62
3039.0	1	12	-1.2	9.0	635.4	51, 52, 53, 54, 55, 56, 57
3059.0	2	12	8.0	9.2	563.2	51, 52, 53, 54, 55, 56, 57
3079.0	3	12	0.4	9.2	534.5	51, 52, 53, 54, 55, 56, 57
3099.0	4	12	9.7	9.0	480.8	52, 53, 54, 55, 56, 57

Shot Summary Listing (6/6)

Measured Depth [m]	Tool Number	Stack Number	Relative Bearing [deg]	Caliper [in]	Anchoring force [kg]	Shot number
3119.0	1	11	0.8	9.2	682.5	45, 46, 47, 48, 49, 50
3139.0	2	11	13.1	9.0	557.8	45, 46, 47, 48, 49, 50
3159.0	3	11	-3.9	9.2	525.2	45, 46, 47, 48, 49, 50
3179.0	4	11	18.0	9.2	511.3	45, 46, 47, 48, 49, 50
3199.0	1	10	-9.3	9.1	683.2	40, 41, 42, 43, 44
3219.0	2	10	-39.4	9.1	553.9	40, 41, 42, 43, 44
3239.0	3	10	-0.2	9.2	528.4	40, 41, 42, 43, 44
3259.0	4	10	6.9	9.2	524.0	40, 41, 42, 43, 44
3279.0	1	9	-9.6	9.1	658.6	35, 36, 37, 38, 39
3299.0	2	9	-13.1	9.1	545.9	35, 36, 37, 38, 39
3319.0	3	9	12.8	9.1	503.3	35, 36, 37, 38, 39
3339.0	4	9	3.3	9.2	498.3	35, 36, 37, 38, 39
3349.1	1	8	-12.1	9.0	638.9	30, 31, 32, 33, 34
3369.1	2	8	-3.0	9.1	552.1	30, 31, 32, 33, 34
3389.1	3	8	-5.3	9.1	502.6	30, 31, 32, 33, 34
3409.1	4	8	-49.8	9.2	499.2	30, 31, 32, 33, 34

Stack Summary Listing (1/6) from VSI_001_A_geo_wavefield_z.ldf

Stack Number ACQUISITION_ SHOT_ NUMBER	Measured Depth [m] CABLE_ LENGTH	True Vertical Depth [m] RECEIVER_ CORRECTION_ Z	Measured Time [s] TRANSIT_ TIME	One-way Vertical Time [s] TRANSIT_ TIME_SRD	Two-way Vertical Time [s] TRANSIT_ TIME_ INITIAL	Interval Velocity [m/s] VELOCITY_ 1	Average Velocity [m/s] VELOCITY_ 2	RMS Velocity [m/s] VELOCITY_ 3
	0	0	0	0	0			
						1722.5		
47	319.1	279.2	0.1625	0.1621	0.3241		1722.5	1722.5
						2152.0		
47	339.1	299.2	0.1715	0.1714	0.3427		1745.8	1748.5
						2179.4		
47	359.1	319.2	0.1805	0.1805	0.3611		1767.8	1772.9
						2526.0		
47	379.1	339.2	0.1882	0.1885	0.3769		1799.7	1810.9
						3221.4		
46	399.0	359.1	0.1941	0.1946	0.3893		1844.8	1872.1
						2391.9		
46	419.0	379.1	0.2024	0.2030	0.4060		1867.4	1896.3
						1911.0		
46	439.0	399.1	0.2127	0.2135	0.4269		1869.5	1897.0
						2319.2		
46	459.0	419.1	0.2212	0.2221	0.4442		1887.0	1915.1
						2435.8		
45	479.0	439.1	0.2293	0.2303	0.4606		1906.6	1936.2
						3558.5		
45	499.0	459.1	0.2348	0.2359	0.4719		1945.9	1990.2
						2362.6		
45	519.0	479.1	0.2432	0.2444	0.4888		1960.4	2004.3
						2826.4		
45	539.0	499.1	0.2502	0.2515	0.5029		1984.7	2032.0
						2298.3		
44	559.0	519.1	0.2589	0.2602	0.5204		1995.2	2041.5
						2697.1		
44	579.0	539.1	0.2662	0.2676	0.5352		2014.7	2062.5
						2761.7		
44	599.0	559.1	0.2734	0.2748	0.5497		2034.4	2083.9
						2778.9		
44	619.0	579.1	0.2805	0.2820	0.5641		2053.4	2104.5
						2636.7		
43	639.0	599.1	0.2881	0.2896	0.5793		2068.6	2120.1
						2761.8		
43	659.0	619.1	0.2952	0.2969	0.5937		2085.6	2138.1
						2778.8		
43	679.0	639.1	0.3024	0.3041	0.6081		2102.0	2155.4
						2666.1		
43	699.0	659.1	0.3099	0.3116	0.6231		2115.5	2169.1
						2446.6		
42	719.0	679.1	0.3180	0.3197	0.6395		2124.0	2176.7
						2896.1		
42	739.0	699.1	0.3249	0.3266	0.6533		2140.3	2194.3
						3058.2		
42	759.0	719.1	0.3314	0.3332	0.6664		2158.3	2214.5
						3015.2		
42	779.0	739.1	0.3380	0.3398	0.6796		2175.1	2232.9
						2752.4		
41	798.9	759.0	0.3452	0.3470	0.6941		2187.1	2244.9
						2699.5		
41	818.9	779.0	0.3525	0.3545	0.7089		2197.8	2255.4
						2601.7		
41	838.9	799.0	0.3602	0.3621	0.7243		2206.4	2263.3
						2534.7		
41	858.9	819.0	0.3681	0.3700	0.7401		2213.4	2269.4
						2841.7		

Stack Summary Listing (2/6) from VSI_001_A_geo_wavefield_z.ldf

Stack Number ACQUISITION_ SHOT_ NUMBER	Measured Depth [m] CABLE_ LENGTH	True Vertical Depth [m] RECEIVER_ CORRECTION_ Z	Measured Time [s] TRANSIT_ TIME	One-way Vertical Time [s] TRANSIT_ TIME_SRD	Two-way Vertical Time [s] TRANSIT_ TIME_ INITIAL	Interval Velocity [m/s] VELOCITY_ 1	Average Velocity [m/s] VELOCITY_ 2	RMS Velocity [m/s] VELOCITY_ 3
40	879.0	839.1	0.3751	0.3771	0.7542		2225.2	2281.5
						2451.5		
40	899.0	859.1	0.3832	0.3853	0.7705		2229.9	2285.2
						2491.8		
40	919.0	879.1	0.3912	0.3933	0.7866		2235.3	2289.6
						2257.2		
40	939.0	899.1	0.4001	0.4021	0.8043		2235.8	2288.9
						2145.6		
39	959.0	919.1	0.4094	0.4115	0.8229		2233.7	2285.7
						2109.3		
39	979.0	939.1	0.4189	0.4209	0.8419		2230.9	2281.9
						2192.9		
39	999.0	959.1	0.4280	0.4301	0.8601		2230.1	2280.1
						2172.9		
39	1019.0	979.1	0.4372	0.4393	0.8785		2228.9	2277.9
						2276.1		
38	1039.0	999.1	0.4459	0.4481	0.8961		2229.8	2277.8
						2167.6		
38	1059.0	1019.1	0.4552	0.4573	0.9146		2228.6	2275.7
						2124.9		
38	1079.0	1039.1	0.4646	0.4667	0.9334		2226.5	2272.7
						2165.0		
38	1099.0	1059.1	0.4738	0.4759	0.9519		2225.3	2270.7
						2263.9		
37	1119.0	1079.1	0.4826	0.4848	0.9696		2226.0	2270.6
						2300.3		
37	1139.0	1099.1	0.4913	0.4935	0.9869		2227.3	2271.1
						2288.7		
37	1159.0	1119.1	0.5000	0.5022	1.0044		2228.4	2271.4
						2329.6		
37	1179.0	1139.1	0.5086	0.5108	1.0216		2230.1	2272.4
						2333.2		
36	1198.9	1159.0	0.5171	0.5193	1.0387		2231.8	2273.4
						2312.2		
36	1218.9	1179.0	0.5258	0.5280	1.0560		2233.1	2274.0
						2353.6		
36	1238.9	1199.0	0.5342	0.5365	1.0730		2235.0	2275.3
						2336.5		
36	1258.9	1219.0	0.5428	0.5450	1.0901		2236.6	2276.3
						2424.7		
35	1279.0	1239.1	0.5510	0.5533	1.1066		2239.4	2278.6
						2361.2		
35	1299.0	1259.1	0.5595	0.5618	1.1236		2241.2	2279.8
						2360.0		
35	1319.0	1279.1	0.5680	0.5703	1.1405		2243.0	2281.1
						2256.6		
35	1339.0	1299.1	0.5768	0.5791	1.1582		2243.2	2280.7
						2372.9		
34	1359.0	1319.1	0.5852	0.5875	1.1751		2245.1	2282.0
						2347.1		
34	1379.0	1339.1	0.5938	0.5961	1.1921		2246.5	2283.0
						2434.2		
34	1399.0	1359.1	0.6020	0.6043	1.2086		2249.1	2285.1
						2453.6		
34	1419.0	1379.1	0.6101	0.6124	1.2249		2251.8	2287.4
						2451.1		
33	1439.0	1399.1	0.6182	0.6206	1.2412		2254.4	2289.7
						2392.3		

Stack Summary Listing (3/6) from VSI_001_A_geo_wavefield_z.ldf

Stack Number ACQUISITION_SHOT_NUMBER	Measured Depth [m] CABLE_LENGTH	True Vertical Depth [m] RECEIVER_CORRECTION_Z	Measured Time [s] TRANSIT_TIME	One-way Vertical Time [s] TRANSIT_TIME_SRD	Two-way Vertical Time [s] TRANSIT_TIME_INITIAL	Interval Velocity [m/s] VELOCITY_1	Average Velocity [m/s] VELOCITY_2	RMS Velocity [m/s] VELOCITY_3
33	1459.0	1419.1	0.6266	0.6289	1.2579		2256.3	2291.0
						2503.0		
33	1479.0	1439.1	0.6346	0.6369	1.2739		2259.4	2293.8
						2575.7		
33	1499.0	1459.1	0.6423	0.6447	1.2894		2263.2	2297.4
						2732.1		
32	1519.0	1479.1	0.6497	0.6520	1.3041		2268.4	2302.8
						2608.6		
32	1539.0	1499.1	0.6573	0.6597	1.3194		2272.4	2306.6
						2715.2		
32	1559.0	1519.1	0.6647	0.6671	1.3341		2277.3	2311.5
						2560.0		
32	1579.0	1539.1	0.6725	0.6749	1.3498		2280.6	2314.5
						2653.5		
31	1599.1	1559.2	0.6801	0.6824	1.3649		2284.7	2318.5
						2638.4		
31	1619.1	1579.2	0.6876	0.6900	1.3800		2288.6	2322.3
						2574.0		
31	1639.1	1599.2	0.6954	0.6978	1.3956		2291.8	2325.2
						2674.1		
31	1659.1	1619.2	0.7029	0.7053	1.4105		2295.8	2329.2
						2691.7		
30	1679.0	1639.1	0.7103	0.7127	1.4254		2299.9	2333.3
						2568.7		
30	1699.0	1659.1	0.7180	0.7205	1.4409		2302.8	2335.9
						2570.0		
30	1719.0	1679.1	0.7258	0.7282	1.4565		2305.7	2338.6
						2641.6		
30	1739.0	1699.1	0.7334	0.7358	1.4716		2309.1	2341.9
						2467.6		
29	1759.0	1719.1	0.7415	0.7439	1.4878		2310.9	2343.3
						2635.8		
29	1779.0	1739.1	0.7491	0.7515	1.5030		2314.1	2346.4
						2652.3		
29	1799.0	1759.1	0.7566	0.7591	1.5181		2317.5	2349.7
						2588.1		
29	1819.0	1779.1	0.7643	0.7668	1.5336		2320.2	2352.2
						2678.4		
28	1839.0	1799.1	0.7718	0.7743	1.5485		2323.7	2355.5
						2661.2		
28	1859.0	1819.1	0.7793	0.7818	1.5636		2326.9	2358.7
						2906.2		
28	1879.0	1839.1	0.7862	0.7887	1.5773		2332.0	2364.0
						2851.7		
28	1899.0	1859.1	0.7932	0.7957	1.5913		2336.6	2368.7
						2844.8		
27	1919.0	1879.1	0.8002	0.8027	1.6054		2341.0	2373.3
						2958.0		
27	1939.0	1899.1	0.8070	0.8095	1.6189		2346.2	2378.8
						3023.4		
27	1959.0	1919.1	0.8136	0.8161	1.6321		2351.7	2384.7
						2969.7		
27	1979.0	1939.1	0.8203	0.8228	1.6456		2356.7	2390.1
						3107.0		
26	1998.8	1958.9	0.8267	0.8292	1.6583		2362.5	2396.4
						3042.9		
26	2018.8	1978.9	0.8332	0.8357	1.6715		2367.8	2402.2
						3141.6		

Stack Summary Listing (4/6) from VSI_001_A_geo_wavefield_z.ldf

Stack Number ACQUISITION_SHOT_NUMBER	Measured Depth [m] CABLE_LENGTH	True Vertical Depth [m] RECEIVER_CORRECTION_Z	Measured Time [s] TRANSIT_TIME	One-way Vertical Time [s] TRANSIT_TIME_SRD	Two-way Vertical Time [s] TRANSIT_TIME_INITIAL	Interval Velocity [m/s] VELOCITY_1	Average Velocity [m/s] VELOCITY_2	RMS Velocity [m/s] VELOCITY_3
26	2038.8	1998.9	0.8396	0.8421	1.6842		2373.7	2408.6
						3122.9		
26	2058.8	2018.9	0.8460	0.8485	1.6970		2379.3	2414.8
						3146.2		
25	2079.0	2039.1	0.8524	0.8549	1.7099		2385.1	2421.1
						3123.4		
25	2099.0	2059.1	0.8588	0.8613	1.7227		2390.6	2427.1
						3098.1		
25	2119.0	2079.1	0.8653	0.8678	1.7356		2395.8	2432.8
						3131.9		
25	2139.0	2099.1	0.8717	0.8742	1.7483		2401.2	2438.6
						3411.9		
24	2158.9	2119.0	0.8775	0.8800	1.7600		2407.9	2446.3
						3464.5		
24	2178.9	2139.0	0.8833	0.8858	1.7716		2414.8	2454.3
						3444.1		
24	2198.9	2159.0	0.8891	0.8916	1.7832		2421.5	2462.1
						3410.1		
24	2218.9	2179.0	0.8949	0.8975	1.7949		2428.0	2469.4
						3574.4		
23	2239.0	2199.1	0.9005	0.9031	1.8062		2435.1	2477.8
						3461.6		
23	2259.0	2219.1	0.9063	0.9089	1.8177		2441.6	2485.3
						3412.7		
23	2279.0	2239.1	0.9122	0.9147	1.8294		2447.9	2492.4
						3548.0		
23	2299.0	2259.1	0.9178	0.9204	1.8407		2454.6	2500.2
						3335.7		
22	2319.0	2279.1	0.9238	0.9264	1.8527		2460.3	2506.5
						3463.6		
22	2339.0	2299.1	0.9296	0.9321	1.8643		2466.5	2513.5
						3346.2		
22	2359.0	2319.1	0.9355	0.9381	1.8762		2472.1	2519.7
						3754.2		
22	2379.0	2339.1	0.9409	0.9434	1.8869		2479.4	2528.4
						3309.5		
21	2399.0	2359.1	0.9469	0.9495	1.8990		2484.6	2534.1
						3376.6		
21	2419.0	2379.1	0.9528	0.9554	1.9108		2490.2	2540.2
						3429.9		
21	2439.0	2399.1	0.9587	0.9612	1.9225		2495.9	2546.5
						3611.8		
21	2459.0	2419.1	0.9642	0.9668	1.9335		2502.3	2553.9
						4416.3		
20	2479.0	2439.1	0.9687	0.9713	1.9426		2511.2	2565.7
						3417.7		
20	2499.0	2459.1	0.9746	0.9771	1.9543		2516.6	2571.7
						3792.5		
20	2519.0	2479.1	0.9798	0.9824	1.9648		2523.5	2579.8
						3685.0		
20	2539.0	2499.1	0.9853	0.9878	1.9757		2529.8	2587.1
						3507.0		
19	2558.9	2519.0	0.9909	0.9935	1.9871		2535.4	2593.3
						4234.2		
19	2578.9	2539.0	0.9957	0.9983	1.9965		2543.5	2603.5
						3595.4		
19	2598.9	2559.0	1.0012	1.0038	2.0076		2549.3	2610.0
						3532.5		

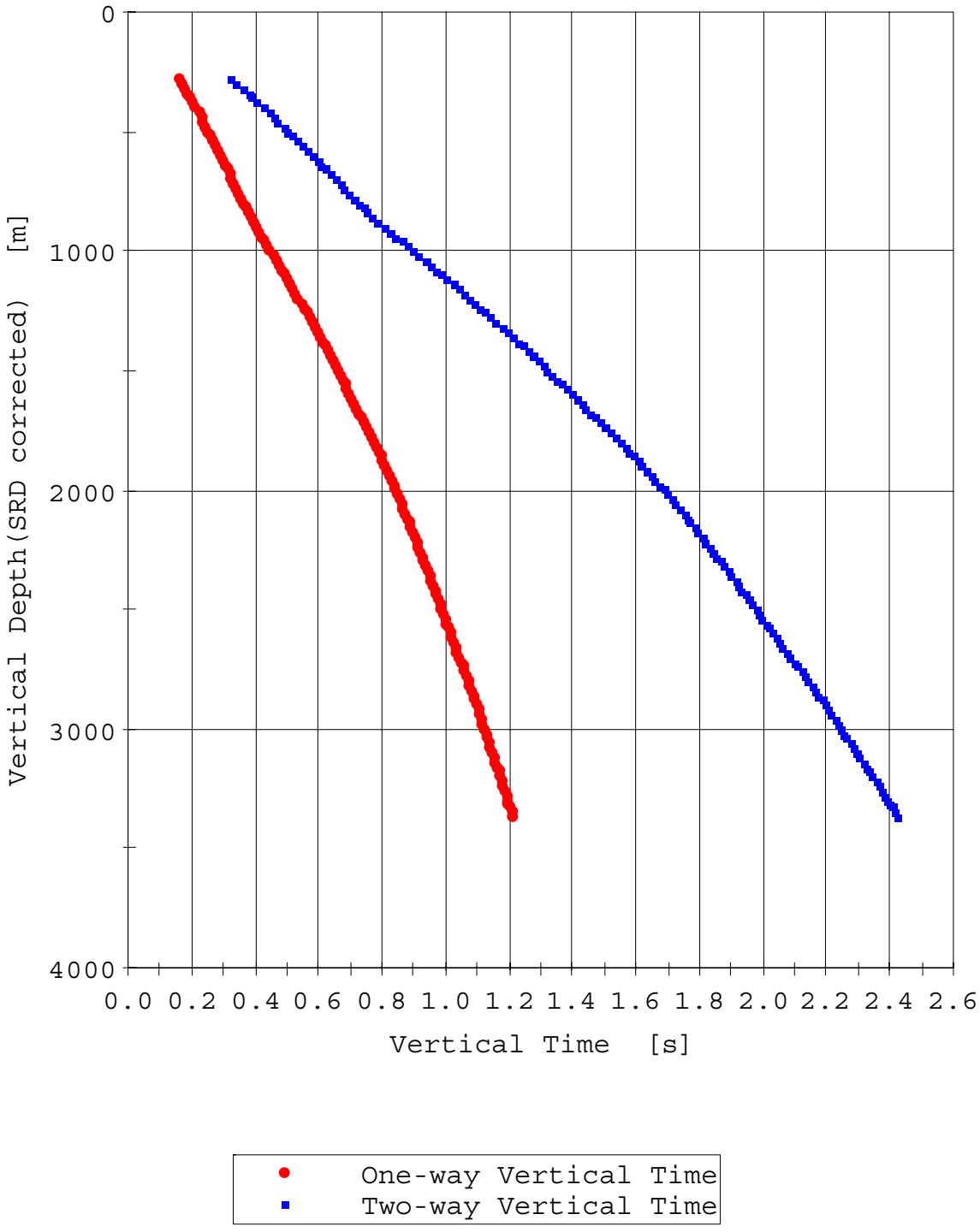
Stack Summary Listing (5/6) from VSI_001_A_geo_wavefield_z.ldf

Stack Number ACQUISITION_SHOT_NUMBER	Measured Depth [m] CABLE_LENGTH	True Vertical Depth [m] RECEIVER_CORRECTION_Z	Measured Time [s] TRANSIT_TIME	One-way Vertical Time [s] TRANSIT_TIME_SRD	Two-way Vertical Time [s] TRANSIT_TIME_INITIAL	Interval Velocity [m/s] VELOCITY_1	Average Velocity [m/s] VELOCITY_2	RMS Velocity [m/s] VELOCITY_3
19	2618.9	2579.0	1.0069	1.0095	2.0190		2554.8	2616.1
						3457.3		
18	2638.9	2599.0	1.0127	1.0153	2.0305		2560.0	2621.7
						3654.7		
18	2658.9	2619.0	1.0181	1.0207	2.0415		2565.8	2628.3
						3864.1		
18	2678.9	2639.0	1.0233	1.0259	2.0518		2572.4	2636.0
						3743.9		
18	2698.9	2659.0	1.0287	1.0312	2.0625		2578.4	2642.9
						3458.1		
17	2718.9	2679.0	1.0344	1.0370	2.0740		2583.3	2648.2
						3392.3		
17	2738.9	2699.0	1.0403	1.0429	2.0858		2587.9	2652.9
						3647.7		
17	2758.9	2719.0	1.0458	1.0484	2.0968		2593.5	2659.1
						3432.1		
17	2778.9	2739.0	1.0516	1.0542	2.1084		2598.1	2664.0
						3529.2		
16	2799.2	2759.3	1.0574	1.0600	2.1200		2603.2	2669.5
						3838.0		
16	2819.2	2779.3	1.0626	1.0652	2.1304		2609.2	2676.4
						3703.8		
16	2839.2	2799.3	1.0680	1.0706	2.1412		2614.7	2682.6
						3495.3		
16	2859.2	2819.3	1.0737	1.0763	2.1527		2619.4	2687.6
						3968.6		
14	2879.2	2839.3	1.0787	1.0814	2.1627		2625.7	2694.9
						3476.2		
14	2899.2	2859.3	1.0845	1.0871	2.1742		2630.2	2699.7
						3380.4		
14	2919.2	2879.3	1.0904	1.0930	2.1861		2634.2	2703.8
						4669.0		
14	2939.2	2899.3	1.0947	1.0973	2.1946		2642.2	2714.3
						3923.1		
13	2958.8	2918.9	1.0997	1.1023	2.2046		2648.0	2721.0
						3645.7		
13	2978.8	2938.9	1.1052	1.1078	2.2156		2652.9	2726.3
						3824.7		
13	2998.8	2958.9	1.1104	1.1130	2.2261		2658.4	2732.5
						4130.2		
13	3018.8	2978.9	1.1153	1.1179	2.2358		2664.8	2740.1
						4680.3		
12	3039.0	2999.1	1.1196	1.1222	2.2444		2672.6	2750.2
						3936.6		
12	3059.0	3019.1	1.1246	1.1273	2.2545		2678.2	2756.7
						3952.0		
12	3079.0	3039.1	1.1297	1.1323	2.2646		2683.9	2763.1
						3751.1		
12	3099.0	3059.1	1.1350	1.1377	2.2753		2688.9	2768.6
						4490.5		
11	3119.0	3079.1	1.1395	1.1421	2.2842		2696.0	2777.4
						3679.5		
11	3139.0	3099.1	1.1449	1.1475	2.2951		2700.6	2782.3
						4193.7		
11	3159.0	3119.1	1.1497	1.1523	2.3046		2706.8	2789.7
						4074.9		
11	3179.0	3139.1	1.1546	1.1572	2.3144		2712.6	2796.4
						3800.1		

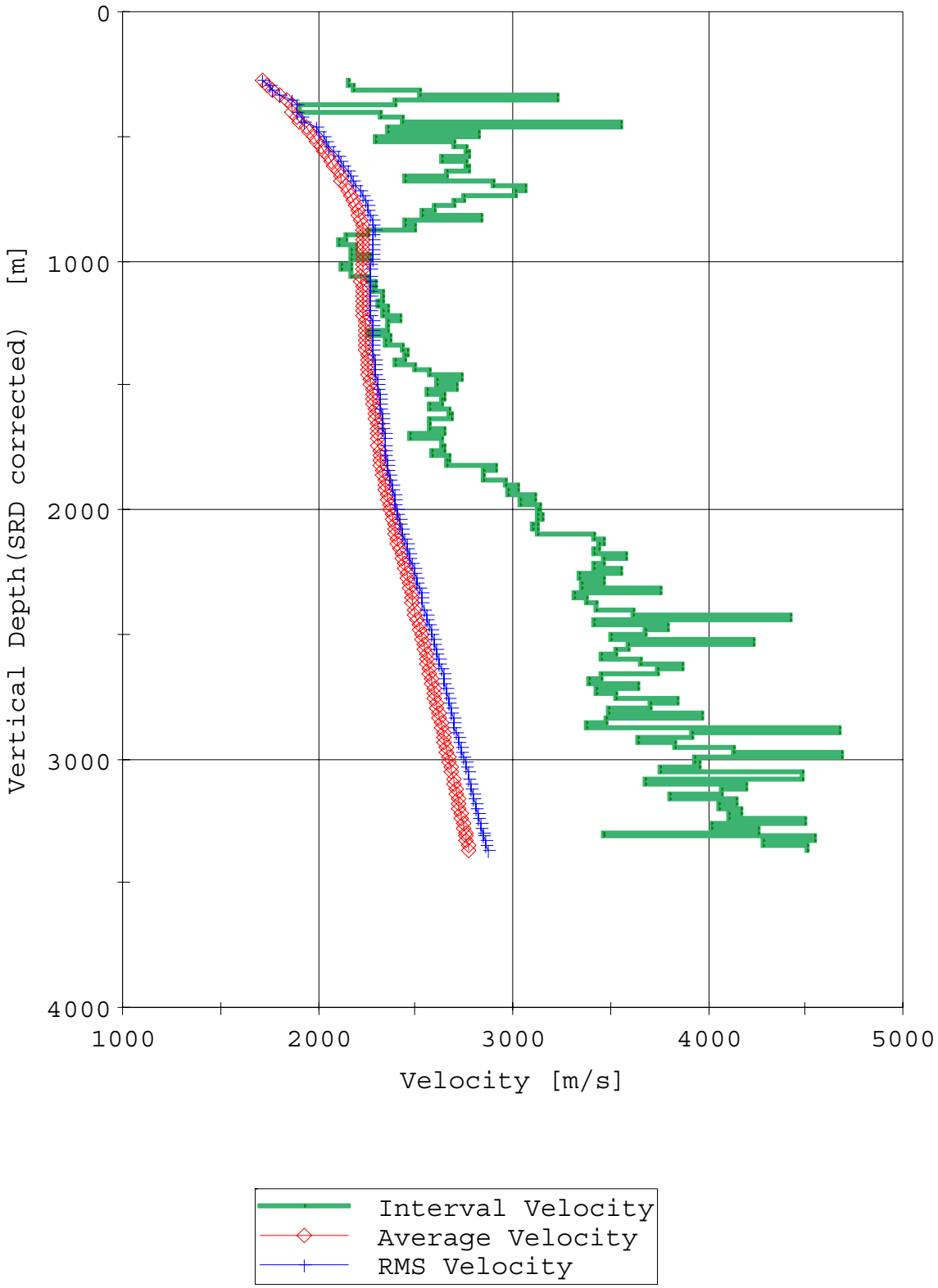
Stack Summary Listing (6/6) from VSI_001_A_geo_wavefield_z.ldf

Stack Number ACQUISITION_ SHOT_ NUMBER	Measured Depth [m] CABLE_ LENGTH	True Vertical Depth [m] RECEIVER_ CORRECTION_ Z	Measured Time [s] TRANSIT_ TIME	One-way Vertical Time [s] TRANSIT_ TIME_SRD	Two-way Vertical Time [s] TRANSIT_ TIME_ INITIAL	Interval Velocity [m/s] VELOCITY_ 1	Average Velocity [m/s] VELOCITY_ 2	RMS Velocity [m/s] VELOCITY_ 3
10	3199.0	3159.1	1.1599	1.1625	2.3250		2717.5	2801.7
						4141.7		
10	3219.0	3179.1	1.1647	1.1673	2.3346		2723.4	2808.6
						4053.4		
10	3239.0	3199.1	1.1696	1.1723	2.3445		2729.0	2815.0
						4169.7		
10	3259.0	3219.1	1.1744	1.1771	2.3541		2734.9	2821.8
						4109.3		
9	3279.0	3239.1	1.1793	1.1819	2.3638		2740.6	2828.3
						4491.8		
9	3299.0	3259.1	1.1837	1.1864	2.3727		2747.1	2836.4
						4022.6		
9	3319.0	3279.1	1.1887	1.1913	2.3827		2752.5	2842.4
						4258.6		
9	3339.0	3299.1	1.1934	1.1960	2.3921		2758.4	2849.3
						3461.8		
8	3349.1	3309.2	1.1963	1.1989	2.3979		2760.1	2850.9
						4551.7		
8	3369.1	3329.2	1.2007	1.2033	2.4067		2766.6	2859.0
						4286.1		
8	3389.1	3349.2	1.2053	1.2080	2.4160		2772.5	2865.9
						4512.8		
8	3409.1	3369.2	1.2098	1.2124	2.4249		2778.8	2873.6

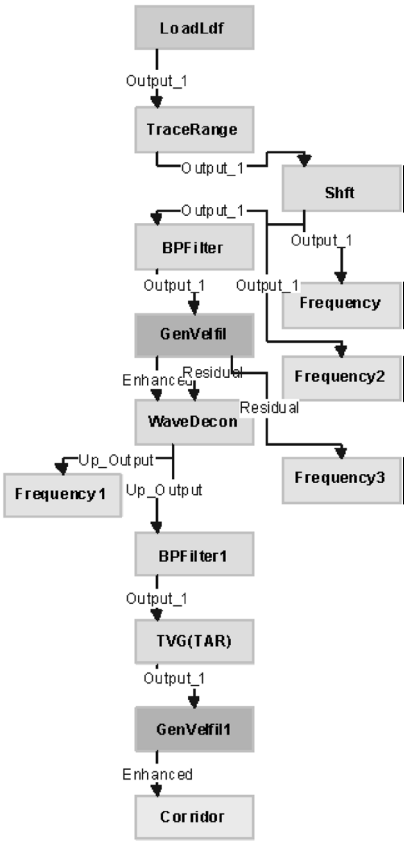
Time Depth Plot Page



Velocity Plot Page



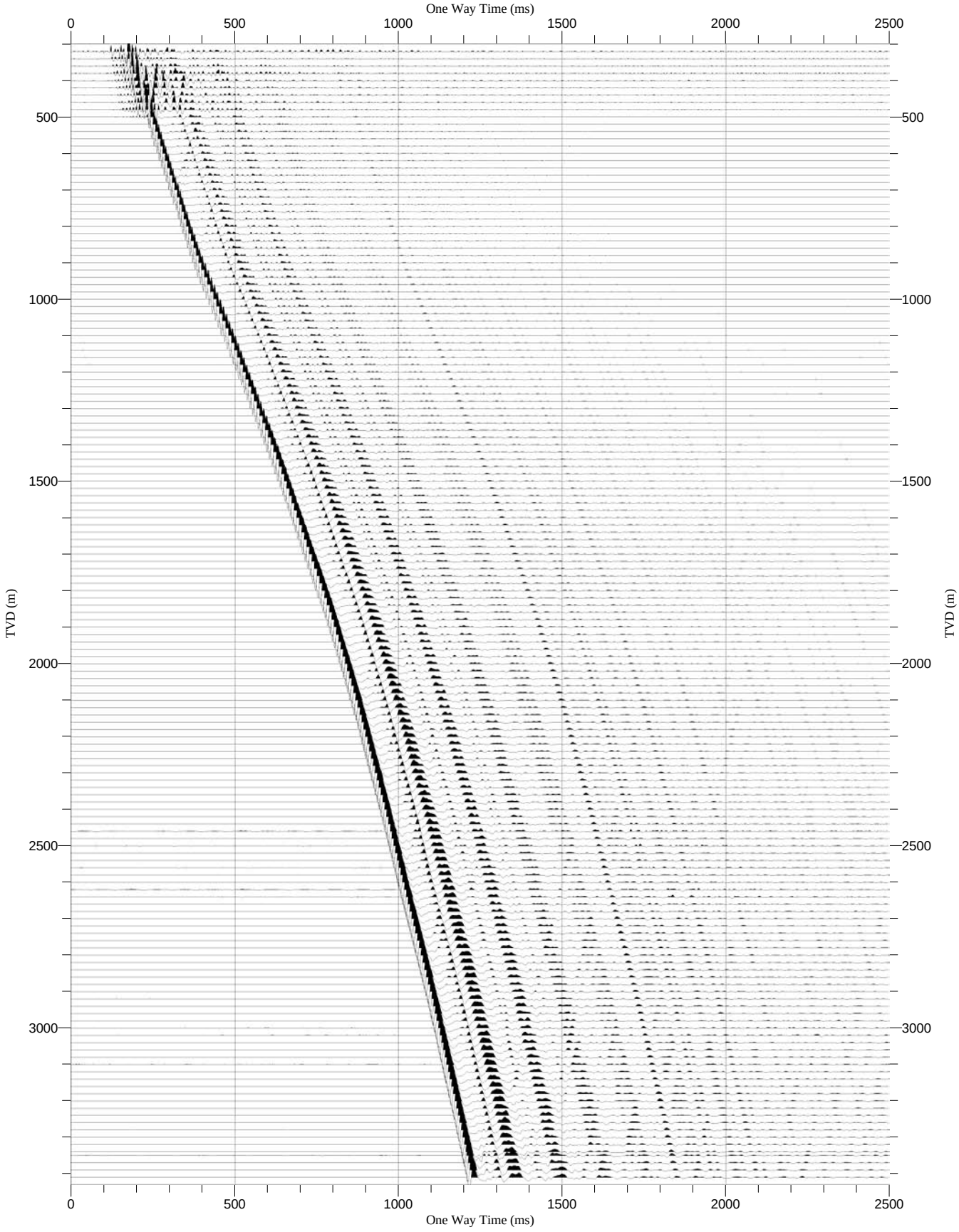
Schlumberger

Process Flow	Parameter
	**[LoadLdf]** Input 1: VSI_001_A_geo_wavefield_z.ldf **[BPFilter]** Phase: Zero Band Width: 3.0 - 200.0Hz **[GenVelfil]** Apply internal Normalization/Denormalization 7 Traces **[Frequency3]** Process all samples Apply FK **[WaveDecon]** Waveshape Deconvolution Design Filter trace Input start at TRANSIT_TIME wavelet: 8.0 - 60.0 Hz zero-phase Polarity: Positive **[BPFilter1]** Phase: Zero Band Width: 3.0 - 65.0Hz **[TVG(TAR)]** Travel time exponent = 1.30 **[GenVelfil1]** 5 Traces **[Corridor]** Window Start: TRANSIT_TIME - 0.000 (s) Window End: TRANSIT_TIME - -0.100 (s) (Deepest 10 traces remain) Mean Stack BPF 5.0 - 100.0Hz **[Frequency2]** Process all samples Apply FZ **[Frequency1]** Process all samples Apply FK **[Frequency]** Process all samples Apply FK

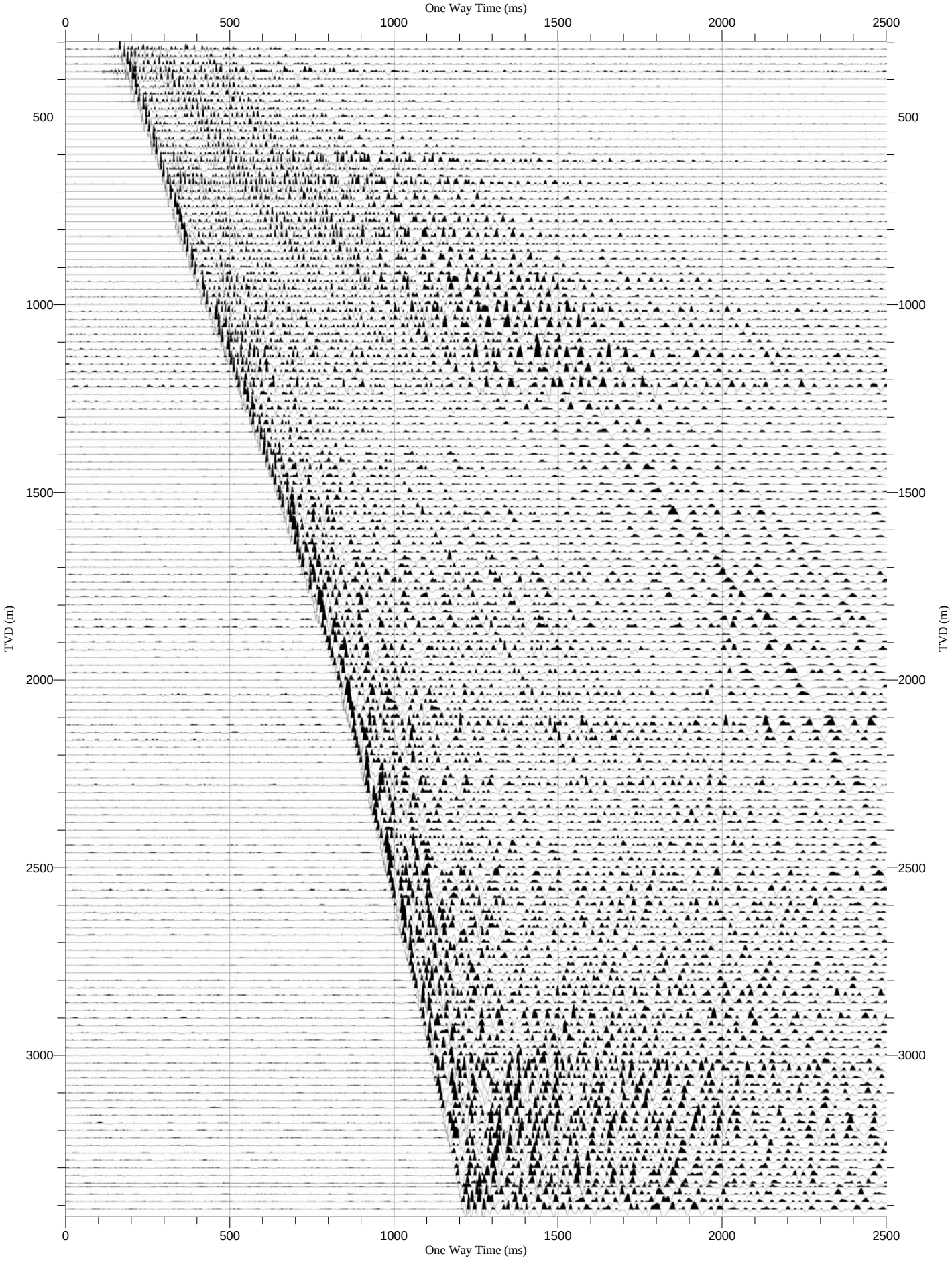
```
[LoadLdf]

FileLoadLdf Parameters
    Input 1:  VSI_001_A_geo_wavefield_z.ldf

[TraceRange]

Trace Range Set Manual Parameters
    Trace Range Set Parameters
        Remove Bad Trace

[Shft]

Shift Parameters
    Shift: +  TRANSIT_TIME_ACCURACY -  0 s
     Update selected headers

[BPFilter]

BPF Parameters
    Butterworth Filter,  Zero Phase
    Charasteristic:  3.000 Hz  to  200.000 Hz  Order  3

[GenVelfil]

Mean/Median Generalized Velocity Filter Parameters
    Align events using times of  TRANSIT_TIME x 1.000
    Compute both enhanced and residual output
    Apply internal Normalization/Denormalization based on RMS of time window
       From  TRANSIT_TIME  -  0.020 s
       Windown length =  0.200 s
    Tuckey's trimean Stacking
     Stacking window (traces):  7
    Stacking window (samples):  1
    Source and receiver coordinates Parameters
        Source Offset:   SOURCE_LINE_POSITION_RHO
        Source Depth:    SOURCE_LINE_POSITION_Z
        Receiver Offset: RECEIVER_LINE_POSITION_RHO
        Receiver Depth:  RECEIVER_LINE_POSITION_Z

[Frequency3]

Spectral Analyser Parameters
    Process all samples
    Depth/Offset header =  CABLE_LENGTH
    Output is FK Domain
    Compute Amplitude spectrum  in dB

[WaveDecon]

Waveshaping deconvolution Parameters
    Design Filter trace by trace
    Filter input start at TRANSIT_TIME  -  0.080 s
    Filter input window: 1.000 s
    Filter Length is filter input window
    Desired wavelet created by filtered unit impulse from   8.000 Hz  to  60.000 
    Positive wavelet polarity
    Wavelet delay time = Filter Length / 2
    White noise (%): 5.000
    Waveshaping optimization Parameters

[BPFilter1]

BPF Parameters
```

```
    Butterworth Filter,  Zero Phase
    Charasteristic:  3.000 Hz  to  65.000 Hz  Order  3

[TVG(TAR)]

Time-Varying Gain Parameters
    Window start at  TRANSIT_TIME - 0.000000
    Window length = 2.999000
    Travel time exponent = 1.300000
    Exponential Weighting = 0.000000

[GenVelfil1]

Mean/Median Generalized Velocity Filter Parameters
    Align events using times of  TRANSIT_TIME x -1.000
    Compute both enhanced and residual output
    Tuckey's trimean Stacking
     Stacking window (traces):  5
    Stacking window (samples):  1
    Source and receiver coordinates Parameters
        Source Offset:   SOURCE_LINE_POSITION_RHO
        Source Depth:    SOURCE_LINE_POSITION_Z
        Receiver Offset: RECEIVER_LINE_POSITION_RHO
        Receiver Depth:  RECEIVER_LINE_POSITION_Z

[Corridor]

Corridor stack Parameters
    Mute before  TRANSIT_TIME  -  0 s
    Mute after  TRANSIT_TIME  -  -0.100 s
        All traces except the deepest (traces):  10
        Depth header:  RECEIVER_POSITION_Z
    Mean stack
    Apply +TT with  TRANSIT_TIME
    Replicate corridor stack x  10
    BPF Parameters
        Butterworth Filter,  Zero Phase
        Charasteristic:  5.000 Hz  to  100.000 Hz  Order  3

[Frequency2]

Spectral Analyser Parameters
    Process all samples
    Depth/Offset header =  RECEIVER_POSITION_Z
    Output is Frequency Domain
    Compute Amplitude spectrum  in dB

[Frequency1]

Spectral Analyser Parameters
    Process all samples
    Depth/Offset header =  RECEIVER_POSITION_Z
    Output is FK Domain
    Compute Amplitude spectrum  in dB

[Frequency]

Spectral Analyser Parameters
    Process all samples
    Depth/Offset header =  RECEIVER_POSITION_Z
    Output is FK Domain
    Compute Amplitude spectrum  in dB
```

Raw Stack (Z)	Normalization Trace by Trace (200%) Polarity Normal One Way Time (ms) Scaling 6.1 cm/sec, 1/14780	

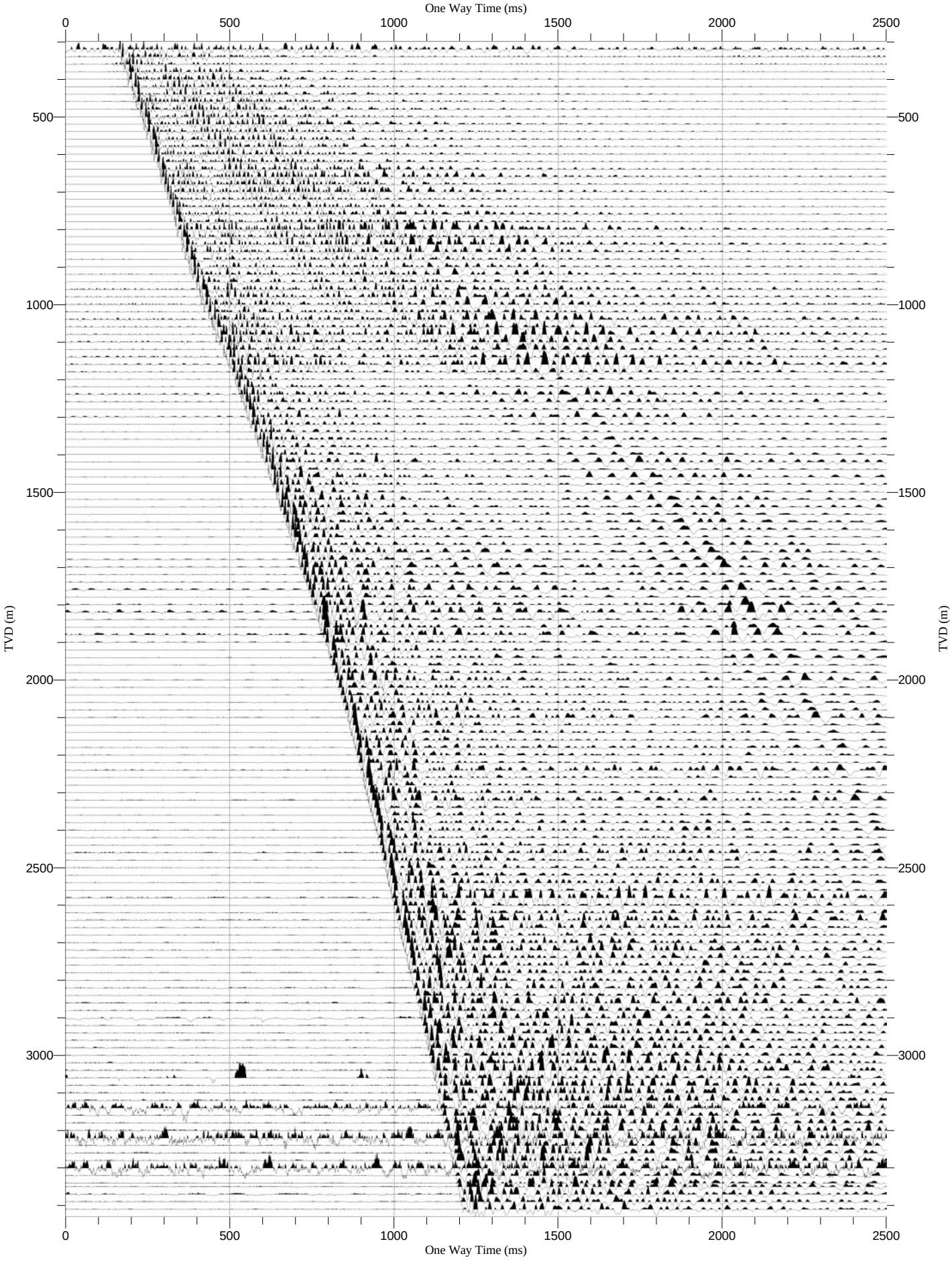


Raw Stack (X)	Normalization Trace by Trace (200%) Polarity Normal One Way Time (ms) Scaling 6.5 cm/sec, 1/13510	



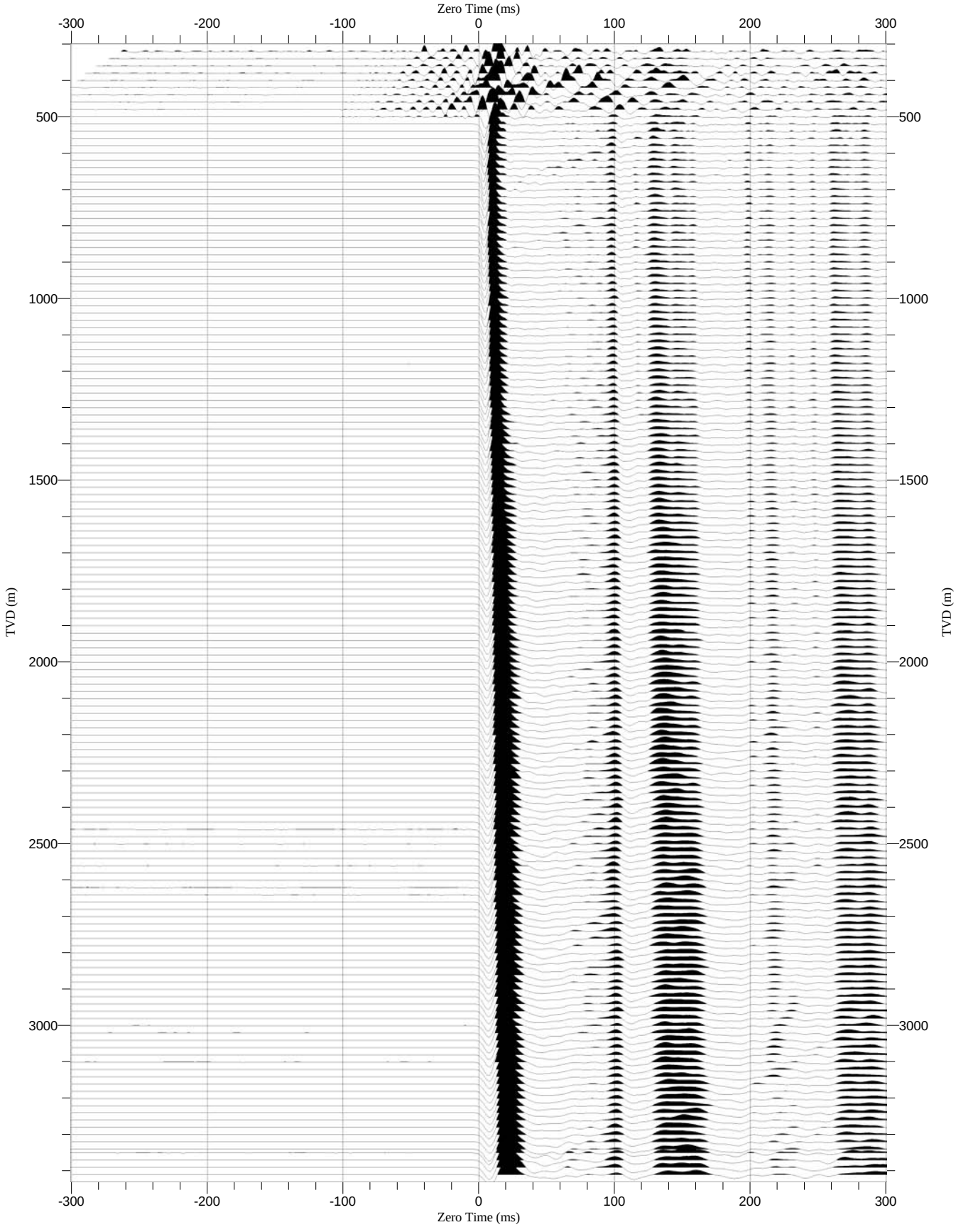
Schlumberger

Raw Stack (Y)	Normalization Trace by Trace (200%) Polarity Normal One Way Time (ms) Scaling 6.5 cm/sec, 1/13510	

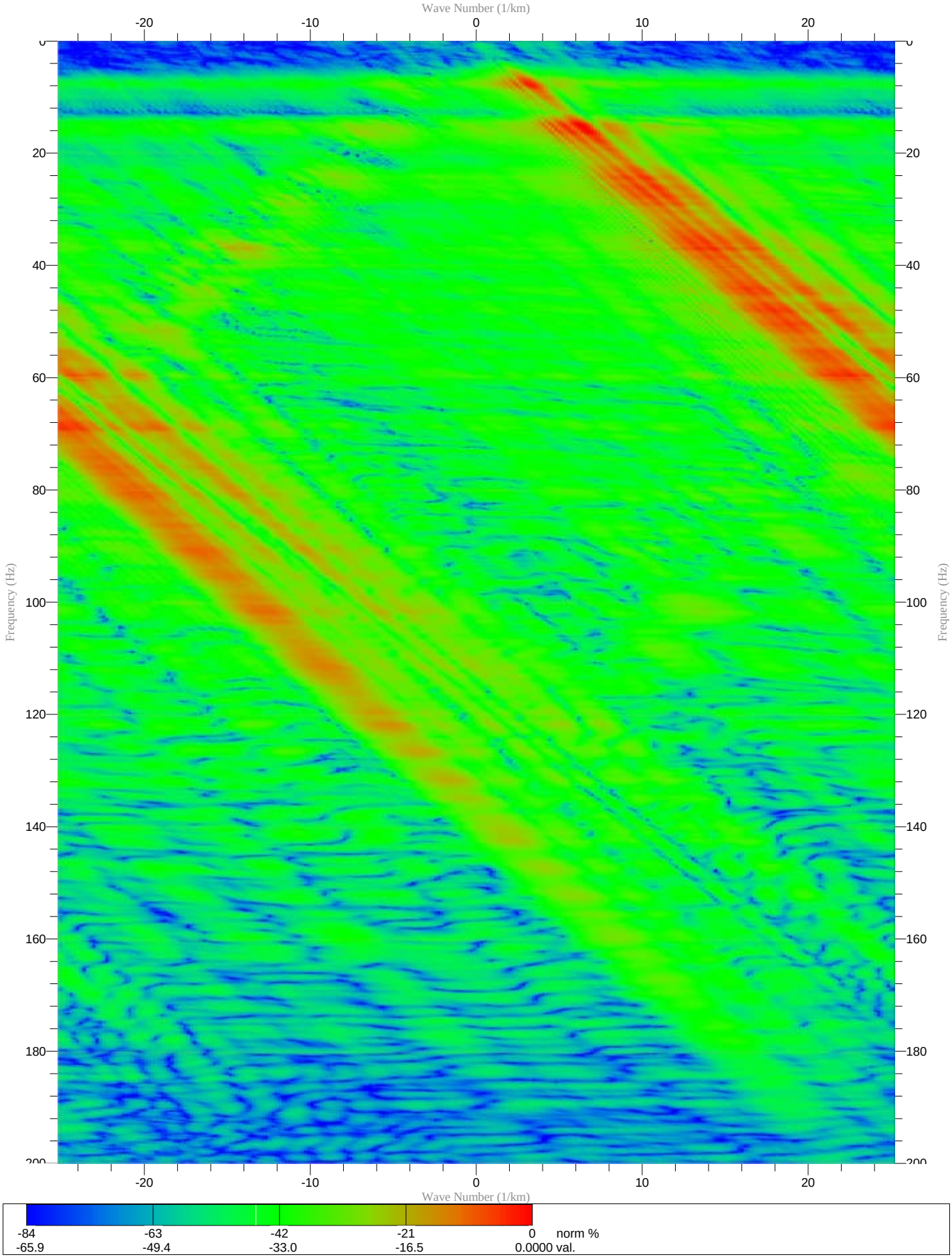


Schlumberger

Raw Stack (Z) (Magnified)	Normalization Trace by Trace (200%) Polarity Normal Zero Time (ms) Scaling 25.3 cm/sec, 1/14780	

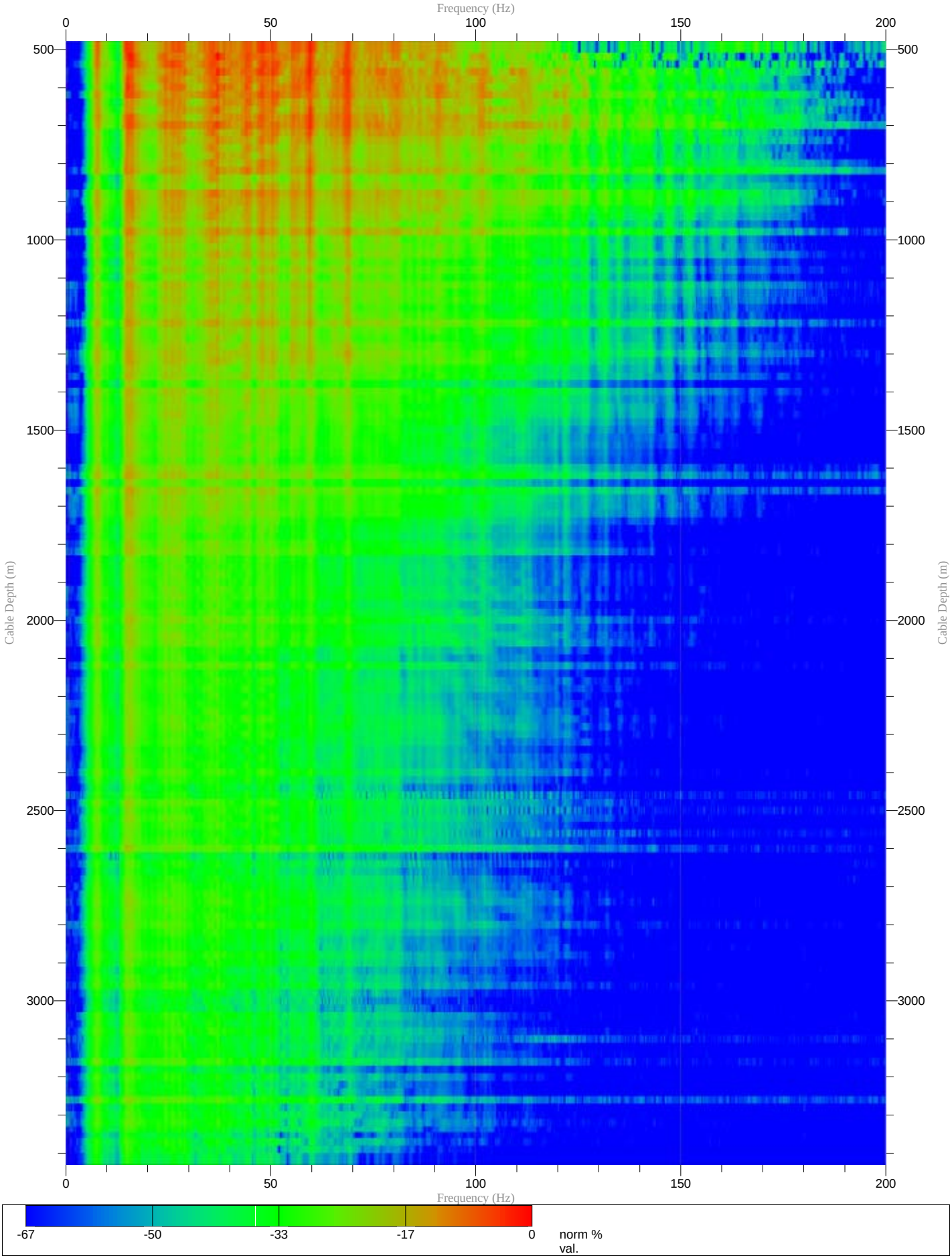


VSP Raw Stack (Z) FK Apply FK	Normalization First Trace in Gather (100%) Polarity Normal Frequency (Hz) Scaling 0.12 cm/Hz, 0.33(1/km)/cm



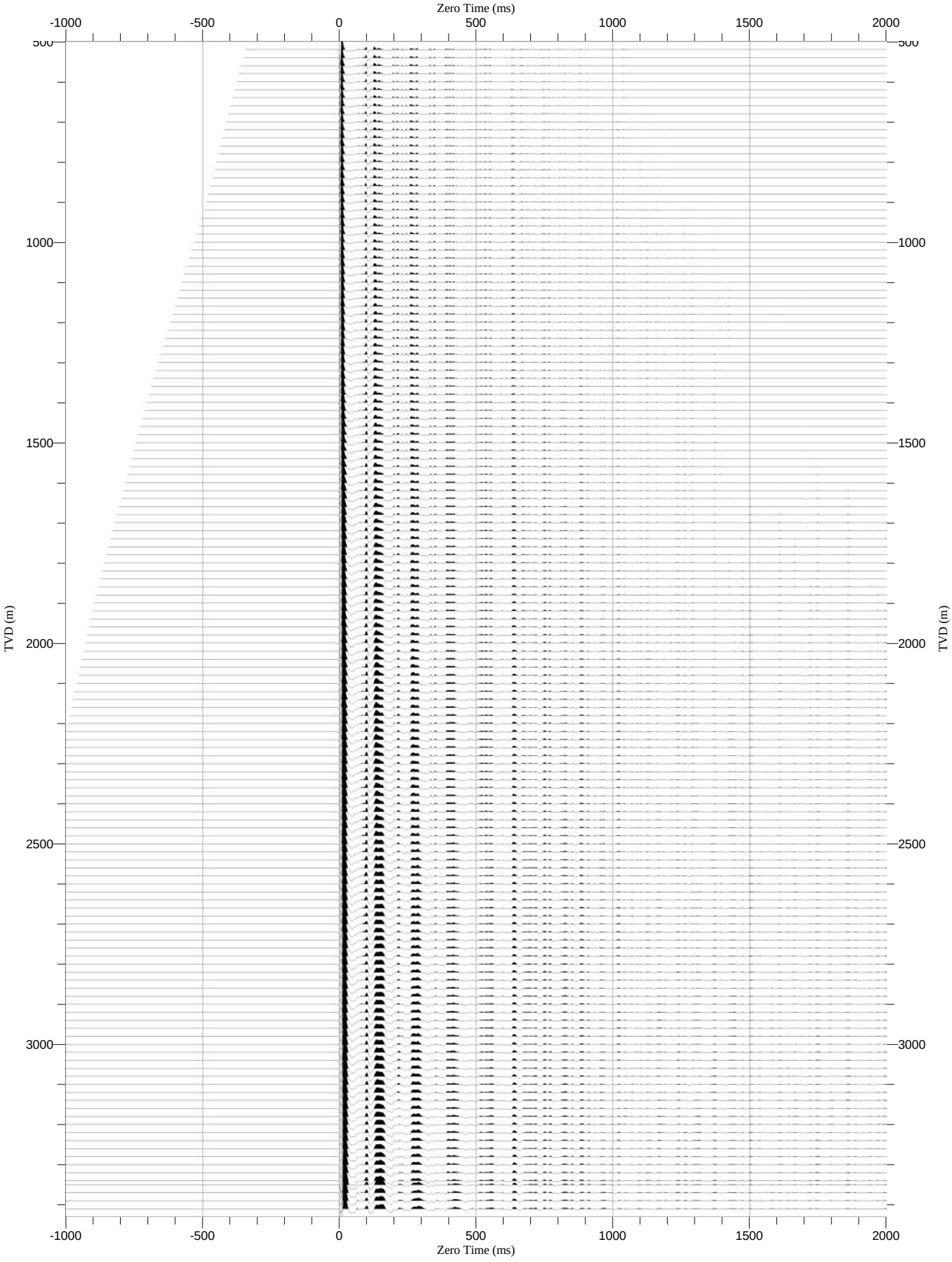
Schlumberger

VSP Raw Stack (Z) FZ Apply FZ	Normalization Trace by Trace (100%) Polarity Normal Frequency (Hz) Scaling 0.1 cm/Hz, 1/12770

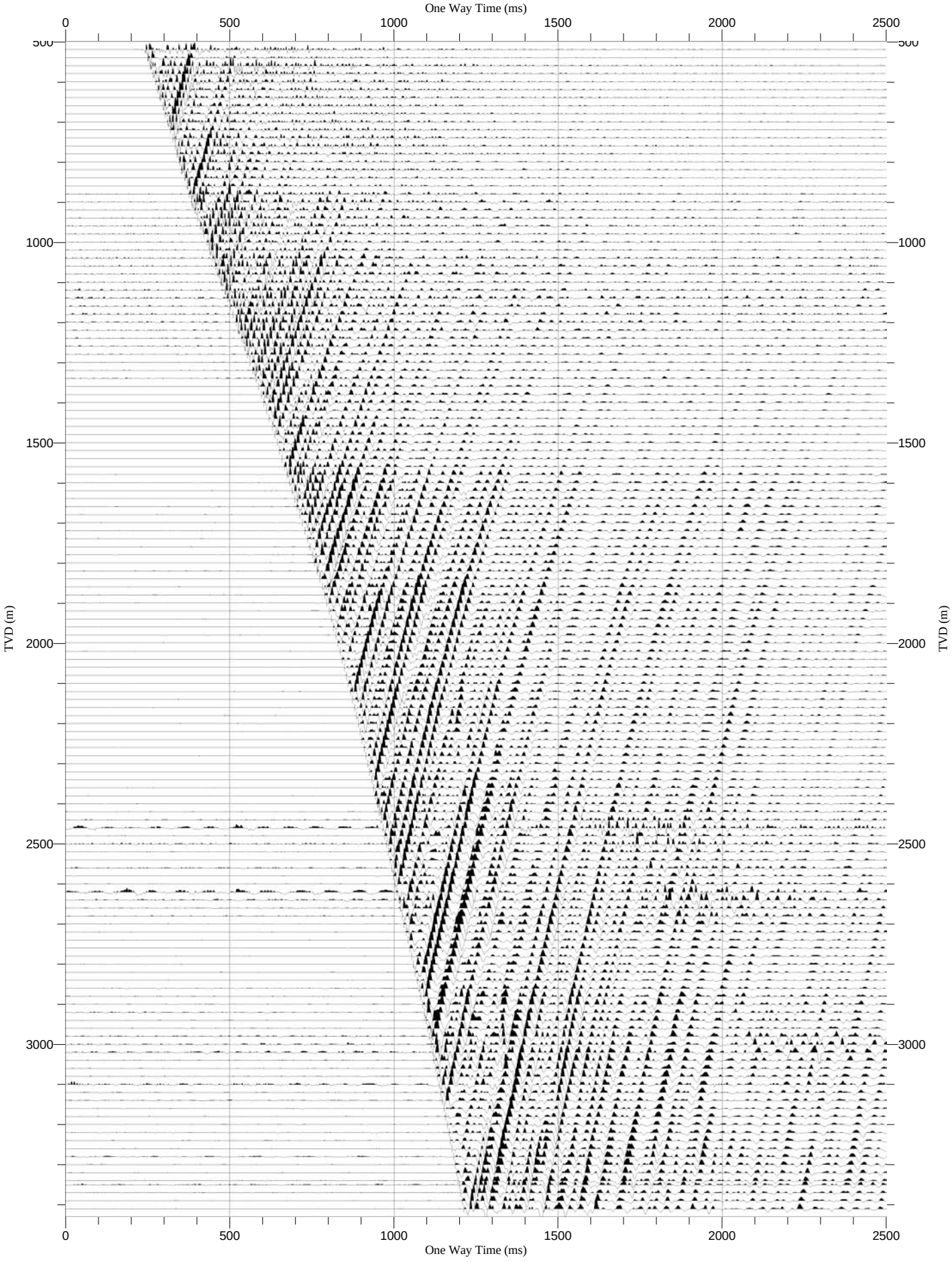


Schlumberger

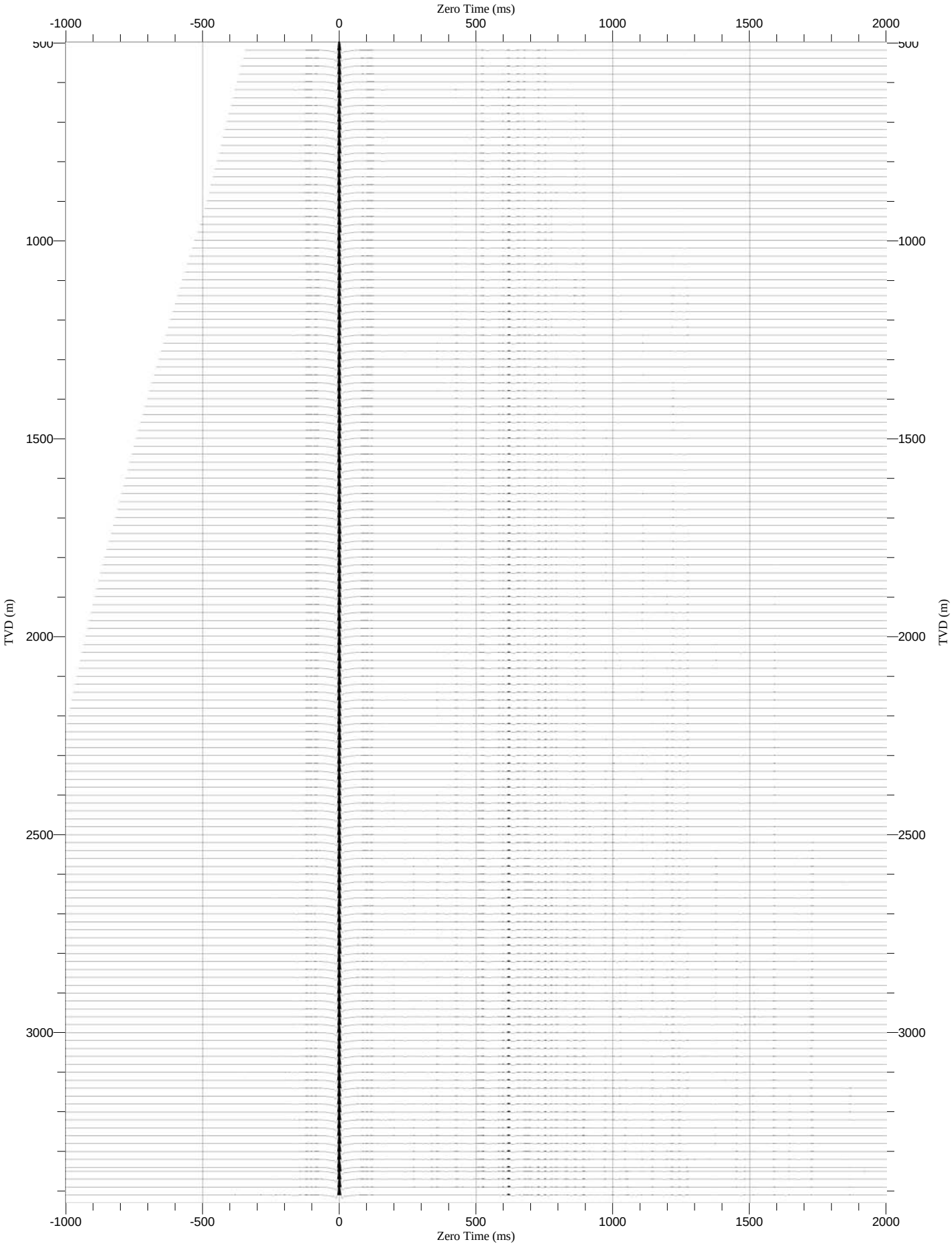
VSP Downgoing BPF 3.0 - 200.0Hz 7 Traces	Normalization Trace by Trace (200%) Polarity Normal Zero Time (ms) Scaling 5.4 cm/sec, 1/12650



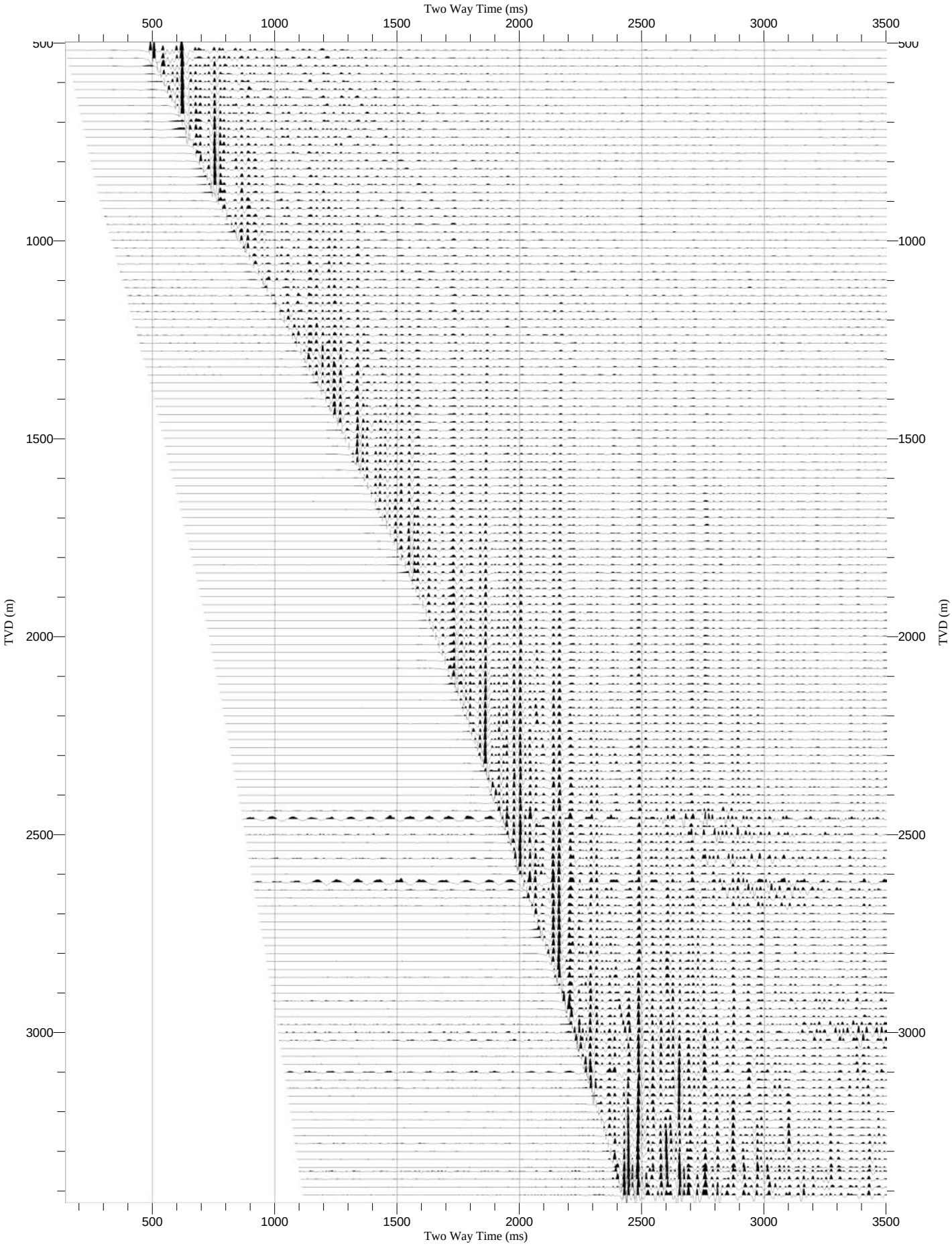
VSP Upgoing BPF 3.0 - 200.0Hz 7 Traces	Normalization Trace by Trace (150%) Polarity Normal One Way Time (ms) Scaling 6.5 cm/sec, 1/12650



VSP Waveshape decon downgoing BPF 3.0 - 200.0Hz 7 Traces Waveshape Decon.(wavelet: 8.0 - 60.0 Hz zero-phase)	Normalization Largest Trace in Gather (150%) Polarity Normal Zero Time (ms) Scaling 5.4 cm/sec, 1/12800

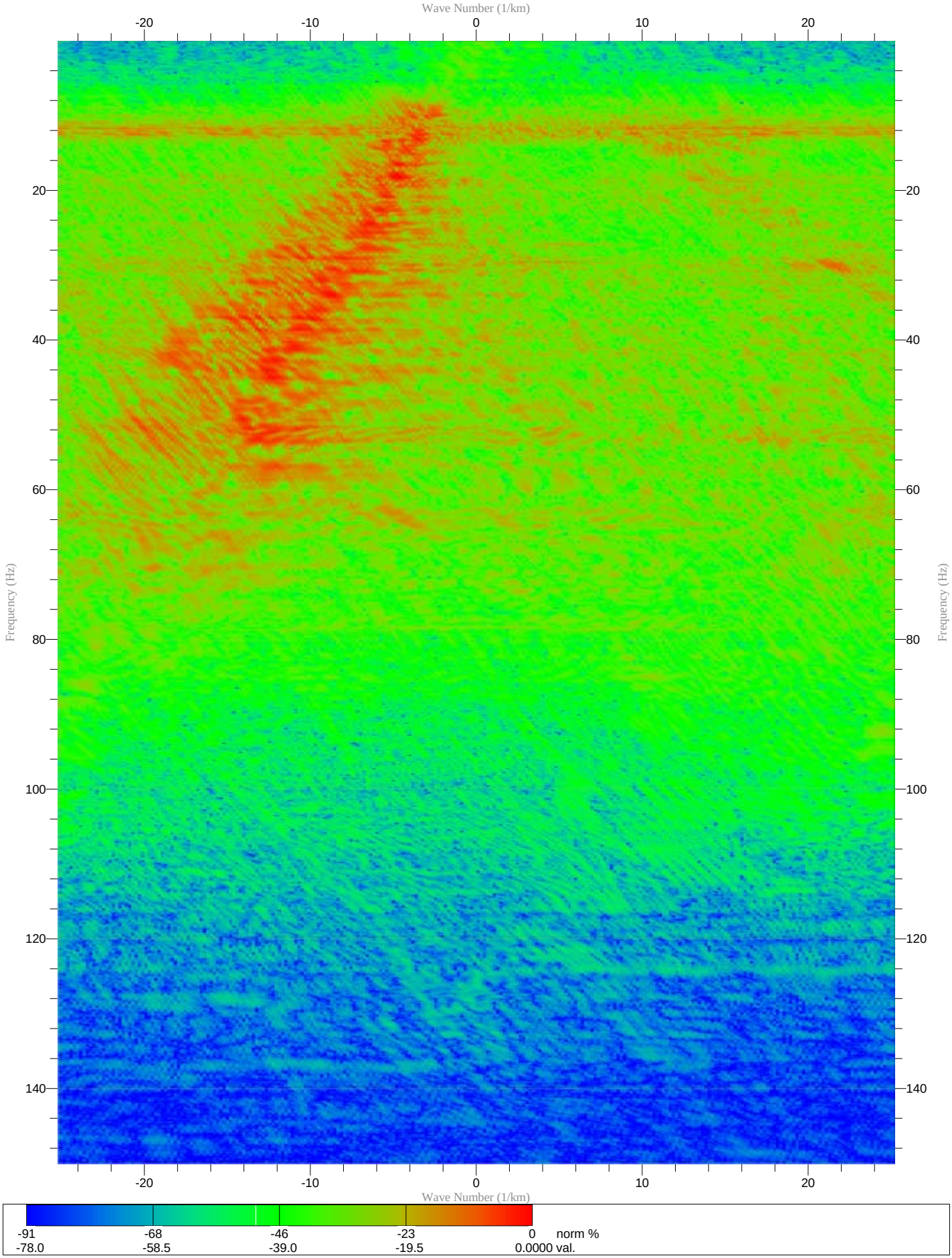


VSP Waveshape decon upgoing BPF 3.0 - 200.0Hz 7 Traces Waveshape Decon.(wavelet: 8.0 - 60.0 Hz zero-phase)	Normalization Largest Trace in Gather (300%) Polarity Normal Two Way Time (ms) Scaling 4.8 cm/sec, 1/12800

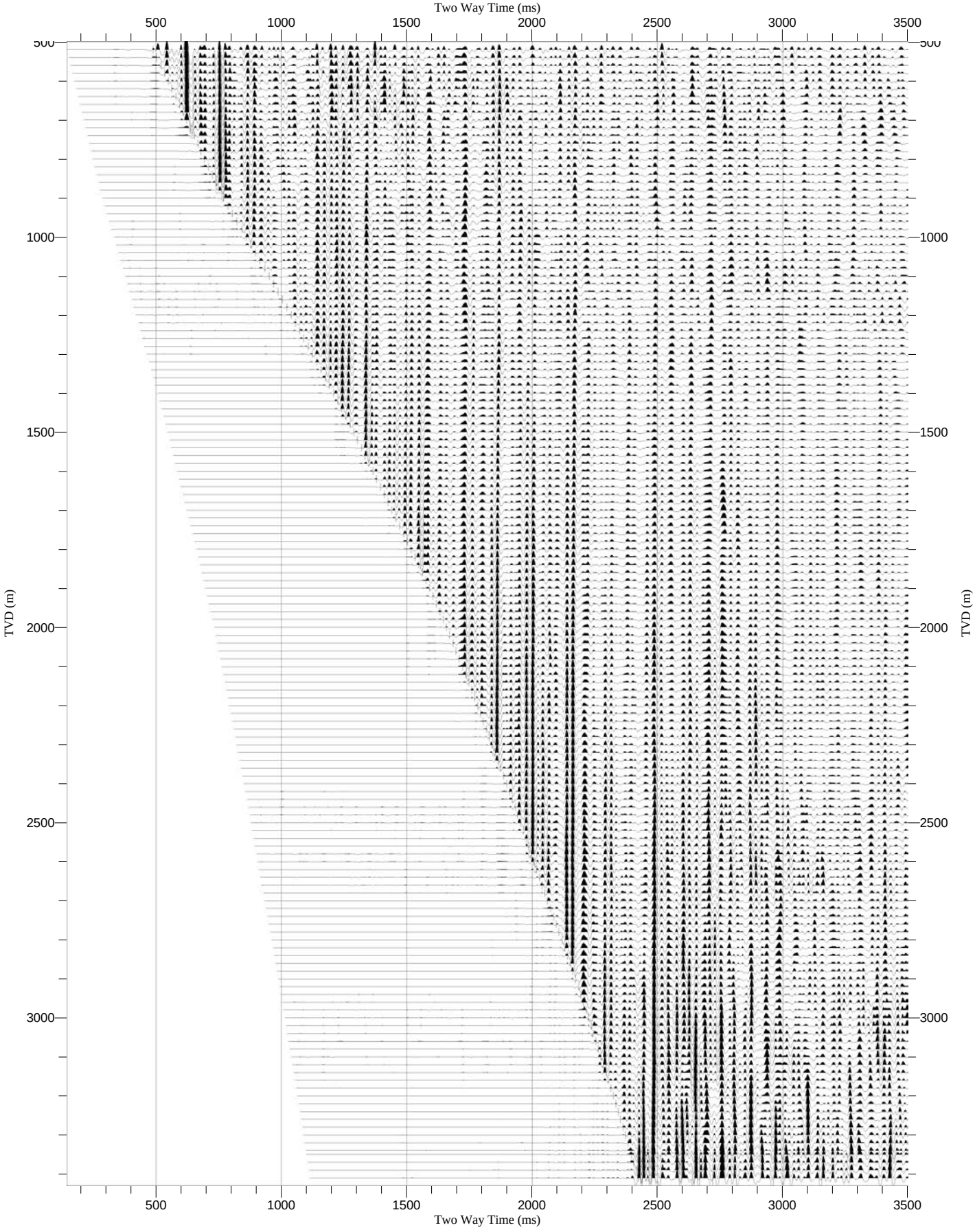


Schlumberger

VSP Waveshape decon upgoing FK Apply FK	Normalization First Trace in Gather (100%) Polarity Normal Frequency (Hz) Scaling 0.15 cm/Hz, 0.33(1/km)/cm

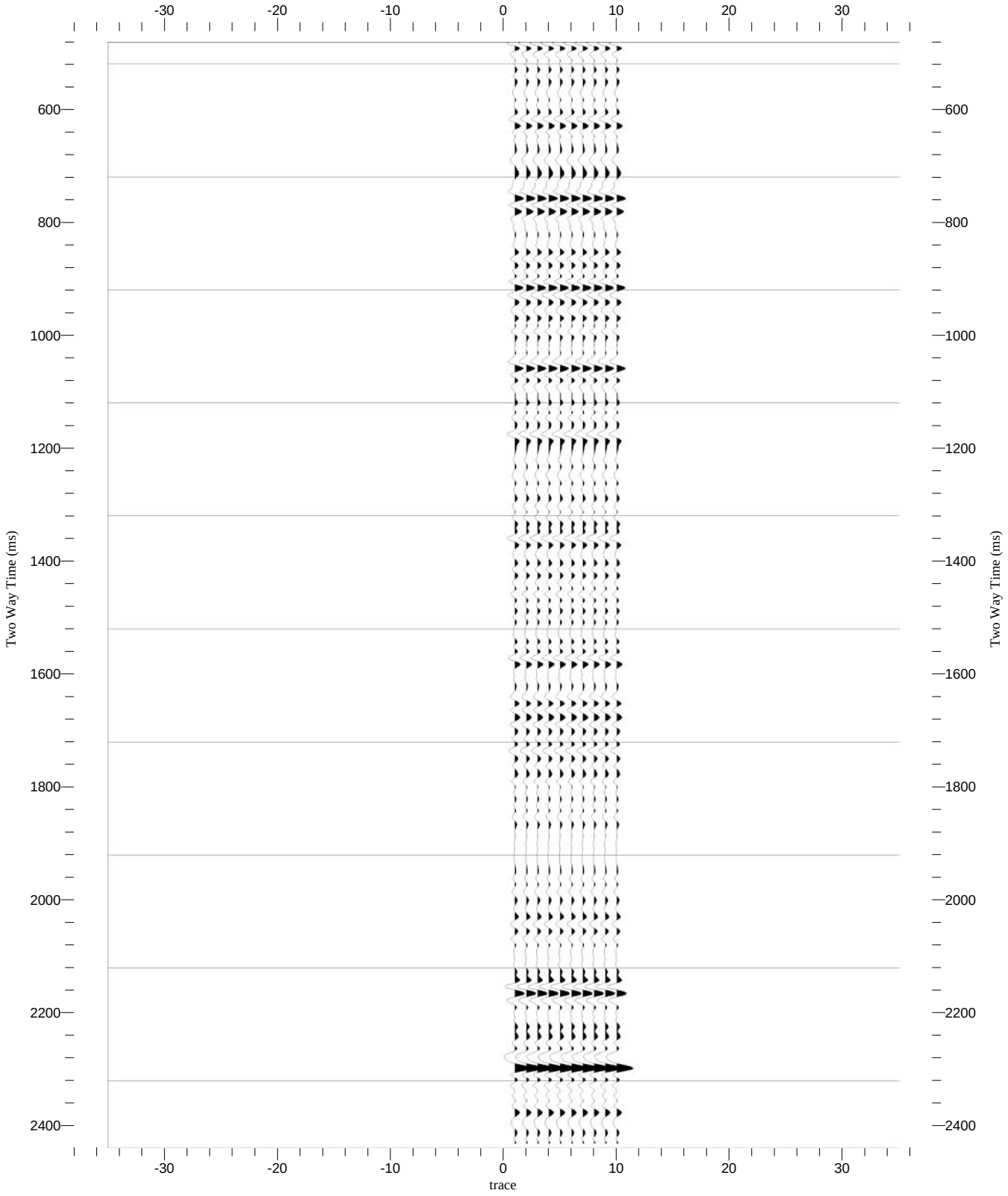


VSP Corridor Stack (Input) BPF 3.0 - 200.0Hz 7 Traces Waveshape Decon.(wavelet: 8.0 - 60.0 Hz zero-phase) BPF 3.0 - 65.0Hz Travel time exponent = 1.30 5 Traces	Normalization Largest Trace in Gather (320%) Polarity Normal Two Way Time (ms) Scaling 4.8 cm/sec, 1/13300	

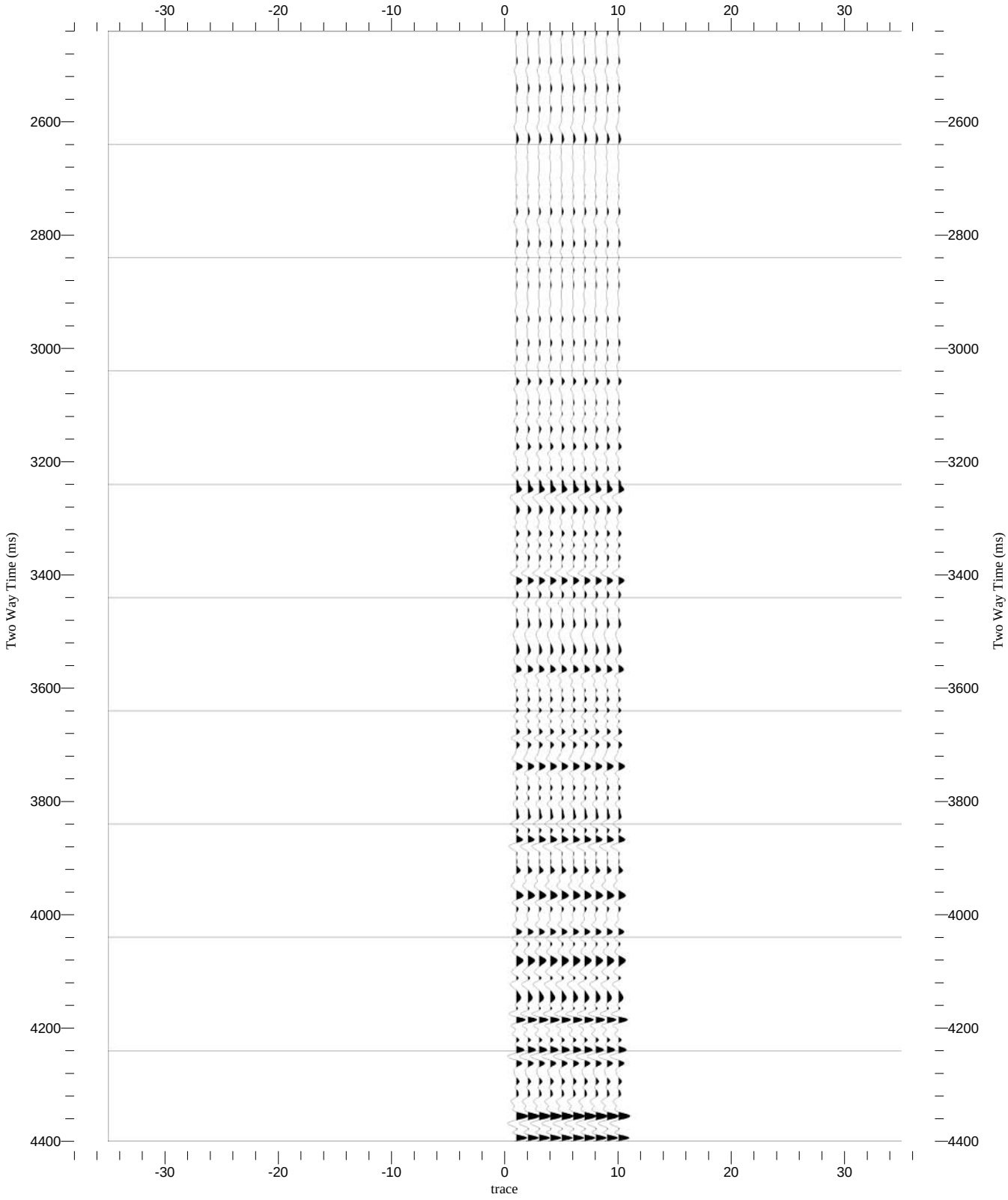


Schlumberger

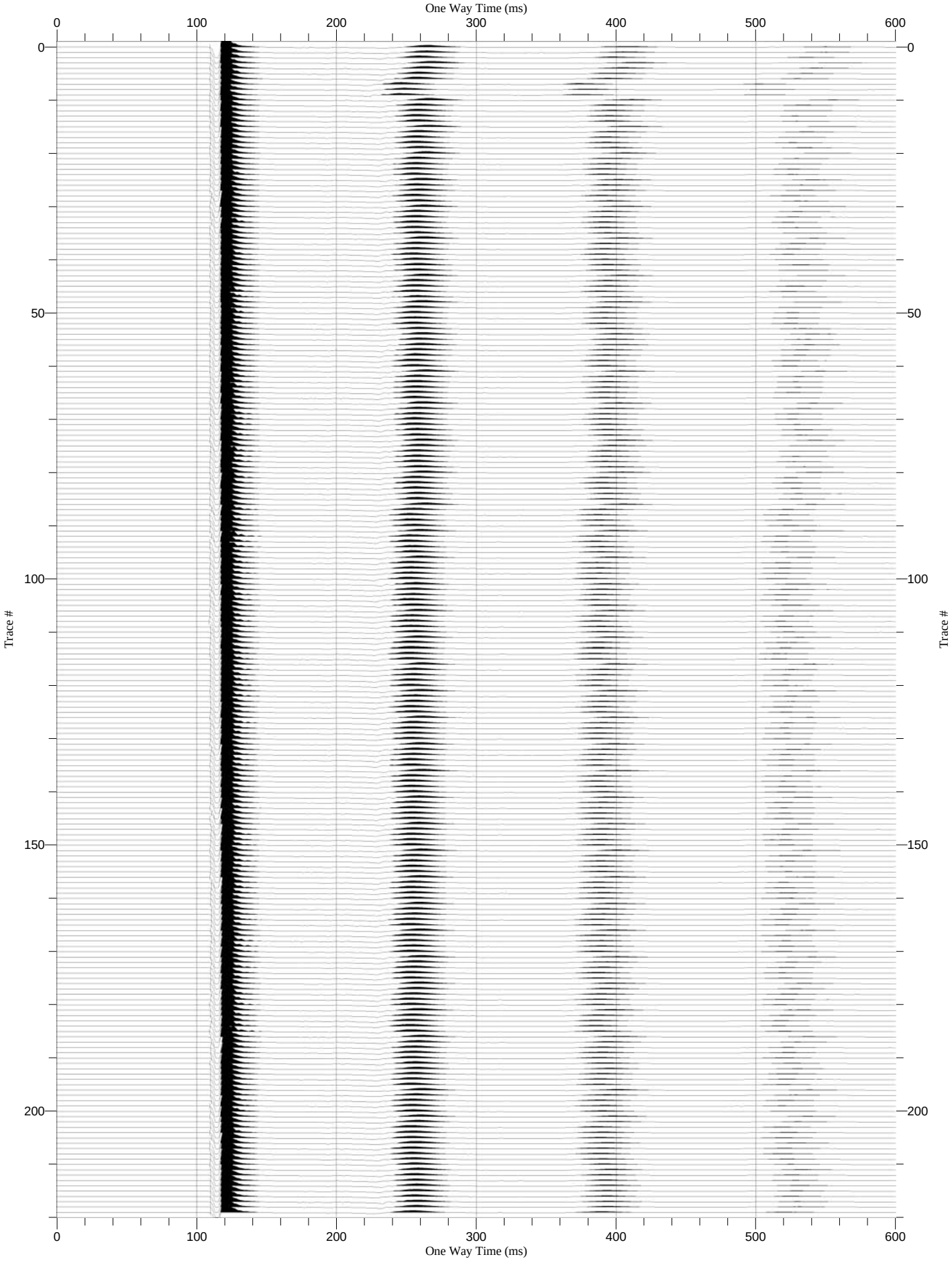
VSP Corridor Stack (output) BPF 3.0 - 200.0Hz 7 Traces Waveshape Decon.(wavelet: 8.0 - 60.0 Hz zero-phase) BPF 3.0 - 65.0Hz Travel time exponent = 1.30 5 Traces Corridor Stack (Mean): BPF 5.0 - 100.0Hz	Normalization Trace by Trace (150%) Polarity Normal Two Way Time (ms) Scaling 10.0 cm/sec, 5.0 traces/cm	



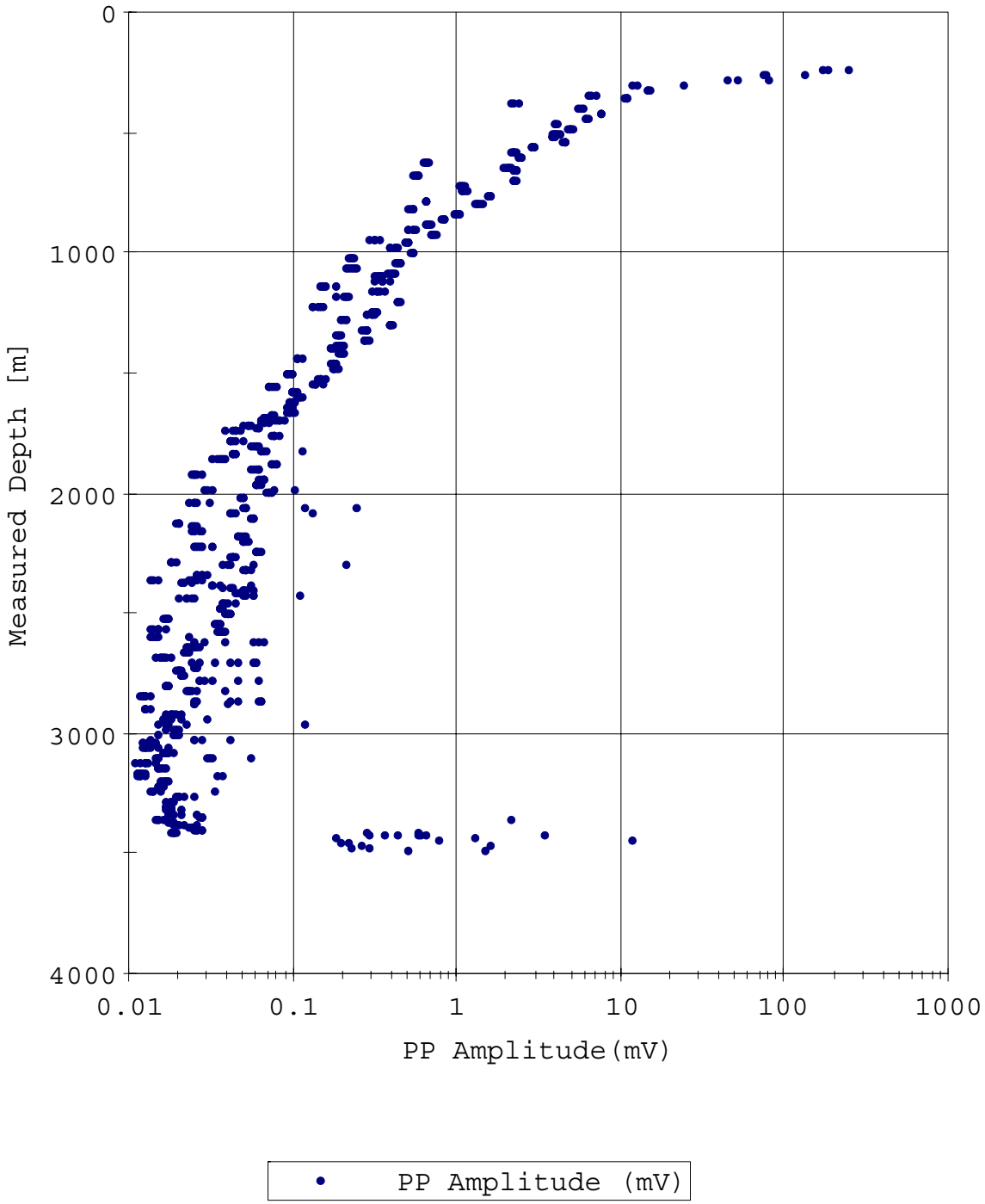
VSP Corridor Stack (output) BPF 3.0 - 200.0Hz 7 Traces Waveshape Decon.(wavelet: 8.0 - 60.0 Hz zero-phase) BPF 3.0 - 65.0Hz Travel time exponent = 1.30 5 Traces Corridor Stack (Mean): BPF 5.0 - 100.0Hz	Normalization Trace by Trace (150%) Polarity Normal Two Way Time (ms) Scaling 10.0 cm/sec, 5.0 traces/cm	



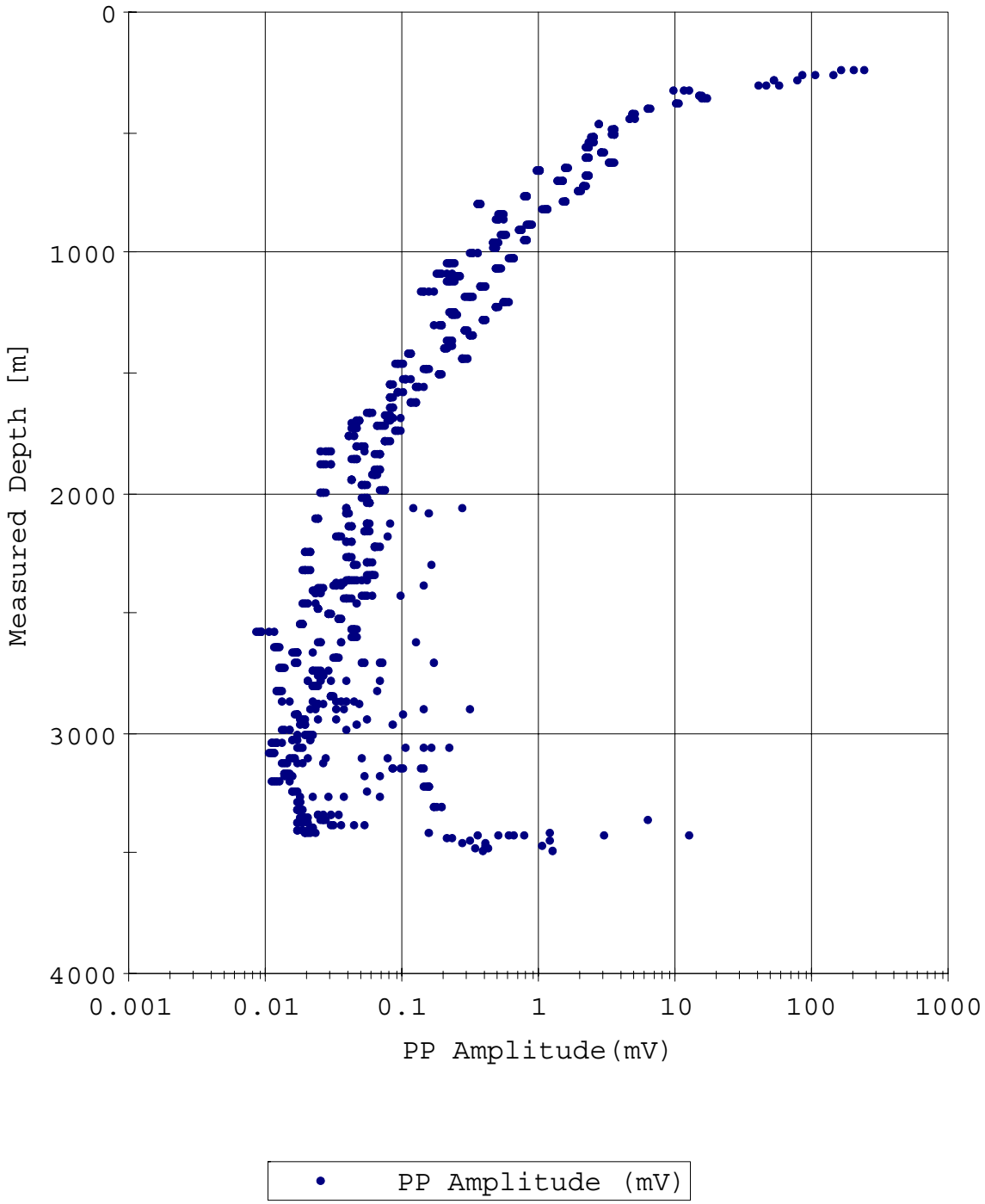
Source Sensor Signature	Normalization Largest Trace in Gather (275%) Polarity Normal One Way Time (ms) Scaling 27.54 cm/sec, 0.10/cm	



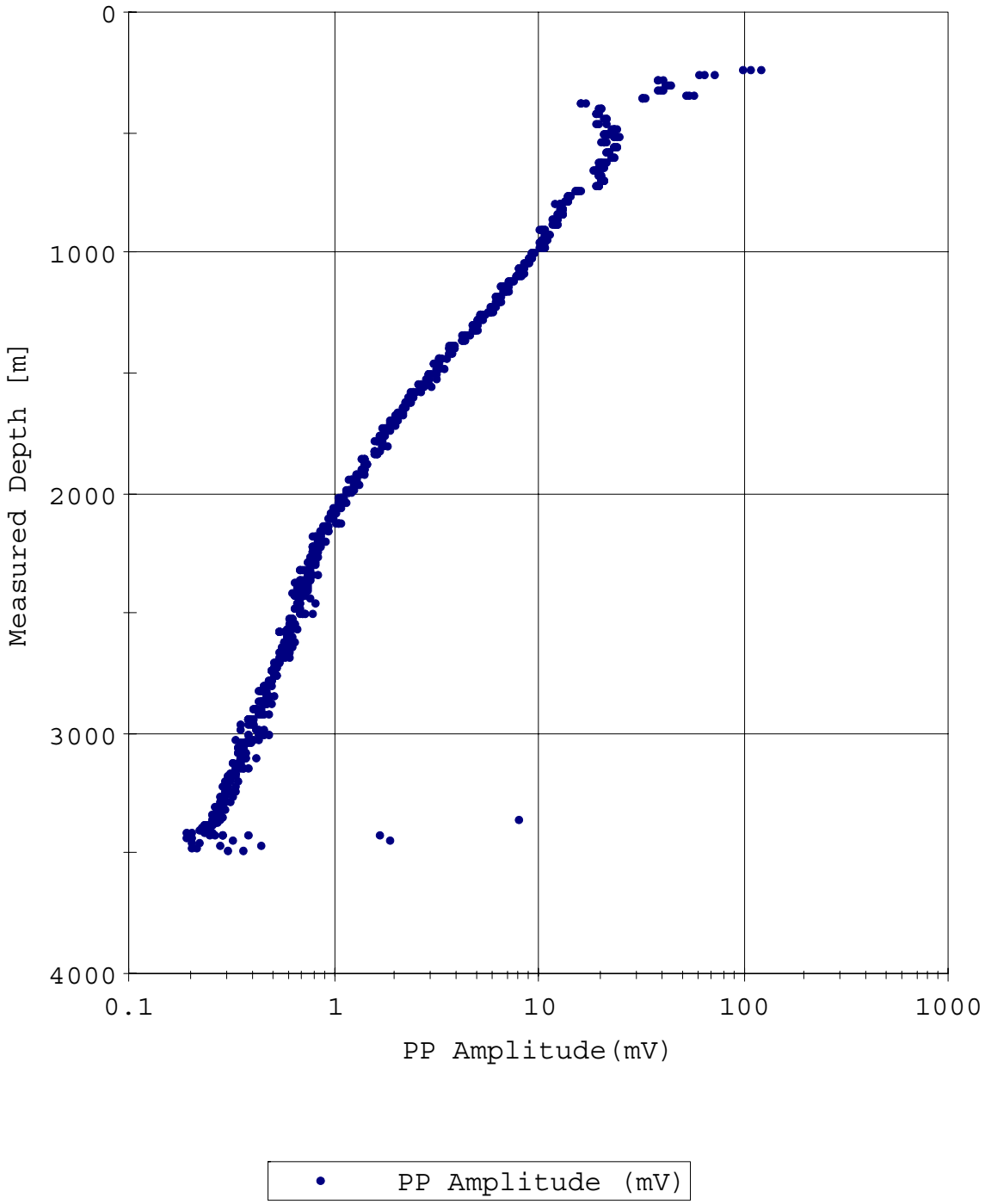
Peak To Peak Plot (X)



Peak To Peak Plot (Y)



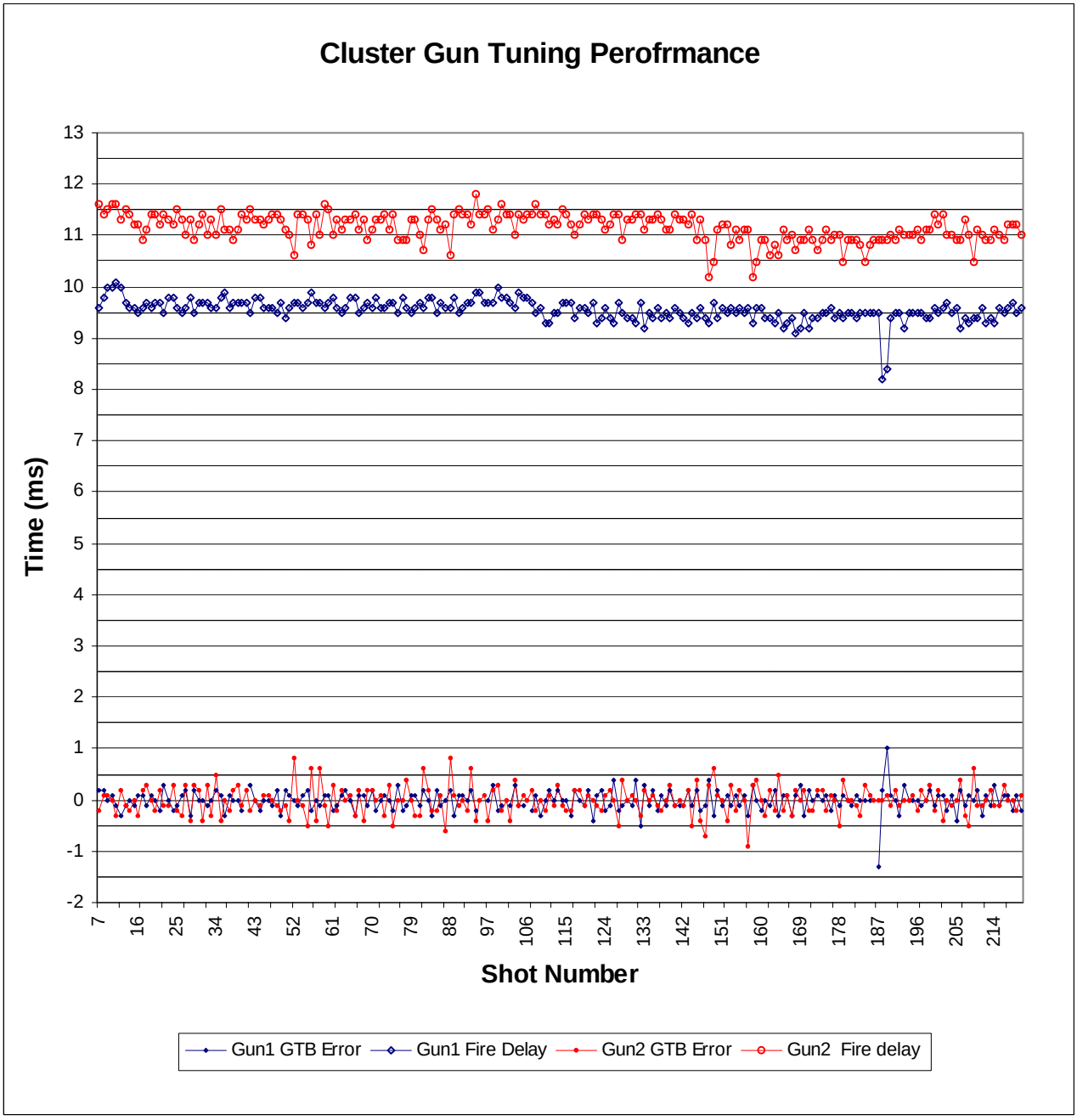
Peak To Peak Plot (Z)



THE GUN SYSTEM - 8
macha international, inc.

Gun Controller Report

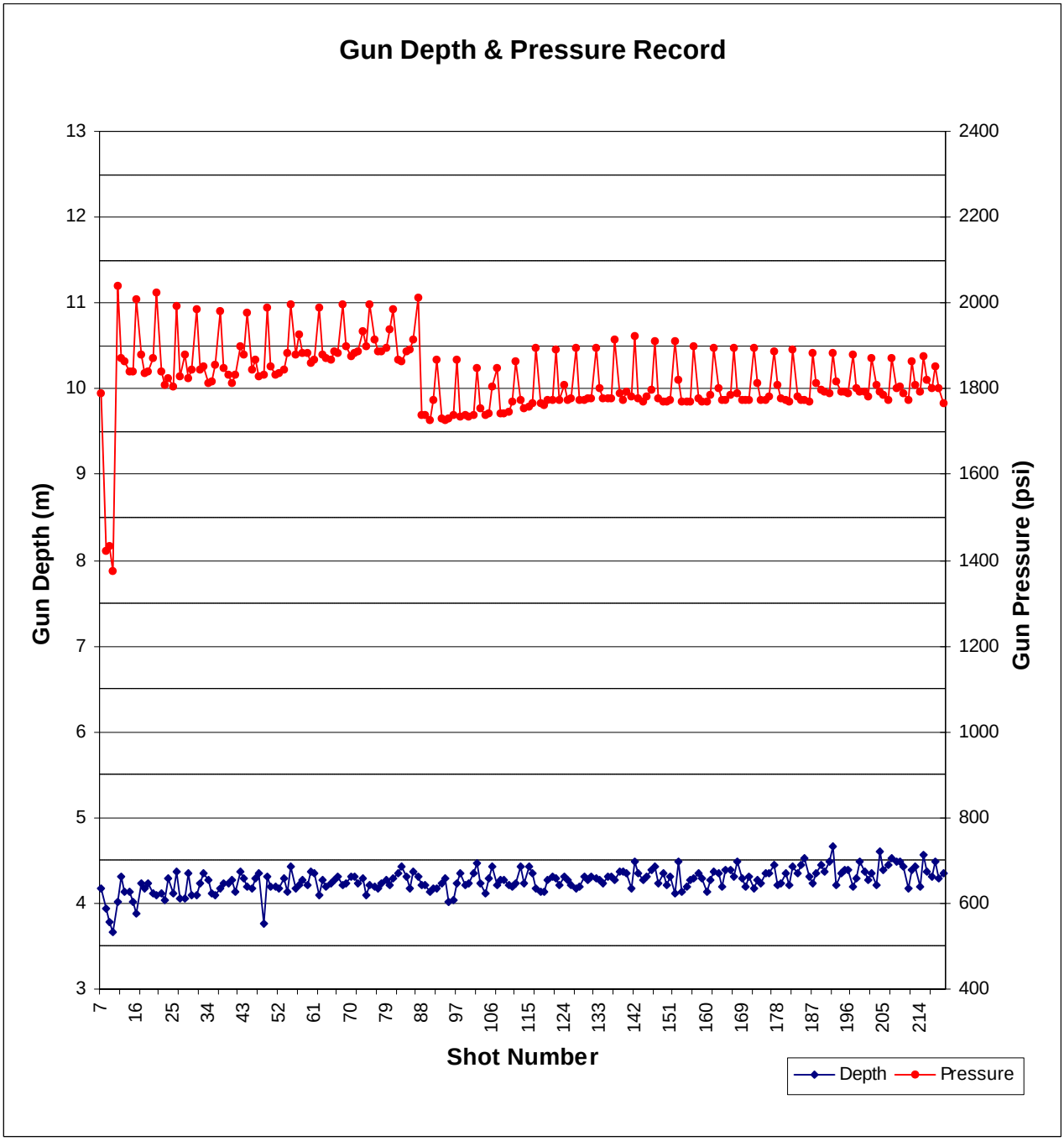
Gun Statistics Report



THE GUN SYSTEM - 8
macha international, inc.

Gun Controller Report

Depth/Pressure Statistics Report



Observer's Note (1/4)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
188.5	00:10:01	ENLO	1			
188.5	00:10:25	ENHI	2			
188.5	00:10:34	ETHD	3			
188.5	00:10:49	DRNG	4			
188.5	00:11:03	GA02	5			
188.5	00:11:13	GA04	6			
188.5	00:11:23	GA08	7			
188.5	00:11:33	GA16	8			
188.5	00:11:43	GA32	9			
188.5	00:11:58	XTLK	10			
188.5	00:12:17	XTLK	11			
188.5	00:12:36	XTLK	12			
188.5	00:12:54	EIMP	13			
1729.0	01:23:44	SHAK	14			
1729.0	01:24:07	SHOT	15	2	A	
1729.0	01:26:25	SHOT	16	2	A	
1729.0	01:26:42	SHOT	17	2	A	
2415.2	01:50:27	SHOT	18	3	A	
2415.2	01:52:23	SHOT	19	3	A	
2415.2	01:52:41	SHOT	20	3	A	
3484.0	02:54:10	SHOT	21	4	A	
3484.0	02:54:36	SHOT	22	4	A	
3474.7	03:05:17	SHOT	23	5	A	
3474.7	03:06:14	SHOT	24	5	A	
3419.0	03:34:25	SHOT	25	7	A	
3419.0	03:35:14	SHOT	26	7	A	
3419.0	03:35:54	SHOT	27	7	A	
3419.0	03:36:19	SHOT	28	7	A	
3419.0	03:36:44	SHOT	29	7	A	Bottom shuttle probably still tangled
3409.1	03:43:03	SHOT	30	8	A	
3409.1	03:43:58	SHOT	31	8	A	
3409.1	03:44:24	SHOT	32	8	A	
3409.1	03:44:52	SHOT	33	8	A	
3409.1	03:45:31	SHOT	34	8	A	Test in between shots to verify that all shuttles are free.
3339.0	03:53:34	SHOT	35	9	A	
3339.0	03:54:03	SHOT	36	9	A	
3339.0	03:54:21	SHOT	37	9	A	
3339.0	03:54:43	SHOT	38	9	A	
3339.0	03:54:58	SHOT	39	9	A	
3259.0	03:59:53	SHOT	40	10	A	
3259.0	04:00:13	SHOT	41	10	A	
3259.0	04:01:00	SHOT	42	10	A	
3259.0	04:01:19	SHOT	43	10	A	
3259.0	04:01:41	SHOT	44	10	A	Second shuttle in Y is very noisy
3179.0	04:06:00	SHOT	45	11	A	
3179.0	04:06:29	SHOT	46	11	A	
3179.0	04:07:04	SHOT	47	11	A	
3179.0	04:07:22	SHOT	48	11	A	
3179.0	04:07:39	SHOT	49	11	A	
3179.0	04:08:08	SHOT	50	11	A	One of the shots is very noisy, hense 6 shots were performed
3099.0	04:12:14	SHOT	51	12	A	
3099.0	04:12:40	SHOT	52	12	A	
3099.0	04:13:01	SHOT	53	12	A	
3099.0	04:13:16	SHOT	54	12	A	
3099.0	04:13:35	SHOT	55	12	A	
3099.0	04:14:25	SHOT	56	12	A	
3099.0	04:14:59	SHOT	57	12	A	Shattle 4 didn't stack all shots. Extra ones were done
3018.8	04:18:49	SHOT	58	13	A	
3018.8	04:19:09	SHOT	59	13	A	

Observer's Note (2/4)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
3018.8	04:19:37	SHOT	60	13	A	
3018.8	04:19:52	SHOT	61	13	A	
3018.8	04:20:07	SHOT	62	13	A	Y axis is not noisy anymore.
2939.2	04:24:39	SHOT	63	14	A	
2939.2	04:24:57	SHOT	64	14	A	
2939.2	04:25:12	SHOT	65	14	A	
2939.2	04:25:28	SHOT	66	14	A	
2939.2	04:25:43	SHOT	67	14	A	
2939.2	04:26:07	SHOT	68	14	A	
2859.2	04:30:41	SHAK	69			
2859.2	04:31:04	SHOT	70	15	A	
2859.2	04:31:31	SHOT	71	15	A	
2859.2	04:32:52	SHOT	72	16	A	Same depth as stack 15
2859.2	04:33:18	SHOT	73	16	A	
2859.2	04:33:42	SHOT	74	16	A	
2859.2	04:33:57	SHOT	75	16	A	
2859.2	04:34:13	SHOT	76	16	A	
2778.9	04:38:18	SHOT	77	17	A	
2778.9	04:38:38	SHOT	78	17	A	
2778.9	04:38:54	SHOT	79	17	A	
2778.9	04:39:09	SHOT	80	17	A	
2778.9	04:39:27	SHOT	81	17	A	
2778.9	04:39:42	SHOT	82	17	A	
2698.9	04:43:37	SHOT	83	18	A	
2698.9	04:44:00	SHOT	84	18	A	
2698.9	04:44:15	SHOT	85	18	A	
2698.9	04:44:30	SHOT	86	18	A	
2698.9	04:44:45	SHOT	87	18	A	
2698.9	04:45:16	SHOT	88	18	A	
2698.9	04:45:31	SHOT	89	18	A	
2618.9	04:49:07	SHOT	90	19	A	
2618.9	04:49:34	SHOT	91	19	A	
2618.9	04:49:49	SHOT	92	19	A	
2618.9	04:50:04	SHOT	93	19	A	
2618.9	04:50:19	SHOT	94	19	A	
2618.9	04:50:50	SHOT	95	19	A	first signal in shuttle 1 and 4 are noisy
2539.0	04:55:09	SHOT	96	20	A	
2539.0	04:55:24	SHOT	97	20	A	
2539.0	04:55:39	SHOT	98	20	A	
2539.0	04:55:58	SHOT	99	20	A	
2539.0	04:56:16	SHOT	100	20	A	
2539.0	04:56:42	SHOT	101	20	A	One of the signals on shuttle 2 is noisy
2459.0	05:06:45	SHOT	102	21	A	
2459.0	05:07:01	SHOT	103	21	A	
2459.0	05:07:20	SHOT	104	21	A	
2459.0	05:07:35	SHOT	105	21	A	
2459.0	05:08:01	SHOT	106	21	A	
2379.0	05:16:52	SHOT	107	22	A	
2379.0	05:17:08	SHOT	108	22	A	
2379.0	05:17:23	SHOT	109	22	A	
2379.0	05:17:38	SHOT	110	22	A	
2379.0	05:17:53	SHOT	111	22	A	
2299.0	05:27:02	SHOT	112	23	A	
2299.0	05:27:17	SHOT	113	23	A	
2299.0	05:27:35	SHOT	114	23	A	
2299.0	05:27:50	SHOT	115	23	A	
2299.0	05:28:05	SHOT	116	23	A	
2218.9	05:33:07	SHOT	117	24	A	
2218.9	05:33:27	SHOT	118	24	A	

Observer's Note (3/4)

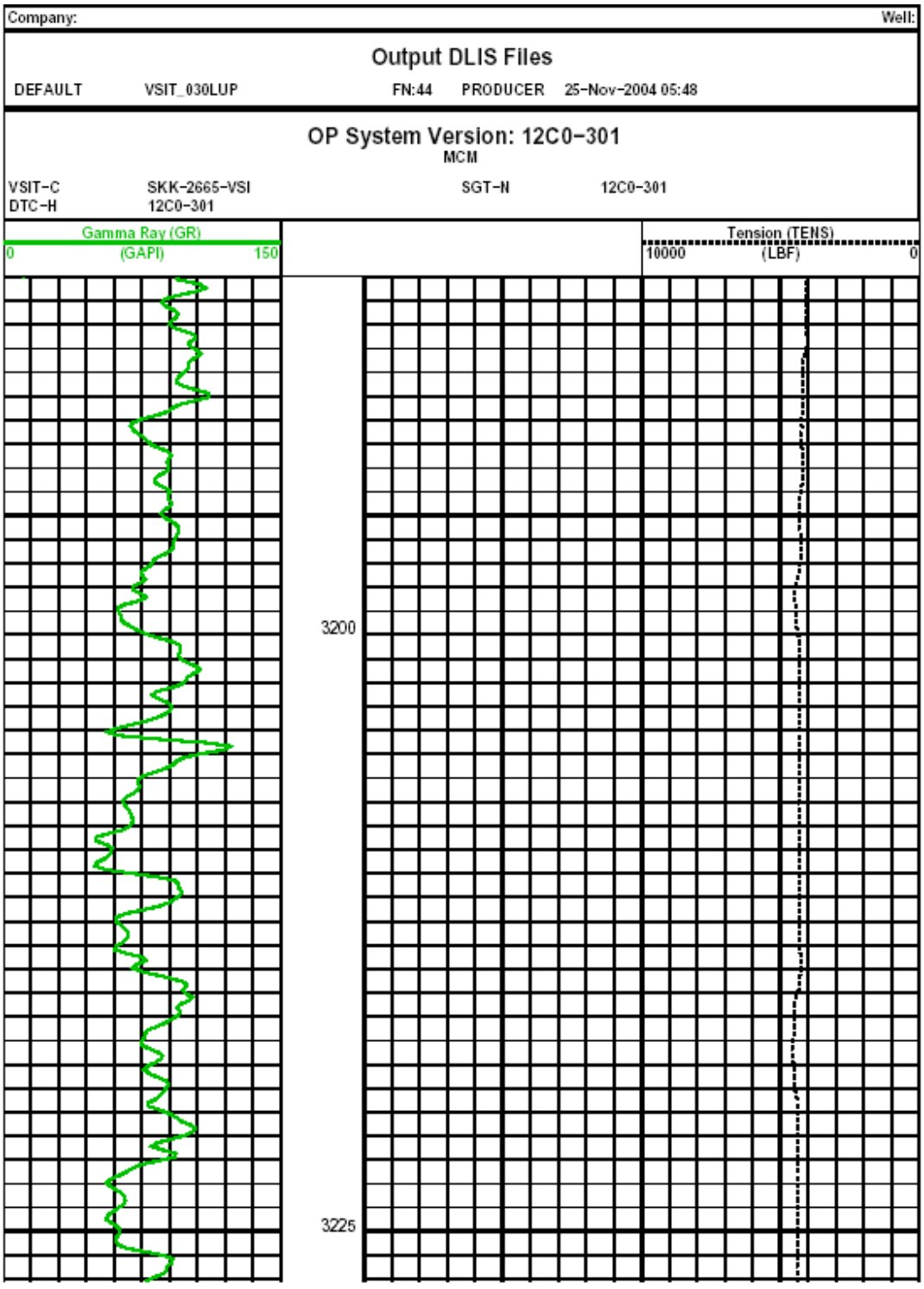
Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
2218.9	05:33:42	SHOT	119	24	A	
2218.9	05:33:57	SHOT	120	24	A	
2218.9	05:35:16	SHOT	121	24	A	
2139.0	05:40:00	SHOT	122	25	A	
2139.0	05:40:15	SHOT	123	25	A	
2139.0	05:40:30	SHOT	124	25	A	
2139.0	05:40:45	SHOT	125	25	A	
2139.0	05:41:04	SHOT	126	25	A	
2058.8	05:44:35	SHOT	127	26	A	
2058.8	05:44:57	SHOT	128	26	A	
2058.8	05:45:12	SHOT	129	26	A	
2058.8	05:45:27	SHOT	130	26	A	
2058.8	05:45:42	SHOT	131	26	A	
1979.0	05:51:09	SHOT	132	27	A	
1979.0	05:51:24	SHOT	133	27	A	
1979.0	05:51:39	SHOT	134	27	A	
1979.0	05:51:56	SHOT	135	27	A	
1979.0	05:52:11	SHOT	136	27	A	
1899.0	05:57:02	SHOT	137	28	A	
1899.0	05:57:17	SHOT	138	28	A	
1899.0	05:57:50	SHOT	139	28	A	
1899.0	05:58:05	SHOT	140	28	A	
1899.0	05:58:20	SHOT	141	28	A	
1819.0	06:03:27	SHOT	142	29	A	
1819.0	06:03:42	SHOT	143	29	A	
1819.0	06:03:57	SHOT	144	29	A	
1819.0	06:04:12	SHOT	145	29	A	
1819.0	06:04:28	SHOT	146	29	A	
1739.0	06:09:13	SHOT	147	30	A	
1739.0	06:09:37	SHOT	148	30	A	
1739.0	06:09:52	SHOT	149	30	A	
1739.0	06:10:07	SHOT	150	30	A	
1739.0	06:10:22	SHOT	151	30	A	
1659.1	06:18:36	SHOT	152	31	A	
1659.1	06:18:54	SHOT	153	31	A	
1659.1	06:19:09	SHOT	154	31	A	
1659.1	06:19:28	SHOT	155	31	A	
1659.1	06:19:43	SHOT	156	31	A	
1579.0	06:29:23	SHOT	157	32	A	
1579.0	06:29:39	SHOT	158	32	A	
1579.0	06:29:54	SHOT	159	32	A	
1579.0	06:30:10	SHOT	160	32	A	
1579.0	06:30:31	SHOT	161	32	A	
1499.0	06:38:01	SHOT	162	33	A	
1499.0	06:38:18	SHOT	163	33	A	
1499.0	06:38:33	SHOT	164	33	A	
1499.0	06:38:48	SHOT	165	33	A	
1499.0	06:39:03	SHOT	166	33	A	
1419.0	06:46:34	SHOT	167	34	A	
1419.0	06:47:23	SHOT	168	34	A	
1419.0	06:47:38	SHOT	169	34	A	
1419.0	06:47:53	SHOT	170	34	A	
1419.0	06:48:08	SHOT	171	34	A	
1339.0	06:53:58	SHOT	172	35	A	
1339.0	06:54:14	SHOT	173	35	A	
1339.0	06:54:29	SHOT	174	35	A	
1339.0	06:54:44	SHOT	175	35	A	
1339.0	06:55:01	SHOT	176	35	A	
1258.9	07:00:08	SHOT	177	36	A	

Observer's Note (4/4)

Well depth [m]	Time	Shot Type	Shot#	Stack#	Source	Remarks
1258.9	07:00:34	SHOT	178	36	A	
1258.9	07:00:49	SHOT	179	36	A	
1258.9	07:01:04	SHOT	180	36	A	
1258.9	07:01:22	SHOT	181	36	A	gain changed on Z after first shot
1179.0	07:07:21	SHOT	182	37	A	
1179.0	07:07:39	SHOT	183	37	A	
1179.0	07:07:54	SHOT	184	37	A	
1179.0	07:08:09	SHOT	185	37	A	
1179.0	07:08:24	SHOT	186	37	A	
1099.0	07:13:59	SHOT	187	38	A	
1099.0	07:14:33	SHOT	188	38	A	
1099.0	07:14:48	SHOT	189	38	A	
1099.0	07:15:03	SHOT	190	38	A	
1099.0	07:15:19	SHOT	191	38	A	
1019.0	07:20:33	SHOT	192	39	A	
1019.0	07:21:00	SHOT	193	39	A	
1019.0	07:21:15	SHOT	194	39	A	
1019.0	07:21:30	SHOT	195	39	A	
1019.0	07:21:45	SHOT	196	39	A	
939.0	07:27:19	SHOT	197	40	A	
939.0	07:27:35	SHOT	198	40	A	
939.0	07:27:50	SHOT	199	40	A	
939.0	07:28:05	SHOT	200	40	A	
939.0	07:28:20	SHOT	201	40	A	
858.9	07:33:35	SHOT	202	41	A	
858.9	07:34:03	SHOT	203	41	A	
858.9	07:34:23	SHOT	204	41	A	
858.9	07:34:43	SHOT	205	41	A	
858.9	07:35:03	SHOT	206	41	A	
779.0	07:40:34	SHOT	207	42	A	
779.0	07:41:06	SHOT	208	42	A	
779.0	07:41:26	SHOT	209	42	A	
779.0	07:41:46	SHOT	210	42	A	
779.0	07:42:06	SHOT	211	42	A	
699.0	07:47:14	SHOT	212	43	A	
699.0	07:47:34	SHOT	213	43	A	
699.0	07:47:54	SHOT	214	43	A	
699.0	07:48:14	SHOT	215	43	A	
699.0	07:48:34	SHOT	216	43	A	
619.0	07:53:28	SHOT	217	44	A	
619.0	07:53:55	SHOT	218	44	A	
619.0	07:54:15	SHOT	219	44	A	
619.0	07:54:35	SHOT	220	44	A	
619.0	07:54:55	SHOT	221	44	A	
539.0	08:00:20	SHAK	222			
539.0	08:00:41	SHOT	223	45	A	
539.0	08:01:01	SHOT	224	45	A	
539.0	08:01:27	SHOT	225	45	A	
539.0	08:01:47	SHOT	226	45	A	
539.0	08:02:07	SHOT	227	45	A	
459.0	08:07:18	SHOT	228	46	A	
459.0	08:07:44	SHOT	229	46	A	
459.0	08:08:04	SHOT	230	46	A	
379.1	08:13:01	SHOT	231	47	A	
379.1	08:13:40	SHOT	232	47	A	
379.1	08:14:02	SHOT	233	47	A	
299.0	08:19:33	SHOT	234	48	A	
299.0	08:20:03	SHOT	235	48	A	
299.0	08:20:23	SHOT	236	48	A	

GR Correlation

Main run


Company:
Well:
Output DLIS Files
DEFAULT VSIT_030LUP FN:44 PRODUCER 25-Nov-2004 05:48
OP System Version: 12C0-301
MCM
VSIT-C SKK-2665-VSI SGT-N 12C0-301
DTC-H 12C0-301
Gamma Ray (GR)
0 (GAPI) 150
Tension (TENS)
10000 (LBF) 0
3200
3225

VSI Seismic Evaluation Report

ELECTRICAL NOISE LOW TEST

2004/11/25 03:10:01

Shot No: 1 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
DC Offset	1	X	-25.3137	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	X	0.1209	micro V	-	0.5000	PASS
Noise Peak	1	X	0.4374	micro V	-	2.0000	PASS
DC Offset	1	Y	-25.3572	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Y	0.1210	micro V	-	0.5000	PASS
Noise Peak	1	Y	0.4441	micro V	-	2.0000	PASS
DC Offset	1	Z	-25.3825	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Z	0.1179	micro V	-	0.5000	PASS
Noise Peak	1	Z	0.4056	micro V	-	2.0000	PASS
DC Offset	2	X	-25.3389	milli V	-100.0000	100.0000	PASS
RMS Noise Level	2	X	0.1189	micro V	-	0.5000	PASS
Noise Peak	2	X	0.4515	micro V	-	2.0000	PASS
DC Offset	2	Y	-25.4848	milli V	-100.0000	100.0000	PASS
RMS Noise Level	2	Y	0.1237	micro V	-	0.5000	PASS
Noise Peak	2	Y	0.4155	micro V	-	2.0000	PASS
DC Offset	2	Z	-25.3639	milli V	-100.0000	100.0000	PASS
RMS Noise Level	2	Z	0.1236	micro V	-	0.5000	PASS
Noise Peak	2	Z	0.4534	micro V	-	2.0000	PASS
DC Offset	3	X	-25.3050	milli V	-100.0000	100.0000	PASS
RMS Noise Level	3	X	0.1243	micro V	-	0.5000	PASS
Noise Peak	3	X	0.4617	micro V	-	2.0000	PASS
DC Offset	3	Y	-25.4421	milli V	-100.0000	100.0000	PASS
RMS Noise Level	3	Y	0.1210	micro V	-	0.5000	PASS
Noise Peak	3	Y	0.4368	micro V	-	2.0000	PASS
DC Offset	3	Z	-25.3404	milli V	-100.0000	100.0000	PASS
RMS Noise Level	3	Z	0.1462	micro V	-	0.5000	PASS
Noise Peak	3	Z	0.5205	micro V	-	2.0000	PASS
DC Offset	4	X	-25.4022	milli V	-100.0000	100.0000	PASS
RMS Noise Level	4	X	0.1169	micro V	-	0.5000	PASS
Noise Peak	4	X	0.3993	micro V	-	2.0000	PASS
DC Offset	4	Y	-25.4528	milli V	-100.0000	100.0000	PASS
RMS Noise Level	4	Y	0.1198	micro V	-	0.5000	PASS
Noise Peak	4	Y	0.4491	micro V	-	2.0000	PASS
DC Offset	4	Z	-25.4517	milli V	-100.0000	100.0000	PASS
RMS Noise Level	4	Z	0.1210	micro V	-	0.5000	PASS
Noise Peak	4	Z	0.4433	micro V	-	2.0000	PASS

ELECTRICAL NOISE HIGH TEST

2004/11/25 03:10:25

Shot No: 2 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
DC Offset	1	X	-25.1535	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	X	0.1203	micro V	-	0.5000	PASS
Noise Peak	1	X	0.4192	micro V	-	2.0000	PASS
DC Offset	1	Y	-25.2744	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Y	0.1163	micro V	-	0.5000	PASS
Noise Peak	1	Y	0.3971	micro V	-	2.0000	PASS
DC Offset	1	Z	-25.4119	milli V	-100.0000	100.0000	PASS
RMS Noise Level	1	Z	0.1194	micro V	-	0.5000	PASS
Noise Peak	1	Z	0.4306	micro V	-	2.0000	PASS
DC Offset	2	X	-25.2369	milli V	-100.0000	100.0000	PASS
RMS Noise Level	2	X	0.1216	micro V	-	0.5000	PASS
Noise Peak	2	X	0.4538	micro V	-	2.0000	PASS
DC Offset	2	Y	-25.7129	milli V	-100.0000	100.0000	PASS
RMS Noise Level	2	Y	0.1249	micro V	-	0.5000	PASS
Noise Peak	2	Y	0.4421	micro V	-	2.0000	PASS
DC Offset	2	Z	-25.0696	milli V	-100.0000	100.0000	PASS
RMS Noise Level	2	Z	0.1215	micro V	-	0.5000	PASS
Noise Peak	2	Z	0.4513	micro V	-	2.0000	PASS
DC Offset	3	X	-24.9273	milli V	-100.0000	100.0000	PASS
RMS Noise Level	3	X	0.1227	micro V	-	0.5000	PASS
Noise Peak	3	X	0.4484	micro V	-	2.0000	PASS

DC Offset	3	Y	-25.5796	milli V	-100.0000	100.0000	PASS
RMS Noise Level	3	Y	0.1200	micro V	-	0.5000	PASS
Noise Peak	3	Y	0.4954	micro V	-	2.0000	PASS
DC Offset	3	Z	-24.9645	milli V	-100.0000	100.0000	PASS
RMS Noise Level	3	Z	0.1487	micro V	-	0.5000	PASS
Noise Peak	3	Z	0.5488	micro V	-	2.0000	PASS
DC Offset	4	X	-25.1432	milli V	-100.0000	100.0000	PASS
RMS Noise Level	4	X	0.1149	micro V	-	0.5000	PASS
Noise Peak	4	X	0.3777	micro V	-	2.0000	PASS
DC Offset	4	Y	-25.3403	milli V	-100.0000	100.0000	PASS
RMS Noise Level	4	Y	0.1196	micro V	-	0.5000	PASS
Noise Peak	4	Y	0.4246	micro V	-	2.0000	PASS
DC Offset	4	Z	-25.2033	milli V	-100.0000	100.0000	PASS
RMS Noise Level	4	Z	0.1186	micro V	-	0.5000	PASS
Noise Peak	4	Z	0.4323	micro V	-	2.0000	PASS

ELECTRICAL DISTORTION TEST

2004/11/25 03:10:34

Shot No: 3 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Total Harmonic Distortion	1	X	-98.7002	dB	-	-90.0000	PASS
Total Harmonic Distortion	1	Y	-97.3298	dB	-	-90.0000	PASS
Total Harmonic Distortion	1	Z	-100.2432	dB	-	-90.0000	PASS
Total Harmonic Distortion	2	X	-97.7461	dB	-	-90.0000	PASS
Total Harmonic Distortion	2	Y	-100.5202	dB	-	-90.0000	PASS
Total Harmonic Distortion	2	Z	-99.2124	dB	-	-90.0000	PASS
Total Harmonic Distortion	3	X	-102.5577	dB	-	-90.0000	PASS
Total Harmonic Distortion	3	Y	-99.2911	dB	-	-90.0000	PASS
Total Harmonic Distortion	3	Z	-103.9072	dB	-	-90.0000	PASS
Total Harmonic Distortion	4	X	-105.6281	dB	-	-90.0000	PASS
Total Harmonic Distortion	4	Y	-103.8192	dB	-	-90.0000	PASS
Total Harmonic Distortion	4	Z	-104.1229	dB	-	-90.0000	PASS

SYSTEM DYNAMIC RANGE TEST

2004/11/25 03:10:49

Shot No: 4 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
System Dynamic Range	1	X	107.1750	dB	103.0000	-	PASS
System Dynamic Range	1	Y	107.2515	dB	103.0000	-	PASS
System Dynamic Range	1	Z	106.8619	dB	103.0000	-	PASS
System Dynamic Range	2	X	107.5648	dB	103.0000	-	PASS
System Dynamic Range	2	Y	108.7312	dB	103.0000	-	PASS
System Dynamic Range	2	Z	108.1113	dB	103.0000	-	PASS
System Dynamic Range	3	X	107.1655	dB	103.0000	-	PASS
System Dynamic Range	3	Y	107.3766	dB	103.0000	-	PASS
System Dynamic Range	3	Z	106.6274	dB	103.0000	-	PASS
System Dynamic Range	4	X	107.6822	dB	103.0000	-	PASS
System Dynamic Range	4	Y	107.9996	dB	103.0000	-	PASS
System Dynamic Range	4	Z	107.7193	dB	103.0000	-	PASS

AMPLIFIER GAIN 2 TEST

2004/11/25 03:11:03

Shot No: 5 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1277	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.1391	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1458	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	X	0.1502	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	X	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Y	0.1582	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Y	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Z	0.1466	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Z	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	X	0.1633	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	X	0.0000	dB	-0.5000	0.5000	PASS

Gain Accuracy	3	Y	0.1535	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Y	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	Z	0.1611	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Z	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	X	0.1333	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	X	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Y	0.1306	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Y	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Z	0.1350	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Z	0.0000	dB	-0.5000	0.5000	PASS

AMPLIFIER GAIN 4 TEST

2004/11/25 03:11:13

Shot No: 6 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1229	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0048	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.1373	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.0018	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1513	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	-0.0055	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	X	0.1474	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	X	0.0027	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Y	0.1555	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Y	0.0027	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Z	0.1448	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Z	0.0018	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	X	0.1604	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	X	0.0029	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	Y	0.1508	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Y	0.0027	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	Z	0.1604	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Z	0.0007	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	X	0.1316	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	X	0.0018	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Y	0.1291	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Y	0.0015	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Z	0.1340	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Z	0.0010	dB	-0.5000	0.5000	PASS

AMPLIFIER GAIN 8 TEST

2004/11/25 03:11:23

Shot No: 7 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1216	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0061	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.1391	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.0000	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1544	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	-0.0086	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	X	0.1483	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	X	0.0018	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Y	0.1541	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Y	0.0041	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Z	0.1459	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Z	0.0006	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	X	0.1598	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	X	0.0035	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	Y	0.1504	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Y	0.0031	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	Z	0.1596	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Z	0.0015	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	X	0.1312	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	X	0.0022	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Y	0.1295	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Y	0.0011	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Z	0.1345	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Z	0.0005	dB	-0.5000	0.5000	PASS

AMPLIFIER GAIN 16 TEST

2004/11/25 03:11:33

Shot No: 8 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1171	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0106	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.1334	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	0.0058	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1481	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	-0.0023	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	X	0.1454	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	X	0.0048	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Y	0.1507	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Y	0.0075	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Z	0.1443	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Z	0.0023	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	X	0.1560	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	X	0.0073	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	Y	0.1456	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Y	0.0079	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	Z	0.1571	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Z	0.0040	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	X	0.1297	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	X	0.0036	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Y	0.1254	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Y	0.0052	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Z	0.1322	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Z	0.0029	dB	-0.5000	0.5000	PASS

AMPLIFIER GAIN 32 TEST

2004/11/25 03:11:43

Shot No: 9 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Gain Accuracy	1	X	0.1205	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	X	0.0072	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Y	0.1401	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Y	-0.0010	dB	-0.5000	0.5000	PASS
Gain Accuracy	1	Z	0.1526	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	1	Z	-0.0068	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	X	0.1463	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	X	0.0039	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Y	0.1531	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Y	0.0051	dB	-0.5000	0.5000	PASS
Gain Accuracy	2	Z	0.1453	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	2	Z	0.0013	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	X	0.1592	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	X	0.0041	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	Y	0.1480	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Y	0.0055	dB	-0.5000	0.5000	PASS
Gain Accuracy	3	Z	0.1587	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	3	Z	0.0024	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	X	0.1306	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	X	0.0027	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Y	0.1280	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Y	0.0025	dB	-0.5000	0.5000	PASS
Gain Accuracy	4	Z	0.1377	dB	-0.5000	0.5000	PASS
Gain Step Accuracy	4	Z	-0.0026	dB	-0.5000	0.5000	PASS

CROSS TALK X TEST

2004/11/25 03:11:58

Shot No: 10 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Cross Talk X-Y	1	-	-100.4145	dB	-	-90.0000	PASS
Cross Talk X-Z	1	-	-98.7120	dB	-	-90.0000	PASS
Cross Talk X-Y	2	-	-100.1607	dB	-	-90.0000	PASS
Cross Talk X-Z	2	-	-98.9901	dB	-	-90.0000	PASS
Cross Talk X-Y	3	-	-100.6233	dB	-	-90.0000	PASS

Cross Talk X-Z	3	-	-97.4021	dB	-	-90.0000	PASS
Cross Talk X-Y	4	-	-100.5341	dB	-	-90.0000	PASS
Cross Talk X-Z	4	-	-98.9673	dB	-	-90.0000	PASS

CROSS TALK Y TEST

2004/11/25 03:12:17

Shot No: 11 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Cross Talk Y-Z	1	-	-98.0216	dB	-	-90.0000	PASS
Cross Talk Y-X	1	-	-99.7328	dB	-	-90.0000	PASS
Cross Talk Y-Z	2	-	-98.5068	dB	-	-90.0000	PASS
Cross Talk Y-X	2	-	-99.9230	dB	-	-90.0000	PASS
Cross Talk Y-Z	3	-	-97.1246	dB	-	-90.0000	PASS
Cross Talk Y-X	3	-	-99.8828	dB	-	-90.0000	PASS
Cross Talk Y-Z	4	-	-98.5060	dB	-	-90.0000	PASS
Cross Talk Y-X	4	-	-99.9278	dB	-	-90.0000	PASS

CROSS TALK Z TEST

2004/11/25 03:12:36

Shot No: 12 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Cross Talk Z-X	1	-	-97.3385	dB	-	-90.0000	PASS
Cross Talk Z-Y	1	-	-96.8722	dB	-	-90.0000	PASS
Cross Talk Z-X	2	-	-97.7581	dB	-	-90.0000	PASS
Cross Talk Z-Y	2	-	-96.9094	dB	-	-90.0000	PASS
Cross Talk Z-X	3	-	-97.0600	dB	-	-90.0000	PASS
Cross Talk Z-Y	3	-	-96.5209	dB	-	-90.0000	PASS
Cross Talk Z-X	4	-	-97.7691	dB	-	-90.0000	PASS
Cross Talk Z-Y	4	-	-97.3542	dB	-	-90.0000	PASS

IMPULSE RESPONSE TEST

2004/11/25 03:12:54

Shot No: 13 **Station Depth: 188.45 m**

Evaluation Item	Shuttle	Channel	Value	Unit	Lower Limit	Upper Limit	Result
Amplitude (0.3Hz)	1	X	-1.5978	dB	-5.0000	-	PASS
Amplitude (400Hz)	1	X	-3.5707	dB	-5.0000	-	PASS
Impulse Amplitude	1	X	573.1796	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	1	X	0.0000	degree	-	-	-
Amplitude (0.3Hz)	1	Y	-1.6343	dB	-5.0000	-	PASS
Amplitude (400Hz)	1	Y	-3.5732	dB	-5.0000	-	PASS
Impulse Amplitude	1	Y	573.7990	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	1	Y	-2.3311	degree	-	-	-
Amplitude (0.3Hz)	1	Z	-1.6269	dB	-5.0000	-	PASS
Amplitude (400Hz)	1	Z	-3.5708	dB	-5.0000	-	PASS
Impulse Amplitude	1	Z	574.2680	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	1	Z	-0.7545	degree	-	-	-
Amplitude (0.3Hz)	2	X	-1.5560	dB	-5.0000	-	PASS
Amplitude (400Hz)	2	X	-3.5720	dB	-5.0000	-	PASS
Impulse Amplitude	2	X	574.3579	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	2	X	-1.6623	degree	-	-	-
Amplitude (0.3Hz)	2	Y	-1.4848	dB	-5.0000	-	PASS
Amplitude (400Hz)	2	Y	-3.5686	dB	-5.0000	-	PASS
Impulse Amplitude	2	Y	574.7844	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	2	Y	-3.6344	degree	-	-	-
Amplitude (0.3Hz)	2	Z	-1.7001	dB	-5.0000	-	PASS
Amplitude (400Hz)	2	Z	-3.5767	dB	-5.0000	-	PASS
Impulse Amplitude	2	Z	573.9604	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	2	Z	0.0133	degree	-	-	-
Amplitude (0.3Hz)	3	X	-1.6746	dB	-5.0000	-	PASS
Amplitude (400Hz)	3	X	-3.5727	dB	-5.0000	-	PASS
Impulse Amplitude	3	X	574.8829	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	3	X	-0.1661	degree	-	-	-
Amplitude (0.3Hz)	3	Y	-1.6555	dB	-5.0000	-	PASS
Amplitude (400Hz)	3	Y	-3.5745	dB	-5.0000	-	PASS
Impulse Amplitude	3	Y	574.2968	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	3	Y	2.8160	degree	-	-	-
Amplitude (0.3Hz)	3	Z	-1.5938	dB	-5.0000	-	PASS
Amplitude (400Hz)	3	Z	-3.5744	dB	-5.0000	-	PASS

Impulse Amplitude	3	Z	574.5537	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	3	Z	-1.0443	degree	-	-	-
Amplitude (0.3Hz)	4	X	-1.6425	dB	-5.0000	-	PASS
Amplitude (400Hz)	4	X	-3.5751	dB	-5.0000	-	PASS
Impulse Amplitude	4	X	573.2418	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	4	X	-0.7210	degree	-	-	-
Amplitude (0.3Hz)	4	Y	-1.4450	dB	-5.0000	-	PASS
Amplitude (400Hz)	4	Y	-3.5770	dB	-5.0000	-	PASS
Impulse Amplitude	4	Y	572.9935	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	4	Y	-2.7018	degree	-	-	-
Amplitude (0.3Hz)	4	Z	-1.6393	dB	-5.0000	-	PASS
Amplitude (400Hz)	4	Z	-3.5774	dB	-5.0000	-	PASS
Impulse Amplitude	4	Z	573.4516	milli V	-	-	-
Phase Diff. at 0.3Hz from X1	4	Z	-0.8350	degree	-	-	-

APPENDIX 10: MDT PRESSURE DATA

			STRAIN GAUGE (PSIG)				QUARTZ GAUGE (PSIA)					STRAIN GAUGE	QUARTZ GAUGE		
Sample No.	**Depth mMD**	**Depth mTVDSS**	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Temp °C	Hydrostatic Pressure After	Hydrostatic Pressure After	Comments	Mobility
1	2626.0	2586.10	4180.8	9.5	3703.6	8.4	4194.70	9.5	3716.47	8.4	102.90	4181.40	4194.40	10cc x 2	202.2
2	2666.5	2626.60	4245.4	9.5	3759.0	8.4	4258.62	9.5	3771.94	8.4	101.90	4225.70	4258.59	20 cc good test	603.9
3	2672.1	2632.20	4254.5	9.5	3766.8	8.4	4267.57	9.5	3779.71	8.4	102.30	4254.60	4267.90	20 cc good test	404.7
4	2697.8	2657.90	4295.1	9.5	3797.7	8.4	4308.37	9.5	3810.60	8.4	102.35	4295.30	4308.44	20 cc good test	786.2
5	2734.0	2694.10	4352.2	9.5	3844.0	8.4	4365.64	9.5	3857.05	8.4	103.90	4352.40	4365.62	20 cc good test	583.5
6	2738.2	2698.30	4359.1	9.5	3850.0	8.4	4372.80	9.5	3863.04	8.4	104.50	4359.30	4372.49	Valid Test	319.5
7	2844.5	2804.60	4526.1	9.5	4005.3	8.4	4540.20	9.5	4018.92	8.4	106.80	4526.50	4540.28	Valid Test	321.9
8	2860.0	2820.10	4551.0	9.5	4029.9	8.4	4564.77	9.5	4043.27	8.4	107.80	4551.30	4564.78	unstable, slow to stabilise	6.7
9	2872.5	2832.60	4570.9	9.5	4086.1	8.5	4584.00	9.5	4099.26	8.5	110.10	4571.20	4584.38	supercharged	0.3
10	2916.8	2876.90	4641.1	9.5	4198.4	8.6	4654.44	9.5	4211.89	8.6	110.20	4641.10	4654.50	slow to build up- poss supercharged	2.2
11	2916.5	2876.60	4640.8	9.5	4097.6	8.3	4654.23	9.5	4110.91	8.4	110.50	4640.80	4654.29	Valid Test	5.5
12	2933.0	2893.10	4667.1	9.5	4667.1	9.5	4680.44	9.5	4141.80	8.4	110.90	4667.10	4680.51	Valid Test	11.1
13	2959.0	2919.10	4708.8	9.5	4148.6	8.3	4721.54	9.5	4162.80	8.4	111.30	4708.10	4721.67	Valid Test	252.9
14	2968.0	2928.10	4722.4	9.5	4187.3	8.4	4735.89	9.5	4202.70	8.4	111.70	4722.40	4736.07	unstable- aborted	21.2
15	2971.0	2931.10	4727.3	9.5	4188.0	8.4	4740.80	9.5	4201.47	8.4	112.10	4727.40	4740.84	ok 2x10 good test	47.6
16	2982.0	2942.10	4744.7	9.5	4199.3	8.4	4758.14	9.5	4212.69	8.4	112.30	4744.70	4758.20	ok 2x10 good test	118.0
17	2991.5	2951.60	4759.7	9.5	4206.4	8.4	4773.24	9.5	4219.85	8.4	112.50	4759.80	4772.44	Valid Test	18.1
18	3002.0	2962.10	4776.3	9.5	4209.2	8.3	4789.83	9.5	4222.67	8.4	112.70	4776.40	4789.85	Valid Test	153.5
19	3006.5	2966.60	4783.4	9.5	4214.0	8.3	4796.92	9.5	4227.61	8.4	113.20	4783.50	4797.02	good test - long time to stabilise	79.3
20	3020.0	2980.10	4804.8	9.5	4240.8	8.3	4818.33	9.5	4254.35	8.4	113.50	4804.90	4818.56	good test - long time to stabilise	54.7
21	3027.0	2987.10	4815.8	9.5	4274.3	8.4	4829.36	9.5	4287.69	8.4	113.70	4815.90	4829.48	increasing press - supercharged	11.8
22	3027.5	2987.60	4816.8	9.5	4271.4	8.4	4830.43	9.5	4284.90	8.4	114.00	4816.80	4830.46	supercharged	19.2
23	3040.5	3000.60	4837.2	9.4	4296.6	8.4	4850.84	9.5	4310.33	8.4	114.30	4837.2	4850.84	increasing- supercharged	9.8
24	3040.7	3000.80	4837.7	9.4	4291.7	8.4	4851.35	9.5	4305.24	8.4	114.50	4837.80	4851.52	Valid Test	11.4
25	3045.0	3005.10	4843.5	9.4	4291.3	8.4	4857.19	9.5	4304.69	8.4	115.10	4843.80	4857.26	Valid Test	6.3
26	3057.0	3017.10	4862.8	9.4	4356.9	8.5	4876.30	9.5	4370.24	8.5	115.00	4862.80	4876.50	Supercharged	0.6
27	3057.2	3017.30	4863.1	9.4	4337.1	8.4	4876.80	9.5	4350.70	8.5	115.00	4863.20	4876.88	Valid Test	126.0
28	3068.5	3028.60	4881.1	9.4	4317.3	8.4	4894.86	9.5	4387.89	8.5	114.20	4881.40	4895.30	Aborted, Dry Test	1.3
29	3069.0	3029.10	4882.1	9.4	4895.8	9.5	4895.76	9.5	4410.89	8.5	115.20	4821.10	4895.90		0.2
30	3100.5	3060.60	4931.9	9.4	4381.6	8.4	4931.68	9.4	4395.36	8.4	115.60	4932.00	4945.78	Valid Test	33.0
31	3109.9	3070.00	4946.9	9.4	incomplete	incompl	4960.71	9.5	incomplete	incompl	115.60	incomplete	incompl	Oil alarm, POOH - test incomplete	

			STRAIN GAUGE (PSIG)				QUARTZ GAUGE (PSIA)					STRAIN GAUGE	QUARTZ GAUGE		
Sample No.	**Depth mMD**	**Depth mTVDSS**	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Temp °C	Hydrostatic Pressure After	Hydrostatic Pressure After	Comments	Mobility
32	3109.9	3070.00	4945.8	9.4	4589.4	8.8	4959.50	9.5	4602.09	8.8	115.60	4946.30	4959.22	10cc initial DD. Tight. Poor result.	2.5
33	3109.7	3069.80	4946.0	9.4	4991.3	9.5	4959.04	9.5	5003.63	9.6	116.10	4946.20	4959.02	5cc DD, Tight. Poor test.	0.4
34	3110.0	3070.10	4946.7	9.4	4403.7	8.4	4959.85	9.5	4416.50	8.4	116.20	4947.00	4960.00	10cc initial DD, followed by secondary 10cc DD. Not stable - pressure still increasing. Fair test.	22.2
35	3121.5	3081.60	4965.1	9.4	4436.0	8.4	4978.12	9.5	4448.90	8.5	116.40	4965.20	4978.30	10cc initial, 10cc secondary DD. Slow to stabilise. Good test.	15.0
36	3126.7	3086.80	4973.6	9.4	4458.1	8.5	4986.76	9.5	4471.31	8.5	116.70	4973.70	4986.99	10cc, 5cc, Good test	6.2
37	3142.5	3102.60	4998.8	9.4	5032.5	9.5	5012.12	9.5	5045.66	9.5	117.00	4998.80	5012.15	5ccDD, supercharged.	5.9
38	3142.7	3102.80	4999.1	9.4	4475.1	8.5	5012.53	9.5	4488.60	8.5	117.20	4999.20	5012.61	10cc initial, 10cc secondary DD. Good test.	149.6
39	3147.0	3107.10	5006.0	9.4	4476.5	8.4	5019.46	9.5	4489.94	8.5	117.40	5006.00	5019.53	10cc initial, 10cc secondary DD. Good test.	12.4
40	3157.2	3117.30	5022.2	9.4	4504.9	8.5	5035.76	9.5	4518.40	8.5	117.80	5022.30	5035.86	10cc initial, 10cc secondary DD. Good test.	8.4
41	3162.0	3122.10	5029.8	9.4	4503.9	8.5	5043.50	9.5	4517.46	8.5	118.00	5030.00	5043.57	10cc initial, 10cc secondary. Good test.	16.5
42	3201.5	3161.60	5092.0	9.4	4585.7	8.5	5105.81	9.5	4598.01	8.5	120.40	5092.30	5105.89	10cc initial DD, 10cc secondary. Supercharged.	0.1
43	3201.7	3161.80	5092.6	9.4	4697.3	8.7	5106.24	9.5	4710.93	8.7	120.20	5092.60	5106.35	10cc initial, 5cc secondary - 1000psi DD limit reached. Failed test, supercharged.	0.2
44	3201.3	3161.40	5091.9	9.4	2881.2	5.3	5105.70	9.5	2889.42	5.4	120.00	5092.10	5105.90	6.9cc DD to 1000psi. Failed test. Tight.	0.1

			STRAIN GAUGE (PSIG)				QUARTZ GAUGE (PSIA)					STRAIN GAUGE	QUARTZ GAUGE		
Sample No.	**Depth mMD**	**Depth mTVDSS**	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Temp °C	Hydrostatic Pressure After	Hydrostatic Pressure After	Comments	Mobility
45	3235.0	3195.10	5145.6	9.4	4665.0	8.6	5159.50	9.5	4678.13	8.6	120.00	5145.70	5159.70	10cc DD, Tight, failed test.	0.1
46	3264.0	3264.00	5192.1	9.3	4748.8	8.5	5206.00	9.3	4762.22	8.6	121.70	5192.30	5205.98	10cc initial DD, 10cc secondary. Good test.	16.6
47	3278.2	3238.30	5215.0	9.4	4771.2	8.6	5228.72	9.5	4784.74	8.7	121.50	5215.10	5228.84	10cc initial, 10cc secondary DD. Good test.	7.4
48	3303.5	3263.60	5255.6	9.4	4807.3	8.6	5269.38	9.5	4820.95	8.7	121.50	5255.90	5269.66	10cc initial, 10cc secondary DD. Pressure fluctuating before settling. Good test.	4.5
49	3333.0	3293.10	5203.9	9.3	4847.1	8.6	5316.79	9.5	4860.87	8.7	122.20	5303.10	5317.07	10cc initial, 10cc secondary DD. Pressure fluctuating before settling. Good test.	14.2
50	3364.0	3324.10	5352.9	9.4	4898.6	8.6	5366.95	9.5	4912.42	8.7	122.40	5353.20	5367.13	10cc initial DD, 10cc secondary. Good test.	4.0
51	3386.5	3346.60	5389.9	9.4	4858.6	8.5	5403.93	9.5	4872.27	8.5	123.30	5390.10	5404.40	10cc initial, 10cc secondary, Good test.	5.1
52	3388.5	3348.60	5393.4	9.4	4865.0	8.5	5407.35	9.5	4878.78	8.5	123.30	5393.60	5407.52	10cc initial, 10cc secondary, slowly building pressure. Not static, unreliable test. Slightly supercharged?	0.7
53	3388.7	3348.80	5393.8	9.4	4863.2	8.5	5407.80	9.5	4876.94	8.5	123.50	5393.90	5407.85	10cc initial, 10cc secondary DD. Slow but good test.	1.5
54	3389.5	3349.60	5395.2	9.4	5012.0	8.8	5409.23	9.5	5030.87	8.8	123.70	5395.20	5409.23	10cc DD, Supercharged, failed test.	0.3
55	3390.0	3350.10	5395.9	9.4	4914.7	8.6	5409.96	9.5	4928.37	8.6	123.70	5396.00	5409.99	10cc DD, plus 10cc secondary DD. Supercharged. Failed test.	0.4
56	3389.3	3349.40	5394.8	9.4	5395.0	9.4	5408.88	9.5	5409.03	9.5	123.80	5394.90	5408.93	10cc DD, no pressure change. Blown seal.	

			STRAIN GAUGE (PSIG)				QUARTZ GAUGE (PSIA)					STRAIN GAUGE	QUARTZ GAUGE		
Sample No.	**Depth mMD**	**Depth mTVDSS**	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Temp °C	Hydrostatic Pressure After	Hydrostatic Pressure After	Comments	Mobility
Pumpout OFA and sampling program							Post sampling reservoir pressures usually are not stabilised								
57	3386.5	3346.60	5390.0	9.4	4858.2	8.5	5403.97	9.5	4871.82	8.5	123.40	5390.10	5404.04	10cc initial, 10cc secondary DD.	9.3
58	3264.0	3224.08	5192.8	9.4	4787.7	8.7	5206.7	9.5	4762.60	8.7	122.90	5192.30	5205.99	10cc initial, 10cc secondary DD.	15.1
59	3142.5	3102.60	4998.5	9.4		0.0	5011.97	9.5		0.0				Aborted due to tight zone	
60	3142.7	3102.80	4998.4	9.4	4475.3	8.5	5012.29	9.5	4489.02	8.5	119.70	4997.60	5011.91	10cc initial, 10cc secondary DD.	259.7
61	3162.0	3122.10	5028.3	9.4	4504.5	8.5	5042.73	9.5	4518.22	8.5	119.80	5028.80	5042.93	10cc initial, 10cc secondary DD.	30.7
62	3068.5	3028.60		0.0	INCOMPL	INCOMPL		0.0		0.0		INCOMPL		Dry Test	4.0
63	3067.0	3027.10	4879.8	9.4	INCOMPL	INCOMPL	4893.47	9.5		0.0		INCOMPL		Dry Test	
64	3067.5	3027.60	4877.8	9.4	INCOMPL	INCOMPL	4891.91	9.5		0.0	117.80	INCOMPL		Dry Test	
65	3071.0	3031.10	4883.6	9.4	4520.1	8.7	4897.36	9.5	4533.68	8.8	117.70	INCOMPL		Dry Test	
66	3057.2	3017.30	4861.6	9.4	4337.6	8.4	4875.42	9.5	4351.26	8.5	117.40	4861.10	4875.21	10cc initial, 10cc secondary DD.	
67	3162.0	3122.10	5027.4	9.4	5105.2	9.6	5041.7	9.5	5125.66	9.6	119.70	5027.70	5041.75	10cc initial, supercharged.	
68	3162.2	3122.30	5028.1	9.4	5083.0	9.5	5042.14	9.5	5097.65	9.6	119.80	5028.10	5042.21	10cc initial, supercharged.	
69	3161.8	3121.90	5027.6	9.4		0.0	5041.72	9.5		0.0	119.90			Software frozen, power down test.	
70	3161.8	3121.90	5027.6	9.4	5023.0	9.4	5041.76	9.5	5036.58	9.5	119.90	5027.70	5041.74	20cc DD, supercharged.	
71	3162.5	3122.60	5028.7	9.4	5132.4	9.6	5042.83	9.5	5146.95	9.7	120.00	5028.80	5042.85	10cc DD, supercharged.	
72	3162.3	3122.40	5028.6	9.4	4500.7	8.4	5042.66	9.5	4514.26	8.5	120.20	5029.00	5042.78	20cc DD, super-charged, pumped fluid, tight but close to reservoir pressure.	

			STRAIN GAUGE (PSIG)				QUARTZ GAUGE (PSIA)					STRAIN GAUGE	QUARTZ GAUGE		
Sample No.	**Depth mMD**	**Depth mTVDSS**	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Temp °C	Hydrostatic Pressure After	Hydrostatic Pressure After	Comments	Mobility
73	3162.0	3122.10	5028.1	9.4	4504.4	8.5	5042.00	9.5	4517.88	8.5	120.20	5028.20	5042.03	10cc initial, 10cc secondary DD. Unstable	
74	3045.0	3005.10	4842.3	9.4	4692.2	9.2	4855.27	9.5	4705.12	9.2	119.10	4842.10	4855.15	10cc initial, 10cc secondary DD. Pressure above previous pretest? Rising slowly.	3.2
75	3045.2	3005.30	4842.2	9.4	4292	8.4	4855.42	9.5	4309.99	8.4	118.30	restart	computer	10cc initial, 10cc secondary DD. Odd readings. Cycle pump, stabilised. Drawdown >20cc?	
76	3045.2	3005.30	4841.9	9.4	4291.8	8.4	4855.44	9.5	4304.96	8.4	118.00	4841.40	4855.16	20cc DD. Good test.	
77	3006.5	2966.60	4780.1	9.4	4214.1	8.3	4794.09	9.5	4227.30	8.4	117.20	4779.80	4793.84	10cc initial DD, 10cc secondary DD, unstable, short pump out to stabilise - successful.	60.9
78	2982.0	2942.10	4741.0	9.4	4199.9	8.4	4754.90	9.5	4213.29	8.4	116.90	4740.80	4754.55	20cc DD, poor test. Pump for short time - good result.	24.7
79	2977.8	2937.90	4734.0	9.4	4198.5	8.4	4747.99	9.5	4212.20	8.4	116.30	4734.20	4747.95	20cc DD, poor test. Pump for short time - good result.	575.8
80	2968.7	2928.80	4719.5	9.4	4187.7	8.4	4733.38	9.5	4201.29	8.4	116.20	4719.1	4732.94	20cc DD, poor test. Pump for short time - good result.	
1	3524.0	3484.10	5616.0	9.4		0.0	5631.80	9.5		0.0				Dry Test	
2	3514.0	3474.10	5601.2	9.5		0.0	5615.32	9.5		0.0				Dry Test	
3	3483.0	3443.10	5554.0	9.5	5083.1	8.7	5567.15	9.5	5095.75	8.7	126.40			10cc initial DD, 10cc secondary DD, Good test	1.7
4	3435.0	3395.10	5480.0	9.5		0.0	5492.30	9.5		0.0				Dry Test	
5	3434.0	3394.10	5477.7	9.5		0.0	5490.79	9.5		0.0				Lost Seal	
6	3433.8	3393.90	5477.7	9.5		0.0	5490.84	9.5		0.0				Tight Test	
7	3434.2	3394.30	5478.4	9.5		0.0	5491.49	9.5		0.0				Tight Test	
8	3388.5	3348.60	5408.3	9.5		0.0	5420.91	9.5		0.0				Tight Test	

			STRAIN GAUGE (PSIG)				QUARTZ GAUGE (PSIA)					STRAIN GAUGE	QUARTZ GAUGE		
Sample No.	**Depth mMD**	**Depth mTVDSS**	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Temp °C	Hydrostatic Pressure After	Hydrostatic Pressure After	Comments	Mobility
9	3388.7	3348.80	5407.9	9.5	4866.6	8.5	5420.99	9.5	4879.41	8.5	122.20			10cc initial DD, 10cc secondary DD, Good test	2.7
10	3155.2	3115.30	5045.0	9.5		0.0	5058.20	9.5		0.0				10cc initial DD, 10cc secondary DD, Supercharged	0.6
11	3157.2	3117.30	5047.8	9.5	4506	8.5	5061.03	9.5	4518.90	8.5	117.00	5048.00	5061.60	5cc initial DD, 5cc secondary DD, Good test	
12	3149.0	3109.10	5035.4	9.5		0.0	5049.80	9.5		0.0				Lost Seal	
13	3147.0	3107.10	5032.2	9.5	4477.3	8.4	5045.86	9.5	4490.48	8.5	119.00	5031.80	5045.79	10cc, Good test	
14	3107.0	3067.10	4970.1	9.5		0.0	4983.19	9.5		0.0	118.70			Tight Test	
15	3106.8	3066.90	4969.5	9.5		0.0	4982.85	9.5		0.0	118.10			Unstable	
16	3100.5	3060.60	4959.4	9.5	4382.5	8.4	4972.89	9.5	4396.91	8.4	117.60	4958.10	4972.08	10cc initial DD, 10cc secondary DD,	3.0
17	3097.0	3057.10	4952.8	9.5	4386.8	8.4	4966.62	9.5	4400.38	8.4	117.90	4952.70	4966.40	10cc initial, 10cc secondary DD. Good test - slow.	6.8
18	3095.0	3055.10	4949.8	9.5	4372.6	8.4	4963.47	9.5	4386.14	8.4	118.00	4949.70	4963.34	10cc DD, good test.	74.8
19	3085.0	3045.10	4934.1	9.5	4376.1	8.4	4947.68	9.5	4389.24	8.4	118.10	4933.20	4946.56	10cc initial, 10cc secondary DD. Slow but good test	7.5
20	3054.4	3014.50	4885.6	9.5	4347.7	8.5	4898.86	9.5	4360.50	8.5	117.60	4885.60	4898.58	10cc initial, 10cc secondary. Very unstable, imprecise result.	0.4
21	3046.0	3006.10	4872.3	9.5	4292.5	8.4	4885.35	9.5	4305.35	8.4	116.90	4871.70	4885.50	10cc initial, 10cc secondary, short pump cycle to settle.	8.4
22	3028.0	2988.10	4843.6	9.5	4272.3	8.4	4857.37	9.5	4285.50	8.4	116.90	4843.00	4856.42	Pump 20cc DD. Unstable. Cycle pump, better though still not stable.	24.5
23	2999.2	2959.30	4796.9	9.5	4209.5	8.3	4810.12	9.5	4222.38	8.4	117.10	4796.40	4810.07	20cc DD.	69.9
24	2995.0	2955.10	4790.0	9.5	4208.7	8.3	4803.56	9.5	4222.15	8.4	115.80	4790.00	4803.60	20cc DD.	62.3
25	2988.0	2948.10	4779.2	9.5	4201.9	8.4	4792.75	9.5	4215.18	8.4	116.10	4201.60	4215.23	20cc DD, at slower rate, faster, more reliable pressure balance.	

			STRAIN GAUGE (PSIG)				QUARTZ GAUGE (PSIA)					STRAIN GAUGE	QUARTZ GAUGE		
Sample No.	**Depth mMD**	**Depth mTVDSS**	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Hydrostatic Pressure Before	PPG	Reservoir Pressure	PPG	Temp °C	Hydrostatic Pressure After	Hydrostatic Pressure After	Comments	Mobility
26	2991.5	2951.60	4784.3	9.5	4207.4	8.4	4798.01	9.5	4220.60	8.4	116.40			2 x 10cc DD.	
27	2986.0	2946.10	4776.4	9.5	4201.7	8.4	4789.92	9.5	4214.96	8.4	116.80	4776.60	4790.00	2 x 10cc DD.very slow rate (40cc)	9.5
28	2959.0	2919.10	4734.4	9.5	4149.9	8.3	4747.72	9.5	4162.87	8.4	116.70	4733.90	4747.29	2 x 10cc DD. Slow rate (40cc)	173.0
29	2933.0	2893.10	4693.4	9.5	4129.5	8.4	4706.79	9.5	4142.59	8.4	115.70	4694.00	4707.09	2 x 10cc DD. Slow rate (40cc)	23.5
30	3149.5	3109.60	5032.0	9.5	4490	8.5	5046.20	9.5	4503.15	8.5	116.70			2 x 10cc DD. Tight Test	3.3
31	3149.3	3109.40	5033.3	9.5	4476.8	8.4	5046.22	9.5	4489.54	8.5	119.70	5033.50	5046.47	1x5 & 1x 10 DD. Not stabilised	
32	3138.3	3098.40	5016.4	9.5	4478.8	8.5	5029.26	9.5	4491.28	8.5	119.70	5016.70	5029.42	2 x 10 DD. Tight.	
33	2926.0	2886.10	4682.9	9.5	4108.6	8.3	4694.36	9.5	4121.18	8.4	117.10	4681.70	4694.38	2 x 10 DD. Incomplete	13.2

APPENDIX 11: MDT SAMPLING & ANALYSIS REPORT

Schlumberger

FROM RESERVOIR TO RESULTS.

Oilphase-DBR Sampling & Analysis Services
23 Brennan Way
Belmont Western Australia
Australia 6104

Origin Energy
Sampling and Analysis Report

FIELD: Trefoil

WELL: Trefoil-1

DATE: 20th November to 1st December, 2004

TEST: Wireline Evaluation

Prepared By: Paul Barraclough – Sampling Specialist Ben Leggo – Sampling Specialist Christian Ritchie – Sampling Specialist	Date: 6th December, 2004	Reviewed By: Chris Forde – Field Service Manager, APG	Date: 14th December, 2004

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3. Sequence of Events

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Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Summary

Origin Energy contracted Oilphase-DBR, the sampling and analysis specialists of Schlumberger, to provide the on site sampling and analytical chemistry services on the Ensco 102 for the evaluation of the exploration well Trefoil-1, located off the south-east coast of Australia. In two runs of the Wireline MDT tool, a total of seventeen downhole samples were collected using nine Oilphase Non-Reactive Single Phase Multi-Chamber (NR-SPMC) tools and eight, Wireline Multi-Phase Sample Receptacles (MPSR). On-site analysis was performed to measure sulphur and mercury content in pre-determined samples and the OilphaseDBR PVT Express was used to analyse gas-condensate compositions and perform Condensate-Gas Ratio (CGR) and Gas-Water Ratio (GWR) measurements.

MDT Run 1

The Wireline MDT tool consisted of two Multi Sample Modules (MRMS) loaded with four 450 cc Wireline MPSR's and eight 250 cc NR-SPMC sampling tools, which are coated to minimise hydrogen sulphide loss. The toolstring was configured for low shock sampling. The MDT tool was run in hole to predetermined depths between 3386.5 m MDRT and 2968.7 m MDRT and sampling took place if pre-tests proved to be feasible.

On recovery to surface, the NR-SPMC's and MPSR's were removed from the MRMS's and opening pressures of the tools recorded, confirming all samplers had collected samples successfully. All MPSR samplers were packaged and labelled in accordance with Dangerous Goods shipping requirements and sent from the rig to Petrolab in Adelaide for analysis. Two NR-SPMC's that sampled from an expected water zone were flashed off, with volumes of water and gas measured to calculate GWR. Compositional analysis was performed on the produced gas using the gas chromatograph (GC) and the remaining water sample was stored for later laboratory analysis. Three NR-SPMC's were heated to reservoir temperature and a portion of each was flashed to determine the CGR and the reservoir fluid composition using the PVT Express equipment (flash kit and GC). The remaining sample in each was used to measure mercury concentration in the gas phase by atomic fluorescence. The final three NR-SPMC samples were flashed through scrubbing solutions for the analysis of hydrogen sulphide, mercaptans and carbonyl sulphides in gas.
All residual liquid from the samplers was collected in 1 Litre glass bottles against further analysis and labelled appropriately to match the respective sampler.

MDT Run 2

For Run 2, the MDT tool was configured with one MRMS loaded with one NR-SPMC and five MPSR's with all chambers configured for low shock sampling. The MDT tool was run in hole to perform a pressure survey and to collect downhole fluid samples between 3388.8 m MDRT and 2933.0 m MDRT.

Once at surface, the sampling tools were removed from the MRMS and opening pressures of samplers recorded, confirming that the single NR-SPMC and all but one MPSR had collected samples successfully. The NR-SPMC was

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heated to reservoir temperature and conditioned at reservoir pressure before being monophasically transferred to a Single-phase Sample Bottle (SSB) for safe shipping to the laboratory.

All sampling, transfer and well site chemistry equipment was rigged down and consigned for shipment back to Perth Schlumberger base. All samples were shipped from the rig in accordance with the IMO Dangerous Goods Regulations, in an Origin supplied shipping container to PetroLab in Adelaide for analysis.

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Schlumberger

Client: Origin Energy
Job No: AOH442
Date: 20th Nov – 1st Dec, 2004
Field: Trefoil
Well: Trefoil-1
Installation: Ensco 102

Open Hole Sample Listing

MDT Run No: Run 1

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
1.01	26/11/04	14:31	Bottomhole Sample	3386.5 m MDRT	450 cc MPSR	0122
1.02	26/11/04	16:28	Stock Tank Water	3264.0 m MDRT	1 Litre Glass bottle	N/A
1.03	26/11/04	19:07	Bottomhole Sample	3142.7 m MDRT	450 cc MPSR	0187
1.04	26/11/04	19:21	Stock Tank Water	3142.7 m MDRT	1 Litre Glass bottle	N/A
1.05	26/11/04	19:36	Stock Tank Water	3142.7 m MDRT	1 Litre Glass bottle	N/A
1.06	27/11/04	01:49	Bottomhole Sample	3057.2 m MDRT	450 cc MPSR	0113
1.07	27/11/04	02:00	Stock Tank Water	3057.2 m MDRT	1 Litre Glass bottle	N/A
1.08	27/11/04	02:14	Stock Tank Water	3057.2 m MDRT	1 Litre Glass bottle	N/A
1.09	27/11/04	08:07	Stock Tank Water	3006.48 m MDRT	1 Litre Glass bottle	N/A
1.10	27/11/04	11:33	Bottomhole Sample	2968.7 m MDRT	450 cc MPSR	0192
1.11	27/11/04	11:47	Stock Tank Water	2968.7 m MDRT	1 Litre Glass bottle	N/A
1.12	27/11/04	11:53	Stock Tank Water	2968.7 m MDRT	1 Litre Glass bottle	N/A

MDT Run No: N/A

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
1.13	21/11/04	N/A	Mud Sample	N/A	1 Litre Plastic cont.	N/A

MDT Run No: Run 2

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
2.01	29/11/04	18:41	Monophasic Bottomhole Sample	3388.7 m MDRT	Non-reactive (NSB)	10007-MA
2.02	30/11/04	08:26	Bottomhole Sample	3028.0 m MDRT	MPSR	0310
2.03	30/11/04	09:57	Bottomhole Sample	2999.2 m MDRT	MPSR	0494
2.04	30/11/04	12:35	Bottomhole Sample	2988.0 m MDRT	MPSR	0501
2.05	30/11/04	19:41	Bottomhole Sample	2933.0 m MDRT	MPSR	0316

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Client: Origin Energy
Job No: AOH442
Date: 20th Nov – 1st Dec, 2004
Field: Trefoil
Well: Trefoil-1
Installation: Ensco 102

Sequence of Events

Date	Time	Event
MDT Logging Operations – Trefoil-1		
21/11/2004	12:00	Oilphase Sampling and Analysis Specialists arrived on Ensco 102
	12:45	Attended Rig safety induction and orientation
	13:45	Began rig up of Oilphase sampling and analysis equipment
	15:00	Mud sample obtained from Mud Engineer (sample 1.13)
	19:00	Prepare JSA for Pressure Operations to take place
22/11/2004	06:30	Attended Supervisors meeting with OIM
	08:00	Continued rig up and function test of equipment
	09:30	Commenced conditioning GC Gas oven
	11:00	Commenced calibration of GC
	14:20	Began DI Water priming of SPMC sampling tools
	19:40	Completed water priming of SPMC's
	22:30	Completed calibration of GC
23/11/04	06:30	Attended Supervisors meeting with OIM
	08:00	Oilphase pressure operations, general work permit arranged
	08:15	Commenced calibration of AFS Sir Galahad
	09:00	Relocated Field Transfer Equipment to prime SPMC sampling tools for RIH
	10:15	Completed AFS Sir Galahad calibration
	11:00	Commenced preparation/ pre-charge of 8 x SPMC's
	13:00	Participated in Daily Rig Audit
	18:00	Completed pressure operations, permit closed
24/11/04	06:30	Attended Supervisors meeting with OIM
	07:15	Commenced NR-SPMC installation into MRMS-BA-011 and MRMS-CA-216
	09:00	Completed installation of SPMC's
	10:00	Prepared MDT Toolstring diagram
	15:30	Commenced set up and function test of XGOR and XPLT
25/11/04	06:30	Attended Supervisors meeting with OIM
	12:56	Rig up of MDT tool string on drill floor
		Standby by for MDT logging and sampling operations
	13:15	Commenced conditioning of GC liquid oven
	14:00	Commenced set up of well site chemistry equipment for onsite analysis
	16:56	Began DI Water priming of SPMC sampling tools for second MDT run
	17:00	GC HID Detector #1 function tested with Diesel sample
	18:15	Completed water priming of SPMC's
26/11/04	01:00	Low oil alarm on MDT, began POOH
	02:00	Tool at surface

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Date	Time	Event
MDT Logging Operations – Trefoil-1		
	02:57	Problem resolved, began RIH
	06:30	Attended Supervisors meeting with OIM
26/11/04	12:25	Began MDT sampling operations
		Started pumpout at sampling point 1 @ 3386.5 m MDRT
	14:31	Commenced sampling in to MPSR 0122 (1.01)
	14:43	Completed sampling into MPSR
	15:17	Pumpout commenced at sampling point 2 @ 3264 m MDRT
	16:28	Began sampling into SPMC 246 (1.02)
	16:30	Completed sampling into SPMC
	17:25	Initiated pumpout at sampling point 3 @ 3142.7 m MDRT
	19:07	Commenced sampling into MPSR 0187 (1.03)
	19:15	Finished sampling into MPSR, pumpout continued
	19:21	Started sampling into SPMC 245 (1.04)
	19:23	Completed sampling into SPMC, pumpout continued
	19:36	Began sampling into SPMC 244 (1.05)
	19:38	Completed sampling into SPMC
	22:55	Started pumpout at sampling point 4 @ 3057.2 m MDRT
27/11/04	01:49	Commenced sampling into MPSR (1.06)
	01:58	Finished sampling in MPSR, pumpout continued
	02:01	Started sampling into SPMC 243 (1.07)
	02:03	Completed sampling into SPMC, pumpout continued
	02:14	Began sampling into SPMC 273 (1.08)
	02:16	Finished sampling into SPMC
	06:30	Attended Supervisors meeting with OIM
	07:22	Started pumpout at sampling point 5 @ 3006.5 m MDRT
	08:07	Commenced sampling into SPMC 247 (1.09)
	08:09	Completed sampling into SPMC
	10:38	Started pumpout at sampling point 6 @ 2968.7 m MDRT
	11:33	Started sampling into MPSR 0192 (1.10)
	11:38	Finished sampling into MPSR, pumpout continued
	11:47	Began sampling into SPMC 248 (1.11)
	11:49	Completed sampling into SPMC, pumpout continued
	11:53	Commenced sampling into SPMC 272 (1.12)
	11:55	Finished sampling into SPMC
	12:10	Sampling for MDT run1 completed, began POOH

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Client: Origin Energy
Job No: AOH442
Date: 20th Nov – 1st Dec, 2004
Field: Trefoil
Well: Trefoil-1
Installation: Ensco 102

Date	Time	Event
MDT Logging Operations – Trefoil-1		
	13:00	Oilphase pressure operations, general work permit arranged
		Arranged Dangerous Goods paperwork for MPSR samplers to go to Petrolabs - Adelaide for analysis
	13:30	Schlumberger Tools at surface
	14:15	Began removal of NR-SPMC's from MRMS from Run 1
	15:09	Commenced MPSR sample validations
	15:30	Completed sample validations on MPSR samplers
	15:45	Determined opening pressure of SPMC 246, 8900 psig @ 23 °C
	16:02	Started flash of SPMC 246, retained water and gas volumes measured
	16:55	Completed SPMC flash, began GWR calculation
	17:03	Determined opening pressure of SPMC 247, 8900 psig @ 23 °C
	17:07	Started flash of SPMC 247, retained water and gas volumes measured
	17:58	Completed SPMC flash, began GWR calculation
		MPSR samples leave the rig for Petrolabs – Adelaide
	18:34	Completed gas compositional analysis of SPMC 246
	18:48	Determined opening pressure of SPMC 245, 7000 psig @ 23 °C
	19:18	Initiated purging of UOP Train 1 Dreschels with N_2
	19:28	Completed N_2 purge
	19:35	Completed gas compositional analysis of SPMC 247
	20:00	H_2S measured by length of stain tube
	20:10	Commenced UOP sampling from SPMC 245
	22:17	Finished sampling from SPMC, 14.502 Litres flowed
	23:00	Started H_2S analysis of SPMC 245
		Determined opening pressure of SPMC 244, 5950 psig @ 17 °C
		Commenced heating of SPMC @ 119.4 °C
	23:40	Completed H_2S analysis
28/11/04	00:20	Started flash of SPMC 244, retained water and gas volumes measured
	01:35	Completed SPMC flash, began GOR calculation
	02:00	Commenced gas purge for mercury analysis from SPMC 244
	02:14	Completed gas compositional analysis of SPMC 244
	02:55	Determined opening pressure of SPMC 243, 5800 psig @ 15 °C
	03:02	Initiated purging of UOP Train 2 Dreschels with N_2
	03:12	Completed N_2 purge
	03:30	Completed gas purge for mercury analysis from SPMC 244, analysed gold tube
	03:50	H_2S measured by stain tube

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Date	Time	Event
MDT Logging Operations – Trefoil-1		
	03:55	Commenced UOP sampling from SPMC 243
	04:47	Finished sampling from SPMC, 19.475 Litres flowed
	05:15	Started H_2S analysis of SPMC 243
	05:15	Determined opening pressure of SPMC 273, 5900 psig @ 15 °C
		Commenced heating of SPMC @ 117.5 °C
	06:26	Started flash of SPMC 273, retained water and gas volumes measured
	06:30	Completed H_2S analysis
	06:50	Completed SPMC flash, began GOR calculation
	07:06	Commenced gas purge for mercury analysis from SPMC 273
	07:25	Completed gas compositional analysis of SPMC 273
	08:28	Completed gas purge for mercury analysis from SPMC 273, analysed gold tube
	08:51	Determined opening pressure of SPMC 248, 5850 psig @ 16 °C
	08:55	Started purging of UOP Train 3 Dreschels with N_2
	09:05	Finished N_2 purging
	09:25	H_2S measured by stain tube
	09:32	Commenced UOP sampling from SPMC 248
	10:25	Finished sampling from SPMC, 20.10 Litres flowed
	10:30	Started H_2S analysis of SPMC 248
	11:00	Determined opening pressure of SPMC 272, 4700 psig @ 15 °C
		Commenced heating of SPMC @ 115.9 °C
	11:20	Completed H_2S analysis
	11:25	Started flash of SPMC 272, retained water and gas volumes measured
	12:30	Completed SPMC flash, began GOR calculation
	13:45	Commenced gas purge for mercury analysis from SPMC 272
	13:58	Completed gas compositional analysis of SPMC 272
	14:35	Completed gas purge for mercury analysis from SPMC 272, analysed gold tube
	20:15	Began sample redress of 4 x SPMC for MDT Run 2
	23:25	Completed redress of SPMC's
	23:10	Injected SPMC 244 liquid sample into GC
29/11/04	00:10	Completed liquid compositional analysis for SPMC 244
	01:45	Injected SPMC 273 liquid sample into GC
	02:30	Commenced Priming of 1 x SPMC's for MDT Run 2
	02:45	Completed liquid compositional analysis for SPMC 273
	02:55	Injected SPMC 272 liquid sample into GC
	03:15	Completed liquid compositional analysis for SPMC 272

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Client: Origin Energy
Job No: AOH442
Date: 20th Nov – 1st Dec, 2004
Field: Trefoil
Well: Trefoil-1
Installation: Ensco 102

Date	Time	Event
MDT Logging Operations – Trefoil-1		
	03:45	Completed priming of SPMC
	04:00	Loaded SPMC into MRMS for RIH on Wireline
	05:45	Began RIH
	15:56	Began pumpout at sampling point 1, 3388.7 m MDRT
	18:41	Commenced sampling into SPMC 257 (2.01)
	18:43	Completed sampling into SPMC
	23:57	Began pumpout at sampling point 2, 3100.5 m MDRT
30/11/04	01:35	Commenced sampling into MPSR 0485
	01:39	Completed sampling into MPSR
	06:17	Started pumpout at sampling point 3, 3028.0 m MDRT
	08:26	Began sampling into MPSR 0310 (2.02)
	08:31	Finished sampling into MPSR
	09:14	Began pumpout at sampling point 4, 2999.2 m MDRT
	09:57	Initiated sampling into MPSR 0494 (2.03)
	10:07	Finished sampling into MPSR
	10:43	Started pumpout at sampling point 5, 2988.0 m MDRT
	12:35	Began sampling into MPSR 0501 (2.04)
	12:43	Completed sampling into MPSR
	17:16	Started pumpout at sampling point 6, 2933.0 m MDRT
	19:41	Commenced sampling into MPSR 0316 (2.05)
	19:49	Finished sampling into MPSR
	22:38	Began POOH
	24:00	Tools at surface, commenced rig down
01/12/04	02:25	Determined opening pressure of SPMC 257, 6400psig @ 12 °C
	03:10	Began heating SPMC 257 to 126.1 °C
	03:15	Commenced MPSR sample validations
	03:45	Completed sample validations on MPSR samplers
	04:12	Began SPMC 257 sample transfer into SSB 10007-MA
	04:20	Completed transfer of SPMC
		End of Sampling and Analysis Operations for Trefoil-1
	04:30	Began rig down of Oilphase equipment and pack up
	06:30	Completed pack up and consign to Schlumberger, Perth, WA
	17:50	Oilphase personnel departed Ensco 102 for Perth

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.02 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 26/11/04

Sampling Time: 16:28

MRMS Serial No: BA-11

MRMS Position (Slot): 6

Sample Point: 3264 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 27/11/04

Transfer Time: 16:02

Chamber Type: NR-SPMC

Chamber Serial No: 246

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 240 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 8900 psia @ 23 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4763 psia

BHT: 122.6 ºC

At depth: 3264 m MDRT

Pump Out Vol: 22.82 Litres

Drawdown: 497 psi

Min BHS Pressure: 4266 psia

Pump Out Duration: 71 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite GWR and Solution gas compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.04 **Test No:** Run 1

Bottle No:	N/A	**Sample Nature:**	Stock Tank Water
Sampling Date:	26/11/04	**Flow Period:**	N/A
Sampling Time:	19:21	**Transfer Date:**	27/11/04
MRMS Serial No:	BA-11	**Transfer Time:**	20:10
MRMS Position (Slot):	3	**Chamber Type:**	NR-SPMC
Sample Point:	3142.7 m MDRT	**Chamber Serial No:**	245
		Formation:	N/A

Shipping Conditions

Sample Bottle Type:	1 Litre Glass bottle	**Gas Cap Created:**	N/A
Sample Bottle Volume:	1 Litre	**Fluid Remaining:**	N/A
Sample Volume:	100 cc approx.	**Final Pressure:**	atmos @ ambient

Transfer Conditions

Initial Pressure:	7000 psia @ 23 ºC	**Transfer Duration:**	N/A
Transfer Pressure:	atmos @ ambient	**Apparent Bubble Point:**	N/A @ N/A
Heating & Agitation Time:	N/A	**Transfer Temperature:**	N/A
		Oil Gravity API:	N/A
GOR:	N/A Scf/Sepbbl		
Contamination Level:	N/A		

Production Conditions During Sampling

Initial BHP:	4489 psia	**Drawdown:**	110 psi
BHT:	119.4 ºC	**Min BHS Pressure:**	4379 psia
At depth:	3142.7 m MDRT	**Pump Out Duration:**	116 mins
Pump Out Vol:	25.16 Litres		

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite H2S, R-SH and COS measured on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.05 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 26/11/04

Sampling Time: 19:36

MRMS Serial No: BA-11

MRMS Position (Slot): 2

Sample Point: 3142.7 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 28/11/04

Transfer Time: 00:22

Chamber Type: NR-SPMC

Chamber Serial No: 244

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 100 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 5950 psia @ 17 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: 80 mins

GOR: 16657 m3/ m3

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4489 psia

BHT: 119.4 ºC

At depth: 3142.7 m MDRT

Pump Out Vol: 26.91 Litres

Drawdown: 84 psi

Min BHS Pressure: 4405 psia

Pump Out Duration: 131 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite Mercury, CGR and Compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.07 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 27/11/04

Sampling Time: 02:00

MRMS Serial No: BA-11

MRMS Position (Slot): 1

Sample Point: 3057.2 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 28/11/04

Transfer Time: 03:53

Chamber Type: NR-SPMC

Chamber Serial No: 243

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 105 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 5800 psia @ 15 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4350 psia

BHT: 117.5 ºC

At depth: 3057.2 m MDRT

Pump Out Vol: 46.8 Litres

Drawdown: 260 psi

Min BHS Pressure: 4090 psia

Pump Out Duration: 190 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite H2S, R-SH and COS measured on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.08 **Test No:** Run 1

Bottle No:	N/A	**Sample Nature:**	Stock Tank Water
Sampling Date:	27/11/04	**Flow Period:**	N/A
Sampling Time:	02:14	**Transfer Date:**	28/11/04
MRMS Serial No:	CA-216	**Transfer Time:**	06:26
MRMS Position (Slot):	6	**Chamber Type:**	NR-SPMC
Sample Point:	3057.2 m MDRT	**Chamber Serial No:**	273
		Formation:	N/A

Shipping Conditions

Sample Bottle Type:	1 Litre Glass bottle	**Gas Cap Created:**	N/A
Sample Bottle Volume:	1 Litre	**Fluid Remaining:**	N/A
Sample Volume:	105 cc approx.	**Final Pressure:**	atmos @ ambient

Transfer Conditions

Initial Pressure:	5900 psia @ 15 ºC	**Transfer Duration:**	N/A
Transfer Pressure:	atmos @ ambient	**Apparent Bubble Point:**	N/A @ N/A
Heating & Agitation Time:	71 mins	**Transfer Temperature:**	N/A
		Oil Gravity API:	N/A
GOR:	12742 m3/ m3		
Contamination Level:	N/A		

Production Conditions During Sampling

Initial BHP:	4350 psia	**Drawdown:**	260 psi
BHT:	117.5 ºC	**Min BHS Pressure:**	4090 psia
At depth:	3057.2 m MDRT	**Pump Out Duration:**	200 mins
Pump Out Vol:	49.0 Litres		

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite Mercury, CGR and Compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.09 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 27/11/04

Sampling Time: 08:07

MRMS Serial No: CA-216

MRMS Position (Slot): 1

Sample Point: 3006.48 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 17:07

Transfer Time: 27/11/04

Chamber Type: NR-SPMC

Chamber Serial No: 247

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 220 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 8900 psia @ 23 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4227 psia

BHT: 117.1 ºC

At depth: 3006.48 m MDRT

Pump Out Vol: 28.6 Litres

Drawdown: 167 psi

Min BHS Pressure: 4060 psia

Pump Out Duration: 46 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite GWR and Solution gas compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.11 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 27/11/04

Sampling Time: 11:47

MRMS Serial No: CA-216

MRMS Position (Slot): 2

Sample Point: 2968.7 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 28/11/04

Transfer Time: 09:32

Chamber Type: NR-SPMC

Chamber Serial No: 248

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 15 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 5800 psia @ 16 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4210 psia

BHT: 115.9 ºC

At depth: 2968.7 m MDRT

Pump Out Vol: 37.44 Litres

Drawdown: 49 psi

Min BHS Pressure: 4161 psia

Pump Out Duration: 69 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite H2S, R-SH and COS measured on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.12 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 27/11/04

Sampling Time: 11:53

MRMS Serial No: CA-216

MRMS Position (Slot): 3

Sample Point: 2968.7 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 28/11/04

Transfer Time: 11:25

Chamber Type: NR-SPMC

Chamber Serial No: 272

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 20 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 4700 psia @ 15 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: 25 mins

GOR: 10795 m3/ m3

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4210 psia

BHT: 115.9 ºC

At depth: 2968.7 m MDRT

Pump Out Vol: 40.95 Litres

Drawdown: 49 psi

Min BHS Pressure: 4161 psia

Pump Out Duration: 75 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite Mercury, CGR and Compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.13 **Test No:** N/A

Bottle No: N/A

Sampling Date: 21/11/04

Sampling Time: N/A

MRMS Serial No: N/A

MRMS Position (Slot): N/A

Sample Point: N/A

Sample Nature: Mud Sample

Flow Period: N/A

Transfer Date: N/A

Transfer Time: N/A

Chamber Type: N/A

Chamber Serial No: N/A

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 900 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Transfer Conditions

Initial Pressure: N/A @ N/A

Transfer Pressure: N/A @ N/A

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: N/A

BHT: N/A

At depth: N/A

Pump Out Vol: N/A

Drawdown: N/A

Min BHS Pressure: N/A

Pump Out Duration: N/A

Remarks

Mud sample provided by Mud Engineer

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 2.01 **Test No:** Run 2

Bottle No: 10007-MA

Sampling Date: 29/11/04

Sampling Time: 18:41

MRMS Serial No: CA-216

MRMS Position (Slot): 4

Sample Point: 3388.7 m MDRT

Sample Nature: Monophasic Bottomhole Sample

Flow Period: N/A

Transfer Date: 01/12/04

Transfer Time: 04:12

Chamber Type: NR-SPMC

Chamber Serial No: 257

Formation: N/A

Shipping Conditions

Sample Bottle Type: Non-reactive (NSB)

Sample Bottle Volume: 820 cc

Sample Volume: 210 cc

Gas Cap Created: 60 cc (Nitrogen)

Fluid Remaining: 530 cc (Water/ Glycol)

Final Pressure: 7650 psia @ 11 ºC

Transfer Conditions

Initial Pressure: 6400 psia @ 12 ºC

Transfer Pressure: 7500 psia @ 126 ºC

Heating & Agitation Time: 62 mins

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: 8 mins

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: 126 ºC

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4880 psia

BHT: 126.1 ºC

At depth: 3388.7 m MDRT

Pump Out Vol: 22.23 Litres

Drawdown: 3484 psi

Min BHS Pressure: 1396 psia

Pump Out Duration: 105 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Sample Analysis Results

Excerpt from PVT Express Report

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Schlumberger

Wellsite Analysis

Sample: 1.02

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2	4.11	Sampler Serial No:	SPMC 246
CO2	5.70	Sample Point:	3264.0 m MDBRT
H2S	0.00	Bottom Hole Press:	4762.61 psia
C1	80.31	Bottom Hole Temp:	122.8 °C
C2	6.26	Fluid Type:	Water trace of Gas
C3	3.03		
iC4	0.27	Resistivity: @ 24.8 °C	0.209 Ωm
C4	0.24	H2S by UOP:	n.m. ppm vol
iC5	0.03	H2S by length of stain:	n.m. ppm vol
C5	0.06	CO2 by length of stain:	n.m. % (v/v)
C6	0.00	Mercury:	n.m. ng/m3
C7	0.00	GWR: @ Std Cond.	1.45 m3/m3
C8	0.00	GOR: @ Std Cond.	n.m. m3/m3
C9	0.00		
C10	0.00	Retained Fluid Type	Water
C11	0.00	Retained Fluid Volume (cc)	240
C12+	0.00		

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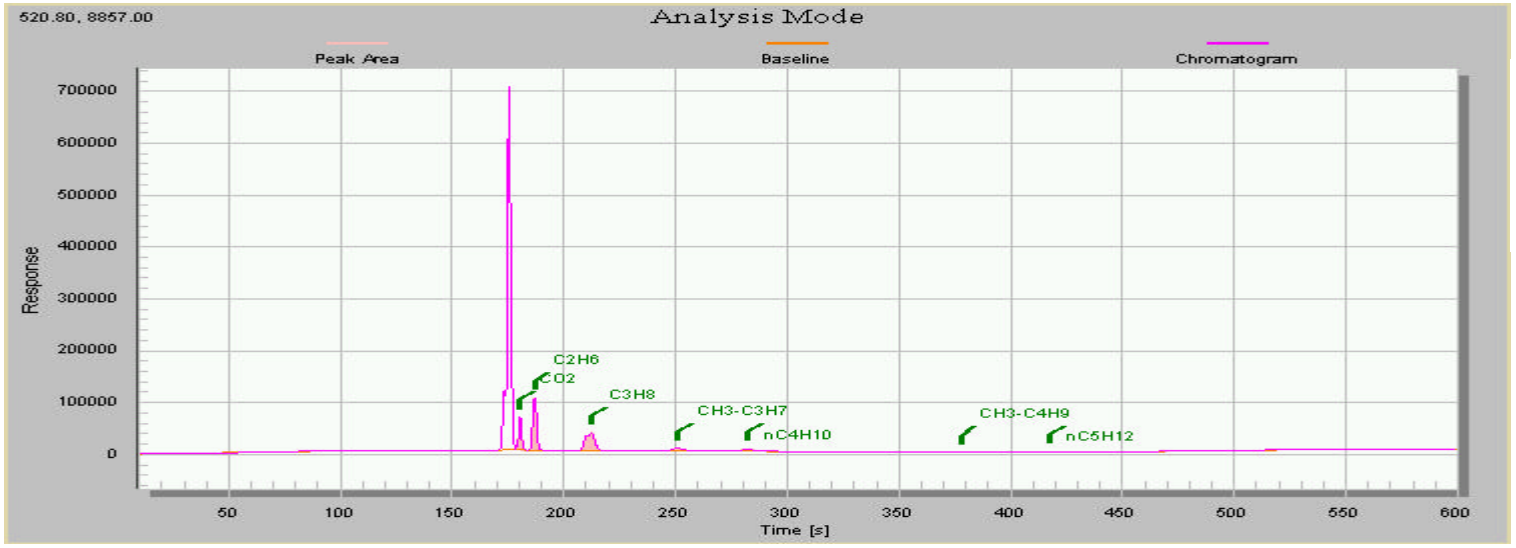

Figure 5.1
Sample: 1.02
Description: Gas sample capilliary column for hydrocarbon detection (column 2)

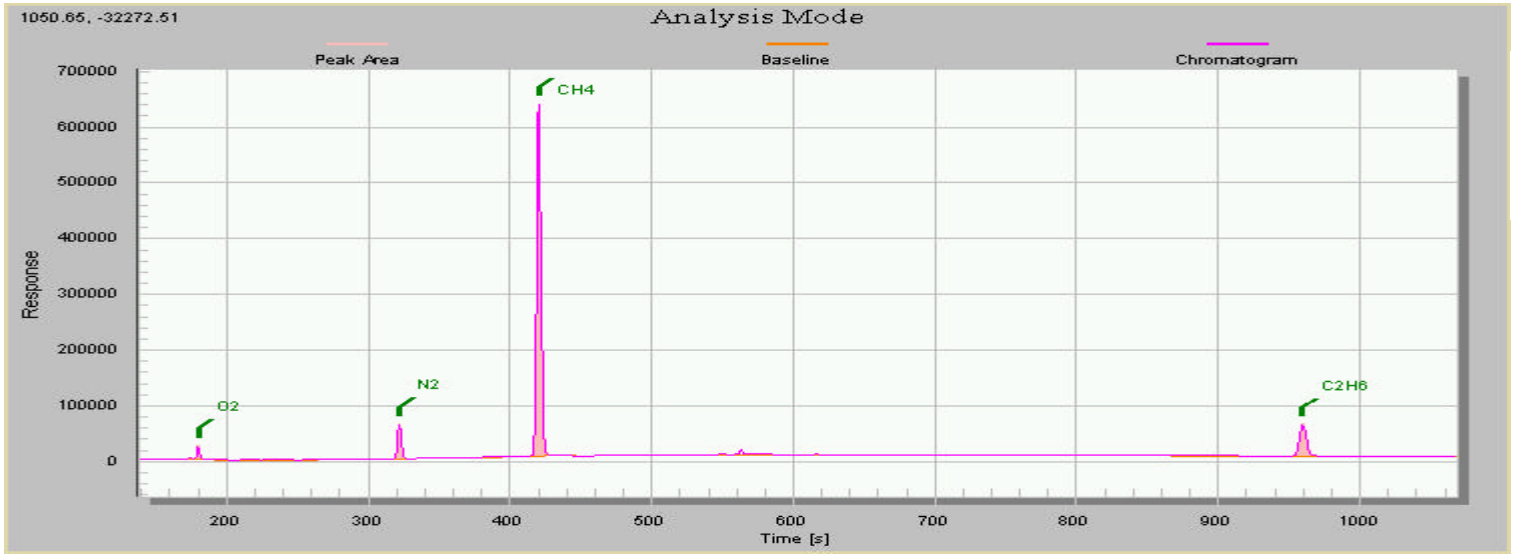

Figure 5.2
Sample: 1.02
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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Schlumberger

Wellsite Analysis

Sample: 1.04

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2		Sampler Serial No:	SPMC 245
CO2	n.m.	Sample Point:	3142.7 m MDBRT
H2S		Bottom Hole Press:	4489.02 psia
C1		Bottom Hole Temp:	119.4 °C
C2		Fluid Type:	Gas trace of water
C3			
iC4		Resistivity: @ 20.9 °C	0.205 Ωm
C4		H2S by UOP:	bdl ppm vol
iC5		H2S by length of stain:	0.00 ppm vol
C5		CO2 by length of stain:	3.00 % (v/v)
C6		Mercury:	n.m. ng/m3
C7		GWR: @ Std Cond.	n.m. m3/m3
C8		GOR: @ Std Cond.	n.m. m3/m3
C9			
C10		Retained Fluid Type	Water
C11		Retained Fluid Volume (cc)	100
C12+			

* bdl -below detectable limit

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Wellsite Analysis

Sample: 1.05

Reservoir Fluid Composition	
Comp.	**Mole %**
N2	0.00
CO2	2.67
H2S	0.00
CH4	82.59
C2H6	8.27
C3H8	3.65
iC4H10	0.53
nC4H10	0.45
iC5H12	0.23
nC5H12	0.12
C6H14	0.23
C7H16	0.36
C8H18	0.41
C9H20	0.06
C10H22	0.06
C11H24	0.05
C12H26	0.04
C13H28	0.04
C14H30	0.04
C15H32	0.04
C16H34	0.03
C17H36	0.02
C18H38	0.02
C19H40	0.02
C20H42	0.01
C21H44	0.01
C22H46	0.01
C23H48	0.01
C24H50	0.01
C25H52	0.01
C26H54	0.01
C27H56	0.01
C28H58	0.00
C29H60	0.00
C30H62	0.00
C31H64	0.00
C32H66	0.00
C33H68	0.00
C34H70	0.00
C35H72	0.00
C36+	0.00

Physical Properties	
Sampler Serial No:	SPMC 244
Sample Point:	3142.7 m MDBRT
Bottom Hole Press:	4489.02 psia
Bottom Hole Temp:	119.4 °C
Fluid Type:	Gas trace of Water
Resistivity: @ 28.0 °C	0.200 Ωm
H2S by UOP:	n.m. ppm vol
H2S by length of stain:	n.m. ppm vol
CO2 by length of stain:	n.m. % (v/v)
Mercury:	473.80 ng/m3
GWR: @ Std Cond.	n.m. m3/m3
GOR: @ Std Cond.	16657 m3/m3
STL Density: @ Std Cond.	820 kg/m3
Retained Fluid Type	Water + trace conden.
Retained Fluid Volume (cc)	100

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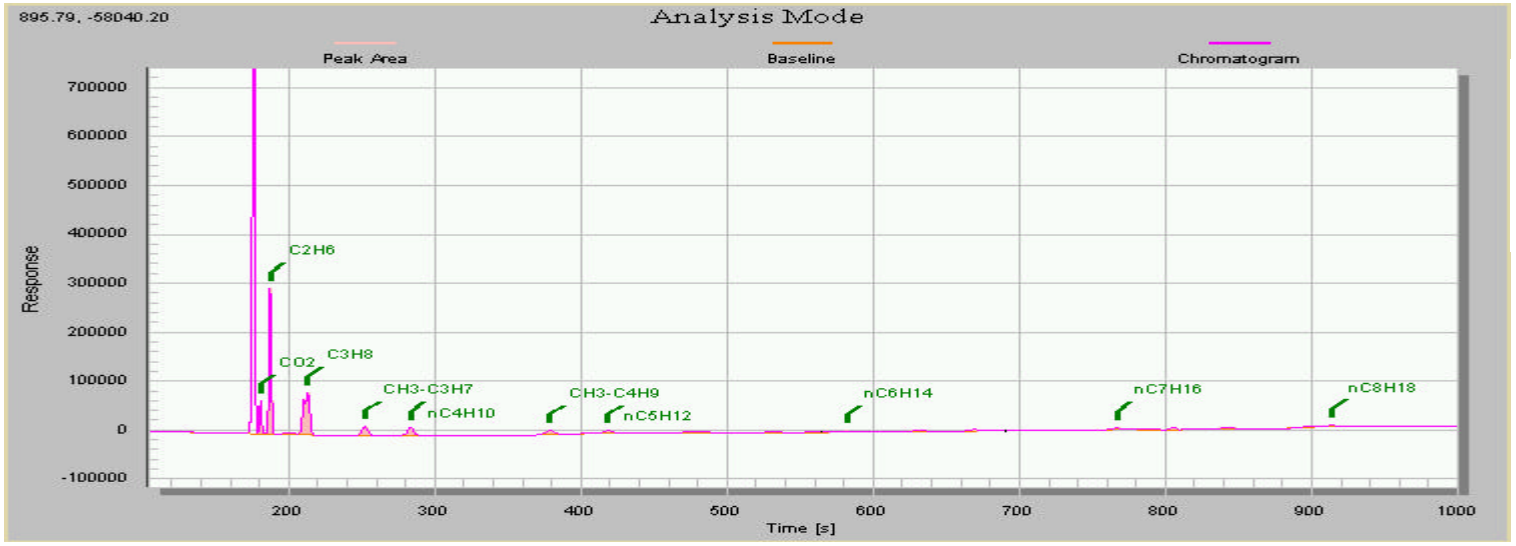

Figure 5.3
Sample: 1.05
Description: Gas sample capilliary column for hydrocarbon detection (column 2)

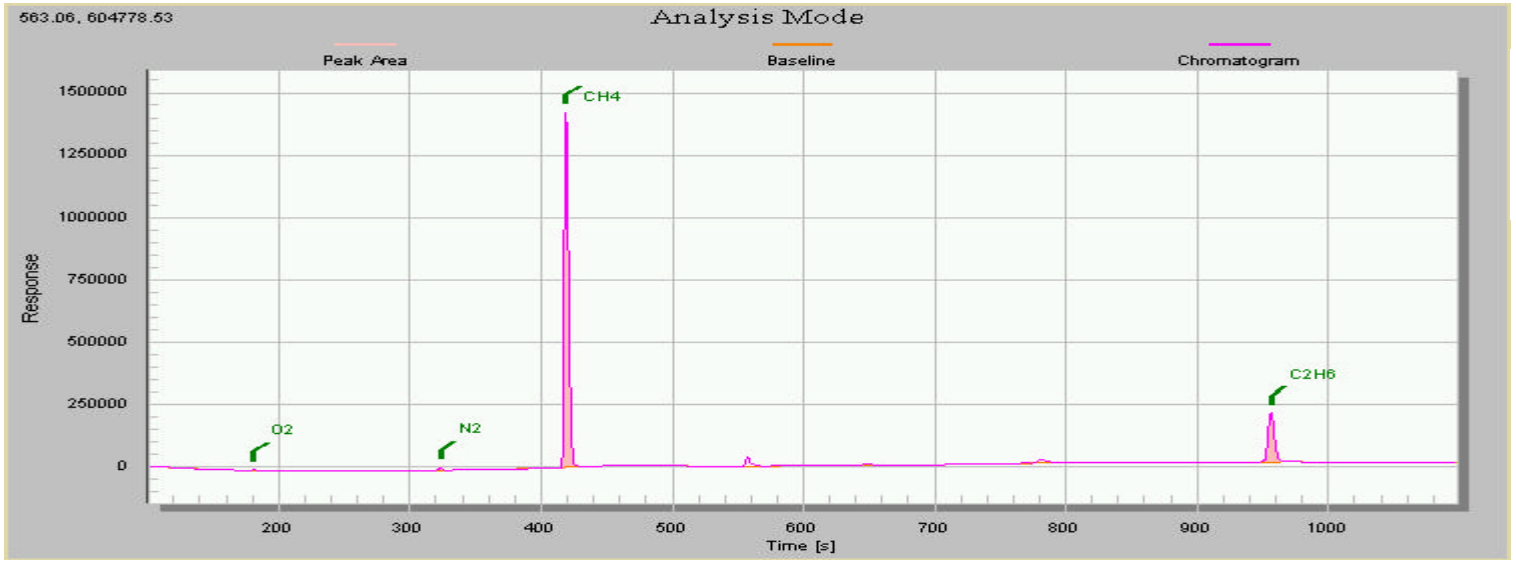

Figure 5.4
Sample: 1.05
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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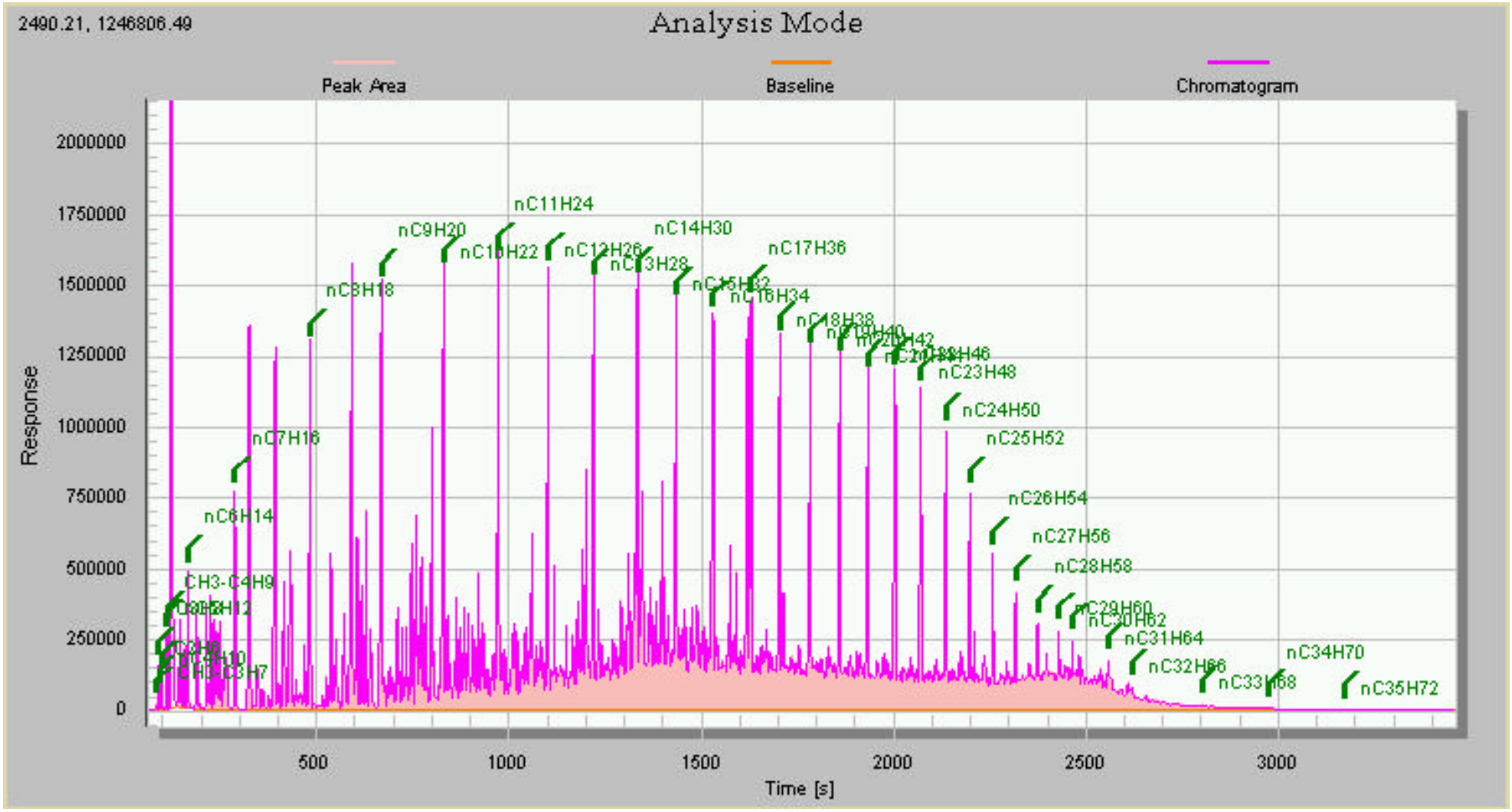

Figure 5.5
Sample: 1.05
Description: Liquid sample capillary column for hydrocarbon detection (column 1)

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Schlumberger

Wellsite Analysis

Sample: 1.07

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2		Sampler Serial No:	SPMC 243
CO2		Sample Point:	3057.2 m MDBRT
H2S	n.m.	Bottom Hole Press:	4354.26 psia
C1		Bottom Hole Temp:	117.5 °C
C2		Fluid Type:	Gas trace of water
C3			
iC4		Resistivity: @ 28.1 °C	0.211 Ωm
C4		H2S by UOP:	bdl ppm vol
iC5		H2S by length of stain:	0.00 ppm vol
C5		CO2 by length of stain:	3.00 % (v/v)
C6		Mercury:	n.m. ng/m3
C7		GWR: @ Std Cond.	n.m. m3/m3
C8		GOR: @ Std Cond.	n.m. m3/m3
C9			
C10		Retained Fluid Type	Water + trace conden.
C11		Retained Fluid Volume (cc)	105
C12+			

* bdl -below detectable limit

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Schlumberger

Wellsite Analysis

Sample: 1.08

Reservoir Fluid Composition	
Comp.	**Mole %**
N2	0.00
CO2	2.58
H2S	0.00
CH4	81.93
C2H6	7.63
C3H8	3.92
iC4H10	0.95
nC4H10	0.74
iC5H12	0.35
nC5H12	0.20
C6H14	0.44
C7H16	0.40
C8H18	0.29
C9H20	0.09
C10H22	0.08
C11H24	0.05
C12H26	0.04
C13H28	0.04
C14H30	0.03
C15H32	0.03
C16H34	0.02
C17H36	0.02
C18H38	0.02
C19H40	0.02
C20H42	0.01
C21H44	0.01
C22H46	0.01
C23H48	0.01
C24H50	0.01
C25H52	0.01
C26H54	0.01
C27H56	0.00
C28H58	0.00
C29H60	0.00
C30H62	0.00
C31H64	0.00
C32H66	0.00
C33H68	0.00
C34H70	0.00
C35H72	0.00
C36+	0.05

Physical Properties	
Sampler Serial No:	SPMC 273
Sample Point:	3057.2 m MDBRT
Bottom Hole Press:	4354.26 psia
Bottom Hole Temp:	117.5 °C
Fluid Type:	Gas trace of water
Resistivity: @ 26.1 °C	0.222 Ωm
H2S by UOP:	n.m. ppm vol
H2S by length of stain:	n.m. ppm vol
CO2 by length of stain:	n.m. % (v/v)
Mercury:	501.80 ng/m3
GWR: @ Std Cond.	n.m. m3/m3
GOR: @ Std Cond.	12742 m3/m3
STL Density: @ Std Cond.	820 kg/m3
Retained Fluid Type	Water + trace conden.
Retained Fluid Volume (cc)	105

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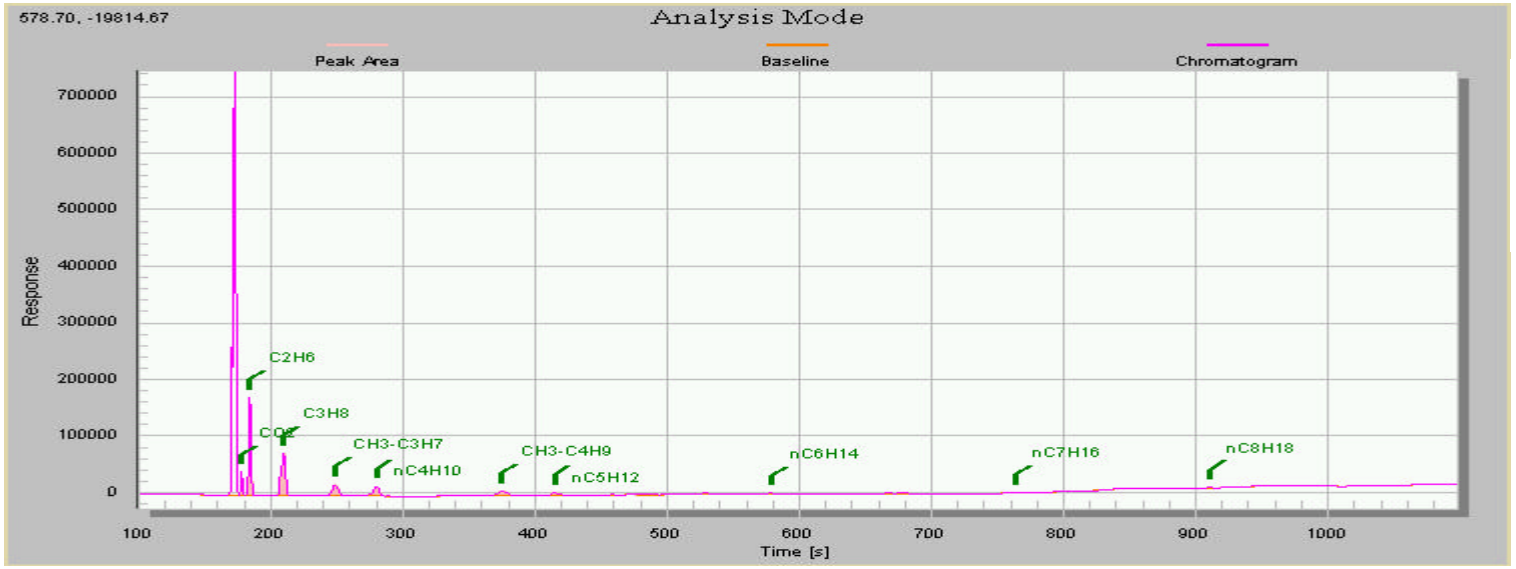

Figure 5.6
Sample: 1.08
Description: Gas sample capillary column for hydrocarbon detection (column 2)

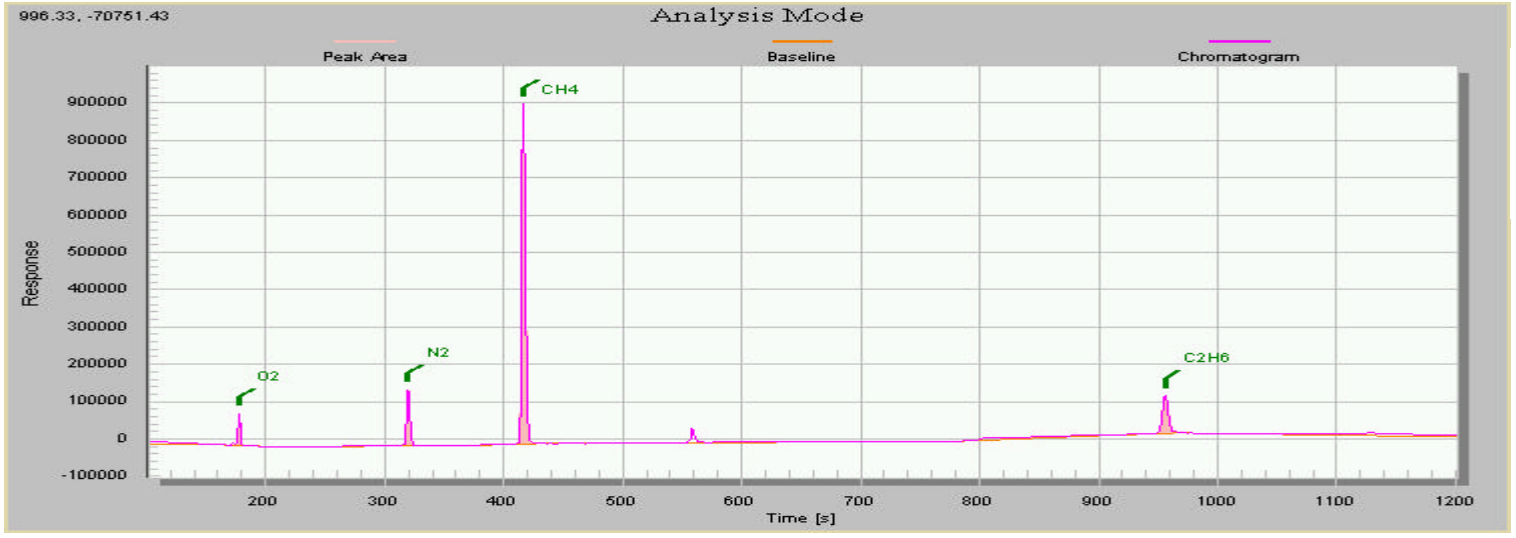

Figure 5.7
Sample: 1.08
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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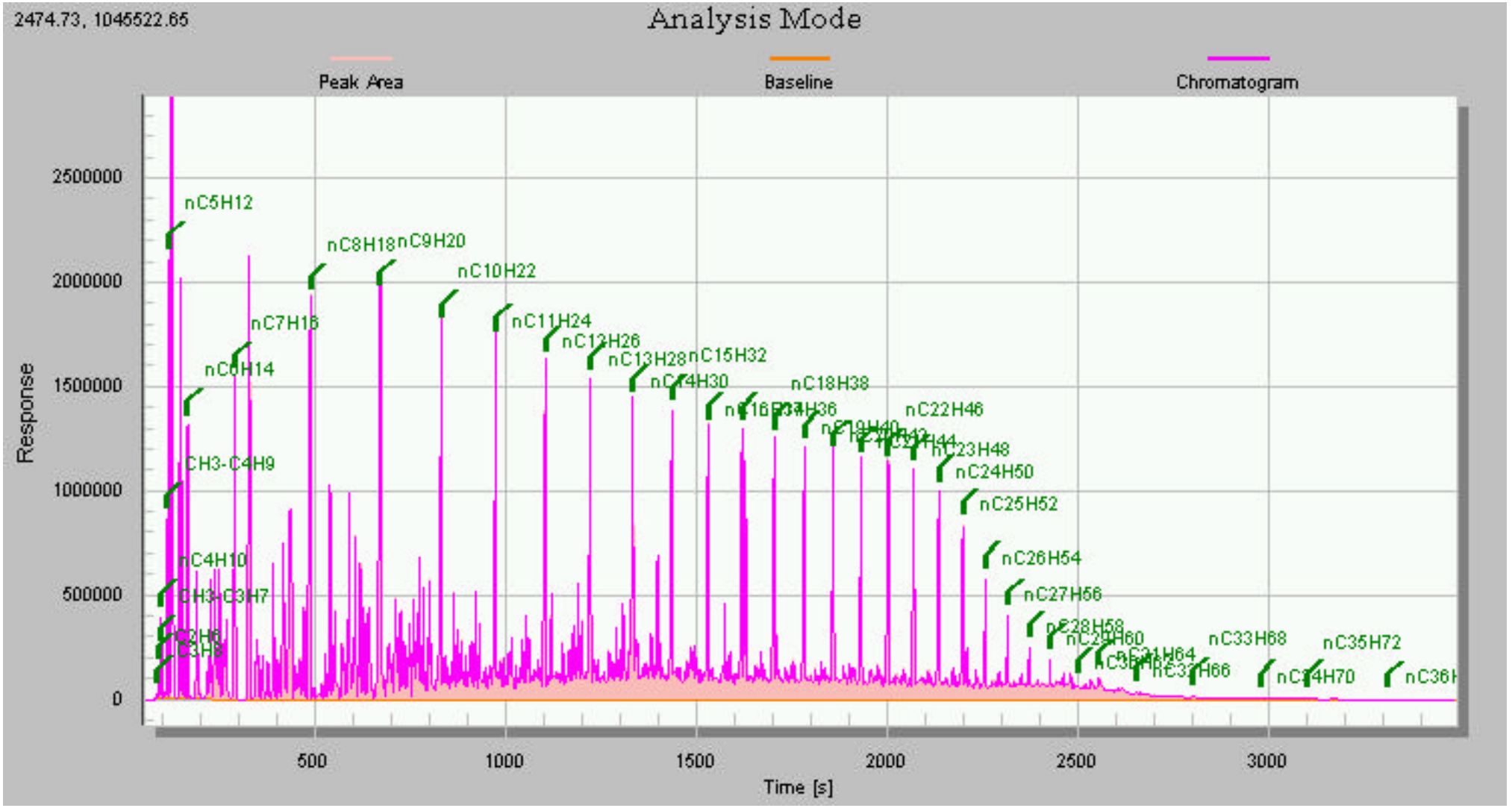

Figure 5.8
Sample: 1.08
Description: Liquid sample capillary column for hydrocarbon detection (column 1)

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not be disclosed or reproduced without the client's permission

Schlumberger

Wellsite Analysis

Sample: 1.09

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2	0.00	Sampler Serial No:	SPMC 247
CO2	8.83	Sample Point:	3006.5 m MDBRT
H2S	0.00	Bottom Hole Press:	4227.30 psia
C1	87.27	Bottom Hole Temp:	117.1 °C
C2	2.65	Fluid Type:	Gas trace of water
C3	1.11		
iC4	0.07	Resistivity: @ 25.0 °C	0.234 Ωm
C4	0.06	H2S by UOP:	n.m. ppm vol
iC5	0.01	H2S by length of stain:	n.m. ppm vol
C5	0.01	CO2 by length of stain:	n.m. % (v/v)
C6	0.00	Mercury:	n.m. ng/m3
C7	0.00	GWR: @ Std Cond.	5.30 m3/m3
C8	0.00	GOR: @ Std Cond.	n.m. m3/m3
C9	0.00		
C10	0.00	Retained Fluid Type	Water
C11	0.00	Retained Fluid Volume (cc)	220
C12+	0.00		

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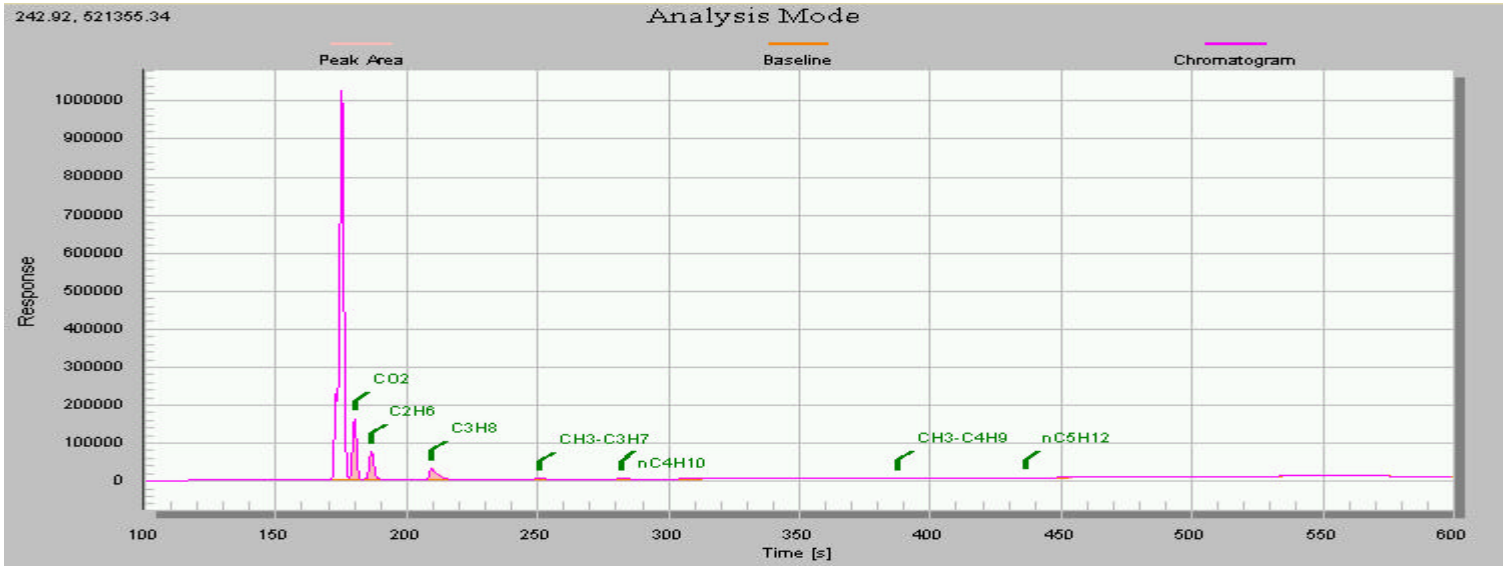

Figure 5.9
Sample: 1.09
Description: Gas sample capillary column for hydrocarbon detection (column 2)

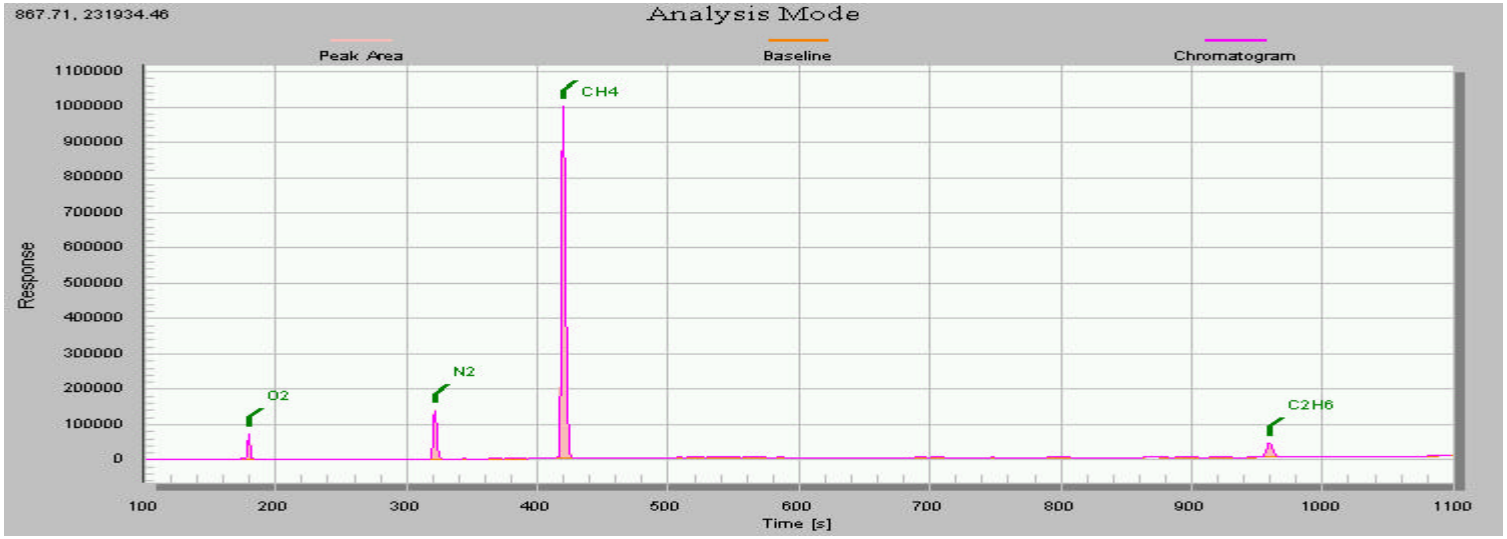

Figure 5.10
Sample: 1.09
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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Schlumberger

Wellsite Analysis

Sample: 1.11

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2		Sampler Serial No:	SPMC 248
CO2	n.m.	Sample Point:	2968.7 m MDBRT
H2S		Bottom Hole Press:	4210.30 psia
C1		Bottom Hole Temp:	115.9 °C
C2		Fluid Type:	Gas trace of water
C3			
iC4		Resistivity: @ 26.1 °C	0.339 Ωm
C4		H2S by UOP:	bdl ppm vol
iC5		H2S by length of stain:	0.00 ppm vol
C5		CO2 by length of stain:	3.10 % (v/v)
C6		Mercury:	n.m. ng/m3
C7		GWR: @ Std Cond.	n.m. m3/m3
C8		GOR: @ Std Cond.	n.m. m3/m3
C9			
C10		Retained Fluid Type	Water/ cond/ sediment
C11		Retained Fluid Volume (cc)	15
C12+			

* bdl -below detectable limit

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Schlumberger

Wellsite Analysis

Sample: 1.12

Reservoir Fluid Composition	
Comp.	**Mole %**
N2	0.58
CO2	2.13
H2S	0.00
CH4	79.19
C2H6	8.50
C3H8	4.45
iC4H10	1.08
nC4H10	0.99
iC5H12	0.52
nC5H12	0.31
C6H14	0.49
C7H16	0.50
C8H18	0.56
C9H20	0.13
C10H22	0.11
C11H24	0.07
C12H26	0.06
C13H28	0.05
C14H30	0.04
C15H32	0.04
C16H34	0.03
C17H36	0.02
C18H38	0.02
C19H40	0.02
C20H42	0.01
C21H44	0.01
C22H46	0.01
C23H48	0.01
C24H50	0.01
C25H52	0.01
C26H54	0.00
C27H56	0.00
C28H58	0.00
C29H60	0.00
C30H62	0.00
C31H64	0.00
C32H66	0.00
C33H68	0.00
C34H70	0.00
C35H72	0.00
C36+	0.04

Physical Properties	
Sampler Serial No:	SPMC 272
Sample Point:	2968.7 m MDBRT
Bottom Hole Press:	4210.30 psia
Bottom Hole Temp:	115.9 °C
Fluid Type:	Gas trace of water
Resistivity: @ 26.3 °C	0.338 Ωm
H2S by UOP:	n.m. ppm vol
H2S by length of stain:	n.m. ppm vol
CO2 by length of stain:	n.m. % (v/v)
Mercury:	772.80 ng/m3
GWR: @ Std Cond.	n.m. m3/m3
GOR: @ Std Cond.	10795 m3/m3
STL Density: @ Std Cond.	794 kg/m3
Retained Fluid Type	Water/ cond/ sediment
Retained Fluid Volume (cc)	20

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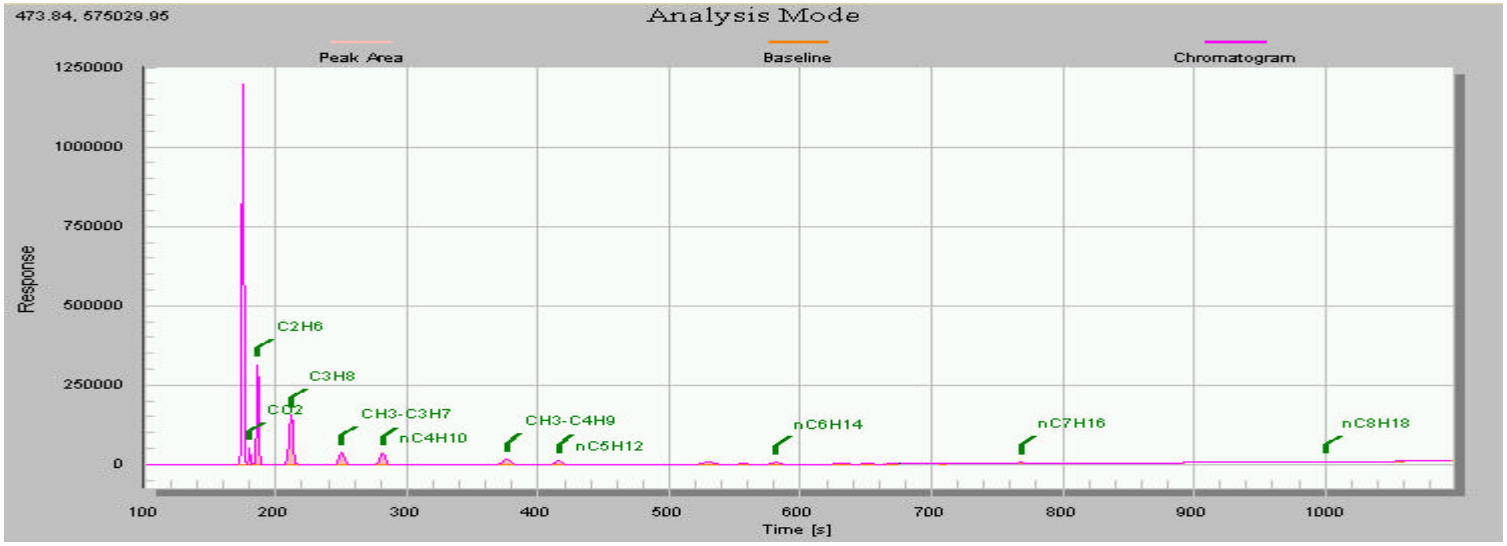

Figure 5.11
Sample: 1.12
Description: Gas sample capillary column for hydrocarbon detection (column 2)

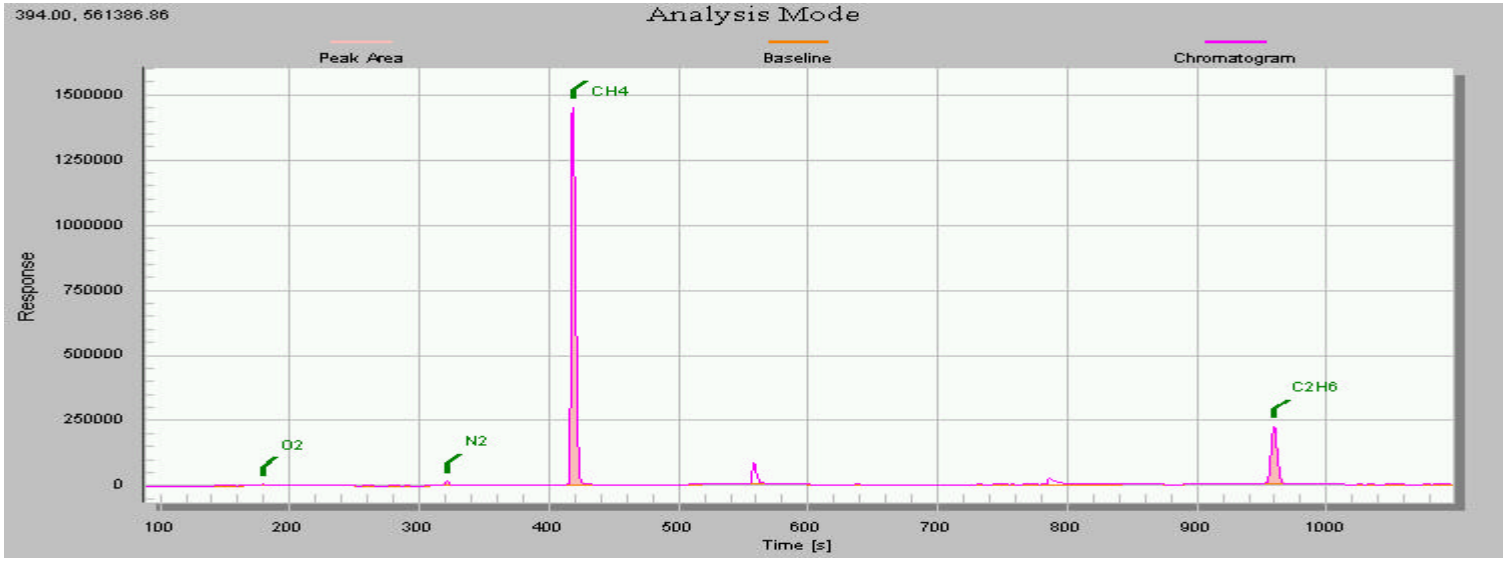

Figure 5.12
Sample: 1.12
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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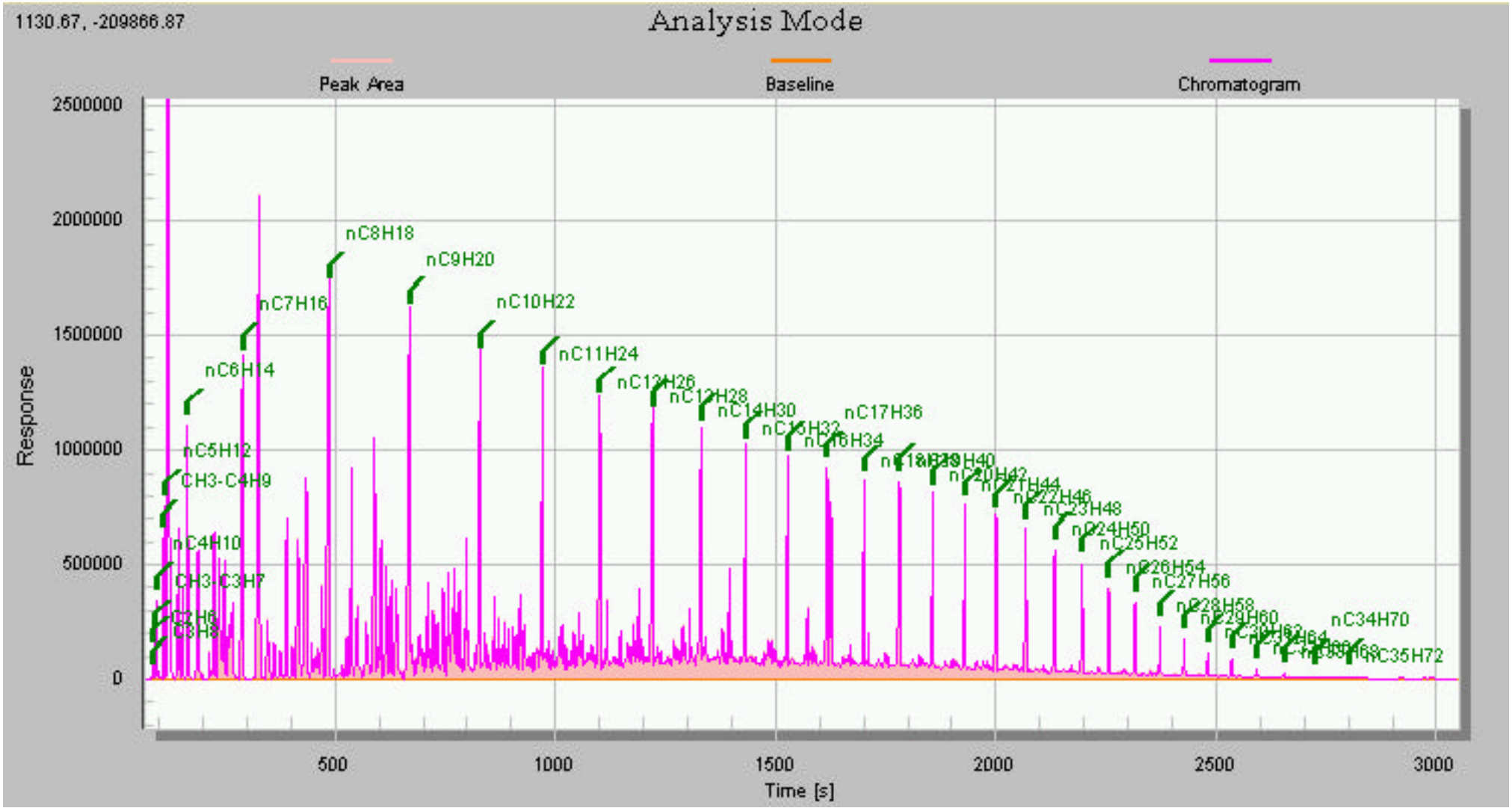

Figure 5.13
Sample: 1.12
Description: Liquid sample capillary column for hydrocarbon detection (column 1)

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not be disclosed or reproduced without the client's permission

Client	Origin Energy	**Field**	Trefoil
Job No	AOH442	**Well**	Trefoil-1
Date	20th Nov - 1st Dec, 2004	**Installation**	Ensco 102

MDT Sampling Toolstring - Run 1

MDT - MRMS Modules

MRMS 1 - S/N: MRMS CA 216

Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	SPMC	247	12,000	11.1
2	SPMC	248	12,000	10.2
3	SPMC	272	12,000	7.2
4	MPSR	0192	N/A	12.5
5	MPSR	0113	N/A	12.0
6	SPMC	273	12,000	10.3

MRMS 2 - S/N: MRMS BA 11

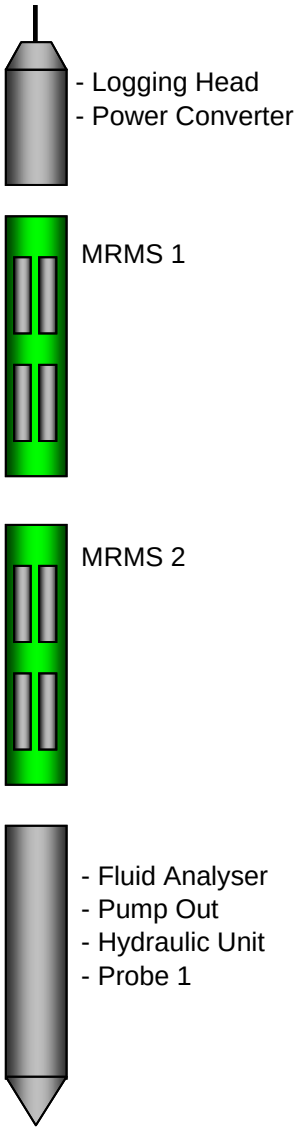
Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	SPMC	243	12,000	11.1
2	SPMC	244	12,000	10.2
3	SPMC	245	12,000	7.2
4	MPSR	0187	N/A	12.5
5	MPSR	0122	N/A	12.0
6	SPMC	246	12,000	10.3

***NB:** "Trapped Vol" is the volume of distilled water present between the "NC" valve and the sample piston that will report to the sample chamber on the commencement of sampling

Tools configured for **Low Shock** sampling

SPMC Charge Parameters

Estimated Bottomhole Pressure	5,041	psia
Estimated Bottomhole Temp		°C
Expected Fluid Type	Dry Gas	
Assumed Fluid Shrinkage	40	%
Calc'd Recovery Pressure at T(amb)	6,000	psig



MDT - MRSC Modules

Module No	Type	Serial No	Volume (Gal)	Agitation Ring?
1	not run			
2	not run			
3	not run			

Remarks

MDT Toolstring diagram is indicative only and is not a true representation of the toolstring used
Estimated data calculated by Oilphase Specialist based on information supplied by Schlumberger Wireline
MDT Toolstring run in hole on Wireline

Client	Origin Energy	**Field**	Trefoil
Job No	AOH442	**Well**	Trefoil-1
Date	20th Nov - 1st Dec, 2004	**Installation**	Ensco 102

MDT Sampling Toolstring - Run 2

MDT - MRMS Modules

MRMS 1 - S/N: MRMS CA 216

Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	MPSR	0485	N/A	11.1
2	MPSR	0310	N/A	10.2
3	MPSR	0494	N/A	7.2
4	SPMC	257	12,000	12.5
5	MPSR	0501	N/A	12.0
6	MPSR	0316	N/A	10.3

MRMS 2 - S/N: Not Run

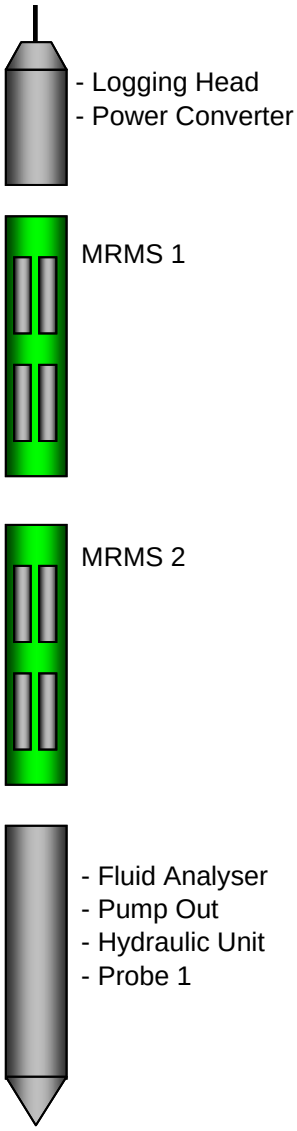
Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1				
2				
3				
4				
5				
6				

***NB:** "Trapped Vol" is the volume of distilled water present between the "NC" valve and the sample piston that will report to the sample chamber on the commencement of sampling

Tools configured for **Low Shock** sampling

SPMC Charge Parameters

Estimated Bottomhole Pressure	5,041	psia
Estimated Bottomhole Temp		°C
Expected Fluid Type	Dry Gas	
Assumed Fluid Shrinkage	40	%
Calc'd Recovery Pressure at T(amb)	6,000	psig



MDT - MRSC Modules

Module No	Type	Serial No	Volume (Gal)	Agitation Ring?
1	not run			
2	not run			
3	not run			

Remarks

MDT Toolstring diagram is indicative only and is not a true representation of the toolstring used
Estimated data calculated by Oilphase Specialist based on information supplied by Schlumberger Wireline
MDT Toolstring run in hole on Wireline

APPENDIX 12: RIG MOVE & POSITIONING REPORT

FUGRO SURVEY PTY LTD ABN 81 009 172 990

REPORT FOR THE ENSCO 102 RIG MOVE TO THE TREFOIL-1 LOCATION

FUGRO SURVEY JOB NO. – P0133

Client : Origin Energy Resources Ltd
c/o Australian Drilling Associates Pty Ltd
Suite 2, Level 9
470 Collins Street
Melbourne
Victoria 3000

Date of Survey : 3 – 29 October 2004

0	Final			5 November 2004
Rev	Description	Checked	Approved	Date

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ABSTRACT

Between 3 and 29 October 2004, Fugro Survey Pty Ltd (Fugro) provided equipment and personnel for the jack-up Mobile Offshore Drilling Unit Ensco 102, rig move from Yolla A Platform to Trefoil-1 location in Permit T/P18 in the Bass Strait, Australia.

Surface positioning was achieved utilising Fugro's Starfix Differential GPS Positioning System (DGPS) and interfaced to Fugro's MRDGPS multiple reference station positioning software and Fugro's Seis navigation software.

The final position for the drill stem derived from DGPS observations at the Trefoil-1 location is:

Location Name:	**Trefoil-1**
Easting (m)	361026.14
Northing (m):	5586267.85
Latitude:	39° 51' 44.12" S
Longitude:	145° 22' 30.73" E
Rig Heading:	52.5° (True)

This position is 78.18m on a bearing of 182.4° (True) from the proposed Trefoil-1 location.

All coordinates in this report are quoted in GDA94 datum and MGA Zone 55 (CM 147° E) projection, unless otherwise stated.

1.0 INTRODUCTION

Fugro Survey Pty Ltd (Fugro) was contracted by Origin Energy Resources Ltd (Origin) to provide navigation and positioning survey services on board the jack-up Mobile Offshore Drilling Unit (MODU) *Ensco 102*, during the rig move to Trefoil-1 location in Permit T/P18 Bass Strait, Australia.

The rig was moved from Yolla A Platform to Trefoil-1. A general location diagram is shown as 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

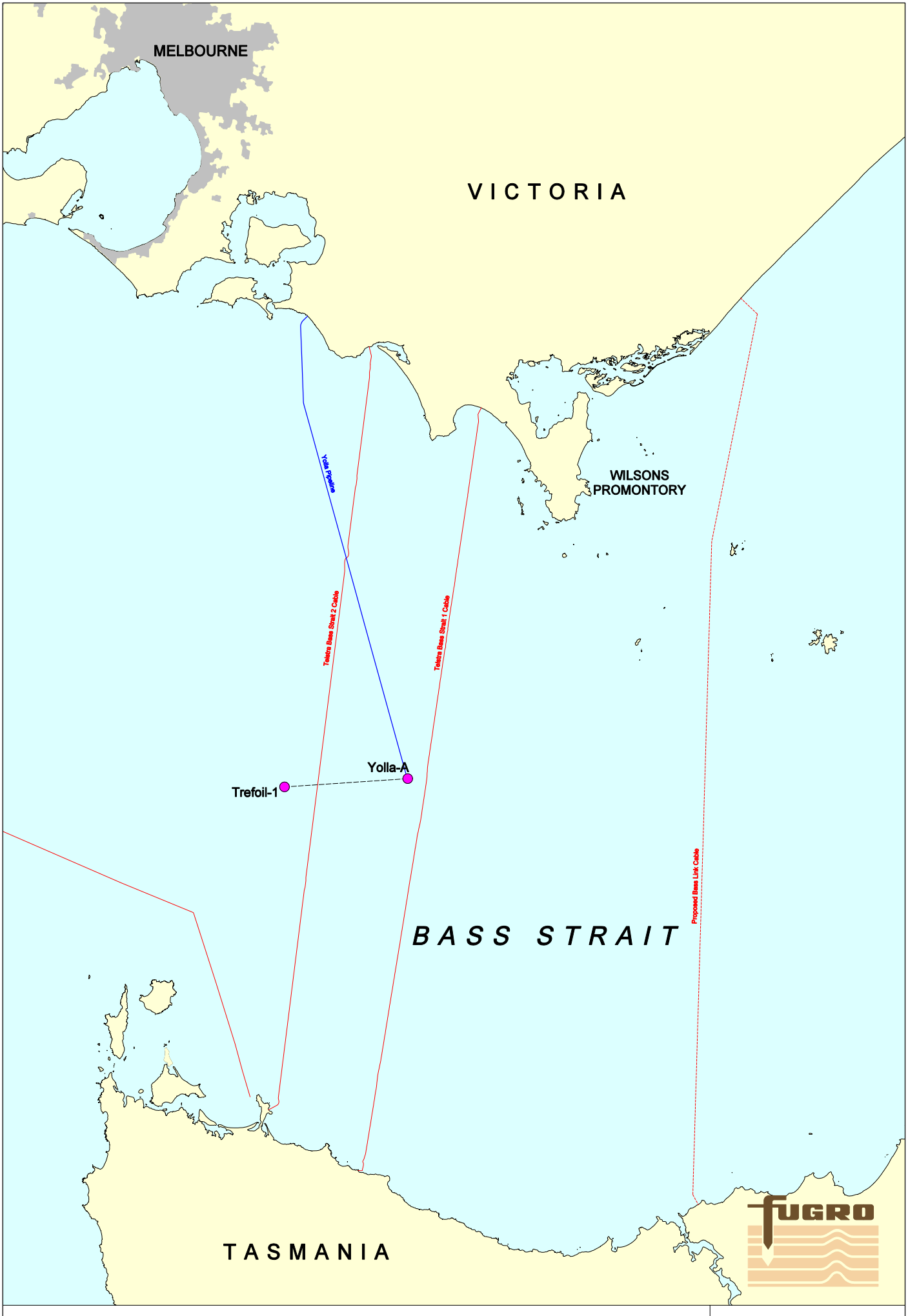
Personnel and equipment were provided on a 24 hour per day basis for:

- Final rig surface positioning at Trefoil-1 location using DGPS observations.
- Final reporting of the positioning results.

1.2 Sequence of Events

On 4 October 2004, N. Gregory and V. Knight arrived on board the *Ensco 102*. Equipment was operational and calibrations complete on 5 October 2004. The rig departed Yolla A Platform location on 16 October 2004. The rig was positioned at Trefoil-1 on 25 October 2004. Fugro personnel departed the rig on 29 October 2004.

Further details of Fugro's involvement in the rig move are presented in the Daily Operations Reports included in Appendix A.



GENERAL LOCATION DIAGRAM

FIGURE 1–1

u:\p0133 origin trefoil-1\dgn\figure\report\figure1-1.dgn

2.0 RESULTS

2.1 Final Position

The final position of the *Ensco 102* drill stem was established by calculating the mean position from one hour of DGPS data between 09:55 and 10:55 on 29 October 2004. During this period, calculated drill stem coordinates from the primary (and secondary) positioning system(s) were logged at five second intervals in Seis. Data from the primary positioning system was used for the final position calculation.

Differential corrections for the GPS were derived using a multi-reference solution with base station data from Melbourne, Ceduna, Bathurst and Cobar.

GDA94 geographical positions for Trefoil-1 location are shown in Table 2-1.

GDA94			
Position	**Method**	**Latitude**	**Longitude**
Drill Stem at Surface	DGPS	39° 51' 44.12" S	145° 22' 30.73" E
Proposed Location	-	39° 51' 41.58" S	145° 22' 30.87" E

TABLE 2-1 : GEOGRAPHICAL POSITIONS FOR TREFOIL-1

GDA94 grid coordinates (CM 147° E) for Trefoil-1 location are shown in Table 2-2.

GDA94, MGA, CM 147°E			
Position	**Method**	**Easting (m)**	**Northing (m)**
Drill Stem at Surface	DGPS	361026.14	5586267.85
Proposed Location	-	361028.00	5586346.00

TABLE 2-2 : GRID COORDINATES FOR TREFOIL-1

This position is 78.18m at a bearing of 182.4° (True) 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 *Ensco 102* was established by calculating the average heading during one hour of corrected gyro compass readings logged between 09:55 and 10:55 on 29 October 2004. During this period gyro readings were logged at five second intervals in Seis.

The *Ensco 102's* rig heading is shown in Table 2-3.

Description	**Method**	**True**	**Grid**
Rig Heading	Gyro	52.5°	51.5°
Proposed Heading	-	110.0°	-

TABLE 2-3 : RIG HEADING

The difference between the proposed and final rig headings was primarily a result of the rig being rotated to improve stability.

3.0 SAFETY

All work undertaken by Fugro personnel during the project was performed within the guidelines of Fugro's Safety Policy, as defined in Fugro's Safety Manual (SMS-P01) and Offshore Survey Safety Practices (SMS-SP26).

Fugro personnel worked within all project safety guidelines and plans adopted by Origin and Ensco Australia Pty Ltd.

No safety incidents involving Fugro personnel were reported during the project.

Fugro personnel attended a vessel induction/pre-rig move meeting/muster drill whilst on board.

4.0 SURVEY PROCEDURES

4.1 Mobilisation

Mobilisation on the rig commenced on 4 October 2004. Equipment was set up and checks were carried out. All calibrations and system checks were completed by 17:30 on 5 October 2004.

4.2 General Survey Procedures

The towing vessel *Ray Jay Hope* brought the *Ensco 102* onto location. The *Invincible Tide* was used to assist in final manoeuvring. After preloading operations, jacking up and skidding out, final position data was logged between 09:55 and 10:55 on 29 October 2004. A rig positioning field report was issued to the ADA Company Representative (see Appendix B).

4.3 Demobilisation

Equipment on board the rig was powered down on 29 October 2004. Prior to Fugro personnel departing the rig, checks were made to ensure that all equipment was secure for the next rig move.

Fugro personnel departed the rig on 29 October 2004.

5.0 EQUIPMENT CALIBRATIONS

5.1 DGPS Navigation Integrity Check

In order to check the correct operation of the navigation systems installed on board the *Ensco 102*, DGPS data was logged for 30 minutes on 6 October 2004, while the rig was located at Yolla A Platform.

The comparison of the primary and secondary DGPS was also conducted. The results from both of these tests are provided in Table 5-1.

GDA94, MGA, CM 147°E				
	Latitude	**Longitude**	**Easting (m)**	**Northing (m)**
Established Well Coordinates	39° 50’ 40.669” S	145° 49’ 06.849” E	398923.94	5588819.35
Observed Coordinates	39° 50’ 40.660” S	145° 49’ 06.855” E	398924.08	5588819.62
Differences	**0.009"**	**0.006"**	**-0.14**	**-0.27**
Primary Navigation	39° 50’ 40.669” S	145° 49’ 06.849” E	398924.08	5588819.62
Secondary Navigation	39° 50’ 40.685” S	145° 49’ 06.868” E	398924.39	5588818.85
Differences	**0.016"**	**0.019"**	**-0.31**	**0.77**

TABLE 5-1 : DGPS NAVIGATION INTEGRITY CHECK

The DGPS check described above demonstrated that the navigation systems on board the *Ensco 102* were set up and working correctly. Details of the DGPS check are provided in Appendix C.

A positioning check list was completed for the Trefoil-1 location to confirm the proposed rig position and to ensure that the correct geodetic datum, transformation and projection parameters were being used. Geodetic calculations were performed using both Seis and the off-line geodetic calculation package Norcom Surveyor.

5.2 Gyro Compass Calibration

The calibration of the survey gyro compass was carried out on 5 October 2004, whilst the rig was located at the Yolla A Platform location.

A series of observations were made to the sun from which the rig heading was calculated. The calculated values were then compared to the observed gyro compass values logged in Seis and a mean C-O value of 1.46° was determined. This correction was applied to the navigation suite.

Details of the observations and gyro calibrations reduction results are enclosed in Appendix C.

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 2004.75) 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) were used in Fugro's software, to transform WGS84 (ITRF2000 Epoch 2004.50) 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 2004.50) to GDA94			
dX	-0.0266m	rX	+0.0134"
dY	-0.0303m	rY	+0.0124"
dZ	-0.0339m	rZ	+0.0140"
		dS	+0.0055 ppm

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 (MGA)**
Projection	:	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 2004.75) datum and shown in Table 6-2.

Starfix DGPS Reference Stations (Datum ITRF2000 Epoch 2004.75)				
Reference Station	**ID**	**Latitude**	**Longitude**	**Height (m)**
Melbourne	385	37° 48' 29.010" S	144° 57' 48.028" E	82.06
Bathurst	336	33° 25' 46.884" S	149° 34' 01.968" E	756.66
Ceduna	355	32° 07' 03.054" S	133° 41' 22.848" E	7.27
Cobar	316	31° 29' 57.436" S	145° 50' 20.343" E	270.16

TABLE 6-2 : DGPS REFERENCE STATIONS

6.3 Project Coordinates and Tolerances

Project target coordinates and surface tolerance for Trefoil-1 location were supplied by Origin and are shown in Table 6-3.

GDA94, MGA, CM 147°E			
Location	**Easting (m)**	**Northing (m)**	**Tolerances**
Trefoil-1	361028	5586346	50m radius

TABLE 6-3 : PROJECT DESIGN COORDINATES

7.0 EQUIPMENT AND PERSONNEL

7.1 Equipment Listing

Survey equipment used for the positioning of the *Ensco 102* was as follows:

Ensco 102

2 x OmniSTAR receiver
2 x Trimble GPS receiver
1 x Spot antennae
1 x APSat antennae
1 x Meridian Surveyor gyro compass
1 x Pentium 4 computer (for Seis / MRDGPS)
1 x UPS power conditioner
1 x Topcon total station
1 x Tripod
1 x Printer

Seis version 6.1, MRDGPS version 3.02

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 *Ensco 102.*

7.2 Vessels

The vessel used for towing the *Ensco 102* was the *Ray Jay Hope*, whilst the *Invincible Tide* was used to assist with final manoeuvring. Refer to Figure 7-2 for the offset diagram of the *Ensco 102*.

7.3 Personnel

Fugro personnel involved in the rig move and positioning operations were as follows:

V. Knight	Party Chief/Surveyor	3 – 29 October 2004
N. Gregory	Engineer	3 – 29 October 2004

Origin was represented during the rig move by:

K. O'Halloran	Origin Representative	3 – 29 October 2004

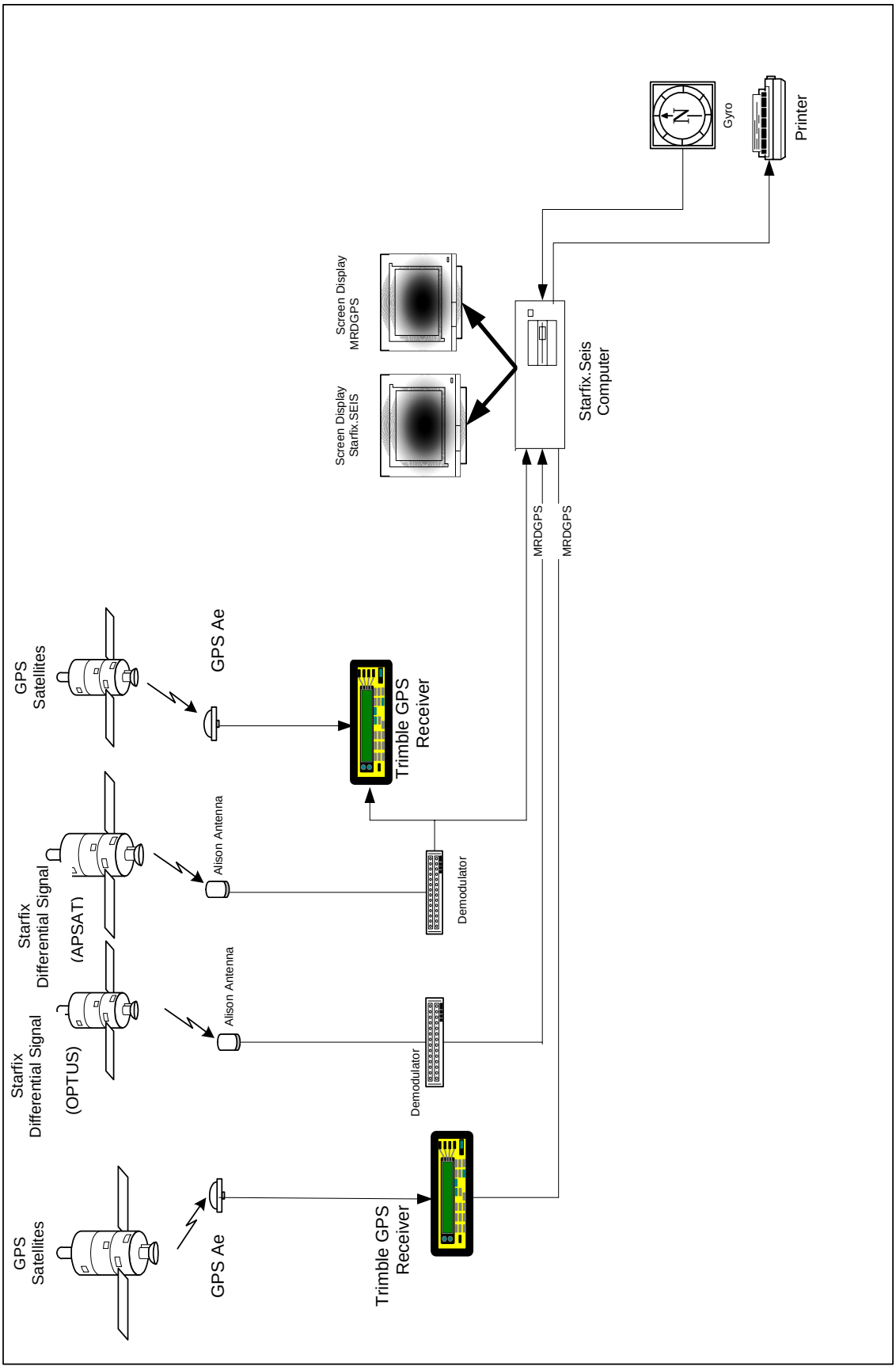
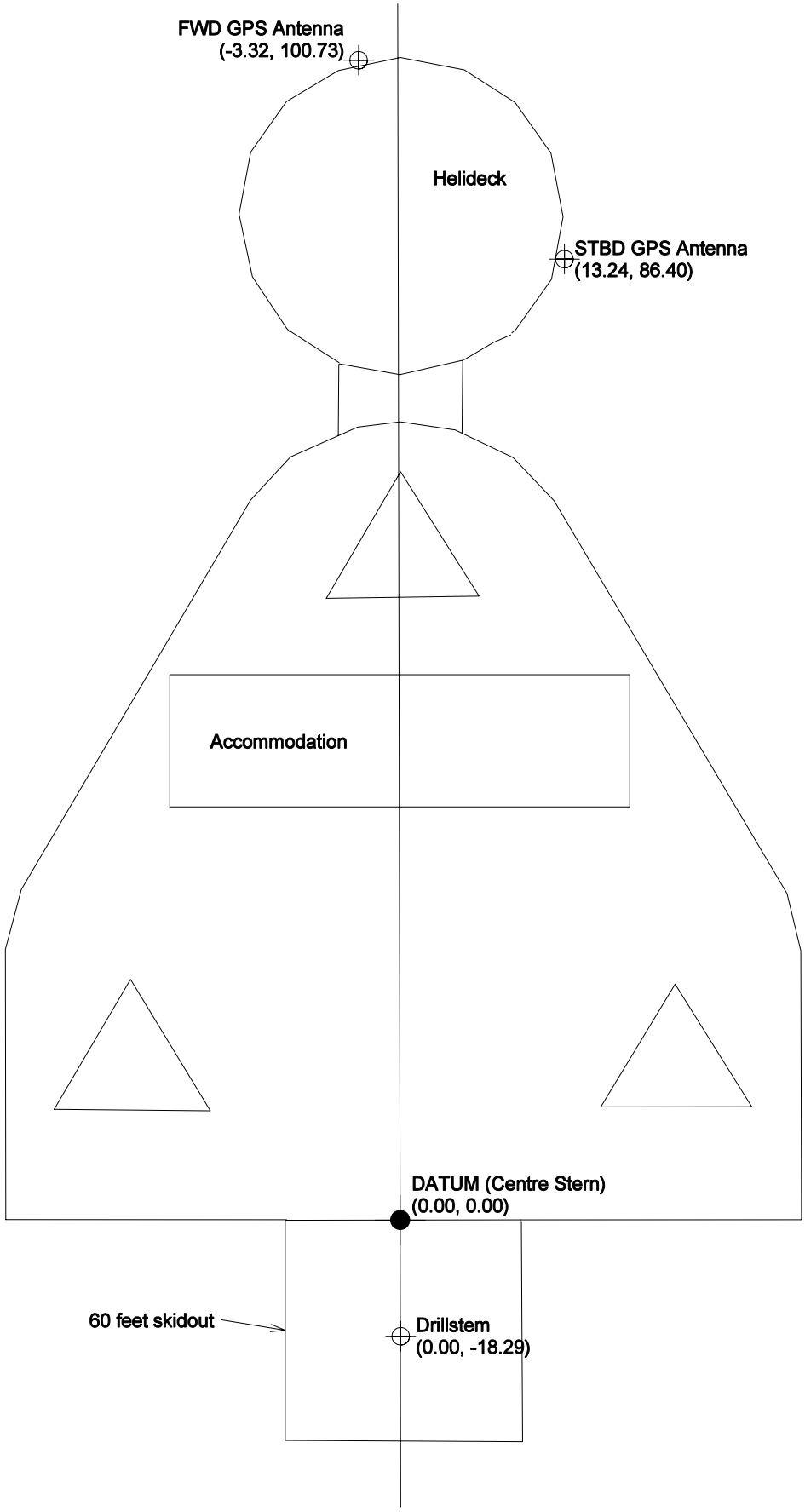


FIGURE 7-1 : EQUIPMENT FLOW DIAGRAM – *ENSCO 102*



RIG OFFSET DIAGRAM – ENSCO 102

FIGURE 7–2

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8.0 CONCLUSIONS

On reviewing the rig move and positioning operations undertaken by Fugro the *Ensco 102* was successfully positioned at Trefoil-1 location.

9.0 DISTRIBUTION

Copies of this report have been distributed as follows:

Origin Energy Resources Limited	: 3 paper copies
c/o ADA Pty Ltd	: 1 electronic copy
Attn: Michael Lanzer	
Fugro Survey Pty Ltd	: 1 paper copy
	: 1 electronic copy

APPENDIX A
DAILY OPERATIONS REPORTS

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: MELBOURNE	DATE: 3 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
1415 (wst)	1945	Fugro personnel in flight from Perth to Melbourne
2030		Check in Holiday Inn Melbourne Airport

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
				Nick Gregory	Senior Engineer
				Vanessa Knight	Surveyor
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION: HOLIDAY INN MELBOURNE AIRPORT					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Ken O'Hallon	1

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 4 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
1130	1200	Fugro personnel check in CHC helicopters and attend helicopter briefing
1205	1320	Commence transit to ENSCO 102
1320		Arrive on board ENSCO 102 rig at Yolla A Platform
1330	1500	V. Knight attends rig induction
1400		Begin mobilisation of equipment.
1700		Equipment powered up and operational.
1900		Survey representative checked survey parameters and coordinate conversion
2400		All systems operational standing by for rig move

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
V Knight	K. O'Hall	2

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 5 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	1725	Standing by for rig move
1725	1730	Conduct gyro calibration by sunshot Result = 1.46° . Entered into Seis
1730	2400	Standing by for rig move

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Ken O'Hara	3

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 6 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	0630	Standing by for rig move
0835	0905	Conduct check fix at Yolla A Platform. Results : Difference –0.14mE and –0.27mN
1130		Commence skidding in cantilever
1355		Complete skidding in cantilever
1400	2400	Standing by at Yolla A for weather

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		4

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 7 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0000	2400	Standing by at Yolla A for weather

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		5

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 8 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0000	2400	Standing by at Yolla A Platform for weather

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		6

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 9 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001		Standing by for weather
1240		Commence jacking hull down
1330		Stop jacking at 48 feet air gap
1520		Continue jacking
1600		Lower stern to 0.3 deg and jack legs individually
1730		Stop jacking at 30 feet air gap
1845		Down with hull
1848		Re commenced jacking to 2m above wave height
1945		All stop with hull 3 feet above wave action
2130		RJ Hope called in to take tow bridle
2150		Handing tow lines
2158		Completed hook up
2210		Emergency muster drill

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		7

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 10 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001		Standing by for weather
0615		Continue jacking down
0625		Rig at zero draft
0640		Stop jacking at 10 feet daft
0910		Continue jacking down
0920		All stop with 23 feet draft
0945		Start jetting operations
2400		Continue jacking and jetting operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		8

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 11 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Continue jacking and jetting operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		9

Note – To ensure that this is the latest version check the Electronic Master File

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 12 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	1830	Continue jacking and jetting operations
1830		Ceased jetting operations and preparing to jack back down due to weather.
1940		Commenced jacking hull up
2022		Rig at zero air gap
2030		Stop jacking with 4 foot air gap
2052		RJ Hope released from tow wire
2400		Standing by for weather at Yolla A platform

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		10

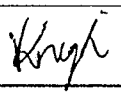
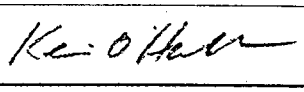
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 13 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Standing by for weather at Yolla A platform

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		11

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 14 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Standing by for weather at Yolla A platform

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		12

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 15 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Standing by for weather at Yolla A platform

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Ken O'Hale	13

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: YOLLA A	DATE: 16 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001		Standing by at Yolla A Platform for weather
0800		RJ Hope called in to take tow bridle
0858		RJ Hope connected to tow bridle
1015		Commence jacking hull down
1025		Zero air gap. Continue jacking down
1033		Rig at 10 feet draft
1035		Checking water tight integrity
1105		Rig at 20 feet draft
1118		Jetting operations
1345		Pennant passed to Invincible Tide
1445	1947	Jacking down
2043		Jetting lines disconnected. Jacking recommenced
2057		Legs free of bottom commencing tow to Trefoil
2200		1nm from Yolla
2400		Continuing tow to Trefoil

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Ken O'Hall	14

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 17 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	0545	Continuing tow to Trefoil-1
0430		1nm from Trefoil-1
0545	1348	Rig in holding pattern inspecting damage to legs
1315	1345	V. Knight attends safety meeting
1348	1838	Lowering legs and conducting approach to Trefoil
1637		1km from location
1838		Rig pinned commenced jacking hull up
1840		Perform preliminary position fix. Drillstem : 361012.27mE 5586340.04mN, 16.91m on bearing of 70.1° (T) to intended location
1910	2400	Pre-load operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Ken O'Halloran	15

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 18 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Continue pre-load operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Kei O'Hallon	16

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 19 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Continue pre-load operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		17

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 20 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Continue pre-load operations
1700	1710	Perform sun azimuth observation to check gyrocompass correction due to change in heading. Confirmed correction OK.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Kai O'Hallon	18

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 21 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Continue pre-load operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Ke O'Hall	19

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 22 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Continue pre-load operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		20

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 23 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	1050	Continue pre-load operations
1050		Emergency muster drill
1110	1305	Continue pre-load operations
1305	1800	Removing cargo from Invincible Tide in preparation for rig re-orientation.
1310		Re-orientate rig within Seis navigation system to approximate position of drillstem
1800	2400	Rig at 10 feet air gap. Standing by at Trefoil-1waiting on weather.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		21

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 24 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	1800	Standing by at Trefoil-1 waiting on weather
1315	1350	Fugro personnel attend safety meeting
1815	1840	Jacking hull down. All stop at 10 feet draft
1840	2025	Waiting on weather to ease for further operations
2025	2050	Jacking hull down. Rig at 23 feet draft
2055	2115	Weather too rough. Jacking up to 6 feet air gap
2115	2400	Waiting on weather

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		22

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 25 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0005	0520	Commenced jacking and jetting operations prior to rig re-orientation
0540	0655	Invincible Tide called in and connected
0710	0830	Rig re-orientated to Hdg 053, 39d 51' 43.7"S 145d 22' 31.4"E
0830	0922	Jacked hull up to facilitate pre loading. Port leg is now in stbd legs old hole.
0922	0955	Pre load operations
0940		Invincible Tide disconnected
0955	1010	Helicopter operations
1010	2400	Continue pre-load operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		23

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 26 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	2400	Continue pre-load operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		24

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 27 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	0025	Continue pre-load operations
0025	0930	Waiting on weather
0930	2400	Continue pre-load operations

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		25

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 28 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0001	0800	Pre-load operations complete
1015	1030	Helicopter on deck
1040	1053	Jacked up 10'
1356	1411	Helicopter on deck
1445		RJ Hope disconnected
1520	1630	Jacked to drilling height

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Ken O'Halloran	26

DAILY OPERATIONS REPORT

CLIENT: ORIGIN / ADA	LOCATION: TREFOIL-1	DATE: 29 OCT 04
PROJECT: RIG MOVE	VESSEL: ENSCO 102	JOB NO: P0133

FROM	TO	SUMMARY OF OPERATIONS
0830	0845	Fugro personnel attend helicopter briefing
0955	1055	Conduct Final Fix. Final Drillstem position is 361026.14mE 5586267.85mN, 78.18m on a bearing of 182.4°(T) from the design location
1210		Confirm position with Company Man. Advise position is with 60 feet skid out
1215	1300	Demobilise equipment
1400		Fugro personnel depart Ensco 102
1840	2040(WST)	Fugro personnel depart Melbourne for Perth

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
P4 PC	1			Nick Gregory	Senior Engineer
Monitor	2			Vanessa Knight	Surveyor
Total Station	1				
OmniSTAR Receiver	2				
Trimble Receiver	2				
Meridian Gyro	1				
Printer	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
Knight	Ken O'Hall	27

APPENDIX B
FINAL POSITIONING DATA

RIG POSITION FIELD REPORT

Trefoil-1

Client :	**Origin / ADA**	**Job Number :**	**P0133**
Rig :	**Ensco 102**	**Date:**	**29-Oct-04**
Project :	**Rig Move**		
Attention :	**K. O'Halloran**		
Copy :	**0**		

The surface location of the drill stem on the Ensco 102 was derived from one hour of observations of the Primary Differential GPS data, between 0954 hrs and 1054 hrs.Which confirms the position of the Ensco 102 over the Trefoil-1 location.

The results of the observations are as follows:

Geographical Coordinates					**Grid Coordinates**	
Latitude	**39°**	**51'**	**44.12**	**" South**	**Easting**	**361026.14**
Longitude	**145°**	**22'**	**30.73**	**" East**	**Northing**	**5586267.85**

The drill stem position is **78.18 m** at a bearing of **182.4°** True from the design location.

The Client supplied design location for Trefoil-1 :

Geographical Coordinates					**Grid Coordinates**	
Latitude	**39°**	**51'**	**41.58**	**" South**	**Easting**	**361028.0**
Longitude	**145°**	**22'**	**30.87**	**" East**	**Northing**	**5586346.0**

The Ensco 102's rig heading, derived from the mean of one hour of observations of the gyro heading is:

52.5 **TRUE** 51.5 Grid

All coordinates in this field report are quoted in the following coordinate system:

Datum :	GDA94 (ITRF2000 Epoch 2004.5)	Projection :	Transverse Mercator (UTM)
Spheroid :	GRS80	Zone (Central Meridian)	55 147° East

Party Chief/Surveyor: V. Knight

Client Representative : K. O'Halloran

APPENDIX C
DGPS AND GYRO CHECKS

RIG POSITIONING
DGPS CHECK LIST (PRE RIG MOVE)

Client : Origin / ADA **Job Number :** P0133

Rig : Ensco 102 **Date:** 6-Oct-04

Project : Rig Move from Yolla A Platform to Trefoil-1

1) ESTABLISHED WELL COORDINATES

Horizontal Datum: GRS80

Observe 30 minutes of DGPS data, logging both Primary and Secondary systems. Establish a mean drill stem position from the primary navigation system and compare against the established well coordinates.

	Easting	Northing
Established Well Coordinates	398923.94	5588819.35
Observed Coordinates	398924.08	5588819.62
Differences	-0.14	-0.27

Ensure agreement OK(?) (Y) / N

If No, Check and ensure that rig has not moved off location.

2) PRIMARY/SECONDARY NAV SYSTEMS

From the data logged above, compare the observed coordinates for both Primary and Secondary navigation systems.

	Easting	Northing
Primary Navigation	398924.08	5588819.62
Secondary Navigation	398924.39	5588818.85
Differences	-0.31	0.77

Ensure agreement OK(?) (Y) / N

If No, Check antenna offsets and gyro calibration.

Party Chief/Surveyor: V.Knight Client Representative : K. O'Halloran

Fugro Survey Pty Ltd
Hydrographic House
4 Ledgar Road
Balcatta 6021
Western Australia

Solar Observation for Azimuth (Hour Angle) 2004

Fugro Job Number: P0133
Job Description: Ensco 102 Rig Move to Trefoil-1
Client: Origin / ADA
Party Chief: V. Knight
Surveyor: V. Knight
Rig Name: Ensco 102
Date: 5 October 2004

Control Point Co-ordinates

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Latitude (DMS):	-039	50	41
Longitude (DMS):	145	49	07
UTC Correction (HMS):	10.00		

Total Station Observations:

Face	Local Time (HMS)			Observed Direction to R.O. (DMS)			Observed Direction to Sun (DMS)			Observed (O) True Heading (D.D)
Left	17	25	30	000	00	00	171	36	44	99.50
Right	17	25	30	180	00	00	351	36	44	
Left	17	26	30	000	00	00	171	27	40	99.50
Right	17	26	30	180	00	00	351	27	40	
Left	17	27	00	000	00	00	171	23	04	99.50
Right	17	27	00	180	00	00	351	23	04	
Left	17	27	37	000	00	00	171	16	55	99.50
Right	17	27	37	180	00	00	351	16	55	
Left	17	28	45	000	00	00	171	04	27	99.50
Right	17	28	45	180	00	00	351	04	27	
Left										
Right										
Left										
Right										
Left										
Right										
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Right										
Left										
Right										

Signature

SURVEYOR/PARTY CHIEF

CLIENT SURVEY REPRESENTATIVE

Fugro Survey Pty Ltd
Hydrographic House
4 Ledgar Road
Balcatta 6021
Western Australia

Solar Observation for Azimuth (Hour Angle) 2004

Fugro Job Number: P0133
Job Description: Ensco 102 Rig Move to Trefoil-1
Client: Origin / ADA
Party Chief: V. Knight
Surveyor: V. Knight
Rig Name: Ensco 102
Date: 5 October 2004

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Average Local Time (HMS)			Average Horizontal Angle (DMS)			Azimuth Sun (DMS)			Azimuth RO (DMS)			Calculated (C) True Heading (D.D)	Observed (O) True Heading (D.D)	C-O (D.D)
17	25	30.0	171	36	44	272	34	30	100	57	46	100.96	99.50	1.46
17	26	30.0	171	27	40	272	24	47	100	57	07	100.95	99.50	1.45
17	27	00.0	171	23	04	272	19	55	100	56	51	100.95	99.50	1.45
17	27	37.0	171	16	55	272	13	56	100	57	01	100.95	99.50	1.45
17	28	45.0	171	04	27	272	02	56	100	58	29	100.97	99.50	1.47

Mean C-O **1.46**

Signature

SURVEYOR/PARTY CHIEF

CLIENT SURVEY REPRESENTATIVE

QUALITY CONTROL REPORT
RIG POSITIONING
AT
TREFOIL-1

Origin Energy Resources Limited
Australian Drilling Associates Pty Ltd

Rig: ENSCO 102

From
4th October
to
29th October 2004 inclusive

Report prepared by Kevin O'Halloran *Report No. 1470*

ECL Pty Ltd (trading as ECL Australia
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WA 6005, Australia
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Website: www.ecqc.com

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1.0 INTRODUCTION

ECL Pty. Ltd., trading as ECL Australia (or ECL), was contracted by Origin Energy Resources Limited (Origin) to provide Quality Control (QC) Services for the positioning of the jack-up drilling rig *Ensco-102* to a new location at Trefoil-1 situated in Permit T/P18, approximately 106 kilometres east of King Island and 95 kilometres north of North Point, Tasmania. The Survey Contractor was Fugro Survey Pty. Ltd. (Fugro). The operational objective was to position the drillstem of the jack-up drilling rig, *Ensco-102* at the intended surface location of well, Trefoil-1. The *Ensco-102* is owned and operated by Ensco International.

The following intended coordinates were provided by Origin (in GDA94, Zone 55):

Latitude	**:**	**39° 51' 41.58" South**
Longitude	**:**	**145° 22' 30.87" East**
Easting	**:**	**361 028 m**
Northing	**:**	**5 586 346 m**
Intended Heading	**:**	**110° True (Original)**

The rig was originally positioned at Trefoil-1 obtaining a heading of 109.2º on the 17th October 2004. Preload criterion was not achieved for the port leg with this heading. A decision was made by management on the 23rd October 2004 to re-position the rig by rotating 60º anticlockwise whereby the bow leg would remain in it's original hole, the port leg would slot into the hole made by the starboard leg, and the starboard leg would penetrate into a new position.

ECL's objective was to assist Origin, Ensco with planning the approach and to ensure that the survey contractor positioned the rig using the appropriate geodetic and on-line survey parameters in a safe and efficient manner. ECL provided a QC Surveyor to verify the correct use and application of the appropriate survey operating parameters, techniques and methodology during positioning of the rig.

This report details the survey parameters and checks made at the old location, Yolla-A. The report also outlines the checks and verifications carried during and subsequent to, final positioning of the rig at Trefoil-1. All times quoted in this report are in Eastern Standard Time (GMT + 10 hours).

2.0 RESULTS

2.1 FINAL FIX POSITION OF ENSCO 102 AT TREFOIL-1

The surface drillstem position of the ENSCO 102 after the rig had jacked to operating level was:

Latitude	**:**	**39° 51' 44.12" South**
Longitude	**:**	**145° 22' 30.73" East**
Easting	**:**	**361 026.14 m**
Northing	**:**	**5 586 267.85 m**
Rig Heading	**:**	**52.5°True**

The above position is 78.18 metres on a bearing of 182.4° (T) from the intended location. The Final Fix Position Summary, as provided to the Origin/ECL Company Representative onboard the Ensco-102, is included in Appendix A.

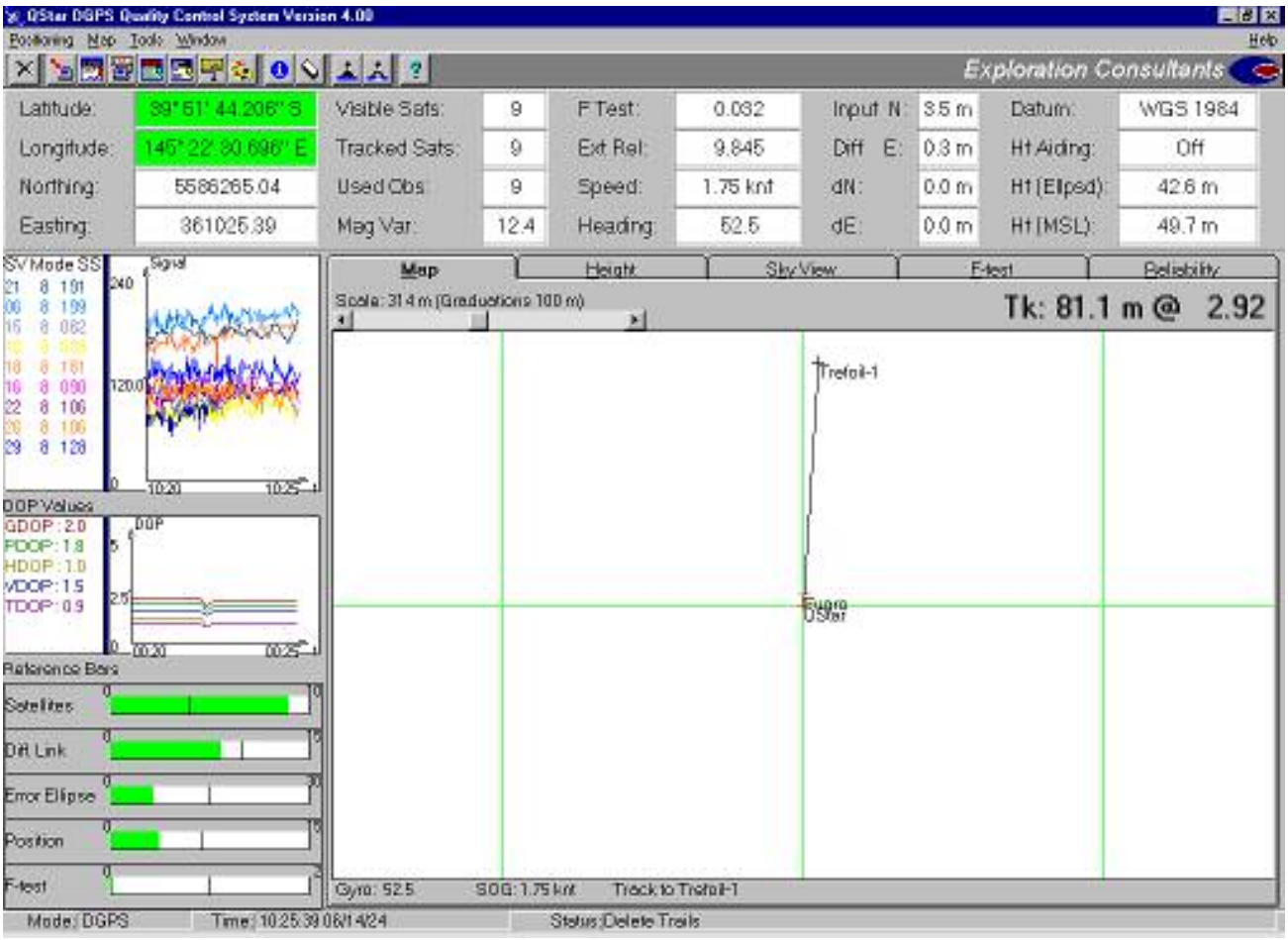
The location coordinates refer to the following geodetic parameters:

Spheroid	**:**	Geocentric Reference Spheriod (GRS80)
Datum	**:**	GDA94 (Australia-ITRF-2004.5)
Projection	**:**	Transverse Mercator (UTM) Zone 55 Central Meridian 147° East

Refer to Section 5.0 for details on geodetic and transformation parameters.

The QSTAR screen dump on the following page shows the relative Fugro and QSTAR rig drillstem position recorded during the Final Fix observation.

QSTAR VERIFICATION OF THE CENTRE STERN POSITION AT TREFOIL-1



3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 CONCLUSIONS

- The run in and final approach to the Trefoil-1, including positioning of the rig to ensure maximum safety and efficiency, was performed well.
- The preliminary drillstem position of the rig was within the tolerence of 50 metres of the intended location for Trefoil-1. The final position of the drillstem after the rig had been re-orientated was 78.18 metres from the intended position.
- A gyro check by theodolite solar observations was performed while the rig was at Yolla-A platform on the 6th October 2004. A gyro correction of +1.46° was determined. This correction was input to the GNS-II navigation program.
- A check fix at Yolla-A confirmed the integrity of the Fugro navigation system. Refer to Appendix E.
- Position comparisons carried out at Yolla-A confirmed the integrity of both the Fugro and ECL navigation systems.
- Antenna offset measurements were independently checked.

3.2 RECOMMENDATIONS

- The ECL Survey Representative and Fugro Surveyors should be mobilised at least 24 hours prior to moving the rig to enable measurements to be checked and equipment fully tested.
- Theodolite solar observations for gyro calibration provide sufficient accuracy and repeatability. This instrument can continue to be utilised on future rig moves. A baseline of at least 30 metres should be used, with offset measurements to the rig centreline accurately obtained.
- Survey equipment should remain in a partially mobilised state where possible (ie rack-mounted) to ensure rapid re-mobilisation.
- The continued use of ECL's QSTAR positioning system is recommended for real-time positioning QC during transit, run-in and final positioning of the rig on location.

4.0 SURVEY CHECKS

4.1 PRE-MOVE LOCATION CHECKS

Prior to the tow to Trefoil-1, operational checks were conducted to ensure the navigation and positioning systems were correctly interfaced and operated within the manufacturer's specifications. These included the following tasks:

- testing of the GPS receiver and verification of StarFix differential station corrections;
- verification of offsets from the GPS antenna to centre of drillstem (paragraph 4.2 below);
- verification of geodetic, transformation and survey parameters for input into the positioning system (Section 5.0 below);
- interface checks to ensure input and output data integrity;
- check fix at Yolla-A;
- gyrocompass calibration;
- verification of intended location coordinates, positioning and heading tolerances with Survey Contractor; and
- verification of proposed coordinates for the drillstem of the Ensco-102 at Trefoil-1.

4.2 FUGRO DIFFERENTIAL GPS ANTENNA TO DRILLSTEM OFFSET CHECK

The primary GPS antenna was installed on the helideck. The measured offset from the drillstem to the GPS antenna being –3.32 metres to port (X) and 100.73 metres forward (Y) of the stern position plus an additional 18.29 metres (to take account of a skid out distance of 60 feet). Hence, the total (Y) offset used for final drillstem positioning was 119.02 metres. The Fugro Surveyor, with the assistance of the Origin/ECL Survey Representative, confirmed the stern to GPS antenna offset using a 30-metre tape.

An independent computation of the drillstem position was completed by the Origin/ECL Survey Representative using the QSTAR/Fugro position comparison, combined with the gyro compass heading and the measured GPS antenna offsets. This calculated position was noted to agree (+/- 3 metres) with both the QStar and Fugro navigation systems position outputs.

4.3 GYROCOMPASS CALIBRATION

Fugro observed a sun azimuth using a total station theodolite. The rig heading relative to the azimuth of the sun was determined while the SIES navigation system logged survey gyrocompass headings simultaneously. A C-O correction of **+1.46°** was computed and input to the SEIS on-line navigation and data logging system. The Origin/ECL Survey Representative using independent software confirmed Fugro's calculations for azimuth. Refer to Appendix D.

5.0 GEODETIC AND TRANSFORMATION PARAMETERS

5.1 SPHEROID AND MAP PROJECTION FOR TREFOIL-1 LOCATION

The following geodetic parameters were used throughout the navigation and positioning operation.

Spheroid	: Geocentric Reference System (GRS80)
Semi-Major Axis	: 6378137.000 m
Semi-Minor Axis	: 63567752.314 m
Inverse Flattening	: 298.257222101
Eccentricity↑2	: 0.006694380
Reference Datum	: GDA94 (Australia-ITRF-2004.50)
Projection	: Transverse Mercator (UTM)
Zone	: 55
False Easting	: 500 000 m
False Northing	: 10 000 000 m
Latitude of ORIGIN	: 0°
Longitude of ORIGIN	: 147° East
Scale Factor	: 0.9996

5.2 WGS-84 SPHEROID

The Global Positioning System (GPS) generates positions based upon the WGS84 Spheroid which is defined by the following geodetic parameters:

Spheroid	: World Geodetic Spheroid 1984 (WGS84)
Semi-Major Axis	: 6378137.000 m
Semi-Minor Axis	: 6356752.314 m
Inverse Flattening	: 298.257223563
Eccentricity↑2	: 0.00669438

5.3 TRANSFORMATION PARAMETERS

The following seven-parameter datum transformation was used in Fugro's software, to transform WGS84 (ITRF2000 Epoch 2004.50) coordinates to GDA94 coordinates. These parameters are calculated from the 14-parameter transformation defined by Geoscience Australia. Fugro follows the coordinate Frame Rotation method (as defined by UKOOA convention) for datum transformations.

14 Parameter Transformation Data:

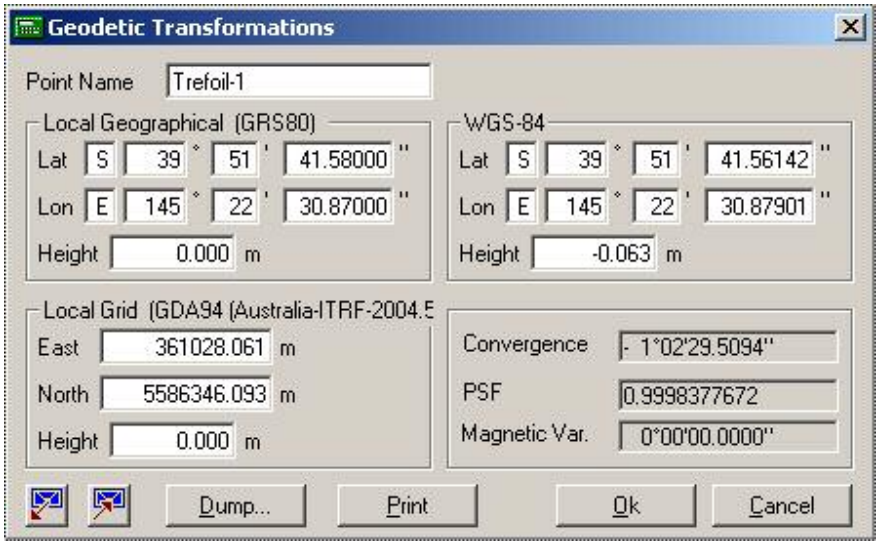
7 Parameter Shifts from ITFR2000 to GDA94 at Epoch				**1 Jan 2000**	
	4 & 6 places			4 & 6 places	
dX =	-0.0761	m	**Rate of Change dX =**	0.0110	m/year
dY =	-0.0101	m	**Rate of Change dY =**	-0.0045	m/year
dZ =	0.0444	m	**Rate of Change dZ =**	-0.0174	m/year
rX =	0.008765	"	**Rate of Change rX =**	0.001034	"/year
rY =	0.009361	"	**Rate of Change rY =**	0.000671	"/year
rZ =	0.009325	"	**Rate of Change rZ =**	0.001039	"/year
dS =	0.007935	ppm	**Rate of Change dS =**	-0.000538	ppm/year

Enter required date for transformation here:	1 Jul 2004	
Difference:	4.4983	years

7 Parameter Shifts from ITFR2000 to GDA94 at Epoch			**1 Jul 2004**	
	4 & 6 places		3 & 4 places	
dX =	-0.0266	m	-0.027	m
dY =	-0.0303	m	-0.030	m
dZ =	-0.0339	m	-0.034	m
rX =	0.013416	"	0.0134	"
rY =	0.012379	"	0.0124	"
rZ =	0.013999	"	0.0140	"
dS =	0.005515	ppm	0.0055	ppm

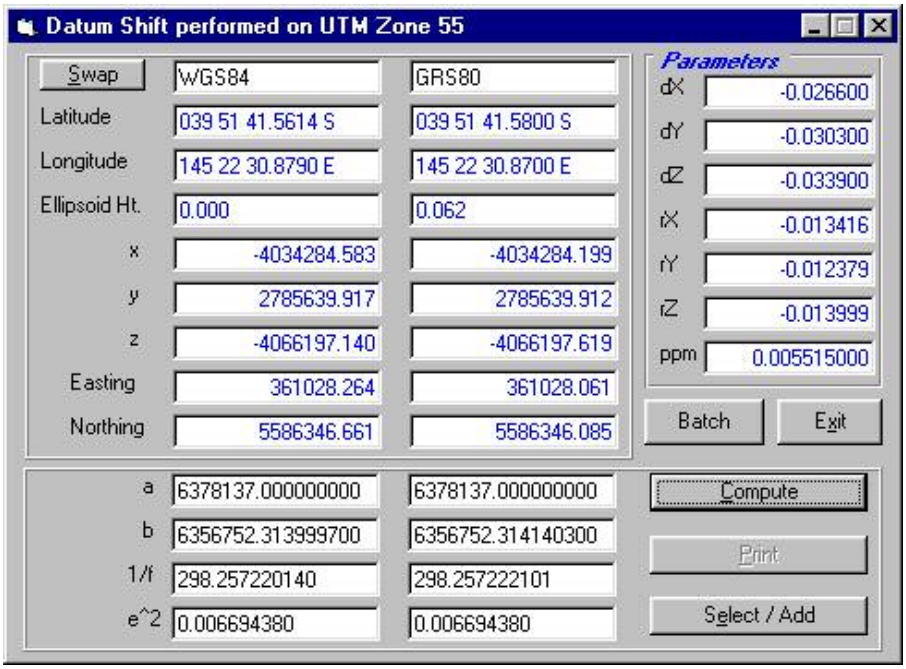
5.3.1 Fugro Transformation Computation

The following worked example was used to confirm the correct application of geodetic parameters within the Fugro positioning software:



5.3.2 ECL Transformation Computation

ECL's NavQC utility software was used to confirm the correct application of geodetic parameters within the Fugro positioning software by computing the following "reversed" worked example:



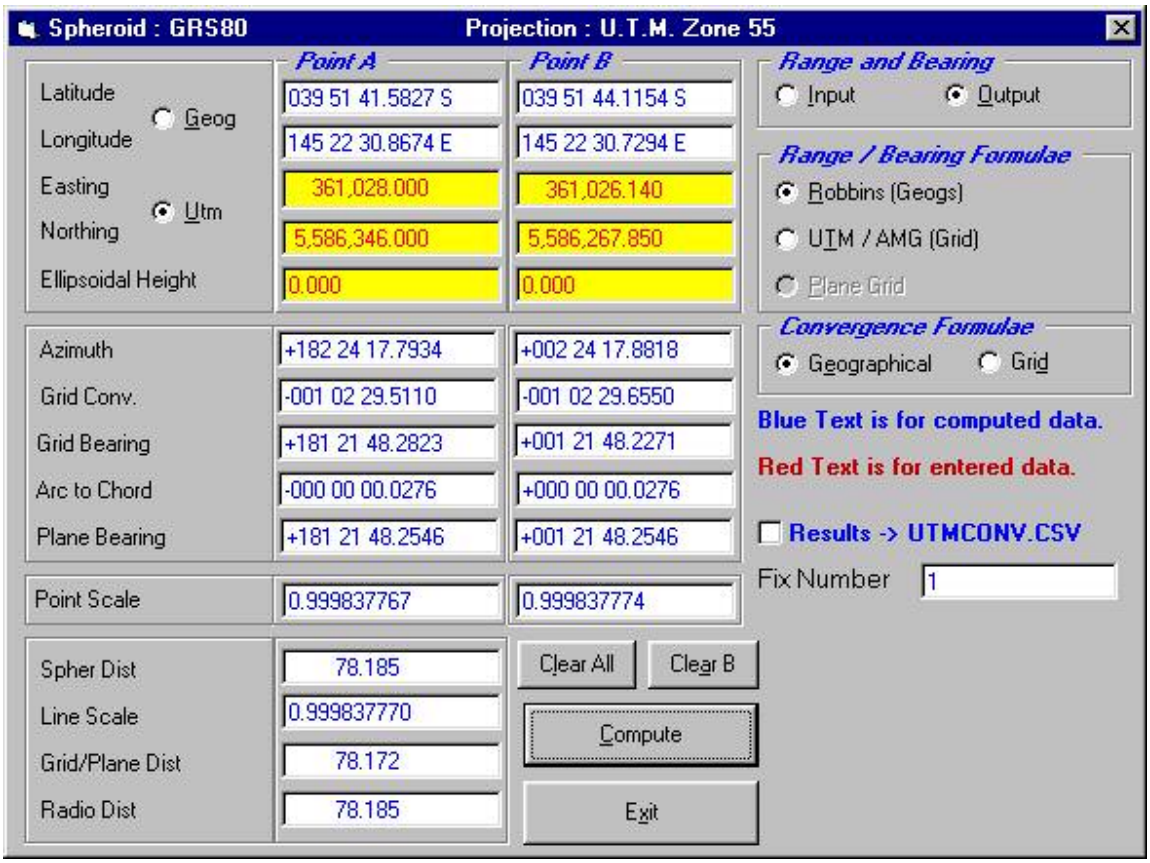
5.4 ECL/NAVQC COORDINATE CONVERSION

ECL's NavQC utility software was used to confirm geographical to grid coordinate conversions and UTM computations for Trefoil-1.

NavQC UTM COMPUTATIONS AND COORDINATE CONVERSIONS

Point A: Intended Coordinates for Trefoil-1

Point B: Drillstem coordinates for Trefoil-1



6.0 SURVEY EQUIPMENT AND PERSONNEL

6.1 EQUIPMENT

6.1.1 Fugro Positioning Systems

The Differential GPS (DGPS) navigation system was based on a Trimble 4000 DS 9-channel GPS receiver. The primary positioning utilised differential corrections provided by Starfix via the Optus link. The secondary positioning system was a direct injection system, which utilised differential corrections, provided by the Apsat satellite link. This provided 100% redundancy for differential correction data. Both primary and secondary systems were interfaced to the Fugro MRDGPS reference station software. Differential corrections were received from reference stations at Melbourne, Bathurst, Ceduna and Cobar to provide a DGPS network solution.

The Fugro SEIS online navigation and data-logging system utilised the DGPS antenna position, measured offsets and rig heading to determine the drillstem or datum position. Heading data was provided by a SG Brown TSS Meridian survey gyrocompass.

6.1.2 ECL QC Position Monitoring System

The Fugro DGPS antenna was interfaced to QSTAR through an antenna signal splitter to provide raw GPS satellite data. QSTAR derived an independent GPS position from two 6-channel Motorola GPS receivers, providing a position solution from a maximum of up to 12 satellites. QSTAR received Fugro RTCM differential correction data from the Melbourne and Bathurst reference stations, which were combined with the rig heading from the survey gyrocompass and GPS antenna offset, to compute an independent WGS84 drillstem position.

Fugro also provided an output of the Fugro drillstem position in GDA94 coordinates, which was interfaced to QSTAR therefor showing the Fugro/QSTAR comparison. Any discrepancy between the two positions could be immediately detected. Agreement between the positioning systems was typically within the accepted tolerances of 1 to 3 metres. ECL also provided the NavQC Utility software for verification of geodetic computations.

6.2 Personnel

The following personnel were assigned to the rig move:

Fugro Personnel:

Vanessa Knight	Surveyor
Nick Gregory	Field Engineer

Origin/ECL Personnel:

Kevin O'Halloran	Origin/ECL QC Surveyor

6.3 PERFORMANCE OF SURVEY CONTRACTOR

- The Fugro Primary and Secondary navigation and positioning systems performed to specification. The Fugro survey personnel performed their duties in a safe, competent and professional manner.

7.0 EVENT LOG

All times are in Eastern Standard Time (GMT + 10 hours).

Monday, 4 October 2004

Time	Event
1130	Origin/ECL Survey Representative and Fugro Personnel check in at CHC helicopter hangar at Essendon airport, Melbourne.
1205	Origin/ECL Survey Representative and Fugro Personnel departed Melbourne.
1320	Origin/ECL Survey Representative and Fugro Personnel arrived onboard ENSCO 102.
1330	Origin/ECL Survey Representative attended rig safety induction.
1400	Fugro commenced mobilisation.
1430	Origin/ECL Survey Representative and Fugro Surveyor confirmed coordinates for Trefoil-1 with the Company Man.
1700	Fugro equipment mobilised.
1830	QSTAR equipment mobilised.
1900	Origin/ECL Survey Representative checked survey parameters, Coordinate conversions and offset measurements.
2400	Standing by for rig move.

Tuesday, 5 October 2004

Time	Event
0001	Standing by for rig move.
0630	Origin/ECL Survey Representative attended daily operations meeting.
1725	Fugro observed sun azimuth for gyrocompass calibration. **Gyro correction**: **+1.46°.**
2400	Standing by for rig move.

Wednesday, 6 October 2004

Time	Event
0001	Standing by at Yolla-A for rig move.
0630	Origin/ECL Survey Representative attended daily operations meeting.
0835	Fugro observed check fix at Yolla-A. **Difference: Easting –0.14m, Northing –0.27m.**
1130	Commenced skidding-in cantilever.
1355	Cantilever skidded-in.
2400	Standing by at Yolla-A for weather.

Thursday, 7 October 2004

Time	Event
0001	Standing by at Yolla-A for weather.
0630	Origin/ECL Survey Representative attended daily operations meeting.
2400	Standing by at Yolla-A for weather.

Friday, 8 October 2004

Time	Event
0001	Standing by at Yolla-A for weather.
0630	ORIGIN/ECL Survey Representative attended daily operations meeting.
2401	Standing by at Yolla-A for weather.

Saturday, 9 October 2004

Time	Event
0001	Standing by at Yolla-A for weather.
0630	Origin/ECL Survey Representative attended daily operations meeting.
1240	Started jacking hull down.
1330	Stopped jacking at 48-feet air gap.
1520	Continued jacking.
1730	Stopped jacking at 30-feet air gap.
1845	Continued jacking.
1945	Stopped jacking with hull 3-feet above wave action. Now 12-feet to MSL.
1946	Re-commenced jacking to 2m above wave height.
2130	Ray Jay Hope called in to take tow bridle.
2400	Standing by for weather.

Sunday, 10 October 2004

Time	Event
0001	Standing by for weather at Yolla-A.
0615	Continue jacking down.
0625	Rig at zero draft.
0640	Stopped jacking at 10-feet draft.
0910	Continued jacking down.
0920	All stop with 23-feet draft.
0945	Started jetting operations.
2400	Continued jacking and jetting operations at Yolla-A platform. Rig at 23-feet draft.

Monday, 11 October 2004

Time	Event
0001	Continued jacking and jetting operations at Yolla-A platform. Rig at 23-feet draft.
2400	Continued jacking and jetting operations at Yolla-A platform. Rig at 23-feet draft.

Tuesday, 12 October 2004

Time	Event
0001	Continued jacking and jetting operations at Yolla-A platform. Rig at 23-feet draft.
1850	Preparing to jack up due to weather.
1940	Started jacking up.
2022	Rig at zero air gap.

Tuesday, 12 October 2004 (continued)

Time	Event
2030	Stopped jacking with 4-feet air gap.
2052	RJ Hope released from tow wire.
2400	Standing by for weather at Yolla-A platform.

Wednesday, 13 October 2004

Time	Event
0001	Standing by for weather at Yolla-A Platform.
2400	Standing by for weather at Yolla-A Platform.

Thursday, 14 October 2004

Time	Event
0001	Standing by for weather at Yolla-A Platform.
2400	Standing by for weather at Yolla-A Platform.

Friday, 15 October 2004

Time	Event
0001	Standing by for weather at Yolla-A Platform.
0630	Origin/ECL Survey Representative attended daily operations meeting.
2400	Standing by for weather at Yolla-A Platform.

Saturday, 16 October 2004

Time	Event
0001	Standing by for weather at Yolla-A Platform.
0630	Origin/ECL Survey Representative attended daily operations meeting.
0800	Ray Jay Hope called in to take tow bridle.
0858	RJ Hope hooked up to tow line.
1015	Started jacking hull down.
1026	Rig at zero feet air gap, continue jacking down.
1033	Stopped jacking at 10-feet draft.
1035	Checking watertight integrity.
1105	Jacked down to 20-feet draft.
1118	Started jetting operations.
2057	Legs free from bottom, commenced tow to Trefoil-1.
2200	Rig one mile off Yolla-A location.
2400	Rig on tow to Trefoil-1.

Sunday, 17 October 2004

Time	Event
0001	Rig on tow to Trefoil-1.

Sunday, 17 October 2004 (continued)

Time	Event
0430	Rig one mile from Trefoil-1
0630	Origin/ECL Survey Representative attended daily operations meeting.
0700	Rig in holding pattern for leg damage assessment.
1315	Origin/ECL Survey Representative attended weekly safety meeting.
1348	Started lowering legs.
1637	Rig is one kilometre from location. Check Rack Phase Differential (RPD) readings.
1720	Invincible Tide hooked up to port tow wire, 700 metres from Trefoil-1 location.
1838	Rig pinned on Trefoil-1 location.
1840	Fugro observed Preliminary Fix at Trefoil-1. **Easting 361 012.27m Northing 5 586 340.04m.** Rig pinned **16.91m** on a bearing of **150.1º** from the intended position. **Rig Heading 109.2º.**
1845	Invincible Tide released from port side tow wire.
2400	Continued jacking and preload operation at Trefoil-1.

Monday, 18 October 2004

Time	Event
0001	Continued jacking and preload operations at Trefoil-1.
2400	Continued jacking and preload operations at Trefoil-1.

Tuesday, 19 October 2004

Time	Event
0001	Continued jacking and preload operations at Trefoil-1.
2400	Continued jacking and preload operations at Trefoil-1.

Wednesday, 20 October 2004

Time	Event
0001	Continued jacking and preload operations at Trefoil-1.
0630	Origin/ECL Survey Representative attended daily operations meeting.
1700	Fugro Observed sun azimuth to check gyro calibration.
1730	Fugro confirmed intial gyro correction OK.
2400	Continued jacking and preload operations at Trefoil-1.

Thursday, 21 October 2004

Time	Event
0001	Continued jacking and preload operations at Trefoil-1.
0630	Origin/ECL Survey Representative attended daily operations meeting.
2400	Continued jacking and preload operations at Trefoil-1.

Friday, 22 October 2004

Time	Event
0001	Continued jacking and preload operations at trefoil-1.
0630	Origin/ECL Survey Representative attended daily operations meeting.
2401	Continued jacking and preload operations at Trefoil-1

Saturday, 23 October 2004

Time	Event
0001	Continued jacking and preload operations at Trefoil-1.
1230	Origin Company Man advised Origin/ECL Survey Representative that a decision had been made to rotate the rig 60º anticlockwise.
1310	Fugro prepared for repositioning.
2400	Rig at 10-feet air gap at Trefoil-1, standing by for weather.

Sunday, 24 October 2004

Time	Event
0001	Rig at 10-feet air gap at Trefoil-1, standing by for weather.
0630	Origin/ECL Survey Representative attended daily operations meeting.
1315	Origin/ECL Survey Representative attended weekly safety meeting.
1815	Weather calmed down, start jacking hull down.
1840	Stop jacking at 10-feet draft, waiting for weather.
2115	Jacked up to 5-feet air gap.
2400	Standing by for weather at Trefoil-1

Monday, 25 October 2004

Time	Event
0001	Standing by for weather at Trefoil-1.
0050	Hull jacked down to 24-feet draft.
0100	Started jetting legs.
0520	Commenced jacking and preload operations prior to orientating the rig.
0655	Invincible Tide connected to tow wire.
0830	Rig re-orientated to heading 53º. **Drillstem Easting 361026m Northing 5586267**.
0900	Rig at 10 feet-draft.
0913	rig at zero-feet draft.
0955	Helicopter on deck.
1010	Continued preload operations.
2400	Continued preload operations at Trefoil-1.

Tuesday, 26 October 2004

Time	Event
0001	Continued preload operations at Trefoil-1.
0630	Origin/ECL Survey Representative attended daily operations meeting.
2400	Continued preload operations at Trefoil-1.

Wednesday, 27 October 2004

Time	Event
0001	Continued preload operations at Trefoil-1.
0630	Origin/ECL Survey Representative attended daily operations meeting.
2400	Continued preload operations at Trefoil-1.

Thursday, 28 October 2004

Time	Event
0001	Continued preload operations at Trefoil-1.
0630	Origin/ECL Survey Representative attended daily operations meeting.
1445	R. J. Hope disconnected from towline.
1630	Rig jacked up to operating level.
2400	Standing by for final fix.

Friday, 29 October 2004

Time	Event
0001	Standing by for final fix.
0630	Origin/ECL Survey Representative attended daily operations meeting.
0645	ECL/Origin Survey Representative advised by Origin Company Representative to complete final position report and be ready for demobilisation.
0830	Origin/ECL Survey Representative and Fugro personnel attended helicopter safety briefing.
0955	Fugro commenced recording final fix.
1055	Final fix completed.
1200	Final fix report accepted by Origin Company Representative.
1315	Fugro equipment packed and secured in container.
1400	Origin/ECL Survey Representative and Fugro personnel departed Ensco-102.
1500	Origin/ECL Survey Representative and Fugro personnel arrived Essendon. End of Project.

8.0 APPENDICES

APPENDIX A: FINAL POSITION REPORT NOTIFICATIONS

Ensco-102
Location – Trefoil-1

DRILLING RIG POSITION

PRELIMINARY NOTIFICATION

To: **Murray Jackson** **ADA/Origin Company Representative**

From: **Kevin O'Halloran** **ECL/ADA/Origin Survey Representative**

Date: **29 October 04** **Time: 1100hrs**

DGPS Final Fix

A set of 720 Differential GPS position fixes were recorded at 5-second intervals from 0955 to 1055 hrs on Friday, 29 October 2004.

Drill-stem location:
Spheroid: GRS80 Datum: GDA94
Projection: MGA 94 Zone 55

Latitude	:	39° 51' 44.12" South
Longitude	:	145° 22' 30.73" East
Easting	:	361 026.14 metres
Northing	:	5 586 267.85 metres

This position is 78.18 metres on a bearing of 182.4° (True) from the intended location.
Final Rig Heading: 52.5° (True)

Intended Location:

Latitude	:	39° 51' 41.58" South	Easting:	361 028.0 metres
Longitude	:	145° 22' 30.87" East	Northing:	5 586 346.0 metres

Notes: Differential data from StarFix reference stations at Melbourne, Bathurst, Ceduna and Cobar.

WGS84 (ITRF 2000) to GDA94 Datum Shift:
dx: -0.0266m dy: -0.0303m dz: -0.0339m
rX: +0.013416" rY: +0.012379" rZ : +0.013999"
Scale factor (k0): +0.005515ppm

Knight
.....
Vanessa Knight
Fugro Survey Pty Ltd

Kevin O'Halloran
.....
Kevin O'Halloran
ECL Pty Ltd

ECL AUSTRALIA
AN ECL GROUP COMPANY

RIG POSITION FIELD REPORT

Trefoil-1

Client :	**Origin / ADA**	**Job Number :**	**P0133**
Rig :	**Ensco 102**	**Date:**	**29-Oct-04**
Project :	**Rig Move**		
Attention :	**K. O'Halloran**		
Copy :	**0**		

The surface location of the drill stem on the Ensco 102 was derived from one hour of observations of the Primary Differential GPS data, between 0954 hrs and 1054 hrs.Which confirms the position of the Ensco 102 over the Trefoil-1 location.

The results of the observations are as follows:

Geographical Coordinates					**Grid Coordinates**	
Latitude	**39°**	**51'**	**44.12**	**" South**	**Easting**	**361026.14**
Longitude	**145°**	**22'**	**30.73**	**" East**	**Northing**	**5586267.85**

The drill stem position is **78.18 m** at a bearing of **182.4°** True from the design location.

The Client supplied design location for Trefoil-1 :

Geographical Coordinates					**Grid Coordinates**	
Latitude	**39°**	**51'**	**41.58**	**" South**	**Easting**	**361028.0**
Longitude	**145°**	**22'**	**30.87**	**" East**	**Northing**	**5586346.0**

The Ensco 102's rig heading, derived from the mean of one hour of observations of the gyro heading is:

52.5 **TRUE** 51.5 Grid

All coordinates in this field report are quoted in the following coordinate system:

Datum :	GDA94 (ITRF2000 Epoch 2004.5)	Projection :	Transverse Mercator (UTM)
Spheroid :	GRS80	Zone (Central Meridian)	55 147° East

Party Chief/Surveyor: V. Knight

Client Representative : K. O'Halloran

APPENDIX B: ON-LINE SURVEY PARAMETERS

06/10/2004 03:03:56 UTC
*** FUGRO SURVEY STARFIX.SEIS ***

Header : Project Name : Origin Energy Ensco 102 Rig Move
Project Number : P0133
Project Description : Rig Move
Project Location : Trefoil-1
Client : Origin / ADA
Client Representative :
Client Reference Number :
Geophysical Contractor : Fugro
Positioning Contractor : Fugro
Positioning Processing Contractor: Fugro
Setup By : VK NG
On : 06/10/2004 03:03:54 UTC
Time Source : 9 GPS Raw Data Trimble
Time Offset : 10:00 (Using UTC)
Vessel : Ensco 102

Files Runline : (None)
Centreline : (None)
Database : C:\Fugro_Projects\P0133\Seis_files\database\GDA94-sdb\yolla-a_platform.sdb
CAD : (None)
Waypoint : C:\Fugro_Projects\P0133\Seis_files\waypoint\trefoil-1.swy

Logging: Directory : C:\Fugro_Projects\P0133\Logged Data\NonSession\SEIS\

Fixing : Mode : Time
Start Mode : Manual
Stop Mode : Manual
Fix Devices :
Auto-Fix : Myfixout
Manual : Myfixout
External : (None)
Offset : (None)
MOB : (None)
Fix Interval : 5.000s
Reset at SOL : No
Next Fix No. : 3954
Fix Increment : 1
Start FFID : 3954
Start Man. Fix: 2
Early Start : 20s
Logging Start : 10s

Datum 1: Datum : GDA94 (Australia-ITRF-2004.50)
Spheroid : GRS80
SemiMajor Axis: 6378137.000
1/Flattening : 298.2572221010
Eccentricity^2: 0.006694380022901

Projection : Transverse Mercator (UTM)
Grid Name :
Lat. Origin : 0d00'00.0000"N
Lon. Origin : 147d00'00.0000"E
False East : 500000.000m

False North : 10000000.000m
Scale Factor : 0.9996
Convergence : Australia/New Zealand

Datum 2: Datum : WGS 84
Spheroid : WGS 84
SemiMajor Axis: 6378137.000
1/Flattening : 298.2572235630
Eccentricity^2: 0.006694379990141

Datum2>1:Parameters : From WGS84 to GDA94 (Australia-ITRF-2004.50)
DX : -0.0270m RX : 0.0134"
DY : -0.0300m RY : 0.0124"
DZ : -0.0340m RZ : 0.0140"
D Scale : 0.0055ppm Rot Convention: +RZ=-RLongitude

Sundry : Vertical Datum:
Ell. Sep. : 0.0000m
Distances : Spheroidal
Bearings : True
Units : metres
Conversion : 1.0000000000

Main Vessel : Ensco 102
: C:\FUGRO\SHARED\DATA\VESSEL_SHAPES\ENSCO 102.SVS

Nav. 1 : System : MRDGPS (In Use)
Type : Lat - Long
Priority : 1
Time-out : 5.0s
Offset Name : Fwd GPS Ae
X Offset : -3.32m
Y Offset : 100.73m
Ant. Height : 0.00m
Nav. 2 : System : TRIMBLE PRN
Type : Lat - Long
Priority : 2
Time-out : 5.0s
Offset Name : Stbd GPS Ae
X Offset : 13.24m
Y Offset : 86.40m
Ant. Height : 0.00m
Dead Reckoning: No Timeout: 30.0s

Gyro 1 : System : SGBrown (In Use)
Priority : 1
Time-out : 3.0s
Offset Name : CRP
X Offset : 0.00m
Y Offset : 0.00m
Z Offset : 0.00m
Correction : 1.46 Degrees

Offsets: Name X Y Z
Datum 0.00 0.00 0.00
Fwd GPS Ae -3.32 100.73 0.00

Stbd GPS Ae	13.24	86.40	0.00

Fairlead:Name	X	Y	Z
FLD P1	-11.02	65.05	0.00
FLD P2	-33.83	12.19	0.00
FLD S1	11.02	65.05	0.00
FLD S2	33.83	12.19	0.00

O/Ts : Steered Point: O/T 0
Shot : O/T 0

O/T 0 PR CRP Flt: Pos Sys: Datum In-Use
O/T 1 MRDGPS Datum Flt: Pos Sys: MRDGPS Datum
O/T 2 TRIMBLE PRN Datu Flt: Pos Sys: TRIMBLE PRN Datum

O/T Legend: PR=Print LG=Log SN=Snap to line

Waypoint : Yolla A
Position : 39d50'40.6690"S 145d49'06.8490"E 0.0m
398923.931mE 5588819.353mN 0.0m
Printing:
Fix mark rate : 1
Weather Device : (None)
Weather Interval: 60 minutes
Weather Enabled : No
Config Changes : No
System Timeouts : No
Concise Header : No

Software:Starfix Suite 6.1
HF: GDA94 Files HF1
Seis Ver 2.08.0018
SeisEngine Ver 2.08.0011
Display Ver 2.14.0006
Anchors Ver 3.02.0028
Print Ver 2.03.0005

APPENDIX C: GYROCOMPASS CALIBRATION

Fugro Survey Pty Ltd
Hydrographic House
4 Ledgar Road
Balcatta 6021
Western Australia

Solar Observation for Azimuth (Hour Angle) 2004

Fugro Job Number: P0133
Job Description: Ensco 102 Rig Move to Trefoil-1
Client: Origin / ADA
Party Chief: V. Knight
Surveyor: V. Knight
Rig Name: Ensco 102
Date: 5 October 2004

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Average Local Time (HMS)			Average Horizontal Angle (DMS)			Azimuth Sun (DMS)			Azimuth RO (DMS)			Calculated (C) True Heading (D.D)	Observed (O) True Heading (D.D)	C-O (D.D)
17	25	30.0	171	36	44	272	34	30	100	57	46	100.96	99.50	1.46
17	26	30.0	171	27	40	272	24	47	100	57	07	100.95	99.50	1.45
17	27	00.0	171	23	04	272	19	55	100	56	51	100.95	99.50	1.45
17	27	37.0	171	16	55	272	13	56	100	57	01	100.95	99.50	1.45
17	28	45.0	171	04	27	272	02	56	100	58	29	100.97	99.50	1.47

Mean C-O **1.46**

Signature V Knight
SURVEYOR/PARTY CHIEF

Ke O'Hall
CLIENT SURVEY REPRESENTATIVE

Fugro Survey Pty Ltd
Hydrographic House
4 Ledgar Road
Balcatta 6021
Western Australia

Solar Observation for Azimuth (Hour Angle) 2004

Fugro Job Number:	P0133
Job Description:	Ensco 102 Rig Move to Trefoil-1
Client:	Origin / ADA
Party Chief:	V. Knight
Surveyor:	V. Knight
Rig Name:	Ensco 102
Date:	5 October 2004

Control Point Co-ordinates

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Latitude (DMS):	-039	50	41
Longitude (DMS):	145	49	07
UTC Correction (HMS):	10.00		

Total Station Observations:

Face	Local Time (HMS)			Observed Direction to R.O. (DMS)			Observed Direction to Sun (DMS)			Observed (O) True Heading (D.D)
Left	17	25	30	000	00	00	171	36	44	99.50
Right	17	25	30	180	00	00	351	36	44	
Left	17	26	30	000	00	00	171	27	40	99.50
Right	17	26	30	180	00	00	351	27	40	
Left	17	27	00	000	00	00	171	23	04	99.50
Right	17	27	00	180	00	00	351	23	04	
Left	17	27	37	000	00	00	171	16	55	99.50
Right	17	27	37	180	00	00	351	16	55	
Left	17	28	45	000	00	00	171	04	27	99.50
Right	17	28	45	180	00	00	351	04	27	
Left										
Right										
Left										
Right										
Left										
Right										
Left										
Right										
Left										
Right										
Left										
Right										
Left										
Right										

Signature

SURVEYOR/PARTY CHIEF

CLIENT SURVEY REPRESENTATIVE

GYRO COMPASS CALIBRATION

ECL SUN AZIMUTH COMPUTATION
ORIGIN ENERGY RIG MOVE
ENSCO 102 To TREFOIL-1

```
Date                 :  5 Oct 2004
Method               : Solar Hour Angle
Latitude         (D.MMSSs) :  39.5041 S
Longitude West       (D.MMSSs) :  145.4907 E
Watch Corr: UT-Watch  (H.MMSSs) :  0.00000
Error in Latitude     (arcsec) :  0
Error in Timing   (sec of time) :  0
Output Filename           : TREF-1
```

Set No.	Average Watch Time (HH.MMSSs)	Average Horz.Ang (DD.MMSSs)	Azimuth Star (DD.MMSSs)	Azimuth RO (HH.MMSSs)	Observed Azimuth (HH.MMSSs)
1	7.2530	171.3644	272.3431	100.5747	99.3000
2	7.2630	171.2740	272.2448	100.5708	99.3000
3	7.2700	171.2304	272.1956	100.5652	99.3000
4	7.2737	171.1655	272.1357	100.5702	99.3000
5	7.2845	171.0427	272.0257	100.5830	99.3000

Average (C) (HH.m)	Average (O) (HH.m)

Set No.	Average Watch Time (HH.MMSSs)	Average Horz.Ang (DD.MMSSs)	Azimuth Star (DD.MMSSs)	Azimuth RO (H.H)	Observed Azimuth (H.H) (C)	(O)
1	7.2530	171.3644	272.3431	100.96	99.50	
2	7.2630	171.2740	272.2448	100.95	99.50	
3	7.2700	171.2304	272.1956	100.95	99.50	
4	7.2737	171.1655	272.1357	100.95	99.50	
5	7.2845	171.0427	272.0257	100.98	99.50	

Average (C) (H.H)	**Average (O) (H.H)**
100.96	99.50

Average C-O: +1.46

APPENDIX D: CHECK FIX AT YOLLA-A

RIG POSITIONING
DGPS CHECK LIST (PRE RIG MOVE)

Client : Origin / ADA **Job Number :** P0133

Rig : Ensco 102 **Date:** 6-Oct-04

Project : Rig Move from Yolla A Platform to Trefoil-1

1) **ESTABLISHED WELL COORDINATES**
Horizontal Datum: GRS80
Observe 30 minutes of DGPS data, logging both Primary and Secondary systems. Establish a mean drill stem position from the primary navigation system and compare against the established well coordinates.

	Easting	Northing
Established Well Coordinates	398923.94	5588819.35
Observed Coordinates	398924.08	5588819.62
Differences	-0.14	-0.27

Ensure agreement OK(?) (Y) / N
If No, Check and ensure that rig has not moved off location.

2) PRIMARY/SECONDARY NAV SYSTEMS
From the data logged above, compare the observed coordinates for both Primary and Secondary navigation systems.

	Easting	Northing
Primary Navigation	398924.08	5588819.62
Secondary Navigation	398924.39	5588818.85
Differences	-0.31	0.77

Ensure agreement OK(?) (Y) / N
If No, Check antenna offsets and gyro calibration.

Party Chief/Surveyor: V. Knight Client Representative : K. O'Halloran

APPENDIX E: TREFOIL PROPOSED SURFACE LOCATION COORDINATES

2 WELL DATA SUMMARY

The following data is provided and referenced to the Petroleum (Submerged Lands) Act Schedule - Specific Requirements as to Offshore Petroleum Exploration and Production Part V Drilling.

Well Data Summary

Clause 501-(2) Ref:	Schedule Item	Details.
A	Well Name.	Trefoil 1
B	Location.	T/P18 Offshore Bass Basin (120km offshore), Tasmania (location map attached). SURFACE LOCATION Latitude 39° 51' 41.58" South, Longitude 145° 22' 30.87" East 5,586,346m N, 361,028m E (GDA94 Zone 55)
	Water Depth.	Approximately 68 metres with bathymetric data indicating a predominantly flat and featureless topography.
C	Programmed Depth.	3114mSS (~3157mMDRT) deepened to 3,487mSS (~3530mMDRT) depending on hydrocarbon shows seen upon reaching the shallower depth.
D	Estimated Spud-in Date.	Approximately mid October, 2004.
E	Estimated Duration.	~36 days as 3114mSS bare dry hole, ~52 days if drilled to 3487mSS and production tested.
F	Number & Type of Attendant Marine Craft.	2 Total: 2 x Tidewater AHTS (long term charter): Ray J Hope & Invincible Tide. Contingent 1x Spot Charter Vessel (TBA) if deemed necessary to move rig away from Yolla A platform.
	Number & Type of Attendant Air Craft.	1 plus temporary back-up. Bell 412 and Sikorsky S-76A++ operated by CHC HELICOPTERS, Essendon Airport Victoria.
G	Drilling Contractor.	ENSCO Australia Pty Ltd, Level 2, 470 Collins Street, Melbourne Victoria 3000. Rig Manager: Barry Todd, Email: contact@enscous.com.au
H	Rig Type & BOP	RIG: MODU Jack Up – ENSCO 102. Design: KFELS Enhanced Mod V "A". 400ft (122m) Water Depth Rating. Built 2002. BOP (Diverter): 49 ½" Nominal, 2000psi (137.9 bar), ABB Vecto Type KFDJ, Twin 14" straight run outlets w/Trunnion remote operated ball valve on each outlet. BOP (Annular): 18 ¾" 10,000psi (689.6 bar), Shaffer Spherical BOP, H2S trim. BOP (Ram): 18 ¾" Shaffer NXT Double Ram (x2); 4 total rams with Ultralocks and boltless doors, 15,000psi (1034.5

2.3 Rig Positioning

The *Ensco 102* will be mobilised with Fugro's Starfix Differential GPS Positioning System and Seis Navigation System. Prior to approaching the Trefoil-1 location the following checks (Table 2-2) will be conducted on board the *Ensco 102*.

	Check
Primary and secondary DGPS positioning systems compared	Yes
GPS antenna offsets to drill stem checked	Yes
Gyrocompass calibration by sun observation conducted	Yes
Perform a Differential GPS check fix to confirm that all positioning systems are functioning correctly	Yes
A gross error check of positioning systems installed on AHV's	N/A
Telemetry system between the Rig and the AHV's checked	N/A
Seabed assets checked and displayed on the Seis navigation system	N/A
Anchor plan checked	N/A

TABLE 2-2 : RIG POSITIONING CHECKS

Fugro personnel should refer to the Fugro BMS for relevant Rig Positioning Field Work procedures.

2.4 Proposed Trefoil-1 Location

The proposed surface location of the drill stem of the *Ensco 102* at the Trefoil-1 location is shown in Table 2-3. Details of client supplied data have been included in Appendix A.

Datum: GDA94		
Latitude	**Longitude**	
39° 51' 41.58" South	145° 22' 30.87" East	
Projection: MGA Zone 55 CM 147° East		
Easting	**Northing**	**Approximate Water Depth**
361028m	5586346m	68.4m LAT

TABLE 2-3 : PROPOSED TREFOIL-1 LOCATION

The positioning requirements of the *Ensco 102* at Trefoil-1 location are outlined in Table 2-4.

	Requirement
Positioning Tolerance	50m
Intended Rig Heading	110° (T)
Height of Drill Floor (AHD)	No

TABLE 2-4 : POSITIONING REQUIREMENTS

Radius Diameter ?
Confirmed

Additionally, ADA requested Fugro to prepare a Tow Route Drawing for the move and this can be found in Appendix C.

APPENDIX 13: PALYNOLOGICAL BASIC DATA

Well Name : TREFOIL-1

Operator : ORIGIN ENERGY

Interval : 2302m - 3533m **Palynological Data Chart : BASIC DATA**

Scale : 1:5000 **% Abundance histogram : Highest occurrence**

Chart date: 26 April 2005 **Roger Morgan**

TREFOIL-1

Morgan Palaeo Associates
Maitland, South Australia

Enclosure 1

Sampling
Cutting
Core
Sidewall core

Text Keys
*1 % within discipline (40mm=100%)
*2 In-Situ occurrences

Depth | Samples (Samples in Discipline(s) : Paly)

Dinoflagellate Cysts — % within discipline (40mm=100%); In-Situ occurrences

Operculodinium centrocarpum
Spiniferites ramosus
Diphyes colligerum
Phthanoperidinium comatum
Morkallacysta spp.
Apectodinium homomorphum
Chiropteridinium sp.
Cyclopsiella vieta
Oligosphaeridium complex
Achomosphaera alcicornu
Adnatosphaeridium spp.
Apectodinium pentagonum
Apectodinium sumissima
Cordosphaeridium fibrospinosum
Fibrocysta spp.
Homotryblium tasmaniense
Muratodinium fimbriatum
Systematophora placacantha
Thalassiphora pelagica
Wetzeliella articulata
Apteodinium australiense
Cleistosphaeridium spp.
Cordosphaeridium multispinosum
Rottnestia borussica
Glaphyrocysta sp.
Polystephanophorus spp.
Hystrichosphaeridium tubiferum
Saeptodinium spp.
Cordosphaeridium inodes
Eocharlisphaeridia spp.
Kokansium polypes
Microforams.

FT: *1 *2
AL: *1 *2 — *Circulisporites sp.*; *Rimosicysta kipperii*
ALBO: *1 *2 — *Botryococcus spp.*
MP: *1 *2 — *Reworking - Permian*; *Reworking - Triassic*

Spores And Pollen — % within discipline (40mm=100%); In-Situ occurrences

Araucariacites australis
Cyathidites australis
Cyathidites minor
Cyathidites splendens
Dictyophyllidites spp.
Dilwynites granulatus
Dilwynites tuberculatus
Ericipites scabratus
Falcisporites similis
Laevigatosporites ovatus
Microcachryidites antarcticus
Nothofagidites brachyspinulosus
Nothofagidites emarcidus
Nothofagidites flemingii
Osmundacidites wellmanii
Phyllocladidites mawsonii
Podosporites microsaccatus
Proteacidites grandis
Proteacidites spp.
Verrucosisporites kopukuensis
Vitreisporites pallidus
Australopollis obscurus
Cicatricosisporites australiensis
Cycadopites follicularis
Dilwynites "pusillum"
Gleicheniidites spp.
Haloragacidites harrisii
Intratriporopollenites notabilis
Lygistepollenites florinii
Proteacidites kopiensis
Proteacidites ornatus
Proteacidites pseudomonoides
Proteacidites tuberculiformis
Retitrilites austroclavatidites
Stereisporites antiquasporites
Malvacipollis subtilis
Nothofagidites deminutus
Proteacidites pachypolus
Sapotaceoidaepollenites rotundus
Spinozonocolpites prominatus
Stereisporites punctatus
Tricolporites "estoutus"
Falcisporites grandis
Periporopollenites polyoratus
Tricolpites phillipsii
Clavifera triplex
Proteacidites incunatus
Proteacidites reticuloscabratus
Malvacipollis diversus
Gambierina rudata
Lygistepollenites balmei
Peninsulapollis gillii
Phyllocladidites verrucatus
Carpentariaensisporites ohaiensis
Cyathidites giganteus
Gambierina edwardsii
Proteacidites palisadus
Arnulfspora folliculosa
Ceratosporites equalis
Cingulatisporites clavus
Nothofagidites endurus
Tetracolporites verrucosus
Triporoletes reticulatus
Proteacidites otwayensis ms
Perotriletes jubatusmorganii
Forcipites longus
Grapnelispora evansii
Battenipollis sectilis
Perinopollenites elatoides
Tricolpites confessus
Tricolpites waiparaensis
Aequitriradites spinulosus
Contignisporites cooksoniae
Tubullifordites illiei
Callialasporites dampieri
Forcipites sabulosus
Forcipites stipulatus
Triporoletes simplex
Triporopollenites "megasectilis"
Stereisporites regium
Cicatricosisporites ludbrookiae
Corollina torosa
Tubullifordites cf. illiei
Fungae .

FU: *1 *2

Samples (Samples in Discipline(s) : Paly)

Depth	Samples
2322.00m CU	2322.00m CU
2433.00m CU	2433.00m CU
2508.00m CU	2508.00m CU
2559.00m CU	2559.00m CU
2616.00m CU	2616.00m CU
2685.00m CU	2685.00m CU
2694.00m CU	2694.00m CU
2712.00m CU	2712.00m CU
2741.72m CO	2741.72m CO
2775.00m CU	2775.00m CU
2868.00m CU	2868.00m CU
2901.00m CU	2901.00m CU
2925.00m CU	2925.00m CU
2994.80m SC	2994.80m SC
3015.00m CU	3015.00m CU
3021.00m CU	3021.00m CU
3042.00m CU	3042.00m CU
3105.00m CU	3105.00m CU
3132.00m CU	3132.00m CU
3156.00m CU	3156.00m CU
3162.00m CU	3162.00m CU
3219.00m CU	3219.00m CU
3255.00m CU	3255.00m CU
3264.00m CU	3264.00m CU
3324.00m CU	3324.00m CU
3360.00m CU	3360.00m CU
3375.00m CU	3375.00m CU
3390.00m CU	3390.00m CU
3492.00m CU	3492.00m CU
3513.00m CU	3513.00m CU

Total Count — In-Situ occurrences

Total count: Total Count

2322.00m CU	95
2433.00m CU	100
2508.00m CU	94
2559.00m CU	100
2616.00m CU	94
2685.00m CU	90
2694.00m CU	100
2712.00m CU	106
2741.72m CO	100
2775.00m CU	100
2868.00m CU	100
2901.00m CU	100
2925.00m CU	100
2994.80m SC	14
3015.00m CU	100
3021.00m CU	100
3042.00m CU	100
3105.00m CU	100
3132.00m CU	100
3156.00m CU	100
3162.00m CU	100
3219.00m CU	100
3255.00m CU	100
3264.00m CU	100
3324.00m CU	52
3360.00m CU	79
3375.00m CU	93
3390.00m CU	116
3492.00m CU	70
3513.00m CU	74

% Category — In-Situ occurrences

Category %: % Category

FU
MP
AL
FT
DC
ALBO
SP

APPENDIX 14: CASING & CEMENTING REPORTS

CASING RUNNING LIST

RIG	Ensco 102
WELL	Trefoil 1

Australian Drilling Associates Pty Ltd ADA

Casing Details

Casing Size (in)	Weight (lb/ft)	Grade	Connection	ID (in)	Make-up (Opt) (Klbs-ft)
20	129	X56	RL4S	18.75	24
30	310	X52	Leopard	28	38 to 42

Date	29/10/2004
Mud Weight (ppg)	8.60
Hook/Block Weight (Klbs)	90

Shoe Depth (m)	**215.05**

Casing Tally

Joint Number/ Description	Joint Length (m)	Run Order	Cumulative Length (m)	Final Depth (m)	Connection	Weight on Hook (lbs)	Remarks
Shoe	12.25	1	12.250	215.05	RL4S	94504	
16	11.84	2	24.090	202.80	RL4S	98857	RL4S Pin down RL4S Box up
15	12.13	3	36.220	190.96	RL4S	103316	RL4S Pin down RL4S Box up
14	12.13	4	48.350	178.83	RL4S	107776	RL4S Pin down RL4S Box up
13 (20x30 x/over)	11.86	5	60.210	166.70	RL4S / Leopard	112137	RL4S Pin down and Leopard Pin up Mud Line Hanger @ 161.06 m.
12	11.96	6	72.170	154.84	Leopard	122703	Leopard Pin up / Box Down
11	11.96	7	84.130	142.88	Leopard	133270	Leopard Pin up / Box Down
10	11.94	8	96.070	130.92	Leopard	143819	Leopard Pin up / Box Down
9 (MLS Joint)	12.85	9	108.915	118.98	Leopard	155168	Leopard Box Down / LH Stub ACME Box up
Cameron x/over sub	0.47	10	109.385	106.14	Leopard	155583	LH Stub ACME Pin down / Leopard Pin up Stick up from Mud line = 2.36 m
8	11.97	11	121.355	105.67	Leopard	166159	Leopard Pin up / Box Down
7	11.97	12	133.325	93.70	Leopard	176734	Leopard Pin up / Box Down
6	11.96	13	145.285	81.73	Leopard	187301	Leopard Pin up / Box Down
5	11.96	14	157.245	69.77	Leopard	197868	Leopard Pin up / Box Down
4	11.96	15	169.205	57.81	Leopard	210032	Leopard Pin up / Box Down
3	11.96	16	181.165	45.85	Leopard	222196	Leopard Pin up / Box Down
pup A	5.83	17	186.995	33.89	Leopard	228125	Leopard Pin up / Box Down
2	11.94	18	198.935	28.06	Leopard/Squnch	240269	Squnch Pin up / Leopard Box down
Landing Joint 1	11.50	19	210.435	16.12	Squnch/Leopard	251965	Leopard Pin up / Squnch Box Down
pup B	5.82	20	216.255	4.62	Leopard	257884	Leopard Pin up / Box Down
			Stick up	-1.20			

Spare Joints

Jnt No.	Length (m)	Size (in)	Threadloss (in)	M/u length (m)
1 Housing Joint	11.97	30		
Squnch joint x/o	11.96	30		
30" Conductor	11.97	30		
Pup C	3	30		
30 x 20 x/o	11.87	30/20		
Shoe joint	12.1	20		
20" Conductor	12	20		
20" Conductor	12	20		
20" Conductor	12	20		
30" Cond cut off		30		

CASING RUNNING LIST

RIG	Ensco 102
WELL	Trefoil 1

Australian Drilling Associates Pty Ltd ADA

Casing Details

Casing Size (in)	Weight (lb/ft)	Grade	Connection	ID (in)	Make-up (Opt) (Klbs-ft)
13 3/8	54.500	K55	BTC	12.687	12000

Date	3/11/2004
Mud Weight (ppg)	8.7
Hook/Block Weight (Klbs)	80

Shoe Depth (m)	**657.25**

Casing Tally

Joint Number/ Description	Joint Length (m)	Run Order	Cumulative Length (m)	Final Depth (m)	Connection	Weight on Hook (lbs)	Remarks
Shoe A	12.510	1	12.510	657.25	BTC	90472	2 x Spring bow 1m from each end of joint
Inter A	12.010	2	24.520	644.74	BTC	90925	1 x Spring bow in middle of joint
Collar A	12.520	3	37.040	632.73	BTC	91397	x Spring bow in middle of joint
66	12.050	4	49.090	620.21	BTC	91851	
65	11.850	5	60.940	608.16	BTC	92298	
64	12.060	6	73.000	596.31	BTC	92753	
63	12.050	7	85.050	584.25	BTC	93208	
62	12.050	8	97.100	572.20	BTC	93662	
61	12.060	9	109.160	560.15	BTC	94117	
60	11.910	10	121.070	548.09	BTC	94566	
59	12.060	11	133.130	536.18	BTC	95021	
58	12.050	12	145.180	524.12	BTC	95475	
57	12.050	13	157.230	512.07	BTC	95930	
56	12.050	14	169.280	500.02	BTC	96384	
55	12.050	15	181.330	487.97	BTC	96839	
54	11.890	16	193.220	475.92	BTC	97287	
53	11.770	17	204.990	464.03	BTC	97731	
52	11.720	18	216.710	452.26	BTC	98173	
51	12.060	19	228.770	440.54	BTC	98628	
50	12.060	20	240.830	428.48	BTC	99083	
49	12.030	21	252.860	416.42	BTC	99537	
48	12.050	22	264.910	404.39	BTC	99991	
47	12.050	23	276.960	392.34	BTC	100445	
46	12.040	24	289.000	380.29	BTC	100900	
45	12.050	25	301.050	368.25	BTC	101354	
44	12.050	26	313.100	356.20	BTC	101808	
43	11.880	27	324.980	344.15	BTC	102257	
42	11.900	28	336.880	332.27	BTC	102705	
41	12.060	29	348.940	320.37	BTC	103160	
40	12.060	30	361.000	308.31	BTC	103615	
39	10.500	31	371.500	296.25	BTC	104011	
38	12.050	32	383.550	285.75	BTC	104466	
37	12.050	33	395.600	273.70	BTC	104920	
36	12.050	34	407.650	261.65	BTC	105374	
35	12.060	35	419.710	249.60	BTC	105829	
34	12.050	36	431.760	237.54	BTC	106284	
33	11.750	37	443.510	225.49	BTC	106727	
32	12.060	38	455.570	213.74	BTC	107182	
31	12.060	39	467.630	201.68	BTC	107637	
30	12.060	40	479.690	189.62	BTC	108091	
29	12.060	41	491.750	177.56	BTC		
Pup B	3.754	42	495.504	165.50	BTC	108233	Buttress pin-pin make up to Hanger joint
Mudline Hanger	4.085	43	499.589	161.75	BTC	108387	
Hang off point	0.765	44	500.354	**157.66**		108416	**Mud Line Suspension Hanger**
Run Tool	3.255	45	503.609	156.90	BTC	108539	
Pup A	2.754	46	506.363	153.64	BTC	108643	Buttress pin-pin need collar
28	12.050	47	518.413	150.89	BTC	109097	
27	12.050	48	530.463	138.84	BTC	109551	
26	12.050	49	542.513	126.79	BTC	110006	
25	12.050	50	554.563	114.74	BTC	110460	
24	12.040	51	566.603	102.69	BTC	110914	
23	12.050	52	578.653	90.65	BTC	111369	
22	11.940	53	590.593	78.60	BTC	111819	
21	11.950	54	602.543	66.66	BTC	112270	
20	12.050	55	614.593	54.71	BTC	112724	
19	12.050	56	626.643	42.66	BTC	113179	1 x 25½" Rigid in middle of joint
18	12.050	57	638.693	30.61	BTC	113633	
17	12.060	58	650.753	18.56	BTC	114088	
12	11.780	59	662.533	6.50		114532	
Cement Head	0.000			-5.28	BTC	114532	Stick Up Above Rotary
				-5.28			

Spare Joints

17 Joints left on deck

Jnt No.	Length (m)	Size (in)	Threadloss (in)	M/u length (m)
Pup C	3.00	13.375	0.265	2.735
Pup D	3.00	13.375	0.265	2.735
16	12.183	13.375	0.123	12.060
15	12.183	13.375	0.123	12.060
14	12.06	13.375	0.123	11.933
13	12.31	13.375	0.123	12.183
11	12.19	13.375	0.123	12.063
10	12.14	13.375	0.123	12.013
9	12.30	13.375	0.123	12.173
8	12.30	13.375	0.123	12.173
7	12.30	13.375	0.123	12.173
6	12.31	13.375	0.123	12.183
5	12.30	13.375	0.123	12.173
4	12.31	13.375	0.123	12.183
3	12.31	13.375	0.123	12.183
2	12.14	13.375	0.123	12.013
1	12.30	13.375	0.123	12.173

CASING RUNNING LIST

RIG	Ensco 102
WELL	Trefoil-1

Australian Drilling Associates Pty Ltd ADA

Casing Details

Casing Size (in)	Weight (lb/ft)	Grade	Connection	ID (in)
9 5/8	43.5	L80	Vam Top	8.755

Make-up (Opt) (Klbs-ft)
13000

Date	10/11/2004
Mud Weight (ppg)	9.4
Hook/Block Weight (Klbs)	90

Shoe Depth Bottom (m)	2420.94

Casing Tally

Joint Number/ Description	Joint Length (m)	Run Order	Cumulative Length (m)	Bottom Depth (m)	Top Depth (m)	Connection	Weight on Hook (lbs)	Remarks
Shoe	12.33	1	12.333	2420.94	2408.61	BTC pin x VT box	90459	2 hinged type centralisers, 1m above shoe, 1m below top of joint
Inter	11.86	2	24.191	2408.61	2396.75	VT pin x BTC box	90901	1 hinged type centraliser, middle of joint placed over tandem stop collars
Float	12.37	3	36.559	2396.75	2384.38	BTC pin x VT box	91362	1 hinged type centraliser, middle of joint placed over tandem stop collars
A	12.05	4	48.607	2384.38	2372.33	VT	91811	1 hinged type centraliser, middle of joint placed over tandem stop collars
B	12.05	5	60.658	2372.33	2360.28	VT	92259	1 hinged type centraliser, middle of joint placed over tandem stop collars
C	12.05	6	72.709	2360.28	2348.23	VT	92708	1 hinged type centraliser, middle of joint placed over tandem stop collars
132	12.03	7	84.737	2348.23	2336.20	VT	93156	1 hinged type centraliser, middle of joint placed over tandem stop collars
131	12.05	8	96.785	2336.20	2324.15	VT	93605	1 hinged type centraliser, middle of joint placed over tandem stop collars
130	12.05	9	108.833	2324.15	2312.11	VT	94054	
129	12.05	10	120.881	2312.11	2300.06	VT	94503	
128	12.05	11	132.929	2300.06	2288.01	VT	94952	
127	11.91	12	144.837	2288.01	2276.10	VT	95395	
126	12.05	13	156.885	2276.10	2264.05	VT	95844	
125	12.05	14	168.933	2264.05	2252.01	VT	96293	
124	12.05	15	180.981	2252.01	2239.96	VT	96741	
123	11.99	16	192.969	2239.96	2227.97	VT	97188	
122	12.04	17	205.007	2227.97	2215.93	VT	97636	
121	12.05	18	217.055	2215.93	2203.88	VT	98085	
120	12.05	19	229.103	2203.88	2191.84	VT	98534	1 hinged type centraliser, middle of joint placed over tandem stop collars
119	12.05	20	241.151	2191.84	2179.79	VT	98983	1 hinged type centraliser, middle of joint placed over tandem stop collars
118	12.04	21	253.189	2179.79	2167.75	VT	99431	1 hinged type centraliser, middle of joint placed over tandem stop collars
117	12.00	22	265.187	2167.75	2155.75	VT	99878	1 hinged type centraliser, middle of joint placed over tandem stop collars
116	12.05	23	277.235	2155.75	2143.70	VT	100327	
115	12.05	24	289.283	2143.70	2131.66	VT	100776	
114	12.05	25	301.331	2131.66	2119.61	VT	101224	
113	12.05	26	313.379	2119.61	2107.56	VT	101673	
112	12.01	27	325.387	2107.56	2095.55	VT	102120	
111	12.02	28	337.405	2095.55	2083.53	VT	102568	
110	12.05	29	349.453	2083.53	2071.49	VT	103017	
109	12.05	30	361.501	2071.49	2059.44	VT	103466	
108	12.05	31	373.549	2059.44	2047.39	VT	103914	
107	12.05	32	385.597	2047.39	2035.34	VT	104363	
106	11.97	33	397.565	2035.34	2023.37	VT	104809	
105	12.05	34	409.613	2023.37	2011.33	VT	105258	
104	12.05	35	421.661	2011.33	1999.28	VT	105707	
103	12.05	36	433.709	1999.28	1987.23	VT	106155	
102	12.05	37	445.757	1987.23	1975.18	VT	106604	
101	12.05	38	457.805	1975.18	1963.13	VT	107053	
100	12.05	39	469.854	1963.13	1951.09	VT	107502	
99	12.05	40	481.902	1951.09	1939.04	VT	107950	
98	12.05	41	493.950	1939.04	1926.99	VT	108399	
97	12.05	42	505.998	1926.99	1914.94	VT	108848	
96	12.05	43	518.046	1914.94	1902.89	VT	109297	
95	12.05	44	530.094	1902.89	1890.85	VT	109746	
94	12.05	45	542.142	1890.85	1878.80	VT	110194	
93	11.91	46	554.050	1878.80	1866.89	VT	110638	
92	12.05	47	566.098	1866.89	1854.84	VT	111087	
91	12.05	48	578.146	1854.84	1842.79	VT	111536	
90	12.05	49	590.194	1842.79	1830.75	VT	111984	
89	12.05	50	602.242	1830.75	1818.70	VT	112433	
88	12.05	51	614.290	1818.70	1806.65	VT	112882	
87	12.03	52	626.318	1806.65	1794.62	VT	113330	
86	12.05	53	638.366	1794.62	1782.57	VT	113779	
85	12.05	54	650.414	1782.57	1770.53	VT	114227	
84	12.05	55	662.462	1770.53	1758.48	VT	114676	
83	12.05	56	674.510	1758.48	1746.43	VT	115125	
82	12.05	57	686.558	1746.43	1734.38	VT	115574	
81	12.03	58	698.586	1734.38	1722.35	VT	116022	
80	12.05	59	710.634	1722.35	1710.31	VT	116471	
79	12.05	60	722.682	1710.31	1698.26	VT	116919	
78	12.05	61	734.730	1698.26	1686.21	VT	117368	
77	12.05	62	746.778	1686.21	1674.16	VT	117817	
76	12.05	63	758.826	1674.16	1662.11	VT	118266	
75	12.05	64	770.874	1662.11	1650.07	VT	118715	
74	12.05	65	782.922	1650.07	1638.02	VT	119163	
73	12.01	66	794.930	1638.02	1626.01	VT	119611	
72	12.05	67	806.978	1626.01	1613.96	VT	120059	
71	12.05	68	819.026	1613.96	1601.91	VT	120508	
70	12.05	69	831.074	1601.91	1589.87	VT	120957	
69	12.05	70	843.122	1589.87	1577.82	VT	121406	

68	12.05	71	855.170	1577.82	1565.77	VT	121854	
67	12.05	72	867.218	1565.77	1553.72	VT	122303	
66	12.05	73	879.266	1553.72	1541.67	VT	122752	
65	12.05	74	891.314	1541.67	1529.63	VT	123201	
64	12.05	75	903.362	1529.63	1517.58	VT	123650	
63	12.05	76	915.410	1517.58	1505.53	VT	124098	
62	12.06	77	927.468	1505.53	1493.47	VT	124548	
61	12.05	78	939.516	1493.47	1481.42	VT	124996	
60	12.05	79	951.564	1481.42	1469.38	VT	125445	
59	12.05	80	963.612	1469.38	1457.33	VT	125894	
58	11.94	81	975.555	1457.33	1445.38	VT	126339	
57	11.95	82	987.508	1445.38	1433.43	VT	126784	
56	11.84	83	999.351	1433.43	1421.59	VT	127225	
55	12.05	84	1011.399	1421.59	1409.54	VT	127674	
54	12.05	85	1023.448	1409.54	1397.49	VT	128123	
53	12.05	86	1035.496	1397.49	1385.44	VT	128572	
52	12.05	87	1047.544	1385.44	1373.40	VT	129020	
51	12.05	88	1059.593	1373.40	1361.35	VT	129469	
50	12.05	89	1071.641	1361.35	1349.30	VT	129918	
49	11.91	90	1083.549	1349.30	1337.39	VT	130361	
48	12.05	91	1095.597	1337.39	1325.34	VT	130810	
D1	24.10	92	1119.693	1325.34	1301.25	VT	131708	
D2	24.10	93	1143.794	1301.25	1277.15	VT	132606	
D3	23.96	94	1167.751	1277.15	1253.19	VT	133498	
D4	24.10	95	1191.855	1253.19	1229.08	VT	134396	
D5	23.94	96	1215.799	1229.08	1205.14	VT	135288	
D6	24.07	97	1239.873	1205.14	1181.07	VT	136184	
D7	23.67	98	1263.539	1181.07	1157.40	VT	137066	
D8	24.06	99	1287.597	1157.40	1133.34	VT	137962	
D9	24.10	100	1311.696	1133.34	1109.24	VT	138860	
D10	24.10	101	1335.800	1109.24	1085.14	VT	139758	
D11	24.10	102	1359.902	1085.14	1061.04	VT	140655	
D12	24.03	103	1383.933	1061.04	1037.01	VT	141551	
D13	24.11	104	1408.038	1037.01	1012.90	VT	142448	
D14	24.04	105	1432.073	1012.90	988.87	VT	143344	
D15	24.10	106	1456.171	988.87	964.77	VT	144241	
D16	24.10	107	1480.271	964.77	940.67	VT	145139	
D17	23.78	108	1504.052	940.67	916.89	VT	146025	
D18	24.03	109	1528.082	916.89	892.86	VT	146920	
D19	24.10	110	1552.182	892.86	868.76	VT	147818	
D20	24.10	111	1576.282	868.76	844.66	VT	148715	
D21	24.10	112	1600.381	844.66	820.56	VT	149613	
D22	24.10	113	1624.482	820.56	796.46	VT	150511	
D23	24.10	114	1648.586	796.46	772.35	VT	151409	
D24	24.11	115	1672.691	772.35	748.25	VT	152307	
D25	23.88	116	1696.567	748.25	724.37	VT	153196	
D26	23.88	117	1720.443	724.37	700.50	VT	154085	
D27	24.10	118	1744.539	700.50	676.40	VT	154983	
D28	24.04	119	1768.576	676.40	652.36	VT	155878	
D29	24.10	120	1792.677	652.36	628.26	VT	156776	1 positive /rigid centraliser b/w 2 stop collars
D30	24.10	121	1816.776	628.26	604.16	VT	157674	1 positive /rigid centraliser b/w 2 stop collars
D31	24.10	122	1840.877	604.16	580.06	VT	158571	
D32	24.10	123	1864.973	580.06	555.97	VT	159469	
D33	24.10	124	1889.069	555.97	531.87	VT	160367	
D34	24.10	125	1913.165	531.87	507.77	VT	161264	
D35	24.08	126	1937.241	507.77	483.70	VT	162161	
D36	24.09	127	1961.327	483.70	459.61	VT	163058	
D37	23.95	128	1985.273	459.61	435.67	VT	163950	
D38	24.09	129	2009.359	435.67	411.58	VT	164847	
D39	24.10	130	2033.457	411.58	387.48	VT	165745	
D40	24.10	131	2057.553	387.48	363.39	VT	166642	
D41	24.10	132	2081.649	363.39	339.29	VT	167540	
D42	24.10	133	2105.745	339.29	315.19	VT	168438	
D43	24.07	134	2129.811	315.19	291.13	VT	169334	
D44	24.10	135	2153.907	291.13	267.03	VT	170232	
D45	24.10	136	2178.003	267.03	242.94	VT	171129	
D46	24.07	137	2202.075	242.94	218.87	VT	172026	
D47	24.10	138	2226.174	218.87	194.77	VT	172923	
D48	24.02	139	2250.190	194.77	170.75	VT	173818	
Hanger Assy	12.25	140	2262.440	170.75	158.50	VT	174274	
			HOP	**158.50**				
Running Assembly	4.07	141	2266.510	158.50	154.43	VT		
47	12.05	142	2278.558	154.43	142.38	VT		
46	12.05	143	2290.606	142.38	130.33	VT		
45	12.05	144	2302.655	130.33	118.28	VT		
44	12.05	145	2314.703	118.28	106.24	VT		
43	12.05	146	2326.751	106.24	94.19	VT		
42	12.05	147	2338.801	94.19	82.14	VT		
41	12.05	148	2350.851	82.14	70.09	VT		
40	12.05	149	2362.899	70.09	58.04	VT		
39	12.05	150	2374.949	58.04	45.99	VT		
38	11.89	151	2386.835	45.99	34.10	VT		
37	11.89	152	2398.723	34.10	22.22	VT		
36	12.05	153	2410.774	22.22	10.17	VT		
35	12.05	154	2422.822	10.17	-1.88	VT		
X-over	6.00	155	2428.822	-1.88	-7.88	VT x BTC		
Cement Head	1.30	156	2430.122	-7.88	-9.18	BTC		

Spare Joints

Jnt No.	Length (m)	Size (in)	Threadloss (in)	M/u length (m)
34	12.19	9.625	0.142	12.05
33	12.191	9.625	0.142	12.05
32	11.912	9.625	0.142	11.77
31	12.191	9.625	0.142	12.05
30	12.19	9.625	0.142	12.05
29	12.193	9.625	0.142	12.05
28	12.192	9.625	0.142	12.05
27	12.190	9.625	0.142	12.05
26	11.869	9.625	0.142	11.73
25	12.192	9.625	0.142	12.05
24	12.190	9.625	0.142	12.05
23	12.192	9.625	0.142	12.05
22	12.192	9.625	0.142	12.05
21	12.192	9.625	0.142	12.05
20	12.191	9.625	0.142	12.05
19	12.189	9.625	0.142	12.05
18	12.188	9.625	0.142	12.05
17	12.190	9.625	0.142	12.05
16	12.191	9.625	0.142	12.05
15	12.190	9.625	0.142	12.05
14	12.190	9.625	0.142	12.05
13	12.191	9.625	0.142	12.05
12	12.190	9.625	0.142	12.05
11	12.191	9.625	0.142	12.05
10	12.191	9.625	0.142	12.05
9	12.194	9.625	0.142	12.05
8	12.190	9.625	0.142	12.05
7	12.192	9.625	0.142	12.05
6	12.190	9.625	0.142	12.05
5	12.190	9.625	0.142	12.05
4	12.190	9.625	0.142	12.05
3	12.193	9.625	0.142	12.05
2	12.192	9.625	0.142	12.05
1	12.19	9.625	0.142	12.05
208	Damaged			
XO	VT box x BTC	Pin (12mts)		
Pup	VT box x BTC	Pin (6mts)		
Pup	NV pin x VT	Pin		

CASING RUNNING LIST (As Run)

RIG	Ensco 102
WELL	Trefoil-1

Australian Drilling Associates Pty Ltd ADA

Casing Details

Casing Size (in)	Weight (lb/ft)	Grade	Connection	ID (in)	Make-up (Opt) (Klbs-ft)
6 5/8	24	L80	Fox K	5.927	8750

Date	2/12/2004
Mud Weight (ppg)	9.4
Hook/Block Weight (Klbs)	95

Shoe Depth (m)	**3458.00**

Casing Tally

Joint Number/ Description	Joint Length (m)	Run Order	Cumulative Length (m)	Final Depth (m)	Connection	Weight on Hook (lbs)	Remarks	
Shoe A	13.190	1	13.19	3458.00	Fox K	95574	2 x Spiraglide in middle of joint.	Bakerlok
Float A	12.990	2	26.18	3444.81	Fox K	96139	1 x Spiraglide in middle of joint.	Bakerlok
134	12.477	3	38.66	3431.82	Fox K	96682	1 x Spiraglide in middle of joint.	Bakerlok
133	12.357	4	51.01	3419.34	Fox K	97219		Bakerlok
Landing Collar A	12.600	5	63.61	3406.99	Fox K	97767	1 x Spiraglide in middle of joint.	
132	12.367	6	75.98	3394.39	Fox K	98305		
131	12.357	7	88.34	3382.02	Fox K	98843	1 x Spiraglide in middle of joint.	
130	12.357	8	100.70	3369.66	Fox K	99380		
129	12.367	9	113.06	3357.31	Fox K	99918	1 x Spiraglide in middle of joint.	
128	12.477	10	125.54	3344.94	Fox K	100461		
127	12.477	11	138.02	3332.46	Fox K	101004	1 x Spiraglide in middle of joint.	
126	12.477	12	150.49	3319.98	Fox K	101546		
125	12.477	13	162.97	3307.51	Fox K	102089	1 x Spiraglide in middle of joint.	
123	12.477	14	175.45	3295.03	Fox K	102632	1 x Spiraglide in middle of joint.	
122	12.477	15	187.92	3282.55	Fox K	103175		
121	12.467	16	200.39	3270.08	Fox K	103717	1 x Spiraglide in middle of joint.	
120	12.477	17	212.87	3257.61	Fox K	104260		
119	12.477	18	225.35	3245.13	Fox K	104803	1 x Spiraglide in middle of joint.	
118	12.477	19	237.82	3232.66	Fox K	105345		
117	12.367	20	250.19	3220.18	Fox K	105883	1 x Spiraglide in middle of joint.	
116	12.237	21	262.43	3207.81	Fox K	106416		
115	12.357	22	274.78	3195.57	Fox K	106953	1 x Spiraglide in middle of joint.	
114	12.347	23	287.13	3183.22	Fox K	107490		
113	12.367	24	299.50	3170.87	Fox K	108028	1 x Spiraglide in middle of joint.	
112	12.367	25	311.86	3158.50	Fox K	108566		
111	12.347	26	324.21	3146.14	Fox K	109103	1 x Spiraglide in middle of joint.	
110	12.347	27	336.56	3133.79	Fox K	109640		
109	12.357	28	348.92	3121.44	Fox K	110178	1 x Spiraglide in middle of joint.	
108	12.477	29	361.39	3109.09	Fox K	110721		
107	12.477	30	373.87	3096.61	Fox K	111263	1 x Spiraglide in middle of joint.	
106	12.477	31	386.35	3084.13	Fox K	111806		
105	12.477	32	398.82	3071.65	Fox K	112349	1 x Spiraglide in middle of joint.	
104	12.477	33	411.30	3059.18	Fox K	112892		
Pup A	**1.977**	**34**	**413.28**	**3046.70**	**Fox K**	**112978**		
103	12.477	35	425.75	3044.72	Fox K	113520	1 x Spiraglide in middle of joint.	
102	12.477	36	438.23	3032.25	Fox K	114063	1 x Spiraglide in middle of joint.	
101	12.477	37	450.71	3019.77	Fox K	114606	1 x Spiraglide in middle of joint.	
100	12.467	38	463.18	3007.29	Fox K	115148	1 x Spiraglide in middle of joint.	
99	12.477	39	475.65	2994.83	Fox K	115691	1 x Spiraglide in middle of joint.	
98	12.477	40	488.13	2982.35	Fox K	116234	1 x Spiraglide in middle of joint.	
97	12.477	41	500.61	2969.87	Fox K	116776	1 x Spiraglide in middle of joint.	
96	12.477	42	513.08	2957.39	Fox K	117319	1 x Spiraglide in middle of joint.	
Pup B	**1.977**	43	**515.06**	**2944.92**	**Fox K**	**117405**	**Install a Pip Tag in the box**	
95	12.477	44	527.54	2942.94	Fox K	117948	1 x Spiraglide in middle of joint.	
94	12.477	45	540.01	2930.46	Fox K	118491	1 x Spiraglide in middle of joint.	
93	12.477	46	552.49	2917.99	Fox K	119033	1 x Spiraglide in middle of joint.	
92	12.477	47	564.97	2905.51	Fox K	119576	1 x Spiraglide in middle of joint.	
91	12.487	48	577.46	2893.03	Fox K	120119	1 x Spiraglide in middle of joint.	
90	12.477	49	589.93	2880.55	Fox K	120662	1 x Spiraglide in middle of joint.	
89	12.467	50	602.40	2868.07	Fox K	121204	1 x Spiraglide in middle of joint.	
88	12.477	51	614.88	2855.60	Fox K	121747	1 x Spiraglide in middle of joint.	
87	12.477	52	627.35	2843.12	Fox K	122290	1 x Spiraglide in middle of joint.	
86	12.487	53	639.84	2830.65	Fox K	122833	1 x Spiraglide in middle of joint.	
85	12.477	54	652.32	2818.16	Fox K	123376	1 x Spiraglide in middle of joint.	
84	12.477	55	664.79	2805.68	Fox K	123919		
83	**12.477**	56	**677.27**	**2793.21**	**Fox K**	**124461**	**Install a Pip Tag in the box**	
82	12.487	57	689.76	2780.73	Fox K	125004	1 x Spiraglide in middle of joint.	
81	12.477	58	702.23	2768.24	Fox K	125547		
80	12.477	59	714.71	2755.77	Fox K	126090		
79	12.477	60	727.19	2743.29	Fox K	126633	1 x Spiraglide in middle of joint.	
78	12.487	61	739.68	2730.81	Fox K	127176		
77	12.487	62	752.16	2718.32	Fox K	127719		
76	12.477	63	764.64	2705.84	Fox K	128262	1 x Spiraglide in middle of joint.	
75	12.347	64	776.99	2693.36	Fox K	128799		
74	12.477	65	789.46	2681.01	Fox K	129342		
73	12.477	66	801.94	2668.54	Fox K	129884	1 x Spiraglide in middle of joint.	
72	12.487	67	814.43	2656.06	Fox K	130428		
71	12.487	68	826.91	2643.57	Fox K	130971		
70	12.487	69	839.40	2631.09	Fox K	131514	1 x Spiraglide in middle of joint.	
69	12.477	70	851.88	2618.60	Fox K	132057		

68	12.477	71	864.36	2606.12	Fox K	132599	
67	12.487	72	876.84	2593.64	Fox K	133143	1 x Spiraglide in middle of joint.
66	12.487	73	889.33	2581.16	Fox K	133686	
65	12.487	74	901.82	2568.67	Fox K	134229	
64	12.487	75	914.30	2556.18	Fox K	134772	1 x Spiraglide in middle of joint.
63	12.487	76	926.79	2543.70	Fox K	135315	
62	12.487	77	939.28	2531.21	Fox K	135859	
61	12.487	78	951.76	2518.72	Fox K	136402	1 x Spiraglide in middle of joint.
60	12.477	79	964.24	2506.24	Fox K	136945	
59	12.477	80	976.72	2493.76	Fox K	137487	
58	12.477	81	989.20	2481.28	Fox K	138030	1 x Spiraglide in middle of joint.
57	12.487	82	1001.68	2468.80	Fox K	138573	
56	12.477	83	1014.16	2456.32	Fox K	139116	
55	12.477	84	1026.64	2443.84	Fox K	139659	1 x Spiraglide in middle of joint.
54	12.477	85	1039.11	2431.36	Fox K	140201	
53	12.487	86	1051.60	2418.89	Fox K	140745	
52	12.487	87	1064.09	2406.40	Fox K	141288	1 x Spiraglide in middle of joint.
51	12.487	88	1076.58	2393.91	Fox K	141831	
50	12.477	89	1089.05	2381.43	Fox K	142374	
49	12.487	90	1101.54	2368.95	Fox K	142917	1 x Spiraglide in middle of joint.
48	12.477	91	1114.02	2356.46	Fox K	143460	
47	12.487	92	1126.50	2343.98	Fox K	144003	
46	12.477	93	1138.98	2331.50	Fox K	144546	1 x Spiraglide in middle of joint.
45	12.487	94	1151.47	2319.02	Fox K	145089	
44	12.477	95	1163.94	2306.53	Fox K	145632	
41	12.477	96	1176.42	2294.06	Fox K	146174	1 x Spiraglide in middle of joint.
Hanger A	3.200		1179.62	2281.58	Fox K	146314	
RS Nipple	1.130		1180.75	2278.38	Fox K	146363	Chrome-13 Hanger
ZXP Packer / PBR	5.100		1185.85	2277.25	Fox K	146585	
Top of Liner				**2272.15**			
Running Tool	2.530		1188.38	2272.15	Fox K	146746	
3 Stands HWDP	84.29		1272.67	2269.62	4½" IF	152141	
75 Stands DP	2177.40		3450.07	2185.33	4½" IF	291495	
1 x Single DP	9.650		3459.72	7.93	4½" IF	292112	
Stick up	-1.721		3458.00	-1.72	4½" IF	292002	

Spare Joints

Jnt No.	Length (m)	Size (in)	Threadloss (in)	M/u length (m)	
Modified Pin	12.59	6.625	0.123	12.590	
43	12.61	6.625	0.123	12.487	
42	12.61	6.625	0.123	12.487	
124	12.60	6.625	0.123	12.477	damaged Pin
40	12.60	6.625	0.123	12.477	
39	12.61	6.625	0.123	12.487	
38	12.60	6.625	0.123	12.477	
37	12.61	6.625	0.123	12.487	
36	12.60	6.625	0.123	12.477	
35	12.61	6.625	0.123	12.487	
34	12.61	6.625	0.123	12.487	
33	12.61	6.625	0.123	12.487	
32	12.61	6.625	0.123	12.487	
31	12.61	6.625	0.123	12.487	
30	12.61	6.625	0.123	12.487	
29	12.61	6.625	0.123	12.487	
28	12.61	6.625	0.123	12.487	
27	12.50	6.625	0.123	12.377	
26	12.50	6.625	0.123	12.377	
25	12.61	6.625	0.123	12.487	
24	12.48	6.625	0.123	12.357	
23	12.48	6.625	0.123	12.357	
22	12.51	6.625	0.123	12.387	
21	12.49	6.625	0.123	12.367	
20	12.49	6.625	0.123	12.367	
19	12.49	6.625	0.123	12.367	
18	12.60	6.625	0.123	12.477	
17	12.61	6.625	0.123	12.487	
16	12.60	6.625	0.123	12.477	
15	12.61	6.625	0.123	12.487	
14	12.60	6.625	0.123	12.477	
13	12.61	6.625	0.123	12.487	
12	12.61	6.625	0.123	12.487	
11	12.60	6.625	0.123	12.477	
10	12.60	6.625	0.123	12.477	
9	12.61	6.625	0.123	12.487	
8	12.61	6.625	0.123	12.487	
7	12.61	6.625	0.123	12.487	
6	12.61	6.625	0.123	12.487	
5	12.60	6.625	0.123	12.477	
4	12.60	6.625	0.123	12.477	
3	12.61	6.625	0.123	12.487	
2	12.61	6.625	0.123	12.487	
1	12.60	6.625	0.123	12.477	
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CASING & CEMENTING REPORTS

CONDUCTOR RUNNING AND CEMENTING REPORT

RIG	Ensco 102
WELL	Trefoil 1
DATE	31-Oct-04

Australian Drilling Associates Pty Ltd ADA

STATUS OF WELL BEFORE RUNNING CASING

PREVIOUS CASING		HOLE CONDITIONS			
Size (in)	none	**Size (in)**	36 / 26	**Mud Losses**	n/a
Weight (lb/ft)		**Depth (mMDRT)**	218	**Caliper Average (in)**	n/a
Grade		**Circulating Hours Before**	0.50	**Max Deviation (°)**	0°
Shoe @ (mMDRT))				**Dev. Depth (mMDRT)**	0°

MUD					
Weight (ppg)	8.7	**Water Loss (cc)**	N/A	**0/10 Gels**	
Type	PHG	**Filter Cake (mm)**	N/A	**Sand**	N/A
PV	9	**Solids (%)**	N/A	**Flowline Temp (°C)**	N/A
YP	41	**Salinity (mg/l)**	N/A		

CASING DETAILS

Size (in)	30 / 20	**Shoe Depth (m)**	215	**Total Length**	
Weight (lb/ft)	310 / 133	**F. Collar @ (m)**	215	**Centralisers**	none
Grade	X52 / X56	**2nd Stg. Collar @ (m)**	n/a		
Calipered ID (in)	28 / 18.75	**Pip Tag(s) @ (m)**	none		
Connection	Loepard / RL4S	**Casing Hanger @ (m)**	161.06	**Displacement (BBL/m)**	n/a
Average Torque (ft-lbs x 1000)	42 / 24	**Wellhead Type**	Cameron SS WH	**Capacity (BBL/m)**	n/a

RUNNING CASING

Start Time	15:00	**Joints Received**	30	**Rate (GPM)**	300
Avg Jnts/hr	1.17	**Joints Run**	20	**Total (BBLs)**	100
Finish Time	8:00	**Joints Left**	10	**Time (mins)**	15
Mud Losses (BBL)	n/a	**Circulating Pressure (psi)**	500	**Time Stopped**	12:45
Comments					

CEMENTING

PRE-FLUSH AND SPACER			
Flush Type	Sea water	**Flush Type**	
Weight (ppg)	8.6	**Weight (ppg)**	
Volume (BBL)	20	**Volume (BBL)**	
Pump Rate (BPM)	6	**Pump Rate (BPM)**	
Pump Press (psi)	300	**Pump Press (psi)**	
Time bottom plug released		n/a	

LEAD SLURRY (1ST STAGE)					
Cement Type	G neat	**Mix Water Type**	Sea Water / 2% CaCl2	**Pump Press (psi)**	500
No. of Sacks	636	**Mix Water (gal/sk)**	8.608	**Pump Rate (BPM)**	6.5 bpm
Volume Used (BBL)	186	**Mix Water Volume (BBL)**	131	**Calculated TOC (mMDRT)**	108
Weight (ppg)	13.8	**Est Time - BC100 (Hrs)**	6:01	**Mud Losses**	n/a
Yield (Cu.ft/sk)	1.64	**Actual Time (Hrs)**	6:00 on surface		
Additives	D020 @ 1% BWOC, CaCl2 @ 2% BWOC.				
Comments					

TAIL SLURRY (1ST STAGE)					
Cement Type	G neat	**Mix Water Type**	Sea Water	**Pump Press (psi)**	300
No. of Sacks	361	**Mix Water (gal/sk)**	5.334	**Pump Rate (BPM)**	4.2
Volume Used (BBL)	76	**Mix Water Volume (BBL)**	46	**Calculated TOC (mMDRT)**	157
Weight (ppg)	15.8	**Est Time - BC100 (Hrs)**	3:29	**Mud Losses**	n/a
Yield (Cu.ft/sk)	1.18	**Time 1st Plug Released**	n/a		
Additives					
Comments					

DISPLACEMENT			
Calc Volume (BBL)	14	**Pump Pressure (psi)**	225
Calc Strokes		**Pump Rate (BBL/min)**	5.5
Efficiency (%)		**Pump Used (CT/M PUMP)**	CT
Actual Strokes		**Did Plug Bump? Time**	n/a
Actual Efficiency (%)		**Delta P Prior to Bump**	35
Mud Losses		**Bump Pressure**	n/a
		Pressure Held (min)	none
COMMENTS			

CASING AND CEMENTING JOB TIMETABLE

1st STAGE					
Operations	**Start Time**	**End Time**	**Pump psi (Initial)**	**Pump psi (Final)**	**Volume (BBLs)**
RIG UP AND RUN CASING					
CIRCULATION	12:30	12:45	500	500	100
SPACER	12:50	13:10	300	300	20
MIX AND PUMP LEAD	13:16	13:47	500	500	186
MIX AND PUMP TAIL	13:47	14:09	300	250	76
RELEASE 1st PLUG					
DISPLACEMENT	14:11	14:15	225	35	14
BUMP PLUG /TEST CASING					
BLEED PRES/CHK FLOAT EQUIP.	14:20	14:30			
DROPPED STAGE COLLAR OPENING PLUG					
PRESSURED UP TO OPEN STAGE COLLAR					
CIRCULATED WHILST WOC					

TOP UP					
Operations	**Start Time**	**End Time**	**Pump psi (Initial)**	**Pump psi (Final)**	**Volume (BBLs)**
RIG UP AND RUN TBG FOR TOP UP	6:30				
CIRCULATION	7:00	7:15	350		10
MIX AND PUMP SLURRY	7:20	7:38	370	500	
RELEASE CLOSING PLUG	N/A				
DISPLACEMENT	7:39	7:41	150	100	
BUMP PLUG /TEST CASING	N/A				

TOP UP JOB					
Cement Type	G neat	**Mix Water Type**	Sea Water	**Pump Press (psi)**	300
No. of Sacks	262	**Mix Water (gal/sk)**	5.334	**Pump Rate (BPM)**	5.5
Volume Used (BBL)	55	**Mix Water Volume (BBL)**	33	**Calculated TOC (mMDRT)**	108.8
Weight (ppg)	15.8	**Est Time - BC100 (Hrs)**	3:29	**Mud Losses**	n/a
Yield (Cu.ft/sk)	1.18	**Time 1st Plug Released**	n/a		
Additives	0.01 gal/sx D047 defoamer				
Comments					

CASING RUNNING AND CEMENTING REPORT

RIG	Ensco 102
WELL	Trefoil 1
DATE	4-Nov-04

Australian Drilling Associates Pty Ltd ADA

STATUS OF WELL BEFORE RUNNING CASING

PREVIOUS CASING		HOLE CONDITIONS			
Size (in)	20 / 30	**Size (in)**	16	**Mud Losses**	5/6 bpm
Weight (lb/ft)	129 / 310	**Depth (mMDRT)**	666.1	**Caliper Average (in)**	N/A
Grade	X56 / X52	**Circulating Hours Before**	1.00	**Max Deviation (°)**	0
Shoe @ (mMDRT))	215			**Dev. Depth (mMDRT)**	666.1

MUD					
Weight (ppg)	8.7	**Water Loss (cc)**	N/A	**0/10 Gels**	N/A
Type	Seawater + sweeps	**Filter Cake (mm)**	N/A	**Sand**	N/A
PV	N/A	**Solids (%)**	N/A	**Flowline Temp (°C)**	N/A
YP	N/A	**Salinity (mg/l)**	N/A		

CASING DETAILS

Size (in)	13.375	**Shoe Depth (m)**	657.25	**Total Length (m)**	500.354
Weight (lb/ft)	54.5	**F. Collar @ (m)**	632.73	**Centralisers**	As per tally
Grade	K55	**2nd Stg. Collar @ (m)**	N/A		
Calipered ID (in)	12.687	**Pip Tag(s) @ (m)**	N/A		
Connection	BTC	**Casing Hanger @ (m)**	157.66	**Displacement (BBL/m)**	N/A
Average Torque (ft-lbs)	12000	**Wellhead Type**	Cameron SSMC Compact Housing	**Capacity (BBL/m)**	0.5130

RUNNING CASING

Start Time	4:30:00 PM (3/11/04)	**Joints Received**	70	**Rate (BPM)**	5.5
Avg Jnts/hr	10	**Joints Run**	53	**Total (BBLs)**	
Finish Time	06:00 (4/11/04)	**Joints Left**	17	**Time (mins)**	60
Mud Losses (BBL)	5 bpm	**Circulating Pressure (psi)**	500	**Time Stopped**	7:00
Comments	Casing stood up 3.5m high to prognosis. Attempted to run casing beyond hang-up depth - unsuccessful. Checked pipe tally and confirmed tally numbers. MLS at 20 in swage. Confirmed landout of casing at 657.25 m with 200 kips on Martin Decker.				

CEMENTING

PRE-FLUSH AND SPACER			
Flush Type	Freshwater	**Flush Type**	Freshwater
Weight (ppg)	8.6	**Weight (ppg)**	8.6
Volume (BBL)	10	**Volume (BBL)**	8
Pump Rate (BPM)	6.5	**Pump Rate (BPM)**	4.5
Pump Press (psi)	450	**Pump Press (psi)**	450
Time bottom plug released		7:11	

LEAD SLURRY					
Cement Type	G	**Mix Water Type**	Drill water	**Pump Press (psi)**	600
No. of Sacks	399	**Mix Water (gal/sk)**	12.265	**Pump Rate (BPM)**	5-7
Volume Used (BBL)	150	**Mix Water Volume (BBL)**	114	**Calculated TOC (mMDRT)**	178
Weight (ppg)	12.5	**Est Time - BC100 (Hrs)**		**Mud Losses**	N/A
Yield (Cu.ft/sk)	2.12	**Actual Time (Hrs)**			
Additives	D020 2.5% BWOC, 0.01 Gal/sk D047				
Comments	Very viscous lead slurry. The gel slurry with 2.5% bentonite made the slurry very viscous.				

TAIL SLURRY					
Cement Type	G	**Mix Water Type**	Drill water	**Pump Press (psi)**	300 - 350
No. of Sacks	244	**Mix Water (gal/sk)**	5.146	**Pump Rate (BPM)**	3.5 - 4.5
Volume Used (BBL)	56	**Mix Water Volume (BBL)**	30	**Calculated TOC (mMDRT)**	557
Weight (ppg)	15.8	**Est Time - BC100 (Hrs)**		**Mud Losses**	N/A
Yield (Cu.ft/sk)	1.16	**Time Top Plug Released**	8:22		
Additives	0.01 Gal/sk D047				
Comments					

DISPLACEMENT			
Calc Volume (BBL)	319 bbls (20 bbls Dowell + 299 bbls rig)	**Pump Pressure (psi)**	675 - 1500
Calc Strokes	2202	**Pump Rate (BBL/min)**	7.5
Efficiency (%)	97%	**Pump Used (CT/M PUMP)**	Mud pump
Actual Strokes	2150	**Did Plug Bump? Time**	Yes at 09:16
Actual Efficiency (%)	97.0%	**Pressure Prior to Bump**	985
Mud Losses	None	**Bump Pressure**	1500 psi applied
		Pressure Held (min)	15
COMMENTS			

CASING AND CEMENTING JOB TIMETABLE

Operations	Start Time	End Time	Pump psi (Initial)	Pump psi (Final)	Volume (BBLs)
RIG UP AND RUN CASING	14:15 (3/11/04)	06:00 (4/11/04)			
CIRCULATION	06:00 (4/11/04)	06:56 (4/11/04)	500	500	
SPACER	06:56 (4/11/04)	07:10 (4/11/04)	0-50	0-50	18
MIX AND PUMP LEAD	07:33 (4/11/04)	08:00 (4/11/04)	200	600	150
MIX AND PUMP TAIL	08:00 (4/11/04)	08:22 (4/11/04)	300	350	56
RELEASE TOP PLUG	08:22 (4/11/04)				
DISPLACEMENT	08:25 (4/11/04)	09:16 (4/11/04)	0-200	0-200	319
BUMP PLUG /TEST CASING	09:16 (4/11/04)	09:31 (4/11/04)	1500	1500	

CASING RUNNING AND CEMENTING REPORT

RIG	Ensco 102
WELL	Trefoil-1
DATE	12-Nov-04

Australian Drilling Associates Pty Ltd ADA

STATUS OF WELL BEFORE RUNNING CASING

PREVIOUS CASING		HOLE CONDITIONS			
Size (in)	13.375	**Size (in)**	12.25	**Mud Losses**	0
Weight (lb/ft)	54.5	**Depth (mMDRT)**	2428	**Caliper Average (in)**	N/A
Grade	K55	**Circulating Hours Before**	10.25 (including wiper trip)	**Max Deviation (°)**	0.3
Shoe @ (mMDRT))	657.25			**Dev. Depth (mMDRT)**	2428

MUD					
Weight (ppg)	9.4	**Water Loss (ml/30min)**	3.8	**Gels (lbs/100 ft2)**	6/8/9
Type	Seawater/Drispac/ Soltex	**Filter Cake (32nd in)**	1.0 / 2.0	**Sand (% by vol)**	0.25
PV	43	**Solids (%)**	7.5	**Flowline Temp (°C)**	42
YP (lbs/100 ft2)	45	**Salinity (mg/l)**	18000		

CASING DETAILS

Size (in)	9.625	**Shoe Depth (mMD)**	2421	**Total Length**	2421
Weight (lb/ft)	43.5	**F. Collar @ (m)**	2397	**Centralisers**	As per tally
Grade	L80	**2nd Stg. Collar @ (m)**	N/A		
Calipered ID (in)	8.87	**Pip Tag(s) @ (m)**	N/A		
Connection	VAM TOP	**Casing Hanger @ (m)**	158.5	**Displacement (BBL/m)**	0.139
Average Torque (ft-lbs)	13000	**Wellhead Type**	Cameron 13 5/8in SSMC Compact Wellhead	**Capacity (BBL/m)**	0.246

RUNNING CASING

Start Time	20:45 (11/11/04)	**Joints Received**	229	**Rate (BPM)**	8.5
Avg Jnts/hr	14	**Joints Run**	140	**Total (BBLs)**	900
Finish Time	17:30 (12/11/04)	**Joints Left**	89	**Time (mins)**	90
Mud Losses (BBL)	40	**Circulating Pressure (psi)**	1100	**Time Stopped**	20:30 (12/11/04)
Comments	Ran casing as per the following procedure: Changed out bails and elevators on top drive. Rigged up Le Fleur fill-up tool. Rigged up to run 9.625 in casing. Picked up and made up 9.625 in shoe track. RIH same and checked floats - OK. RIH 9.625 in casing to 650 mMD (filled each joint). Broke circulation at 650 mMD (120 gpm, 350 psi) Rigged down 150T side door elevators and 350T bails. Made up 500T spider elevators & bails. RIH 9.625 in casing to 1095 mMD (filled each joint). RIH 9.625 in casing doubles from derrick to 2250 mMD (filled each double). Picked up and made up casing hanger. Opened ports and re-torqued externally. Tested seals to 5000 psi (5 mins) - OK RIH 9.625 in casing (43.5 ppf, L80, VT) to 2388 mMD where 30-40 klbs weight was taken Broke circulation and washed down casing string (20 spm, 500 psi) from 2388 mMD to 2421 mMD (shoe depth). Total of 40 bbls mud lost during running casing.				

CEMENTING

PRE-FLUSH AND SPACER			
Flush Type	Freshwater	**Flush Type**	N/A
Weight (ppg)	8.6	**Weight (ppg)**	N/A
Volume (BBL)	29	**Volume (BBL)**	N/A
Pump Rate (BPM)	6	**Pump Rate (BPM)**	N/A
Pump Press (psi)	500	**Pump Press (psi)**	N/A

LEAD SLURRY (1ST STAGE)					
Cement Type	G	**Mix Water Type**	Drill water	**Pump Press (psi)**	550
No. of Sacks	1162	**Mix Water (gal/sk)**	12.22	**Pump Rate (BPM)**	6-Jan
Volume Used (BBL)	441	**Mix Water Volume (BBL)**	335	**Calculated TOC (mMDRT)**	Mudline
Weight (ppg)	12.5	**Time 1st Plug Released**	20:40	**Mud Losses**	40
Yield (Cu.ft/sk)	2.13	**Excess (%)**	50		
Additives	D47 Antifoam (0.01 gal/sk), D20 Bentonite (2.5% BWOC), D110 Retarder (0.05 gal/sk)				
Comments	A slurry volume of 461 bbls was planned to be pumped. Due to a mixwater supply issue this was reduced to 441 bbls.				

TAIL SLURRY (1ST STAGE)					
Cement Type	G	**Mix Water Type**	Drill water	**Pump Press (psi)**	150
No. of Sacks	144	**Mix Water (gal/sk)**	5.402	**Pump Rate (BPM)**	4
Volume Used (BBL)	42	**Mix Water Volume (BBL)**	22	**Calculated TOC (mMDRT)**	2321
Weight (ppg)	15.8	**Est Time - BC100 (Hrs)**	N/A	**Mud Losses**	0
Yield (Cu.ft/sk)	1.53	**Time 2nd Plug Released**	22:30	**Excess (%)**	50
Additives	D47 Antifoam (0.03 gal/sk), D145A Dispersant (0.1 gal/sk), D66 Silica (35% BWOC), D300 Fluid Loss (0.9 gal/sk)				
Comments	Increased planned slurry volume of 39 bbls to 42 bbls due to less lead being pumped.				

2nd STAGE SLURRY					
Cement Type	N/A	**Mix Water Type**	N/A	**Pump Press (psi)**	N/A
No. of Sacks	N/A	**Mix Water (gal/sk)**	N/A	**Pump Rate (BPM)**	N/A
Volume Used (BBL)	N/A	**Mix Water Volume (BBL)**	N/A	**Calculated TOC (mMDRT)**	N/A
Weight (ppg)	N/A	**Est Time - BC100 (Hrs)**	N/A	**Mud Losses**	N/A
Yield (Cu.ft/sk)	N/A				
Additives	N/A				
Comments					

DISPLACEMENT			
Calc Volume (BBL)	20bbls freshwater using cement unit + 585bbls mud using rig pumps	**Pump Pressure (psi)**	500
Calc Strokes	4209	**Pump Rate (bpm)**	8.5
Efficiency (%)	97%	**Pump Used (CT/M PUMP)**	Mud pump
Actual Strokes	4159	**Did Plug Bump? Time**	Yes, 23:50
Actual Efficiency (bbl/stroke)	0.139	**SPP Prior to Bump (psi)**	1200
Mud Losses	40	**Bump Pressure**	3500 psi applied
		Pressure Held (min)	10
COMMENTS	Good returns during cement job (including traces of cement). Average casing ID callipered using rig floor calipers (only tool available). The accuracy of these calipers is unknown. This may account for the plug bumping 50 strokes early. Also the quoted efficiency of the rig pumps may also be incorrect.		

CASING AND CEMENTING JOB TIMETABLE

1st STAGE					
Operations	**Start Time**	**End Time**	**Pump psi (Initial)**	**Pump psi (Final)**	**Volume (BBLs)**
RIG UP AND RUN CASING	19:30 (11/11/04)	04:15 (13/11/04)			
CIRCULATION	18:30 (12/11/04)	20:00 (12/11/04)	1100	1100	900
SPACER	20:20	20:40	500	500	29
RELEASE 1st PLUG	20:40				
MIX AND PUMP LEAD	20:55	21:50	700	550	441
MIX AND PUMP TAIL	21:50	22:30	550	150	42
RELEASE 2nd PLUG	22:30				
DISPLACEMENT	22:31	23:50	500	3500	598
BUMP PLUG /TEST CASING	23:50	0:00	3500	3500	
BLEED PRESS	0:00				

2nd STAGE					
Operations	**Start Time**	**End Time**	**Pump psi (Initial)**	**Pump psi (Final)**	**Volume (BBLs)**
RIG UP FOR 2ND STAGE					
CIRCULATION					
MIX AND PUMP SLURRY					
RELEASE CLOSING PLUG					
DISPLACEMENT					
BUMP PLUG /TEST CASING					

LINER RUNNING AND CEMENTING REPORT

RIG	Ensco 102
WELL	Trefoil-1
DATE	5-Dec-04

Australian Drilling Associates Pty Ltd ADA

STATUS OF WELL BEFORE RUNNING LINER

PREVIOUS CASING		HOLE CONDITIONS			
Size (in)	9.625	**Size (in)**	8.5	**Mud Losses**	0
Weight (lb/ft)	43.5	**Depth (mMDRT)**	3545	**Caliper Average (in)**	8.375
Grade	L80	**Circulating Hours Before**	2.5	**Max Deviation (°)**	0
Shoe @ (mMDRT))	2421			**Dev. Depth (mMDRT)**	3545

MUD					
Weight (ppg)	9.4	**Water Loss (ml/30min)**	3.7	**0/10 Gels**	4/6/8
Type	Seawater/Drispac/ Soltex	**Filter Cake (32nd in)**	1	**Sand (% by vol)**	0.05
PV	45	**Solids (%)**	6	**Flowline Temp (°C)**	55
YP (lbs/100 ft2)	36	**Salinity (mg/l)**	18500		

LINER DETAILS

Size (in)	6.625	**Shoe Depth (mMD)**	3458.0	**Total Length**	1185.85
Weight (lb/ft)	24	**F. Collar @ (m)**	3444.8	**Centralisers**	As per tally
Grade	13 Cr	**L. Collar @ (m)**	3407.0		
Calipered ID (in)	5.927	**Pip Tag(s) @ (m)**	2944.92 2793.21		
Connection	FOX K	**Liner Hanger @ (m)**	2272.2	**Displacement (BBL/m)**	0.0279
Average Torque (ft-lbs)	8750	**Wellhead Type**	Cameron 13 5/8in 10 Kpsi, Fastlock	**Capacity (BBL/m)**	0.1120

RUNNING LINER

Start Time	09:45:00 AM (03/12/04)	**Joints Received**	140	**Rate (GPM)**	225
Avg Jnts/hr	6.3	**Joints Run**	96	**Total (BBLs)**	750
Finish Time	01:00:00 AM (04/12/04)	**Joints Left**	44	**Time (mins)**	85
Mud Losses (BBL)	0	**Circulating Pressure (psi)**	635	**Time Stopped**	01:00:00 AM (04/12/04)

Comments

Ran liner as per the following procedure:
Ran 6 5/8", 24#, 13 Cr, Fox K liner to 1176 mRT / 1176 mTVD, filling string every 5 joints. One rejected (Galled threads), monitored hole on trip tank, lost 0.0 Bbls.

Made up liner hanger and flexlock CR-13 packer assembly to the 6 5/8" liner. Filled PBR with hi vis fluid to prevent debris entering the PBR. SWU / SWD = 180 /180 KLbs.
Circulated 120 % of string volume (160 bbls) at 293 gpm / 635 psi. No losses.
RIH 6 5/8" liner on 5" HWDP from 1185 mRT to 1272 mRT at 1 min per stand, filled pipe every 2 stands. Monitored hole on trip tank, no losses.

RIH 6 5/8" liner on 5" drill pipe from 1272 mRT to 9 5/8" shoe at 2421 mRT at 1 min per stand, filled pipe every 5 stands. Monitored hole on trip tank, no losses.

Circulated 120% of string volume (260 bbls) at 235 gpm / 750 psi whilst rotating the liner, torque reading at 20 RPM = 1.5 Kftlbs, no losses.

Cont'd to RIH 6 5/8" liner on 5" drill pipe from shoe at 2421 mRT and stood up at 3456 mRT at 1 min per stand, filled pipe every 5 stands. Monitored hole on trip tank, no losses.

Made up top drive and washed down with 200 gpm / 600 psi, 30 rpm, 10 to 20 kips from 3456 to 3461 mRT, no further progress.

Made up cement head. Pulled back to 3458 m.

Circulated 150% of annular volume (732 bbls) with 225 gpm / 750 psi whilst rotating the liner, torque readings as follows: 20 RPM = 1,500 Kftlbs. no losses.

Dropped 1 3/4" phenolic liner setting ball, pumped down same at 120 gpm / 580 psi.
Pressure up string to 1600 psi to set 6 5/8" liner, slacked off liner weight plus 20 Klbs running string weight to confirm liner set. Pressured up to 2600 psi to release running tool, bled off pressure and picked up, did not release. Re-cycled, did not release. Turned 2 turns left hand torque on surface, worked torque down and released running tool.

CEMENTING

PRE-FLUSH AND SPACER			
Flush Type	Freshwater / Chemical wash	**Flush Type**	N/A
Weight (ppg)	8.4	**Weight (ppg)**	N/A
Volume (BBL)	40	**Volume (BBL)**	N/A
Pump Rate (BPM)	6	**Pump Rate (BPM)**	N/A
Pump Press (psi)	1000	**Pump Press (psi)**	N/A
Time bottom plug released		N/A	

TAIL SLURRY					
Cement Type	HTB	**Mix Water Type**	Drill water	**Pump Press (psi)**	±220
No. of Sacks	436	**Mix Water (gal/sk)**	6.39	**Pump Rate (BPM)**	2.8
Volume Used (BBL)	119	**Mix Water Volume (BBL)**	66	**Calculated TOC (mMDRT)**	2225
Weight (ppg)	15.8	**Est Time - BC100 (Hrs)**	3:56	**Mud Losses**	0
Yield (Cu.ft/sk)	1.53	**Time Wiper dart Released**	16:16		
Additives	Gasstop (0.6% BWOC), D80 Dispersant (0.08gal/sk), D110 Retarder (0.06 gal/sk), D047 Antifoam (0.02gal/sk), D066 Silica (35% BWOC) D122 Chemical wash (0.5gal/bbl), J237A (0.25gal/bbl) - Chemical wash spacer				
Comments	Slurry consistancy was good through out despite concerns of using Gasstop with Dowel products. Mixing was slow again and still requires investigation.				

DISPLACEMENT			
Calc Volume (BBL)	20 bbls Drillwater using cement unit + 115 bbls Drillwater with rig pumps + 127.1bbls mud using rig pumps	**Pump Pressure (psi)**	Max = 2500 Final = 2500 Static diff = 1900
Calc Strokes	859	**Pump Rate (spm)**	40
Efficiency (%)	97%	**Pump Used (CT/M PUMP)**	Cement & Mud pump
Actual Strokes	823	**Did Plug Bump? Time**	Yes 17:12
Actual Efficiency (bbl/stroke)	0.139	**SPP Prior to Bump (psi)**	2500
Mud Losses	0	**Bump Pressure**	4000 psi applied
		Pressure Held (min)	10
COMMENTS	Full returns during job. Displaced with 20 bbls DW, 115 bbls DW with the rig pumps. No indication of plug shearing. Switched rig pumps to mud displaced with 114.7 bbls mud. Pressure increased to 2500 psi, reduced pump rate to 2.0 bpm. Bumped plug 36 stks early. Set ZXP Packer. Pulled out of liner and reversed out 0 bbls cement and ±35 bbls Chemical wash. Theoretical cement in liner lap 102 m. TOC = 2319 m.		

CASING AND CEMENTING JOB TIMETABLE

1st STAGE					
Operations	**Start Time**	**End Time**	**Pump psi (Initial)**	**Pump psi (Final)**	**Volume (BBLs)**
RIG UP AND RUN LINER	09:45:00 AM (03/12/04)	01:00:00 AM (04/12/04)			
CIRCULATION	(In liner running time)				
SPACER / Pressure test lines	14:55	15:11	1000	1000	40
MIX & PUMP SLURRY	15:28	16:08	520	140	119
RELEASE 1st PLUG	16:16				
DISPLACEMENT (cement unit)	16:18	16:20	250	250	20
DISPLACEMENT (rig)	16:28	17:12	156	2500	229.7
BUMP PLUG /TEST CASING	17:26	17:36	4000		
BLEED PRES/CHK FLOAT EQUIP.	17:36	17:38			3
Set liner top packer	17:42	17:56	600	0	
Reverse circulated	18:00	18:45	No Cement, 35 bbls Cemical wash		
Circulated bottoms up					

APPENDIX 15: FIT/LOT SUMMARY SHEETS

FIT / LOT SUMMARY SHEET

Australian Drilling Associates Pty Ltd ADA

RIG	Ensco 102
WELL	Yolla-3
DATE	16-Aug-04

Casing Size:	13.375 in
Shoe Depth:	932.00 m TVD
Hole Depth:	935.50 m TVD
Mud Weight:	1.03 SG
Pump Rate:	0.25 BPM
Vol pumped:	1.75 BBL
Vol bled back:	1.25 BBL

Target FIT EMW	1.26 SG
Target Surf Press	303 psi

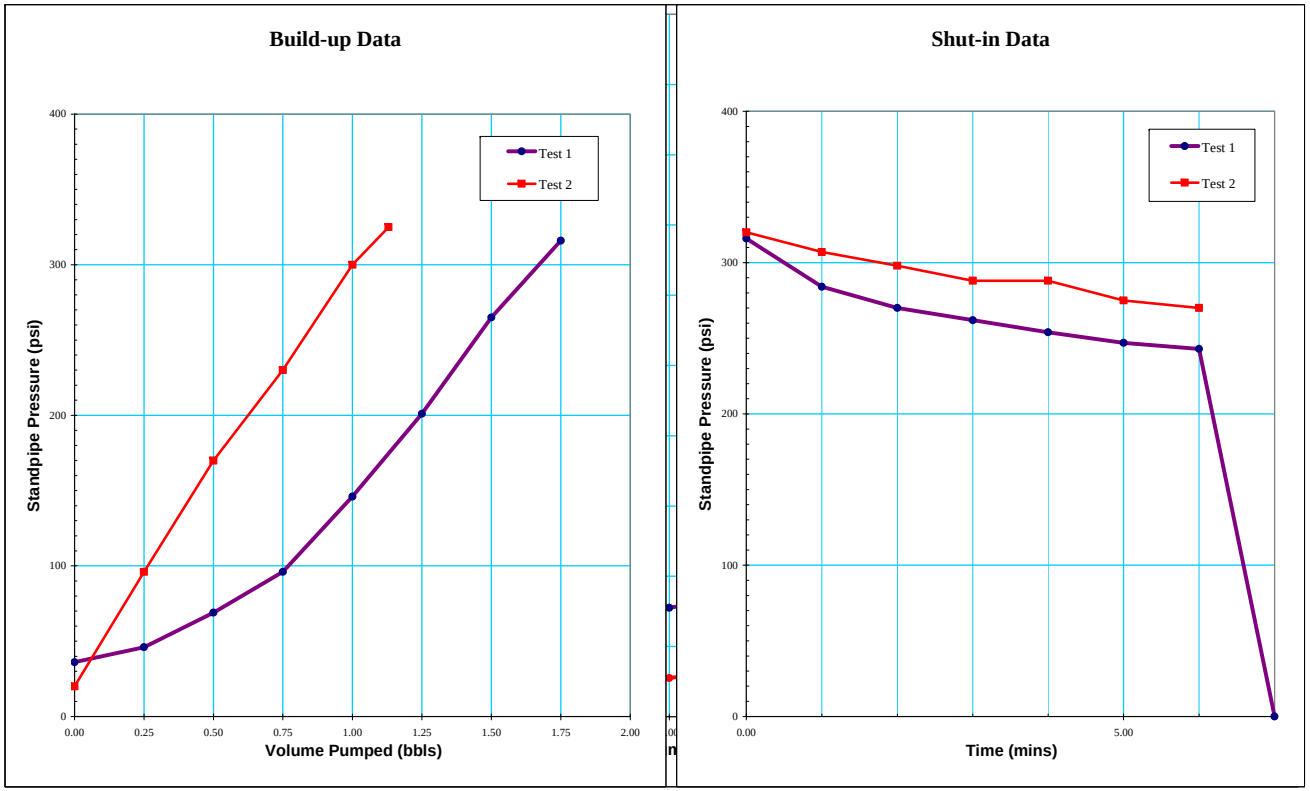
Actual Max Press	316 psi
Actual EMW	**1.27 SG**

Build-up Data

Volume bbls	Pressure psi	Volume bbls	Pressure psi
Test 1		Test 2	
0.00	36	0.00	20
0.25	46	0.25	96
0.50	69	0.50	170
0.75	96	0.75	230
1.00	146	1.00	300
1.25	201	1.13	325
1.50	265	1.38	
1.75	316	1.63	
		1.88	
		2.13	
		2.38	
		2.63	
		2.88	

Shut-in Data

Time mins	Pressure psi	Time mins	Pressure psi
Test 1		Test 2	
0.00	316	0.00	320
1.00	284	1.00	307
2.00	270	2.00	298
3.00	262	3.00	288
4.00	254	4.00	288
5.00	247	5.00	275
6.00	243	6.00	270
7.00	0	7.00	



NOTES
1: Performed FIT at 0.25 bpm, recording data every 0.25 bbls pumped.

FIT / LOT SUMMARY SHEET

Australian Drilling Associates Pty Ltd ADA

RIG	Ensco 102
WELL	Trefoil-1
DATE	15-Nov-04

Casing Size:	9.625 in
Shoe Depth:	2421 m TVD
Hole Depth:	2431 m TVD
Mud Weight:	1.11 SG
Pump Rate:	0.25 BPM
Vol pumped:	2.95 BBL
Vol bled back:	2.50 BBL

Target FIT EMW	1.50 SG
Target Surf Press	1300 psi

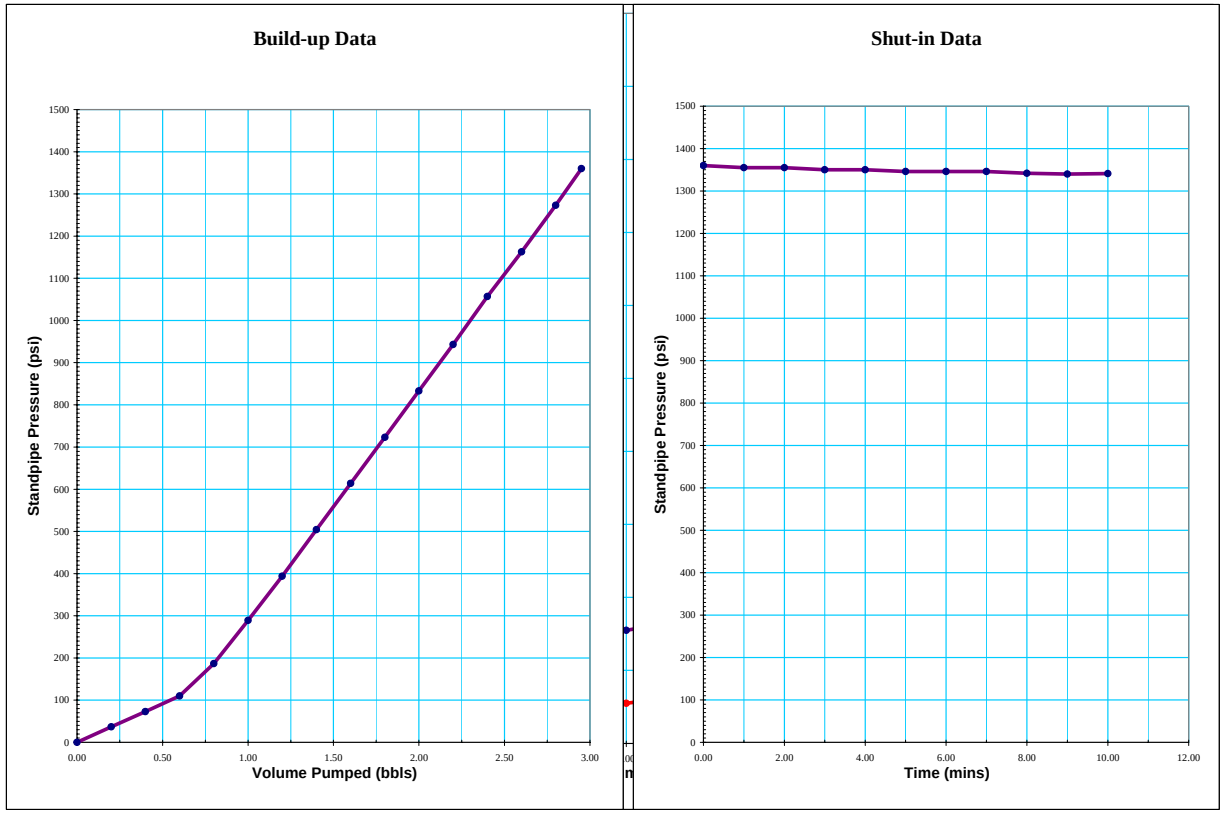
Actual Max Press	1360 psi
Actual EMW	**1.51 SG**
	12.5 ppg

Build-up Data

Volume bbls	Pressure psi	Volume bbls	Pressure psi
Test 1		Test 2	
0.00	0		
0.20	37		
0.40	73		
0.60	110		
0.80	187		
1.00	289		
1.20	394		
1.40	504		
1.60	614		
1.80	723		
2.00	833		
2.20	943		
2.40	1057		
2.60	1163		
2.80	1273		
2.95	1360		

Shut-in Data

Time mins	Pressure psi	Time mins	Pressure psi
Test 1		Test 2	
0.00	1360		
1.00	1355		
2.00	1355		
3.00	1350		
4.00	1350		
5.00	1346		
6.00	1346		
7.00	1346		
8.00	1342		
9.00	1340		
10.00	1341		



NOTES:

Excellent test result.

APPENDIX 16: DAILY DRILLING REPORTS

DFE above MSL : 39.9m | Lat : 39 Deg 51 Min 44.12 Sec | Spud Date : 30 Oct 2004 | Release Date : 25 Dec 2004

Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Activity Report For Trefoil 1

Date : 16 Oct 2004 **Daily Cost : $ 2,826,150** **Report Number : 1**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	P	RM		0	RIG DEPARTED YOLLA FOR TREFOIL 1.
0	RM	P	RM		2	Underway to Trefoil 1. Continued to jack legs up and inspect legs. Found a bent brace at 92 ft level on Stbd leg. Position at 24.00 hours 39°51'39.49' S 145°42'54.96" E Heading 268.3° at 2.2 knots.

Date : 17 Oct 2004 **Daily Cost : $ 246,812** **Report Number : 2**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	P	RM		6	On tow to Trefoil 1. Commenced leg inspection for damage at daylight and currently in holding position 1 nm NW of Trefoil 1 while inspecting the legs for damage. Found 2 span brackets bent, A chord 1" and C chord 8½" at level 4 at 55 ft. Other damage found broken sections of leg ladder and vent line valve stem broken off. Position at 06.00. 39°51'16.84' S 145°20'16.67" E Heading 356.3° at 1.8 knots.
0	RM	U	RM		7	Washed Top of Port and Stbd spud cans. Inspected legs and cross braces for damage immediately above the spud cans. No further damage found in this area.
0	RM	U	RM		0.5	Lowered and connected bow preload pump. Repaired Stbd spud can vent valve stem handle.
0	RM	P	RM		0.25	Jacked all legs down.
0	RM	U	RM		0.5	Stopped jacking legs and visually inspected welds on bent braces for cracks - no cracks found.
0	RM	U	RM		1.25	Continued to jack legs down to 20 ft off bottom whilst visually inspecting all cross braces. Commenced tow for final approach to Trefoil 1.
0	RM	U	RM		1	Towing vessel on heading for final rig position. Lowered and connected Port and Stbd preload pumps.
0	RM	P	RM		2	Attached Invincible Tide to Port midships pendant. Maneuvered rig on to location with Ray J Hope on the tow bridle and assisted by Invincible Tide.
0	RM	P	RM		0.25	Soft pinned on location. Stbd leg 287 ft, Bow leg 288.5 ft and Port leg 287.5 ft. Disconnected Invincible tide from midships. Preliminary Co-ordinates:- 39°51'41.7483" S - 145°22'30.2100" E Heading 109.23° Distance from planned well location = 16.9 m on bearing of 70.07°.
0	RM	P	JUD		0.25	Jacked hull up to 10 ft draft with 13 ft of penetration on all legs.
0	RM	P	JUD		1	Commenced preloading on all legs to maximum jacking capacity - 1400 kips per leg.
0	RM	P	JUD		0.75	Jacked hull up to zero air gap. 16 ft penetration on all 3 legs.
0	RM	U	JUD		1	Commenced preloading Bow leg at 10 ft draft. Gained 5 ft penetration to 21 ft with 85% preload, then punched through to 39.5 ft penetration. Dumped Bow preload.
0	RM	U	JUD		0.75	Leveled rig at 10 ft draft. Penetrations Bow = 39.5 ft, Port = 16.5 ft and Stbd = 16.5 ft.
0	RM	U	JUD		0.25	Jacked hull up to zero air gap.
0	RM	P	JUD		1.25	Commenced preloading Bow leg, cycle #2. Bow leg penetration 42 ft at 94% preload. Port leg = 16.5 ft and Stbd leg = 16.5 ft.

Date : 18 Oct 2004 **Daily Cost : $ 246,812** **Report Number : 3**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	P	JUD		6	Continued preloading Bow leg to 100% with 2 ft draft. Bow leg penetration = 44 ft, Port leg = 16.5 ft and Stbd leg = 16.5 ft. Wait for outgoing tide to achieve 100% preload at 2 ft draft.
0	RM	P	JUD		1	Held 100% preload (21,980 kips) on Bow leg. Final penetration 44 ft.
0	RM	P	JUD		1	Dumped Preload.

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DFE above MSL : 39.9m | Lat : 39 Deg 51 Min 44.12 Sec | Spud Date : 30 Oct 2004 | Release Date : 25 Dec 2004

Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 18 Oct 2004 **Daily Cost : $ 246,812** **Report Number : 3**

0	RM	U	JUD	1.75	Preloaded Port leg to 69.9% - 20 ft penetration at 4 ft draft. Increased preload to 84%, penetration 20 ft.
0	RM	U	JUD	0.75	Stopped preloading while handling helicopter.
0	RM	U	JUD	1.5	Continued preloading Port leg. Equivalent to 88.3% out of water preload with 4 ft draft. Penetration remained at 20 ft.
0	RM	U	JUD	1	Dumped preload to permit jacking the rig to accomodate tide changes.
0	RM	U	JUD	0.25	Jacked hull up 1 ft.
0	RM	P	JUD	3	Preloaded Port leg (cycle #2). Penetration remained at 20 ft with 100% (21,980 kips).
0	RM	P	JUD	6	Held preload on Port leg. Initially at 4 ft draft then full preload (21,980 kips) for 3 hrs while tide turned on low tide, penetration remained at 20 ft.
0	RM	P	JUD	0.5	Dumped Port leg prelaod.
0	RM	P	JUD	0.25	Jacked up 5 ft and prepared to preload Stbd leg.
0	RM	P	JUD	1	Commenced preload on Stbd leg. Initial penetration 19 ft.

Date : 19 Oct 2004 **Daily Cost : $ 258,112** **Report Number : 4**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	P	JUD		2	Continued preloading Stbd leg. Preload tanks full at 3 ft draft, equivalent to 100% preload (21,980 kips) when air gap is zero. Penetration remained at 20 ft.
0	RM	P	JUD		5	Wait on tide to turn to achieve 100% preload at zero air gap. Penetration at 20 ft.
0	RM	P	JUD		3	Held preload for 3 hrs at zero draft.
0	RM	P	JUD		1	Dumped starboard leg preload.
0	RM	U	JUD		0.5	Jacked hull up to accomodate for incoming tide.
0	RM	U	JUD		2.5	Took on preload for bow leg.
0	RM	U	JUD		2.5	Held 100% preload on Bow leg, penetration remained at 44 ft. Reviewed leg penetration with ENSCO, Origin and Geotech.
0	RM	U	JUD		1	Dumped Bow leg preload.
0	RM	U	JUD		0.5	Jacked hull down to 10 ft draft.
0	RM	U	JUD		0.25	Connected mud pumps to low pressure jetting line (can bottom).
0	RM	U	JUD		1.5	Staged mud pumps up from 350 to 700 gpm with 0 psi while pulling on Port leg.
0	RM	U	JUD		0.25	Disconnected from Port leg low pressure jetting line.
0	RM	U	JUD		0.5	Pulled on Port leg, leg came free.
0	RM	U	JUD		0.25	Reconnected Port leg low pressure jetting line to mud pumps.
0	RM	U	JUD		3.25	Commenced dynamic preload on Port leg. Worked Port leg from 2 ft to 12 ft draft while jetting with mud pumps down low pressure jetting line (can bottom) at 700 gpm then raised to 800 gpm, attempting to drive Port leg through cyclic loading. Weather begining to deteriorate. 22.00 wind = 20 knts @ 080°, swell = 1.5 m, waves = 1.0 m, seas = 2.5 m. 24.00 wind = 22 knts @ 060°, swell = 1.5 m, waves = 1.0 m, seas = 2.5 m.

Date : 20 Oct 2004 **Daily Cost : $ 256,012** **Report Number : 5**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	TP	JUD	WOW	0.25	Stopped jacking Port leg due to deteriorating weather. Signs of wear on C chord racks. Continued jetting at 800 gpm.
0	RM	TP	JUD	WOW	1	Inspected racks and pinions on Port leg for wear.
0	RM	TP	JUD	WOW	0.25	Stopped jetting and disconnected jetting line.
0	RM	TP	JUD	WOW	0.5	Jacked hull up to clear seas. 02.00 wind = 18 knts @ 035°, swell = 1.5 m, waves = 1.5 m, seas = 3.0 m.
0	RM	TP	JUD	WOW	4.75	Wait weather to continue preloading. 04.00 wind = 15 knts @ 050°, swell = 1.5 m, waves = 1.0 m, seas = 2.5 m.

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Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 20 Oct 2004 | **Daily Cost : $ 256,012** | **Report Number : 5**

						06.00 wind = 11 knts @ 050°, swell = 1.2 m, waves = 1.0 m, seas = 2.2 m.
0	RM	TP	JUD	OTH	1.25	Jacked hull down to 11 ft draft and connected low pressure jetting line to mud pumps.
0	RM	TP	JUD	OTH	3	Pumped at 1100 gpm through low pressure jetting line (can bottom) on Port leg.
0	RM	TP	JUD	OTH	1	Continued to jet while jacking hull down to 20.8 ft draft to pull Port leg free. Jacked back up to 5 ft air gap. Penetration on Stbd leg increased to 32 ft and Port leg to 28 ft. Maintained 44 ft on Bow leg.
0	RM	TP	JUD	OTH	2	Preloaded Port leg to 80%.
0	RM	TP	JUD	OTH	1.75	Jacked rig down to allow for incoming tide and continued to preload up to 100% at zero air gap, current draft 2.5 ft.
0	RM	TP	JUD	OTH	0.75	Held preload at 100% while tide turned.
0	RM	TP	JUD	OTH	0.25	Commenced jetting Port leg through low pressure jetting line (can bottm) at 200 gpm. Staged up in 200 gpm increments to 1000 gpm. Dumped tank 6-P1 to permit jacking down and holding 2 ft draft.
0	RM	TP	JUD	OTH	3	Jacked rig down at max jacking load (14000 kips) on Port leg and maintained 2 ft draft with the outgoing tide.
0	RM	TP	JUD	OTH	0.75	Dumped remaining preload. stopped jetting. disconnected jetting line.
0	RM	TP	JUD	OTH	1.25	Jacked down and pulled Port leg free.
0	RM	TP	JUD	OTH	0.25	Connected mud pumps to Stbd leg low pressure jetting line (can bottom).
0	RM	TP	JUD	OTH	0.5	Pumped through Stbd leg jetting lines at 1000 gpm to clear jetting lines.
0	RM	TP	JUD	OTH	0.25	Disconnected Stbd jetting line.
0	RM	TP	JUD	OTH	0.25	Connected mud pumps to Port leg low pressure jetting line (can bottom).
0	RM	TP	JUD	OTH	0.75	Pumped through Port leg jetting lines at 1000 gpm to free can off bottom.
0	RM	TP	JUD	OTH	0.25	Port leg became free. Stopped jetting and disconnected jetting line from Port leg.

Date : 21 Oct 2004 | **Daily Cost : $ 261,396** | **Report Number : 6**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	P	JUD		6	Pulled Stbd leg 3 ft off bottom. Jacked down and tagged bottom. Repeated the process with the Port leg. Jacked up to 2 ft draft on both Port and Stbd legs. Jacked down to floating draft on both Port and Stbd legs. Repeated the entire process 6 times. Progress made: Port leg = 0.5 ft and Stbd leg = 4 ft.
0	RM	P	JUD		2	Cycled Port leg by jacking from 2 ft draft to floating draft at 20 ft without any jetting.
0	RM	P	JUD		3.5	Jacked up rig to 10 ft draft - stable position. Picked up crane and took potable water off Invincible Tide. Re-established communications and handled helicopter.
0	RM	P	JUD		2.5	Jacked down rig to 20 ft floating draft and cycled port leg 15 ft off bottom several times to free up travel. Jacked up rig to 5 ft air gap and confirmed leg penetrations: Bow = 46 ft, Stbd = 41 ft, Port = 30 ft (made 2 ft).
0	RM	P	JUD		1.5	Jacked rig hull to 20 ft floating draft and cycled port leg 2 times.
0	RM	P	JUD		0.25	Jacked hull to 6 ft air gap. Penetrations were as follows: Bow = 46 ft, Stbd = 41 ft, Port = 30 ft. No progress made.
0	RM	P	JUD		0.25	Jacked rig hull down to 3 ft air gap.
0	RM	P	JUD		3	Commenced preloading Port leg. Decision made to dump preload and continue cycling Port leg.
0	RM	P	JUD		5	Jacked rig down to 20 ft floating draft. Cycled Port leg several times between 20 ft and 2 ft draft. This was done without any preload and wave action was used to work the leg. Penetrations at 24 hrs were as follows: Bow = 46 ft, Stbd = 44 ft, Port = 31 ft. Note: Favourable weather and sea conditions allowed the cranes and boats to be accessed as required.

Date : 22 Oct 2004 | **Daily Cost : $ 240,946** | **Report Number : 7**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	P	JUD		6	Cycled Port leg several times between 20 ft and 2 ft draft. This was done without any preload and wave action was used to work the leg. Penetrations at the completion of these cycles were as follows:

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Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 22 Oct 2004 **Daily Cost : $ 240,946** **Report Number : 7**

						Bow = 46 ft, Stbd = 47 ft, Port = 33 ft.
0	RM	TP	JUD	WOW	0.25	Swell increased and jacked up to 5 ft air gap to clear wave action.
0	RM	TP	JUD	WOW	4.25	WOW due to confused swell of 1.5 m and seas of 1 m (20 knt winds). Worked Invincible Tide - transferred containers to rig and took drill water.
0	RM	P	JUD		2.25	Jacked hull down to 18 ft floating draft. Pulled Stbd leg free and allowed it to realign to vertical. Set leg back to bottom and rack phase difference reduced back to normal levels. Rig heading held at 105.6°.
0	RM	P	JUD		0.25	Jacked hull up to preload air gap and secured cranes for preload.
0	RM	P	JUD		1.25	Commenced to preload Stbd leg.
0	RM	P	JUD		1.75	Dumped preload on Stbd leg. Prepared to cycle Port leg.
0	RM	P	JUD		5.5	Cycled Port leg between 20 ft and 2 ft draft (used wave action to work the leg) and discussed forward program with town. Penetrations at the completion of these cycles were as follows: Bow = 46 ft, Stbd = 54 ft, Port = 33 ft.
0	RM	TP	JUD	OTH	2.5	Waited on tide prior to commencing preloading operations on Port leg.
						Note: Sea conditions did at times interrupt jacking/preloading operations. Cranes and boats were able to be accessed as required.

Date : 23 Oct 2004 **Daily Cost : $ 254,320** **Report Number : 8**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	TP	JUD	OTH	1	Waited on tide prior to commencing preloading operations on Port leg.
0	RM	P	JUD		11	Cycled Port leg with preload from 14,100 klbs to 18,900 klbs to replicate 50 year storm conditions. Adjusted hull for tide change (maintained 5-6 ft air gap). Completed a total of 7 cycles. No change in port leg penetration. ENSCO engineering discussed results and decided to re-position rig. Final leg penetrations- Bow 46 ft, Stb 54 ft and Port 33 ft.
0	RM	TP	JUD	OTH	2	Handled helicopter. Jacked hull up clear of rising tide and sea conditions and prepared deck to offload Invincible Tide.
0	RM	TP	JUD	OTH	2	Offloaded Invincible Tide to clear their decks for handling manoeuvering line.
0	RM	TP	JUD	OTH	2	Secured all deck cargo on rig.
0	RM	TP	JUD	WOW	6	Waited on weather. Summary of conditions as follows: Time -- Wind Direction -- Knots -- Combined wave height 18:00 -- 220 -- 27 -- 3.0 19:00 -- 240 -- 27 -- 3.0 20:00 -- 240 -- 26 -- 3.0 21:00 -- 240 -- 24 -- 2.5+ 22:00 -- 240 -- 23 -- 2.5+ 23:00 -- 240 -- 25 -- 2.5+ 24:00 -- 230 -- 28 -- 3.0

Date : 24 Oct 2004 **Daily Cost : $ 256,070** **Report Number : 9**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	TP	JUD	WOW	18	Waited on weather. Summary of conditions as follows: Time -- Wind Direction -- Knots -- Combined wave height 01:00 -- 230 -- 28 -- 3.0 02:00 -- 225 -- 30 -- 3.0 03:00 -- 225 -- 30 -- 3.0 04:00 -- 225 -- 25 -- 3.0 05:00 -- 220 -- 20 -- 3.0 06:00 -- 220 -- 20 -- 3.0 07:00 -- 100 -- 10 -- 1.8 08:00 -- 100 -- 12 -- 1.8 09:00 -- 090 -- 16 -- 1.8 10:00 -- 090 -- 13 -- 1.5 11:00 -- 090 -- 13 -- 1.5 12:00 -- 095 -- 12 -- 2.0 13:00 -- 095 -- 12 -- 1.5

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Date : 24 Oct 2004 **Daily Cost : $ 256,070** **Report Number : 9**

						14:00 -- 095 -- 12 -- 1.5 15:00 -- 095 -- 12 -- 1.5 16:00 -- 095 -- 12 -- 2.0 17:00 -- 095 -- 12 -- 2.0 18:00 -- 095 -- 12 -- 2.0
0	RM	TP	JUD	OTH	0.5	Jacked hull down to 20 ft floating draft. Attempted to free legs.
0	RM	TP	JUD	OTH	0.25	Swells caused too much rig movement to pull legs free. Jacked up hull to 9 ft draft.
0	RM	TP	JUD	WOW	1.75	Waited on weather. Summary of conditions as follows: Time -- Wind Direction -- Knots -- Combined wave height 19:00 -- 085 -- 10 -- 2.0 20:00 -- 065 -- 9 -- 2.0
0	RM	TP	JUD	OTH	1	Jacked hull down to 20 ft floating draft. Attempted to free legs. Swell still caused too much rig movement to pull legs free. Jacked hull up to 6 ft air gap.
0	RM	TP	JUD	WOW	2.5	Waited on weather. Summary of conditions as follows: Time -- Wind Direction -- Knots -- Combined wave height 22:00 -- 035 -- 7 -- 2.0 23:00 -- 040 -- 5 -- 1.8 24:00 -- 045 -- 7 -- 1.8 Note: Sea and weather conditions allowed the boats and cranes to be accessed as required.

Date : 25 Oct 2004 **Daily Cost : $ 248,089** **Report Number : 10**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	TP	JUD	OTH	0.5	Jacked hull down to jetting draft.
0	RM	TP	JUD	OTH	0.5	Connected mud pump to lower jets of Stbd leg. Jetted at 1000 gpm (50 psi) and freed Stbd leg.
0	RM	TP	JUD	OTH	1.5	Connected deluge pump to lower jets of Port leg. Pumped and freed Port leg.
0	RM	TP	JUD	OTH	4	Connected deluge pump to lower jets of Bow leg. Jetted at 700 gpm. Connected lower jets of Bow leg to mud pump. Jetted at 1000 gpm and freed Bow leg.
0	RM	TP	JUD	OTH	0.75	Held Pre-Job meeting and hooked up Invincible Tide to the rig on the Stbd stern.
0	RM	TP	JUD	OTH	1.25	Raised Stbd and Port legs until clear of mud line. Rotated rig around the Bow leg, to a heading of 53 degrees, so that the Port leg was above the spud can hole previously created by the Stbd leg.
0	RM	TP	JUD	OTH	0.25	Jacked Port leg down into the old Stbd spud can hole.
0	RM	TP	JUD	OTH	0.5	Jacked up hull to a 0 ft (0 m) air gap. Preloaded Stbd leg to maximum jacking capacity.
0	RM	TP	JUD	OTH	0.25	Jacked down hull to a 4.5 ft (1.4 m) draft. Commenced preload operations on the Stbd leg.
0	RM	TP	JUD	OTH	0.75	Disconnected Invincible Tide from the rig and handled the helicopter operations.
0	RM	TP	JUD	OTH	2.75	Continued preload operations on the Stbd leg. Stepped up leg force to full preload of 21,980 kips (Draft of 8.5 ft / 2.6 m).
0	RM	TP	JUD	OTH	1	Held preload on Stbd leg (hull at 5 ft / 1.5 m draft). Leg penetrations: 26 ft (7.9 m) on Stbd leg, 44 ft (13.4 m) on Bow leg and 40 ft (12.2 m) on Port leg. (Below minimum required.)
0	RM	TP	JUD	OTH	0.5	Dumped preload on Stbd leg.
0	RM	TP	JUD	OTH	2.25	Jacked hull a floating draft to free Stbd leg.
0	RM	TP	JUD	OTH	0.25	Stbd leg freed. Stopped jacking to check load on all A Chords.
0	RM	TP	JUD	OTH	0.5	Manually checked Rack Phase Difference on Port and Stbd leg and confirmed accuracy of RDP readings.
0	RM	TP	JUD	OTH	0.25	Jacked hull up to a 5 ft (1.5 m) air gap.
0	RM	TP	JUD	OTH	2.75	Commenced preloading the Stbd leg.
0	RM	TP	JUD	OTH	2.5	Held 100% preload of 21,987 kips on the Stbd leg. Leg penetrations: 38 ft (11.6 m) on Stbd leg, 44 ft (13.4 m) on Bow leg and 40 ft (12.2 m) on Port leg. Confirmed with the Ensco Engineer that Stbd leg penetration is below the minimum.
0	RM	TP	JUD	OTH	0.5	Dumped preload.
0	RM	TP	JUD	OTH	0.5	Jacked hull down to a 20 ft (6.1 m) floating draft and pull all three legs free.

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Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 26 Oct 2004 **Daily Cost : $ 255,228** **Report Number : 11**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	TP	JUD	OTH	0.5	Jacked hull up to a 6.5 ft (2 m) air gap. Penetration on Port and Bow legs increased to 46 ft (14 m) and Stbd increased to 45 ft (13.4 m).
0	RM	TP	JUD	OTH	3.75	Filled Stbd tanks to full preload of 21,900 kips. Penetration on Stbd leg increased to 46 ft (14 m).
0	RM	TP	JUD	OTH	1.25	Held full preload on the Stbd leg.
0	RM	TP	JUD	OTH	0.5	Dumped preload as waves were hitting the rig hull (rising tide).
0	RM	TP	JUD	OTH	1.5	Jacked up hull to an air gap of 7.5 ft (2.3 m) and continued to dump Stbd preload.
0	RM	TP	JUD	OTH	3	Preloaded Port leg to 100% (21,987 kips). Initial Port leg penetration at 46 ft (14 m).
0	RM	TP	JUD	OTH	6	Held 100% preload on the Port leg. No change in penetration.
0	RM	TP	JUD	OTH	3	Dumped preload on Port leg. Backloaded containers and equipment onto Invincible Tide.
0	RM	TP	JUD	OTH	2.25	Preloaded Bow leg to 100% (21,986 kips).
0	RM	TP	JUD	OTH	2.25	Held full preload on Bow leg. Commenced taking on Stbd leg preload. No change in leg penetrations. Note 1: Weather and sea conditions allowed access to cranes and boats as required. Note 2: ROV made a successful dive. Visibility was poor at the mudline level and 1/2 knot currents were encountered.

Date : 27 Oct 2004 **Daily Cost : $ 249,805** **Report Number : 12**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	TP	JUD	OTH	0.5	Completed full preloading of Stbd leg to 21,971 kips
0	RM	TP	JUD	OTH	7	Held full preload on Bow and Stbd legs for 7 hours. No change in leg penetration- all legs remained at 46 ft (14 m).
0	RM	TP	JUD	OTH	1	Jacked up hull 3 ft (0.9 m) to clear seas. Dumped preload. Continued to jack hull up 5 ft (1.5 m).
0	RM	TP	JUD	OTH	2	Commenced preloading with Port deepwell pump. Note: The preload pumps were inoperable as the 15 ft (4.6 m) air gap required to clear the high seas places the suction point of the pumps out of the water.
0	RM	TP	JUD	OTH	13.5	Jacked hull up 2 ft (0.6 m). Continued preloading with Port deepwell pump. Preload at midnight 17,084 kips. Note: Weather and sea conditions allowed access to cranes as required. Condiitions were too severe to access boats.

Date : 28 Oct 2004 **Daily Cost : $ 249,800** **Report Number : 13**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	RM	TP	JUD	OTH	7.25	Completed taking on preload with Port deepwell pump. Held final rig loading of 17,290 kips for a total 24 hour cycle period. This completed preloading procedures. No settling occured and final leg penetrations are: Bow 46 ft (14 m), Stbd 46 ft (14 m) and Port 46 ft (14 m).
0	RM	TP	JUD	OTH	0.75	Dumped preload.
0	RM	TP	JUD	OTH	2.5	ENSCO reviewed preload results and obtained approval to jack up from their insurance underwriters. Unable to work on the deck of the RJ Hope to release the tow line due to sea conditions. Time -- Wind Direction -- Knots -- Combined wave height 08:00 -- 220-- 36-- 3.0 10:00 -- 220-- 25-- 3.0
0	RM	TP	JUD	OTH	0.5	Jacked up hull 10 ft (3.1 m) and checked RPD readings- all satisfactory.
0	RM	TP	JUD	WOW	3.5	Waited on weather to release RJ Hope from tow bridle. Summary of conditions as follows: Time -- Wind Direction -- Knots -- Combined wave height 11:00 -- 220-- 25-- 3.0 12:00 -- 220-- 20-- 3.0 13:00 -- 210-- 20-- 3.0 14:00 -- 210-- 21-- 3.0 15:00 -- 210-- 18-- 2.5

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Date : 28 Oct 2004 **Daily Cost : $ 249,800** **Report Number : 13**

0	RM	P	JUD	0.5	Recovered tow bridle from Ray J Hope.
0	RM	P	JUD	0.25	Held prejob meeting with crews prior to jacking up the hull.
0	RM	P	JUD	0.75	Jacked up hull to a 62 ft (18.9 m) air gap.
0	RM	P	SKR	3.25	Prepared cantilever for skidding out. Connected BOP hoist lines to PCU.
0	RM	P	RU	0.25	Held prejob meeting with crews prior to skidding out canitlever. Brought in Ray J Hope to take on Drill water, Pot Water and Cement.
0	RM	P	RU	0.75	Skidded out cantilever- Rotary table centre 14.5 ft past transom. PCU clear of transom.
0	PS	P	RU	3	Secured Cantilever. Lowered and pinned PCU in position. Rigged up conductor tensioner frame on tensioner rams / slings. Installed Foxhole and slips. Cleared and prepared cantilever deck to pick up drill pipe / BHA. Measured and stroked out tensioner rams Minimum = 15.34 m and maximum = 16.56 m from rotary table. Attempted to launch ROV at 22.45, heave jarred ROV in the splash zone during launch and caused unit to fail. Recovered ROV.
0	PS	P	RU	0.75	Laid out and strapped drill pipe. Commenced picking up drill pipe. Note: Favourable weather conditions permitted both cranes and vessel to be worked from 15.00 hrs onwards.

Date : 29 Oct 2004 **Daily Cost : $ 269,654** **Report Number : 14**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	PS	P	PUP		7.5	Picked up 24 stands of 5 in drill pipe.
0	PS	P	RU		1	Made up cement stand and racked into derrick.
0	PS	P	HBHA		4.75	Held JSA on picking up BHA. Picked up 3 stands of HWDP and 8¼ in DC's and racked back. Continued preparations to spud, installed ¾ in guidelines on cellar deck air winches, moved 30 in elevators to PCU and mixed spud mud.
0	PS	P	RU		0.75	Removed diverter element from rotary housing and racked clear.
0	PS	P	HBHA		3.25	Made up 26 in bit, picked up and RIH 9½ in DC's. Made up double pin sub and hole opener. RIH BHA and tagged mudline at 109.7 m (with 18.9 m air gap).
0	PS	U	HBHA		0.25	Laid down one single of 8¼ in drill collar and picked up 9 m off bottom.
0	PS	U	JUD		0.25	Jacked hull down 3 ft (0.9 m) to improve space out. New air gap 18 m.
0	PS	U	JUD		1.25	Installed rack chocks on all legs. Prepared cantilever for skid out.
0	PS	P	SKR		0.5	Skidded rig to 60 ft (18.3 m) aft of transom. Secured cantilever. Jumped the ROV. Fine mud surface.
0	PS	P	RU		0.5	Installed service lines and mud lines to cantilever.
0	PS	P	ROV		0.75	Positioned ROV to observe bit tagging sea bed and confirm water depth.
0	PS	P	TI		0.25	RIH and tagged mudline with 10 klb. Tagged at 108.8 (18 m air gap and 68.9 m water depth).
0	PS	U	WO		3	Wait on slack tide. ROV deployed sonar bouys. Installed cantilever stairways and handrails. Laid out and strapped 30 in and 20 in conductor. Note: Weather and sea conditions allowed access to boats and cranes as required.

Date : 30 Oct 2004 **Daily Cost : $ 279,711** **Report Number : 15**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
0	PS	P	WO		1	Wait on slack tide to spud - slack tide at `01:00. ROV completed deployment of the sonar bouys.
218.0	CH	P	DA		7	Drilled 26/36 in hole from 108.8 m to 218 m (TD of hole section). Pumped 40 bbl PHG each 10 m and 75 bbl around BHA prior to each connection. Drilling parameters:- WOB = 0 to 4 kips Rotary = 50 to 60 rpm Pumps = 300 to 1000 gpm SPP = 290 to 900 psi Avg ROP = 17.8 m/hr
218.0	CH	P	PS		0.5	Displaced 150% of hole volume with 600 bbls PHG.

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DFE above MSL : 39.9m | Lat : 39 Deg 51 Min 44.12 Sec | Spud Date : 30 Oct 2004 | Release Date : 25 Dec 2004

Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 30 Oct 2004 **Daily Cost : $ 279,711** **Report Number : 15**

218.0	CH	P	SVY	0.25	Dropped Totco double shot survey.
218.0	CH	P	TO	0.5	POOH from 218 to 138 m. Tight spot at 196 m (40 klb overpull).
218.0	CH	P	SVY	0.25	Rigged up wireline and retrieved totco survey Barrel, 0°.
218.0	CH	P	TI	0.25	RIH from 138 to 214 m. Tagged 4 m of fill.
218.0	CH	P	RW	0.25	Washed out fill from 214 to 218 m.
218.0	CH	P	PS	0.5	Displaced hole volume with 600 bbls of PHG.
218.0	CH	P	TO	0.5	POOH from 218 m to sea bed (108.8 m).
218.0	CH	P	HBHA	2	POOH BHA and racked back in the derrick.
218.0	CON	P	CRN	0.5	Made up pup joint on 30 in circulating head and laid out. Made up tag in cement adapter on 5 in DP and racked in derrick.
218.0	CON	P	CRN	1.25	Changed out to 15 ft bails and installed link tilt. Rigged up 30 in conductor handling equipment.
218.0	CON	P	CRN	0.25	Held JSA for conductor run.
218.0	CON	P	CRN	2.25	Picked up and ran 20 in 133 ppf X56 R4LS conductor, set lock tabs x 2 each joint. Flushed through shoe.
218.0	CON	P	CRN	0.75	Changed out to 30 condutor handling equipment. Made up 20 in / 30 in cross over joint.
218.0	CON	P	CRN	2.5	Ran 30 in 310 ppf, X52, Leopard conductor. Filled each joint below sea level with sea water. Installed lock tabs.
218.0	CON	P	CRN	1	Picked up wellhead housing joint. Re-torqued Left hand ACME stub cross over to 4,000 ft lbs.
218.0	CON	U	CRN	0.5	Cut off handling padeyes from wellhead housing joint. Picked up rotary table external bushing and worked over guide wire padeye.
218.0	CON	P	CRN	1	Picked up and ran 30 in conductor through rotary table and below divertor housing. Installed rotary table external bushing. Observed shoe entering 36 in hole on sea bed with ROV.
218.0	CON	U	CRN	0.75	Welded guide wire padeye to 30 in wellhead housing joint at PCU level.
218.0	CON	P	CRN	0.25	Attached guide wires to 30 in wellhead housing padeyes.

Date : 31 Oct 2004 **Daily Cost : $ 250,159** **Report Number : 16**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
218.0	CON	P	CRN		2	Ran 20/30 in conductor string from 133 m to 169 m.
218.0	CON	U			1	Daylight saving clocks went forward 1 hour.
218.0	CON	P	CRN		2	Ran 20/30 in conductor string from 169 to 198 m.
218.0	CON	P	CRN		1	Picked up and made up landing joint. Squnch joint connection would not engage. Cleaned up and worked until made up. Continued to RIH to 210 m.
218.0	CON	U	CRN		2	Installed tensioner frame inserts on tensioner frame and cut off handling padeyes.
218.0	CON	P	CRN		0.5	Lowered 30 in conductor to shoe depth at 215 mRT. String weight 280 klb.
218.0	CON	P	CMC		0.25	Rigged up to run 5 in drill pipe (cement stinger) with stab in sub.
218.0	CON	P	CMC		0.25	Held pre-job safety meeting.
218.0	CON	P	CMC		1.75	RIH 5 in drill pipe cement stinger with false rotary attached to 30 in conductor.
218.0	CON	P	CMC		1	Made up pup joint for space out. Pick up cement stand and stung in with 10 klb.
218.0	CON	P	CMC		1	Filled 30 in conductor with sea water. Made up pump-in line and circulated conductor with 100 bbls saltwater at 7 bpm and 500 psi. ROV confirmed returns at the mudline. Held JSA for cement job.
218.0	CON	P	CMC		1.5	Lined up Dowel cement unit and pumped 20 bbls sea water. Pressure tested lines to 2000 psi- OK. Mixed and pumped 186 bbls (636 sacks) lead slurry at 13.8 ppg and 76 bbls (361 sacks) tail slurry at 15.8 ppg. Displaced with 14 bbls salt water to leave 2 bbls in drill pipe. ROV monitored returns but couldn't confirm any definite cement returns.
218.0	CON	P	CMC		2.75	Checked floats- OK. Picked up and unstung cement stinger. Pulled back one stand and flushed drillpipe. POOH and laid out cement stinger.
218.0	CON	P	WOC		3.5	Waited on Cement. Installed 30 in elevator on conductor above tension frame. Removed slips on rig floor and held conductor on blocks (weight 280 kips). Secured guide wires on PCU. Re-spooled cellar deck air hoists with operating wire. Laid out and prepared 3½ in cement stinger. Removed Fox hole to run cement stinger. Cut low pressure riser joint to 21 ft (6.4 m).

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Water Depth : 68.9m	Long : 145 Deg 22 Min 30.73 Sec	Spud Time : 01:00	Release Time : 07:45

Date : 31 Oct 2004 **Daily Cost : $ 250,159** **Report Number : 16**

218.0	CON	TP	CPL	CWR 3.5	Took weight on conductor tensioner jacks - 12.5 tonnes x 4. Slacked off tension on blocks, conductor now supported on tension frame - 110 kips. Installed bolts (16) on squnch joint connector- threads tight/corroded. Pulled to 40 kips (22 kips overpull) did not release. Removed squnch joint connector bolts and checked lock ring was free in connector. Re-installed bolts (16), bolts tight then backed off ¼ turn, confirmed all bolts had uniform penetration. Pulled on conductor to 45 kips (27 kips overpull) did not release. Contact Dril-Quip Service Rep for recommendations. Note: Prevailing weather conditions did not impact either crane or vessel operations.

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Activity Report For Trefoil 1

Date : 01 Nov 2004 **Daily Cost : $ 579,808** **Report Number : 17**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
218.0	CON	TU	CPL	CWR	0.75	Removed alternate bolts (8) from squnch joint connector. Pulled 45 kips (27 kips overpull) and connector released. Inspected pin end of squnch joint and found marks of releasing bolts making up against pin profile impeding release.
218.0	CON	P	CPL		2	Held JSA. Pulled and laid down 30 in landing string. Laid down 30 in condutor handling equipment. Prepared rig floor for 3½ in cement stinger.
218.0	CON	P	CMC		0.25	Held JSA for 3½ in cement stinger run.
218.0	CON	P	CMC		1	Picked up 9 joints of 3½ in cement stinger and ran through Fox hole on false rotary table.
218.0	CON	P	CMC		2.5	Ran cement stinger on 5 in drill pipe to sea bed. Stabbed into 36 in annulus with ROV assistance. Tagged cement at 131 m.
218.0	CON	P	CMC		0.5	Laid out top single from cement string and made up pump-in sub and cement lines. End of tubing at 123 m. Held JSA for cement top up job.
218.0	CON	P	CMC		1	Broke circulation with rig pumps 180 gpm, 350 psi. Lined up Dowell cement unit and pumped 10 bbls at 6 bpm and 300 psi. Tested lines to 2000 psi / 5 min. Mixed and pumped 55 bbls 15.8 ppg neat slurry (262 sacks) mixed with seawater. Displaced with 6 bbls to clear drillpipe. Rigged down cement lines.
218.0	CON	P	CMC		1.5	POOH and laid out 3½ in cement stinger.
218.0	CON	P	CRN		2	Cleared rig floor. Changed bails on TDS and installed rig up slings. Installed overboard hoses on shaker drains.
218.0	CON	P	CMC		1.5	Picked up 21 ft 30 in squnch jt mandrel and set down on conductor. Rigged up air hoists to pull down and latch up squnch connection.
218.0	CON	P	BOP		1.75	Installed overshot and diverter. Connected control lines and energised overshot / diverter system.
218.0	CON	P	BOP		1.25	Rigged up drill pipe handling equipment and ran 1 stand drill pipe. Filled conductor and function tested diverter system. Flushed through overboard lines. Leak noted on diverter inner seal on connection between diverter and overshot.
218.0	CON	TP	BOP	OEF	0.75	Pulled diverter overshot. Found inner seal rolled. Replaced seal.
218.0	CON	TP	BOP	OEF	0.5	Re-installed diverter and overshot.
218.0	CON	P	BOP		0.75	Ran 1 stand of 5 in drill and made up to TDS. Closed diverter and tested to 200 psi.
218.0	CON	P	BOP		0.5	Removed 10 in insert packer from the diverter housing. Installed the fox hole and slips.
218.0	SH	P	HBHA		0.25	Held JSA on making up BHA.
218.0	SH	P	HBHA		4.75	Made up 16 in BHA. Rearranged stands in derrick to access BHA components. Checked torque on service breaks on motor and installed MWD probe. RIH to 150 m.
218.0	SH	P	HBHA		0.5	Shallow tested MWD at 860 gpm and 130 psi. Installed 10 in diverter packer in diverter housing. Note: Weather and sea conditions allowed access to boats and cranes as required.

Date : 02 Nov 2004 **Daily Cost : $ 309,535** **Report Number : 18**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
218.0	SH	P	TI		0.25	Installed 10 in diverter packer element.
218.0	SH	P	TI		0.5	RIH on Drill Pipe and tagged cement at 214 m.
218.0	SH	P	DC		1.25	Drilled shoe track and cement from 214 m to 218 m. WOB = 0 to 10 kips Rotary = 30 rpm Motor rpm = 85 rpm Pumps = 650 gpm Pressure = 100 psi
240.0	SH	P	DM		0.75	Drilled new hole from 218 m to 240 m at reduced parameters to clear stabilisers from shoe track. Returns dumped at shakers. WOB = 0 to 2 kips Rotary = 30 rpm Motor rpm = 85 rpm Pumps = 650 gpm Pressure = 100 psi

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Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 02 Nov 2004 **Daily Cost : $ 309,535** **Report Number : 18**

641.0	SH	P	DM		12.5	Drilled from 240 m to 641 m. Pumped 30 bbl PHG sweeps every 10 m and spotted 50 bbls PHG around BHA prior to connections. Controlled ROP to ±50 m/hr. Closed in the mud system commenced taking returns to the pits. Took MWD surveys each connection. WOB = 0 to 5 kips Rotary = 30 to 50 rpm Motor rpm = 130 rpm Pumps = 1000 gpm Pressure = 2300 to 2600 psi
641.0	SH	TP	LC	LC	0.25	Observed static losses while making a connection at 641 m.
641.0	SH	TP	LC	LC	1.75	Racked back stand DP. Pumped & circulated 100 bbl hi vis. Circulated out.
641.0	SH	TP	LC	LC	0.25	Pumped and spotted 100 bbl PHG/PHPA Hi vis pill on bottom.
641.0	SH	TP	LC	LC	0.75	Monitored well on trip tank, downhole losses at 5 to 6 bbl/min.
641.0	SH	TP	LC	LC	0.25	Pumped 115 bbl Hi vis sweep. Losses 5 to 6 bbl/min.
666.1	SH	P	DM	LC	1.5	Picked up stand and drilled from 641 m to 666.1 m with continued downhole losses at 5 to 6 bbl/min. Reduced pump rate to 750 gpm. Pumped 50 Bbl PHG every 9 m.
666.1	SH	P	CMD	LC	0.75	Pumped 50 bbl PHG around BHA, took survey. Circulated at 620 gpm to clean hole. Prepared LCM pill.
666.1	SH	TU	CMD	LC	1	Pumped 100 bbl LCM pill, 300 bbl PHG and 100 bbl Inhibited pill all at 500 gpm. LCM composition:- Circal Y at 20 lbs/bbl Barafibre at 10 lbs/bbl Kwikseal Med at 5 lbs/bbl
666.1	SH	TP	LC	WOW	0.25	Monitored well on trip tank, downhole losses at 5 to 6 bbl/min. Maintaining annulus full with sea water. Note:- Cranes shut down at 21.30 due to high wind gusts > 40 Knots.
666.1	SH	P	TO	LC	1.75	POOH from 666.1 m to 200 m. Filled annulus with sea water via trip tank while POOH, downhole losses at 5 to 6 bbl/min.
666.1	SH	TP	WOW	LC	0.25	Monitored well on trip tank, downhole losses at 5 to 6 bbl/min. Maintaining annulus full with sea water. Unable to proceed to casing run due to high winds preventing cranes operating. Continued to attempt to cure losses while waiting on weather.

Date : 03 Nov 2004 **Daily Cost : $ 338,072** **Report Number : 19**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
666.1	SH	TP	WOW	LC	0.75	Monitor well on trip tank, filling annulus with sea water, while WOW. Finished mixing LCM Pill.
666.1	SH	TP	WOW	LC	0.5	Pumped 100 bbl LCM pill and chased with 10 bbls PHG at 280 gpm. Maintained annulus static while pumping LCM and PHG. LCM composition:- Circal Y at 20 lbs/bbl Barafibre at 10 lbs/bbl Kwikseal Med at 5 lbs/bbl Weather condition: 01.00 wind = 45 knts, Combined Seas = 5.5 m
666.1	SH	TP	WOW	LC	2.25	Monitored well on trip tank, while WOW. Losses initially at 1 bbl/min then gradually incresed to 5 bbl/min. Mixed LCM Pill. LCM composition:- Circal Y at 20 lbs/bbl Kwikseal Med at 5 lbs/bbl Baralift at 0.4 lbs/bbl Weather condition: 03.00 wind = 55 knts, Combined Seas = 6.0 m
666.1	SH	TP	WOW	LC	0.5	Pumped 100 bbl LCM pill at ±250 gpm and maintained annulus static while pumping LCM.
666.1	SH	TP	WOW	LC	0.75	Chased LCM with PHG and maintained hole full at 150 gpm, 130 bbls pumped. Initial losses at 3.5 bbl/min reduced to 2.0 bbl/min.
666.1	SH	TP	WOW	LC	1.75	Monitored well on trip tank , while WOW, losses at 3.0 bbl/min. Mixing LCM Pill. Weather condition: 06.00 wind = 42 knts, Combined Seas = 5.5 m

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Date : 03 Nov 2004 **Daily Cost : $ 338,072** **Report Number : 19**

666.1	SH	P	TI	1.25	Wind abating and estimated should be able to run casing by afternoon. RIH to bottom, no drag or fill on bottom.
666.1	SH	P	CMD	1	Pumped 300 bbls hi vis PHG and spotted 200 bbl KCl inhibited pill on bottom. Monitored losses at 3.5 bbl/min.
666.1	SH	P	TO	1.5	POOH to 205 m. No excess drag, hole in good condition. Checked losses at 3.5 bbl/min. Weather condition: 08.00 wind = 40 knts, Combined Seas = 5.5 m 10.00 wind = 36 knts, Combined Seas = 4.5 m
666.1	SH	P	TO	1	Pumped 100 bbls LCM pill and chased with 50 bbl hi vis PHG. Losses dropped to 2.0 bbl/min then 0.5 bbl/min.
666.1	SH	P	TO	2.5	POOH from 205 m to surface, racked back BHA. Laid out drill collar and recovered MWD probe. 12.00 wind = 30 knts, Combined Seas = 4.5 m
666.1	SH	P	CRN	0.5	Cleared rig floor. Pulled diverter element. Monitored well on trip tank, losses at 2.9 bbl/min. Shut off fill up and monitored fluid level. Dropped to ±80 ft and still dropping after 40 mins.
666.1	SC	P	CRN	2	Changed out handling equipment on PRS and TDS for running casing. Installed La Fleur circulating head. Changed out PS21 inserts to 13.375 in.
666.1	SC	P	CRN	0.25	Held casing running JSA.
666.1	SC	P	CRN	2.75	Made up shoe track and checked float operation. Ran 15 jts 13.375 in casing. Filled each joint with sea water and every 4th joint with PHG.
666.1	SC	P	CRN	0.5	Filled annulus with PHG and broke circulation through casing.
666.1	SC	P	CRN	2.75	Ran 13.375 casing to 480 m. Filled each joint with sea water and every 4th joint with PHG.
666.1	SC	P	CRN	0.5	Removed PS21 slips. Pulled diverter element. Made up MLS running tool to MLS hanger on catwalk.
666.1	SC	P	CRN	0.5	Picked up MLS Hanger. Torqued pup joint connection. Backed out and re-made up MLS running tool and checked torque.
666.1	SC	P	CRN	0.25	Pressure tested MLS Hanger / Running tool seals with porta-pack to 1500 psi 5 mins.
666.1	SC	P	CRN	0.25	Removed PS 21 slips, ran MLS hanger below rotary table and installed PS 21 slips.

Date : 04 Nov 2004 **Daily Cost : $ 399,019** **Report Number : 20**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
666.1	SC	P	CRN		1.5	Ran 13.375 in casing (54 ppf, K55, BTC) from 503 m to 625 m.
666.1	SC	P	CRN		0.25	Pulled PS21 slips and installed diverter element.
666.1	SC	P	CRN		0.25	Ran 13.375 in casing (54 ppf, K55, BTC) from 625 m to 650 m.
666.1	SC	P	CRN		0.5	Rigged down 500 tonne elevators and La Fleur fill-up tool. Picked up 250 tonne side door elevators.
666.1	SC	P	CRN		0.5	Picked up 13.375 in landing / cementing joint. Ran casing from 650 m and stood up at 657.25 m (3.5 m high to prognosed).
666.1	SC	P	CRN		0.5	Installed cement head and cement hose on landing joint.
666.1	SC	TP	CRN	CWR	0.25	Broke circulation with 245 gpm (500 psi).
666.1	SC	TP	CRN	CWR	1	Changed out tong head on rig tongs to 13.375 in. Checked all casing and conductor measurements to confirm correct data.
666.1	SC	TP	CRN	CWR	0.25	Turned casing ¼ turn left with rig tong (zero torque) and attempted to run casing. Stood up at 657.25 m. Set down 20 kips and turned casing with rig tongs, still would not pass 657.25 m. Sat down with 60 kips and would not pass 657.25 m.
666.1	SC	TP	CRN	CWR	0.5	Called town and discussed options.
666.1	SC	TP	CRN	CWR	0.5	Sat down with full string weight 120 kips, still would not pass 657.25 m. Checked pipe tally and confirmed depth. MLS at 20 in swage.
666.1	SC	P	CRN		1	Circulated at 5.5 bpm (500 psi) and confirmed landout of casing at 657.25 m with 200 kips on the Martin Decker. Decision made to cement pipe.
666.1	SC	P	CMC		0.25	Pumped 10 bbls of freshwater and tested cement lines to 2000 psi - OK. Pumped 8 bbls of freshwater and released bottom plug. Pumped 2 bbls of fresh water spacer and confirmed bottom plug had released.
666.1	SC	P	CMC		0.25	Loaded top plug in cement head.

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Date : 04 Nov 2004 **Daily Cost : $ 399,019** **Report Number : 20**

666.1	SC	P	CMC	0.75	Mixed and pumped 150 bbls of 12.5 ppg lead slurry and 56 bbls of 15.8 ppg tail slurry.
666.1	SC	P	CMC	0.25	Released top plug and chased same with 20 bbls of freshwater.
666.1	SC	P	CMC	0.75	Displaced cement with 299 bbls of seawater using rig pumps (7.5 bpm, 950 psi). Bumped plug with 1500 psi
666.1	SC	P	CMC	0.25	Held bump pressure of 1500 psi to test 13.375 in casing (15 mins) - OK.
666.1	SC	P	CMC	0.25	Rigged down cement hose - floats holding.
666.1	SC	P	CMC	0.75	Opened MLS ports with x8 turns to right with power tongs. Rigged up cement hose.
666.1	SC	P	CMC	1.25	Pumped seawater through MLS ports at 8 bpm (600 psi). Pumped a total of x2 bottoms up and no cement returns were observed at surface.
666.1	SC	P	CMC	0.5	Pumped 30 bbls of sugar water and displaced with 40 bbls of seawater to spot across MLS ports.Whilst circulating the ROV noticed circulation around the outside of the 30 in at the mudline.
666.1	SC	P	CMC	0.75	Removed cement hose and closed wash ports with x8 left hand turns and torque to 6500 ft/lbs.
666.1	SC	P	CMC	0.25	Made up cement hose and tested 13.375 in casing to 1500 psi (10 mins) - OK.
666.1	SC	P	CMC	0.5	Rigged down cement line and cement head.
666.1	SC	P	CRN	1.5	Welder cut window in 30 in conductor (cellar deck). Welder drained and rough cut 13.375 in casing. Note: Moved wellhead into cellar deck for nipple up.
666.1	SC	P	CRN	0.5	Pulled out and laid down 13.375 in landing string.
666.1	SC	P	CRN	0.25	Rigged down 13.375 in handling equipment and removed same from rig floor.
666.1	SC	P	CRN	1.25	Rigged up to pull diverter. Pulled same and set back on rig floor. Laid out 30 in overshot.
666.1	SC	P	CRN	0.25	Installed rig up slings on 30 in mandrel.
666.1	SC	P	CRN	2.75	Inserted bolts on 30 in squench connector. Attempted to release mandrel with 40 klb overpull - unsuccessful. Reconfigured and worked release bolts. After several attempts the joint came free with 40 klb overpull.
666.1	SC	P	CRN	0.25	Laid out 30 in mandrel.
666.1	SC	P	CRN	1.5	Welder cut and dressed off 13.375 in stump. Concurrently prepared handling equipment and 3.5 in stinger for top-up cement job. Removed and laid down fox hole.
666.1	SC	P	WH	0.25	Held JSA prior to installing Cameron wellhead.
666.1	SC	P	WH	1.75	Installed wellhead as per Cameron procedures. Made up ACME - Buttress crossover to stand of 5 in drillpipe to latch in casing head. Note: Favourable weather and sea conditions allowed the cranes and boat to be accessed as required.

Date : 05 Nov 2004 **Daily Cost : $ 419,490** **Report Number : 21**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
666.1	SC	P	WH		1.75	Cameron energised slips on wellhead (using Hy-Torq to 750 ft/lbs). Concurrently picked up and ran 6 joints of 3.5 in tubing (cement stinger) through fox hole. .
666.1	SC	P	WH		0.75	Made up 13.375 in BTC pin x 4.5 in IF box crossover on a stand of drill pipe. Made up same into Cameron compact housing running tool with x3.5 turns to left. Picked up to 100 klbs (weight of casing above mud line hanger) and installed split landing base. Released running tool and laid down same. .
666.1	SC	P	WH		1.5	Energised and tested P seals to 900 psi (15 mins) - OK. Continued to run cement stinger on 5 in drill pipe. Stabbed into 36 x 30 in annulus with ROV assistance. Stinger could not pass 116m. Picked up 115 m and installed pump-in sub and cement lines. .
666.1	CH	U	TUC	CJ	0.25	Conducted JSA prior to conducting top-up cement job. Broke circulation through cement string with rig pumps. .
666.1	CH	U	TUC	CJ	0.25	Broke circulation with cement unit pumps - returns observed by ROV. Pressure tested cement lines to 2000 psi - OK. .

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Date : 05 Nov 2004 **Daily Cost : $ 419,490** **Report Number : 21**

666.1	CH	U	TUC	CJ	0.75	Pumped 55 bbls of 15.8 ppg G neat cement slurry (264 sx, 33.5 bbl seawater). ROV observed returns at seabed during cement operation. Displaced cement with 6 bbls of seawater. .
666.1	CH	U	TUC	CJ	1.75	Installed Cameron 10 k riser adapter on compact housing head. Rigged down cement lines. POOH and laid down cement string. .
666.1	CH	U	TUC	CJ	0.5	Removed 3.5 in equipment from rig floor. .
666.1	SC	P	BOP		1.5	Removed casing bails from top drive. Installed drilling bails and 4 x 35 T BOP slings. Prepared for nipple up of BOP's. .
666.1	SC	P	BOP		0.25	Conducted JSA prior to handling BOP's. .
666.1	SC	P	BOP		0.75	Lifted BOP's off stump and moved to well centre. Installed x4 BOP slings and removed test joint. .
666.1	SC	P	BOP		1.75	Lowered BOP's and made up NT2 connector. .
666.1	SC	P	BOP		0.75	Picked up and made up bell nipple to BOP's. .
666.1	SC	U	BOP		0.75	Altered Choke and Kill elbow block configuration to hook up Choke and Kill hoses. Removed shackles and rigged up lines from mandrel. .
666.1	SC	U	BOP		1.75	Made up diverter/oveshot. Continued to alter block configuration. .
666.1	SC	P	BOP		9	Rigged down diverter handling equipment and rigged up 5 in handling equipment on rig floor. Ran x1 stand of 5 in drillpipe and spaced out and function tested BOP's. Performed accumulator drawdown test. Filled riser/BOP with sea water. All blocks reconfigured on BOP's with x3 Choke and Kill lines installed. Note: Favourable weather and sea conditions allowed the cranes and boat to be accessed as required.

Date : 06 Nov 2004 **Daily Cost : $ 339,674** **Report Number : 22**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
666.1	SC	P	BOP		3.25	Rigged up Choke and Kill lines on BOP's. .
666.1	SC	P	BOP		1	Made up and set test plug while Cameron re-tightened Fastlock connector after installation of the BOP's. .
666.1	SC	P	BOP		1.75	Filled BOP stack and Choke and Kill lines with sea water. Tested wellhead and BOP connection, Choke and Kill lines + 1, 2, 3, 4 CMV against pipe rams. All tests were successful (250/5000 psi, 5/10 mins). .
666.1	SC	P	BOP		1	Backed out test plug from running string and tested blind rams to 250/5000 psi (5/10 mins) - OK. Made up running string to test plug and POOH same. Pressure tested 13.375 in casing and lower slip lock connector against blind rams to 250/1500 psi (5/10 mins) - OK. .
666.1	SC	P	BOP		2	Rigged up and tested LMV, upper IBOP and stand pipe #9 - OK. Rigged down test equipment. .
666.1	SC	P	BOP		1.75	Rigged up and tested choke manifold and all stand pipe valves to 250/5000 psi (5/10 mins) - OK. Changed out lube oil pump on top drive. .
666.1	SC	TP	BOP	OEF	0.25	High presure homer valve on cement unit leaking. Changed out valve. .
666.1	SC	P	BOP		0.5	Continued testing stand pipe valves 250/5000 psi (5/10 mins) - OK. .
666.1	SC	P	HBHA		1.5	Laid down 16 in BHA from derrick. .

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666.1	SC	P	MWD	0.25	Calibrated Sperry MWD block height sensor. .
666.1	SC	P	HBHA	1	Laid down 9.5 in drill collars from derrick. .
666.1	SC	P	WH	0.5	Made up wear bushing to running assembly and RIH same. Set wear bushing and POOH running assembly. .
666.1	IH1	P	HBHA	2.25	Made up 12.25 in BHA (including mud motor with 0° bend). .
666.1	IH1	P	MWD	0.5	Surface tested MWD tools - OK. .
666.1	IH1	P	HBHA	0.5	Picked up and made up 8.25 in drill collars. .
666.1	IH1	P	TI	1	RIH with 12.25 in BHA to 135 mMD. .
666.1	IH1	P	MWD	0.25	Shallow tested MWD tools at 850 gpm (1300 psi) - OK. .
666.1	IH1	P	TI	1.25	Installed automatic slips (PS21) and RIH 12.25 in BHA to 605 mMD. .
666.1	IH1	P	ED	0.25	Conducted trip drill prior to drillout of 13.375 in shoe. .
666.1	IH1	P	TI	0.25	Washed down BHA from 605 mMD (450 gpm, 650 psi, 40 rpm) and tagged top of cement at 629 mMD. .
666.1	IH1	P	DC	2	Drilled out cement from 629 mMD and displaced to Drispac-Polymer mud 5 m prior to shoe. Drilled through float collar at 633 mMD and shoe at 657 mMD. Reamed through shoetrack x3 times. .
666.1	IH1	P	TI	0.25	Cleaned out rat hole to 666 mMD. .
671.0	IH1	P	DM	0.25	Drilled 5 m of new formation to 671 mMD. .
671.0	IH1	P	CMD	0.5	Circulated hole clean x2 times to condition mud system. Pulled back into 13.375 in shoe. Note: 1. Favourable weather and sea conditions allowed the cranes and boats to be accessed as required. 2. Dived ROV at 09:20. Conductor at seabed showed no sign of movement. 3. BOP tensioners 4 x 40 tonnes. No movement observed at surface.

Date : 07 Nov 2004 **Daily Cost : $ 373,275** **Report Number : 23**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
671.0	IH1	P	LOT		1.5	Lined up cement unit for FIT. Broke circulation and performed FIT: MW = 8.6 ppg Surface pressure = 202 psi EMW = 10.5 ppg
1398.0	IH1	P	DM		22.5	Drilled 12.25 in hole from 671 mMD to 1398 mMD. WOB = 5 - 10 klbs RPM (combined) = 150 - 200 Flow = 850 - 900 gpm SCR at 864 mMD with 8.9 ppg MW 30 40 #1 290 385 #2 300 400 SCR at 1380 mMD with 8.8 ppg MW 30 40 #1 390 490 #2 390 485 Note:

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1. No gas encountered through potential gas zone below 13.375 in shoe.
2. Picked up and made up 5 in drill pipe stands. A total of 86 stands in derrick.
3. Changed out fox hole and PRS handling equipment to 9.625 in. Rigged up Weatherford jam unit and tong. Commenced picking up and racking back 9.625 in casing doubles.
4. Favourable weather and sea conditions allowed the cranes and boats to be accessed as required.
5. Dived ROV at 06:20. Conductor at seabed showed no sign of movement.
6. BOP tensioners 4 x 35 tonnes. No movement observed at surface.

Date : 08 Nov 2004 **Daily Cost : $ 296,608** **Report Number : 24**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1937.0	IH1	P	DM		18.25	Drilled 12.25 in hole from 1398 mMD to 1937 mMD. WOB = 5 - 15 klbs RPM (combined) = 180 - 200 Flow = 850 gpm SCR at 1765 mMD with 8.8 ppg MW 30 40 #1 500 630 #2 510 640
1937.0	IH1	P	CMD		0.5	Drill string stalled at 1937 mMD. Worked string free with 35 klbs overpull. Circulated to clean hole at 900 gpm (90 rpm) and reciprocated pipe. Suspected hard dolomite stringer encountered.
2036.0	IH1	P	DM		5.25	Drilled 12.25 in hole from 1937 mMD to 2036 mMD. Increased MW from 8.8 ppg to 9.0 ppg due to signs of "blocky" cuttings over shakers. WOB = 5 - 15 klbs RPM (combined) = 180 - 200 Flow = 850 gpm SCR at 1967 mMD with 9.0 ppg MW 30 40 #1 520 640 #2 500 630 Note: 1. Favourable weather and sea conditions allowed the cranes and boat to be accessed as required. 2. Dived ROV at 06:10. Conductor at seabed showed no sign of movement. Noted that one guideline had lost its pin. Attempted to re-establish same - unsuccessful. 3. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 4. Made up a total of 40 x 9.625 in casing doubles and racked back in derrick.

Date : 09 Nov 2004 **Daily Cost : $ 289,857** **Report Number : 25**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2428.0	IH1	P	DM		21.75	Drilled 12.25 in hole from 2036 mMD to section TD at 2428 mMD. Increased MW from 9.0 ppg to 9.2 ppg. WOB = 10 - 20 klbs RPM (combined) = 180 - 200 Flow = 800 - 900 gpm SCR's at 2175 mMD with 9.1 ppg MW 30 40 #1 550 680 #3 560 700 SCR's at 2315 mMD with 9.2 ppg MW 30 40 #1 570 730 #3 570 730 Note: 1. Traces of H2S (1 ppm) detected at 2037 mMD, 2042 mMD, 2054 mMD, 2055 mMD, 2059 mMD and 2066 mMD. 2. Gas peak of 77 units encountered at 2113 mMD. .

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Date : 09 Nov 2004 **Daily Cost : $ 289,857** **Report Number : 25**

2428.0	IH1	P	CMD		0.75	Reciprocated drillstring and circulated bottoms up. Confirmed section TD. .
2428.0	IH1	P	CMD		1.25	Pumped 40 bbls (12 ppg) of weighted pill. Circulated out at 850 gpm and reciprocated pipe at 120 rpm. Noticed a large increase of "rounded" cuttings on bottoms-up. .
2428.0	IH1	P	CMD		0.25	Pumped 2nd 40 bbl (12 ppg) weighted pill. Circulated out at 850 gpm and reciprocated pipe at 120 rpm. Note: 1. Favourable weather and sea conditions allowed the cranes and boat to be accessed as required. 2. ROV survey of the seabed showed no sign of conductor movement. Successfully re-established guidewire pin. 3. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 4. Made up a total of 48 x 9.625 in casing doubles and racked back in derrick. 5. Made up additional stands of 5 in drillpipe and stood back in derrick (114 stands in total = 3309 m). .

Date : 10 Nov 2004 **Daily Cost : $ 305,224** **Report Number : 26**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2428.0	IH1	U	CMD		3.5	Circulated weighted (12 ppg) pill #2 at TD of 12.25 in section. On bottoms up a +/-50% reduction in rounded cuttings was observed when compared to bottoms-up of pill #1. Circulated an addtional 3x bottoms up with 900 gpm (4100 psi). A significant reduction in cuttings was observed on each bottoms-up. .
2428.0	IH1	P	TO		0.25	Flowchecked well - well static. .
2428.0	IH1	P	TO		3	POOH on elevators to 2288 mMD (5 stands) and pumped slug. Continued to POOH on elevators to 1553 mMD. Tight spots were encountered at 1675 mMD, 1591 mMD and 1533 mMD (maximum overpull of 30 klbs). Well swabbed 1 bbl at 1533 mMD. .
2428.0	IH1	P	TI		0.25	RIH to 1620 mMD. .
2428.0	IH1	P	CMD		1	Circulated bottoms up at 850 gpm (3200 psi). A 50% increase in cuttings and a 109 unit gas peak were observed. .
2428.0	IH1	P	TO		0.25	Flowchecked well - well static. .
2428.0	IH1	P	TO		1.75	POOH from 1620 mMD to 1185 mMD. Tight hole was encountered at 1466 mMD and 1435 mMD (maximum overpull of 25 klbs). Well swabbed at 1185 mMD. .
2428.0	IH1	P	TI		0.25	RIH from 1185 mMD to 1243 mMD. .
2428.0	IH1	P	CMD		0.5	Circulated bottoms up with 850 gpm (2750 psi). A 10% increase in cuttings was observed (maximum gas = 3 units). .
2428.0	IH1	P	TO		1.25	POOH from 1243 mMD to 1150 mMD where tight hole was encountered. Pulled free with 25 klbs. Pumped out of hole from 1150 mMD to 1079 mMD (750 gpm, 2250 psi). Hole packed off at 1079 mMD - regained full circulation. Precautionary reamed from 1079 mMD to 1069 mMD.
2428.0	IH1	P	TO		3.75	Pumped out of hole from 1069 mMD to 13.375 in shoe at 657.25 mMD (700 gpm, 1700 psi). Back reamed through tight hole at 826 mMD and worked through tight hole at 794 mMD to 784 mMD (20 klbs overpull). .
2428.0	IH1	P	CMD		0.5	Pumped a 30 bbl Barolift (12 ppg) sweep and circulated hole clean (reciprocated string). A 100% increase in cuttings noticed on bottoms-up (majority of cuttings were large and blocky). .
2428.0	IH1	TP	RS	RE	0.75	Serviced top drive and PRS. Redressed and installed PS21 auto slips. Monitored well on trip tank - static. .
2428.0	IH1	P	TI		5.75	RIH from 629 mMD to 2385 mMD. Worked and pumped through tight spots at 1208 mMD, 1320 mMD, 1334 mMD, 1369 mMD, 1402 mMD, 1423 mMD, 1441 mMD, 1456 mMD, 1483 mMD and 2385

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					mMD with 700 gpm (90 rpm). .
2428.0	IH1	P	TI	0.5	Precautionary washed and reamed from 2385 mMD to TD at 2428 mMD (850 gpm, 90 rpm). Note: No fill encountered at TD. .
2428.0	IH1	P	CMD	0.75	Circulated bottoms up and reciprocated string (850 gpm, 120 rpm). A maximum gas peak of 215 units (4.3%) was recorded whilst circulating. Note: 1. Favourable weather and sea conditions allowed the cranes and boats to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No inspection carried out with ROV due to vessel traffic and heavy seas.

Date : 11 Nov 2004 **Daily Cost : $ 281,215** **Report Number : 27**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2428.0	IH1	U	CMD		4.5	Circulated bottoms up #1 at 850 gpm (3800 psi). Noticed an increase in cuttings returns on bottoms up. Pumped a 30 bbl weighted (12 ppg) Barolift pill and circulated out same. At bottoms up noticed a decrease in the volume of cuttings returned when compared to bottoms up #1 . Pumped a further 30 bbl weighted (12 ppg) Barolift pill and circulated out same. At bottoms up noticed a further decrease in the volume of cuttings returned. Two further bottoms up circulations were conducted with only minor volumes of cuttings observed at the shakers. .
2428.0	IH1	P	CMD		0.25	Flowchecked well - static. .
2428.0	IH1	P	TO		1.75	POOH from 2428 mMD to 1823 mMD. From 1843 mMD to 1823 mMD tight hole (10 klbs overpull) and swabbing was encountered. .
2428.0	IH1	P	TI		0.25	RIH from 1823 mMD to 1910 mMD. .
2428.0	IH1	P	CMD		1	Circulated bottoms up at 850 gpm (3300 psi). Gas peak of 50 units recorded. No significant increase in cuttings observed over shakers. .
2428.0	IH1	P	CMD		0.25	Flowchecked well - static. .
2428.0	IH1	P	TO		2.75	Pumped out of hole at 300 gpm from 1910 mMD to 1387 mMD. Tight spots (30 klbs overpull) at 1823 mMD, 1733 mMD and 1641 mMD. .
2428.0	IH1	P	TO		2	POOH on elevators from 1387 mMD to 13.375 in shoe (657.25 mMD). .
2428.0	IH1	P	CMD		0.25	Flowchecked well - static. .
2428.0	IH1	P	TO		0.75	POOH from 13.375 in shoe to BHA at 198 mMD. .
2428.0	IH1	P	CMD		0.25	Flowchecked well - static. Removed PS21 auto slips. .
2428.0	IH1	P	HBHA		1.25	POOH 12.25 in BHA from 198 mMD to MWD tool. .
2428.0	IH1	P	MWD		0.75	Downloaded MWD tool and pulled MWD probe. .
2428.0	IH1	P	HBHA		0.5	Drained mud motor and broke off bit (1-1-NO-A-X-I-NO-TD). Racked back BHA in derrick. .
2428.0	IC1	P	RRC		1.5	Rigged up Weatherford casing tongs and dressed PS21 auto slips for 9.625 in casing. Made up wellhead jetting assembly. .
2428.0	IC1	U	WH		0.25	RIH with wellhead jetting assembly to 150 mMD. .
2428.0	IC1	U	WH		0.25	Jetted hang-off area from 150 mMD to 165 mMD at 700 gpm (600 psi, 50 rpm). Made 3 passes

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					across this interval. .
2428.0	IC1	U	WH	0.5	POOH and laid down jetting tool assembly. .
2428.0	IC1	P	WH	0.5	Made up wear bushing retrieval tool. Pulled wear bushing and laid out retrieval tool. .
2428.0	IC1	P	RRC	1	Changed out bails and elevators on top drive. Rigged up Le Fleur fill-up tool. Rigged up to run 9.625 in casing. .
2428.0	IC1	P	RRC	0.25	Conducted JSA prior to running 9.625 in casing. .
2428.0	IC1	P	CRN	1.25	Picked up and made up 9.625 in shoe track. RIH same and checked floats - OK. .
2428.0	IC1	P	CRN	2	RIH 9.625 in casing (43.5 ppf, L80, VT) to 193 mMD. Note: 1. Favourable weather and sea conditions allowed the cranes and boat to be accessed as required. 2. ROV survey of the seabed showed no sign of conductor movement. ROV also completed leg survey. 3. BOP tensioners 4 x 35 tonnes. No movement observed at surface.

Date : 12 Nov 2004 **Daily Cost : $ 360,990** **Report Number : 28**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2428.0	IC1	P	CRN		0.25	Conducted JSA prior to running 9.625 in casing. .
2428.0	IC1	P	CRN		3	RIH 9.625 in casing (43.5 ppf, L80, VT) to 650 mMD (filled each joint). .
2428.0	IC1	P	CRN		0.25	Broke circulation at 650 mMD (120 gpm, 350 psi). .
2428.0	IC1	P	CRN		0.75	Rigged down 150 T side door elevators and 350 T bails. Made up 500 T spider elevators and bails. .
2428.0	IC1	P	CRN		3.5	RIH 9.625 in casing (43.5 ppf, L80, VT) to 1095 mMD (filled each joint). .
2428.0	IC1	P	CRN		5.5	RIH 9.625 in casing doubles from derrick to 2250 mMD (filled each double). .
2428.0	IC1	P	CRN		1.25	Picked up and made up casing hanger. Opened ports and re-torqued externally. Tested seals to 5000 psi (5 mins) - OK. .
2428.0	IC1	P	CRN		1.25	RIH 9.625 in casing (43.5 ppf, L80, VT) to 2388 mMD where 30-40 klbs weight was taken. .
2428.0	IC1	P	CRN		1.75	Broke circulation and washed down casing string (20 spm, 500 psi) from 2388 mMD to 2421 mMD (shoe depth). Total of 40 bbls mud lost during running casing.
2428.0	IC1	P	CMC		1	Made up 6 m crossover joint (VT pin x BTC box) and rigged up cement head. .
2428.0	IC1	P	CMC		2	Broke circulation and staged up to 8.5 bpm with 1100 psi. Circulated 1.5 times casing volume (maximum gas 11 units). Conducted JSA prior to commencing cement job. .
2428.0	IC1	P	CMC		2.25	Cemented 9.625 in casing as follows: - Pumped 20 bbls fresh water spacer - Pressure tested cement lines to 4000 psi (5 mins) - OK - Pumped 9 bbls fresh water spacer - Released bottom plug - Pumped 1 bbl of fresh water to confirm release of bottom plug - OK - Mixed and pumped 441 bbls of lead slurry (12.5 ppg, 1162 sx) - Mixed and pumped 42 bbls of tail slurry (15.8 ppg, 144 sx) - Released top plug - Pumped 20 bbls of fresh water with cement unit .

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2428.0	IC1	P	CMC	1.25	Displaced cement with active mud (9.5 ppg) at 8.5 bpm. Bumped plug (4159 strokes). Note: 1. Favourable weather and sea conditions allowed the cranes and boat to be accessed as required. 2. Back loaded excess 9.625 in casing onto R.J.Hope. 3. ROV survey of the seabed showed no sign of conductor movement. 4. BOP tensioners 4 x 35 tonnes. No movement observed at surface.

Date : 13 Nov 2004 **Daily Cost : $ 683,938** **Report Number : 29**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2428.0	IC1	P	CMC		0.5	Pressure tested 9.625 in casing to 3500 psi (10 mins) - OK. Bled off pressure and checked floats holding - OK. .
2428.0	IC1	P	CMC		0.75	Rigged down cement lines and cement head. Broke out and laid down 6 m crossover (VT pin x BTC box) joint. .
2428.0	IC1	P	WH		0.5	Made up circulating swedge and opened MLS wash ports at 158 mMD as per Cameron procedures (8 RH turns). .
2428.0	IC1	P	WH		0.5	Circulated seawater 3 times bottoms-up at 400 psi. Cement contaminated mud seen at 210 strokes (29.3 bbls) pumped. Functioned annulars and flushed out choke and kill lines. .
2428.0	IC1	P	WH		0.25	Pumped 82 bbls of sugar water (250 gpm, 400 psi) down casing through MLS ports at 158 mMD (filled annulus). .
2428.0	IC1	P	WH		0.5	Broke off surface lines and closed wash ports with 6 kft/lbs torque (8 LH turns). Made up surface lines. .
2428.0	IC1	P	WH		0.5	Fliushed and tested lines to 3500 psi (5 mins) - OK. Pressured up casing and tested integrity of MLS seals to 3500 psi (10 mins) - OK. .
2428.0	IC1	P	RRD		0.75	Broke off surface lines and circulating swedge. Rigged down 9.625 in handling equipment. .
2428.0	IC1	P	CCT		0.25	Removed slips, rotary bushings and 22 in diverter packer. Installed rotary guard. .
2428.0	IC1	P	CCT		0.25	Conducted JSA prior to commening 9.625 in casing cutting operations. .
2428.0	IC1	U	CCT		1	Checked rotary table for gas - no gas. Rough cut 9.625 in casing 3.5 ft inside diverter housing. Laid out cut piece. .
2428.0	IC1	U	CCT		1.25	Rigged up diverter recovery J-tool. RIH and pulled diverter. Set back same on rig floor and laid out overshot. .
2428.0	IC1	U	CCT		1	Rigged up BOP safety slings and cut holes in 9.625 in casing stump. Attached tuggers to casing stump. .
2428.0	IC1	P	CCT		0.5	Broke out wellhead Fastloc connector. Raised BOP to access 9.625 in casing. .
2428.0	IC1	P	CCT		3.5	Installed slip assembly onto 9.625 in casing in wellhead with 20 klbs overpull. Furmanite cut and drained the 9.625 in casing section. Rigged up Furmanite internal cutter to cut and dress off casing stump at wellhead. .
2428.0	IC1	P	CCT		5	Furmanite attempted to make an internal cut on the 9.625 in casing. Wave action caused pipe movement resulting in cutter blades breaking. Made up and installed wooden wedges between casing and wellhead to prevent movement - OK. Made successful internal cut on the 9.625 in casing and laid down the cutting tool. .
2428.0	IC1	P	CCT		2	Functioned all BOP rams and annulars. Washed out BOP. Cleaned mud from wellhead, tensioner frame and PCU. Changed cutter head on Furmanite tool.

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						.
2428.0	IC1	P	CCT		1.5	Re-installed cutter tool and chamferred casing stump.
						.
2428.0	IC1	P	WH		0.5	Rigged down Furmanite tools. Cameron cleaned out the wellhead and made preparations for seal assembly installation.
						.
2428.0	IC1	P	BOP		0.25	Conducted JSA prior to nippling up the BOP.
						.
2428.0	IC1	P	BOP		0.5	Lowered BOP and stabbed same onto wellhead. Made up NT-2 connector.
						.
2428.0	IC1	P	WH		1.25	Disconnected and laid down lifting slings. Changed out bails and installed elevators. Installed master bushings and iron roughneck tracks.
						.
2428.0	IC1	P	WH		1	Picked up and made up the seal assembly and running tool. RIH same and set in wellhead seal bore. Engaged with 4 RH turns. Pulled 20 klbs to ensure seal assembly latched - OK. Tested seals to 3000 psi (10 mins) - OK. Released running tool, POOH and laid down same. Note: 1. Due to heavy seas the boats could not be accessed for the 24 hr period. Cranes were operated as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface.

Date : 14 Nov 2004 **Daily Cost : $ 284,306** **Report Number : 30**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2428.0	IC1	P	BOP		0.25	Conducted JSA prior to testing BOP.
						.
2428.0	IC1	P	BOP		1.5	Made up and RIH with test plug. Rigged up surface lines and changed 1 damaged seal on test plug.
						.
2428.0	IC1	TP	WH	OEF	1.75	Flushed lines and filled BOP. Tested annulars to 250 psi (5 mins) - OK. Pressured up to 5000 psi and a leak was noticed on the wellhead Fastloc connector weep hole. Re-torqued connector to 450 ft/lbs. Pressured up to 5000 psi - weep hole still leaking.
						.
2428.0	IC1	TP	WH	OEF	0.5	POOH test assembly and stood back in derrick.
						.
2428.0	IC1	TP	WH	OEF	0.5	Rigged up BOP safety slings and pulled rotary table bushings. Attached slings to BOP and broke out Fastloc connector. Lifted BOP.
						.
2428.0	IC1	TP	WH	OEF	0.5	Recovered ring gasket and inspected same. Damage to sealing surface noted (most likely occured when BOP landed out). Replaced damaged gasket.
						.
2428.0	IC1	TP	WH	OEF	1	Lowered BOP and made up Fastloc connection. Rigged down BOP lifting slings.
						.
2428.0	IC1	TP	WH	OEF	0.5	Made up and RIH with test plug. Rigged up surface lines.
						.
2428.0	IC1	P	BOP		3.5	Flushed lines and filled BOP. Tested BOP's and manifolds to 250/5000 psi (5/10 mins) - OK. Tested top drive valves to 250/5000 psi (5/10 mins) - OK.
						.
2428.0	IC1	P	BOP		1.5	Broke out surface lines. POOH and laid down test assembly. Continued to test C & K and stand pipe manifolds to 250/5000 psi (5/10 mins) - OK.
						.
2428.0	IC1	U	BOP		2.5	Cleared rig floor and rigged up lifting slings for diverter handling. Re-aligned iron roughneck tracks and pulled rotary table bushings. Picked up and ran diverter overshot. Connected hoses and pressured up seals. Re-installed bushings and laid down lifting slings. Installed elevators.
						.
2428.0	IC1	P	WH		0.5	Picked up wearbushing. RIH and set wearbushing. POOH with running assembly.
						.
2428.0	IC1	P	HBHA		0.5	Installed 5 in handling tool on PRS. Changed out foxhole slip segments and prepared to lay down 12.25 in BHA.

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Date : 14 Nov 2004 **Daily Cost : $ 284,306** **Report Number : 30**

					.
2428.0	IC1	P	HBHA	5	Laid out 12.25 in BHA from derrick (mud motor, MWD tools, jars, 8.25 in drill collars, stabilisers).
					.
2428.0	IC1	P	HBHA	0.25	Conducted JSA prior to making up 8.5 in BHA.
					.
2428.0	IC1	P	HBHA	2.25	Picked up and made up bit #4 (MA74EPX). Made up MWD tools and RIH.
					.
2428.0	IC1	P	MWD	1	Programmed MWD tools.
					.
2428.0	IC1	P	MWD	0.5	Installed radioactive sources in MWD tools.
					Note: 1. Due to heavy seas the boats could not be handled for the 24 hr period. Cranes were operated as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV activities for the 24 hr period.

Date : 15 Nov 2004 **Daily Cost : $ 319,899** **Report Number : 31**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2428.0	PH1	P	HBHA		0.25	Conducted JSA prior to handling BHA.
						.
2428.0	PH1	P	MWD		0.25	Took MWD survey at wellhead (Inc = 0.28°) and shallow tested MWD (475 psi, 460 gpm).
						.
2428.0	PH1	P	HBHA		1.75	RIH with BHA to 5 in HWDP.
						.
2428.0	PH1	P	HBHA		0.25	RIH with 5 in HWDP to 158 mMD and took mudline survey with MWD (Inc = 0.24°). Continued to RIH to 174 mMD.
						.
2428.0	PH1	P	HBHA		0.25	Installed PS21 auto slips.
						.
2428.0	PH1	P	TI		4.25	RIH on 5 in drill pipe to 2305 mMD (filled each 15 stands).
						.
2428.0	PH1	P	TI		1.25	Conducted kick/strip drill through annulars (x2 joints) with 400 psi on annulars and 500 psi on annulus.
						.
2428.0	PH1	P	TI		0.25	RIH on 5 in drill pipe to 2365 mMD.
						.
2428.0	PH1	P	TI		0.75	Took SCR's and washed down with 450 gpm (2150 psi). Tagged plugs at 2395 mMD and fanned bottom for 5 mins to clear debris.
						.
2428.0	PH1	P	DC		2	Drilled plugs and float collar (2396 mMD) with varying parameters: 350 - 500 gpm, 30 - 100 rpm, 15 klbs WOB (maximum).
						.
2428.0	PH1	P	DC		0.5	Drilled out cement from 2396 mMD to 9.625 in shoe at 2421 mMD (500 gpm, 90 rpm, 5 klbs WOB).
						.
2428.0	PH1	P	DC		0.25	Drilled out rathole from 2420 mMD to 2428 mMD.
						.
2431.0	PH1	P	DA		0.5	Drilled 3 m of new formation from 2428 mMD to 2431 mMD.
						.
2431.0	PH1	P	CMD		0.75	Pulled BHA back into shoe. Circulated and conditioned mud.
						.
2431.0	PH1	TP	LOT	RE	1	Lined up Dowell to annulus, broke circulation and tested line to 2000 psi - OK. Closed pipe rams and attempted FIT - unsuccessful. Broke off top drive and installed Lo-Torq valve to drill string. Closed valve and annular preventer.
						.
2431.0	PH1	U	DA		0.75	Successfully conducted FIT. MW = 9.2 ppg

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Date : 15 Nov 2004 **Daily Cost : $ 319,899** **Report Number : 31**

						Surface pressure = 1360 psi EMW = 12.5 ppg .
2431.0	PH1	P	DA		1.5	Re-checked pipe rams with 1000 psi pressure test - OK. Tested top drive IBOP to 250/5000 psi - OK. Rigged down lines. .
2458.0	PH1	P	DA		2	Drilled 8.5 in hole from 2431 mMD to 2458 mMD. .
2458.0	PH1	P	WC		0.25	Flow checked well at 2458 mMD - static. .
2499.0	PH1	P	DC		2	Drilled 8.5 in hole from 2458 mMD to 2499 mMD - drilling break. .
2499.0	PH1	P	CS		0.5	Circulated bottoms-up sample from 2499 mMD. .
2527.0	PH1	P	DA		1.5	Drilled 8.5 in hole from 2499 mMD to 2527 mMD. .
2527.0	PH1	P	WC		0.25	Flow checked well at 2527 mMD - static. .
2539.0	PH1	P	DA		1	Drilled from 2527 mMD to 2539 mMD. Note: 1. Due to heavy seas the boat could not be handled for the 24 hr period. Cranes were operated as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV activities for the 24 hr period.

Date : 16 Nov 2004 **Daily Cost : $ 272,477** **Report Number : 32**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2568.0	PH1	P	DA		2.25	Drilled 8.5 in hole from 2539 mMD to 2568 mMD. Flow checked at 2547 mMD and 2561 mMD - well static. .
2568.0	PH1	P	CS		0.75	Drill break encountered at 2568 mMD (>50 m/hr). Circulated bottoms-up for sample - no shows. .
2603.0	PH1	P	DA		2	Drilled 8.5 in hole from 2568 mMD to 2603 mMD. Flow checked at 2588 mMD - well static. .
2603.0	PH1	P	CS		0.75	Drill break encountered at 2603 mMD (>50 m/hr). Circulated bottoms-up for sample - no shows. .
2617.0	PH1	P	DA		0.75	Drilled 8.5 in hole from 2603 mMD to 2617 mMD. ROP increased to >50 m/hr. Flow checked - well static. .
2617.0	PH1	P	CS		0.75	Circulated bottoms-up for sample - no shows. .
2735.0	PH1	P	DA		4.75	Drilled 8.5 in hole from 2617 mMD to 2735 mMD - ROP increased to >50 m/hr. Flow checked - well static. Note: Laid down stand of 8.25 in drill collars from derrick using foxhole). .
2735.0	PH1	P	WC		0.25	Flow checked at 2735 mMD - well static. .
2735.0	PH1	P	CS		1.75	Circulated bottoms-up for sample - 194 units gas (maximum). Decision made to POOH for coring operations. .
2735.0	PH1	P	DA		0.25	Flow checked at 2735 mMD - well static. .
2735.0	PH1	P	TO		0.25	POOH on elevators from 2735 mMD to 2646 mMD. At 2646 mMD overpull (30 klbs) and swabbing (1.5 bbls) was encountered . .
2735.0	PH1	TP	TI	HC	0.25	RIH from 2646 mMD to 2735 mMD.

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Date : 16 Nov 2004 **Daily Cost : $ 272,477** **Report Number : 32**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
						.
2735.0	PH1	TP	WC	HC	0.25	Flow checked at 2735 mMD - well static. .
2735.0	PH1	TP	CMD	HC	0.5	Circulated bottoms-up - 19 units gas (maximum). .
2735.0	PH1	TP	WC	HC	0.25	Flow checked at 2735 mMD - well static. .
2735.0	PH1	TP	TOT	HC	3.25	Pumped out of hole from 2735 mMD at 300 gpm (1500 psi). At 2646 mMD an overpull of 30 klbs was encountered. Unable to wipe hole clean. Backreamed from 2646 mMD to 2626 mMD. Increased pump rate to 500 gpm (2700 psi) and continued to pump out of hole to 2394 mMD (back reamed 2607 mMD to 2597 mMD and 2543 mMD to 2475 mMD). Note: 1. Attempted to wipe out tight hole - no success. Back reamed as a last resort. 2. 50% of trip through this section required back reaming. .
2735.0	PH1	P	WC		0.5	Flow checked well at 2394 mMD - well static. Serviced and inspected top drive. .
2735.0	PH1	P	TO		3	Pumped slug and POOH from 2394 mMD to BHA at 217 mMD. .
2735.0	PH1	P	WC		0.25	Flow checked - well static. Removed PS21 auto slips. .
2735.0	PH1	P	HBHA		1.25	POOH with 8.5 in BHA to MWD tools. Note: 1. Favourable weather and sea conditions allowed the cranes and boat to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV dived and strong currents and poor visibility were encountered. Confirmed guideline pin had worked free. Aborted re-establishment attempt.

Date : 17 Nov 2004 **Daily Cost : $ 276,868** **Report Number : 33**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2735.0	PH1	P	MWD		0.25	Removed radio active sources from MWD tool. .
2735.0	PH1	P	MWD		0.5	Downloaded MWD tool. .
2735.0	PH1	P	HBHA		0.25	Broke off 8.5 in PDC bit (1-1-CT-S-X-I-NO-CP) and near bit stabiliser. Racked back MWD in derrick. .
2735.0	PH1	P	HBHA		0.25	Conducted JSA prior to making up coring BHA. .
2735.0	PH1	P	HBHA		1.75	Picked up and made up outer core barrel assembly. Made up core head (CD93) and RIH same. .
2735.0	PH1	P	HBHA		1	Picked up and made up inner core barrel assembly. Made up and adjusted safety joints. .
2735.0	PH1	P	HBHA		0.5	Picked up and made up 3 x 6.75 in drill collars from deck. .
2735.0	PH1	P	HBHA		1.25	RIH with BHA from derrick to 255 mMD. .
2735.0	PH1	P	HBHA		0.25	Removed master bushings from rotary table and installed PS21 auto slips. .
2735.0	PH1	P	TI		3.25	RIH on 5 in drill pipe to 9.625 in casing shoe at 2421 mMD. .
2735.0	PH1	P	TI		0.75	RIH on 5 in drill pipe from 2421 mMD to 2694 mMD. .
2735.0	PH1	P	TI		0.5	Washed down BHA from 2694 mMD to 2719 mMD. Washed and light reamed (400 gpm, 70 rpm) from 2719 mMD to 2735 mMD. Tagged bottom with 5 klbs. .

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Date : 17 Nov 2004 **Daily Cost : $ 276,868** **Report Number : 33**

2735.0	PH1	P	TI	0.25	Pulled back and racked back stand of 5 in drill pipe. Picked up 5 in drill pipe single to space out for coring. .
2735.0	PH1	P	CS	0.75	Circulated bottoms-up (400 gpm, 1900 psi) - maximum gas 16 units. .
2735.0	PH1	P	COR	0.5	Dropped 1.25 in steel ball and pumped down at 200 gpm (900 psi). Seated ball (1100 psi) and diverted mud flow for coring operations. Took SCR's: 150 gpm, 880 psi 200 gpm, 1100 psi 250 gpm, 1390 psi Rot torque: 60 rpm, 2 kft/lbs 80 rpm, 2.5 kft/lbs .
2743.0	PH1	P	COR	1	Cut core #1 from 2735 mMD to 2743 mMD (P5 sand).
2743.0	PH1	P	COR	1	Indication of jamming at 2743 mMD. Progressively increased WOB to 30 klbs (maximum) and attempted to cut additional core - unsuccessful. .
2743.0	PH1	P	CMD	1	Circulated bottoms-up at 2743 mMD - maximum gas 155 units. .
2743.0	PH1	P	WC	0.25	Flow checked - well static. .
2743.0	PH1	P	TO	1.25	POOH with coring BHA from 2743 mMD to 9.625 in shoe at 2421 mMD (hole good with maximum 8 klbs overpull). .
2743.0	PH1	P	WC	0.25	Flow checked - well static. .
2743.0	PH1	P	TO	3	Pumped slug and POOH from 2421 mMD to BHA at 255 mMD. .
2743.0	PH1	P	HBHA	0.25	Flow checked - well static. Removed PS21 auto slips. .
2743.0	PH1	P	HBHA	1.5	POOH with BHA to core barrels. .
2743.0	PH1	P	HBHA	0.25	Conducted JSA prior to handling core barrels. .
2743.0	PH1	P	HBHA	1.75	Broke out safety joint and checked for gas - OK. Laid out inner core barrels and racked back 3 outer barrels in derrick. Broke out corehead (1-1-WT-A-X-I-PN-FM) and laid down 4th outer barrel on deck. .
2743.0	PH1	P	HBHA	0.5	Picked up MWD tools from derrick. Made up near bit stabiliser and PDC bit. Note: 1. Favourable weather and sea conditions allowed the cranes and boat to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV inspected guidewire shear pin. One wire disconnected - unable to work on wire. Due to poor visibility recovered ROV. 4. Summary of core #1: Barrel length = 36 m Cut = 8.2 m Recovered = 7.3 m (89%)

Date : 18 Nov 2004 **Daily Cost : $ 279,342** **Report Number : 34**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2743.0	PH1	P	MWD		1.25	Programmed MWD tool and tested same. Installed radio active source. .
2743.0	PH1	P	HBHA		1	RIH with 8.5 in BHA to 217 mMD. .
2743.0	PH1	P	MWD		0.25	Shallow tested MWD (500 gpm, 1230 psi) - OK. .

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Date : 18 Nov 2004 **Daily Cost : $ 279,342** **Report Number : 34**

2743.0	PH1	P	TI		3.75	Installed PS21 auto slips and RIH on 5 in drill pipe to 2420 mMD (filled each 15 stands). .
2743.0	PH1	P	TI		0.5	RIH from 2420 mMD to 2676 mMD. Attempted to work through tight spot/ledge at 2676 mMD with 25 klbs weight - unsuccessful. .
2743.0	PH1	P	TI		0.75	Washed and light reamed through tight spot/ledge at 2676 mMD (450 gpm, 2300 psi, 60 rpm) and continued to RIH to 2713 mMD. .
2743.0	PH1	P	RW		0.25	Reamed through cored section from 2735 mMD to 2743 mMD (TD). Took MWD log across same (500 gpm, 2750 psi, 60 rpm). .
2748.0	PH1	P	DA		5.5	Drilled 8.5 in hole from 2743 mMD to 2748 mMD with varying parameters to maximise ROP (500 - 550 gpm, 60 - 100 rpm, 5 - 25 klbs WOB). .
2748.0	PH1	P	WC		0.25	Flow checked at 2748 mMD - well static. .
2821.0	PH1	P	DA		9	Drilled 8.5 in hole from 2748 mMD to 2821 mMD. .
2821.0	PH1	P	WC		0.25	Flow checked at 2821 mMD - well static. .
2834.0	PH1	P	DA		1.5	Drilled 8.5 in hole from 2821 mMD to 2834 mMD. Note: 1. Favourable weather and sea conditions allowed the cranes and boat to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV operations.

Date : 19 Nov 2004 **Daily Cost : $ 285,981** **Report Number : 35**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2876.0	PH1	P	DA		3	Drilled ahead 8.5 in hole from 2834 mMD to 2876 mMD. Flow checked drilling breaks at 2836 mMD and 2842 mMD - well static (maximum gas 282 units, 5.6%). Took SCR's at 2858 mMD with 9.2 ppg MW. 30 40 #1 690 950 #2 690 960 Note: Maximum recorded gas peak = 282 units (5.6%). .
2876.0	PH1	TP	RR	RE	0.5	Top drive lost power. Reciprocated string (pumped at 550 gpm) whilst trouble shooting and rectifying problem. Changed out fuse in field supply - OK. .
2919.0	PH1	P	DA		3.25	Drilled ahead 8.5 in hole from 2876 mMD to 2919 mMD. Flow checked drilling break at 2919 mMD - well static (770 units maximum gas). .
2928.0	PH1	P	DA		2.25	Drilled ahead 8.5 in hole from 2919 mMD to 2928 mMD. Gas peak of 750 units encountered at 2928 mMD. Circulated gas out and flow checked - well static. Circulated and increased mud weight from 9.2 ppg to 9.4 ppg. Reciprocated string whilst weighting up. .
2973.0	PH1	P	DA		1.5	Drilled 8.5 in hole from 2928 mMD to 2973 mMD (1195 units maximum gas). .
2973.0	PH1	P	WC		1.25	Flow checked well at 2973 mMD - well static. Circulated bottoms up sample (1197 units maximum gas). Circulated gas out and flow checked - well static. .
2991.0	PH1	P	DA		1	Drilled 8.5 in hole from 2973 mMD to 2991 mMD (1095 units maximum gas). .
2991.0	PH1	P	WC		0.25	Flow checked at 2991 mMD - well static. .
2995.0	PH1	P	DA		0.25	Drilled 8.5 in hole from 2991 mMD to 2995 mMD (1100 units maximum gas). .
2995.0	PH1	P	WC		0.25	Flow checked at 2995 mMD - well static.

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Date : 19 Nov 2004 **Daily Cost : $ 285,981** **Report Number : 35**

					.
3005.0	PH1	P	DA	0.75	Drilled 8.5 in hole from 2995 mMD to 3005 mMD (1136 units maximum gas).
					.
3005.0	PH1	P	CS	0.75	Circulated bottoms up at 3005 mMD.
					.
3033.0	PH1	P	DA	1.5	Drilled 8.5 in hole from 3005 mMD to 3033 mMD (1200 units maximum gas).
					.
3033.0	PH1	P	WC	0.25	Flow checked at 3033 mMD - well static.
					.
3056.0	PH1	P	DA	1	Drilled 8.5 in hole from 3033 mMD to 3056 mMD (1025 units maximum gas).
					.
3056.0	PH1	P	WC	0.25	Flow checked at 3056 mMD - well static.
					.
3099.0	PH1	P	DA	2.25	Drilled 8.5 in hole from 3056 mMD to 3099 mMD (683 units maximum gas).
					.
3099.0	PH1	P	WC	0.25	Flow checked at 3099 mMD - well static.
					.
3099.0	PH1	P	CS	1.25	Circulated bottoms up at 3099 mMD (690 units maximum gas).
					.
3140.0	PH1	P	DA	1.5	Drilled 8.5 in hole from 3099 mMD to 3140 mMD (1220 units maximum gas).
					.
3140.0	PH1	P	WC	0.25	Flow checked at 3140 mMD - well static.
					.
3148.0	PH1	P	DA	0.5	Drilled 8.5 in hole from 3140 mMD to 3148 mMD (1558 units maximum gas).
					Note: 1. Due to strong winds cranes were used at crane operators discretion. Seas were too heavy to handle boat. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV operations.

Date : 20 Nov 2004 **Daily Cost : $ 302,168** **Report Number : 36**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3155.0	PH1	P	DA		0.5	Drilled 8.5 in hole from 3148 mMD to 3155 mMD. Flow checked drilling break at 3152 mMD - static (maximum gas 1559 units).
3155.0	PH1	P	WC		0.5	Flow checked at 3155 mMD - static. Circulated gas level down to 50 units.
3387.0	PH1	P	DA		18.5	Drilled 8.5 in hole from 3155 mMD to 3387 mMD (531 units maximum gas). Flow checked drilling breaks at 3159 mMD, 3181 mMD, 3197 mMD, 3330 mMD and 3384 mMD - all static. SCR's at 3236 mMD with 9.4 ppg MW: 30 40 #1 740 1020 #2 750 1030
3387.0	PH1	P	CS		0.25	Circulated at 3387 mMD for geological sample (1724 units maximum gas).
3407.0	PH1	P	DA		4.25	Drilled 8.5 in hole from 3387 mMD to 3407 mMD. Flow checked drilling break at 3403 mMD - well static. Note: 1. Due to favourable weather and sea conditions the cranes and boats were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV operations.

Date : 21 Nov 2004 **Daily Cost : $ 301,143** **Report Number : 37**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity

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Date : 21 Nov 2004 **Daily Cost : $ 301,143** **Report Number : 37**

3418.0	PH1	U	DA	6.25	Drilled ahead 8.5 in hole from 3407 mMD to 3418 mMD (maximum BGG 25 units). .
3418.0	PH1	U	WC	0.25	Flow checked drilling break at 3418 mMD - well static. .
3431.0	PH1	U	DA	2	Drilled ahead 8.5 in hole from 3418 mMD to 3431 mMD (maximum BGG 217 units). .
3431.0	PH1	U	WC	0.25	Flow checked drilling break at 3431 mMD - well static. .
3442.0	PH1	U	DA	6	Drilled ahead 8.5 in hole from 3431 mMD to 3442 mMD (maximum BGG 301 units). .
3442.0	PH1	U	CS	0.75	Circulated bottoms up at 3442 mMD for sample (8 units maximum gas). .
3442.0	PH1	U	WC	0.25	Flow checked drilling break at 3442 mMD - well static. .
3442.0	PH1	U	TO	1.75	POOH on elevators from 3442 mMD to 3168 mMD. Maximum 50 klbs overpull was encountered at 3168 mMD. .
3442.0	PH1	U	TOT	6.5	Continued to POOH as per the following: - Pumped out of hole from 3168 mMD to 3150 mMD. - Light backreamed out of hole (50 rpm, 550 gpm, 3500 psi) from 3150 mMD to 2859 mMD due to tight spots/ledges (30-50 klbs overpull) at 3143 mMD, 3111 mMD, 3086 mMD, 3051 mMD, 3045 mMD, 3029 mMD, 2996 mMD, 2962 mMD, 2926 mMD and 2892 mMD. - Pumped out of hole from 2859 mMD to 2453 mMD (550 gpm, 3500 psi). Reamed through tight spots/ledges (30-50 klbs overpull) at 2755 mMD, 2718 mMD, 2690 mMD, 2678 mMD, 2645 mMD and 2505 mMD. Note: 1. Due to favourable weather and sea conditions the cranes and boats were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV operations.

Date : 22 Nov 2004 **Daily Cost : $ 289,712** **Report Number : 38**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3442.0	PH1	U	TOT		0.25	Pumped out of hole from 2453 mMD to 9.625 in casing shoe at 2421 mMD (550 gpm, 2950 psi). .
3442.0	PH1	U	WC		0.25	Flow checked at shoe - well static. .
3442.0	PH1	U	RS		0.25	Conducted JSA prior to slipping and cutting drilling line. .
3442.0	PH1	U	RS		1.75	Installed block hang off line. Slipped and cut 50 m (160 ft) of drilling line. .
3442.0	PH1	U	RS		0.5	Serviced disc brakes on draw works. .
3442.0	PH1	U	RS		0.5	Removed block hang off line and re-installed mudlogging and MWD sensors. Calibrated mudlogging sensors and reset block limits. .
3442.0	PH1	U	TO		3.5	Pumped slug and POOH with 5 in DP to BHA at 217 mMD. .
3442.0	PH1	U	WC		0.25	Flow checked - welll static. Removed PS21 auto slips. .
3442.0	PH1	U	HBHA		1	POOH with BHA and racked back same in derrick. .
3442.0	PH1	U	HBHA		1	Removed radio active sources from MWD tool. Downloaded MWD data and broke off PDC bit (2-3-FC-S-X-I-CT-PR). .
3442.0	PH1	U	HBHA		0.5	Picked up drillpipe single and racked back MWD stand in derrick. .

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3442.0	PH1	U	HBHA	1.75	Broke down and laid out outer core barrel stand from derrick. Picked up and service broke x1 barrel. .
3442.0	PH1	U	HBHA	0.25	Conducted JSA prior to making up BHA. .
3442.0	PH1	U	HBHA	2	Picked up and made up tricone bit (MX20HDX) and mud motor. Picked up MWD assembly from derrick and changed out HOS tool. .
3442.0	PH1	U	MWD	1.5	Programmed MWD tools and installed radioactive sources. .
3442.0	PH1	U	HBHA	0.5	RIH with BHA to 58 mMD. .
3442.0	PH1	U	MWD	0.25	Shallow tested mud motor and MWD tools at 500 gpm (1200 psi) - OK. .
3442.0	PH1	U	HBHA	0.75	RIH with BHA to 254 mMD. .
3442.0	PH1	U	TI	0.25	Installed PS21 auto slips. .
3442.0	PH1	U	TI	3.75	RIH to 2402 mMD - filled pipe every 15 stands. .
3442.0	PH1	U	RS	0.5	Serviced and inspected top drive and travelling blocks. .
3442.0	PH1	U	HBHA	2.5	RIH to 3418 mMD - filled pipe every 15 stands. .
3442.0	PH1	U	RW	0.25	Washed and reamed to TD at 3442 mMD (525 gpm, 4000 psi, 60 rpm) - no fill. Took SCR's and established drilling parameters. Note: 1. Due to favourable weather and sea conditions the cranes and boats were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV operations.

Date : 23 Nov 2004 **Daily Cost : $ 317,796** **Report Number : 39**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3443.0	PH1	U	DM		0.25	Drilled 8.5 in hole from 3442 mMD to 3443 mMD to bed bit (54 units maximum gas). .
3443.0	PH1	U	WC		0.25	Flow checked well due to high return flow - well static. .
3478.0	PH1	U	DM		9.75	Drilled 8.5 in from 3443 mMD to 3478 mMD (20 units maximum gas). .
3478.0	PH1	U	WC		0.25	Flow checked drilling break at 3478 mMD - well static. .
3545.0	PH1	U	DM		10.25	Drilled 8.5 in hole from 3478 mMD to TD 3545 mMD (38 units maximum gas). Flow checked well at 3509 mMD - static. Note: MWD survey tool had a temporary failure at 3421 mMD due to magnetic interference. .
3545.0	PH1	U	CMD		2.25	Circulated 2x bottoms up at 3545 mMD. POOH with single stand and racked back same. Circulated 1x bottoms up. Rotated and reciprocated string. .
3545.0	PH1	U	WC		0.25	Flow checked - well static. .
3545.0	PH1	U	TO		0.75	POOH BHA on 5 in drill pipe from 3534 mMD to 3389 mMD. Worked through tight spot at 3412 mMD. Note: 1. Due to favourable weather and sea conditions the cranes and boats were able to be accessed as required.

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Date : 23 Nov 2004 **Daily Cost : $ 317,796** **Report Number : 39**

2. BOP tensioners 4 x 35 tonnes. No movement observed at surface.
3. ROV dived and inspected guidewires and conductor.

Date : 24 Nov 2004 **Daily Cost : $ 286,341** **Report Number : 40**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	TO		3.25	POOH 8.5 in BHA on elevators to 9.625 in casing shoe at 2421 mMD. Flow checked - well static. The following tight spots/ledges were encountered: 3412 mMD (50 klbs, back reamed lightly for 2 m) 3374 mMD (50 klbs, back reamed lightly for 5 m) 3365 mMD (50 klbs, back reamed lightly for 5 m) 3331 mMD (50 klbs, back reamed lightly for 5 m) 2725 mMD (15 klbs, worked through) .
3545.0	PH1	P	WC		0.25	Flow checked - well static. .
3545.0	PH1	P	TO		3	Pumped slug and POOH with 5 in drill pipe from 9.625 casing shoe to BHA at 254 mMD. .
3545.0	PH1	P	WC		0.25	Flow checked - well static. Removed PS21 auto slips. .
3545.0	PH1	P	HBHA		1.25	POOH with BHA to MWD tools and racked back BHA in derrick. .
3545.0	PH1	P	MWD		0.25	Removed radio active sources from MWD tools. .
3545.0	PH1	P	HBHA		1	Broke down and laid out NMDC, stabilisers, MWD tools and float sub. Broke off bit (1-1-WT-A-E-I-NO-TD) and laid down motor. .
3545.0	PH1	P	LOG		0.25	Cleared and cleaned rig floor of excess equipment. .
3545.0	PH1	P	LOG		0.25	Conducted JSA prior to rigging up wireline equipment. .
3545.0	PH1	P	LOG		0.25	Rigged up wireline sheaves and equipment. .
3545.0	PH1	P	LOG		1.25	Made up wireline logging assembly #1: PEX-HRLA-CMR-SP-GR. Installed radioactive sources. .
3545.0	PH1	P	LOG		3.25	RIH with logging assembly #1 to hang up depth at 3416 mMD. Attempted to pass hang up depth without success. Maximum overpull of 1300 lbs experienced. .
3545.0	PH1	P	LOG		9.5	Logged up with logging assembly #1 from 3416 mMD to 814 mMD. Note: 1. Due to favourable weather and sea conditions the cranes and boat were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV dived and inspected conductor. ROV also re-inserted safety clip in suspension cap guidewire.

Date : 25 Nov 2004 **Daily Cost : $ 348,412** **Report Number : 41**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	LOG		1	Logged with assembly #1 (PEX-HRLA-CMR-SP-GR) from 814 mMD to surface (GR inside casing). .
3545.0	PH1	P	LOG		1	Broke out and laid down logging assembly #1. .
3545.0	PH1	P	LOG		1	Made up logging assembly #2 (VSI-GR). .
3545.0	PH1	P	LOG		3	RIH with logging assembly #2 to 3419 mMD. Conducted JSA and lowered guns into water. .

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Date : 25 Nov 2004 **Daily Cost : $ 348,412** **Report Number : 41**

3545.0	PH1	P	LOG		6.25	Ran logging assembly #2 VSI-GR. POOH. .
3545.0	PH1	P	LOG		0.5	Laid down logging assembly #2 VSI-GR. .
3545.0	PH1	U	LOG		1.25	Picked up logging assembly #3 MDT-GR-LEH-QT. Checked tool on surface. .
3545.0	PH1	U	LOG		10	Ran logging assembly #3 MDT-GR-LEH-QT and took pre-tests to 3057.2 m. Note: 1. Due to favourable weather and sea conditions the cranes and boat were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV operations.

Date : 26 Nov 2004 **Daily Cost : $ 289,105** **Report Number : 42**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	LOG		0.75	Ran logging assembly #3 MDT-GR-LEH-QT and took pre-tests from 3057.2 m to 3109.9 m. .
3545.0	PH1	TP	LOG	LTF	2	MDT tool failed at 3109.9 m sample point. POOH with logging assembly #3 MDT-GR-LEH-QT. Found a damaged "O" ring seal in the MDT tool, repaired same. .
3545.0	PH1	TP	LOG	LTF	2.5	Ran back in with logging assembly #3 MDT-GR-LEH-QT to 3109.9 m. .
3545.0	PH1	P	LOG		6.75	Ran logging assembly #3 MDT-GR-LEH-QT and took pre-tests from 3109.9 m to 3418 m. Total of 56 points tested. Tool stood up at 3418 m. .
3545.0	PH1	P	LOG		12	Ran Logging assembly #3 MDT-GR-LEH-QT. Took samples at 3386.5 m and 3264 m. Pumped out at 3162 m. Took samples x 3 at 3142.5 m. Attempted to pump out at 3068.5 m. Commenced sampling at 3057 m. Hole in good condition, no overpull when closing and pulling MDT tool. Note: 1. Due to favourable weather and sea conditions the cranes and boat were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV operations.

Date : 27 Nov 2004 **Daily Cost : $ 297,655** **Report Number : 43**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	LOG		12	Ran logging assembly #3 MDT-GR-LEH-QT. Collected samples x 3 at 3057.2 m. Pumped out at 3162 m 3045.2 m. Pumped out and sampled at 3006.5 m. Pumped out 2977.8 m. Sampled x 3 at 2968.7 m. .
3545.0	PH1	P	LOG		1.5	POOH with Logging assembly #3 MDT-GR-LEH-QT. .
3545.0	PH1	P	LOG		1.25	Laid out wireline equipment. Recovered samples from MDT tool. Shipped 4 x 450 ml sample bottles to town on MV Invincible Tide. Analyse balance of samples on rig. .
3545.0	PH1	P	HBHA		1.75	Picked up new bit and BHA. RIH with HWDP. Filled pipe and broke circulation. .
3545.0	PH1	P	TI		4.5	RIH to 9.625 in casing shoe. Filled pipe every 20 stands. .
3545.0	PH1	P	CMD		1.25	Broke circlulation and worked stabiliser through shoe while circulating bottoms up. Pumps = 600 gpm. Pressure = 3100 psi. Rotary = 80 rpm. Torque = 1200 ft/lbs. WOB / drag = 0. Gas peaked at 24% (1200 units). Circulated until gas 1% (50 Units). .

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Date : 27 Nov 2004 **Daily Cost : $ 297,655** **Report Number : 43**

3545.0	PH1	P	TI	0.25	Flow checked well - Static.
3545.0	PH1	P	TI	1	RIH from 2430 m to 2679 m filled pipe. RIH to 2825 m, mud returned from hole exceeded pipe displacement by 1.8 bbls.
3545.0	PH1	P	CMD	0.5	Circulated bottoms up at 600 gpm, max gas at bottoms up = 51% (2550 units). No H2S observed. Note: 1. Due to favourable weather and sea conditions the cranes and boat were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV operations.

Date : 28 Nov 2004 **Daily Cost : $ 278,496** **Report Number : 44**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	CMD		1.5	Circulated out excess gas from 51% to ±1%.
3545.0	PH1	P	TI		0.5	RIH from 2825 m to 3115 m. Volume returned exceeded pipe displacement by 1.5 bbls.
3545.0	PH1	P	CMD		1.25	Circulated well to clear gas from wellbore, max gas = 64% (3200 units). No H2S observed.
3545.0	PH1	P	TI		0.25	RIH from 3115 m to 3260 m. Volume returned exceeded pipe displacement by 1.5 bbls.
3545.0	PH1	P	CMD		0.75	Circulated well to clear gas from wellbore, max gas = 20.7% (1035 units).
3545.0	PH1	P	TI		0.5	RIH from 3260 m to 3376 m. Hole in good condition max drag 10 kips while tripping in.
3545.0	PH1	P	RW		2.25	Washed and reamed from 3376 m to 3545 m. Max gas = 29.8 % (1490 units). No indications of ledge or bridge at wireline hold up depth 3418 m. No fill on bottom. Rotary = 50 rpm. Torque = 1000 to 2000 ft/lbs. WOB = 0 to 5 kips.
3545.0	PH1	P	CMD		2.25	Circulated bottoms up x 3 and conditioned mud to 9.4 ppg.
3545.0	PH1	P	TO		0.25	Flow checked well - static.
3545.0	PH1	P	TO		2.5	POOH, 1st 5 stands wet. Pumped slug and POOH to 2421 m.
3545.0	PH1	P	TO		3.25	Flow checked well - static. POOH to BHA at 204 m.
3545.0	PH1	P	HBHA		1.25	Flow checked - static. POOH with BHA. Racked back BHA and broke off bit.
3545.0	PH1	P	OTH		0.5	Cleared rig floor and prepared to rig up wireline. Held JSA.
3545.0	PH1	P	LOG		0.75	Rigged up wireline equipment. Picked up logging assembly #4 MSCT-GR.
3545.0	PH1	P	LOG		2.25	RIH with Logging assembly #4 MSCT-GR to 2612 m.
3545.0	PH1	P	LOG		4	Ran logging assembly #4 MSCT-GR from 2612 m to 2996 m (cut 21 cores). Note: 1. Due to favourable weather and sea conditions the cranes and boat were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. Jumped ROV & inspected guidelines & conductor for movement.

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Date : 29 Nov 2004 **Daily Cost : $ 272,731** **Report Number : 45**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	LOG		3	Ran loggging assembly #4 MSCT -GR from 2996 m to 3046 m (cut 6 cores). Total positions = 33, Total cut = 27. .
3545.0	PH1	P	LOG		1.25	POOH with loggging assembly #4 MSCT -GR from 3046 m. .
3545.0	PH1	P	LOG		0.75	Laid out loggging assembly #4 MSCT -GR. .
3545.0	PH1	P	LOG		0.75	Picked up logging assembly #5 MDT-LEH-GR-QT. .
3545.0	PH1	P	LOG		1.75	Ran logging assembly #5 MDT-LEH-GR-QT to 2307 m. Tool failed. .
3545.0	PH1	TP	LOG	LTF	1.5	POOH with logging assembly #5 MDT-GR-LEH-QT. .
3545.0	PH1	TP	LOG	LTF	0.5	Changed out Fluid Analyser component. .
3545.0	PH1	TP	LOG	LTF	2	Ran in with logging assembly #5 MDT-GR-LEH-QT to 2307 m. .
3545.0	PH1	P	LOG		12.5	Ran logging assembly #5 MDT-GR-LEH-QT, tool stood up at 3528.7 m. Commenced pre-tests then collected samples at 3388.7 m and 3100.5 m plus pumped out at 3157.2 m. Note: 1. Due to favourable weather and sea conditions the cranes and boat were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. Jumped ROV (Maintenance dive). .

Date : 30 Nov 2004 **Daily Cost : $ 284,010** **Report Number : 46**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	LOG		22.75	Ran logging assembly #5 MDT-GR-LEH-QT from 3138.3 m to 2926 m. Pre-tests x 8. Collected samples x 4. Pumped out x 5. .
3545.0	PH1	P	LOG		1.25	POOH with logging assembly #5 MDT-GR-LEH-QT. Note: 1. Due to favourable weather and sea conditions the cranes and boat were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. Jumped ROV inspected Port leg. .

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Activity Report For Trefoil 1

Date : 01 Dec 2004 **Daily Cost : $ 281,113** **Report Number : 47**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	LOG		1	Held JSA. Laid down logging assembly #5 MDT-LEH-GR-QT. .
3545.0	PH1	P	LOG		0.75	Picked up logging assembly #6 MSCT-GR. .
3545.0	PH1	P	LOG		4.75	RIH with logging assembly #6 MSCT-GR. Cut cores from 2968.3 to 3018 m. Positions = 26, Total cut = 26. Indications of tool jamming. .
3545.0	PH1	TP	LOG	LTF	2.75	POOH with logging assembly #6 MSCT-GR. Recovered 24 cores. Cleaned and redressed tool and made up new barrel. .
3545.0	PH1	TP	LOG	LTF	1.25	RIH with logging assembly #7 MSCT-GR to 3009. .
3545.0	PH1	P	LOG		2	Ran logging assembly #7 MSCT-GR from 3009 to 3414 m. Positions = 12, Total cut = 8. Tool jammed at 3414 m. .
3545.0	PH1	P	LOG		2.5	POOH with logging assembly #7 MSCT-GR. Recovered 8 cores. Laid down logging assembly #6 MSCT-GR .
3545.0	PH1	P	LOG		0.5	Picked up logging assembly #8 FMI-DSI-HNGS-LEH-QT. .
3545.0	PH1	P	LOG		7.25	Ran logging assembly #8 FMI-DSI-HNGS-LEH-QT from 300 to 3527 m. .
3545.0	PH1	P	LOG		1.25	Ran logging assembly #8 FMI-DSI-HNGS-LEH-QT from 3527 to 3487 m. Note: 1. Unable to work cranes or vessels from 10.00 to 16.30 due to wind gust >40 knts. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. No ROV operations in past 24 hrs. .

Date : 02 Dec 2004 **Daily Cost : $ 277,268** **Report Number : 48**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	LOG		6.5	Ran logging assembly #8 FMI-DSI-HNGS-LEH-QT from 3487 to 1630 m. .
3545.0	PH1	P	LOG		1	POOH with logging assembly #8 FMI-DSI-HNGS-LEH-QT from 1630 m to surface. .
3545.0	PH1	P	LOG		1.25	Laid down logging assembly and rigged down wireline equipment. .
3545.0	PH1	P	HBHA		1.5	Made up bit and BHA, RIH on HWDP to 203 m. .
3545.0	PH1	P	TI		1.75	RIH from 203 m to 1074 m. Filled pipe every 20 stands. .
3545.0	PH1	P	CMD		0.5	Circulated bottoms up at 1074 m, Max gas = 2% (100 units). .
3545.0	PH1	P	TI		2	RIH from 1074 to 2421 m. .
3545.0	PH1	P	CMD		1	Circulated bottoms up, Max gas = 12% (600 units). .
3545.0	PH1	P	TI		0.75	RIH from 2421 to 2685 m, returns exceeded displacement by 2 bbls. .
3545.0	PH1	P	CMD		0.75	Circulated bottoms up, Max gas = 51% (2350 units). .
3545.0	PH1	P	TI		0.25	Flow checked well - static.

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						.
3545.0	PH1	P	TI		0.75	RIH from 2685 to 2900 m, returns exceeded displacement by 2 bbls.
						.
3545.0	PH1	P	CMD		1.25	Circulated bottoms up, Max gas = 55% (2750 units).
						.
3545.0	PH1	P	TI		0.75	RIH from 2900 to 3193 m, returns exceeded displacement by 2 bbls.
						.
3545.0	PH1	P	CMD		1.25	Circulated bottoms up, Max gas = 56% (2800 units).
						.
3545.0	PH1	P	TI		0.75	RIH from 3193 to 3515 m, drill string stood up.
						.
3545.0	PH1	P	RW		0.25	Washed and reamed from 3515 to 3545 m. Wiped tight spot at 3515 m.
						.
3545.0	PH1	P	CMD		1.75	Circulated and conditioned Mud / Hole. Max gas = 3% (150 units).
						.

Date : 03 Dec 2004 **Daily Cost : $ 856,237** **Report Number : 49**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PH1	P	CMD		0.75	Circulated well clean (bottoms up x 3).
						.
3545.0	PH1	P	TO		0.25	Flow checked well - static.
						.
3545.0	PH1	P	TO		0.5	POOH wet from 3545 to 3396 m. Pumped a slug. Dropped 2½" open drift.
						.
3545.0	PH1	P	TO		1.5	POOH from 3396 to 2409 m.
						.
3545.0	PH1	P	TO		0.25	Flow checked well - static.
						.
3545.0	PH1	P	TO		2.75	POOH from 2409 to 203 m.
						.
3545.0	PH1	P	HBHA		1.5	POOH with BHA. Laid out stabilisers, monel pony drill collar and bit.
						.
3545.0	PC	P	CRN		2.25	Held JSA and rigged up to run 6.625 in liner. Changed out bails and elevators.
						.
3545.0	PC	U	CRN		0.5	Crane operations shut down for helicopter arrival.
						.
3545.0	PC	P	CRN		3	Installed rubber mats in "V" Door. Made up shoe track (4 joints) and checked floats. Held JSA and ran 10 joints 6.625 in K-Fox, 24 ppf, L-80 liner to 163 m. Filled liner every 5 joints.
						.
3545.0	PC	TP	CRN	OTH	0.5	Laid out galled pin joint. Remove and replaced collar. Changed torque gauge on power tongs.
						.
3545.0	PC	P	CRN		10.25	Ran 6.625 in liner from 163 m to 1176 m. Filled liner every 5 joints.
						Note: 1. Due to favourable weather and sea conditions the cranes and boat were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. Jumped ROV inspected Port and Stbd legs.
						.

Date : 04 Dec 2004 **Daily Cost : $ 280,569** **Report Number : 50**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PC	P	CRN		0.25	Changed out to manual DP elevators .
						.

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DFE above MSL : 39.9m | Lat : 39 Deg 51 Min 44.12 Sec | Spud Date : 30 Oct 2004 | Release Date : 25 Dec 2004

Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 04 Dec 2004 **Daily Cost : $ 280,569** **Report Number : 50**

3545.0	PC	P	CRN		0.75	Picked up Baker Flexloc liner hanger. Filled debris cavity with hi vis. .
3545.0	PC	P	CRN		0.5	Changed out to short bails and picked up auto DP elevators. .
3545.0	PC	P	CRN		0.25	Ran 1 stand HWDP and recorded string weights and torque. Pick up weight = 180 kips Slack off weight = 180 kips Pumps = 293 gpm. Pressure = 635 psi. Torque = <1000 ft/lbs. .
3545.0	PC	P	CIC		0.5	Circulated liner contents + 20% at 293 gpm / 635 psi. .
3545.0	PC	P	CRN		2.75	Ran 2 stands HWDP and ran liner on DP to 2421 m. .
3545.0	PC	P	CIC		0.75	Circulated string contents + 20% recorded string weights and torque. Pick up weight = 260 kips Slack off weight = 275 kips Rotating Weight = 260 kips Pumps = 235 gpm. Pressure = 750 psi. Rotary = 20 rpm. Torque = <1500 ft/lbs. .
3545.0	PC	P	CRN		2.25	Ran liner from 2421 m to 3456 m, filled pipe every 5 stands. Liner stood up at 3456 m. No downhole losses observed during liner running operations. .
3545.0	PC	TP	CRN	HC	2.25	Washed / worked liner down from 3456 m to 3461 m. No further progress. Pumps = 200 gpm. Pressure = 600 psi. Rotary = 30 rpm. Torque = 2000 to 5000 ft/lbs. WOB = 10 to 20 kips. .
3545.0	PC	P	CRN		0.5	Racked back working stand. Picked up a single. Picked up the cement head and spaced out to place shoe at 3458 m. Landing collar at 3407 m, Pip tags at 2943 and 2781 m and TOL at 2272 m. .
3545.0	PC	P	CIC		2.25	Circulated bottoms up + 50% at 225 gpm, 840 psi and 10 rpm. No downhole losses observed. .
3545.0	PC	P	CRN		0.75	Dropped 1¾" ball, pumped down and landed with 990 stks. Pressured up to 1600 psi to set liner hanger. .
3545.0	PC	P	CRN		0.75	Pressured up to 2600 psi to release Hydraulic running tool, did not release. Cycled Hydraulic release several times and sheared out ball seat at 3800 psi without releasing. Activated mechanical release tool with 7k left hand torque. Picked up and checked free travel - string weight 260k. Set down & established rotation at 20 rpm and 2000 ft/lbs. .
3545.0	PC	P	CMC		0.5	Rigged up surface lines to cement unit. Pumped 20 bbl chemical wash. Pressure tested cement lines to 4000 psi. .
3545.0	PC	P	CMC		1.25	Pumped 20 bbls chemical wash. Mixed and pumped 119 bbls 15.8 ppg HTB cement slurry. Pumped 4 bbls drill water behind cement to rig floor. .
3545.0	PC	P	CMC		1	Launched dart and pumped 20 bbls drill water with cement unit. Switched over to rig pumps and pumped 115 bbls drill water. Completed displacement with 119.7 bbls mud with rig pumps. No downhole losses observed during cement job. .
3545.0	PC	P	CMC		0.25	Bumped cement wiper plug after 249.7 bbls pumped (theoretical = 254.7 bbls), delta P = 2500 psi. Pressure tested liner to 4000 psi / 10 mins. Bled back 3 bbls, confirmed floats holding. .
3545.0	PC	P	CMC		0.25	Picked up 3 m and set down and shear pins with 45 kips and set ZXP packer. Pressured up 600 psi and pulled back drill pipe untill pressure bled off to confirm running tool was clear of liner. .

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DFE above MSL : 39.9m | Lat : 39 Deg 51 Min 44.12 Sec | Spud Date : 30 Oct 2004 | Release Date : 25 Dec 2004

Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 04 Dec 2004 **Daily Cost : $ 280,569** **Report Number : 50**

3545.0	PC	P	CMC		1	Picked up 8 m. Lined up surface lines to reverse circulate. Reverse circulated at 232 gpm ±1500 psi. Monitored returns for cement, none observed. Observed and dumped ~35 bbls chemical wash returned (theoretical TOC at 2319 m). .
3545.0	PC	P	CMC		1.75	Disconnected surface lines. Laid down cement head. .
3545.0	PC	P	TO		3.5	POOH with running string to 60 m. Note: 1. Due to favourable weather and sea conditions the cranes and boat were able to be accessed as required. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. No ROV operations. .

Date : 05 Dec 2004 **Daily Cost : $ 645,506** **Report Number : 51**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PC	P	TO		0.25	POOH with liner running tool. .
3545.0	PC	P	TO		0.75	Laid down liner running tool. .
3545.0	PT	P	BOP		0.75	RIH and pulled wear bushing. .
3545.0	PC	P	TO		0.25	Broke off pup joint from cement head and laid down both. .
3545.0	PT	P	BOP		5	Commenced reconfiguring BOP for well test as follows:- 3½" x 5½" Variable rams Shear rams. 5" Fixed rams. 3½" x 5½" Variable rams. .
3545.0	PT	P	BOP		1.25	Made up BOP test assembly and set test plug in wellhead. .
3545.0	PT	P	BOP		5	Filled riser and BOP with water. Functioned and pressure tested BOP, rams, valves and lines to 250 / 5000 for 5 / 10 mins. .
3545.0	PT	TP	BOP	RE	1.25	Lower manual IBOP would not test, changed out IBOP and saver sub. .
3545.0	PT	P	BOP		1	Pulled test plug and laid down test equipment. .
3545.0	PT	P	BOP		0.5	Pressure tested manual IBOP to 250 / 5000 psi 5/10 mins. .
3545.0	PT	P	BOP		0.75	Installed wear bushing. .
3545.0	PT	P	HBHA		0.5	Held JSA. Rigged up to pick up Bit, 6.625" casing scraper and 4¾" BHA. .
3545.0	PT	U	HBHA	OTH	0.5	Crane operations shut down due to helicopter. .
3545.0	PT	P	HBHA		3.25	Picked up 5¾" Bit, 6.625" casing scraper and 4¾" Drill collars. .
3545.0	PT	P	PUP		3	Picked up 3½" drill pipe and RIH to 476 m. Note: 1. No weather related impact to crane and vessel operations. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. No ROV operations. .

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Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 06 Dec 2004 **Daily Cost : $ 296,890** **Report Number : 52**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	PUP		3.5	Picked up 3½" Drill pipe and RIH to 1128 m. .
3545.0	PT	P	TI		0.5	Changed out from 3½" to 5" pipe handling equipment. .
3545.0	PT	P	PUP		1	Picked up PBR mill assembly and 9.625" casing scraper. .
3545.0	PT	P	TI		2	RIH casing clean out assembly on 5" drill pipe 2263 m. .
3545.0	PT	P	PT		0.5	Broke circulation, closed TPR and circulated through choke. Pressure tested casing / liner lap to 2000 psi for 10 min with rig pump. .
3545.0	PT	P	TI		0.5	Open TPR and RIH to 2495 m. .
3545.0	PT	P	TI		0.25	Drill pipe "U" tubing. Pumped 20 Bbls 9.4 ppg mud to slug pipe. .
3545.0	PT	P	TI		0.75	RIH to 2698 m. .
3545.0	PT	P	TI		1.5	Drill pipe "U" tubing. Pumped 50 Bbls Hi-Vis followed by sea water. .
3545.0	PT	P	WCU		1.5	RIH to 3399.45 m. Tagged top of liner with polish mill at 2271 m. Worked 6.625" casing scrapers x 2 over the following intervals 2930 to 2975 m, 3010 to 3035 m and 3112 to 3141 m.
3545.0	PT	P	WCU		0.5	Polished Liner top at 2271. .
3545.0	PT	P	WCU		1.75	Pumped 50 bbls high viscosity sweep and followed by sea water circulated at 2 x hole volume at 537 gpm 3750 psi. .
3545.0	PT	P	WCU		9.75	Pumped 50 bbls high viscosity sweep, 50 bbls Condet sweep, 100 bbls caustic sweep, 90 Bbls Barakleen and 50 Bbls high viscosity sweep. Circulated the wellbore at 525 gpm / 3750 psi until 3 consequetive NTU readings 15 minutes apart within 15% achieved (73.5, 69, 71). Cleaned surface lines, trip tanks, mud ditches and diverter lines while cleaning wellbore. Note: 1. No weather related impact to crane and vessel operations. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. Jumped ROV & inpsected Port & Stbd legs for bubbles (none observed) and confirmed guide wires were secure. .

Date : 07 Dec 2004 **Daily Cost : $ 312,809** **Report Number : 53**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	WCU		1	Displaced well to 8.9 ppg brine with 100 bbls inhibited brine left in liner. .
3545.0	PT	P	PT		0.5	Racked back 1 stand. Rigged up cement line to choke line and drill pipe.
3545.0	PT	P	PT		0.75	Flushed cement lines. Pressure tested cement line to 4000 spi. Closed TPR and pressure tested casing / liner to 4000 psi for 15 min down the choke line and drill pipe. .
3545.0	PT	P	PT		0.5	Rigged down cement lines. .
3545.0	PT	P	TO		3.25	POOH with clean out assembly to 1131 m. .
3545.0	PT	P	TO		0.75	Laid down 9.625" casing scraper, Polish mill and dress mill. Changed out from 5" to 3½" handling equipment. .
3545.0	PT	P	TO		2	POOH to 118 m. Racked back 3½" drill pipe. .
3545.0	PT	P	TO		1	POOH and racked back 4¾" collars. Laid down 6.625" casing scrapers and 5.625" bit.

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Date : 07 Dec 2004 **Daily Cost : $ 312,809** **Report Number : 53**

					.
3545.0	PT	P	HT	2.75	Picked up flowhead and made up stiff joint. Made up all connections to required torque.
					.
3545.0	PT	P	HT	1.25	Picked up stand of drill pipe. RIH and closed 5" Pipe rams to confirm space out (11.14 m BRT). Picked up test valve on drill pipe and rechecked ram space out on designated valve profile. Laid out test valve.
					.
3545.0	PT	P	LOG	1.5	Held JSA. Rigged up wireline and picked up Log #1 USIT-CBL.
					.
3545.0	PT	P	LOG	6.5	Ran Log# 1 USIT-CBL to 3495 m. Note: Good Cement bond accross all hydrocarbon bearing zones; Overall good bond from Liner Shoe to 2525 m. No cement in Liner-lap.
					.
3545.0	PT	P	LOG	1.75	POOH with Log #1 USIT-CBL.
					.
3545.0	PT	P	LOG	0.5	Laid down Log #1 USIT-CBL. Note: 1. No weather related impact to crane and vessel operations. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. No ROV ops.

Date : 08 Dec 2004 **Daily Cost : $ 344,928** **Report Number : 54**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	LOG		0.25	Laid down Log #1 USIT-CBL.
						.
3545.0	PT	P	LOG		0.75	Picked up Log #2 junk basket / 5.77" gauge ring.
						.
3545.0	PT	P	LOG		1.5	Ran Log #2 junk basket / 5.77" gauge ring to 3200 m.
						.
3545.0	PT	P	LOG		1.75	POOH with Log #2 junk basket / 5.77" gauge ring.
						.
3545.0	PT	P	LOG		0.25	Rigged down wireline.
						.
3545.0	PT	P	BOP		0.5	RIH and retrieve the wear bushing.
						.
3545.0	PT	P	BOP		4.5	RIH with test plug and pressure tested BOP, in preparation for DST, to 250 / 5000 psi for 5/10 mins. Pulled test plug.
						.
3545.0	PT	P	BOP		0.5	RIH and set wearbushing.
						.
3545.0	PT	P	RPK		0.75	Rigged up handling equipment for TCP guns and tail pipe.
						.
3545.0	PT	P	RPK		0.25	Held JSA prior to picking up TCP's.
						.
3545.0	PT	P	RPK		1	Made up TCP Guns and Tail pipe assembly. RIH to 30 m.
						.
3545.0	PT	P	RPK		0.5	Rigged up wireline equipment. Made up permanent packer to TCP guns.
						.
3545.0	PT	P	RPK		2.75	RIH with permanent packer / TCP guns on wireline to 3150 m.
						.
3545.0	PT	P	RPK		0.75	Correlate Packer setting depth and set packer at 3120.2 m (middle of packer) placing top shot at 3141 m.
						.
3545.0	PT	P	RPK		0.75	POOH with wireline.
						.

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Date : 08 Dec 2004 | **Daily Cost : $ 344,928** | **Report Number : 54**

3545.0	PT	P	RPK		0.75	Rigged down wireline equipment. .
3545.0	PT	TP	RTB	WOW	6.5	Cranes shut down due to high winds. Wait on Weather. Serviced TDS, changed out swivel packing plus PMS on rig floor. Combined Seas / Direction 18.00 Hrs Wind = 43 knts 4.5 m / 130 Deg 20.00 Hrs Wind = 44 knts 5 m / 130 Deg 22.00 Hrs Wind = 48 knts 5 m / 130 Deg 24.00 Hrs Wind = 45 knts. 5 m / 130 Deg Note: 1. No crane or vessel ops from 14.00 due to high winds. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. No ROV ops.

Date : 09 Dec 2004 | **Daily Cost : $ 447,314** | **Report Number : 55**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	TP	RTB	WOW	17.5	Wait on Weather. Continued with rig maintenance. Time / WInd Speed / Combined Seas 02.00 Hrs / wind = 45 knts / 6 m / 120 Deg 04.00 Hrs / wind = 43 knts / 6 m / 120 Deg 06.00 Hrs / wind = 43 knts. / 6 m / 120 Deg 08.00 Hrs / wind = 42 knts. / 6 m / 110 Deg 10.00 Hrs / wind = 38 knts. / 6 m / 110 Deg 12.00 Hrs / wind = 41 knts. / 6 m / 110 Deg 14.00 Hrs / wind = 38 knts. / 5 m / 110 Deg 16.00 Hrs / wind = 38 knts. / 4 m / 100 Deg .
3545.0	PT	P	RTB		0.25	Held running DST JSA. .
3545.0	PT	P	RTB		1.5	Laid out DST equipment and loaded gauges. Pressure tested DST equipment. .
3545.0	PT	P	RTB		2.75	Picked up Retrievable packer and DST tools. Torqued up service breaks on DST tools. .
3545.0	PT	P	HBHA		1	Changed out from YT elevators to Varco auto elevators and picked up 4¾" Drill Collars. Collars drifted with 2" drift. .
3545.0	PT	P	PUP		1	Picked up and RIH 12 joints 3½" HWDP to 273 m. Drifted with 2 " drift. Note: 1. No crane ops until 17.00. No vessel ops for 24 hrs due to inclement weather. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV operations. No ROV ops.

Date : 10 Dec 2004 | **Daily Cost : $ 316,398** | **Report Number : 56**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	PUP		0.5	Changed out from Varco auto elevators to 3½" YT elevators. .
3545.0	PT	P	PUP		1	Picked up and RIH 3 x 5" slip joints. .
3545.0	PT	P	PUP		0.25	Rigged up Weatherford power tongs. .
3545.0	PT	P	RTB		0.5	Picked up and RIH 3 joints 3½" PH-6 tubing. Drifted with 2" drift. .
3545.0	PT	P	PT		1	Rigged up and pressure tested DST string and BHA to 5000 psi 15 mins. Rigged down test line. .
3545.0	PT	P	RTB		18.5	Picked up and RIH 276 Joints 3½" PH-6 tubing to 2932 m. Drifted with 2" drift. Note: No rejected pipe; Average running-in speed 15 Jts / Hr.

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Date : 10 Dec 2004 **Daily Cost : $ 316,398** **Report Number : 56**

					.
3545.0	PT	P	RTB	0.75	Pulled PS 21 slips. Installed master bushings. Changed out from 3½" PH-6 to 4½" PH-6 handling equipment.
					.
3545.0	PT	P	RTB	0.5	Picked up EZ valve and made up 4½" PH-6 pup joints.
					.
3545.0	PT	P	RTB	1	Ran in and spaced out EZ valve in BOP. Functioned 5" rams to mark hang off point. Pulled string to confirm space out. Installed control lines on EZ valve. Note: 1. No weather related lost time with either cranes or vessels. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV inspected Port and Aft legs and 30" conductor.

Date : 11 Dec 2004 **Daily Cost : $ 322,545** **Report Number : 57**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	PT		0.5	Connected pressure test hose to DST string. Closed 5" rams. Reverse circulated at 1 bbl/min, 150 psi to fill pipe and lines.
						.
3545.0	PT	P	PT		0.75	Lined up cement unit to pressure test Test string. Pressure tested surface line to 5000 psi.
						.
3545.0	PT	P	PT		1	Pressure tested Test string to 5000 psi for 15 mins.
						.
3545.0	PT	P	PT		2.5	Laid out 1 x 4½" PH-6 pup joint. Picked up Flowhead. Rigged up coflexip and test line (kill wing) to cement unit.
3545.0	PT	P	PT		1	Flushed test line & coflexip. Pressure tested surface lines to 5000 psi. Pressure tested TFTV to 5000 psi for 15 mins.
						.
3545.0	PT	P	PT		3.5	Pressure tested various sections of the surface Test Package to pressures required as per Schlumberger procedures.
						.
3545.0	PT	P	RPK		0.25	Held pre-job Safety Meeting on retrievable Positrieve Packer setting and displacement to Diesel cushion.
						.
3545.0	PT	P	RPK		0.5	Set 6.625" Positrieve Packer and spaced out test string to position EZ valve Slick joint in 5" Pipe Rams.
						.
3545.0	PT	P	DST		1	Installed surface lines to Flowhead. Closed 5" BOP Ram onto EZ valve Slick joint. Pressured up annulus to 1000 psi to lock "open" TFTV, MCVL and Port and simultaneously test Positrieve Packer being set. Held 1000 psi for 15 mins. Note: Held pre-DST Rig Fire and Abandon Drill.
						.
3545.0	PT	P	HBHA		0.5	Opened Flow and Kill Wing valves and flushed with Dowell to Surge Tank via Test Choke. Closed Kill Wing Valve and pressure tested same to 5000 psi. Opened Kill Wing and Master valve on Flowhead.
						.
3545.0	PT	P	DST		0.25	Pressured up on Annulus with Rig Pump to 1200 psi for 5 mins and closed PCT valve. Bled off pressure.
						.
3545.0	PT	P	DST		0.5	Closed Master valve on Flowhead to isolate DST String and pressured up against the Test Choke to 2000 psi with Dowell. Closed hydraulic Flow Wing Valve on Flowhead and bled off pressure down on Kill line.
						.
3545.0	PT	P	DST		1.5	Held pre-DST Safety Meeting with all personnel on board the Rig. Carried out "walk-about" with the OIM and DST / Rig crew personnel to check and review the DST Equipment set-up. Note: Continued to pressure test Surface DST equipment "offline" from Flow Wing Valve down to Test Choke and onto Separator with Schlumberger Test Pump to 5000 psi.

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Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
						.
3545.0	PT	P	DST		0.5	Tested ESD system of valves; Activated ESD stations and timed closing delay on ESD functioned valves. Flow Wing valve closed in 28 sec from ESD activation.
						.
3545.0	PT	P	DST		0.5	Held JSA on pumping diesel cushion.
						.
3545.0	PT	P	DST		0.5	Pressured up Annulus to 500 psi with Rig Pump. Cycled MCVL into circulating position with 1200 psi down DST String with Dowell. Confirmed DST String communication to Annulus by pressure drop inside DST String and equalising with Annulus.
						.
3545.0	PT	P	DST		0.75	Lined up Dowell and displaced 8.9 ppg Brine from DST String with 64 BBL Diesel cushion. Final differential draw-down / underbalance pressure 820 psi.
						.
3545.0	PT	P	DST		0.5	Bled off pressure at the Test Choke and closed MCVL; DST string ready for the flow. Closed Master valve on Flowhead and flushed accross from Kill & Flow Wing Valve to Surge Tank via Test Choke with Dowell. Opened Master valve and pressured up on Annulus to 1500 psi - Reference pressure confirmed no communication to DST String.
						.
3545.0	PT	P	DST		0.25	Held JSA on firing TCP guns.
						.
3545.0	PT	P	DST		1	Installed Check valve into Kill line up from Kill Wing Valve. Pressured up on annulus with rig pumps to 1700 psi. Pressured-up down DST String to 4700 psi with Dowell and held for 2 Min then bled off to initiate the TCP Guns firing cycle. TCP Guns fired at 17.35 hrs. Perforated Liner 22 Min following the pressure bleed-off. Intital surface pressure after TCP guns fired = 700 psi. Flowed well on 16/64 Choke and shut-in the well after 7 Min with 3.5 BBL back to surface.
						.
3545.0	PT	P	DST		1.25	Bled pressure off annulus to close PCT valve for initial build up.
						.
3545.0	PT	P	DST		0.5	Pressured up on annulus to 1500 psi to open PCT valve. Initial well pressure = 650 psi. Opened well on 16/64 Choke. Took diesel returns back to surge tank. Started flaring at 19.30 hours.
						.
3545.0	PT	P	DST		4.5	Flowed well on 32/64 choke. Gas and brine to surface at 19.50 hrs. Wellhead BSW data as follows:- TIME / CHOKE / TUBING PRESS / CONDENSATE / WATER 22.00 / 48/64ths / 1275 Psi / 70% / 30% 24.00 / 48/64ths / 1301 psi / 76% / 24%. Note: 1. No weather related lost time with either cranes or vessels. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. ROV inspected Port and Aft legs and 30" conductor.

Date : 12 Dec 2004 **Daily Cost : $ 310,050** **Report Number : 58**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	DST		5	Flowed well to flare boom: TIME / CHOKE / TUBING PRESS / CONDENSATE / WATER 02:00 / 48/64ths / 1317 Psi / 80% / 20% 04:00 / 48/64ths / 1326 psi / 77% / 23%. 05:00 / 48/64ths / 1329 psi / 77% / 23%. Final production rate = 16.3 mscf/d. CGR = 9 bpm. Water = 43 bbl/day H2S = 0% CO2 = 2.4 % .
3545.0	PT	P	DST		7	Closed in well. Initial shut-in pressure = 1208 psi. Bled annular pressure down to close PCT valve. Final shut-in pressure = 1565 psi. Held pressure for final build-up period. .

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DFE above MSL : 39.9m | Lat : 39 Deg 51 Min 44.12 Sec | Spud Date : 30 Oct 2004 | Release Date : 25 Dec 2004

Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 12 Dec 2004 **Daily Cost : $ 310,050** **Report Number : 58**

3545.0	PT	P	SEP	1.25	Prepared El Wireline tools and equipment on deck with Schlumberger. Conducted JSA prior to making up drift assembly. .
3545.0	PT	P	SEP	3	Made up drift assembly and installed same into lubricator. Made up lubricator to flowhead. .
3545.0	PT	P	SEP	0.25	Pressure tested Lubricator with Dowell to 5000 psi (10 mins) .
3545.0	PT	P	SEP	1.5	Closed Swab and Kill wing valves. Opened LMV and 1500 psi was recorded as Tubing W/Head pressure at the Choke. Pressured up on the annulus to 1500 psi to open PCT valve. .
3545.0	PT	P	SEP	6	Opened up well to flare boom for sampling and final flow: TIME / CHOKE / TUBING PRESS / CONDENSATE / WATER / GAS 18:00 / 16/64ths / 3468 psi / - / - / no gas rate reported 19:00 / 32/64ths / 2289 psi / 80% / 20% / no gas rate reported 20:00 / 32/64ths / 2228 psi / 80% / 20% / no gas rate reported 21:00 / 36/64ths / 2010 psi / 80% / 20% / 14.5 mscf/d 22:00 / 36/64ths / 2000 psi / 80% / 20% / 14.5 mscf/d 23:00 / 36/64ths / 2004 psi / 80% / 20% / 14.2 mscf/d Shut-in pressure at 24:00 = 3182 psi Sampling flow period extended due to failure of: a. Separator pressure controller. b. Steam generator water pump tripped. Note: 1. No weather related lost time with either cranes or vessels. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface. 3. Jumped ROV and checked Seabed around Legs

Date : 13 Dec 2004 **Daily Cost : $ 312,615** **Report Number : 59**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	SEP		0.5	Well pressure built to 3412 psi. .
3545.0	PT	P	SEP		0.25	Conducted JSA prior to RIH with 1.75 in drift assembly. .
3545.0	PT	TP	SEP	OTH	0.25	Opened swab valve to equalise pressure to lubricator. Sclumberger attempted to RIH with 1.75 in drift assembly - unsuccessful. .
3545.0	PT	TP	SEP	OTH	0.5	Closed master valve on flowhead and bled off pressure through burner boom. Closed swab valve. Vented and broke out lubricator. Laid down 1.75 in drift assembly. .
3545.0	PT	TP	SEP	OTH	3	Reconfigured drift assembly to include x3 sinker bars (45 kgs additional weight). Made up new rope socket (previous socket not compatible with sinker bars). .
3545.0	PT	TP	SEP	OTH	0.5	Installed new drift assembly in lubricator. Made up lubricator connection and tested same to 5000 psi (5 mins) - OK. Opened master and swab valves (well head pressure = 3460 psi). .
3545.0	PT	TP	SEP	OTH	1	Attempted to RIH with 1.75 in drift assembly - unsuccessful. .
3545.0	PT	P	SEP		2.25	Closed master valve and bled off pressure through burner boom to 2200 psi. Drift assembly started to RIH. Opened master valve and flowed well to decrease pressure in test string. RIH with drift assembly to 3130 mMD. Note: Stopped flowing well with drift assembly at 250 mMD. .
3545.0	PT	P	SEP		2.5	POOH with 1.75 in drift assembly. .
3545.0	PT	P	SEP		1.25	Closed master valve and bled off presure through burner boom. Closed swab valve and broke out lubricator. Laid down drift assembly. .
3545.0	PT	P	SEP		0.25	Conducted JSA prior to making up 1.875 in Owen bridge plug.

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Date : 13 Dec 2004 **Daily Cost : $ 312,615** **Report Number : 59**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
						Note: Rig in radio silence. .
3545.0	PT	P	SEP		0.5	Made up bridge plug assembly and installed same in lubricator. Made up lubricator connection and tested same to 5000 psi (5 mins) - OK. .
3545.0	PT	P	SEP		2.5	Opened master and swab valves (well head pressure = 3460 psi). Flowed well to reduce pressure to 2200 psi. RIH with 1.875 in Owen bridge plug assembly to setting depth at 3125 mMD (tail pipe of packer) and set same. Note: Radio silence lifted with bridge plug assembly at 200 mMD. .
3545.0	PT	P	SEP		1.75	POOH with bridge plug running assembly. Note: Rig in radio silence with running assembly at 200 mMD. .
3545.0	PT	P	SEP		0.5	Bled off tubing pressure from 3487 psi to 2991 psi and monitored for 15 mins to ensure plug was sealing - OK. Continued to bleed off pressure to 2524 psi (provide underbalance for DST #2 peforations). Closed master valve and opened swab valve and bled off lubricator pressure. Closed swab valve. .
3545.0	PT	P	SEP		0.5	Broke out lubricator and laid down bridge plug running assembly. .
3545.0	PT	P	PER		2	Made up GR/CCL assembly and function tested same - OK. Made up 1-11/16 in PJ Enerjet guns (6 shot/ft, 113 shots) and armed same. .
3545.0	PT	P	PER		0.5	Installed Enerjet assembly in lubricator. Made up lubricator connection and tested same to 5000 psi (5 mins) - OK. Opened master and swab valves (well head pressure = 2913 psi). .
3545.0	PT	P	PER		3.5	RIH with Enerjet assembly to 3075 mMD (hang-up point encountered at 2914 mMD - worked through same). Note: 1. No weather related lost time with either cranes or vessels. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface.

Date : 14 Dec 2004 **Daily Cost : $ 326,905** **Report Number : 60**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	PER		1.25	Correlated 1-11/16 in PJ Enerjet guns on depth. Fired guns and perforated interval from 3040.5 mMD to 3046.5 mMD. TIME / TUBING PRESSURE 00:30 / 2524 psi 01:00 / 2722 psi 01:15 / 2843 psi .
3545.0	PT	P	PER		3.25	POOH with perforating assembly. Closed master valve and bled off lubricator via flare boom. Closed swab valve and vented lubricator. Broke out lubricator and laid down perforating assembly - positive indication of all shots firing. Made up lubricator and tested same to 5000 psi (5 mins) - OK. Opened master valves. .
3545.0	PT	P	FLO		11.5	Flowed well (DST#2): TIME / CHOKE / TUBING PRESSURE / CONDENSATE / WATER / FLOW RATE 06:00 / 32/64ths / 1020 psi / 85% / 15% / no recorded rate 09:00 / 32/64ths / 1266 psi / 95% / 5% / 7 mscf/d 12:00 / 32/64ths / 1334 psi / 95% / 5% / 7.2mscf/d 14:00 / 56/64ths / 602 psi / 96% / 4% / 9.1 mscf/d 16:00 / 56/64ths / 645 psi / 95% / 5% / 9.8 mscf/d .
3545.0	PT	P	FLO		8	Bled pressure off annulus to close PCT valve. Confirmed PCT closed by bleeding off tubing pressure to 380 psi - OK. Closed LMV and bled off flowhead pressure to 0 psi. Shut-in well for main pressure build up period. The following operations were conducted during the pressure build up period:

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Date : 14 Dec 2004 **Daily Cost : $ 326,905** **Report Number : 60**

a. Conducted JSA prior to rigging down wireline and lubricator equipment.
b. Rigged down wireline and lubricator equipment.
c. Flushed test spread.
d. Rigged down scaffolding erected around flowhead.

Note:
1. No weather related lost time with either cranes or vessels.
2. BOP tensioners 4 x 35 tonnes. No movement observed at surface.

Date : 15 Dec 2004 **Daily Cost : $ 337,877** **Report Number : 61**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	FLO		4	Well shut-in at PCT valve for main build up period. Note: At 03:45 a JSA was conducted for well kill operations. .
3545.0	PT	P	FLIN		1.5	Opened well test choke manifold (tubing pressure = 1725 psi) and bled down tubing pressure above closed PCT to 0 psi. Filled tubing string above PCT with 65 bbls of 8.9 ppg brine using the cement unit. .
3545.0	PT	P	FLIN		1	Opened PCT valve and bullheaded 13.2 bbls of brine - locked up. Squeezed a total of 10.8 bbls of brine (maximum pressure = 2500 psi) into the formation at 0.2 bpm. .
3545.0	PT	P	WC		1	Shut-in and pressure dropped to 400 psi (11 mins). Flow checked for 15 mins on production choke - well static. Pressured up test string to 2500 psi and bled off pressure. Monitored pressure for 30 mins - OK. .
3545.0	PT	P	CMD		1	Held 500 psi on annulus. Cycled test string to 1200 psi 4x using cement unit to open MCVL. Circulated with mud pumps (250 psi) and reverse circulated a total of 70 bbls - some gas slugging. .
3545.0	PT	P	CMD		0.5	Pressured up production string to 1000 psi and closed MCVL. Pumped with rig pumps into annulus and confirmed MCVL closed. Flow checked - well static. .
3545.0	PT	P	CMD		1.25	Opened BOP rams and picked up test string 4 m to open ports on packer. Closed lower variable rams and reverse circulated 2x tubing volume of 8.9 ppg brine via production choke. Gas slugging on first circulation and then cleaned up. Opened rams and flow checked - well static. .
3545.0	PT	P	CMD		1.75	Closed master valve on flowhead. Pumped across flowhead with rig pumps and flushed surface lines to flare boom with drill water. Broke out surface lines and flowhead. Laid down same on deck. Opened BOP rams and unseated packer. Picked up test string to the EZ valve assembly and laid down same. .
3545.0	PT	P	TI		0.5	Changed out elevators and handling equipment to 3.5 in. .
3545.0	PT	P	TI		0.25	RIH on 3.5 in drill pipe from 2934 mMD to 3025 mMD. .
3545.0	PT	P	BKC		0.75	Rigged up surface lines and broke circulation. Tested lines to 1000 psi - OK. .
3545.0	PT	P	CMD		0.5	Closed top variable rams. Reverse circulated out 84 bbls of 8.9 ppg brine (3 bpm, 400 psi) with returns being taken via the rig choke manifold and gas buster to the active pit (20 units maximum gas). .
3545.0	PT	P	CMD		0.25	Lined up to pump down the test string taking the annulus returns via the rig choke manifold to the active pit. .
3545.0	PT	P	CMD		2.25	Pumped 610 bbls of 8.9 ppg brine down tubing at 4.5 bpm (1000 psi) to confirm well was gas free - OK. .
3545.0	PT	P	CMD		0.75	Pumped 10 bbls of saturated brine, 20 bbls of sized salt and 4 bbls of saturated brine. Pumped 70 bbls of 8.9 ppg brine to spot sized salt across perforations. .

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3545.0	PT	P	CMD	0.25	Rigged down surface lines and set packer.
3545.0	PT	P	OTH	0.25	Closed top variable rams. Pressured up on annulus to 2900 psi and sheared out SHRV.
3545.0	PT	P	TO	0.25	Opened top BOP variable rams and unseated packer. POOH with x1 stand of 3.5 in drill pipe.
3545.0	PT	P	WC	0.25	Flow checked - well static.
3545.0	PT	P	TO	0.25	POOH to 2934 mMD with 3.5 in drill pipe.
3545.0	PT	P	TO	0.75	Changed out handling equipment and rigged up for POOH of 3.5 in tubing.
3545.0	PT	P	TO	0.25	Conducted JSA prior to POOH with 3.5 in tubing.
3545.0	PT	P	TO	4.5	POOH with 3.5 in tubing from 2934 mMD to 2416 mMD. Note: 1. No weather related lost time with either cranes or vessels. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface.

Date : 16 Dec 2004 **Daily Cost : $ 330,273** **Report Number : 62**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	PT	P	TO		16.5	POOH with 3.5 in tubing from 2416 mMD to 296 mMD. Note: Wiped, blow cleaned and redoped threads on each joint of 3.5 in tubing (added internal inhibitor).
3545.0	PT	P	HBHA		0.5	Changed out handling equipment.
3545.0	PT	P	HBHA		0.75	Laid down x3 Schlumberger slip joints.
3545.0	PT	P	HBHA		0.5	Changed out handling equipment.
3545.0	PT	P	HBHA		2.25	POOH and laid down 3.5 in HWDP and 4.75 in drill collars to 46 mMD.
3545.0	PT	P	HBHA		2.25	POOH and laid down DST tools.
3545.0	PT	P	HBHA		1.25	Picked up and broke down Schlumberger down hole test equipment. Broke out the flow head and removed subs and excess equipment from the rig flloor. Note: 1. No weather related lost time with either cranes or vessels. 2. BOP tensioners 4 x 35 tonnes. No movement observed at surface.

Date : 17 Dec 2004 **Daily Cost : $ 311,212** **Report Number : 63**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	SUS	P	TI		0.75	Changed handling equipment from 5 in to 3.5 in tubing. Held JSA prior to making up 6.625 in cement retainer. Picked up one stand of 3.5 in tubing and made up cement retainer. Note: Downloaded all test data from Schlumberger gauges.
3545.0	SUS	P	TI		1.25	RIH with cement retainer on 3.5 in tubing to 90 mMD.
3545.0	SUS	P	TI		0.25	Changed out handling tools from 3.5 in tubing to 3.5 in drill pipe.
3545.0	SUS	P	TI		2	RIH with 6.625 in cement retainer on 3.5 in drill pipe from 90 mMD to 783 mMD.

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Date : 17 Dec 2004 **Daily Cost : $ 311,212** **Report Number : 63**

3545.0	SUS	P	TI		0.5	Changed bushings in automatic elevators to handle 5 in drill pipe. Made up one stand of 5 in drill pipe. Changed out inserts in PS21 slips from 3.5 in to 5 in. .
3545.0	SUS	P	TI		4.25	RIH with Baker K-1 6.625 in cement retainer on 5 in drill pipe from 783 mMD to 2350 mMD. .
3545.0	SUS	TP	RR	RE	1.5	Troubleshoot and repaired hydraulic leak on PRS upper gripper jaw. .
3545.0	SUS	P	TI		2.5	Continued to RIH with packer to 3031mMD. Picked up space out pups. .
3545.0	SUS	P	RPK		0.75	Broke circulation, worked and flushed across packer setting depth. Set packer at 3031mMD. Picked up 45 kips over and set 40 kips down to confirm packer set - Ok. Released running tool with 10 turns to the right. Tool free. .
3545.0	SUS	P	PT		0.25	Closed pipe rams and established circulation thru choke. Shut in and tested packer to 1000 psi. No bleed off. .
3545.0	SUS	P	BKC		1.25	Circulated bottoms up from 3029m at 8 bpm with balanced 8.9 ppg brine and cooled hole. Dumped saturated brine pill. Maximum gas 950 units at btms up. Held JSA for cement job. .
3545.0	SUS	P	SEP		1.75	Made up cement line and flushed with drill watwer. D/S pumped 10 bbls drill water ahead and tested lines to 2000 psi - Ok. Mixed and pumped 4.5 bbls HTB cement slurry @ 15.8 ppg. (17 sks). Chased with 3 bbls drill water and 143 bbls 8.9 ppg brine and set balanced plug from 3030m to 2990mMD. CIP 16.55 hrs. .
3545.0	SUS	P	TO		0.75	Rigged down cement line and pulled out of hole to 2875mMD. .
3545.0	SUS	P	SEP		1	Lined up and reversed out drill string volume at 5 bpm and 700 psi. Dumped 14 bbls of contaminated brine on bottoms up. .
3545.0	SUS	P	PT		0.75	Lined up Dowell, closed pipe rams and pressure tested cement plug to 1000 psi / 15 mins. Chart test. No leak off. Pumped 2.1 bbls. .
3545.0	SUS	P	CMD		1.5	Circulated bottoms up at 10 bpm with 2000 psi to flush setting tool clean. Spotted 117 bbls 8.9 ppg inhibited brine and displaced to cover 2875m to 2072mMD. .
3545.0	SUS	P	PLD		1	Flushed choke manifold, C&K hoses and gas separator with drill water. Filled BOP's and trip tank with drill water for flushing drill pipe. .
3545.0	SUS	P	PLD		2	Held JSA and POOH from 2875m to 2460mMD. Flushed, doped and laid out 5"drill pipe. .

Date : 18 Dec 2004 **Daily Cost : $ 294,065** **Report Number : 64**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	SUS	P	PLD		1	Conintued to lay out 5 in drill pipe in singles from 2460m to 2294mMD .
3545.0	SUS	P	SEP		0.5	Spotted 5 bbls HiVis and diplaced to 2294m - 2264mMD .
3545.0	SUS	P	SEP		0.25	POOH to 2264mMd and made up cementing line. Held JSA for cementing job. .
3545.0	SUS	P	SEP		2	Lined up Dowell and pumped 20 bbls drill water ahead and tested lines to 2000 psi -Ok. Mixed & pumped 10 bbls HTB slurry @ 15.8 ppg (37 sks), chased with 2 bbls drill water and 99 bbls 8.9 ppg brine and spotted balanced plug from 2264m to 2224mMD. .
3545.0	SUS	P	SEP		0.5	Pulled out of hole 5 stds to 2114mMD. .

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Date : 18 Dec 2004 **Daily Cost : $ 294,065** **Report Number : 64**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	SUS	P	SEP		0.75	Lined up and reversed out drill pipe volume at 5 bpm with 450 psi. Dumped preflush water but no cement returns. .
3545.0	SUS	P	SEP		1.5	Circulated bottoms up at 13.6 bpm with 2500 psi to flush retainer setting tool clean. Pumped 345 bbls 8.9 ppg inhibited brine and displaced to cover 2114m to 700mMD. Laid out 1 std 6-3/4"DC's while circulating. .
3545.0	SUS	P	PLD		10.5	Held JSA and pulled out of hole. Laid out 5 in drill pipe in singles from 2114m to 901mMD. Picked up 6-1/2" drilling jars out of derrick and laid out for backload. .
3545.0	SUS	P	SEP		0.75	Rigged up pump in sub and cement lines and circulated pipe volume at 901mMD and held pre-job meeting for cementing. .
3545.0	SUS	P	SEP		1	Lined up D/S and pumped 20 bbls drill water ahead and tested lines to 2000 psi - Ok. Mixed and pumped 10 bbls HTB cement slurry @ 15.8 ppg (37 sks). Chased with 2 bbls drill water and 21 bbls 8.9 ppg brine to set balanced plug from 901m to 861mMD. .
3545.0	SUS	P	SEP		0.25	Rigged down cement line and pulled out of hole to 787mMD.
3545.0	SUS	P	SEP		0.5	Lined up and reversed out drill string volume at 4 bpm with 500 psi. Dumped pre-flush water but no cement returns.
3545.0	SUS	P	SEP		1	Circulated bottoms up from 787mMD at 11 bpm with 1600 psi to clean packer setting tool. Pumped 175 bbls 8.9 ppg inhibited brine and displace to cover 787m to 100mMD. .
3545.0	SUS	P	PLD		3.5	Pulled out of hole from 787m to 88mMD. Laid out 3-1/2" drill pipe in singles.

Date : 19 Dec 2004 **Daily Cost : $ 253,366** **Report Number : 65**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	SUS	P	PLD		1.5	Continued POOH. Laid out 3-1/2 in Tbg in singles and laid out retainer setting tool. Some cement sheath on bottom jts and setting tool. .
3545.0	SUS	P	PLD		2	Changed out Tbg elevators and bushings and rigged up 5 in handling equipment. Laid out 18 jts of 3.5 in drill pipe in fox hole. .
3545.0	SUS	P	WH		0.5	Picked up pulling tool and pulled wear bushing. .
3545.0	SUS	P	BOP		1.25	Made up wash tool and flushed BOP's, casing head & seal assy area. Laid out fox hole. .
3545.0	SUS	P	BOP		3	Opened BOP ram doors and changed ram configuration. Rigged up and ran Tbg stinger thru fox hole. RIH with 3-1/2 in drill pipe to mud line. Stabbed into crater around 30 in conductor with ROV assistance. Tagged bottom at 111m. .
3545.0	SUS	P	CMC		1.75	Connected cement lines and D/S flushed 10 bbls drill water ahead. Tested lines to 1000 psi. Mixed and pumped 41 bbls HTB slurry @ 15.8 ppg (148 sks). Chased with 6 bbls drill water to clear lines. Pulled 3-1/2 in string above mud line and flushed clean with sea water. ROV monitor returns around conductor. .
3545.0	SUS	P	PLD		1.5	Pulled 3-1/2 in drill pipe to surface and laid out in sgles. Laid out X-over and stinger. Ram change out completed. Reconfigured to: 5 in fixed in top, shear rams, 3.5 to 5.5 in variables and 5 in fixed in bottom. .
3545.0	SUS	P	BOP		0.5	Held JSA and prepared floor for pulling diverter/BOP's. Laid out Weatherford tongs and excess equipment. .
3545.0	SUS	P	BOP		3.5	Nippled down choke & kill hoses from BOP's. Rigged up floor to pull diverter assy. .
3545.0	SUS	P	BOP		1.5	Pulled diverter assy. Laid out lower housing and pulled and laid out mandrel. .

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3545.0	SUS	P	BOP	2	Installed BOP safety slings, Installed test joint and closed rams, Removed control hoses and broke BOP stack at NT-2 connector. .
3545.0	SUS	P	BOP	1.5	Held JSA and picked up BOP's, transported to test stump, landed and latched up connector and secured on stump. .
3545.0	SUS	P	BOP	1.25	Rigged up and nippled down fast lock connector and riser adaptor spool and laid out same. .
3545.0	SUS	P	BOP	0.75	Made up CIW seal assy running tool on 5 in HWDP. Made up onto 9-5/8 in seal assy and pull free with 20K over pull. .
3545.0	SUS	P	CCT	1	Made up Baker 8-1/4 in multi string casing cutter dressed with 3.5 in knives on 5 in HWDP. Run in hole and set at 27m RT.
3545.0	SUS	P	CCT	0.5	Cut 9-5/8 in casing at 27m below RT. 80 rpm, 234 gpm @ 425 psi. . NOTE: Cranes shut down for high winds (Gusting above 40 kts) 18:00 to 24:00

Date : 20 Dec 2004 **Daily Cost : $ 268,606** **Report Number : 66**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	SUS	P	CPL		1.75	Made up Tri-State Type B (LH release) 9-5/8 in casing spear.RIH and latched cut piece of 9-5/8 in casing. POOH, released spear and stoodd back. Laid out joint, recovered casing slips on first collar. .
3545.0	SUS	P	CPL		1.75	Re- ran 9-5/8 in casing spear to 29mMD and engaged 9-5/8"casing. Torqued up to the right to release MLS hanger. Worked string weight and gradually increased torque to 20K ft/lbs. Broke free and rotated out 14 turns at 6 to 8K ft/lbs. Picked up with 49 kips overpull. (9-5/8 in string weight 21K) Picked up and confirmed compact housing and 13-3/8 in casing also comming. Indicated both strings backed out at MLS hangers. . .
3545.0	SUS	TP	CPL		2.75	Checked drawings, discussed options and plans for recovery of 9-5/8 in and 13-3/8 in strings. Attempted to work casing back to landing depth. Sitting +/- 1 m high. .
3545.0	SUS	U	CPL		1.5	Released casing spear and stood back in derrick. Picked up 9-5/8 in casing cutter and ran in hole to 144mMd. .
3545.0	SUS	U	CPL		1.25	Cut 9-5/8 in casing at 144mMD. 13-3/8 in casing turned when pressure/torque increased. Reduced pressure and time cut casing. 80 rpm, 207 gpm,450 psi, 2K torque. Pulled out of hole and stood cutter back. .
3545.0	SUS	P	CPL		1.5	Ran spear and engaged 9-5/8 in casing at 29mMD. Picked up and pulled back to rig floor with 15K string weight. 9-5/8 in casing free of 13-3/8 in string. Set slips and released spear assy and racked back in derrick. .
3545.0	SUS	P	CPL		1.25	Held JSA and rigged up to lay out casing.Removed elevators and installed slings. Rigged up Weatherford casing tools. Cut holes in cut off joint of 9-5/8 in casing for handling. .
3545.0	SUS	P	CPL		3.25	Pulled and laid out 9-5/8 in casing. Recovered 9 full joints and 2 cut off joints. .
3545.0	SUS	P	CPL		2	Made up Cameron compact hsg running tool and engaged in well head. Pulled 20K tension to secure 13-3/8 in string. Removed wing valves and well head support base plate. .
3545.0	SUS	P	CPL		1	Pulled wellhead housing and 13-3/8 in casing to surface and secured in rotary table. Cut 13-3/8 in casing below well head and racked back in derrick on running tool. .
3545.0	SUS	P	CPL		5.5	Pulled and laid out 10 joints 13-3/8 in casing. 9-5/8 inner joint at tensioner level in PCU. Cut hole thru 13-3/8 and 9-5/8 and installed pipe to secure both joints together. Laid down 13-3/8 & 9-5/8 mud line hanger running tools in one piece. Recovered 11 full joints, 2 pups, 1 cut off pce. . Note:

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DFE above MSL : 39.9m | Lat : 39 Deg 51 Min 44.12 Sec | Spud Date : 30 Oct 2004 | Release Date : 25 Dec 2004

Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 20 Dec 2004 **Daily Cost : $ 268,606** **Report Number : 66**

						13-3/8 x 25.5 in centraliser recovered from joint below wellhead. 5 of 8 ribs missing - left in hole. 3 remaining ribs bent to the right from left hand rotation. .
3545.0	SUS	P	RRD		0.5	Rigged down Weatherford casing tools. Note: Cranes Shut Down from 00:00 to 03:30 due to high winds .

Date : 21 Dec 2004 **Daily Cost : $ 272,464** **Report Number : 67**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	SUS	P	RRD		0.25	Removed excess equipment from rig floor and rigged up to handle drill pipe. .
3545.0	SUS	U	WH		2.75	Picked up 3-1/2"pup joint as a stinger with 20 in bow centraliser above and ran in hole to 161m. Stabbed thru 9-5/8" mud line hanger with no drag or hang ups. Pumped 65 bbls HiVis and circulated out with sea water at 1510 gpm and 900 psi to flush hgr area. Spotted 40 bbls inhibited brine on bottom and pulled out of hole. . Note: Wrapped stinger pin with duck tape to protect seal area.
3545.0	SUS	U	WH		2.5	Made up 9-5/8 in TA cap on running tool with 26"centraliser above. Hung up at 117m. Centraliser wouldn't pass thru X-over on to 30 in SS housing. .
3545.0	SUS	U	HT		1.25	Pulled out of hole and laid out 26 in centraliser. .
3545.0	SUS	P	SEP		1.75	Ran in hole with 9-5/8 in TA cap. Worked past top shoulder and landed out and set at 158.5mMD. Good indications of tool setting. Tested below tool to 300 psi/5min to confirm. Released off TA cap and pulled out with running tool. .
3545.0	SUS	P	SEP		3	Made up 13-3/8 in TA cap on running tool and ran in hole. Landed out and set at 157.6m. Overpull to 10K to confim latched. Released off TA cap and pulled out of hole. Laid out running tool, X-over and DC. .
3545.0	SUS	P	HT		2	Broke down and laid out Baker and Cameron tools from derrick for back load on last boat. Cutter, spear and well head running tools. .
3545.0	SUS	P	CPL		1	Rigged up to handle 30 in conductor. Elevators, tongs, slips and spider. .
3545.0	SUS	P	CPL		1.75	Held JSA and picked up 30 in conductor landing joints and made up squnch connctor to 30 in conductor. Pulled up 100K string weight. .
3545.0	SUS	P	CPL		1	Lowered tensioner frame, removed 30 in support elevators, removed tensioner frame inserts and cut pad eye obstruction. .
3545.0	SUS	P	CPL		1.25	Backed out 30 in conductor from LH stub ACME in SS well head housing at mud line. Made 11 turns to the right with 14 to 18K ft/lbs surface torque with Bull tongs. Monitor with ROV - conductor released. .
3545.0	SUS	P	CPL		4.75	Recovered and laid out 30 in conductor. Total of 8 full joints and 2 pups. (including handling jts.) .
3545.0	SUS	P	RRD		0.75	Rigged down 30 in handling equipment. .

Date : 22 Dec 2004 **Daily Cost : $ 277,948** **Report Number : 68**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	SUS	P	RRD		0.75	Changed bails, elevators and rigged up floor to handle drill pipe. .
3545.0	SUS	P	RRD		2	Made up CIW running tool to 30 in suspension trash cap and installed guidlines. RIH on DP to 106m.

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DFE above MSL : 39.9m | Lat : 39 Deg 51 Min 44.12 Sec | Spud Date : 30 Oct 2004 | Release Date : 25 Dec 2004

Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 22 Dec 2004 **Daily Cost : $ 277,948** **Report Number : 68**

					Tensioned up guidlines - port guidline line free . Note: Ran a pack of 2 Biocide Sticks (delayed) hung below trash cap. (for Bacteria control)
3545.0	SUS	P	ROV	2.25	Stabbed trash cap on housing with ROV assistance. Un-jayed running tool and waited for ROV to pull pin and release stbd guidline. Released stbd guidline & pulled running tool off trash cap. ROV confirm trash cap in place and G/L's all clear. Note: While ROV releasing G/L rig flr rigged up fox hole & spider and commenced laying out 5 in HWDP.
3545.0	SUS	P	WH	0.75	POOH with running tool and laid out. .
3545.0	SUS	P	WH	1.25	Recovered port & stbd guidlines and coiled away. .
3545.0	SUS	P	PLD	3	Continued to pick up from derrick and lay out in singles all tubulars in derrick. 6 joints HWDP, 2 x 6-3/4 in DC's, 18 jts DP. .
3545.0	SUS	TP	RR	0.5	Repaired damaged hydraulic hose on PRS - upper gripper jaw. .
3545.0	SUS	P	PLD	7.5	Continued laying out tubulars from derrick. 133 joints of 5 in drill pipe. .
3545.0	SUS	P	RD	3	Laid out fox hole, rigged down overboard dump hoses from shaker and trip tank. Rigged up tp pick up PCU. .
3545.0	SUS	P	RD	1.25	Held PJSM and lifted PCU into position for skidding and secured. .
3545.0	SUS	P	RD	1.75	Installed diverter housing and secured rig floor. Prepared to skid in cantilever.

Date : 23 Dec 2004 **Daily Cost : $ 268,203** **Report Number : 69**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	RMO	P	SKR		0.5	Prepared to skid in cantilever. Removed stairways. .
3545.0	RMO	P	SKR		1.75	Held PJSM and skidded cantilever in to tow position and secured. .
3545.0	RMO	P	JUD		3.75	Prepared to jack down. Pulled rack chocks, took RPD readings, secured loads on deck.
3545.0	RMO	P	JUD		1.25	Held PJSM and jacked hull down to 10 ft air gap. .
3545.0	RMO	P	RM		1.5	Transfered 1 pax from Invincible Tide to RJ Hope by crane basket lift and put MO47 Captain on Invincibe Tide and carried out inspection of tow equipment. Offloaded anchor pendant lines from Invincible. . Note: Wind shifted to 70 deg and increased to >25 kts from 06:00 hrs. .
3545.0	RMO	TP	WOW		15.25	Wait on weather to jack into the water. Sea conditions exceeded rig operating limits. . Time 09.00 Wind =26 kts @ 070,Swell =1.0 m,Sea =1.0 m,Combined =2+ m. 12.00 Wind =30 kts @ 075,Swell =2.0 m,Sea =1.0 m,Combined =3 m. 14.00 Wind =25 kts @ 050,Swell =1.0 m,Sea =1.6 m,Combined =2.6 m. 16.00 Wind =28 kts @ 070,Swell =1.0 m,Sea =1.8 m,Combined =2.8 m. 18.00 Wind =30 kts @ 075,Swell =2.0 m,Sea =1.0 m,Combined =3 m. 20.00 Wind =28 kts @ 075,Swell =2.0 m,Sea =1.0 m,Combined =3 m. 22.00 Wind =24 kts @ 075,Swell =2.0 m,Sea =1.5 m,Combined =3.5 m. 24.00 Wind =26 kts @ 090,Swell =2.5 m,Sea =1.5 m,Combined =4.0 m. . Note: Rig crews performed maintenance on PRS, replaced sheave on man rider in cellar deck, pulled stbd deepwell, prepared leg jetting hoses.

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DFE above MSL : 39.9m | Lat : 39 Deg 51 Min 44.12 Sec | Spud Date : 30 Oct 2004 | Release Date : 25 Dec 2004

Water Depth : 68.9m | Long : 145 Deg 22 Min 30.73 Sec | Spud Time : 01:00 | Release Time : 07:45

Date : 24 Dec 2004 | **Daily Cost : $ 255,546** | **Report Number : 70**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	RMO	TP	WOW	WOW	5	Wait on weather to jack in to water. Sea conditions exceeded rig operating limits. 02.00 Wind =25 kts@070,Swell =1.2 m, Sea =1.6 m, Combined = 2.8 m. 04.00 Wind =10 kts@350, Swell =1.0 m, Sea =0.8 m, Combined =1.8 m. . Rig crew slipped & cut drill line.
3545.0	RMO	P	RM		1	Connected RJ Hope to main tow bridle. 06.00 Wind =27 kts@270,Swell =1.5 m, Sea =1.2 m, Combined =2.7 m.
3545.0	RMO	P	RM		0.5	Jacked rig down in to the water and lowered hull to the 10 ft draft mark. .
3545.0	RMO	P	RM		1	Conducted water tight integrity checks. Rigged up jetting hoses to port and stbd legs for lower cans. .
3545.0	RMO	P	RM		1.5	Lowered hull to 20 ft draft and jetted port leg with 760 gpm @ 250 psi thru lower cans. Port leg free. .
3545.0	RMO	P	RM		1.5	Jetted stbd leg free with 760 gpm @ 250 psi thru lower cans. . 10.00 Wind =22 kts@225, Swell =1.5 m, Sea =1 m, Combined =2.5 m. .
3545.0	RMO	P	RM		1.75	Rigged up jetting hose on bow leg and secured pre-load pump. Leveled rig to handle Helicopter. Continued jetting & pulling on bow leg. Bow leg binding with the rig heave causing jacking motors to shut down on overload. Sea conditions increasing ahead of forecast. Decided to abort and jack up clear of water. 12.00 Wind =28 kts@220, Swell 2.5 m, Sea =1.0 m, Combined 3.5 m.
3545.0	RMO	P	RM		0.5	Removed jetting hose. Jacked hull clear of water to 15 ft air gap. .
3545.0	RMO	TP	WOW	WOW	11.25	Waiting on weather to jack down and pull bow leg free. Insreasing seas. Seeing up to 13' total seas against legs. . Note: Held pre-move abandon drill and pre-move meeting for all personnel. 14.00 Wind =30 kts@240,Swell =2.0 m,Seas =1.0 m,Combined =3.0 m. 16.00 Wind =24 kts@240,Swell =2.0 m,Seas =1.0 m,Combined =3.0 m. 18.00 Wind =25 kts@230,Swell =2.5 m,Seas =1.0 m,Combined =3.5 m. 20.00 Wind =28 kts@230,Swell =2.5 m,Seas =1.0 m,Combined =3.5 m. 22.00 Wind =26 kts@230,Swell =2.5 m,Seas =0.8 m,Combined =3.3 m. 24.00 Wind =20 kts@230,Swell =2.5 m,Seas =0.5 m,Combined =3.0 m. . Rig crew working on Dropped Object Survey, Serviced BOP sceren, HT Maintenance on draworks & TDS.

Date : 25 Dec 2004 | **Daily Cost : $ 148,160** | **Report Number : 71**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3545.0	RMO	TP	WOW	WOW	4.5	Waited on weather to jack down. 02.00 Wind =18 kts@240,Swell =1.5 m,Seas =0.5 m,Combined =2.0 m. 04.00 Wind =15 kts@230,Swell =1.2 m,Seas =0.5 m,Combined =1.7 m. .
3545.0	RMO	P	RM		2	Prepared and jacked rig down to 20 ft draft. Connected bow jetting line. Worked stern legs free and jetted bow leg free with 760 gpm @ 100 psi. All legs free. Disconnected jetting hose. .
3545.0	RMO	P	RM		0.75	Leveled rig at 300 ft leg marker on all legs and raised all legs together. Legs clear of bottom at 07:12 hrs. Departed location at 52° heading. .
3545.0	RMO	P	RM		0.5	Rig under tow to West Moonfish location. Rig 1 nm from Trefoil-1 location at 07:45 - RIG RELEASED. Obtained statement of facts from rig, Invincible Tide and R.J.Hope.

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APPENDIX 17: DAILY GEOLOGICAL REPORTS

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 1 **DAYS FROM SPUD:** 13.08 **DATE:** 29 Oct 04 **0000 hrs DEPTH:** 0m
LAST DEPTH: 0m **24 HR PROGRESS:** 0m

0600 OPS: Drilling ahead 26" hole at 198mMD in the Torquay Group.

OPERATIONS: Picked up 24 x 5" DP, 3 x HWDP, 3 x 8.25" DC and racked back. Made up 26" drill bit, picked up and RIH with 9.5" DC's, double pin sub and hole-opener. Tag mudline at 109.7mMD, pull back 9m off bottom. Jack down 0.9m to improve space out (sea floor – rotary table). Skidded rig to 60ft aft of transom. Launched ROV, tagged mudline at 108.8mMD.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
TD Reached Date		**TD =**	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
Rig release Date:		**RT-ML =** 108.8	**Metres R.T.**	**20" Conductor Depth: =**			**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**			**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**			**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-61					
Torquay Group			-68			-76	-62	
Lwr Miocene Marl			-817			-825		
Angahook			-1295			-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

		General Remarks:
Rmf		
Rmc		
Temp (°C)		

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 2 **DAYS FROM SPUD:** 14.07 **DATE:** 30 Oct 04 **0000 hrs DEPTH:** 218m
LAST DEPTH: 0m **24 HR PROGRESS:** 218m

0600 OPS: Running in 30" conductor.

OPERATIONS: Wait on slack tide, then spud well at 01.00hrs. Drilled 26/26" hole to 218mMD and displace hole to PHG. POOH to 138mMD, tight spot at 196mMD (40 klb pverpull). RIH to bottom, washing down 214-218m, 4m fill. POOH, rack back BHA in derrick. Change out bails and install 20" casing handling equipment. RIH 20" casing and make up cross over joint. Change out casing handling equipment to 30". RIH 30" conductor. Run conductor through rotary table and diverter housing. Observed conductor shoe entering 36" hole on ROV.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
TD Reached Date		**TD =**	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
Rig release Date:		**RT-ML =** 108.8	**Metres R.T.**	**20" Conductor Depth: =**			**Metres R.T.**
Rig ENSCO 102		**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**			**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**			**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly			-660			?		
Lwr Miocene Marl			-817			-825		
Angahook			-1295			-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

		General Remarks:
Rmf @		
Temp (°C)		
Rmc @		
Temp (°C)		

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 3 **DAYS FROM SPUD:** 1.92 **DATE:** 31 Oct 04 **0000 hrs DEPTH:** 218m
LAST DEPTH: 0m **24 HR PROGRESS:** 218m

0600 OPS: RIH with 5" drill pipe and tagged top of cement at 131m.

OPERATIONS: Pick up and run 30/20" conductor 133-215mMD. Carried out cementing operations. POOH and wait on cement.

Plan: Complete cement-top-up operations. Lay down 36"/26' BHA, Pick up 16" BHA

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
TD Reached Date		**TD =**	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
Rig release Date:		**RT-ML =** 108.8	**Metres R.T.**		**20" Conductor Depth: =** 215		**Metres R.T.**
Rig ENSCO 102		**RT-MSL =** 39.9	**Metres R.T.**		**13 3/8" Casing Depth:=**		**Metres R.T.**
			Metres R.T.		**9 5/8" Casing Depth:=**		**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly			-660			?		
Lwr Miocene Marl			-817			-825		
Angahook			-1295			-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

		General Remarks:
Rmf @		
Temp (°C)		
Rmc @		
Temp (°C)		

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 4 **DAYS FROM SPUD:** 2.92 **DATE:** 01 Nov 04 **0000 hrs DEPTH:** 218m
LAST DEPTH: 218m **24 HR PROGRESS:** 0m

0600 OPS: Drilling ahead at 349mMD in the Torquay Group

OPERATIONS: Pump Cement to top up annulus, Wait on cement, Nipple up and Test Diverter, Make up 16 " BHA, RIH, Conduct shallow hole test with MWD.

NEXT 24 HRS: Drill 16" hole to 13.375" casing point.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
TD Reached Date		**TD =**	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
Rig release Date:		**RT-ML =** 108.8	**Metres R.T.**	**20" Conductor Depth: =**	215	**Metres R.T.**	
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		**Metres R.T.**	
			Metres R.T.	**9 5/8" Casing Depth:=**		**Metres R.T.**	

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly			-660			?		
Lwr Miocene Marl			-817			-825		
Angahook			-1295			-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

		General Remarks:
Rmf @		
Temp (°C)		
Rmc @		
Temp (°C)		

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 5 **DAYS FROM SPUD:** 3.92 **DATE:** 02 Nov 04 **0000 hrs DEPTH:** 666m
LAST DEPTH: 218m **24 HR PROGRESS:** 448m

0600 OPS: Waiting on weather to run casing and rebuilding LCM volume.

OPERATIONS: Install diverter and RIH to top cement at 214mMD. Drill out shoe track and rat hole to 218mMD. Drill ahead 16" hole through Torquay Group with sea water, pumping 30bbls high vis sweeps every 9m. At connection at 641mMD start having mud losses. Pump 100bbls then 300bbls high vis sweep. POOH to inside 20" casing. Pump LCM and gel with temporary reduction in rate of loss.

NEXT 24 HRS: POOH 16" bit, rig to and run 13.375" casing.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date: 30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**	215		**Metres R.T.**
Rig ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**			**Metres R.T.**
		Metres R.T.	**9 5/8" Casing Depth:=**			**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly			-660			?		
Lwr Miocene Marl			-817			-825		
Angahook			-1295			-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

Mud		**General Remarks:**
Rmf @		
Temp (°C)		
Rmc @		
Temp (°C)		

Rm @		
Temp (°C)		

Interval (m)			ROP (avg)	Lithology Description Calcrudite and interbedded Calcarenite						
218	-	395		CALCRUDITE, bryozoans, off white to light grey and olive grey, firm to moderately hard, irregular fracture, calcareous grains: 5% clay (grey calclutite), moderately sorted, sub angular, equant, fragments, trace weak calcareous cement, accessories: gastropods 15%, pelecypods 10%, 15%, interskeletal porosity. CALCARENITE, fossiliferous, light grey, translucent, moderately hard, blocky, calcareous grains: trace clay, 90% sand grains, well sorted, angular, sub sperical grains, Trace calcareous cement, 10% intergranular porosity.						
Gas average			**(ppm) :**		**Composition (ppm)**	C1	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Sideritic Calcarenite						
395	-	594		CALCARENITE, cream to light yellow brown and yellow, grey firm to moderately hard, irregular fracture, calcareous grains: 10% clay (grey calclutite), 90% sand grains, poorly sorted, sub angular, equant, weak calcareous and sideritic cements, accessories: pelecypods 5%, gastropods 3%, foraminifera 5%, 10% intergranular porosity.						
Gas average			**(ppm) :**		**Composition (ppm)**	C1	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Calcarenite with minor Siltstone						
594	-	666		CALCARENITE, medium grey, white, friable to firm, irregular fracture, 30% silt, 70% sand, well sorted, sub angular, sub equant, moderately strong calcareous cement, accessories: pelecypods 20%, bryozoans 5%, fossils 5%, 20% intergranular porosity. SILTSTONE, brown to grey, black laminae, soft to firm, fissile fracture, moderately strong silicious cement.						
Gas average			**(ppm) :**		**Composition (ppm)**	C1	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 6 **DAYS FROM SPUD:** 4.92 **DATE:** 03 Nov 04 **0000 hrs DEPTH:** 666m
LAST DEPTH: 666m **24 HR PROGRESS:** 0m

0600 OPS: Casing hanging up 3.5m high. POOH 13.375" casing 13 joints to hanger.

OPERATIONS: Monitor well on trip tanks. Pump LCM and high vis sweeps to slow losses from 20" shoe. RIH to TD. Pump high vis sweeps, KCl pill, and LCM slowing losses to 0.5bbls per minute. POOH with BHA. Change out bails, power slips, and handling equipment for 13.375" casing. RIH with casing to 480mMD, install hanger then continue RIH.

NEXT 24 HRS: Cement casing, remove diverter and begin installation of BOP's.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date: 30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**	215		**Metres R.T.**
Rig ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**			**Metres R.T.**
		Metres R.T.	**9 5/8" Casing Depth:=**			**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly			-660			?		
Lwr Miocene Marl			-817			-825		
Angahook			-1295			-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

Mud		**General Remarks:**
Rmf @		
Temp (°C)		
Rmc @		
Temp (°C)		

Rm @		
Temp (°C)		

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 7 **DAYS FROM SPUD:** 5.92 **DATE:** 04 Nov 04 **0000 hrs DEPTH:** 666m
LAST DEPTH: 666m **24 HR PROGRESS:** 0m

0600 OPS: Just completed pumping 55bbls of 15.8ppg slurry into annulus.

OPERATIONS: Rig up cementing equipment and cement in 13.375" casing. Pump 12.5ppg lead and 15.8ppg tail slurry up to theoretical top cement of 147mMD in annulus. ROV noticed returns to sea bed. Remove overshot and diverter and begin to install BOP's. Prepare for top up cement job in annulus.

NEXT 24 HRS: Rig down cement lines, install BOP's, lay down 16" BHA and pick up 12.25" BHA.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date: 30th Oct 2004 @ 01:00hrs			**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**			**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly			-660			?		
Lwr Miocene Marl			-817			-825		
Angahook			-1295			-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

Mud		**General Remarks:**
Rmf @		
Temp (°C)		
Rmc @		
Temp (°C)		

Rm @		
Temp (°C)		

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 8 **DAYS FROM SPUD:** 6.92 **DATE:** 05 Nov 04 **0000 hrs DEPTH:** 666m
LAST DEPTH: 666m **24 HR PROGRESS:** 0m

0600 OPS: Testing BOP's.

OPERATIONS: Run 3.5" stinger on 5" drill pipe to seafloor. Stinger guided by ROV into conductor annulus and down to top cement at 116m. Pump 55bbls of 15.8ppg slurry and POOH stinger. Install riser adapter, BOP's, diverter and overshot, choke and kill hoses.

NEXT 24 HRS: Pressure test BOP's, pick and make up 12.25" BHA, drill out shoe, FIT.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**		**20" Conductor Depth: =** 215		**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**		**13 3/8" Casing Depth:=** 657.3		**Metres R.T.**
			Metres R.T.		**9 5/8" Casing Depth:=**		**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly			-660			?		
Lwr Miocene Marl			-817			-825		
Angahook			-1295			-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

Mud		**General Remarks:**
Rmf @		
Temp (°C)		
Rmc @		
Temp (°C)		
Rm @		

Temp (°C)		

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 9 **DAYS FROM SPUD:** 7.92 **DATE:** 06 Nov 04 **0000 hrs DEPTH:** 671m
LAST DEPTH: 666m **24 HR PROGRESS:** 5m

0600 OPS:	Drilling ahead through Torquay Group at 780mMD.
OPERATIONS:	Install choke and kill hoses to BOP's. Pressure test pipe, shear and blind rams, as well as stand pipe manifold to 5000psi. Lay out 16" BHA and pick up 12.25" BHA. Drill out shoe track and 5m new formation to 671mMD.
NEXT 24 HRS:	Perform FIT. Drill ahead 12.25" hole through Miocene sediments.
	Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**		**20" Conductor Depth: =** 215		**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**		**13 3/8" Casing Depth:=** 657.3		**Metres R.T.**
			Metres R.T.		**9 5/8" Casing Depth:=**		**Metres R.T.**
			(Nearby Well / Facility: Nil)				

						Offset wells TVDSS		
	All Depth are in METRES							
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lwr Miocene Marl			-817			-825		
Angahook			-1295			-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

Mud		**General Remarks:**
Rmf @		FIT reached 230psi for EWM of 10.5ppg.
Temp (°C)		
Rmc @		
Temp (°C)		
Rm @		

Temp (°C)		

Interval (m)			ROP (avg)	Lithology Description 5m New formation – Siltstone and Calcarenite						
666	-	671	63-34 (45)	CAREN, light grey, cream/off white, firm, blocky, calcareous grains: 30% clay, trace silt, 70% sand, moderately sorted, angular, sub spherical, moderately stron calcareous cement, accessories: trace foraminifera, trace bryozoans porosity: 10%, inter granular. SILTSTONE, sideritic, medium brown to ochre brown, moderately hard, blocky, calcareous grains: 30% clay, clastic grains: 5% clay, 60% silt, 5% coarse sand, accessories: quartz grain 5%.						
Gas average			**(ppm) :** 1	average	**Composition (ppm)**	C1 1	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 10 **DAYS FROM SPUD:** 8.92 **DATE:** 07Nov 04 **0000 hrs DEPTH:** 1398m
LAST DEPTH: 671m **24 HR PROGRESS:** 727m

0600 OPS:	Drilling ahead through Angahook Formation at 1590mMD.
OPERATIONS:	Drill ahead 671-1398mMD through the Torquay Group, Volcanics, Lower Miocene Marl and into the Angahook Formation. Drilling generally between 40-60m/h with a consistent mud weight of 8.8ppg. Losses of around 25bbls/h are occurring over the shakers and in the centrifuge to maintain mud weight. Gas readings are from liberated and not produced gasses.
NEXT 24 HRS:	Drill ahead through the Angahook Formation.
	Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**			**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lwr Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff			-1780			-1814	-1419	
EVCM			-2077			-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.18	17	
Rmf:	0.16	17	
Rmc:	0.19	17	
Rm Downhole:	0.11	42.3	

Interval (m)			ROP (avg)	Lithology Description Calcarenite And Interbedded Siltstone						
671	-	702.5	34-87 (65)	CALCARENITE, off white to light grey, translucent, firm, sub blocky, calcareous grains: 20% clay, 20% silt, 60% sand, moderately sorted, angular, sub spherical grains, moderately strong calcareous cement, accessories: trace bryozoans, trace foraminifera, porosity: 10%, inter granular. SILTSTONE, red/brown grey, moderately hard, blocky, calcareous grains: 20% clay, clastic grains: 10% clay, 70% silt, traces coarse sand, accessories: quartz grains.						
Gas average			**(ppm) :**	0.5	**Composition (ppm)**	C1 0.5	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Altered And Crystalline Mafic Volcanics Top Volcanics – 702.5m MD, -662.5m TVDSS						
702.5	-	731	14-74 (39)	ALTERED VOLCANICS, dark green to blue/green, mottled white with black specks, hard blocky, accessories: trace quartz. VOLCANICS, crystalline, medium grey to blue/grey, moderately hard to hard, blocky.						
Gas average			**(ppm) :**	0.5	**Composition (ppm)**	C1 0.5	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Calcarenite Grading To Calcisiltite						
731	-	884	13-93 (42)	CALCARENITE, light brown, cream & clear, soft, sub blocky, calc grains: 30% clay, 20% silt, 50% sand ,poorly sorted, sub angular, sub spherical, weak calcareous cement, accessories: trace fossils, porosity: trace, intergranular. CALCISILTITE, grey to light grey, trace cream/light brown, soft, sub blocky, calc grains: 20% clay, 30% silt, 20% sand, clastic grains: 10% clay, 10% silt, 10% very fine sand, weak calcareous cement, accessories: trace fossils.						
Gas average			**(ppm) :** =	223	**Composition (ppm)**	C1 223	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Marl Top Lower Miocene Marl – 884m MD, 844m TVDSS						
884	-	930	25-83 (50)	MARL, pale to light-med grey, soft, sub blocky fracture, calcareous grains: 40% clay, 10% silt, clastic grains: 10% clay, 30% silt, 10% very fine sand, argillaceous and trace calcareous cement, accessories: trace fossils.						
Gas average			**(ppm) :**	722	**Composition (ppm)**	C1 722	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Marl With Dolomite Streaks							
930	-	990	38-87 (63)	MARL, olive grey - dark green grey, soft, sub-blocky fracture, calcareous grains: 80% clay, clastic grains: 20% silt, calcareous cement, accessories: fossils 5%. DOLOMITE, brown-red-grey, hard-very hard, massive, weak calcareous cement.							
Gas average			**(ppm) :**	1360	**Composition (ppm)**	C1 1360	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Marl Grading To Calcilutite With Dolomite Streaks							
990	-	1130	19-94 (58)	CALCILUTITE, fossiliferous, olive grey - dark green grey, soft, sub-blocky fracture, calcareous grains: 40% clay, siliciclastic grains: 50% clay, 10% very fine sand, very calcareous to moderately calcareous cement, accessories: shell fragments 15%, bryozoan 5%, trace coal. DOLOMITE, brown-red-grey, hard-very hard, moderate fracture, weak calcareous cement. MARL, med olive grey-light grey, friable-firm, sub blocky, calcareous grains: 70% clay, clastic grains: 30% silt, strong calcareous cement.							
Gas average			**(ppm) :**	2010	**Composition (ppm)**	C1 2010	C2	C3	C4	C5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Calcilutite With Minor Siltstone							
1130	-	1342	21-93 (51)	CALCILUTITE, light-green-grey, soft, amorphous, calcareous grains: 40% silt, clastic grains: 60% silt, moderately calcareous cement, accessories: 5% shell fragments. SILTSTONE, light olive-light-brown, soft-friable, sub blocky, calc grains: 30% silt, clastic grains: 70% silt, moderately calcareous cement.							
Gas average			**(ppm) :**	2533	**Composition (ppm)**	C1 2460	C2 0	C3 3	C4 2	C 2	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Calcareous Siltstone Top Angahook Formation - 1342m MD, 1302m TVDSS							
1342	-	1398	16-71 (45)	SILTSTONE, brown-light-olive-grey, friable to firm, sub-blocky, calcareous grains: 60% silt, clastic grains: 40% silt, moderately calcareous cement, accessories: dolomite 3%, glauconite trace. CALCILUTITE, light-green-grey-olive-grey, soft, amorphous, calcareous grains: 30% clay, 40% silt, clastic grains: 20% silt, 10% very fine sand, moderately calcareous cement.							
Gas average			**(ppm) :**	3679	**Composition (ppm)**	C1 3458	C2	C3 8	C4 2	C5 1	-
Show Details			No Hydrocarbon Shows								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 11 **DAYS FROM SPUD:** 9.92 **DATE:** 08 Nov 04 **0000 hrs DEPTH:** 2036m

LAST DEPTH: 1398m **24 HR PROGRESS:** 638m

0600 OPS: Drilling ahead in EVCM at 2170mMD. ROP between 12-45m/h.

OPERATIONS: Drill from 1398mMD to 2036mMD through the Angahook Formation and into the Demon's Bluff Formation. Average ROP while drilling is 40-60m/h however, 24 hour average including connections is 26.6m/h. Mud weight has built from 8.8ppg to 9.0ppg at midnight. Losses of around 30bbls/h are occurring over the shakers and in the centrifuge. Background gasses only.

NEXT 24 HRS: Drill ahead to Casing Point in the EVCM.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date: 30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**	215	**Metres R.T.**	
Rig ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**	657.3	**Metres R.T.**	
		Metres R.T.	**9 5/8" Casing Depth:=**		**Metres R.T.**	

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	**(°C)**	Resistivity measured at midnight 08 Nov.
Rm:	0.19	19	
Rmf:	0.18	19	
Rmc:	0.20	19	
Rm @ Max °C:	0.10	58	

Interval (m)			ROP (avg)	Lithology Description Siltstone Grading To Claystone							
1520	-	1740	16-83 (39)	30-90% SILTSTONE, medium brown-grey brown, firm, blocky fracture, moderately calcareous, glauconitic in part, siliceous texture in part, trace fossils, trace pyrite. 10-50% CLAYSTONE, cream, light brown coloured, very soft, amorphous, minor calcareous cement, common siliceous matrix, 10% kaolinite, trace carbonaceous material, minor loose Dolomite: orange-red-brown, hard, blocky. 0-10% CLAYSTONE, medium grey-blue-grey, moderately hard.							
Gas average			**(ppm) :**	7900 (40 units)	**Composition (ppm)**	C1 7424	C2 35	C3 18	C4 9	C5 5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Calcareous Siltstone with Interbedded Claystone							
1740	-	1780	22-71 (46)	50-70% CALCAREOUS SILTSTONE, medium brown to grey, friable to firm, sub - blocky fracture, siliceous cement in part, abundant calcareous cement, trace very fine sand, minor glauconite, 3%, fossils, trace pyrite. 10-20% CLAYSTONE, light grey-off white, very light brown, very soft, amorphous, minor calcareous cement, siliceous matrix, trace very fine sand, common kaolinite, minor dolomite. 10-20% CALCAREOUS CLAYSTONE, light grey-blue grey, firm to moderately hard, blocky fracture, calcareous cement, minor siliceous matrix.							
Gas average			**(ppm) :**	8340 (42 units)	**Composition (ppm)**	C1 7380	C2 58	C3 22	C4 10	C5 4	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone With Graded And Interbedded Claystone							
1780	-	1859	14-57 (31)	40-75% SILTSTONE, medium-light brown, firm, blocky fracture, minor calcareous cement, siliceous matrix, trace very fine sand, trace dolomite, trace pyrite. 10-40% CLAYSTONE, light to med brown & light grey brown, soft to firm, sub-blocky fracture, calcareous cement, siliceous matrix, trace shell fragments. 10-20% CLAYSTONE, light blue-grey, friable to firm, calcareous to very calcareous, grades to MARL, trace shell fragments, trace pyrite.							
Gas average			**(ppm) :**	6800 (34 Units)	**Composition (ppm)**	C1 6390	C2 63	C3 25	C4 11	C5 4	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone Grading To Claystone With Interbedded Dolomite (Top Demons Bluff Formation – 1859m MD, - 1819m TVDSS)						
1859	-	1937	14-52 (32)	70-95% SILTSTONE, medium-light brown, firm, blocky fracture, minor calcareous cement, siliceous matrix, trace very fine sand, trace dolomite, trace pyrite. 10-15% CLAYSTONE, light grey-blue grey, friable to firm, blocky, calcareous cement, trace fossils, trace pyrite, grades to CALCAREOUS CLAYSTONE. 0-20% DOLOMITE, yellow-grey-red-brown, hard-very hard, slightly calcareous.						
Gas average			**(ppm) :**	6925 (35 units)	**Composition (ppm)**	C1 6357	C2 76	C3 31	C4 15	C5 5	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone And Minor Calcareous Claystone						
1937	-	2036	10-39 (25.5)	75-95% SILTSTONE, light to medium brown & light grey brown coloured, soft to friable, sub blocky fracture, clastic grains: 10% clay, 50% silt, 25% very fine sand, 15% fine sand, moderately strong siliceous cement, accessories: trace dolomite, trace shell fragments. 5-20% CALCAREOUS CLAYSTONE, light grey to blue grey coloured, friable to firm, blocky, calcareous grains: 15% clay, clastic grains: 15% clay, 60% silt, 10% very fine sand, weak calcareous cement, accessories: trace fossils, trace pyrite.						
Gas average			**(ppm) :**	5375 (27 units)	**Composition (ppm)**	C1 4807	C2 92	C3 35	C4 18	C5 6	-
Show Details			No Hydrocarbon Shows								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 12 **DAYS FROM SPUD:** 10.92 **DATE:** 09 Nov 04 **0000 hrs DEPTH:** 2428m

LAST DEPTH: 2036m **24 HR PROGRESS:** 392m

0600 OPS: Coming up hole in wiper trip.

OPERATIONS: Drill ahead through the top EVCM to casing point at 2428mMD. Average ROP while drilling is 15-35m/h however, 24 hour average including connections is 21m/h. Mud weight 9.2ppg, background gasses only. At TD pump 2 x 13ppg pills, bringing large Angahook cavings to surface. Continue circulating BU.

NEXT 24 HRS: Complete wiper trip, pump HW pill and circulate BU. POOH, rig to and run 9.625" csg.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
				Metres R.T.	**9 5/8" Casing Depth:=**			**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	**(°C)**	
Rm:	0.19	19	
Rmf:	0.18	19	
Rmc:	0.20	19	
Rm @ Max °C:	0.10	58	

Interval (m)			ROP (avg)	Lithology Description Siltstone Grading To Claystone With Minor Calcareous Claystone							
2036	-	2097	13-41 (29)	SILTSTONE, dark grey brown, occasionally medium to light brown, firm, sub blocky, clastic grains: 20% clay, 40% silt, 30% very fine sand, 10% fine sand, cements/strengths: argillaceous/moderate, accessories: pyrite 15%, trace quartz. CLAYSTONE, medium grey coloured, soft, sub blocky, clastic grains: 50% clay, 30% silt, 20% very fine sand, trace fine sand. CALCAREOUS CLAYSTONE, light grey to light blue grey coloured, moderately hard, blocky, calcareous grains: 25% clay, clastic grains: 60% clay, 10% silt, 5% very fine sand.							
Gas average			**(ppm) :**	3448 (17 units)	**Composition (ppm)**	C1 2980	C2 75	C3 38	C4 23	C5 6	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Claystone Grading To Siltstone (Top EVCM – 2097mMD, -2057mTVDSS)							
2097	-	2134	19-74 (46)	CLAYSTONE, cream, light to medium brown and green grey coloured, very soft, amorphous, calcareous grains: trace clay, clastic grains: 50% clay, 40% silt, 10% very fine sand, accessories: trace carbonaceous, coal 3%, trace fossils. SILTSTONE, light brown to translucent, medium grey coloured, friable to firm, sub blocky fracture, clastic grains: 30% clay, 40% silt, 20% very fine sand, 10% fine sand, cements/strengths: argillaceous/moderate, calcareous/trace, accessories: trace carbonaceous.							
Gas average			**(ppm) :**	514 (2 units)	**Composition (ppm)**	C1 410	C2 9	C3 5	C4 4	C5 1	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Sandstone Grading To Siltstone And Claystone							
2134	-	2182	11-58 (27)	SANDSTONE, light yellow brown to clear translucent, hard, blocky, clastic grains: 40% very fine sand, 20% fine sand, 30% medium sand, 10% coarse sand, poorly sorted, amorphous, sub sperical, cements/strengths: siliceous/strong, calcareous/trace, porosity: 15%, intergranular. SILTSTONE, dark to medium grey brown coloured, firm to moderately hard, blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: trace carbonaceous, trace coal. CLAYSTONE, light to medium, occasionally off white coloured, soft, sub blocky, clastic grains: 60% clay, 30% silt, 10% very fine sand, accessories: trace calcareous.							
Gas average			**(ppm) :**	1271 (6 Units)	**Composition (ppm)**	C1 1026	C2 21	C3 15	C4 15	C5 8	-
Show Details			65% fluorescence-dull orange, no cut at 2172, 2178m samples. Oil staining on grains.								

Interval (m)			ROP (avg)	Lithology Description Siltstone With Occasional Claystone And Minor Sandstone							
2182	-	2266	5-34 (21)	SILTSTONE, grey brown to medium brown, light grey brown coloured, firm to moderately hard, sub blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, cements/strengths: argillaceous/moderate, accessories: trace fossils, trace carbonaceous, trace sandy. CLAYSTONE, off white to light grey, brown grey coloured, soft, amorphous, clastic grains: 60% clay, 30% silt, 10% very fine sand, accessories: kaolinite 10%. SANDSTONE, micaceous, off white to light grey, brown grey coloured, friable, fracture clastic grains: 10% clay, 20% silt, 70% very fine sand, trace very coarse sand, moderately sorted, sub rounded, sub spherical, accessories: kaolinite 10%.							
Gas average			**(ppm) :**	1794 (9 units)	**Composition (ppm)**	C1 1291	C2 29	C3 24	C4 27	C5 20	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Sandstone Grading To Siltstone And Claystone							
2266	-	2382	6-49 (24)	SILTSTONE, grey brown to medium brown, light grey brown coloured, firm to moderately hard, sub blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, cements/strengths: argillaceous/moderate, accessories: carbonaceous 15%, micaceous 10%. SANDSTONE, off white light grey, light brown grey coloured, friable, clastic grains: 10% clay, 10% silt, 80% very fine sand, trace very coarse sand, well sorted, sub rounded, sub spherical, accessories: siderite 3%, trace pyrite. CLAYSTONE, white pale grey coloured, soft, amorphous, clay clastic grains: 70% clay, 15% silt, 10% very fine sand, accessories: trace fossils.							
Gas average			**(ppm) :**	2050 (10 units)	**Composition (ppm)**	C1 1461	C2 43	C3 31	C4 28	C5 14	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone With Minor Claystone							
2382	-	2428	15-37 (21)	SILTSTONE, grey brown to medium brown, light grey brown coloured, firm to moderately hard, sub blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, trace coarse sand, cements/strengths: argillaceous/moderate, accessories: carbonaceous 15%, micaceous 10%. CLAYSTONE, white to pale grey coloured, soft, amorphous, clay clastic grains: 55% clay, 15% silt, 15% very fine sand, 15% coarse sand, accessories: trace fossils.							
Gas average			**(ppm) :**	3606 (18 units)	**Composition (ppm)**	C1 2555	C2 121	C3 77	C4 62	C5 26	-
Show Details			No Hydrocarbon Shows								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 13 **DAYS FROM SPUD:** 11.92 **DATE:** 10 Nov 04 **0000 hrs DEPTH:** 2428m

LAST DEPTH: 2482m **24 HR PROGRESS:** 0 m

0600 OPS: POOH to run 9.625" casing.

OPERATIONS: POOH, encounter tight hole @ 1675m, 1591m and 1533m - max pull 30Klb. RIH to 1620m. Circulate B/U - 109 Units. Flow check well - static, POOH from 1620-1243 m. Tight spots @ 1466m, 1435m. Circulate B/U. Continue POOH. Over-pull of 25Klb at 1150m, pump out of hole to 1079m, packed off, regained full circ, back ream to shoe.

NEXT 24 HRS: Continue POOH, run 9 5/8" casing and cement same.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
				Metres R.T.	**9 5/8" Casing Depth:=**			**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.19	19	
Rmf:	0.18	19	
Rmc:	0.20	19	
Temp @ Max °C:	0.10	58	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 14 **DAYS FROM SPUD:** 12.92 **DATE:** 12 Nov 04 **0000 hrs DEPTH:** 2428m

LAST DEPTH: 2482m **24 HR PROGRESS:** 0 m

0600 OPS: RIH 9.625" casing to 879mMD.

OPERATIONS: Continue pump out of hole to shoe. POOH 12.25" to surface and rack back BHA. Download MWD recorded data. Begin rig up and then RIH 9.625" casing.

NEXT 24 HRS: Continue RIH 9.625" casing, and cement same.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**		**20" Conductor Depth: =** 215		**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**		**13 3/8" Casing Depth:=** 657.3		**Metres R.T.**
			Metres R.T.		**9 5/8" Casing Depth:=**		**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.19	19	
Rmf:	0.18	19	
Rmc:	0.20	19	
Temp @ Max °C:	0.10	58	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 15 **DAYS FROM SPUD:** 13.92 **DATE:** 13 Nov 04 **0000 hrs DEPTH:** 2428m

LAST DEPTH: 2482m **24 HR PROGRESS:** 0 m

0600 OPS: Rigging up diverter.

OPERATIONS: RIH with 9.625" casing to 1095mMD. RIH with pre-joined double casing joints in derrick. At 2388mMD hole taking 30-40K weight. Wash down from 2385m and land casing at 2421mMD. Rig up cement lines and pump 461bbls 12.5ppg lead slurry, followed by 39bbls 15.8ppg tail. Displaced well, bumped plug, holding 3500psi for 10 minutes. Theoretical maximum cement to mud-line.

NEXT 24 HRS: Rig down cement and casing equipment. Cut casing, nipple up BOP's and test same.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
				Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	(°C)	Good cement job with cement apparently through to the mud line.
Rm:	0.19	19	
Rmf:	0.18	19	
Rmc:	0.20	19	
Temp @ Max °C:	0.10	58	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 16 **DAYS FROM SPUD:** 14.92 **DATE:** 14 Nov 04 **0000 hrs DEPTH:** 2428m

LAST DEPTH: 2482m **24 HR PROGRESS:** 0 m

0600 OPS: Leak in well-head seal gasket. Replaced gasket and stabbed BOP's to well-head.

OPERATIONS: Rig down cementing equipment, pump 82bbls sugar water, pressure test casing to 3500psi. Lifted BOP's and cut off 9.625" casing at diverter. Removed excess casing. Stab and nipple up BOP's. Installed well-head seal assembly.

NEXT 24 HRS: Install new gasket to well-head seal assembly. Install, nipple up and pressure test BOP's.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**		**20" Conductor Depth: =** 215		**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**		**13 3/8" Casing Depth:=** 657.3		**Metres R.T.**
			Metres R.T.		**9 5/8" Casing Depth:=** 2421		**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	**(°C)**	
Rm:	0.19	19	
Rmf:	0.18	19	
Rmc:	0.20	19	
Temp @ Max °C:	0.10	58	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 17 **DAYS FROM SPUD:** 15.92 **DATE:** 15 Nov 04 **0000 hrs DEPTH:** 2428m

LAST DEPTH: 2482m **24 HR PROGRESS:** 0 m

0600 OPS: RIH with 8.5" BHA to 1700mMD.

OPERATIONS: Test BOP's to 5000psi – leak between well-head and BOP's. POOH test assembly and lift BOP's off well-head. Change out damaged seal then reinstall BOP's. Successfully test BOP's and well-head seal to 5000psi. Lay out 12.25" BHA from derrick. Make up 8.5" drill bit and MWD assembly. Programme tools and load nuclear sources.

NEXT 24 HRS: Drill out shoe, rat hole cement and 3m new formation. Drill ahead 8.5" hole to core point 1.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
				Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	(°C)	
Rm:	0.19	19	
Rmf:	0.18	19	
Rmc:	0.20	19	
Temp @ Max °C:	0.10	58	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 18 **DAYS FROM SPUD:** 16.92 **DATE:** 16 Nov 04 **0000 hrs DEPTH:** 2539m

LAST DEPTH: 2428m **24 HR PROGRESS:** 111m

0600 OPS: Drilling ahead near top E1 sand.

OPERATIONS: Drill 9 5/8" shoe, Conduct FIT. Tested to 12.58ppg @ 1360psi. Bottoms up sample 100% Siltstone. Drill ahead in EVCM Formation to 2539m.

NEXT 24 HRS: Drill ahead to core point, POOH and prepare to cut core 1.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date: 30th Oct 2004 @ 01:00hrs **Surface Location** **Latitude** 39°51'44.0604"S **Easting** 361025.73

TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**	215	**Metres R.T.**	
Rig ENSCO 102 **RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**	657.3	**Metres R.T.**	
		Metres R.T.	**9 5/8" Casing Depth:=**	2421	**Metres R.T.**	

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1			-2506			-2582	-1843	
P5			-2627			-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

MUD RESISTIVITY			General Remarks:
	Ohmm	(°C)	
Rm:	0.18	18	
Rmf:	0.15	18	
Rmc:	0.19	18	
Temp @ Max °C:	0.10	62	

Interval (m)			ROP (avg)	Lithology Description Siltstone							
2428	-	2433	7-19 (15)	100% SILTSTONE, light grey medium brown , firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding , minor mica .							
Gas average			**(ppm) :**	1461 ppm (7 units)	**Composition (ppm)**	C1 1115	C2 54	C3 27	C4 19	C5 8	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone with interbedded Coarse Sandstone							
2433	-	2439	21-47 (35)	50-70% SILTSTONE, light grey medium brown , firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding , minor mica . 5-50% SANDSTONE, clear to opaque, translucent, loose, grains: 80% very coarse, 10% coarse sand, 10% Granular, poorly sorted, sub sperical, cements/strengths: common coating of very fine sandstone: 20%, intergranular porosity.							
Gas average			**(ppm) :**	2627 (13 Units)	**Composition (ppm)**	C1 1971	C2 95	C3 37	C4 22	C5 8	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone with minor interbedded Fine Sandstone							
2439	-	2457	19-53 (33)	50-75% SILTSTONE, light grey medium brown , firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding , minor mica . 20-50% SANDSTONE, clear-white coloured, friable-firm, irregular fracture Clastic Grains: 80% very fine sand, 20% fine sand, well sorted, sub-angular, Cement: argillaceous/moderate, Trace Mica Porosity: 3%, intergranular							
Gas average			**(ppm) :**	2557 (13 Units)	**Composition (ppm)**	C1 2034	C2 104	C3 42	C4 25	C5 8	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Interbedded Coarse and Fine Sandstones with Siltstones						
2457	-	2466	13-57 (33)	5-70% SANDSTONE, clear to opaque, translucent, loose, grains: 80% very coarse, 10% coarse sand, 10% Granular, poorly sorted, sub sperical, cements/strengths: common coating of very fine sandstone: 20%, intergranular porosity. 10-35% SILTSTONE, light grey medium brown , firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding , minor mica . 10-35% SANDSTONE, clear-white coloured, friable-firm, irregular fracture Clastic Grains: 80% very fine sand, 20% fine sand, well sorted, sub-angular, Cements: argillaceous/moderate, Trace Mica Porosity: 3-5 %, intergranular						
Gas average			**(ppm) :**	1849 (9 Units)	**Composition (ppm)**	C1 1435	C2 75	C3 34	C4 22	C5 6	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone With Interbedded Sandstone						
2466	-	2539	8-60 (30	SILTSTONE, light grey medium brown, firm to mod hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding , minor mica . SANDSTONE, clear-white coloured, friable-firm, irregular fracture CLASTIC GRAINS: 80% very fine sand, 20% fine sand, well sorted, sub-angular, CEMENTS/STRENGTHS: argillaceous/moderate, Trace Mica POROSITY: 3%, intergranular						
Gas average			**(ppm) :**	2422 (12 units)	**Composition (ppm)**	C1 1906	C2 95	C3 36	C4 23	C5 9	-
Show Details			5% fluorescence at 2472m . No live oil shows.								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 19 **DAYS FROM SPUD:** 17.92 **DATE:** 17 Nov 04 **0000 hrs DEPTH:** 2735 m

LAST DEPTH: 2539m **24 HR PROGRESS:** 196 m

0600 OPS: RIH with core barrels and coring BHA.

OPERATIONS: Drill ahead in EVCM Formation. Flow check well and circulate bottoms up at 2458m, 2499m, 2604m, 2618m, 2735m. At 2735m circulated out 38 948ppm TG. POOH to cut Core #1, at 2678m 30 000lb overpull and swabbed 1.5bbls into well. RIH to 2735m, flow check - ok, POOH for Core 1.

NEXT 24 HRS: Complete RIH, cut core 1, POOH with core barrels.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**	215	**Metres R.T.**	
Rig	ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**	657.3	**Metres R.T.**
				Metres R.T.	**9 5/8" Casing Depth:=**	2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	2732	- 2692	-2627	65	Low	-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY		
	Ohmm	**(°C)**
Rm:	0.18	18
Rmf:	0.15	18
Rmc:	0.19	18

General Remarks:

Poor bottom hole sample, probably not reflective of what is truly in the Formation. Background gas above the P5 is five times what background was above E1. Gas show at P5 is almost ten times the gas peak at E1.

Temp @ Max °C:	0.10	62	

Interval (m)			ROP (avg)	Lithology Description Interbedded Siltstones and Sandstones							
2539	-	2568	7-45 (22)	SANDSTONE, cream to light brown, friable to firm, fine to very fine and trace medium sand, grading to silt size, poorly sorted, sub-rounded, sub-spherical, argillaceous cement (kaolinite), sub-blocky, 3% visual porosity. SILTSTONE, medium brown-grey brown coloured, moderately hard, brittle fracture, moderate argillaceous cement, carbonaceous, micaceous. SILTSTONE, light brown, cream coloured, firm to moderately hard, sub blocky fracture, strong argillaceous cement (Kaolinite), clay matrix, trace very fine sandy matrix.							
Gas average			**(ppm)**	1990 (10 units)	**Composition (ppm)**	C1 1430	C2 91	C3 41	C4 25	C5 11	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone With Minor Interbedded Coarse Sandstone							
2568	-	2602	12-37 (27)	SILTSTONE, light-medium brown and cream coloured, soft to friable, common very fine sand and clay matrix, weakly argillaceous, carbonaceous, coal traces. SILTSTONE, cream to light brown coloured, soft, sub blocky fracture, very fine sand, clay matrix, weakly argillaceous, carbonaceous, trace pyrite. SANDSTONE, light brown, clear, translucent, loose, dispersive, medium to coarse, minor very coarse to granular clasts, poorly sorted, sub-rounded, sub spherical, trace siliceous cement, trace kaolinite, 20% visual porosity.							
Gas average			**(ppm)**	2831 (14 Units)	**Composition (ppm)**	C1 2118	C2 108	C3 48	C4 30	C5 14	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Sandstone With Minor Interbedded Siltstones Top E1 Sand - 2602m							
2602	-	2629	14-55 (34)	SANDSTONE, cream to light brown, clear, translucent, loose to soft, dispersive, clastic grains: 40% clay, 30% silt, 10% very fine sand, 5% medium sand, 10% coarse sand, 5% very coarse sand, poorly sorted, sub-angular, sub-spherical, weak argillaceous cement, trace glauconite, 5% visual porosity. SILTSTONE, medium & dark brown, occasionally light brown coloured, firm to moderately hard, brittle fracture clastic grains: 10% clay, 80% silt, 10% very fine sand, 3% carbonaceous material and trace pyrite accessories.							
Gas average			**(ppm) :**	4442 (22 Units)	**Composition (ppm)**	C1 3488	C2 135	C3 61	C4 41	C5 19	-
Show Details			2619-2625m. Weak hydrocarbon shows: Trace fluorescence, pale yellow/ green in fluid, slow bleeding cut, thick residual ring								

Interval (m)			ROP (avg)	Lithology Description Siltstone With Minor Interbedded Sandstones							
2629	-	2663	21-68 (37)	SILTSTONE, medium to light brown coloured, firm to moderately hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, moderately strong argillaceous cement, carbonaceous. SANDSTONE, light brown, cream, occasionally medium grey coloured, soft, sub blocky fracture, clastic grains: 20% clay, 20% silt, 30% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately to well sorted, sub angular, sub spherical, moderate argillaceous cement, trace pyrite, trace visual porosity.							
Gas average			**(ppm) :**	6089 (31 Units)	**Composition (ppm)**	C1 4349	C2 207	C3 134	C4 106	C5 47	-
Show Details			2655-2685m. Weak hydrocarbon shows: Trace fluorescence, pale yellow/ green in fluid, slow bleeding cut, thick residual ring								

Interval (m)			ROP (avg)	Lithology Description Sandstone With Interbedded Siltstone							
2663	-	2702	13-58 (38)	SANDSTONE, light brown, cream, occasionally medium grey coloured, soft, sub blocky fracture, clastic grains: 20% clay, 20% silt, 30% very fine sand, 15% fine sand, 5% medium sand, trace very coarse sand, moderately well sorted, sub-angular, sub-spherical, moderate argillaceous cement, trace pyrite, trace visual porosity. SILTSTONE, medium to light brown coloured, firm to moderately hard, sub blocky fracture, clastic grains: 20% clay, 70% silt, 10% very fine sand, moderately strong argillaceous cement, carbonaceous.							
Gas average			**(ppm) :**	8292 (42 units)	**Composition (ppm)**	C1 6017	C2 296	C3 223	C4 140	C5 57	-
Show Details			2663-2685m. Weak hydrocarbon shows: Trace fluorescence, pale yellow/ green in fluid, slow bleeding cut, thick residual ring 2694-2697m. Weak hydrocarbon shows: Trace fluorescence, dull yellow/ green, slow bleeding cut, thin residual ring.								

Interval (m)			ROP (avg)	Lithology Description Siltstone With Trace Sandstone							
2702	-	2732	13-41 (33)	SILTSTONE, light grey medium brown, firm to moderately hard, sub blocky fracture, clastic grains: 10% clay, 80% silt, 10% very fine sand, cements/strengths: argillaceous/moderate, accessories: common carbonaceous banding, minor mica. SANDSTONE, clear to white coloured, friable to firm, irregular fracture, clastic grains: 10% very fine sand, 30% fine sand, 70% medium sand, trace coarse sand, well sorted, sub-angular, argillaceous cement, 5% visual porosity.							
Gas average			**(ppm) :**	9197 (45 units)	**Composition (ppm)**	C1 6005	C2 547	C3 402	C4 156	C5 49	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Sandstone With Siltstone Top P5 Sand – 2732m						
2732	-	2735	12-45 (31)	SANDSTONE, clear, white & very pale brown coloured, moderately hard to hard, blocky, clastic grains: 10% clay, 50% silt, 40% very fine sand, w sorted, sub angular, sub spherical, cements/strengths: siliceous/strong, 10% intergranular porosity. SILTSTONE, light grey to slightly brown grey coloured, friable to firm, sub blocky, clastic grains: 10% clay, 90% silt, trace very fine sand, cements/strengths: argillaceous/moderately strong, accessories: kaolinite 3%.						
Gas average			**(ppm) :**	25 716 (129 units)	**Composition (ppm)**	C1 13351	C2 1674	C3 1829	C4 953	C5 248	-
Show Details			Gas Peak: Total Gas – 38 122 (191 units), (19 864 / 2472 / 2773 / 1492 / 391)								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 20 **DAYS FROM SPUD:** 18.92 **DATE:** 18 Nov 04 **0000 hrs DEPTH:** 2743m

LAST DEPTH: 2735m **24 HR PROGRESS:** 8m

0600 OPS: RIH with 8.5" drilling assembly to 2200m.

OPERATIONS: Record MWD data from tools. Rack back MWD in derrick. Make up Core Barrels and BHA for Core #1 and RIH. Commence coring at 12.05 hours – Initially cored at 15-20m/h to a maximum of 53m/h. Core Barrel jammed at 2743m after cutting 8.2m. POOH, retrieve Core.

NEXT 24 HRS: RIH with 8.5" drilling assembly, drill ahead to the P3 sand, core point 3.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**		**20" Conductor Depth: =**	215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**		**13 3/8" Casing Depth:=**	657.3	**Metres R.T.**
			Metres R.T.		**9 5/8" Casing Depth:=**	2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	- 1302	-1295	7	Low	-1280		
Demon's Bluff	1859	- 1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	2732	- 2692	-2627	65	Low	-2702	-1930	
P4			-2700			-2783	-1963	
P3			-2774			-2870	-1990	
P2			-2825			-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	**(°C)**	Note that hole was actually drilled to 2743.2m. However, all reporting is to 2743m. There was 7.3m of core recovered from 8.2m drilled (89%). The 7.3m recovered from the 36m planned translates to an efficiency of 20% for the coring run.
Rm:	0.18	18	
Rmf:	0.15	18	
Rmc:	0.19	18	
Temp @ Max °C:	0.10	62	

Interval (m)			ROP (avg)	CORE #1 - Cuttings Lithology Description Sandstone						
2735	-	2741	2-19 (13.5)	SANDSTONE, very pale brown, white brown, translucent coloured, moderately hard, blocky, clastic grains: 40% very fine sand, 60% fine sand, very well sorted, angular, sub spherical, cements/strengths: siliceous/moderate, porosity: intergranular, 15%.						
Gas average			**(ppm)**	26893 (10 units)	**Composition (ppm)**	C1 14944	C2 1780	C3 2019	C4 1046	C5 261	-
Show Details			Fluorescence with solvent: 50-20%, moderately bright, yellow/green, even to patchy, direct cut on core chip, moderately fast at 50% distribution, slow at 20%, thin dull yellow ring residue, poor dull crush cut. Gas Peak at 2736m: Total gas – 33696 (20259 / 2456 / 2769 / 1508 / 411)							

Interval (m)			ROP (avg)	CORE #1 - Cuttings Lithology Description Siltstone						
2741	-	2743	18-19 (18.5)	SILTSTONE, dark brown coloured, hard to very hard, blocky, clastic grains: 10% clay, 80% silt, 10% very fine sand, tr% fine sand.						
Gas average			**(ppm)**	28004 (14 Units)	**Composition (ppm)**	C1 16528	C2 1876	C3 1976	C4 944	C5 228	-
Show Details			No Hydrocarbon Shows							

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 21 **DAYS FROM SPUD:** 19.92 **DATE:** 19 Nov 04 **0000 hrs DEPTH:** 2834m

LAST DEPTH: 2743m **24 HR PROGRESS:** 91m

0600 OPS: Drilling ahead at ~30m/h beneath P2 towards P1 at around 2940m.

OPERATIONS: Lay down Core # 1, cut, box, and dispatch same to ACS Laboratories, RIH, tag hard siltstone where core jammed off, worked through slowly to 2748m, drill ahead through Lower EVCM to top P4 at 2819mMD, continue drill ahead in P4 to 2834m.

NEXT 24 HRS: Drill ahead to the P1 sand, CBU and discuss cutting core 2, cut same or drill to C1 sand.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date: 30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**	215	**Metres R.T.**	
Rig ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**	657.3	**Metres R.T.**	
		Metres R.T.	**9 5/8" Casing Depth:=**	2421	**Metres R.T.**	

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5			-2627			-2702	-1930	
P4	2732	-2692	-2700	8	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2873	-2833	-2825	8	Low	-2921	-2033	
P1			-2965			-3061	-2089	
Cretaceous			-3104			-3196	-2113	
C1			-3104			-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	**(°C)**	Core # 1 Core chip descriptions at end of report.
Rm:	0.20	22	
Rmf:	0.16	22	
Rmc:	0.28	22	
Temp @ Max °C:	0.09	72	

Interval (m)			ROP (avg)	Lithology Description Siltstone with minor Sandstone						
2743	-	2762	0.8-17 (8.0)	90% SILTSTONE, medium to dark brown coloured, hard to very hard, blocky, clastic grains: 30% clay, 70% silt, trace pyrite. 5% SANDSTONE, micaceous, white to very pale brown, firm to moderately hard, clastic grains: 30% very fine sand, 40% fine sand, 20% medium sand, moderately well sorted, angular, sub spherical, argillaceous cement, trace intergranular porosity. 5% SANDSTONE, white to cream coloured, friable, clastic grains: 20% fine sand, 80% medium sand, well sorted, sub-angular, sub-spherical, argillaceous cement, 10% visual porosity.						
Gas average			**(ppm)**	6200 (31 units)	**Composition (ppm)**	C1 3790	C2 430	C3 310	C4 110	C5 35	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone						
2762	-	2819	6-16 (11)	100% SILTSTONE, medium-dark grey coloured, hard to very hard, blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, common mica, trace pyrite.						
Gas average			**(ppm)**	5100 (25 Units)	**Composition (ppm)**	C1 3350	C2 370	C3 200	C4 55	C5 15	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Top P3 Sand 2819m Siltstone With Subordinate Interbedded Sandstone						
2819	-	2834	9-16 (12)	SILTSTONE, light to medium grey coloured, firm to moderately hard, blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, accessories: trace mica, carbonaceous traces. SANDSTONE, kaolinitic, light brown, cream, medium brown coloured, soft, sub blocky fracture clastic grains: 20% clay, 10% silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, sub rounded, spherical, cements/strengths: argillaceous / weak, siliceous / trace, accessories: trace coal, porosity: 3%, intergranular.						
Gas average			**(ppm)**	16 911 (85 Units)	**Composition (ppm)**	C1 11668	C2 1054	C3 634	C4 232	C5 54	-
Show Details			Gas Peak at 2822m: Total Gas 40154 (201 units), Breakdown (30071/2410/1421/521/112).								

CORE CHIP DESCRIPTIONS CORE # 1 2735 – 2742.3 m

2735 m (Top)

ROCK: **Sandstone, white-clear-opaque, friable, fine-med-well sorted, fair to good visual Porosity , common mica .**

ODOUR: **Faint Diesel odour .**

FLUOR: **Natural Fluor : 50% Dull violet-blue, fluor, rare bright blue-violet pinpoint fluor**

Cut Fluor : Faint blue cut fluor

Crush Cut Fluor : 50% Instant yellow-light green crush cut fluor observed within sample, however only very slow pale blue Cut fluor observed in solvent .

2736m

ROCK: **Sandstone, white-clear-opaque, friable, fine-med-well sorted, fair to good visual Porosity, common mica .**

ODOUR: **Strong Diesel odour.**

FLUOR: **Natural Fluor : 50% Dull to moderate violet blue natural fluor**

Cut Fluor : No cut fluor

Crush Cut Fluor : Instant yellow-light green crush cut fluor observed within sample, however only very slow pale blue Cut fluor observed in solvent .

2737m

ROCK: **Sandstone, white-clr-opaque, friable, med, v well sorted, fair to good visual porosity ., sucrosic, common mica .**

ODOUR: **Strong Diesel odour,**

FLUOR: **Natural Fluor : 50% Dull to bright violet blue natural fluor**

Cut Fluor : Instant yellow-light green cut fluor in sample with slow blooming bright pale blue fluor in solvent

Crush Cut Fluor : Pale blue crush Cut fluor observed in solvent .

2738m

ROCK: **Sandstone, white-clr-opaque, friable, med, v well sorted, fair to good visual porosity, sucrosic, common mica .**

ODOUR: **Strong Diesel odour.**

FLUOR: **Natural Fluor : 40% Dull violet blue natural fluor**

Cut Fluor : Instant yellow-light green cut fluor in sample with slow blooming bright pale blue fluor in solvent ,

Crush Cut Fluor : bright blue crush Cut fluor observed in solvent .

2739m

ROCK: **Sandstone, white-clr-opaque, friable, fine-med-well sorted, fair to good visual porosity, common mica .**

ODOUR: **Strong Diesel odour,**

FLUOR: **Natural Fluor : No natural fluor**

Cut Fluor : No cut fluor

Crush Cut Fluor : V Pale blue crush cut fluor.

2740m

ROCK: **Micaceous Sandstone, white-clr-opque, friable, med, v well sorted, fair to good visual porosity, sucrosic, common mica .**

ODOUR: **Strong Diesel odour.**

FLUOR: **Natural Fluor : 20 % Dull violet blue natural fluor**

Cut Fluor : Slow yellow-light green cut fluor in sample with slow blooming bright pale blue fluor in solvent

Crush Cut Fluor : Pale blue crush Cut fluor observed in solvent .

2741 m

ROCK: **Micaceous Siltstone, mottled dark brown-grey, hard to very hard .**

ODOUR: **Zero odour.**

FLUOR: **Natural Fluor : No Fluor**

Cut Fluor : No Solvent Cut

Crush Cut Fluor : No crush Cut .

2742 m (Base)

ROCK: **Micaceous Siltstone, mottled dark brown-grey, hard to very hard**

ODOUR: **Zero odour.**

FLUOR: **Natural Fluor : No Fluor**

Cut Fluor : No Solvent Cut

Crush Cut Fluor : No crush Cut .

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 22 **DAYS FROM SPUD:** 20.92 **DATE:** 20 Nov 04 **0000 hrs DEPTH:** 3148

LAST DEPTH: 2834m **24 HR PROGRESS:** 314

0600 OPS:	Drilling ahead at 20m/h, 3220m, through Cretaceous (?), geology.
OPERATIONS:	Drill ahead in through P3, P2 and P1 Sands of Lower EVCM Formation. Variable ROP (10-78m/h) resultant from interbedded lithology. Flow checking of well, circulation of samples and gas (max 1559 units at 3145m) from well as required. Increase in mud weight from 9.2ppg to 9.4ppg around midday.
NEXT 24 HRS:	Drill ahead and evaluate Cretaceous geology to well TD.
	Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
				Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5			-2627			-2702	-1930	
P4	2732	-2692	-2700	8	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2873?	-2833	-2825	8	Low	-2921	-2033	
P1	3024?	-2984	-2965	19	Low	-3061	-2089	
Cretaceous	3136?	-3096	-3104	8	High	-3196	-2113	
C1	3136?	-3096	-3104	8	High	-3200	-2116	
TD – A			-3144					
Cretaceous U/C			-3147					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.22	22	ppm to units = ppm/200
Rmf:	0.16	22	
Rmc:	0.28	22	
Temp @ Max °C:	0.10	76	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

Interval (m)			ROP (avg)	Lithology Description Sandstone And Interbedded Siltstone							
2834	-	2873	10-50 (24)	SANDSTONE, kaolinitic, clear-white, clastic grains: 70% fine sand, 30% medium sand, moderately well sorted, sub-angular, sub spherical, argillaceous cement, 5% intergranular porosity, trace COAL. SILTSTONE, medium-dark grey-brown coloured, hard to very hard, blocky, clastic grains: 20% clay, 80% silt, trace very fine sand, carbonaceous. SILTSTONE, light grey-white coloured, soft, sub-blocky, clastic grains: 5% clay, 75% silt, trace very fine sand, carbonaceous.							
Gas average			**(ppm)**	25536 (127 units)	**Composition (ppm)**	C1 18251	C2 1508	C3 947	C4 399	C5 105	-
Show Details			Fluorescence: In mud, 2835-53m; 2859-2968m; pale yellow/ green slow bleeding cut, thin residual ring 2853-59m 20% patchy, dim white fluorescence, moderately fast cut, dull white crush cut, thin white residual ring. Gas Peak:								
			Depth	TG	C1	C2	C3	iC4	nC4	iC5	nC5
			2844	35491	21332	1966	1306	279	263	78	53
			2858	42842	30660	2534	1682	372	350	107	72
			2862	50159	35390	2971	2012	455	433	137	94

Interval (m)			ROP (avg)	Lithology Description Top P2 Sand – 2873m Interbedded Siltstone And Sandstone							
2873	-	2907	18-41 (23)	SILTSTONE, medium-brown to light grey coloured, firm to hard, brittle fracture, clastic grains: 10% clay, 60% silt, 20% very fine sand, argillaceous cement, carbonaceous in part. SANDSTONE, kaolinitic, clear-white, light brown, clastic grains: 70% fine sand, 40% medium sand, moderately well sorted, sub-angular, sub spherical, argillaceous cement, 5% intergranular porosity.							
Gas average			**(ppm)**	21492 (107 units)	**Composition (ppm)**	C1 16598	C2 1190	C3 546	C4 214	C5 67	-
Show Details			Fluorescence: 2892-2907m: In mud, pale yellow green, slow bleeding cut, thin residual ring								

Interval (m)			ROP (avg)	Lithology Description Sandstone							
2907	-	2916	30-44 (37)	SANDSTONE, kaolinitic, light brown, cream, medium brown coloured, soft, sub blocky fracture clastic grains: 20% clay, 10% silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, sub rounded, spherical, cements/strengths: argillaceous / weak, siliceous / trace, accessories: trace coal, porosity: 5%, intergranular.							
Gas average			**(ppm)**	14739 (73 units)	**Composition (ppm)**	C1 11599	C2 638	C3 301	C4 131	C5 47	-
Show Details			Fluorescence: 2907-16m: In mud, pale yellow green, slow bleeding cut, thin residual ring 2907m:40%; slow, dull, yellow, patchy direct cut; blooming, pale green crush cut; thin, dim, yellow ring residue. Gas Peak: 2912m, 16984ppm / 85 units, (13633 / 724 / 331 / 141 / 51)								

Interval (m)			ROP (avg)	Lithology Description Siltstone With Subordinate Interbedded Sandstone
2916	-	3024	7-68 (28)	SILTSTONE, light to medium grey coloured, firm to moderately hard, blocky, clastic grains: 20% clay, 70% silt, 10% very fine sand, accessories: trace mica, carbonaceous traces. SANDSTONE, clear-opaque-white, loose, clastic grains: 20% medium 40% coarse, 20% very coarse, 20 % Cobble size, poorly sorted, sub rounded, sub-spherical, bit fractured, porosity: 20 %, intergranular.

Gas average	(ppm)	84857 (424 units)	Composition (ppm)	C1 60651	C2 4783	C3 2168	C4 946	C5 272	-

Show Details

Fluorescence: 2916-31m: In mud, pale yellow green, slow bleeding cut, thin residual ring

2913-2919m, 2925-31m: 50%, patchy, moderately bright yellow, moderately fast cut, pale white blooming crush cut, dull green residual ring.

Gas Peak:

Depth	TG	C1	C2	C3	iC4	nC4	iC5	nC5
2932	152419	103006	9020	6106	1248	1311	348	274
2942	54912	41707	3005	1502	376	295	106	64
2957	90529	68709	4942	2327	564	458	173	107
2967	239592	160150	13832	6879	1639	1562	533	365
2979	220464	156046	12504	4945	1090	1027	361	240
2985	220541	155889	13255	5337	1078	1136	372	260
2991	227261	161870	13494	5303	989	1087	328	238
2996	135283	105025	8025	3002	530	578	171	127
3000	95164	74496	5579	2109	418	424	139	97
3020	125931	96862	6543	2475	520	507	171	122

Interval (m)			ROP (avg)	Lithology Description Top P1 Sand - 3024m Interbedded Siltstone and Sandstone
3024	-	3136	13-71 (28)	SILTSTONE, grey to brown coloured, firm to moderately hard, blocky, clastic grains: 10% clay, 60% silt, 30% very fine sand, cements/strengths: argillaceous/moderate. SANDSTONE, clear to opaque white coloured, loose, clastic grains: 20% medium sand, 40% coarse sand, 20% very coarse sand, 20% granular, poorly sorted, sub angular, equant, porosity: 25%, intergranular.

Gas average	(ppm)	26285 (131 units)	Composition (ppm)	C1 18086	C2 1213	C3 491	C4 274	C5 119	-

Show Details

No fluorescence.
Gas Peak:
Gas Peaks:

Depth	TG	C1	C2	C3	iC4	nC4	iC5	nC5
3025	240160	173045	12466	4438	963	861	308	197
3027	151327	118202	7687	2650	569	495	175	110
3042	208927	149048	11250	5353	1164	1183	378	268
3042	208927	149048	11250	5353	1164	1183	378	268
3056	146524	113939	7147	2900	747	650	248	156
3099	136599	104688	6898	2524	564	527	199	130
3108	93526	73583	4514	1558	357	327	129	83
3120	135848	106785	6385	2083	487	426	168	104
3125	127912	98724	6698	2163	514	460	189	118
3136	221266	161549	11863	3047	624	570	221	138

Interval (m)			**ROP (avg)**	**Lithology Description** **Top C1 Sand - 3136m** **Sandstone**
3136	-	3148	18-78 (41)	SANDSTONE (3136-3158m), very light grey & clear to light brown coloured, loose, dispersive, clastic grains: 10% fine sand, 20% medium sand, 40% coarse sand, 30% very coarse sand, trace granular, moderately sorted, angular, sub spherical, cements/strengths: siliceous/trace, porosity: 20%, intergranular.

Gas average	**(ppm)**	220490 (1102 units)	**Composition (ppm)**	C1 159226	C2 12622	C3 3477	C4 1423	C5 428	-

Show Details

No fluorescence.
Gas Peak:

Depth	TG	C1	C2	C3	iC4	nC4	iC5	nC5
3138	243958	175381	12795	3254	661	607	236	150
3144	305130	208199	16507	4418	945	881	351	217
3145	311761	210666	16846	4524	973	911	368	228

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 23 **DAYS FROM SPUD:** 21.92 **DATE:** 21 Nov 04 **0000 hrs DEPTH:** 3407m

LAST DEPTH: 3148m **24 HR PROGRESS:** 259m

0600 OPS:	Drilling ahead through volcanics at 2216m, ROP 1-2m/h.
OPERATIONS:	Drill from 3148 to 3407m in Cretaceous (?) sediments. Variable ROP (1-56m/h) through interbedded lithology. Flow check well at 3151m, 3159, 3180, 3197 3244, 3229m, 3342, 3382, 3387m.
NEXT 24 HRS:	Drill to TD at 2430m, circulate and condition mud, wiper trip, POOH.
	Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs	**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**	215	**Metres R.T.**	
Rig ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**	657.3	**Metres R.T.**
		Metres R.T.	**9 5/8" Casing Depth:=**	2421	**Metres R.T.**	

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2732	-2692	-2700	8	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2873?	-2833	-2825	8	Low	-2921	-2033	
P1	3024?	-2984	-2965	19	Low	-3061	-2089	
Cretaceous	3136?	-3096	-3104	8	High	-3196	-2113	
C1	3136?	-3096	-3104	8	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.22	22	
Rmf:	0.16	22	
Rmc:	0.28	22	
Temp @ Max °C:	0.10	76	

Interval (m)			ROP (avg)	Lithology Description Sandstones with minor Interbedded Siltstone						
3148	-	3289	6-50 (20)	SANDSTONE, light grey-light brown, loose, very poor sorting, angular, sub-elongate, trace siliceous cement, 15 % visual porosity. SANDSTONE, kaolinitic, light brown, cream, medium brown coloured, soft, sub blocky fracture clastic grains: 20% clay, 10% silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, sub rounded, spherical, cements/strengths: argillaceous/weak, siliceous/trace, accessories: trace coal, porosity: 5%, intergranular. SILTSTONE, light grey to light brown, firm to moderately hard, blocky, clastic grains: 10% clay, 90% silt, trace very fine sand.						
Gas average			**(ppm)**	19009 (95 units)	**Composition (ppm)**	C1 14126	C2 941	C3 326	C4 165	C5 76	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Sandstone						
3289	-	3305	10-33 (45)	SANDSTONE, kaolinitic, light brown, cream, white, light brown coloured, loose, medium to cobble size grain , poorly sorted, sub angular, sub-elongate, weak argillaceous cement, moderate siliceous cement, 10 %, intergranular porosity.						
Gas average			**(ppm)**	8988 (45 units)	**Composition (ppm)**	C1 6741	C2 392	C3 153	C4 71	C5 32	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Interbedded Siltstone and Sandstone						
3305	-	3370	8-32 (15)	SILTSTONE, grey to brown coloured, firm to moderately hard, blocky, clastic grains: 10% clay, 60% silt, 30% very fine sand, cements/strengths: argillaceous/moderate. SANDSTONE, kaolinitic, light brown, cream, white, light brown coloured, loose, medium to cobble size grain , poorly sorted, sub angular, sub-elongate, weak argillaceous cement, moderate siliceous cement, 10%, intergranular porosity.						
Gas average			**(ppm)**	7789 (39 units)	**Composition (ppm)**	C1 5774	C2 322	C3 127	C4 63	C5 29	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Siltstone						
3370	-	3382	4-15 (7)	SILTSTONE, dark grey to dark brown coloured, firm to moderately hard, blocky, clastic grains: 30% clay, 70% silt, cements/strengths: argillaceous/siliceous moderate.						
Gas average			**(ppm)**	11342 (57 units)	**Composition (ppm)**	C1 8887	C2 469	C3 159	C4 69	C5 27	-
Show Details			No Hydrocarbon Shows								

Interval (m)			ROP (avg)	Lithology Description Volcanics, Sandstones, Minor Interbedded Siltstone Top Volcanics – 3382m						
3382	-	3388	1-56 (21)	IGNEOUS, green to white coloured, soft with associated calcite, light pink coloured, soft, amorphous fracture. SANDSTONE, clear to opaque, loose, very poor sorting, angular, sub-elongate, trace siliceous cement, 20% visual porosity. SANDSTONE, kaolinitic, light brown, cream, white, light brown coloured, loose, fine to coarse, well sorted, sub angular, sub-spherical, weak argillaceous cement, moderate siliceous cement, 20%, visual intergranular porosity. SLTSTONE, dark-grey-dark-brown coloured, firm-mod hard, brittle fracture clastic grains: 10% clay, 90% silt, tr% very fine sand, weak siliceous cement.						
Gas average			**(ppm)**	164,904 (824 units)	**Composition (ppm)**	C1 91155	C2 12091	C3 5200	C4 1588	C5 673	-
Show Details			Fluorescence in mud: Streaming bright pale green to pale yellow fluorescence with instant cut. Gas Peak: 344700ppm / 1723 units (192430 / 25131 / 12360 / 5684 / 1803)								

Interval (m)			ROP (avg)	Lithology Description Altered And Crystalline Volcanics , Minor Sandstone						
3388	-	3407	2-30 (12)	VOLCANICS, altered and calcareous, mottled white, green, black coloured with trace tan to red calcite, possibly from veins, firm to moderately hard, blocky, accessories: feldspar 15%, crystalline 10%. SANDSTONE, white to off white coloured, friable to firm, sub blocky fracture, calc grains: 10% clay, clastic grains: 20% clay, tr% silt, 20% very fine sand, 30% fine sand, 20% medium sand, poorly sorted, angular, sub equant, cements/strengths: calcareous/moderate, argillaceous/weak, porosity: trace, intergranular. VOLCANICS, crystalline, black, green, dark grey, trace clear coloured, moderately hard, blocky, accessories: feldspar 15%, trace calcareous.						
Gas average			**(ppm)**	6181 (31 units)	**Composition (ppm)**	C1 8794	C2 1022	C3 549	C4 288	C5 106	-
Show Details			No Hydrocarbon Shows.								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 24 **DAYS FROM SPUD:** 22.92 **DATE:** 22 Nov 04 **0000 hrs DEPTH:** 3442m

LAST DEPTH: 3407 m **24 HR PROGRESS:** 35 m

0600 OPS: POOH to 1123m for new bit.

OPERATIONS: Drill from 3407 to 3442m in Cretaceous sediments, ROP slowed to 0.7m/h through interbedded volcanics and sediments, POOH for Bit change. Encountered tight hole from 3168 – 2743 m.

NEXT 24 HRS: Continue POOH and change bit. RIH and drill ahead to planned TD at 3527m.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date: 30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
		Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2732	-2692	-2700	8	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2873	-2833	-2825	8	Low	-2921	-2033	
P1	3024	-2984	-2965	19	Low	-3061	-2089	
Cretaceous	3136?	-3096	-3104	8	High	-3196	-2113	
C1	3136	-3096	-3104	8	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	**(°C)**	
Rm:	0.22	22	
Rmf:	0.16	22	
Rmc:	0.28	22	
Temp @ Max °C:	0.10	76	

Interval (m)			ROP (avg)	Lithology Description Altered And Ferrous Volcanics with Minor Sandstone						
3407	-	3430	3-16 (9)	ALTERED VOLCANICS, calcareous, mottled white, green, black, with trace tan to red coloured vein calcite, firm to moderately hard, irregular fracture, accessories: feldspar 15%, crystalline 10%. VOLCANICS, ferrous, black, dark grey, red to pink, green, light grey, hard to very hard, irregular fracture, 10% crystalline. SANDSTONE, light brown to grey, firm to mod hard, very fine to coarse grained, poorly sorted, angular, sub-equant grains, siliceous cement, trace calcareous cement, trace porosity.						
Gas average			**(ppm)**	2476 (12 units)	**Composition (ppm)**	C1 1606	C2 84	C3 27	C4 14	C5 11	-
Show Details			Gas Peak: 3417m, 4995ppm / 25 units (2525 / 352 / 220 / 140 / 62)								

Interval (m)			ROP (avg)	Lithology Description Sandstone with minor Volcanics						
3430	-	3435	3-21 (10)	SANDSTONE, kaolinitic, off white, light brown, translucent, loose, very fine to medium grained, moderately well sorted, angular, sub equant grains, cements/strengths: argillaceous/weak, porosity: trace, intergranular. VOLCANICS, crystalline, black, green, dark grey, moderately hard, blocky, accessories: feldspar 15%, trace calcareous.						
Gas average			**(ppm)**	34,849 (31 units)	**Composition (ppm)**	C1 24292	C2 2416	C3 1167	C4 459	C5 115	-
Show Details			Gas Peak: 3432m, 60350ppm / 302 (43424 / 4245 / 2040 / 804 / 201)								

Interval (m)			ROP (avg)	Lithology Description Siltstone with minor Volcanics						
3435	-	3442	0.8-3.8 (2.6)	SILTSTONE, dark brown, dark grey brown, moderately hard, blocky, common loose calcite (10-30%). ALTERED VOLCANICS, black, siliceous, recrystallized texture, very hard. VOLCANICS, crystalline, black, very hard.						
Gas average			**(ppm)**	2878 (31 units)	**Composition (ppm)**	C1 1463	C2 196	C3 119	C4 61	C5 25	-
Show Details			No Hydrocarbon Shows.								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 25 **DAYS FROM SPUD:** 23.92 **DATE:** 23 Nov 04 **0000 hrs DEPTH:** 3442m

LAST DEPTH: 3442m **24 HR PROGRESS:** 0m

0600 OPS: Drilling ahead at 3459m, in volcanic rock.

OPERATIONS: Continue POOH from inside casing. Rack back BHA in derrick, download MWD data, remove sources, and rack MWD back in derrick. Break down core barrels previously racked in derrick. Change out PDC bit and make up insert tri-cone bit, install motor to BHA and RIH. On bottom at midnight.

NEXT 24 HRS: Drill ahead to planned TD at 3527m.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =		**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
				Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2732	-2692	-2700	8	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2855	-2815	-2825	10	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH			**-3487**			**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	**(°C)**	
Rm:	0.22	22	
Rmf:	0.16	22	
Rmc:	0.28	22	
Temp @ Max °C:	0.10	76	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 26 **DAYS FROM SPUD:** 24.92 **DATE:** 24 Nov 04 **0000 hrs DEPTH:** 3545m

LAST DEPTH: 3442m **24 HR PROGRESS:** 103m

0600 OPS: POOH to above the BHA at around 500m.

OPERATIONS: Drill from 3442 to 3545m (Total Depth) through interbedded volcanics, siltstones minor sandstones and claystone. HRLA cartridge returned to rig, set up and tested okay.

NEXT 24 HRS: Circulate 2x bottoms up, POOH, rack back BHA, rig up and run wireline Run 1.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		SECONDARY OBJECTIVES:	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD = 3545	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2733	-2693	-2700	7	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2857	-2817	-2825	8	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH	3545	-3505	**-3487**	18	Low	**-3682.2**	**-2208**	

MUD RESISTIVITY			General Remarks:
	Ohmm	**(°C)**	
Rm:	0.22	22	
Rmf:	0.16	22	
Rmc:	0.28	22	
Temp @ Max °C:	0.10	76	

Interval (m)			ROP (avg)	Cuttings Lithology Description Volcanics with interbedded Sandstone and Siltstone						
3442	-	3480	2-24 (5)	SILTSTONE, medium-brown coloured, friable-firm, sub-blocky fracture, 20% clay, 80% silt, moderately argillaceous. SANDSTONE, kaolinitic, light brown to off white coloured, soft, sub-blocky fracture, 30% clay, 10% very fine sand, 30% fine sand, 20% medium sand, tr% coarse sand, moderately well sorted, sub-angular, sub-spherical, weakly argillaceous, trace to 5% visual porosity. VOLCANICS, black, dark brown, green, coloured, hard, irregular fracture, 10% crystalline material, trace calcareous material.						
Gas average			**(ppm)**	1557 (8 units)	**Composition (ppm)**	C1 1516	C2 93	C3 33	C4 15	C5 8	-
Show Details			Fluorescence: in mud at 3475-3490m. Bright, pale green-white, instant cut, dull green yellow ring residue. Gas Peak: 3479m, 6576 / 33 units (5570 / 399 / 101 / 23 / 7)								

Interval (m)			ROP (avg)	Cuttings Lithology Description Sandstone with Siltstone						
3480	-	3507	4-18 (7)	SANDSTONE, kaolinitic, white to cream, friable, sub-blocky, very fine to medium grained, very well sorted, sub-angular, sub-spherical, argillaceous cement, common lithic grains, trace visual porosity. SILTSTONE, medium-brown coloured, friable to firm, sub-blocky fracture , 20% clay, 80% silt, moderately strong argillaceous cement.						
Gas average			**(ppm)**	2875 (14 units)	**Composition (ppm)**	C1 2187	C2 220	C3 68	C4 25	C5 9	-
Show Details			Gas Peak: 3481m, 6221 / 31units (5187 / 383 / 99 / 21 / 6)								

Interval (m)			ROP (avg)	Cuttings Lithology Description Volcanics with interbedded Sandstone and Siltstone						
3507	-	3545	4-30 (11)	SANDSTONE, clear, opaque coloured, loose clastic grains: 30% very fine sand, 50% fine sand, 10% coarse sand, 10% very coarse sand, moderately sorted, sub-angular, porosity: 15%, intergranular. VOLCANICS, green white to cream coloured, firm, sub blocky, accessories: feldspar 10%, crystalline 5%.						
Gas average			**(ppm)**	2662 (13 units)	**Composition (ppm)**	C1 2101	C2 129	C3 47	C4 23	C5 9	-
Show Details			Fluorescence: in mud at 3507-3527m. Bright, pale green-white, instant cut, dull green yellow ring residue. Gas Peak: 3510m, 6100ppm / 31 units, (5000 / 332 / 107 / 40 / 13)								

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 27 **DAYS FROM SPUD:** 25.92 **DATE:** 25 Nov 04 **0000 hrs DEPTH:** 3545m

LAST DEPTH: 3545m **24 HR PROGRESS:** 0 m

0600 OPS: RIH with VSI.

OPERATIONS: POOH, rack back BHA, lay out MWD and motor, download MWD data, continue rack back BHA, Rig up wireline and RIH with PEX-HRLA-CMR-SP-GR-LEH-QT, unable to log down past 3410m, due to ledge or swelled hole. Log back to shoe, repeat section, POOH for VSI.

NEXT 24 HRS: Run wireline VSI, MDT.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD = 3545	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2733	-2693	-2700	7	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2857	-2817	-2825	8	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH	3545	-3505	**-3487**	18	Low	**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.206	24.6	
Rmf:	0.1738	25	
Rmc:	0.28	24.9	
Temp @ Max °C:	0.069	117	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 28 **DAYS FROM SPUD:** 26.92 **DATE:** 26 Nov 04 **0000 hrs DEPTH:** 3545m

LAST DEPTH: 3545m **24 HR PROGRESS:** 0 m

0600 OPS:	MDT logging at 3121.5m.
OPERATIONS:	POOH wireline Run 1 PEX-HRLA-CMR-SP-GR-LEH-QT, unload sources, lay out and rig down toolstring. Rig up and RIH Run 2 VSI-GR, tool hanging up at 3419m, complete run above 3419m and POOH. Lay out and rig down Run 2, Rig up and RIH Run 3 MDT-GR-LEH-QT.
NEXT 24 HRS:	Continue MDT programme.
	Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD = 3545	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2733	-2693	-2700	7	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2857	-2817	-2825	8	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH	3545	-3505	**-3487**	18	Low	**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.206	24.6	
Rmf:	0.1738	25	
Rmc:	0.28	24.9	
Temp @ Max °C:	0.069	117	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 29 **DAYS FROM SPUD:** 27.92 **DATE:** 27 Nov 04 **0000 hrs DEPTH:** 3545m

LAST DEPTH: 3545m **24 HR PROGRESS:** 0 m

0600 OPS: MDT pump-out at 3045.2m.

OPERATIONS: Continue Run 2 MDT-GR-LEH-QT, until low oil alarm. POOH to investigate, locate damaged "O" ring and replace same. RIH Run 2 and complete 56 pretests to 3389.3m Try twice to work through tight spot indicated at 3418m without success. Pull up hole to begin MDT sample/pump out programme. At midnight at 3057.2m sampling.

NEXT 24 HRS: Continue MDT programme, POOH Run 2, wiper trip.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =	3545	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2733	-2693	-2700	7	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2857	-2817	-2825	8	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH	3545	-3505	**-3487**	18	Low	**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.206	24.6	
Rmf:	0.1738	25	
Rmc:	0.28	24.9	
Temp @ Max °C:	0.069	117	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 30 **DAYS FROM SPUD:** 28.92 **DATE:** 28 Nov 04 **0000 hrs DEPTH:** 3545m

LAST DEPTH: 3545m **24 HR PROGRESS:** 0 m

0600 OPS: Circulating off bottom.

OPERATIONS: Complete programmed Run 3 MDT-GR-LEH-QT, pretests, pump-outs and samples. POOH, retrieve samples, sent 4 X 450cc bottles to town and retain 8 x 250cc bottles for well site analysis. RIH for Wiper Trip. Circulate out 269 litres of pump-out fluid.

NEXT 24 HRS: Complete Wiper Trip, RIH with Run 4 MCST-GR.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD = 3545	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2733	-2693	-2700	7	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2857	-2817	-2825	8	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH	3545	-3505	**-3487**	18	Low	**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.206	24.6	
Rmf:	0.1738	25	
Rmc:	0.28	24.9	
Temp @ Max °C:	0.069	117	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 31 **DAYS FROM SPUD:** 29.92 **DATE:** 29 Nov 04 **0000 hrs DEPTH:** 3545m

LAST DEPTH: 3545m **24 HR PROGRESS:** 0 m

0600 OPS: Start RIH Run 5 MDT-GR-LEH-QT.

OPERATIONS: Continue and complete wiper trip. RIH Run 4 MSCT-GR-LEH-QT, core first 15 points of programme and recover 9 cores to tool by midnight. Oil phase complete H2S, Hg and liquid analysis, continuing with HC gas analysis.

NEXT 24 HRS: Complete Run 5, start Run 6 CMR/or MSCT.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD = 3545	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2733	-2693	-2700	7	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2857	-2817	-2825	8	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH	3545	-3505	**-3487**	18	Low	**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.206	24.6	
Rmf:	0.1738	25	
Rmc:	0.28	24.9	
Temp @ Max °C:	0.069	117	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 32 **DAYS FROM SPUD:** 30.92 **DATE:** 30 Nov 04 **0000 hrs DEPTH:** 3545m

LAST DEPTH: 3545m **24 HR PROGRESS:** 0 m

0600 OPS:	Continue MDT programme, just completing 3046m.
OPERATIONS:	Continue with MSCT coring programme. Cut 27 cores, recover 10. Rig down Run 4 and rig up Run 5 MDT-GR-LEH-QT. RIH to 2300m, telemetry problems, POOH and change out LFA. RIH to 1837m, wait on instructions for possible tool-string change. Continue RIG to bottom reaching 3528.7m. Conduct MDT programme – at 3100.5m midnight depth.
NEXT 24 HRS:	Complete MDT run, POOH to conduct Run 5 MSCT-GR-LEH-QT.
	Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =	3545	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig ENSCO 102	**RT-MSL =**	39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2733	-2693	-2700	7	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2857	-2817	-2825	8	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH	3545	-3505	**-3487**	18	Low	**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.206	24.6	
Rmf:	0.1738	25	
Rmc:	0.28	24.9	
Temp @ Max °C:	0.069	117	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 33 **DAYS FROM SPUD:** 31.92 **DATE:** 1 Dec 04 **0000 hrs DEPTH:** 3545m

LAST DEPTH: 3545m **24 HR PROGRESS:** 0 m

0600 OPS:	RIH Run 6 MSCT, cut 24 SWC to 3006.7m.
OPERATIONS:	Continue with MDT programme 3100.5m-2926m. From 33 stations obtained 20 good pretests, 12 good LFA pump-outs and 6 good samples. At surface, breaking down MDT tool at midnight.
NEXT 24 HRS:	Rig up and conduct MSCT-GR-LEH-QT Run 6, begin Run 7 MSCT-GR-LEH-QT or FMI-DSI-HNGS-LEH-QT.
	Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date:	30th Oct 2004 @ 01:00hrs		**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
		TD = 3545	**Metres R.T.**	**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
		RT-ML = 108.8	**Metres R.T.**	**20" Conductor Depth: =**		215	**Metres R.T.**
Rig	ENSCO 102	**RT-MSL =** 39.9	**Metres R.T.**	**13 3/8" Casing Depth:=**		657.3	**Metres R.T.**
			Metres R.T.	**9 5/8" Casing Depth:=**		2421	**Metres R.T.**

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2733	-2693	-2700	7	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2857	-2817	-2825	8	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH	3545	-3505	**-3487**	18	Low	**-3682.2**	**-2208**	

MUD RESISTIVITY			**General Remarks:**
	Ohmm	**(°C)**	
Rm:	0.206	24.6	
Rmf:	0.1738	25	
Rmc:	0.28	24.9	
Temp @ Max °C:	0.069	117	

ORIGIN ENERGY RESOURCES LIMITED
DAILY GEOLOGICAL REPORT

WELL: Trefoil 1 **REPORT No.:** 34 **DAYS FROM SPUD:** 32.92 **DATE:** 2 Dec 04 **0000 hrs DEPTH:** 3545m

LAST DEPTH: 3545m **24 HR PROGRESS:** 0 m

0600 OPS: Logging up Run 7 with DSI inside casing at 1810m.

OPERATIONS: POOH Run 5 MDT, rig down then rig up Run 6 MSCT-GR-LEH-QT. RIH and cut 26 SWC before POOH for blocked tool, recover 24 SWC on surface. Change out SWC catching apparatus to 25 core capacity, RIH Run 7 MSCT-GR-LEH-QT, attempt to cut 12 SWC, tool jam as with Run 6, POOH Run 7 and recover 8 SWC. Rig down Run 7 and rig up Run 8, FMI-DSI-HNGS-LEH-QT. RIH insurance logging down through casing, then in open to TD, log up repeat pass.

NEXT 24 HRS: Complete Run 8 FMI-DSI-HNGS-LEH-QT, POOH wireline, wiper trip.

Geologists: David Cohen / Mark Tindale

PRIMARY OBJECTIVES:		**SECONDARY OBJECTIVES:**	
Palaeocene	Sands P1, P2, P3, P4 and P5	Early Eocene, Late Cretaceous	Sands E1 and C1

Spud Date: 30th Oct 2004 @ 01:00hrs			**Surface Location**	**Latitude**	39°51'44.0604"S	**Easting**	361025.73
	TD =	3545 **Metres R.T.**		**Longitude**	145°22'30.7219"E	**Northing**	5586268.98
	RT-ML =	108.8 **Metres R.T.**		**20" Conductor Depth: =**	215	**Metres R.T.**	
Rig ENSCO 102	**RT-MSL =**	39.9 **Metres R.T.**		**13 3/8" Casing Depth:=**	657.3	**Metres R.T.**	
			Metres R.T.	**9 5/8" Casing Depth:=**	2421	**Metres R.T.**	

(Nearby Well / Facility: Nil)

	All Depth are in METRES					Offset wells TVDSS		
FORMATION TOPS: * Geophysical Picks	**Geological Pick (MD)**	**Geological Pick (TVDSS)**	**Prognosed (mTVDSS)**	**Diff. (m)**	**High Low**	**Aroo 1**	**White Ibis**	
Water Bottom	108.8	-68.9	-68					
Torquay Group	108.8	-68.9	-68			-76	-62	
Seismic Anomaly	702.5	-662.5	-660	2.5	Low	?		
Lower Miocene Marl	884	-844	-817	27	Low	-825		
Angahook Fm	1342	-1302	-1295	7	Low	-1280		
Demon's Bluff	1859	-1819	-1780	39	Low	-1814	-1419	
EVCM	2097	-2057	-2077	20	High	-2049	-1591	
E1	2602	-2562	-2506	56	Low	-2582	-1843	
P5	Absent		-2627			-2702	-1930	
P4	2733	-2693	-2700	7	High	-2783	-1963	
P3	2819	-2779	-2774	5	Low	-2870	-1990	
P2	2857	-2817	-2825	8	High	-2921	-2033	
P1	3009	-2969	-2965	4	Low	-3061	-2089	
Cretaceous	3119	-3079	-3104	25	High	-3196	-2113	
C1	3119	-3079	-3104	25	High	-3200	-2116	
Top Basalt	3382	-3342						
Cretaceous U/C			-3447					
TOTAL DEPTH	3545	-3505	**-3487**	18	Low	**-3682.2**	**-2208**	

APPENDIX 18: MUD ENGINEERS REPORTS

ORIGIN ENERGY RESOURCES LTD
BAROID DRILLING FLUID RECAP
Trefoil-1
BASS STRAIT, VICTORIA.

Prepared by: Tony Kowalski, Adam Martin,
Hayden Butler, Dan Cotter

Date: October / November / December, 2004

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    - Fluid Program Exceptions Report
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1. WELL SUMMARY

1.1 Well Data

Well Name	:	Trefoil-1
Operator	:	Origin Energy Resources Ltd
Well Type	:	Vertical, Exploration
Bottom Hole Temperature	:	84°C (Dynamic), 119°C (Static)
Maximum Inclination	:	0.73 deg
Location	:	T/P18, Bass Strait, Victoria
Contractor/Rig	:	ENSCO 102
Start Date (Rig)	:	16/10/2004 (22:00 Hrs)
Baroid On Location	:	18/10/2004 (13:45 Hrs)
Spud Date	:	30/10/2004 (01:00 Hrs)
RT to Mudline	:	108.8 m
Total Depth	:	3,545 m
Date TD Reached	:	23/11/2004 (20:50 Hrs)
Total Days Actual Drilling	:	18 Days
Date Released (Baroid)	:	23/12/04 (14:00 Hrs)
Total Days on Well	:	71 Days (Rig Released 25/12/2004 07:45 Hrs)
Drilling Cuttings Volume	:	1,801 bbls

1.2 Formation Tops

Formation	Predicted m KB	Actual m KB	Difference
Torquay Group	108.8	108.8	-
Seismic Anomaly	700	702.5	+2.5
LWR Miocene Marl	857	884	+27
Angahook Formation	1335	1342	+7
Demons Bluff	1820	1859	+39
Eastern View Coal Measures	2117	2097	-20
Eocene 1	2546	2602	+56
Palaeocene 5	2667	-	
Palaeocene 4	2740	273	-7
Palaeocene 3	2814	2819	+5
Palaeocene 2	2865	3857	-8
Palaeocene 1	3005	3009	+4
Cretaceous	3144	-	-
Cretaceous 1	3144	3119	-8
TD – A	3184	-	-
Cretaceous U/C	3187	-	-
Total Depth	3527	3545	+18

1.3 Casing Program

20” / 30”	Conductor Casing	@	215 m MDRT
13 3/8”	Surface casing	@	657 m MDRT
9 5/8”	Intermediate Casing	@	2420 m MDRT
6 5/8”	Production Liner	@	2272 m – 3458 m MDRT

1.4 Personnel

Drilling Supervisors	:	Wally Jakimczuk	Mark Nasarczyk	Michael Lanzer
		Murray Jackson	Hedley Amos	
Baroid Field Service Reps.	:	Hayden Butler	Adam Martin	
		Dan Cotter	Tony Kowalski	

2. COST SUMMARY

2.1 Drilling Fluid Costs

	Drilling Fluid	Hole Size	MD From	MD To	Cost USD $
1.	Seawater/Hi-Vis Bentonite Sweeps	26”/36”	108.8 m	218 m	
2.	Seawater/Hi-Vis Bentonite Sweeps	16”	218 m	666 m	
3.	Seawater/Drispac/Soltex/PHPA	12.25”	666 m	2,428 m	
4.	Seawater/Drispac/Soltex/PHPA	8.5”	2,428 m	3545 m	

Total Mud Materials Used For Drilling **USD $**

Materials Used For Cementing **USD$**

Materials Used For Clean Up & Well Testing **USD$**

Materials Used During Suspension Operations **USD$**

Total Materials Used on Well **USD $**

2.2 Engineering Costs

Service Representatives	From (date)	To (date)	Days
Tony Kowalski	18/10/2004	31/10/2004	14
	12/11/2004	28/11/2004	17
	17/12/2004	23/12/04	7
Adam Martin	18/10/2004	04/11/2004	18
	29/11/2004	07/12/2004	9
Dan Cotter	01/11/2004	11/11/2004	11
	19/11/2004	03/12/2004	14
Hayden Butler	05/11/2004	18/11/2004	14
	03/12/2004	16/12/2004	14

Total Days: **117**

Service Cost (AUD $ 950) @ 0.74 = **USD $ 703 / day** **USD $**

Total Cost of Materials & Engineering: **USD $**

3. PERFORMANCE SUMMARY

3.1 Comments

Overall the drilling fluids performed well. The Seawater/Hi-Vis Bentonite Sweeps spud mud performed as planned. However, the loss of circulation experienced in the 16" interval resulted in increased mud volumes and costs. The Seawater/Drispac/Soltex PHPA system used in the 12 ¼" and 8 ½" intervals was also effective. Some hole problems were experienced, but the actual drilling was problem free. The drilling fluid cost was below that programmed for both intervals.
In the 12 ¼" interval some difficulty was experienced with tight hole on trips out. This was primarily due to swelling clays and cavings from the Angahook formation. Casing was successfully run to bottom. Some tight hole occurred in the 8 ½" interval, which was drilled to TD at 3545 m and an extensive wireline logging program successfully carried out. The 6-5/8" liner failed to go to bottom and was set approximately 100 metres high.

3.2 Performance Indicators

Interval 1. (108.8 m - 218 m)	**Program**	**Actual**	**Achieved (+/- 10 %)**
• Drilled, m	61	109	No
• Volume Built, bbl	1,621	2,856	No
• Consumption Rate, bbl/m	26.57	18.10	Yes
• Mud Cost / bbl, USD $			Yes
• Mud Cost / m, USD $			Yes
• Interval Mud Cost, USD $			No

Interval 2. (218 m – 666 m)	**Program**	**Actual**	**Achieved (+/- 10 %)**
• Drilled, m	496	448	Yes
• Volume Built, bbl	2,914	3,708	No
• Consumption Rate, bbl/m	5.88	10.24	No
• Mud Cost / bbl, USD $			No
• Mud Cost / m, USD $			No
• Interval Mud Cost, USD $			No

Interval 3. (666 m – 2428 m)	**Program**	**Actual**	**Achieved (+/- 10 %)**
• Drilled, m	1,780	1,762	Yes
• Volume Built, bbl	5,151	5,213	Yes
• Dilution Rate, bbl/m	2.00	1.34	Yes
• Consumption Rate, bbl/m	2.89	2.49	Yes
• Mud Cost / bbl, USD $			Yes
• Mud Cost / m, USD $			Yes
• Interval Mud Cost, USD $			Yes

Interval 4. (2428 m – 3545 m)	**Program**	**Actual**	**Achieved (+/- 10 %)**
• Drilled, m	1,037	1,117	Yes
• Volume Built, bbl	1,403	301	Yes
• Dilution Rate, bbl/m	1.70	1.13	Yes
• Consumption Rate, bbl/m	2.50	2.61	Yes
• Mud Cost / bbl, USD $			No
• Mud Cost / m, USD $			Yes
• Interval Mud Cost, USD $			Yes

- **Total Materials Used For Drilling, US$** **Yes**

Explanation of Non-Conformance

Interval 1:
- Comparing performance indicators between programmed and actual values is difficult in this interval because the interval length, as well as the sweep volumes, were changed after the drilling fluids program was compiled.
- The total fluid volume built and interval mud cost exceeded programmed values. This was a result of the large volume of pre-hydrated gel charged to this interval but salvaged for use in the next.

Interval 2:
- All performance indicators for this interval were much higher than programmed due to the loss of circulation experienced.
- Loss circulation materials and the additional mud volume resulting from losses contributed to the increased interval costs.

Interval 3:
- All performance indicators were met or exceeded for this interval.
- The total mud volume built includes 833 bbls of un-used premix which is not considered in the dilution/consumption rate calculations.
- The un-used premix was utilized in the 8- ½" hole section.
- Dilution and consumption rates were significantly lower than programmed due to the effectiveness of the solids control equipment, particularly the use of the centrifuge throughout the interval.

Interval 4:
- All performance indicators were met for this interval, with the exception of mud cost per barrel. The total interval cost was 27 % below program.
- The mud cost per barrel was extremely high due to the fact that such a small volume was actually built in this section. A volume of 833 bbls of premix was left over from the previous interval and additional maintenance treatments were made directly to the active, resulting in a very low new volume being mixed.

Overall the drilling fluids performed well, with no mud related problems occurring. The Seawater/Hi-Vis Bentonite Sweeps spud mud performed as planned, however, the loss of circulation experienced in the 16" interval resulted in increased mud volumes and costs.
The Seawater/Drispac/Soltex PHPA system used in the 12 ¼" interval was effective, although the programmed fluid losses were never achieved. Some difficulty was experienced with tight hole on trips out, but the actual drilling was problem free. The hole was cased without problem, and the interval drilling fluid cost was 18% below that programmed.

The 8 ½" interval was drilled with the same mud system as in the 12 ¼" interval. Although the program called for lower API and HTHP fluid losses, as on the two Yolla wells, this was not achieved. On the trip out for a core at 2735 m, tight hole and swabbing necessitated pumping out to the shoe. After recovering 8 m of core, a PDC bit was run without a motor and hole drilled to 3442 m. Drilling breaks and gas peaks were flow checked over the trip tank, with the well remaining static on all occasions. The mud weight was increased from 9.2 to 9.4 ppg at 2928 m in response to increased gas readings. Tripped out at 3443 m for a new bit (plus motor), with periodic back-reaming required.

The hole was drilled to an eventual TD of 3545 m after which an extensive wireline logging program was carried out. A wiper trip between logs showed good hole conditions. The interval drilling fluid cost was approximately 27% lower than programmed.

4.0 INTERVAL - 1

4.1 SUMMARY

26/36" Hole From 108.8 To 218 m In 1 Day

Drilling Fluid Seawater/ Bentonite Sweeps
Formations Torquay Group

Operations on Trefoil-1 commenced at 22:00 hrs on October 16, 2004 when the rig was undertow 1 mile from the Yolla platform. Eleven days were spent preloading and ensuring adequate leg penetration at the Trefoil location, prior to jacking up and skidding off.

The well was spudded at 01:00 hrs on October 30 with a 26" bit and with a 36" hole opener located 58.8 m above the bit. Prior to spudding, an initial volume of 2856.3 bbls of hi-vis pre-hydrated bentonite was prepared as soon as the rig was jacked up and skidded out. This included volume for use in the following 16" hole interval. Drilling commenced from the seabed at 108.8 m RKB and was successfully drilled to 218 m using seawater and hi-vis sweeps. The final hole configuration consisted of 58.8 m of 26" hole and 50.4 m of 36" hole.

Three sweeps per stand were pumped (each drill pipe single), the first 2 being 40 bbl hi-vis (35 ppb bentonite) sweeps, while the 3rd one was 75 bbls spotted on bottom prior to connections. Approximately 5 bbls of the third sweep was left in the string while connections were made. No seawater diluted, lime flocculated sweeps were utilized on this well.

At interval TD, the hole was swept with 100 bbls of hi-vis bentonite. This was immediately followed by 500 bbls (150% of open hole volume) of hi-vis pre-hydrated bentonite. A wiper trip was made to just below the mud line. There was 4 m of fill on bottom, and the hole was circulated with seawater. Another 100 bbls of hi-vis was pumped around, followed by another 500 bbls of hi-vis mud. The tapered 20"/30" casing was successfully run and cemented with the 20" shoe at 215m RKB.

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance**
Funnel Viscosity	120	-	180		Yes
Calcium (mg/lt)	-	400	30		Yes
Chlorides (mg/lt)	-	1500		1100	Yes

Explanation of Non-Conformance

- All properties were maintained in the programmed range.

Maintenance

- A total volume of 2856.3 bbls of 35 ppb pre-hydrated bentonite was mixed as soon as the rig was jacked up and skidded out.
- The reason for the large volume mixed, was that time was available to mix additional volume for use in the 16" hole interval. Only 1976 bbls were utilized in the 26"/36" hole interval.
- Caustic soda was not added to the pre-hydrated bentonite until shortly before it was pumped downhole, at which time 0.5 ppb was added.
- Frequency and volumes of sweeps were as described in the above summary.

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 bentonite was being added via the surge tank.
   Cause Accuracy of the digital weight scale is suspect.
   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
- Check the surge tank digital weight scale, and recalibrate if necessary.
- Also determine whether the readout is in Imperial or Metric units.
- While preloading the rig, all shakers were stripped, needle-gunned, rust proofed and painted.

5.0 INTERVAL - 2

5.1 SUMMARY

16 ” Hole From 218 m To 666m In 1 Day

Drilling Fluid Seawater/Bentonite Sweeps
Formations Torquay Group

The 20”/30” conductor and shoe were drilled with seawater and high-vis sweeps with returns being dumped overboard. Once the shoe was exited a closed circulating system was utilized. The interval was drilled with seawater and hi-vis pre-hydrated bentonite sweeps. A 30 bbl sweep was pumped on each single drilled and a 50 bbl sweep pumped to cover the BHA prior to each connection. The closed system was allowed to ‘mud-up’ with the addition of the high-vis sweeps. It was necessary, however, to continuously add seawater and dump the sand trap on connections to control the mud weight at 8.8ppg.

When making a connection at 641m, static losses of 5 bbl/min were noted. A 100bbl phpa/bentonite pill was spotted on bottom in an effort to contain the losses. As there was no reduction in the loss rate it was concluded that the loss zone was further up the hole, possibly at the conductor shoe. Drilling continued to 666m, interval TD, and 100 bbls of LCM pill followed by 300 bbls of hi-vis bentonite and 100 bbls of KCl/bentonite was spotted in the hole.

The drillstring was pulled to the shoe and another lost circulation pill containing pre-hydrated Bentonite, BAROFIBRE, Kwikseal Medium and Calcium Carbonate (CIrcal Y) was pumped. Losses were initially reduced from 5 bbl/min to 1bbl/min. These losses increased again and another lost circulation pill was pumped. The losses were reduced to 3 bbl/min.

When back on bottom following the wiper trip, losses slowed to 2.5 bbls/min and another 100 bbl BARACARB LCM pill was pumped, followed by 50 bbls of pre-hydrated bentonite. Losses were reduced to 2 bbls/min, slowing to 0.5 bbls/min. The hole was displaced to hi-vis bentonite followed by 200 bbls of 6%KCl/bentonite. The pipe was pulled to the conductor shoe and another 100 bbl calcium carbonate LCM was spotted at the shoe. Casing was then run and cemented at 657m.

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance**
Funnel Viscosity	120	-	120		Yes
Mud Weight (ppg)		8.9		8.8	Yes
Calcium (mg/lt)	-	400		400	Yes
Chlorides (mg/lt)	-	1500		1500	Yes

Explanation of Non-Conformance

- Mud properties conformed to programmed specifications.

Maintenance

- A total of 880 bbls of hi-vis pre-hydrated bentonite was salvaged from the 26”/36” hole interval for use in the closed circulation 16” hole interval. An additional 3708 bbls of pre-hydrated bentonite was built and used for high-vis sweeps and for loss circulation pills.
- Prior to pumping sweeps, 0.5 ppb of caustic soda was added to enhance the viscosity of the bentonite.

Solids Control Equipment

- The 4 Derrick FLC 415 shakers were initially dressed with 4 x 150 mesh screens on #1 and #2 shakers, and 4 x 125 mesh on shakers #3 and #4. In order to save costs, the screens had all been previously used, and were a combination of flats and pyramids.
- The Derrick mud cleaner was dressed with 4 previously used 265 mesh screens, again a mixture of flat and pyramid screens.

5.2 EVALUATION

Comments

Seawater and high-vis bentonite sweeps are effective in drilling surface hole.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem Lost Circulation at 5 bbl/min (started at 641m).
   Cause Porous Limestone Formation near the shoe.
   Action Mixed a variety of lost circulation pills using BAROFIRBE, Kwikseal Medium, BAROLIFT, Calcium Carbonate.

Drilling Fluid

1) Problem BARACARB 100 not able to be added through the salt hopper due to high winds.
   Cause Crane not being able to operate.
   Action BARACARB 100 was “bucketed” in from the scissor lift.

2) Problem Pre-hydrated Bentonite mixtures become too thick to move with centrifugal pump.
   Cause Too much Bentonite is being added to mud mixtures.
   Action Calibrate Surge Tank.

Solids Control and Mud Mixing Equipment

1) Problem Surge Tank Blocks up while mixing Bentonite.
   Cause Possible design fault or Operator error.
   Action Needs modification or Derrickmen need training on equipment.

5.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- None.

Drilling Fluid

- It is recommended that a pallet of 25kg sacked calcium carbonate be available for future wells so that the material can be added appropriately through the mixing hopper. High winds are often a problem in Bass Strait, resulting in crane shutdowns.

Solids Control and Mud Mixing Equipment

- Problems with bulk mixing system have been discussed on previous recaps for Yolla-4 and Yolla-3.

6. INTERVAL - 3

6.1 SUMMARY

12 ¼ " Hole From 666 m To 2428 m In 3 Days

Drilling Fluid Seawater/Drispac/Soltex/PHPA
Formations Torquay Group, Angahook Formation, Demons Bluff, Eastern View Coal Measures

The 13-3/8" shoe track was drilled with a PDC/mud motor assembly using seawater. Prior to exiting the shoe, the casing was displaced to Seawater/Drispac/Soltex mud, 5m of new hole was drilled and a FIT conducted to an EMW of 10.5ppg.

A 12-1/4" PDC directional/mud motor assembly was used to drill the interval. ROP's averaged 30 to 40 m/hr from the shoe to 2428m, interval TD. The interval was drilled relatively quickly and without major mud or hole problems. As with the previous two Yolla wells however, there were cavings/block cuttings from the Angahook formation noted at the shakers from 1600m to interval TD as well as some difficulties in wiping through this area on trips.

At 2428m, bottoms-up was circulated and a 40bbl 12.0 ppg weighted pill pumped and circulated to clean the hole for the wiper trip. A significant amount of cuttings/cavings was noted at the shakers as the pill reached surface. A second weighted pill was pumped and approximately 15% increase in cuttings was observed, significantly less than the first pill. In order to ensure a clean hole for the wiper trip, an additional three times bottoms-up were circulated before coming out of the hole. On the wiper trip out, the hole started to swab and pull tight from 1675m. Bottoms-up was circulated, and as the hole continued to pull tight, it was decided to pump-out to the surface casing.

At the shoe, a weighted BAROLIFT sweep was pumped and a large amount of block cuttings circulated out. The trip back to bottom was relatively easy, but with tight spots observed at a number of points. Bottoms-up was circulated five times and two 30 bbl 12.0ppg BAROLIFT sweeps pumped to ensure cleaning. On the trip out for casing the hole started to pull tight at 1600m requiring several stands to be pumped out. The remaining trip to the casing shoe progressed without incident.

The 9-5/8" casing was run successfully and set at 2420 metres. The casing contents were circulated 1.5 times prior to cementing. The casing was cemented with a lead cement slurry of 12.5 ppg, followed by 15.8 ppg tail slurry. The cement was displaced with mud using the rig pumps. A total of 41 bbls of mud was lost downhole while displacing cement. No cement returns were observed during displacement.

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance**
Mud Weight, ppg	8.9	9.4	8.8	9.4	Yes
Yield Point (lb/100 ft²)	25		25	44	Yes
Low Gravity Solids (% by vol)		6.0	2.2	5.5	Yes
API Filtrate (cc/30 min)		4.5	4.0	5.2	No
HTHP Filtrate (200° F-ml)		15	12.4	16.4	No
MBT (ppb)	5	12	5	12	Yes
pH	8.5	9.5	8.7	9.5	Yes
Calcium (mg/l)		300	160	320	No
Residual Sulphite (mg/l)	100		60	180	No

Explanation of Non-Conformance

- Mud properties generally conformed to programmed specification through the interval.
- API and HTHP fluid loss values were outside specification initially, but were eventually achieved as the mud system picked up drill solids from the hole and barite was added.
- Residual sulphites were above 100 mg/l for much of the interval, but became difficult to maintain towards the end of the section. BARACOR 129 was added regularly to the active to ensure there was a sulphites residual in the mud at all times.
- Calcium levels were kept below 300 mg/l for most of the section, occasionally drifting to 320 mg/l. Caustic soda additions were increased and in one instance soda ash used for treatment.
- The mud weight, low gravity solids and MBT were controlled effectively for the entire section while drilling.

Maintenance

- While running casing and WOC, 2845 bbls of premix was prepared. The displacement volume was built without the programmed PHPA concentration in order to avoid excessive losses over the shakers on displacement. The remaining volume of premix was fully specified. Once drilling commenced and the mud had sufficiently sheared, the PHPA concentration was increased to programmed levels.
- A total of 5211 bbls was built for the interval, 4380 bbls of this was used during the section for an average dilution rate of 1.34 bbl/m.
- After cleaning out the rat hole and drilling 5 m of new formation, a LOT was carried out to an EMW of 10.5 ppg.
- Bicarbonate of soda was added to the active system to reduce the calcium content which had increased after drilling the cement.
- The mud weight was maintained with dilution and use of solids control equipment. At 1889 m, the mud weight was increased to 9.0 ppg when some slight caving was noted in the cuttings at the shakers. The mud weight was further increased to 9.2 ppg with barite in response to continued block cavings at the shakers. With the incorporation of several weighted sweeps at TD, the mud weight increased to 9.5 ppg.
- Premix was continuously added to the active system to maintain volume, dilution rates and to assist the centrifuge in controlling the mud weight.
- BARACOR 129 was added as required to maintain a residual sulphites level of >100 mg/l.
- The pH was maintained as programmed through regular additions of caustic soda.
- At TD, prior to a wiper trip, a 40 bbl weighted 12.0 ppg sweep was pumped to ensure clean hole. The sweep showed a noticeable increase in cuttings when it returned to surface. A weighted 12.0 ppg BAROFIBER sweep was pumped at the casing shoe and, again showed a considerable increase in block cuttings at surface.
- Two further weighted 12.0 ppg BAROLIFT sweeps were also circulated when back on bottom following the wiper trip. Again, there was an increase in cuttings when the sweep returned.

Solids Control Equipment

- In order to avoid excessive losses of un-sheared mud on displacement, the shakers were initially dressed with 80 mesh screens. Once the mud had sheared sufficiently, three shakers were dressed with 200 mesh screens and two shakers dressed with 150/180 mesh screens.
- The shakers performed well in keeping mud weight and LGS's at programmed levels. Sand content through the interval was maintained at or below 0.1%.
- The Derrick mud cleaner (of which only the desilter was utilized) was dressed with 265 mesh screens and was used for a short period at the start of the interval while the centrifuge was down for repair. Subsequently, it was dressed with 200 mesh screens and used as a conventional shaker.
- The centrifuge was used continually when drilling and circulating. In conjunction with dilution with premix, worked extremely effectively in controlling mud weight and low gravity solids.

6.2 EVALUATION

Comments

As was seen on the previous Yolla wells, the lack of mud inhibition caused some difficulties through the reactive Angahook Formation. Large amounts of very wet 'sticky' cuttings resulted in some blinding of the shaker screens and there was further indication of formation instability with occasional large chunks of clay-stone at surface. Although the interval drilled well, the wiper trip at the end of the interval required washing and back-reaming through the Angahook Formation.

A KCl brine based fluid would provide better inhibition and may have been more effective to prevent the formation swelling and the generation of cavings. The potassium ion is effective at reducing clay swelling due to its low hydration energy and size, which enable it to fit between silica layers in the clay crystal lattice and prevent interlayer swelling. A more inhibitive fluid also is more effective in preventing dispersion of cuttings as they are carried out of the hole. This results in larger, more intact, cuttings at the shakers, enabling a dryer discharge and lower dilution rates.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem Cavings observed at the shakers continuously while drilling below the Angahook Formation and while circulating at section TD.
   Cause Swelling of reactive clays.
   Action The mud weight was increased on two occasions to combat the borehole instability noted by the presence of cavings. Cavings were still observed subsequent to this, particularly during the wiper trip at TD. Multiple circulations and the pumping of weighted BAROLIFT sweeps were used to clean the cavings from the hole prior to the casing run.

Drilling Fluid

1) Problem Calcium content slightly in excess of programmed requirement.
   Cause The base fluid was seawater which had a calcium content of 500 mg/l.
   Action Added large quantities of soda ash to premixes, but still difficult to achieve < 300 mg/l calcium. Additions of caustic soda assisted in controlling calcium levels. Mixed additional soda ash in active when required.

2) Problem API and HTHP fluid loss in excess of programmed early in the interval.
   Cause Polymer concentrations should have been adequate. Probable cause is that the initial system was very low in solids content. In addition, the solids that were present (bentonite & Soltex), may not provide a broad range of particle sizes.
   Action Continued additions of fully specified premix to active. Allowed some drill solids to be incorporated in the mud system. The addition of barite also helped reduce both the API and HTHP fluid loss.

Solids Control and Mud Mixing Equipment

1) Problem Difficulties mixing bulk material as described on the Yolla recaps. Blockages of the hopper occurred both when mixing bulk bentonite and barite.
   Cause The cause appears to be a design flaw of the bulk mixing system.
   Action Address the apparent design issue with the input of the derrickmen who use the system.

6.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- As on the previous wells, Yolla-4 and Yolla-3, hole instability was observed with cavings from the Angahook formation. These cavings were very well rounded, not angular as would be expected from 'fresh' pressure cavings.
- In general, rounded cavings are evidence that the cavings have taken an excessive time to be carried out of the hole, having been ground up by the drill pipe in the annulus. On this well however, it is unlikely that this was the case as it was a vertical hole.
- The cavings were also observed to be very soft. It is therefore more likely that the cavings were indicative of borehole instability induced by swelling clays.
- A possible solution to this problem of borehole instability would be to use a more inhibitive mud system. The same basic system could be utilized, but with potassium chloride brine instead of seawater as the base fluid.

Drilling Fluid

- As discussed in the Yolla-3 recap, high calcium content has a detrimental effect on the long PHPA polymer chains. PHPA is a very effective at solids encapsulation and worked well in assisting solids control on this well. However, it would probably be more effective if used in a KCl brine based system rather than a seawater based system, due to the high calcium levels in seawater.
- As discussed above, a potassium chloride based polymer system may be a better solution for drilling the reactive clay formations in this field.

Solids Control and Mud Mixing Equipment

- Modify bulk mixing system to avoid blockages.
- Retain the centrifuge for the remainder of the Origin program.

6. INTERVAL - 4

6.1 SUMMARY

8 ½ " Hole From 2428 m To 3545 m In 9 Days

Drilling Fluid Seawater/Drispac/Soltex/PHPA
Formations Eastern View Coal Measures, E1 Sand, P5 Sand, P4 Sand, P3 Sand, P2 Sand, P1 Sand, Cretaceous, Cretaceous 1, Cretaceous U/C

A rotary assembly and PDC drill bit were used to drill this section to the first core point at 2735 m. After cleaning out the shoe track and rat hole, the active system was circulated to a balanced mud weight of 9.2 ppg. An FIT was conducted to 12.5 ppg EMW. The first section of 8-1/2" hole was drilled from 2428 m to 2735 m, circulating up samples when encountering drilling breaks. The first core point was eventually picked at 2735 m, and the BHA pulled out for the first coring run.

Indications of jamming were observed after cutting 8 metres of the first core. The coring assembly was pulled and the core laid out. The decision was made to continue drilling and a rotary assembly with MWD tools was run back in the hole. No further cores were cut, and a new bit (without a motor) was run and 8 ½" hole drilled to 3442 m. The mud weight was increased to 9.4 ppg, prompted by a gas increase (770 units) at 2928 m. Periodic back-reaming of tight hole was required in the newly drilled hole section when pulling out for a new bit at 3442 m.

The hole was drilled to an eventual TD of 3545 m with a motor and a new bit. Although the hole was well circulated at TD, no wiper trip was made, and no sweeps pumped prior to pulling out to run wireline logs. Some back-reaming was required in the hole drilled on the previous bit run.

The first suite of wireline logs were run for 3 days prior to a wiper trip being made. The logs never got below 3419 m, the hang up being attributed to a volcanics stringer. The remainder of the hole was in good condition and the caliper log indicated a practically gauge hole. By the time bottom was reached on the wiper trip, the hole had been uncirculated for 4 days. Considerable gas was circulated out while running in on the wiper trip. Only light washing was required to get past the hang up depth and there was no fill on bottom.

Following the wiper trip, the 6-5/8" liner was run. The liner hung up at 3458 m and despite attempts to wash down further was unable to reach programmed setting depth. It was decided to set the liner high. A cement job was successfully conducted to set the liner in place.

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance**
Mud Weight, ppg	9.1	9.4	9.15	9.45	No
Yield Point (lb/100 ft²)	20		23	51	Yes
Dial 6 rpm (lb/100 ft²)	-	-	4	10	N/A
Low Gravity Solids (% by vol)		6.0	3.3	5.2	Yes
API Filtrate (cc/30 min)		3.0	3.1	4.6	No
HTHP Filtrate (250° F) cc/30		10.0	12.2	14.8	No
MBT (ppb)	5.0	10.0	8.5	11.0	No
pH	8.5	9.5	8.6	9.4	Yes
Calcium (mg/l)		300	60	400	No
Residual Sulphites (mg/l)	100		10	180	No

Explanation of Non-Conformance

- The slightly high mud weight was recorded in the pits after the mud had been uncirculated, and had cooled down after 30 hours of tripping.
- As on the two Yolla wells, the API and HTHP filtrate loss exceeded the programmed specification for the entire interval. As stated elsewhere in this recap, and on that of the Yolla wells, these targets are probably not achievable with this mud system as formulated. Additions of Drispac (primarily Superlo) and Soltex were made directly to the active system to attempt to reduce the fluid loss to the requested <3.0 cc API and <10.0 cc HTHP. These levels were never achieved.
- The slightly elevated MBT was recorded shortly after commencing to drill this interval, and reflected the higher MBT values which were allowed in the 12 ¼" interval. Rather than dilute with new mud, this section was commenced with used mud that was centrifuged to reduce the mud weight. This does not remove colloidal solids.
- The high Calcium reading was a result of drilling cement. Considerable soda ash treatment was required to control Ca+ at the requested <300 mg/l. After treatment with soda ash, lower calcium levels were maintained by controlling the pH in the higher end of the permissible range.
- The low residual sulphites were a result of not adding the oxygen scavenger until the casing had been drilled out.

Maintenance

- Active mud from the previous section was centrifuged to reduce the mud weight from 9.5 ppg to 9.2 ppg for the beginning of the 8 ½" hole.
- The active surface mud was pre-treated with 0.5 ppb sodium bicarbonate prior to drilling cement, as was the mud circulated out of the hole. No citric acid treatments were required.
- No new premix was mixed prior to commencement of the 8 ½" interval as there was 833 bbls of premix remaining from the 12 ¼" interval. This premix was treated with 0.5 ppb PHPA.
- All shakers were dressed with 200 mesh screens. Damaged 200 mesh shaker screens were replaced were with new ones, and repairable ones patched.
- An additional 523 bbls of used mud was salvaged from the 12 ¼" interval and kept in reserve. Some of this mud was used for maintaining volume in the active system.
- After cleaning out the rat hole and drilling 3 m of new formation to 2431 m, an FIT was carried out to an EMW of 12.5 ppg.
- Soda Ash was added to the active system to reduce the calcium content which had increased after drilling the cement.
- Once cement had been drilled, additional PHPA was added to the active system to increase PHPA content back to specification.
- New premix was bled into the active system to maintain volume and mud properties. Additions to the basic premix makeup were made based on the requirements of the active system as determined by regular mud checks.
- The centrifuge was run continuously while drilling to control mud weight. See Solids Control section for a detailed breakdown the centrifuge performance.
- BARACOR 129 was added as required to maintain a residual sulphites level of >100 mg/l.
- Continual treatments of Drispac Superlo and Soltex Potassium were required in attempting to reduce the fluid loss to the programmed range. This did not prove to be achievable, but attempts were continued to achieve the desired specification. The HTHP fluid loss followed a similar trend as that of the API.
- The addition of barite to the active system in response to increasing gas readings at approximately 2928 m had a significant effect in reducing the fluid loss.
- The active mud weight was partially increased from 9.2 to 9.3 ppg by bleeding in 9.5 ppg mud remaining from the 12 ¼" interval. When the mud weight had to be further increased to 9.4 ppg, barite was used.

- Premix additions were made primarily to maintain volume, and to a lesser extent to aid in controlling the mud weight. When necessary, the basic premix was treated with additional chemicals based on the results of mud checks carried out on the active system.
- Additional PHPA treatments, over and above the programmed concentrations, were made based on deterioration of cuttings quality.
- The combination of increasing temperature, continual running of the centrifuge and extended periods of degasser operation all contributed to a significant increase in the use of BARACOR 129 oxygen scavenger as compared to higher up the hole.
- As the bottom hole temperature (BHT) reached 80° C, seawater additions were made to counteract the affects of dehydration, which was primarily elevated high end rheology. These additions were made directly to the active pits.

Solids Control Equipment

- For the commencement of the 8 ½" hole interval, the 4 Derrick FLC 415 shakers were all dressed with 200 mesh screens. 265 mesh screens were fitted to the mud cleaner shaker, which was primarily used as an extra shaker when required.
- Initially, only 4 new replacement screens of the above size were required, the remainder being previously used screens that had been repaired. New screen usage was minimized by frequent scrutiny of screens on connections and prompt replacement and repair. This procedure was followed until it was determined that the screens had too many patches to be any longer effective. The screens use to replace the screens being repaired were, in most cases, of the same mesh size.
- The shakers performed well, and by following the repair procedures as above, the stock of excess used screens was further reduced, with primarily only used 80 to 150 mesh screens remaining at the conclusion of the Origin drilling program.
- The Derrick DE-1000 FHD centrifuge again proved to be very effective, resulting in low dilution rates. There was no problem in controlling the mud weight, with parameters being adjusted based on the weight of the returning mud. As a result, the desilter was not utilized at all during this interval.
- The centrifuge was used continually when drilling and circulating. Mud feed weight averaged 9.3 ppg, centrate 9.0 ppg and the cake weight 16.1 ppg. Average operating parameters were: Feed Rate = 20 gpm, RPM = 2685, PSI = 1035.
- Once again, the centrifuge proved to be very effective and dilution rates were kept to a minimum.
- On one occasion, the Derrick Mud Cleaner was operated for evaluation purposes. In Desander mode it worked well with an acceptable operating pressure and with adequate discharge weight and rate. In Desilter mode, however, virtually no pressure was available at the cone manifold.

6.2 EVALUATION

Comments

The 8 ½" hole interval was drilled with basically the same Seawater/Drispac/Soltex/PHPA mud used for the 12 ¼" interval. The concentration of fluid loss additives was increased, but the required API and HTHP fluid loss requirements were never achieved. Once again, the use of the centrifuge made controlling the mud weight easy, and dilution volume was lower than programmed. The use of two equalized mud pits, and consequently large surface volume, probably also contributed to the lower mud weights and solids concentration. Another factor was the dumping and cleaning of the sand trap and all 4 settling tanks while waiting on cement. Little problem was encountered in achieving adequate low end rheology readings, although the high end rheology was elevated on several occasions, particularly as the mud got hotter. This was attributed to both dehydration and an excess of fluid loss control additives.
An extensive seven day wireline logging program was carried out. On the first run, tools hung up at 3417 m (127 m off bottom). The second run got down to 3419 m, and the MDT run to 3417 m. These depths coincided with a volcanic stringer. The remainder of the hole was close to gauge. A wiper trip mid-way through the logging program proved the hole to be in good condition.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem Downhole losses of 1 bph during trips and when slipping and cutting line. Suspected that these losses would have been somewhat higher when drilling and circulating. All flow checks during trips indicated that the well was static. The downhole loss rate was somewhat less while logging.
   Cause Seepage losses in the Eastern Coal Measures.
   Action Losses were monitored. No specific treatments were made.

2) Problem Wireline logs at TD hung up approximately 127 m off bottom.
   Cause This coincided with a volcanics stringer, although no wiper trip was made through the new hole following the final bit run, nor was a sweep pumped prior to commencement of the wireline logging program.
   Action Logged up from where tools hung up.

Drilling Fluid

1) Problem As on both the Yolla wells, both API, and more so, the HTHP fluid losses were higher than programmed.
   Cause Suspect that there was not enough variation in particle sizes amongst the specified fluid loss additives.
   Action Increased programmed concentration of fluid loss additives, but with little improvement. One of the most noticeable improvements in the fluid loss occurred immediately after adding barite to increase the mud weight.

2) Problem High BARACOR 129 oxygen scavenger consumption.
   Cause Combination of increasing downhole temperature, and continual running of the centrifuge, plus operating the degasser for extended periods.
   Action Attempted to maintain the programmed residual sulphites at >100 mg/l, through increased treatment.

Solids Control and Mud Mixing Equipment

1) Problem None, other than occasional difficulties mixing bulk material as described on Yolla-4 and Yolla-3 recaps.
   Cause
   Action

6.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions
- None.

Drilling Fluid
- None

Solids Control and Mud Mixing Equipment
- Modify bulk mixing system to avoid blockages.
- Consider keeping the centrifuge onboard for use on both the WBM and OBM Esso wells.

7. CLEAN-UP & TESTING INTERVAL

7.1 SUMMARY

After setting the 6-5/8" liner, a 5-3/4" bit and 6-5/8" x 9-5/8" scraper assembly was run to clean through the liner hanger and scrape any residual cement from the casing. A 50 bbl hi-vis pill was pumped and the well displaced to seawater. The clean-up pills were pumped and the well circulated with seawater until acceptable turbidity readings were obtained at surface.

The well was then displaced to filtered 8.9 ppg NaCl brine. A TCP gun and tail pipe assembly was run on wireline and packer set at 3120 m to isolate the bottom test zone. After rigging down wireline, the DST string was made up and RIH on 2-7/8" tubing. Two zones were perforated and tested.

The well was killed by bull-heading 8.9 ppg brine, and the excess gas circulated out. A sized salt pill was spotted across the perforations and the tubing string pulled out. A cement stinger was run in hole to place cement plugs and the well suspended, leaving inhibited brine in the hole.

Completion Fluids Filtered 8.9 ppg NaCl Brine, Saturated NaCl brine/Sized Salt pill, Inhibited NaCl brine

Properties	**Programmed**		**Actual (Typical)**		
	Min	**Max**	**Min**	**Max**	**Conformance**
Brine Weight (ppg)		8.9		8.9	Yes
Saturated Salt Weight		10.0		10.0	Yes
Filtered Brine Ntu			5	7	n/a

Explanation of Non-Conformance

- Brine properties conformed to programmed specification.

Maintenance

- Prior to mixing for completion operations the brine pits were cleaned and mixing lines thoroughly flushed.
- The following sweeps were prepared for cleaning up the well:
    1. 80 bbls of 3% CON DET
    2. 200 bbls of caustic wash
    3. 180 bbls of hi-vis polymer sweep
    4. 100 bbls of 5% BARAKLEAN FL
- 1740 bbls of 8.9 ppg NaCl brine was prepared and filtered in advance of clean up operations.
- A 6-5/8" and 9-5/8" scraper assembly was run, the packer setting intervals scraped & PBR polished. A 50 bbl hi-vis sweep followed by two hole volumes of seawater was pumped. All returns to surface were dumped.
- The well clean-up sweeps were pumped in the following order; 50 bbls hi-vis, 60 bbls CONDET detergent, 100 bbls caustic wash, seawater spacer, 90 bbls BARAKLEAN FL and 50 bbls hi-vis. The sweeps were followed by seawater and returns were monitored for NTU readings.
- While circulating clean-up sweeps/seawater, surface/trip tanks, flow lines, desilter/degasser and choke/kill lines were all flushed with seawater.
- Once seawater turbidity readings were stable at <80 NTU, 100 bbls of inhibited brine was spotted inside the liner.
- The casing was then displaced to 8.9ppg NaCl brine.

- Prior to killing and suspending the well, additional brine volume was built. This included 220 bbls of saturated NaCl brine, 90 bbls of which was used to mix a sized salt pill.
- The sized salt pill was mixed as follows:
    1. N-VIS P PLUS 6 ppb
    2. BARABUF 3 ppb
    3. Ultrasal 20E 35 ppb
- (The sized salt was actually a combination of Ultrasal 20E and BARAPLUG 20.)
- Initially, the plan was to bullhead the string volume, then bullhead with a 40 bbl sized salt pill in the string. Only 23 bbls of brine were pumped before maximum pressure of 2500 psi was achieved. Thus, the first sized salt pill was not required.
- A 20 bbl sized salt pill was spotted across the perforations prior to pulling out tubing.
- After setting cement plugs, the inhibited brine was prepared as follows and the well displaced to inhibited brine above each cement plug in turn.

    0.5 ppb caustic soda
    0.25 ppb BARACIDE
    0.5 % BARACOR 100 corrosion inhibitor
    1.0 ppb BARACOR 129 oxygen scavenger

7.2 EVALUATION

Comments

The filtered brine as used for this DST was successfully employed as programmed. Filtration of the brine was able to proceed as planned to produce very low turbidity readings. Initial turbidity readings prior to filtering the saturated brine were 55 - 70 as compared to 120+ on Yolla-4, and cartridge usage was also significantly lower. As on Yolla-3, this can probably be attributed to more thorough pit cleaning and line flushing on this well.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem None
   Cause
   Action

Completion Brine

1) Problem None
   Cause
   Action

Solids Control and Mud Mixing Equipment

1) Problem Pit cleaning
   Cause Personnel not certified for confined space entry.
   Action Supervisors employed to clean mud pits prior to mixing and filtering brine.

7.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- None

Completion Brine

- None

Solids Control and Mud Mixing Equipment.

- Attempt to train more personnel in confined space procedures.

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Summary

Interval # 1	**Max Bit Size: 36.000 in**	**Hole Size Avg/Max**	**22.491 / 36.000 in**

Interval Start Date		10/28/2004	Planned Cost	$	0.00
Interval End Date		10/30/2004	Total Interval Cost	$	27,755.90
Interval TD Date		10/30/2004	Program Variance	$	27,755.90
Drilling Days		1.00	Other material charges	$	0.00
Rotating/Drilling Hours		7.25 / 7.00	Total Fluids Cost	$	9,477.90
Interval Top MD/TVD	m	0.0 / 0.0	Total Charges Cost	$	18,278.00
Interval End MD/TVD	m	218.0 / 218.0	Total Cementing Cost	$	0.00
Footage	m	218.0	Fluid Cost Per Vol Unit	$/bbl	3.32
Average ROP	m/hr	31.1	Fluid Cost/Hole Drilled	$/m	43.48
Max Hole Angle	degrees	0.00	Fluid Cost/Vol Drilled	$/bbl	26.97
Casing Size	in	0.000	Fluid Built	bbl	2,856.3
Casing Shoe MD	m	0.0	Total Additions/Vol Drilled	bbl/bbl	8.13
Casing Length	m	0.0	Total Additions/Hole Drilled	bbl/m	13.10
Bottom Hole Temp			Fluid Loss/Vol Drilled	bbl/bbl	4.62
Max Fluid Density	ppg	8.80	Fluid Loss/Hole Drilled	bbl/m	7.45

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Viscosifier/Suspension Agent				
bentonite	Gel	100 lb bulk	636.000	8,579.64
			Total	**$ 8,579.64**
Alkalinity Control				
caustic soda	Gel	25 kg pail	17.000	756.16
soda ash	Gel	25 kg bag	10.000	142.10
			Total	**$ 898.26**

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Summary

Interval #	**2**	**Max Bit Size: 26.000 in**	**Hole Size Avg/Max**	**16.000 / 26.000 in**

Interval Start Date		10/31/2004	Planned Cost	$	0.00
Interval End Date		11/03/2004	Total Interval Cost	$	38,204.00
Interval TD Date		11/02/2004	Program Variance	$	38,204.00
Drilling Days		1.00	Other material charges	$	1,258.04
Rotating/Drilling Hours		16.00 / 14.75	Total Fluids Cost	$	31,321.96
Interval Top MD/TVD	m	218.0 / 218.0	Total Charges Cost	$	5,624.00
Interval End MD/TVD	m	666.0 / 666.0	Total Cementing Cost	$	1,258.04
Footage	m	448.0	Fluid Cost Per Vol Unit	$/bbl	5.80
Average ROP	m/hr	30.4	Fluid Cost/Hole Drilled	$/m	69.92
Max Hole Angle	degrees	0.00	Fluid Cost/Vol Drilled	$/bbl	85.69
Casing Size	in	20.000	Fluid Built	bbl	3,708.0
Casing Shoe MD	m	215.0	Total Additions/Vol Drilled	bbl/bbl	14.78
Casing Length	m	215.0	Total Additions/Hole Drilled	bbl/m	12.06
Bottom Hole Temp			Fluid Loss/Vol Drilled	bbl/bbl	0.00
Max Fluid Density	ppg	8.75	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
Viscosifier/Suspension Agent				
AQUAGEL GOLD SEAL (AQUA GOLD SEAL	No Fluid	25 kg bag	48.000	987.84
bentonite	Gel	100 lb bulk	1,626.000	21,934.74
BAROLIFT	Gel	15 lb box	4.000	880.00
			Total	**$ 23,802.58**
Lost Circulation/Bridging Agent				
BAROFIBRE	Gel	25 lb bag	80.000	3,572.00
Kwikseal Medium	Gel	40 lb bag	40.000	1,246.40
Circal Y	Gel	1200 kg bag	4.000	2,060.24
			Total	**$ 6,878.64**
Weighting Material				
calcium chloride	No Fluid	25 kg bag	28.000	270.20
			Total	**$ 270.20**
Alkalinity Control				
caustic soda	Gel	25 kg pail	1.000	44.48
soda ash	Gel	25 kg bag	12.000	170.52
			Total	**$ 215.00**
Shale Control				
EZ-MUD	Gel	25 kg pail	5.000	263.35
potassium chloride (Potassium Chloride Bulk)	Gel	1000 kg bulk	3.000	1,150.23
			Total	**$ 1,413.58**

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Summary

Interval # 3	**Max Bit Size: 16.000 in**	**Hole Size Avg/Max**	**12.250 / 16.000 in**

Interval Start Date		11/04/2004	Planned Cost	$	0.00
Interval End Date		11/12/2004	Total Interval Cost	$	110,977.80
Interval TD Date		11/10/2004	Program Variance	$	110,977.80
Drilling Days		5.00	Other material charges	$	1,173.06
Rotating/Drilling Hours		74.25 / 69.50	Total Fluids Cost	$	97,150.74
Interval Top MD/TVD	m	666.0 / 666.0	Total Charges Cost	$	12,654.00
Interval End MD/TVD	m	2,428.0 / 2,427.9	Total Cementing Cost	$	1,173.06
Footage	m	1,762.0	Fluid Cost Per Vol Unit	$/bbl	15.75
Average ROP	m/hr	25.4	Fluid Cost/Hole Drilled	$/m	55.14
Max Hole Angle	degrees	0.73	Fluid Cost/Vol Drilled	$/bbl	115.28
Casing Size	in	9.625	Fluid Built	bbl	5,213.5
Casing Shoe MD	m	2,420.0	Total Additions/Vol Drilled	bbl/bbl	7.32
Casing Length	m	2,420.0	Total Additions/Hole Drilled	bbl/m	3.50
Bottom Hole Temp			Fluid Loss/Vol Drilled	bbl/bbl	2.72
Max Fluid Density	ppg	9.60	Fluid Loss/Hole Drilled	bbl/m	1.30

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Viscosifier/Suspension Agent				
AQUAGEL GOLD SEAL (AQUA GOLD SEAL	No Fluid	25 kg bag	57.000	1,173.06
Flowzan	Flowzan/Drispac	25 kg bag	46.000	11,250.22
BAROLIFT	Flowzan/Drispac	15 lb box	2.000	440.00
			Total	**$ 12,863.28**
Defoamer				
BARA-DEFOAM W300	Flowzan/Drispac	25 l can	1.000	59.94
			Total	**$ 59.94**
Weighting Material				
barite	Flowzan/Drispac	100 lb bulk	858.000	10,845.12
			Total	**$ 10,845.12**
Bactericides				
Baracide	Flowzan/Drispac	25 kg can	2.000	553.44
			Total	**$ 553.44**
Corrosion Inhibitor				
BARACOR 129	Flowzan/Drispac	25 kg can	46.000	2,211.22
Ammonium Bisulphite	Flowzan/Drispac	260 kg drum	2.000	579.88
			Total	**$ 2,791.10**
Alkalinity Control				
caustic soda	Flowzan/Drispac	25 kg pail	50.000	2,224.00
soda ash	Flowzan/Drispac	25 kg bag	48.000	682.08
sodium bicarbonate	Flowzan/Drispac	25 kg bag	11.000	136.18
			Total	**$ 3,042.26**
Thinner/Deflocculant				
Desco CF	Flowzan/Drispac	25 lb bag	12.000	379.20
			Total	**$ 379.20**
Filtration Control				
Drispac Superlo	Flowzan/Drispac	50 lb bag	234.000	22,084.92
Drispac R	Flowzan/Drispac	50 lb bag	167.000	15,761.46

Interval Summary

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

			Total	**$ 37,846.38**
Shale Control				
EZ-MUD	Flowzan/Drispac	25 kg pail	45.000	2,370.15
EZ-MUD DP	Flowzan/Drispac	50 lb bag	18.000	1,480.14
Soltex Potassium	Flowzan/Drispac	50 lb bag	212.000	12,448.64
Soltex	Flowzan/Drispac	50 lb bag	303.000	28,872.87
			Total	**$ 45,171.80**

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Summary

Interval # 4	**Max Bit Size: 12.250 in**	**Hole Size Avg/Max**	**8.500 / 12.250 in**

Interval Start Date		11/13/2004	Planned Cost	$	0.00
Interval End Date		12/03/2004	Total Interval Cost	$	76,527.14
Interval TD Date		11/28/2004	Program Variance	$	76,527.14
Drilling Days		9.00	Other material charges	$	244.57
Rotating/Drilling Hours		123.00 / 114.00	Total Fluids Cost	$	46,756.57
Interval Top MD/TVD	m	2,428.0 / 2,427.9	Total Charges Cost	$	29,526.00
Interval End MD/TVD	m	3,545.0 / 3,544.9	Total Cementing Cost	$	0.00
Footage	m	1,117.0	Fluid Cost Per Vol Unit	$/bbl	13.01
Average ROP	m/hr	9.6	Fluid Cost/Hole Drilled	$/m	41.86
Max Hole Angle	degrees	0.00	Fluid Cost/Vol Drilled	$/bbl	181.78
Casing Size	in	9.625	Fluid Built	bbl	350.9
Casing Shoe MD	m	2,420.0	Total Additions/Vol Drilled	bbl/bbl	13.97
Casing Length	m	2,420.0	Total Additions/Hole Drilled	bbl/m	3.22
Bottom Hole Temp	Deg C	84	Fluid Loss/Vol Drilled	bbl/bbl	5.05
Max Fluid Density	ppg	9.55	Fluid Loss/Hole Drilled	bbl/m	1.16

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Defoamer				
BARA-DEFOAM W300	Flowzan/Drispac	25 l can	1.000	59.94
			Total	**$ 59.94**
Weighting Material				
barite	Flowzan/Drispac	100 lb bulk	198.000	2,502.72
			Total	**$ 2,502.72**
Bactericides				
Baracide	Flowzan/Drispac	25 kg can	10.000	2,767.20
			Total	**$ 2,767.20**
Corrosion Inhibitor				
BARACOR 129	Flowzan/Drispac	25 kg can	63.000	3,028.41
			Total	**$ 3,028.41**
Alkalinity Control				
caustic soda	Flowzan/Drispac	25 kg pail	60.000	2,668.80
soda ash	Flowzan/Drispac	25 kg bag	13.000	184.73
sodium bicarbonate	Flowzan/Drispac	25 kg bag	9.000	111.42
			Total	**$ 2,964.95**
Filtration Control				
Drispac Superlo	Flowzan/Drispac	50 lb bag	60.000	5,662.80
Drispac R	Flowzan/Drispac	50 lb bag	20.000	1,887.60
			Total	**$ 7,550.40**
Shale Control				
EZ-MUD DP	Flowzan/Drispac	50 lb bag	22.000	1,809.06
phpa	Flowzan/Drispac	25 kg bag	17.000	1,537.65
Soltex Potassium	Flowzan/Drispac	50 lb bag	130.000	7,633.60
Soltex	Flowzan/Drispac	50 lb bag	15.000	1,429.35
			Total	**$ 12,409.66**
Viscosifier/Suspension Agent				
Flowzan	Flowzan/Drispac	25 kg bag	1.000	244.57

Interval Summary

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Flowzan	No Fluid	25 kg bag	1.000	244.57
			Total	**$ 489.14**

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Summary

Interval # 5	**Max Bit Size: 8.500 in**	**Hole Size Avg/Max**	**0.000 / 0.000 in**

Interval Start Date		12/04/2004	Planned Cost	$	0.00
Interval End Date		12/22/2004	Total Interval Cost	$	47,179.47
Interval TD Date			Program Variance	$	47,179.47
Drilling Days		0.00	Other material charges	$	893.19
Rotating/Drilling Hours		0.00 / 0.00	Total Fluids Cost	$	30,117.28
Interval Top MD/TVD	m	3,545.0 / 3,544.9	Total Charges Cost	$	16,169.00
Interval End MD/TVD	m	0.0 / 0.0	Total Cementing Cost	$	0.00
Footage	m	0.0	Fluid Cost Per Vol Unit	$/bbl	5.50
Average ROP	m/hr	0.0	Fluid Cost/Hole Drilled	$/m	0.00
Max Hole Angle	degrees	0.73	Fluid Cost/Vol Drilled	$/bbl	0.00
Casing Size	in	0.000	Fluid Built	bbl	4,079.5
Casing Shoe MD	m	0.0	Total Additions/Vol Drilled	bbl/bbl	0.00
Casing Length	m	0.0	Total Additions/Hole Drilled	bbl/m	0.00
Bottom Hole Temp			Fluid Loss/Vol Drilled	bbl/bbl	0.00
Max Fluid Density	ppg	9.40	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
Casing Wash				
BARAKLEAN FL	Seawater	55 gal drum	4.000	4,336.96
			Total	**$ 4,336.96**
Defoamer				
BARA-DEFOAM W300	No Fluid	25 l can	1.000	59.94
			Total	**$ 59.94**
Alkalinity Control				
BARABUF	Sodium Chloride	50 lb bag	6.000	123.12
caustic soda	No Fluid	25 kg pail	1.000	44.48
caustic soda	Seawater	25 kg pail	14.000	622.72
caustic soda	Sodium Chloride	25 kg pail	10.000	444.80
			Total	**$ 1,235.12**
Corrosion Inhibitor				
BARACOR 100	Sodium Chloride	208 l drum	2.000	1,003.06
BARAFILM	No Fluid	55 gal drum	1.000	415.91
BARACOR 129	No Fluid	25 kg can	2.000	96.14
BARACOR 129	Sodium Chloride	25 kg can	14.000	672.98
			Total	**$ 2,188.09**
Bactericides				
Baracide	No Fluid	25 kg can	1.000	276.72
Baracide	Sodium Chloride	25 kg can	4.000	1,106.88
			Total	**$ 1,383.60**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	Sodium Chloride	25 kg bag	4.000	850.32
Flowzan	Seawater	25 kg bag	7.000	1,711.99
Flowzan	Sodium Chloride	25 kg bag	3.000	733.71
N-VIS P PLUS	Sodium Chloride	50 lb bag	10.000	1,825.00
			Total	**$ 5,121.02**
Weighting Material				

Interval Summary

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

salt	Sodium Chloride	1200 kg bulk	45.000	14,728.50
			Total	**$ 14,728.50**
Lost Circulation/Bridging Agent				
BARAPLUG 20	Sodium Chloride	50 lb bag	12.000	363.36
			Total	**$ 363.36**
Detergent/Surfactanct				
CON DET E	Seawater	208 l drum	2.000	441.88
			Total	**$ 441.88**
Filtration Control				
UltraSal 20E	Sodium Chloride	50 lb bag	48.000	1,152.00
			Total	**$ 1,152.00**

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Inventory Report

Interval # 01	**From Date 10/28/2004**	**Top of Interval 0.0 m**
Max. Hole Size / Bit Size 36.000 / 36.000 in	**To Date 10/30/2004**	**Bottom of Interval 218.0 m**

Product Name	Units	Starting	Received	Used	Returned	Ending	Weight lb
Ammonium Bisulphite	260 kg drum		2.0			2.0	1,146.40
AQUAGEL GOLD SEAL (AQUA GOLD SEAL)	25 kg bag		151.0			151.0	8,322.45
BARABUF	50 lb bag		10.0			10.0	500.00
Baracide	25 kg can		3.0			3.0	165.35
BARACOR 100	208 l drum		2.0			2.0	916.52
BARACOR 129	25 kg can		66.0			66.0	3,637.63
BARA-DEFOAM W300	25 l can		13.0			13.0	628.68
BARAFILM	55 gal drum		1.0			1.0	422.00
BARAZAN D PLUS	25 kg bag		80.0			80.0	4,409.25
barite	100 lb bulk		1,368.000			1,368.000	136,800.00
BAROFIBRE	25 lb bag		80.0			80.0	2,000.00
BAROLIFT	15 lb box		6.0			6.0	90.00
bentonite	100 lb bulk		1,896.000	636.000		1,260.000	126,000.00
calcium chloride	25 kg bag		41.0			41.0	2,259.74
caustic soda	25 kg pail		81.0	17.0		64.0	3,527.40
Circal 60/16	1200 kg bag		4.0			4.0	10,582.19
Circal Y	1200 kg bag		4.0			4.0	10,582.19
citric acid	25 kg bag		36.0			36.0	1,984.16
Desco CF	25 lb bag		55.0			55.0	1,375.00
Drispac R	50 lb bag		167.0			167.0	8,350.00
Drispac Superlo	50 lb bag		134.0			134.0	6,700.00
EZ SPOT	208 l drum		4.0			4.0	4,216.00
Flowzan	25 kg bag		95.0			95.0	5,235.98
guar gum	25 kg bag		52.0			52.0	2,866.01
Kwikseal Coarse	40 lb bag		20.0			20.0	800.00
Kwikseal Medium	40 lb bag		40.0			40.0	1,600.00
lime	20 kg bag		80.0			80.0	3,527.40
NO-SULF	17 kg pail		57.0			57.0	2,136.28
N-VIS P PLUS	50 lb bag		49.0			49.0	2,450.00
PETROFREE ESTER	208 l drum		24.0			24.0	9,458.51
phpa	25 kg bag		61.0			61.0	3,362.05
potassium chloride (Potassium Chloride Bulk)	1000 kg bulk		11.000			11.000	24,250.85
salt	1200 kg bulk		5.000			5.000	13,227.74
sapp	25 kg bag		40.0			40.0	2,204.62
soda ash	25 kg bag		70.0	10.0		60.0	3,306.93
sodium bicarbonate	25 kg bag		16.0			16.0	881.85
Soltex	50 lb bag		80.0			80.0	4,000.00
Soltex Potassium	50 lb bag		142.0			142.0	7,100.00
					Total Weight of Products in Stock lb		**421,023.15**
					Total Weight of Products in Stock, Metric Tons		**190.97**

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Inventory Report

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Inventory Report

Interval # 02	**From Date**	**10/31/2004**		**Top of Interval**		**218.0 m**	
Max. Hole Size / Bit Size 36.000 / 36.000 in	**To Date**	**11/03/2004**		**Bottom of Interval**		**666.0 m**	
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**
Ammonium Bisulphite	260 kg drum	2.0				2.0	1,146.40
AQUAGEL GOLD SEAL (AQUA GOLD SEAL)	25 kg bag	151.0		48.0		103.0	5,676.90
BARABUF	50 lb bag	10.0				10.0	500.00
Baracide	25 kg can	3.0	17.0			20.0	1,102.31
BARACOR 100	208 l drum	2.0				2.0	916.52
BARACOR 129	25 kg can	66.0				66.0	3,637.63
BARA-DEFOAM W300	25 l can	13.0				13.0	628.68
BARAFILM	55 gal drum	1.0				1.0	422.00
BARAZAN D PLUS	25 kg bag	80.0				80.0	4,409.25
barite	100 lb bulk	1,368.000				1,368.000	136,800.00
BAROFIBRE	25 lb bag	80.0		80.0			
BAROLIFT	15 lb box	6.0		4.0		2.0	30.00
bentonite	100 lb bulk	1,260.000	595.000	1,626.000		229.000	22,900.00
calcium chloride	25 kg bag	41.0		28.0		13.0	716.50
caustic soda	25 kg pail	64.0	64.0	1.0		127.0	6,999.68
Circal 60/16	1200 kg bag	4.0				4.0	10,582.19
Circal Y	1200 kg bag	4.0		4.0			
citric acid	25 kg bag	36.0				36.0	1,984.16
Desco CF	25 lb bag	55.0				55.0	1,375.00
Drispac R	50 lb bag	167.0	160.0			327.0	16,350.00
Drispac Superlo	50 lb bag	134.0	160.0			294.0	14,700.00
EZ SPOT	208 l drum	4.0				4.0	4,216.00
EZ-MUD	25 kg pail		50.0	5.0		45.0	2,480.20
EZ-MUD DP	50 lb bag		40.0			40.0	2,000.00
Flowzan	25 kg bag	95.0				95.0	5,235.98
guar gum	25 kg bag	52.0				52.0	2,866.01
Kwikseal Coarse	40 lb bag	20.0				20.0	800.00
Kwikseal Medium	40 lb bag	40.0		40.0			
lime	20 kg bag	80.0				80.0	3,527.40
NO-SULF	17 kg pail	57.0				57.0	2,136.28
N-VIS P PLUS	50 lb bag	49.0				49.0	2,450.00
PETROFREE ESTER	208 l drum	24.0				24.0	9,458.51
phpa	25 kg bag	61.0				61.0	3,362.05
potassium chloride (Potassium Chloride Bulk)	1000 kg bulk	11.000		3.000		8.000	17,636.98
salt	1200 kg bulk	5.000				5.000	13,227.74
sapp	25 kg bag	40.0				40.0	2,204.62
soda ash	25 kg bag	60.0		12.0		48.0	2,645.55
sodium bicarbonate	25 kg bag	16.0				16.0	881.85
Soltex	50 lb bag	80.0	238.0			318.0	15,900.00
Soltex Potassium	50 lb bag	142.0	160.0			302.0	15,100.00

Well Name	Trefoil-1
Operator	Origin Energy Resources Ltd
Contractor	Ensco Australia Pty Ltd
Rig No	Ensco 102
Unit System	Esso

Interval Inventory Report

Total Weight of Products in Stock lb	337,006.37
Total Weight of Products in Stock, Metric Tons	152.86

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Inventory Report

Interval # 03	**From Date 11/04/2004**			**Top of Interval 666.0 m**			
Max. Hole Size / Bit Size 16.000 / 16.000 in	**To Date 11/12/2004**			**Bottom of Interval 2,428.0 m**			
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**
Ammonium Bisulphite	260 kg drum	2.0		2.0			
AQUAGEL GOLD SEAL (AQUA GOLD SEAL)	25 kg bag	103.0		57.0		46.0	2,535.32
BARABUF	50 lb bag	10.0				10.0	500.00
Baracide	25 kg can	20.0		2.0		18.0	992.08
BARACOR 100	208 l drum	2.0				2.0	916.52
BARACOR 129	25 kg can	66.0		46.0		20.0	1,102.31
BARA-DEFOAM W300	25 l can	13.0		1.0		12.0	580.32
BARAFILM	55 gal drum	1.0				1.0	422.00
BARAZAN D PLUS	25 kg bag	80.0				80.0	4,409.25
barite	100 lb bulk	1,368.000	1,298.000	858.000		1,808.000	180,800.00
BAROFIBRE	25 lb bag		100.0			100.0	2,500.00
BAROLIFT	15 lb box	2.0	6.0	2.0		6.0	90.00
bentonite	100 lb bulk	229.000				229.000	22,900.00
calcium chloride	25 kg bag	13.0	40.0			53.0	2,921.12
caustic soda	25 kg pail	127.0		50.0		77.0	4,243.90
Circal 60/16	1200 kg bag	4.0				4.0	10,582.19
Circal Y	1200 kg bag		2.0			2.0	5,291.09
citric acid	25 kg bag	36.0				36.0	1,984.16
Desco CF	25 lb bag	55.0		12.0		43.0	1,075.00
Drispac R	50 lb bag	327.0		167.0		160.0	8,000.00
Drispac Superlo	50 lb bag	294.0		234.0		60.0	3,000.00
EZ SPOT	208 l drum	4.0				4.0	4,216.00
EZ-MUD	25 kg pail	45.0		45.0			
EZ-MUD DP	50 lb bag	40.0		18.0		22.0	1,100.00
Flowzan	25 kg bag	95.0		46.0		49.0	2,700.66
guar gum	25 kg bag	52.0				52.0	2,866.01
Kwikseal Coarse	40 lb bag	20.0				20.0	800.00
Kwikseal Fine	40 lb bag		20.0			20.0	800.00
Kwikseal Medium	40 lb bag						
lime	20 kg bag	80.0				80.0	3,527.40
NO-SULF	17 kg pail	57.0				57.0	2,136.28
N-VIS P PLUS	50 lb bag	49.0				49.0	2,450.00
PAC-L	25 kg sack		90.0			90.0	4,960.40
PAC-R	25 kg bag		120.0			120.0	6,613.87
PETROFREE ESTER	208 l drum	24.0				24.0	9,458.51
phpa	25 kg bag	61.0				61.0	3,362.05
potassium chloride (Potassium Chloride Bulk)	1000 kg bulk	8.000				8.000	17,636.98
salt	1200 kg bulk	5.000				5.000	13,227.74
sapp	25 kg bag	40.0				40.0	2,204.62
soda ash	25 kg bag	48.0	40.0	48.0		40.0	2,204.62

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Inventory Report

sodium bicarbonate	25 kg bag	16.0	40.0	11.0		45.0	2,480.20
Soltex	50 lb bag	318.0		303.0		15.0	750.00
Soltex Potassium	50 lb bag	302.0	240.0	212.0		330.0	16,500.00
					Total Weight of Products in Stock lb		**354,840.59**
					Total Weight of Products in Stock, Metric Tons		**160.95**

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Inventory Report

Interval # 04	**From Date**	**11/13/2004**		**Top of Interval**		**2,428.0 m**	
Max. Hole Size / Bit Size 12.250 / 12.250 in	**To Date**	**12/03/2004**		**Bottom of Interval**		**3,545.0 m**	
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**
Ammonium Bisulphite	260 kg drum						
AQUAGEL GOLD SEAL (AQUA GOLD SEAL)	25 kg bag	46.0				46.0	2,535.32
BARABUF	50 lb bag	10.0	7.0			17.0	850.00
Baracide	25 kg can	18.0		10.0		8.0	440.92
BARACOR 100	208 l drum	2.0				2.0	916.52
BARACOR 129	25 kg can	20.0	96.0	63.0		53.0	2,921.12
BARA-DEFOAM W300	25 l can	12.0		1.0		11.0	531.96
BARAFILM	55 gal drum	1.0				1.0	422.00
BARAKLEAN FL	55 gal drum		4.0			4.0	1,669.67
BARAPLUG 20	50 lb bag		144.0			144.0	7,200.00
BARAZAN D PLUS	25 kg bag	80.0				80.0	4,409.25
barite	100 lb bulk	1,808.000	158.000	198.000		1,768.000	176,800.00
BAROFIBRE	25 lb bag	100.0				100.0	2,500.00
BAROLIFT	15 lb box	6.0				6.0	90.00
bentonite	100 lb bulk	229.000				229.000	22,900.00
calcium chloride	25 kg bag	53.0				53.0	2,921.12
caustic soda	25 kg pail	77.0	32.0	60.0		49.0	2,700.66
Circal 60/16	1200 kg bag	4.0				4.0	10,582.19
Circal Y	1200 kg bag	2.0				2.0	5,291.09
citric acid	25 kg bag	36.0				36.0	1,984.16
CON DET E	208 l drum		2.0			2.0	925.69
Desco CF	25 lb bag	43.0				43.0	1,075.00
Drispac R	50 lb bag	160.0		20.0		140.0	7,000.00
Drispac Superlo	50 lb bag	60.0		60.0			
EZ SPOT	208 l drum	4.0				4.0	4,216.00
EZ-MUD	25 kg pail						
EZ-MUD DP	50 lb bag	22.0		22.0			
Flowzan	25 kg bag	49.0		2.0		47.0	2,590.43
guar gum	25 kg bag	52.0				52.0	2,866.01
Kwikseal Coarse	40 lb bag	20.0				20.0	800.00
Kwikseal Fine	40 lb bag	20.0				20.0	800.00
Kwikseal Medium	40 lb bag						
lime	20 kg bag	80.0				80.0	3,527.40
NO-SULF	17 kg pail	57.0				57.0	2,136.28
N-VIS P PLUS	50 lb bag	49.0				49.0	2,450.00
PAC-L	25 kg sack	90.0				90.0	4,960.40
PAC-R	25 kg bag	120.0				120.0	6,613.87
PETROFREE ESTER	208 l drum	24.0				24.0	9,458.51
phpa	25 kg bag	61.0		17.0		44.0	2,425.08
potassium chloride (Potassium Chloride Bulk)	1000 kg bulk	8.000				8.000	17,636.98

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Inventory Report

salt	1200 kg bulk	5.000	40.000			45.000	119,049.62
sapp	25 kg bag	40.0				40.0	2,204.62
soda ash	25 kg bag	40.0	40.0	13.0		67.0	3,692.74
sodium bicarbonate	25 kg bag	45.0		9.0		36.0	1,984.16
Soltex	50 lb bag	15.0		15.0			
Soltex Potassium	50 lb bag	330.0		130.0		200.0	10,000.00
UltraSal 20E	50 lb bag		48.0			48.0	2,400.00
					Total Weight of Products in Stock lb		**456,478.78**
					Total Weight of Products in Stock, Metric Tons		**207.06**

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Inventory Report

Interval # 05	**From Date**	**12/04/2004**		**Top of Interval**		**3,545.0 m**	
Max. Hole Size / Bit Size	**To Date**	**12/22/2004**		**Bottom of Interval**		**0.0 m**	
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**
Ammonium Bisulphite	260 kg drum						
AQUAGEL GOLD SEAL (AQUA GOLD SEAL)	25 kg bag	46.0				46.0	2,535.32
BARABUF	50 lb bag	17.0		6.0		11.0	550.00
Baracide	25 kg can	8.0		5.0		3.0	165.35
BARACOR 100	208 l drum	2.0		2.0			
BARACOR 129	25 kg can	53.0		16.0		37.0	2,039.28
BARA-DEFOAM W300	25 l can	11.0		1.0		10.0	483.60
BARAFILM	55 gal drum	1.0		1.0			
BARAKLEAN FL	55 gal drum	4.0		4.0			
BARAPLUG 20	50 lb bag	144.0		12.0		132.0	6,600.00
BARAZAN D PLUS	25 kg bag	80.0		4.0		76.0	4,188.78
barite	100 lb bulk	1,768.000				1,768.000	176,800.00
BAROFIBRE	25 lb bag	100.0				100.0	2,500.00
BAROLIFT	15 lb box	6.0				6.0	90.00
bentonite	100 lb bulk	229.000				229.000	22,900.00
calcium chloride	25 kg bag	53.0				53.0	2,921.12
caustic soda	25 kg pail	49.0		25.0		24.0	1,322.77
Circal 60/16	1200 kg bag	4.0				4.0	10,582.19
Circal Y	1200 kg bag	2.0				2.0	5,291.09
citric acid	25 kg bag	36.0				36.0	1,984.16
CON DET E	208 l drum	2.0		2.0			
Desco CF	25 lb bag	43.0			43.0		
Drispac R	50 lb bag	140.0			140.0		
Drispac Superlo	50 lb bag						
EZ SPOT	208 l drum	4.0				4.0	4,216.00
EZ-MUD	25 kg pail						
EZ-MUD DP	50 lb bag						
Flowzan	25 kg bag	47.0		10.0	37.0		
guar gum	25 kg bag	52.0				52.0	2,866.01
Kwikseal Coarse	40 lb bag	20.0				20.0	800.00
Kwikseal Fine	40 lb bag	20.0				20.0	800.00
Kwikseal Medium	40 lb bag						
lime	20 kg bag	80.0				80.0	3,527.40
NO-SULF	17 kg pail	57.0				57.0	2,136.28
N-VIS P PLUS	50 lb bag	49.0		10.0		39.0	1,950.00
PAC-L	25 kg sack	90.0				90.0	4,960.40
PAC-R	25 kg bag	120.0				120.0	6,613.87
PETROFREE ESTER	208 l drum	24.0				24.0	9,458.51
phpa	25 kg bag	44.0				44.0	2,425.08
potassium chloride (Potassium Chloride Bulk)	1000 kg bulk	8.000				8.000	17,636.98

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Inventory Report

salt	1200 kg bulk	45.000		45.000			
sapp	25 kg bag	40.0				40.0	2,204.62
soda ash	25 kg bag	67.0				67.0	3,692.74
sodium bicarbonate	25 kg bag	36.0				36.0	1,984.16
Soltex	50 lb bag						
Soltex Potassium	50 lb bag	200.0			200.0		
UltraSal 20E	50 lb bag	48.0		48.0			
					Total Weight of Products in Stock lb		**306,225.71**
					Total Weight of Products in Stock, Metric Tons		**138.90**

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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
Interval # 01																				
Fluid Name: Hi-Vis Bentonite Sweeps																				
002	29/10/2004					2,781.8		73.2		2,855.0									2,855.0	2,855.0
003	30/10/2004	2,855.0						1.3		1.3			1,624.8			1,624.8	351.5		880.0	1,231.5
Cumulative Volume						2,781.8		74.5		2,856.3			1,624.8			1,624.8				

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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
Interval # 02																				
Fluid Name: Seawater																				
004	31/10/2004		462.4							462.4							462.4			462.4
005	1/11/2004	462.4											462.4			462.4				
Cumulative Volume			462.4							462.4			462.4			462.4				
Fluid Name: Hi-Vis Bentonite Sweeps																				
004	31/10/2004	1,231.5						33.1		33.1			384.6			384.6			880.0	880.0
005	1/11/2004	880.0				2,491.3		87.8		2,579.1							462.4		2,996.7	3,459.1
006	2/11/2004	3,459.1						12.8		12.8			1,624.3			1,624.3	791.6		1,056.0	1,847.6
007	3/11/2004	1,847.6				1,000.0		83.0		1,083.0			1,142.7			1,142.7	823.9		964.0	1,787.9
Cumulative Volume						3,491.3		216.7		3,708.0			3,151.6			3,151.6				

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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
Interval # 03																				
Fluid Name:		**Hi-Vis Bentonite Sweeps**																		
008	4/11/2004	1,787.9											1,045.3			1,045.3	340.6		402.0	742.6
010	6/11/2004	742.6											340.6			340.6			402.0	402.0
Cumulative Volume													1,385.9			1,385.9				
Fluid Name:		**Seawater/Drispac/Solte›**																		
008	4/11/2004					610.8		12.2		623.0									623.0	623.0
010	6/11/2004	623.0		267.9				1.6		269.5	26.3					26.3	302.2	538.0	26.0	866.2
011	7/11/2004	866.2		947.5				6.9		954.4	370.1					370.1	632.4	802.0	16.0	1,450.4
012	8/11/2004	1,450.4		1,157.6			7.5	4.0		1,169.1	824.9					824.9	922.7	856.0	16.0	1,794.7
013	9/11/2004	1,794.7		939.6			37.4	5.1		982.1	679.8		80.0			759.8	1,101.0	850.0	66.0	2,017.0
014	10/11/2004	2,017.0		1,199.0			13.5	1.1		1,213.6	230.6					230.6	1,101.0	652.0	122.0	1,875.0
015	11/11/2004	1,875.0		292.0				1.7		293.7	115.4					115.4	1,180.2	315.0	558.0	2,053.2
016	12/11/2004	2,053.2									5.2	41.2	0.0			46.4	595.0	452.0	959.8	2,006.8
Cumulative Volume				4,803.6		610.8	58.4	32.6		5,505.4	2,252.3	41.2	80.0			2,373.5				
Fluid Name:		**Premix**																		
008	4/11/2004					608.8		12.2		621.0									621.0	621.0
009	5/11/2004	621.0				1,169.5		29.5		1,199.0									1,820.0	1,820.0
010	6/11/2004	1,820.0				260.0		9.9		269.9				267.9		267.9			1,822.0	1,822.0
011	7/11/2004	1,822.0				1,170.0		22.5		1,192.5				947.5		947.5			2,067.0	2,067.0
012	8/11/2004	2,067.0				600.0		14.6		614.6				1,157.6		1,157.6			1,524.0	1,524.0
013	9/11/2004	1,524.0				600.0		14.6		614.6				939.6		939.6			1,199.0	1,199.0
014	10/11/2004	1,199.0												74.0		74.0			1,125.0	1,125.0
015	11/11/2004	1,125.0												292.0		292.0			833.0	833.0
Cumulative Volume						4,408.3		103.3		4,511.6				3,678.6		3,678.6				

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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
Interval # 04																				
Fluid Name:		**Hi-Vis Bentonite Sweeps**																		
025	21/11/2004	402.0												31.0		31.0			371.0	371.0
037A	3/12/2004	371.0											371.0			371.0				
Cumulative Volume													371.0	31.0		402.0				
Fluid Name:		**Seawater/Drispac/Solte›**																		
017	13/11/2004	2,006.8						0.5		0.5	14.5		150.0			164.5	595.0	468.0	779.8	1,842.8
018	14/11/2004	1,842.8									10.0					10.0	595.0	766.0	471.8	1,832.8
019	15/11/2004	1,832.8						4.8		4.8	62.5		70.1			132.6	534.1	438.0	733.0	1,705.1
020	16/11/2004	1,705.1		344.0				10.5		354.5	94.9		48.0			142.9	663.7	595.0	658.0	1,916.7
021	17/11/2004	1,916.7				30.0		0.1		30.1	74.3		27.0			101.3	665.6	550.0	630.0	1,845.6
022	18/11/2004	1,845.6		118.0				7.5		125.5	65.8		10.0			75.8	605.3	712.0	578.0	1,895.3
023	19/11/2004	1,895.3		122.0			12.0	6.5		140.5	131.9		5.6			137.5	670.2	797.0	431.0	1,898.2
024	20/11/2004	1,898.2		235.2		35.0		4.6		274.8	95.5		16.5			112.0	723.0	835.0	503.0	2,061.0
025	21/11/2004	2,061.0		31.0				1.3		32.3	93.0		39.2			132.2	731.1	860.0	370.0	1,961.1
026	22/11/2004	1,961.1									26.3	36.0	39.5	151.0		252.8	726.3	867.0	115.0	1,708.3
027	23/11/2004	1,708.3		257.0				0.8		257.8	52.7	36.0	33.8			122.5	747.6	976.0	120.0	1,843.6
028	24/11/2004	1,843.6										18.0	221.3			239.3	850.2	674.0	80.0	1,604.2
029	25/11/2004	1,604.2										24.0				24.0	850.2	655.0	75.0	1,580.2
030	26/11/2004	1,580.2										8.0				8.0	850.2	643.0	79.0	1,572.2
031	27/11/2004	1,572.2		5.0						5.0	19.4	10.0	9.0			38.4	777.9	683.0	78.0	1,538.9
032	28/11/2004	1,538.9						1.1		1.1	32.0	27.0	14.7			73.7	850.2	571.0	45.0	1,466.2
033	29/11/2004	1,466.2		54.0						54.0		8.0				8.0	850.2		662.0	1,512.2
034	30/11/2004	1,512.2										58.0				58.0	850.2	580.0	24.0	1,454.2
035	1/12/2004	1,454.2				48.0				48.0							850.2	628.0	24.0	1,502.2
036	2/12/2004	1,502.2					1.5	0.5		2.0	2.0		0.2			2.2	757.1	668.0	77.0	1,502.1
037A	3/12/2004	1,502.1											105.8			105.8	850.2	518.0	28.0	1,396.2
Cumulative Volume				1,166.2		113.0	13.5	38.2		1,330.9	774.8	225.0	790.7	151.0		1,941.5				

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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
Fluid Name:		**Premix**																		
019	15/11/2004	833.0						1.0		1.0									834.0	834.0
020	16/11/2004	834.0												344.0		344.0			490.0	490.0
021	17/11/2004	490.0											15.0			15.0			475.0	475.0
022	18/11/2004	475.0												118.0		118.0			357.0	357.0
023	19/11/2004	357.0												122.0		122.0			235.0	235.0
024	20/11/2004	235.0						0.3		0.3				235.2		235.2				
026	22/11/2004			151.0		57.3		7.7		216.0									216.0	216.0
027	23/11/2004	216.0				120.0				120.0				257.0		257.0			79.0	79.0
031	27/11/2004	79.0												5.0		5.0			74.0	74.0
033	29/11/2004	74.0											20.0	54.0		74.0				
Cumulative Volume				151.0		177.3		9.0		337.3			35.0	1,135.2		1,170.2				

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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
Interval # 05																				
Fluid Name: Seawater																				
040	6/12/2004					610.2				610.2							610.2			610.2
041	7/12/2004	610.2											610.2			610.2				
Cumulative Volume						610.2				610.2			610.2			610.2				
Fluid Name: Seawater/Drispac/Solte›																				
038	4/12/2004	1,396.2											222.7			222.7	687.6	486.0		1,173.6
040	6/12/2004	1,173.6											873.6			873.6			300.0	300.0
051	17/12/2004	300.0											300.0			300.0				
Cumulative Volume													1,396.3			1,396.3				
Fluid Name: 8.9 ppg NaCl Brine																				
038	4/12/2004				997.8		52.2	1,050.0											1,050.0	1,050.0
039	5/12/2004	1,050.0			655.2		34.8	690.0											1,740.0	1,740.0
040	6/12/2004	1,740.0					1.3	1.3											1,741.3	1,741.3
041	7/12/2004	1,741.3											273.7			273.7	687.6	110.0	670.0	1,467.6
042	8/12/2004	1,467.6											23.0			23.0	687.6	90.0	667.0	1,444.6
044	10/12/2004	1,444.6											5.0	543.0		548.0	687.6	170.0	39.0	896.6
048	14/12/2004	896.6		40.0	20.0			60.0									687.6		269.0	956.6
049	15/12/2004	956.6		941.8	280.0			1,221.8					198.8			198.8	687.6	270.0	1,022.0	1,979.6
050	16/12/2004	1,979.6		70.0	264.9		3.1	338.0									687.6	230.0	1,400.0	2,317.6
051	17/12/2004	2,317.6					1.3	1.3					187.7			187.7	591.2		1,540.0	2,131.2
052	18/12/2004	2,131.2											494.0			494.0	333.2		1,304.0	1,637.2
053	19/12/2004	1,637.2											271.2			271.2			1,366.0	1,366.0
054	20/12/2004	1,366.0					0.4	0.4					914.4			914.4			452.0	452.0
055	21/12/2004	452.0											117.0			117.0			335.0	335.0

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Chemical Concentration

Interval #	**01**	**From Report Date**	**10/28/2004**	**Top of Interval**	**0.0 m**
Max. Hole Size / Bit Size	**36.000 / 36.000 in**	**To Report Date**	**10/30/2004**	**Bottom of Interval**	**218.0 m**

Fluid Name: **Hi-Vis Bentonite Sweeps**

Material	Average ppb	Minimum ppb	Maximum ppb
bentonite	27.35	22.28	32.42
caustic soda	0.33	0.33	0.33
soda ash	0.19	0.19	0.19

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Chemical Concentration

Interval #	**02**	**From Report Date**	**10/31/2004**	**Top of Interval**	**218.0 m**
Max. Hole Size / Bit Size	**26.000 / 26.000 in**	**To Report Date**	**11/03/2004**	**Bottom of Interval**	**666.0 m**

Fluid Name: **Hi-Vis Bentonite Sweeps**

Material	Average ppb	Minimum ppb	Maximum ppb
BAROFIBRE	0.98	0.58	1.39
BAROLIFT	0.08	0.08	0.08
bentonite	71.85	33.54	165.74
caustic soda	0.19	0.08	0.32
Circal Y	6.04	1.53	10.56
EZ-MUD	0.14	0.06	0.22
Kwikseal Medium	0.91	0.23	1.60
potassium chloride	2.80	1.91	4.59
soda ash	0.30	0.13	0.74

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Chemical Concentration

Interval # 03		**From Report Date**	**11/04/2004**	**Top of Interval**	**666.0 m**
Max. Hole Size / Bit Size	**16.000 / 16.000 in**	**To Report Date**	**11/12/2004**	**Bottom of Interval**	**2,428.0 m**

Fluid Name: Hi-Vis Bentonite Sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
BAROFIBRE	1.39	1.39	1.39
BAROLIFT	0.08	0.08	0.08
bentonite	165.74	165.74	165.74
caustic soda	0.27	0.27	0.27
Circal Y	10.56	10.56	10.56
EZ-MUD	0.22	0.22	0.22
Kwikseal Medium	1.60	1.60	1.60
potassium chloride	4.59	4.59	4.59
soda ash	0.74	0.74	0.74

Fluid Name: Seawater/Drispac/Soltex

Material	Average ppb	Minimum ppb	Maximum ppb
Ammonium Bisulphite	0.34	0.18	0.64
Baracide	0.03	0.02	0.03
BARACOR 129	0.56	0.36	0.70
BARA-DEFOAM W300	0.01	0.01	0.01
barite	22.25	4.20	30.98
BAROLIFT	0.01	0.01	0.01
caustic soda	0.61	0.44	0.75
Desco CF	0.08	0.05	0.12
Drispac R	1.28	0.72	1.62
Drispac Superlo	2.14	1.93	2.23
EZ-MUD	0.55	0.42	0.60
EZ-MUD DP	0.17	0.13	0.20
Flowzan	0.54	0.47	0.64
soda ash	0.49	0.44	0.56
sodium bicarbonate	0.16	0.10	0.33
Soltex	3.74	2.77	4.94
Soltex Potassium	1.69	0.62	2.15

Fluid Name: Premix

Material	Average ppb	Minimum ppb	Maximum ppb
BARA-DEFOAM W300	0.01	0.01	0.02
Desco CF	0.07	0.04	0.12
Drispac R	1.56	0.72	1.84

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Chemical Concentration

Drispac Superlo	2.30	1.93	2.58
EZ-MUD DP	0.22	0.14	0.43
Flowzan	0.53	0.36	0.90
soda ash	0.46	0.44	0.53
Soltex	3.24	1.96	5.26
Soltex Potassium	2.72	1.19	3.22

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Chemical Concentration

Interval # 04		**From Report Date**	**11/13/2004**	**Top of Interval**	**2,428.0 m**
Max. Hole Size / Bit Size	**12.250 / 12.250 in**	**To Report Date**	**12/03/2004**	**Bottom of Interval**	**3,545.0 m**

Fluid Name: Hi-Vis Bentonite Sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
BAROFIBRE	1.39	1.39	1.39
BAROLIFT	0.08	0.08	0.08
bentonite	165.81	165.74	166.14
caustic soda	0.27	0.27	0.27
Circal Y	10.57	10.56	10.59
EZ-MUD	0.22	0.22	0.23
Kwikseal Medium	1.60	1.60	1.60
potassium chloride	4.59	4.59	4.60
soda ash	0.74	0.74	0.74

Fluid Name: Seawater/Drispac/Soltex

Material	Average ppb	Minimum ppb	Maximum ppb
Ammonium Bisulphite	0.12	0.10	0.18
Baracide	0.17	0.03	0.23
BARACOR 129	1.38	0.70	1.79
BARA-DEFOAM W300	0.02	0.01	0.03
barite	23.00	20.38	27.62
BAROFIBRE	0.02	0.02	0.02
BAROLIFT	0.01	0.01	0.01
bentonite	2.26	2.14	2.45
caustic soda	1.40	0.75	1.75
Circal Y	0.14	0.14	0.16
Desco CF	0.04	0.04	0.05
Drispac R	1.82	1.62	2.04
Drispac Superlo	2.85	2.23	3.14
EZ-MUD	0.40	0.32	0.60
EZ-MUD DP	0.48	0.17	0.58
Flowzan	0.41	0.38	0.47
Kwikseal Medium	0.02	0.02	0.02
phpa	0.33	0.03	0.38
potassium chloride	0.06	0.06	0.07
soda ash	0.68	0.54	0.75
sodium bicarbonate	0.23	0.19	0.35
Soltex	2.55	2.26	2.98
Soltex Potassium	4.04	2.14	4.64

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Chemical Concentration

Fluid Name:	**Premix**		
Material	**Average ppb**	**Minimum ppb**	**Maximum ppb**
Ammonium Bisulphite	0.05	0.05	0.08
Baracide	0.27	0.25	0.39
BARACOR 129	0.75	0.70	1.09
BARA-DEFOAM W300	0.02	0.01	0.21
barite	11.42	10.68	16.61
BAROFIBRE	0.01	0.01	0.01
BAROLIFT	0.00	0.00	0.01
bentonite	1.18	1.10	1.72
caustic soda	0.85	0.23	1.35
Circal Y	0.08	0.07	0.11
Desco CF	0.03	0.02	0.04
Drispac R	1.61	1.29	2.01
Drispac Superlo	4.05	2.34	8.39
EZ-MUD	0.18	0.17	0.26
EZ-MUD DP	0.36	0.14	0.56
Flowzan	0.36	0.35	0.54
Kwikseal Medium	0.01	0.01	0.02
phpa	0.85	0.79	1.24
potassium chloride	0.03	0.03	0.05
soda ash	0.57	0.45	1.01
sodium bicarbonate	0.10	0.10	0.15
Soltex	1.60	1.17	1.96
Soltex Potassium	4.89	3.22	9.56

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Chemical Concentration

Interval # 05		**From Report Date**	**12/04/2004**	**Top of Interval**	**3,545.0 m**
Max. Hole Size / Bit Size		**To Report Date**	**12/22/2004**	**Bottom of Interval**	**0.0 m**

Fluid Name: Seawater/Drispac/Soltex

Material	Average ppb	Minimum ppb	Maximum ppb
Ammonium Bisulphite	0.10	0.10	0.10
Baracide	0.22	0.22	0.22
BARACOR 129	1.79	1.79	1.79
BARA-DEFOAM W300	0.03	0.03	0.03
barite	22.13	22.13	22.13
BAROFIBRE	0.02	0.02	0.02
BAROLIFT	0.01	0.01	0.01
bentonite	2.14	2.14	2.14
caustic soda	1.73	1.73	1.73
Circal Y	0.14	0.14	0.14
Desco CF	0.04	0.04	0.04
Drispac R	1.71	1.71	1.71
Drispac Superlo	3.04	3.04	3.04
EZ-MUD	0.32	0.32	0.32
EZ-MUD DP	0.47	0.47	0.47
Flowzan	0.38	0.38	0.38
Kwikseal Medium	0.02	0.02	0.02
phpa	0.37	0.37	0.37
potassium chloride	0.06	0.06	0.06
soda ash	0.67	0.67	0.67
sodium bicarbonate	0.19	0.19	0.19
Soltex	2.26	2.26	2.26
Soltex Potassium	4.48	4.48	4.48

Fluid Name: 8.9 ppg NaCl Brine

Material	Average ppb	Minimum ppb	Maximum ppb
BARABUF	0.08	0.03	0.14
Baracide	0.28	0.10	0.47
BARACOR 100	0.32	0.15	0.73
BARACOR 129	0.98	0.33	1.63
BARAPLUG 20	0.15	0.06	0.27
BARAZAN D PLUS	0.16	0.16	0.16
caustic soda	0.70	0.24	1.17
Flowzan	0.21	0.07	0.35
N-VIS P PLUS	0.13	0.05	0.23
salt	64.04	37.76	192.21

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval Chemical Concentration

UltraSal 20E	0.60	0.22	1.10

Fluid Name:	**CON DET Pill**		
Material	**Average ppb**	**Minimum ppb**	**Maximum ppb**
CON DET E	11.21	11.21	11.21

Fluid Name:	**Caustic Pill**		
Material	**Average ppb**	**Minimum ppb**	**Maximum ppb**
caustic soda	3.94	3.94	3.94

Fluid Name:	**BARAKLEAN FL Sweep**		
Material	**Average ppb**	**Minimum ppb**	**Maximum ppb**
BARAKLEAN FL	15.87	15.87	15.87

Fluid Name:	**9.1 ppg NaCl Brine**		
Material	**Average ppb**	**Minimum ppb**	**Maximum ppb**
BARACOR 100	0.16	0.16	0.16
salt	51.74	51.74	51.74

Fluid Name:	**Saturated NaCl Brine**		
Material	**Average ppb**	**Minimum ppb**	**Maximum ppb**
salt	125.98	125.98	125.98

Fluid Name:	**Sized Salt Pill**		
Material	**Average ppb**	**Minimum ppb**	**Maximum ppb**
BARABUF	3.27	3.27	3.27
BARAPLUG 20	6.54	6.54	6.54
N-VIS P PLUS	5.45	5.45	5.45
salt	123.51	123.51	123.51
UltraSal 20E	26.14	26.14	26.14

Operator	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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**				**10/28/2004**						**Top of Interval**			**0.0**		**m**						
Max. Hole Size / Bit Size	**36.000 / 36.000 in**									**To Date**				**10/30/2004**						**Bottom of Interval**			**218.0**		**m**						
10/30/2004	0		8.80	180															1,000	50						0.1						
10/30/2004	199		8.80	180	14	69	57	62	68						9.00				1,100	30						0.1	97.0	83.0	78.0	74.0	56.0	52.0
Interval # 02										**From Date**				**10/31/2004**						**Top of Interval**			**218.0**		**m**						
Max. Hole Size / Bit Size	**26.000 / 26.000 in**									**To Date**				**11/03/2004**						**Bottom of Interval**			**666.0**		**m**						
11/02/2004	320	16	8.75	28																						0.1						
Interval # 03										**From Date**				**11/04/2004**						**Top of Interval**			**666.0**		**m**						
Max. Hole Size / Bit Size	**16.000 / 16.000 in**									**To Date**				**11/12/2004**						**Bottom of Interval**			**2,428.0**		**m**						
11/06/2004	668	25	8.65	107	21	26	5	7	8	5.4	16.0	1	2	93	9.50	0.90	0.15	0.40	18,000	880	5.0		0.95	0.789		98	68.0	47.0	37.0	25.0	6.0	4.0
11/07/2004	767	40	8.85	95	20	25	5	7	8	5.1	16.4	1	2	93	9.50	0.70	0.15	0.40	18,000	280	5.0	0.25	2.47	2.305		96.5	65.0	45.0	35.0	24.0	6.0	4.0
11/07/2004	902	47	8.80	85	23	25	4	6	8	4.8	15.4	1	2	93	9.20	0.35	0.20	0.50	18,000	260	6.0	0.50	2.16	2.077		96.8	71.0	48.0	37.0	24.0	6.0	4.0
11/07/2004	1,125	46	8.80	101	25	24	3	5	8	5.0	15.4	1	2	93	9.00	0.30	0.20	0.45	18,000	160	6.0	0.20	2.16	2.077		96.8	74.0	49.0	38.0	27.0	7.0	5.0
11/07/2004	1,316	44	8.80	115	27	37	6	8	9	5.2	15.4	1	2	93	9.00	0.50	0.10	0.45	18,000	240	6.0	0.10	2.16	2.077		96.8	91.0	64.0	52.0	35.0	7.0	5.0
11/08/2004	1,548	42	8.80	140	29	41	7	8	9	5.3	15.8	1	2	93	9.00	0.30	0.10	0.40	18,000	280	5.0	0.05	2.16	2.077		96.8	99.0	70.0	56.0	38.0	8.0	6.0
11/08/2004	1,700	42	8.80	109	30	41	5	8	10	4.8	15.3	1	2	93	9.00	0.30	0.15	0.45	18,000	220	6.0	0.10	2.16	2.077		96.8	101.0	71.0	57.0	39.0	9.0	8.0
11/08/2004	1,790	40	8.80	111	34	42	6	8	10	4.7	15.3	1	2	93	8.80	0.25	0.10	0.45	18,000	220	5.0	0.10	2.16	2.077		96.8	110.0	76.0	62.0	42.0	9.0	7.0
11/08/2004	1,996	49	9.00	114	33	40	7	10	11	4.8	14.2	1	2	93	8.70	0.25	0.10	0.45	18,000	320	5.0	0.10	3.48	3.191		95.5	106.0	73.0	59.0	40.0	8.0	6.0
11/09/2004	2,135	58	9.05	95	31	41	7	9	10	4.8	14.0	1	2	93	8.80	0.35	0.10	0.45	18,000	280	5.0	0.10	3.98	3.821		95	103.0	72.0	57.0	39.0	8.0	6.0
11/09/2004	2,225	56	9.10	98	35	43	5	8	10	4.5	13.6	1	2	93	8.80	0.20	0.10	0.40	18,000	260	7.0	0.10	4.18	3.849		94.8	113.0	78.0	65.0	43.0	9.0	7.0
11/09/2004	2,277	55	9.20	95	36	40	4	6	9	4.4	13.6	1	2	93	8.90	0.25	0.15	0.50	18,000	280	9.0	0.10	4.39	3.502		94.6	112.0	76.0	59.0	39.0	8.0	6.0
11/09/2004	2,407	55	9.20	88	34	42	6	8	9	4.4	12.8	1	2	93	9.00	0.45	0.10	0.45	19,000	320	10.0	0.10	4.44	3.674		94.5	110.0	76.0	61.0	40.0	7.0	5.0
11/10/2004	2,428		9.30	91	35	39	6	7	9	4.3	13.0	2	2	93	9.00	0.50	0.10	0.40	18,000	280	10.0	0.10	4.99	3.959		94	109.0	74.0	58.0	38.0	7.0	5.0
11/10/2004	2,428	52	9.30	86	36	40	4	6	9	4.3	12.6	1	2	93	8.80	0.25	0.10	0.45	18,000	280	10.0	0.10	4.99	3.959		94	112.0	76.0	58.0	39.0	8.0	6.0
11/10/2004	2,428	51	9.30	98	35	44	4	7	9	4.0	12.4	1	2	93	8.80	0.30	0.15	0.40	18,000	240	10.0	0.10	4.99	3.959		94	114.0	79.0	62.0	40.0	8.0	6.0
11/10/2004	2,428		9.40	116	35	38	5	7	9	4.2	12.4	1	2	93	8.80	0.35	0.10	0.40	18,000	280	10.0	0.10	5.5	4.214		93.5	108.0	73.0	56.0	37.0	7.0	5.0
11/11/2004	2,428		9.40	115	35	38	5	7	9	4.0	12.4	1	2	93	8.80	0.25	0.10	0.40	18,000	280	11.0	0.10	5.5	4.214		93.5	108.0	73.0	55.0	36.0	7.0	5.0
11/11/2004	2,428		9.50	98	32	37	4	6	7	4.0	12.4	1	2	93	8.90	0.20	0.10	0.40	18,000	280	12.0	0.10	6.41	5.274		92.6	101.0	69.0	53.0	34.0	6.0	4.0
11/11/2004	2,428		9.50	107	32	39	4	7	8	4.1	12.0	1	2	93	9.00	0.25	0.10	0.45	19,000	280	12.0	0.10	6.46	5.447		92.5	103.0	71.0	54.0	34.0	6.0	4.0

Operator	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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						
11/12/2004	2,428		9.50	112	33	41	6	8	10	4.2	12.4	1	2	93	8.90	0.20	0.18	0.40	18,500	280	12.0	0.10	6.48	5.461		92.5	107.0	74.0	58.0	37.0	8.0	6.0
11/12/2004	2,428	42	9.60	136	43	45	6	8	9	3.8	11.2	1	2	93	8.70	0.35	0.10	0.40	18,000	280	14.0	0.25	7.52	6.735		91.5	131.0	88.0	70.0	45.0	8.0	6.0
Interval # 04										**From Date**				**11/13/2004**						**Top of Interval**				**2,428.0 m**							
Max. Hole Size / Bit Size 12.250 / 12.250 in										**To Date**				**12/03/2004**						**Bottom of Interval**				**3,545.0 m**							
11/13/2004	2,428		9.55	118	39	42	6	8	10	4.0	11.4	1	2	93	8.70	0.30	0.12	0.35	18,500	300	13.0	0.15	6.99	6.091		92	120.0	81.0	64.0	41.0	8.0	6.0
11/13/2004	2,428		9.50	112	37	41	6	8	9	4.0	11.0	1	2	93	8.60	0.25	0.10	0.45	19,000	240	13.0	0.10	6.46	5.447		92.5	115.0	78.0	62.0	39.0	8.0	6.0
11/14/2004	2,428		9.20	141	29	32	3	5	6	4.4	11.8	1	2	93	8.70	0.25	0.10	0.40	18,000	300	12.0	0.05	4.49	3.703		94.5	90.0	61.0	47.0	30.0	5.0	3.0
11/14/2004	2,428		9.20	135	30	34	4	6	7	4.3	11.5	1	2	93	8.60	0.23	0.08	0.38	18,000	280	11.5	0.10	4.59	3.904		94.4	94.0	64.0	49.0	32.0	5.0	3.0
11/14/2004	2,428		9.20	140	31	35	3	6	7	4.2	11.8	1	2	93	8.70	0.25	0.10	0.40	18,000	240	12.0	0.10	4.49	3.703		94.5	97.0	66.0	50.0	33.0	5.0	3.0
11/15/2004	2,431	58	9.20	85	28	23	3	5	6	4.5	14.8	1	2	121	8.90	5.50	0.12	0.43	17,000	400	11.0	0.05	4.33	3.329		94.7	79.0	51.0	38.0	24.0	5.0	3.0
11/15/2004	2,465	43	9.20	79	29	23	3	5	5	4.4	14.0	1	2	121	9.20	0.90	0.10	0.20	18,000	280	11.0	0.05	4.49	3.703		94.5	81.0	52.0	39.0	24.0	4.0	3.0
11/15/2004	2,532	46	9.20	125	41	44	5	7	8	4.6	14.0	1	2	121	9.00	0.70	0.10	0.20	18,000	280	10.0	0.10	4.49	3.703		94.5	126.0	85.0	67.0	43.0	7.0	5.0
11/16/2004	2,596	59	9.25	141	44	43	4	6	7	4.4	13.2	1	2	121	9.50	1.10	0.10	0.35	18,000	200	10.0	0.10	4.99	4.333		94	131.0	87.0	68.0	44.0	6.0	4.0
11/16/2004	2,654	58	9.15	167	47	47	4	6	6	4.6	13.8	1	2	121	9.00	0.68	0.12	0.50	17,500	160	11.0	0.10	4.51	4.091		94.5	141.0	94.0	73.0	47.0	6.0	4.0
11/16/2004	2,735	60	9.15	168	44	46	4	6	7	4.2	13.0	1	2	121	8.80	0.50	0.09	0.40	18,000	170	10.5	0.15	4.69	4.479		94.3	134.0	90.0	64.0	43.0	6.0	4.0
11/16/2004	2,735		9.20	200	47	53	7	11	12	4.1	13.6	1	2	121	9.00	0.55	0.10	0.35	18,500	180	10.0	0.10	4.97	4.693		94	147.0	100.0	72.0	50.0	10.0	7.0
11/17/2004	2,741	48	9.20	191	47	47	4	6	6	3.9	13.0	1	2	121	8.70	0.33	0.08	0.54	18,500	150	10.0	0.10	4.87	4.492		94.1	141.0	94.0	73.0	47.0	7.0	4.0
11/17/2004	2,743		9.20	200	48	49	5	7	8	4.0	14.4	1	2	121	8.90	0.45	0.10	0.45	18,000	160	10.0	0.10	4.99	4.707		94	145.0	97.0	74.0	48.0	7.0	5.0
11/18/2004	2,745	55	9.20	174	47	47	4	5	6	4.2	14.6	1	2	121	8.60	0.40	0.06	0.48	18,000	200	9.0	0.10	4.89	4.507		94.1	141.0	94.0	72.0	44.0	6.0	3.0
11/18/2004	2,755	59	9.10	152	47	45	3	4	5	4.3	14.4	1	2	121	8.70	0.55	0.08	0.53	16,500	130	8.5	0.10	4.56	4.493		94.5	139.0	92.0	71.0	44.0	6.0	3.0
11/18/2004	2,823	59	9.20	137	51	47	4	6	7	4.5	14.2	1	2	121	8.90	0.85	0.10	0.30	18,000	140	9.0	0.10	4.99	4.707		94	149.0	98.0	73.0	45.0	6.0	4.0
11/19/2004	2,887	60	9.20	126	49	46	4	6	6	4.3	13.8	1	2	121	9.10	0.70	0.10	0.25	18,000	140	9.0	0.10	4.99	4.707		94	144.0	95.0	72.0	44.0	6.0	4.0
11/19/2004	2,973	56	9.40	123	49	42	4	5	6	3.9	13.4	1	2	121	8.70	0.45	0.06	0.50	19,000	120	9.5	0.05	5.75	4.789		93.2	140.0	91.0	68.0	40.0	6.0	4.0
11/19/2004	3,025	57	9.40	137	49	40	4	5	6	4.0	13.8	1	2	121	8.90	0.50	0.07	0.58	18,000	130	9.0	0.05	5.9	5.018		93.1	138.0	89.0	74.0	40.0	6.0	4.0
11/19/2004	3,092	58	9.40	135	52	38	3	5	6	3.8	12.8	1	2	121	8.80	0.45	0.15	0.55	18,000	160	9.5	0.10	5.9	5.018		93.1	142.0	90.0	76.0	44.0	7.0	5.0
11/20/2004	3,197	58	9.40	138	48	38	3	4	6	3.8	12.8	1	2	121	8.80	0.40	0.20	0.50	18,000	160	9.0	0.05	5.9	5.018		93.1	134.0	86.0	65.0	39.0	6.0	4.0
11/20/2004	3,260	58	9.40	130	49	41	4	5	5	3.9	13.2	1	2	121	8.90	0.48	0.07	0.55	18,500	140	9.5	0.10	5.78	4.803		93.2	139.0	90.0	66.0	42.0	6.0	4.0
11/20/2004	3,351	60	9.35	117	50	44	4	5	6	3.7	12.8	1	2	121	8.90	0.45	0.06	0.50	17,500	170	9.0	0.05	5.72	5.004		93.3	144.0	94.0	70.0	40.0	6.0	4.0
11/20/2004	3,385	61	9.40	115	46	34	3	4	6	4.0	12.6	1	2	121	8.80	0.40	0.15	0.50	18,000		9.0	0.05	6	5.219		93	126.0	80.0	59.0	35.0	5.0	4.0

Operator	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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						
11/21/2004	3,414	62	9.40	109	48	32	3	4	6	4.2	12.9	1	2	121	8.80	0.40	0.20	0.55	18,000	160	9.0	0.05	5.9	5.018		93.1	128.0	80.0	59.0	36.0	5.0	3.0
11/21/2004	3,430	60	9.40	105	49	37	4	5	5	3.7	12.6	1	2	121	9.30	0.72	0.11	0.65	19,000	130	9.5	0.05	5.75	4.789		93.2	135.0	86.0	64.0	39.0	6.0	4.0
11/21/2004	3,442	62	9.35	106	50	40	4	5	5	3.8	13.0	1	2	121	9.40	0.78	0.15	0.72	18,000	120	9.0	0.05	5.6	4.79		93.4	140.0	90.0	64.0	37.0	6.0	4.0
11/21/2004	3,442	60	9.40	120	50	38	3	4	6	3.8	12.7	1	2	121	9.40	0.70	0.30	0.60	18,000	100	10.0	0.02	5.9	5.018		93.1	138.0	88.0	62.0	36.0	7.0	5.0
11/22/2004	3,442		9.40	121	51	38	3	4	6	4.0	12.8	1	2	121	9.20	0.45	0.20	0.50	18,000	120	10.0	0.02	5.9	5.018		93.1	140.0	89.0	60.0	36.0	6.0	4.0
11/22/2004	3,442		9.45	172	51	40	3	4	5	3.6	12.2	1	2	121	9.40	0.80	0.33	0.95	18,000	90	9.5	0.02	6	4.845		93	142.0	91.0	68.0	39.0	5.0	3.0
11/23/2004	3,452	58	9.40	140	42	46	3	4	6	3.8	13.4	1	2	121	9.30	0.40	0.13	0.55	18,000	100	10.0	0.02	5.9	5.018		93.1	130.0	88.0	65.0	41.0	7.0	5.0
11/23/2004	3,467	60	9.40	140	51	40	4	6	7	3.1	12.2	1	2	121	9.00	0.52	0.11	0.48	18,000	60	10.0	0.05	5.8	4.817		93.2	142.0	91.0	68.0	39.0	6.0	4.0
11/23/2004	3,503	63	9.40	147	51	43	4	6	8	3.3	12.6	1	2	121	9.00	0.57	0.12	0.65	18,500	70	9.5	0.02	5.88	5.004		93.1	145.0	94.0	72.0	46.0	7.0	4.0
11/23/2004	3,541	62	9.40	144	49	51	3	4	7	3.8	12.2	1	2	121	9.30	0.45	0.20	0.50	18,000	80	10.0	0.02	5.9	5.018		93.1	149.0	100.0	74.0	48.0	7.0	5.0
11/24/2004	3,545		9.40	149	50	51	3	4	7	3.8	12.8	1	2	121	9.30	0.40	0.20	0.55	18,000	80	10.0	0.02	5.9	5.018		93.1	151.0	101.0	74.0	49.0	7.0	5.0
11/24/2004	3,545		9.45	174	51	51	4	5	6	3.4	12.4	1	2	121	9.40	0.60	0.27	0.68	19,500	120	10.0	0.02	5.93	4.802		93	153.0	102.0	76.0	49.0	6.0	4.0
11/25/2004	3,545		9.50	163	51	53	2	3	6	3.5		1		121	9.30	0.45	0.25	0.55	18,500	100	10.0	0.02	6.38	5.26		92.6	155.0	104.0	79.0	53.0	6.0	4.0
11/25/2004	3,545		9.45	238	52	53	3	4	6	3.3	12.8	1	2	121	9.50	0.60	0.30	0.88	19,000	90	10.0	0.05	5.95	4.816		93	157.0	105.0	79.0	58.0	6.0	3.0
11/26/2004	3,545		9.40	225	55	56	3	5	7	3.2	12.4	1	2	121	9.40	0.65	0.45	0.75	18,500	80	10.0	0.02	5.98	5.205		93	166.0	111.0	87.0	65.0	7.0	5.0
11/26/2004	3,545		9.45	236	54	53	4	5	6	3.4	12.6	1	2	121	9.50	0.68	0.43	0.85	19,000	90	10.0	0.04	5.95	4.816		93	161.0	107.0	85.0	64.0	6.0	4.0
11/27/2004	3,545		9.45	233	55	58	3	4	6	3.4		1		121	9.30	0.40	0.45	0.80	18,000	90	10.0	0.02	6.2	5.246		92.8	168.0	113.0	88.0	67.0	7.0	5.0
11/27/2004	3,545		9.40	229	54	56	4	5	6	3.5	12.8	1	2	121	9.40	0.55	0.37	0.75	18,500	80	10.0	0.02	5.98	5.205		93	164.0	110.0	85.0	64.0	6.0	4.0
11/28/2004	3,545	54	9.45	188	51	57	3	5	6	3.4	12.4	1	2	121	9.30	0.55	0.30	0.70	19,000	100	10.2	0.02	6.06	5.017		92.9	159.0	108.0	65.0	40.0	7.0	5.0
11/28/2004	3,545	60	9.45	133	56	59	5	9	13	3.6	12.8	1	2	121	9.20	0.63	0.33	0.95	18,500	110	10.5	0.45	6.28	5.433		92.7	171.0	115.0	78.0	50.0	7.0	4.0
11/29/2004	3,545		9.45	155	52	55	3	4	6	3.9	12.9	1	2	121	9.40	0.60	0.30	0.80	19,000	100	10.5	0.02	6.26	5.419		92.7	159.0	107.0	68.0	40.0	7.0	5.0
11/29/2004	3,545		9.45	150	54	47	3	4	6	3.8	12.6	1	2	121	9.20	0.50	0.20	0.90	18,500	120	10.0	0.05	6.18	5.232		92.8	155.0	101.0	62.0	40.0	6.0	4.0
11/30/2004	3,535		9.45	168	54	55	2	3	6	3.8	12.9	1	2	121	9.40	0.40	0.30	0.90	19,000	100	10.5	0.02	6.16	5.218		92.8	163.0	109.0	65.0	44.0	6.0	4.0
11/30/2004	3,545		9.45	160	52	56	3	4	6	3.8	12.7	1	2	121	9.10	0.50	0.25	0.80	18,500	100	10.0	0.02	6.28	5.433		92.7	160.0	108.0	66.0	44.0	6.0	4.0
12/01/2004	3,545		9.45	168	54	55	2	3	6	3.9	13.4	1	2	121	9.30	0.40	0.25	0.90	19,000	100	10.5	0.02	6.06	5.017		92.9	163.0	109.0	64.0	43.0	6.0	4.0
12/01/2004	3,545		9.40	160	55	55	2	3	6	3.7	12.9	1	2	121	9.00	0.40	0.35	0.80	18,500	100	10.0	0.02	6.18	5.607		92.8	165.0	110.0	63.0	42.0	6.0	4.0
12/02/2004	3,545		9.40	134	41	45	2	3	5	3.8	13.7	1	2	121	9.30	0.35	0.25	0.80	19,000	100	10.5	0.02	5.95	5.191		93	127.0	86.0	58.0	43.0	6.0	4.0
12/02/2004	3,545	40	9.40	120	39	47	2	3	5	3.9	12.9	1	2	121	9.00	0.40	0.30	0.80	18,500	100	10.0	0.05	6.18	5.607		92.8	125.0	86.0	58.0	43.0	6.0	4.0
12/02/2004	3,545	55	9.40	170	52	51	7	9	12	3.6	12.9	1	2	121	8.80	0.30	0.30	0.80	18,500	120	10.0	0.05	5.98	5.205		93	155.0	103.0	70.0	41.0	8.0	6.0

Operator	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

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						
12/03/2004	3,545		9.40	180	49	30	4	6	7	3.6	12.8	1	2	121	8.70	0.35	0.20	0.70	18,000	120	10.0	0.05	6	5.219		93	128.0	79.0	57.0	37.0	6.0	4.0
12/03/2004	3,545		9.40	170	45	36	4	6	8	3.7	12.8	1	2	121	8.80	0.30	0.25	0.80	18,500	100	10.0	0.05	5.98	5.205		93	126.0	81.0	58.0	35.0	6.0	4.0
Interval # 05										**From Date**				**12/04/2004**						**Top of Interval**				**3,545.0**		**m**						
Max. Hole Size / Bit Size										**To Date**				**12/22/2004**						**Bottom of Interval**				**0.0**		**m**						
12/04/2004	3,545	42	9.40	165	48	30	4	8	9	3.5	13.2	1	2	121	8.80	0.40	0.20	0.80	18,000	140	10.0	0.05	6	5.219		93	126.0	78.0	57.0	35.0	5.0	4.0
12/05/2004	3,545		9.40	180	48	31	4	7	8	3.4	13.6	1	2	121	8.70	0.45	0.20	0.75	18,000	140	10.0	0.05	6	5.219		93	127.0	79.0	58.0	37.0	6.0	4.0
12/05/2004	3,545		9.40	175	45	36	4	6	8	3.8	12.9	1	2	121	8.90	0.40	0.20	0.70	18,500	100	10.0	0.05	6.08	5.406		92.9	126.0	81.0	55.0	37.0	6.0	4.0
12/06/2004	3,545		8.90																57,000							96.7						
12/07/2004	3,545		8.90																							96.7						
12/08/2004	3,545		8.90																							86.7						
12/09/2004	3,545		8.90																							96.7						
12/10/2004	3,545		8.90																							96.7						
12/11/2004	3,545		8.90																							96.7						
12/12/2004	3,545		8.90																							96.7						
12/13/2004	3,545		8.90																							96.7						
12/14/2004	3,545		8.90																							96.7						
12/15/2004	3,545		8.90																							96.7						
12/16/2004	3,545		8.90																							96.7						
12/17/2004	3,545		8.90																							96.7						
12/17/2004	3,545		8.90																							96.7						
12/18/2004	2,220		8.90																							96.7						
12/19/2004	860		8.90																							96.7						
12/20/2004	0		8.90																							96.7						
12/21/2004	0		8.90																							96.7						

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig Name	**Ensco 102**
Unit System	**Esso**

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
006	11/02/2004	5:00	320	Funnel Viscosity	sec/qt	28	Low	120	240
011	11/07/2004	15:00	1,125	Yield Point	lbs/100 ft2	24	Low	25	55
012	11/08/2004	21:45	1,996	Sulfite residual	mg/l	80	Low	100	200
013	11/09/2004	4:00	2,135	Sulfite residual	mg/l	80	Low	100	200
013	11/09/2004	9:30	2,225	Sulfite residual	mg/l	80	Low	100	200
013	11/09/2004	12:30	2,277	Sulfite residual	mg/l	60	Low	100	200
014	11/10/2004	17:00	2,428	Sulfite residual	mg/l	60	Low	100	200
014	11/10/2004	21:30	2,428	Sulfite residual	mg/l	60	Low	100	200
014	11/10/2004	11:00	2,428	Sulfite residual	mg/l	80	Low	100	200
015	11/11/2004	19:00	2,428	Density	ppg	9.50	High	8.60	9.40
015	11/11/2004	19:00	2,428	Sulfite residual	mg/l	60	Low	100	200
015	11/11/2004	5:00	2,428	Sulfite residual	mg/l	80	Low	100	200
015	11/11/2004	13:00	2,428	Density	ppg	9.50	High	8.60	9.40
015	11/11/2004	13:00	2,428	Sulfite residual	mg/l	60	Low	100	200
016	11/12/2004	10:45	2,428	Density	ppg	9.50	High	8.60	9.40
016	11/12/2004	10:45	2,428	Sulfite residual	mg/l	40	Low	100	200
016	11/12/2004	19:30	2,428	MBT	ppb Eq.	14.0	High	5.0	12.0
016	11/12/2004	19:30	2,428	Density	ppg	9.60	High	8.60	9.40
016	11/12/2004	19:30	2,428	Sulfite residual	mg/l	40	Low	100	200
017	11/13/2004	10:00	2,428	MBT	ppb Eq.	13.0	High	5.0	12.0
017	11/13/2004	20:00	2,428	MBT	ppb Eq.	13.0	High	5.0	12.0
017	11/13/2004	20:00	2,428	Density	ppg	9.50	High	8.60	9.40
017	11/13/2004	10:00	2,428	Density	ppg	9.55	High	8.60	9.40
017	11/13/2004	20:00	2,428	Sulfite residual	mg/l	10	Low	100	200
017	11/13/2004	10:00	2,428	Sulfite residual	mg/l	20	Low	100	200
018	11/14/2004	4:00	2,428	Sulfite residual	mg/l	10	Low	100	200
018	11/14/2004	8:15	2,428	Sulfite residual	mg/l	10	Low	100	200
018	11/14/2004	22:00	2,428	Sulfite residual	mg/l	10	Low	100	200
019	11/15/2004	13:00	2,431	MBT	ppb Eq.	11.0	High	5.0	10.0
019	11/15/2004	19:15	2,465	MBT	ppb Eq.	11.0	High	5.0	10.0

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig Name	**Ensco 102**
Unit System	**Esso**

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
020	11/16/2004	8:30	2,654	MBT	ppb Eq.	11.0	High	5.0	10.0
020	11/16/2004	14:00	2,735	MBT	ppb Eq.	10.5	High	5.0	10.0
026	11/22/2004	10:30	3,442	Density	ppg	9.45	High	9.10	9.40
028	11/24/2004	13:00	3,545	Density	ppg	9.45	High	9.10	9.40
029	11/25/2004	13:00	3,545	Density	ppg	9.45	High	9.10	9.40
029	11/25/2004	4:00	3,545	Density	ppg	9.50	High	9.10	9.40
030	11/26/2004	10:15	3,545	Density	ppg	9.45	High	9.10	9.40
030	11/26/2004	3:00	3,545	Yield Point	lbs/100 ft2	56	High	20	55
031	11/27/2004	4:00	3,545	Density	ppg	9.45	High	9.10	9.40
031	11/27/2004	10:30	3,545	Yield Point	lbs/100 ft2	56	High	20	55
031	11/27/2004	4:00	3,545	Yield Point	lbs/100 ft2	58	High	20	55
032	11/28/2004	2:30	3,545	MBT	ppb Eq.	10.2	High	5.0	10.0
032	11/28/2004	7:45	3,545	MBT	ppb Eq.	10.5	High	5.0	10.0
032	11/28/2004	2:30	3,545	Density	ppg	9.45	High	9.10	9.40
032	11/28/2004	7:45	3,545	Density	ppg	9.45	High	9.10	9.40
032	11/28/2004	2:30	3,545	Yield Point	lbs/100 ft2	57	High	20	55
032	11/28/2004	7:45	3,545	Yield Point	lbs/100 ft2	59	High	20	55
033	11/29/2004	13:00	3,545	MBT	ppb Eq.	10.5	High	5.0	10.0
033	11/29/2004	13:00	3,545	Density	ppg	9.45	High	9.10	9.40
033	11/29/2004	22:00	3,545	Density	ppg	9.45	High	9.10	9.40
034	11/30/2004	13:00	3,535	MBT	ppb Eq.	10.5	High	5.0	10.0
034	11/30/2004	13:00	3,535	Density	ppg	9.45	High	9.10	9.40
034	11/30/2004	21:00	3,545	Density	ppg	9.45	High	9.10	9.40
034	11/30/2004	21:00	3,545	Yield Point	lbs/100 ft2	56	High	20	55
035	12/01/2004	11:00	3,545	MBT	ppb Eq.	10.5	High	5.0	10.0
035	12/01/2004	11:00	3,545	Density	ppg	9.45	High	9.10	9.40
036	12/02/2004	11:00	3,545	MBT	ppb Eq.	10.5	High	5.0	10.0
040	12/06/2004	13:00	3,545	Density	ppg	8.90	Low	9.10	9.40
041	12/07/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40
042	12/08/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig Name	**Ensco 102**
Unit System	**Esso**

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
043	12/09/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40
044	12/10/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40
045	12/11/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40
046	12/12/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40
047	12/13/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40
048	12/14/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40
049	12/15/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40
050	12/16/2004	20:00	3,545	Density	ppg	8.90	Low	9.10	9.40
051	12/17/2004	14:15	3,545	Density	ppg	8.90	Low	9.10	9.40
051	12/17/2004	8:00	3,545	Density	ppg	8.90	Low	9.10	9.40

Operations Log Recap

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval #	**01**		**From Report**	**001**	**Top of Interval**	**.0**	**m**
Max. Hole/Bit Size	**36.000 / 36.000**	**in**	**To Report**	**003**	**Bottom of Interval**	**218.0**	**m**

For Report # 001 On 10/28/2004	**Operation at Depth .0 m**
Rig Activity	Commencement of operations on Trefoil-1 was at 22:00 hrs on Oct 16, 2004. Two Baroid mud engineers arrived onboard on Oct 18. Rig was on location and being pre-loaded prior to jacking up. Problems were experienced obtaining acceptable leg penetration. Rig was jacked up on the 28th of October, skidded off, and preparations made for commencing drilling operations.
Activity	Prepare Rig to Drill
Fluid Treatment	Started to mix pre-hydrated bentonite. Shakers were serviced, painted and then dressed with screens for use later on the 16" interval. Note that 22 engineering days have been charged on the first report. Chemicals required for the pre-hydrated bentonite will be charged of all together once mixing is complete.
For Report # 002 On 10/29/2004	**Operation at Depth .0 m**
Rig Activity	Continued to rig up in preparation for drilling. Picked up drill pipe and heavy weight. Picked up drill collars and bit and made up BHA. Waited for appropriate tide to spud.
Activity	Wait on tide to Spud
Fluid Treatment	Daily New Volume : 2855 bbls (26"/36" Hole) Total New Volume : 2855 bbls (26"/36" Hole) Continued mixing pre-hydrated bentonite, including volume for the 16" interval so that supply boat could top up our bulk tank.
For Report # 003 On 10/30/2004	**Operation at Depth 218.0 m**
Rig Activity	Spudded Trefoil-1 at 01:00 hrs. Drilled from mudline at 108.8 m RKB with a 26" bit (36" hole opener 58.8 m above bit) using seawater and hi-vis sweeps. Returns to seabed. Drilled to 218 m MD. Started running casing.
Activity	Running Casing
Fluid Treatment	Daily New Volume : 1.3 bbls (26"/36") Total New Volume : 2856.3 bbls (26"/36") Pumped 105 bbls hi-vis pre-hydrated bentonite mud while drilling first 10 m. Pumped 40 bbls hi-vis sweeps for the first 2 drill pipe singles of each stand and spotted 75 bbls prior to connections. At TD, the hole was swept with 100 bbls of hi-vis and 500 bbls (150% open hole volume was spotted in hole prior to a wiper trip. Had 4 m fill when back on bottom. Circulated seawater and then repeated sweep and spot as above.

Operations Log Recap

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval #	**02**		**From Report**	**004**	**Top of Interval**	**218.0**	**m**
Max. Hole/Bit Size	**26.000 / 26.000**	**in**	**To Report**	**007**	**Bottom of Interval**	**666.0**	**m**

For Report	**# 004**	**On**	**10/31/2004**	**Operation at Depth**	**218.0 m**
Rig Activity				Continued running tapered 20"/30" casing string. Cemented casing in place and waited on cement.	
Activity				Cementing	
Fluid Treatment				893.3 bbls mixed for top hole will be utilized in the 16" hole interval. Aquagel Gold Seal bentonite and calcium chloride used for cement mix water.	
For Report	**# 005**	**On**	**11/01/2004**	**Operation at Depth**	**218.0 m**
Rig Activity				RIH with 3 1/2" tubing stinger on drill pipe and carried out a cement top up job. Made up 16" BHA.	
Activity				Make up BHA	
Fluid Treatment				Resumed mixing 35 ppb hi-vis pre-hydrated bentonite for use in the 16" hole interval.	
For Report	**# 006**	**On**	**11/02/2004**	**Operation at Depth**	**666.0 m**
Rig Activity				Drill 16" section to 641m, noted static losses on connection @ 641m. Pump and spot 100 bbls PHPA/Bentonite pill @ 641m. Losses still 5bbl/min. Drill ahead @ reduced flowrate form 641m to 666m. Pump 100 bbl LCM pill, 300 bbl Bentontite pill and 100 bbl KCl/Bentonite pill.	
Activity				Drilling	
Fluid Treatment				Drilling 16" hole with closed seawater system. Pumping 30 bbl hi-vis PHB sweeps on the single and 50 bbls PHB on each connection. Maintaining mud weight at 8.8 ppg with seawater additions, dumping sand trap on connections and running mud cleaner. MIxed 100 bbls lost circulation pill, contained Pre-hydrated Gel 10 ppb Barofibre 10 ppb Kwikseal Medium 26 ppb Circal Y	
For Report	**# 007**	**On**	**11/03/2004**	**Operation at Depth**	**666.0 m**
Rig Activity				Monitor well on trip tank, losses still at 5 bbls/min. Pump 100bbl LCM and chase with 10 bbl Hi-Vis. Monitor well on Trip Tank, 1bbl/min losses for the first 10 min, increasing to 5 bbl/min. Pump 100 bbl LCM, 10 bbls Hi-Vis. Monitor trip tank - losses down to 3bbls/min. TIH to 666m, POOH from 666 -205m. Losses 2.5 bbls/min. Pump 100 bbls BARACARB LCM, 50 bbls Hi-Vis. Losses down to 2 bbls/min, slowing to 0.5 bbls/min. POOH to surface. Prepare to run casing and then run 13 3/8" casing.	
Activity				Run casing and cement	
Fluid Treatment				Mixed a combination of lost circulation pills using pre-hydrated bentonite and the following products: Circal Y (26 ppb) , Kwikseal Medium (10ppb) BAROFIBRE (10ppb). Losses reduced from 5 bbls/hr to 1 bbls/hr. Losses subsequently increased to 5 bbls/hr. Mixed another lost circulation pill with pre-hydrated bentonite and the following products: Circal Y (26ppb), Kwikseal Medium (10ppb), BAROLIFT (0.3ppb). Following wiper trip, filled hole with hi-vis PHB and inhibited (6% KCl) bentonite. Spotted 100 bbls of LCM pill at casing shoe prior to POOH to run casing.	

Interval #	**03**		**From Report**	**008**	**Top of Interval**	**666.0**	**m**
Max. Hole/Bit Size	**16.000 / 16.000**	**in**	**To Report**	**016**	**Bottom of Interval**	**2,428.0**	**m**

For Report	**# 008**	**On**	**11/04/2004**	**Operation at Depth**	**666.0 m**
Rig Activity				Continue to run casing. Complete cement job. Rig down handling equipment and prepare to install casing head.	
Activity				Install Casing Head	
Fluid Treatment				Started mixing Seawater/Soltex/Drispac mud system for the 12.25" section. Mixed 50bbl sugar water for cement job (10ppb)	
For Report	**# 009**	**On**	**11/05/2004**	**Operation at Depth**	**666.0 m**
Rig Activity				Completed top up cement job on conductor. Commenced nippling up BOP.	
Activity				Nipple up B.O.P.	
Fluid Treatment				Mixed a futher 1200 bbls of Seawater/Drispac/Soltex mud in preparation for drilling 12-1/4" hole section. Received 31 MT of bulk barite.	
For Report	**# 010**	**On**	**11/06/2004**	**Operation at Depth**	**671.0 m**
Rig Activity				Complete N/U BOP & test. L/D 16" BHA. P/U & M/U 12-1/4" BHA and RIH. Tag top of cement at 630m. Displace to polymer mud while drilling shoe track. Drill 5m of new formation to 671m. Circulate hole clean in preparation for FIT.	
Activity				Conduct FIT	
Fluid Treatment				Mixed additional Seawater/Drispac/Soltex mud for displacement. Changed shakers to 80 mesh screens to enable handling of un-sheared mud. Displaced to Seawater/Drispac/Soltex mud. Used: 2x 80 mesh screens.	
For Report	**# 011**	**On**	**11/07/2004**	**Operation at Depth**	**1,398.0 m**
Rig Activity				Conduct FIT to 10.5 ppg EMW. Drill 12-1/4" hole from 671m to 1398m.	
Activity				Drilling	
Fluid Treatment				Mixed sodium bicarbonate in active system to treat out cement contamination. Added BARACOR 129 to maintain sulphite residual. Upgraded shakers to 200 mesh as flow allowed. Increased PHPA concentration to specified amount of 0.75 ppb in active with additions of EZ-MUD liquid direct to pit. Mixed additional Drispac/Soltex premix. Centrifuge: 2650 rpm @ Feed Rate: 95 gpm centrate: 8.7 ppg, solids discharge: 14 ppg Used 8 x 200 mesh screens	
For Report	**# 012**	**On**	**11/08/2004**	**Operation at Depth**	**2,036.0 m**
Rig Activity				Drilled 12-1/4" hole from 1398m to 2036m.	
Activity				Drilling	
Fluid Treatment				Mixed additional Seawater/Drispac/Soltex premix. Maintained active volume and properties with premix additions. Added BARACOR 129, caustic & EZ-MUD direct to	

Interval #		**03**			**From Report**	**008**	**Top of Interval**	**666.0** **m**
Max. Hole/Bit Size		**16.000 / 16.000**		**in**	**To Report**	**016**	**Bottom of Interval**	**2,428.0** **m**

	active system to maintain pH, sulphite residual and PHPA concentration. At 1891m, increased mud weight to 9.0ppg with barite when cavings noted at shakers. Used 6 x 180 mesh screens. Centrifuge: Feed Rate = 45 gpm @ 2650 rpm Centrate = 8.7 ppg, Solids Dis. = 14.2 ppg
For Report # 013 On 11/09/2004	**Operation at Depth 2,428.0 m**
Rig Activity	Drill 12-1/4" hole from 2036m to 2428m. Circulate bottoms up and pump 40 bbls of 12.0ppg weighted pill. Significant amount of cavings observed with pill returns. Pumped 2nd weighted pill, circulating out at report time.
Activity	Circulating
Fluid Treatment	Mixed a further 600 bbls of Drispac/Soltex premix. Added caustic, BARACOR 129 and EZ-MUD direct to active pit. Maintained active volume and properties with premix additions. Increased mud weight to 9.2ppg in response to cavings over shakers. Dumped sandtrap to reduce drill solids in system. Mixed 160 bbls of weighted mud to 12.0 ppg for sweeps and slug. Centrifuge: 2700 rpm @ feed rate = 80 gpm centrate: 8.9 ppg, solids dis.: 14.7 ppg
For Report # 014 On 11/10/2004	**Operation at Depth 2,428.0 m**
Rig Activity	Circulated weighted sweep out, cavings observed. Continue to circulate 3 x b/u. Flow check & POOH to 2288m. Pump slug and POOH to 1533m (tight @ 1675m, 1591m). RIH to 1620m & circ. b/u. Flow check & POOH to 1185m (tight @ 1466m, 1435m). RIH to 1243m, circ. b/u & attempt to POOH - 25k overpull. Pump out of hole to 1079m - packed off - re-establish circ. - continue pump out to shoe @ 657m (backreaming tight spots @ 826m & 794m-784m). Pump 30 bbl 12ppg BAROLIFT sweep - large increase in cavings observed - circ clean. RIH to 2385m, reaming tight spots. Wash down to TD - no fill. Circulate bottoms up.
Activity	Wiper trip
Fluid Treatment	Mixed BARACOR 129 & caustic soda in active system while circulating on bottom, to maintain pH and sulphite residual. Continued additions of premix from reserve to active system to maintain volume and properties. Mixed a 12ppg BAROLIFT sweep - pumped 30 bbls at casing shoe on wiper trip , large increase in cuttings/cavings observed. Centrifuge: 2700 rpm @ feed rate = 80 gpm centrate: 9.0 ppg, solids dis.: 14.5 ppg
For Report # 015 On 11/11/2004	**Operation at Depth 2,428.0 m**
Rig Activity	Continue to circulate bottoms up, pumped 30 bbl 12ppg sweep & circulate out - small increase in cuttings. Circulate a further 2 x bottoms up. Flow check, POOH from 2428m to 1823m. Tight hole from 1843m to 1823m - 10k overpull, swabbing noted. RIH f/ 1823m to 1910m. Circulate bottoms up. Flow check - static. POOH, tight at 1823m. Pump out of hole to 1387m. POOH f/ 1387m to BHA. Rack back BHA & rig up casing handling equipment. RIH with 9-5/8" casing.
Activity	Run 9-5/8" casing
Fluid Treatment	Mixed BARACOR 129 and caustic soda in active while circulating on bottom, to maintain pH and sulphite residual.

Operations Log Recap

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval #	**03**		**From Report**	**008**	**Top of Interval**	**666.0**	**m**
Max. Hole/Bit Size	**16.000 / 16.000**	**in**	**To Report**	**016**	**Bottom of Interval**	**2,428.0**	**m**
	Transferred premix to active to maintain volume and chemical concentrations in active system. Ran centrifuge while circulating. Commenced cleaning pits for cement mix water and sugar water for cement job.						

For Report	**# 016**	**On**	**11/12/2004**	**Operation at Depth**	**2,428.0 m**
Rig Activity				Continued to run 9 5/8" casing. Broke circulation at 650 m and changed out side-door elevators to spider elevators. Continue RIH with casing and set at 2420 m. Rig up cement head and surface lines. Circulate 1.5 x casing volume. Mix and pump cement as per program. Lead slurry at 12.5ppg, tail slurry at 15.8ppg. Displaced cement with rig pumps.	
Activity				Displace Cement	
Fluid Treatment				Completed cleaning pits #6 & #8 for cement mix water & sugar water. Flushed mix lines. Mixed 57 sacks of Gold Seal Aquagel in cement mix water for cement job. Mixed 100 bbls (80 bbls pumpable) sugar water for spotting in the annulus and casing. Concentration: 20 ppb. Lost 41 bbls downhole while displacing cement. Mud check at 19:30 is a bottoms up sample while circulating the casing prior to cementing. Significant amount of fine solids observed over shakers on bottoms up.	

Operations Log Recap

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval #	**04**		**From Report**	**017**	**Top of Interval**	**2,428.0**	**m**
Max. Hole/Bit Size	**12.250 / 12.250**	**in**	**To Report**	**037A**	**Bottom of Interval**	**3,545.0**	**m**

For Report	**# 017**	**On**	**11/13/2004**	**Operation at Depth**	**2,428.0 m**
Rig Activity				Held pressure on casing and then rigged down cement lines. Made up circulating swedge and opened MLS ports. Circulated 3 times bottoms up with seawater, dumping returns. Pumped 82 bbls of sugar water down casing and through ports to fill annulus. Closed ports and pressure tested. Cut casing and pulled diverter. Raised BOP's and installed slip assembly. Furmanite cut and dressed 9 5/8" casing stub. Set pack off. Nipple up BOP.	
Activity				Nipple up B.O.P.	
Fluid Treatment				Daily New Volume : 0.5 bbls (8 1/2") Total New Volume : 0.5 bbls (8 1/2") Pre-treated active surface mud with 0.5 ppb sodium bicarbonate prior to running in to drill out cement. Finished cleaning sand trap. Dumped and cleaned settling tanks, trough and shaker beds. Downsized shaker screens as below, using previously used screens where possible. Used 4 x 200 mesh NEW Origin screens. Sorted out used shaker screens and scrapped 14. Circ mud from active pits to shaker tanks and processed through centrifuge to reduce mud weight.	
For Report	**# 018**	**On**	**11/14/2004**	**Operation at Depth**	**2,428.0 m**
Rig Activity				Nippled up BOP's pressure tested - leaking. Rig up and raise BOP, change out seal. Re-stab BOP, M/U fast loc connection & re-test BOP. Continue pressure testing, choke, kill & standpipe. L/D 12-1/4" BHA. Pick up and make up 8-1/2" BHA.	
Activity				M/U 8-1/2" BHA	
Fluid Treatment				Continued centrifuging mud offline. Processed mud through centrifuge from active pits #10 & #11 and discharged centrate to reserve pit #3. Mud check #1 performed after 450 bbls processed. Finished processing the remaining volume from active pits #10 and #11 with centrate to Pit #3. Transferred processed mud back to active pits. Added 0.5 ppb PHPA (EZ MUD DP) to dilution premix volume (will be charged to next interval). Centrifuged further reserve volume from pit #1, discharging centrate to active.	
For Report	**# 019**	**On**	**11/15/2004**	**Operation at Depth**	**2,539.0 m**
Rig Activity				Continued making up 8 1/2" BHA and running in hole. Shallow tested and ran survey at the wellhead. Conontinued running in with BHA and surveyed at MLS. Ran in with drillpipe to 2305 m. Conducted kick drill and stripping drill. Ran in and tagged at 2395 m. Drilled out plugs, FC, shoe track and shoe. Cleaned rat hole and drilled 3 m new formation to 2431 m. Circulated 9.2 ppg mud. Carried out an FIT to an EMW of 12.5 ppg after second attempt. Drilled 8 1/2" hole to 2539m.	
Activity				Drilling 8 1/2" hole	
Fluid Treatment				Daily New Volume:5.8 bbls, Total New Volume: 6.3 bbls Sugar water & interface from hole diverted to trip tanks, dumped and cleaned same. Mud from hole (unprocessed 9.5 ppg mud) diverted to reserve Pit #3 and replaced with processed (9.2 ppg) mud form Pits #10 and #11. Added additional sodium bicarbonate to active while drilling cement. Operated centrifuge continually: Mud Wt In=9.2 ppg, Centrate=9.0 ppg, 56 gpm, 2700 rpm and 1100 psi. Added PHPA to active to replace depletion. Added oxygen scavenger to programmed residual. Mixed Drispac in active to reduce filtrate loss toward spec. Commenced Soltex additions to further reduce filtrate loss.	

Interval #	**04**		**From Report**	**017**	**Top of Interval**	**2,428.0**	**m**
Max. Hole/Bit Size	**12.250 / 12.250**	**in**	**To Report**	**037A**	**Bottom of Interval**	**3,545.0**	**m**

For Report	**# 020**	**On**	**11/16/2004**	**Operation at Depth**	**2,735.0 m**
Rig Activity				Continued drilling 8 1/2" hole and circulating up samples looking for the first core point. Continued drilling and circulating samples to 2735 m. POOH from 2734m to 2626m on elevators - 25k overpull, hole swabbing. RIH to 2734m, circulate & pump out of hole to casing shoe. Flow check - static, service top drive. Pump slug & POOH to BHA at 217m. Rack back BHA in derrick.	
Activity				POOH w/ BHA	
Fluid Treatment				Daily New Volume : 10.5 bbls Total New Volume : 15.8 bbls Continued additions of Soltex to active system to reduce API & HTHP filtrate loss. Added BARACOR & caustic to active to maintain sulphite residual & pH. Bled premix into active to maintain volume and properties. Running only 3 shakers. Ran centrifuge continuously: Wt in=9.2, Cent=9.0, 23 gpm, 2700 rpm and 1100 psi. Maintained PHPA concentration and continued PAC treatments. Increased weight of slug for trips out. Sulphites= 0 ppm @ 2735 m.	
For Report	**# 021**	**On**	**11/17/2004**	**Operation at Depth**	**2,743.0 m**
Rig Activity				Completed pulling out of the hole. Downloaded MWD and racked back. Broke out bit and NBS and racked. Made up core barrel and coring BHA. Ran in to 2694 m and commenced washing down. Tagged up at 2719 m. Washed/reamed to bottom at 2735 m. Pulled back a stand and circulated bottoms up. Maximum gas was 16 units. Performed SCR's and rotating weights and torques. Cut core #1 from 2735-2743m - indication of jamming. Circulate bottoms up & POOH to shoe at 2420m. Flow check, pump slug & POOH to core assembly. Rack back 3 outer barrels & L/O 1st core barrel. M/U 8-1/2" drilling BHA.	
Activity				Make up 8 1/2" BHA	
Fluid Treatment				Daily New Volume : 30.1 bbls Total New Volume : 45.9 bbls Added seawater to active while circulating prior to coring to treat the effects of dehydration. Considerable losses over the shakers near bottoms up while circulating prior to coring. Used 3 NEW Origin 200 mesh shaker screens to replace those too damaged to repair. Scrapped 4 screens. Consolidated all premix in Pit #3.	
For Report	**# 022**	**On**	**11/18/2004**	**Operation at Depth**	**2,834.0 m**
Rig Activity				M/U & RIH with BHA to 217m. Shallow test MWD. Continue RIH to 2676m, was & ream tight spot. RIH to 2713m, wash & ream to 2735m (core point). Ream through cored section to 2743m. Drill 8-1/2" hole from 2743m to 2834m.	
Activity				Drilling 8 1/2" hole	
Fluid Treatment				Daily New Volume : 7.5 bbls Total New Volume : 53.4 bbls Maintained volume with premix additions. Treated active as required to maintain programmed properties. Maintained mud weight at 9.2 ppg. Ran centrifuge. Varied parameters as per active mud wt. Average: Wt in=9.2 ppg, Cent=9.1 gpm, Cake Wt= 16.1 ppg, Feed Rate=16.5 gpm, 2650 rpm and 940 psi. Used 1 NEW Origin 200 mesh shaker screen. Repaired damaged screens. Sulphites = 0 ppm @ 2823 m	

Interval #	**04**		**From Report**	**017**	**Top of Interval**	**2,428.0**	**m**
Max. Hole/Bit Size	**12.250 / 12.250**	**in**	**To Report**	**037A**	**Bottom of Interval**	**3,545.0**	**m**

For Report	**# 023**	**On**	**11/19/2004**	**Operation at Depth**	**3,148.0 m**
Rig Activity				Continued drilling 8 1/2" hole from 2834 m to 3148m flow checking drilling breaks and increased background gas units. Circulate for geological samples at 2973m and 3005m.	
Activity				Drilling 8 1/2" hole	
Fluid Treatment				Daily New Volume : 18.5 bbls Total New Volume : 71.9 bbls Gas increased to approx 770 units from 2928 m. Started to increase active mud weight to 9.3 ppg with heavy reserve mud, then added barite to increase and maintain the weight at 9.4 ppg. Added 0.23 ppb PHPA to the active to improve cuttings quality. Continued to run centrifuge. Average: Feed Wt=9.4 ppg, Cent Wt=8.8ppg, Cake Wt=16.4 ppg, Feed Rate=10 gpm, 2605 rpm, 1000 psi. Sulphites = 0 ppm @ 3025 m	
For Report	**# 024**	**On**	**11/20/2004**	**Operation at Depth**	**3,403.0 m**
Rig Activity				Continued drilling 8 1/2 " hole from 3148 m. Circulated gas (1559 units) down to <50 units from drilling break at 3152 m. Flow check was static. Flow check drilling breaks on trip tank at 3159 m, 3181 m, 3197 m, 3244m, 3329m 3384m and 3403m . All static. Drilled to 3403 m.	
Activity				Drilling 8-1/2" hole	
Fluid Treatment				Daily New Volume : 39.4 bbls Total New Volume : 111.3 bbls Used 3 NEW Origin 200 mesh shaker screens. Scrapped 3x200 screens. Topped up slug using remaining barite in surge tank. Miantained volume and 9.3+ to 9.4 ppg active mud weight with premix additions and varying centrifuge parameters which averaged: Feed Wt=9.4 ppg, Cent Wt=9.0 ppg, Cake Wt=16.6 ppg, Feed Rate=17 gpm, 2700 rpm, 1016 psi. Sulphites = 0 ppm @ 3351 m Baracor-129 oxygen scavenger usage high-most likely due to continuous operation of the degasser and centrifuge plus increased BHT.	
For Report	**# 025**	**On**	**11/21/2004**	**Operation at Depth**	**3,442.0 m**
Rig Activity				Continued drilling 8 1/2" hole from 3403 m. Flow checked break on trip tank. Well static. Drilled 3431m. Flow checked break on trip tank. Well static. Drilled to 3442 m, circulated bottoms-up and POOH for bit. Pipe pulled dry to 3120m then circulated and periodic back -reamed to casing shoe in response to tight hole conditions.	
Activity				Trip for new bit / slip and cut drlg line	
Fluid Treatment				Daily New Volume : 1.3 bbls Total New Volume : 112.6 bbls Used 1 NEW Origin 200 mesh shaker screens. Repaired and replaced damaged screens as necessary. Maintained mud weight at 9.3+ to 9.4 ppg with premix and centrifuge which averaged: Feed Wt=9.4 ppg, Cent Wt=8.95 ppg, Cake Wt=16 ppg, Feed Rate=20 gpm, 2730 rpm, 1065 psi. Consolidated remainder of premix and old excess active volume in Pit #3. Sulphites = 0 ppm @ 3442 m.	
For Report	**# 026**	**On**	**11/22/2004**	**Operation at Depth**	**3,442.0 m**
Rig Activity				Continued to POOH to casing shoe. Flow checked on trip tank. Well static. Slipped and cut drilling line. Carried out rig service. Pumped a slug and continued pulling out of hole to the BHA. Flow checked on trip tank. Well static. Pulled BHA and downloaded MWD. Changed out bit and racked back. Laid out core barrel. Make-up bit and mud motor assembly and RIH to casing shoe. Service top drive. Continue to	

Interval #	**04**		**From Report**	**017**	**Top of Interval**	**2,428.0**	**m**
Max. Hole/Bit Size	**12.250 / 12.250**	**in**	**To Report**	**037A**	**Bottom of Interval**	**3,545.0**	**m**

	run in, hole clean to bottom.
Activity	Drill 8-1/2" hole
Fluid Treatment	Daily New Volume : 65 bbls Total New Volume : 177.6 bbls Mixed additional new dilution/ weight control volume treated with extra fluid loss additives for treating active system prior to logging. Replaced damaged shaker screens with old repaired screens.

For Report	**# 027**	**On**	**11/23/2004**	**Operation at Depth**	**3,545.0 m**
Rig Activity				Work/break-in new bit for 1m. Drill ahead from 3442m to 3478m. Flow check drilling break at 3478m - OK. Drill ahead from 3478m to 3545m, well TD. Circulate 3x bottoms-up.	
Activity				POOH for E-logs	
Fluid Treatment				Daily New Volume : 120.8 bbls Total New Volume : 298.4 bbls Bled in new premix to maintain volume and help control mud weight. Premix treated so as to tighten up active system properties prior to anticipated extended wireline logging program. Ran centrifuge continually with parameters averaging: Feed Wt=9.4 ppg, Cent Wt=8.8 ppg, Cake Wt=15.7 ppg, Feed Rate=20 gpm, 2700 rpm, 1035 psi. Sulphites = 0 ppm @ 3503 m. Added seawater to active to counteract dehydration. Commenced flushing unused pits for possible use for brine storage.	

For Report	**# 028**	**On**	**11/24/2004**	**Operation at Depth**	**3,545.0 m**
Rig Activity				Continued pulling out of hole to shoe. Backreamed tight spots at 3374 m, 3365 m, and 3321 m. Maximum overpull was 50K. Worked through tight spot (15K) at 2725 m. Flow checked on trip tank at shoe. Well static. Pumped a slug and pulled to BHA. Flow checked again. OK. Racked back BHA. Laid out MWD, motor and bit. Rigged up Schlumberger. Ran wireline logs. Tools hung up at 3417m. Log up from 3417m.	
Activity				Wireline Logging	
Fluid Treatment				Daily New volume : 0 bbls Total New Volume : 298.4 bbls Continued flushing out unused pits for possible brine mixing. Retained mud as per bottom of report. Dumped and cleaned sand trap and settling tanks. Cleaned header tanks, shaker beds and troughs. Repaired damaged screens	

For Report	**# 029**	**On**	**11/25/2004**	**Operation at Depth**	**3,545.0 m**
Rig Activity				Continued wireline logging. Tools on second run got down to 3417 m. logged up from this depth. Made-up MDT tool string , RIH to 3419 m Logged out taking MDT samples.	
Activity				Wire Line logs	
Fluid Treatment				Daily New Volume : 0 bbls Total New Volume : 298.4 bbls Completed cleaning shaker tanks. Repaired shaker screens and replaced. Carried out maintenance on the degasser. Continued to flush and dump unused mud pits. Downhole losses while logging still approximately 1 bph.	

For Report	**# 030**	**On**	**11/26/2004**	**Operation at Depth**	**3,545.0 m**

Operations Log Recap

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval #	**04**		**From Report**	**017**	**Top of Interval**	**2,428.0**	**m**
Max. Hole/Bit Size	**12.250 / 12.250**	**in**	**To Report**	**037A**	**Bottom of Interval**	**3,545.0**	**m**

Rig Activity	Continued wireline logging with first MDT run up t0 3150 m. Detected oil leak. Pulled tool and repaired leak. Ran MDT back in and continued logging up.
Activity	Wireline Logging
Fluid Treatment	Daily New Volume : 0 bbls Total New Volume : 298.4 bbls Continued flushing and dumping unused mud pits for possible future cleanup pills and brine mixing. Hole taking just under 0.5 bph while logging.

For Report	**# 031**	**On**	**11/27/2004**	**Operation at Depth**	**3,545.0 m**

Rig Activity	Continued wireline logging run #3-MDT sampling. Completed logging run and rigged down wireline. Made up BHA and new bit and ran in hole for a wiper trip between wireline logging runs.
Activity	Wiper Trip
Fluid Treatment	Daily New Volume : 0 bbls Total New Volume : 298.4 bbls Continued flushing out pits. Hole still taking approximately 0.5 bph while logging. Filled cleaned shaker tanks (sand trap and 4 settling tanks) when starting into the hole.

For Report	**# 032**	**On**	**11/28/2004**	**Operation at Depth**	**3,545.0 m**

Rig Activity	Circulated 2550 units of gas (51%) at 2825 m. Ran in to 3150m and circulated 64% gas. Ran in to 3260 m and circulated 20.7% gas. Ran in to 3876 m and washed/reamed to bottom at 3545 m. No fill. Circulated 3 times bottoms up and started out of hole. Pumped slug at shoe. Pulled out and rigged up Schlumberger. Running wireline logs at report time.
Activity	Wireline Logging
Fluid Treatment	Daily New Volume : 1.1bbls Total New Volume : 299.5 bbls Added BARACOR 129 oxygen scavenger to requiured sulfite residual. Added additional caustic soda and baracide in anticipation of another period of extended wireline logging. Note that mud check #2 was bottoms up from TD. Replaced 3 x 265 mesh screens on #5 (mud cleaner) shaker with repaired 200 mesh screens in response to losses over the shakers. Ran centrifuge while washing/circulating. Feed Wt=9.45ppg, Cent Wt=9.1 ppg, Cake Wt=16.5 ppg, Feed Rate=20 gpm, 2600 rpm, 1000 psi. Sulphites=0 ppm @ bottoms up from 3545 m.

For Report	**# 033**	**On**	**11/29/2004**	**Operation at Depth**	**3,545.0 m**

Rig Activity	Continued wireline logging operations. Ran log #4-MSCT's. Recovered MSCT's and ran log #5-second MDT run.
Activity	Wireline Logging
Fluid Treatment	Daily New Volume : 0 bbls Total New Volume : 299.5 bbls Hole still taking approximately 1 bph while running wireline logs. Repaired damaged shaker screen to enable them to last the remainder of the well rather than use new ones. Scrapped 1 x 200 mesh screen. Continued flushing out unused mud pits.

Operations Log Recap

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval #		**04**		**From Report**	**017**	**Top of Interval**	**2,428.0**	**m**
Max. Hole/Bit Size		**12.250 / 12.250**	**in**	**To Report**	**037A**	**Bottom of Interval**	**3,545.0**	**m**
For Report	**# 034**	**On**	**11/30/2004**	**Operation at Depth**		**3,545.0 m**		
Rig Activity				Continued to log				
Activity				Wire Line logs				
For Report	**# 035**	**On**	**12/01/2004**	**Operation at Depth**		**3,545.0 m**		
Rig Activity				Continued to log				
Activity				Wire Line logs				
For Report	**# 036**	**On**	**12/02/2004**	**Operation at Depth**		**3,545.0 m**		
Rig Activity				Continued to log. Made up BHA and conducted wiper trip. Large amounts of gas noticed when circulating after every 10 stands down. Up to 57% noticed @ 3193m.				
Activity				Cond. mud & Circ.				
Fluid Treatment				Mixed 60 bbl Slug Note: Test 3 conducted on bottoms up sample once TD reached during wiper trip				
For Report	**# 037A**	**On**	**12/03/2004**	**Operation at Depth**		**3,545.0 m**		
Rig Activity				Continue circulate mud at 3545m. Flow check - static. POOH wet to 3396m, pump slug, drop 2-1/2" drift & POOH to 2409m. Flow check - static, continue POOH to BHA at 203m. POOH & L/D BHA. R/U weatherford equipment for 6-5/8" liner. P/U, M/U & RIH with liner to 1101 m				
Activity				RIH w/ 6-5/8" Liner				
Fluid Treatment				Transferred active mud to pit #7 to isolate system. Dump excess surface mud volume and commence cleaning pits in preparation for mixing brine and clean up pills. Cleaned pits #1, #2, and #3. Cleaning pits #4, #5, #10, #11, #8 & #9. Mixed hi-vis polymer for filling junk cover in liner hanger.				

Operations Log Recap

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval #		**05**			**From Report**	**038**	**Top of Interval**	**3,545.0** **m**
Max. Hole/Bit Size		**.000 / 8.500**		**in**	**To Report**	**056**	**Bottom of Interval**	**.0** **m**
For Report	**# 038**	**On**	**12/04/2004**		**Operation at Depth**		**3,545.0 m**	
Rig Activity					Continued running the 6-5/8" liner to 3458m - could not get all the way down. Then circulated 1.5 times b/up @ 3458m, then conducted cement job and POOH.			
Activity					Tripping			
Fluid Treatment					Continued with cleaning pits and lines in preparation for brine mixing. Pits #10, #11, #3 and #4 fully cleaned. Dumped surface active volume of mud to allow space for cement job displacement. Dumped cement contaminated returns when reversing out. Mixed 1000 bbls of 8.9ppg NaCl Brine. Started filtering the NaCl Brine.			
For Report	**# 039**	**On**	**12/05/2004**		**Operation at Depth**		**3,545.0 m**	
Rig Activity					Finish POOH, break down baker running tool, retrieve wear bushing, break out pup joint from cement head. Change out rams in B.O.P. Fill B.O.P and test. Make up cleanout assembly and RIH.			
Activity					Tripping			
Fluid Treatment					Completed filtering the first batch of 8.9 ppg NaCl brine. Mixed an additional 700 bbls of 8.9 ppg sodium chloride brine. 400 of the 700 bbls was filtered. All filtered brine turbitity < 7 NTU.			
For Report	**# 040**	**On**	**12/06/2004**		**Operation at Depth**		**3,545.0 m**	
Rig Activity					TIH with wellbore cleanout assembly. Pump 50 bbls Hi-Vis followed by two hole volumes of seawater. Then pumped the following clean up sweeps: 50 bbl CON DET, 100 bbl Caustic Sweep, 90 bbl BARAKLEAN FL sweep and then 50 bbl Hi-Vis. Chase with seawater until 3 consecutive 15 min NTU readings were under 80.			
Activity					Displacing to Brine			
Fluid Treatment					Continued to make clean up pills: 100 bbl 5% BARAKLEAN FL Pill 80 bbl 3% CON DET Pill Also mixed 100 bbls of Inhibited Filtered 8.9 ppg NaCl Brine, for spotting in liner: 0.25 ppb BARACIDE 0.5 ppb caustic soda 1 ppb BARACOR 129 oxygen scavenger 0.5% BARACOR 100 corrosion inhibitor			
For Report	**# 041**	**On**	**12/07/2004**		**Operation at Depth**		**3,545.0 m**	
Rig Activity					Displaced well to 8.9 ppg brine, leaving inhibited brine inside liner. Rack back 1 stand, R/U Dowell & pressure test liner top & casing. POOH to 1131m. L/O 9-5/8" scraper & PBR mill. Continue to POOH & L/O scraper assy. Rig up & conduct wireline logging.			
Activity					Wire Line logs			
Fluid Treatment					Completed displacing hole to 8.9 ppg Filtered NaCl Brine. Spotted Inhibited Brine in liner. Dumped seawater and interface returns from hole.			
For Report	**# 042**	**On**	**12/08/2004**		**Operation at Depth**		**3,545.0 m**	

Operations Log Recap

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval #		**05**			**From Report**	**038**	**Top of Interval**	**3,545.0 m**
Max. Hole/Bit Size		**.000 / 8.500**		**in**	**To Report**	**056**	**Bottom of Interval**	**.0 m**
Rig Activity					Continue with wireline logging. Pull wear bushing. R/U and test BOPs with 3-1/2" DP. Set wear bushing. R/U handling gear for TCP gun / tail pipe assy. P/U & M/U TCP gun assy & RIH on wireline. Set guns. POOH with wireline. Wait on weather.			
Activity					Wait on Weather			
Fluid Treatment					Flushed and cleaned pits used for clean up pills.			
For Report	**# 043**	**On**	**12/09/2004**		**Operation at Depth**	**3,545.0 m**		
Rig Activity					Wait on weather. P/U & M/U DST tool string assembly.			
Activity					M/U DST Assembly			
For Report	**# 044**	**On**	**12/10/2004**		**Operation at Depth**	**3,545.0 m**		
Rig Activity					Continue to M/U DST string assembly and RIH on 2-7/8" tubing.			
Activity					RIH w/ DST Assy. on Tubing			
Fluid Treatment					Mixed and filtered 900 bbls of sodium chloride brine at 9.1 ppg.			
For Report	**# 045**	**On**	**12/11/2004**		**Operation at Depth**	**3,545.0 m**		
Rig Activity					Continue with DST testing as per program.			
Activity					DST Test			
Fluid Treatment					Mixed saturated sodium chloride brine in filtered drillwater. Saturated brine will be used to mix a sized salt LCM pill. Back loaded remaining stock of Soltex Potassium, Drispac R & Desco CF.			
For Report	**# 046**	**On**	**12/12/2004**		**Operation at Depth**	**3,545.0 m**		
Rig Activity					Continue with well testing program.			
Activity					DST Test			
Fluid Treatment					Mixed 90 bbls of sized salt pill as follows: N-VIS P PLUS 6 ppb BARABUF 3 ppb Ultrasal 20E 35 ppb Filtered brine returns from well displacement back to active pit #10.			
For Report	**# 047**	**On**	**12/13/2004**		**Operation at Depth**	**3,545.0 m**		
Rig Activity					Continue with well testing program.			
Activity					Well Testing			
For Report	**# 048**	**On**	**12/14/2004**		**Operation at Depth**	**3,545.0 m**		
Rig Activity					Continue with well testing program.			
Activity					Well Testing			

Operations Log Recap

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Interval #	**05**		**From Report**	**038**	**Top of Interval**	**3,545.0**	**m**
Max. Hole/Bit Size	**.000 / 8.500**	**in**	**To Report**	**056**	**Bottom of Interval**	**.0**	**m**

Fluid Treatment	Transferred 40 bbls of 9.1 ppg brine to active pit #10 and dilute with drillwater to fill up active with 8.9 ppg brine.
For Report # 049 On 12/15/2004	**Operation at Depth 3,545.0 m**
Rig Activity	Continue with well shut in for build up period. Bleed down tubing. Dowell pump 65 bbls of 8.9ppg brine to fill up tubing. Open PCT valve and start bullhead operations. Pump 23 bbls brine - max pressure 2500psi. Flow check - static. Open packer bypass & reverse circulate two tubing volumes. Flush well test equipment. Rig down flow head. RIH 3 stands & reverse circulate out gas. Circulate conventionally 1.5 times hole volume and gas free. Spot 20 bbls sized salt pill across perforations. Flow check - static. POOH with DST string.
Activity	POOH with DST String
Fluid Treatment	Spotted 20 bbl sized salt pill across perforations. Diluted 9.1ppg brine to reduce weight to 8.9 ppg. BARAFILM corrosion inhibitor supplied to rig floor, to coat inside of tubing on trip out.
For Report # 050 On 12/16/2004	**Operation at Depth 3,545.0 m**
Rig Activity	Continue to pull out of hole with 3-1/2" tubing string and DST assembly.
Activity	POOH with DST String
Fluid Treatment	Diluted remaining saturated brine to 8.9 ppg with drillwater. Dumped and flushed clean sized salt pill from slug pit. Mixed in slug pit, hi-vis pill in 8.9ppg brine. Commenced preparation of inhibited fluid for spotting in hole above each cement plug.
For Report # 051 On 12/17/2004	**Operation at Depth 2,989.0 m**
Rig Activity	Continued pulling out of hole and laying out tubing, testing equipment and other tubulars. Made up cement retainer and ran in and set at 3031 m. Circulated hole and dumped sized-salt pill. Set cement plug #1 from 3029-2989 m. Reversed circulated and dumped slightly cement contaminated brine. Pressure tested and reverse circulated to help clean retainer setting tool. Spotted 117 bbls of inhibited brine on bottom. Spotted 5 bbls of hi vis. Pulling out and laying out tubulars at midnight report time.
Activity	Suspension Operations
Fluid Treatment	Added BARACOR 100 corrosion inhibitor just prior to spotting 117 bbls of inhibited brine on bottom above first cement plug. Spotted 5 bbls of hi-vis from 2290-2260 m. Dumped remaining surface mud and flushed pits clean.
For Report # 052 On 12/18/2004	**Operation at Depth 860.0 m**
Rig Activity	Continued pulling out and laying out tubulars to 2260 m. Circulated and set cement plug #2 from 2260-2220 m. Pulled 5 stands and reverse circulated. Only preflush water observed at surface. Circulated bottoms up to clean up retainer setting tool. Spotted 345 bbls of inhibited brine on top of #2 cement plug. Pulled out to 900 m laying out tubulars. Set cement plug #3 from 900-860 m. Pulled 4 stands and reverse circulated. Only clean preflush water observed at surface. Circulated bottoms up to clean retainer setting tool. Spotted 175 bbls of inhibited brine above plug to seabed at 109 m. Continuing pulling out of hole laying out tubulars at 21:00 hrs report time.
Activity	Suspension Operations.

Interval #	**05**		**From Report**	**038**	**Top of Interval**	**3,545.0**	**m**
Max. Hole/Bit Size	**.000 / 8.500**	**in**	**To Report**	**056**	**Bottom of Interval**	**.0**	**m**
Fluid Treatment	Added BARACOR 100 corrosion inhibitor just prior to spotting 345 bbls of inhibited brine above second cement plug. Added BARACOR 100 corrosion inhibitor to 175 bbls of inhibited brine spotted above cement plug #3 to seabed. Continued dumping excess surface fluid volume and cleaning pits. Backloaded Flowzan for return to Port Melbourne.						
For Report	**# 053**	**On**	**12/19/2004**	**Operation at Depth**	**108.8 m**		
Rig Activity	Continued pulling out of hole laying out tubulars. Ran in with a 3 1/2" tubing stinger on 3 1/2" drill pipe and pumped a 55 bbl top up cement job. Nippled down diverter and nippling down BOP's at 18:00 hrs report time.						
Activity	Suspension Operations						
Fluid Treatment	Continued dumping and cleaning pits. Retained inhibited brine and an active pit of 8.9 NaCl brine. NO CHEMICAL ADDITIONS TODAY. Ensco received the following shaker screens: PMD500HP80 = 38 screens PMDHT500HP200 = 20 screens PMDHT500DX210 = 18 screens Note that the "HT" designated screens are supposedly "glycol resistant" as required on the next contract.						
For Report	**# 054**	**On**	**12/20/2004**	**Operation at Depth**	**108.8 m**		
Rig Activity	Finished nippling down BOP's and moved to test stump. Pulled seal assembly. Made up 9 5/8" casing cutter and ran in to 27 m on 5" HWDP. Cut 9 5/8" casing at 27 m. laid out cutter. Ran in with 9 5/8" casing spear and pulled cut piece of casing. Ran spear and engagd casing at 29 m and commenced pulling. Noticed that both wellhead and 13 3/8" casing were coming out. Ran 8.25" multi-cutter and cut 9 5/8" at 144 m. Pulled cutter and ran in type "B" spear to 27 m and engaged 9 5/8" at 27 m. Pulled to rotary tabled and secured.Cut holes in casing, rigged slings and pulled 9 5/8". Ran 13 3/8" casing spear and engaged casing. Pulling 13 3/8" casing at 21:00 hrs report time.						
Activity	Suspension Operations						
Fluid Treatment	Continued dumping and flush cleaning pits. Organized sack room for tow, stowing chemicals for backloading and those to be used for top hole on the next well so that they are easily accessible. Mixed 68 bbls of hi-vis 8.9 ppg NaCl brine for jetting after pulling casing. Used BARAZAN D Plus as Flowzan had been backloaded to shore. ABOVE CHEMICAL USAGE CHARGED TO COMPLETION COSTS.						
For Report	**# 055**	**On**	**12/21/2004**	**Operation at Depth**	**.0 m**		
Rig Activity	Continued suspension operations. Pulled and laid out 13 3/8" casing. Laid down 13 3/8" and 9 5/8" hangers together. Ran in with 3.5" pup on 5" drill pipe to 160 m and pumped 66 bbls of hi-vis 8.9 ppg NaCl brine, displacing with seawater. Pumped 36 bbls of inhibited 8.9 ppg NaCl brine, displacing with seawater. Ran 9 5/8" TA cap but unable to get past 117 m. Set at 158.5 m. Ran and set 13 3/8" TA cap at 157.6 m. Laid down wellhead. Ran 30" casing retrieval string. Pulling and laying out 30" casing at 20:00 hrs report time.						
Activity	Suspension Operations						
Fluid Treatment	After pulling 13 3/8" casing, ran in and jetted with 66 bbls of hi-vis brine to help clean out in cement debris. Spotted remaining accessible inhibited brine (36 bbls) in hole. The above was displaced with seawater. Dumped all remaining pits except for 335 bbls of 8.9 ppg NaCl brine retained in #10						

Interval #	**05**		**From Report**	**038**	**Top of Interval**	**3,545.0**	**m**
Max. Hole/Bit Size	**.000 / 8.500**	**in**	**To Report**	**056**	**Bottom of Interval**	**.0**	**m**

	active pit.
For Report # 056 On 12/22/2004	**Operation at Depth .0 m**
Rig Activity	Completed pulling and laying out 30" casing. Ran and installed 30" trash cap. ROV carried out seabed inspection-OK. Pulled guidelines. Layed out tubulars still racked in the derrick and preparing for rig move at 18:00 hrs report time. FINAL REPORT FOR TREFOIL-1.
Activity	Suspension/Prepare for Rig Move
Fluid Treatment	Dumped remaining 335 bbls of 8.9 ppg NaCl brine. All pits now dumped and being cleaned by personnel in the pits. All pallets in the Aft sackroom down to just one pallet high in preparation for the rig move. Some pallets in the Forward sackroom still stacked two high. All shaker screens can be removed, cleaned, inspected and repaired. THIS IS THE FINAL MUD REPORT FOR ORIGIN'S TREFOIL-1 WELL. (Rig still contracted to Origin until underway and 1 nautical mile away from Trefoil-1 location).

Well Name	**Trefoil-1**
Operator	**Origin Energy Resources Ltd**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

Deviation Actual

Survey Date	MD m	TVD m	Angle	Direction	Horiz Displ. m
10/30/2004	218	218			
11/03/2004	666	666	0.24	257.8	
11/11/2004	2,428	2,428	0.12	65.4	
11/15/2004	2,522	2,522	0.43	64.8	1.0
11/16/2004	2,638	2,638	0.67	69.4	0.1
11/18/2004	2,754	2,754	0.42	60.4	1.1
11/19/2004	2,842	2,841	0.44	69.8	1.6
11/19/2004	2,958	2,958	0.45	75.3	2.4
11/19/2004	3,070	3,070	0.38	83.9	3.1
11/20/2004	3,161	3,161	0.32	87.8	3.6
11/20/2004	3,248	3,248	0.28	78.1	3.9
11/20/2004	3,335	3,335	0.45	62.5	4.6
11/21/2004	3,421	3,421	0.73	77.2	5.5
11/23/2004	3,545	3,545	0.45	83.8	6.6

Company	**Origin Energy Resources Ltd**
Well Name	**Trefoil-1**
Contractor	**Ensco Australia Pty Ltd**
Rig No	**Ensco 102**
Unit System	**Esso**

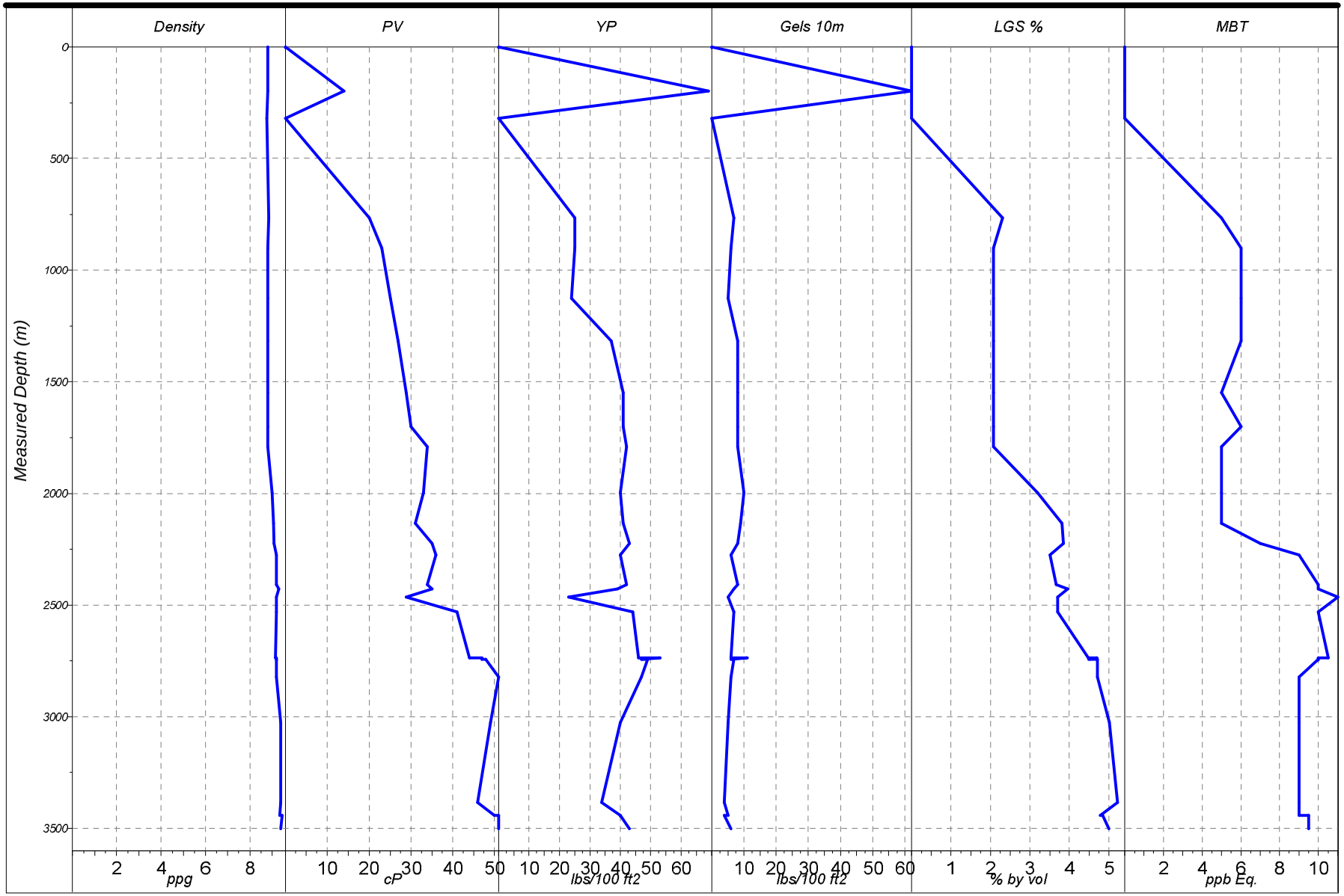
Bit Record Report

Run No	Bit No	Bit Size in	Bit Manufacturer	Bit Type	Bit Style	IADC Code	Serial Number	Jet or TFA sq-in	Depth Out m	Run Length m	ROP m/hr	WOB lb	Bit RPM	Pump Press psi	Pump OutPut gpm	Fluid Type	Fluid Weight ppg	Hole Angle	Bit Grading	Reason Pulled
1	1	26.000	RTC	Y11	MT	111	JT3368	3x24	218.0	109.0	15.6	4.0	45	580.0	1,000	SWEEP	8.80		1-1-NO-A-1-I-NO-TD	TD - Total/Casing Depth
2	2	16.000	HTC	MX-1	MT	117		3x24	666.0	448.0	28.0	10,000.0	144	1,100.0	800	SWEEP	8.80	0.24	2-2-WT-A-E-I-NO-TD	TD - Total/Casing Depth
3	3	12.250	REED-HYCALOG	RSX162	FC		206574	6x18	2,428.0	1,762.0	25.8	12,000.0	196	3,650.0	854	Flowzan/Drispac	9.20	0.12	1-1-NO-A-X-I-NO-TD	TD - Total/Casing Depth
4	4	8.500	SMITH	MA74EPX	FC		JT3386	3x16|3x18	2,735.0	307.0	26.8	11,000.0	170	2,900.0	556	Flowzan/Drispac	9.20	0.12	1-1-CT-S-X-I-NO-CP	CP - Core Point
5	5	8.500	DBS	CD 93	CH	M233	7981361	0.930	2,743.0	8.0	3.0	16.0	70	1,200.0	217	Flowzan/Drispac	9.20	0.54	1-Jan	Recover Core #1
6	4RR1	8.500	SMITH	MA74EPX	FC		JT3386	3x16|3x18	3,442.0	699.0	11.9	30,000.0	85	3,400.0	544	Flowzan/Drispac	9.40	0.73	2-3-FC-S-X-I-CT-PR	PR - Penetration Rate
7	6	8.500	HTC	MX20DHX	IN		6024175	3x18	3,545.0	103.0	5.5	38,000.0	288	4,000.0	527	Flowzan/Drispac	9.40	0.45	2-2-CT-M2-E-I-NO-TD	TD - Total/Casing Depth
8	7	8.500	HTC	ATJ-G8	MT	347	6010646	3x24	3,545.0				45	3,360.0	562	Flowzan/Drispac	9.40	0.73	1-1-NO-N/A-E-I-NO LOG	Wiper trip between logs

Recap Properties Water Based vs Depth Set 1

Well : Trefoil-1

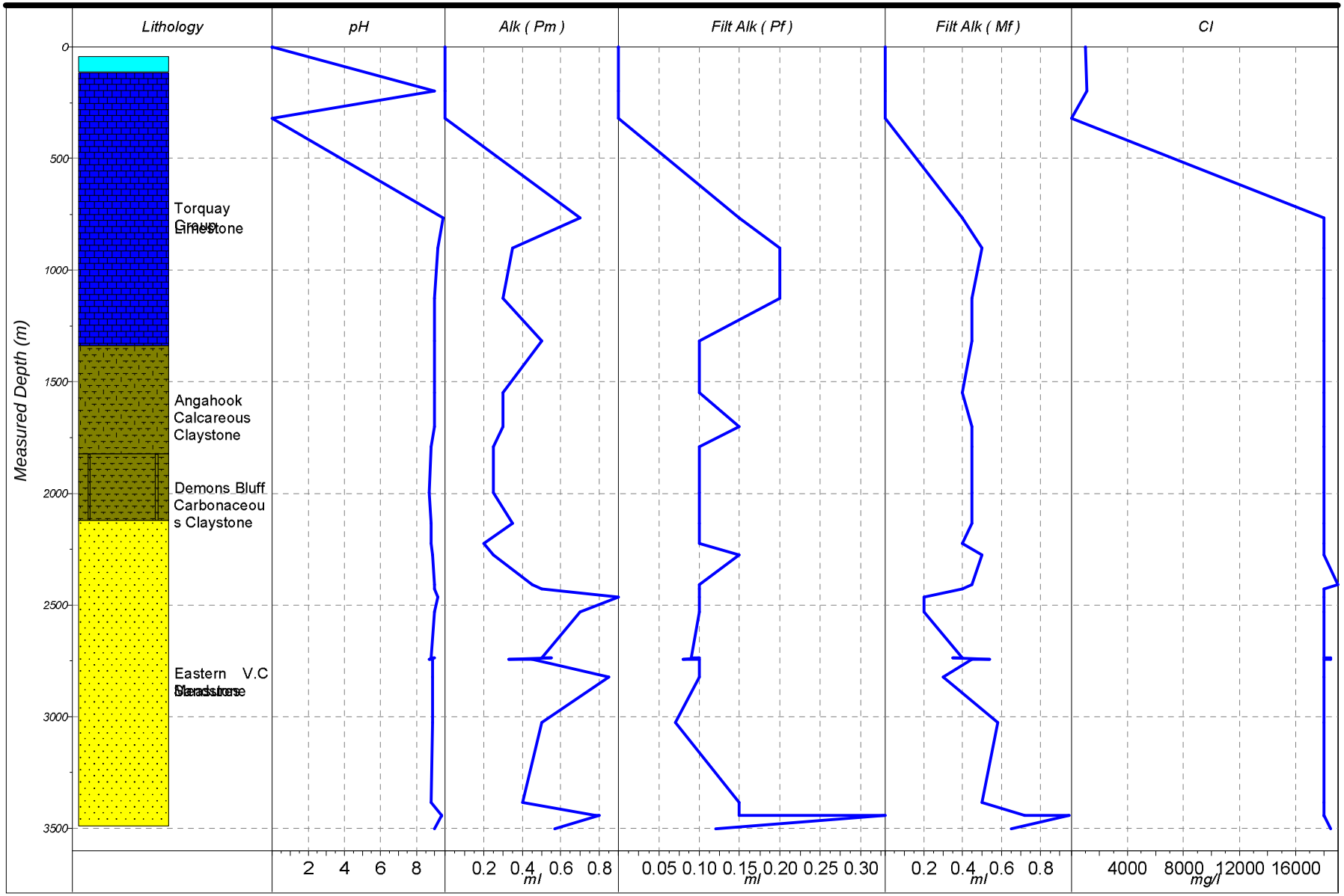
Operator : Origin Energy Resources Ltd



Recap Properties Water Based vs Depth Set 2

Well : Trefoil-1

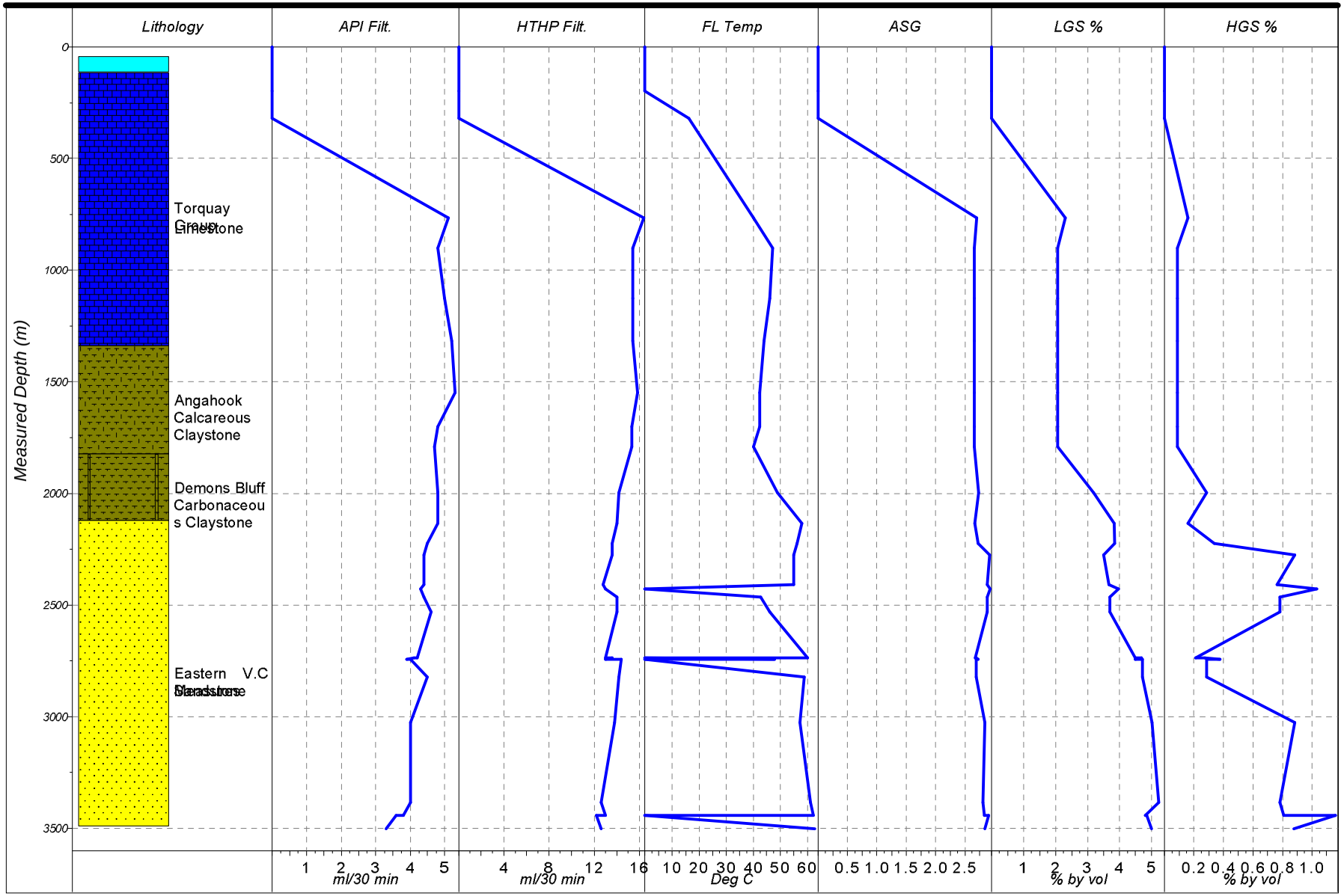
Operator : Origin Energy Resources Ltd



Recap Properties Water Based vs Depth Set 3

Well : Trefoil-1

Operator : Origin Energy Resources Ltd



APPENDIX 19: WATER ANALYSIS & PVT REPORTS

(A) Petrolab Report

A. C. N. # 008 130 667
Adelaide, May 25, 2004
P. O. Box 410
Magill
S. A. 5072

Origin Energy Resources Limited
1 King William Street
PO Box 1199
Adelaide
S.A. 5000

Subject : Reservoir Fluid Study
Well: Trefoil # 1
File: O – 24073

Attention: Mr. Joe Parvar

Dear Sirs,

In December, 2004, separator samples from two DSTs and 9 MDT bottom hole samples collected by Schlumberger, were received in our Adelaide laboratory where they were used in a reservoir fluid study. The results of the tests are presented in the following report.

Upon arrival in the laboratory, the samples were subjected to quality checks in order to select the most representative samples to be used.

We determined the single phase opening pressures of the separator gas samples, at approximately 10 °C higher than the separator temperature, to see if any leakage had taken place during transportation. We then determined the compositions by means of gas chromatography.

The validity of the separator liquid samples was checked by measuring their bubble point pressures at room temperature and correlating these pressures with gas opening pressures and field separator pressures.

The compositions of the separator liquid samples were determined by flashing the samples under atmospheric conditions into two phases. Through measurements of densities, molecular weights, quantities produced and compositions of the evolved stock tank gas and liquid from the flash experiments, we were able to mathematically recombine these products into the desired fluid compositions. The compositions were extended to C-12+ by means of Capillary Column Gas Chromatography on the flashed stock tank liquids.

Mathematical recombinations of the separator products into their produced field ratios, after corrections of the produced separator gas rates, resulted in the actual produced reservoir fluid

compositions.

These standard corrections result in more accurate gas rates by dividing out the assumed field values of the gas gravity and super compressibility factors (Fg and Fpv) and multiplying in, the values of these factors found in the laboratory.

We then physically recombined the best set of the 2nd DST and performed a Constant Mass Study on the mixture.

On all MDT samples compositional analyses were performed. Two other samples were selected for a Constant Composition Expansions while a third collected from 2968.7 m was used for a complete Gas Condensate PVT study.

This reservoir fluid was charged to a visual P V T cell and thermally expanded to the reservoir temperature of 240 °F. During a constant composition expansion at this temperature, a dew point pressure of 4160 psig was observed.

Other data obtained during these Pressure - Volume relations' experiments, include relative volume versus pressure, gas compressibility, specific volume and gas expansion above the dew point and the distribution of retrograde liquid versus pressure below it.

The reservoir fluid was then produced by means of constant volume differential depletions. At each depletion pressure, the amount and composition of the produced wellstream was determined and the retrograde liquid observed. Together with other measured gas properties this data allowed us to calculate the compositions of the retrograde liquid remaining in the cell.

The produced compositions and volumes from the depletion study were used in conjunction with published equilibrium constants to calculate cumulative surface recoveries resulting from conventional separation.

Routine water analyses were performed on stock tank water samples recovered from the separator and two bottom hole samples.

Some other tests including SARA and BTX content were also performed on recovered stock tank liquid and trace metals in the produced separator gas were analysed for.

We thank Origin Energy Resources Limited for the opportunity to be of service. Please do not hesitate in contacting us should you require any further information or if we can assist you in any other way.

Yours Sincerely,

Jan G. Bon
Manager

PETROLAB

Company : Origin Energy Resources Limited
Well : Trefoil # 1 File : O - 24073

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PETROLAB

Company : Origin Energy Resources Limited
Well : Trefoil # 1 File : O - 24073

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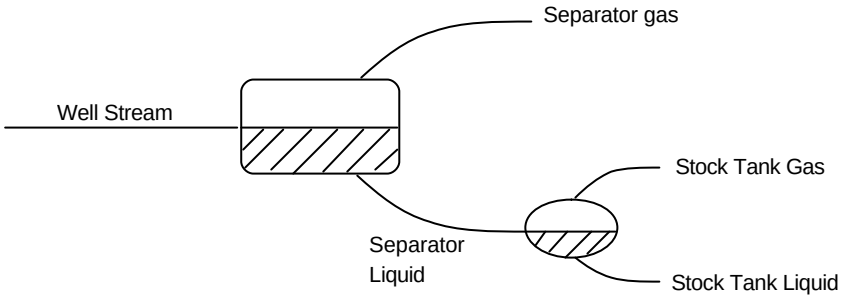
Gas Contaminates

TRACE METALS ANALYSIS

Customer Sample ID		Sample #1.05	Sample #1.06	Sample #2.06	Sample #2.07
Well ID		Trefoil-1 DST-1	Trefoil-1 DST-1	Trefoil-1 DST-2	Trefoil-1 DST-2
Description		Origin Energy	Origin Energy	Origin Energy	Origin Energy
Date Collected		12/12/2004	12/12/2004	14/12/2004	14/12/2004
Time Collected		02:15	02:15	11:02	11:02
Date Received		14/01/2005	14/01/2005	14/01/2005	14/01/2005
Sample Type		Water	Water	Water	Water
Test/Reference	Unit				
Trace Metals					
Arsenic	mg/M^3	<0.012	<0.012	<0.012	<0.012
Cadmium	mg/M^3	<0.012	<0.012	<0.012	<0.012
Chromium	mg/M^3	<0.012	<0.012	<0.012	<0.012
Cobalt	mg/M^3	<0.012	<0.012	0.027	<0.012
Copper	mg/M^3	0.027	0.042	0.020	0.015
Manganese	mg/M^3	<0.012	<0.012	<0.012	<0.012
Molybdenum	mg/M^3	<0.012	<0.012	<0.012	<0.012
Nickel	mg/M^3	<0.012	<0.012	<0.012	<0.012
Lead	mg/M^3	<0.012	0.015	<0.012	<0.012
Antimony	mg/M^3	<0.012	<0.012	<0.012	<0.012
Selenium	mg/M^3	0.047	0.050	0.047	0.050
Tin	mg/M^3	<0.012	<0.012	<0.012	<0.012
Zinc	mg/M^3	0.099	0.273	0.057	0.045
Barium	mg/M^3	0.012	0.020	0.022	0.012
Beryllium	mg/M^3	<0.012	<0.012	<0.012	<0.012
Boron	mg/M^3	0.092	0.035	0.102	0.119
Vanadium	mg/M^3	<0.012	<0.012	<0.012	<0.012

Sand	CHDST#1 L-684 / 3189-A			CHDST#2 L-691 / 4564-A		
	B	T	X	B	T	X
Wt% of BTX - ST Gas	2.23	2.29	1.14	0.35	0.72	0.57
Wt% of BTX - ST Liq	2.16	1.91	4.69	0.34	2.05	5.10
Wt% of BTX - Sep Gas	0.40	0.45	0.35	0.17	0.99	0.31
Wt% of BTX - Sep Liq	2.17	1.94	4.41	0.34	1.99	4.91
Wt% of BTX - Well Stream	**0.51**	**0.54**	**0.61**	**0.20**	**1.11**	**0.87**



SARA

		CHDST#1 L-684 / 3189-A	CHDST#2 L-691 / 4564-A
(S)aturates	(wt%)	34.9	51.9
(A)romates	(wt%)	64.9	48.0
(R)esins	(wt%)	0.2	0.1
(A)sphaltenes	(wt%)	< 0.1	< 0.1

Surface Samples

WATER ANALYSIS

Customer Sample ID		Trefoil - 1 Origin	Yolla - 3
Date Collected			24/08/2004
Date Received		06/12/2004	06/12/2004
Sample Type		Filtrate	Filtrate
Test/Reference	Unit		
PROPERTIES: APHA 20th Ed			
pH at Measured Temp.*		8.2	8.3
Measured Temp.*	°C	22.3	22.3
Electrical Conductivity @ 25°C*	µS/cm	58100	68500
Resistivity @ 25°C*	M.Ohm	0.17	0.15
ANIONS mg/L APHA 20th ed			
Hydroxide as OH*	mg/L	<1	<1
Carbonate as CO3*	mg/L	<1	<1
Bicarbonate as HCO3*	mg/L	1679	979
Chloride as Cl*	mg/L	18673	26954
Nitrate as NO3*	mg/L	<0.1	<0.1
Sulphate as SO4*	mg/L	11354	6722
Total Anions*	mg/L	31706	34655
ANIONS meq/L APHA 20th ed			
Hydroxide as OH*	meq/L	<0.01	<0.01
Carbonate as CO3*	meq/L	<0.01	<0.01
Bicarbonate as HCO3*	meq/L	27.53	16.06
Chloride as Cl*	meq/L	526.00	759.27
Nitrate as NO3*	meq/L	<0.01	<0.01
Sulphate as SO4*	meq/L	236.40	139.96
Total Anions*	meq/L	789.93	915.28
CATIONS mg/L APHA 20th ed			
Potassium as K*	mg/L	2145	5920
Sodium as Na*	mg/L	16470	16600
Calcium as Ca*	mg/L	65	393
Magnesium as Mg*	mg/L	20	824
Total Cations*	mg/L	18700	23737
CATIONS meq/L APHA 20th ed			
Potassium as K*	meq/L	54.86	151.41
Sodium as Na*	meq/L	716.40	722.05
Calcium as Ca*	meq/L	3.24	19.61
Magnesium as Mg*	meq/L	1.65	67.82
Total Cations*	meq/L	776.15	960.89
DERIVED PARAMETERS APHA 20th ed			
Ion balance (Diff * 100/Sum)*	%	0.88	2.43
Acceptance Criteria*	%	5	5
Satisfactory*		Yes	Yes
Total Alkalinity (calc as CaCO3)*	mg/L	1376	803
Total Cations + Anions*	mg/L	50406	58392
Hardness (calc as CaCO3)*	mg/L	245	4375
Calculated Total Dissolved Solids	mg/L	37184	43840

WATER ANALYSIS

Customer Sample ID		Sample #1.18	Sample #2.16
Description		Trefoil-1 DST-1 Origin Energy	Trefoil-1 DST-2 Origin Energy
Date Collected		12/12/2004	14/12/2004
Time Collected		23:35	14:55
Date Received		14/01/2005	14/01/2005
Sample Type	Unit	Water	Water
PROPERTIES: APHA 20th Ed			
pH at Measured Temp.		6.2	6.0
Measured Temp.	°C	23.4	23.4
Electrical Conductivity @ 25°C	µS/cm	6090	7820
Resistivity @ 25°C	M.Ohm	1.64	1.28
ANIONS mg/L APHA 20th ed			
Hydroxide as OH	mg/L	<1	<1
Carbonate as CO3	mg/L	<1	<1
Bicarbonate as HCO3	mg/L	720	516
Chloride as Cl	mg/L	2195	3257
Nitrate as NO3	mg/L	0.4	<0.1
Sulphate as SO4	mg/L	573	1081
Total Anions	mg/L	3488	4854
ANIONS meq/L APHA 20th ed			
Hydroxide as OH	meq/L	<0.01	<0.01
Carbonate as CO3	meq/L	<0.01	<0.01
Bicarbonate as HCO3	meq/L	11.80	8.45
Chloride as Cl	meq/L	61.83	91.75
Nitrate as NO3	meq/L	0.01	<0.01
Sulphate as SO4	meq/L	11.93	22.51
Total Anions	meq/L	85.56	122.71
CATIONS mg/L APHA 20th ed			
Potassium as K	mg/L	510	338
Sodium as Na	mg/L	1345	2130
Calcium as Ca	mg/L	124	193
Magnesium as Mg	mg/L	19	11
Total Cations	mg/L	1998	2672
CATIONS meq/L APHA 20th ed			
Potassium as K	meq/L	13.04	8.64
Sodium as Na	meq/L	58.50	92.65
Calcium as Ca	meq/L	6.19	9.63
Magnesium as Mg	meq/L	1.56	0.91
Total Cations	meq/L	79.30	111.83
DERIVED PARAMETERS APHA 20th ed			
Ion balance (Diff * 100/Sum)	%	3.80	4.64
Acceptance Criteria	%	5	5
Satisfactory		Yes	Yes
Total Alkalinity (calc as CaCO3)	mg/L	590	423
Total Cations + Anions	mg/L	5486	7526
Hardness (calc as CaCO3)	mg/L	388	527
Calculated Total Dissolved Solids	mg/L	3898	5005

Surface Samples Validity Check
CHDST#1

Saturation Pressure : 380 psig @ 77 ° F

Surface Samples Set # 1 of 3

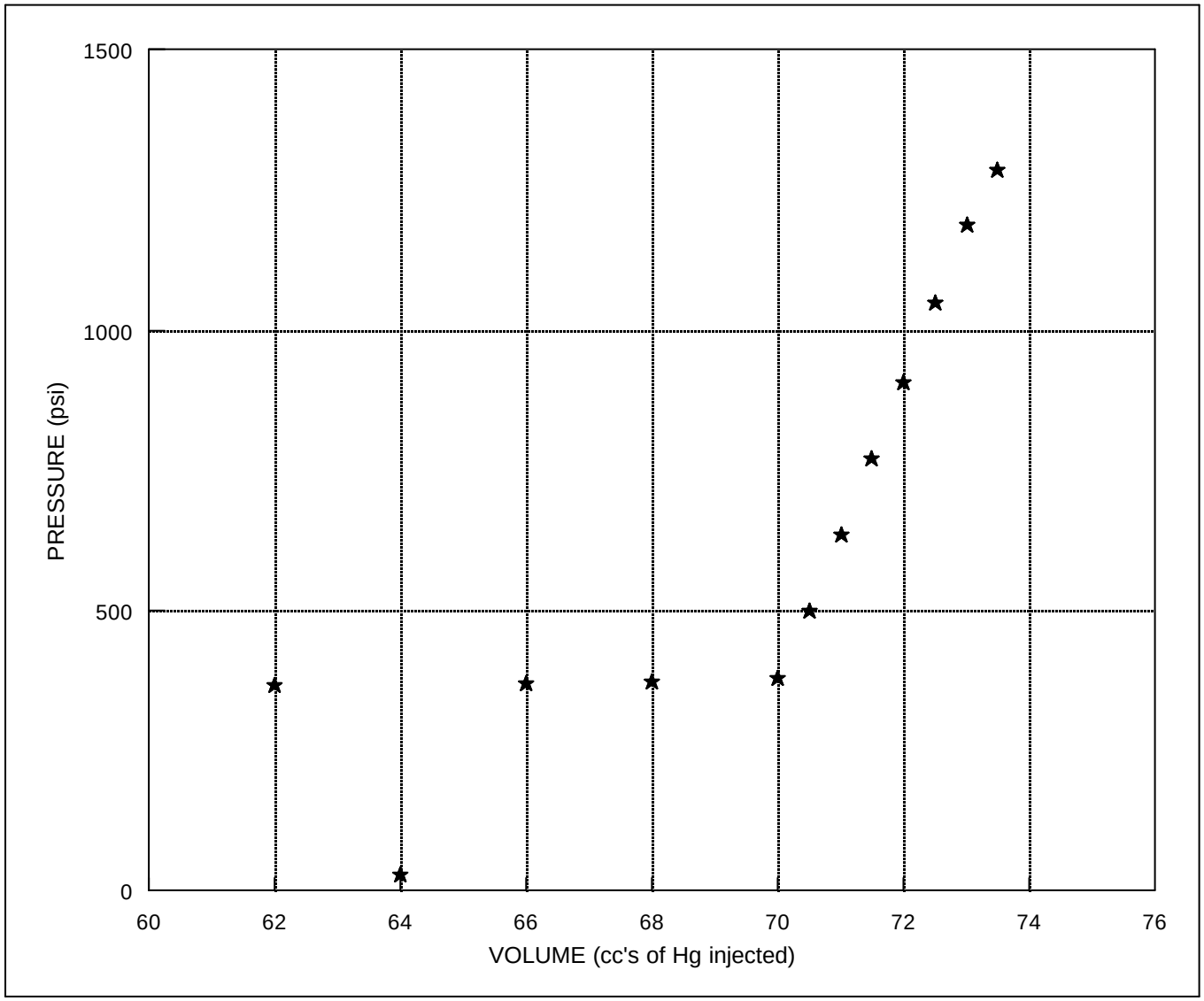
Sampling Conditions

Date	:	December 12, 2004
Pressure	:	453 psig
Temperature	:	117 °F

Cylinder #	:	4349 - A (gas)
Opening Pressure	:	540 psig @ 140 °F

Cylinder #	:	L - 690 (liquid)
Opening Pressure	:	410 psig @ 77 °F

Volume (cc's)	Pressure (psi)
62.00	366
64.00	29
66.00	370
68.00	374
70.00	378
70.50	500
71.00	635
71.50	771
72.00	907
72.50	1050
73.00	1188
73.50	1286



Surface Samples Validity Check
CHDST#1

Saturation Pressure : 415 psig @ 77 ° F

Surface Samples Set # 2 of 3

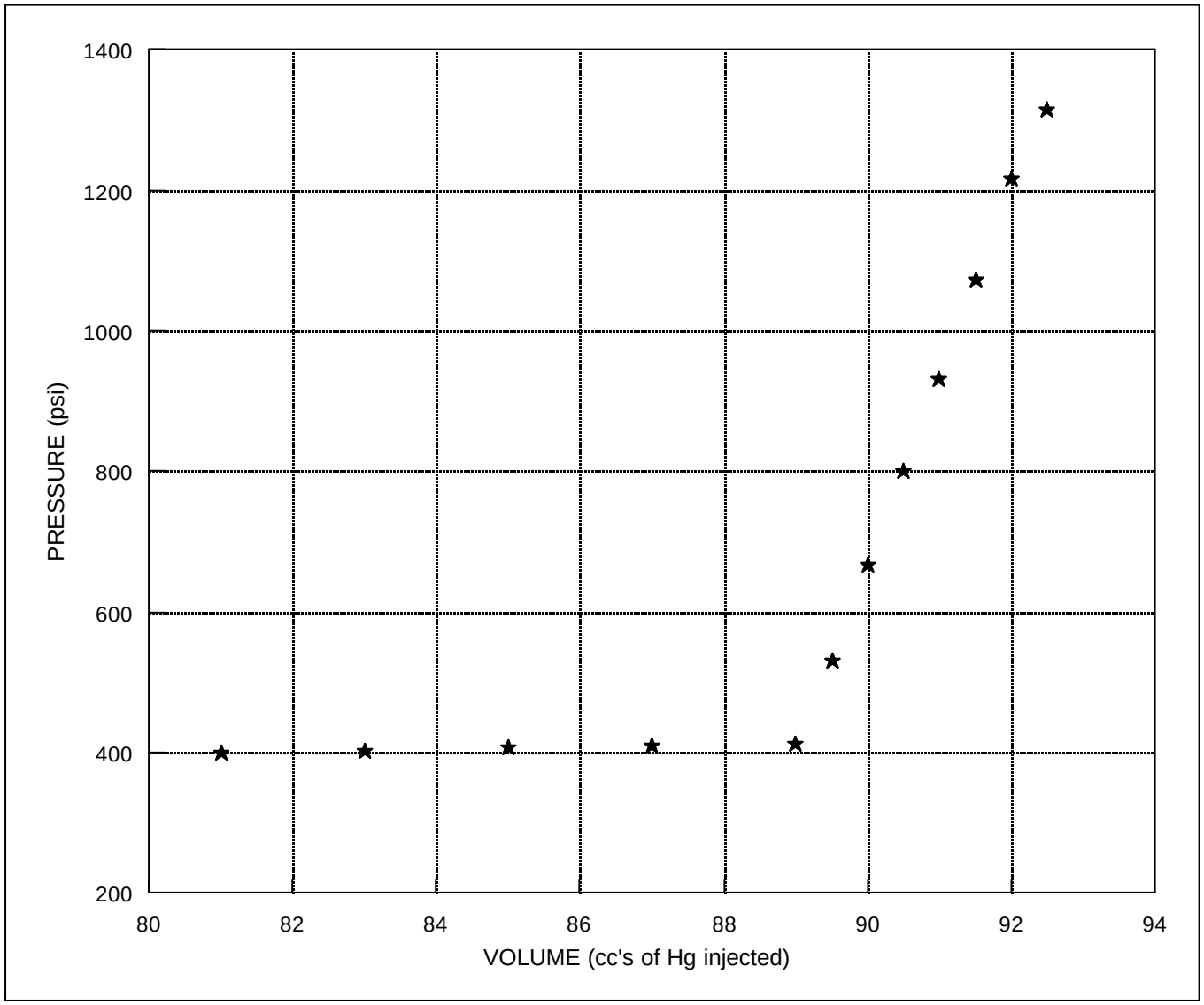
Sampling Conditions

Date	:	December 12, 2004
Pressure	:	478 psig
Temperature	:	108 °F

Cylinder #	:	4277 - A (gas)
Opening Pressure	:	570 psig @ 140 °F

Cylinder #	:	L - 692 (liquid)
Opening Pressure	:	401 psig @ 77 °F

Volume (cc's)	Pressure (psi)
81.00	400
83.00	403
85.00	407
87.00	410
89.00	414
89.50	531
90.00	666
90.50	800
91.00	933
91.50	1073
92.00	1216
92.50	1316



Surface Samples Validity Check
CHDST#1
Saturation Pressure : 472 psig @ 77 ° F

Surface Samples Set # 3 of 3

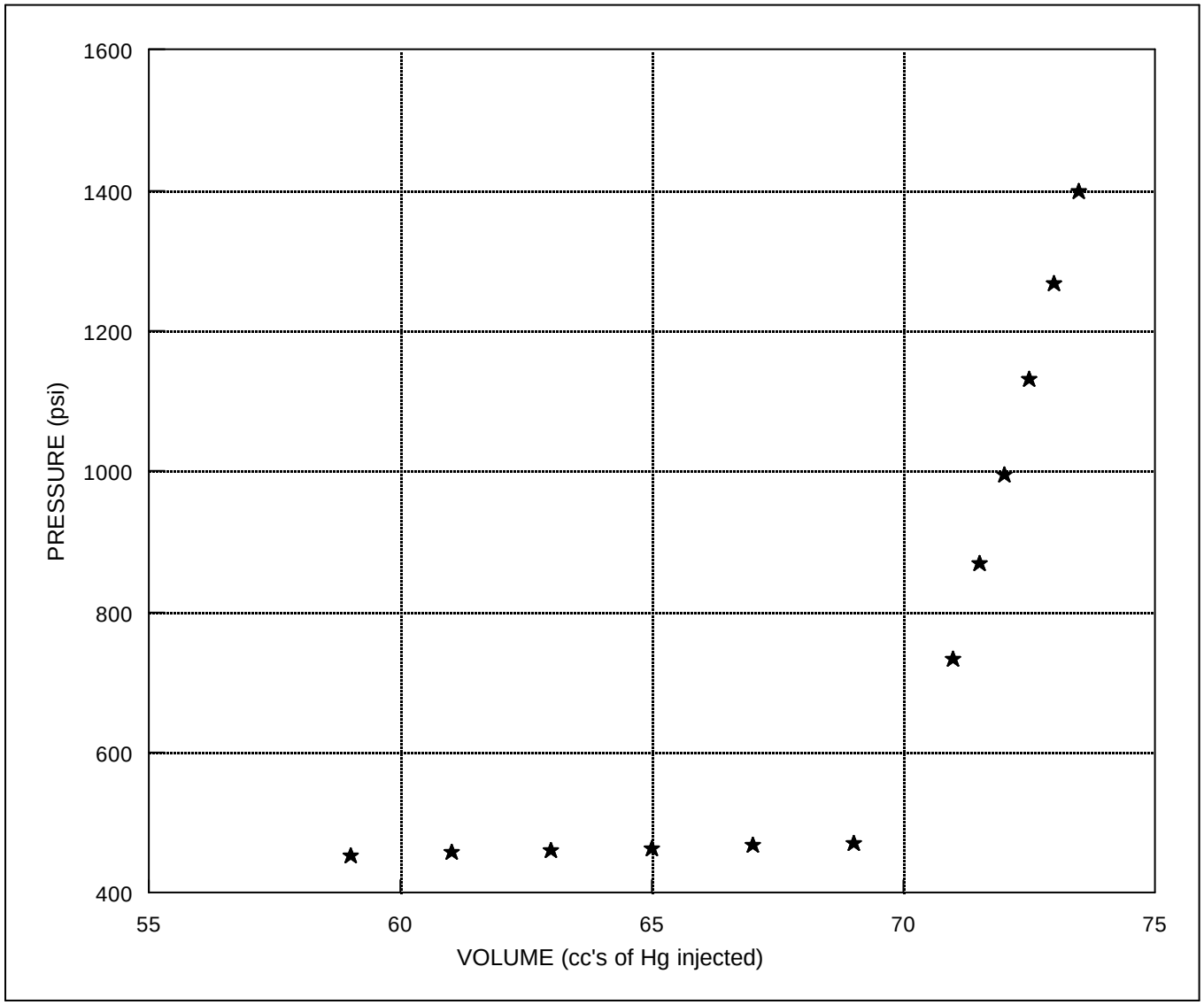
Sampling Conditions

Date	:	December 12, 2004
Pressure	:	502 psig
Temperature	:	90 °F

Cylinder #	:	3189 - A (gas)
Opening Pressure	:	587 psig @ 140 °F

Cylinder #	:	L - 684 (liquid)
Opening Pressure	:	445 psig @ 77 °F

Volume (cc's)	Pressure (psi)
59.00	455
61.00	458
63.00	462
65.00	465
67.00	468
69.00	471
71.00	733
71.50	869
72.00	997
72.50	1133
73.00	1268
73.50	1400



Surface Samples Validity Check
CHDST#2

Saturation Pressure : 214 psig @ 77 ° F

Surface Samples Set # 1 of 3

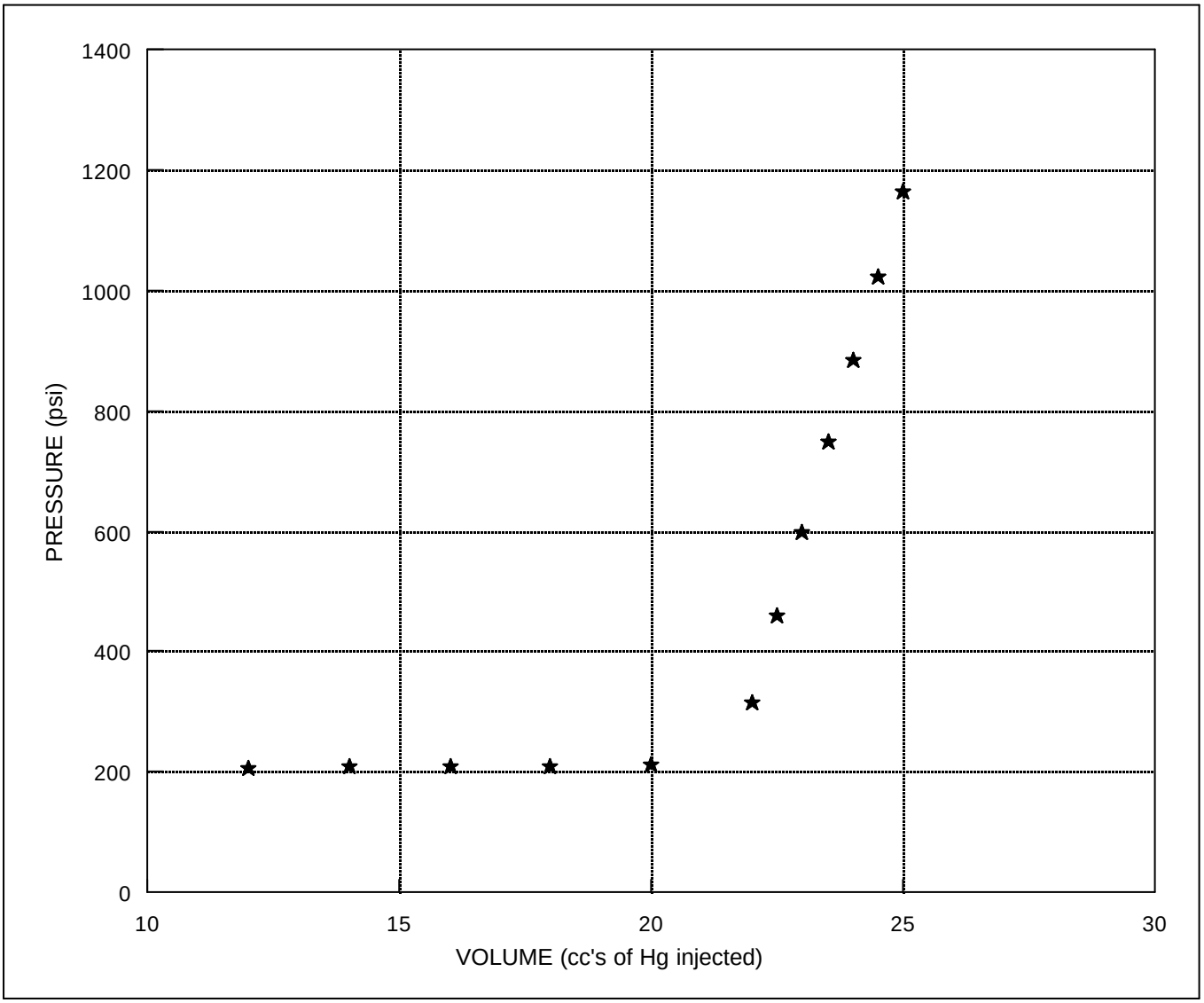
Sampling Conditions

Date	:	December 14, 2004
Pressure	:	256 psig
Temperature	:	113 °F

Cylinder #	:	5235 - A (gas)
Opening Pressure	:	309 psig @ 140 °F

Cylinder #	:	L - 685 (liquid)
Opening Pressure	:	200 psig @ 77 °F

Volume (cc's)	Pressure (psi)
12.00	207
14.00	208
16.00	209
18.00	210
20.00	212
22.00	316
22.50	460
23.00	600
23.50	750
24.00	885
24.50	1024
25.00	1165



Surface Samples Validity Check
CHDST#2

Saturation Pressure : 216 psig @ 77 ° F

Surface Samples Set # 2 of 3

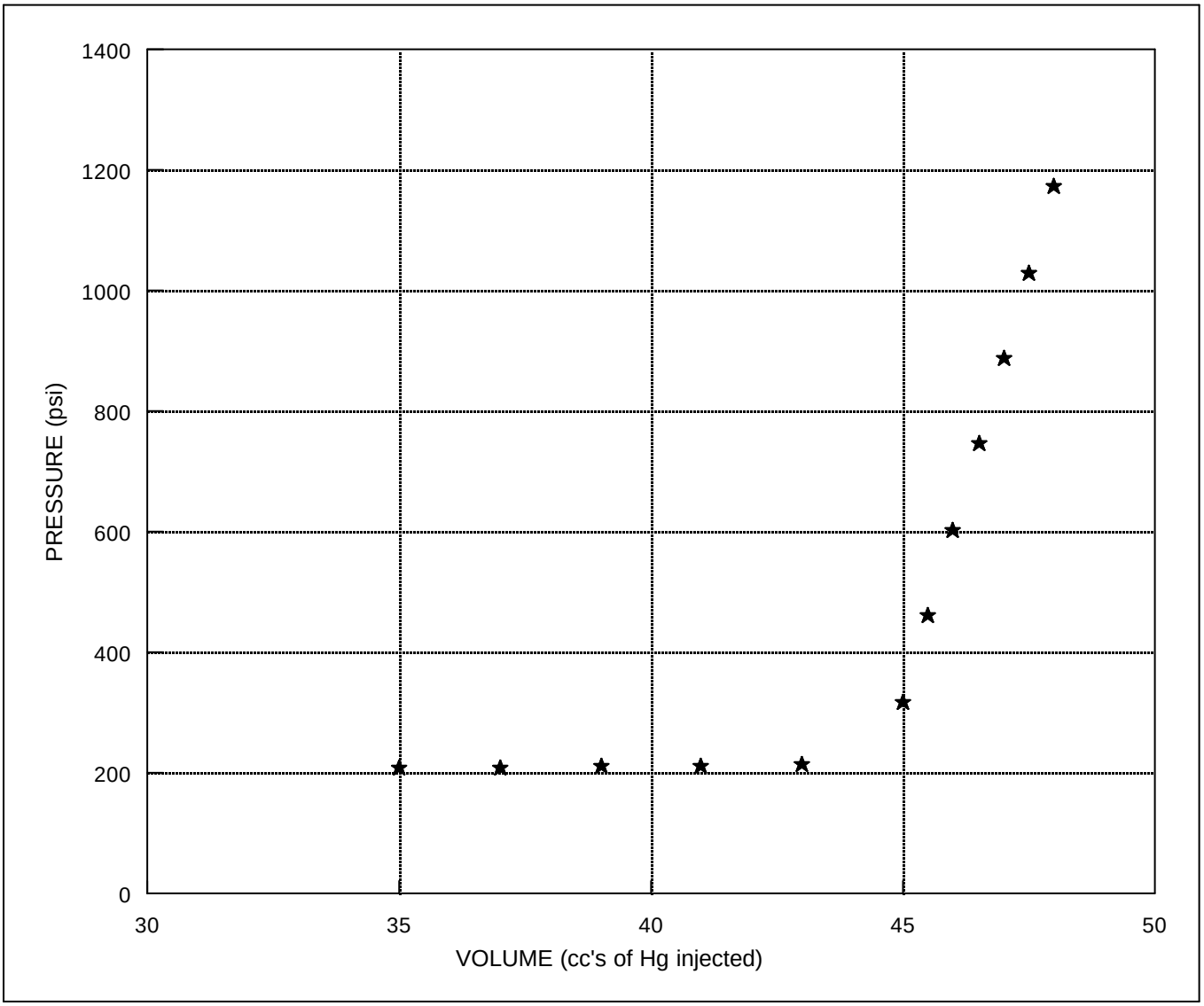
Sampling Conditions

Date	:	December 14, 2004
Pressure	:	255 psig
Temperature	:	113 °F

Cylinder #	:	2494 - A (gas)
Opening Pressure	:	309 psig @ 140 °F

Cylinder #	:	L - 683 (liquid)
Opening Pressure	:	203 psig @ 77 °F

Volume (cc's)	Pressure (psi)
35.00	210
37.00	211
39.00	212
41.00	213
43.00	215
45.00	319
45.50	463
46.00	605
46.50	749
47.00	889
47.50	1030
48.00	1173



Surface Samples Validity Check
CHDST#2

Saturation Pressure : 225 psig @ 77 ° F

Surface Samples Set # 3 of 3

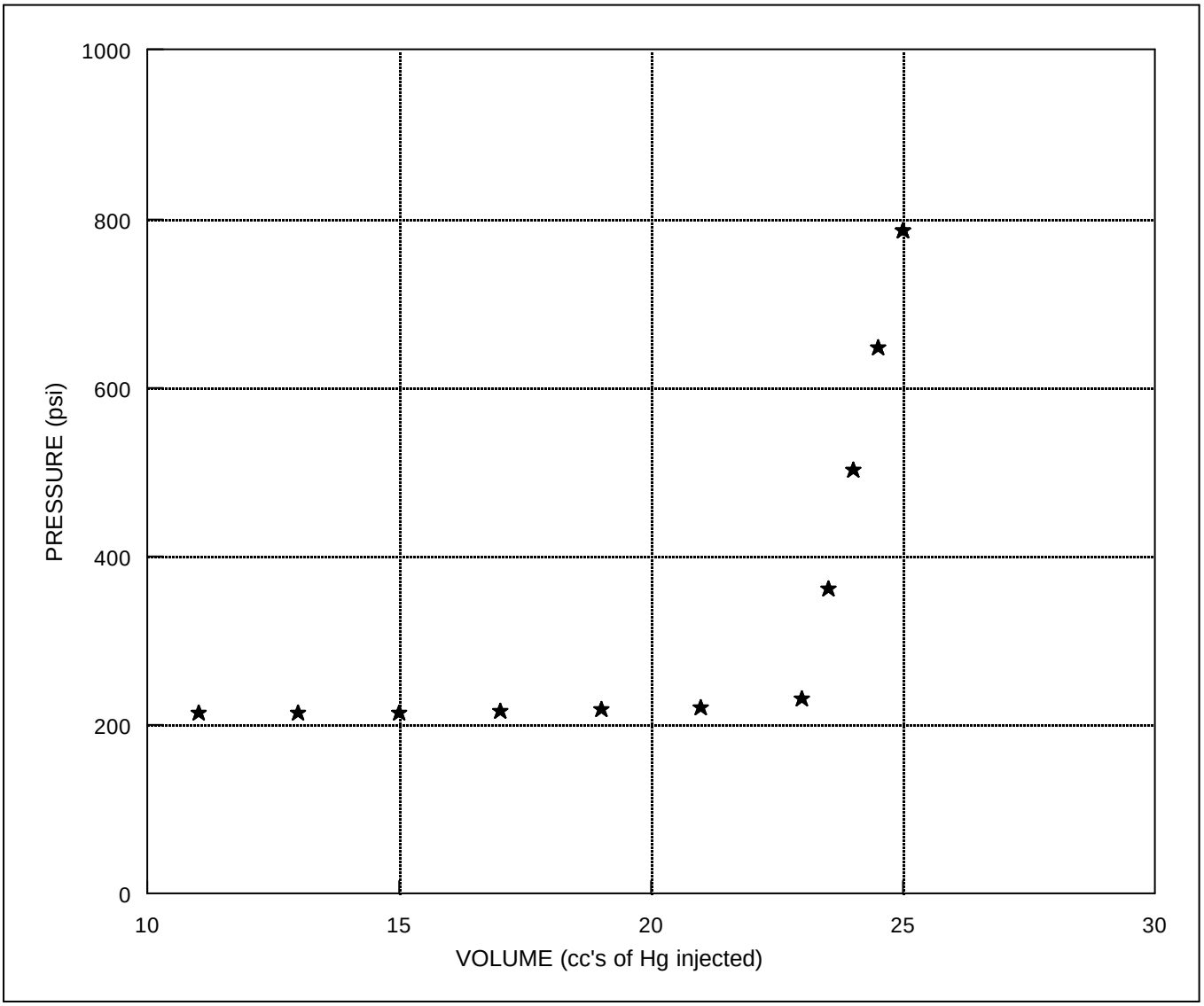
Sampling Conditions

Date	:	December 14, 2004
Pressure	:	265 psig
Temperature	:	111 °F

Cylinder #	:	4564 - A (gas)
Opening Pressure	:	318 psig @ 140 °F

Cylinder #	:	L - 691 (liquid)
Opening Pressure	:	213 psig @ 77 °F

Volume (cc's)	Pressure (psi)
11.00	215
13.00	216
15.00	216
17.00	218
19.00	220
21.00	221
23.00	232
23.50	362
24.00	503
24.50	647
25.00	787
25.00	787



COMPOSITIONAL ANALYSIS OF CHDST#1

Cylinder # : 4349 - A

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	4.02	
Nitrogen	N2	0.37	
Methane	C1	85.39	
Ethane	C2	6.86	1.836
Propane	C3	1.80	0.496
Iso-Butane	iC4	0.42	0.138
N-Butane	nC4	0.39	0.123
Iso-Pentane	iC5	0.18	0.066
N-Pentane	nC5	0.12	0.043
Hexanes	C6	0.19	0.074
Heptanes	C7	0.16	0.067
Octanes	C8	0.06	0.027
Nonanes	C9	0.03	0.015
Decanes	C10	0.01	0.005
Undecanes	C11	0.00	0.000
Dodecanes Plus	C12+	0.00	0.000
TOTAL		100.00	2.890

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	19.54
Gas Gravity	:	0.677
Pc	:	681.2
Tc	:	378.6
Mol Weight C6+	:	94.9
Density C6+	:	0.6822
Mol Weight C7+	:	102.9
Density C7+	:	0.6929
Mol Weight C10+	:	134.0
Density C10+	:	0.7278
Mol Weight C11+	:	--
Density C11+	:	--
Mol Weight C12+	:	--
Density C12+	:	--
Heating Value (BTU/ft3)		
Gross	:	1097
Nett	:	992
Wobbe Index	:	1334
Zpt *	:	0.941

* (P)ressure : 453 psig * (T)emperature : 117 °F

Date Sampled: December 12, 2004 @ 02:30 hrs

Lab Opening Pressure : 540 psig @ : 140 °F

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COMPOSITIONAL ANALYSIS OF CHDST#1

Cylinder # : 4277 - A

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	4.02	
Nitrogen	N2	0.38	
Methane	C1	85.46	
Ethane	C2	6.84	1.831
Propane	C3	1.82	0.502
Iso-Butane	iC4	0.41	0.134
N-Butane	nC4	0.39	0.123
Iso-Pentane	iC5	0.17	0.062
N-Pentane	nC5	0.11	0.040
Hexanes	C6	0.17	0.066
Heptanes	C7	0.15	0.063
Octanes	C8	0.06	0.027
Nonanes	C9	0.02	0.010
Decanes	C10	0.00	0.000
Undecanes	C11	0.00	0.000
Dodecanes Plus	C12+	0.00	0.000
TOTAL		100.00	2.858

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	19.49
Gas Gravity	:	0.675
Pc	:	681.3
Tc	:	378.2
Mol Weight C6+	:	93.8
Density C6+	:	0.6806
Mol Weight C7+	:	101.0
Density C7+	:	0.6905
Mol Weight C10+	:	--
Density C10+	:	--
Mol Weight C11+	:	--
Density C11+	:	--
Mol Weight C12+	:	--
Density C12+	:	--
Heating Value (BTU/ft3)		
Gross	:	1094
Nett	:	989
Wobbe Index	:	1332
Zpt *	:	0.934

* (P)ressure : 478 psig * (T)emperature : 108 °F

Date Sampled: December 12, 2004 @ 22:00 hrs

Lab Opening Pressure : 570 psig @ : 140 °F

COMPOSITIONAL ANALYSIS OF CHDST#1

Cylinder # : 3189 - A

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	4.02	
Nitrogen	N2	0.38	
Methane	C1	84.92	
Ethane	C2	7.02	1.879
Propane	C3	1.85	0.510
Iso-Butane	iC4	0.48	0.157
N-Butane	nC4	0.49	0.155
Iso-Pentane	iC5	0.22	0.081
N-Pentane	nC5	0.14	0.051
Hexanes	C6	0.20	0.078
Heptanes	C7	0.17	0.072
Octanes	C8	0.07	0.032
Nonanes	C9	0.03	0.015
Decanes	C10	0.01	0.005
Undecanes	C11	0.00	0.000
Dodecanes Plus	C12+	0.00	0.000
TOTAL		100.00	3.035

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	19.71
Gas Gravity	:	0.682
Pc	:	680.8
Tc	:	380.2
Mol Weight C6+	:	95.0
Density C6+	:	0.6823
Mol Weight C7+	:	102.8
Density C7+	:	0.6927
Mol Weight C10+	:	134.0
Density C10+	:	0.7278
Mol Weight C11+	:	--
Density C11+	:	--
Mol Weight C12+	:	--
Density C12+	:	--
Heating Value (BTU/ft3)		
Gross	:	1106
Nett	:	1000
Wobbe Index	:	1339
Zpt *	:	0.922

* (P)ressure : 502 psig * (T)emperature : 90 °F

Date Sampled: December 12, 2004 @ 23:40 hrs

Lab Opening Pressure : 587 psig @ : 140 °F

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

CHDST#1

On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 684 ex 5142-EA

Component		Mol %
Hexanes minus	C6-	8.68
Hexanes	C6	9.74
Heptanes	C7	22.54
Octanes	C8	16.02
Nonanes	C9	13.85
Decanes	C10	6.57
Undecanes	C11	3.60
Dodecanes	C12	2.76
Tridecanes	C13	2.34
Tetradecanes	C14	1.86
Pentadecanes	C15	2.10
Hexadecanes	C16	1.37
Heptadecanes	C17	1.56
Octadecanes	C18	1.05
Nonadecanes	C19	0.99
Eicosanes	C20	0.90
Heneicosanes	C21	0.81
Docosanes	C22	0.73
Tricosanes	C23	0.63
Tetracosanes	C24	0.50
Pentacosanes	C25	0.44
Hexacosanes	C26	0.33
Heptacosanes	C27	0.22
Octacosanes	C28	0.17
Nonacosanes	C29	0.12
Triacontanes	C30	0.07
Hentriacontanes	C31	0.05
Dotriacontanes	C32	0.00
Tritriacontanes	C33	0.00
Tetratriacontanes	C34	0.00
Pentatriacontanes Plus	C35+	0.00
TOTAL		100.00

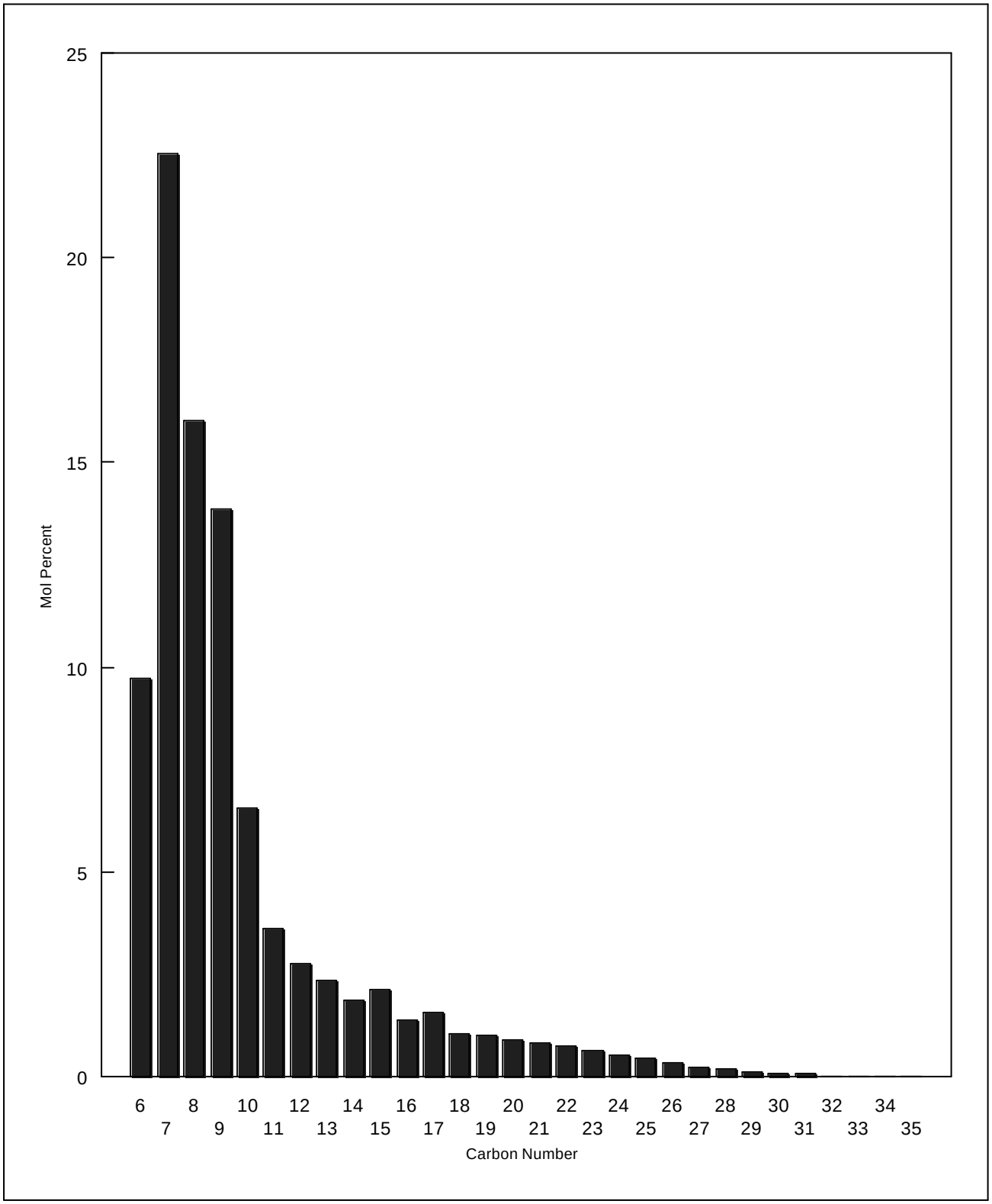
Molecular Weight Calculated *	:	128.8
Density @ 60 °F Calculated *	:	0.7662
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7758

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

CHDST#1

On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 684 ex 5142-EA



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Company : Origin Energy Resources Ltd. | Page : 16 of 107
Well : Trefoil # 1 DST # 1 | File : O - 24073

COMPOSITIONAL ANALYSIS OF SEPARATOR LIQUID

CHDST#1

Cylinder # L - 684 ex 5142-EA

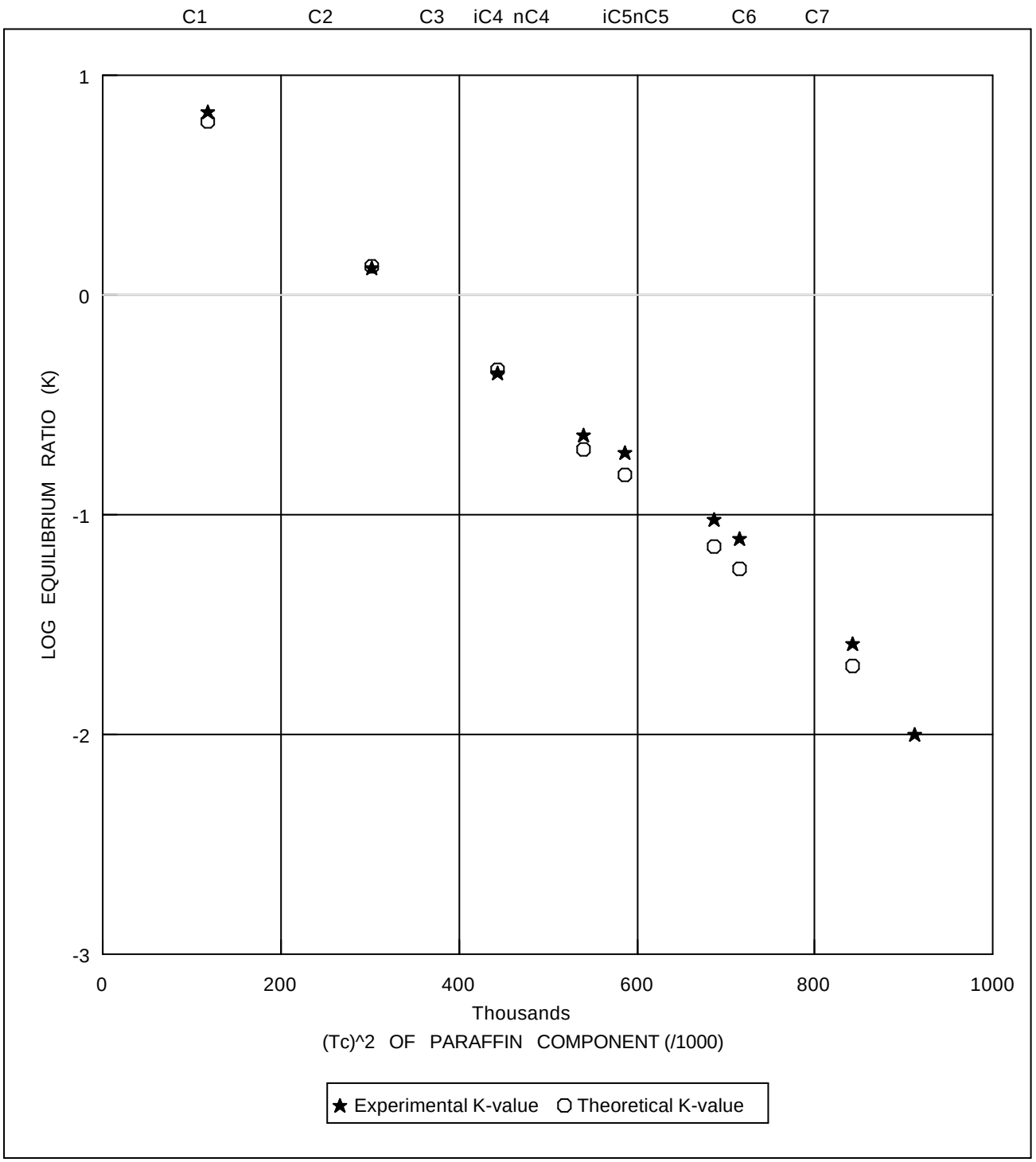
Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Separator Liquid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.07	5.23	1.40
Nitrogen	N2	0.00	0.07	0.02
Methane	C1	0.27	47.54	12.39
Ethane	C2	0.62	18.81	5.28
Propane	C3	1.43	12.16	4.18
Iso-Butane	iC4	1.27	4.35	2.06
N-Butane	nC4	1.87	4.48	2.54
Iso-Pentane	iC5	2.36	2.16	2.31
N-Pentane	nC5	1.94	1.39	1.80
Hexanes	C6	9.62	1.90	7.64
Heptanes	C7	22.25	1.42	16.91
Octanes	C8	15.81	0.38	11.86
Nonanes	C9	13.67	0.10	10.19
Decanes	C10	6.49	0.01	4.83
Undecanes	C11	3.55	0.00	2.64
Dodecanes Plus	C12+	18.76	0.00	13.95
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.7436	0.2564	1.0000
Mass Ratio	:	0.9193	0.0807	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	1.1688 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	277 SCF	--
Stream Properties				
Molecular Weight	:	126.4	32.16	102.2
Density obs. (gm/cc)	:	0.7644 @ 60 °F	--	0.7119 @ PT*
Gravity (AIR = 1.000)	:	53.4 °API @ 60 °F	1.120	67.1
GHV (BTU/scf)	:	--	1761	--
Hexanes Plus Properties				
Mol %	:	90.15	3.81	68.02
Molecular Weight	:	133.7	91.9	133.1
Density (gm/cc @ 60 °F)	:	0.7766	0.6779	0.7754
Gravity (°API @ 60 °F)	:	50.5	77.0	50.8
Heptanes Plus Properties				
Mol %	:	80.54	1.91	60.38
Molecular Weight	:	139.6	99.7	139.3
Density (gm/cc @ 60 °F)	:	0.7841	0.6887	0.7834
Gravity (°API @ 60 °F)	:	48.8	73.8	48.9
Decanes Plus Properties				
Mol %	:	28.80	0.01	21.42
Molecular Weight	:	200.1	133.9	200.1
Density (gm/cc @ 60 °F)	:	0.8296	0.7277	0.8295
Gravity (°API @ 60 °F)	:	38.9	62.8	38.9
Undecanes Plus Properties				
Mol %	:	22.31	0.00	16.59
Molecular Weight	:	219.3	--	219.3
Density (gm/cc @ 60 °F)	:	0.8394	--	0.8394
Gravity (°API @ 60 °F)	:	36.9	--	36.9
Dodecanes Plus Properties				
Mol %	:	18.76	0.00	13.95
Molecular Weight	:	233.0	--	233.0
Density (gm/cc @ 60 °F)	:	0.8459	--	0.8459
Gravity (°API @ 60 °F)	:	35.6	--	35.6

* (P)ressure : 502 psig * (T)emperature : 90 °F

SEPARATOR SAMPLES QUALITY CHECK

On Separator Samples From Gas Cylinder # 3189A and Liquid Cylinder # L - 684 ex 5142-EA



COMPOSITIONAL ANALYSIS OF RECOMBINED RESERVOIR FLUID

Using Separator Samples from CHDST#1 in

Component		Cyl # L - 684 ex 5142-EA Separator Liquid Mol %	Cyl # 3189A Separator Gas Mol %	Recombined Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	1.40	4.02	3.99
Nitrogen	N2	0.02	0.38	0.38
Methane	C1	12.39	84.92	84.00
Ethane	C2	5.28	7.02	7.00
Propane	C3	4.18	1.85	1.88
Iso-Butane	iC4	2.06	0.48	0.50
N-Butane	nC4	2.54	0.49	0.52
Iso-Pentane	iC5	2.31	0.22	0.25
N-Pentane	nC5	1.80	0.14	0.16
Hexanes	C6	7.64	0.20	0.29
Heptanes	C7	16.91	0.17	0.38
Octanes	C8	11.86	0.07	0.22
Nonanes	C9	10.19	0.03	0.16
Decanes	C10	4.83	0.01	0.07
Undecanes	C11	2.64	0.00	0.03
Dodecanes Plus	C12+	13.95	0.00	0.17
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0126	0.9874	1.0000
Mass Ratio	:	0.0622	0.9378	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000	--	-- @ PT**
Gas Liquid Ratio	:	1.0000 @ PT*	72478 SCF ***	--
Stream Properties				
Molecular Weight	:	102.21	19.71	20.75
Density obs. (gm/cc)	:	0.7119 @ PT*	--	-- @ PT**
Gravity (AIR = 1.000)	:	67.06 API @ 60 ° F	0.682	--
GHV (BTU/scf)	:	--	1106	--
Hexanes Plus Properties				
Mol %	:	68.02	0.48	1.32
Molecular Weight	:	133.1	95.0	119.5
Density (gm/cc @ 60 °F)	:	0.7754	0.6823	0.7466
Gravity (°API @ 60 °F)	:	50.8	75.7	57.8
Heptanes Plus Properties				
Mol %	:	60.38	0.28	1.03
Molecular Weight	:	139.3	102.8	129.6
Density (gm/cc @ 60 °F)	:	0.7834	0.6927	0.7624
Gravity (°API @ 60 °F)	:	48.9	72.6	53.9
Decanes Plus Properties				
Mol %	:	21.42	0.01	0.27
Molecular Weight	:	200.1	134.0	197.7
Density (gm/cc @ 60 °F)	:	0.8295	0.7278	0.8268
Gravity (°API @ 60 °F)	:	38.9	62.7	39.5
Undecanes Plus Properties				
Mol %	:	16.59	0.00	0.20
Molecular Weight	:	219.3	--	219.3
Density (gm/cc @ 60 °F)	:	0.8394	--	0.8394
Gravity (°API @ 60 °F)	:	36.9	--	36.9
Dodecanes Plus Properties				
Mol %	:	13.95	0.00	0.17
Molecular Weight	:	233.0	--	233.0
Density (gm/cc @ 60 °F)	:	0.8459	--	0.8459
Gravity (°API @ 60 °F)	:	35.6	--	35.6

* (P)ressure : 502 psig * (T)emperature : 90 °F

** Saturation (P)ressure : 3029 psig * (T)emperature : 248 °F

*** 72478 SCF / SEP BBL @ PT = 84714 SCF / ST BBL

84714 = 83882 * (1.2107 * 1.0417) / (1.1952 * 1.0448)

PETROLAB

COMPOSITIONAL ANALYSIS OF CHDST#2

Cylinder # : 5235 - A

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	3.99	
Nitrogen	N2	0.86	
Methane	C1	80.86	
Ethane	C2	7.23	1.935
Propane	C3	3.74	1.031
Iso-Butane	iC4	0.98	0.321
N-Butane	nC4	1.01	0.319
Iso-Pentane	iC5	0.39	0.143
N-Pentane	nC5	0.30	0.109
Hexanes	C6	0.34	0.132
Heptanes	C7	0.22	0.093
Octanes	C8	0.05	0.023
Nonanes	C9	0.02	0.010
Decanes	C10	0.01	0.005
Undecanes	C11	0.00	0.000
Dodecanes Plus	C12+	0.00	0.000
TOTAL		100.00	4.121

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	21.03
Gas Gravity	:	0.729
Pc	:	676.8
Tc	:	392.8
Mol Weight C6+	:	91.9
Density C6+	:	0.6779
Mol Weight C7+	:	100.8
Density C7+	:	0.6901
Mol Weight C10+	:	134.0
Density C10+	:	0.7278
Mol Weight C11+	:	--
Density C11+	:	--
Mol Weight C12+	:	--
Density C12+	:	--
Heating Value (BTU/ft3)		
Gross	:	1171
Nett	:	1061
Wobbe Index	:	1372
Zpt *	:	0.961

* (P)ressure : 256 psig * (T)emperature : 113 °F

Date Sampled: December 14, 2004 @ 11:05 hrs

Lab Opening Pressure : 309 psig @ : 140 °F

COMPOSITIONAL ANALYSIS OF CHDST#2

Cylinder # : 2494 - A

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	4.05	
Nitrogen	N2	0.85	
Methane	C1	80.68	
Ethane	C2	7.26	1.943
Propane	C3	3.77	1.040
Iso-Butane	iC4	1.01	0.331
N-Butane	nC4	1.00	0.316
Iso-Pentane	iC5	0.39	0.143
N-Pentane	nC5	0.30	0.109
Hexanes	C6	0.35	0.136
Heptanes	C7	0.23	0.097
Octanes	C8	0.05	0.023
Nonanes	C9	0.03	0.015
Decanes	C10	0.02	0.011
Undecanes	C11	0.01	0.006
Dodecanes Plus	C12+	0.00	0.000
TOTAL		100.00	4.170

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	21.12
Gas Gravity	:	0.732
Pc	:	676.8
Tc	:	393.6
Mol Weight C6+	:	93.6
Density C6+	:	0.6804
Mol Weight C7+	:	103.6
Density C7+	:	0.6937
Mol Weight C10+	:	138.3
Density C10+	:	0.7320
Mol Weight C11+	:	147.0
Density C11+	:	0.7400
Mol Weight C12+	:	--
Density C12+	:	--
Heating Value (BTU/ft3)		
Gross	:	1174
Nett	:	1064
Wobbe Index	:	1373
Zpt *	:	0.961

* (P)ressure : 255 psig * (T)emperature : 113 °F

Date Sampled: December 14, 2004 @ 11:50 hrs

Lab Opening Pressure : 309 psig @ : 140 °F

PETROLAB

Company : Origin Energy Resources Ltd. | Page : 21 of 107
Well : Trefoil # 1 DST # 2 | File : O - 24073

COMPOSITIONAL ANALYSIS OF CHDST#2

Cylinder # : 4564 - A

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	4.05	
Nitrogen	N2	0.87	
Methane	C1	80.52	
Ethane	C2	7.31	1.956
Propane	C3	3.77	1.040
Iso-Butane	iC4	1.02	0.334
N-Butane	nC4	1.03	0.325
Iso-Pentane	iC5	0.40	0.146
N-Pentane	nC5	0.31	0.112
Hexanes	C6	0.36	0.140
Heptanes	C7	0.24	0.101
Octanes	C8	0.06	0.027
Nonanes	C9	0.03	0.015
Decanes	C10	0.02	0.011
Undecanes	C11	0.01	0.006
Dodecanes Plus	C12+	0.00	0.000
TOTAL		100.00	4.213

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	21.18
Gas Gravity	:	0.734
Pc	:	676.7
Tc	:	394.1
Mol Weight C6+	:	93.7
Density C6+	:	0.6805
Mol Weight C7+	:	103.4
Density C7+	:	0.6936
Mol Weight C10+	:	138.3
Density C10+	:	0.7320
Mol Weight C11+	:	147.0
Density C11+	:	0.7400
Mol Weight C12+	:	--
Density C12+	:	--
Heating Value (BTU/ft3)		
Gross	:	1177
Nett	:	1067
Wobbe Index	:	1374
Zpt *	:	0.958

* (P)ressure : 265 psig * (T)emperature : 111 °F

Date Sampled: December 14, 2004 @ 15:00 hrs

Lab Opening Pressure : 318 psig @ : 140 °F

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

CHDST#2

On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 691 ex 4986-EA

Component		Mol %
Hexanes minus	C6-	11.98
Hexanes	C6	10.05
Heptanes	C7	23.61
Octanes	C8	12.28
Nonanes	C9	11.02
Decanes	C10	7.37
Undecanes	C11	4.56
Dodecanes	C12	3.33
Tridecanes	C13	2.64
Tetradecanes	C14	2.10
Pentadecanes	C15	1.96
Hexadecanes	C16	1.38
Heptadecanes	C17	1.69
Octadecanes	C18	0.98
Nonadecanes	C19	0.82
Eicosanes	C20	0.72
Heneicosanes	C21	0.68
Docosanes	C22	0.59
Tricosanes	C23	0.51
Tetracosanes	C24	0.48
Pentacosanes	C25	0.38
Hexacosanes	C26	0.28
Heptacosanes	C27	0.22
Octacosanes	C28	0.15
Nonacosanes	C29	0.11
Triacontanes	C30	0.07
Hentriacontanes	C31	0.04
Dotriacontanes	C32	0.00
Tritriacontanes	C33	0.00
Tetratriacontanes	C34	0.00
Pentatriacontanes Plus	C35+	0.00
TOTAL		100.00

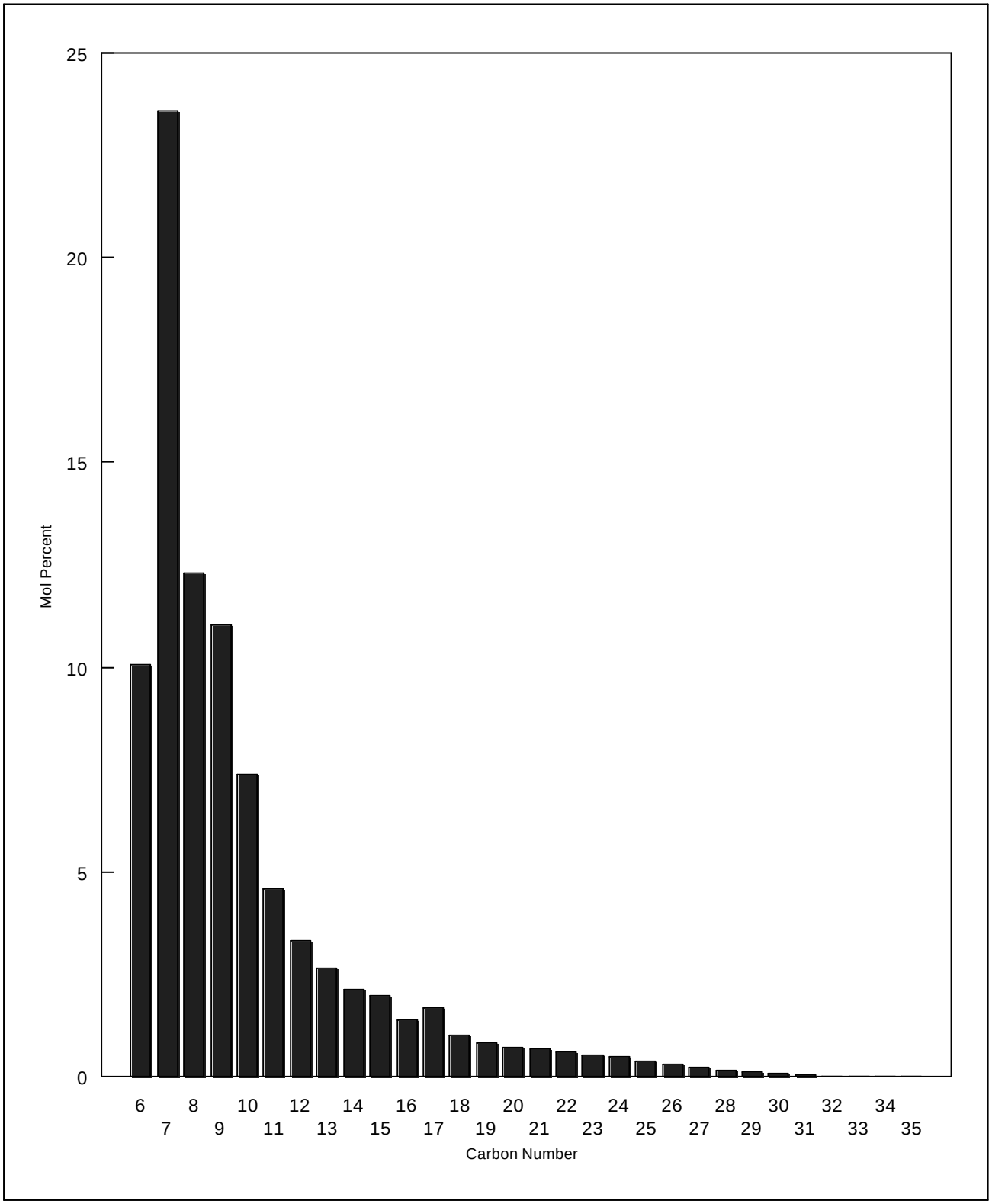
Molecular Weight Calculated *	:	126.1
Density @ 60 °F Calculated *	:	0.7616
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7645

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

CHDST#2

On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 691 ex 4986-EA



PETROLAB

Company : Origin Energy Resources Ltd. | Page : 24 of 107
Well : Trefoil # 1 DST # 2 | File : O - 24073

COMPOSITIONAL ANALYSIS OF SEPARATOR LIQUID

CHDST#2

Cylinder # L - 691 ex 4986-EA

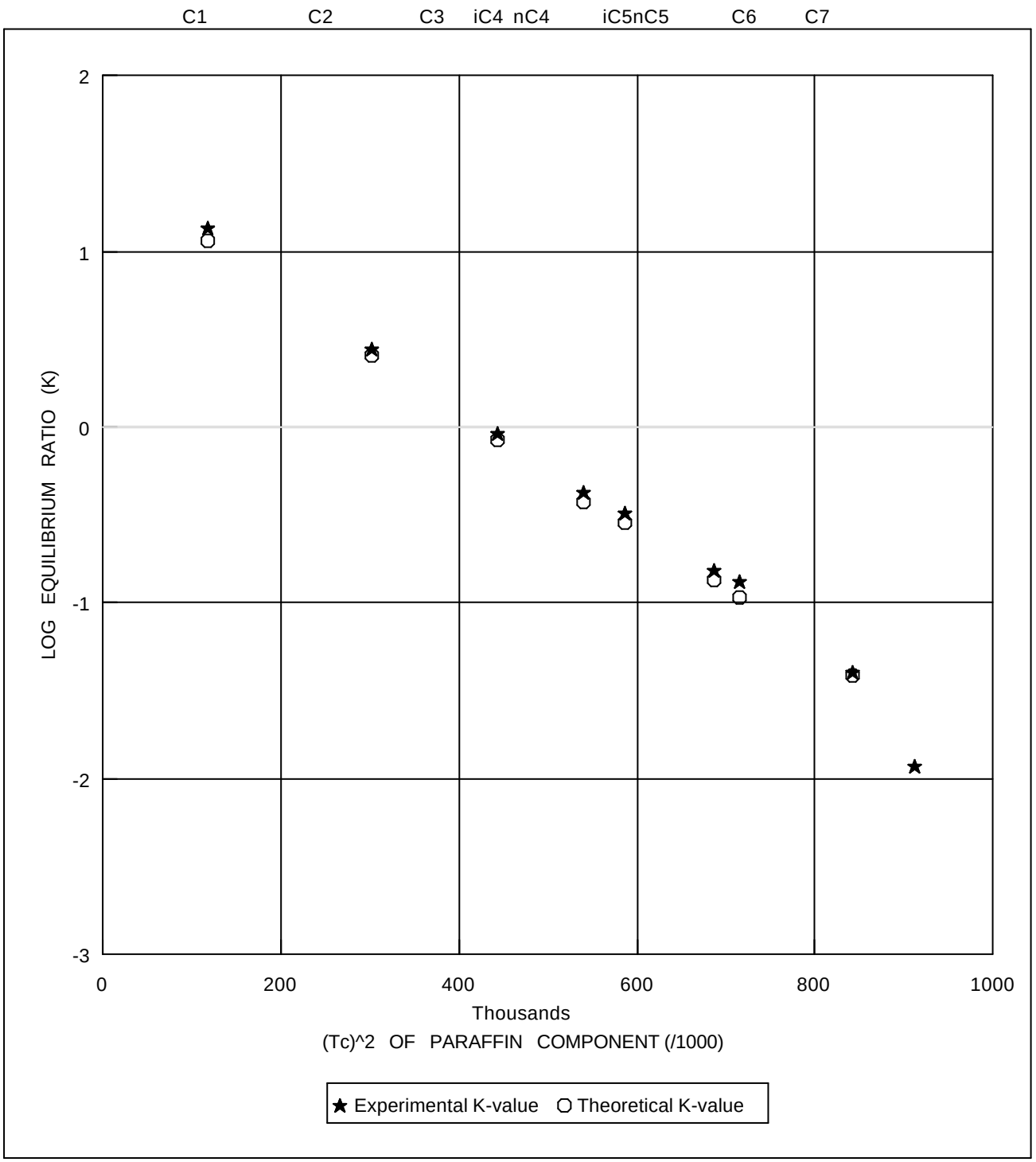
Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Separator Liquid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.06	4.30	0.63
Nitrogen	N2	0.00	0.19	0.03
Methane	C1	0.24	42.36	5.90
Ethane	C2	0.54	16.09	2.63
Propane	C3	2.06	17.21	4.10
Iso-Butane	iC4	1.81	6.05	2.38
N-Butane	nC4	2.71	6.31	3.19
Iso-Pentane	iC5	2.63	2.33	2.59
N-Pentane	nC5	2.44	1.69	2.34
Hexanes	C6	9.99	1.88	8.90
Heptanes	C7	23.47	1.23	20.48
Octanes	C8	12.21	0.26	10.60
Nonanes	C9	10.95	0.08	9.49
Decanes	C10	7.33	0.02	6.35
Undecanes	C11	4.53	0.00	3.92
Dodecanes Plus	C12+	19.02	0.00	16.47
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.8658	0.1342	1.0000
Mass Ratio	:	0.9588	0.0412	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	1.1019 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	126 SCF	--
Stream Properties				
Molecular Weight	:	124.2	34.42	112.1
Density obs. (gm/cc)	:	0.7605 @ 60 °F	--	0.7201 @ PT*
Gravity (AIR = 1.000)	:	54.4 °API @ 60 °F	1.200	64.8
GHV (BTU/scf)	:	--	1907	--
Hexanes Plus Properties				
Mol %	:	87.50	3.47	76.21
Molecular Weight	:	133.4	91.1	133.2
Density (gm/cc @ 60 °F)	:	0.7759	0.6768	0.7755
Gravity (°API @ 60 °F)	:	50.7	77.4	50.8
Heptanes Plus Properties				
Mol %	:	77.51	1.59	67.31
Molecular Weight	:	139.8	99.5	139.7
Density (gm/cc @ 60 °F)	:	0.7840	0.6885	0.7837
Gravity (°API @ 60 °F)	:	48.8	73.8	48.9
Decanes Plus Properties				
Mol %	:	30.88	0.02	26.74
Molecular Weight	:	192.8	133.9	192.7
Density (gm/cc @ 60 °F)	:	0.8251	0.7277	0.8251
Gravity (°API @ 60 °F)	:	39.8	62.8	39.8
Undecanes Plus Properties				
Mol %	:	23.55	0.00	20.39
Molecular Weight	:	211.0	--	211.0
Density (gm/cc @ 60 °F)	:	0.8351	--	0.8351
Gravity (°API @ 60 °F)	:	37.8	--	37.8
Dodecanes Plus Properties				
Mol %	:	19.02	0.00	16.47
Molecular Weight	:	226.3	--	226.3
Density (gm/cc @ 60 °F)	:	0.8427	--	0.8427
Gravity (°API @ 60 °F)	:	36.3	--	36.3

* (P)ressure : 265 psig * (T)emperature : 111 °F

SEPARATOR SAMPLES QUALITY CHECK

On Separator Samples From Gas Cylinder # 4564A and Liquid Cylinder # L - 691 ex 4986-EA



COMPOSITIONAL ANALYSIS OF RECOMBINED RESERVOIR FLUID

Using Separator Samples from CHDST#2 in

Component		Cyl # L - 691 ex 4986-EA Separator Liquid Mol %	Cyl # 4564A Separator Gas Mol %	Recombined Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.63	4.05	3.96
Nitrogen	N2	0.03	0.87	0.85
Methane	C1	5.90	80.52	78.60
Ethane	C2	2.63	7.31	7.19
Propane	C3	4.10	3.77	3.78
Iso-Butane	iC4	2.38	1.02	1.05
N-Butane	nC4	3.19	1.03	1.09
Iso-Pentane	iC5	2.59	0.40	0.46
N-Pentane	nC5	2.34	0.31	0.36
Hexanes	C6	8.90	0.36	0.58
Heptanes	C7	20.48	0.24	0.76
Octanes	C8	10.60	0.06	0.33
Nonanes	C9	9.49	0.03	0.27
Decanes	C10	6.35	0.02	0.18
Undecanes	C11	3.92	0.01	0.11
Dodecanes Plus	C12+	16.47	0.00	0.43
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0257	0.9743	1.0000
Mass Ratio	:	0.1224	0.8776	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000	--	-- @ PT**
Gas Liquid Ratio	:	1.0000 @ PT*	32416 SCF ***	--
Stream Properties				
Molecular Weight	:	112.13	21.18	23.52
Density obs. (gm/cc)	:	0.7201 @ PT*	--	-- @ PT**
Gravity (AIR = 1.000)	:	64.80 API @ 60 ° F	0.734	--
GHV (BTU/scf)	:	--	1177	--
Hexanes Plus Properties				
Mol %	:	76.21	0.72	2.66
Molecular Weight	:	133.2	93.7	122.8
Density (gm/cc @ 60 °F)	:	0.7755	0.6805	0.7543
Gravity (°API @ 60 °F)	:	50.8	76.2	55.9
Heptanes Plus Properties				
Mol %	:	67.31	0.36	2.08
Molecular Weight	:	139.7	103.4	133.6
Density (gm/cc @ 60 °F)	:	0.7837	0.6936	0.7707
Gravity (°API @ 60 °F)	:	48.9	72.3	51.9
Decanes Plus Properties				
Mol %	:	26.74	0.03	0.72
Molecular Weight	:	192.7	138.3	190.3
Density (gm/cc @ 60 °F)	:	0.8251	0.7320	0.8219
Gravity (°API @ 60 °F)	:	39.8	61.6	40.5
Undecanes Plus Properties				
Mol %	:	20.39	0.01	0.54
Molecular Weight	:	211.0	147.0	209.9
Density (gm/cc @ 60 °F)	:	0.8351	0.7400	0.8337
Gravity (°API @ 60 °F)	:	37.8	59.5	38.1
Dodecanes Plus Properties				
Mol %	:	16.47	0.00	0.43
Molecular Weight	:	226.3	--	226.3
Density (gm/cc @ 60 °F)	:	0.8427	--	0.8427
Gravity (°API @ 60 °F)	:	36.3	--	36.3

* (P)ressure : 265 psig * (T)emperature : 111 °F

** Saturation (P)ressure : 1996 psig * (T)emperature : 229 °F

*** 32416 SCF / SEP BBL @ PT = 35719 SCF / ST BBL

35719 = 36604 * (1.1674 * 1.0215) / (1.1952 * 1.0225)

CONSTANT MASS STUDY
@ 242 °F
Using Recombined Separator Samples from Cyl # L-691 ex 4986-EA & Cyl # 4564A

Pressure (psig)		Relative Volume (V/Vsat) (1)	Formation Volume Factor (Bg) (2)	Gas Expansion Factor (E) (3)	Deviation Factor (Z)	Specific Volume (CFT/LB)	Gas Viscosity (Centipoise) (4)
5000		0.8902	0.00384	260.70	0.969	0.06192	0.0315
4900		0.9017	0.00389	257.36	0.962	0.06272	0.0311
4800		0.9137	0.00394	253.97	0.955	0.06356	0.0306
4700		0.9263	0.00399	250.53	0.948	0.06443	0.0302
4600		0.9394	0.00405	247.04	0.941	0.06534	0.0297
4500		0.9530	0.00411	243.50	0.934	0.06629	0.0293
4400		0.9684	0.00417	239.65	0.928	0.06736	0.0288
4300		0.9833	0.00424	236.00	0.921	0.06840	0.0284
4291	**	0.9843	0.00424	235.76	0.920	0.06847	0.0283
4205	*	1.0000	0.00431	232.06	0.916	0.06956	0.0279

* Dew Point Pressure
** Reservoir Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at reservoir pressure
(2) Cubic feet of gas at indicated pressure and temperature per cubic foot at 14.696 psia and 60 °F
(3) Cubic feet of gas at 14.696 psia and 60 °F per cubic foot at indicated pressure and temperature
(4) Calculated from correlation of Lee, Gonzales and Eakin

CONSTANT MASS STUDY
@ 242 °F
Using Recombined Separator Samples from Cyl # L-691 ex 4986-EA & Cyl # 4564A

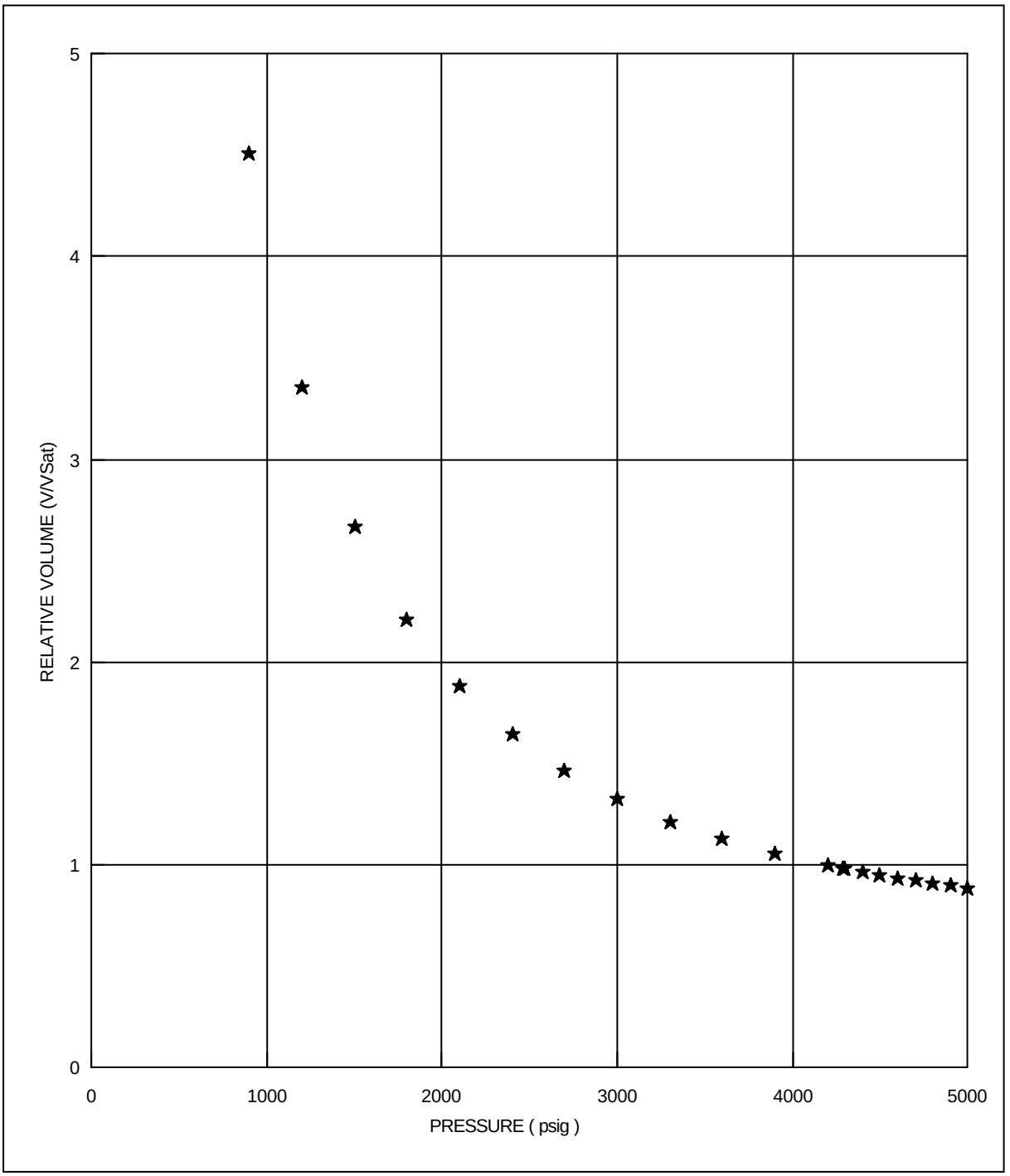
Pressure (psig)		Relative Volume (V/Vsat) (1)	Retrograde Liquid Deposit (Bbl/MMSCF) (2)	(Volume%) (3)
4205	*	1.0000	0.00	0.00
3900		1.0591	2.46	0.32
3600		1.1291	5.07	0.66
3300		1.2160	7.52	0.98
3000		1.3279	9.90	1.29
2700		1.4661	12.20	1.59
2400		1.6483	14.28	1.86
2100		1.8865	16.42	2.14
1800		2.2085	18.19	2.37
1500		2.6672	19.65	2.56
1200		3.3601	20.34	2.65
900		4.5075	20.49	2.67

* Dew Point Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at saturation pressure
(2) Barrels of liquid at indicated pressure and temperature per MMSCF of original reservoir fluid
(3) Percent of reservoir hydrocarbon pore space at dew point

RELATIVE VOLUME

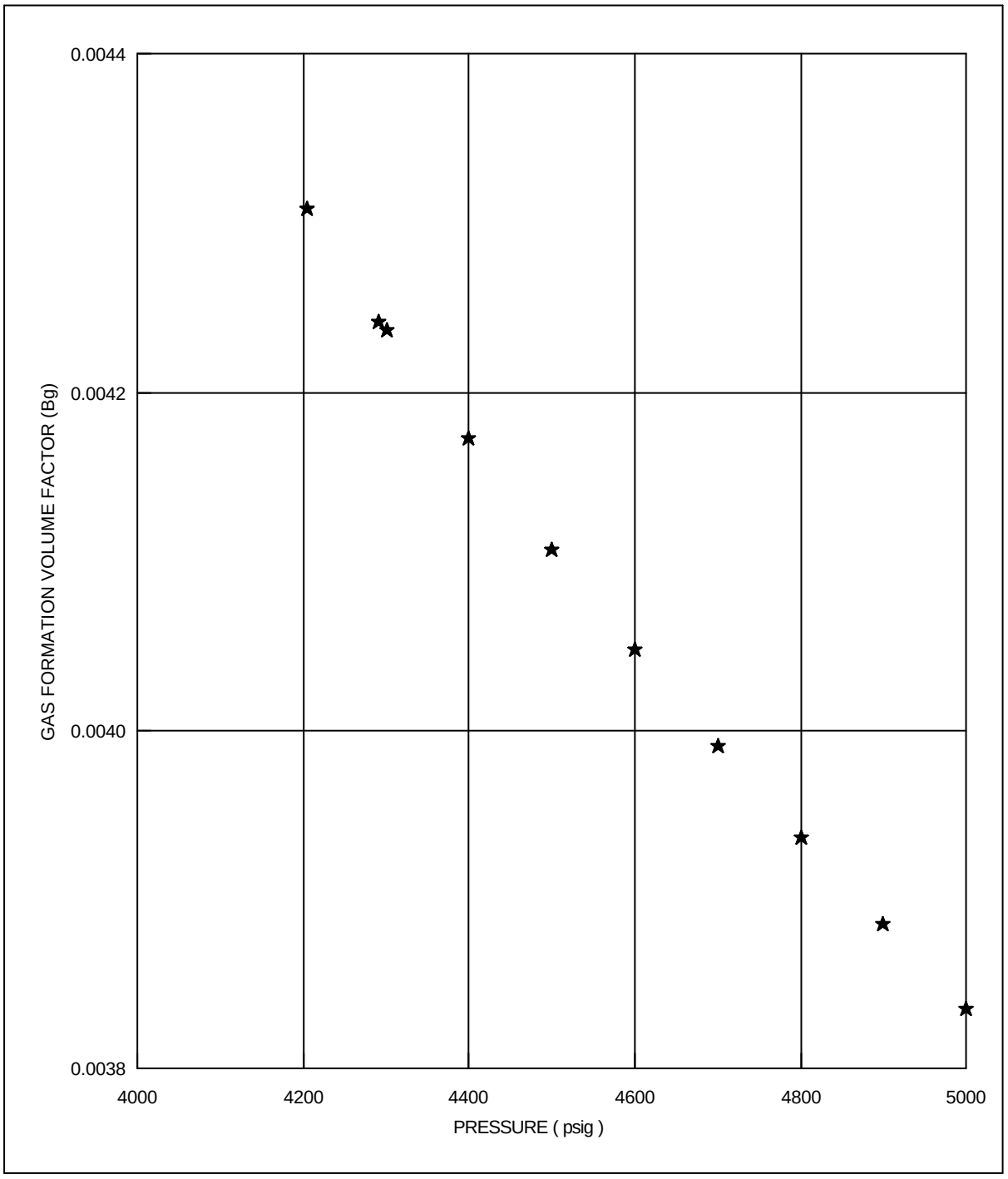
Equation of best fit
V/VSat = +1.00E+01 -8.86E-03 * P +3.52E-06 * P^2 -6.42E-10 * P^3 +4.40E-14 * P^4



GAS FORMATION VOLUME FACTOR

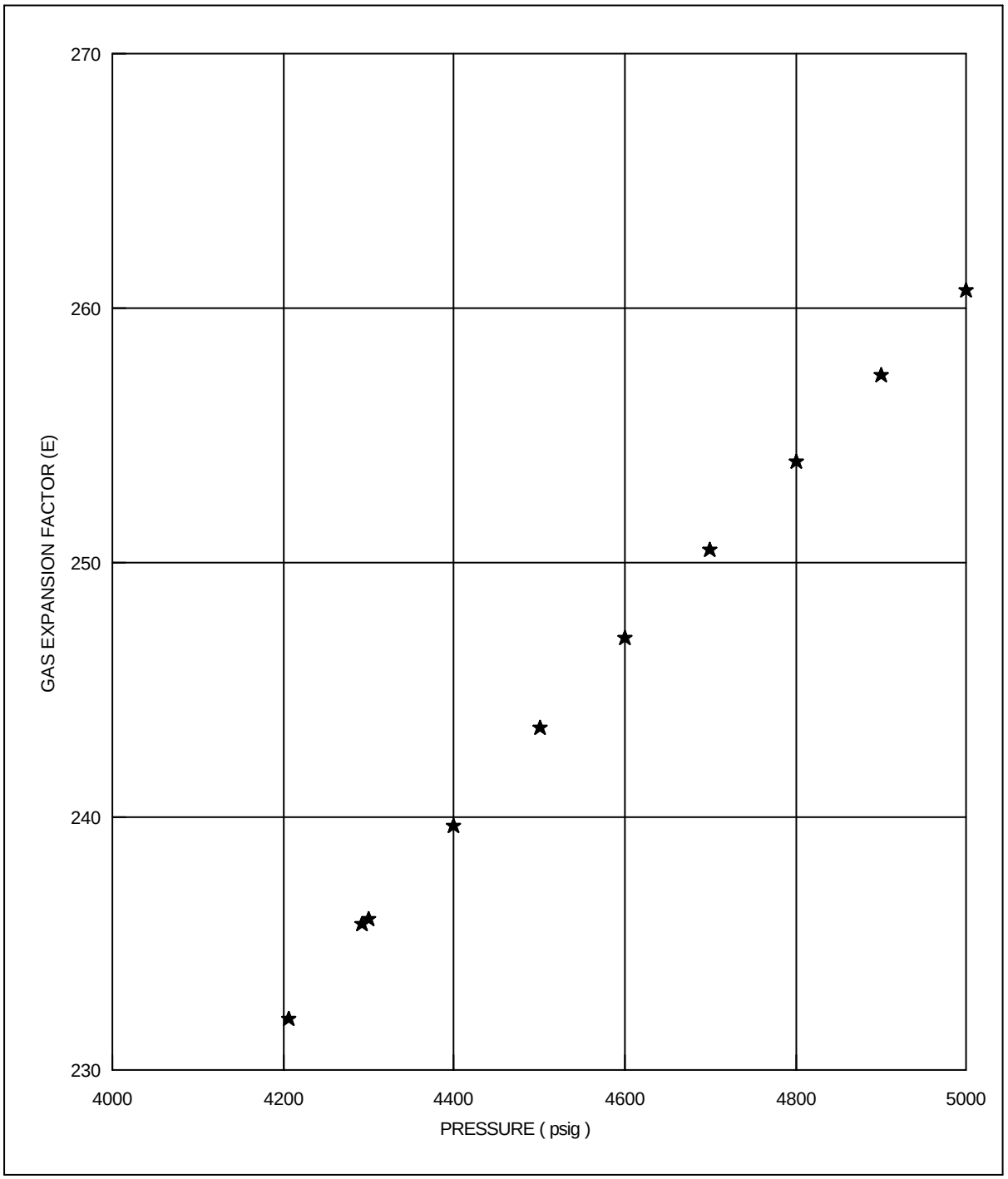
Equation of best fit

Bg = +2.13E-02 -9.33E-06 * P +1.74E-09 * P^2 -1.14E-13 * P^3 +0.00E+00 * P^4



GAS EXPANSION FACTOR

Equation of best fit
E = -4.67E+02 +3.74E-01 * P -6.92E-05 * P^2 +4.69E-09 * P^3 +0.00E+00 * P^4

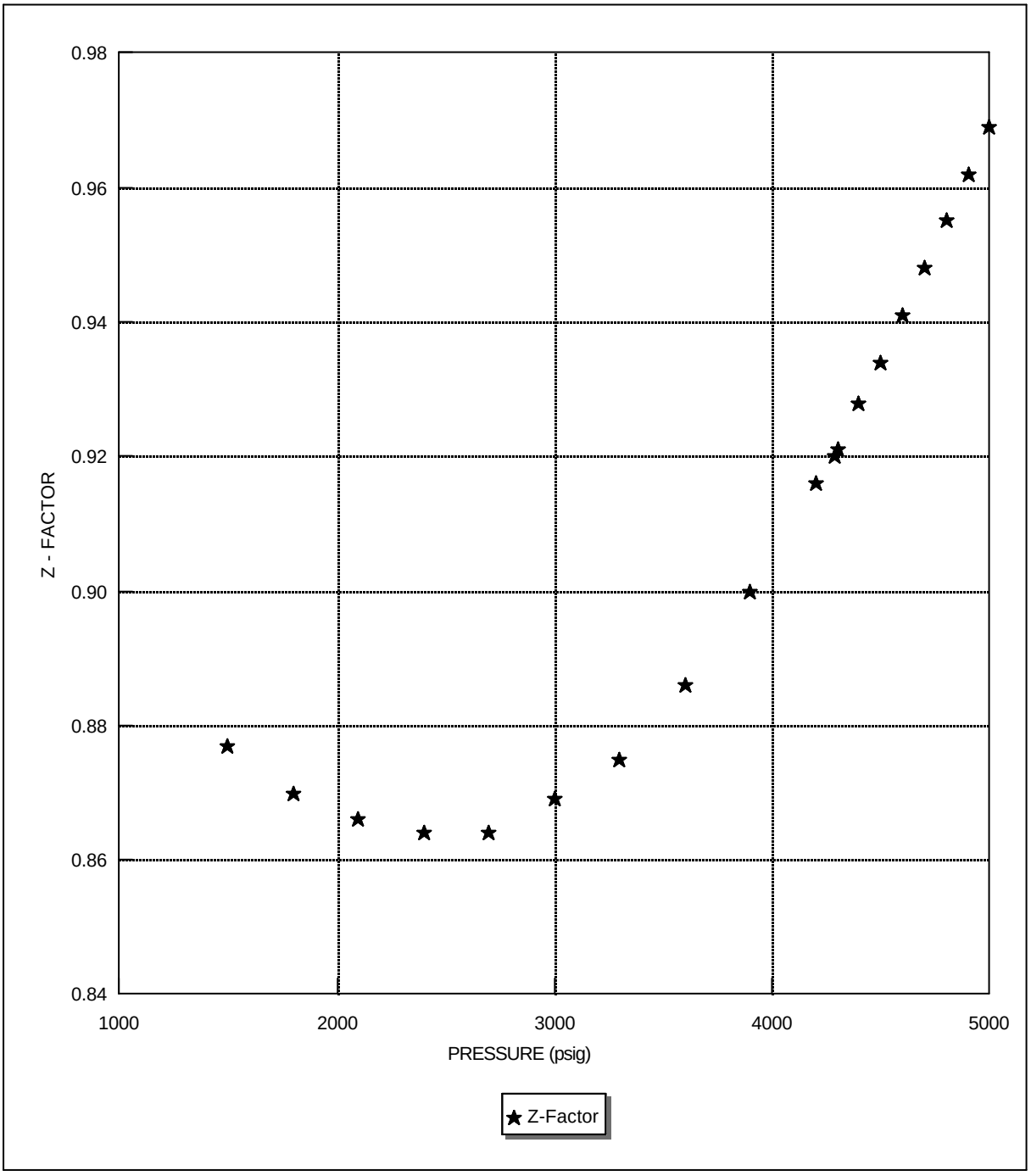


GAS DEVIATION FACTOR

Equation of best fit

Z

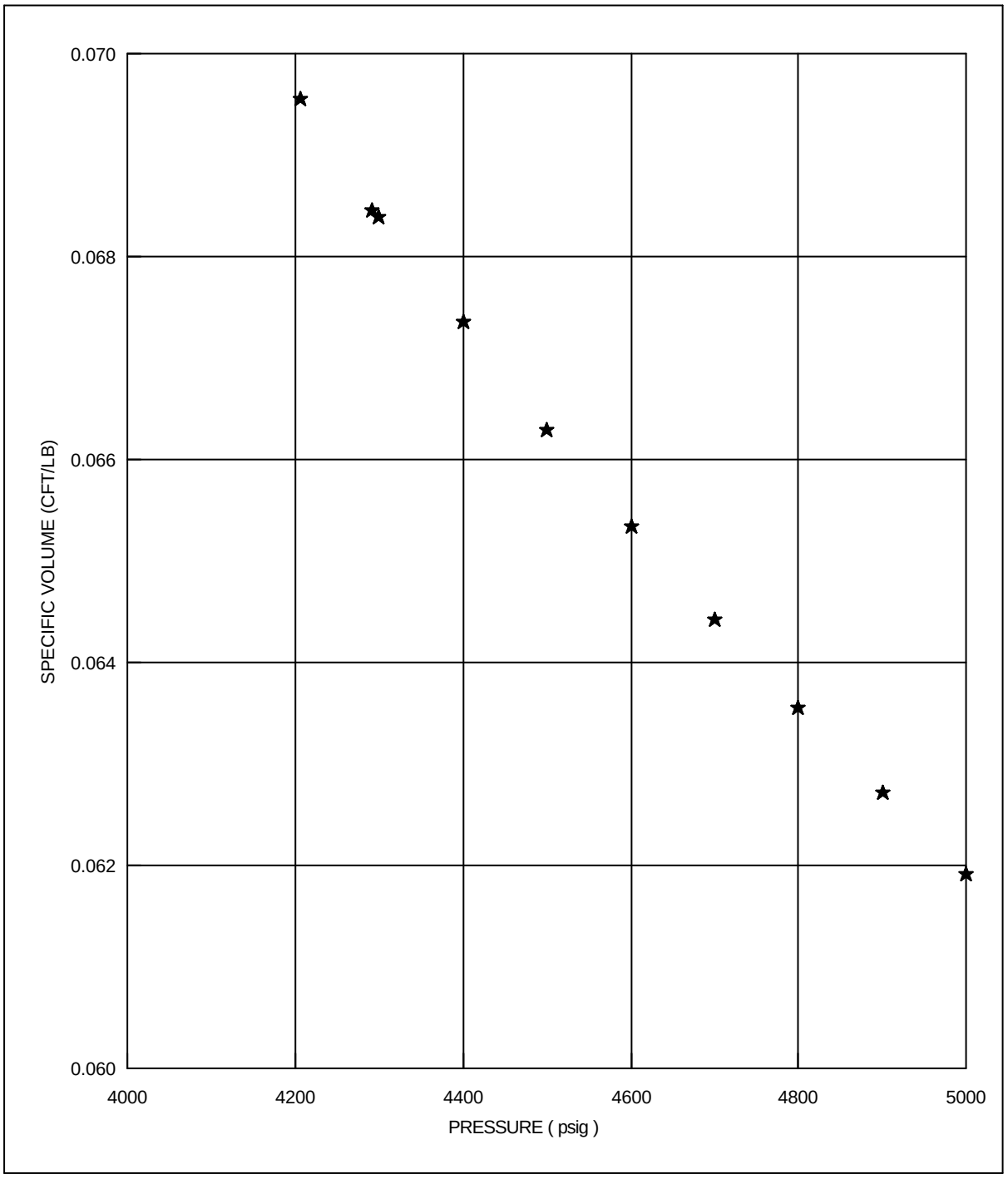
$$Z = +9.15E\text{-}01 \; -1.24E\text{-}05 * P \; -1.90E\text{-}08 * P^2 \; +7.86E\text{-}12 * P^3 \; +\text{-}6.28E\text{-}16 * P^4$$



RESERVOIR FLUID SPECIFIC VOLUME

Equation of best fit

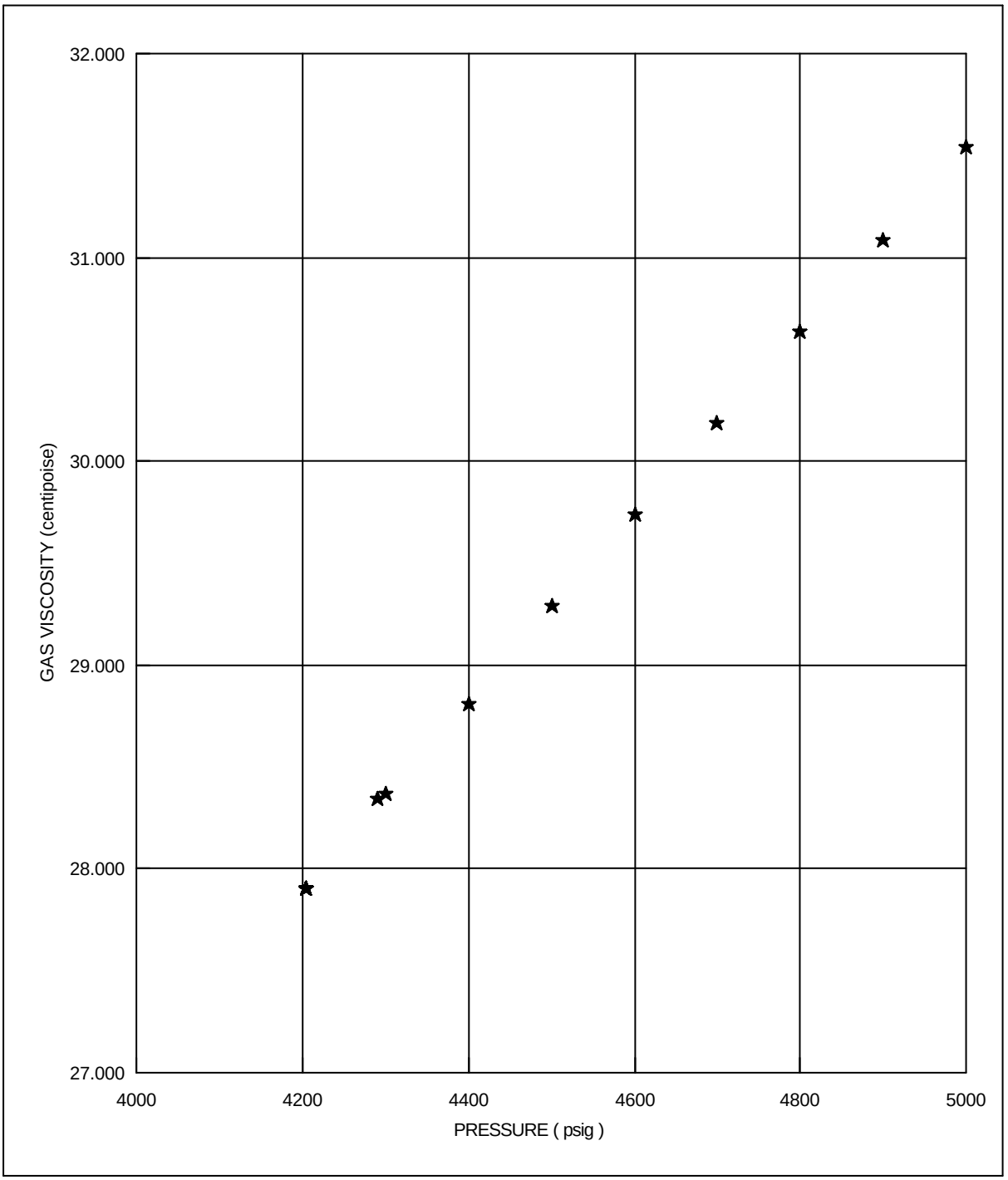
SV = +3.43E-01 -1.51E-04 * P +2.81E-08 * P^2 -1.85E-12 * P^3 +0.00E+00 * P^4



VISCOSITY OF RESERVOIR FLUID

Equation of best fit

μ = -5.71E-02 +4.70E-05 * P -9.09E-09 * P^2 +6.48E-13 * P^3 +0.00E+00 * P^4

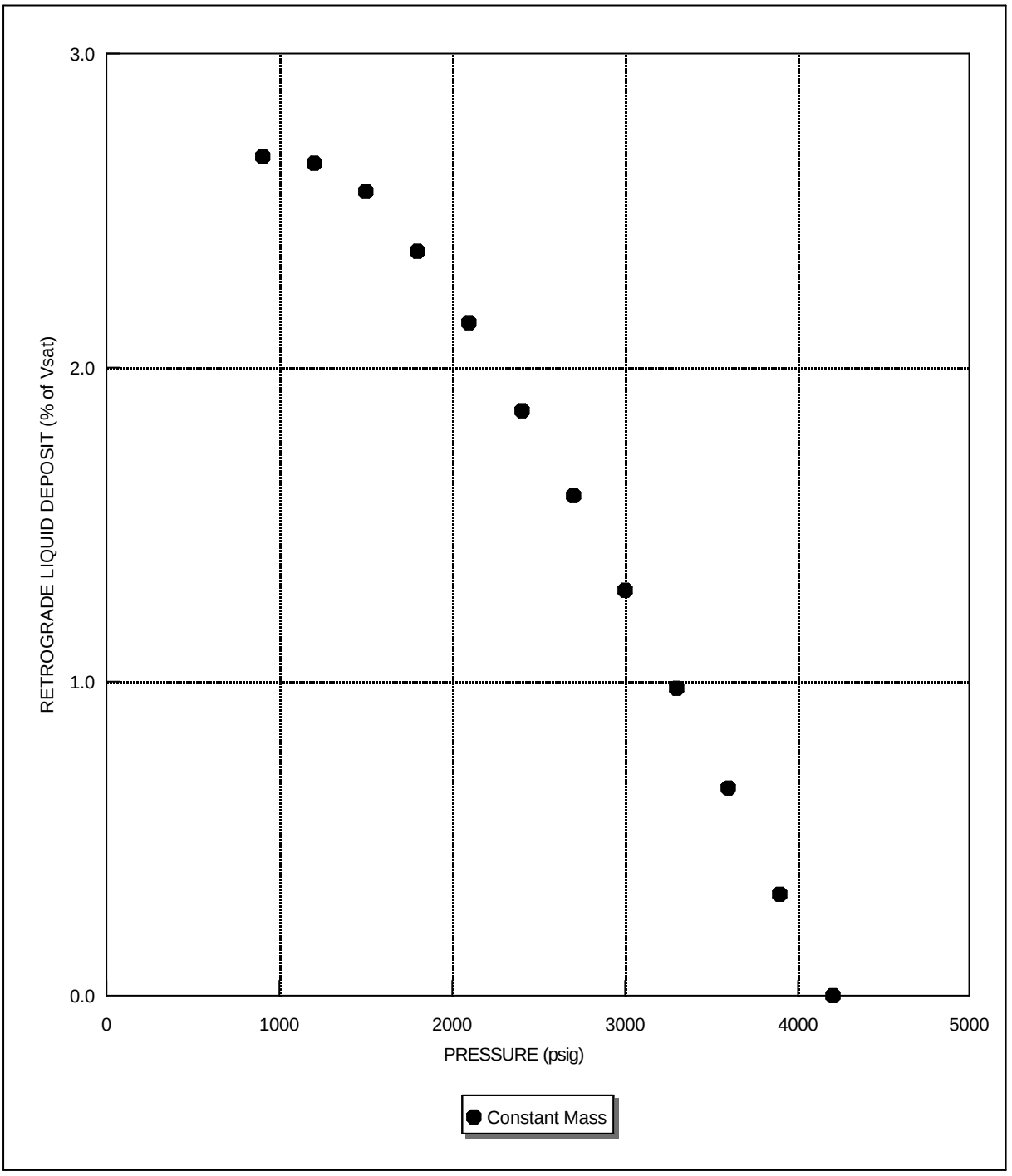


RETROGRADE CONDENSATION

Equation of best fit

Constant Mass

RLD = +1.87E+00 +1.81E-03 * P -1.22E-06 * P^2 +2.37E-10 * P^3 -1.77E-14 * P^4



Bottom Hole Samples

MDT Transfer Details
@ 5000 psig & 25 °C
Transferred on November 28, 2004

MDT Tool No.	Contents	Sample Depth (m)	Opening Press. (psi)	Transferred to Cylinder no.	CCs Water Recovered
MPSR 0192	Gas	2968.7	4400	XCI8529	20
MPSR 0113	Gas	3057.2	4700	810828	trace
MPSR 0187	Gas	3142.7	3750	XCI8536	trace
MPSR 0122	Gas	3386.5	4000	812157	275

MDT Transfer Details
@ 5000 psig & 25 °C
Transferred on December 12, 2004

MDT Tool No.	Contents	Sample Depth (mMD)	Opening Press. (psi)	Transferred to Cylinder no.	CCs Water Recovered
MPSR 0494	Gas	2999.2	3320	L-144	trace
MPSR 0316	Gas	2933.0	4900	L-689	trace
Oilphase 501	Gas	2988.0	2000	L-084	trace
MPSR 0310	Gas	3028.0	1360	L-017	trace
10007-MA	Water	3388.7	8500	- -	water

Retained Liquid Sample Details

Sample No.	Contents	Sample Depth (m)	Date	Time	Sample Amount (mL)
1.02	Retained Liquid	3264	26/11/04	16:28	250
1.04	Retained Liquid	3142.7	26/11/04	19:21	110
1.05	Retained Liquid	3142.7	26/11/04	19:36	110
1.07	Retained Liquid	3057.2	27/11/04	02:00	100
1.08	Retained Liquid	3057.2	27/11/04	02:14	100
1.09	Retained Liquid	3006.48	27/11/04	08:07	220
1.11	Retained Liquid	2968.7	27/11/04	11:47	30
1.12	Retained Liquid	2968.7	27/11/04	11:53	30
2.02	Retained Liquid	3100.5	30/11/04	- -	50
Mud sample from pre-logging			24/11/04	08:00	900

SUMMARY OF RESULTS

SATURATED VAPOUR:		CHDST#2	3142.7 m	2988.0 m	2968.7 m
Reservoir Temperature (°F)	:	242	248	241	240
Dew Point Pressure (psig)	:	4205	4040	4050	4160
Gas Formation Volume Factor (Bg)	:	0.00431	0.00463	0.00444	0.00430
Gas Expansion Factor (E)	:	232.06	215.96	225.21	232.56
Gas Deviation Factor (Z)	:	0.916	0.939	0.911	0.907
Specific Volume (CFT/LB)	:	0.06956	0.08231	0.07400	0.06881
Density (gm/cc)	:	0.2303	0.1946	0.2165	0.2328
Viscosity (centipoise)	:	0.0279	0.0247	0.0265	0.0281
Molecular Weight	:	23.52	21.36	22.78	23.73
Gas Gravity (Air = 1.000)	:	--	--	--	0.825
Gross Heating Value (BTU/ft3)	:	--	--	--	1340

Total Plant Products in Dew Point Fluid (GPMM):

Ethane	:	1906
Propane	:	902
Butanes	:	694
Pentanes Plus	:	2015

FLASH DATA:

1st Separator Pressure (psig)	:	756
1st Separator Temperature (°F)	:	86
2nd Separator Pressure (psig)	:	--
2nd Separator Temperature (°F)	:	--
Stock Tank Pressure (psig)	:	0
Stock Tank Temperature (°F)	:	60
1st Separator GOR (scf/bbl)	:	20628
2nd Separator GOR (scf/bbl)	:	--
Stock Tank GOR (scf/bbl)	:	631
Total GOR (scf/bbl)	:	21259
1st Sep.Gas / Prod. WS (mscf/mms	:	933
2nd Sep.Gas / Prod. WS (mscf/mm	:	--
STT Gas / Prod. WS (mscf/mmscf)	:	29
ST T Liq / Produced W/S (stb/mmsc	:	45

Total Plant Products in Primary Separator Gas (GPMM):

Ethane	:	1779
Propane	:	754
Butanes	:	465
Pentanes Plus	:	260

Total Plant Products in Secondary Separator Gas (GPMM):

Ethane	:	0
Propane	:	0
Butanes	:	0
Pentanes Plus	:	0

Total Plant Products in Stock Tank Gas (GPMM):

Ethane	:	114
Propane	:	120
Butanes	:	133
Pentanes Plus	:	95

FIELD CHARACTERISTICS :

Field Name	:	Trefoil
Formation Name	:	UEVCM
Date first well completed	:	Trefoil 1
Original reservoir pressure (psia)	:	4203
@ datum (mahbODF)	:	2968.7mMD

WELL CHARACTERISTICS :

Depth datum (mahbODF)	:	- -
Elevation above MSL (m)	:	39.9
Total depth	:	3545 mMD
Perforated intervals CHDST#1	:	3141 - 3150 mMD
Perforated intervals CHDST#2		3040.5 - 3046.5 mMD
Tubing size (inch)	:	3 1/2"
Tubing shoe (mRT)	:	- -
Casing size (inch)	:	9 5/8" & 6 5/8"
Reservoir temperature (°F)	:	240
Last reservoir pressure (psia)	:	4203
date	:	December, 2004
Status of well	:	Cased and suspended

WATER ANALYSIS

Customer Sample ID		Ex Cylinder	Trefoil - Origin	Trefoil - 1 MDT -1	Trefoil - 1 MDT -2
Description		10007-MA Ensco 102	Energy Ensco 102	Sample 1.11 Ensco 102	Sample 2.02 Ensco 102
Depth		3388.7mMD	3386.5m	2968.7mRT	3100.5mRT
Date Collected		13/12/2004		27/11/2004	30/11/2004
Time Collected				11:47	
Date Received		14/01/2005	30/11/2004	15/12/2004	15/12/2004
Sample Type	Unit	Water	Water	Water	Water
PROPERTIES: APHA 20th Ed					
pH at Measured Temp.		7.4	6.8	7.8	7.8
Measured Temp.	°C	23.4	25.8	23.7	23.7
Electrical Conductivity @ 25°C	µS/cm	55100	51800	30500	51600
Resistivity @ 25°C	M.Ohm	0.18	0.19	0.33	0.19
ANIONS mg/L APHA 20th ed					
Hydroxide as OH	mg/L	<1	<1	<1	<1
Carbonate as CO3	mg/L	<1	<1	<1	<1
Bicarbonate as HCO3	mg/L	1415	1379	2219	2019
Chloride as Cl	mg/L	18384	15025	7554	15363
Nitrate as NO3	mg/L	<0.1	11	<0.1	<0.1
Sulphate as SO4	mg/L	7924	7399	4947	8667
Total Anions	mg/L	27723	23814	14720	26049
ANIONS meq/L APHA 20th ed					
Hydroxide as OH	meq/L	<0.01	<0.01	<0.01	<0.01
Carbonate as CO3	meq/L	<0.01	<0.01	<0.01	<0.01
Bicarbonate as HCO3	meq/L	23.20	22.61	36.37	33.10
Chloride as Cl	meq/L	517.86	423.24	212.79	432.76
Nitrate as NO3	meq/L	<0.01	0.18	<0.01	<0.01
Sulphate as SO4	meq/L	164.98	154.05	103.00	180.45
Total Anions	meq/L	706.04	600.08	352.16	646.31
CATIONS mg/L APHA 20th ed					
Potassium as K	mg/L	1734	1758	1090	1800
Sodium as Na	mg/L	13410	13650	7700	13920
Calcium as Ca	mg/L	119	154	352	188
Magnesium as Mg	mg/L	18	26	59	30
Total Cations	mg/L	15281	15588	9201	15938
CATIONS meq/L APHA 20th ed					
Potassium as K	meq/L	44.35	44.96	27.88	46.04
Sodium as Na	meq/L	583.30	593.74	334.93	605.48
Calcium as Ca	meq/L	5.94	7.68	17.56	9.38
Magnesium as Mg	meq/L	1.48	2.14	4.86	2.47
Total Cations	meq/L	635.06	648.52	385.23	663.37
DERIVED PARAMETERS APHA 20th ed					
Ion balance (Diff * 100/Sum)	%	5.29	3.88	4.48	1.30
Acceptance Criteria	%	5	5	5	5
Satisfactory		No	Yes	Yes	Yes
Total Alkalinity (calc as CaCO3)	mg/L	1160	1131	1819	1655
Total Cations + Anions	mg/L	43004	39402	23921	41987
Hardness (calc as CaCO3)	mg/L	371	492	1122	593
Calculated Total Dissolved Solids	mg/L	35264	33152	19520	33024

WATER ANALYSIS

Customer Sample ID		Trefoil - 1 MDT -1	Trefoil - 1 MDT -1	Trefoil - 1 MDT -1	Trefoil - 1 MDT -1
Description		Sample 1.02 Ensco 102	Sample 1.04 Ensco 102	Sample 1.07 Ensco 102	Sample 1.09 Ensco 102
Depth		3264.0mRT	3142.7mRT	3057.2mRT	3006.5mRT
Date Collected		26/11/2004	26/11/2004	27/11/2004	27/11/2004
Time Collected		16:28	19:21	02:00	08:07
Date Received		15/12/2004	15/12/2004	15/12/2004	15/12/2004
Sample Type	Unit	Water	Water	Water	Water
PROPERTIES: APHA 20th Ed					
pH at Measured Temp.		7.5	7.7	7.6	7.2
Measured Temp.	°C	23.7	23.7	23.7	23.7
Electrical Conductivity @ 25°C	µS/cm	50200	52600	48000	45000
Resistivity @ 25°C	M.Ohm	0.20	0.19	0.21	0.22
ANIONS mg/L APHA 20th ed					
Hydroxide as OH	mg/L	<1	<1	<1	<1
Carbonate as CO3	mg/L	<1	<1	<1	<1
Bicarbonate as HCO3	mg/L	1359	1699	1759	1379
Chloride as Cl	mg/L	15537	16001	14142	13534
Nitrate as NO3	mg/L	<0.1	<0.1	<0.1	<0.1
Sulphate as SO4	mg/L	7451	8124	7332	6064
Total Anions	mg/L	24347	25824	23233	20977
ANIONS meq/L APHA 20th ed					
Hydroxide as OH	meq/L	<0.01	<0.01	<0.01	<0.01
Carbonate as CO3	meq/L	<0.01	<0.01	<0.01	<0.01
Bicarbonate as HCO3	meq/L	22.28	27.85	28.84	22.61
Chloride as Cl	meq/L	437.66	450.73	398.37	381.24
Nitrate as NO3	meq/L	<0.01	<0.01	<0.01	<0.01
Sulphate as SO4	meq/L	155.14	169.15	152.66	126.26
Total Anions	meq/L	615.08	647.73	579.86	530.11
CATIONS mg/L APHA 20th ed					
Potassium as K	mg/L	1557	1815	1641	1323
Sodium as Na	mg/L	12330	13380	12390	11430
Calcium as Ca	mg/L	111	124	141	143
Magnesium as Mg	mg/L	17	22	33	14
Total Cations	mg/L	14015	15341	14205	12910
CATIONS meq/L APHA 20th ed					
Potassium as K	meq/L	39.82	46.42	41.97	33.84
Sodium as Na	meq/L	536.32	581.99	538.93	497.17
Calcium as Ca	meq/L	5.54	6.19	7.04	7.14
Magnesium as Mg	meq/L	1.40	1.81	2.72	1.15
Total Cations	meq/L	583.08	636.41	590.65	539.30
DERIVED PARAMETERS APHA 20th ed					
Ion balance (Diff * 100/Sum)	%	2.67	0.88	0.92	0.86
Acceptance Criteria	%	5	5	5	5
Satisfactory		Yes	Yes	Yes	Yes
Total Alkalinity (calc as CaCO3)	mg/L	1114	1393	1442	1131
Total Cations + Anions	mg/L	38362	41165	37438	33887
Hardness (calc as CaCO3)	mg/L	347	400	488	415
Calculated Total Dissolved Solids	mg/L	32128	33664	30720	28800

COMPOSITIONAL ANALYSIS OF
Solution Gas
In Water Sample from 3388.7 m

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	4.02	
Nitrogen	N2	0.37	
Methane	C1	85.39	
Ethane	C2	6.86	1.836
Propane	C3	1.80	0.496
Iso-Butane	iC4	0.42	0.138
N-Butane	nC4	0.39	0.123
Iso-Pentane	iC5	0.18	0.066
N-Pentane	nC5	0.12	0.043
Hexanes	C6	0.19	0.074
Heptanes	C7	0.16	0.067
Octanes	C8	0.06	0.027
Nonanes	C9	0.03	0.015
Decanes	C10	0.01	0.005
Undecanes	C11	0.00	0.000
Dodecanes Plus	C12+	0.00	0.000
TOTAL		100.00	2.890

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	19.54
Gas Gravity	:	0.677
Pc	:	681.2
Tc	:	378.6
Mol Weight C6+	:	94.9
Density C6+	:	0.6822
Mol Weight C7+	:	102.9
Density C7+	:	0.6929
Mol Weight C10+	:	134.0
Density C10+	:	0.7278
Mol Weight C11+	:	--
Density C11+	:	--
Mol Weight C12+	:	--
Density C12+	:	--
Heating Value (BTU/ft3)		
Gross	:	1097
Nett	:	992
Wobbe Index	:	1334
Zpt *	:	1.000

COMPOSITIONAL ANALYSIS OF
Gas
In Sample from 3386.5 m

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	10.82	
Nitrogen	N2	7.70	
Methane	C1	72.81	
Ethane	C2	5.12	1.370
Propane	C3	1.99	0.549
Iso-Butane	iC4	0.41	0.134
N-Butane	nC4	0.39	0.123
Iso-Pentane	iC5	0.13	0.048
N-Pentane	nC5	0.10	0.036
Hexanes	C6	0.16	0.062
Heptanes	C7	0.19	0.080
Octanes	C8	0.07	0.032
Nonanes	C9	0.05	0.025
Decanes	C10	0.03	0.016
Undecanes	C11	0.01	0.006
Dodecanes Plus	C12+	0.02	0.015
TOTAL		100.00	2.496

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	22.19
Gas Gravity	:	0.768
Pc	:	695.0
Tc	:	381.3
Mol Weight C6+	:	102.3
Density C6+	:	0.6921
Mol Weight C7+	:	110.2
Density C7+	:	0.7019
Mol Weight C10+	:	149.8
Density C10+	:	0.7426
Mol Weight C11+	:	165.7
Density C11+	:	0.7558
Mol Weight C12+	:	175.0
Density C12+	:	0.7631
Heating Value (BTU/ft3)		
Gross	:	946
Nett	:	856
Wobbe Index	:	1080
Zpt *	:	1.000

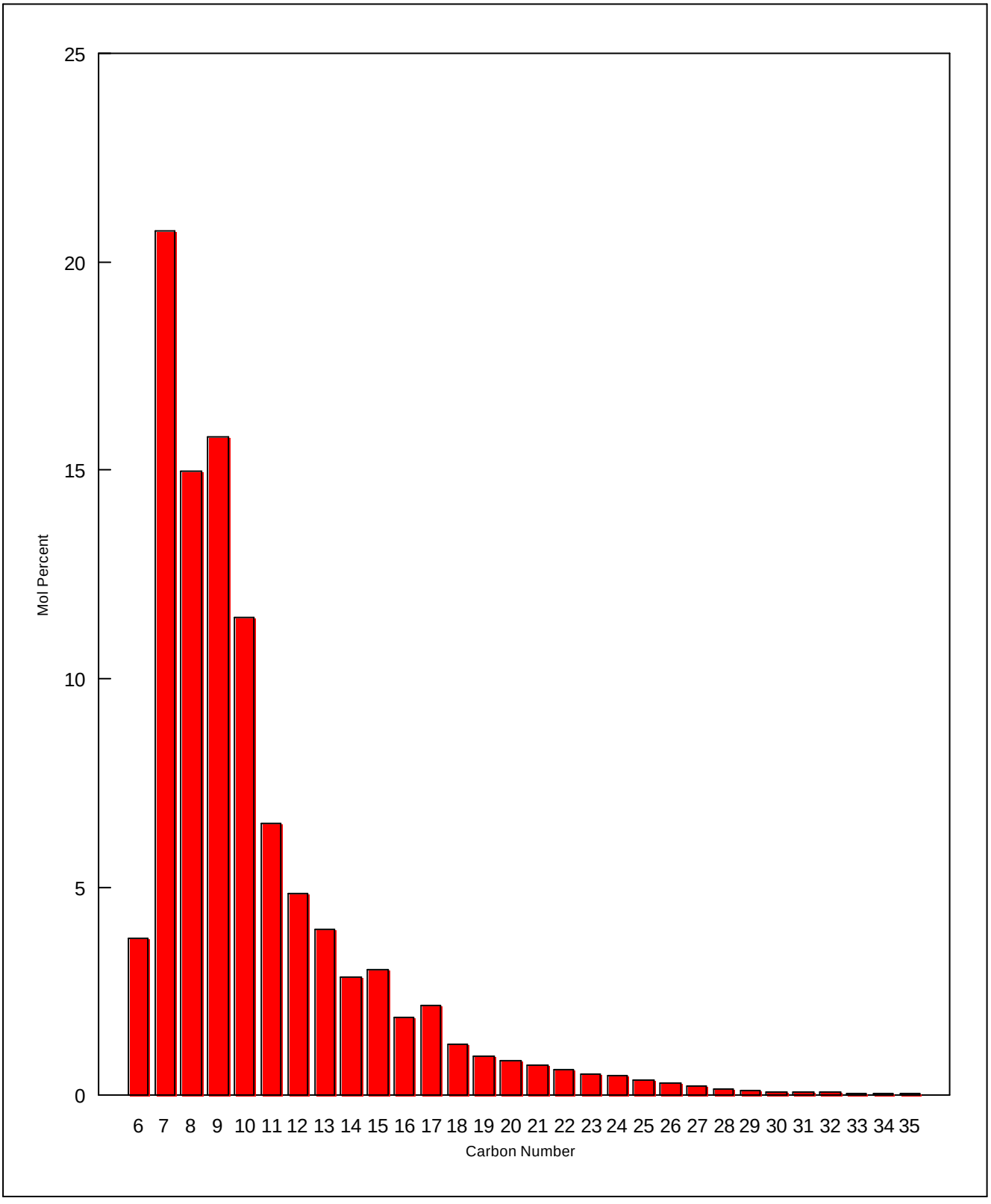
FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # 812157

Component		Mol %
Hexanes minus	C6-	1.20
Hexanes	C6	3.76
Heptanes	C7	20.75
Octanes	C8	14.96
Nonanes	C9	15.79
Decanes	C10	11.45
Undecanes	C11	6.54
Dodecanes	C12	4.83
Tridecanes	C13	3.98
Tetradecanes	C14	2.83
Pentadecanes	C15	3.03
Hexadecanes	C16	1.87
Heptadecanes	C17	2.15
Octadecanes	C18	1.23
Nonadecanes	C19	0.94
Eicosanes	C20	0.83
Heneicosanes	C21	0.74
Docosanes	C22	0.61
Tricosanes	C23	0.53
Tetracosanes	C24	0.47
Pentacosanes	C25	0.37
Hexacosanes	C26	0.30
Heptacosanes	C27	0.24
Octacosanes	C28	0.15
Nonacosanes	C29	0.10
Triacontanes	C30	0.08
Hentriacontanes	C31	0.07
Dotriacontanes	C32	0.08
Tritriacontanes	C33	0.04
Tetratriacontanes	C34	0.03
Pentatriacontanes Plus	C35+	0.05
TOTAL		100.00

Molecular Weight Calculated *	:	141.4
Density @ 60 °F Calculated *	:	0.7835
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	--

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # 812157



PETROLAB

Company : Origin Energy Resources Limited | Page : 44 of 107
Well : Trefoil # 1 | File : O - 24073

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # 812157 ex MPSR chamber # 0122 taken @ 3386.5 meters

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.02	1.68	1.67
Nitrogen	N2	0.00	1.21	1.20
Methane	C1	0.41	76.91	76.46
Ethane	C2	0.24	8.92	8.87
Propane	C3	0.47	5.11	5.08
Iso-Butane	iC4	0.28	1.28	1.27
N-Butane	nC4	0.42	1.38	1.37
Iso-Pentane	iC5	0.46	0.60	0.60
N-Pentane	nC5	0.46	0.47	0.47
Hexanes	C6	3.70	0.78	0.80
Heptanes	C7	20.42	0.99	1.10
Octanes	C8	14.72	0.31	0.39
Nonanes	C9	15.54	0.19	0.28
Decanes	C10	11.27	0.08	0.15
Undecanes	C11	6.44	0.03	0.07
Dodecanes Plus	C12+	25.15	0.06	0.22
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0058	0.9942	1.0000
Mass Ratio	:	0.0342	0.9658	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	49.6357 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	127314 SCF	--
Stream Properties				
Molecular Weight	:	138.9	23.09	23.8
Density obs. (gm/cc)	:	0.7817 @ 60 °F	--	0.4631 @ PT*
Gravity (AIR = 1.000)	:	49.3 °API @ 60 °F	0.800	173.8
GHV (BTU/scf)	:	--	1334	--
Hexanes Plus Properties				
Mol %	:	97.24	2.44	3.01
Molecular Weight	:	141.4	99.2	107.2
Density (gm/cc @ 60 °F)	:	0.7852	0.6880	0.7100
Gravity (°API @ 60 °F)	:	48.5	74.0	67.6
Heptanes Plus Properties				
Mol %	:	93.55	1.66	2.21
Molecular Weight	:	143.6	106.3	115.6
Density (gm/cc @ 60 °F)	:	0.7879	0.6972	0.7230
Gravity (°API @ 60 °F)	:	47.9	71.3	64.0
Decanes Plus Properties				
Mol %	:	42.86	0.17	0.44
Molecular Weight	:	187.1	149.0	165.7
Density (gm/cc @ 60 °F)	:	0.8215	0.7418	0.7885
Gravity (°API @ 60 °F)	:	40.6	59.1	47.8
Undecanes Plus Properties				
Mol %	:	31.59	0.09	0.29
Molecular Weight	:	206.0	162.3	186.8
Density (gm/cc @ 60 °F)	:	0.8323	0.7531	0.8065
Gravity (°API @ 60 °F)	:	38.3	56.2	43.8
Dodecanes Plus Properties				
Mol %	:	25.15	0.06	0.22
Molecular Weight	:	221.2	170.0	203.8
Density (gm/cc @ 60 °F)	:	0.8402	0.7592	0.8183
Gravity (°API @ 60 °F)	:	36.8	54.7	41.2

* (P)ressure : 5000 psig * (T)emperature : 80 °F

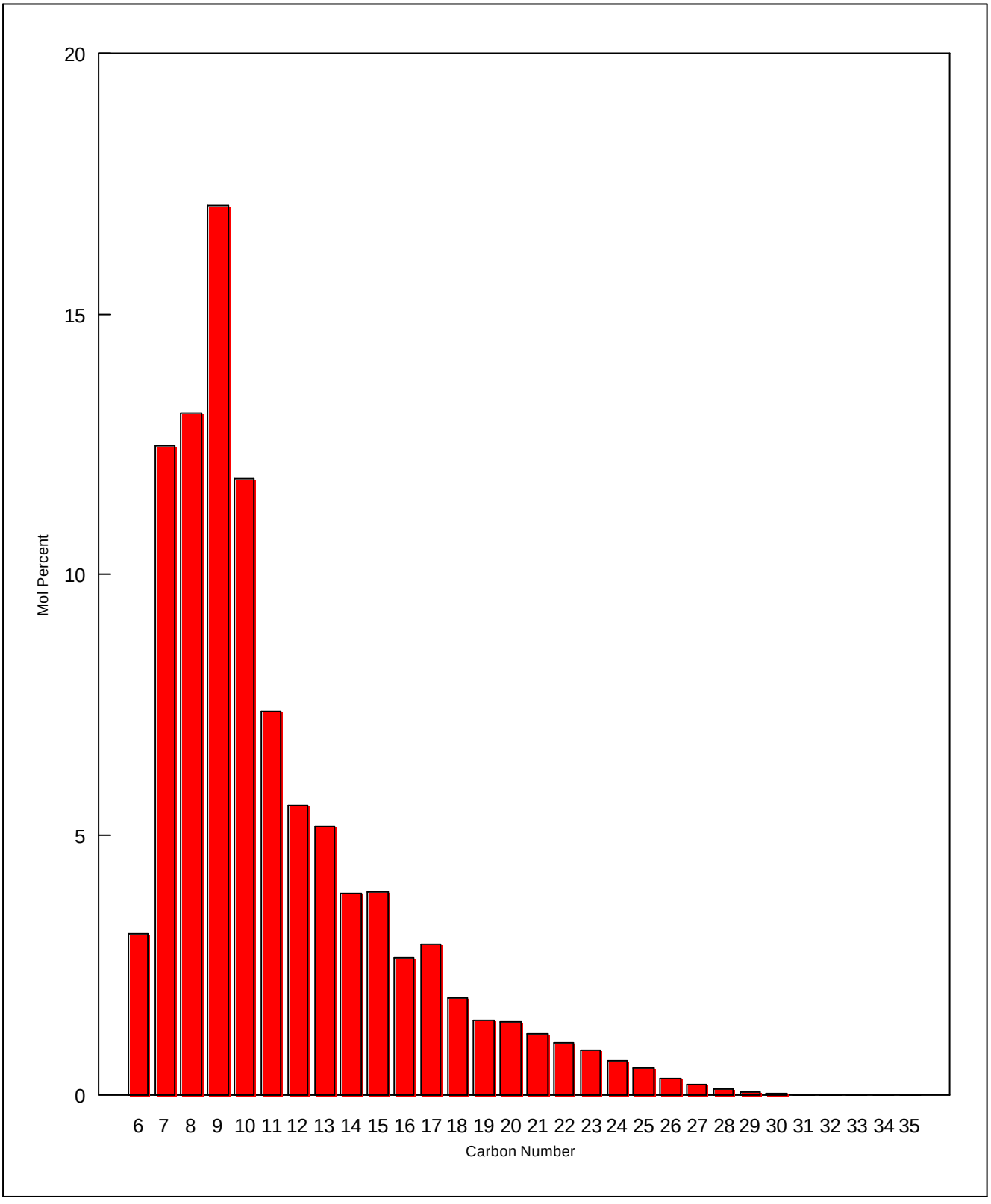
FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # 18536

Component		Mol %
Hexanes minus	C6-	1.22
Hexanes	C6	3.10
Heptanes	C7	12.47
Octanes	C8	13.10
Nonanes	C9	17.09
Decanes	C10	11.83
Undecanes	C11	7.36
Dodecanes	C12	5.58
Tridecanes	C13	5.15
Tetradecanes	C14	3.87
Pentadecanes	C15	3.91
Hexadecanes	C16	2.65
Heptadecanes	C17	2.91
Octadecanes	C18	1.87
Nonadecanes	C19	1.45
Eicosanes	C20	1.41
Heneicosanes	C21	1.19
Docosanes	C22	1.01
Tricosanes	C23	0.86
Tetracosanes	C24	0.68
Pentacosanes	C25	0.51
Hexacosanes	C26	0.33
Heptacosanes	C27	0.20
Octacosanes	C28	0.11
Nonacosanes	C29	0.06
Triacontanes	C30	0.03
Hentriacontanes	C31	0.01
Dotriacontanes	C32	0.01
Tritriacontanes	C33	0.01
Tetratriacontanes	C34	0.01
Pentatriacontanes Plus	C35+	0.01
TOTAL		100.00

Molecular Weight Calculated *	:	152.4
Density @ 60 °F Calculated *	:	0.7941
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	--

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # 18536



PETROLAB

Company : Origin Energy Resources Limited | Page : 47 of 107
Well : Trefoil # 1 | File : O - 24073

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # 18536 ex MPSR chamber # 0187 taken @ 3142.7 meters

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.04	2.99	2.96
Nitrogen	N2	0.00	0.36	0.36
Methane	C1	0.46	85.86	84.96
Ethane	C2	0.18	6.77	6.70
Propane	C3	0.16	1.74	1.72
Iso-Butane	iC4	0.09	0.40	0.40
N-Butane	nC4	0.09	0.30	0.30
Iso-Pentane	iC5	0.12	0.15	0.15
N-Pentane	nC5	0.10	0.10	0.10
Hexanes	C6	3.10	0.26	0.29
Heptanes	C7	12.47	0.43	0.56
Octanes	C8	13.10	0.28	0.42
Nonanes	C9	17.09	0.23	0.41
Decanes	C10	11.83	0.08	0.20
Undecanes	C11	7.36	0.01	0.09
Dodecanes Plus	C12+	33.83	0.04	0.38
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0105	0.9895	1.0000
Mass Ratio	:	0.0746	0.9254	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	65565 SCF	--
Stream Properties				
Molecular Weight	:	151.2	19.98	21.36
Density obs. (gm/cc)	:	0.7942 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	46.5 °API @ 60 °F	0.692	--
GHV (BTU/scf)	:	--	1147	--
Hexanes Plus Properties				
Mol %	:	98.77	1.33	2.35
Molecular Weight	:	152.6	105.2	126.1
Density (gm/cc @ 60 °F)	:	0.7959	0.6958	0.7459
Gravity (°API @ 60 °F)	:	46.1	71.7	58.0
Heptanes Plus Properties				
Mol %	:	95.68	1.07	2.06
Molecular Weight	:	154.8	110.3	132.0
Density (gm/cc @ 60 °F)	:	0.7981	0.7021	0.7540
Gravity (°API @ 60 °F)	:	45.6	69.8	56.0
Decanes Plus Properties				
Mol %	:	53.02	0.13	0.67
Molecular Weight	:	191.4	146.1	180.7
Density (gm/cc @ 60 °F)	:	0.8240	0.7392	0.8092
Gravity (°API @ 60 °F)	:	40.1	59.7	43.2
Undecanes Plus Properties				
Mol %	:	41.19	0.05	0.47
Molecular Weight	:	207.9	165.4	201.7
Density (gm/cc @ 60 °F)	:	0.8331	0.7556	0.8254
Gravity (°API @ 60 °F)	:	38.2	55.6	39.8
Dodecanes Plus Properties				
Mol %	:	33.83	0.04	0.38
Molecular Weight	:	221.1	170.0	215.1
Density (gm/cc @ 60 °F)	:	0.8399	0.7592	0.8326
Gravity (°API @ 60 °F)	:	36.8	54.7	38.3

* (P)ressure : 5000 psig * (T)emperature : 80 °F

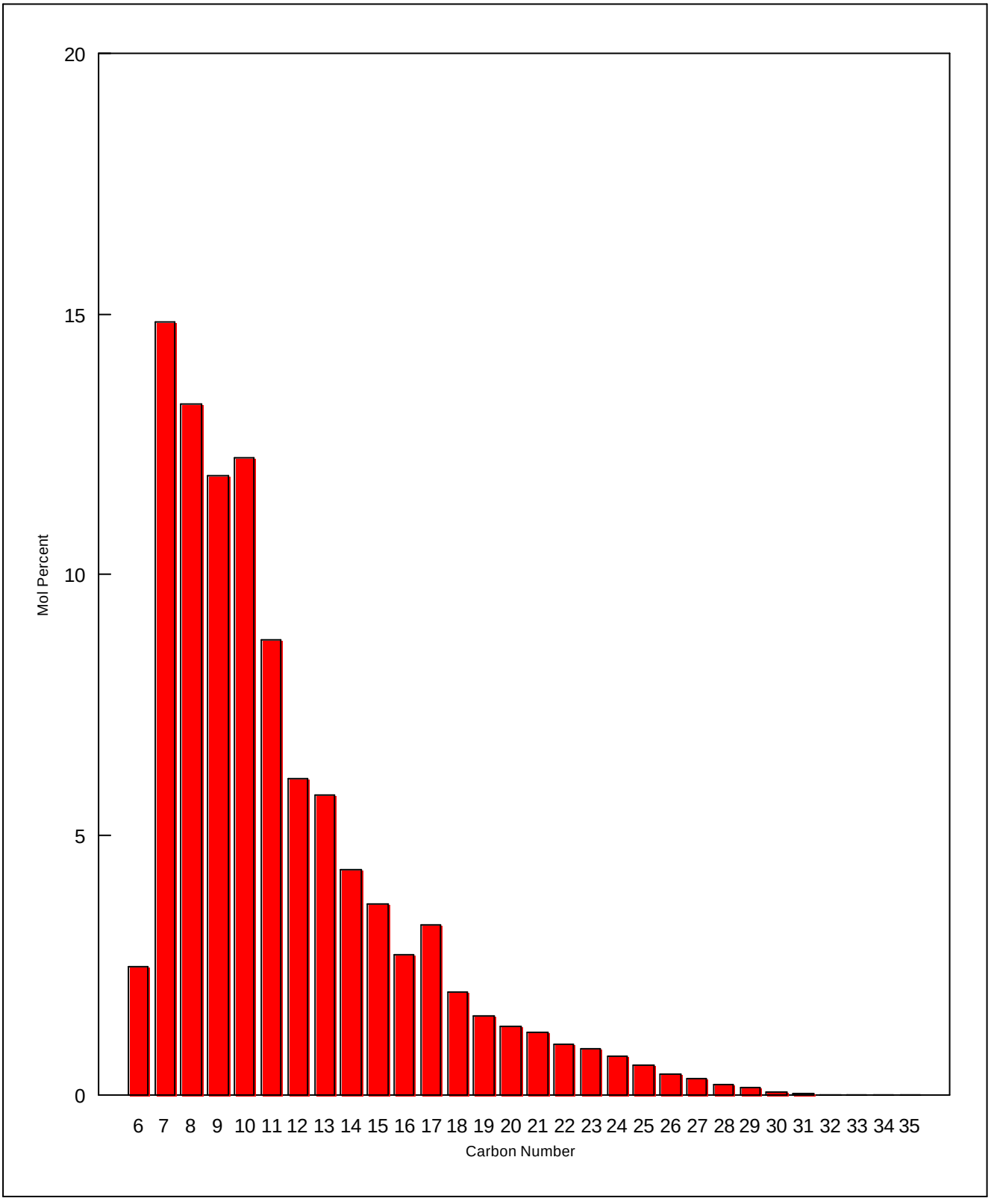
FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # 810828

Component		Mol %
Hexanes minus	C6-	0.23
Hexanes	C6	2.46
Heptanes	C7	14.86
Octanes	C8	13.28
Nonanes	C9	11.89
Decanes	C10	12.23
Undecanes	C11	8.73
Dodecanes	C12	6.09
Tridecanes	C13	5.78
Tetradecanes	C14	4.33
Pentadecanes	C15	3.68
Hexadecanes	C16	2.71
Heptadecanes	C17	3.28
Octadecanes	C18	1.98
Nonadecanes	C19	1.53
Eicosanes	C20	1.33
Heneicosanes	C21	1.20
Docosanes	C22	0.98
Tricosanes	C23	0.89
Tetracosanes	C24	0.74
Pentacosanes	C25	0.57
Hexacosanes	C26	0.42
Heptacosanes	C27	0.33
Octacosanes	C28	0.20
Nonacosanes	C29	0.14
Triacontanes	C30	0.06
Hentriacontanes	C31	0.03
Dotriacontanes	C32	0.02
Tritriacontanes	C33	0.01
Tetratriacontanes	C34	0.01
Pentatriacontanes Plus	C35+	0.01
TOTAL		100.00

Molecular Weight Calculated *	:	155.8
Density @ 60 °F Calculated *	:	0.7974
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	--

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # 810828



PETROLAB

Company : Origin Energy Resources Limited | Page : 50 of 107
Well : Trefoil # 1 | File : O - 24073

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # 810828 ex MPSR chamber # 0113 taken @ 3057.2 meters

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.05	3.90	3.87
Nitrogen	N2	0.00	1.16	1.15
Methane	C1	0.44	82.06	81.51
Ethane	C2	0.17	6.35	6.31
Propane	C3	0.26	2.91	2.89
Iso-Butane	iC4	0.20	0.94	0.94
N-Butane	nC4	0.24	0.80	0.80
Iso-Pentane	iC5	0.32	0.41	0.41
N-Pentane	nC5	0.27	0.28	0.28
Hexanes	C6	2.42	0.49	0.50
Heptanes	C7	14.60	0.45	0.55
Octanes	C8	13.05	0.13	0.22
Nonanes	C9	11.68	0.06	0.14
Decanes	C10	12.02	0.03	0.11
Undecanes	C11	8.58	0.01	0.07
Dodecanes Plus	C12+	35.69	0.02	0.25
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0068	0.9932	1.0000
Mass Ratio	:	0.0472	0.9528	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	101475 SCF	--
Stream Properties				
Molecular Weight	:	153.0	21.05	21.95
Density obs. (gm/cc)	:	0.7956 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	46.2 °API @ 60 °F	0.729	--
GHV (BTU/scf)	:	--	1168	--
Hexanes Plus Properties				
Mol %	:	98.04	1.19	1.84
Molecular Weight	:	155.1	96.2	117.3
Density (gm/cc @ 60 °F)	:	0.7980	0.6839	0.7338
Gravity (°API @ 60 °F)	:	45.6	75.2	61.2
Heptanes Plus Properties				
Mol %	:	95.62	0.70	1.34
Molecular Weight	:	156.9	104.7	129.8
Density (gm/cc @ 60 °F)	:	0.7998	0.6951	0.7525
Gravity (°API @ 60 °F)	:	45.2	71.9	56.4
Decanes Plus Properties				
Mol %	:	56.29	0.06	0.43
Molecular Weight	:	191.7	148.1	183.9
Density (gm/cc @ 60 °F)	:	0.8243	0.7411	0.8136
Gravity (°API @ 60 °F)	:	40.0	59.3	42.2
Undecanes Plus Properties				
Mol %	:	44.27	0.03	0.32
Molecular Weight	:	207.4	162.3	201.9
Density (gm/cc @ 60 °F)	:	0.8329	0.7531	0.8261
Gravity (°API @ 60 °F)	:	38.2	56.2	39.6
Dodecanes Plus Properties				
Mol %	:	35.69	0.02	0.25
Molecular Weight	:	221.9	169.9	217.3
Density (gm/cc @ 60 °F)	:	0.8404	0.7592	0.8349
Gravity (°API @ 60 °F)	:	36.7	54.7	37.8

* (P)ressure : 5000 psig * (T)emperature : 80 °F

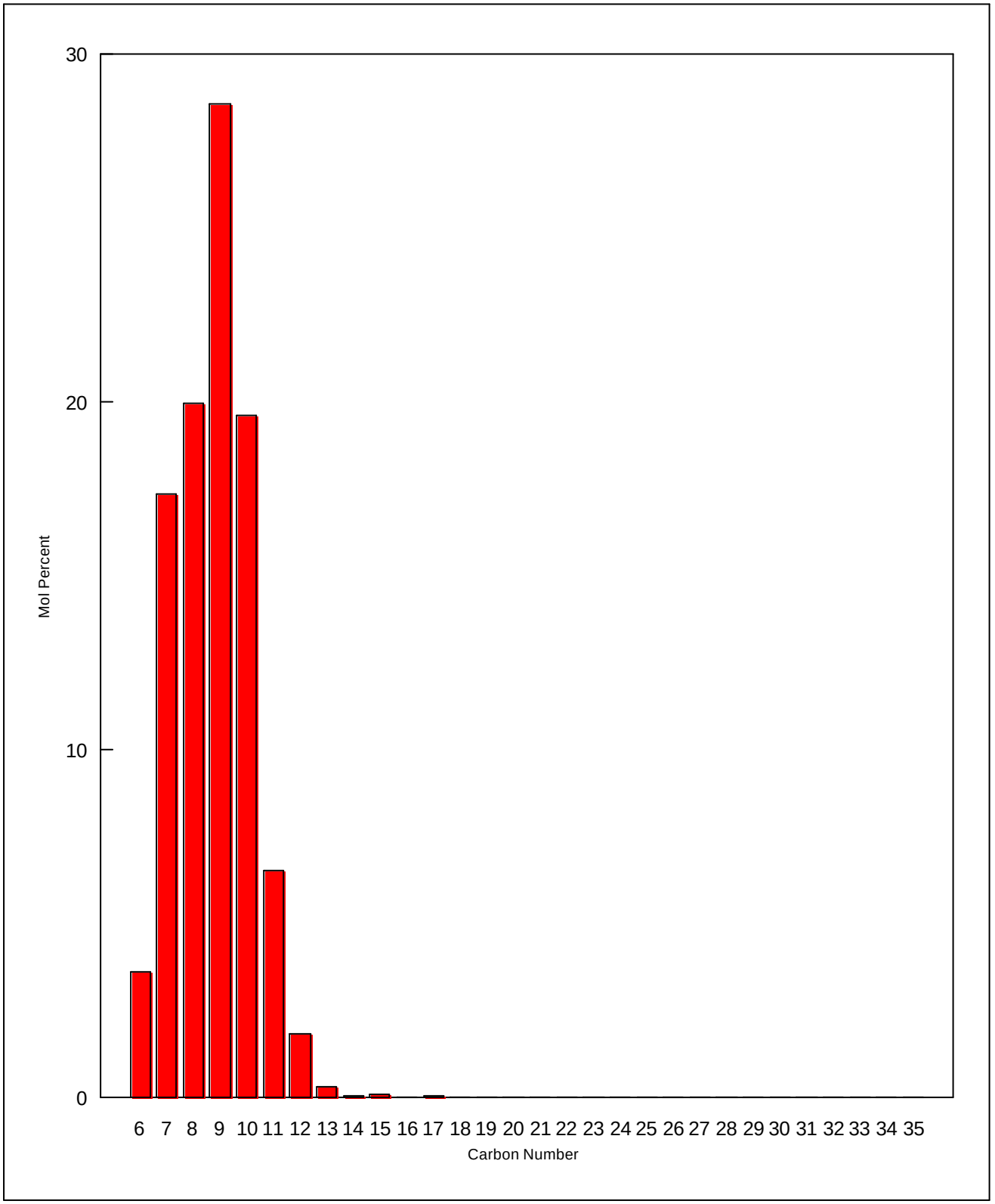
FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 017

Component		Mol %
Hexanes minus	C6-	1.83
Hexanes	C6	3.64
Heptanes	C7	17.33
Octanes	C8	19.95
Nonanes	C9	28.56
Decanes	C10	19.61
Undecanes	C11	6.53
Dodecanes	C12	1.82
Tridecanes	C13	0.33
Tetradecanes	C14	0.05
Pentadecanes	C15	0.12
Hexadecanes	C16	0.03
Heptadecanes	C17	0.04
Octadecanes	C18	0.02
Nonadecanes	C19	0.03
Eicosanes	C20	0.02
Heneicosanes	C21	0.02
Docosanes	C22	0.02
Tricosanes	C23	0.01
Tetracosanes	C24	0.02
Pentacosanes	C25	0.01
Hexacosanes	C26	0.01
Heptacosanes	C27	0.00
Octacosanes	C28	0.00
Nonacosanes	C29	0.00
Triacontanes	C30	0.00
Hentriacontanes	C31	0.00
Dotriacontanes	C32	0.00
Tritriacontanes	C33	0.00
Tetratriacontanes	C34	0.00
Pentatriacontanes Plus	C35+	0.00
TOTAL		100.00

Molecular Weight Calculated *	:	118.3
Density @ 60 °F Calculated *	:	0.7562
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7562

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 017



PETROLAB

Company : Origin Energy Resources Limited | Page : 53 of 107
Well : Trefoil # 1 | File : O - 24073

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # L - 017 ex MDT Tool # MPSR 0310 taken @ 3028.0 mMD

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.02	1.36	1.35
Nitrogen	N2	0.00	1.02	1.01
Methane	C1	0.48	83.78	83.27
Ethane	C2	0.25	7.36	7.32
Propane	C3	0.35	2.90	2.88
Iso-Butane	iC4	0.25	0.84	0.84
N-Butane	nC4	0.33	0.76	0.76
Iso-Pentane	iC5	0.41	0.36	0.36
N-Pentane	nC5	0.36	0.25	0.25
Hexanes	C6	3.62	0.45	0.47
Heptanes	C7	17.22	0.54	0.64
Octanes	C8	19.83	0.23	0.35
Nonanes	C9	28.38	0.13	0.30
Decanes	C10	19.49	0.02	0.14
Undecanes	C11	6.49	0.00	0.04
Dodecanes Plus	C12+	2.53	0.00	0.02
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0062	0.9938	1.0000
Mass Ratio	:	0.0341	0.9659	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	138788 SCF	--
Stream Properties				
Molecular Weight	:	116.4	20.51	21.11
Density obs. (gm/cc)	:	0.7553 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	55.7 °API @ 60 °F	0.710	--
GHV (BTU/scf)	:	--	1206	--
Hexanes Plus Properties				
Mol %	:	97.56	1.37	1.96
Molecular Weight	:	118.1	96.8	103.4
Density (gm/cc @ 60 °F)	:	0.7586	0.6848	0.7090
Gravity (°API @ 60 °F)	:	54.8	74.9	67.9
Heptanes Plus Properties				
Mol %	:	93.93	0.92	1.49
Molecular Weight	:	119.4	103.1	109.4
Density (gm/cc @ 60 °F)	:	0.7608	0.6932	0.7203
Gravity (°API @ 60 °F)	:	54.3	72.4	64.8
Decanes Plus Properties				
Mol %	:	28.51	0.02	0.20
Molecular Weight	:	140.6	133.9	139.9
Density (gm/cc @ 60 °F)	:	0.7842	0.7277	0.7784
Gravity (°API @ 60 °F)	:	48.8	62.8	50.1
Undecanes Plus Properties				
Mol %	:	9.02	0.00	0.06
Molecular Weight	:	154.8	--	154.8
Density (gm/cc @ 60 °F)	:	0.7961	--	0.7961
Gravity (°API @ 60 °F)	:	46.1	--	46.1
Dodecanes Plus Properties				
Mol %	:	2.53	0.00	0.02
Molecular Weight	:	174.8	--	174.8
Density (gm/cc @ 60 °F)	:	0.8119	--	0.8119
Gravity (°API @ 60 °F)	:	42.6	--	42.6

* (P)ressure : 5000 psig * (T)emperature : 80 °F

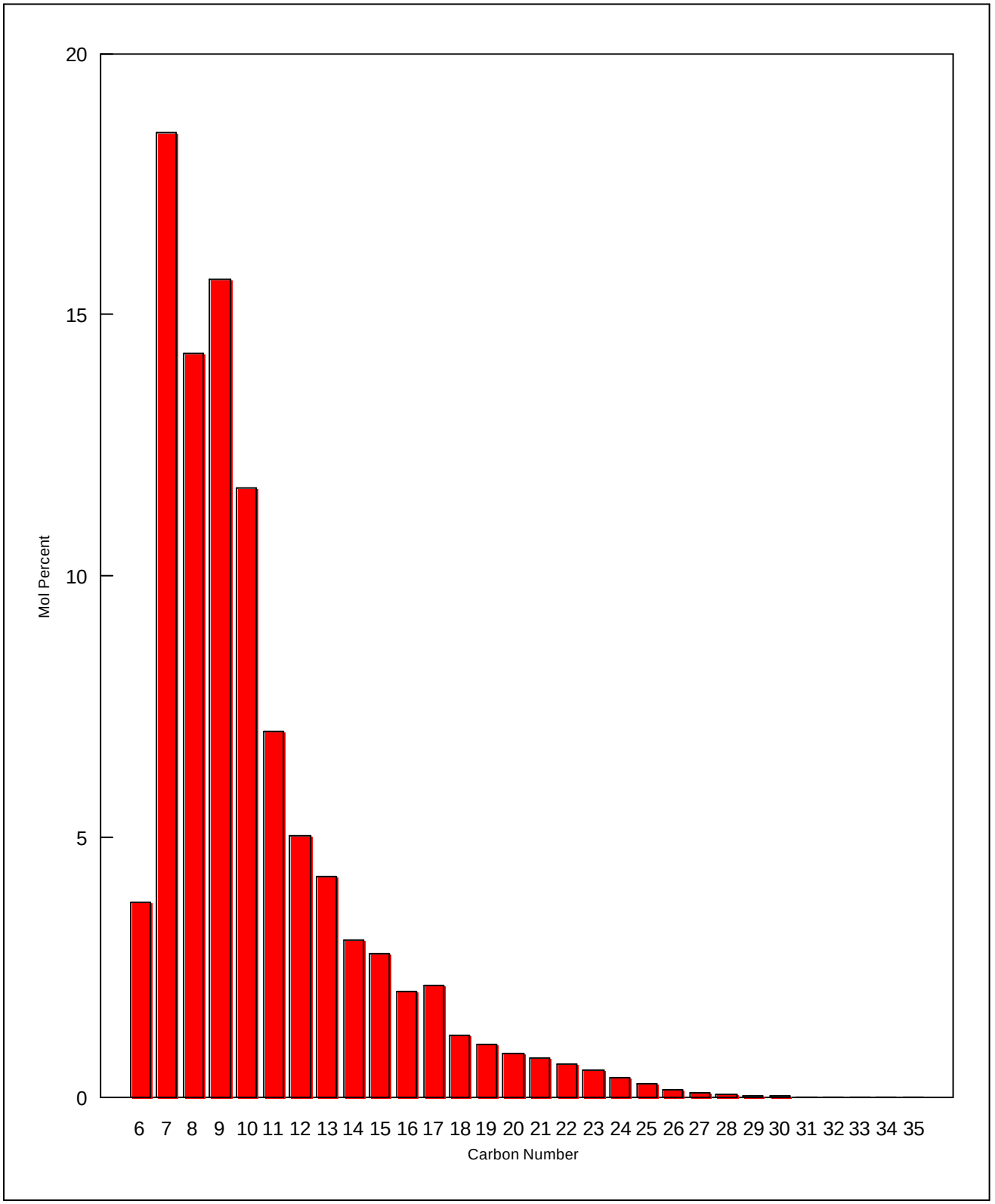
FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 144

Component		Mol %
Hexanes minus	C6-	3.82
Hexanes	C6	3.74
Heptanes	C7	18.48
Octanes	C8	14.26
Nonanes	C9	15.67
Decanes	C10	11.69
Undecanes	C11	7.02
Dodecanes	C12	5.01
Tridecanes	C13	4.24
Tetradecanes	C14	3.03
Pentadecanes	C15	2.76
Hexadecanes	C16	2.03
Heptadecanes	C17	2.16
Octadecanes	C18	1.21
Nonadecanes	C19	1.02
Eicosanes	C20	0.85
Heneicosanes	C21	0.76
Docosanes	C22	0.65
Tricosanes	C23	0.52
Tetracosanes	C24	0.40
Pentacosanes	C25	0.28
Hexacosanes	C26	0.17
Heptacosanes	C27	0.10
Octacosanes	C28	0.06
Nonacosanes	C29	0.04
Triacontanes	C30	0.03
Hentriacontanes	C31	0.00
Dotriacontanes	C32	0.00
Tritriacontanes	C33	0.00
Tetratriacontanes	C34	0.00
Pentatriacontanes Plus	C35+	0.00
TOTAL		100.00

Molecular Weight Calculated *	:	138.6
Density @ 60 °F Calculated *	:	0.7793
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7800

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 144



PETROLAB

Company : Origin Energy Resources Limited | Page : 56 of 107
Well : Trefoil # 1 | File : O - 24073

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # L - 144 ex MPSR chamber # 0494 taken @ 2999.2 meters

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.03	2.13	2.11
Nitrogen	N2	0.00	0.70	0.69
Methane	C1	0.43	81.77	80.94
Ethane	C2	0.21	7.70	7.62
Propane	C3	0.29	3.19	3.16
Iso-Butane	iC4	0.15	0.71	0.70
N-Butane	nC4	0.24	0.79	0.78
Iso-Pentane	iC5	0.29	0.37	0.37
N-Pentane	nC5	0.29	0.30	0.30
Hexanes	C6	3.81	0.61	0.64
Heptanes	C7	18.84	0.89	1.07
Octanes	C8	14.54	0.40	0.54
Nonanes	C9	15.98	0.30	0.46
Decanes	C10	11.92	0.13	0.25
Undecanes	C11	7.16	0.01	0.08
Dodecanes Plus	C12+	25.82	0.04	0.29
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0102	0.9898	1.0000
Mass Ratio	:	0.0621	0.9379	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	72431 SCF	--
Stream Properties				
Molecular Weight	:	138.9	21.68	22.94
Density obs. (gm/cc)	:	0.7818 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	49.3 °API @ 60 °F	0.751	--
GHV (BTU/scf)	:	--	1254	--
Hexanes Plus Properties				
Mol %	:	98.07	2.38	3.33
Molecular Weight	:	140.7	101.5	113.2
Density (gm/cc @ 60 °F)	:	0.7843	0.6910	0.7230
Gravity (°API @ 60 °F)	:	48.7	73.1	64.0
Heptanes Plus Properties				
Mol %	:	94.26	1.77	2.69
Molecular Weight	:	143.0	107.5	120.1
Density (gm/cc @ 60 °F)	:	0.7871	0.6986	0.7335
Gravity (°API @ 60 °F)	:	48.1	70.8	61.2
Decanes Plus Properties				
Mol %	:	44.90	0.18	0.62
Molecular Weight	:	182.2	142.7	168.8
Density (gm/cc @ 60 °F)	:	0.8180	0.7361	0.7961
Gravity (°API @ 60 °F)	:	41.3	60.5	46.1
Undecanes Plus Properties				
Mol %	:	32.98	0.05	0.37
Molecular Weight	:	199.7	165.4	192.9
Density (gm/cc @ 60 °F)	:	0.8283	0.7556	0.8188
Gravity (°API @ 60 °F)	:	39.2	55.6	41.2
Dodecanes Plus Properties				
Mol %	:	25.82	0.04	0.29
Molecular Weight	:	214.3	170.0	207.3
Density (gm/cc @ 60 °F)	:	0.8362	0.7592	0.8268
Gravity (°API @ 60 °F)	:	37.6	54.7	39.5

* (P)ressure : 5000 psig * (T)emperature : 80 °F

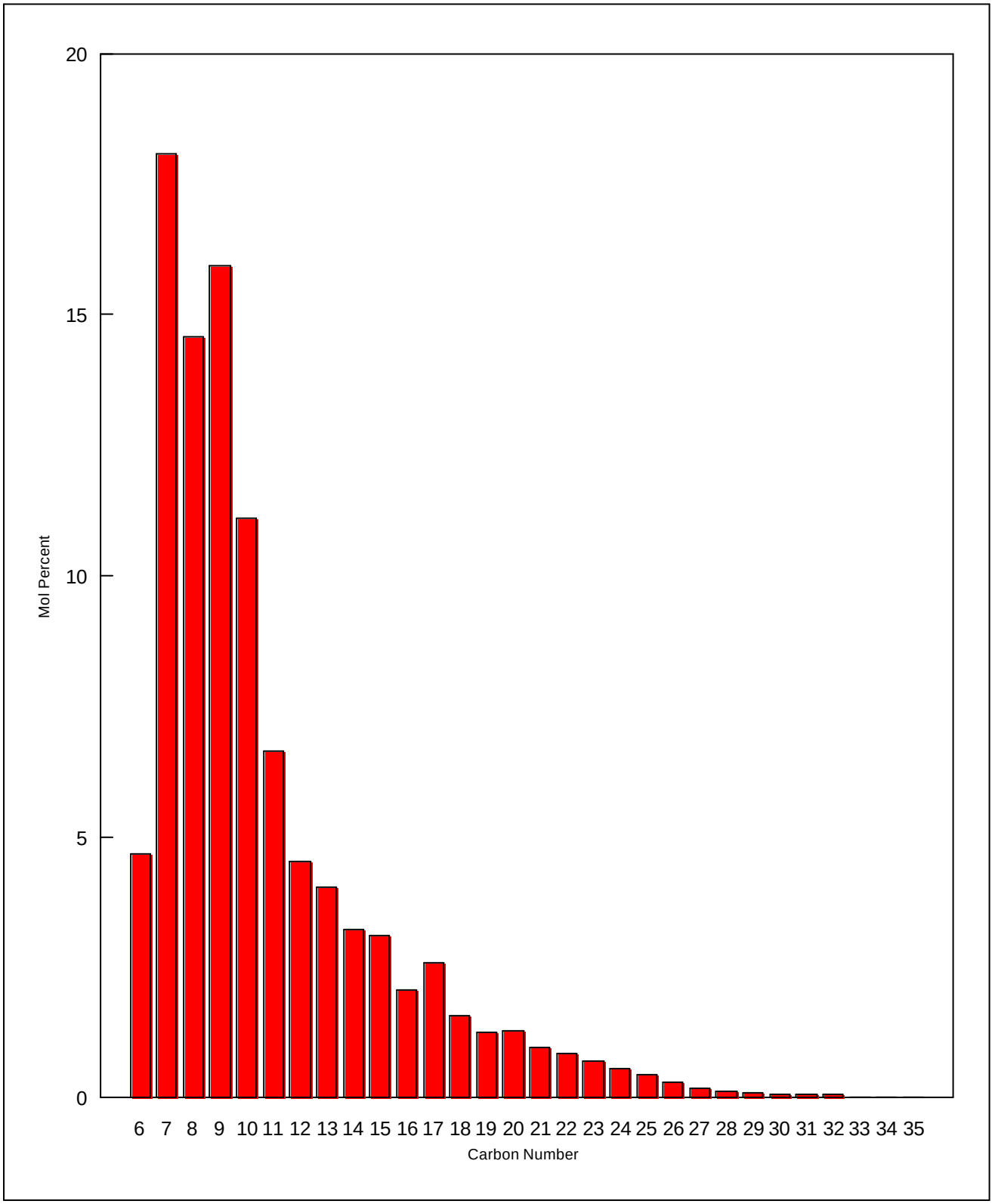
FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 084

Component		Mol %
Hexanes minus	C6-	0.89
Hexanes	C6	4.66
Heptanes	C7	18.08
Octanes	C8	14.57
Nonanes	C9	15.93
Decanes	C10	11.09
Undecanes	C11	6.64
Dodecanes	C12	4.54
Tridecanes	C13	4.03
Tetradecanes	C14	3.22
Pentadecanes	C15	3.11
Hexadecanes	C16	2.06
Heptadecanes	C17	2.60
Octadecanes	C18	1.57
Nonadecanes	C19	1.27
Eicosanes	C20	1.28
Heneicosanes	C21	0.98
Docosanes	C22	0.85
Tricosanes	C23	0.71
Tetracosanes	C24	0.56
Pentacosanes	C25	0.44
Hexacosanes	C26	0.31
Heptacosanes	C27	0.19
Octacosanes	C28	0.13
Nonacosanes	C29	0.09
Triacontanes	C30	0.07
Hentriacontanes	C31	0.06
Dotriacontanes	C32	0.07
Tritriacontanes	C33	0.00
Tetratriacontanes	C34	0.00
Pentatriacontanes Plus	C35+	0.00
TOTAL		100.00

Molecular Weight Calculated *	:	145.4
Density @ 60 °F Calculated *	:	0.7875
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7875

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 084



PETROLAB

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Well : Trefoil # 1 | File : O - 24073

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # L - 084 ex MDT Tool # Oilphase 501 taken @ 2988.0 mMD

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.04	2.48	2.44
Nitrogen	N2	0.00	0.94	0.93
Methane	C1	0.47	82.32	81.03
Ethane	C2	0.25	7.60	7.48
Propane	C3	0.36	3.11	3.07
Iso-Butane	iC4	0.23	0.79	0.78
N-Butane	nC4	0.36	0.85	0.84
Iso-Pentane	iC5	0.39	0.36	0.36
N-Pentane	nC5	0.41	0.29	0.29
Hexanes	C6	4.58	0.45	0.52
Heptanes	C7	17.78	0.49	0.76
Octanes	C8	14.33	0.18	0.40
Nonanes	C9	15.67	0.10	0.35
Decanes	C10	10.91	0.03	0.20
Undecanes	C11	6.53	0.01	0.11
Dodecanes Plus	C12+	27.68	0.00	0.44
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0157	0.9843	1.0000
Mass Ratio	:	0.0987	0.9013	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	45771 SCF	--
Stream Properties				
Molecular Weight	:	142.7	20.86	22.78
Density obs. (gm/cc)	:	0.7856 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	48.4 °API @ 60 °F	0.722	--
GHV (BTU/scf)	:	--	1198	--
Hexanes Plus Properties				
Mol %	:	97.49	1.26	2.78
Molecular Weight	:	145.1	96.6	123.4
Density (gm/cc @ 60 °F)	:	0.7888	0.6845	0.7489
Gravity (°API @ 60 °F)	:	47.7	75.0	57.3
Heptanes Plus Properties				
Mol %	:	92.91	0.81	2.26
Molecular Weight	:	148.1	103.6	132.4
Density (gm/cc @ 60 °F)	:	0.7921	0.6937	0.7623
Gravity (°API @ 60 °F)	:	47.0	72.3	53.9
Decanes Plus Properties				
Mol %	:	45.12	0.04	0.75
Molecular Weight	:	191.1	137.2	188.1
Density (gm/cc @ 60 °F)	:	0.8239	0.7309	0.8199
Gravity (°API @ 60 °F)	:	40.1	61.9	40.9
Undecanes Plus Properties				
Mol %	:	34.21	0.01	0.55
Molecular Weight	:	209.3	146.9	208.2
Density (gm/cc @ 60 °F)	:	0.8340	0.7399	0.8326
Gravity (°API @ 60 °F)	:	38.0	59.6	38.3
Dodecanes Plus Properties				
Mol %	:	27.68	0.00	0.44
Molecular Weight	:	224.0	--	224.0
Density (gm/cc @ 60 °F)	:	0.8414	--	0.8414
Gravity (°API @ 60 °F)	:	36.5	--	36.5

* (P)ressure : 5000 psig * (T)emperature : 80 °F

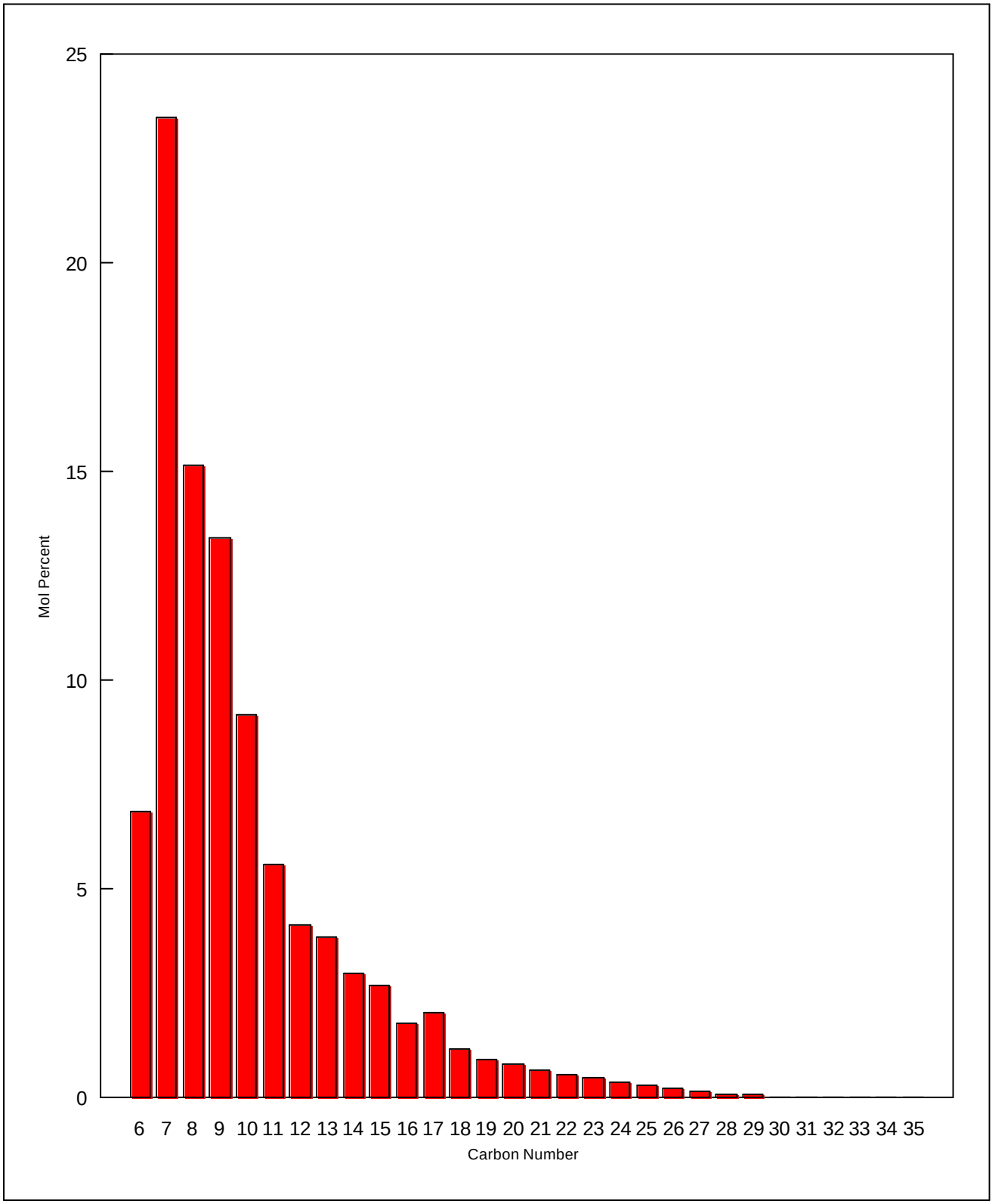
FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # XC18529

Component		Mol %
Hexanes minus	C6-	2.99
Hexanes	C6	6.85
Heptanes	C7	23.47
Octanes	C8	15.14
Nonanes	C9	13.40
Decanes	C10	9.17
Undecanes	C11	5.58
Dodecanes	C12	4.14
Tridecanes	C13	3.86
Tetradecanes	C14	2.97
Pentadecanes	C15	2.68
Hexadecanes	C16	1.79
Heptadecanes	C17	2.03
Octadecanes	C18	1.17
Nonadecanes	C19	0.92
Eicosanes	C20	0.81
Heneicosanes	C21	0.66
Docosanes	C22	0.55
Tricosanes	C23	0.48
Tetracosanes	C24	0.39
Pentacosanes	C25	0.30
Hexacosanes	C26	0.22
Heptacosanes	C27	0.16
Octacosanes	C28	0.10
Nonacosanes	C29	0.08
Triacontanes	C30	0.03
Hentriacontanes	C31	0.02
Dotriacontanes	C32	0.01
Tritriacontanes	C33	0.01
Tetratriacontanes	C34	0.01
Pentatriacontanes Plus	C35+	0.01
TOTAL		100.00

Molecular Weight Calculated *	:	135.1
Density @ 60 °F Calculated *	:	0.7756
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	--

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # XC18529



PETROLAB

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Well : Trefoil # 1 | File : O - 24073

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # XC18529 ex MPSR chamber # 0192 taken @ 2968.7 meters

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.03	2.57	2.54
Nitrogen	N2	0.00	0.94	0.93
Methane	C1	0.42	78.42	77.36
Ethane	C2	0.20	7.22	7.12
Propane	C3	0.36	3.93	3.88
Iso-Butane	iC4	0.23	1.07	1.06
N-Butane	nC4	0.33	1.08	1.07
Iso-Pentane	iC5	0.42	0.55	0.55
N-Pentane	nC5	0.45	0.46	0.46
Hexanes	C6	6.89	0.93	1.01
Heptanes	C7	23.60	1.43	1.73
Octanes	C8	15.23	0.63	0.83
Nonanes	C9	13.48	0.42	0.60
Decanes	C10	9.22	0.19	0.31
Undecanes	C11	5.61	0.07	0.15
Dodecanes Plus	C12+	23.53	0.04	0.40
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0136	0.9864	1.0000
Mass Ratio	:	0.0724	0.9276	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	55829 SCF	--
Stream Properties				
Molecular Weight	:	134.1	23.70	25.12
Density obs. (gm/cc)	:	0.7762 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	50.6 °API @ 60 °F	0.822	--
GHV (BTU/scf)	:	--	1349	--
Hexanes Plus Properties				
Mol %	:	97.56	3.71	5.03
Molecular Weight	:	136.2	101.4	110.6
Density (gm/cc @ 60 °F)	:	0.7793	0.6909	0.7176
Gravity (°API @ 60 °F)	:	49.9	73.1	65.5
Heptanes Plus Properties				
Mol %	:	90.67	2.78	4.02
Molecular Weight	:	140.1	107.2	117.4
Density (gm/cc @ 60 °F)	:	0.7842	0.6983	0.7278
Gravity (°API @ 60 °F)	:	48.8	70.9	62.7
Decanes Plus Properties				
Mol %	:	38.36	0.30	0.86
Molecular Weight	:	187.1	141.8	167.9
Density (gm/cc @ 60 °F)	:	0.8213	0.7353	0.7919
Gravity (°API @ 60 °F)	:	40.6	60.8	47.0
Undecanes Plus Properties				
Mol %	:	29.14	0.11	0.55
Molecular Weight	:	203.9	155.3	191.7
Density (gm/cc @ 60 °F)	:	0.8309	0.7473	0.8144
Gravity (°API @ 60 °F)	:	38.6	57.7	42.1
Dodecanes Plus Properties				
Mol %	:	23.53	0.04	0.40
Molecular Weight	:	217.5	170.0	211.3
Density (gm/cc @ 60 °F)	:	0.8381	0.7592	0.8302
Gravity (°API @ 60 °F)	:	37.2	54.7	38.8

* (P)ressure : 5000 psig * (T)emperature : 80 °F

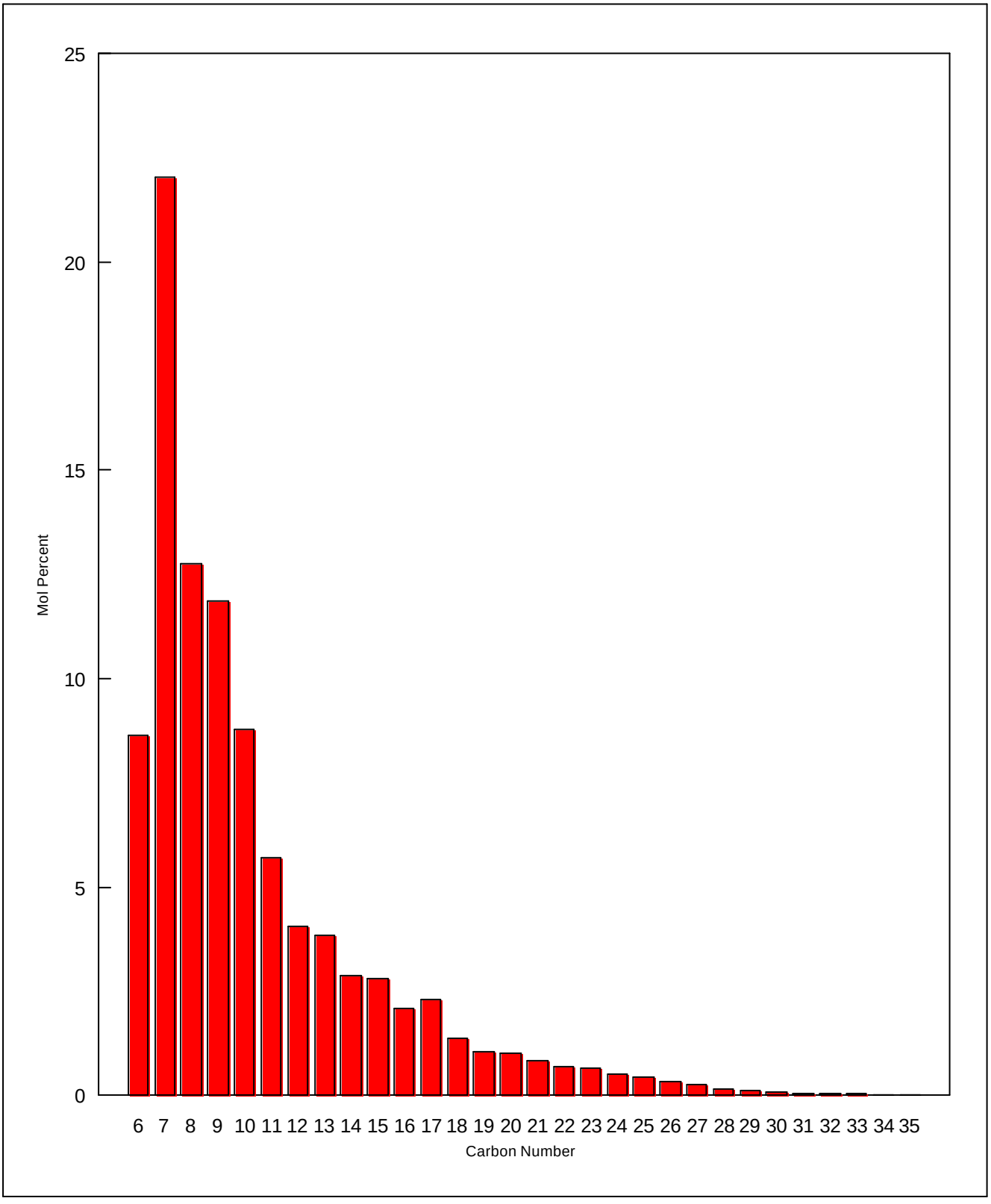
FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 689

Component		Mol %
Hexanes minus	C6-	4.63
Hexanes	C6	8.65
Heptanes	C7	22.05
Octanes	C8	12.76
Nonanes	C9	11.86
Decanes	C10	8.77
Undecanes	C11	5.69
Dodecanes	C12	4.04
Tridecanes	C13	3.85
Tetradecanes	C14	2.86
Pentadecanes	C15	2.79
Hexadecanes	C16	2.08
Heptadecanes	C17	2.32
Octadecanes	C18	1.38
Nonadecanes	C19	1.04
Eicosanes	C20	1.00
Heneicosanes	C21	0.83
Docosanes	C22	0.69
Tricosanes	C23	0.64
Tetracosanes	C24	0.53
Pentacosanes	C25	0.45
Hexacosanes	C26	0.34
Heptacosanes	C27	0.27
Octacosanes	C28	0.15
Nonacosanes	C29	0.13
Triacontanes	C30	0.08
Hentriacontanes	C31	0.06
Dotriacontanes	C32	0.03
Tritriacontanes	C33	0.03
Tetratriacontanes	C34	0.00
Pentatriacontanes Plus	C35+	0.00
TOTAL		100.00

Molecular Weight Calculated *	:	138.3
Density @ 60 °F Calculated *	:	0.7784
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7765

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # L - 689



PETROLAB

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Well : Trefoil # 1 | File : O - 24073

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # L - 689 ex MDT Tool # MPSR 0316 taken @ 2933.0 mMD

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.02	1.33	1.27
Nitrogen	N2	0.00	1.23	1.18
Methane	C1	0.43	74.33	71.12
Ethane	C2	0.30	8.94	8.56
Propane	C3	0.79	6.74	6.48
Iso-Butane	iC4	0.56	1.91	1.85
N-Butane	nC4	1.01	2.41	2.35
Iso-Pentane	iC5	0.94	0.86	0.86
N-Pentane	nC5	1.09	0.78	0.79
Hexanes	C6	8.60	0.80	1.14
Heptanes	C7	21.93	0.51	1.44
Octanes	C8	12.69	0.11	0.66
Nonanes	C9	11.80	0.04	0.55
Decanes	C10	8.72	0.01	0.39
Undecanes	C11	5.66	0.00	0.25
Dodecanes Plus	C12+	25.46	0.00	1.11
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.0434	0.9566	1.0000
Mass Ratio	:	0.2081	0.7919	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	-- @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	16714 SCF	--
Stream Properties				
Molecular Weight	:	136.3	23.55	28.45
Density obs. (gm/cc)	:	0.7775 @ 60 °F	--	-- @ PT*
Gravity (AIR = 1.000)	:	50.3 °API @ 60 °F	0.817	--
GHV (BTU/scf)	:	--	1369	--
Hexanes Plus Properties				
Mol %	:	94.87	1.47	5.54
Molecular Weight	:	140.6	91.2	128.1
Density (gm/cc @ 60 °F)	:	0.7838	0.6770	0.7620
Gravity (°API @ 60 °F)	:	48.9	77.3	54.0
Heptanes Plus Properties				
Mol %	:	86.27	0.67	4.40
Molecular Weight	:	146.3	99.9	139.5
Density (gm/cc @ 60 °F)	:	0.7903	0.6889	0.7783
Gravity (°API @ 60 °F)	:	47.4	73.7	50.1
Decanes Plus Properties				
Mol %	:	39.84	0.01	1.75
Molecular Weight	:	193.9	133.9	193.6
Density (gm/cc @ 60 °F)	:	0.8257	0.7277	0.8253
Gravity (°API @ 60 °F)	:	39.7	62.8	39.8
Undecanes Plus Properties				
Mol %	:	31.12	0.00	1.36
Molecular Weight	:	210.7	--	210.7
Density (gm/cc @ 60 °F)	:	0.8348	--	0.8348
Gravity (°API @ 60 °F)	:	37.8	--	37.8
Dodecanes Plus Properties				
Mol %	:	25.46	0.00	1.11
Molecular Weight	:	224.9	--	224.9
Density (gm/cc @ 60 °F)	:	0.8419	--	0.8419
Gravity (°API @ 60 °F)	:	36.4	--	36.4

* (P)ressure : 5000 psig * (T)emperature : 80 °F

CONSTANT MASS STUDY
@ 248 °F
On MDT Sample from XC-18536 (ex MPSR 0187) - taken @ 3142.7 mRT

Pressure (psig)		Relative Volume (V/Vsat) (1)	Formation Volume Factor (Bg) (2)	Gas Expansion Factor (E) (3)	Deviation Factor (Z)	Specific Volume (CFT/LB)	Gas Viscosity (Centipoise) (4)
5000		0.8542	0.00396	252.82	0.992	0.07031	0.0282
4900		0.8663	0.00401	249.29	0.986	0.07130	0.0279
4800		0.8789	0.00407	245.71	0.980	0.07234	0.0275
4700		0.8921	0.00413	242.09	0.974	0.07342	0.0271
4600		0.9058	0.00419	238.42	0.968	0.07455	0.0268
4474	**	0.9245	0.00428	233.60	0.961	0.07609	0.0263
4400		0.9361	0.00433	230.71	0.957	0.07704	0.0260
4300		0.9528	0.00441	226.67	0.952	0.07842	0.0256
4200		0.9692	0.00449	222.82	0.946	0.07977	0.0253
4040	*	1.0000	0.00463	215.96	0.939	0.08231	0.0247

* Dew Point Pressure
** Reservoir Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at reservoir pressure
(2) Cubic feet of gas at indicated pressure and temperature per cubic foot at 14.696 psia and 60 °F
(3) Cubic feet of gas at 14.696 psia and 60 °F per cubic foot at indicated pressure and temperature
(4) Calculated from correlation of Lee, Gonzales and Eakin

CONSTANT MASS STUDY

@ 248 °F

On MDT Sample from XC-18536 (ex MPSR 0187) - taken @ 3142.7 mRT

Pressure (psig)		Relative Volume (V/Vsat) (1)	Retrograde Liquid Deposit (Bbl/MMSCF) (2)	(Volume%) (3)
4040	*	1.0000	0.00	0.00
3900		1.0280	0.25	0.03
3600		1.0990	0.82	0.10
3300		1.1855	1.48	0.18
3000		1.2934	2.14	0.26
2700		1.4300	2.72	0.33
2400		1.6041	3.30	0.40
2100		1.8337	3.96	0.48
1800		2.1439	4.70	0.57
1500		2.5828	5.44	0.66
1200		3.2456	6.19	0.75
900		4.3526	6.76	0.82

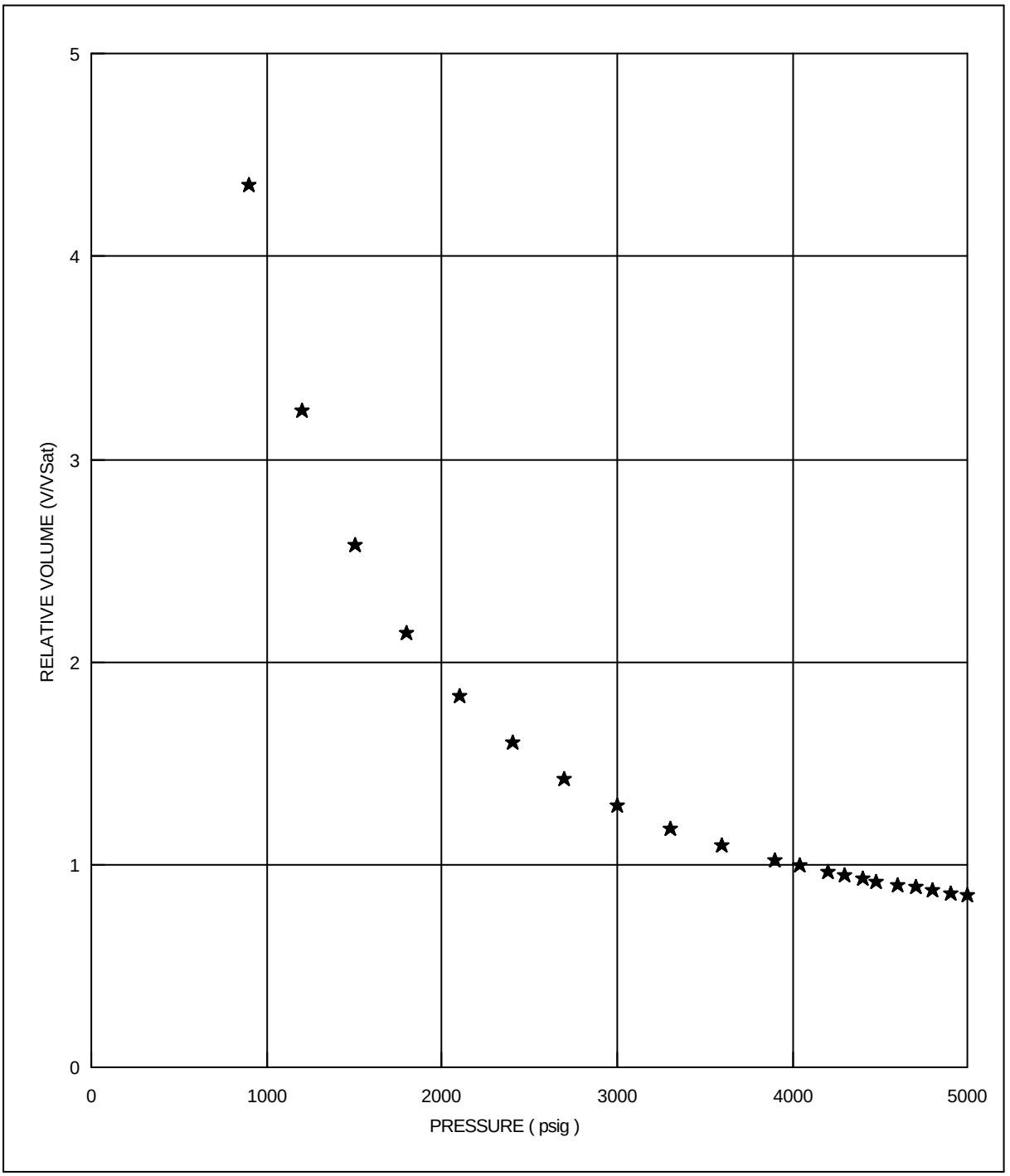
* Dew Point Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at saturation pressure
(2) Barrels of liquid at indicated pressure and temperature per MMSCF of original reservoir fluid
(3) Percent of reservoir hydrocarbon pore space at dew point

RELATIVE VOLUME

Equation of best fit

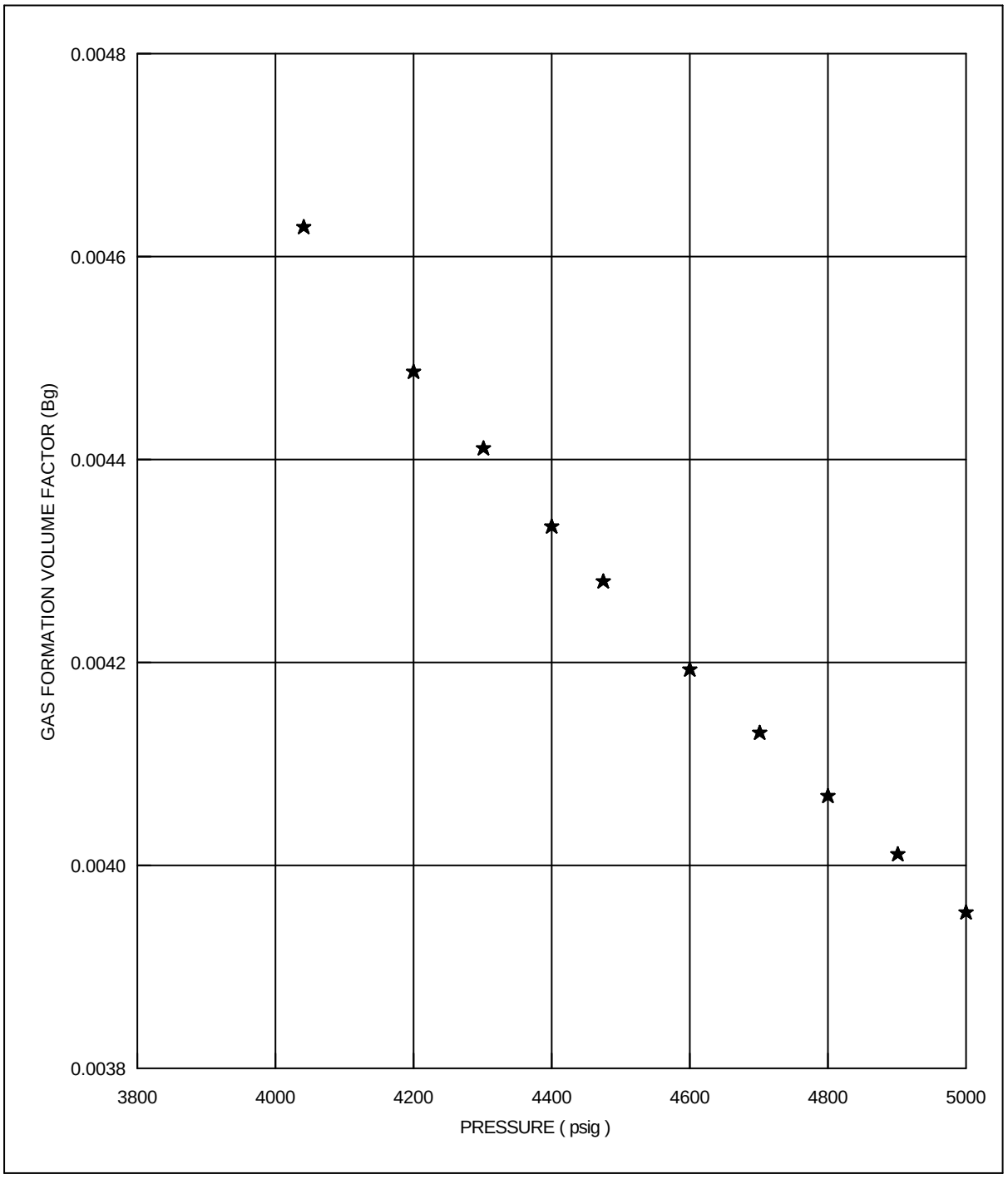
V/VSat = +9.66E+00 -8.55E-03 * P +3.41E-06 * P^2 -6.25E-10 * P^3 +4.29E-14 * P^4



GAS FORMATION VOLUME FACTOR

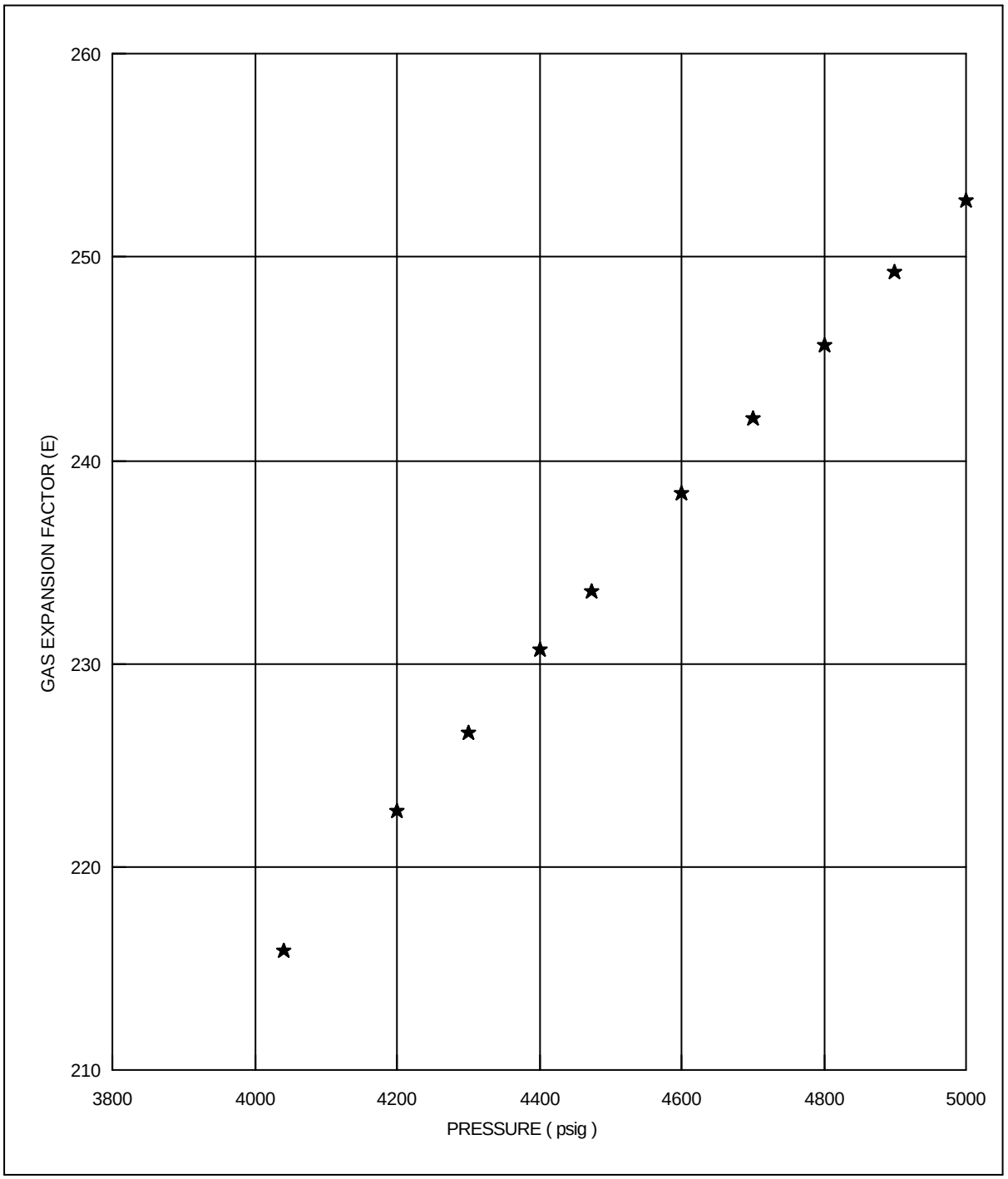
Equation of best fit

Bg = +1.75E-02 -6.55E-06 * P +1.11E-09 * P^2 -6.75E-14 * P^3 +0.00E+00 * P^4



GAS EXPANSION FACTOR

Equation of best fit
E = -1.41E+02 +1.55E-01 * P -2.16E-05 * P^2 +1.29E-09 * P^3 +0.00E+00 * P^4

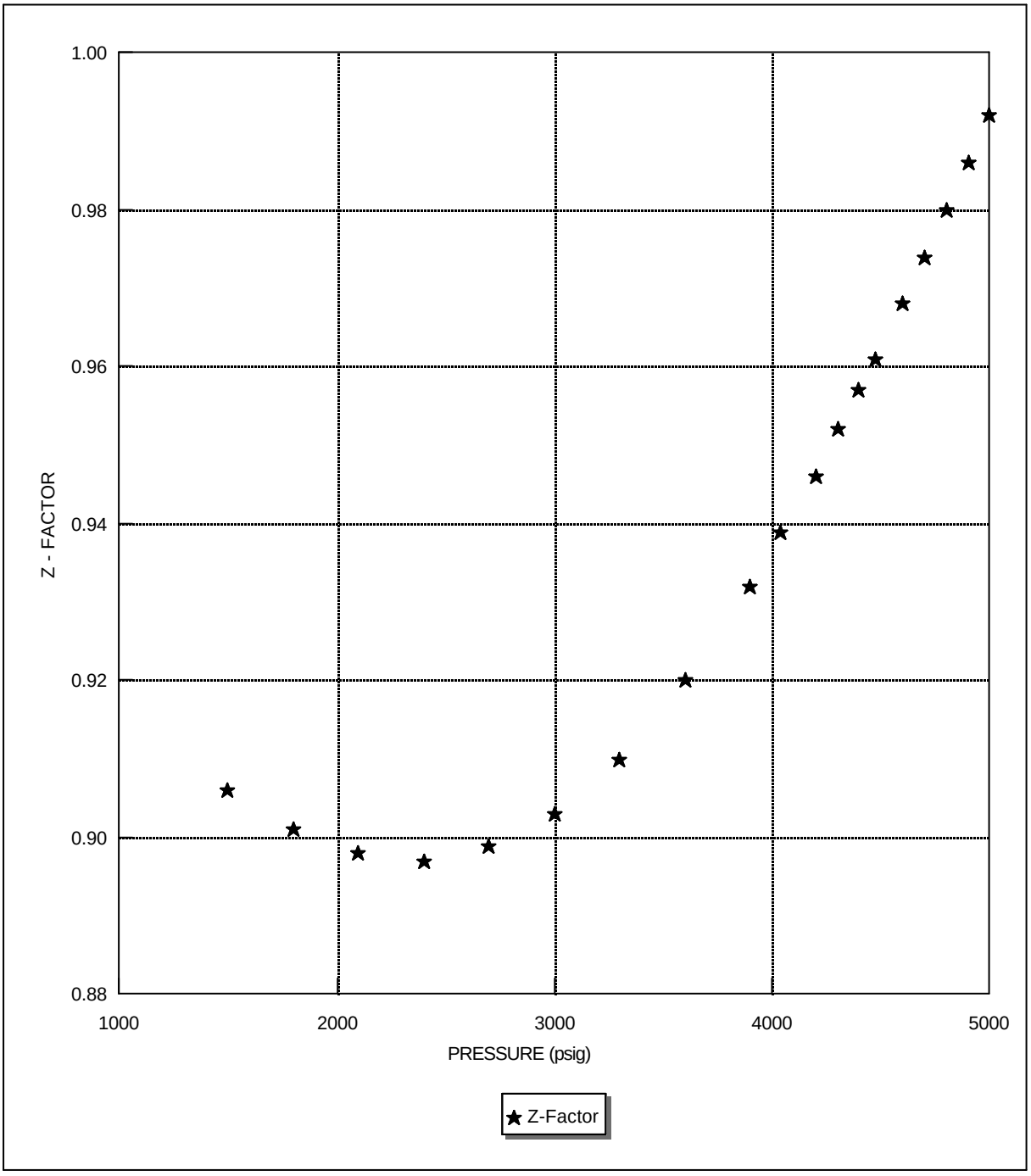


GAS DEVIATION FACTOR

Equation of best fit

Z

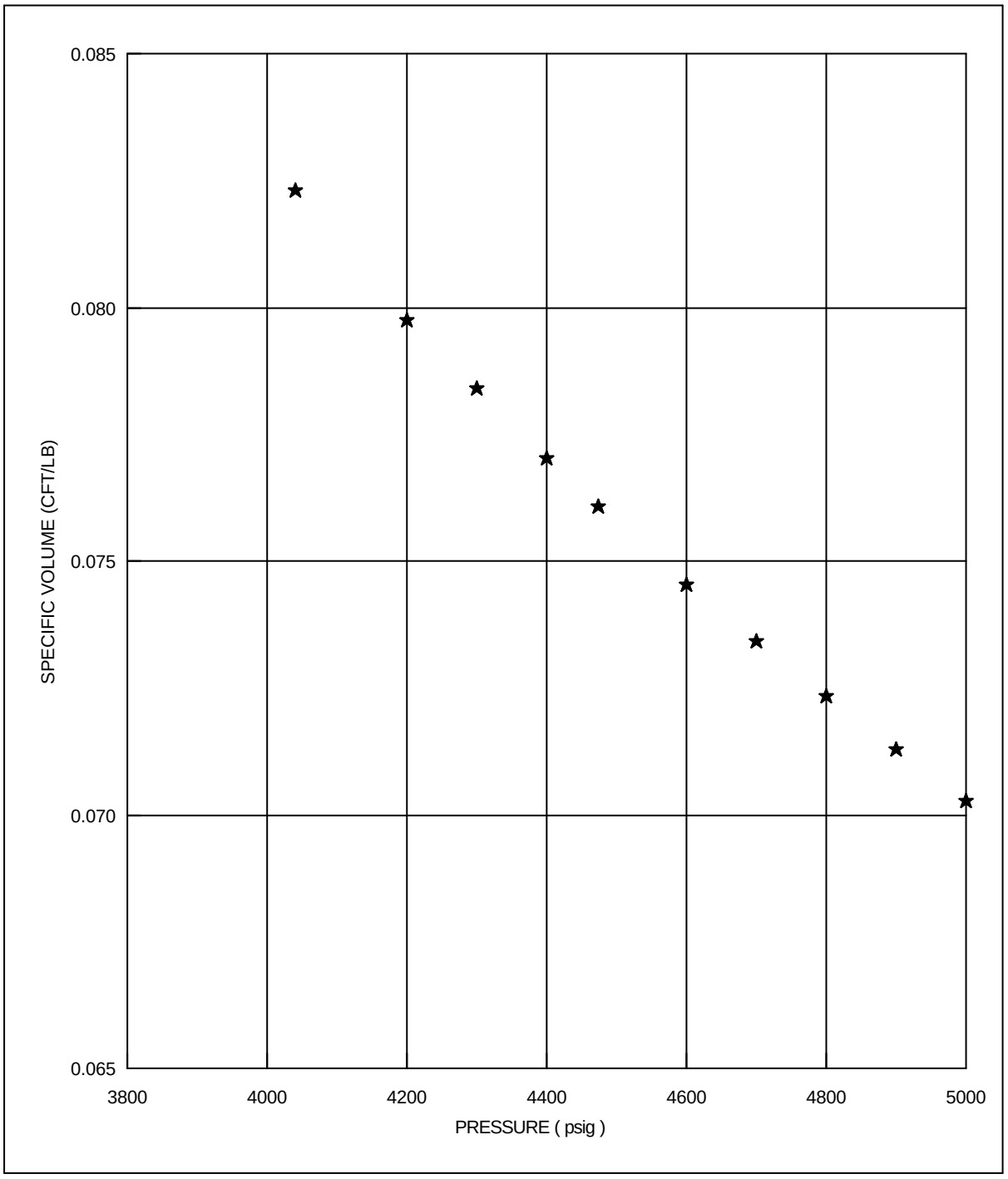
Z = +9.39E-01 -1.33E-05 * P -1.44E-08 * P^2 +6.65E-12 * P^3 +-5.61E-16 * P^4



RESERVOIR FLUID SPECIFIC VOLUME

Equation of best fit

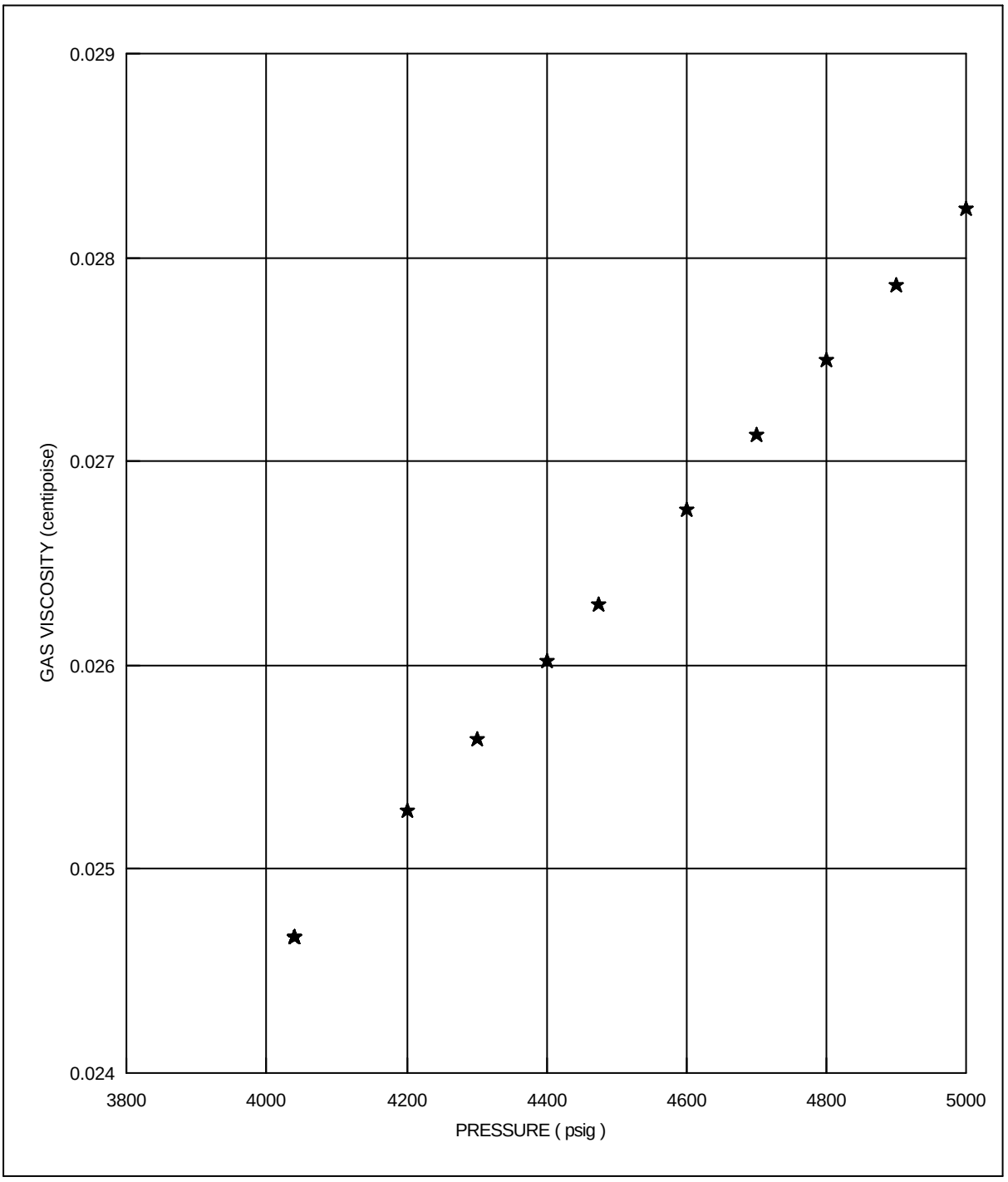
SV = +3.11E-01 -1.16E-04 * P +1.97E-08 * P^2 -1.20E-12 * P^3 +0.00E+00 * P^4



VISCOSITY OF RESERVOIR FLUID

Equation of best fit

μ = +1.27E-03 +9.10E-06 * P -1.14E-09 * P^2 +8.08E-14 * P^3 +0.00E+00 * P^4

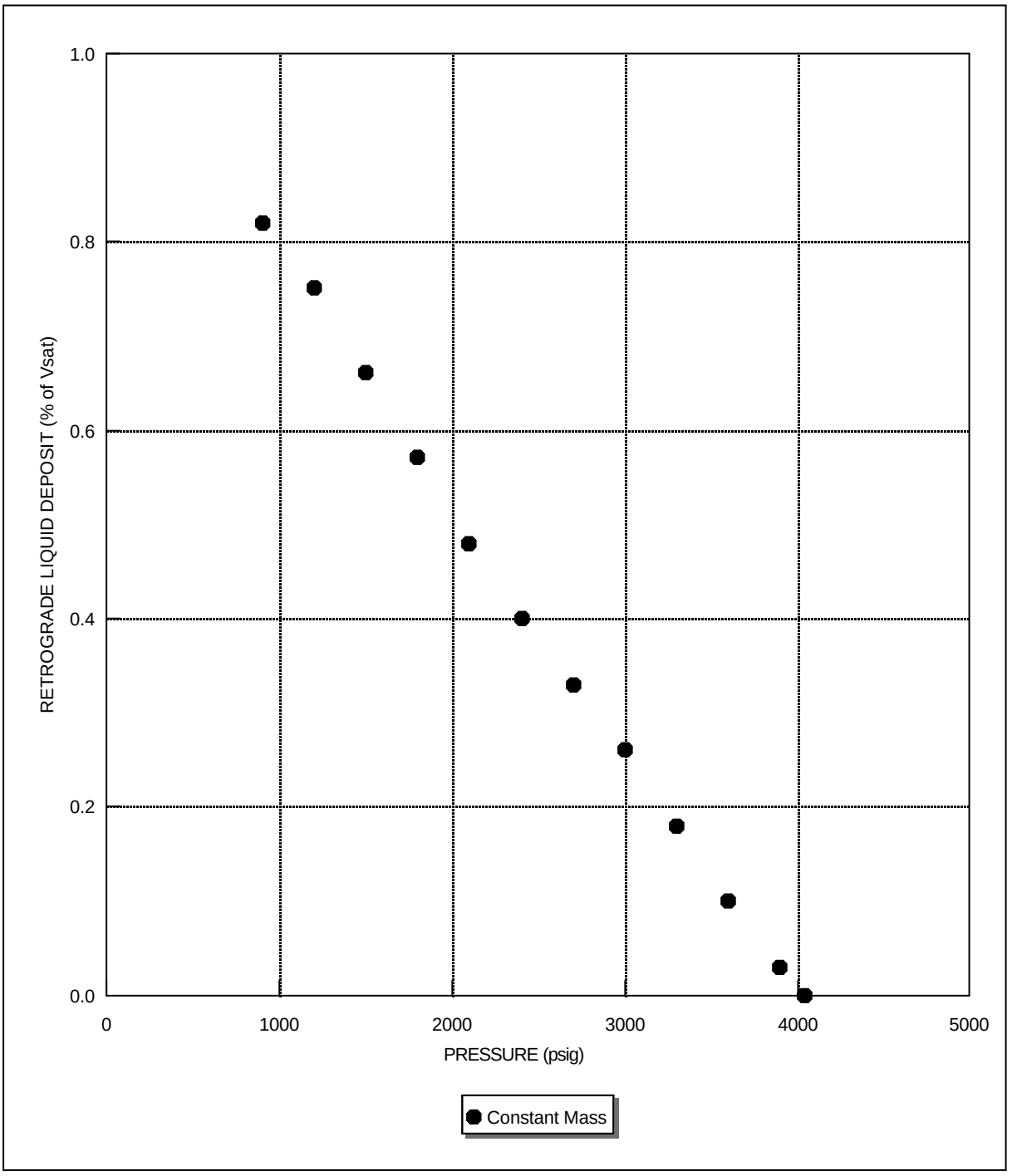


RETROGRADE CONDENSATION

Equation of best fit

Constant Mass

RLD = +9.76E-01 -5.21E-05 * P -1.74E-07 * P^2 +5.29E-11 * P^3 -5.33E-15 * P^4



CONSTANT MASS STUDY
@ 241 °F
On MDT Sample from L - 084 (ex MPSR 0501) - taken @ 2988.0 mRT

Pressure (psig)		Relative Volume (V/Vsat) (1)	Formation Volume Factor (Bg) (2)	Gas Expansion Factor (E) (3)	Deviation Factor (Z)	Specific Volume (CFT/LB)	Gas Viscosity (Centipoise) (4)
5000		0.8782	0.00390	256.46	0.987	0.06499	0.0301
4900		0.8888	0.00395	253.40	0.979	0.06577	0.0297
4800		0.8998	0.00400	250.29	0.971	0.06659	0.0293
4700		0.9104	0.00404	247.38	0.962	0.06737	0.0290
4600		0.9214	0.00409	244.42	0.953	0.06819	0.0286
4500		0.9339	0.00415	241.15	0.945	0.06911	0.0282
4400		0.9470	0.00420	237.82	0.937	0.07008	0.0279
4300		0.9617	0.00427	234.18	0.930	0.07117	0.0275
4201	**	0.9769	0.00434	230.54	0.923	0.07229	0.0271
4050	*	1.0000	0.00444	225.21	0.911	0.07400	0.0265

* Dew Point Pressure
** Reservoir Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at reservoir pressure
(2) Cubic feet of gas at indicated pressure and temperature per cubic foot at 14.696 psia and 60 °F
(3) Cubic feet of gas at 14.696 psia and 60 °F per cubic foot at indicated pressure and temperature
(4) Calculated from correlation of Lee, Gonzales and Eakin

CONSTANT MASS STUDY

@ 241 °F

On MDT Sample from L - 084 (ex MPSR 0501) - taken @ 2988.0 mRT

Pressure (psig)		Relative Volume (V/Vsat) (1)	Retrograde Liquid Deposit (Bbl/MMSCF) (2)	(Volume%) (3)
4050	*	1.0000	0.00	0.00
3900		1.0258	1.19	0.15
3600		1.0850	3.88	0.49
3300		1.1549	6.41	0.81
3000		1.2491	8.94	1.13
2700		1.3740	11.15	1.41
2400		1.5373	12.89	1.63
2100		1.7575	14.87	1.88
1800		2.0629	16.21	2.05
1500		2.4950	17.16	2.17
1200		3.1516	17.79	2.25
900		4.2584	18.03	2.28

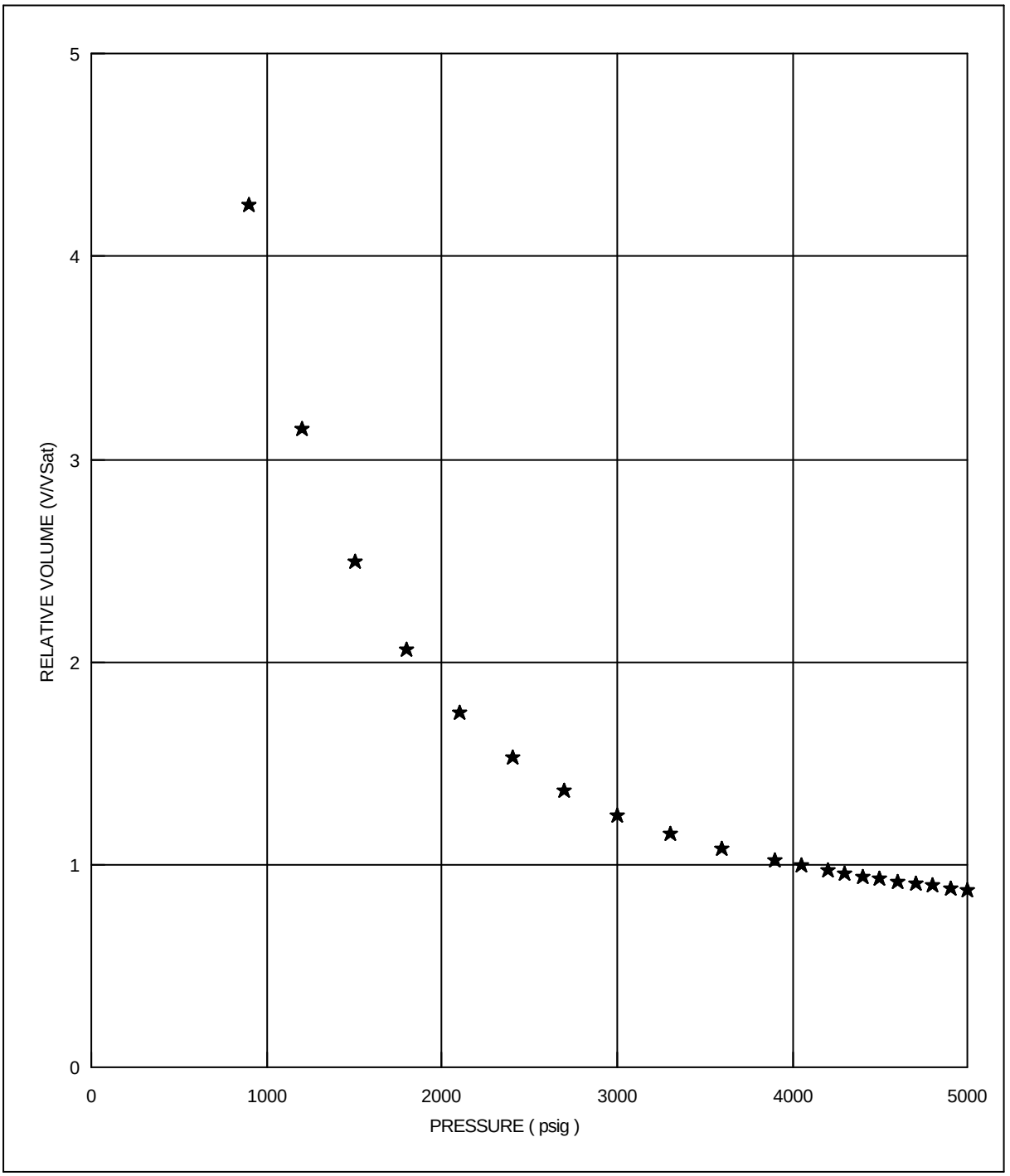
* Dew Point Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at saturation pressure
(2) Barrels of liquid at indicated pressure and temperature per MMSCF of original reservoir fluid
(3) Percent of reservoir hydrocarbon pore space at dew point

RELATIVE VOLUME

Equation of best fit

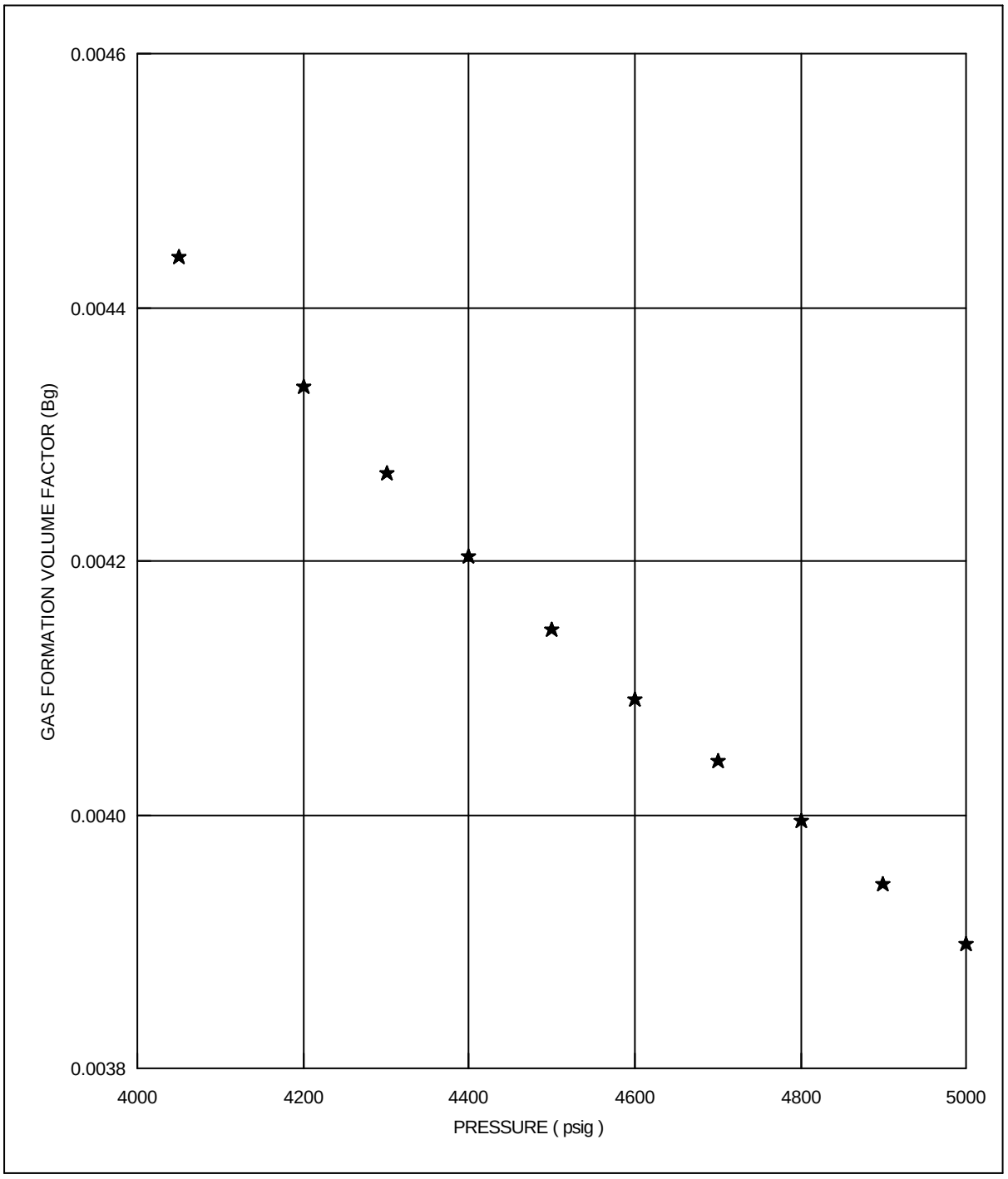
V/VSat = +9.57E+00 -8.56E-03 * P +3.42E-06 * P^2 -6.22E-10 * P^3 +4.25E-14 * P^4



GAS FORMATION VOLUME FACTOR

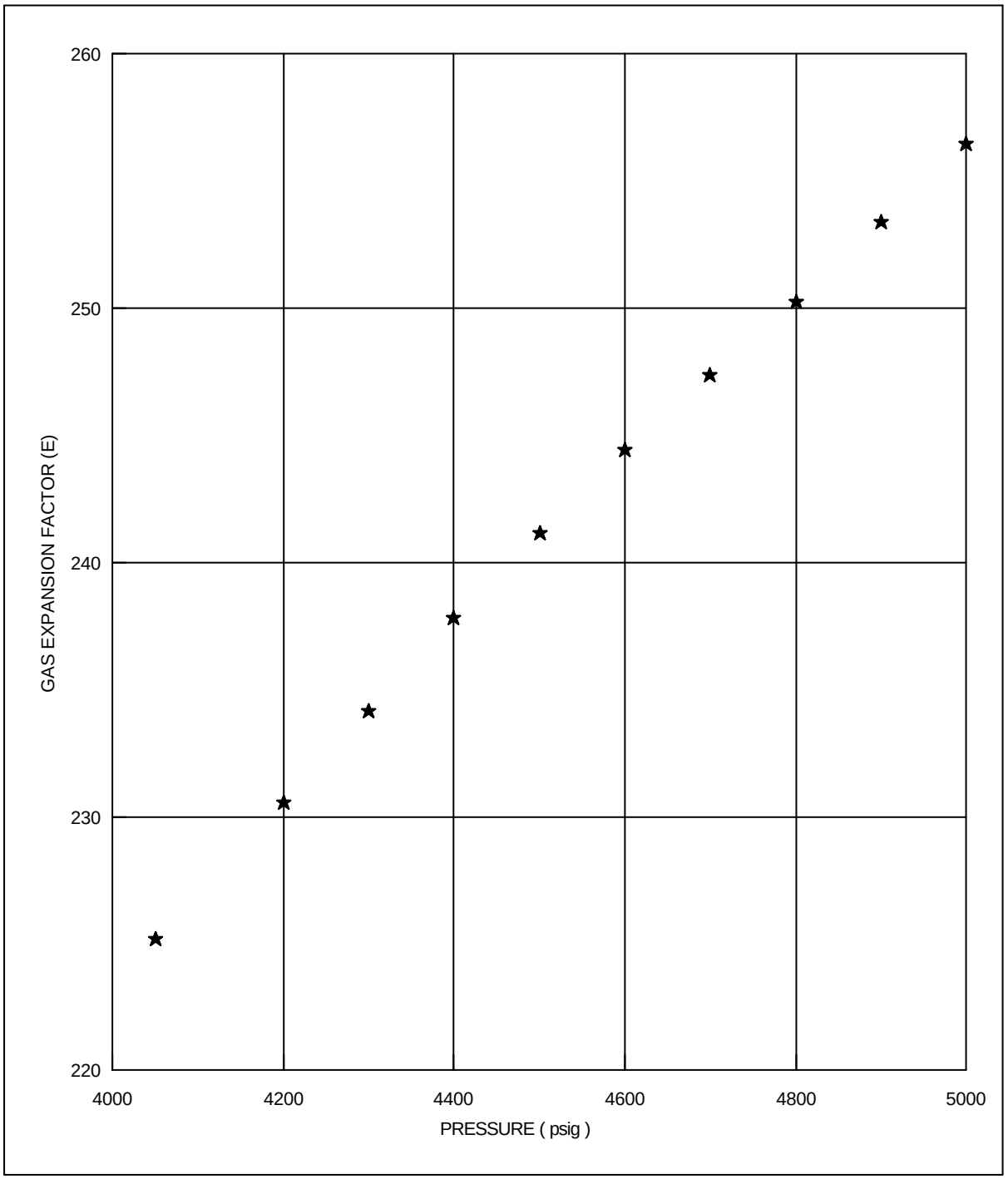
Equation of best fit

Bg = +1.51E-02 -5.42E-06 * P +9.11E-10 * P^2 -5.51E-14 * P^3 +0.00E+00 * P^4



GAS EXPANSION FACTOR

Equation of best fit
E = -1.53E+02 +1.74E-01 * P -2.62E-05 * P^2 +1.57E-09 * P^3 +0.00E+00 * P^4

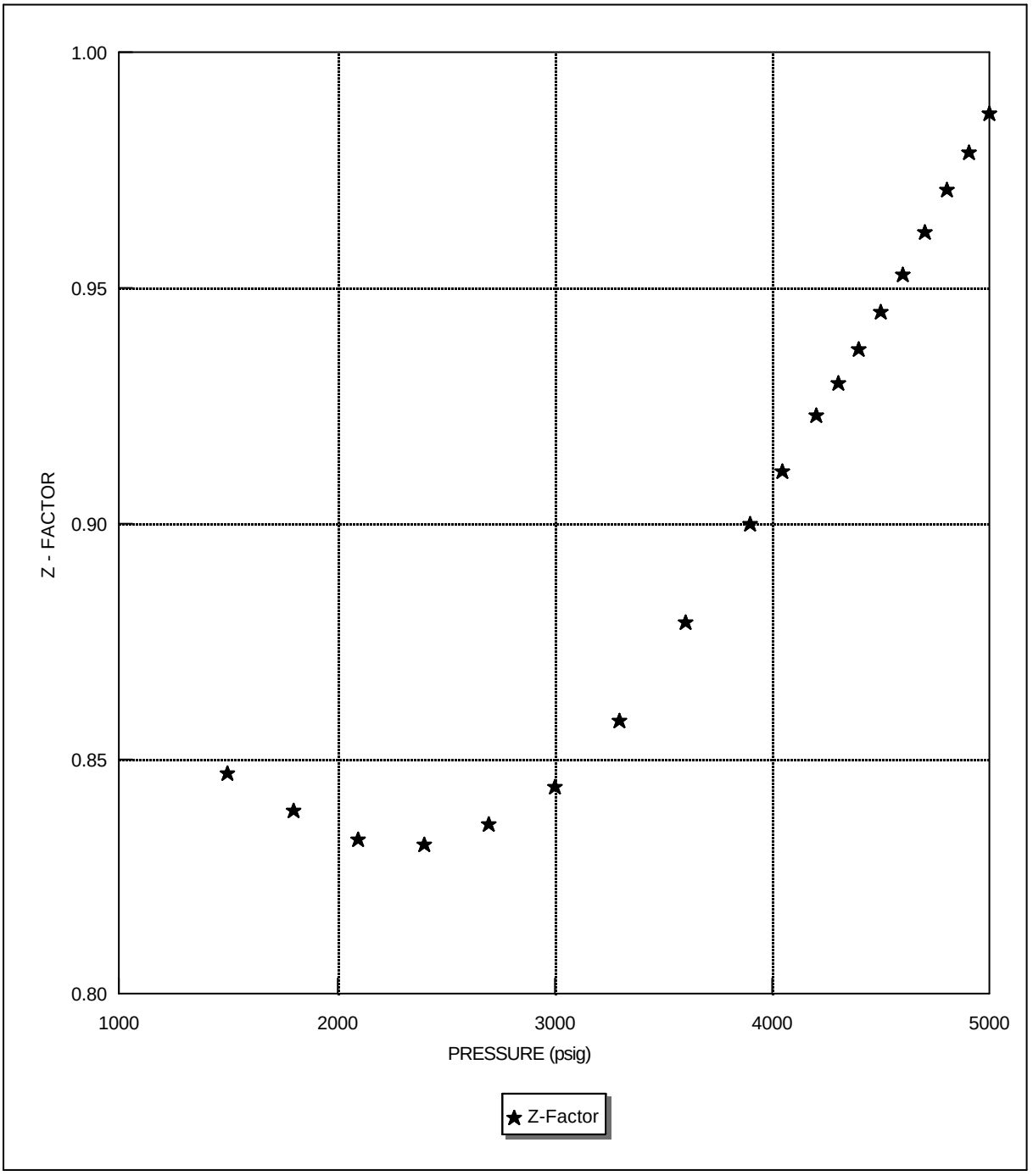


GAS DEVIATION FACTOR

Equation of best fit

Z

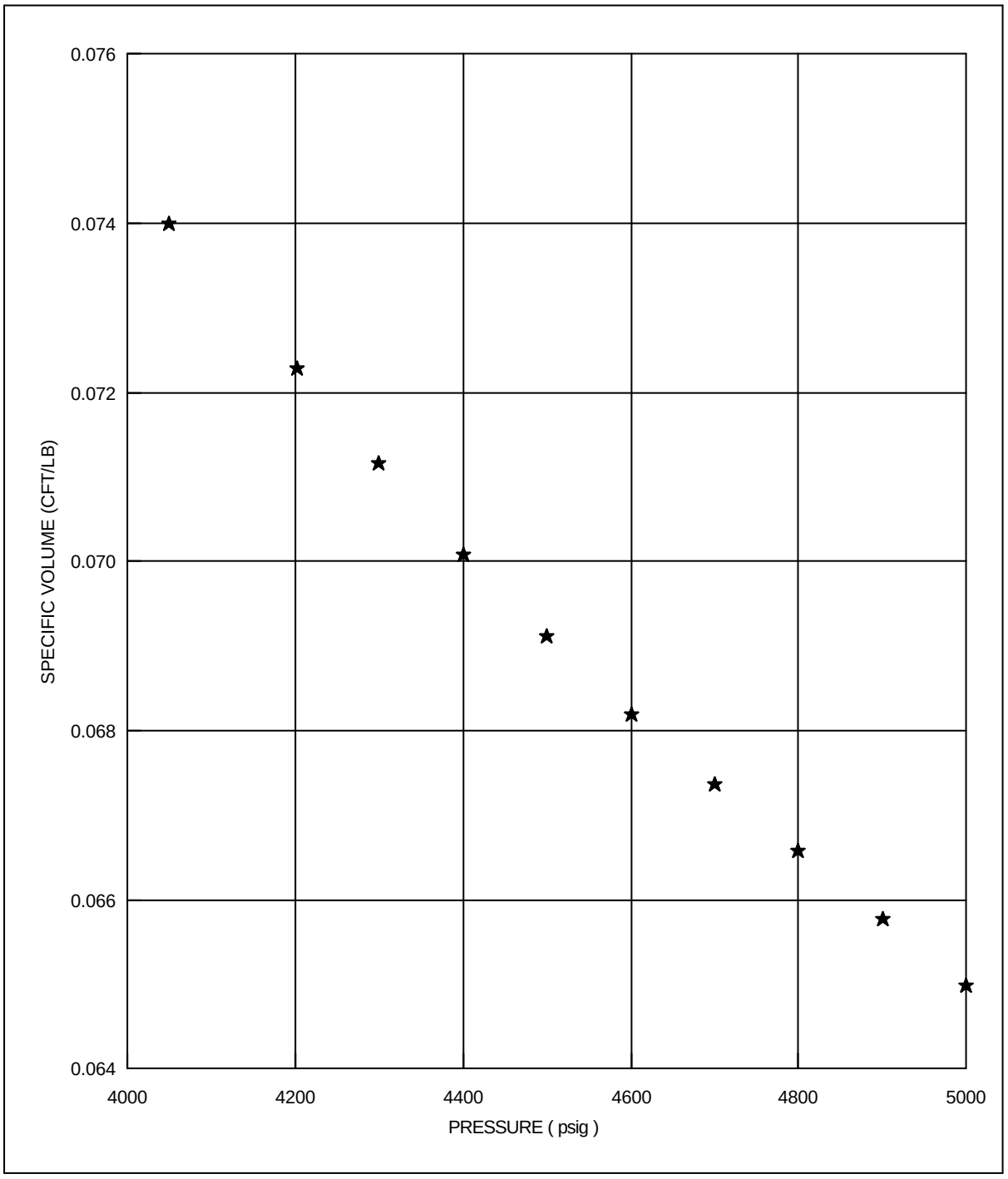
$$Z = +9.43E\text{-}01 \; -7.08E\text{-}05 * P \; -7.61E\text{-}09 * P^2 \; +9.95E\text{-}12 * P^3 \; +\text{-}1.05E\text{-}15 * P^4$$



RESERVOIR FLUID SPECIFIC VOLUME

Equation of best fit

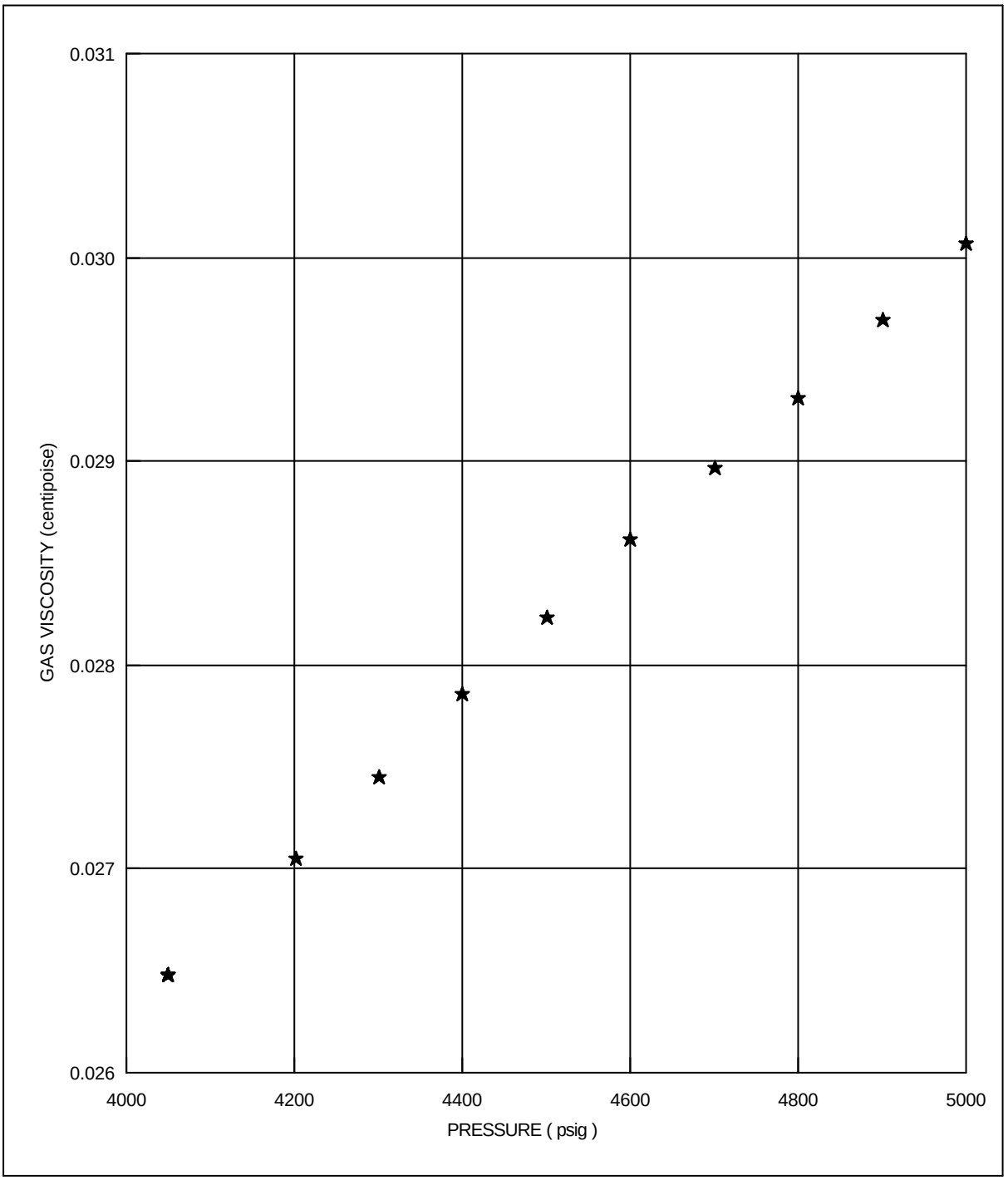
SV = +2.52E-01 -9.03E-05 * P +1.52E-08 * P^2 -9.18E-13 * P^3 +0.00E+00 * P^4



VISCOSITY OF RESERVOIR FLUID

Equation of best fit

μ = +2.59E-03 +8.58E-06 * P -8.53E-10 * P^2 +4.71E-14 * P^3 +0.00E+00 * P^4

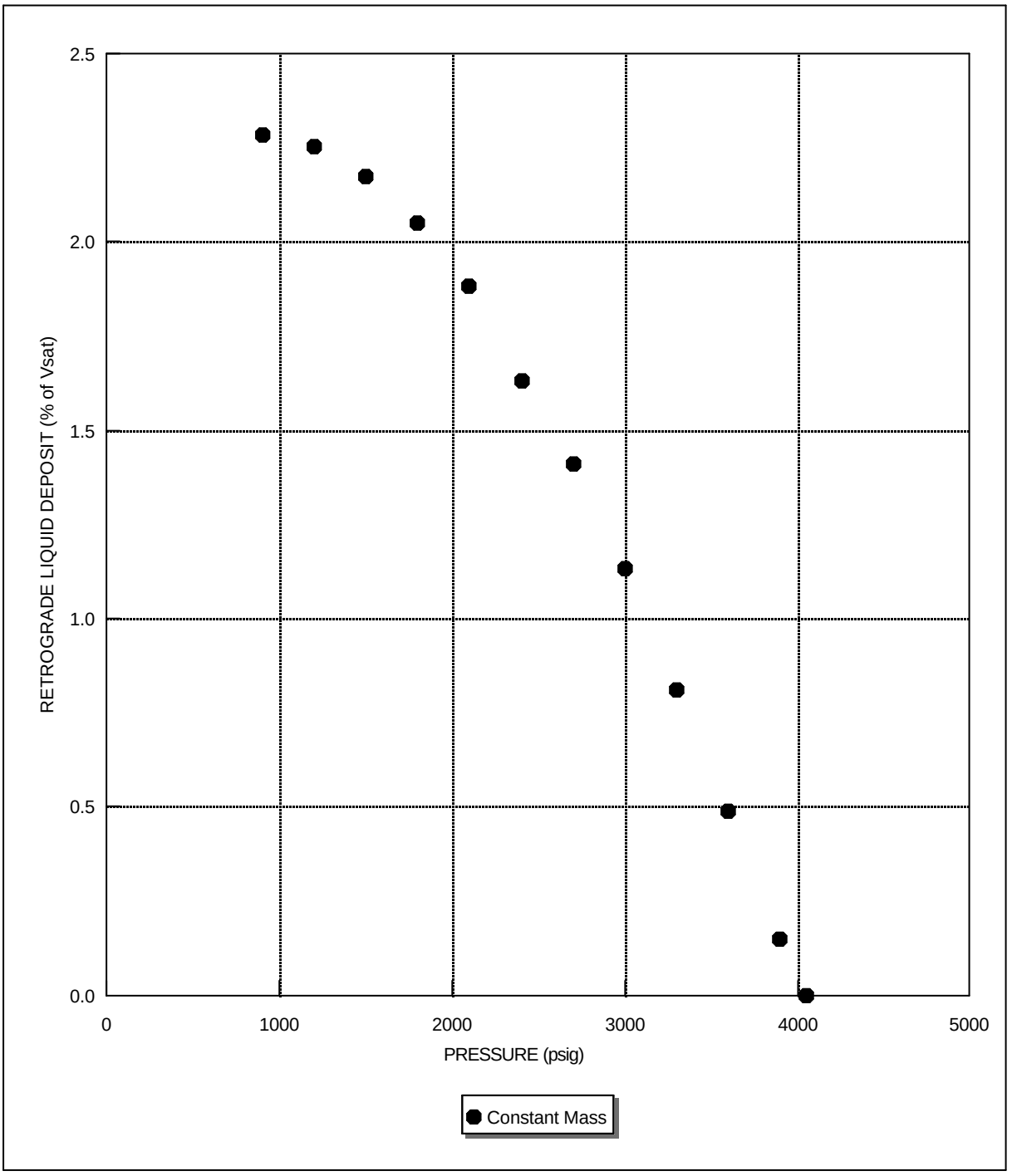


RETROGRADE CONDENSATION

Equation of best fit

Constant Mass

RLD = +2.05E+00 +5.07E-04 * P -2.76E-07 * P^2 -1.39E-11 * P^3 +4.95E-15 * P^4



CONSTANT MASS STUDY
@ 240 °F
On MDT Sample from XC-18529 (ex MPSR 0192) - taken @ 2968.7 mRT

Pressure (psig)		Relative Volume (V/Vsat) (1)	Formation Volume Factor (Bg) (2)	Gas Expansion Factor (E) (3)	Deviation Factor (Z)	Specific Volume (CFT/LB)	Gas Viscosity (Centipoise) (4)
5000		0.8857	0.00381	262.57	0.965	0.06095	0.0320
4900		0.8963	0.00385	259.48	0.957	0.06167	0.0316
4800		0.9082	0.00391	256.07	0.950	0.06249	0.0311
4700		0.9206	0.00396	252.62	0.943	0.06335	0.0307
4600		0.9336	0.00401	249.11	0.936	0.06424	0.0302
4500		0.9471	0.00407	245.55	0.929	0.06517	0.0297
4400		0.9613	0.00413	241.93	0.922	0.06615	0.0293
4300		0.9772	0.00420	238.00	0.916	0.06724	0.0288
4188	**	0.9955	0.00428	233.61	0.909	0.06850	0.0282
4160	*	1.0000	0.00430	232.56	0.907	0.06881	0.0281

* Dew Point Pressure
** Reservoir Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at reservoir pressure
(2) Cubic feet of gas at indicated pressure and temperature per cubic foot at 14.696 psia and 60 °F
(3) Cubic feet of gas at 14.696 psia and 60 °F per cubic foot at indicated pressure and temperature
(4) Calculated from correlation of Lee, Gonzales and Eakin

CONSTANT MASS STUDY

@ 240 °F

On MDT Sample from XC-18529 (ex MPSR 0192) - taken @ 2968.7 mRT

Pressure (psig)		Relative Volume (V/Vsat) (1)	Retrograde Liquid Deposit (Bbl/MMSCF) (2)	(Volume%) (3)
4160	*	1.0000	0.00	0.00
3900		1.0488	1.15	0.15
3600		1.1167	2.22	0.29
3300		1.2025	3.06	0.40
3000		1.3084	4.21	0.55
2700		1.4429	5.74	0.75
2400		1.6164	7.58	0.99
2100		1.8435	9.57	1.25
1800		2.1559	11.79	1.54
1500		2.6012	13.25	1.73
1200		3.2777	15.55	2.03
900		4.4181	16.62	2.17

* Dew Point Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at saturation pressure
(2) Barrels of liquid at indicated pressure and temperature per MMSCF of original reservoir fluid
(3) Percent of reservoir hydrocarbon pore space at dew point

CONSTANT VOLUME DEPLETION STUDY

@ 240 °F

On MDT Sample from XC-18529 (ex MPSR 0192) - taken @ 2968.7 mRT

Pressure (psig)		Cumulative Produced Fluid (1)	Deviation Factor (Z) Liberated Gas	Deviation Factor (Z) Two Phase	Gas Viscosity (Centipoise)	Retrograde Liquid (Bbl/MMSCF) (2)	Retrograde Liquid (Vol.%) (3)
4160	*	0.000	0.907	0.907	0.0281	0.00	0.00
3800		5.650	0.887	0.878	0.0261	0.77	0.10
3400		13.508	0.872	0.858	0.0240	2.45	0.32
3000		22.754	0.866	0.848	0.0219	4.52	0.59
2550		33.928	0.865	0.843	0.0199	6.89	0.90
2100		45.445	0.868	0.842	0.0181	8.96	1.17
1550		59.770	0.877	0.845	0.0164	10.95	1.43
1000		74.127	0.897	0.852	0.0150	11.95	1.56
500		86.888	0.932	0.853	0.0140	11.79	1.54

* Dew Point Pressure

(1) Wellstream produced : Cumulative volume percent of initial fluid
(2) Barrels of liquid at indicated pressure and temperature per MMSCF of original reservoir fluid
(3) Percent of reservoir hydrocarbon pore space at dew point

PETROLAB

COMPOSITIONS OF WELL STREAMS
PRODUCED DURING CONSTANT VOLUME DEPLETION

Pressure (psig):		4160 **	3800	3400
Component		Mol %	Mol %	Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	3.09	3.10	3.11
Nitrogen	N2	0.93	0.93	0.94
Methane	C1	79.09	79.43	79.73
Ethane	C2	7.12	7.13	7.13
Propane	C3	3.27	3.26	3.25
Iso-Butane	iC4	1.04	1.03	1.03
N-Butane	nC4	1.12	1.11	1.10
Iso-Pentane	iC5	0.52	0.51	0.51
N-Pentane	nC5	0.43	0.42	0.42
Hexanes	C6	0.73	0.71	0.70
Heptanes	C7	0.96	0.88	0.83
Octanes	C8	0.46	0.42	0.37
Nonanes	C9	0.38	0.34	0.31
Decanes	C10	0.31	0.26	0.22
Undecanes	C11	0.15	0.13	0.11
Dodecanes Plus	C12+	0.40	0.34	0.24
TOTAL		100.00	100.00	100.00
Stream Properties				
Molecular Weight	:	23.73	23.37	23.05
Gravity (AIR = 1.000)	:	0.825	0.810	0.799
Gross HV (BTU/SCF)	:	1340	1317	1299
Nett HV (BTU/SCF)	:	1219	1197	1180
Wobbe Index	:	1476	1463	1454
Critical Pressure (psia)	:	664.1	665.2	666.4
Critical Temperature (°R)	:	410.3	407.6	405.8
G P M Content				
Ethane Plus	:	5.517	5.314	5.161
Propane Plus	:	3.611	3.406	3.253
Butanes Plus	:	2.709	2.507	2.357
Pentanes Plus	:	2.015	1.820	1.673
Hexanes Plus Properties				
Mol %	:	3.39	3.08	2.78
Molecular Weight	:	115.9	114.5	112.1
Density (gm/cc @ 60 °F)	:	0.7303	0.7545	0.7517
Gravity (°API @ 60 °F)	:	62.1	55.9	56.6
Heptanes Plus Properties				
Mol %	:	2.66	2.37	2.08
Molecular Weight	:	124.8	123.7	121.5
Density (gm/cc @ 60 °F)	:	0.7437	0.7650	0.7626
Gravity (°API @ 60 °F)	:	58.6	53.3	53.9
Decanes Plus Properties				
Mol %	:	0.86	0.73	0.57
Molecular Weight	:	167.8	169.1	166.7
Density (gm/cc @ 60 °F)	:	0.7918	0.8092	0.8072
Gravity (°API @ 60 °F)	:	47.0	43.2	43.6
Undecanes Plus Properties				
Mol %		0.55	0.47	0.35
Molecular Weight	:	191.6	189.4	186.1
Density (gm/cc @ 60 °F)	:	0.8143	0.8259	0.8233
Gravity (°API @ 60 °F)	:	42.1	39.7	40.2
Dodecanes Plus Properties				
Molecular Weight	:	211.1	206.6	202.7
Density (gm/cc @ 60 °F)	:	0.8299	0.8389	0.8360
Gravity (°API @ 60 °F)	:	38.8	37.0	37.6
Recovery Factor*				
* at 500 psi abandonment pressure	:	0.8858	0.8779	0.8660

** Original Reservoir Fluid

COMPOSITIONS OF WELL STREAMS
PRODUCED DURING CONSTANT VOLUME DEPLETION

Pressure (psig):		3000	2550	2100
Component		Mol %	Mol %	Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	3.11	3.12	3.13
Nitrogen	N2	0.94	0.94	0.95
Methane	C1	79.97	80.18	80.34
Ethane	C2	7.14	7.15	7.16
Propane	C3	3.25	3.24	3.25
Iso-Butane	iC4	1.02	1.02	1.02
N-Butane	nC4	1.10	1.09	1.09
Iso-Pentane	iC5	0.50	0.50	0.49
N-Pentane	nC5	0.41	0.41	0.40
Hexanes	C6	0.68	0.67	0.65
Heptanes	C7	0.78	0.75	0.74
Octanes	C8	0.34	0.32	0.30
Nonanes	C9	0.27	0.24	0.21
Decanes	C10	0.19	0.15	0.12
Undecanes	C11	0.08	0.07	0.05
Dodecanes Plus	C12+	0.22	0.15	0.10
TOTAL		100.00	100.00	100.00

Stream Properties				
Molecular Weight	:	22.73	22.49	22.27
Gravity (AIR = 1.000)	:	0.788	0.779	0.772
Gross HV (BTU/SCF)	:	1282	1269	1257
Nett HV (BTU/SCF)	:	1165	1153	1141
Wobbe Index	:	1445	1438	1431
Critical Pressure (psia)	:	667.0	667.9	668.5
Critical Temperature (°R)	:	403.7	402.3	400.9
GPM Content				
Ethane Plus	:	5.014	4.903	4.796
Propane Plus	:	3.103	2.989	2.880
Butanes Plus	:	2.207	2.096	1.984
Pentanes Plus	:	1.526	1.418	1.306
Hexanes Plus Properties				
Mol %	:	2.56	2.35	2.17
Molecular Weight	:	109.9	107.3	104.5
Density (gm/cc @ 60 °F)	:	0.7490	0.7459	0.7423
Gravity (°API @ 60 °F)	:	57.2	58.0	58.9
Heptanes Plus Properties				
Mol %	:	1.88	1.68	1.52
Molecular Weight	:	119.3	116.6	113.2
Density (gm/cc @ 60 °F)	:	0.7601	0.7570	0.7530
Gravity (°API @ 60 °F)	:	54.5	55.2	56.2
Decanes Plus Properties				
Mol %	:	0.49	0.37	0.27
Molecular Weight	:	164.8	162.6	159.7
Density (gm/cc @ 60 °F)	:	0.8055	0.8035	0.8009
Gravity (°API @ 60 °F)	:	44.0	44.4	45.0
Undecanes Plus Properties				
Mol %	:	0.30	0.22	0.15
Molecular Weight	:	185.0	181.2	178.9
Density (gm/cc @ 60 °F)	:	0.8224	0.8194	0.8175
Gravity (°API @ 60 °F)	:	40.4	41.0	41.4
Dodecanes Plus Properties				
Molecular Weight	:	199.5	196.2	193.4
Density (gm/cc @ 60 °F)	:	0.8336	0.8311	0.8290
Gravity (°API @ 60 °F)	:	38.1	38.6	39.0
Recovery Factor*				
* at 500 psi abandonment pressure :		0.8493	0.8230	0.7845

COMPOSITIONS OF WELL STREAMS
PRODUCED DURING CONSTANT VOLUME DEPLETION

Pressure (psig):		1550	1000	500
Component		Mol %	Mol %	Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	3.13	3.13	3.12
Nitrogen	N2	0.95	0.95	0.94
Methane	C1	80.37	80.20	79.66
Ethane	C2	7.18	7.21	7.23
Propane	C3	3.26	3.29	3.35
Iso-Butane	iC4	1.02	1.04	1.07
N-Butane	nC4	1.09	1.11	1.16
Iso-Pentane	iC5	0.49	0.50	0.54
N-Pentane	nC5	0.40	0.41	0.44
Hexanes	C6	0.65	0.66	0.74
Heptanes	C7	0.76	0.80	0.88
Octanes	C8	0.29	0.31	0.40
Nonanes	C9	0.20	0.22	0.29
Decanes	C10	0.10	0.10	0.13
Undecanes	C11	0.04	0.03	0.02
Dodecanes Plus	C12+	0.07	0.04	0.03
TOTAL		100.00	100.00	100.00

Stream Properties				
Molecular Weight	:	22.16	22.23	22.57
Gravity (AIR = 1.000)	:	0.768	0.770	0.782
Gross HV (BTU/SCF)	:	1251	1255	1274
Nett HV (BTU/SCF)	:	1135	1139	1157
Wobbe Index	:	1428	1430	1440
Critical Pressure (psia)	:	668.8	668.6	667.4
Critical Temperature (°R)	:	400.3	401.1	404.0
GPM Content				
Ethane Plus	:	4.758	4.813	5.021
Propane Plus	:	2.836	2.883	3.086
Butanes Plus	:	1.937	1.976	2.162
Pentanes Plus	:	1.259	1.285	1.446
Hexanes Plus Properties				
Mol %	:	2.11	2.16	2.49
Molecular Weight	:	102.1	101.0	100.6
Density (gm/cc @ 60 °F)	:	0.7391	0.7377	0.7372
Gravity (°API @ 60 °F)	:	59.8	60.1	60.3
Heptanes Plus Properties				
Mol %	:	1.46	1.50	1.75
Molecular Weight	:	110.1	108.4	107.6
Density (gm/cc @ 60 °F)	:	0.7493	0.7472	0.7461
Gravity (°API @ 60 °F)	:	57.2	57.7	58.0
Decanes Plus Properties				
Mol %	:	0.21	0.17	0.18
Molecular Weight	:	155.0	150.6	143.6
Density (gm/cc @ 60 °F)	:	0.7967	0.7926	0.7859
Gravity (°API @ 60 °F)	:	45.9	46.9	48.4
Undecanes Plus Properties				
Mol %	:	0.11	0.07	0.05
Molecular Weight	:	174.2	171.4	168.7
Density (gm/cc @ 60 °F)	:	0.8135	0.8112	0.8089
Gravity (°API @ 60 °F)	:	42.3	42.8	43.3
Dodecanes Plus Properties				
Molecular Weight	:	189.7	186.0	183.2
Density (gm/cc @ 60 °F)	:	0.8261	0.8232	0.8209
Gravity (°API @ 60 °F)	:	39.6	40.2	40.7
Recovery Factor*				
* at 500 psi abandonment pressure :		0.7051	0.5323	--

CALCULATED LIQUID COMPOSITIONS

Pressure (psig):		3800	3400	3000
Component		Mol %	Mol %	Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	2.25	2.16	2.05
Nitrogen	N2	0.68	0.61	0.54
Methane	C1	45.74	42.90	39.78
Ethane	C2	6.52	6.40	6.25
Propane	C3	4.17	4.23	4.27
Iso-Butane	iC4	1.70	1.76	1.83
N-Butane	nC4	1.99	2.08	2.18
Iso-Pentane	iC5	1.16	1.23	1.32
N-Pentane	nC5	1.03	1.10	1.18
Hexanes	C6	2.36	2.59	2.86
Heptanes Plus	C7+	32.40	34.94	37.74
TOTAL		100.00	100.00	100.00

Stream Properties

Molecular Weight	:	101.4	89.6	89.3
Density @ P & T	:	0.693	0.648	0.638

Hexanes Plus Properties

Mol %	:	34.76	37.53	40.60
Molecular Weight	:	245.5	196.9	182.1
Density (gm/cc @ 60 °F)	:	0.867	0.832	0.820
Gravity (°API @ 60 °F)	:	31.5	38.3	40.8

Heptanes Plus Properties

Molecular Weight	:	257.3	205.3	189.5
Density (gm/cc @ 60 °F)	:	0.873	0.838	0.826
Gravity (°API @ 60 °F)	:	30.5	37.2	39.6

CALCULATED LIQUID COMPOSITIONS

Pressure (psig):		2550	2100	1550
Component		Mol %	Mol %	Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	1.91	1.74	1.47
Nitrogen	N2	0.44	0.34	0.21
Methane	C1	35.89	31.54	25.40
Ethane	C2	6.00	5.66	5.02
Propane	C3	4.29	4.25	4.04
Iso-Butane	iC4	1.90	1.95	1.95
N-Butane	nC4	2.29	2.38	2.42
Iso-Pentane	iC5	1.42	1.52	1.62
N-Pentane	nC5	1.29	1.39	1.50
Hexanes	C6	3.21	3.60	4.10
Heptanes Plus	C7+	41.36	45.63	52.27
TOTAL		100.00	100.00	100.00

Stream Properties

Molecular Weight	:	92.8	98.7	109.8
Density @ P & T	:	0.639	0.647	0.662

Hexanes Plus Properties

Mol %	:	44.57	49.23	56.37
Molecular Weight	:	175.0	171.9	172.0
Density (gm/cc @ 60 °F)	:	0.814	0.812	0.812
Gravity (°API @ 60 °F)	:	42.1	42.6	42.6

Heptanes Plus Properties

Molecular Weight	:	182.1	178.8	178.9
Density (gm/cc @ 60 °F)	:	0.820	0.817	0.817
Gravity (°API @ 60 °F)	:	40.9	41.5	41.4

CALCULATED LIQUID COMPOSITIONS

Pressure (psig):		1000	500 *	500 **
Component		Mol %	Mol %	Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	1.11	0.65	0.58
Nitrogen	N2	0.11	0.04	0.09
Methane	C1	18.11	10.08	9.15
Ethane	C2	3.99	2.49	2.45
Propane	C3	3.49	2.38	2.38
Iso-Butane	iC4	1.79	1.31	1.19
N-Butane	nC4	2.27	1.71	1.64
Iso-Pentane	iC5	1.60	1.30	1.27
N-Pentane	nC5	1.51	1.25	1.12
Hexanes	C6	4.44	4.10	2.33
Heptanes Plus	C7+	61.58	74.69	77.80
TOTAL		100.00	100.00	100.00

Stream Properties

Molecular Weight	:	126.3	150.2	193.0
Density @ P & T	:	0.683	0.708	0.771

Hexanes Plus Properties

Mol %	:	66.02	78.79	80.13
Molecular Weight	:	175.0	181.4	232.3
Density (gm/cc @ 60 °F)	:	0.814	0.820	0.857
Gravity (°API @ 60 °F)	:	42.1	41.0	33.4

Heptanes Plus Properties

Molecular Weight	:	181.5	186.7	236.7
Density (gm/cc @ 60 °F)	:	0.820	0.824	0.860
Gravity (°API @ 60 °F)	:	41.0	40.1	33.0

* Abandonment Pressure Liquid Composition from Material Balance
** Abandonment Pressure Liquid Composition Analysed

CALCULATED CUMULATIVE RECOVERY DURING DEPLETION

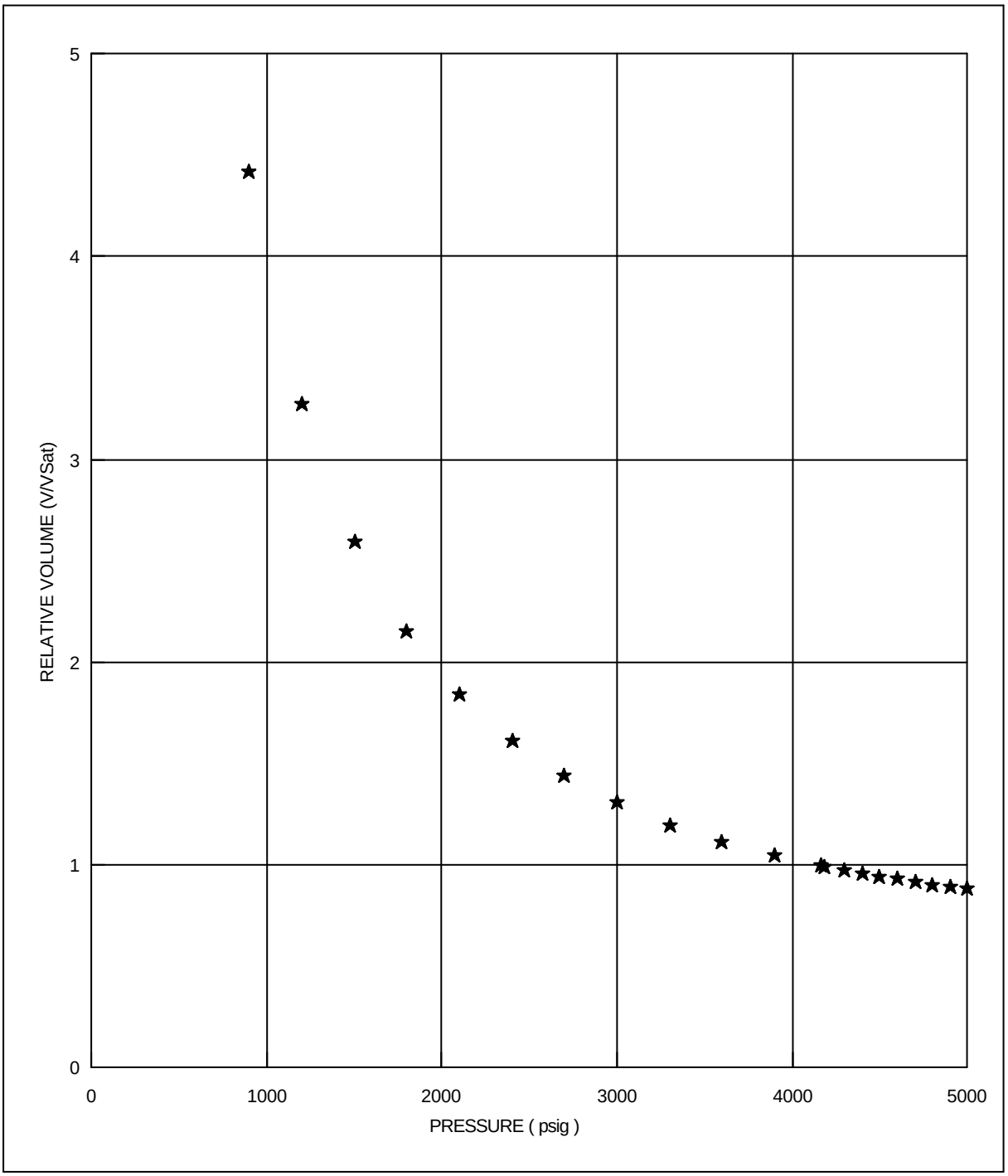
per MMSCF of Original Reservoir Fluid *

Reservoir Pressure		4160	3800	3400	3000	2550	2100	1550	1000	500
	Initial in Place	**Saturation Pressure**								
Well Stream - MSCF	**1000**	0	56.5	135.1	227.5	339.3	454.5	597.7	741.3	868.9
Stock Tank Liquid - °API @ 60 °F		58.6	63.1	64.2	65.1	66.2	67.4	68.4	69.1	69.3
Cumulative Produced (Bbl)	**0.00**	0.00	2.13	4.76	7.53	10.55	13.35	16.65	20.04	23.55
Remaining in Vapor (Bbl)	**45.23**	45.23	35.14	28.37	22.59	17.20	12.73	8.81	5.71	3.25
Remaining in Liquid (Bbl)	**0.00**	0.00	7.97	12.11	15.11	17.48	19.16	19.78	19.48	18.43
Primary Separator Gas - MSCF	**933.01**	0.00	53.07	127.32	215.11	321.69	431.93	569.28	706.68	827.88
Second Stage Gas - MSCF	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stock Tank Gas - MSCF	**28.56**	0.00	1.48	3.36	5.40	7.67	9.85	12.49	15.25	18.13
		Total " Plant Products " - (Gallons) in Well Stream :								
Ethane	**1906**	0	108	258	434	648	869	1144	1421	1668
Propane	**902**	0	51	121	204	304	407	536	666	784
Butanes	**694**	0	39	93	156	231	309	407	506	597
Pentanes Plus	**2015**	0	103	234	375	534	684	865	1049	1234
		Total " Plant Products " - (Gallons) in Primary Separator Gas :								
Ethane	**1779**	0	101	243	411	615	826	1089	1354	1589
Propane	**754**	0	43	104	176	264	356	471	587	690
Butanes	**465**	0	27	65	111	168	228	302	378	445
Pentanes Plus	**260**	0	15	37	64	97	132	176	220	259
		Total " Plant Products " - (Gallons) in Secondary Separator Gas :								
Ethane	**0**	0	0	0	0	0	0	0	0	0
Propane	**0**	0	0	0	0	0	0	0	0	0
Butanes	**0**	0	0	0	0	0	0	0	0	0
Pentanes Plus	**0**	0	0	0	0	0	0	0	0	0
		Total " Plant Products " - (Gallons) in Stock Tank Gas :								
Ethane	**114**	0	6	13	21	30	39	49	59	71
Propane	**120**	0	6	14	23	32	41	53	64	77
Butanes	**133**	0	7	16	26	37	48	61	75	90
Pentanes Plus	**95**	0	5	12	19	28	36	46	57	69
		Gas Liquid Ratios *								
1st Sep. Gas/Stock Tank Liquid (SCF/BBL)		20628	24950	28247	31597	35388	39343	41591	40535	34510
1st+2nd Sep. Gas/Stock Tank Liquid (SCF/BBL)		20628	24950	28247	31597	35388	39343	41591	40535	34510
1st+2nd Sep+STTGas/Stock Tank Liquid (SCF/BBL)		21259	25644	28962	32331	36144	40122	42389	41349	35331
1st Sep. Gas/Produced WellStream (MSCF/MMSCF)		933	939	945	950	954	957	959	957	950
1st+2nd Sep. Gas/Produced WS (MSCF/MMSCF)		933	939	945	950	954	957	959	957	950
1st+2nd Sep.+STT Gas/Produced WS (MSCF/MMSCF)		962	965	969	972	974	976	977	976	972
Stock Tank Liquid/Produced WS (STB/MMSCF)		45	38	33	30	27	24	23	24	28

* Primary Separator @ 756 psig and 86 °F; No Secondary Separator; Stock Tank @ 14.696 psia and 60 °F

RELATIVE VOLUME

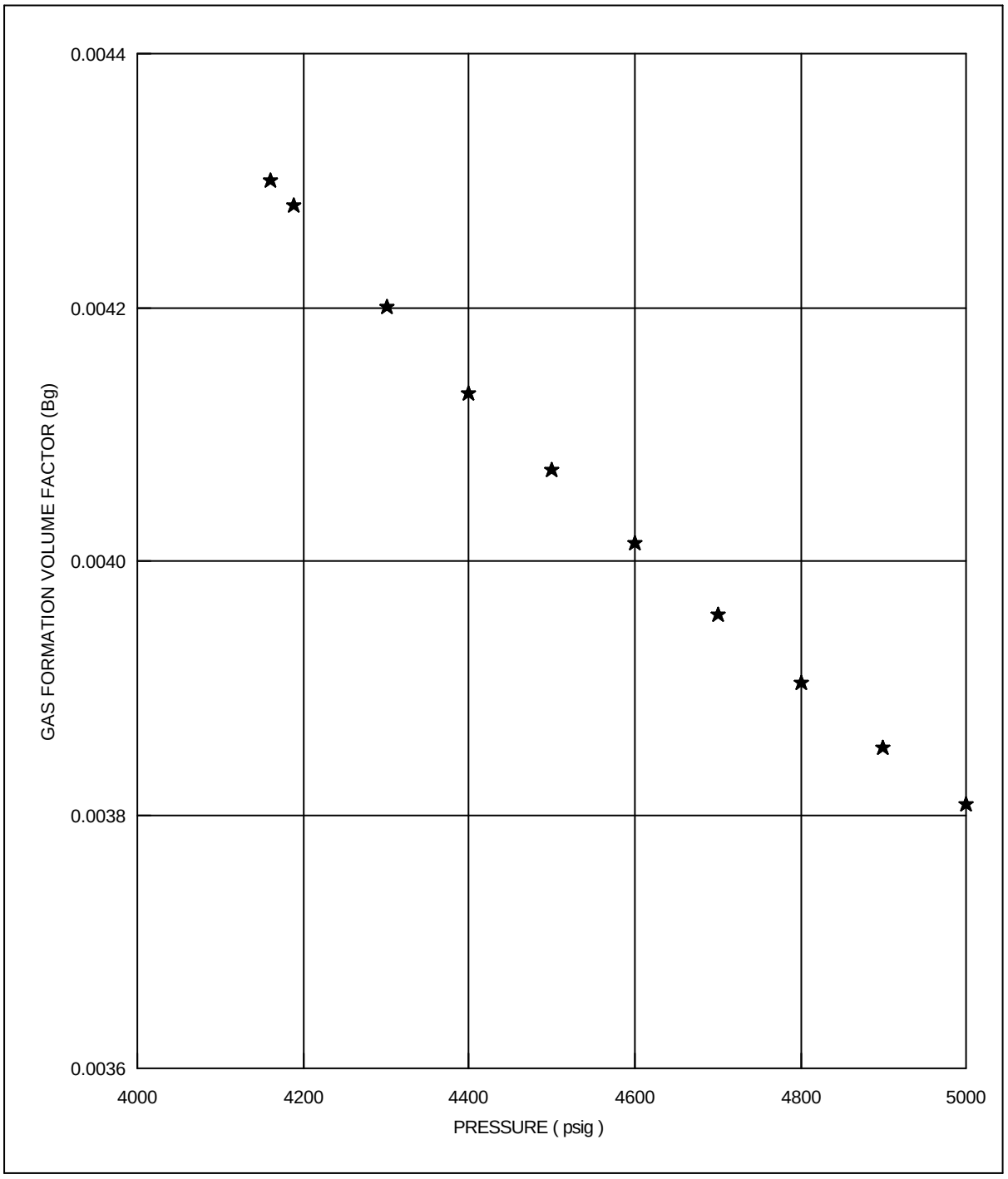
Equation of best fit
V/VSat = +9.90E+00 -8.85E-03 * P +3.55E-06 * P^2 -6.53E-10 * P^3 +4.49E-14 * P^4



GAS FORMATION VOLUME FACTOR

Equation of best fit

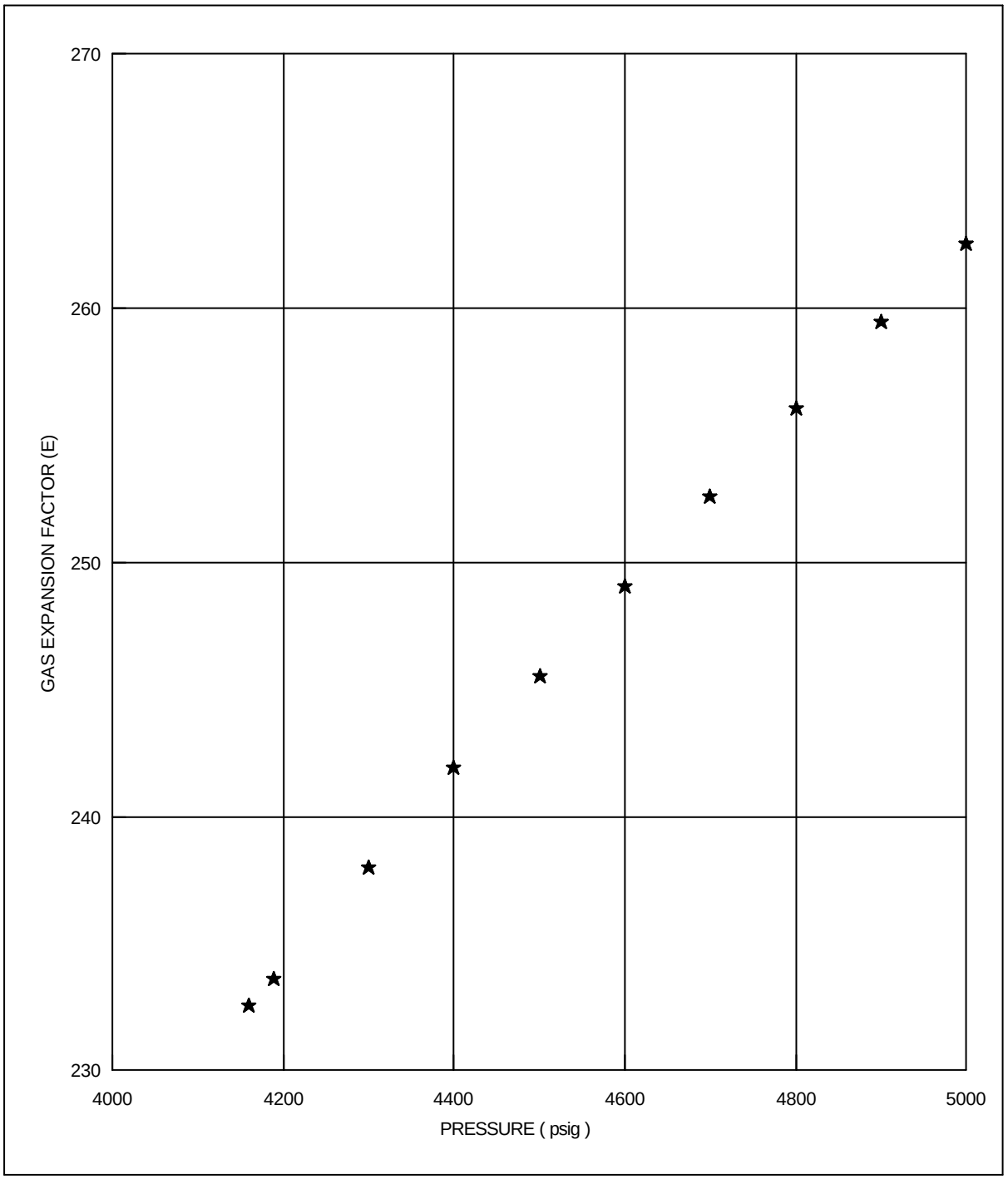
Bg = +1.39E-02 -4.57E-06 * P +7.07E-10 * P^2 -3.94E-14 * P^3 +0.00E+00 * P^4



GAS EXPANSION FACTOR

Equation of best fit

E = -3.54E+01 +9.18E-02 * P -7.30E-06 * P^2 +1.72E-10 * P^3 +0.00E+00 * P^4



GAS DEVIATION FACTOR

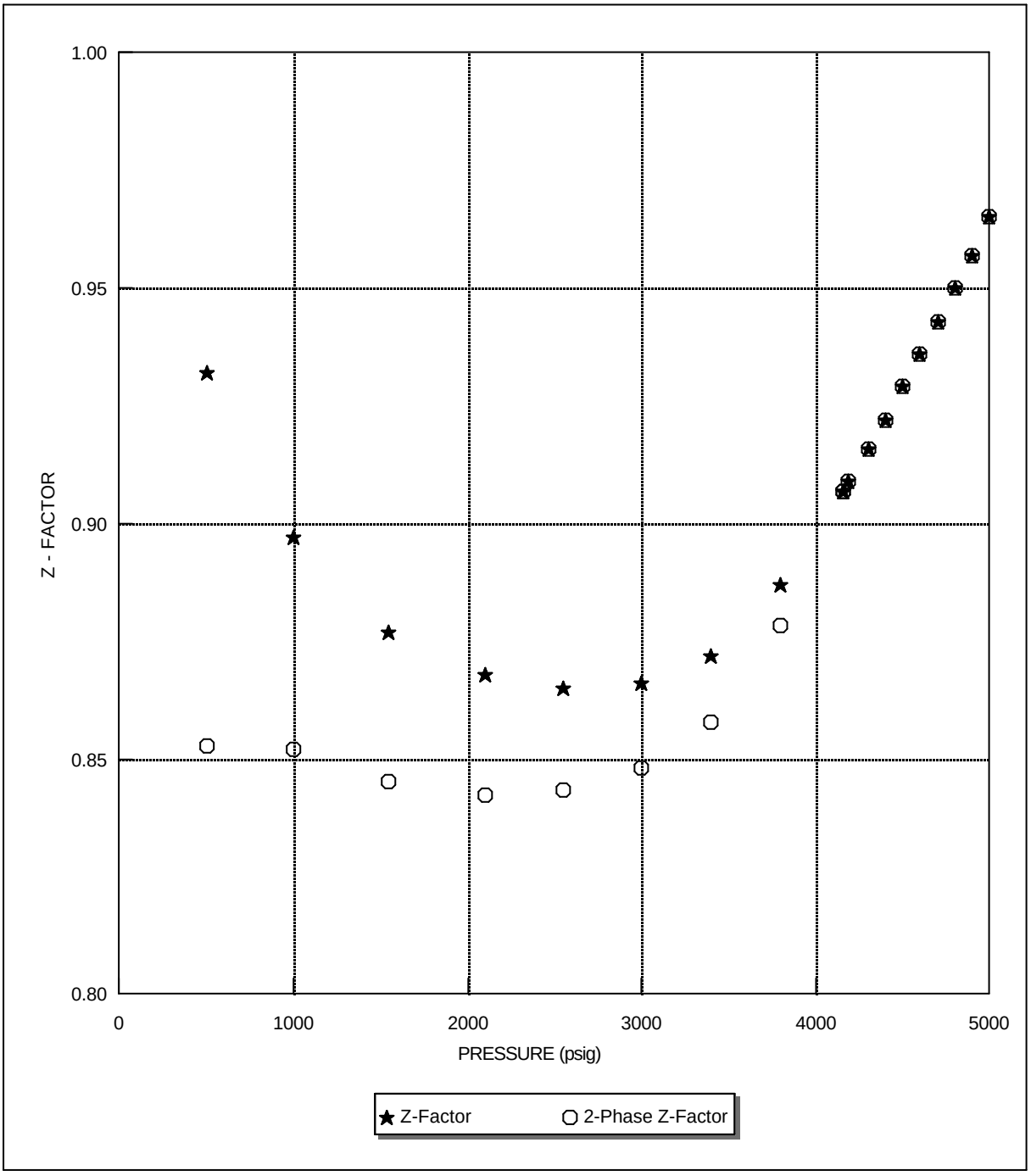
Equation of best fit

Z

$Z = +9.72E\text{-}01 - 9.34E\text{-}05 * P + 2.36E\text{-}08 * P^2 - 1.92E\text{-}12 * P^3 + 1.79E\text{-}16 * P^4$

2 phase Z

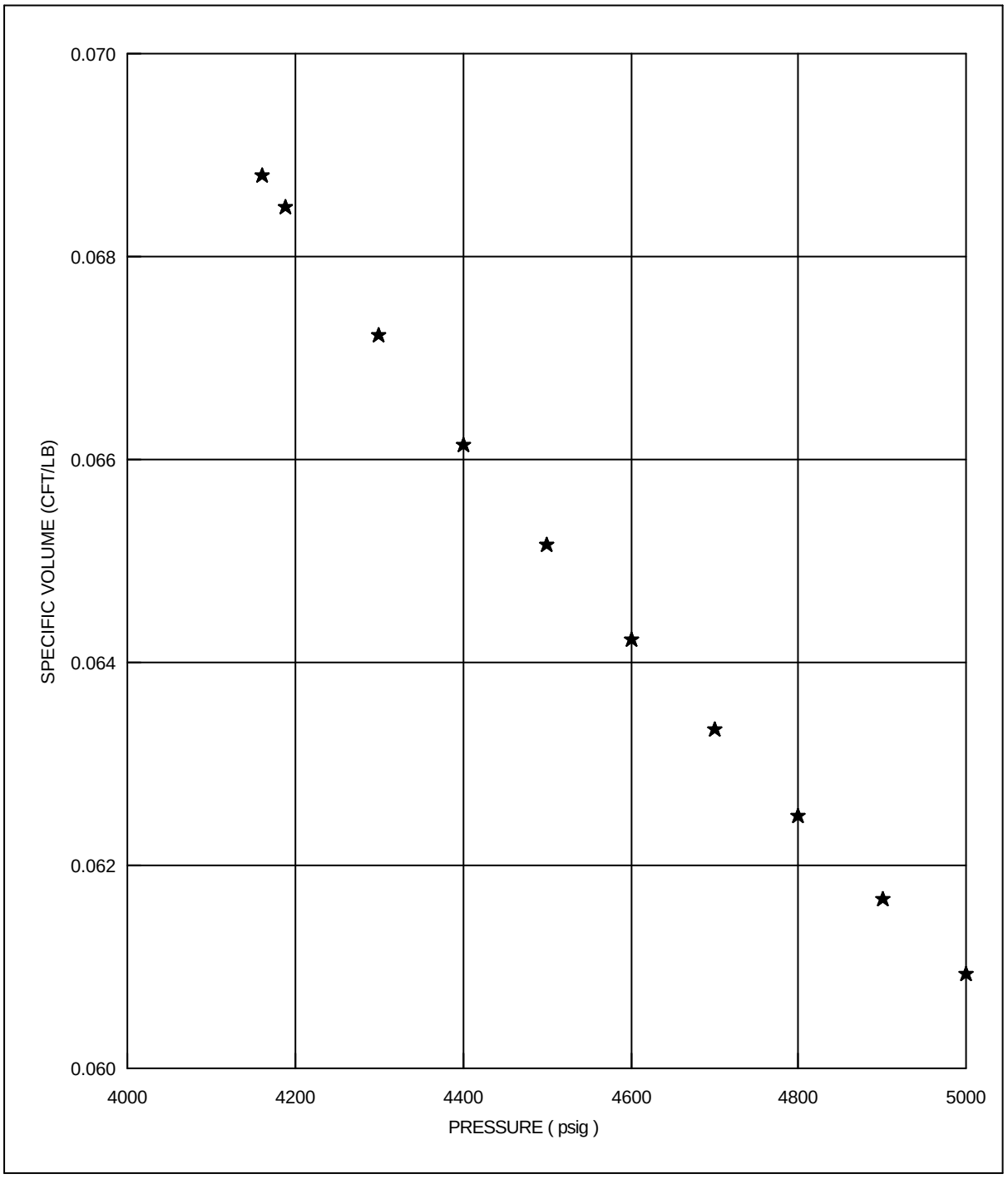
$2phZ = +9.93E\text{-}01 - 3.47E\text{-}04 * P + 2.62E\text{-}07 * P^2 - 7.96E\text{-}11 * P^3 + 8.58E\text{-}15 * P^4$



RESERVOIR FLUID SPECIFIC VOLUME

Equation of best fit

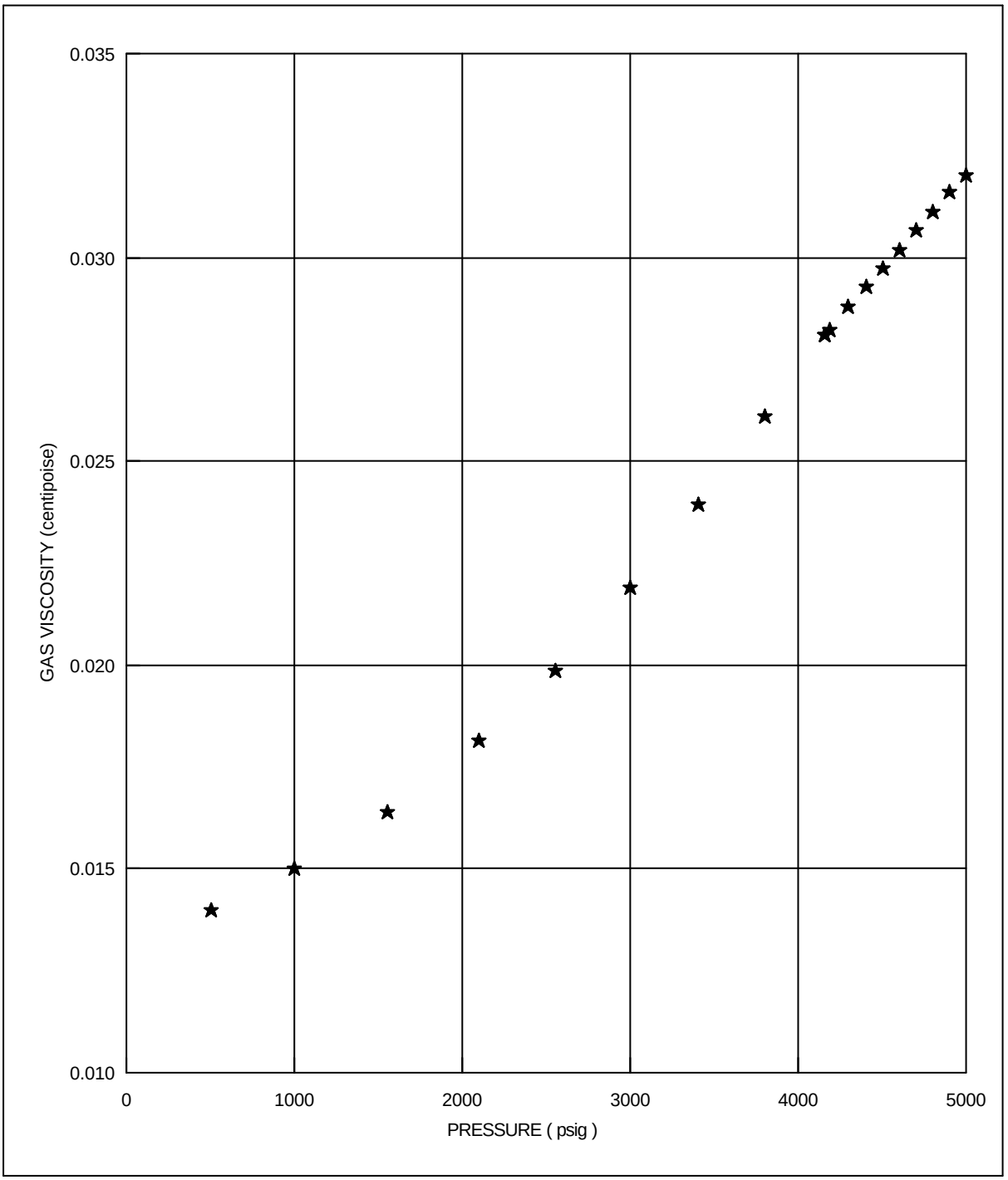
SV = +2.23E-01 -7.32E-05 * P +1.13E-08 * P^2 -6.31E-13 * P^3 +0.00E+00 * P^4



VISCOSITY OF RESERVOIR FLUID

Equation of best fit

$\mu = +1.29E\text{-}02 + 2.41E\text{-}06 * P - 6.69E\text{-}10 * P^2 + 4.39E\text{-}13 * P^3 - 4.99E\text{-}17 * P^4$



RETROGRADE CONDENSATION

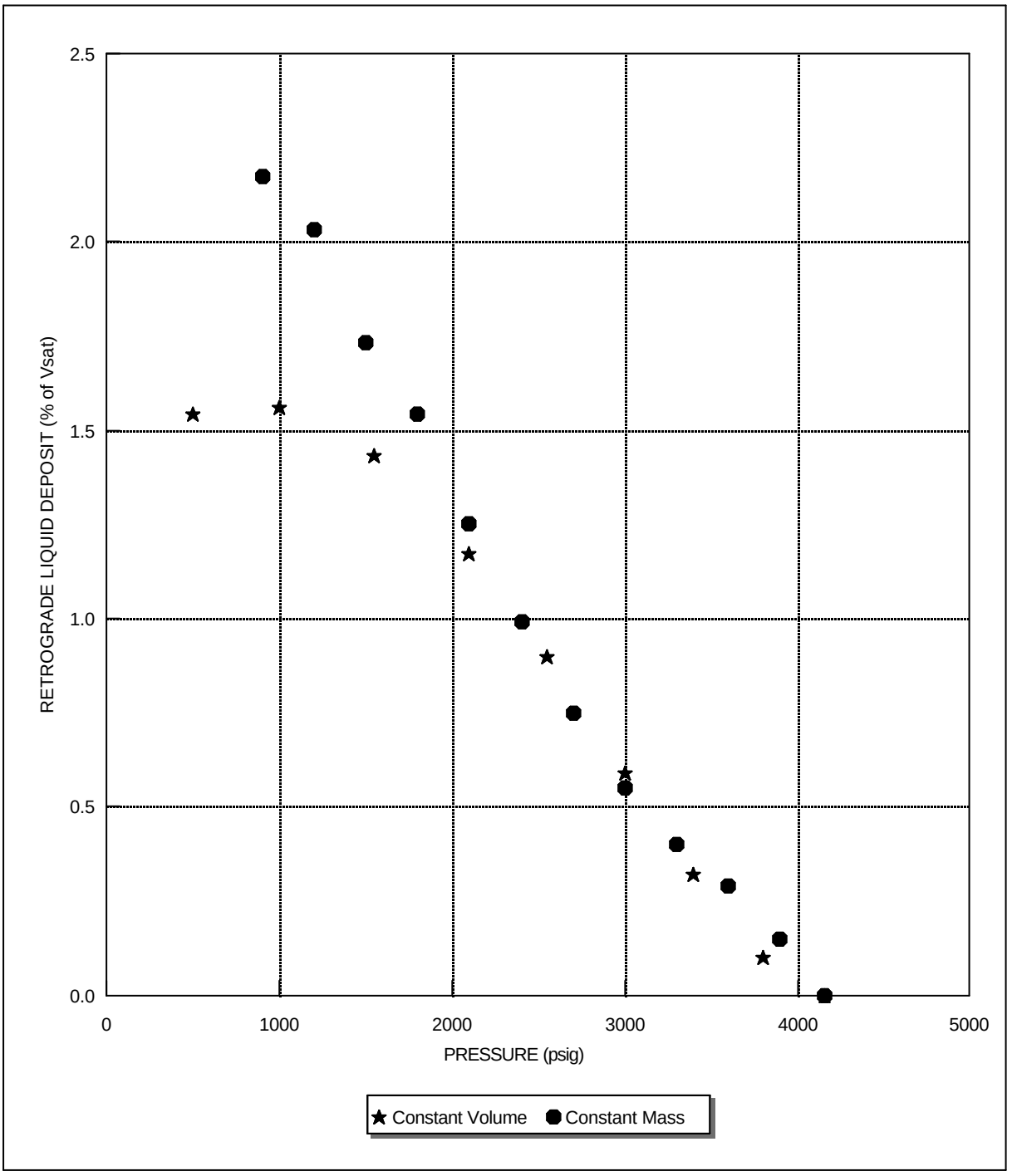
Equation of best fit

Constant Volume

RLD = +1.42E+00 +3.45E-04 * P -1.71E-07 * P^2 -4.73E-11 * P^3 +1.17E-14 * P^4

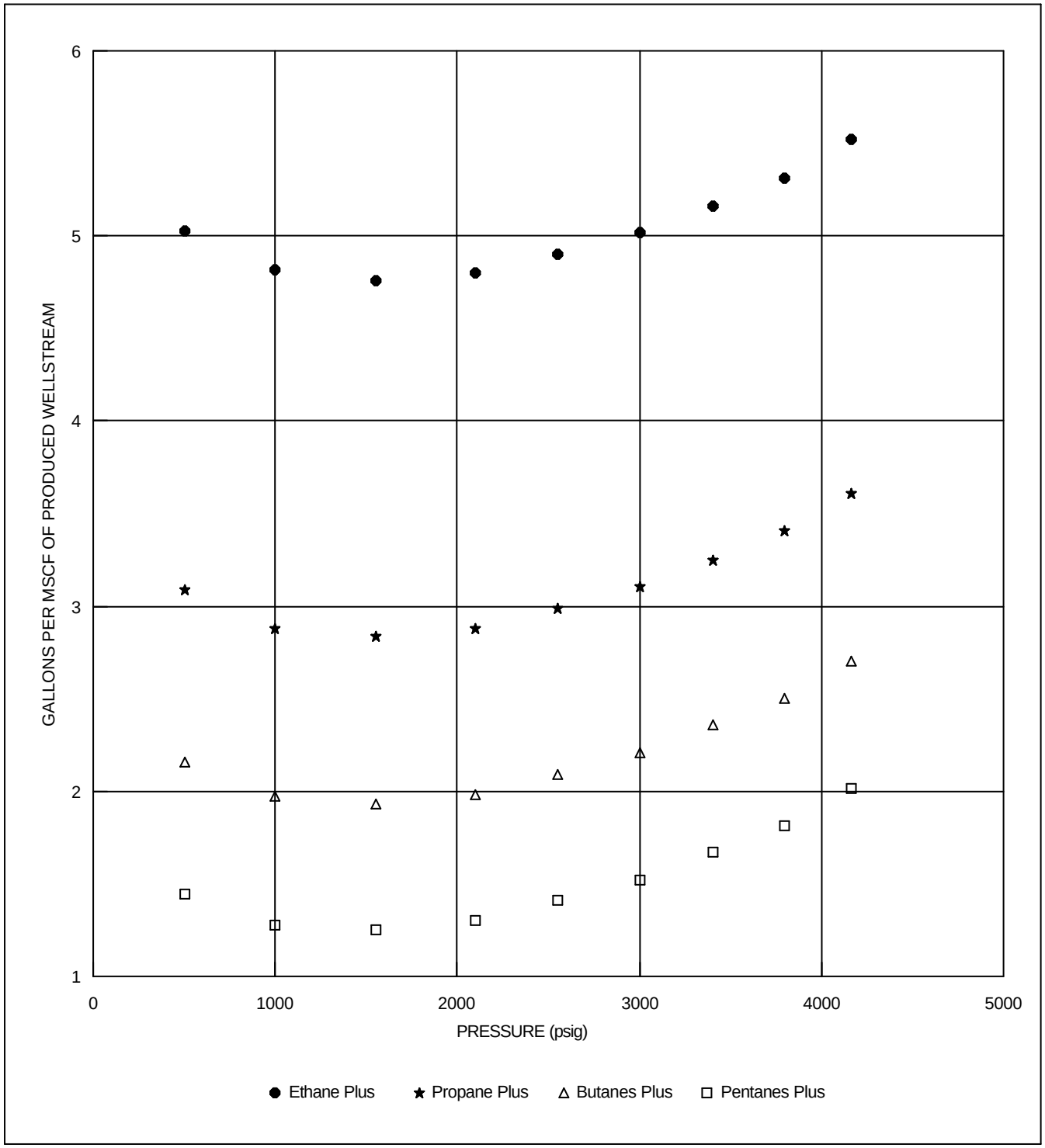
Constant Mass

RLD = +1.69E+00 +1.74E-03 * P -1.73E-06 * P^2 +4.69E-10 * P^3 -4.27E-14 * P^4



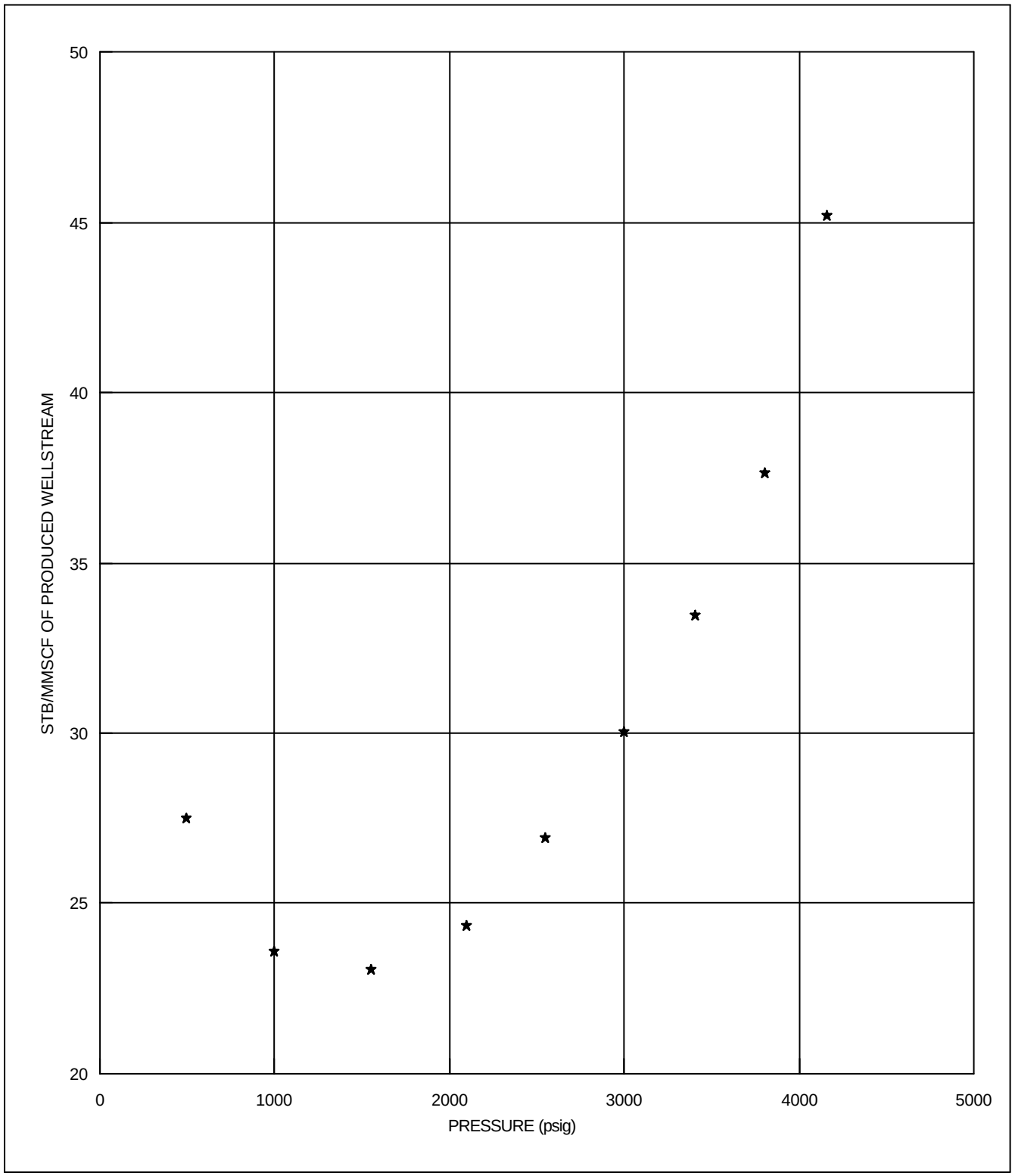
GPM CONTENT IN PRODUCED WELL STREAM

Ethane Plus GPM C o n t e n t = +5.45E+00 -1.14E-03 * P +6.23E-07 * P^2 -1.33E-10 * P^3 +1.21E-14 * P^4
Propane Plus GPM C o n t e n t = +3.51E+00 -1.14E-03 * P +6.31E-07 * P^2 -1.36E-10 * P^3 +1.24E-14 * P^4
Butanes Plus GPM C o n t e n t = +2.56E+00 -1.07E-03 * P +5.98E-07 * P^2 -1.29E-10 * P^3 +1.18E-14 * P^4
Pentanes Plus GPM C o n t e n t = +1.80E+00 -9.35E-04 * P +5.29E-07 * P^2 -1.13E-10 * P^3 +1.04E-14 * P^4



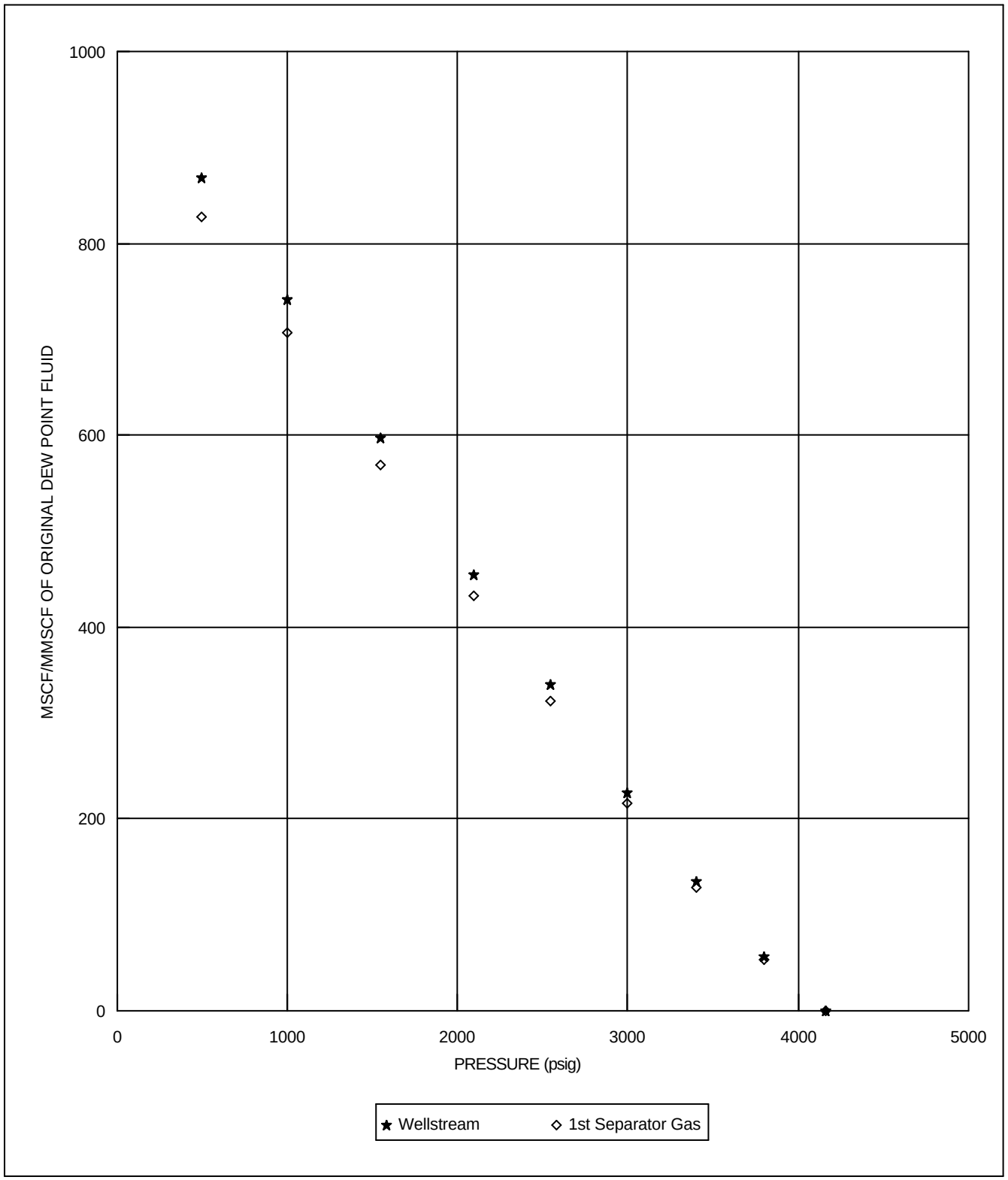
STOCK TANK LIQUID
IN PRODUCED WELLSTREAM

STL = +3.80E+01 -2.90E-02 * P +1.90E-05 * P^2 -5.00E-09 * P^3 +5.32E-13 * P^4



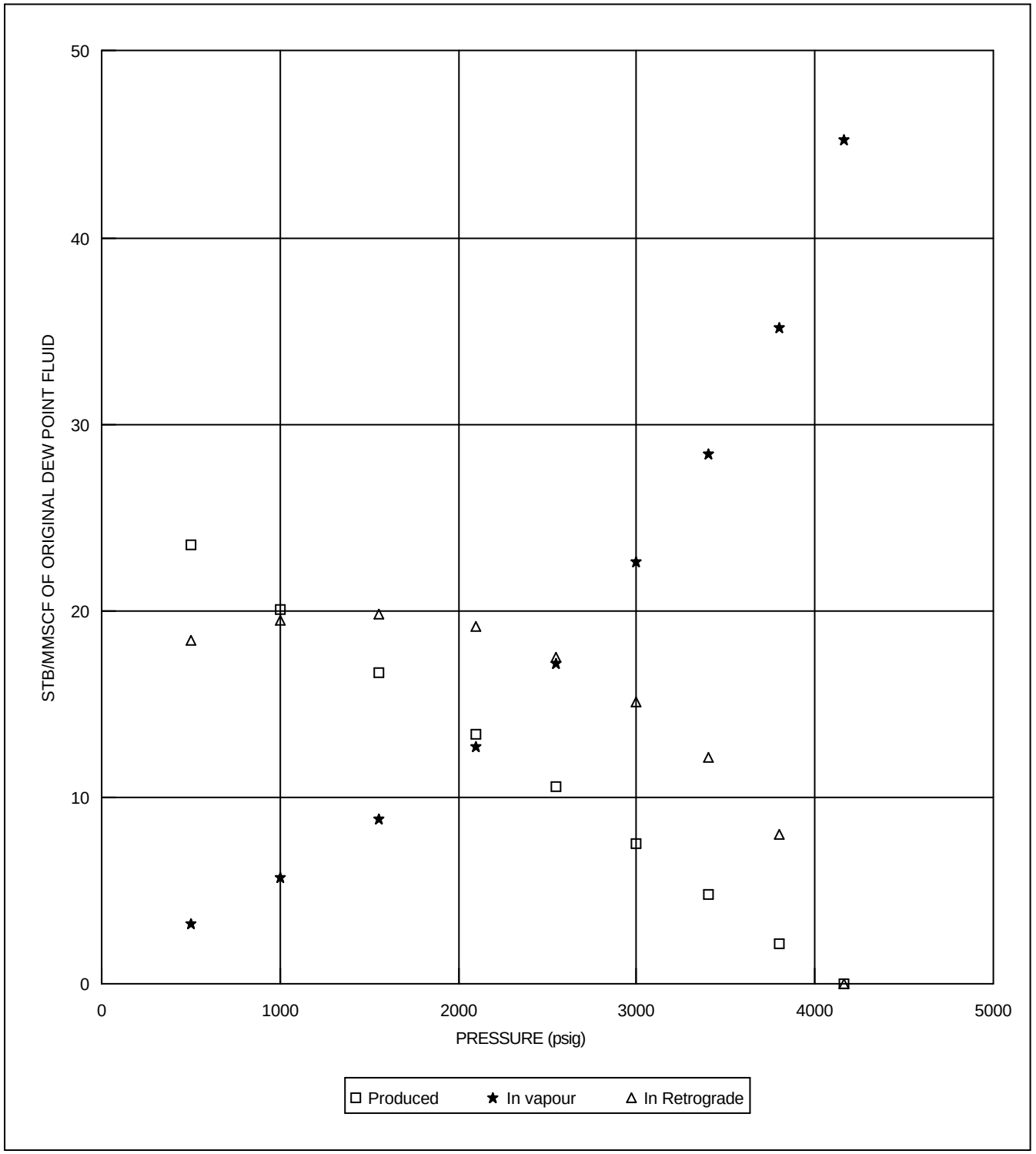
CUMULATIVE GAS PHASE PRODUCED

Cum Vol W/S = +1.00E+03 -2.66E-01 * P +1.39E-05 * P^2 -8.38E-09 * P^3 +1.57E-12 * P^4
Cum Vol Sep Gas = +9.50E+02 -2.47E-01 * P +7.78E-06 * P^2 -6.53E-09 * P^3 +1.38E-12 * P^4



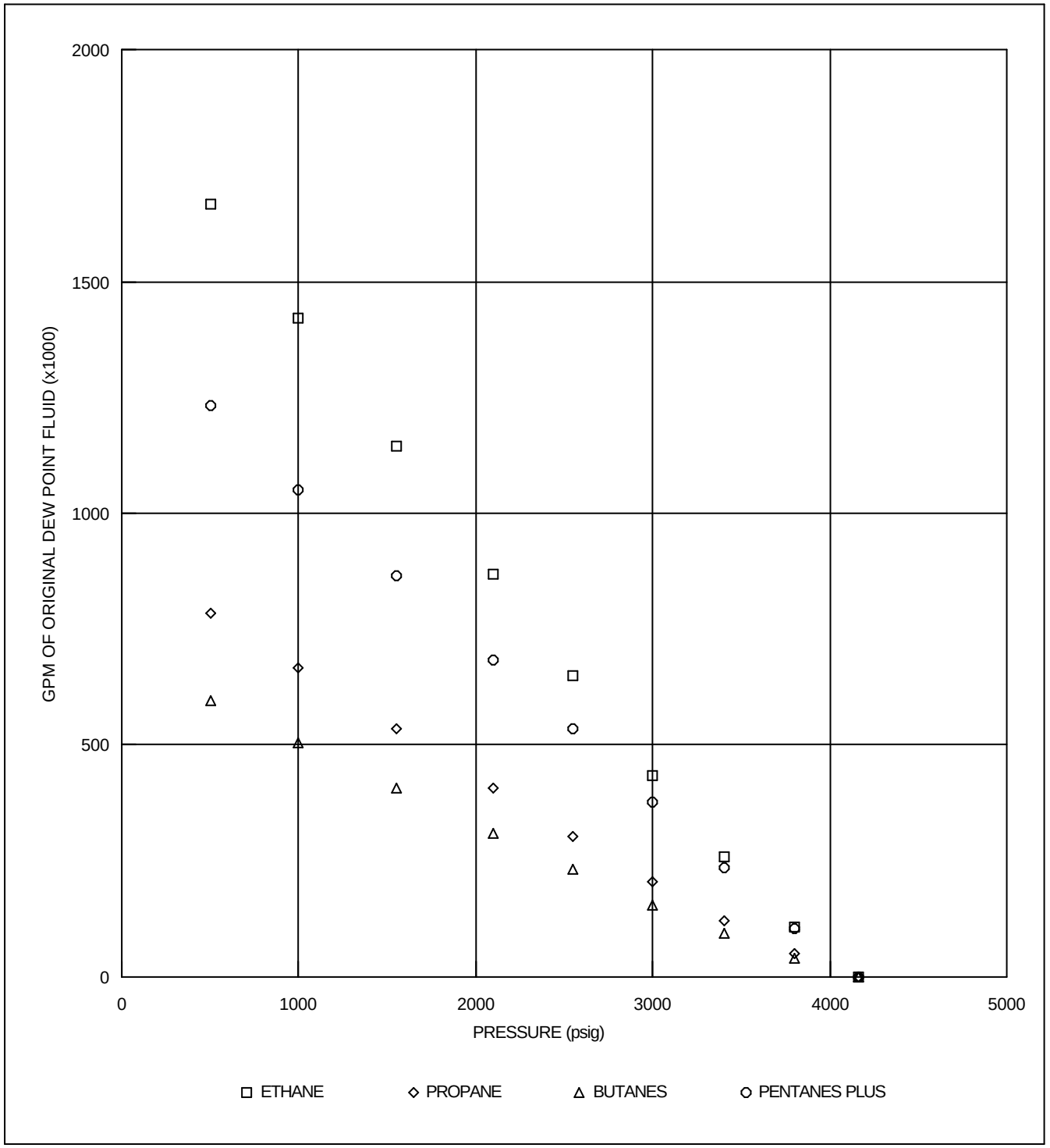
CUMULATIVE STOCK TANK LIQUID PRODUCTION AND CONDENSATION

Produced = +2.82E+01 -1.07E-02 * P +3.59E-06 * P^2 -1.12E-09 * P^3 +1.17E-13 * P^4
In Vapour = +5.28E-02 +7.92E-03 * P -4.06E-06 * P^2 +2.15E-09 * P^3 -3.56E-13 * P^4
In Retrograde = +1.67E+01 +4.22E-03 * P -1.36E-06 * P^2 +3.39E-12 * P^3 -2.52E-14 * P^4



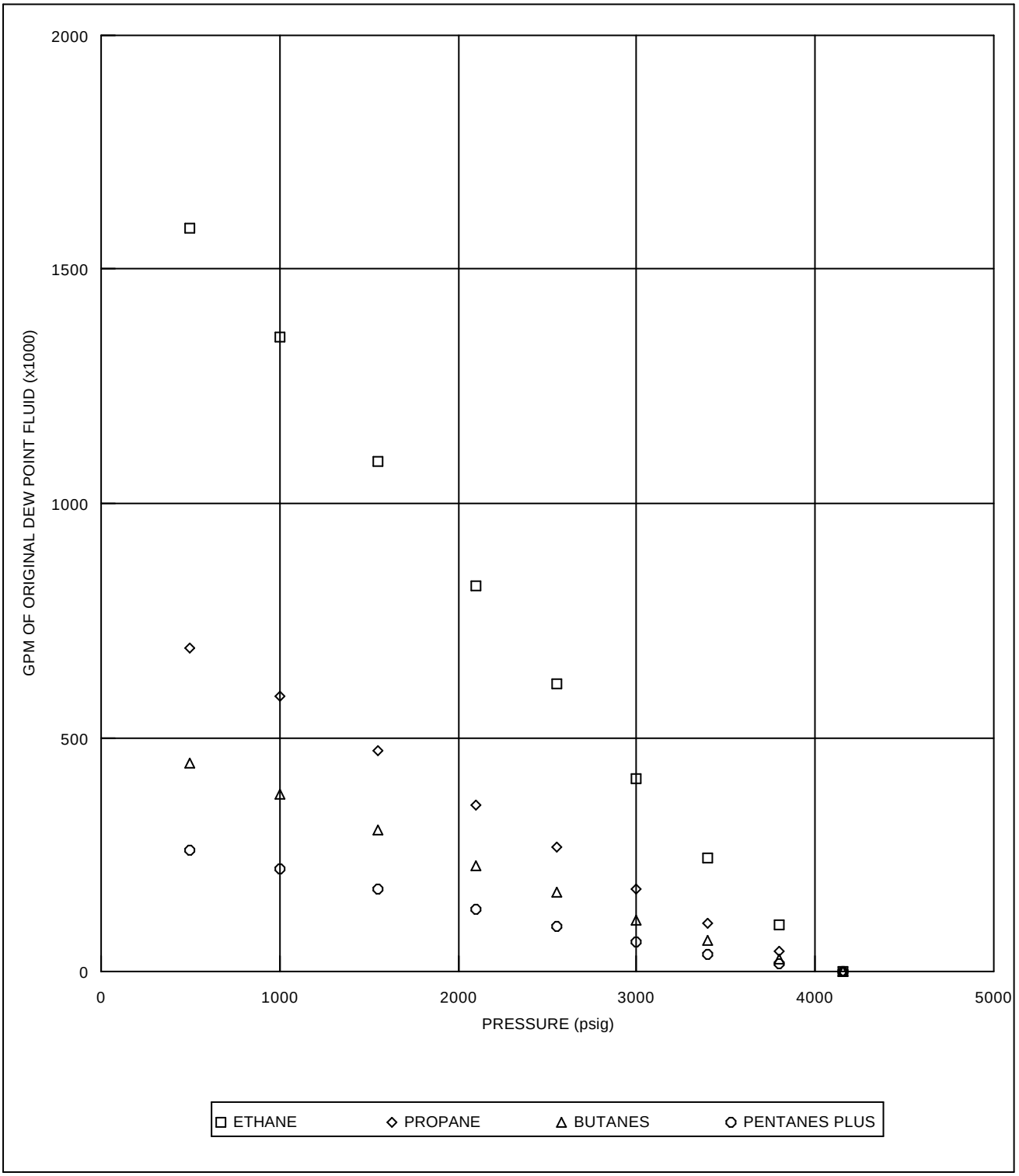
PLANT PRODUCTS IN PRODUCED WELL STREAMS
PRODUCED DURING CONSTANT VOLUME DEPLETION

Ethane Plus GPM C o n t e n t = +1.92E+03 -5.17E-01 * P +2.79E-05 * P^2 -1.59E-08 * P^3 +2.97E-12 * P^4
Propane Plus GPM C o n t e n t = +9.07E+02 -2.55E-01 * P +2.02E-05 * P^2 -9.08E-09 * P^3 +1.52E-12 * P^4
Butanes Plus GPM C o n t e n t = +6.96E+02 -2.07E-01 * P +2.40E-05 * P^2 -9.13E-09 * P^3 +1.35E-12 * P^4
Pentanes Plus GPM C o n t e n t = +1.46E+03 -5.25E-01 * P +1.52E-04 * P^2 -4.86E-08 * P^3 +5.29E-12 * P^4



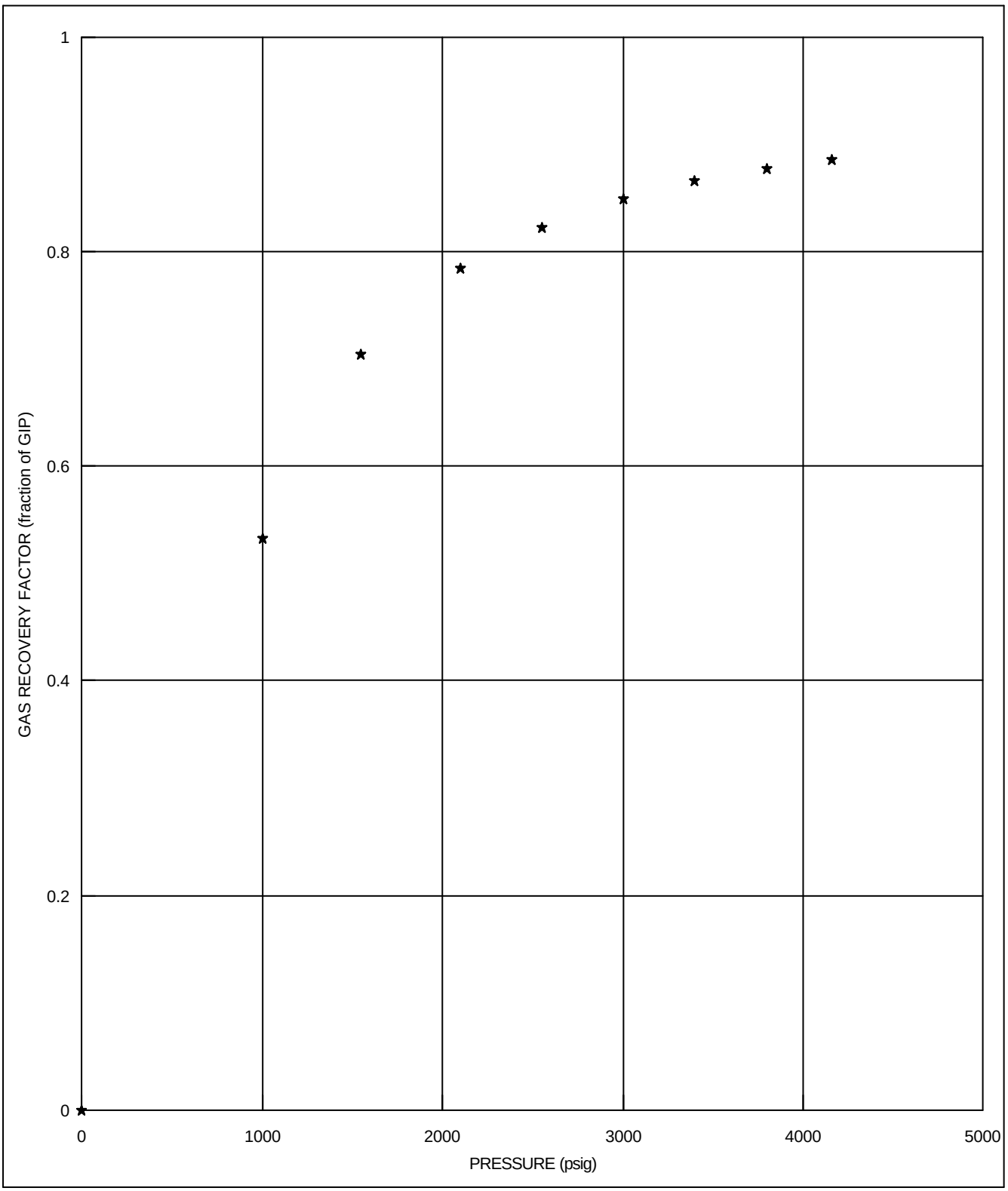
PLANT PRODUCTS
IN PRIMARY SEPARATOR GAS

Ethane Plus GPM C o n t e n t = +1.83E+03 -4.82E-01 * P +1.77E-05 * P^2 -1.28E-08 * P^3 +2.64E-12 * P^4
Propane Plus GPM C o n t e n t = +7.94E+02 -2.11E-01 * P +7.03E-06 * P^2 -5.13E-09 * P^3 +1.10E-12 * P^4
Butanes Plus GPM C o n t e n t = +5.12E+02 -1.35E-01 * P +1.95E-06 * P^2 -2.48E-09 * P^3 +6.41E-13 * P^4
Pentanes Plus GPM C o n t e n t = +2.97E+02 -7.51E-02 * P -1.33E-06 * P^2 -8.24E-10 * P^3 +3.27E-13 * P^4



GAS RECOVERY FACTOR

Gas Recovery Factor = -2.20E-01 +1.17E-03 * P -5.17E-07 * P^2 +1.07E-10 * P^3 -8.42E-15 * P^4



(B) Amdel Reports

24 February 2005

Upstream Origin Energy
Bass Gas Plant
GPO Box 2576
Adelaide
SA 5001

Attention: Joe Parvar

REPORT 05PEAD00711

CLIENT REFERENCE:

WELL NAME/RE: Trefoil #1, DST #1, 1.16, Zone 3141.0-3150.0

MATERIAL: Condensate

WORK REQUIRED: Crude oil assay

AUTHOR'S NAME: Mohammad Massoumi

Please direct technical enquiries regarding this work, to the signatory below, under whose supervision the work was carried out. This report relates specifically to the sample or samples submitted for testing.

Diane Cass
Operations Manager
Petroleum Services

dc.rn

\\jupiter\Petroleum\Secretary\petroleum\Docs-05\05pead00711.doc

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CRUDE OIL ASSAY

Trefoil #1, DST #1

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True Boiling Point Distillation	2-3
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Gas Chromatogram	Appendix

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00711

Sample: Condensate
Trefoil #1, DST #1
1.16, Zone 3141.0-3150.0

Method		Description	Units	Condensate
	ASTM D974	Acid Number*	mg KOH/g	0.02
	ASTM D3279	Asphaltenes	% wt	0.02
	ASTM D482	Ash Content	% wt	<0.01
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.7808
	by FTIR	Methanol	% wt	<1
	ASTM D5185	Trace Elements*		
		Silver*	mg/kg	<1
		Aluminium*	mg/kg	<1
		Boron*	mg/kg	<1
		Barium*	mg/kg	<1
		Calcium*	mg/kg	<1
		Chromium*	mg/kg	<1
		Copper*	mg/kg	<1
		Iron*	mg/kg	<1
		Magnesium*	mg/kg	<1
		Manganese*	mg/kg	<1
		Molybdenum*	mg/kg	<1
		Sodium*	mg/kg	<1
		Nickel*	mg/kg	<1
		Phosphorus*	mg/kg	1
		Lead*	mg/kg	<1
		Silicon*	mg/kg	<1
		Tin*	mg/kg	<1
		Titanium*	mg/kg	<1
		Vanadium*	mg/kg	<1
		Zinc*	mg/kg	<1
IP71	ASTM D445	Kinematic Viscosity @ 40°C*	cSt	0.953
IP224		Lead Content	µg/L	40
UOP296		Arsenic Content	µg/L	<5
	In-House	Mercury Content	µg/kg	100
	ASTM D5453	Sulphur Content	mg/kg	55.22
IP15	ASTM D97	Pour Point*	°C	0
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.7811
	ASTM D3227	H2S	mg/kg	<1
	ASTM D3227	Mercaptans	mg/kg	<1
UOP 46		Paraffin Wax Content	% wt	9.8
	ASTM D96	Water	%vol	<0.05
	ASTM D96	Sediment	%vol	<0.05
IP160/9(	ASTM D1298	API Gravity*	degrees	49.65

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 24-Feb-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

TABLE 1

ASTM D2892 DISTILLATION AND DENSITIES :
Condensate (Trefoil #1, DST #1, 1.16 Zone 3141.0-3150.0)
Report # 05PEAD00711

Temp (deg F)	Temp (deg C)	Density at 15 °C	Cumulative Weight (%)	Cumulative Volume (%)	Mid Volume (%)	Specific Gravity (60/60 °F)	API Gravity
LPG	LPG	0.5780	2.4	3.3	1.6	0.5782	113.2
158.0	70.0	0.6691	8.7	10.6	6.9	0.6693	79.9
194.0	90.0	0.7345	16.0	18.3	14.4	0.7347	61.1
212.0	100.0	0.7547	22.6	25.2	21.7	0.7549	55.9
230.0	110.0	0.7807	31.5	34.1	29.6	0.7809	49.7
257.0	125.0	0.7767	38.8	41.5	37.8	0.7770	50.6
284.0	140.0	0.7902	47.0	49.5	45.5	0.7905	47.5
302.0	150.0	0.7937	51.3	53.7	51.6	0.7940	46.7
338.0	170.0	0.7917	58.6	60.9	57.3	0.7921	47.1
374.0	190.0	0.7914	63.6	65.8	63.4	0.7918	47.2
410.0	210.0	0.8075	70.1	72.1	69.0	0.8079	43.6
446.0	230.0	0.8268	75.1	76.9	74.5	0.8272	39.6
502.2	261.2	0.8427	82.0	83.3	80.1	0.8431	36.3
626.0	330.0	0.8344	92.3	92.9	88.1	0.8348	38.0
626+	330+	0.8273	99.9	100.1	96.5	0.8277	39.5

This report relates specifically to the sample tested.

Approved Signatory _____

Mohammad Massoumi

Accreditation No: 2013

Date 23-Feb-05

TABLE 2

ASTM D2892 DISTILLATION AND DENSITIES
Condensate (Trefoil #1, DST #1, 1.16 Zone 3141.0-3150.0)
Report # 05PEAD00711

Temp (deg F)	Temp (deg C)	Weight (%)	Volume (%)
LPG	LPG	2.4	3.3
158.0	70.0	6.3	7.3
194.0	90.0	7.3	7.7
212.0	100.0	6.6	6.9
230.0	110.0	8.9	8.9
257.0	125.0	7.4	7.4
284.0	140.0	8.2	8.1
302.0	150.0	4.3	4.2
338.0	170.0	7.3	7.2
374.0	190.0	5.0	4.9
410.0	210.0	6.5	6.3
446.0	230.0	5.1	4.8
502.2	261.2	6.9	6.4
626.0	330.0	10.3	9.6
626+	330+	7.6	7.2

This report relates specifically to the sample tested.

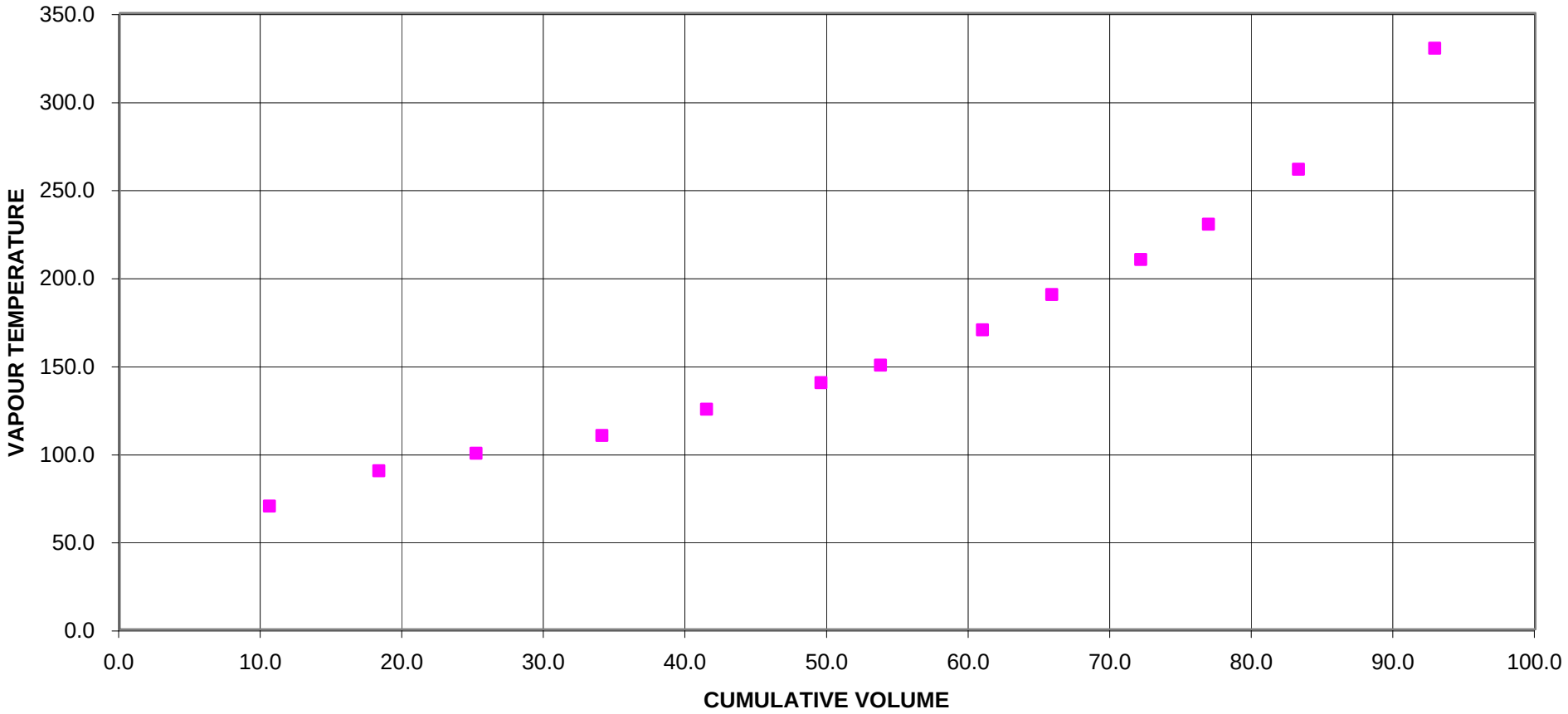
Approved Signatory _____

Mohammad Massoumi

Accreditation No: 2013

Date 23-Feb-05

TRUE BOILING POINT CURVE CONDENSATE
Trefoil #1, DST #1, 1.16 Zone 3141.0-3150.0



PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00711

Sample: Condensate
Trefoil #1, DST #1
1.16, Zone 3141.0-3150.0

Method		Description	Units	Cut C5-70°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.6691
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.6692
IP160/9(	ASTM D1298	API Gravity*	degrees	79.95
	ASTM D5453	Sulphur Content	mg/kg	7.14
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	0.433

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 23-Feb-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00711

Sample: Condensate
Trefoil #1, DST #1
1.16, Zone 3141.0-3150.0

Method		Description	Units	Cut 70-150°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.7709
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.7712
IP160/9(	ASTM D1298	API Gravity*	degrees	51.98
	ASTM D5453	Sulphur Content	mg/kg	4.39
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	0.678

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 23-Feb-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00711

Sample: Condensate
Trefoil #1, DST #1
1.16, Zone 3141.0-3150.0

Method		Description	Units	Cut C5-190°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.7640
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.7643
IP160/9(	ASTM D1298	API Gravity*	degrees	53.64
	ASTM D5453	Sulphur Content	mg/kg	4.39
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	0.661

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 23-Feb-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00711

Sample: Condensate
Trefoil #1, DST #1
1.16, Zone 3141.0-3150.0

Method		Description	Units	Cut 140-230°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.8017
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.8021
IP160/9(	ASTM D1298	API Gravity*	degrees	44.91
	ASTM D5453	Sulphur Content	mg/kg	19.88
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	1.172
IP71	ASTM D445	Kinematic Viscosity @ 40°C*	cSt	0.967
	ASTM D341	Kinematic Viscosity @ -30°C	cSt	3.635
	ASTM D1322	Smoke Point*	mm	19.0
IP16	ASTM D2386	Freezing Point*	°C	-56.5
	ASTM D611	Aniline Point*	°C	47.2

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 23-Feb-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00711

Sample: Condensate
Trefoil #1, DST #1
1.16, Zone 3141.0-3150.0

Method		Description	Units	Cut 190-230°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.8159
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.8163
IP160/9(	ASTM D1298	API Gravity*	degrees	41.84
	ASTM D5453	Sulphur Content	mg/kg	38.36
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	1.710
IP71	ASTM D445	Kinematic Viscosity @ 40°C*	cSt	1.356
	ASTM D341	Kinematic Viscosity @ -30°C	cSt	6.781
	ASTM D1322	Smoke Point*	mm	16.0
IP16	ASTM D2386	Freezing Point*	°C	-36.0
	ASTM D611	Aniline Point*	°C	58.8

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 23-Feb-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00711

Sample: Condensate
Trefoil #1, DST #1
1.16, Zone 3141.0-3150.0

Method		Description	Units	Cut 230-330°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.8363
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.8367
IP160/9(	ASTM D1298	API Gravity*	degrees	37.62
	ASTM D5453	Sulphur Content	mg/kg	195.75
	ASTM D2500	Cloud Point*	°C	0
IP71	ASTM D445	Kinematic Viscosity @ 40°C*	cSt	3.261
	ASTM D189	Conradson Carbon Residue on 10% Distillation*	% wt	0.003
	ASTM D976	Calculated Cetane Index*		53.5
	ASTM D611	Aniline Point*	°C	75.4

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 23-Feb-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00711

Sample: Condensate
Trefoil #1, DST #1
1.16, Zone 3141.0-3150.0

Method		Description	Units	Cut 330°C+
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.8273
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.8277
IP160/96	ASTM D1298	API Gravity*	degrees	39.46
	ASTM D5453	Sulphur Content	% wt	<0.01
	ASTM D97	Pour Point*	°C	42
IP71	ASTM D445	Kinematic Viscosity @ 50°C	cSt	7.271
	ASTM D189	Conradson Carbon Residue	% wt	0.092
	ASTM D664	Acid Number	mg KOH/g	0.20
	ASTM D482	Ash Content	% wt	<0.01
	ASTM D5185	Trace Elements*		
		Silver*	mg/kg	<1
		Aluminium*	mg/kg	1
		Boron*	mg/kg	<1
		Barium*	mg/kg	<1
		Calcium*	mg/kg	3
		Chromium*	mg/kg	<1
		Copper*	mg/kg	<1
		Iron*	mg/kg	<1
		Magnesium*	mg/kg	<1
		Manganese*	mg/kg	<1
		Molybdenum*	mg/kg	<1
		Sodium*	mg/kg	2
		Nickel*	mg/kg	<1
		Phosphorus*	mg/kg	<1
		Lead*	mg/kg	<1
		Silicon*	mg/kg	325
		Tin*	mg/kg	<1
		Titanium*	mg/kg	<1
		Vanadium*	mg/kg	<1
		Zinc*	mg/kg	<1

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 23-Feb-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

Report No: 05PEAD00711

METHODS

TEST	METHODS
True Boiling Point	ASTM D2892
Density-API Gravity	ASTM D4052
Kinematic Viscosity	ASTM D445
Sulphur Content	ASTM D5453, IP336
Trace Elements	ASTM D5185
PONA	GC (gas chromatography)
Smoke Point	ASTM D1322
Freezing Point	ASTM D2386
Conradson Carbon Residue	ASTM D189
Pour Point	ASTM D97
Cloud Point	ASTM D2500
Calculated Cetane Index	ASTM D976
Mercury	AAS
Aniline Point	ASTM D611
Water and Sediment	ASTM D96
Ash Content	ASTM D482
Acid Number	ASTM D974
Lead	IP224
Hydrogen Sulphide	ASTM D3227
Mercaptans	ASTM D3227
Methanol	FTIR
Arsenic	UOP296
Gas Chromatography	GL-01-01
Wax Content	UOP46
Asphaltenes	ASTM D3279
Acid Number	ASTM D664

APPENDIX

PETROLEUM SERVICES LIQUID ANALYSIS Method GL-02-01

Client: UPSTREAM ORIGIN ENERGY RESOURCES LTD. Report # 05PEAD00711

Sample: TREFOIL# 1, DST# 1
Sample# 1.16, Zone: 3141.0-3150.0
12/12/2004

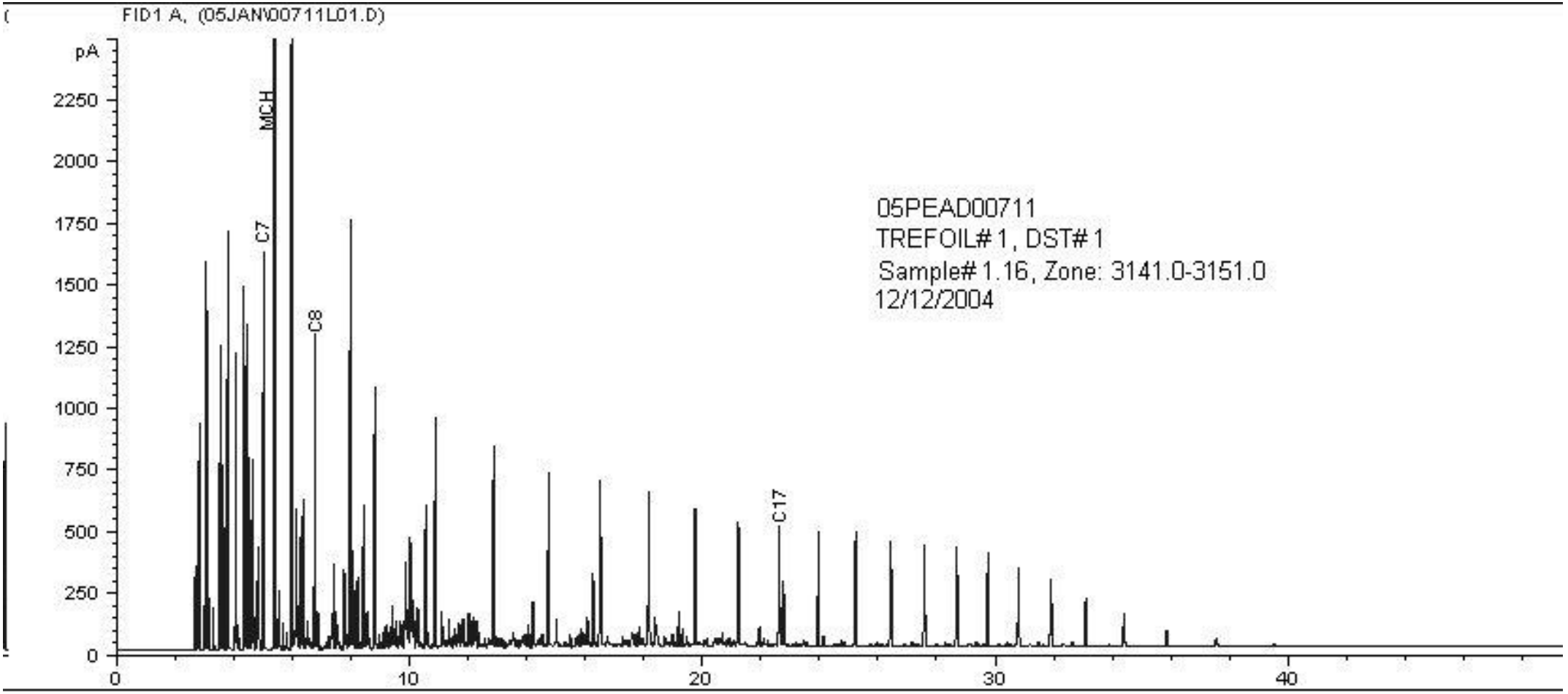
Boiling Point Range (Deg.C)	Component	Weight%	Mol%
-88.6	ETHANE	0.03	0.12
-42.1	PROPANE	0.31	0.89
-11.7	I-BUTANE	0.49	1.05
-0.5	N-BUTANE	0.88	1.90
27.9	I-PENTANE	1.56	2.71
36.1	N-PENTANE	1.42	2.46
36.1-68.9	HEXANE, C-6	5.19	7.54
80.0	BENZENE	2.07	3.33
80.7	CYCLOHEXANE	1.87	2.78
68.9-98.3	HEPTANE,C-7	8.96	11.17
100.9	METHYLCYCLOHEXANE	6.03	7.70
110.6	TOLUENE	6.01	8.18
98.3-125.6	OCTANE, C-8	8.71	9.55
136.1-144.4	ETHYLBZ+XYLENES	7.87	9.29
125.6-150.6	C-9	6.79	6.64
150.6-173.9	C-10	0.26	0.23
173.9-196.1	C-11	5.88	4.71
196.1-215.0	C-12	4.77	3.51
215.0-235.0	C-13	4.90	3.33
235.0-252.2	C-14	3.71	2.34
252.2-270.6	C-15	3.83	2.26
270.6-287.8	C-16	2.69	1.49
287.8-302.8	C-17	2.24	1.17
302.8-317.2	C-18	2.53	1.25
317.2-330.0	C-19	1.61	0.75
330.0-344.4	C-20	1.50	0.67
344.4-357.2	C-21	1.37	0.58
357.2-369.4	C-22	1.31	0.53
369.4-380.0	C-23	1.27	0.49
380.0-391.1	C-24	1.15	0.43
391.1-401.7	C-25	1.01	0.36
401.7-412.2	C-26	0.72	0.25
412.2-422.2	C-27	0.54	0.18
>422.2	C-28+	0.52	0.16
	Total	100.00	100.00
	(0.00 = LESS THAN 0.01%)		

The above boiling point ranges refer to the normal paraffin hydrocarbon boiling in that range. Aromatics, branched hydrocarbons, naphthenes and olefins may have higher or lower carbon numbers but are grouped and reported according to their boiling points.

Average molecular weight of C-8 plus fraction (calc) = 147 g/mol

This report relates specifically to the sample submitted for analysis.

Approved Signatory
Accreditation No: 2013
Date 23-Feb-05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pA
2250
2000
1750
1500
1250
1000
750
500
250
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MCH
C7
C8
C17
0
10
20
30
40
05PEAD00711
TREFOIL# 1, DST# 1
Sample# 1.16, Zone: 3141.0-3151.0
12/12/2004

Report: 05PEAD00711
Sample : TREFOIL-1 DST-1, CUT C5-70°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	0.019	0.025	0.034
2	i C 4	0.155	0.188	0.211
3	n C 4	0.924	1.065	1.255
4	22 DMC 3	3.114	3.387	3.407
5	i C 5	16.832	18.116	18.416
6	n C 5	17.204	18.336	18.823
7	22 DMC 4	2.171	2.234	1.991
8	CYC 5	2.849	2.550	3.206
9	23 DMC 4	3.478	3.508	3.186
10	2 MC 5	13.643	13.939	12.497
11	3 MC 5	7.507	7.539	6.876
12	n C 6	12.626	12.761	11.565
13	22 DMC 5	0.257	0.255	0.202
14	M CYC 5	6.658	5.936	6.245
15	24 DMC 5	0.319	0.316	0.251
16	223 TMC 4	0.091	0.088	0.072
17	BZ	7.906	6.004	7.989
18	33 DMC 5	0.056	0.054	0.044
19	CYC 6	2.747	2.354	2.576
20	2 MC 6	0.340	0.334	0.268
21	23 DMC 5	0.099	0.095	0.078
22	11 DMCYC 5	0.102	0.090	0.082
23	3 MC 6	0.228	0.221	0.179
24	t 13 DMCYC 5	0.099	0.089	0.080
25	c 13 DMCYC 5	0.088	0.079	0.071
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	0.115	0.104	0.093
28	n C7	0.126	0.123	0.099
29	MCYC 6	0.166	0.144	0.133
30	22 DMC 6	-	-	-
31	ECYC 5	-	-	-
32	25 DMC 6	-	-	-
33	24 DMC 6	-	-	-
34	tc 124 TMCYC 5	-	-	-
35	234 TMC 5	-	-	-
36	tc 123 TMCYC 5	-	-	-
37	233 TMC 5	-	-	-
38	TOL	0.083	0.064	0.071
39	23 DMC 6	-	-	-
40	2 M 3 EC 5	-	-	-
41	2 MC 7	-	-	-
42	4 MC 7	-	-	-
43	34 DMC 6	-	-	-
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	-	-	-
46	1 M 2 E CYC 5	-	-	-

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	-	-	-
48	C 8-N	-	-	-
49	C 8-P	-	-	-
50	C 8-N	-	-	-
51	C 8-N	-	-	-
52	c 1 M 3 ECYC 6	-	-	-
53	C 8-P	-	-	-
54	t 12 DMCYC 6	-	-	-
55	n C 8	-	-	-
56	C 8-N	-	-	-
57	unk	-	-	-
58	C 9-P	-	-	-
59	unk	-	-	-
60	C 9-P	-	-	-
61	C 9-P	-	-	-
62	n C 3 CYC 5	-	-	-
63	N	-	-	-
64	113 TMCYC 6	-	-	-
65	C 9-P	-	-	-
66	C 9-P	-	-	-
67	N	-	-	-
68	N	-	-	-
69	N	-	-	-
70	E BZ	-	-	-
71	114 TMCYC 6	-	-	-
72	unk	-	-	-
73	unk	-	-	-
74	m+p XYL	-	-	-
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	-	-	-
79	2 MC 8	-	-	-
80	C 9-P	-	-	-
81	3 MC 8	-	-	-
82	N	-	-	-
83	o XYL	-	-	-
84	unk	-	-	-
85	unk	-	-	-
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	-	-	-
88	c 1 M 4 ECYC 6	-	-	-
89	N	-	-	-
90	N	-	-	-
91	N	-	-	-
92	n C9	-	-	-
93	1 M 1 ECYC 6	-	-	-
94	C 9-N	-	-	-
95	i PBZ	-	-	-
96	C 10-P	-	-	-
97	C 9-N	-	-	-
98	C 9-N	-	-	-
99	C 10-P	-	-	-
100	C 10-P	-	-	-
101	unk	-	-	-

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	-	-	-
103	s BCYC 5	-	-	-
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	-	-	-
107	C 10-P	-	-	-
108	unk	-	-	-
109	unk	-	-	-
110	n PBZ	-	-	-
111	N	-	-	-
112	unk	-	-	-
113	unk	-	-	-
114	m E TOL	-	-	-
115	p E TOL	-	-	-
116	135 TM BZ	-	-	-
117	N	-	-	-
118	C 10-N	-	-	-
119	C 10-P	-	-	-
120	2 MC 9	-	-	-
121	o E TOL	-	-	-
122	C 10-P	-	-	-
123	36 DMC 8	-	-	-
124	N	-	-	-
125	C 10-N	-	-	-
126	124 TM BZ	-	-	-
127	C 10-N	-	-	-
128	N	-	-	-
129	C 10-N	-	-	-
130	N	-	-	-
131	N	-	-	-
132	N	-	-	-
133	C 10-P	-	-	-
134	n C 10	-	-	-
135	unk	-	-	-
136	unk	-	-	-
137	123 TM BZ	-	-	-
138	unk	-	-	-
139	unk	-	-	-
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	-	-	-
143	C 10-N	-	-	-
144	C 11-P	-	-	-
145	unk	-	-	-
146	C 10-N	-	-	-
147	unk	-	-	-
148	unk	-	-	-
149	C 10-A	-	-	-
150	C 10-A	-	-	-
151	C 10-A	-	-	-
152	unk	-	-	-
153	C 10-A	-	-	-
154	unk	-	-	-
155	unk	-	-	-
156	unk	-	-	-

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	-	-	-
159	C 11-P	-	-	-
160	C 11-P	-	-	-
161	C 11-P	-	-	-
162	C 10-A	-	-	-
163	C 11-P	-	-	-
164	C 10-A	-	-	-
165	unk	-	-	-
166	unk	-	-	-
167	unk	-	-	-
168	C 10-A	-	-	-
169	n C 11	-	-	-
170	unk	-	-	-
171	C 10-A	-	-	-
172	unk	-	-	-
173	C 10-A	-	-	-
174	unk	-	-	-
175	unk	-	-	-
176	unk	-	-	-
177	unk	-	-	-
178	unk	-	-	-
179	C 12-P	-	-	-
180	unk	-	-	-
181	unk	-	-	-
182	unk	-	-	-
183	unk	-	-	-
184	C 11-A	-	-	-
185	unk	-	-	-
186	C 12-P	-	-	-
187	C 11-A	-	-	-
188	unk	-	-	-
189	n C 12	-	-	-

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	79.187	82.585	79.454
Naphthenes	12.824	11.347	12.486
Aromatics	7.989	6.068	8.060
Unknowns	0.000	0.000	0.000
Olefins	<0.1	<0.1	<0.1
Average molecular weight	79.66	Density @ 15°C	0.6691

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

Report: 05PEAD00711
Sample : TREFOIL-1 DST-1, CUT 70-150°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	-	-	-
2	i C 4	-	-	-
3	n C 4	0.009	0.012	0.016
4	22 DMC 3	0.030	0.038	0.042
5	i C 5	0.123	0.153	0.172
6	n C 5	0.172	0.211	0.240
7	22 DMC 4	0.056	0.066	0.065
8	CYC 5	0.084	0.086	0.120
9	23 DMC 4	0.202	0.235	0.236
10	2 MC 5	0.918	1.081	1.073
11	3 MC 5	0.737	0.853	0.861
12	n C 6	2.415	2.814	2.821
13	22 DMC 5	0.216	0.247	0.217
14	M CYC 5	2.209	2.269	2.642
15	24 DMC 5	0.337	0.385	0.339
16	223 TMC 4	0.105	0.117	0.105
17	BZ	3.125	2.735	4.026
18	33 DMC 5	0.163	0.180	0.163
19	CYC 6	3.362	3.321	4.021
20	2 MC 6	2.255	2.556	2.265
21	23 DMC 5	0.600	0.664	0.602
22	11 DMCYC 5	0.460	0.469	0.472
23	3 MC 6	2.185	2.450	2.195
24	t 13 DMCYC 5	0.809	0.841	0.829
25	c 13 DMCYC 5	0.909	0.940	0.932
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	1.193	1.242	1.223
28	n C7	5.287	5.948	5.310
29	MCYC 6	11.873	11.869	12.171
30	22 DMC 6	0.249	0.275	0.219
31	ECYC 5	0.342	0.343	0.350
32	25 DMC 6	0.546	0.606	0.481
33	24 DMC 6	0.407	0.448	0.359
34	tc 124 TMCYC 5	0.305	0.307	0.273
35	234 TMC 5	0.100	0.107	0.088
36	tc 123 TMCYC 5	0.230	0.230	0.206
37	233 TMC 5	-	-	-
38	TOL	17.362	15.404	18.970
39	23 DMC 6	0.258	0.279	0.227
40	2 M 3 EC 5	0.037	0.040	0.033
41	2 MC 7	2.011	2.216	1.772
42	4 MC 7	0.665	0.726	0.586
43	34 DMC 6	0.123	0.132	0.109
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	1.778	1.935	1.567
46	1 M 2 E CYC 5	2.169	2.229	1.946

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	1.039	1.048	0.932
48	C 8-N	0.402	0.397	0.361
49	C 8-P	-	-	-
50	C 8-N	0.116	0.115	0.104
51	C 8-N	0.105	0.103	0.094
52	c 1 M 3 ECYC 6	0.144	0.146	0.115
53	C 8-P	0.035	0.038	0.031
54	t 12 DMCYC 6	0.851	0.822	0.763
55	n C 8	5.319	5.824	4.687
56	C 8-N	0.597	0.590	0.536
57	unk	0.044	0.044	0.038
58	C 9-P	0.112	0.119	0.088
59	unk	0.021	0.020	0.019
60	C 9-P	0.179	0.192	0.140
61	C 9-P	0.477	0.510	0.374
62	n C 3 CYC 5	1.207	1.196	1.082
63	N	0.009	0.009	0.008
64	113 TMCYC 6	0.542	0.534	0.432
65	C 9-P	0.272	0.291	0.213
66	C 9-P	0.086	0.092	0.068
67	N	0.016	0.016	0.015
68	N	0.019	0.018	0.017
69	N	0.037	0.036	0.033
70	E BZ	1.239	1.099	1.175
71	114 TMCYC 6	0.221	0.221	0.176
72	unk	0.028	0.027	0.023
73	unk	-	-	-
74	m+p XYL	10.908	9.774	10.342
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	0.635	0.678	0.498
79	2 MC 8	0.956	1.034	0.750
80	C 9-P	0.100	0.107	0.078
81	3 MC 8	0.883	0.943	0.693
82	N	0.093	0.093	0.083
83	o XYL	1.813	1.585	1.719
84	unk	-	-	-
85	unk	0.091	0.088	0.077
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	0.307	0.296	0.245
88	c 1 M 4 ECYC 6	0.144	0.142	0.115
89	N	-	-	-
90	N	0.077	0.076	0.061
91	N	-	-	-
92	n C9	2.694	2.888	2.115
93	1 M 1 ECYC 6	0.128	0.125	0.102
94	C 9-N	0.023	0.023	0.019
95	i PBZ	0.023	0.021	0.019
96	C 10-P	0.009	0.010	0.007
97	C 9-N	0.053	0.052	0.043
98	C 9-N	0.133	0.129	0.106
99	C 10-P	-	-	-
100	C 10-P	0.065	0.069	0.046
101	unk	0.040	0.038	0.031

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	0.040	0.042	0.028
103	s BCYC 5	0.160	0.156	0.128
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	0.102	0.108	0.072
107	C 10-P	0.019	0.020	0.013
108	unk	-	-	-
109	unk	0.023	0.022	0.017
110	n PBZ	0.007	0.006	0.006
111	N	0.021	0.020	0.015
112	unk	0.088	0.085	0.066
113	unk	-	-	-
114	m E TOL	-	-	-
115	p E TOL	-	-	-
116	135 TM BZ	0.246	0.219	0.206
117	N	0.119	0.114	0.085
118	C 10-N	0.009	0.009	0.007
119	C 10-P	0.181	0.189	0.128
120	2 MC 9	0.023	0.025	0.016
121	o E TOL	0.023	0.020	0.019
122	C 10-P	-	-	-
123	36 DMC 8	0.065	0.069	0.046
124	N	-	-	-
125	C 10-N	-	-	-
126	124 TM BZ	0.109	0.096	0.092
127	C 10-N	-	-	-
128	N	-	-	-
129	C 10-N	-	-	-
130	N	-	-	-
131	N	-	-	-
132	N	-	-	-
133	C 10-P	-	-	-
134	n C 10	0.056	0.059	0.039
135	unk	-	-	-
136	unk	-	-	-
137	123 TM BZ	-	-	-
138	unk	-	-	-
139	unk	-	-	-
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	-	-	-
143	C 10-N	-	-	-
144	C 11-P	-	-	-
145	unk	-	-	-
146	C 10-N	-	-	-
147	unk	-	-	-
148	unk	-	-	-
149	C 10-A	-	-	-
150	C 10-A	-	-	-
151	C 10-A	-	-	-
152	unk	-	-	-
153	C 10-A	-	-	-
154	unk	-	-	-
155	unk	-	-	-
156	unk	-	-	-

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	-	-	-
159	C 11-P	-	-	-
160	C 11-P	-	-	-
161	C 11-P	-	-	-
162	C 10-A	-	-	-
163	C 11-P	-	-	-
164	C 10-A	-	-	-
165	unk	-	-	-
166	unk	-	-	-
167	unk	-	-	-
168	C 10-A	-	-	-
169	n C 11	-	-	-
170	unk	-	-	-
171	C 10-A	-	-	-
172	unk	-	-	-
173	C 10-A	-	-	-
174	unk	-	-	-
175	unk	-	-	-
176	unk	-	-	-
177	unk	-	-	-
178	unk	-	-	-
179	C 12-P	-	-	-
180	unk	-	-	-
181	unk	-	-	-
182	unk	-	-	-
183	unk	-	-	-
184	C 11-A	-	-	-
185	unk	-	-	-
186	C 12-P	-	-	-
187	C 11-A	-	-	-
188	unk	-	-	-
189	n C 12	-	-	-

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	34.293	38.081	32.293
Naphthenes	30.516	30.634	30.862
Aromatics	34.856	30.959	36.574
Unknowns	0.335	0.326	0.271
Olefins	<0.1	<0.1	<0.1
Average molecular weight	102.18	Density @ 15°C	0.7709

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

Report: 05PEAD00711
Sample : TREFOIL-1 DST-1, CUT C5-190°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	-	-	-
2	i C 4	0.011	0.016	0.020
3	n C 4	0.082	0.108	0.145
4	22 DMC 3	0.285	0.353	0.406
5	i C 5	1.679	2.060	2.393
6	n C 5	1.775	2.156	2.530
7	22 DMC 4	0.254	0.298	0.303
8	CYC 5	0.282	0.288	0.414
9	23 DMC 4	0.542	0.623	0.647
10	2 MC 5	2.007	2.337	2.394
11	3 MC 5	1.270	1.454	1.515
12	n C 6	2.972	3.423	3.546
13	22 DMC 5	0.178	0.201	0.182
14	M CYC 5	2.227	2.263	2.720
15	24 DMC 5	0.271	0.306	0.278
16	223 TMC 4	0.085	0.093	0.087
17	BZ	2.989	2.587	3.934
18	33 DMC 5	0.121	0.133	0.125
19	CYC 6	2.648	2.586	3.234
20	2 MC 6	1.631	1.828	1.674
21	23 DMC 5	0.435	0.476	0.446
22	11 DMCYC 5	0.336	0.338	0.352
23	3 MC 6	1.569	1.740	1.610
24	t 13 DMCYC 5	0.581	0.598	0.609
25	c 13 DMCYC 5	0.652	0.667	0.683
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	0.855	0.881	0.895
28	n C7	3.763	4.186	3.860
29	MCYC 6	8.428	8.331	8.825
30	22 DMC 6	0.178	0.195	0.160
31	ECYC 5	0.274	0.272	0.287
32	25 DMC 6	0.358	0.393	0.323
33	24 DMC 6	0.288	0.314	0.259
34	tc 124 TMCYC 5	0.215	0.214	0.197
35	234 TMC 5	0.073	0.078	0.066
36	tc 123 TMCYC 5	0.164	0.162	0.150
37	233 TMC 5	-	-	-
38	TOL	12.324	10.811	13.750
39	23 DMC 6	0.183	0.196	0.165
40	2 M 3 EC 5	0.023	0.024	0.020
41	2 MC 7	1.437	1.565	1.293
42	4 MC 7	0.474	0.512	0.427
43	34 DMC 6	0.088	0.092	0.079
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	1.270	1.367	1.143
46	1 M 2 E CYC 5	1.552	1.577	1.422

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	0.742	0.740	0.680
48	C 8-N	0.288	0.281	0.264
49	C 8-P	-	-	-
50	C 8-N	0.082	0.080	0.075
51	C 8-N	0.076	0.074	0.070
52	c 1 M 3 ECYC 6	0.104	0.105	0.085
53	C 8-P	0.025	0.027	0.023
54	t 12 DMCYC 6	0.613	0.585	0.561
55	n C 8	3.827	4.144	3.445
56	C 8-N	0.429	0.419	0.393
57	unk	0.031	0.031	0.027
58	C 9-P	0.082	0.087	0.066
59	unk	0.014	0.013	0.013
60	C 9-P	0.133	0.140	0.106
61	C 9-P	0.356	0.376	0.285
62	n C 3 CYC 5	0.900	0.882	0.825
63	N	-	-	-
64	113 TMCYC 6	0.409	0.399	0.333
65	C 9-P	0.215	0.227	0.172
66	C 9-P	0.071	0.075	0.057
67	N	0.014	0.014	0.013
68	N	0.014	0.014	0.013
69	N	-	-	-
70	E BZ	0.940	0.824	0.910
71	114 TMCYC 6	0.198	0.195	0.161
72	unk	0.023	0.022	0.019
73	unk	0.138	0.134	0.118
74	m+p XYL	8.536	7.562	8.265
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	0.539	0.570	0.432
79	2 MC 8	0.838	0.897	0.672
80	C 9-P	0.104	0.111	0.084
81	3 MC 8	0.785	0.828	0.629
82	N	0.090	0.089	0.083
83	o XYL	1.646	1.422	1.593
84	unk	-	-	-
85	unk	0.104	0.101	0.091
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	0.381	0.363	0.310
88	c 1 M 4 ECYC 6	0.192	0.187	0.156
89	N	-	-	-
90	N	0.090	0.088	0.074
91	N	-	-	-
92	n C9	3.573	3.787	2.864
93	1 M 1 ECYC 6	0.217	0.210	0.177
94	C 9-N	0.042	0.041	0.034
95	i PBZ	0.042	0.038	0.036
96	C 10-P	0.020	0.021	0.014
97	C 9-N	0.124	0.120	0.101
98	C 9-N	0.257	0.248	0.209
99	C 10-P	-	-	-
100	C 10-P	0.175	0.183	0.126
101	unk	0.104	0.100	0.083

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	0.135	0.141	0.098
103	s BCYC 5	0.432	0.417	0.352
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	0.375	0.392	0.271
107	C 10-P	0.071	0.074	0.051
108	unk	-	-	-
109	unk	0.096	0.092	0.073
110	n PBZ	0.059	0.052	0.051
111	N	0.079	0.075	0.058
112	unk	0.299	0.286	0.229
113	unk	0.045	0.043	0.035
114	m E TOL	0.034	0.030	0.029
115	p E TOL	0.025	0.022	0.022
116	135 TM BZ	1.011	0.888	0.864
117	N	0.646	0.616	0.474
118	C 10-N	0.051	0.048	0.037
119	C 10-P	1.442	1.485	1.042
120	2 MC 9	0.288	0.300	0.208
121	o E TOL	0.288	0.249	0.246
122	C 10-P	0.073	0.077	0.053
123	36 DMC 8	0.700	0.731	0.506
124	N	0.093	0.089	0.068
125	C 10-N	0.062	0.059	0.046
126	124 TM BZ	1.809	1.571	1.547
127	C 10-N	-	-	-
128	N	0.127	0.121	0.093
129	C 10-N	0.093	0.089	0.068
130	N	-	-	-
131	N	-	-	-
132	N	-	-	-
133	C 10-P	-	-	-
134	n C 10	3.029	3.161	2.188
135	unk	0.088	0.082	0.067
136	unk	0.085	0.080	0.065
137	123 TM BZ	0.161	0.137	0.138
138	unk	0.361	0.342	0.268
139	unk	0.104	0.099	0.077
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	0.079	0.070	0.061
143	C 10-N	0.248	0.237	0.182
144	C 11-P	0.186	0.192	0.123
145	unk	-	-	-
146	C 10-N	0.254	0.242	0.186
147	unk	-	-	-
148	unk	0.059	0.055	0.043
149	C 10-A	0.059	0.053	0.045
150	C 10-A	0.220	0.195	0.169
151	C 10-A	-	-	-
152	unk	0.096	-	-
153	C 10-A	0.288	0.255	0.221
154	unk	0.051	0.048	0.036
155	unk	0.040	0.038	0.028
156	unk	0.141	0.134	0.101

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	0.169	0.150	0.130
159	C 11-P	0.068	0.070	0.045
160	C 11-P	0.181	0.186	0.119
161	C 11-P	0.023	0.023	0.015
162	C 10-A	0.141	0.125	0.108
163	C 11-P	0.071	0.073	0.046
164	C 10-A	0.051	0.045	0.039
165	unk	0.028	0.027	0.020
166	unk	-	-	-
167	unk	0.042	0.040	0.030
168	C 10-A	0.023	0.020	0.017
169	n C 11	0.807	0.831	0.531
170	unk	-	-	-
171	C 10-A	-	-	-
172	unk	-	-	-
173	C 10-A	0.037	0.033	0.028
174	unk	0.034	0.032	0.023
175	unk	-	-	-
176	unk	-	-	-
177	unk	-	-	-
178	unk	-	-	-
179	C 12-P	-	-	-
180	unk	-	-	-
181	unk	-	-	-
182	unk	-	-	-
183	unk	-	-	-
184	C 11-A	-	-	-
185	unk	-	-	-
186	C 12-P	-	-	-
187	C 11-A	-	-	-
188	unk	-	-	-
189	n C 12	0.025	0.026	0.015

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	41.521	45.759	40.382
Naphthenes	25.565	25.302	25.969
Aromatics	30.930	27.139	32.203
Unknowns	1.984	1.799	1.446
Olefins	<0.1	<0.1	<0.1
Average molecular weight	105.58	Density @ 15°C	0.7640

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

Report: 05PEAD00711
Sample : TREFOIL-1 DST-1, CUT 140-230°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	-	-	-
2	i C 4	-	-	-
3	n C 4	-	-	-
4	22 DMC 3	-	-	-
5	i C 5	-	-	-
6	n C 5	-	-	-
7	22 DMC 4	-	-	-
8	CYC 5	-	-	-
9	23 DMC 4	-	-	-
10	2 MC 5	-	-	-
11	3 MC 5	-	-	-
12	n C 6	-	-	-
13	22 DMC 5	-	-	-
14	M CYC 5	-	-	-
15	24 DMC 5	-	-	-
16	223 TMC 4	-	-	-
17	BZ	-	-	-
18	33 DMC 5	-	-	-
19	CYC 6	-	-	-
20	2 MC 6	-	-	-
21	23 DMC 5	-	-	-
22	11 DMCYC 5	-	-	-
23	3 MC 6	-	-	-
24	t 13 DMCYC 5	-	-	-
25	c 13 DMCYC 5	-	-	-
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	-	-	-
28	n C7	-	-	-
29	MCYC 6	0.029	0.029	0.040
30	22 DMC 6	-	-	-
31	ECYC 5	-	-	-
32	25 DMC 6	-	-	-
33	24 DMC 6	-	-	-
34	tc 124 TMCYC 5	-	-	-
35	234 TMC 5	-	-	-
36	tc 123 TMCYC 5	-	-	-
37	233 TMC 5	-	-	-
38	TOL	0.106	0.096	0.155
39	23 DMC 6	-	-	-
40	2 M 3 EC 5	-	-	-
41	2 MC 7	0.039	0.043	0.045
42	4 MC 7	-	-	-
43	34 DMC 6	-	-	-
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	0.043	0.048	0.051
46	1 M 2 E CYC 5	0.121	0.126	0.144

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	0.058	0.059	0.069
48	C 8-N	-	-	-
49	C 8-P	-	-	-
50	C 8-N	-	-	-
51	C 8-N	-	-	-
52	c 1 M 3 ECYC 6	-	-	-
53	C 8-P	-	-	-
54	t 12 DMCYC 6	0.101	0.099	0.121
55	n C 8	0.492	0.548	0.579
56	C 8-N	0.072	0.073	0.087
57	unk	-	-	-
58	C 9-P	0.034	0.037	0.035
59	unk	-	-	-
60	C 9-P	0.058	0.063	0.061
61	C 9-P	0.203	0.220	0.212
62	n C 3 CYC 5	0.541	0.544	0.647
63	N	-	-	-
64	113 TMCYC 6	0.265	0.266	0.283
65	C 9-P	0.193	0.210	0.202
66	C 9-P	0.068	0.073	0.071
67	N	-	-	-
68	N	-	-	-
69	N	-	-	-
70	E BZ	0.647	0.583	0.818
71	114 TMCYC 6	0.290	0.294	0.308
72	unk	0.029	0.029	0.032
73	unk	0.164	0.163	0.183
74	m+p XYL	8.606	7.834	10.891
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	0.739	0.802	0.773
79	2 MC 8	1.245	1.369	1.304
80	C 9-P	0.130	0.142	0.136
81	3 MC 8	1.294	1.403	1.355
82	N	0.145	0.147	0.173
83	o XYL	2.607	2.314	3.298
84	unk	-	-	-
85	unk	0.217	0.215	0.247
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	0.845	0.828	0.899
88	c 1 M 4 ECYC 6	0.439	0.440	0.467
89	N	-	-	-
90	N	0.188	0.189	0.200
91	N	-	-	-
92	n C9	8.341	9.082	8.736
93	1 M 1 ECYC 6	0.550	0.545	0.586
94	C 9-N	0.106	0.105	0.113
95	i PBZ	0.111	0.101	0.124
96	C 10-P	0.053	0.057	0.050
97	C 9-N	0.333	0.330	0.354
98	C 9-N	0.666	0.660	0.709
99	C 10-P	0.029	0.031	0.027
100	C 10-P	0.483	0.518	0.456
101	unk	0.285	0.281	0.295

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	0.381	0.409	0.360
103	s BCYC 5	1.168	1.157	1.243
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	1.052	1.128	0.994
107	C 10-P	0.198	0.212	0.187
108	unk	-	-	-
109	unk	0.265	0.260	0.266
110	n PBZ	0.174	0.158	0.194
111	N	0.222	0.217	0.213
112	unk	0.835	0.819	0.836
113	unk	0.126	0.123	0.126
114	m E TOL	0.087	0.079	0.097
115	p E TOL	0.072	0.066	0.081
116	135 TM BZ	2.848	2.572	3.183
117	N	1.825	1.785	1.747
118	C 10-N	0.140	0.137	0.134
119	C 10-P	4.257	4.503	4.020
120	2 MC 9	0.833	0.893	0.786
121	o E TOL	0.833	0.739	0.931
122	C 10-P	0.208	0.223	0.196
123	36 DMC 8	2.013	2.158	1.900
124	N	0.265	0.260	0.254
125	C 10-N	0.179	0.175	0.171
126	124 TM BZ	5.319	4.746	5.945
127	C 10-N	-	-	-
128	N	0.377	0.368	0.361
129	C 10-N	0.270	0.264	0.259
130	N	0.039	0.038	0.037
131	N	-	-	-
132	N	-	-	-
133	C 10-P	-	-	-
134	n C 10	9.321	9.995	8.800
135	unk	0.261	0.252	0.261
136	unk	0.261	0.252	0.261
137	123 TM BZ	0.512	0.447	0.572
138	unk	1.130	1.098	1.094
139	unk	0.348	0.338	0.337
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	0.275	0.250	0.275
143	C 10-N	0.883	0.864	0.846
144	C 11-P	0.661	0.700	0.568
145	unk	-	-	-
146	C 10-N	0.956	0.935	0.915
147	unk	-	-	-
148	unk	0.265	0.253	0.254
149	C 10-A	0.275	0.250	0.275
150	C 10-A	0.801	0.729	0.802
151	C 10-A	0.048	0.044	0.048
152	unk	0.367	-	-
153	C 10-A	1.139	1.037	1.140
154	unk	0.222	0.217	0.208
155	unk	0.183	0.179	0.172
156	unk	0.671	0.657	0.628

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	0.825	0.751	0.826
159	C 11-P	0.386	0.408	0.332
160	C 11-P	0.999	1.057	0.859
161	C 11-P	0.130	0.138	0.112
162	C 10-A	0.314	0.286	0.314
163	C 11-P	0.869	0.919	0.747
164	C 10-A	0.285	0.259	0.285
165	unk	0.261	0.255	0.241
166	unk	0.135	0.132	0.125
167	unk	0.323	0.316	0.299
168	C 10-A	0.169	0.154	0.169
169	n C 11	8.249	8.726	7.089
170	unk	-	-	-
171	C 10-A	0.159	0.145	0.159
172	unk	0.183	0.179	0.170
173	C 10-A	0.362	0.330	0.362
174	unk	0.391	0.380	0.345
175	unk	-	-	-
176	unk	0.579	0.563	0.511
177	unk	0.439	0.427	0.388
178	unk	0.468	0.455	0.413
179	C 12-P	0.521	0.544	0.411
180	unk	0.174	0.169	0.153
181	unk	0.193	0.188	0.170
182	unk	0.309	0.301	0.271
183	unk	0.348	0.339	0.305
184	C 11-A	0.454	0.413	0.411
185	unk	0.743	0.724	0.653
186	C 12-P	0.188	0.196	0.148
187	C 11-A	0.676	0.615	0.613
188	unk	0.208	0.202	0.182
189	n C 12	7.129	7.441	5.624

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	50.840	54.296	47.226
Naphthenes	11.073	10.937	11.380
Aromatics	27.704	24.996	31.968
Unknowns	10.383	9.771	9.426
Olefins	<0.1	<0.1	<0.1
Average molecular weight	135.42	Density @ 15°C	0.8017

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

Report: 05PEAD00711
Sample : TREFOIL-1 DST-1, CUT 190-230°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	-	-	-
2	i C 4	-	-	-
3	n C 4	-	-	-
4	22 DMC 3	-	-	-
5	i C 5	-	-	-
6	n C 5	-	-	-
7	22 DMC 4	-	-	-
8	CYC 5	-	-	-
9	23 DMC 4	-	-	-
10	2 MC 5	-	-	-
11	3 MC 5	-	-	-
12	n C 6	-	-	-
13	22 DMC 5	-	-	-
14	M CYC 5	-	-	-
15	24 DMC 5	-	-	-
16	223 TMC 4	-	-	-
17	BZ	-	-	-
18	33 DMC 5	-	-	-
19	CYC 6	-	-	-
20	2 MC 6	-	-	-
21	23 DMC 5	-	-	-
22	11 DMCYC 5	-	-	-
23	3 MC 6	-	-	-
24	t 13 DMCYC 5	-	-	-
25	c 13 DMCYC 5	-	-	-
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	-	-	-
28	n C7	-	-	-
29	MCYC 6	-	-	-
30	22 DMC 6	-	-	-
31	ECYC 5	-	-	-
32	25 DMC 6	-	-	-
33	24 DMC 6	-	-	-
34	tc 124 TMCYC 5	-	-	-
35	234 TMC 5	-	-	-
36	tc 123 TMCYC 5	-	-	-
37	233 TMC 5	-	-	-
38	TOL	-	-	-
39	23 DMC 6	-	-	-
40	2 M 3 EC 5	-	-	-
41	2 MC 7	-	-	-
42	4 MC 7	-	-	-
43	34 DMC 6	-	-	-
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	-	-	-
46	1 M 2 E CYC 5	-	-	-

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	-	-	-
48	C 8-N	-	-	-
49	C 8-P	-	-	-
50	C 8-N	-	-	-
51	C 8-N	-	-	-
52	c 1 M 3 ECYC 6	-	-	-
53	C 8-P	-	-	-
54	t 12 DMCYC 6	-	-	-
55	n C 8	-	-	-
56	C 8-N	-	-	-
57	unk	-	-	-
58	C 9-P	-	-	-
59	unk	-	-	-
60	C 9-P	-	-	-
61	C 9-P	-	-	-
62	n C 3 CYC 5	-	-	-
63	N	-	-	-
64	113 TMCYC 6	-	-	-
65	C 9-P	-	-	-
66	C 9-P	-	-	-
67	N	-	-	-
68	N	-	-	-
69	N	-	-	-
70	E BZ	-	-	-
71	114 TMCYC 6	-	-	-
72	unk	-	-	-
73	unk	0.030	0.029	0.038
74	m+p XYL	-	-	-
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	-	-	-
79	2 MC 8	-	-	-
80	C 9-P	-	-	-
81	3 MC 8	-	-	-
82	N	-	-	-
83	o XYL	-	-	-
84	unk	-	-	-
85	unk	-	-	-
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	-	-	-
88	c 1 M 4 ECYC 6	-	-	-
89	N	-	-	-
90	N	-	-	-
91	N	-	-	-
92	n C9	0.074	0.080	0.090
93	1 M 1 ECYC 6	-	-	-
94	C 9-N	-	-	-
95	i PBZ	-	-	-
96	C 10-P	-	-	-
97	C 9-N	-	-	-
98	C 9-N	-	-	-
99	C 10-P	-	-	-
100	C 10-P	-	-	-
101	unk	-	-	-

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	-	-	-
103	s BCYC 5	-	-	-
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	-	-	-
107	C 10-P	-	-	-
108	unk	-	-	-
109	unk	-	-	-
110	n PBZ	-	-	-
111	N	-	-	-
112	unk	-	-	-
113	unk	-	-	-
114	m E TOL	-	-	-
115	p E TOL	-	-	-
116	135 TM BZ	-	-	-
117	N	0.081	0.079	0.091
118	C 10-N	-	-	-
119	C 10-P	-	-	-
120	2 MC 9	0.067	0.071	0.073
121	o E TOL	0.067	0.058	0.087
122	C 10-P	-	-	-
123	36 DMC 8	0.163	0.173	0.179
124	N	-	-	-
125	C 10-N	-	-	-
126	124 TM BZ	0.681	0.601	0.884
127	C 10-N	-	-	-
128	N	0.118	0.115	0.132
129	C 10-N	-	-	-
130	N	-	-	-
131	N	-	-	-
132	N	-	-	-
133	C 10-P	-	-	-
134	n C 10	2.725	2.888	2.988
135	unk	0.074	0.071	0.086
136	unk	0.081	0.078	0.095
137	123 TM BZ	0.178	0.153	0.231
138	unk	0.422	0.406	0.475
139	unk	0.178	0.171	0.2
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	0.170	0.153	0.198
143	C 10-N	0.659	0.637	0.733
144	C 11-P	0.511	0.534	0.510
145	unk	-	-	-
146	C 10-N	0.955	0.924	1.062
147	unk	-	-	-
148	unk	-	-	-
149	C 10-A	0.563	0.506	0.654
150	C 10-A	0.726	0.653	0.844
151	C 10-A	0.081	0.073	0.095
152	unk	0.392	-	-
153	C 10-A	1.310	1.179	1.524
154	unk	0.333	0.322	0.362
155	unk	0.148	0.143	0.161
156	unk	1.088	1.053	1.183

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	2.184	1.965	2.540
159	C 11-P	-	-	-
160	C 11-P	1.977	2.067	1.973
161	C 11-P	0.244	0.255	0.244
162	C 10-A	0.496	0.446	0.577
163	C 11-P	2.421	2.531	2.417
164	C 10-A	0.570	0.513	0.663
165	unk	0.740	0.716	0.795
166	unk	0.392	0.380	0.422
167	unk	0.837	0.809	0.899
168	C 10-A	0.429	0.386	0.499
169	n C 11	24.758	25.888	24.715
170	unk	-	-	-
171	C 10-A	0.481	0.433	0.560
172	unk	0.540	0.523	0.581
173	C 10-A	1.103	0.993	1.283
174	unk	1.251	1.203	1.282
175	unk	-	-	-
176	unk	2.051	1.971	2.102
177	unk	1.444	1.388	1.480
178	unk	1.718	1.651	1.760
179	C 12-P	1.903	1.963	1.743
180	unk	0.622	0.599	0.635
181	unk	0.748	0.720	0.763
182	unk	1.185	1.141	1.209
183	unk	1.399	1.348	1.428
184	C 11-A	1.829	1.645	1.926
185	unk	3.058	2.945	3.120
186	C 12-P	-	-	-
187	C 11-A	2.873	2.585	3.025
188	unk	0.948	0.913	0.967
189	n C 12	29.925	30.874	27.417

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	64.766	67.324	62.349
Naphthenes	1.814	1.754	2.018
Aromatics	13.741	12.343	15.590
Unknowns	19.679	18.579	20.043
Olefins	<0.1	<0.1	<0.1
Average molecular weight	157.83	Density @ 15°C	0.8159

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

11 March 2005

Upstream Origin Energy
Bass Gas Plant
GPO Box 2576
Adelaide
SA 5001

Attention: Joe Parvar

REPORT 05PEAD00716

CLIENT REFERENCE:

WELL NAME/RE: Trefoil #1, DST #2, 2.10, Zone 3040.5-3046.5

MATERIAL: Condensate

WORK REQUIRED: Crude oil assay

AUTHOR'S NAME: Mohammad Massoumi

Please direct technical enquiries regarding this work, to the signatory below, under whose supervision the work was carried out. This report relates specifically to the sample or samples submitted for testing.

Diane Cass
Operations Manager
Petroleum Services

dc.rn

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CRUDE OIL ASSAY

Trefoil #1, DST #2

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Gas Chromatogram	Appendix

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00716

Sample: Condensate
Trefoil #1, DST #2
2.10, Zone 3040.5-3046.5

Method		Description	Units	Condensate
	ASTM D974	Acid Number*	mg KOH/g	0.02
	ASTM D3279	Asphaltenes	% wt	<0.01
	ASTM D482	Ash Content	% wt	<0.01
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.7714
	by FTIR	Methanol	% wt	<1
	ASTM D5185	Trace Elements*		
		Silver*	mg/kg	<1
		Aluminium*	mg/kg	<1
		Boron*	mg/kg	<1
		Barium*	mg/kg	<1
		Calcium*	mg/kg	<1
		Chromium*	mg/kg	<1
		Copper*	mg/kg	<1
		Iron*	mg/kg	<1
		Magnesium*	mg/kg	<1
		Manganese*	mg/kg	<1
		Molybdenum*	mg/kg	<1
		Sodium*	mg/kg	<1
		Nickel*	mg/kg	<1
		Phosphorus*	mg/kg	<1
		Lead*	mg/kg	<1
		Silicon*	mg/kg	<1
		Tin*	mg/kg	<1
		Titanium*	mg/kg	<1
		Vanadium*	mg/kg	<1
		Zinc*	mg/kg	<1
IP71	ASTM D445	Kinematic Viscosity @ 40°C*	cSt	1.024
IP224		Lead Content	µg/L	40
UOP296		Arsenic Content	µg/L	<5
	In-House	Mercury Content	µg/kg	80
	ASTM D5453	Sulphur Content	mg/kg	45.68
IP15	ASTM D97	Pour Point*	°C	3
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.7717
	ASTM D3227	H2S	mg/kg	<1
	ASTM D3227	Mercaptans	mg/kg	<1
UOP 46		Paraffin Wax Content	% wt	8.5
	ASTM D96	Water	%vol	<0.05
	ASTM D96	Sediment	%vol	<0.05
IP160/9(	ASTM D1298	API Gravity*	degrees	51.86

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 9-Mar-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

TABLE 1

ASTM D2892 DISTILLATION AND DENSITIES :
Condensate (Trefoil #1, DST #2, 2.10 Zone 3040.5-3046.5)
Report # 05PEAD00716

Temp (deg F)	Temp (deg C)	Density at 15 °C	Cumulative Weight (%)	Cumulative Volume (%)	Mid Volume (%)	Specific Gravity (60/60 °F)	API Gravity
LPG	LPG	0.5920	2.0	2.6	1.3	0.5922	107.4
158.0	70.0	0.6550	7.7	9.3	6.0	0.6552	84.5
203.0	95.0	0.7224	16.6	18.8	14.1	0.7226	64.3
221.0	105.0	0.7526	25.1	27.5	23.2	0.7528	56.5
251.6	122.0	0.7602	33.9	36.4	32.0	0.7604	54.6
284.0	140.0	0.7635	40.8	43.5	39.9	0.7638	53.8
302.0	150.0	0.7742	46.3	48.9	46.2	0.7745	51.2
338.0	170.0	0.7796	54.6	57.2	53.0	0.7799	49.9
374.0	190.0	0.7862	60.1	62.5	59.8	0.7866	48.4
410.0	210.0	0.8003	67.4	69.6	66.1	0.8007	45.2
446.0	230.0	0.8101	71.4	73.4	71.5	0.8105	43.1
500.0	260.0	0.8238	77.9	79.5	76.4	0.8242	40.2
561.2	294.0	0.8276	84.2	85.3	82.4	0.8280	39.4
626.0	330.0	0.8257	90.2	90.9	88.1	0.8261	39.8
626+	330+	0.8298	100.0	100.0	95.5	0.8302	38.9

This report relates specifically to the sample tested.

Approved Signatory _____

Mohammad Massoumi

Accreditation No: 2013

Date 9-Mar-05

TABLE 2

ASTM D2892 DISTILLATION AND DENSITIES
Condensate (Trefoil #1, DST #2, 2.10 Zone 3040.5-3046.5)
Report # 05PEAD00716

Temp (deg F)	Temp (deg C)	Weight (%)	Volume (%)
LPG	LPG	2.0	2.6
158.0	70.0	5.7	6.7
203.0	95.0	8.9	9.5
221.0	105.0	8.5	8.7
251.6	122.0	8.8	8.9
284.0	140.0	6.9	7.0
302.0	150.0	5.4	5.4
338.0	170.0	8.4	8.3
374.0	190.0	5.5	5.4
410.0	210.0	7.4	7.1
446.0	230.0	4.0	3.8
500.0	260.0	6.5	6.1
561.2	294.0	6.2	5.8
626.0	330.0	6.0	5.6
626+	330+	9.8	9.1

This report relates specifically to the sample tested.

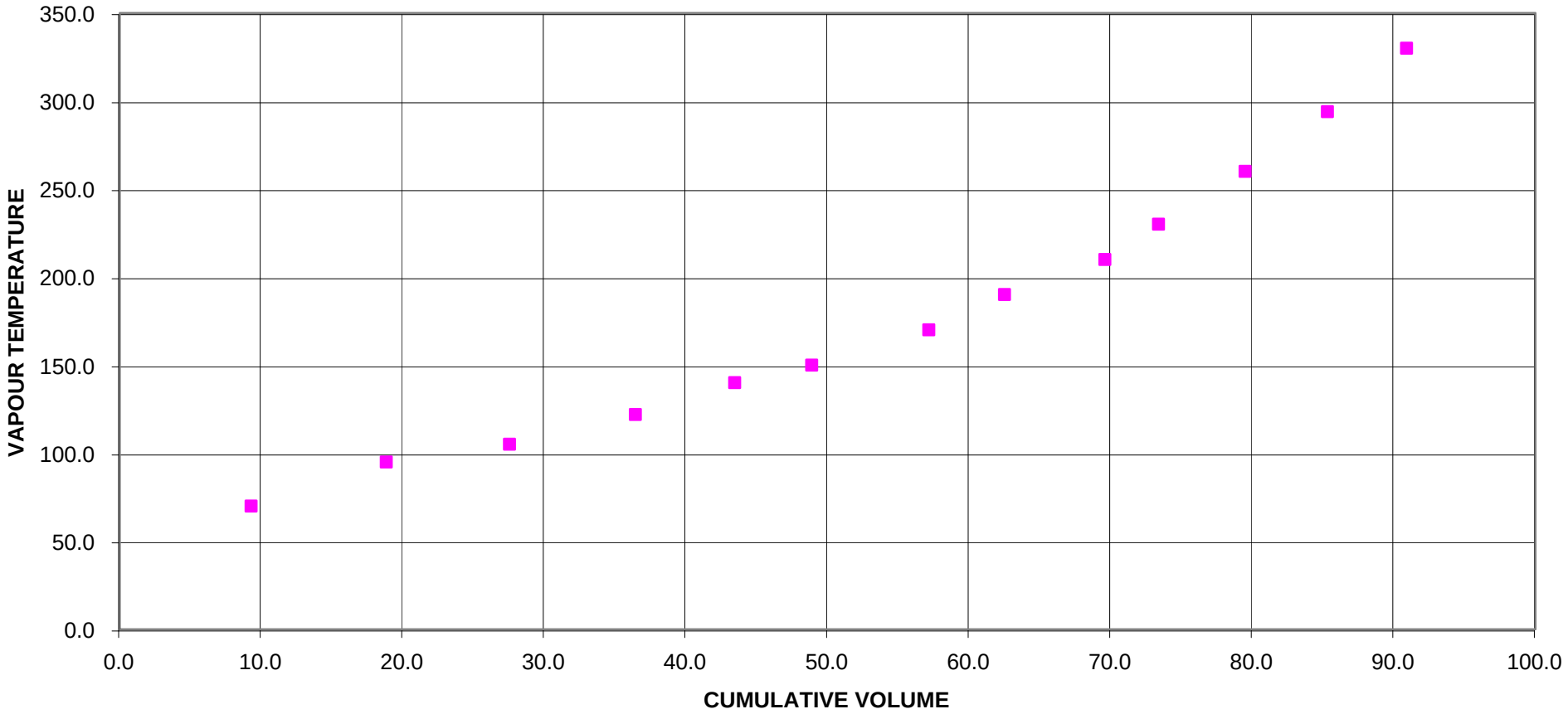
Approved Signatory _____

Mohammad Massoumi

Accreditation No: 2013

Date 9-Mar-05

TRUE BOILING POINT CURVE CONDENSATE
Trefoil #1, DST #2, 2.10 Zone 3040.5-3046.5



PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00716

Sample: Condensate
Trefoil #1, DST #2
2.10, Zone 3040.5-3046.5

Method		Description	Units	Cut C5-70°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.6550
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.6551
IP160/9(	ASTM D1298	API Gravity*	degrees	84.50
	ASTM D5453	Sulphur Content	mg/kg	6.47
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	0.406

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 9-Mar-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00716

Sample: Condensate
Trefoil #1, DST #2
2.10, Zone 3040.5-3046.5

Method		Description	Units	Cut 70-150°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.7521
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.7523
IP160/9(	ASTM D1298	API Gravity*	degrees	56.59
	ASTM D5453	Sulphur Content	mg/kg	6.27
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	0.682

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 9-Mar-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00716

Sample: Condensate
Trefoil #1, DST #2
2.10, Zone 3040.5-3046.5

Method		Description	Units	Cut C5-190°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.7489
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.7491
IP160/9(	ASTM D1298	API Gravity*	degrees	57.39
	ASTM D5453	Sulphur Content	mg/kg	6.39
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	0.697

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 9-Mar-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00716

Sample: Condensate
Trefoil #1, DST #2
2.10, Zone 3040.5-3046.5

Method		Description	Units	Cut 140-230°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.7885
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.7889
IP160/96	ASTM D1298	API Gravity*	degrees	47.86
	ASTM D5453	Sulphur Content	mg/kg	15.88
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	1.170
IP71	ASTM D445	Kinematic Viscosity @ 40°C*	cSt	0.958
	ASTM D341	Kinematic Viscosity @ -30°C	cSt	3.870
	ASTM D1322	Smoke Point*	mm	26.0
IP16	ASTM D2386	Freezing Point*	°C	-59.0
	ASTM D611	Aniline Point*	°C	55.0

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 9-Mar-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00716

Sample: Condensate
Trefoil #1, DST #2
2.10, Zone 3040.5-3046.5

Method		Description	Units	Cut 190-230°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.8038
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.8042
IP160/9(	ASTM D1298	API Gravity*	degrees	44.45
	ASTM D5453	Sulphur Content	mg/kg	30.18
IP71	ASTM D445	Kinematic Viscosity @ 25°C	cSt	1.768
IP71	ASTM D445	Kinematic Viscosity @ 40°C*	cSt	1.380
	ASTM D341	Kinematic Viscosity @ -30°C	cSt	7.977
	ASTM D1322	Smoke Point*	mm	26.0
IP16	ASTM D2386	Freezing Point*	°C	-37.0
	ASTM D611	Aniline Point*	°C	64.0

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 9-Mar-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00716

Sample: Condensate
Trefoil #1, DST #2
2.10, Zone 3040.5-3046.5

Method		Description	Units	Cut 230-330°C
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.8256
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.8260
IP160/9(	ASTM D1298	API Gravity*	degrees	39.81
	ASTM D5453	Sulphur Content	mg/kg	131.76
	ASTM D2500	Cloud Point*	°C	1
IP71	ASTM D445	Kinematic Viscosity @ 40°C*	cSt	3.576
	ASTM D189	Conradson Carbon Residue on 10% Distillation*	% wt	0.05
	ASTM D976	Calculated Cetane Index*		57.0
	ASTM D611	Aniline Point*	°C	79.4

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 9-Mar-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

PHYSICAL PROPERTIES

Client: Upstream Origin Energy Report: 05PEAD00716

Sample: Condensate
Trefoil #1, DST #2
2.10, Zone 3040.5-3046.5

Method		Description	Units	Cut 330°C+
IP365	ASTM D4052	Density @ 15°C*	g/mL	0.8298
IP365	ASTM D4052	Specific Gravity @ 60/60°F*		0.8302
IP160/9(	ASTM D1298	API Gravity*	degrees	38.94
IP336		Sulphur Content	% wt	0.03
	ASTM D97	Pour Point*	°C	42
IP71	ASTM D445	Kinematic Viscosity @ 50°C	cSt	7.895
	ASTM D189	Conradson Carbon Residue	% wt	0.07
	ASTM D664	Acid Number	mg KOH/g	0.21
	ASTM D482	Ash Content	% wt	0.01
	ASTM D5185	Trace Elements*		
		Silver*	mg/kg	<1
		Aluminium*	mg/kg	4
		Boron*	mg/kg	1
		Barium*	mg/kg	<1
		Calcium*	mg/kg	3
		Chromium*	mg/kg	<1
		Copper*	mg/kg	<1
		Iron*	mg/kg	1
		Magnesium*	mg/kg	<1
		Manganese*	mg/kg	<1
		Molybdenum*	mg/kg	<1
		Sodium*	mg/kg	4
		Nickel*	mg/kg	<1
		Phosphorus*	mg/kg	1
		Lead*	mg/kg	<1
		Silicon*	mg/kg	257
		Tin*	mg/kg	<1
		Titanium*	mg/kg	<1
		Vanadium*	mg/kg	<1
		Zinc*	mg/kg	<1

- = not determined * = NATA Accredited Test

Approved Signatory: _____
Mohammad Massoumi

Date: 10-Mar-05 Accreditation No: 2013

This report relates specifically to the sample submitted for testing.

Report No: 05PEAD00716

METHODS

TEST	METHODS
True Boiling Point	ASTM D2892
Density-API Gravity	ASTM D4052
Kinematic Viscosity	ASTM D445
Sulphur Content	ASTM D5453, IP336
Trace Elements	ASTM D5185
PONA	GC (gas chromatography)
Smoke Point	ASTM D1322
Freezing Point	ASTM D2386
Conradson Carbon Residue	ASTM D189
Pour Point	ASTM D97
Cloud Point	ASTM D2500
Calculated Cetane Index	ASTM D976
Mercury	AAS
Aniline Point	ASTM D611
Water and Sediment	ASTM D96
Ash Content	ASTM D482
Acid Number	ASTM D974
Lead	IP224
Hydrogen Sulphide	ASTM D3227
Mercaptans	ASTM D3227
Methanol	FTIR
Arsenic	UOP296
Gas Chromatography	GL-01-01
Wax Content	UOP46
Asphaltenes	ASTM D3279
Acid Number	ASTM D664

APPENDIX

PETROLEUM SERVICES LIQUID ANALYSIS Method GL-02-01

Client: UPSTREAM ORIGIN ENERGY RESOURCES LTD. Report # 05PEAD00716

Sample: TREFOIL# 1, DST# 2
Sample# 2.10, Zone: 3040.5-3046.5
25/01/2005

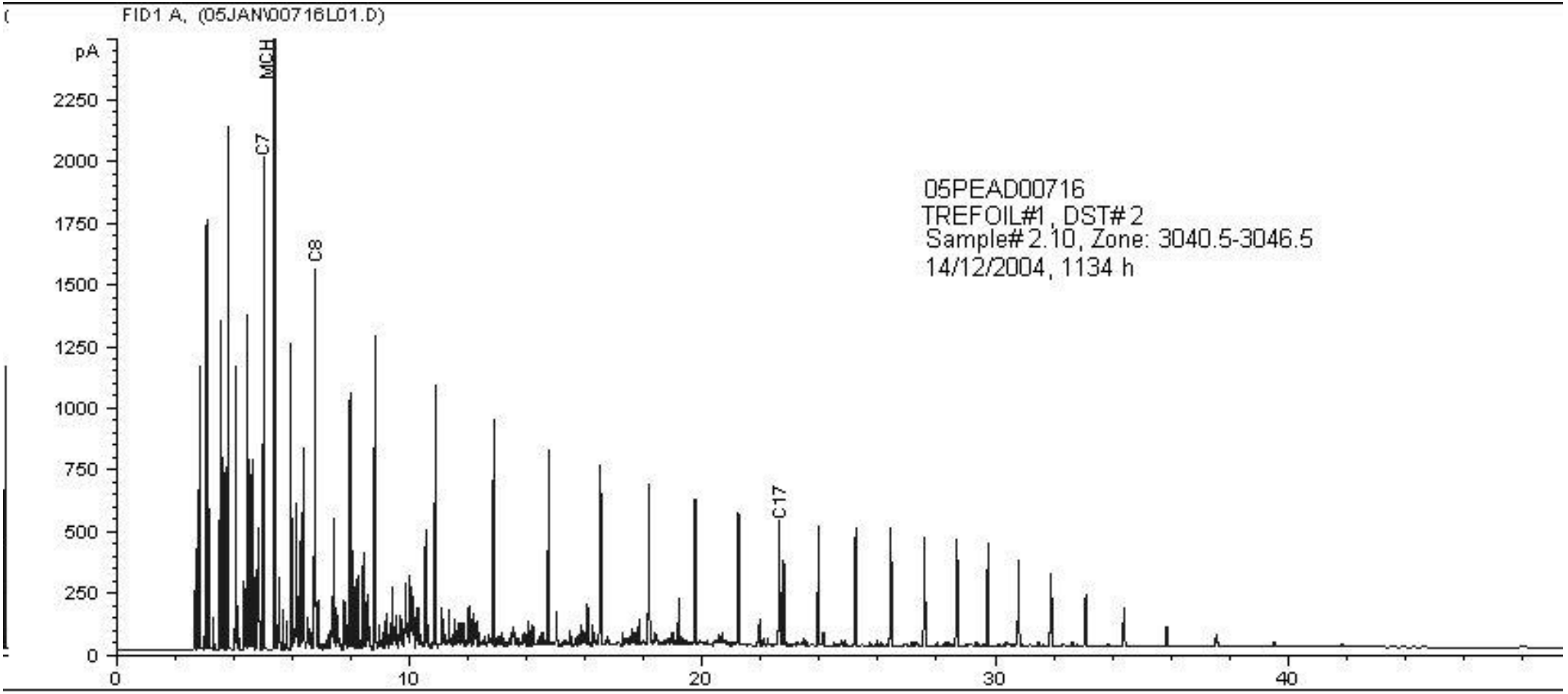
Boiling Point Range (Deg.C)	Component	Weight%	Mol%
-88.6	ETHANE	0.03	0.13
-42.1	PROPANE	0.33	0.98
-11.7	I-BUTANE	0.52	1.15
-0.5	N-BUTANE	0.97	2.17
27.9	I-PENTANE	1.51	2.71
36.1	N-PENTANE	1.59	2.85
36.1-68.9	HEXANE, C-6	5.09	7.65
80.0	BENZENE	0.34	0.56
80.7	CYCLOHEXANE	1.71	2.64
68.9-98.3	HEPTANE,C-7	8.70	11.26
100.9	METHYLCYCLOHEXANE	6.81	8.98
110.6	TOLUENE	1.87	2.63
98.3-125.6	OCTANE, C-8	9.52	10.84
136.1-144.4	ETHYLBZ+XYLENES	3.80	4.64
125.6-150.6	C-9	7.91	7.99
150.6-173.9	C-10	9.13	8.31
173.9-196.1	C-11	6.18	5.12
196.1-215.0	C-12	4.77	3.62
215.0-235.0	C-13	4.43	3.12
235.0-252.2	C-14	3.53	2.30
252.2-270.6	C-15	3.50	2.13
270.6-287.8	C-16	2.49	1.42
287.8-302.8	C-17	2.18	1.17
302.8-317.2	C-18	2.52	1.28
317.2-330.0	C-19	1.52	0.73
330.0-344.4	C-20	1.47	0.68
344.4-357.2	C-21	1.28	0.56
357.2-369.4	C-22	1.24	0.52
369.4-380.0	C-23	1.20	0.48
380.0-391.1	C-24	1.05	0.40
391.1-401.7	C-25	0.96	0.35
401.7-412.2	C-26	0.69	0.24
412.2-422.2	C-27	0.54	0.19
>422.2	C-28+	0.62	0.20
	Total	100.00	100.00
	(0.00 = LESS THAN 0.01%)		

The above boiling point ranges refer to the normal paraffin hydrocarbon boiling in that range. Aromatics, branched hydrocarbons, naphthenes and olefins may have higher or lower carbon numbers but are grouped and reported according to their boiling points.

Average molecular weight of C-8 plus fraction (calc) = 151 g/mol

This report relates specifically to the sample submitted for analysis.

Approved Signatory
Accreditation No: 2013
Date 09-Mar-05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pA
2250
2000
1750
1500
1250
1000
750
500
250
0
MCH
C7
C8
C17
0
10
20
30
40
05PEAD00716
TREFOIL#1, DST#2
Sample#2.10, Zone: 3040.5-3046.5
14/12/2004, 1134 h

Report: 05PEAD00716
Sample : TREFOIL-1, DST-2, Cut C5-70°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	0.071	0.092	0.125
2	i C 4	0.719	0.849	0.960
3	n C 4	3.079	3.459	4.115
4	22 DMC 3	0.088	0.093	0.095
5	i C 5	19.572	20.520	21.069
6	n C 5	23.506	24.405	25.305
7	22 DMC 4	1.761	1.765	1.589
8	CYC 5	2.741	2.390	3.035
9	23 DMC 4	3.500	3.439	3.154
10	2 MC 5	14.416	14.347	12.992
11	3 MC 5	7.181	7.026	6.472
12	n C 6	12.791	12.594	11.528
13	22 DMC 5	0.159	0.153	0.123
14	M CYC 5	4.809	4.177	4.438
15	24 DMC 5	0.230	0.222	0.178
16	223 TMC 4	0.057	0.054	0.044
17	BZ	1.506	1.114	1.497
18	33 DMC 5	0.037	0.035	0.029
19	CYC 6	2.065	1.724	1.906
20	2 MC 6	0.318	0.305	0.247
21	23 DMC 5	0.102	0.096	0.079
22	11 DMCYC 5	0.088	0.076	0.070
23	3 MC 6	0.230	0.218	0.178
24	t 13 DMCYC 5	0.114	0.100	0.090
25	c 13 DMCYC 5	0.102	0.089	0.081
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	0.139	0.123	0.110
28	n C7	0.216	0.205	0.167
29	MCYC 6	0.304	0.257	0.240
30	22 DMC 6	-	-	-
31	ECYC 5	-	-	-
32	25 DMC 6	-	-	-
33	24 DMC 6	-	-	-
34	tc 124 TMCYC 5	-	-	-
35	234 TMC 5	-	-	-
36	tc 123 TMCYC 5	-	-	-
37	233 TMC 5	-	-	-
38	TOL	0.099	0.075	0.084
39	23 DMC 6	-	-	-
40	2 M 3 EC 5	-	-	-
41	2 MC 7	-	-	-
42	4 MC 7	-	-	-
43	34 DMC 6	-	-	-
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	-	-	-
46	1 M 2 E CYC 5	-	-	-

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	-	-	-
48	C 8-N	-	-	-
49	C 8-P	-	-	-
50	C 8-N	-	-	-
51	C 8-N	-	-	-
52	c 1 M 3 ECYC 6	-	-	-
53	C 8-P	-	-	-
54	t 12 DMCYC 6	-	-	-
55	n C 8	-	-	-
56	C 8-N	-	-	-
57	unk	-	-	-
58	C 9-P	-	-	-
59	unk	-	-	-
60	C 9-P	-	-	-
61	C 9-P	-	-	-
62	n C 3 CYC 5	-	-	-
63	N	-	-	-
64	113 TMCYC 6	-	-	-
65	C 9-P	-	-	-
66	C 9-P	-	-	-
67	N	-	-	-
68	N	-	-	-
69	N	-	-	-
70	E BZ	-	-	-
71	114 TMCYC 6	-	-	-
72	unk	-	-	-
73	unk	-	-	-
74	m+p XYL	-	-	-
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	-	-	-
79	2 MC 8	-	-	-
80	C 9-P	-	-	-
81	3 MC 8	-	-	-
82	N	-	-	-
83	o XYL	-	-	-
84	unk	-	-	-
85	unk	-	-	-
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	-	-	-
88	c 1 M 4 ECYC 6	-	-	-
89	N	-	-	-
90	N	-	-	-
91	N	-	-	-
92	n C9	-	-	-
93	1 M 1 ECYC 6	-	-	-
94	C 9-N	-	-	-
95	i PBZ	-	-	-
96	C 10-P	-	-	-
97	C 9-N	-	-	-
98	C 9-N	-	-	-
99	C 10-P	-	-	-
100	C 10-P	-	-	-
101	unk	-	-	-

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	-	-	-
103	s BCYC 5	-	-	-
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	-	-	-
107	C 10-P	-	-	-
108	unk	-	-	-
109	unk	-	-	-
110	n PBZ	-	-	-
111	N	-	-	-
112	unk	-	-	-
113	unk	-	-	-
114	m E TOL	-	-	-
115	p E TOL	-	-	-
116	135 TM BZ	-	-	-
117	N	-	-	-
118	C 10-N	-	-	-
119	C 10-P	-	-	-
120	2 MC 9	-	-	-
121	o E TOL	-	-	-
122	C 10-P	-	-	-
123	36 DMC 8	-	-	-
124	N	-	-	-
125	C 10-N	-	-	-
126	124 TM BZ	-	-	-
127	C 10-N	-	-	-
128	N	-	-	-
129	C 10-N	-	-	-
130	N	-	-	-
131	N	-	-	-
132	N	-	-	-
133	C 10-P	-	-	-
134	n C 10	-	-	-
135	unk	-	-	-
136	unk	-	-	-
137	123 TM BZ	-	-	-
138	unk	-	-	-
139	unk	-	-	-
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	-	-	-
143	C 10-N	-	-	-
144	C 11-P	-	-	-
145	unk	-	-	-
146	C 10-N	-	-	-
147	unk	-	-	-
148	unk	-	-	-
149	C 10-A	-	-	-
150	C 10-A	-	-	-
151	C 10-A	-	-	-
152	unk	-	-	-
153	C 10-A	-	-	-
154	unk	-	-	-
155	unk	-	-	-
156	unk	-	-	-

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	-	-	-
159	C 11-P	-	-	-
160	C 11-P	-	-	-
161	C 11-P	-	-	-
162	C 10-A	-	-	-
163	C 11-P	-	-	-
164	C 10-A	-	-	-
165	unk	-	-	-
166	unk	-	-	-
167	unk	-	-	-
168	C 10-A	-	-	-
169	n C 11	-	-	-
170	unk	-	-	-
171	C 10-A	-	-	-
172	unk	-	-	-
173	C 10-A	-	-	-
174	unk	-	-	-
175	unk	-	-	-
176	unk	-	-	-
177	unk	-	-	-
178	unk	-	-	-
179	C 12-P	-	-	-
180	unk	-	-	-
181	unk	-	-	-
182	unk	-	-	-
183	unk	-	-	-
184	C 11-A	-	-	-
185	unk	-	-	-
186	C 12-P	-	-	-
187	C 11-A	-	-	-
188	unk	-	-	-
189	n C 12	-	-	-

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	88.033	89.876	88.449
Naphthenes	10.362	8.935	9.970
Aromatics	1.605	1.188	1.581
Unknowns	0.000	0.000	0.000
Olefins	<0.1	<0.1	<0.1
Average molecular weight	78.61	Density @ 15°C	0.6550

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

Report: 05PEAD00716
Sample : TREFOIL-1, DST-2, Cut 70-150°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	-	-	-
2	i C 4	-	-	-
3	n C 4	0.005	0.007	0.009
4	22 DMC 3	0.013	0.015	0.018
5	i C 5	0.040	0.049	0.058
6	n C 5	0.081	0.097	0.115
7	22 DMC 4	0.035	0.041	0.042
8	CYC 5	0.066	0.066	0.096
9	23 DMC 4	0.207	0.235	0.247
10	2 MC 5	1.103	1.264	1.313
11	3 MC 5	0.883	0.995	1.051
12	n C 6	3.575	4.053	4.254
13	22 DMC 5	0.218	0.242	0.223
14	M CYC 5	2.360	2.361	2.876
15	24 DMC 5	0.385	0.428	0.394
16	223 TMC 4	0.104	0.113	0.106
17	BZ	0.602	0.513	0.790
18	33 DMC 5	0.152	0.164	0.155
19	CYC 6	3.739	3.595	4.557
20	2 MC 6	2.350	2.593	2.405
21	23 DMC 5	0.718	0.774	0.735
22	11 DMCYC 5	0.491	0.486	0.513
23	3 MC 6	2.302	2.513	2.356
24	t 13 DMCYC 5	0.992	1.003	1.036
25	c 13 DMCYC 5	1.090	1.097	1.139
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	1.485	1.505	1.551
28	n C7	7.149	7.829	7.317
29	MCYC 6	15.951	15.521	16.656
30	22 DMC 6	0.382	0.411	0.343
31	ECYC 5	0.392	0.383	0.410
32	25 DMC 6	0.638	0.688	0.572
33	24 DMC 6	0.481	0.515	0.432
34	tc 124 TMCYC 5	0.463	0.454	0.423
35	234 TMC 5	0.139	0.145	0.125
36	tc 123 TMCYC 5	0.395	0.384	0.361
37	233 TMC 5	0.028	0.029	0.025
38	TOL	9.072	7.834	10.097
39	23 DMC 6	0.314	0.330	0.282
40	2 M 3 EC 5	0.071	0.074	0.064
41	2 MC 7	2.305	2.472	2.069
42	4 MC 7	0.724	0.769	0.650
43	34 DMC 6	0.162	0.168	0.145
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	1.882	1.994	1.690
46	1 M 2 E CYC 5	3.291	3.291	3.008

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	1.563	1.535	1.429
48	C 8-N	0.481	0.462	0.439
49	C 8-P	-	-	-
50	C 8-N	0.195	0.187	0.178
51	C 8-N	0.177	0.170	0.162
52	c 1 M 3 ECYC 6	0.266	0.262	0.216
53	C 8-P	0.053	0.056	0.048
54	t 12 DMCYC 6	1.336	1.256	1.221
55	n C 8	7.165	7.635	6.433
56	C 8-N	0.868	0.834	0.793
57	unk	0.073	0.072	0.065
58	C 9-P	0.121	0.126	0.097
59	unk	0.035	0.033	0.033
60	C 9-P	0.225	0.235	0.180
61	C 9-P	0.650	0.677	0.520
62	n C 3 CYC 5	1.938	1.869	1.771
63	N	0.018	0.017	0.016
64	113 TMCYC 6	0.552	0.529	0.448
65	C 9-P	0.425	0.443	0.340
66	C 9-P	0.129	0.134	0.103
67	N	0.035	0.034	0.032
68	N	0.038	0.036	0.035
69	N	0.073	0.070	0.067
70	E BZ	0.754	0.651	0.728
71	114 TMCYC 6	0.316	0.307	0.257
72	unk	0.038	0.036	0.032
73	unk	0.273	0.260	0.233
74	m+p XYL	5.533	4.825	5.345
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	0.579	0.602	0.463
79	2 MC 8	0.939	0.989	0.751
80	C 9-P	0.099	0.103	0.079
81	3 MC 8	0.830	0.862	0.664
82	N	0.121	0.118	0.111
83	o XYL	1.230	1.046	1.188
84	unk	-	-	-
85	unk	0.132	0.125	0.114
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	0.440	0.413	0.358
88	c 1 M 4 ECYC 6	0.210	0.202	0.171
89	N	-	-	-
90	N	0.109	0.105	0.088
91	N	-	-	-
92	n C9	3.069	3.202	2.454
93	1 M 1 ECYC 6	0.190	0.180	0.154
94	C 9-N	0.030	0.029	0.025
95	i PBZ	0.030	0.026	0.026
96	C 10-P	0.015	0.016	0.011
97	C 9-N	0.061	0.058	0.049
98	C 9-N	0.213	0.202	0.173
99	C 10-P	-	-	-
100	C 10-P	0.063	0.065	0.046
101	unk	0.051	0.048	0.040

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	0.033	0.034	0.024
103	s BCYC 5	0.238	0.226	0.193
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	0.121	0.125	0.088
107	C 10-P	0.028	0.029	0.020
108	unk	-	-	-
109	unk	0.023	0.021	0.017
110	n PBZ	-	-	-
111	N	0.056	0.052	0.041
112	unk	0.089	0.083	0.068
113	unk	0.015	0.014	0.012
114	m E TOL	0.013	0.011	0.011
115	p E TOL	-	-	-
116	135 TM BZ	0.207	0.179	0.177
117	N	0.111	0.104	0.081
118	C 10-N	0.013	0.012	0.009
119	C 10-P	0.142	0.144	0.102
120	2 MC 9	0.027	0.027	0.019
121	o E TOL	0.027	0.023	0.023
122	C 10-P	-	-	-
123	36 DMC 8	0.081	0.083	0.058
124	N	-	-	-
125	C 10-N	-	-	-
126	124 TM BZ	0.116	0.099	0.099
127	C 10-N	-	-	-
128	N	-	-	-
129	C 10-N	-	-	-
130	N	-	-	-
131	N	-	-	-
132	N	-	-	-
133	C 10-P	-	-	-
134	n C 10	0.089	0.091	0.064
135	unk	-	-	-
136	unk	-	-	-
137	123 TM BZ	-	-	-
138	unk	-	-	-
139	unk	-	-	-
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	-	-	-
143	C 10-N	-	-	-
144	C 11-P	-	-	-
145	unk	-	-	-
146	C 10-N	-	-	-
147	unk	-	-	-
148	unk	-	-	-
149	C 10-A	-	-	-
150	C 10-A	-	-	-
151	C 10-A	-	-	-
152	unk	-	-	-
153	C 10-A	-	-	-
154	unk	-	-	-
155	unk	-	-	-
156	unk	-	-	-

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	-	-	-
159	C 11-P	-	-	-
160	C 11-P	-	-	-
161	C 11-P	-	-	-
162	C 10-A	-	-	-
163	C 11-P	-	-	-
164	C 10-A	-	-	-
165	unk	-	-	-
166	unk	-	-	-
167	unk	-	-	-
168	C 10-A	-	-	-
169	n C 11	-	-	-
170	unk	-	-	-
171	C 10-A	-	-	-
172	unk	-	-	-
173	C 10-A	-	-	-
174	unk	-	-	-
175	unk	-	-	-
176	unk	-	-	-
177	unk	-	-	-
178	unk	-	-	-
179	C 12-P	-	-	-
180	unk	-	-	-
181	unk	-	-	-
182	unk	-	-	-
183	unk	-	-	-
184	C 11-A	-	-	-
185	unk	-	-	-
186	C 12-P	-	-	-
187	C 11-A	-	-	-
188	unk	-	-	-
189	n C 12	-	-	-

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	41.326	44.682	39.759
Naphthenes	40.361	39.417	41.143
Aromatics	17.584	15.208	18.484
Unknowns	0.729	0.693	0.614
Olefins	<0.1	<0.1	<0.1
Average molecular weight	103.95	Density @ 15°C	0.7521

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

Report: 05PEAD00716
Sample : TREFOIL-1, DST-2, Cut C5-190°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	-	-	-
2	i C 4	0.005	0.007	0.009
3	n C 4	0.049	0.063	0.089
4	22 DMC 3	0.221	0.269	0.325
5	i C 5	1.649	1.985	2.425
6	n C 5	2.051	2.444	3.015
7	22 DMC 4	0.180	0.207	0.222
8	CYC 5	0.229	0.229	0.346
9	23 DMC 4	0.511	0.576	0.629
10	2 MC 5	2.036	2.326	2.506
11	3 MC 5	1.238	1.390	1.524
12	n C 6	3.530	3.989	4.345
13	22 DMC 5	0.158	0.175	0.167
14	M CYC 5	1.995	1.988	2.514
15	24 DMC 5	0.275	0.305	0.291
16	223 TMC 4	0.073	0.079	0.077
17	BZ	0.535	0.454	0.727
18	33 DMC 5	0.102	0.110	0.108
19	CYC 6	2.642	2.532	3.330
20	2 MC 6	1.564	1.720	1.656
21	23 DMC 5	0.479	0.514	0.507
22	11 DMCYC 5	0.328	0.324	0.355
23	3 MC 6	1.525	1.659	1.615
24	t 13 DMCYC 5	0.659	0.665	0.712
25	c 13 DMCYC 5	0.720	0.722	0.778
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	0.983	0.993	1.062
28	n C7	4.681	5.108	4.954
29	MCYC 6	10.422	10.107	11.258
30	22 DMC 6	0.251	0.269	0.233
31	ECYC 5	0.314	0.305	0.339
32	25 DMC 6	0.358	0.385	0.332
33	24 DMC 6	0.311	0.333	0.289
34	tc 124 TMCYC 5	0.294	0.288	0.278
35	234 TMC 5	0.097	0.101	0.090
36	tc 123 TMCYC 5	0.258	0.250	0.244
37	233 TMC 5	0.017	0.017	0.016
38	TOL	5.922	5.096	6.816
39	23 DMC 6	0.204	0.214	0.190
40	2 M 3 EC 5	0.046	0.048	0.043
41	2 MC 7	1.499	1.602	1.392
42	4 MC 7	0.472	0.500	0.438
43	34 DMC 6	0.107	0.111	0.099
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	1.224	1.292	1.136
46	1 M 2 E CYC 5	2.156	2.148	2.038

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	1.024	1.002	0.968
48	C 8-N	0.316	0.303	0.299
49	C 8-P	-	-	-
50	C 8-N	0.129	0.124	0.122
51	C 8-N	0.117	0.112	0.110
52	c 1 M 3 ECYC 6	0.175	0.172	0.147
53	C 8-P	0.034	0.036	0.032
54	t 12 DMCYC 6	0.886	0.830	0.837
55	n C 8	4.715	5.007	4.378
56	C 8-N	0.574	0.550	0.543
57	unk	0.049	0.048	0.044
58	C 9-P	0.083	0.086	0.068
59	unk	0.024	0.022	0.024
60	C 9-P	0.156	0.162	0.129
61	C 9-P	0.457	0.475	0.378
62	n C 3 CYC 5	1.360	1.307	1.285
63	N	0.015	0.014	0.014
64	113 TMCYC 6	0.394	0.377	0.331
65	C 9-P	0.324	0.336	0.268
66	C 9-P	0.100	0.104	0.082
67	N	0.027	0.026	0.025
68	N	0.029	0.028	0.028
69	N	-	-	-
70	E BZ	0.535	0.461	0.535
71	114 TMCYC 6	0.282	0.273	0.237
72	unk	0.032	0.030	0.028
73	unk	0.221	0.210	0.195
74	m+p XYL	4.114	3.576	4.110
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	0.494	0.512	0.408
79	2 MC 8	0.827	0.868	0.684
80	C 9-P	0.075	0.078	0.062
81	3 MC 8	0.783	0.811	0.648
82	N	0.122	0.118	0.115
83	o XYL	1.066	0.903	1.065
84	unk	-	-	-
85	unk	0.158	0.149	0.142
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	0.572	0.535	0.480
88	c 1 M 4 ECYC 6	0.292	0.279	0.245
89	N	-	-	-
90	N	4.333	4.152	3.641
91	N	-	-	-
92	n C9	4.333	4.505	3.583
93	1 M 1 ECYC 6	0.341	0.322	0.286
94	C 9-N	0.114	0.108	0.096
95	i PBZ	0.061	0.053	0.054
96	C 10-P	0.034	0.035	0.025
97	C 9-N	0.151	0.143	0.127
98	C 9-N	0.433	0.410	0.364
99	C 10-P	0.017	0.017	0.013
100	C 10-P	0.180	0.184	0.134
101	unk	0.136	0.128	0.112

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	0.136	0.139	0.102
103	s BCYC 5	0.654	0.619	0.550
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	0.460	0.471	0.343
107	C 10-P	0.107	0.110	0.080
108	unk	-	-	-
109	unk	-	-	-
110	n PBZ	0.168	0.145	0.148
111	N	0.190	0.177	0.143
112	unk	0.285	0.267	0.225
113	unk	0.066	0.062	0.052
114	m E TOL	0.054	0.046	0.047
115	p E TOL	0.039	0.034	0.034
116	135 TM BZ	0.710	0.613	0.627
117	N	0.589	0.550	0.445
118	C 10-N	0.061	0.057	0.046
119	C 10-P	0.922	0.931	0.687
120	2 MC 9	0.307	0.314	0.229
121	o E TOL	0.307	0.260	0.271
122	C 10-P	0.073	0.075	0.054
123	36 DMC 8	0.693	0.710	0.517
124	N	0.158	0.148	0.120
125	C 10-N	-	-	-
126	124 TM BZ	1.418	1.208	1.252
127	C 10-N	-	-	-
128	N	0.190	0.177	0.143
129	C 10-N	0.127	0.118	0.096
130	N	0.010	0.009	0.007
131	N	-	-	-
132	N	-	-	-
133	C 10-P	-	-	-
134	n C 10	3.623	3.709	2.700
135	unk	0.102	0.094	0.081
136	unk	0.102	0.094	0.081
137	123 TM BZ	0.197	0.164	0.174
138	unk	0.377	0.350	0.288
139	unk	0.144	0.133	0.11
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	0.090	0.078	0.071
143	C 10-N	0.377	0.352	0.285
144	C 11-P	0.207	0.209	0.140
145	unk	-	-	-
146	C 10-N	0.345	0.323	0.261
147	unk	-	-	-
148	unk	0.078	0.071	0.059
149	C 10-A	0.078	0.068	0.062
150	C 10-A	0.238	0.207	0.188
151	C 10-A	0.019	0.017	0.015
152	unk	0.097	-	-
153	C 10-A	0.282	0.245	0.223
154	unk	0.068	0.064	0.050
155	unk	-	-	-
156	unk	0.158	0.148	0.117

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	0.192	0.167	0.152
159	C 11-P	0.127	0.128	0.086
160	C 11-P	0.236	0.238	0.160
161	C 11-P	0.032	0.032	0.021
162	C 10-A	0.163	0.142	0.129
163	C 11-P	0.097	0.098	0.066
164	C 10-A	0.063	0.055	0.050
165	unk	0.056	0.052	0.041
166	unk	0.027	0.025	0.020
167	unk	0.068	0.064	0.050
168	C 10-A	0.039	0.034	0.031
169	n C 11	1.219	1.231	0.827
170	unk	-	-	-
171	C 10-A	0.032	0.027	0.025
172	unk	0.034	0.032	0.025
173	C 10-A	0.061	0.053	0.048
174	unk	0.051	0.047	0.036
175	unk	0.051	0.047	0.036
176	unk	-	-	-
177	unk	0.039	0.036	0.027
178	unk	-	-	-
179	C 12-P	-	-	-
180	unk	-	-	-
181	unk	-	-	-
182	unk	-	-	-
183	unk	-	-	-
184	C 11-A	-	-	-
185	unk	-	-	-
186	C 12-P	-	-	-
187	C 11-A	-	-	-
188	unk	-	-	-
189	n C 12	0.044	0.044	0.027

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	45.808	49.452	45.653
Naphthenes	35.386	34.267	35.650
Aromatics	16.383	14.106	16.854
Unknowns	2.423	2.175	1.843
Olefins	<0.1	<0.1	<0.1
Average molecular weight	108.95	Density @ 15°C	0.7481

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

Report: 05PEAD00716
Sample : TREFOIL-1, DST-2, Cut 140-230°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	-	-	-
2	i C 4	-	-	-
3	n C 4	-	-	-
4	22 DMC 3	-	-	-
5	i C 5	-	-	-
6	n C 5	-	-	-
7	22 DMC 4	-	-	-
8	CYC 5	-	-	-
9	23 DMC 4	-	-	-
10	2 MC 5	-	-	-
11	3 MC 5	-	-	-
12	n C 6	-	-	-
13	22 DMC 5	-	-	-
14	M CYC 5	-	-	-
15	24 DMC 5	-	-	-
16	223 TMC 4	-	-	-
17	BZ	-	-	-
18	33 DMC 5	-	-	-
19	CYC 6	-	-	-
20	2 MC 6	-	-	-
21	23 DMC 5	-	-	-
22	11 DMCYC 5	-	-	-
23	3 MC 6	-	-	-
24	t 13 DMCYC 5	-	-	-
25	c 13 DMCYC 5	-	-	-
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	-	-	-
28	n C7	-	-	-
29	MCYC 6	0.063	0.063	0.086
30	22 DMC 6	-	-	-
31	ECYC 5	-	-	-
32	25 DMC 6	-	-	-
33	24 DMC 6	-	-	-
34	tc 124 TMCYC 5	-	-	-
35	234 TMC 5	-	-	-
36	tc 123 TMCYC 5	-	-	-
37	233 TMC 5	-	-	-
38	TOL	0.083	0.074	0.121
39	23 DMC 6	-	-	-
40	2 M 3 EC 5	-	-	-
41	2 MC 7	0.116	0.128	0.137
42	4 MC 7	0.040	0.044	0.047
43	34 DMC 6	-	-	-
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	0.126	0.138	0.148
46	1 M 2 E CYC 5	0.404	0.417	0.485

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	0.195	0.198	0.234
48	C 8-N	0.063	0.062	0.076
49	C 8-P	-	-	-
50	C 8-N	0.023	0.023	0.028
51	C 8-N	0.023	0.023	0.028
52	c 1 M 3 ECYC 6	0.036	0.037	0.039
53	C 8-P	-	-	-
54	t 12 DMCYC 6	0.311	0.302	0.374
55	n C 8	1.513	1.665	1.784
56	C 8-N	0.215	0.214	0.258
57	unk	0.036	0.037	0.042
58	C 9-P	0.066	0.071	0.070
59	unk	0.013	0.013	0.016
60	C 9-P	0.136	0.146	0.143
61	C 9-P	0.473	0.509	0.497
62	n C 3 CYC 5	1.354	1.348	1.625
63	N	0.013	0.013	0.016
64	113 TMCYC 6	0.444	0.440	0.473
65	C 9-P	0.430	0.463	0.452
66	C 9-P	0.142	0.153	0.150
67	N	0.033	0.033	0.040
68	N	0.036	0.036	0.044
69	N	0.076	0.075	0.091
70	E BZ	0.520	0.463	0.659
71	114 TMCYC 6	0.506	0.509	0.541
72	unk	0.053	0.052	0.059
73	unk	0.361	0.355	0.404
74	m+p XYL	5.184	4.669	6.578
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	0.874	0.939	0.918
79	2 MC 8	1.566	1.703	1.645
80	C 9-P	-	-	-
81	3 MC 8	1.665	1.786	1.749
82	N	0.232	0.233	0.278
83	o XYL	1.850	1.625	2.348
84	unk	-	-	-
85	unk	0.328	0.321	0.373
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	1.294	1.255	1.381
88	c 1 M 4 ECYC 6	0.659	0.653	0.703
89	N	-	-	-
90	N	0.291	0.289	0.311
91	N	-	-	-
92	n C9	10.039	10.817	10.546
93	1 M 1 ECYC 6	0.804	0.789	0.858
94	C 9-N	0.271	0.266	0.290
95	i PBZ	0.142	0.128	0.160
96	C 10-P	0.083	0.088	0.078
97	C 9-N	0.367	0.360	0.392
98	C 9-N	1.036	1.016	1.106
99	C 10-P	0.043	0.046	0.041
100	C 10-P	0.447	0.474	0.423
101	unk	0.331	0.323	0.344

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	0.354	0.376	0.335
103	s BCYC 5	1.586	1.555	1.692
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	1.139	1.208	1.078
107	C 10-P	0.268	0.284	0.254
108	unk	-	-	-
109	unk	-	-	-
110	n PBZ	0.430	0.386	0.482
111	N	0.463	0.449	0.445
112	unk	0.698	0.678	0.701
113	unk	0.162	0.157	0.163
114	m E TOL	0.136	0.121	0.152
115	p E TOL	0.096	0.086	0.108
116	135 TM BZ	1.771	1.582	1.985
117	N	1.460	1.413	1.402
118	C 10-N	0.146	0.141	0.140
119	C 10-P	2.367	2.477	2.241
120	2 MC 9	0.776	0.824	0.735
121	o E TOL	0.776	0.681	0.870
122	C 10-P	0.179	0.190	0.169
123	36 DMC 8	1.744	1.851	1.652
124	N	0.407	0.394	0.391
125	C 10-N	0.242	0.234	0.232
126	124 TM BZ	3.720	3.284	4.170
127	C 10-N	-	-	-
128	N	0.493	0.478	0.474
129	C 10-N	-	-	-
130	N	-	-	-
131	N	0.023	0.022	0.022
132	N	0.026	0.026	0.025
133	C 10-P	-	-	-
134	n C 10	9.732	10.326	9.215
135	unk	0.225	0.216	0.226
136	unk	0.275	0.263	0.276
137	123 TM BZ	0.536	0.464	0.601
138	unk	1.013	0.974	0.984
139	unk	0.453	0.436	0.441
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	0.248	0.224	0.249
143	C 10-N	1.099	1.064	1.056
144	C 11-P	0.612	0.641	0.528
145	unk	-	-	-
146	C 10-N	1.069	1.035	1.027
147	unk	-	-	-
148	unk	0.305	0.288	0.292
149	C 10-A	0.258	0.233	0.259
150	C 10-A	0.712	0.641	0.714
151	C 10-A	0.063	0.057	0.063
152	unk	0.305	-	-
153	C 10-A	0.890	0.802	0.894
154	unk	0.235	0.228	0.221
155	unk	0.205	0.199	0.193
156	unk	0.569	0.551	0.534

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	0.702	0.632	0.705
159	C 11-P	0.536	0.561	0.462
160	C 11-P	0.960	1.005	0.827
161	C 11-P	0.119	0.125	0.103
162	C 10-A	0.334	0.301	0.336
163	C 11-P	0.331	0.346	0.285
164	C 10-A	0.261	0.236	0.263
165	unk	0.331	0.320	0.307
166	unk	0.156	0.151	0.144
167	unk	0.338	0.327	0.313
168	C 10-A	0.192	0.173	0.193
169	n C 11	8.365	8.755	7.209
170	unk	-	-	-
171	C 10-A	0.195	0.176	0.196
172	unk	0.199	0.192	0.184
173	C 10-A	0.384	0.346	0.385
174	unk	0.397	0.382	0.352
175	unk	-	-	-
176	unk	0.665	0.640	0.589
177	unk	0.434	0.417	0.384
178	unk	0.566	0.545	0.501
179	C 12-P	0.596	0.615	0.471
180	unk	0.192	0.185	0.169
181	unk	0.195	0.188	0.172
182	unk	0.146	0.140	0.128
183	unk	0.331	0.319	0.292
184	C 11-A	0.430	0.388	0.391
185	unk	0.728	0.702	0.642
186	C 12-P	0.248	0.256	0.196
187	C 11-A	0.563	0.507	0.512
188	unk	0.364	0.351	0.321
189	n C 12	7.064	7.295	5.588

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	53.148	56.306	50.176
Naphthenes	15.766	15.464	16.663
Aromatics	20.478	18.278	23.394
Unknowns	10.609	9.952	9.767
Olefins	<0.1	<0.1	<0.1
Average molecular weight	135.74	Density @ 15°C	0.7885

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

Report: 05PEAD00716
Sample : TREFOIL-1, DST-2, Cut 190-230°C

Components were separated on a Hewlett-Packard PONA column and quantified using a flame ionisation detector. Area counts were used directly to compute weight percentages. Components were identified by retention time comparison with a reference oil derived by pooling oils from several basins. Components in the reference oil were identified by computerised GC-MS and by comparison with published retention time data.

	Component	Weight%	Liquid vol %	Mole %
1	C 3	-	-	-
2	i C 4	-	-	-
3	n C 4	-	-	-
4	22 DMC 3	-	-	-
5	i C 5	-	-	-
6	n C 5	-	-	-
7	22 DMC 4	-	-	-
8	CYC 5	-	-	-
9	23 DMC 4	-	-	-
10	2 MC 5	-	-	-
11	3 MC 5	-	-	-
12	n C 6	-	-	-
13	22 DMC 5	-	-	-
14	M CYC 5	-	-	-
15	24 DMC 5	-	-	-
16	223 TMC 4	-	-	-
17	BZ	-	-	-
18	33 DMC 5	-	-	-
19	CYC 6	-	-	-
20	2 MC 6	-	-	-
21	23 DMC 5	-	-	-
22	11 DMCYC 5	-	-	-
23	3 MC 6	-	-	-
24	t 13 DMCYC 5	-	-	-
25	c 13 DMCYC 5	-	-	-
26	3 EC 5	-	-	-
27	t 12 DMCYC 5	-	-	-
28	n C7	-	-	-
29	MCYC 6	-	-	-
30	22 DMC 6	-	-	-
31	ECYC 5	-	-	-
32	25 DMC 6	-	-	-
33	24 DMC 6	-	-	-
34	tc 124 TMCYC 5	-	-	-
35	234 TMC 5	-	-	-
36	tc 123 TMCYC 5	-	-	-
37	233 TMC 5	-	-	-
38	TOL	-	-	-
39	23 DMC 6	-	-	-
40	2 M 3 EC 5	-	-	-
41	2 MC 7	-	-	-
42	4 MC 7	-	-	-
43	34 DMC 6	-	-	-
44	tt 124 TMCYC 5	-	-	-
45	3 MC 7	-	-	-
46	1 M 2 E CYC 5	-	-	-

Component		Weight%	Liquid vol %	Mole %
47	t 14 DMCYC 6	-	-	-
48	C 8-N	-	-	-
49	C 8-P	-	-	-
50	C 8-N	-	-	-
51	C 8-N	-	-	-
52	c 1 M 3 ECYC 6	-	-	-
53	C 8-P	-	-	-
54	t 12 DMCYC 6	-	-	-
55	n C 8	-	-	-
56	C 8-N	-	-	-
57	unk	-	-	-
58	C 9-P	-	-	-
59	unk	-	-	-
60	C 9-P	-	-	-
61	C 9-P	-	-	-
62	n C 3 CYC 5	-	-	-
63	N	-	-	-
64	113 TMCYC 6	-	-	-
65	C 9-P	-	-	-
66	C 9-P	-	-	-
67	N	-	-	-
68	N	-	-	-
69	N	-	-	-
70	E BZ	-	-	-
71	114 TMCYC 6	-	-	-
72	unk	-	-	-
73	unk	-	-	-
74	m+p XYL	-	-	-
75	C 9-P	-	-	-
76	23 DMC 7	-	-	-
77	C 9-P	-	-	-
78	4 MC 8	-	-	-
79	2 MC 8	-	-	-
80	C 9-P	-	-	-
81	3 MC 8	-	-	-
82	N	-	-	-
83	o XYL	-	-	-
84	unk	-	-	-
85	unk	-	-	-
86	1 M 2 PCYC 5	-	-	-
87	t 1 M 4 ECYC 6	-	-	-
88	c 1 M 4 ECYC 6	-	-	-
89	N	-	-	-
90	N	-	-	-
91	N	0.105	0.104	0.129
92	n C9	-	-	-
93	1 M 1 ECYC 6	-	-	-
94	C 9-N	-	-	-
95	i PBZ	-	-	-
96	C 10-P	-	-	-
97	C 9-N	-	-	-
98	C 9-N	-	-	-
99	C 10-P	-	-	-
100	C 10-P	-	-	-
101	unk	-	-	-

Component		Weight%	Liquid vol %	Mole %
102	C 10-P	-	-	-
103	s BCYC 5	-	-	-
104	C 10-P	-	-	-
105	C 10-P	-	-	-
106	3 MC 9	-	-	-
107	C 10-P	-	-	-
108	unk	-	-	-
109	unk	-	-	-
110	n PBZ	-	-	-
111	N	-	-	-
112	unk	-	-	-
113	unk	-	-	-
114	m E TOL	-	-	-
115	p E TOL	-	-	-
116	135 TM BZ	0.077	0.068	0.099
117	N	0.105	0.101	0.116
118	C 10-N	-	-	-
119	C 10-P	0.174	0.182	0.191
120	2 MC 9	0.094	0.100	0.103
121	o E TOL	0.094	0.082	0.122
122	C 10-P	-	-	-
123	36 DMC 8	0.188	0.199	0.206
124	N	-	-	-
125	C 10-N	0.042	0.040	0.046
126	124 TM BZ	0.599	0.528	0.778
127	C 10-N	-	-	-
128	N	-	-	-
129	C 10-N	-	-	-
130	N	-	-	-
131	N	-	-	-
132	N	-	-	-
133	C 10-P	-	-	-
134	n C 10	3.100	3.284	3.399
135	unk	0.084	0.080	0.097
136	unk	0.091	0.087	0.105
137	123 TM BZ	0.202	0.174	0.262
138	unk	0.397	0.381	0.447
139	unk	-	-	-
140	unk	-	-	-
141	unk	-	-	-
142	C 10-A	0.153	0.138	0.178
143	C 10-N	0.766	0.741	0.852
144	C 11-P	0.488	0.510	0.487
145	unk	-	-	-
146	C 10-N	0.982	0.949	1.093
147	unk	-	-	-
148	unk	0.286	0.269	0.317
149	C 10-A	0.279	0.251	0.324
150	C 10-A	0.523	0.470	0.607
151	C 10-A	0.098	0.088	0.113
152	unk	0.293	-	-
153	C 10-A	0.871	0.783	1.012
154	unk	0.334	0.323	0.363
155	unk	0.132	0.128	0.144
156	unk	0.829	0.801	0.901

Component		Weight%	Liquid vol %	Mole %
157	unk	-	-	-
158	C 10-A	1.108	0.996	1.288
159	C 11-P	1.108	1.157	1.106
160	C 11-P	1.672	1.747	1.669
161	C 11-P	0.209	0.218	0.209
162	C 10-A	1.916	1.723	2.227
163	C 11-P	0.669	0.699	0.668
164	C 10-A	0.516	0.464	0.599
165	unk	0.871	0.842	0.935
166	unk	0.446	0.431	0.479
167	unk	0.815	0.788	0.876
168	C 10-A	0.467	0.420	0.543
169	n C 11	23.276	24.322	23.232
170	unk	-	-	-
171	C 10-A	0.578	0.520	0.672
172	unk	0.578	0.559	0.621
173	C 10-A	1.108	0.996	1.288
174	unk	1.240	1.191	1.271
175	unk	-	-	-
176	unk	2.404	2.309	2.463
177	unk	1.526	1.466	1.564
178	unk	2.153	2.068	2.206
179	C 12-P	2.243	2.313	2.055
180	unk	0.745	0.718	0.761
181	unk	0.801	0.771	0.817
182	unk	0.606	0.583	0.618
183	unk	1.393	1.341	1.422
184	C 11-A	1.853	1.666	1.951
185	unk	3.177	3.058	3.241
186	C 12-P	-	-	-
187	C 11-A	2.529	2.274	2.662
188	unk	1.770	1.703	1.805
189	n C 12	30.842	31.798	28.261

The symbol - signifies < 0.005%

The percentages of the component types are as follows:-

	Weight%	Liquid vol%	Mol %
Paraffins	64.062	66.528	61.586
Naphthenes	1.999	1.935	2.236
Aromatics	12.969	11.640	14.725
Unknowns	20.970	19.897	21.453
Olefins	<0.1	<0.1	<0.1
Average molecular weight	158.09	Density @ 15°C	0.8038

Unknown components are not used in average molecular weight and specific gravity calculations. Samples with a high proportion of unknowns may therefore have unreliable calculated molecular weights and specific gravities. Weight percents of unknown components are converted to volume% and mole% and used in calculation of molecular weight and density assuming the average properties of the PNA components of closest boiling range.

ABBREVIATIONS: D = di; T = tri; M = methyl; E = ethyl; P = propyl; B = butyl; CYC = cyclo
BZ = benzene; TOL = toluene; XYL = xylene; unk = unknown.
PREFIXES: i = iso; n = normal; s = secondary; o = ortho; m = meta; p = para; c = cis; t = trans.
SUFFIXES: A = aromatic; N = naphthene; P = paraffin.

(C) Oilphase Onsite Analysis Report

Schlumberger

FROM RESERVOIR TO RESULTS.

Oilphase-DBR Sampling & Analysis Services
23 Brennan Way
Belmont Western Australia
Australia 6104

Origin Energy
Sampling and Analysis Report

FIELD: Trefoil

WELL: Trefoil-1

DATE: 20th November to 1st December, 2004

TEST: Wireline Evaluation

Prepared By: Paul Barraclough – Sampling Specialist Ben Leggo – Sampling Specialist Christian Ritchie – Sampling Specialist	Date: 6th December, 2004	Reviewed By: Chris Forde – Field Service Manager, APG	Date: 14th December, 2004

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2. Sample Listing

3. Sequence of Events

4. Sample Data Sheets

5. Sample Analysis Results - Excerpt from PVT Express Report

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Summary

Origin Energy contracted Oilphase-DBR, the sampling and analysis specialists of Schlumberger, to provide the on site sampling and analytical chemistry services on the Ensco 102 for the evaluation of the exploration well Trefoil-1, located off the south-east coast of Australia. In two runs of the Wireline MDT tool, a total of seventeen downhole samples were collected using nine Oilphase Non-Reactive Single Phase Multi-Chamber (NR-SPMC) tools and eight, Wireline Multi-Phase Sample Receptacles (MPSR). On-site analysis was performed to measure sulphur and mercury content in pre-determined samples and the OilphaseDBR PVT Express was used to analyse gas-condensate compositions and perform Condensate-Gas Ratio (CGR) and Gas-Water Ratio (GWR) measurements.

MDT Run 1

The Wireline MDT tool consisted of two Multi Sample Modules (MRMS) loaded with four 450 cc Wireline MPSR's and eight 250 cc NR-SPMC sampling tools, which are coated to minimise hydrogen sulphide loss. The toolstring was configured for low shock sampling. The MDT tool was run in hole to predetermined depths between 3386.5 m MDRT and 2968.7 m MDRT and sampling took place if pre-tests proved to be feasible.

On recovery to surface, the NR-SPMC's and MPSR's were removed from the MRMS's and opening pressures of the tools recorded, confirming all samplers had collected samples successfully. All MPSR samplers were packaged and labelled in accordance with Dangerous Goods shipping requirements and sent from the rig to Petrolab in Adelaide for analysis. Two NR-SPMC's that sampled from an expected water zone were flashed off, with volumes of water and gas measured to calculate GWR. Compositional analysis was performed on the produced gas using the gas chromatograph (GC) and the remaining water sample was stored for later laboratory analysis. Three NR-SPMC's were heated to reservoir temperature and a portion of each was flashed to determine the CGR and the reservoir fluid composition using the PVT Express equipment (flash kit and GC). The remaining sample in each was used to measure mercury concentration in the gas phase by atomic fluorescence. The final three NR-SPMC samples were flashed through scrubbing solutions for the analysis of hydrogen sulphide, mercaptans and carbonyl sulphides in gas.
All residual liquid from the samplers was collected in 1 Litre glass bottles against further analysis and labelled appropriately to match the respective sampler.

MDT Run 2

For Run 2, the MDT tool was configured with one MRMS loaded with one NR-SPMC and five MPSR's with all chambers configured for low shock sampling. The MDT tool was run in hole to perform a pressure survey and to collect downhole fluid samples between 3388.8 m MDRT and 2933.0 m MDRT.

Once at surface, the sampling tools were removed from the MRMS and opening pressures of samplers recorded, confirming that the single NR-SPMC and all but one MPSR had collected samples successfully. The NR-SPMC was

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heated to reservoir temperature and conditioned at reservoir pressure before being monophasically transferred to a Single-phase Sample Bottle (SSB) for safe shipping to the laboratory.

All sampling, transfer and well site chemistry equipment was rigged down and consigned for shipment back to Perth Schlumberger base. All samples were shipped from the rig in accordance with the IMO Dangerous Goods Regulations, in an Origin supplied shipping container to PetroLab in Adelaide for analysis.

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Schlumberger

Client: Origin Energy
Job No: AOH442
Date: 20th Nov – 1st Dec, 2004
Field: Trefoil
Well: Trefoil-1
Installation: Ensco 102

Open Hole Sample Listing

MDT Run No: Run 1

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
1.01	26/11/04	14:31	Bottomhole Sample	3386.5 m MDRT	450 cc MPSR	0122
1.02	26/11/04	16:28	Stock Tank Water	3264.0 m MDRT	1 Litre Glass bottle	N/A
1.03	26/11/04	19:07	Bottomhole Sample	3142.7 m MDRT	450 cc MPSR	0187
1.04	26/11/04	19:21	Stock Tank Water	3142.7 m MDRT	1 Litre Glass bottle	N/A
1.05	26/11/04	19:36	Stock Tank Water	3142.7 m MDRT	1 Litre Glass bottle	N/A
1.06	27/11/04	01:49	Bottomhole Sample	3057.2 m MDRT	450 cc MPSR	0113
1.07	27/11/04	02:00	Stock Tank Water	3057.2 m MDRT	1 Litre Glass bottle	N/A
1.08	27/11/04	02:14	Stock Tank Water	3057.2 m MDRT	1 Litre Glass bottle	N/A
1.09	27/11/04	08:07	Stock Tank Water	3006.48 m MDRT	1 Litre Glass bottle	N/A
1.10	27/11/04	11:33	Bottomhole Sample	2968.7 m MDRT	450 cc MPSR	0192
1.11	27/11/04	11:47	Stock Tank Water	2968.7 m MDRT	1 Litre Glass bottle	N/A
1.12	27/11/04	11:53	Stock Tank Water	2968.7 m MDRT	1 Litre Glass bottle	N/A

MDT Run No: N/A

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
1.13	21/11/04	N/A	Mud Sample	N/A	1 Litre Plastic cont.	N/A

MDT Run No: Run 2

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
2.01	29/11/04	18:41	Monophasic Bottomhole Sample	3388.7 m MDRT	Non-reactive (NSB)	10007-MA
2.02	30/11/04	08:26	Bottomhole Sample	3028.0 m MDRT	MPSR	0310
2.03	30/11/04	09:57	Bottomhole Sample	2999.2 m MDRT	MPSR	0494
2.04	30/11/04	12:35	Bottomhole Sample	2988.0 m MDRT	MPSR	0501
2.05	30/11/04	19:41	Bottomhole Sample	2933.0 m MDRT	MPSR	0316

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Client: Origin Energy
Job No: AOH442
Date: 20th Nov – 1st Dec, 2004
Field: Trefoil
Well: Trefoil-1
Installation: Ensco 102

Sequence of Events

Date	Time	Event
MDT Logging Operations – Trefoil-1		
21/11/2004	12:00	Oilphase Sampling and Analysis Specialists arrived on Ensco 102
	12:45	Attended Rig safety induction and orientation
	13:45	Began rig up of Oilphase sampling and analysis equipment
	15:00	Mud sample obtained from Mud Engineer (sample 1.13)
	19:00	Prepare JSA for Pressure Operations to take place
22/11/2004	06:30	Attended Supervisors meeting with OIM
	08:00	Continued rig up and function test of equipment
	09:30	Commenced conditioning GC Gas oven
	11:00	Commenced calibration of GC
	14:20	Began DI Water priming of SPMC sampling tools
	19:40	Completed water priming of SPMC's
	22:30	Completed calibration of GC
23/11/04	06:30	Attended Supervisors meeting with OIM
	08:00	Oilphase pressure operations, general work permit arranged
	08:15	Commenced calibration of AFS Sir Galahad
	09:00	Relocated Field Transfer Equipment to prime SPMC sampling tools for RIH
	10:15	Completed AFS Sir Galahad calibration
	11:00	Commenced preparation/ pre-charge of 8 x SPMC's
	13:00	Participated in Daily Rig Audit
	18:00	Completed pressure operations, permit closed
24/11/04	06:30	Attended Supervisors meeting with OIM
	07:15	Commenced NR-SPMC installation into MRMS-BA-011 and MRMS-CA-216
	09:00	Completed installation of SPMC's
	10:00	Prepared MDT Toolstring diagram
	15:30	Commenced set up and function test of XGOR and XPLT
25/11/04	06:30	Attended Supervisors meeting with OIM
	12:56	Rig up of MDT tool string on drill floor
		Standby by for MDT logging and sampling operations
	13:15	Commenced conditioning of GC liquid oven
	14:00	Commenced set up of well site chemistry equipment for onsite analysis
	16:56	Began DI Water priming of SPMC sampling tools for second MDT run
	17:00	GC HID Detector #1 function tested with Diesel sample
	18:15	Completed water priming of SPMC's
26/11/04	01:00	Low oil alarm on MDT, began POOH
	02:00	Tool at surface

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Date	Time	Event
MDT Logging Operations – Trefoil-1		
	02:57	Problem resolved, began RIH
	06:30	Attended Supervisors meeting with OIM
26/11/04	12:25	Began MDT sampling operations
		Started pumpout at sampling point 1 @ 3386.5 m MDRT
	14:31	Commenced sampling in to MPSR 0122 (1.01)
	14:43	Completed sampling into MPSR
	15:17	Pumpout commenced at sampling point 2 @ 3264 m MDRT
	16:28	Began sampling into SPMC 246 (1.02)
	16:30	Completed sampling into SPMC
	17:25	Initiated pumpout at sampling point 3 @ 3142.7 m MDRT
	19:07	Commenced sampling into MPSR 0187 (1.03)
	19:15	Finished sampling into MPSR, pumpout continued
	19:21	Started sampling into SPMC 245 (1.04)
	19:23	Completed sampling into SPMC, pumpout continued
	19:36	Began sampling into SPMC 244 (1.05)
	19:38	Completed sampling into SPMC
	22:55	Started pumpout at sampling point 4 @ 3057.2 m MDRT
27/11/04	01:49	Commenced sampling into MPSR (1.06)
	01:58	Finished sampling in MPSR, pumpout continued
	02:01	Started sampling into SPMC 243 (1.07)
	02:03	Completed sampling into SPMC, pumpout continued
	02:14	Began sampling into SPMC 273 (1.08)
	02:16	Finished sampling into SPMC
	06:30	Attended Supervisors meeting with OIM
	07:22	Started pumpout at sampling point 5 @ 3006.5 m MDRT
	08:07	Commenced sampling into SPMC 247 (1.09)
	08:09	Completed sampling into SPMC
	10:38	Started pumpout at sampling point 6 @ 2968.7 m MDRT
	11:33	Started sampling into MPSR 0192 (1.10)
	11:38	Finished sampling into MPSR, pumpout continued
	11:47	Began sampling into SPMC 248 (1.11)
	11:49	Completed sampling into SPMC, pumpout continued
	11:53	Commenced sampling into SPMC 272 (1.12)
	11:55	Finished sampling into SPMC
	12:10	Sampling for MDT run1 completed, began POOH

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Date	Time	Event
MDT Logging Operations – Trefoil-1		
	13:00	Oilphase pressure operations, general work permit arranged
		Arranged Dangerous Goods paperwork for MPSR samplers to go to Petrolabs - Adelaide for analysis
	13:30	Schlumberger Tools at surface
	14:15	Began removal of NR-SPMC's from MRMS from Run 1
	15:09	Commenced MPSR sample validations
	15:30	Completed sample validations on MPSR samplers
	15:45	Determined opening pressure of SPMC 246, 8900 psig @ 23 °C
	16:02	Started flash of SPMC 246, retained water and gas volumes measured
	16:55	Completed SPMC flash, began GWR calculation
	17:03	Determined opening pressure of SPMC 247, 8900 psig @ 23 °C
	17:07	Started flash of SPMC 247, retained water and gas volumes measured
	17:58	Completed SPMC flash, began GWR calculation
		MPSR samples leave the rig for Petrolabs – Adelaide
	18:34	Completed gas compositional analysis of SPMC 246
	18:48	Determined opening pressure of SPMC 245, 7000 psig @ 23 °C
	19:18	Initiated purging of UOP Train 1 Dreschels with N_2
	19:28	Completed N_2 purge
	19:35	Completed gas compositional analysis of SPMC 247
	20:00	H_2S measured by length of stain tube
	20:10	Commenced UOP sampling from SPMC 245
	22:17	Finished sampling from SPMC, 14.502 Litres flowed
	23:00	Started H_2S analysis of SPMC 245
		Determined opening pressure of SPMC 244, 5950 psig @ 17 °C
		Commenced heating of SPMC @ 119.4 °C
	23:40	Completed H_2S analysis
28/11/04	00:20	Started flash of SPMC 244, retained water and gas volumes measured
	01:35	Completed SPMC flash, began GOR calculation
	02:00	Commenced gas purge for mercury analysis from SPMC 244
	02:14	Completed gas compositional analysis of SPMC 244
	02:55	Determined opening pressure of SPMC 243, 5800 psig @ 15 °C
	03:02	Initiated purging of UOP Train 2 Dreschels with N_2
	03:12	Completed N_2 purge
	03:30	Completed gas purge for mercury analysis from SPMC 244, analysed gold tube
	03:50	H_2S measured by stain tube

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Date	Time	Event
MDT Logging Operations – Trefoil-1		
	03:55	Commenced UOP sampling from SPMC 243
	04:47	Finished sampling from SPMC, 19.475 Litres flowed
	05:15	Started H_2S analysis of SPMC 243
	05:15	Determined opening pressure of SPMC 273, 5900 psig @ 15 °C
		Commenced heating of SPMC @ 117.5 °C
	06:26	Started flash of SPMC 273, retained water and gas volumes measured
	06:30	Completed H_2S analysis
	06:50	Completed SPMC flash, began GOR calculation
	07:06	Commenced gas purge for mercury analysis from SPMC 273
	07:25	Completed gas compositional analysis of SPMC 273
	08:28	Completed gas purge for mercury analysis from SPMC 273, analysed gold tube
	08:51	Determined opening pressure of SPMC 248, 5850 psig @ 16 °C
	08:55	Started purging of UOP Train 3 Dreschels with N_2
	09:05	Finished N_2 purging
	09:25	H_2S measured by stain tube
	09:32	Commenced UOP sampling from SPMC 248
	10:25	Finished sampling from SPMC, 20.10 Litres flowed
	10:30	Started H_2S analysis of SPMC 248
	11:00	Determined opening pressure of SPMC 272, 4700 psig @ 15 °C
		Commenced heating of SPMC @ 115.9 °C
	11:20	Completed H_2S analysis
	11:25	Started flash of SPMC 272, retained water and gas volumes measured
	12:30	Completed SPMC flash, began GOR calculation
	13:45	Commenced gas purge for mercury analysis from SPMC 272
	13:58	Completed gas compositional analysis of SPMC 272
	14:35	Completed gas purge for mercury analysis from SPMC 272, analysed gold tube
	20:15	Began sample redress of 4 x SPMC for MDT Run 2
	23:25	Completed redress of SPMC's
	23:10	Injected SPMC 244 liquid sample into GC
29/11/04	00:10	Completed liquid compositional analysis for SPMC 244
	01:45	Injected SPMC 273 liquid sample into GC
	02:30	Commenced Priming of 1 x SPMC's for MDT Run 2
	02:45	Completed liquid compositional analysis for SPMC 273
	02:55	Injected SPMC 272 liquid sample into GC
	03:15	Completed liquid compositional analysis for SPMC 272

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Client: Origin Energy
Job No: AOH442
Date: 20th Nov – 1st Dec, 2004
Field: Trefoil
Well: Trefoil-1
Installation: Ensco 102

Date	Time	Event
MDT Logging Operations – Trefoil-1		
	03:45	Completed priming of SPMC
	04:00	Loaded SPMC into MRMS for RIH on Wireline
	05:45	Began RIH
	15:56	Began pumpout at sampling point 1, 3388.7 m MDRT
	18:41	Commenced sampling into SPMC 257 (2.01)
	18:43	Completed sampling into SPMC
	23:57	Began pumpout at sampling point 2, 3100.5 m MDRT
30/11/04	01:35	Commenced sampling into MPSR 0485
	01:39	Completed sampling into MPSR
	06:17	Started pumpout at sampling point 3, 3028.0 m MDRT
	08:26	Began sampling into MPSR 0310 (2.02)
	08:31	Finished sampling into MPSR
	09:14	Began pumpout at sampling point 4, 2999.2 m MDRT
	09:57	Initiated sampling into MPSR 0494 (2.03)
	10:07	Finished sampling into MPSR
	10:43	Started pumpout at sampling point 5, 2988.0 m MDRT
	12:35	Began sampling into MPSR 0501 (2.04)
	12:43	Completed sampling into MPSR
	17:16	Started pumpout at sampling point 6, 2933.0 m MDRT
	19:41	Commenced sampling into MPSR 0316 (2.05)
	19:49	Finished sampling into MPSR
	22:38	Began POOH
	24:00	Tools at surface, commenced rig down
01/12/04	02:25	Determined opening pressure of SPMC 257, 6400psig @ 12 °C
	03:10	Began heating SPMC 257 to 126.1 °C
	03:15	Commenced MPSR sample validations
	03:45	Completed sample validations on MPSR samplers
	04:12	Began SPMC 257 sample transfer into SSB 10007-MA
	04:20	Completed transfer of SPMC
		End of Sampling and Analysis Operations for Trefoil-1
	04:30	Began rig down of Oilphase equipment and pack up
	06:30	Completed pack up and consign to Schlumberger, Perth, WA
	17:50	Oilphase personnel departed Ensco 102 for Perth

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.02 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 26/11/04

Sampling Time: 16:28

MRMS Serial No: BA-11

MRMS Position (Slot): 6

Sample Point: 3264 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 27/11/04

Transfer Time: 16:02

Chamber Type: NR-SPMC

Chamber Serial No: 246

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 240 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 8900 psia @ 23 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4763 psia

BHT: 122.6 ºC

At depth: 3264 m MDRT

Pump Out Vol: 22.82 Litres

Drawdown: 497 psi

Min BHS Pressure: 4266 psia

Pump Out Duration: 71 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite GWR and Solution gas compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.04 **Test No:** Run 1

Bottle No:	N/A	**Sample Nature:**	Stock Tank Water
Sampling Date:	26/11/04	**Flow Period:**	N/A
Sampling Time:	19:21	**Transfer Date:**	27/11/04
MRMS Serial No:	BA-11	**Transfer Time:**	20:10
MRMS Position (Slot):	3	**Chamber Type:**	NR-SPMC
Sample Point:	3142.7 m MDRT	**Chamber Serial No:**	245
		Formation:	N/A

Shipping Conditions

Sample Bottle Type:	1 Litre Glass bottle	**Gas Cap Created:**	N/A
Sample Bottle Volume:	1 Litre	**Fluid Remaining:**	N/A
Sample Volume:	100 cc approx.	**Final Pressure:**	atmos @ ambient

Transfer Conditions

Initial Pressure:	7000 psia @ 23 ºC	**Transfer Duration:**	N/A
Transfer Pressure:	atmos @ ambient	**Apparent Bubble Point:**	N/A @ N/A
Heating & Agitation Time:	N/A	**Transfer Temperature:**	N/A
		Oil Gravity API:	N/A
GOR:	N/A Scf/Sepbbl		
Contamination Level:	N/A		

Production Conditions During Sampling

Initial BHP:	4489 psia	**Drawdown:**	110 psi
BHT:	119.4 ºC	**Min BHS Pressure:**	4379 psia
At depth:	3142.7 m MDRT	**Pump Out Duration:**	116 mins
Pump Out Vol:	25.16 Litres		

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite H2S, R-SH and COS measured on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.05 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 26/11/04

Sampling Time: 19:36

MRMS Serial No: BA-11

MRMS Position (Slot): 2

Sample Point: 3142.7 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 28/11/04

Transfer Time: 00:22

Chamber Type: NR-SPMC

Chamber Serial No: 244

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 100 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 5950 psia @ 17 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: 80 mins

GOR: 16657 m3/ m3

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4489 psia

BHT: 119.4 ºC

At depth: 3142.7 m MDRT

Pump Out Vol: 26.91 Litres

Drawdown: 84 psi

Min BHS Pressure: 4405 psia

Pump Out Duration: 131 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite Mercury, CGR and Compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.07 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 27/11/04

Sampling Time: 02:00

MRMS Serial No: BA-11

MRMS Position (Slot): 1

Sample Point: 3057.2 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 28/11/04

Transfer Time: 03:53

Chamber Type: NR-SPMC

Chamber Serial No: 243

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 105 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 5800 psia @ 15 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4350 psia

BHT: 117.5 ºC

At depth: 3057.2 m MDRT

Pump Out Vol: 46.8 Litres

Drawdown: 260 psi

Min BHS Pressure: 4090 psia

Pump Out Duration: 190 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite H2S, R-SH and COS measured on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.08 **Test No:** Run 1

Bottle No:	N/A	**Sample Nature:**	Stock Tank Water
Sampling Date:	27/11/04	**Flow Period:**	N/A
Sampling Time:	02:14	**Transfer Date:**	28/11/04
MRMS Serial No:	CA-216	**Transfer Time:**	06:26
MRMS Position (Slot):	6	**Chamber Type:**	NR-SPMC
Sample Point:	3057.2 m MDRT	**Chamber Serial No:**	273
		Formation:	N/A

Shipping Conditions

Sample Bottle Type:	1 Litre Glass bottle	**Gas Cap Created:**	N/A
Sample Bottle Volume:	1 Litre	**Fluid Remaining:**	N/A
Sample Volume:	105 cc approx.	**Final Pressure:**	atmos @ ambient

Transfer Conditions

Initial Pressure:	5900 psia @ 15 ºC	**Transfer Duration:**	N/A
Transfer Pressure:	atmos @ ambient	**Apparent Bubble Point:**	N/A @ N/A
Heating & Agitation Time:	71 mins	**Transfer Temperature:**	N/A
		Oil Gravity API:	N/A
GOR:	12742 m3/ m3		
Contamination Level:	N/A		

Production Conditions During Sampling

Initial BHP:	4350 psia	**Drawdown:**	260 psi
BHT:	117.5 ºC	**Min BHS Pressure:**	4090 psia
At depth:	3057.2 m MDRT	**Pump Out Duration:**	200 mins
Pump Out Vol:	49.0 Litres		

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite Mercury, CGR and Compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.09 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 27/11/04

Sampling Time: 08:07

MRMS Serial No: CA-216

MRMS Position (Slot): 1

Sample Point: 3006.48 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 17:07

Transfer Time: 27/11/04

Chamber Type: NR-SPMC

Chamber Serial No: 247

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 220 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 8900 psia @ 23 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4227 psia

BHT: 117.1 ºC

At depth: 3006.48 m MDRT

Pump Out Vol: 28.6 Litres

Drawdown: 167 psi

Min BHS Pressure: 4060 psia

Pump Out Duration: 46 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite GWR and Solution gas compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.11 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 27/11/04

Sampling Time: 11:47

MRMS Serial No: CA-216

MRMS Position (Slot): 2

Sample Point: 2968.7 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 28/11/04

Transfer Time: 09:32

Chamber Type: NR-SPMC

Chamber Serial No: 248

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 15 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 5800 psia @ 16 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4210 psia

BHT: 115.9 ºC

At depth: 2968.7 m MDRT

Pump Out Vol: 37.44 Litres

Drawdown: 49 psi

Min BHS Pressure: 4161 psia

Pump Out Duration: 69 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite H2S, R-SH and COS measured on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.12 **Test No:** Run 1

Bottle No: N/A

Sampling Date: 27/11/04

Sampling Time: 11:53

MRMS Serial No: CA-216

MRMS Position (Slot): 3

Sample Point: 2968.7 m MDRT

Sample Nature: Stock Tank Water

Flow Period: N/A

Transfer Date: 28/11/04

Transfer Time: 11:25

Chamber Type: NR-SPMC

Chamber Serial No: 272

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Glass bottle

Sample Bottle Volume: 1 Litre

Sample Volume: 20 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: atmos @ ambient

Transfer Conditions

Initial Pressure: 4700 psia @ 15 ºC

Transfer Pressure: atmos @ ambient

Heating & Agitation Time: 25 mins

GOR: 10795 m3/ m3

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4210 psia

BHT: 115.9 ºC

At depth: 2968.7 m MDRT

Pump Out Vol: 40.95 Litres

Drawdown: 49 psi

Min BHS Pressure: 4161 psia

Pump Out Duration: 75 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative
Onsite Mercury, CGR and Compositional analysis performed on sample

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.13 **Test No:** N/A

Bottle No: N/A

Sampling Date: 21/11/04

Sampling Time: N/A

MRMS Serial No: N/A

MRMS Position (Slot): N/A

Sample Point: N/A

Sample Nature: Mud Sample

Flow Period: N/A

Transfer Date: N/A

Transfer Time: N/A

Chamber Type: N/A

Chamber Serial No: N/A

Formation: N/A

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 900 cc approx.

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Transfer Conditions

Initial Pressure: N/A @ N/A

Transfer Pressure: N/A @ N/A

Heating & Agitation Time: N/A

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: N/A

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: N/A

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: N/A

BHT: N/A

At depth: N/A

Pump Out Vol: N/A

Drawdown: N/A

Min BHS Pressure: N/A

Pump Out Duration: N/A

Remarks

Mud sample provided by Mud Engineer

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 2.01 **Test No:** Run 2

Bottle No: 10007-MA

Sampling Date: 29/11/04

Sampling Time: 18:41

MRMS Serial No: CA-216

MRMS Position (Slot): 4

Sample Point: 3388.7 m MDRT

Sample Nature: Monophasic Bottomhole Sample

Flow Period: N/A

Transfer Date: 01/12/04

Transfer Time: 04:12

Chamber Type: NR-SPMC

Chamber Serial No: 257

Formation: N/A

Shipping Conditions

Sample Bottle Type: Non-reactive (NSB)

Sample Bottle Volume: 820 cc

Sample Volume: 210 cc

Gas Cap Created: 60 cc (Nitrogen)

Fluid Remaining: 530 cc (Water/ Glycol)

Final Pressure: 7650 psia @ 11 ºC

Transfer Conditions

Initial Pressure: 6400 psia @ 12 ºC

Transfer Pressure: 7500 psia @ 126 ºC

Heating & Agitation Time: 62 mins

GOR: N/A Scf/Sepbbl

Contamination Level: N/A

Transfer Duration: 8 mins

Apparent Bubble Point: N/A @ N/A

Transfer Temperature: 126 ºC

Oil Gravity API: N/A

Production Conditions During Sampling

Initial BHP: 4880 psia

BHT: 126.1 ºC

At depth: 3388.7 m MDRT

Pump Out Vol: 22.23 Litres

Drawdown: 3484 psi

Min BHS Pressure: 1396 psia

Pump Out Duration: 105 mins

Remarks

Bottomhole data obtained during sample capture from Schlumberger Wireline
Samples captured using low shock technique
Sample captured at request of Client representative

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Schlumberger

Client:	Origin Energy	**Field:**	Trefoil
Job No:	AOH442	**Well:**	Trefoil-1
Date:	20th Nov – 1st Dec, 2004	**Installation:**	Ensco 102

Sample Analysis Results

Excerpt from PVT Express Report

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Schlumberger

Wellsite Analysis

Sample: 1.02

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2	4.11	Sampler Serial No:	SPMC 246
CO2	5.70	Sample Point:	3264.0 m MDBRT
H2S	0.00	Bottom Hole Press:	4762.61 psia
C1	80.31	Bottom Hole Temp:	122.8 °C
C2	6.26	Fluid Type:	Water trace of Gas
C3	3.03		
iC4	0.27	Resistivity: @ 24.8 °C	0.209 Ωm
C4	0.24	H2S by UOP:	n.m. ppm vol
iC5	0.03	H2S by length of stain:	n.m. ppm vol
C5	0.06	CO2 by length of stain:	n.m. % (v/v)
C6	0.00	Mercury:	n.m. ng/m3
C7	0.00	GWR: @ Std Cond.	1.45 m3/m3
C8	0.00	GOR: @ Std Cond.	n.m. m3/m3
C9	0.00		
C10	0.00	Retained Fluid Type	Water
C11	0.00	Retained Fluid Volume (cc)	240
C12+	0.00		

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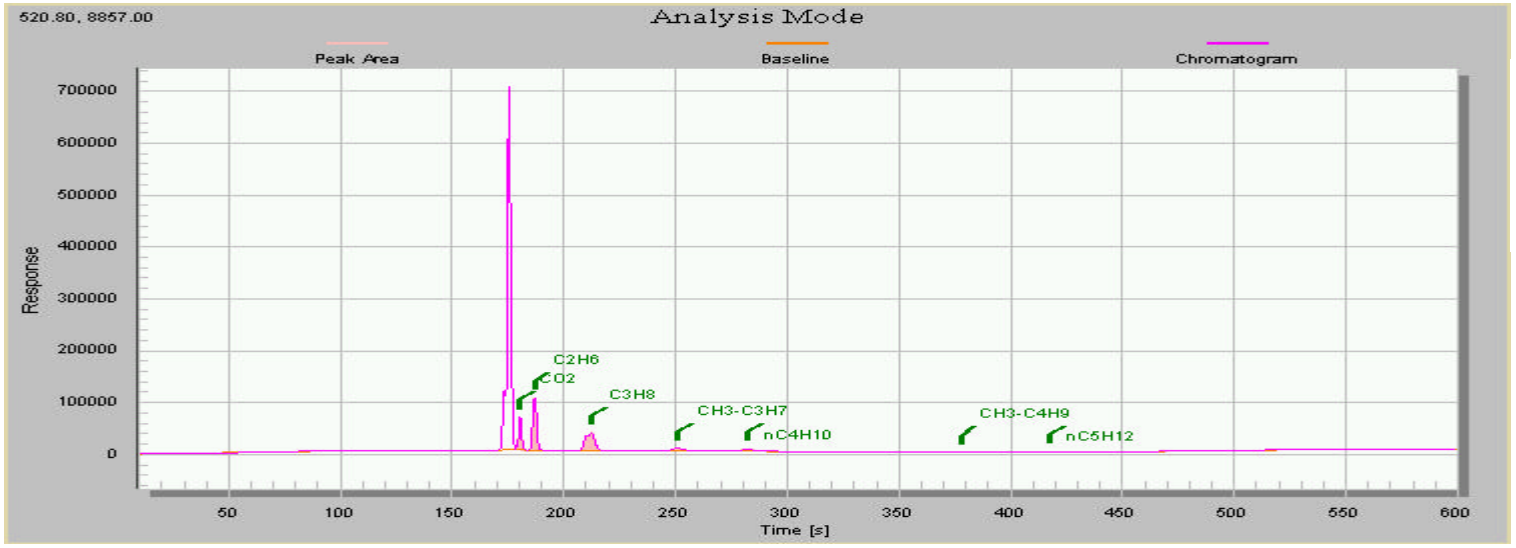

Figure 5.1
Sample: 1.02
Description: Gas sample capilliary column for hydrocarbon detection (column 2)

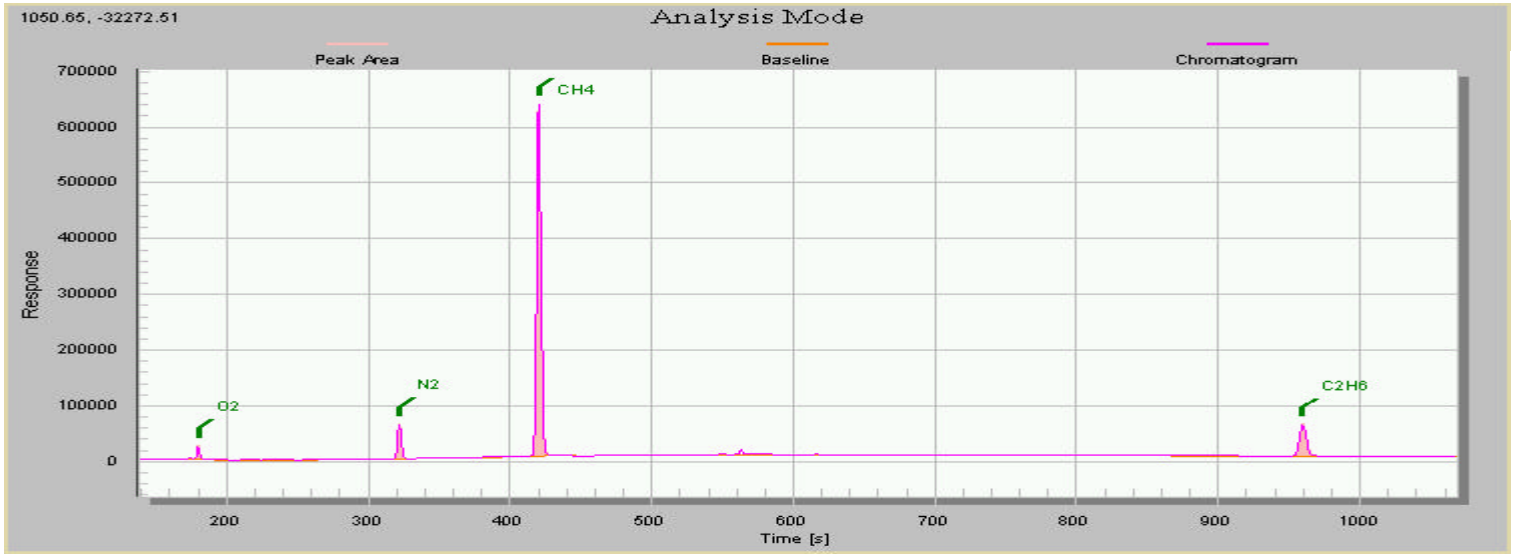

Figure 5.2
Sample: 1.02
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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Schlumberger

Wellsite Analysis

Sample: 1.04

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2		Sampler Serial No:	SPMC 245
CO2	n.m.	Sample Point:	3142.7 m MDBRT
H2S		Bottom Hole Press:	4489.02 psia
C1		Bottom Hole Temp:	119.4 °C
C2		Fluid Type:	Gas trace of water
C3			
iC4		Resistivity: @ 20.9 °C	0.205 Ωm
C4		H2S by UOP:	bdl ppm vol
iC5		H2S by length of stain:	0.00 ppm vol
C5		CO2 by length of stain:	3.00 % (v/v)
C6		Mercury:	n.m. ng/m3
C7		GWR: @ Std Cond.	n.m. m3/m3
C8		GOR: @ Std Cond.	n.m. m3/m3
C9			
C10		Retained Fluid Type	Water
C11		Retained Fluid Volume (cc)	100
C12+			

* bdl -below detectable limit

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Wellsite Analysis

Sample: 1.05

Reservoir Fluid Composition	
Comp.	**Mole %**
N2	0.00
CO2	2.67
H2S	0.00
CH4	82.59
C2H6	8.27
C3H8	3.65
iC4H10	0.53
nC4H10	0.45
iC5H12	0.23
nC5H12	0.12
C6H14	0.23
C7H16	0.36
C8H18	0.41
C9H20	0.06
C10H22	0.06
C11H24	0.05
C12H26	0.04
C13H28	0.04
C14H30	0.04
C15H32	0.04
C16H34	0.03
C17H36	0.02
C18H38	0.02
C19H40	0.02
C20H42	0.01
C21H44	0.01
C22H46	0.01
C23H48	0.01
C24H50	0.01
C25H52	0.01
C26H54	0.01
C27H56	0.01
C28H58	0.00
C29H60	0.00
C30H62	0.00
C31H64	0.00
C32H66	0.00
C33H68	0.00
C34H70	0.00
C35H72	0.00
C36+	0.00

Physical Properties	
Sampler Serial No:	SPMC 244
Sample Point:	3142.7 m MDBRT
Bottom Hole Press:	4489.02 psia
Bottom Hole Temp:	119.4 °C
Fluid Type:	Gas trace of Water
Resistivity: @ 28.0 °C	0.200 Ωm
H2S by UOP:	n.m. ppm vol
H2S by length of stain:	n.m. ppm vol
CO2 by length of stain:	n.m. % (v/v)
Mercury:	473.80 ng/m3
GWR: @ Std Cond.	n.m. m3/m3
GOR: @ Std Cond.	16657 m3/m3
STL Density: @ Std Cond.	820 kg/m3
Retained Fluid Type	Water + trace conden.
Retained Fluid Volume (cc)	100

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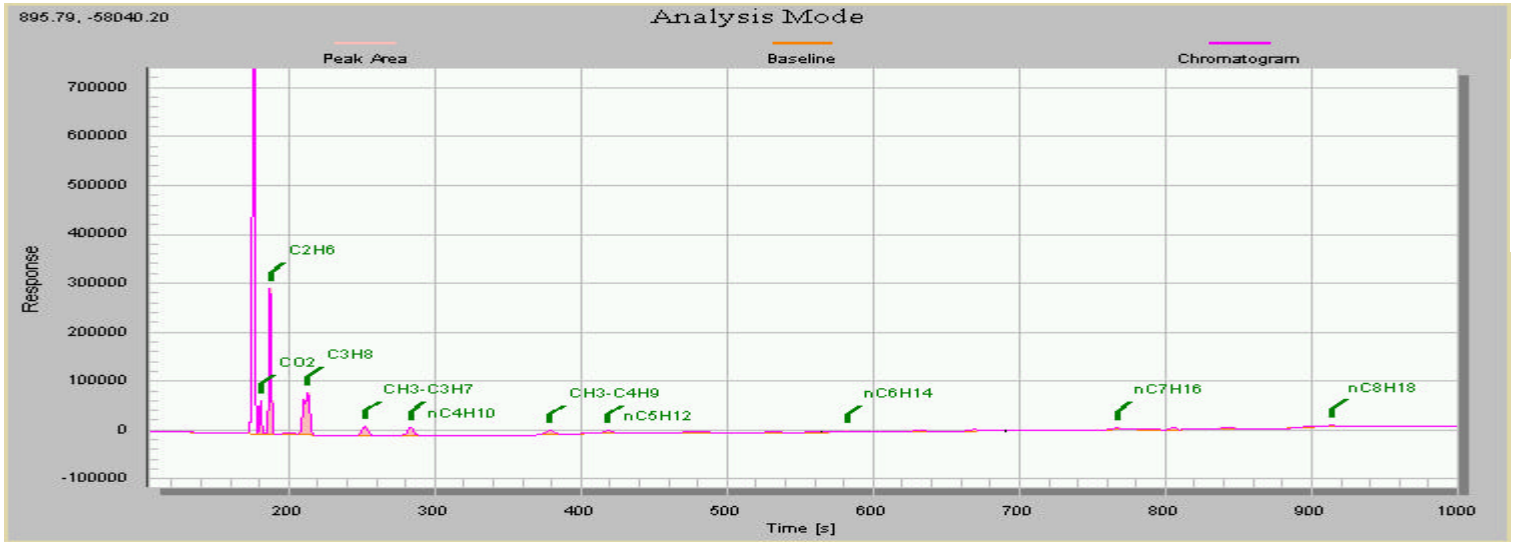

Figure 5.3
Sample: 1.05
Description: Gas sample capilliary column for hydrocarbon detection (column 2)

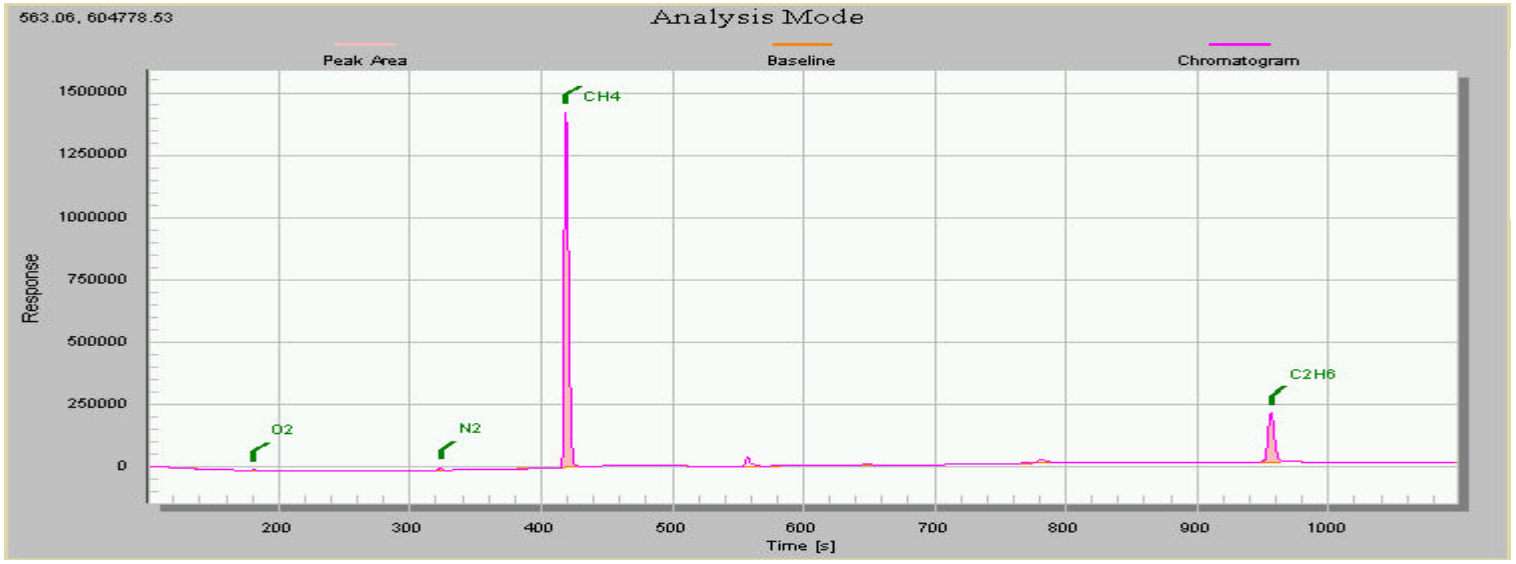

Figure 5.4
Sample: 1.05
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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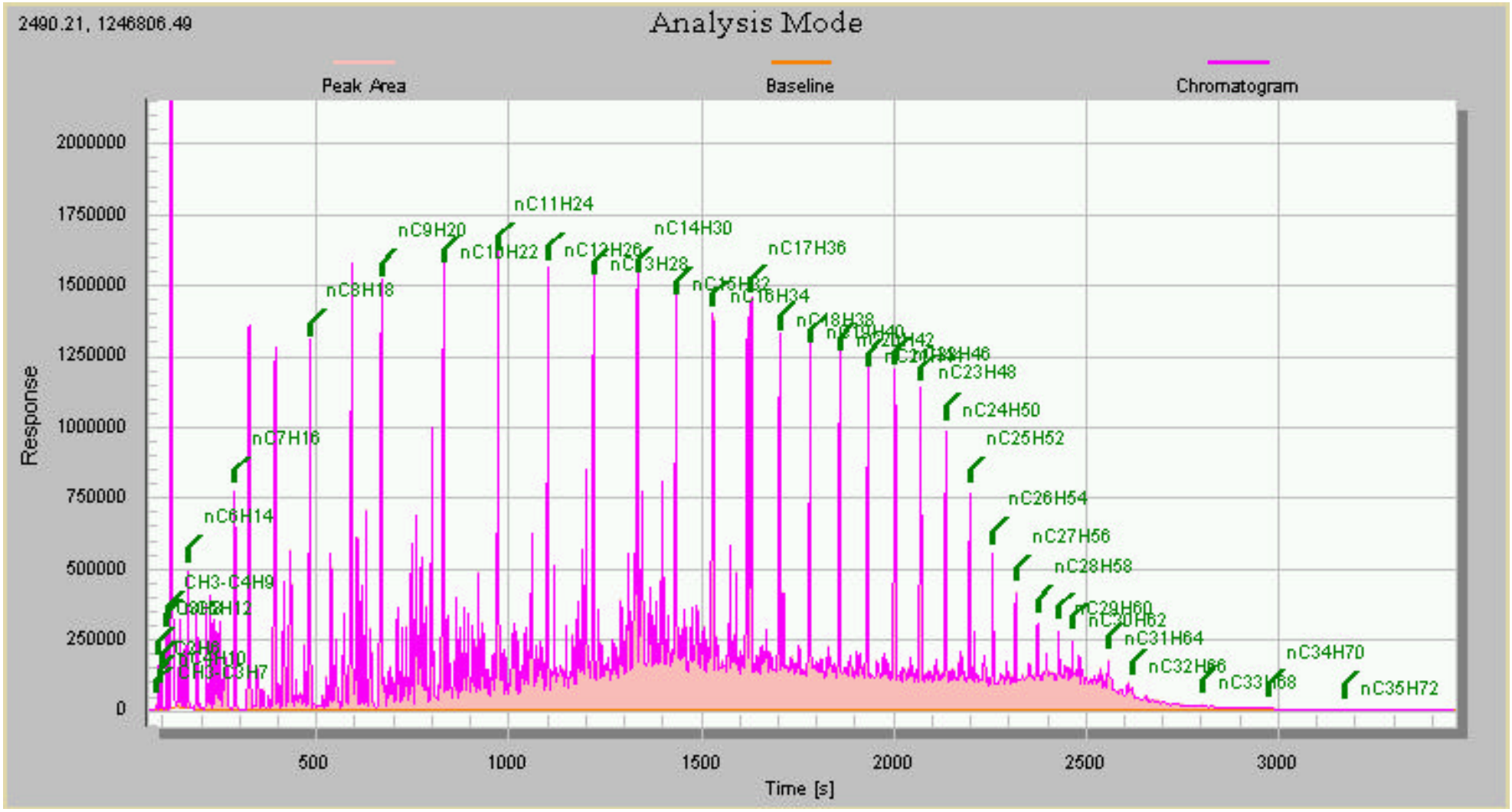

Figure 5.5
Sample: 1.05
Description: Liquid sample capillary column for hydrocarbon detection (column 1)

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Schlumberger

Wellsite Analysis

Sample: 1.07

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2		Sampler Serial No:	SPMC 243
CO2		Sample Point:	3057.2 m MDBRT
H2S	n.m.	Bottom Hole Press:	4354.26 psia
C1		Bottom Hole Temp:	117.5 °C
C2		Fluid Type:	Gas trace of water
C3			
iC4		Resistivity: @ 28.1 °C	0.211 Ωm
C4		H2S by UOP:	bdl ppm vol
iC5		H2S by length of stain:	0.00 ppm vol
C5		CO2 by length of stain:	3.00 % (v/v)
C6		Mercury:	n.m. ng/m3
C7		GWR: @ Std Cond.	n.m. m3/m3
C8		GOR: @ Std Cond.	n.m. m3/m3
C9			
C10		Retained Fluid Type	Water + trace conden.
C11		Retained Fluid Volume (cc)	105
C12+			

* bdl -below detectable limit

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Schlumberger

Wellsite Analysis

Sample: 1.08

Reservoir Fluid Composition	
Comp.	**Mole %**
N2	0.00
CO2	2.58
H2S	0.00
CH4	81.93
C2H6	7.63
C3H8	3.92
iC4H10	0.95
nC4H10	0.74
iC5H12	0.35
nC5H12	0.20
C6H14	0.44
C7H16	0.40
C8H18	0.29
C9H20	0.09
C10H22	0.08
C11H24	0.05
C12H26	0.04
C13H28	0.04
C14H30	0.03
C15H32	0.03
C16H34	0.02
C17H36	0.02
C18H38	0.02
C19H40	0.02
C20H42	0.01
C21H44	0.01
C22H46	0.01
C23H48	0.01
C24H50	0.01
C25H52	0.01
C26H54	0.01
C27H56	0.00
C28H58	0.00
C29H60	0.00
C30H62	0.00
C31H64	0.00
C32H66	0.00
C33H68	0.00
C34H70	0.00
C35H72	0.00
C36+	0.05

Physical Properties	
Sampler Serial No:	SPMC 273
Sample Point:	3057.2 m MDBRT
Bottom Hole Press:	4354.26 psia
Bottom Hole Temp:	117.5 °C
Fluid Type:	Gas trace of water
Resistivity: @ 26.1 °C	0.222 Ωm
H2S by UOP:	n.m. ppm vol
H2S by length of stain:	n.m. ppm vol
CO2 by length of stain:	n.m. % (v/v)
Mercury:	501.80 ng/m3
GWR: @ Std Cond.	n.m. m3/m3
GOR: @ Std Cond.	12742 m3/m3
STL Density: @ Std Cond.	820 kg/m3
Retained Fluid Type	Water + trace conden.
Retained Fluid Volume (cc)	105

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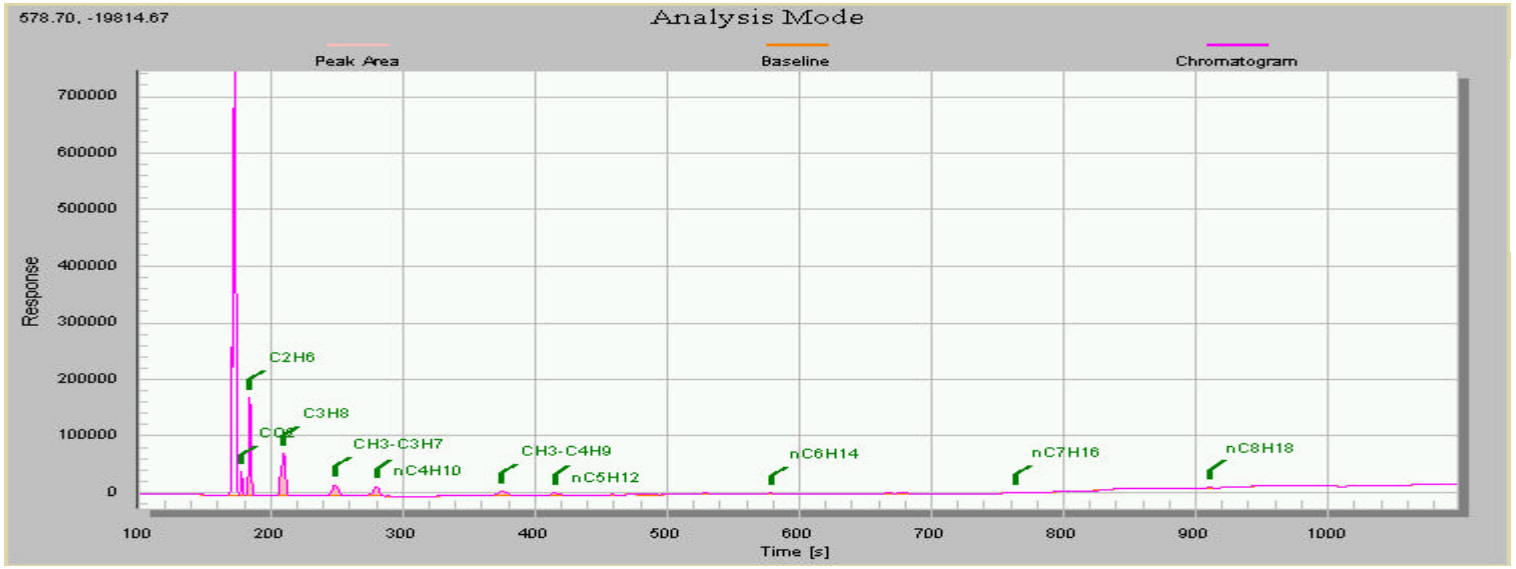

Figure 5.6
Sample: 1.08
Description: Gas sample capillary column for hydrocarbon detection (column 2)

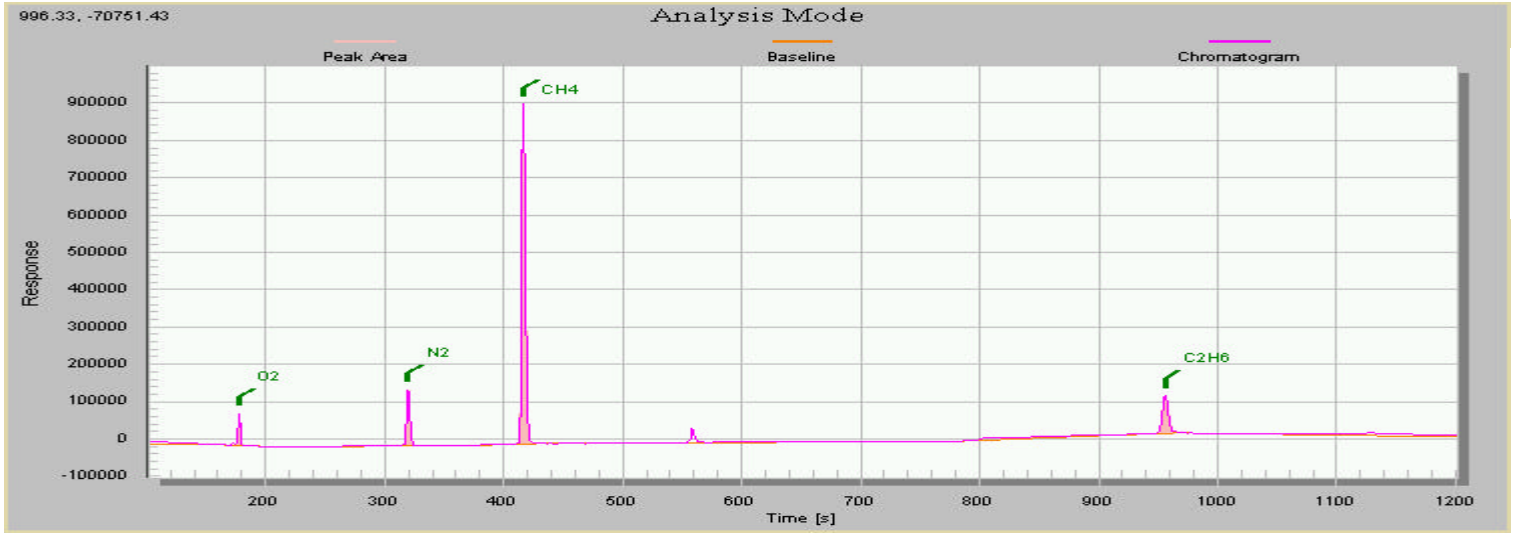

Figure 5.7
Sample: 1.08
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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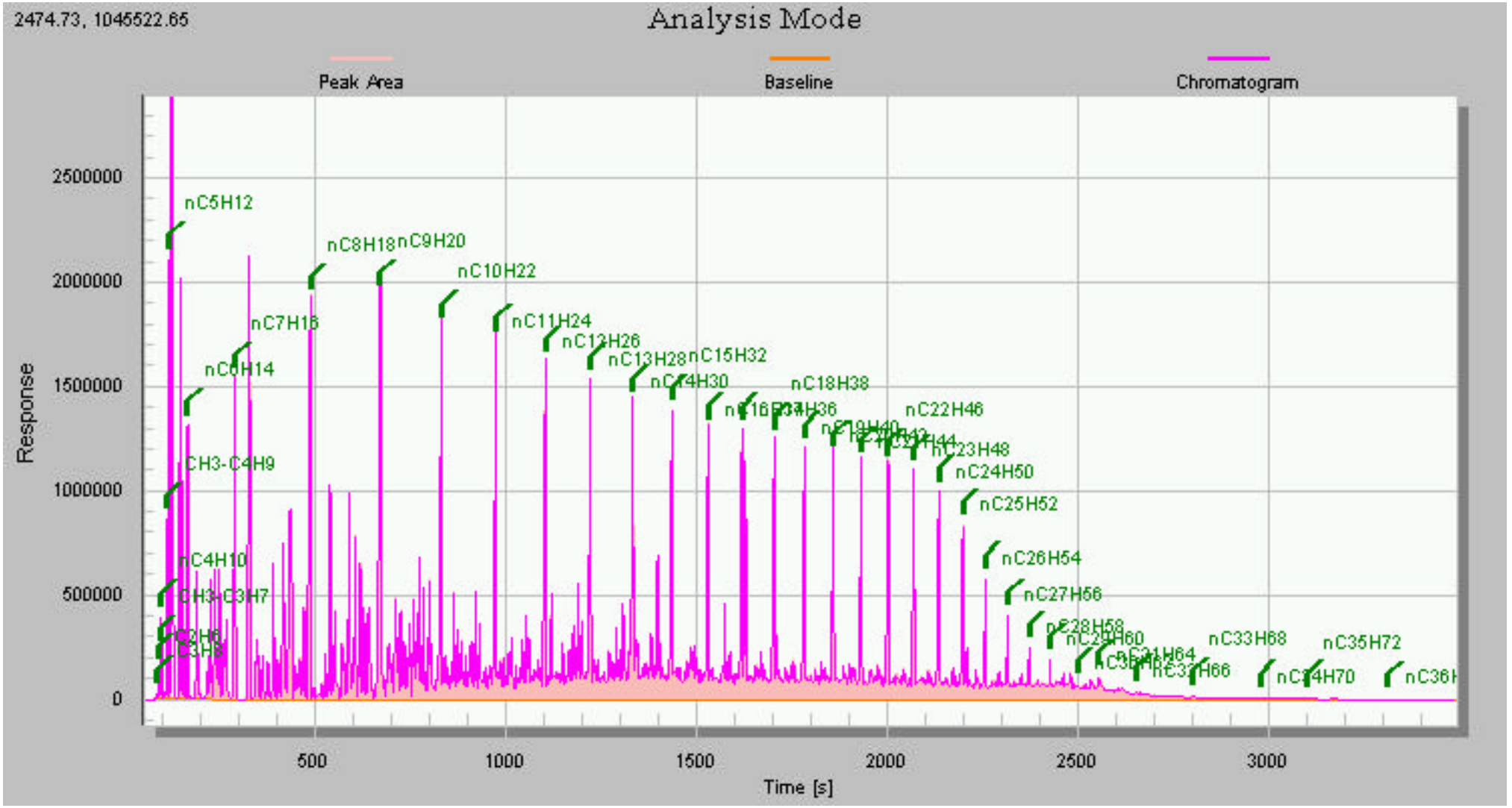

Figure 5.8
Sample: 1.08
Description: Liquid sample capillary column for hydrocarbon detection (column 1)

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not be disclosed or reproduced without the client's permission

Schlumberger

Wellsite Analysis

Sample: 1.09

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2	0.00	Sampler Serial No:	SPMC 247
CO2	8.83	Sample Point:	3006.5 m MDBRT
H2S	0.00	Bottom Hole Press:	4227.30 psia
C1	87.27	Bottom Hole Temp:	117.1 °C
C2	2.65	Fluid Type:	Gas trace of water
C3	1.11		
iC4	0.07	Resistivity: @ 25.0 °C	0.234 Ωm
C4	0.06	H2S by UOP:	n.m. ppm vol
iC5	0.01	H2S by length of stain:	n.m. ppm vol
C5	0.01	CO2 by length of stain:	n.m. % (v/v)
C6	0.00	Mercury:	n.m. ng/m3
C7	0.00	GWR: @ Std Cond.	5.30 m3/m3
C8	0.00	GOR: @ Std Cond.	n.m. m3/m3
C9	0.00		
C10	0.00	Retained Fluid Type	Water
C11	0.00	Retained Fluid Volume (cc)	220
C12+	0.00		

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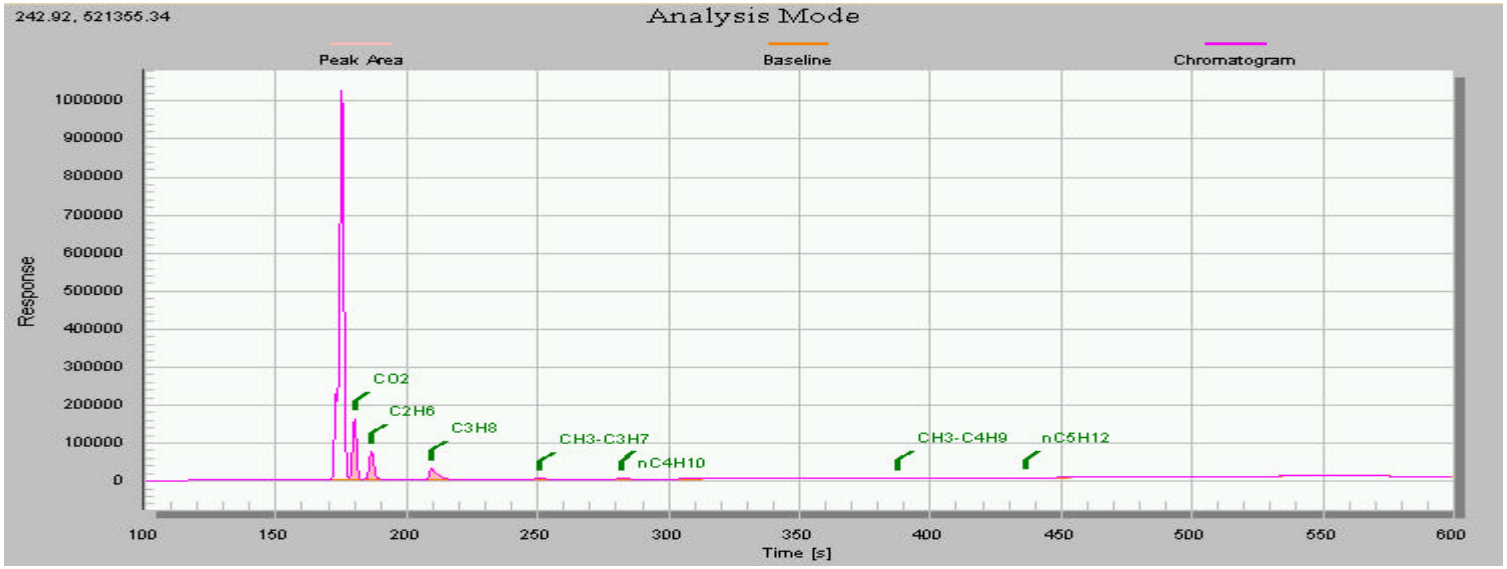

Figure 5.9
Sample: 1.09
Description: Gas sample capillary column for hydrocarbon detection (column 2)

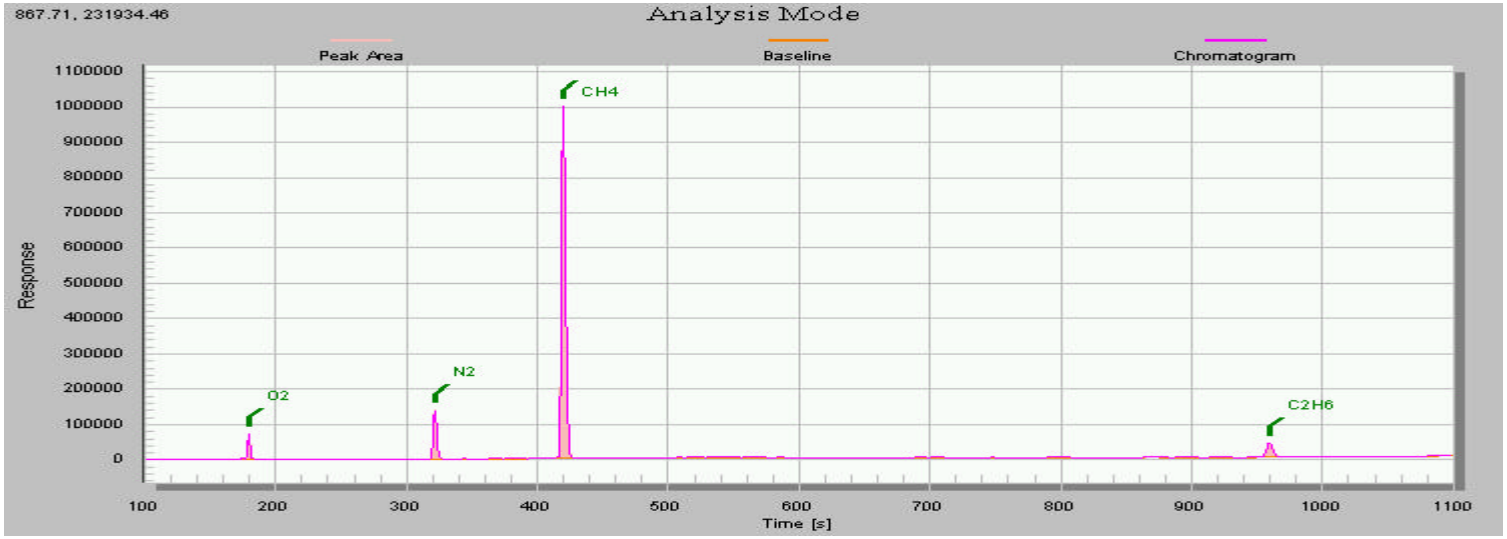

Figure 5.10
Sample: 1.09
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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Schlumberger

Wellsite Analysis

Sample: 1.11

Gas Composition Analysis		Physical Properties	
Comp.	**Mole %**		
N2		Sampler Serial No:	SPMC 248
CO2	n.m.	Sample Point:	2968.7 m MDBRT
H2S		Bottom Hole Press:	4210.30 psia
C1		Bottom Hole Temp:	115.9 °C
C2		Fluid Type:	Gas trace of water
C3			
iC4		Resistivity: @ 26.1 °C	0.339 Ωm
C4		H2S by UOP:	bdl ppm vol
iC5		H2S by length of stain:	0.00 ppm vol
C5		CO2 by length of stain:	3.10 % (v/v)
C6		Mercury:	n.m. ng/m3
C7		GWR: @ Std Cond.	n.m. m3/m3
C8		GOR: @ Std Cond.	n.m. m3/m3
C9			
C10		Retained Fluid Type	Water/ cond/ sediment
C11		Retained Fluid Volume (cc)	15
C12+			

* bdl -below detectable limit

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Schlumberger

Wellsite Analysis

Sample: 1.12

Reservoir Fluid Composition	
Comp.	**Mole %**
N2	0.58
CO2	2.13
H2S	0.00
CH4	79.19
C2H6	8.50
C3H8	4.45
iC4H10	1.08
nC4H10	0.99
iC5H12	0.52
nC5H12	0.31
C6H14	0.49
C7H16	0.50
C8H18	0.56
C9H20	0.13
C10H22	0.11
C11H24	0.07
C12H26	0.06
C13H28	0.05
C14H30	0.04
C15H32	0.04
C16H34	0.03
C17H36	0.02
C18H38	0.02
C19H40	0.02
C20H42	0.01
C21H44	0.01
C22H46	0.01
C23H48	0.01
C24H50	0.01
C25H52	0.01
C26H54	0.00
C27H56	0.00
C28H58	0.00
C29H60	0.00
C30H62	0.00
C31H64	0.00
C32H66	0.00
C33H68	0.00
C34H70	0.00
C35H72	0.00
C36+	0.04

Physical Properties	
Sampler Serial No:	SPMC 272
Sample Point:	2968.7 m MDBRT
Bottom Hole Press:	4210.30 psia
Bottom Hole Temp:	115.9 °C
Fluid Type:	Gas trace of water
Resistivity: @ 26.3 °C	0.338 Ωm
H2S by UOP:	n.m. ppm vol
H2S by length of stain:	n.m. ppm vol
CO2 by length of stain:	n.m. % (v/v)
Mercury:	772.80 ng/m3
GWR: @ Std Cond.	n.m. m3/m3
GOR: @ Std Cond.	10795 m3/m3
STL Density: @ Std Cond.	794 kg/m3
Retained Fluid Type	Water/ cond/ sediment
Retained Fluid Volume (cc)	20

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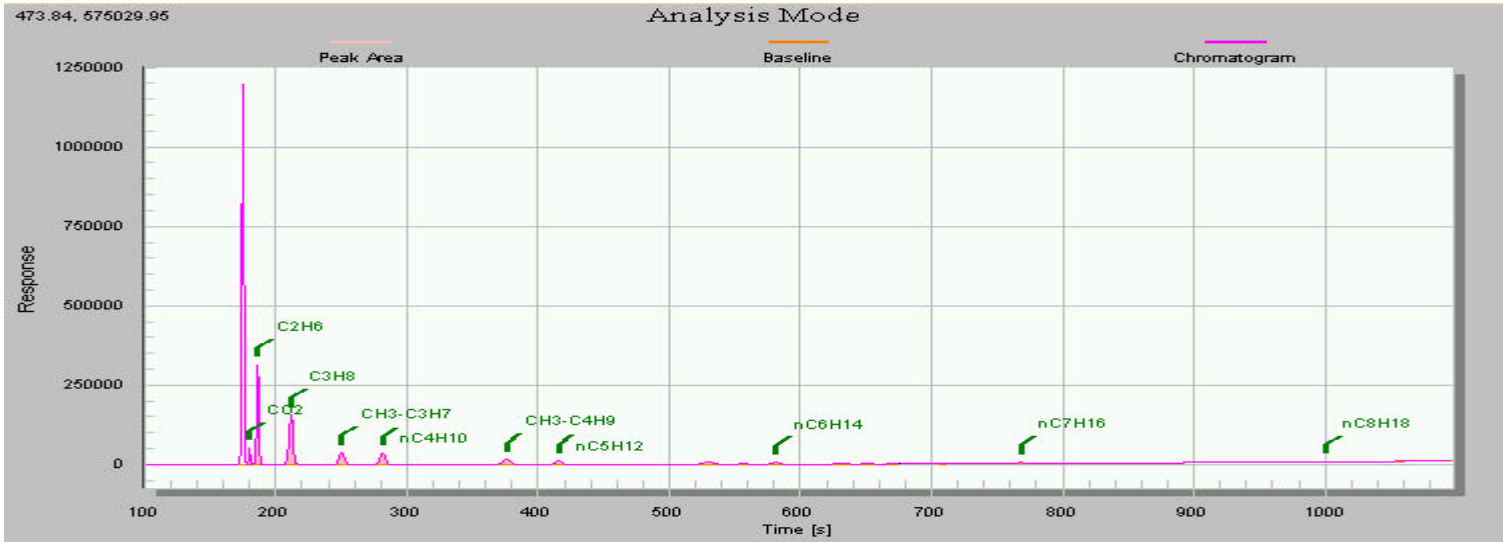

Figure 5.11
Sample: 1.12
Description: Gas sample capillary column for hydrocarbon detection (column 2)

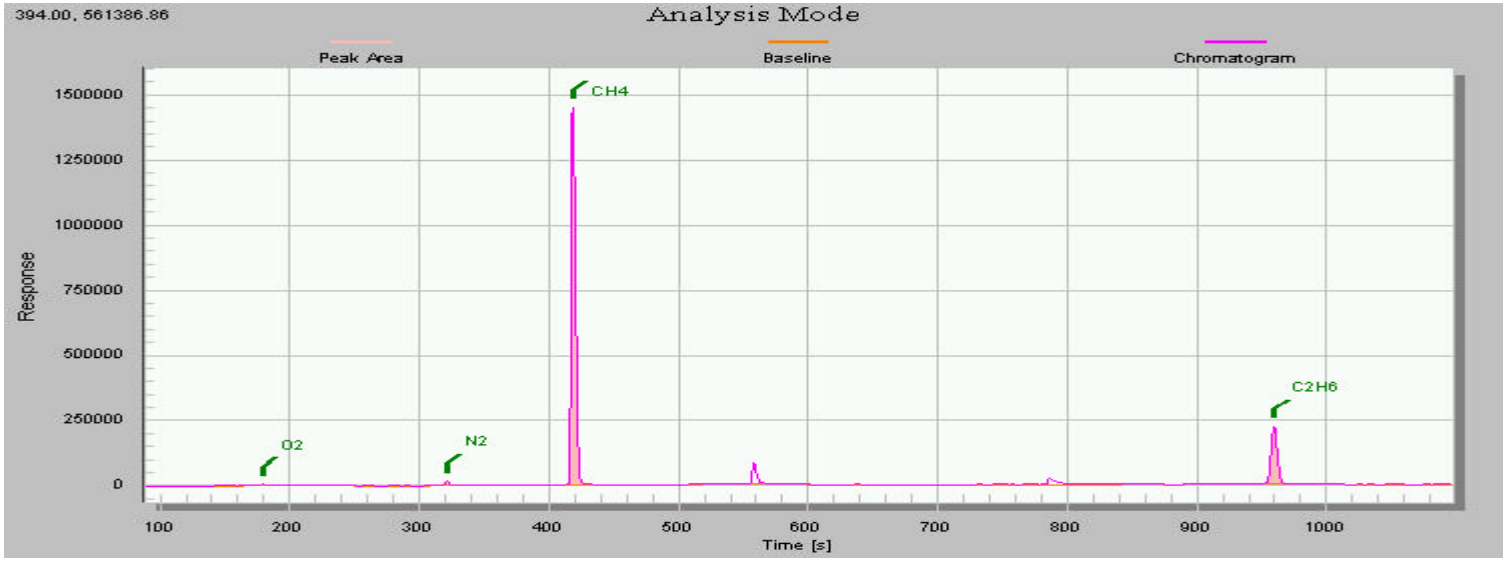

Figure 5.12
Sample: 1.12
Description: Gas sample mol-sieve column for inorganics detection (column 3)

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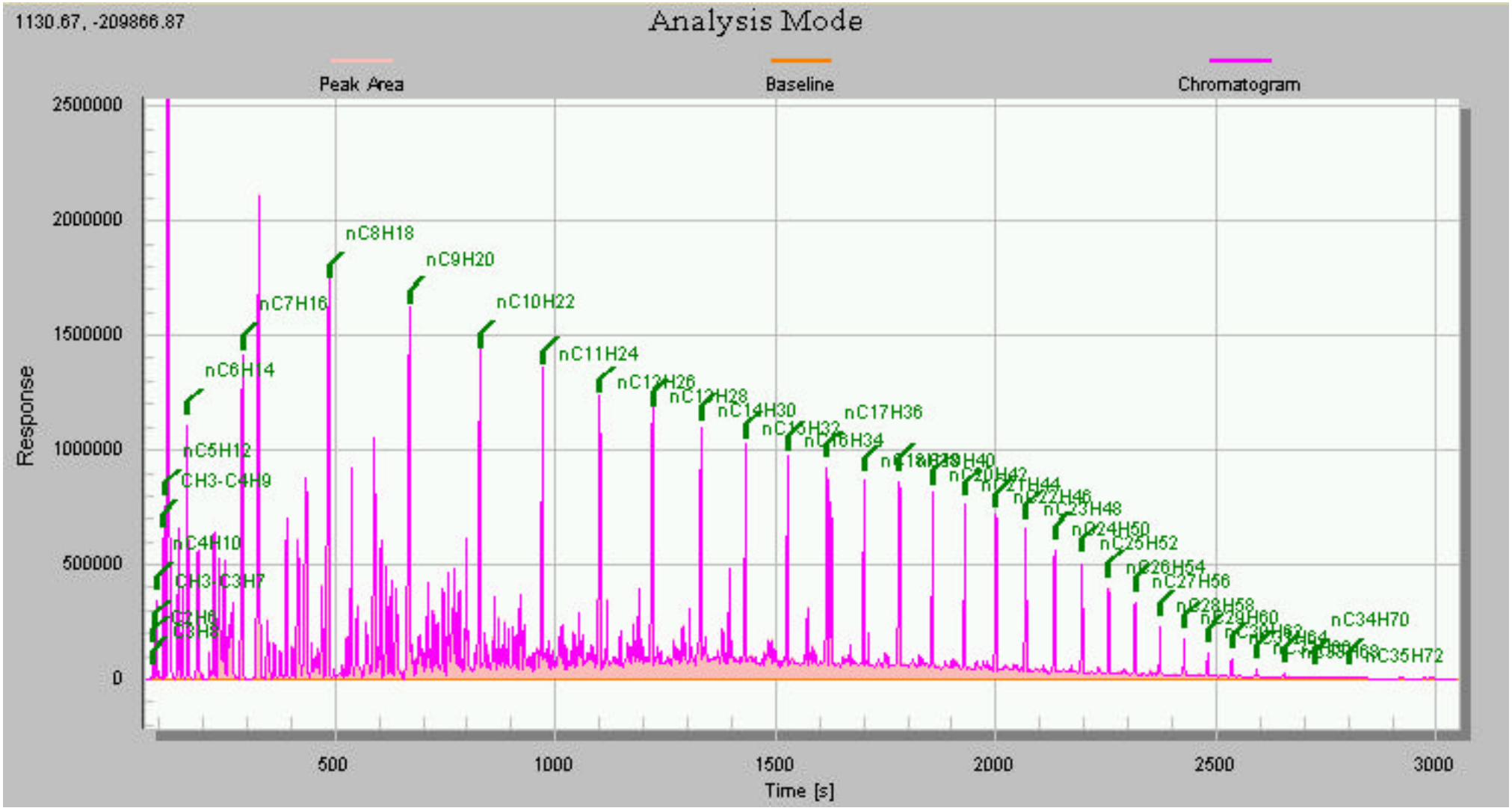

Figure 5.13
Sample: 1.12
Description: Liquid sample capillary column for hydrocarbon detection (column 1)

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Client	Origin Energy	**Field**	Trefoil
Job No	AOH442	**Well**	Trefoil-1
Date	20th Nov - 1st Dec, 2004	**Installation**	Ensco 102

MDT Sampling Toolstring - Run 1

MDT - MRMS Modules

MRMS 1 - S/N: MRMS CA 216

Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	SPMC	247	12,000	11.1
2	SPMC	248	12,000	10.2
3	SPMC	272	12,000	7.2
4	MPSR	0192	N/A	12.5
5	MPSR	0113	N/A	12.0
6	SPMC	273	12,000	10.3

MRMS 2 - S/N: MRMS BA 11

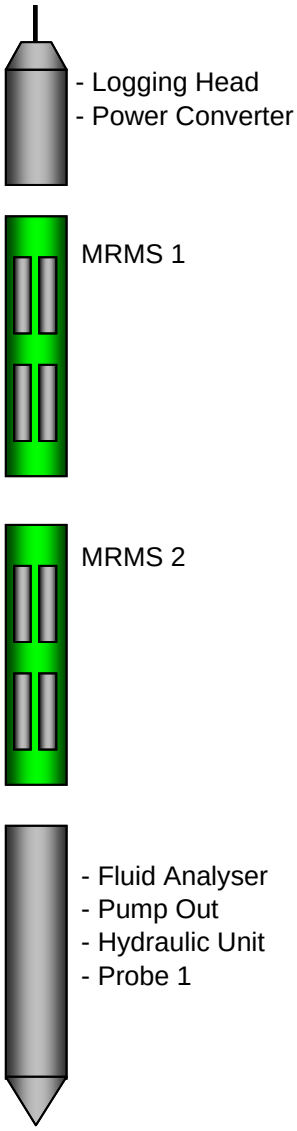
Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	SPMC	243	12,000	11.1
2	SPMC	244	12,000	10.2
3	SPMC	245	12,000	7.2
4	MPSR	0187	N/A	12.5
5	MPSR	0122	N/A	12.0
6	SPMC	246	12,000	10.3

***NB:** "Trapped Vol" is the volume of distilled water present between the "NC" valve and the sample piston that will report to the sample chamber on the commencement of sampling

Tools configured for **Low Shock** sampling

SPMC Charge Parameters

Estimated Bottomhole Pressure	5,041	psia
Estimated Bottomhole Temp		°C
Expected Fluid Type	Dry Gas	
Assumed Fluid Shrinkage	40	%
Calc'd Recovery Pressure at T(amb)	6,000	psig



MDT - MRSC Modules

Module No	Type	Serial No	Volume (Gal)	Agitation Ring?
1	not run			
2	not run			
3	not run			

Remarks

MDT Toolstring diagram is indicative only and is not a true representation of the toolstring used
Estimated data calculated by Oilphase Specialist based on information supplied by Schlumberger Wireline
MDT Toolstring run in hole on Wireline

Client	Origin Energy	**Field**	Trefoil
Job No	AOH442	**Well**	Trefoil-1
Date	20th Nov - 1st Dec, 2004	**Installation**	Ensco 102

MDT Sampling Toolstring - Run 2

MDT - MRMS Modules

MRMS 1 - S/N: MRMS CA 216

Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	MPSR	0485	N/A	11.1
2	MPSR	0310	N/A	10.2
3	MPSR	0494	N/A	7.2
4	SPMC	257	12,000	12.5
5	MPSR	0501	N/A	12.0
6	MPSR	0316	N/A	10.3

MRMS 2 - S/N: Not Run

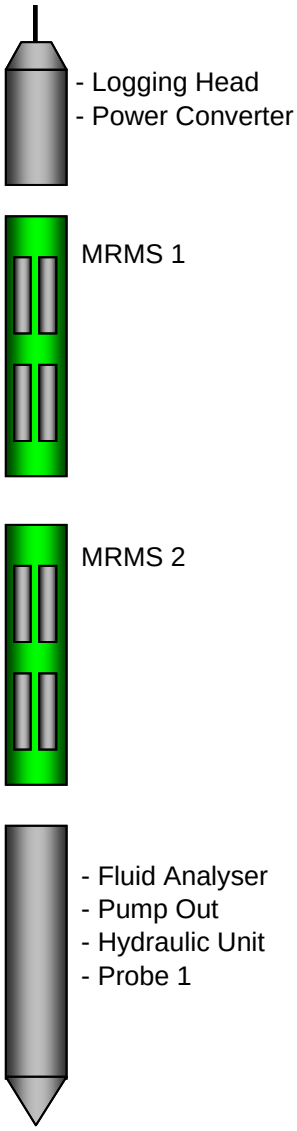
Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1				
2				
3				
4				
5				
6				

***NB:** "Trapped Vol" is the volume of distilled water present between the "NC" valve and the sample piston that will report to the sample chamber on the commencement of sampling

Tools configured for **Low Shock** sampling

SPMC Charge Parameters

Estimated Bottomhole Pressure	5,041	psia
Estimated Bottomhole Temp		°C
Expected Fluid Type	Dry Gas	
Assumed Fluid Shrinkage	40	%
Calc'd Recovery Pressure at T(amb)	6,000	psig



MDT - MRSC Modules

Module No	Type	Serial No	Volume (Gal)	Agitation Ring?
1	not run			
2	not run			
3	not run			

Remarks

MDT Toolstring diagram is indicative only and is not a true representation of the toolstring used
Estimated data calculated by Oilphase Specialist based on information supplied by Schlumberger Wireline
MDT Toolstring run in hole on Wireline

APPENDIX 20: PRODUCTION TESTING REPORTS

(A) Surface Data – Schlumberger Report

Schlumberger

WELL TESTING REPORT

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / Base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

INDEX

1 WELL AND MEASUREMENT INFORMATION

2 SEQUENCE OF EVENTS

3 MAIN RESULTS including SUMMARY OF RESULTS

4 SURFACE DATA ACQUISITION PLOTS

- Wellhead Pressure And Temperature Plot
- Separator Measurement Plot
- Rates Plots

5 CONDENSATE COMPUTATIONS RESULTS - with tank

6 GAS COMPUTATIONS RESULTS

7 BOTTOM HOLE PRESSURE AND TEMPERATURE PLOTS

8 BOTTOM HOLE GAUGE DATA - Upper DGA Carrier

9 BOTTOM HOLE GAUGE DATA - Lower DGA Carrier

10 ANNEXES

- Gauge Setup Information
- DST String Diagram and Tools Calculation
- TCP Diagram and Information
- E-Z Valve Landing String Diagram
- STAN Sensor Calibration
- Surface Equipment Layout
- Ensco 102 Equipment Layout
- Piping And Instrumentation Diagram

Schlumberger

WELL TESTING REPORT

WELL AND MEASUREMENT INFORMATION

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

WELL INFORMATION

GENERAL INFORMATION

Service / Client Ref.	:	Well Testing Full Package
Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test type	:	Drill Stem Test with Retreivable Packer
Rig/Installation	:	Ensco 102 Jack-up rig

OPERATION DATA

Test Date	:	08-Dec-04 to 16-Dec-04
Report Number	:	2004-029
Region / District / Base	:	MEA/APG/AUF
Co. Representative	:	John Lennon; Daniel Barrow
Schlumberger Representative	:	Eng Loke Goh
Unit system	:	US Oilfield

WELL DATA

Drill Floor Elevation	:	39.9m above LAT.
Water Depth	:	68.9m below LAT.
Total Depth	:	PB 3400m TVDRT
Well type	:	Exploration
Fluid type	:	Low CGR Gas
Liner / Tubing size	:	6-5/8" Liner 24 ppf L80 Fox Top / 3-1/2" 12.95 ppf L80 PH6
Liner Interval	:	2272.15m - 3458.0m
Packer depth	:	Permanent Packer 3120.22m; Retrieve Packer 2940m
Minimum restriction	:	2.06" @ 3-1/2" Heavy drill pipe
Maximum deviation	:	Near Vertical
Perforation shot density	:	Test #1 - 12 spf TCP; Test #2 - 6 spf Wireline
Perforation gun type	:	Test #1 - 4-1/2" HTX 34JL TCP; Test #2 - 1-11/16" PJ Enerjet Gun
Perforating conditions	:	Test #1 - 620 psi Underbalance; Test #2 - 950 psi Underbalance
Perforation interval	:	Test #1 - 3141m -3150m; Test #2 - 3040.5m - 3046.5m RT
Perforation type	:	Test #1 - TCF HDF/HDF with TCR-B; Test #2 - Wireline fired

FORMATION DATA

Formation / lithology	:	Test #1 - EVCM Sand; Test #2 - Cretaceous Sand
Oil gravity	:	Test #1 - 48 API; Test #2 - 53 API
Gas gravity (Air=1)	:	Test #1 - 0.70 SG; Test #2 - 0.74 SG
Pressure and Temperature	:	Test #1 - 4355 psia / 120 degC; Test #2 - 4266 psia/118 degC - Final Build-up Period at 2943.6m .

MUD PROPERTIES

Type	:	CaCl Brine
Weight / SG	:	8.9 ppg / 1.09
Cushion type / Weight / SG	:	Diesel / 6.9 ppg / 0.827
Cushion Length	:	2820m (67 bbls) to surface

WELL INFORMATION

DEPTH INFORMATION

Depth unit	:	Meter (m)
Depth reference	:	Measuring Depth from Rotary Table
Gauges Measure Point	:	Upper Gauges 2924.54m; Lower Gauges 2943.58m MDRT.
	:	

DOWNHOLE EQUIPMENT

Carrier type	:	15kpsi DGA Carrier
Packer type	:	7" Positrieve Retrievable Packer
Test Valve type	:	15 kpsi PCTH-F with HOOP
Reversing Valve type	:	15 kpsi SHRV-F
Circulating Valve type	:	10 kpsi MCVL
Gauge type	:	7x WTQR
Safety Valve type	:	15 kpsi 3" E-Z Valve
Surface Test Tree	:	10 kpsi 3-1/16" WOM Flowhead

WELL HEAD EQUIPMENT

Casing pressure gauge	:	Electronic strain gauge, 10K STPS-C Delta control. S/n 24985
Tubing pressure gauge	:	Electronic strain gauge, 10K STPS-C Delta control. S/n 24978
Temperature gauge	:	Platinium resistor, STTS-B Frode Pedersen & Co
Downstream pressure gauge	:	Electronic strain gauge, 10K STPS-C Delta control. S/n 24979
Choke Manifold type	:	WOM 3" 10 k psi fixed and adjustable chokes.
Flowline type	:	60 ft 10 kpsi 3" Coflexip Hose

SEPARATOR

Capacity	:	1440 psig WP, 22000 b/d, 60 MMscf/d
Gas meter type	:	Senior Daniel Orifice Meter
I.D. of meter tube	:	5.761"
Low Gas Meter	:	Not used.
Gas line pressure gauge	:	Electronic strain gauge, 1.5k Sensotec. S/n 923449
Differential pressure gauge	:	Electronic strain gauge, Honeywell ST3000. (0-400"wc). S/n 3884010
Gas line temperature gauge	:	Platinium resistor, STTS-B Frode Pedersen & Co
Gas sampling point	:	Top of gas outlet of separator
Gravitometer type	:	Ranarex
Oil / Condensate line temperature gauge	:	Platinium resistor, STTS-B Frode Pedersen & Co
Oil / Condensate rate meter	:	Electronic pulse transmitter Model 308 (2 "Floco)
Oil / Condensate rate meter	:	Electronic pulse transmitter # (3" Rotron)
Oil / Condensate sampling point	:	Separator oil sight glass
Gravitometer type	:	Glass sg Hydrometer
Water rate meter	:	2" Floco meter

OTHER EQUIPMENT

Tank type / capacity	:	Single-Compartment Surge tank 80 bbls. (0.176 bbl/cm)
Pump type / capacity	:	Electric Centrifugal Pump 5000 bbls/d.
Heater type / capacity	:	10K 3" 3 MMBtu/h STX
Burner type	:	3-Header Mud Burner
Burner capacity	:	8,000 bbls/d

Schlumberger

WELL TESTING REPORT

SEQUENCE OF EVENTS

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

SEQUENCE OF EVENTS

Date/Time	Events
08-Dec-04	TEST #1 Lower Zone (Perforation: 3141m - 3150m)
10:40	Hold JSA meeting prior to run 4-1/2" TCP perforation guns.
11:00	Commence making up and running in hole TCP gun.
11:35	Connect and run in hole with HDF/TCF Firing Head.
11:40	Connect Wireline Setting Tool to Permanent Packer assembly on the catwalk.
12:20	Pick up and connect Wireline / Packer assembly to TCP assembly.
12:35	Commence running in hole with Wireline.
15:55	Set Packer at 3000m RT and pull out of Wireline Setting tool.
16:00	Start programming Lower DGA gauges.
16:30	Install three WTQR to Lower DGA carrier.
17:00	Wireline on surface, start rigging down.
17:30	Start programming Upper DGA gauges.
18:00	Install four WTQR to Upper DGA carrier.
18:15	Shut down rig operation due to strong wind.
18:30	Pressure test Upper DGA carrier to 5000 psi.
09-Dec-04	Wait on weather.
17:40	Remove Lower DGA gauges and re-programme.
17:45	Conduct JSA meeting on running DST test tools.
17:55	Install gauges to Lower DGA.
18:10	Remove Upper DGA gauges and re-programme.
18:35	Install gauges to Upper DGA and pressure test to 5000 psi.
19:10	Pick up Lower DGA and commence running in hole with DST test string.
19:35	Pick up and run in hole with 7" Positrieve Packer assembly.
20:10	Run in hole with PCT / PORT assembly.
20:35	Run in hole with Upper DGA carrier.
20:50	Run in hole with a single 3-1/2" PH6 tubing.
22:00	Commence running in hole with 4 stands drill collar.
22:50	Commence running in hole with 4 stands 3-1/2" drill pipe
10-Dec-04	
00:30	Commence running in hole with 3 Slip joints.
02:07	Prepare drill floor for pressure testing BHA.
02:40	Pressure test surface line to 5000 psi.
02:45	Pressure test BHA against TFTV to 5000 psi.
03:05	Complete pressure testing BHA.
03:15	Commence running in hole with 3-1/2" PH6 tubing.
21:30	Finish running 3-1/2" Ph6 tubing. Change to 4-1/2" tubing handling equipment.
22:45	Make up E-Z valve assembly to DST string.
23:00	Run in hole with E-Z valve assembly on 4-1/2" pup joints.
23:45	Close BOP ram to confirm space out.
23:50	Open BOP ram, pull out to connect control hoses.
11-Dec-04	
01:05	Close Bop ram, circulate down annulus to check communication.
01:20	Open BOP ram, pressure test surface line to 5000 psi.
01:27	Pressure test DST string against TFTV to 5000 psi.
02:00	Test good, bleed off test pressure.
02:45	Pick up and commence making up flowhead.
03:15	Rig up coflexip flowline and Kill line to flowhead.

SEQUENCE OF EVENTS

Date/Time	Events
03:24	Commence flushing surface welltest equipment from choke manifold inlet.
03:53	Finish flushing, commence rigging up Coflexip Flowline to Choke manifold.
06:05	Commence flushing through surface equipment prior to pressure test.
06:15	Commence pressure testing surface lines to base of booms to 750 psi.
06:26	Leak detected. Pressure bled off.
06:38	Re-commence pressure testing to 750 psi.
06:46	Good test.
06:51	Commence pressure testing gas divertor manifold to 750 psi.
07:00	Good test.
07:02	Commence pressure testing oil divertor manifoild to 750 psi.
07:12	Good test.
07:14	Commence pressure testing body of separator to 1000 psi.
07:24	Good test.
07:28	Commence pressure testing separator inlet-bypass manifold to 1000 psi.
07:39	Good test. Bleed off test pressure.
07:42	Commence pumping 1bbl/min through oil 2" Floco meter.
07:56	Finished pumping. Meter factor = 1.077
08:15	Disconnect Coflexip Flowline from Choke manifold to set Packer.
09:00	Pressure test Steam Exchanger STX outlet and bypass valves with DST pump to 5000 psi.
09:40	Pull DST string to position Packer.
09:47	Rotate DST clockwise 3 turns, lower string to set Packer.
09:55	Good test on the STX.
10:00	Pressure test STX inlet and bypass valves to 5000 psi.
10:10	Re-connect Coflexip Flowline to Choke manifold.
10:15	Pressure test backside of downstream choke manifold valves to 5000 psi.
10:25	Finish pressure testing on cantilever deck. Good test on choke manifold.
10:31	Pressue Annulus 850 psi to actuate PORT, MCVL and lock open TFTV.
10:36	Increase Annulus 1050 psi to test Positrieve Packer integrity.
10:53	Good test, bleed off Annulus.
11:14	Close Flowhead Master valve, pump through surface lines to confirm flow path.
11:38	Pressure Annulus to cycle PCT.
11:45	Bleed off Annulus, PCT out of hold-open position.
11:50	Close Choke manifold.
11:51	Pressure test Coflexip Flowline against Choke manifold.
11:54	Close Flowhead Flow valve. Pressure test in between to 5000 psi with DST pump.
12:18	Close SSV and pressure test.
12:36	Finish pressure testing.
12:45	Conduct JSA on displacing tubing with diesel cushion.
13:00	Conduct final inspection of test area and to complete pre-test check list.
13:05	Function test ESD system, 6 seconds shut down.
13:15	General pre-test meeting in the dining room.
14:05	Function test all ESD stations. Witnessed by senior authority.
14:43	Apply 500 psi on annulus to assist cycling MCVL.
14:58	Pressure up tubing 1200 psi, start cycling MCVL.
15:03	Bleed off tubing pressure.
15:05	Pressure up tubing 1200 psi.
15:10	Bleed off tubing pressure. Good indication of MCVL port opened.

SEQUENCE OF EVENTS

Date/Time	Events
15:19	Start displacing tubing contents with diesel cushion.
15:56	Finish displacing with 64 bbls diesel cushion.
15:59	Close Master valve, flush surface line to Surge tank.
16:12	Open Master valve, pressure up tubing for PCT opening indication.
16:14	Reduce tubing pressure.
16:17	Pressure Annulus to open PCT, good indication.
16:30	Conduct TCP operation meeting on drill floor.
17:05	Adjust Kill line check valve back to service position.
17:09	Commence pressuring up tubing to initiate TCP guns.
17:11	Stop pumping but hold tubing pressure.
17:13	Bleed off tubing pressure to obtain circ. underbalance.
17:15	Close Choke manifold.
17:35	Good surface indication of TCP guns fired.
17:37	Open well on 16/64" adjustable choke to Surge tank. (Initial Flow Period)
17:47	Bleed off Annulus to close PCT. (Initial Pressure Build Up Period)
17:49	Close Choke manifold. Recover 3.7 bbls diesel cushion.
19:04	Pressure Annulus to open PCT (Clean Up Flow Period)
19:06	Open well on 16/64" adjustable choke to Surge tank.
19:08	Increase adjustable choke to 20/64"
19:16	Increase adjustable choke to 24/64"
19:17	Total recovery 14 bbls diesel cushion.
19:32	Divert flow to Portside burner. Total recovery 31 bbls diesel cushion.
19:39	Increase adjustable choke to 28/64"
19:49	Increase adjustable choke to 32/64"
19:52	Gas and Brine at surface.
19:53	Decrease choke to 16/64". Divert flow through Steam Exchanger
19:54	Decrease choke to 20/64" adjustable.
19:55	Divert flow to burner gas flare.
19:56	Increase adjustable choke to 24/64".
19:57	Gradually increase to 32/64" adjustable choke.
20:04	Increase adjustable choke to 36/64".
20:17	Increase adjustable choke to 40/64".
20:33	Increase adjustable choke to 44/64".
20:41	Divert flow through separator.
21:00	Well head BSW = 70% condensate; 30% water; trace of sediment.
21:08	Lower 2.75" orifice plate.
21:15	Well head BSW = 70% condensate; 30% water; trace of sediment.
21:28	Lift up orifice plate.
21:33	Divert flow through 48/64" fixed choke, fully open STX adjustable choke.
21:46	Lower 3.25" orifice plate.
22:18	Increase separator pressure to prevent liquid being carry-over.
22:30	Well head BSW = 82% condensate; 18% water; trace of sediment.
23:00	Well head BSW = 82% condensate; 18% water (Main Flow Period)
23:00	Take Separator water sample number 1.01; Resistivity= 0.46 ohm; CL= 6400 mg/l
00:00	Well head BSW = 76% condensate; 24% water.
12-Dec-04	
00:00	Take Separator water sample number 1.02; Resistivity= 0.5 ohm; CL= 6000 mg/l

SEQUENCE OF EVENTS

Date/Time	Events
00:55	Start pumping out Surge tank contents to burner.
01:00	Well head BSW = 78% condensate; 22% water.
01:00	Take Separator water sample number 1.02; Resistivity= 0.53 ohm; CL= 5800 mg/l
01:30	Stop pumping.
02:00	Well head BSW = 80% condensate; 20% water.
02:00	Take Separator water sample number 1.02; Resistivity= 0.8 ohm; CL= 5600 mg/l
02:15	Take Separator gas sample number 1.05 and sample number 1.06
02:20	Start pumping out Surge tank contents to burner.
02:30	Take Separator PVT sample, oil sample 1.07; gas sample 1.08
03:00	Stop Pumping, Well head BSW = 80% condensate; 20% water.
03:00	Take Separator water sample number 1.09; Resistivity= 0.8 ohm; CL= 5800 mg/l
04:00	Well head BSW = 77% condensate; 23% water.
04:00	Take Separator water sample number 1.10; Resistivity= 0.79 ohm; CL= 6000 mg/l
04:00	Shrinkage factor = 3.4% at 16 degC; obtained with venting method.
05:00	Take Separator water sample number 1.11; Resistivity= 0.76 ohm; CL= 5800 mg/l
05:03	Bleed off pressure to close PCT (Main Build Up Period)
05:04	Close Choke manifold.
10:06	Close Master valve.
10:34	Commence bleeding off pressure at choke manifold to gas flare.
10:36	Open Choke manifold.
10:38	Commence rigging up wireline prior to running 1.875" Owen bridge plug.
11:30	STAN acquisition stopped due to a power failure.
14:30	STAN restarted.
16:15	Commence pressure testing wireline lubricator to 5000 psi.
16:35	Good test. Bleed off pressure.
16:39	Open choke manifold and bleed remaining pressure through to gas flare.
16:46	Close Choke manifold.
17:00	Open Master valve.
17:06	Pressure Annulus to open PCT. (Sampling Flow Period)
17:59	Open well on 16/64" adjustable choke to flare.
18:03	Increase adjustable choke to 20/64".
18:04	Start Methanol injection 32 stokes/min.
18:05	Increase adjustable choke to 24/64".
18:06	Divert flow through separator.
18:08	Increase adjustable choke to 28/64".
18:10	Increase adjustable choke to 32/64" .
18:12	Reduce STX choke to 32/64"
18:20	Stop Methanol injection.
18:22	Divert flow through 32/64" fixed choke.
19:24	By-pass Separator.
19:35	Start Methanol injection. Adjust STX choke to eliminate hydrate
19:55	Divert flow through separator.
20:09	By-pass Separator.
20:10	Commence changing choke to 36/64" fixed choke.
20:19	Divert flow through separator.
20:50	Stop Methanol injection.
21:00	Well head BSW = 80% condensate; 20% water.

SEQUENCE OF EVENTS

Date/Time	Events
21:20	Lower down 2.750" orifice plate.
21:55	Take Separator 20 ltr dead oil sample number 1.12
22:00	Well head BSW = 80% condensate; 20% water. CO2= 2.6%; H2S= 0 ppm
22:00	Take Separator water 1 ltr sample number 1.13
22:00	Take Separator PVT sample, oil sample 1.14; gas sample 1.15
22:31	Take Separator 20 ltr dead oil sample number 1.16
22:42	Attempt to correct the steam pressure to STX.
23:00	Take Separator water 1 ltr sample number 1.17
23:16	Steam Boiler back on operation.
23:35	Take Separator water 1 ltr sample number 1.18
23:40	Take Separator PVT sample, oil sample 1.19; gas sample 1.20
23:56	Close Choke manifold. (Final Build Up Period)
13-Dec-04	
00:03	Conduct JSA on running Wireline toolstring.
00:42	Open Flowhead Swab valve.
00:45	Attempt and fail to lower wireline tool string.
01:00	Close Master valve, bleed off surface pressure to flare.
01:07	Close back Choke manifold and Flowhead Swab valve.
01:15	Open Lubricator needle valve to bleed off any remained pressure.
01:16	Conduct JSA on bring down Wireline Lubricator.
01:23	Commence changing tool string and weight bar.
04:12	Make up Wireline lubricator with new toolstring.
04:53	Pressure test quick test sub.
04:59	Open Master valve and Swab valve.
05:10	Attempt and fail to lower wireline tool string.
05:21	Start pumping Methanol at the wellhead.
05:22	Close Master valve, attempt to free the toolstring.
05:25	Stop pumping Methanol.
06:09	Open Master valve.
06:10	Open Choke manifold to flow well in order to reduce wellhead pressure.
06:11	Fail to run in, close Choke manifold and Master valve.
06:13	Slowly bleed down pressure to free toolstring.
06:16	Close Choke manifold.
06:24	Open Master valve. Start Methanol injection.
06:28	Open well on 20/64" adjustable choke to assist Wireline lowering toolstring.
06:29	Increase choke to 24/64" adjustable.
06:33	Increase choke to 36/64" adjustable.
06:56	Decrease choke to 32/64" adjustable. Wireline able to run in slowly.
07:04	Gradually decrease choke to 20/64" adjustable.
07:06	Wireline running in hole freely, Close choke manifold.
07:18	Stop pumping Methanol.
08:25	Wireline drift to 3130mMDRT.
08:30	Commence wireline pulling out of hole.
10:30	Wireline out of hole.
10:45	Close Master valve, bleed off surface pressure to flare.
10:50	Close Swab valve. Commence changing out Wireline toolstring.
12:19	Conduct JSA on rig floor. Arm Wireline 1.875" Owen Bridge plug.

SEQUENCE OF EVENTS

Date/Time	Events
12:45	Close Choke manifold.
12:48	Open Master valve.
13:00	Open well on 16/64" adjustable choke to Portside flare.
13:04	Close Choke manifold, no flare ignition.
13:20	Open well on 16/64" adjustable choke to Portside flare.
13:23	Gradually increase to 36/64" adjustable choke.
13:28	Wireline able to run in hole, slowly reduce choke.
13:34	Shut in at choke manifold.
15:20	Wireline set Bridge plug at 3125.3m, Start pulling out with running toolstring.
16:49	Wireline out of hole.
17:05	Open Choke manifold, bleed down tubing pressure 500 psi for inflw test Bridge plug.
17:17	Good test. Close Master valve, bleed off surface pressure.
	TEST #2 Upper Zone (Perforation: 3040.5m - 3046.5m)
17:22	Closed Swab valve. Commence changing out Wireline toolstring to run perforation guns.
19:10	Connect 1-11/16" PJ Enerjet Gun to toolstring.
20:10	Make up Wireline lubricator with Perforation toolstring.
20:18	Open Master valve.
20:22	Open Swab valve.
20:26	Open choke, bleed down tubing to required underbalance.
20:31	Close Choke manifold with approximately 1000 psi underbalance.
20:33	Wireline running in hole with Perforation toolstring.
00:00	Wireline on depth, start depth correlation.
14-Dec-04	
00:35	Wireline perforate 3040.5m - 3046.5m
01:15	Wireline pull out of hole with spent guns.
03:25	Conduct JSA on rigging down spent guns.
04:00	Wireline on surface, close Master valve.
04:02	Bleed off surface pressure.
04:05	Close Swab valve, rig down spent guns.
04:30	Make up Lubricator.
04:43	Open Master valve. Start Methanol injection.
04:52	Open well on 16/64" adjustable choke to Portside flare. (Clean Up Flow Period)
04:55	Gradually increase adjustable choke to 24/64".
05:03	Gradually increase adjustable choke to 28/64".
05:10	Wellhead BSW= 100% Condensate; trace of solid.
05:20	CO2 = 3.5%; H2S = 0 ppm
05:41	Increase adjustable choke to 32/64".
05:45	Divert flow through 32/64" fixed choke.
05:50	Wellhead BSW= 85% Condensate; 15% water; resistivity 4 ohm.
06:15	Wellhead BSW= 99% Condensate; 1% water; CO2 = 3.6%; H2S = 0 ppm
06:25	Reduce slowly the STX adjustable choke.
06:30	Wellhead BSW= 96% Condensate; 4% water; resistivity 6.5 ohm.
06:35	Stop pumping Methanol.
06:41	Divert flow through Separator.
06:42	Fully open STX choke.
06:55	By-pass Separator. Start Methanol Injection.

SEQUENCE OF EVENTS

Date/Time	Events
07:00	Wellhead BSW= 95% Condensate; 5% water; resistivity 1.55ohm; CL 2400 mg/l
07:01	By-pass STX.
07:07	Divert flow through STX and inject Methanol at low rate 20 strokes/min.
07:08	Divert flow through Separator.
07:15	Lower 2.00" orifice plate. Wellhead BSW = 97% Condensate; 3% water
07:20	Lift up 2.00" orifice plate.
07:27	Lower 2.25" orifice plate. CO2 = 3.6%
07:30	Wellhead BSW= 96% Condensate; 4% water
08:00	Wellhead BSW= 96% Condensate; 4% water; CO2=2.8%; H2S=0; resistivity 3.1ohm; CL 800 mg/l
08:00	Take Separator water 1 ltr sample number 2.01 (Sampling Flow Period)
08:12	Increase Methanol injection to 30 strokes/min to eliminate hydrate at inlet STX.
08:32	Dump water from separator. Wellhead BSW = 94% Condensate; 6% water
08:40	Stop dumping water from separator
09:00	Take Separator water 1 ltr sample number 2.02; resistivity 3.5 ohm; CL 600 mg/l
09:15	Wellhead BSW= 95% Condensate; 5% water
09:20	Increase Methanol injection to 40 strokes/min to eliminate hydrate at upstream STX.
09:37	Ajust STX choke to increase inlet pressure.
09:45	Wellhead BSW= 95% Condensate; 5% water; CO2 =2.8%
10:00	Take Separator water 1 ltr sample number 2.03; resistivity 3.8 ohm; CL 500 mg/l
10:01	Increase upstream STX pressure. Stop Methanol injection.
10:07	Commence dumping all Separator liquid before sampling.
10:16	Finish dumping all Separator Liquid.
10:55	Take Separator water 1 ltr sample number 2.04
11:00	Wellhead BSW= 94% Condensate; 6% water; CO2 =2.0%; resistivity 3.1 ohm; CL 600 mg/l
11:00	Take Separator 20 ltr dead oil sample number 2.05
11:02	Take Separator heavy metals gas sample number 2.06; 2.07
11:05	Take Separator PVT oil sample number 2.08; gas sample number 2.09
11:34	Take Separator 20 ltr dead oil sample number 2.10
11:45	Take Separator water 1 ltr sample number 2.11 resistivity 3.6 ohm; CL 500 mg/l
11:50	Take Separator PVT oil sample number 2.12; gas sample number 2.13
12:05	Shrinkage factor = 3% at 17 degC; obtained with Shrinkage Tester.
12:30	Wellhead BSW= 97% Condensate; 3% water; CO2 =2.0%
12:47	Switch to adjustable choke and gradually increase choke. (Maximum Flow Period)
12:50	By-pass STX.
13:03	Well flow on 56/64" adjustable choke.
13:04	Divert flow 56/64" fixed choke.
13:21	Lower down 2.75" orifice plate.
13:30	Wellhead BSW= 96% Condensate; 4% water; CO2=2.8%; H2S= 0; resistivity 3 ohm; CL 600 mg/l
13:30	Take Separator water 1 ltr sample number 2.14
14:01	Pump Surge tank contents to burner.
14:30	Take Separator water 1 ltr sample number 2.15; resistivity 0.75 ohm; CL 5600 mg/l
14:55	Take Separator water 1 ltr sample number 2.16; resistivity 0.87 ohm; CL 5200 mg/l
15:00	Finish pumping out Surge tank.
15:00	Take Separator PVT oil sample number 2.17; gas sample number 2.18
15:00	Wellhead BSW= 95% Condensate; 5% water; CO2 =2.8%; H2S = 0 ppm
16:02	Bleed off Annulus to close PCT. (Final Build Up Period)
16:06	Close Choke manifold.

SEQUENCE OF EVENTS

Date/Time	Events
16:34	Close Master valve.
16:35	Bleed off surface pressure.
17:00	Conduct JSA on drill floor.
17:12	Commence rigging down Wireline equipment.
22:30	Close Flow valve, connect second Coflexip hose to the Flow line.
23:45	Open Flow valve. Start flushing Surface lines with seawater.
15-Dec-04	
01:14	Pressure test Flow line to 4200 psi with rig pump.
01:33	Good test, open Choke manifold.
01:34	Start flushing Surface test equipment with drill water.
01:56	Displace Kill line across Flowhead with Brine to Choke manifold.
03:40	Conduct JSA on well kill
03:58	Open Master valve.
04:01	Open Choke manifold. Bleed off tubing pressure to flare.
04:36	Top fill tubing with 8.9 ppg kill Brine.
05:08	65 bbls Brine in tubing, close Choke manifold.
05:30	Pressure Annulus to open PCT.
05:32	Start bullheading formation with kill Brine.
06:19	Finish bullheading 23 bbls into formation.
06:22	Bleed down tubing pressure and observe well condition.
06:31	Pressure up tubing.
06:35	Bleed down tubing pressure and observe well condition.
07:25	Bleed down Annulus. PCT in hold-open position.
07:38	Pressure tubing, commence cycling MCVL to circulating position.
07:52	MCVL opened, open Choke manifold.
07:55	Commence reversing out salt pill to burner.
08:23	Complete reversing out 140 bbls, close Choke manifold and observe well.
08:35	Pump down tubing to reset MCVL.
08:45	Pump down Annulus to close MCVL.
08:58	Pull DST string to open Packer by-pass.
09:05	Open Choke manifold.
09:08	Commence reversing out tubing to burner.
10:00	Finish reversing, close Choke manifold and observe well.
10:16	Lower down DST string.
10:19	Close Master valve.
10:22	Flush surface lines prior to rig down Flowhead.
10:30	Commence rigging down Kill line and Coflexip Flow line.
11:30	Lay down Flowhead.
12:00	Lay down E-Z assembly.
12:15	Start running in hole with 3 stands 3-1/2" drill pipe for bottom circulation.
19:30	Finish reverse circulating 71 bbls; direct circulating 610 bbls.
19:40	Set Packer, pressure Annulus to rupture SHRV.
19:45	Start pulling string to unset Packer and pull out of hole with DST toolstring.
16-Dec-04	
16:45	3-1/2" PH6 out of hole, start laying out 3 Slip joints.
21:15	Lay down Upper DGA gauge carrier.
22:00	Lay down PCT/PORT assembly.

SEQUENCE OF EVENTS

Date/Time	Events
22:20	Lay down Positrieve Packer assembly.
22:45	Lay down Lower DGA gauge carrier.
	END of TEST

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WELL TESTING REPORT

MAIN RESULTS

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	MAIN RESULTS	MAIN RESULT 2004-029

Test #2 : Cretaceous Sand
Test #1 : EVCM Sands

Perforated Interval : 3141m - 3150m MDRT
Perforated Interval : 3040.5m - 3046.5m MDRT

FP#	Operation	Duration Time	Choke Size		Bottomhole Conditions		Wellhead Conditions		Cond Rate	Water Rate	Gas Rate	CGR	Cond API	Gas s.g.	BSW	Resistivity	Chloride	CO2	H2S
			size	Type	Press	Temp.	Press	Temp.											
		hrs	64th		psiA	degC	psiA	degC	stbd	bwpd	MMscfd	bbl/Mscf	API60	Air=1	%	ohm	mg/l	%	ppm
	TEST #1																		
1	Initial Flow	0.17	16	adjustable	4166	119	634	19	-	-	-	-	-	-	-	-	-	-	-
	Initial Build up	1.28	-	-	4222	119	69	17	Shut in at the PCT		-	-	-	-	-	-	-	-	-
	Clean up Flow	3.93	48	fixed	2620	117	1290	30	-	-	16.19	-	-	0.692	18	0.46	6400	2.4	0
2	Main Flow	6.05	48	fixed	2671	117	1329	39	140	42.75	16.33	8.5	47.978	0.700	23	0.76	5800	2.4	0
3	Main Build up	12.05	-	-	4381	119	1462	21	Shut in at the PCT		-	-	-	-	-	-	-	-	-
	Sampling Flow	6.83	36	fixed	3107	120	2004	38	170	43.08	14.26	11.9	47.978	0.700	20	-	-	2.6	0
	Final Build up	15.40	-	-	4378	121	3499	26	Shut in at the Choke manifold				-	-	-		-	-	-
	TEST #2																		
	Clean up Flow	3.13	32	fixed	1867	108	1240	26	-	-	6.86		-	0.741	4	3.1	800	2.8	0
4	Sampling Flow	4.78	32	fixed	2018	110	1349	31	113	3.55	7.41	15.2	52.685	0.747	3	3.6	500	2.0	0
	Maximum Flow	3.25	56	fixed	1575	105	645	31	253	13.52	9.87	25.6	52.685	0.742	5	0.87	5200	2.8	0
	Main Build up	13.47	-	-	4267	118	51	17	Shut in at the PCT		-	-	-	-	-		-	-	-

Remarks :
* Values are taken at end of each flow period or the nearest available value where applicable.

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 1 2004-029

Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
11-Dec-04								TEST #1 Lower Zone (Perforation: 3141m - 3150m)														
02:45		4404	118	15	16	14	15	Pick up and commence making up flowhead.														
03:00		4404	118	15	16	14	15															
03:15		4407	118	15	16	14	15	Rig up coflexip flowline and Kill line to flowhead.														
03:24		4408	118	20	16	17	15	Commence flushing surface welltest equipment from choke manifold inlet.														
03:30		4408	118	18	18	17	15															
03:45		4408	118	42	20	29	15															
03:53		4407	118	12	19	13	15	Finish flushing, commence rigging up Coflexip Flowline to Choke manifold.														
04:00		4407	118	15	18	14	18															
04:15		4407	118	15	17	14	15															
04:30		4407	118	15	17	14	17															
04:45		4407	118	15	17	14	15															
05:00		4407	118	14	16	14	18															
05:15		4407	118	15	16	14	18															
05:30		4407	118	15	16	14	17															
05:45		4407	118	15	16	14	16															
06:00		4407	118	15	16	14	18															
06:05		4407	118	15	16	14	17	Commence flushing through surface equipment prior to pressure test.															
06:15		4407	118	21	16	20	16	Commence pressure testing surface lines to base of booms to 750 psi.															
06:26		4407	118	361	17	369	17	Leak detected. Pressure bled off.															
06:30		4407	118	758	17	758	18															
06:38		4407	118	752	17	749	15	Re-commence pressure testing to 750 psi.															
06:45		4407	118	741	16	741	17															
06:46		4407	118	741	16	738	17	Good test.															
06:51		4407	118	755	16	752	15	Commence pressure testing gas divertor manifold to 750 psi.															

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 2 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead WHP	WHT	WHDCP	Casing	Separator Sep.	Gas	Oil	BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
07:00		4407	118	745	16	743	17	Good test.														
07:02		4407	118	747	16	746	16	Commence pressure testing oil divertor manifoild to 750 psi.														
07:12		4407	118	734	16	732	15	Good test.														
07:14		4407	118	1000	16	977	18	Commence pressure testing body of separator to 1000 psi.														
07:15		4407	118	1016	16	1007	17															
07:24		4407	118	1009	16	1009	15	Good test.														
07:28		4407	118	1000	16	963	17	Commence pressure testing separator inlet-bypass manifold to 1000 psi.														
07:30		4407	118	1006	16	1005	14															
07:39		4407	118	991	16	988	15	Good test. Bleed off test pressure.														
07:42		4407	118	21	16	20	18	Commence pumping 1bbl/min through oil 2" Floco meter.														
07:45		4407	118	18	16	17	15															
07:56		4407	118	17	18	16	18	Finished pumping. Meter factor = 1.077														
08:00		4407	118	15	18	14	16															
08:15		4407	118	15	18	14	17	Disconnect Coflexip Flowline from Choke manifold to set Packer.														
08:30		4407	118	15	17	14	18															
08:40		4407	118	15	17	14	17															
08:45		4407	118	15	17	14	18															
09:00		4407	118	15	17	17	18	Pressure test Steam Exchanger STX outlet and bypass valves with DST pump to 5000 psi.														
09:15		4407	118	15	17	26	17															
09:30		4407	118	15	16	40	18															
09:40		4404	118	15	16	57	15	Pull DST string to position Packer.														
09:45		4403	118	15	17	64	15															
09:47		4401	118	15	17	67	15	Rotate DST clockwise 3 turns, lower string to set Packer.														
09:55		4400	118	15	17	1507	14	Good test on the STX.														
10:00		4401	118	15	17	5207	14	Pressure test STX inlet and bypass valves to 5000 psi.														

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 3 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
10:10		4402	118	15	17	5178	13	Re-connect Coflexip Flowline to Choke manifold.														
10:15		4402	118	15	17	5127	13	Pressure test backside of downstream choke manifold valves to 5000 psi.														
10:25		4329	118	15	17	755	14	Finish pressure testing on cantilever deck. Good test on choke manifold.														
10:30		4333	118	21	17	21	35															
10:31		4414	118	21	17	22	843	Pressue Annulus 850 psi to actuate PORT, MCVL and lock open TFTV.														
10:35		4420	118	21	17	21	849															
10:36		4421	118	21	17	22	997	Increase Annulus 1050 psi to test Positrieve Packer integrity.														
10:40		4421	118	21	17	21	1049															
10:45		4421	118	21	17	21	1040															
10:50		4421	118	21	17	21	1031															
10:53		4421	118	21	17	20	949	Good test, bleed off Annulus.														
10:55		4419	118	21	17	20	230															
11:00		4419	118	21	17	20	41															
11:05		4418	118	21	17	20	41															
11:10		4418	118	21	17	20	39															
11:14		4418	118	24	17	23	38	Close Flowhead Master valve, pump through surface lines to confirm flow path.														
11:15		4418	118	27	17	23	38															
11:30		4418	118	18	18	17	36															
11:38		4419	118	18	18	17	584	Pressure Annulus to cycle PCT.														
11:40		4419	118	18	18	17	1212															
11:45		4418	118	18	18	17	1097	Bleed off Annulus, PCT out of hold-open position.														
11:50		4417	118	18	18	17	44	Close Choke manifold.														
11:51		4417	118	64	18	18	44	Pressure test Coflexip Flowline against Choke manifold.														
11:54		4418	118	1742	18	18	42	Close Flowhead Flow valve. Pressure test in between to 5000 psi with DST pump.														
11:55		4418	118	1720	19	18	41															

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 4 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
12:00		4418	118	5081	19	18	41															
12:05		4419	118	5007	19	18	38															
12:10		4419	118	4981	19	18	39															
12:15		4419	118	4969	19	18	36															
12:18		4420	118	5045	19	18	36	Close SSV and pressure test.														
12:20		4420	118	5034	20	18	36															
12:25		4420	118	5031	20	18	36															
12:30		4421	118	5034	20	18	33															
12:35		4421	118	5034	20	18	33															
12:36		4421	118	1010	20	18	33	Finish pressure testing.														
12:40		4422	118	209	20	18	33															
12:45		4422	118	138	21	18	33	Conduct JSA on displacing tubing with diesel cushion.														
13:00		4424	118	136	21	18	33	Conduct final inspection of test area and to complete pre-test check list.														
13:05		4424	118	136	21	18	33	Function test ESD system, 6 seconds shut down.														
13:15		4425	118	136	21	18	30	General pre-test meeting in the dining room.														
13:30		4426	118	136	21	18	30															
13:45		4428	118	136	20	18	30															
14:00		4429	118	136	20	18	30															
14:05		4429	118	133	20	18	30	Function test all ESD stations. Witnessed by senior authority.														
14:15		4430	118	136	20	18	30															
14:30		4417	118	112	20	18	30															
14:43		4434	118	114	20	18	121	Apply 500 psi on annulus to assist cycling MCVL.														
14:45		4434	118	124	20	18	533															
14:58		4435	118	555	21	18	515	Pressure up tubing 1200 psi, start cycling MCVL.														
15:00		4435	118	1175	21	18	521															

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 5 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead WHP	Wellhead WHT	Wellhead WHDCP	Wellhead Casing	Separator Sep.	Separator Gas	Separator Oil	BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
15:03		4435	118	114	21	23	512	Bleed off tubing pressure.														
15:05		4435	118	67	21	18	509	Pressure up tubing 1200 psi.														
15:10		4436	118	363	21	22	479	Bleed off tubing pressure. Good indication of MCVL port opened.														
15:15		4421	118	30	20	17	27															
15:19		4420	118	244	20	16	27	Start displacing tubing contents with diesel cushion.														
15:20		4420	118	56	20	17	27															
15:25		4421	118	270	20	16	27															
15:30		4421	118	406	19	16	27															
15:35		4422	118	540	19	16	27															
15:40		4422	118	677	19	15	27															
15:45		4423	118	817	19	15	27															
15:50		4423	118	950	19	15	27															
15:55		4421	118	1069	19	15	27															
15:56		4417	118	832	19	15	27	Finish displacing with 64 bbls diesel cushion.														
15:59		4418	118	23	19	18	27	Close Master valve, flush surface line to Surge tank.														
16:00		4418	118	18	19	16	27															
16:05		4418	118	42	19	28	27															
16:10		4419	118	9	19	9	27															
16:12		4414	118	89	19	9	27	Open Master valve, pressure up tubing for PCT opening indication.														
16:14		4414	118	306	19	9	27	Reduce tubing pressure.														
16:15		4414	118	215	19	9	27															
16:17		4442	118	232	19	9	205	Pressure Annulus to open PCT, good indication.														
16:20		3965	118	495	19	9	1304															
16:25		3975	118	510	19	9	1499															
16:30		3976	118	510	19	9	1488	Conduct TCP operation meeting on drill floor.														

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 6 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead WHP	Wellhead WHT	Wellhead WHDCP	Wellhead Casing	Separator Sep.	Separator Gas	Separator Oil	BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
16:45		3971	118	507	19	9	1458															
17:00		3975	118	510	19	9	1692															
17:05		3971	118	506	19	8	1686	Adjust Kill line check valve back to service position.														
17:09		5627	119	1678	19	9	1692	Commence pressuring up tubing to initiate TCP guns.														
17:10		8202	119	4267	19	9	1731															
17:11		8240	119	4721	19	9	1742	Stop pumping but hold tubing pressure.														
17:13		7345	119	4354	19	11	1739	Bleed off tubing pressure to obtain circ. underbalance.														
17:15		3481	118	154	19	90	1689	Close Choke manifold.														
17:20		3477	118	15	19	8	1674															
17:25		3484	118	24	19	6	1665															
17:30		3489	118	30	19	6	1660															
17:35		4190	118	707	19	6	1659	Good surface indication of TCP guns fired.														
17:36		4193	118	716	19	6	1659															
17:37	16	4189	118	709	19	6	1657	Open well on 16/64" adjustable choke to Surge tank. (Initial Flow Period)														
17:38	16	4037	118	573	19	8	1656															
17:39	16	4087	118	579	19	20	1657															
17:40	16	4129	118	627	19	15	1657															
17:41	16	4124	118	619	19	15	1656															
17:42	16	4038	118	524	19	21	1657															
17:43	16	4055	119	514	19	23	1657															
17:44	16	4157	119	628	19	14	1659															
17:45	16	4165	119	634	19	12	1660															
17:46	16	4166	119	634	19	12	1645															
17:47	16	4210	119	604	19	12	584	Bleed off Annulus to close PCT. (Initial Pressure Build Up Period)														
17:48		4228	119	224	18	11	28															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead WHP	Wellhead WHT	Wellhead WHDCP	Wellhead Casing	Separator Sep.	Separator Gas	Separator Oil	BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
17:49		4228	119	201	18	10	27	Close Choke manifold. Recover 3.7 bbls diesel cushion.														
17:50		4228	119	180	18	10	27															
17:51		4229	119	163	18	9	27															
17:52		4229	119	150	18	9	27															
17:53		4229	119	139	18	9	27															
17:54		4229	119	130	18	9	30															
17:55		4229	119	122	18	9	28															
17:56		4229	119	115	18	9	30															
17:57		4229	119	109	18	9	29															
17:58		4229	119	106	18	9	30															
17:59		4230	119	101	18	9	30															
18:00		4230	119	98	18	9	30															
18:05		4230	119	86	18	9	30															
18:10		4228	119	77	18	9	30															
18:15		4226	119	74	18	9	30															
18:20		4225	119	68	18	9	30															
18:25		4224	119	65	18	9	30															
18:30		4223	119	65	18	9	30															
18:45		4222	119	59	17	9	30															
19:00		4222	119	56	17	12	30															
19:03		4222	119	69	17	15	306															
19:04		4090	119	123	17	15	855	Pressure Annulus to open PCT (Clean Up Flow Period)														
19:05		4220	118	711	17	15	1349															
19:06	16	4155	118	660	17	17	1324	Open well on 16/64" adjustable choke to Surge tank.														
19:07	16	4068	118	615	17	21	1306															

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Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
19:08	20	3945	118	506	17	23	1354	Increase adjustable choke to 20/64"														
19:09	20	3905	118	509	17	26	1387															
19:10	20	3910	118	537	17	35	1483															
19:11	20	3930	118	527	17	39	1488															
19:12	20	3950	118	512	17	61	1491															
19:13	20	3970	118	496	17	61	1499															
19:14	20	3984	118	484	18	59	1506															
19:15	20	3995	118	484	18	59	1514															
19:16	24	3982	118	462	18	74	1521	Increase adjustable choke to 24/64"														
19:17	24	3985	118	444	19	77	1530	Total recovery 14 bbls diesel cushion.														
19:18	24	3984	118	444	19	79	1538															
19:19	24	3995	119	452	19	78	1547															
19:20	24	4004	119	465	19	78	1557															
19:21	24	4002	119	470	19	87	1566															
19:22	24	4012	119	492	20	85	1577															
19:23	24	4019	119	513	20	86	1588															
19:24	24	4015	119	528	20	95	1599															
19:25	24	4018	119	555	20	97	1599															
19:30	24	3936	119	734	21	161	1552															
19:32	24	3907	119	850	21	219	1579	Divert flow to Portside burner. Total recovery 31 bbls diesel cushion.														
19:35	24	3962	119	1085	22	285	1500															
19:39	28	4090	120	1410	22	163	1534	Increase adjustable choke to 28/64"														
19:40	28	4097	120	1464	22	165	1541															
19:41	28	4100	120	1514	22	168	1547															
19:42	28	4102	120	1564	22	170	1553															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
19:43	28	4103	120	1611	22	174	1559															
19:44	28	4100	120	1657	22	168	1565															
19:45	28	4097	120	1704	22	170	1571															
19:46	28	4094	120	1749	22	173	1577															
19:47	28	4091	120	1794	22	176	1584															
19:48	28	4087	120	1840	22	179	1592															
19:49	32	4052	120	1853	22	370	1470	Increase adjustable choke to 32/64"														
19:50	32	4049	120	1912	22	234	1473															
19:51	32	4076	120	1952	22	511	1479															
19:52	32	4135	120	2012	22	413	1482	Gas and Brine at surface.														
19:53	16	4185	120	2064	22	277	1485	Decrease choke to 16/64". Divert flow through Steam Exchanger														
19:54	20	4187	120	2078	22	394	1488	Decrease choke to 20/64" adjustable.														
19:55	20	4195	120	2098	22	361	1488	Divert flow to burner gas flare.														
19:56	24	4175	120	2110	22	254	1491	Increase adjustable choke to 24/64".														
19:57	32	4129	120	2121	21	192	1494	Gradually increase to 32/64" adjustable choke.														
19:58	32	3976	120	1987	21	327	1497															
19:59	32	3865	120	2160	22	495	1503															
20:00	32	3786	120	2233	23	533	1509															
20:01	32	3722	120	2317	24	579	1518															
20:02	32	3649	119	2361	25	588	1524															
20:03	32	3548	119	2378	26	506	1529															
20:04	36	3424	119	2316	27	618	1534	Increase adjustable choke to 36/64".														
20:05	36	3273	119	2182	27	492	1538															
20:06	36	3158	119	2137	27	447	1541															
20:07	36	3048	118	1991	27	427	1547															

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Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
20:08	36	2966	118	1919	27	400	1554															
20:09	36	2907	118	1861	26	384	1563															
20:10	36	2862	118	1815	26	381	1574	CO2 = 0 %; H2S = 0 ppm														
20:11	36	2840	118	1811	25	372	1586															
20:12	36	2825	118	1805	25	370	1488															
20:13	36	2823	118	1795	26	373	1494															
20:14	36	2814	118	1782	26	370	1502															
20:15	36	2807	118	1778	26	371	1509															
20:16	36	2803	118	1774	26	497	1518															
20:17	40	2777	118	1673	26	676	1525	Increase adjustable choke to 40/64".														
20:18	40	2741	118	1635	25	646	1532															
20:19	40	2713	118	1611	25	578	1541															
20:20	40	2697	118	1595	25	593	1548															
20:21	40	2687	118	1583	25	598	1558															
20:22	40	2686	118	1591	25	566	1567															
20:23	40	2691	118	1613	25	557	1577															
20:24	40	2693	118	1594	25	599	1571															
20:25	40	2693	118	1589	25	599	1420															
20:30	40	2708	118	1613	25	638	1487															
20:33	44	2733	118	1585	26	797	1511	Increase adjustable choke to 44/64".														
20:34	44	2698	118	1489	26	691	1517															
20:35	44	2666	117	1454	26	644	1524															
20:36	44	2642	117	1431	26	622	1532															
20:37	44	2624	117	1427	26	600	1538															
20:38	44	2609	117	1408	26	599	1547															

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Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
20:39	44	2609	117	1406	26	580	1554															
20:40	44	2608	117	1408	26	572	1563															
20:41	44	2602	117	1395	26	551	1571	Divert flow through separator.														
20:45	44	2603	117	1388	26	558	1482	238	25	17												
20:50	44	2613	117	1393	26	648	1517	413	28	17												
20:55	44	2629	117	1402	26	651	1552	413	30	17												
21:00	44	2630	117	1403	27	652	1513	Well head BSW = 70% condensate; 30% water; trace of sediment.														
21:05	44	2637	117	1408	27	650	1523	416	31	17												
21:08	44	2640	117	1411	27	656	1541	Lower 2.75" orifice plate.														
21:10	44	2643	117	1411	27	655	1553	410	31	18						0.688	2.4	0		16.66		
21:15	44	2648	117	1417	27	666	1585	Well head BSW = 70% condensate; 30% water; trace of sediment.														
21:15	44	2648	117	1417	27	666	1585	414	31	18						0.688	2.4	0		16.77		
21:20	44	2652	117	1417	27	667	1478	412	32	18						0.688	2.4	0		16.85		
21:25	44	2656	117	1420	28	670	1509	412	31	20						0.688	2.4	0		16.83		
21:28	44	2653	117	1424	28	670	1529	Lift up orifice plate.														
21:30	44	2662	117	1426	28	670	1541	410	32	29												
21:33	48	2662	117	1412	28	711	1561	Divert flow through 48/64" fixed choke, fully open STX adjustable choke.														
21:35	48	2626	117	1310	28	662	1570	391	31	29												
21:40	48	2589	116	1275	28	640	1452	374	31	29												
21:45	48	2585	116	1270	28	638	1478	416	32	29												
21:46	48	2585	116	1272	28	640	1482	Lower 3.25" orifice plate.														
21:50	48	2589	116	1272	28	638	1504	412	33	28						0.692	2.4	0		15.82		
21:55	48	2594	116	1275	29	639	1530	415	33	25						0.692	2.4	0		16.00		
22:00	48	2593	116	1275	29	641	1556	416	35	23						0.692	2.4	0		16.08		
22:05	48	2596	116	1278	29	638	1583	412	37	22						0.692	2.4	0		16.02		

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Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
22:10	48	2599	116	1278	29	641	1479	413	38	22						0.692	2.4	0		15.84		
22:15	48	2604	116	1281	29	638	1502	412	38	22						0.692	2.4	0		16.15		
22:18	48	2604	116	1281	29	646	1514	Increase separator pressure to prevent liquid being carry-over.														
22:20	48	2604	116	1281	29	664	1523	451	38	22						0.692	2.4	0		16.12		
22:25	48	2607	116	1283	29	673	1547	466	39	22						0.692	2.4	0		16.16		
22:30	48	2609	116	1284	29	676	1567	467	39	21	18% water; 82% condensate					0.692	2.4	0		16.18		
22:35	48	2611	116	1284	29	676	1464	467	40	24						0.692	2.4	0		16.16		
22:40	48	2613	116	1287	30	676	1478	466	39	32						0.692	2.4	0		16.14		
22:45	48	2614	116	1287	30	677	1493	469	40	35						0.692	2.4	0		16.18		
22:50	48	2616	116	1290	30	676	1505	468	40	36						0.692	2.4	0		16.17		
22:55	48	2618	116	1290	30	679	1517	469	41	37						0.692	2.4	0		16.19		
23:00	48	2620	117	1290	30	676	1530	468	40	37	18% water; 82% condensate					0.692	2.4	0		16.19		
23:00				(Main Flow Period)				Take Separator water sample number 1.01; Resistivity= 0.46 ohm; CL= 6400 mg/l														
23:15	48	2623	117	1293	30	679	1558	470	41	38					48.56	0.706	2.4	0	162	16.08	36	10
23:30	48	2627	117	1296	31	678	1478	468	42	39					48.56	0.706	2.4	0	135	16.12	30	8
23:45	48	2631	117	1299	31	676	1469	467	41	39					48.56	0.706	2.4	0	176	16.11	40	11
12-Dec-04																						
00:00	48	2634	117	1302	32	679	1452	469	42	39	24% water; 76% condensate				48.56	0.706	2.4	0	138	16.17	45	9
00:00								Take Separator water sample number 1.02; Resistivity= 0.5 ohm; CL= 6000 mg/l														
00:15	48	2637	117	1303	32	679	1425	469	43	34					48.56	0.706	2.4	0	163	16.19	53	10
00:30	48	2640	117	1305	32	679	1493	467	43	40					48.56	0.706	2.4	0	163	16.17	53	10
00:45	48	2643	117	1307	33	679	1451	467	43	40					48.56	0.698	2.4	0	125	16.22	41	8
01:00	48	2645	117	1308	33	679	1487	469	43	41	22% water; 78% condensate					0.698	2.4	0		16.25		
01:00								Take Separator water sample number 1.02; Resistivity= 0.53 ohm; CL= 5800 mg/l														
01:15	48	2648	117	1311	34	682	1434	470	44	41						0.698	2.4	0		16.28		

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Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
01:30	48	2651	117	1314	34	679	1521	469	44	42						0.698	2.4	0		16.28		
01:45	48	2654	117	1314	34	682	1460	470	45	41					48.56	0.698	2.4	0	142	16.32	41	9
02:00	48	2656	117	1317	35	680	1555	468	46	36	20% water; 80% condensate				48.56	0.698	2.4	0	145	16.20	37	9
02:00								Take Separator water sample number 1.02; Resistivity= 0.8 ohm; CL= 5600 mg/l														
02:15	48	2657	117	1317	35	679	1443	467	45	30					48.56	0.698	2.4	0	168	16.33	48	10
02:15								Take Separator gas sample number 1.05 and sample number 1.06														
02:30	48	2658	117	1320	35	682	1459	468	46	33						0.698	2.4	0		16.34		
02:30								Take Separator PVT sample, oil sample 1.07; gas sample 1.08														
02:45	48	2660	117	1320	36	682	1576	469	47	43						0.698	2.4	0		16.33		
03:00	48	2661	117	1320	36	682	1454	469	47	43	20% water; 80% condensate					0.700	2.4	0		16.31		
03:00								Take Separator water sample number 1.09; Resistivity= 0.8 ohm; CL= 5800 mg/l														
03:15	48	2663	117	1323	36	682	1452	468	47	44					47.98	0.700	2.4	0	119	16.30	30	7
03:30	48	2664	117	1323	37	681	1472	468	46	44					47.98	0.700	2.4	0	145	16.29	37	9
03:45	48	2665	117	1326	38	685	1496	470	47	44					47.98	0.700	2.4	0	119	16.32	30	7
04:00	48	2666	117	1326	38	682	1510	468	47	45	23% water; 77% condensate				47.98	0.700	2.4	0	140	16.31	43	9
04:00								Take Separator water sample number 1.10; Resistivity= 0.79 ohm; CL= 6000 mg/l														
04:00								Shrinkage factor = 3.4% at 16 degC; obtained with venting method.														
04:15	48	2667	117	1326	38	682	1449	470	48	45					47.98	0.700	2.4	0	152	16.33	47	9
04:30	48	2668	117	1326	38	682	1464	469	47	45					47.98	0.700	2.4	0	140	16.30	43	9
04:45	48	2669	117	1329	38	685	1481	471	47	45					47.98	0.700	2.4	0	114	16.31	35	7
05:00	48	2671	117	1329	39	685	1499	471	48	45					47.98	0.700	2.4	0	140	16.33	43	9
05:00								Take Separator water sample number 1.11; Resistivity= 0.76 ohm; CL= 5800 mg/l														
05:01	48	2670	117	1329	39	683	1318															
05:02	48	2830	117	1329	39	682	752															
05:03		3789	119	1208	39	659	165	Bleed off pressure to close PCT (Main Build Up Period)														

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Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
05:04		3956	120	1359	39	228	25	Close Choke manifold.														
05:05		3992	121	1406	39	85	24															
05:06		4010	121	1454	39	76	24															
05:07		4023	121	1502	39	76	24															
05:08		4032	121	1552	39	73	24															
05:09		4109	121	1580	39	73	24															
05:10		4125	121	1577	38	67	27															
05:11		4134	121	1574	38	49	26															
05:12		4140	121	1572	38	18	27															
05:13		4146	121	1575	38	37	25															
05:14		4151	121	1572	38	18	27															
05:15		4156	121	1572	37	16	27															
05:16		4160	121	1572	37	16	27															
05:17		4163	121	1572	36	16	27															
05:18		4166	121	1569	36	16	27															
05:19		4169	121	1568	35	16	27															
05:20		4172	121	1568	35	16	27															
05:25		4183	121	1565	33	16	24															
05:30		4191	121	1562	32	17	24															
05:35		4199	121	1559	31	17	24															
05:40		4205	121	1559	30	17	21															
05:45		4211	120	1556	28	17	19															
05:50		4216	120	1553	27	16	18															
05:55		4221	120	1553	26	17	18															
06:00		4226	120	1550	26	16	18															

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 15 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
06:15		4238	120	1545	23	16	18															
06:30		4249	120	1542	21	16	21															
06:45		4258	120	1539	20	15	17															
07:00		4266	119	1536	19	16	15															
07:15		4274	119	1531	18	16	15															
07:30		4281	119	1527	18	17	16															
07:45		4287	119	1524	18	17	18															
08:00		4293	119	1524	18	18	18															
08:30		4304	119	1518	18	18	18															
09:00		4313	119	1515	17	18	18															
09:30		4321	119	1509	17	18	18															
10:00		4328	119	1506	17	17	18															
10:30		4335	119	1506	18	17	18															
10:34		4335	119	1070	17	16	18	Commence bleeding off pressure at choke manifold to gas flare.															
10:36		4336	119	713	17	17	18	Open Choke manifold.															
10:38		4336	119	15	16	15	18	Commence rigging up wireline prior to running 1.875" Owen bridge plug.															
11:00		4340	119	15	18	15	18															
11:30		4346	119	15	21	15	18	STAN acquisition stopped due to a power failure.															
14:30		4368	119	15	21	15	18	STAN restarted.															
15:00		4371	119	15	24	15	18															
15:30		4373	119	14	23	15	18															
16:00		4376	119	14	22	15	18															
16:05		4376	119	15	22	15	18															
16:10		4377	119	14	22	15	18															
16:15		4377	119	103	22	15	18	Commence pressure testing wireline lubricator to 5000 psi.															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead WHP	Wellhead WHT	Wellhead WHDCP	Wellhead Casing	Separator Sep. Press	Separator Gas Temp	Separator Oil Temp	BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
16:20		4377	119	2043	21	15	18															
16:25		4378	119	5055	21	15	18															
16:30		4378	119	5052	21	15	17															
16:35		4378	119	2139	21	15	17	Good test. Bleed off pressure.														
16:40		4379	119	14	20	15	17															
16:45		4379	119	20	20	15	18															
16:50		4380	119	32	20	16	17															
16:55		4380	119	44	20	16	17															
17:00		4380	119	56	20	16	17	Open Master valve.														
17:01		4380	119	951	20	15	17															
17:02		4380	119	1464	20	16	17															
17:03		4380	119	1464	21	16	17															
17:04		4380	119	1462	21	16	18															
17:05		4381	119	1462	21	15	62															
17:06		4381	119	1464	21	15	605	Pressure Annulus to open PCT. (Sampling Flow Period)														
17:07		3198	118	1468	21	15	1260															
17:08		3106	117	1943	21	15	1547															
17:09		3409	117	2401	21	15	1573															
17:10		3700	117	2730	21	15	1598															
17:11		3941	118	2999	20	15	1514															
17:12		4117	118	3200	20	15	1499															
17:13		4229	119	3330	20	15	1503															
17:14		4291	119	3405	20	15	1502															
17:15		4323	120	3443	20	15	1500															
17:20		4359	120	3476	21	15	1471															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead WHP	WHT	WHDCP	Casing	Separator Sep.	Gas	Oil	BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
17:25		4370	120	3484	21	16	1438															
17:30		4374	120	3490	21	15	1518															
17:35		4376	120	3490	21	15	1487															
17:40		4377	120	3490	21	15	1456															
17:45		4378	120	3493	21	17	1425															
17:50		4379	120	3493	21	24	1513															
17:55		4380	120	3493	21	15	1484															
17:59	16	4358	120	3479	21	95	1459	Open well on 16/64" adjustable choke to flare.														
18:00	16	4351	120	3468	21	76	1453															
18:01	16	4347	120	3463	21	154	1448															
18:02	16	4337	120	3459	21	243	1442															
18:03	20	4325	120	3440	21	295	1438	Increase adjustable choke to 20/64".														
18:04	20	4301	120	3434	22	342	1433	Start Methanol injection 32 stokes/min.														
18:05	24	4287	120	3404	22	373	1428	Increase adjustable choke to 24/64".														
18:06	24	4296	120	3407	22	366	1425	Divert flow through separator.														
18:07	24	4299	120	3408	22	388	1436	391	52	19												
18:08	28	4260	120	3383	22	432	1489	Increase adjustable choke to 28/64".														
18:09	28	4225	120	3333	21	446	1518	422	59	19												
18:10	32	4221	120	3330	21	434	1516	Increase adjustable choke to 32/64" .														
18:12	32	4208	120	3315	21	464	1511	Reduce STX choke to 32/64"														
18:15	32	4197	120	3301	21	764	1505	418	65	19												
18:20	32	4159	120	3266	21	1848	1497	Stop Methanol injection.														
18:22	32	4032	120	3140	21	1771	1493	Divert flow through 32/64" fixed choke.														
18:25	32	3632	119	2585	22	1236	1489	419	7	19												
18:30	32	3431	119	2358	26	1149	1516	422	6	19												

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
18:35	32	3385	119	2313	27	884	1555	421	14	19												
18:40	32	3372	119	2305	28	849	1486	419	37	19												
18:45	32	3361	119	2293	29	839	1503	416	37	19												
18:50	32	3352	119	2284	29	852	1519	415	34	22												
18:55	32	3349	119	2287	30	861	1534	412	31	23												
19:00	32	3350	119	2289	30	1063	1545	415	12	25												
19:05	32	3350	119	2290	31	1094	1555	611	3	23												
19:10	32	3345	120	2290	31	1189	1563	576	2	17												
19:15	32	3340	120	2284	31	1203	1569	522	10	13												
19:20	32	3333	120	2273	32	1283	1572	421	11	12												
19:24	32	3326	120	2269	32	1196	1575	By-pass Separator.														
19:25	32	3324	120	2267	32	1201	1575															
19:30	32	3317	120	2258	32	1299	1578															
19:35	32	3332	120	2310	32	1786	1577	Start Methanol injection. Adjust STX choke to eliminate hydrate														
19:40	32	3420	120	2405	32	1916	1580															
19:45	32	3350	120	2294	32	1442	1574															
19:50	32	3301	120	2239	33	1303	1569															
19:55	32	3288	120	2227	33	1297	1563	Divert flow through separator.														
20:00	32	3285	120	2228	33	1291	1560	304	18	13												
20:05	32	3286	120	2231	33	1288	1554	328	21	14												
20:09	32	3286	120	2231	33	1297	1551	By-pass Separator.														
20:10	36	3353	120	2375	33	908	1551	Commence changing choke to 36/64" fixed choke.														
20:15	36	3246	120	2150	34	1407	1543	Well flowing on 36/64" fixed choke														
20:19	36	3174	120	2054	34	1075	1534	Divert flow through separator.														
20:20	36	3165	120	2045	34	1069	1534	188	20	16												

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
20:25	36	3144	120	2024	34	1098	1528	253	21	16												
20:30	36	3137	120	2018	34	1092	1546	321	24	16												
20:35	36	3134	120	2016	35	1095	1575	378	26	19												
20:40	36	3131	120	2013	35	1089	1575	338	27	19												
20:45	36	3129	120	2013	35	1093	1560	346	26	19												
20:50	36	3128	120	2009	35	1092	1546	347	28	22	Stop Methanol injection.											
20:55	36	3126	120	2010	35	1091	1531	386	28	24												
21:00	36	3125	120	2010	35	1086	1516	305	29	25	20% water; 80% condensate											
21:05	36	3124	120	2010	36	1080	1500	398	31	26												
21:10	36	3123	120	2007	36	1086	1483	491	32	27												
21:15	36	3122	120	2007	36	1080	1468	489	33	28												
21:20	36	3121	120	2007	36	1084	1451	491	33	29	Lower down 2.750" orifice plate.											
21:25	36	3120	120	2007	36	1084	1451	489	35	30						0.690	2.6	0		14.58		
21:30	36	3119	120	2007	36	1082	1468	488	34	31	20				47.98	0.690	2.6	0	200	14.55	51	14
21:35	36	3119	120	2007	36	1083	1483	491	35	31						0.690	2.6	0		14.56		
21:40	36	3118	120	2007	36	1080	1501	487	35	32						0.690	2.6	0		14.53		
21:45	36	3118	120	2007	37	1084	1519	491	35	29					47.98	0.690	2.6	0	186	14.52	47	13
21:50	36	3117	120	2007	37	1083	1537	490	36	30						0.690	2.6	0		14.57		
21:55	36	3116	120	2007	37	1086	1554	491	37	32						0.690	2.6	0		14.55		
21:55	36			2007	37	1086	1554	Take Separator 20 ltr dead oil sample number 1.12															
22:00	36	3116	120	2007	37	1086	1575	492	39	33	20% water; 80% condensate				47.98	0.690	2.6	0	159	14.56	41	11
22:00	36			2007	37	1086	1575	Take Separator water 1 ltr sample number 1.13														
22:00	36			2007	37	1086	1575	Take Separator PVT sample, oil sample 1.14; gas sample 1.15														
22:05	36	3115	120	2007	37	1089	1560	493	40	34						0.690	2.6	0		14.56		
22:10	36	3114	120	2006	37	1086	1528	491	41	35						0.690	2.6	0		14.54		

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
22:15	36	3114	120	2007	37	1087	1498	491	40	36					47.98	0.690	2.6	0	146	14.52	37	10
22:20	36	3113	120	2007	37	1090	1465	493	41	36						0.690	2.6	0		14.53		
22:25	36	3113	120	2006	37	1089	1436	493	42	36						0.690	2.6	0		14.54		
22:30	36	3113	120	2006	37	1089	1430	493	42	37	20				47.98	0.700	2.6	0	186	14.43	47	13
22:31	36	3112	120	2006	37	1089	1433	Take Separator 20 ltr dead oil sample number 1.16														
22:35	36	3112	120	2007	38	1080	1441	490	42	38						0.700	2.6	0		14.42		
22:40	36	3111	120	2005	38	1103	1451	480	21	38						0.700	2.6	0		14.28		
22:42	36	3112	120	2007	38	1110	1457	Attempt to correct the steam pressure to STX.														
22:45	36	3111	120	2004	38	1069	1462	497	14	36					47.98	0.700	2.6	0	186	14.13	47	13
22:50	36	3110	120	2004	38	1062	1474	505	21	27						0.700	2.6	0		14.21		
22:55	36	3110	120	2004	38	1063	1486	504	22	26						0.700	2.6	0		14.23		
23:00	36	3110	120	2004	38	1068	1499	500	20	25					47.98	0.700	2.6	0	187	14.18	47	13
23:00	36	3110	120	2004	38	1068	1499	Take Separator water 1 ltr sample number 1.17														
23:15	36	3109	120	2007	38	1098	1540	497	10	22					47.98	0.700	2.6	0	187	14.04	47	13
23:16	36	3109	120	2007	38	1095	1542	Steam Boiler back in operation.														
23:30	36	3107	120	2004	38	1068	1569	514	27	20	20				47.98	0.700	2.6	0	174	14.29	44	12
23:35	36	3107	120	2004	38	1071	1530	Take Separator water 1 ltr sample number 1.18														
23:40	36	3107	120	2004	38	1069	1492	Take Separator PVT sample, oil sample 1.19; gas sample 1.20														
23:45	36	3107	120	2004	38	1071	1454	517	32	27					47.98	0.700	2.6	0	170	14.26	43	12
23:56		3144	120	2195	39	813	1435	Close Choke manifold. (Final Build Up Period)														
23:57		3420	120	2584	39	305	1443															
23:58		3667	121	2844	39	33	1451															
23:59		3857	121	3044	39	18	1454															
13-Dec-04																						
00:00		3988	121	3182	40	17	1454															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
00:01		4068	122	3267	40	17	1451															
00:02		4112	122	3313	40	17	1445															
00:03		4135	122	3335	40	17	1439	Conduct JSA on running Wireline toolstring.														
00:04		4152	122	3349	40	17	1429															
00:05		4164	122	3358	40	17	1420															
00:06		4174	123	3367	39	16	1410															
00:07		4182	123	3372	39	16	1402															
00:08		4190	123	3379	39	16	1506															
00:09		4197	123	3384	39	17	1497															
00:10		4202	123	3390	38	17	1487															
00:15		4218	122	3402	37	16	1441															
00:20		4228	122	3408	36	16	1541															
00:25		4236	122	3414	35	16	1521															
00:30		4242	122	3418	34	16	1484															
00:35		4247	122	3423	33	16	1531															
00:40		4252	122	3425	33	16	1498															
00:42		4254	122	3426	32	16	1484	Open Flowhead Swab valve.														
00:45		4248	122	3418	32	16	1466	Attempt and fail to lower wireline tool string.														
00:50		4260	122	3428	31	15	1434															
00:55		4264	121	3432	30	15	1549															
01:00		4268	121	3435	30	15	1520	Close Master valve, bleed off surface pressure to flare.														
01:07		4272	121	18	24	16	1481	Close back Choke manifold and Flowhead Swab valve.														
01:15		4277	121	41	18	14	1472	Open Lubricator needle valve to bleed off any remained pressure.														
01:16		4278	121	41	18	15	1466	Conduct JSA on bring down Wireline Lubricator.														
01:23		4281	121	47	18	15	1525	Commence changing tool string and weight bar.														

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
01:30		4285	121	50	19	15	1493															
01:45		4292	121	62	19	15	1425															
02:00		4298	121	70	19	16	1523															
02:15		4304	120	77	19	15	1457															
02:30		4309	120	85	18	15	1533															
02:45		4314	120	94	18	15	1477															
03:00		4318	120	103	18	15	1511															
03:15		4322	120	109	18	14	1472															
03:30		4326	120	118	18	14	1424															
03:45		4330	120	124	18	15	1536															
04:00		4333	120	133	18	15	1492															
04:12		4335	120	139	18	15	1455	Make up Wireline lubricator with new toolstring.														
04:15		4336	120	138	17	15	1445															
04:30		4339	120	144	17	14	1540															
04:45		4341	120	150	17	14	1500															
04:53		4343	120	155	17	14	1478	Pressure test quick test sub.														
04:56		4343	120	156	17	14	1471															
04:59		4308	120	983	17	14	1463	Open Master valve and Swab valve.														
05:00		4332	120	3468	18	14	1460															
05:10		4344	120	3483	23	14	1436	Attempt and fail to lower wireline tool string.														
05:15		4346	120	3482	23	14	1422															
05:21		4347	120	3482	22	14	1564	Start pumping Methanol at the wellhead.														
05:22		4347	120	3482	22	14	1562	Close Master valve, attempt to free the toolstring.														
05:25		4348	120	3485	22	14	1555	Stop pumping Methanol.														
05:30		4349	120	3485	22	14	1541															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
05:45		4351	120	3485	21	14	1502															
06:00		4353	120	3488	20	14	1462															
06:09		4354	120	3483	20	14	1438	Open Master valve.														
06:10		4354	120	3466	20	15	1436	Open Choke manifold to flow well in order to reduce wellhead pressure.														
06:11		4354	120	3140	20	19	1433	Fail to run in, close Choke manifold and Master valve.														
06:13		4355	120	2899	20	19	1428	Slowly bleed down pressure to free toolstring.														
06:15		4355	120	2457	19	14	1423															
06:16		4355	120	1550	19	132	1422	Close Choke manifold.														
06:24		4353	120	1313	14	14	1555	Open Master valve. Start Methanol injection.														
06:28		4262	120	3401	18	355	1546	Open well on 20/64" adjustable choke to assist Wireline lowering toolstring.														
06:29		4150	120	3272	19	673	1544	Increase choke to 24/64" adjustable.														
06:30		4001	119	3063	20	950	1543															
06:33		3611	119	2511	21	592	1550	Increase choke to 36/64" adjustable.														
06:45		3232	119	2086	29	569	1528															
06:56		3260	119	2156	31	516	1513	Decrease choke to 32/64" adjustable. Wireline able to run in slowly.														
07:00		3445	120	2452	32	382	1504															
07:04		3812	120	2932	32	448	1489	Gradually decrease choke to 20/64" adjustable.														
07:06		4089	121	3236	32	20	1476	Wireline running in hole freely, Close choke manifold.														
07:15		4302	122	3451	31	15	1425															
07:18		4312	122	3459	31	15	1565	Stop pumping Methanol.														
07:30		4328	122	3471	29	15	1500															
07:45		4337	122	3476	28	15	1457															
08:00		4341	121	3479	27	16	1511															
08:15		4345	121	3482	26	15	1457															
08:25		4347	121	3485	26	15	1425	Wireline drift to 3130mMDRT.														

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 24 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
08:30		4348	121	3485	25	15	1549	Commence wireline pulling out of hole.														
08:45		4351	121	3485	25	15	1511															
09:00		4353	121	3488	25	14	1472															
09:15		4355	120	3487	24	14	1433															
09:30		4358	120	3491	23	14	1534															
09:45		4360	120	3491	23	14	1499															
10:00		4361	120	3490	23	14	1463															
10:15		4363	120	3494	22	14	1428															
10:30		4365	120	3494	22	14	1543	Wireline out of hole.														
10:45		4367	120	3494	22	14	1514	Close Master valve, bleed off surface pressure to flare.														
10:50		4367	120	15	14	14	1502	Close Swab valve. Commence changing out Wireline toolstring.														
11:00		4368	120	15	11	14	1484															
11:15		4370	120	15	14	14	1451															
11:30		4371	120	15	16	14	1433															
11:45		4372	120	15	18	14	1529															
12:00		4373	120	15	19	14	1502															
12:15		4374	120	15	21	14	1476															
12:19		4375	120	15	21	15	1469	Conduct JSA on rig floor. Arm Wireline 1.875" Owen Bridge plug.														
12:30		4375	120	15	22	15	1448															
12:45		4376	120	15	23	15	1520	Close Choke manifold.														
12:48		4368	120	361	23	15	1517	Open Master valve.														
13:00		4275	120	3406	29	215	1502	Open well on 16/64" adjustable choke to Portside flare.														
13:00		4275	120	3406	29	215	1502															
13:04		4098	119	3194	25	15	1509	Close Choke manifold, no flare ignition.														
13:15		4367	120	3490	26	15	1523															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
13:20		4370	120	3493	26	15	1513	Open well on 16/64" adjustable choke to Portside flare.														
13:23		3865	120	2829	25	616	1505	Gradually increase to 36/64" adjustable choke.														
13:28		3470	119	2341	27	690	1541	Wireline able to run in hole, slowly reduce choke.														
13:30		3554	119	2593	28	309	1567															
13:34		4134	121	3259	30	105	1522	Shut in at choke manifold.														
13:45		4354	122	3481	30	14	1507															
14:00		4371	122	3493	29	14	1460															
14:15		4374	121	3496	28	15	1419															
14:30		4375	121	3496	27	15	1526															
14:45		4377	121	3499	27	15	1495															
15:00		4378	121	3499	26	14	1466															
15:15		4374	121	3496	25	15	1438															
15:20		4372	121	3494	25	14	1428	Wireline set Bridge plug at 3125.3m, Start pulling out with running toolstring.														
15:30		4367	120	3491	24	14	1567															
15:45		4360	120	3485	23	14	1543															
16:00		4346	120	3473	23	14	1520															
16:15		4329	120	3459	22	14	1496															
16:30		4312	120	3444	22	14	1472															
16:45		4303	120	3435	21	14	1448															
16:49		4302	120	3435	21	14	1443	Wireline out of hole.														
17:00		4298	120	3432	21	15	1425															
17:04		4297	120	3430	21	15	1499															
17:05		4257	120	3412	21	123	1497	Open Choke manifold, bleed down tubing pressure 500 psi for inflw test Bridge plug.														
17:06		4247	120	3396	21	202	1496															
17:07		4194	120	3347	21	218	1493															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
17:08		4161	120	3331	21	79	1493															
17:09		4087	120	3278	21	146	1490															
17:10		3777	120	2984	21	254	1486															
17:11		3779	119	2995	20	15	1482															
17:12		3778	119	2996	20	13	1481															
17:13		3778	119	2995	20	12	1478															
17:14		3778	119	2996	20	12	1478															
17:15		3778	119	2996	20	12	1475															
17:17		3777	119	2995	20	11	1472	Good test. Close Master valve, bleed off surface pressure.														
								TEST #2 Upper Zone (Perforation: 3040.5m - 3046.5m)														
17:22		3777	119	15	11	14	1466	Closed Swab valve. Commence changing out Wireline toolstring to run perforation guns.														
17:30		3777	119	15	11	14	1456															
18:00		3775	119	15	15	14	1535															
18:30		3772	119	15	16	14	1493															
19:00		3769	119	15	16	14	1449															
19:10		3768	119	15	16	14	1435	Connect 1-11/16" PJ Enerjet Gun to toolstring.														
19:30		3767	119	18	16	14	1490															
20:00		3764	120	18	16	14	1451															
20:10		3763	120	21	16	14	1440	Make up Wireline lubricator with Perforation toolstring.														
20:15		3763	120	21	16	14	1434															
20:18		3716	120	2738	16	14	1429	Open Master valve.														
20:19		3715	119	2943	18	14	1428															
20:20		3714	119	2943	19	14	1425															
20:21		3709	119	2942	20	14	1425															
20:22		3683	119	2918	21	14	1423	Open Swab valve.														

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
20:26		3640	119	2897	21	42	1419	Open choke, bleed down tubing to required underbalance.														
20:27		3514	119	2804	21	113	1416															
20:28		3334	119	2650	21	157	1435															
20:29		3207	119	2544	20	104	1437															
20:30		3166	118	2504	20	34	1434															
20:31		3167	118	2500	19	14	1433	Close Choke manifold with approximately 1000 psi underbalance.														
20:33		3167	118	2501	18	14	1440	Wireline running in hole with Perforation toolstring.														
20:45		3169	118	2503	18	14	1433															
21:00		3177	118	2509	18	15	1529															
21:30		3189	119	2518	17	16	1487															
22:00		3198	119	2527	16	15	1454															
22:30		3200	119	2527	15	15	1499															
23:00		3197	119	2524	15	15	1460															
23:30		3197	119	2524	15	15	1538															
00:00		3197	119	2524	15	15	1502	Wireline on depth, start depth correlation.														
14-Dec-04																						
00:15		3196	119	2524	14	14	1493															
00:30		3195	119	2524	14	14	1485															
00:35		3209	120	2530	14	14	1484	Wireline perforate 3040.5m - 3046.5m														
00:36		3216	120	2539	14	15	1484															
00:37		3224	120	2545	14	14	1484															
00:38		3232	120	2550	14	15	1483															
00:39		3240	120	2556	14	14	1481															
00:40		3249	120	2565	14	14	1481															
00:41		3258	120	2571	14	15	1481															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
00:42		3267	120	2579	14	14	1481															
00:43		3276	120	2586	14	14	1483															
00:44		3286	120	2595	14	14	1481															
00:45		3295	120	2601	14	14	1483															
00:46		3305	120	2610	14	14	1483															
00:47		3314	120	2615	14	14	1483															
00:48		3324	120	2624	14	14	1482															
00:49		3334	120	2633	14	15	1484															
00:50		3344	120	2640	14	15	1484															
00:51		3354	120	2648	14	14	1484															
00:52		3364	120	2657	14	15	1484															
00:53		3374	120	2666	14	14	1484															
00:54		3384	120	2672	14	14	1484															
00:55		3394	120	2681	14	14	1484															
00:56		3404	120	2689	14	14	1485															
00:57		3414	120	2698	14	15	1484															
00:58		3425	120	2705	14	14	1484															
00:59		3435	120	2713	14	14	1487															
01:00		3445	120	2722	14	15	1487															
01:05		3496	120	2763	14	15	1487															
01:10		3546	120	2804	14	14	1486															
01:15		3596	120	2843	14	13	1485	Wireline pull out of hole with spent guns.														
01:20		3644	120	2882	14	14	1484															
01:25		3689	121	2920	14	14	1484															
01:30		3732	121	2955	14	14	1484															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
01:45		3851	121	3053	14	15	1484															
02:00		3950	121	3132	14	15	1481															
02:15		4029	121	3194	14	14	1478															
02:30		4090	121	3244	14	15	1472															
02:45		4137	121	3283	14	14	1523															
03:00		4171	121	3309	14	14	1518															
03:15		4197	121	3330	14	14	1511															
03:25		4211	121	3342	14	13	1506	Conduct JSA on rigging down spent guns.														
03:30		4218	121	3348	14	14	1503															
03:45		4230	121	3357	14	14	1496															
04:00		4241	120	3365	14	14	1488	Wireline on surface, close Master valve.														
04:02		4242	120	1317	14	99	1487	Bleed off surface pressure.														
04:05		4244	120	18	5	14	1486	Close Swab valve, rig down spent guns.														
04:15		4250	120	21	4	13	1482															
04:30		4256	120	27	8	14	1476	Make up Lubricator.														
04:43		4242	120	36	9	14	1467	Open Master valve. Start Methanol injection.														
04:44		4200	120	3314	10	14	1467															
04:45		4200	120	3331	12	14	1467															
04:46		4202	120	3330	14	14	1465															
04:47		4203	120	3333	15	14	1464															
04:48		4205	120	3333	16	14	1464															
04:49		4206	120	3336	16	13	1464															
04:50		4208	120	3336	16	14	1464															
04:51		4209	120	3336	16	14	1462															
04:52	16	4096	120	3275	16	151	1461	Open well on 16/64" adjustable choke to Portside flare. (Clean Up Flow Period)														

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
04:53	16	3971	120	3164	16	190	1459															
04:54	16	3819	120	3042	16	231	1458															
04:55	24	3620	119	2870	16	301	1455	Gradually increase adjustable choke to 24/64".														
04:56	24	3392	119	2661	15	375	1452															
04:57	24	3200	118	2499	15	360	1447															
04:58	24	3030	117	2358	15	333	1445															
04:59	24	2884	117	2238	16	303	1442															
05:00	24	2757	116	2133	16	285	1440															
05:01	24	2639	116	2035	16	289	1453															
05:02	24	2523	116	1933	16	584	1496															
05:03	28	2387	115	1808	16	716	1496	Gradually increase adjustable choke to 28/64".														
05:04	28	2265	115	1704	16	696	1496															
05:05	28	2160	115	1615	16	661	1496															
05:06	28	2071	114	1537	17	631	1497															
05:07	28	1993	114	1469	17	561	1496															
05:08	28	1925	114	1408	17	535	1497															
05:09	28	1866	114	1355	17	513	1499															
05:10	28	1819	114	1317	17	494	1502	Wellhead BSW= 100% Condensate; trace of solid.														
05:15	28	1704	114	1228	17	364	1518															
05:20	28	1693	114	1223	17	426	1535	CO2 = 3.5%; H2S = 0 ppm														
05:25	28	1744	114	1262	18	468	1556															
05:30	28	1797	114	1305	18	461	1574															
05:35	28	1843	113	1341	18	464	1482															
05:40	28	1882	113	1368	18	473	1494															
05:41	32	1849	113	1312	18	706	1496	Increase adjustable choke to 32/64".														

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Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
05:42	32	1809	113	1286	18	518	1496															
05:43	32	1780	113	1265	18	491	1499															
05:44	32	1753	112	1243	19	487	1502															
05:45	32	1722	112	1196	19	553	1503	Divert flow through 32/64" fixed choke.														
05:46	32	1684	112	1173	19	526	1506															
05:47	32	1652	112	1146	19	474	1506															
05:48	32	1624	112	1121	19	409	1508															
05:49	32	1599	111	1100	19	391	1511															
05:50	32	1578	111	1082	20	389	1511	Wellhead BSW= 85% Condensate; 15% water; resistivity 4 ohm.														
05:51	32	1559	111	1066	20	397	1514															
05:52	32	1544	111	1052	20	403	1517															
05:53	32	1534	111	1041	20	405	1518															
05:54	32	1525	111	1033	20	413	1521															
05:55	32	1517	111	1026	20	417	1523															
06:00	32	1504	110	1012	20	404	1440															
06:05	32	1512	110	1012	20	396	1449															
06:10	32	1529	110	1021	20	399	1461															
06:15	32	1546	109	1030	20	402	1472	Wellhead BSW= 99% Condensate; 1% water; CO2 = 3.6%; H2S = 0 ppm														
06:20	32	1568	109	1039	20	405	1483															
06:25	32	1600	109	1063	21	409	1496	Reduce slowly the STX adjustable choke.														
06:30	32	1623	109	1080	21	570	1508	Wellhead BSW= 96% Condensate; 4% water; resistivity 6.5 ohm.														
06:35	32	1642	108	1100	21	565	1521	Stop pumping Methanol.														
06:40	32	1676	108	1128	22	656	1532															
06:41	32	1684	108	1134	22	676	1535	Divert flow through Separator.														
06:42	32	1691	108	1137	22	605	1537	Fully open STX choke.														

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	WHP Press	WHT Temp	WHDCP Press	Casing Press	Sep. Press	Gas Temp	Oil Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
06:45	32	1706	108	1143	22	529	1545	182	31	17	4.0											
06:50	32	1728	108	1154	22	643	1437	245	39	17	4.0											
06:55	32	1758	108	1182	22	824	1446	By-pass Separator. Start Methanol Injection.														
07:00	32	1739	108	1157	22	468	1455	Wellhead BSW= 95% Condensate; 5% water; resistivity 1.55ohm; CL 2400 mg/l														
07:01	32	1737	108	1154	22	291	1458	By-pass STX.														
07:05	32	1730	108	1149	23	240	1466															
07:07	32	1729	108	1146	23	325	1469	Divert flow through STX and inject Methanol at low rate 20 strokes/min.														
07:08	32	1728	108	1146	23	324	1470	Divert flow through Separator.														
07:10	32	1728	108	1146	23	356	1476	188	38	17	5											
07:15	32	1748	108	1154	23	396	1485	Lower 2.00" orifice plate. Wellhead BSW = 97% Condensate; 3% water														
07:20	32	1772	108	1172	23	409	1496	Lift up 2.00" orifice plate.														
07:25	32	1786	108	1184	23	410	1509	256	44	17	3											
07:27	32	1791	108	1187	23	415	1512	Lower 2.25" orifice plate. CO2 = 3.6%														
07:30	32	1796	108	1190	23	419	1519	256	44	18	4											
07:35	32	1803	108	1196	24	422	1529	256	44	18						0.741	3.6	0		6.65		
07:40	32	1807	108	1199	24	428	1541	256	43	17						0.741	3.6	0		6.67		
07:45	32	1811	108	1202	24	432	1553	256	44	17						0.741	3.6	0		6.69		
07:50	32	1834	108	1211	24	434	1414	256	44	17						0.741	3.6	0		6.72		
07:55	32	1853	108	1226	26	441	1424	256	44	17						0.741	3.6	0		6.77		
08:00	32	1867	108	1240	26	448	1434	257	44	18	4	Resistivity 3.1; CL 800mg/l				0.741	2.8	0		6.86		
08:00	32	1867	108	1240	26	448	1434	Take Separator water 1 ltr sample number 2.01 (Sampling Flow Period)														
08:12	32	1884	108	1254	25	520	1458	Increase Methanol injection to 30 strokes/min to eliminate hydrate at inlet STX.														
08:15	32	1885	108	1252	25	502	1464	256	43	34						0.741	2.8	0		6.93		
08:30	32	1891	109	1258	25	529	1496	256	42	38	6					0.741	2.8	0		6.98		
08:45	32	1898	109	1261	27	539	1541	256	43	33						0.748	2.8	0		6.99		

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 33 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead WHP	WHT	WHDCP	Casing	Separator Sep.	Gas	Oil	BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
09:00	32	1906	109	1266	27	543	1428	265	43	31						0.748	2.8	0		7.03		
09:00	32	1906	109	1266	27	543	1428	Take Separator water 1 ltr sample number 2.02; resistivity 3.5 ohm; CL 600 mg/l														
09:15	32	1914	109	1273	26	555	1458	269	43	41	5					0.748	2.8	0		7.02		
09:20	32	1916	109	1275	27	528	1474	Increase Methanol injection to 40 strokes/min to eliminate hydrate at upstream STX.														
09:30	32	1922	109	1278	27	550	1505	268	43	39						0.748	2.8	0		7.06		
09:37	32	1925	109	1281	27	432	1515	Ajust STX choke to increase inlet pressure.														
09:45	32	1928	109	1284	28	493	1526	267	43	39	5				52.68	0.746	2.8	0	126	7.09	7	18
10:00	32	1938	109	1290	27	500	1541	268	42	39	5				52.68	0.746	2.8	0	126	7.12	7	18
10:00	32	1938	109	1290	27	500	1541	Take Separator water 1 ltr sample number 2.03; resistivity 3.8 ohm; CL 500 mg/l														
10:01	32	1939	109	1290	27	585	1543	Increase upstream STX pressure. Stop Methanol injection.														
10:07	32	1949	109	1299	28	596	1553	Commence dumping all Separator liquid before sampling.														
10:15	32	1961	109	1311	28	599	1564	265	43	38						0.746	2.8	0		6.82		
10:16	32	1962	109	1311	28	608	1565	Finish dumping all Separator Liquid.														
10:30	32	1973	109	1320	29	611	1582	271	41	26	5					0.746	2.8	0		7.15		
10:45	32	1976	109	1322	29	614	1444	269	43	21						0.746	2.8	0		7.20		
10:55	32	1978	109	1323	30	616	1440	Take Separator water 1 ltr sample number 2.04														
11:00	32	1980	109	1323	30	631	1443	271	44	36	5					0.746	2.0	0		7.20		
11:00	32	1980	109	1323	30	631	1443	Take Separator 20 ltr dead oil sample number 2.05														
11:02	32	1980	109	1322	30	625	1446	Take Separator heavy metals gas sample number 2.06; 2.07														
11:05	32	1981	109	1323	30	625	1449	Take Separator PVT oil sample number 2.08; gas sample number 2.09														
11:15	32	1984	110	1326	31	639	1458	272	44	38					52.68	0.746	2.0	0	126	7.23	7	17
11:30	32	1990	110	1328	30	686	1472	271	45	40	5				52.68	0.746	2.0	0	142	7.26	8	20
11:34	32	1991	110	1328	31	629	1475	Take Separator 20 ltr dead oil sample number 2.10														
11:45	32	1993	110	1332	31	678	1487	268	45	36					52.68	0.747	2.0	0	142	7.28	8	19
11:45	32	1993	110	1332	31	678	1487	Take Separator water 1 ltr sample number 2.11 resistivity 3.6 ohm; CL 500 mg/l														

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Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
11:50	32	1993	110	1331	30	733	1490	Take Separator PVT oil sample number 2.12; gas sample number 2.13														
12:00	32	1996	110	1334	31	649	1501	269	45	41	5				52.68	0.747	2.0	0	126	7.29	7	17
12:05	32	1998	110	1334	31	678	1505	Shrinkage factor = 3% at 17 degC; obtained with Shrinkage Tester.														
12:15	32	1999	110	1334	31	621	1514	270	45	40					52.68	0.747	2.0	0	142	7.32	8	19
12:30	32	2011	110	1340	31	602	1528	269	45	42	3				52.68	0.747	2.0	0	113	7.35	4	15
12:45	32	2018	110	1349	31	618	1541	274	46	37					52.68	0.747	2.0	0	113	7.41	4	15
12:47	32	2017	110	1329	31	718	1544	Switch to adjustable choke and gradually increase choke. (Maximum Flow Period)														
12:48	36	1949	110	1182	31	846	1544	290	45	40												
12:49	40	1849	109	1042	31	862	1543	290	43	41												
12:50	40	1753	109	938	31	494	1541	By-pass STX.														
12:55	48	1535	108	738	32	413	1538	277	42	42												
13:00	52	1510	108	711	31	347	1538	276	34	41												
13:03	56	1509	108	674	31	371	1541	Well flow on 56/64" adjustable choke.														
13:04	56	1489	108	616	31	360	1540	Divert flow 56/64" fixed choke.														
13:05	56	1474	107	611	31	355	1538	278	35	40												
13:10	56	1433	107	584	31	252	1538	124	35	36												
13:15	56	1424	107	578	31	353	1537	282	38	36												
13:20	56	1445	106	586	31	355	1538	283	41	36												
13:21	56	1446	106	587	31	358	1538	Lower down 2.75" orifice plate.														
13:25	56	1447	106	589	31	361	1538	283	42	37						0.747	2.8	0		8.95		
13:30	56	1448	106	590	31	362	1538	283	43	38	4					0.747	2.8	0		8.95		
13:30	56	1448	106	590	31	362	1538	Take Separator water 1 ltr sample number 2.14														
13:35	56	1453	106	592	31	358	1538	281	43	36						0.747	2.8	0		8.95		
13:40	56	1456	105	592	31	361	1540	283	43	32						0.747	2.8	0		9.02		
13:45	56	1463	105	595	31	362	1540	283	44	39	4				52.68	0.747	2.8	0	219	9.03	9	24

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Time	Flowing Condition										Fluid Properties								Production Rate			Ratio
	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
13:50	56	1468	105	598	31	362	1541	282	44	40						0.747	2.8	0		9.07		
13:55	56	1472	105	598	31	361	1541	282	44	40						0.747	2.8	0		9.11		
14:00	56	1478	105	602	31	361	1541	282	44	41	4				52.68	0.747	2.8	0	255	9.15	11	28
14:05	56	1486	105	605	31	360	1543	282	44	41	Pump Tank contents to burner					0.747	2.8	0		9.18		
14:10	56	1493	105	608	31	365	1544	281	44	41						0.747	2.8	0		9.22		
14:15	56	1494	105	610	31	364	1544	280	45	41						0.747	2.8	0		9.25		
14:20	56	1496	105	607	31	364	1541	281	44	42						0.747	2.8	0		9.27		
14:25	56	1496	105	610	31	364	1541	280	44	42						0.747	2.8	0		9.28		
14:30	56	1497	105	610	31	365	1540	279	45	42						0.747	2.8	0		9.28		
14:30	56	1497	105	610	31	365	1540	Take Separator water 1 ltr sample number 2.15; resistivity 0.75 ohm; CL 5600 mg/l														
14:35	56	1501	105	610	31	362	1538	279	44	42						0.747	2.8	0		9.30		
14:40	56	1507	105	613	31	362	1538	278	44	42						0.747	2.8	0		9.32		
14:45	56	1532	105	622	31	366	1538	279	44	42						0.742	2.8	0		9.46		
14:50	56	1553	105	634	31	368	1538	279	44	42						0.742	2.8	0		9.63		
14:55	56	1558	105	637	31	367	1538	278	44	42						0.742	2.8	0		9.74		
14:55	56	1558	105	637	31	367	1538	Take Separator water 1 ltr sample number 2.16; resistivity 0.87 ohm; CL 5200 mg/l														
15:00	56	1560	105	637	32	370	1538	279	44	43	Stop Pumping					0.742	2.8	0		9.76		
15:00	56	1560	105	637	32	370	1538	Take Separator PVT oil sample number 2.17; gas sample number 2.18														
15:00	56	1560	105	637	32	370	1538	Wellhead BSW= 95% Condensate; 5% water; CO2 =2.8%; H2S = 0 ppm														
15:05	56	1561	105	637	31	371	1538	279	44	42						0.742	2.8	0		9.76		
15:10	56	1562	105	640	31	371	1537	279	44	42						0.742	2.8	0		9.78		
15:15	56	1563	105	640	31	370	1538	279	44	42	5				52.68	0.742	2.8	0	221	9.78	12	23
15:20	56	1565	105	640	31	370	1538	280	44	42						0.742	2.8	0		9.79		
15:25	56	1565	105	639	31	370	1538	280	44	42						0.742	2.8	0		9.81		
15:30	56	1566	105	639	31	371	1537	280	44	42	5				53.02	0.742	2.8	0	268	9.81	14	27

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
15:35	56	1568	105	643	31	371	1537	281	44	42						0.742	2.8	0		9.82		
15:40	56	1569	105	643	31	373	1537	282	44	42						0.742	2.8	0		9.83		
15:45	56	1571	105	643	31	373	1538	283	44	42	5				52.68	0.742	2.8	0	268	9.84	14	27
15:50	56	1572	105	642	31	374	1538	283	44	42						0.742	2.8	0		9.85		
15:55	56	1574	105	643	31	377	1538	284	44	42						0.742	2.8	0		9.87		
16:00	56	1575	105	645	31	377	1538	284	44	42	5				52.68	0.742	2.8	0	253	9.87	14	26
16:01	56	1576	105	646	31	376	1464															
16:02		2347	106	646	31	377	558	Bleed off Annulus to close PCT. (Main Build Up Period)														
16:03		3653	109	537	31	345	23															
16:04		4138	112	406	31	304	23															
16:05		4195	113	425	31	206	23															
16:06		4209	113	305	31	263	23	Close Choke manifold.														
16:07		4216	113	363	30	174	23															
16:08		4219	113	363	30	167	23															
16:09		4222	114	362	30	162	23															
16:10		4225	114	365	30	159	23															
16:15		4232	114	371	29	142	23															
16:20		4236	114	377	28	99	23															
16:25		4239	114	383	27	75	24															
16:30		4241	114	389	26	74	26															
16:34		4242	114	395	26	22	25	Close Master valve.														
16:35		4242	114	389	26	16	24	Bleed off surface pressure.														
16:40		4244	114	15	24	15	25															
16:45		4245	114	15	23	15	23															
16:50		4246	114	15	23	15	23															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
16:55		4247	114	15	23	15	24															
17:00		4248	114	15	23	15	24	Conduct JSA on drill floor.														
17:12		4249	114	15	22	14	23	Commence rigging down Wireline equipment.														
17:15		4249	114	15	22	15	23															
17:30		4251	114	15	21	14	23															
17:45		4252	115	15	20	14	21															
18:00		4253	115	15	19	14	24															
18:30		4255	115	21	18	14	24															
19:00		4256	115	30	16	14	24															
19:30		4257	115	39	16	14	24															
20:00		4258	116	44	15	14	21															
20:30		4258	116	53	15	14	21															
21:00		4259	116	59	14	14	21															
21:30		4259	116	65	14	14	21															
22:00		4259	116	71	14	14	21															
22:30		4260	117	15	13	14	24	Close Flow valve, connect second Coflexip hose to the Flow line.														
23:00		4260	117	15	13	14	23															
23:30		4260	117	15	13	14	24															
23:45		4260	117	48	17	35	107	Open Flow valve. Start flushing Surface lines with seawater.														
15-Dec-04		4260	117																			
00:00		4260	117	182	16	174	355															
00:30		4260	117	12	15	11	21															
01:00		4260	117	9	15	5	20															
01:14		4260	117	3915	16	5	3337	Pressure test Flow line to 4200 psi with rig pump.														
01:20		4260	117	3882	15	5	2315															

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	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
01:30		4260	117	3865	15	5	404															
01:33		4260	117	303	15	5	226	Good test, open Choke manifold.														
01:34		4260	117	230	15	5	197	Start flushing Surface test equipment with drill water.														
01:45		4260	117	21	15	19	31															
01:56		4260	117	6	17	8	17	Displace Kill line across Flowhead with Brine to Choke manifold.														
02:00		4260	117	106	17	102	124															
02:30		4260	117	77	16	8	18															
03:00		4260	118	139	15	8	21															
03:30		4260	118	201	14	8	21															
03:40		4260	118	221	14	8	21	Conduct JSA on well kill														
03:58		4260	118	1614	14	8	21	Open Master valve.														
04:00		4260	118	1734	14	8	21															
04:01		4260	118	1727	14	9	21	Open Choke manifold. Bleed off tubing pressure to flare.														
04:05		4261	118	1125	15	332	20															
04:15		4262	118	53	16	43	20															
04:30		4262	118	15	15	16	20															
04:36		4262	118	17	15	17	20	Top fill tubing with 8.9 ppg kill Brine.														
04:45		4262	118	9	15	8	20															
05:00		4261	118	9	14	8	20															
05:08		4266	118	15	14	16	21	65 bbls Brine in tubing, close Choke manifold.														
05:15		4266	118	33	18	11	21															
05:30		4267	118	51	17	11	128	Pressure Annulus to open PCT.														
05:32		4373	118	79	17	11	1515	Start bullheading formation with kill Brine.														
05:33		4969	118	1136	17	11	1508															
05:34		5596	118	1248	17	11	1472															

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 39 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole		Wellhead				Separator			BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		WTQR #937		WHP	WHT	WHDCP	Casing	Sep.	Gas	Oil												
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
05:35		5721	118	1235	17	11	1427															
05:36		6093	118	1628	17	11	1504															
05:37		6006	118	1893	17	11	1477															
05:38		5894	118	1433	17	11	1445															
05:39		6086	117	1587	16	11	1429															
05:40		6094	117	1689	16	11	1491															
05:45		6251	116	1835	16	11	1493															
05:50		6105	116	1585	16	11	1500															
05:55		6888	116	2435	16	11	1532															
06:00		6845	116	2423	16	11	1468															
06:05		6952	116	2491	16	11	1571															
06:10		6743	115	2311	16	11	1497															
06:15		6708	115	2238	16	11	1433															
06:19		6395	115	2071	16	11	1550	Finish bullheading 23 bbls into formation.														
06:20		6109	115	1759	15	11	1578															
06:22		5683	114	1302	15	11	1555	Bleed down tubing pressure and observe well condition.														
06:25		5231	114	825	15	11	1523															
06:30		4803	114	375	15	11	1477															
06:31		5339	114	618	15	11	1471	Pressure up tubing.														
06:35		5046	115	2299	15	11	1460	Bleed down tubing pressure and observe well condition.														
06:40		4482	113	36	15	17	1558															
06:45		4473	114	33	16	17	1517															
06:50		4464	114	30	16	16	1476															
06:55		4456	114	28	16	17	1476															
07:00		4449	115	27	16	15	1565															

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	WELL TESTING DATA SHEET	Main Data 40 2004-029

	Flowing Condition										Fluid Properties								Production Rate			Ratio
Time	Choke Size	Bottomhole WTQR #937		Wellhead WHP	Wellhead WHT	Wellhead WHDCP	Wellhead Casing	Separator Sep.	Separator Gas	Separator Oil	BSW				Cond. Gravity	Gas Gravity	CO2	H2S	Cond.	Gas	Water	CGR
		Press	Temp	Press	Temp	Press	Press	Press	Temp	Temp												
hr:min	64 ths	psiA	degC	psiA	degC	psiA	psiA	psiA	degC	degC	%				API60	air=1	%	ppm	stbd	MMscfd	bwpd	bbl/MM
07:15		4430	115	27	16	14	1445															
07:25		4421	115	24	17	15	1346	Bleed down Annulus. PCT in hold-open position.														
07:30		4416	115	24	17	14	643															
07:38		4941	116	118	17	14	596	Pressure tubing, commence cycling MCVL to circulating position.														
07:45		4452	115	15	17	14	593															
07:52		4960	116	520	18	16	572	MCVL opened, open Choke manifold.														
07:55		4589	115	24	19	16	294	Commence reversing out salt pill to burner.														
08:00		4559	115	24	25	17	273															
08:15		4506	115	54	30	38	146															
08:23		4405	116	34	30	21	38	Complete reversing out 140 bbls, close Choke manifold and observe well.														
08:24		4395	115	21	30	17	24															
08:25		4397	115	28	30	17	21															
08:30		4394	116	30	28	17	20															
08:35		4454	116	52	29	17	24	Pump down tubing to reset MCVL.														
08:45		4439	116	74	23	17	350	Pump down Annulus to close MCVL.														
08:45		4439	116	74	23	17	350															
08:58		4427	116	74	21	17	29	Pull DST string to open Packer by-pass.														
09:00		4425	116	74	21	17	24															
09:05		4381	115	40	21	17	24	Open Choke manifold.														
09:08		4585	115	47	21	18	170	Commence reversing out tubing to burner.														
10:00		4403	110	12	28	11	24	Finish reversing, close Choke manifold and observe well.														
10:16		4399	111	18	26	12	21	Lower down DST string.														
10:19		4397	111	18	26	12	24	Close Master valve.														
10:22		4393	111	29	27	14	55	Flush surface lines prior to rig down Flowhead.														

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WELL TESTING REPORT

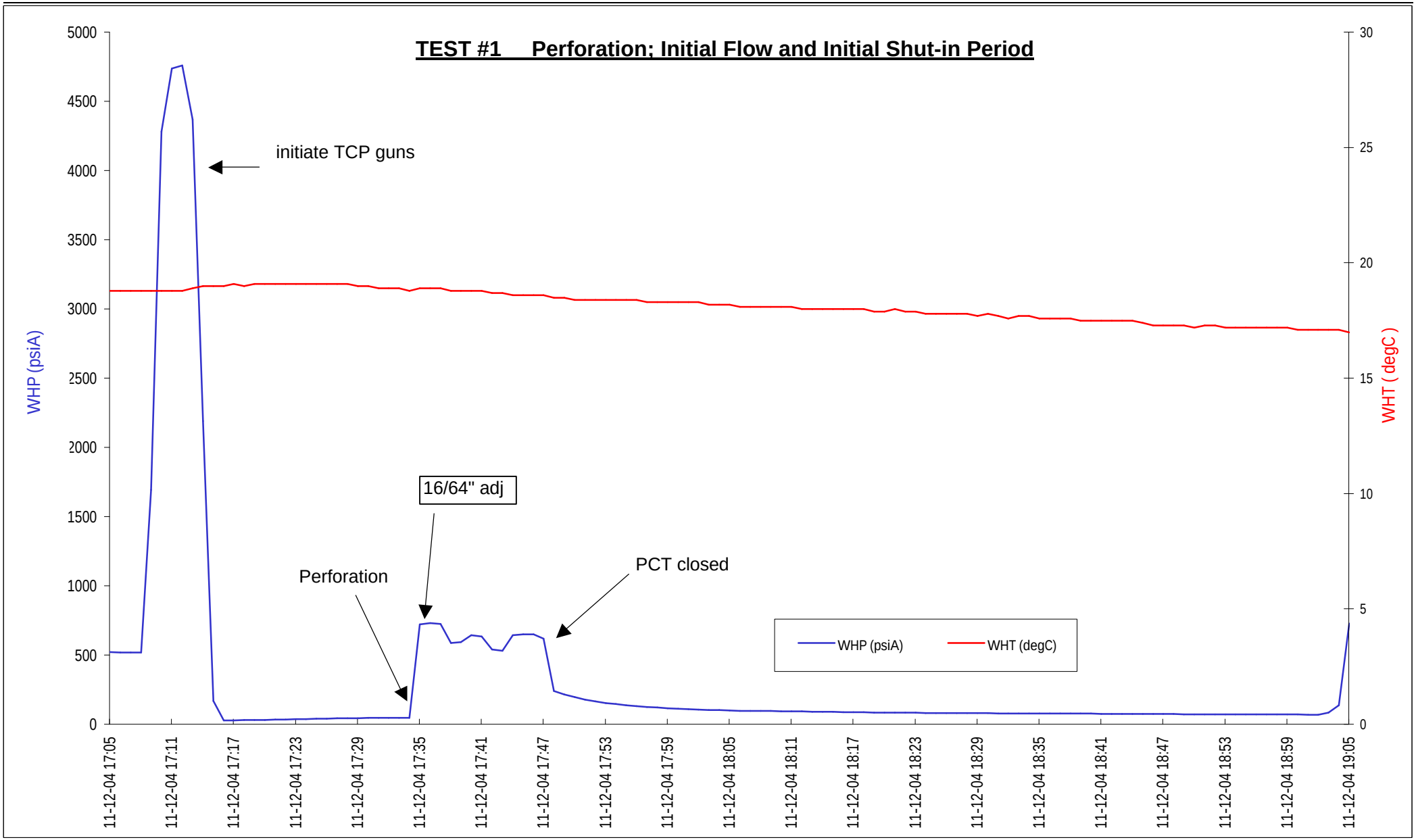
SURFACE DATA ACQUISITION PLOTS

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Wellhead Pressure and Temperature Plot	Wellhead 1 2004-029

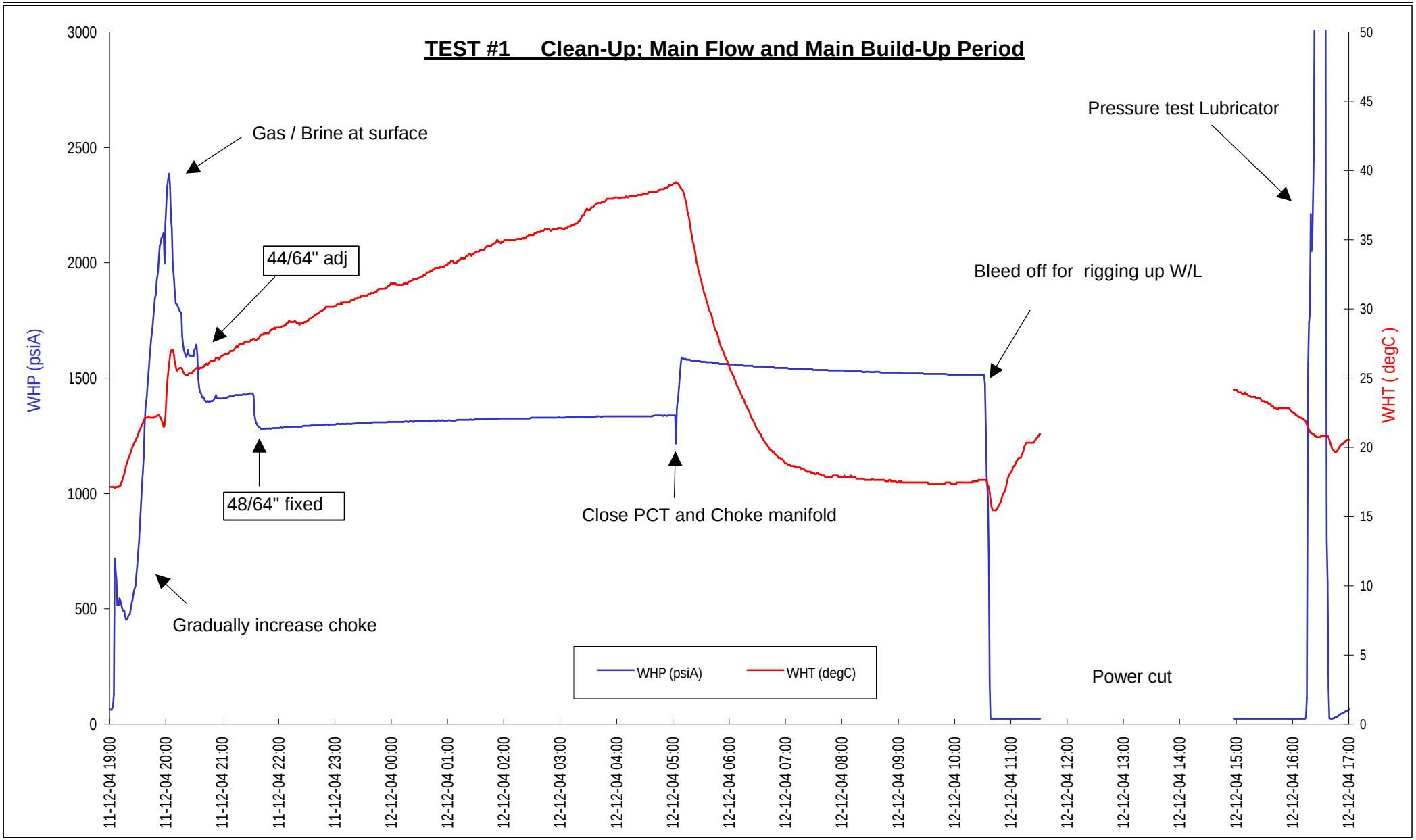
From Date Time : 11-Dec-04 17:05 To Date Time : 11-Dec-04 19:05



Wellhead Pressure and Temperature Plot

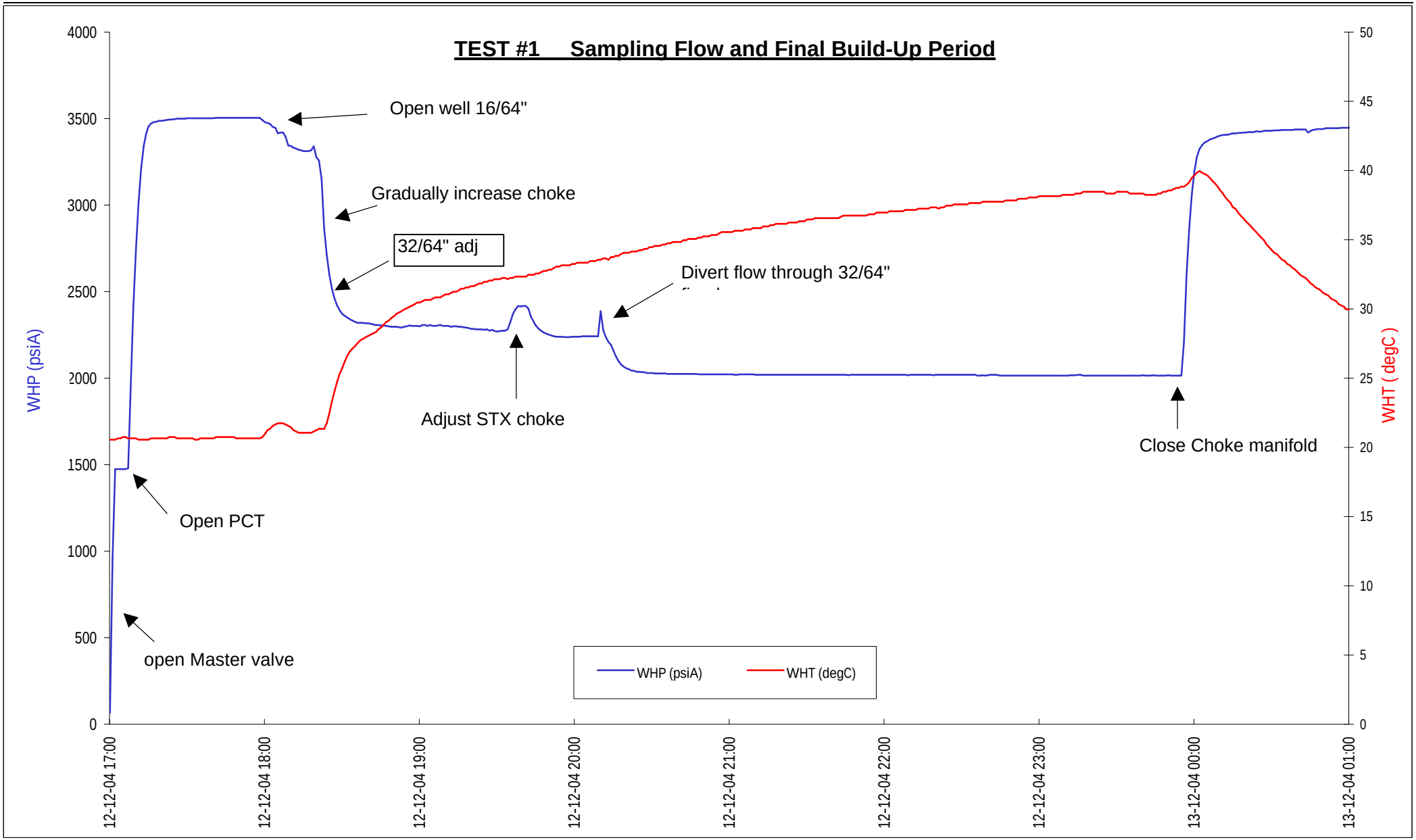
Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Wellhead Pressure and Temperature Plot	Wellhead 2 2004-029

From Date Time : 11-Dec-04 19:00 To Date Time : 12-Dec-04 17:00



Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Wellhead Pressure and Temperature Plot	Wellhead 3 2004-029

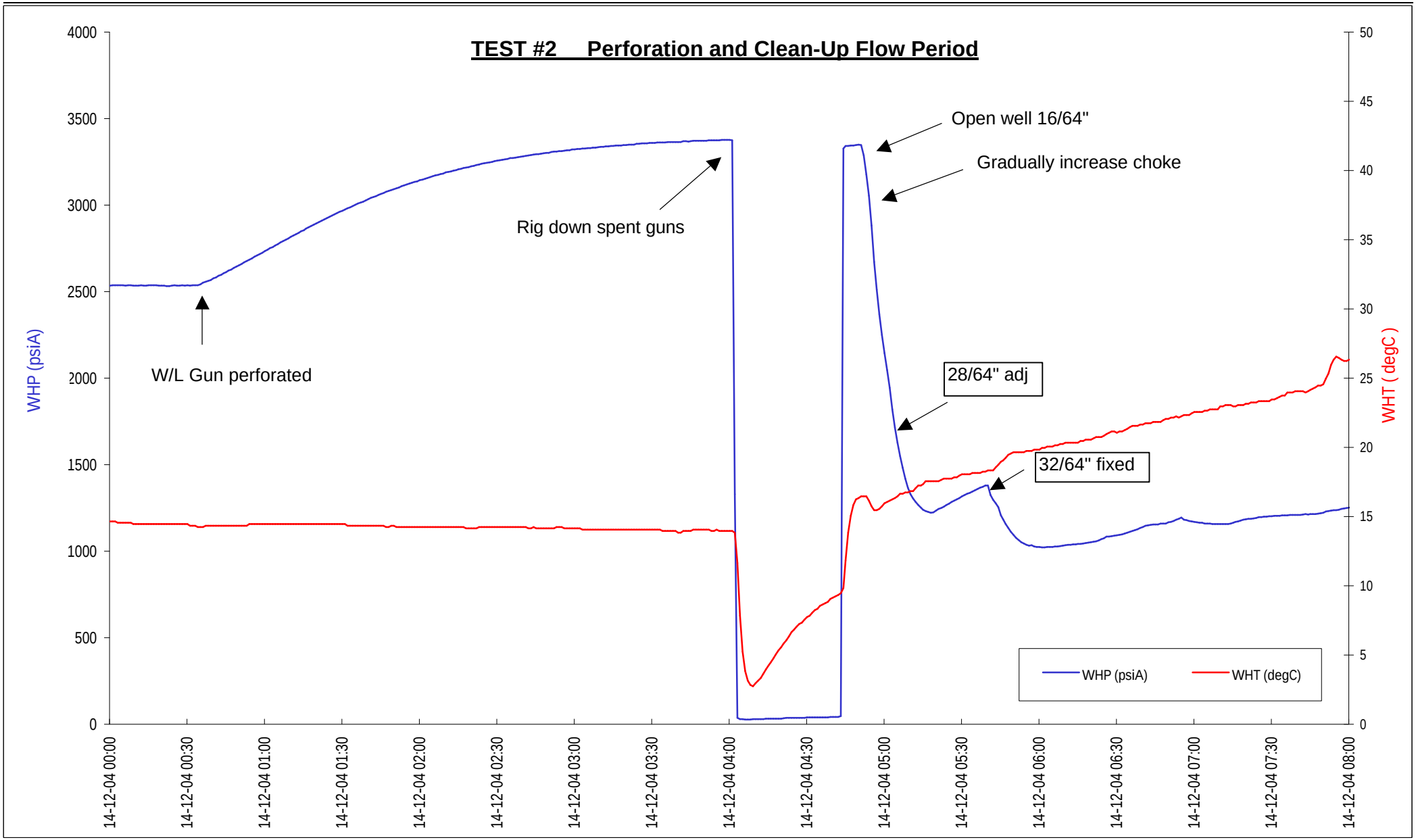
From Date Time : 12-Dec-04 17:00 To Date Time : 13-Dec-04 01:00



Wellhead Pressure and Temperature Plot

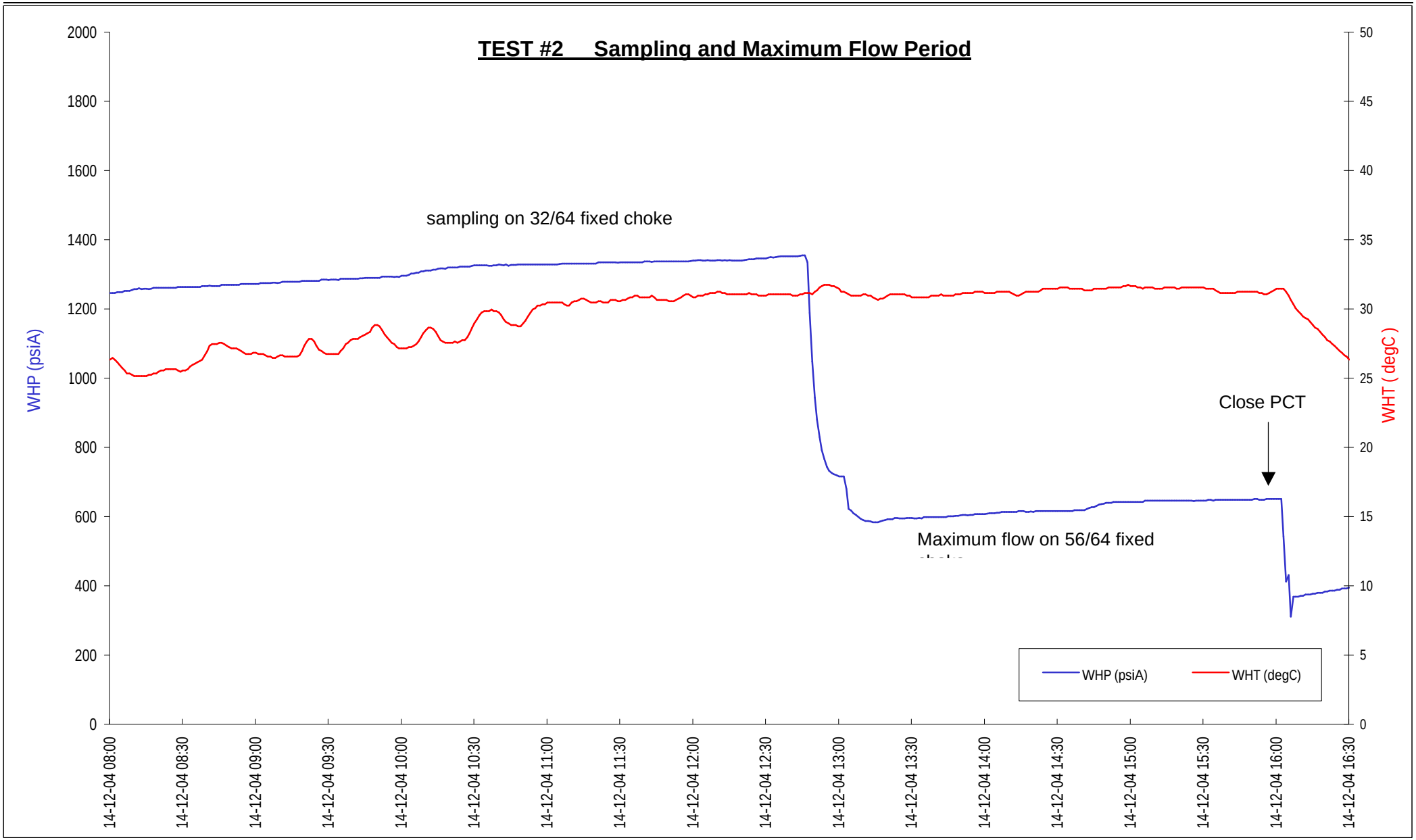
Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Wellhead Pressure and Temperature Plot	Wellhead 4 2004-029

From Date Time : 14-Dec-04 00:00 To Date Time : 14-Dec-04 08:00



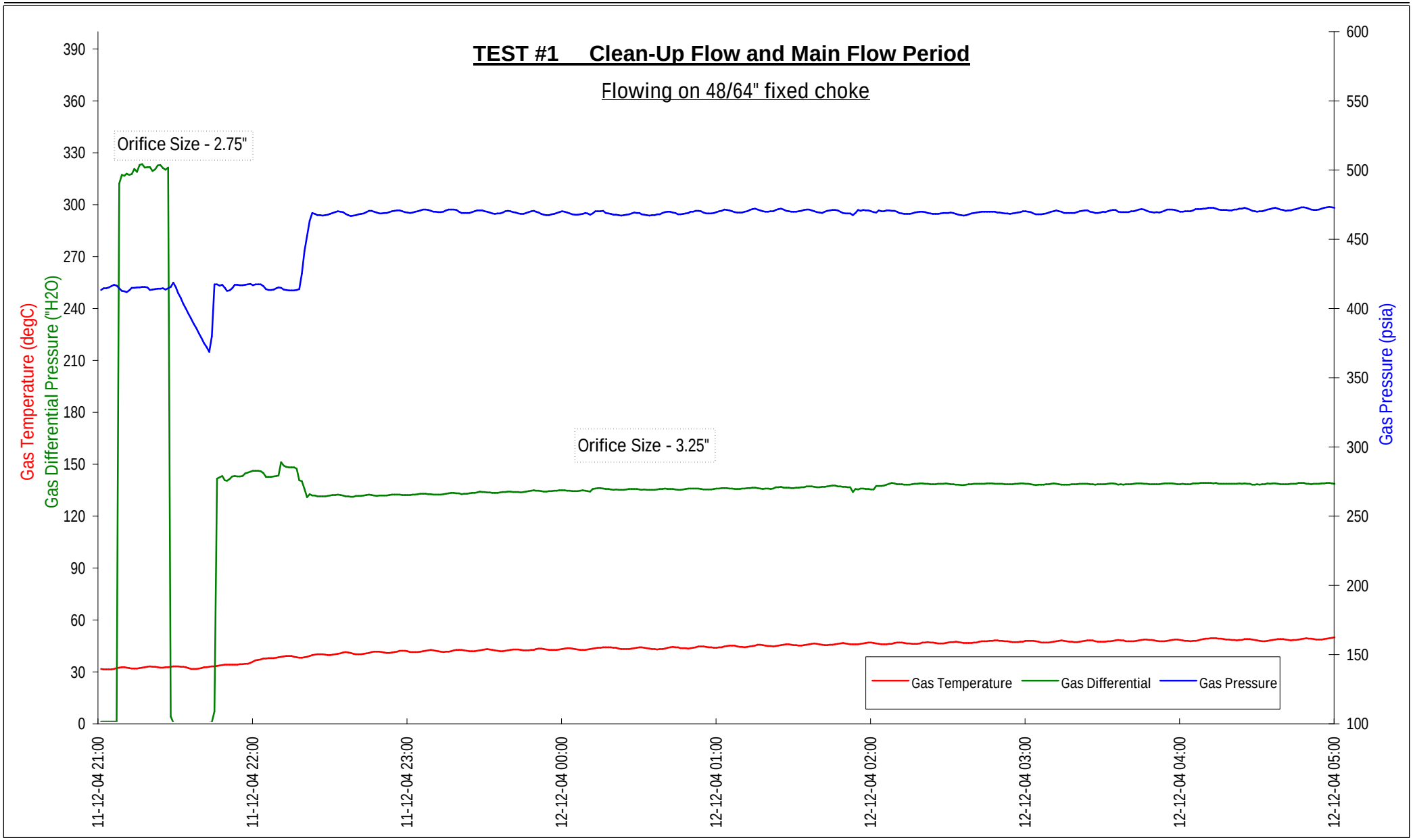
Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Wellhead Pressure and Temperature Plot	Wellhead 5 2004-029

From Date Time : 14-Dec-04 08:00 To Date Time : 14-Dec-04 16:30



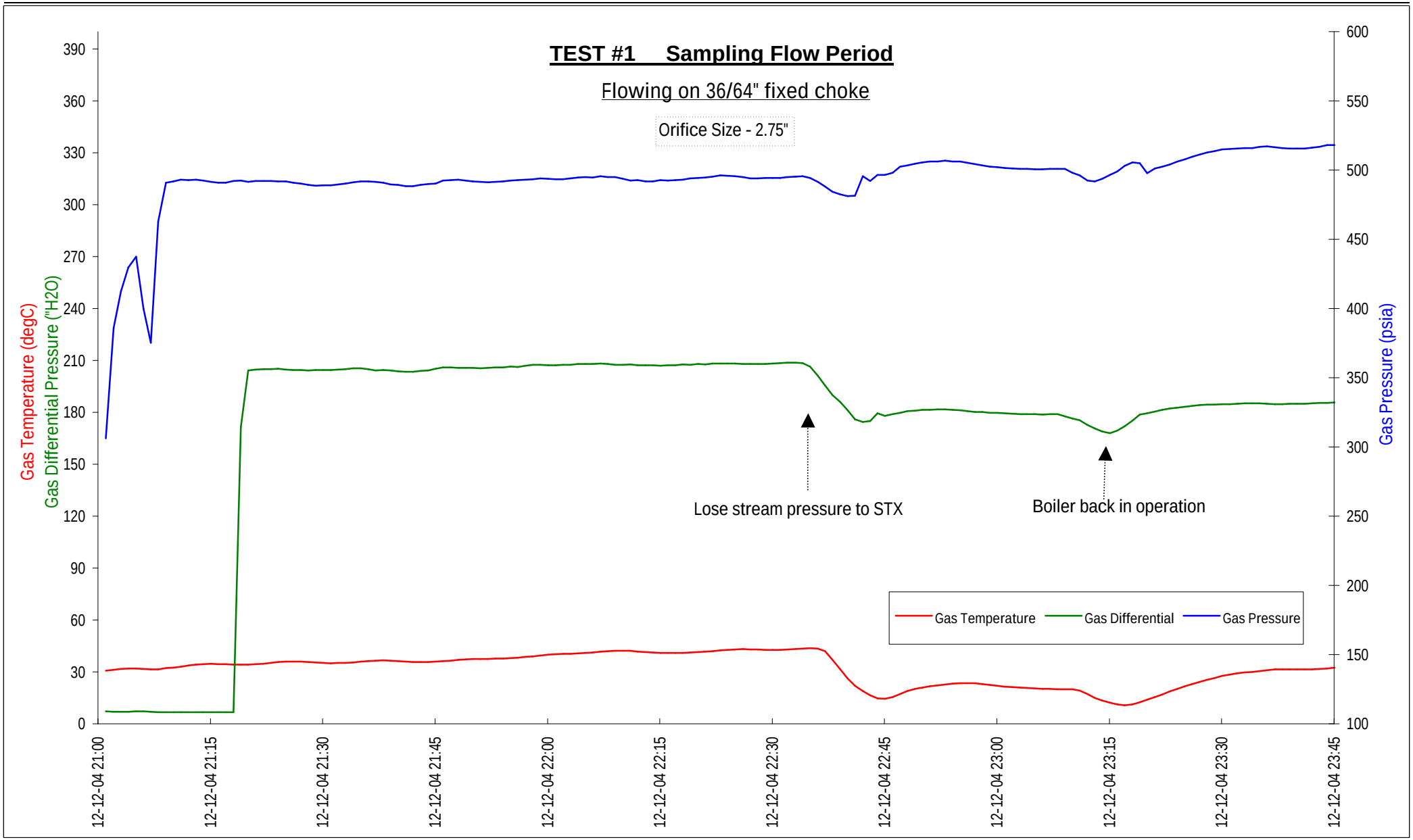
Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Separator Plot	Gas 1 2004-029

From Date Time : 11-Dec-04 21:00 To Date Time : 12-Dec-04 05:00



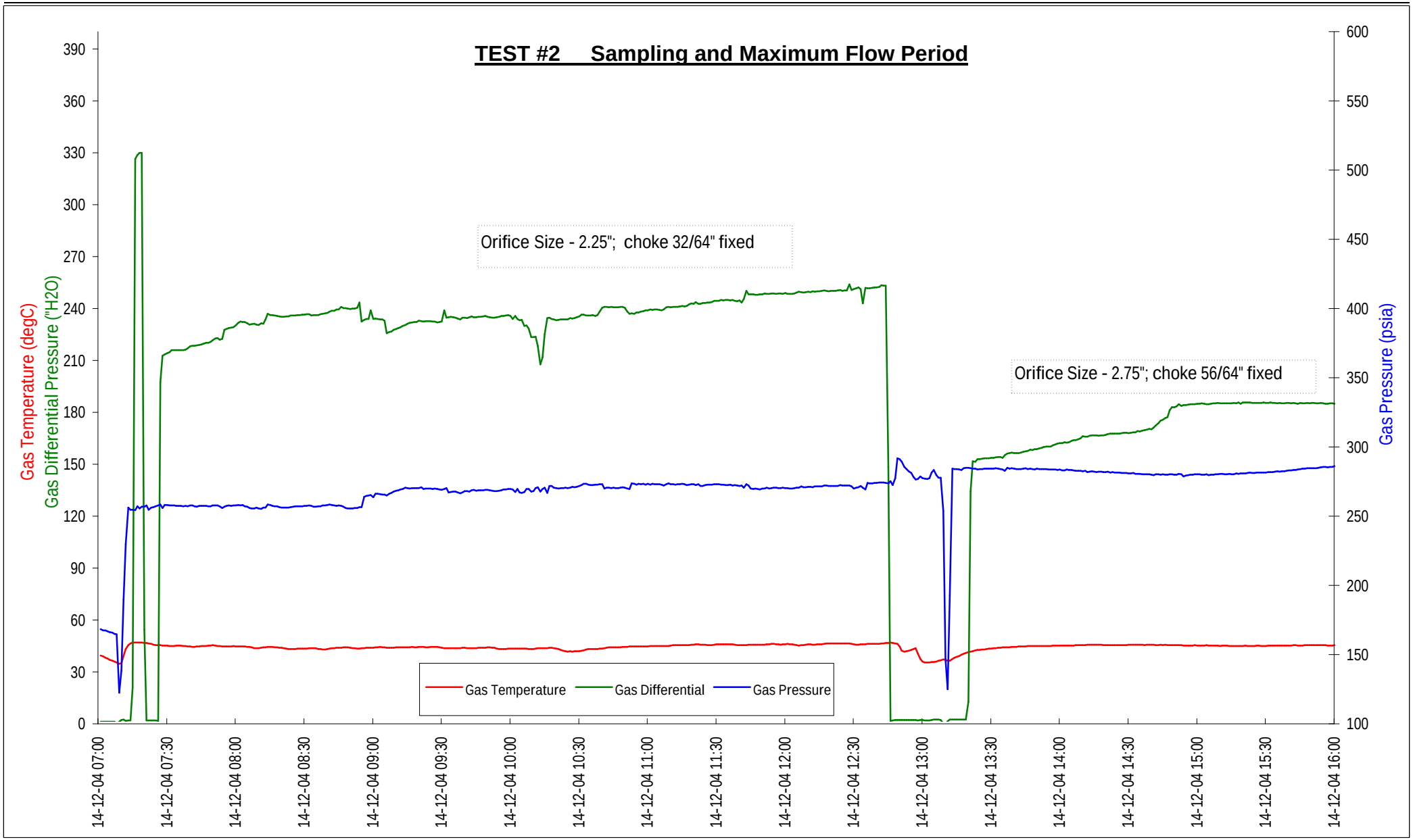
Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Separator Plot	Gas 2 2004-029

From Date Time : 12-Dec-04 21:00 To Date Time : 12-Dec-04 23:45



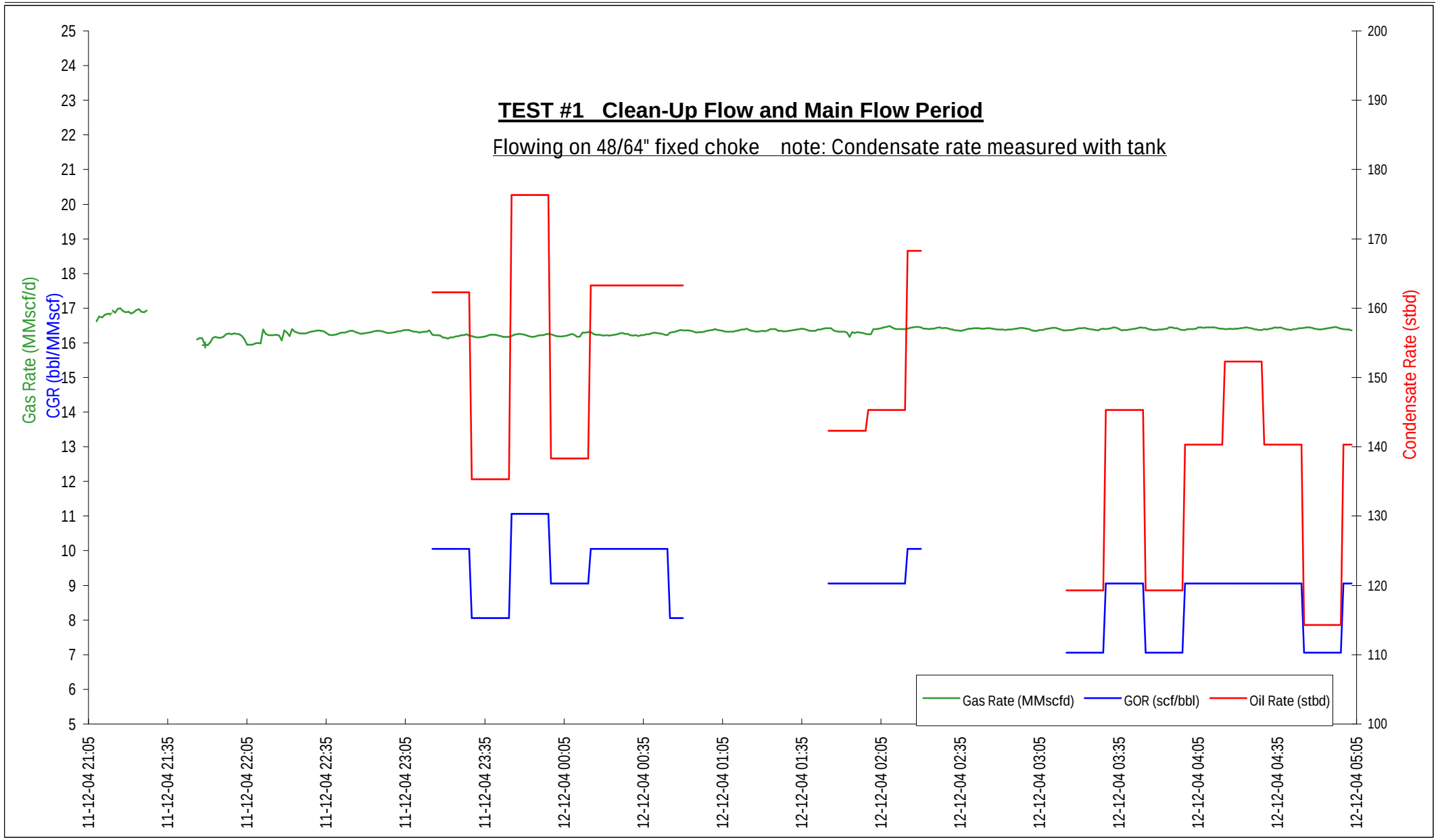
Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Separator Plot	Gas 3 2004-029

From Date Time : 14-Dec-04 07:00 To Date Time : 14-Dec-04 16:00



Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Flow Rate Plot	Flow Rate 1 2004-029

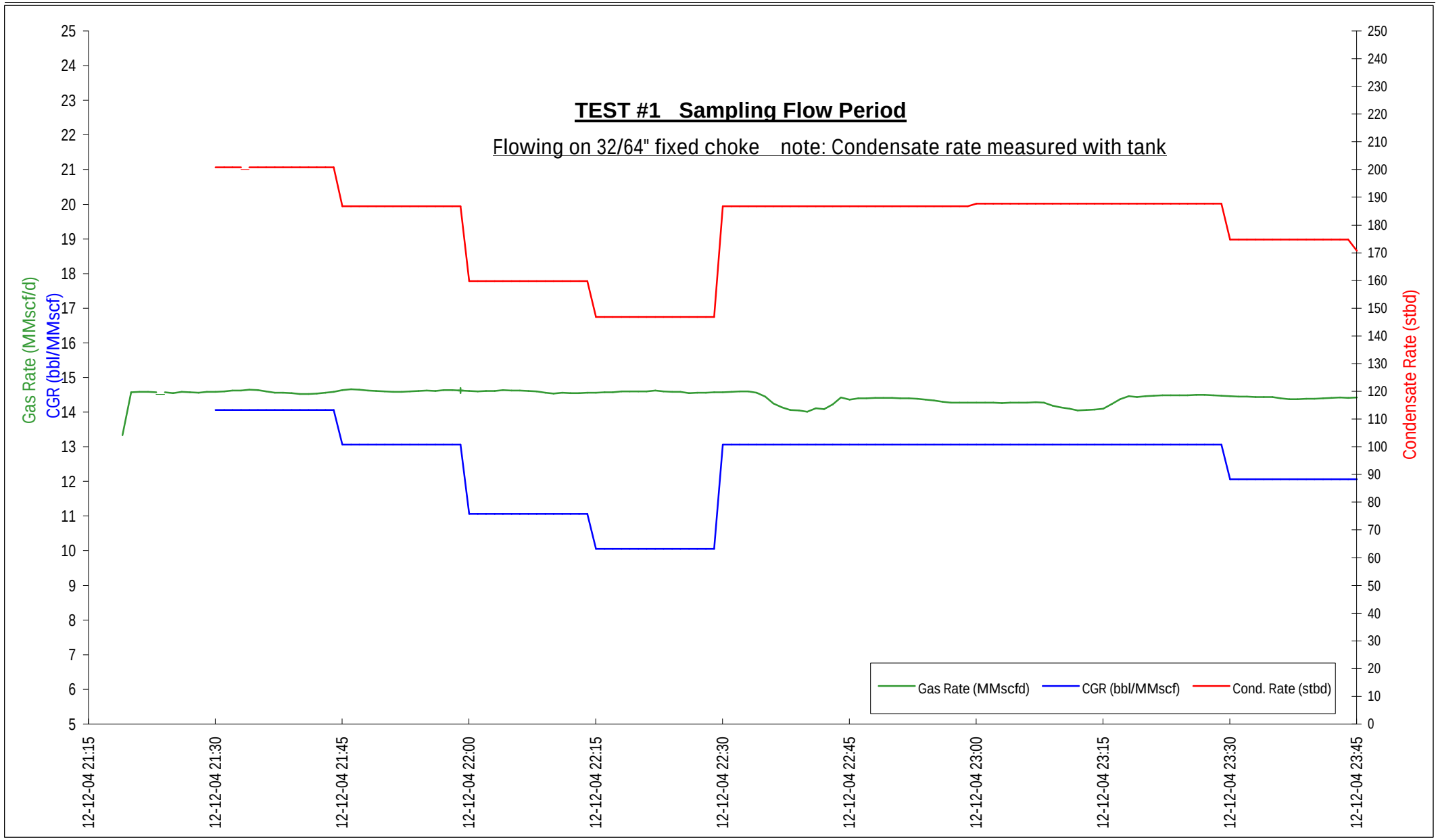
From Date Time : 11-Dec-04 21:05 To Date Time : 12-Dec-04 05:05



Rates Plot

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Flow Rate Plot	Flow Rate 2 2004-029

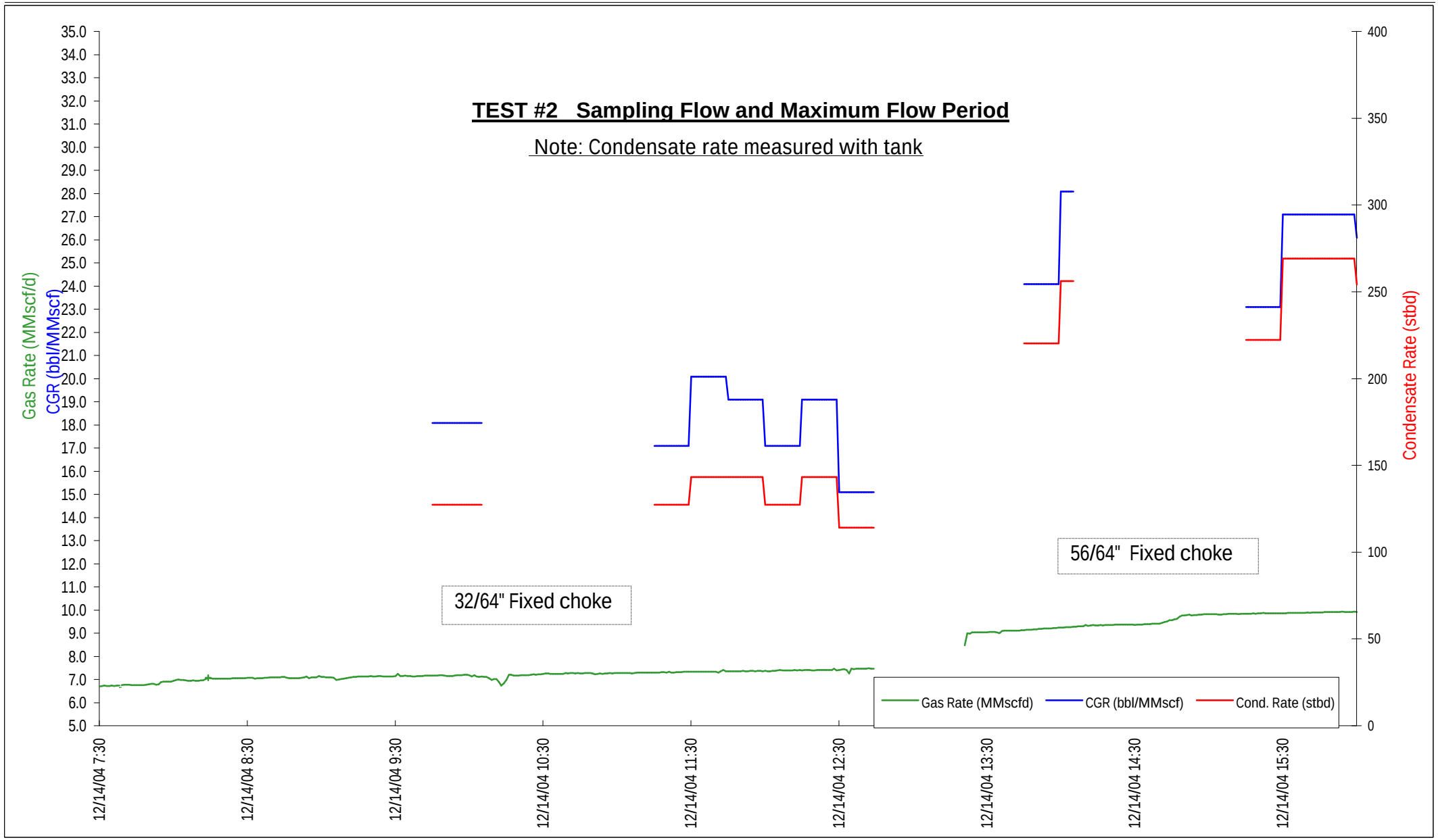
From Date Time : 12-Dec-04 21:15 To Date Time : 12-Dec-04 23:45



Rates Plot

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Flow Rate Plot	Flow Rate 3 2004-029

From Date Time : 14-Dec-04 07:30 To Date Time : 14-Dec-04 16:00



Rates Plot

Schlumberger

WELL TESTING REPORT

LIQUID COMPUTATION RESULTS - by Tank

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

Liquid Production Rate Measurement

I) MEASUREMENT WITH A TANK. (This method was used)

$$Vo = V \times K \times (1 - BSW/100)$$

Vo : Net oil volume at 60 degF and atmospheric pressure
V : Gross oil/condensate volume measured by tank gauging
K : Volume correction factor to be applied between the tank temperature during gauging measurement and 60 degF
BSW : Basic sediment and water

II) MEASUREMENT WITH A METER (Not used due the the low rate)

Shrinkage factor is measured with a Shrinkage Tester.

$$Vo = Vs \times f \times (1 - Shr) \times K \times (1 - BSW/100)$$

Vo : Net oil volume at 60 degF and atmospheric pressure
Vs : Gross oil/condensate volume measured by meter under separator conditions
f : Meter correction factor = $\frac{\text{Volume measured in tank}}{\text{Volume measured by meter}}$
Shr : Percentage of oil/condensate volume reduction between separator and tank conditions, reported to oil/condensate volume at separator conditions*
K : Volume correction factor to be applied between the final temperature during shrinkage measurement and 60 degF*
BSW : Basic sediment and water (taken at the oil/condensate separator outlet - if running in 3 phase)
: Basic sediment and water (taken at the oil/condensate separator inlet or upstream - if running in 2 phase)

* NOTE: In the calculation Shr is adjusted back to 60 degF, therefore K =1 (or not used)

Shrinkage factor is measured with a tank.

$$Vo = Vs \times (1 - SHR') \times K \times (1 - BSW/100)$$

$$Vwater = Vs \times CMF \times BSW/100$$

Vo, Vs, K and BSW : Same as measured with a tester
(1 - SHR') : Shrinkage factor including meter correction factor obtained from tank.

BSW : Basic sediment and water (taken at the oil/condensate separator outlet - if running in 3 phase)
: Basic sediment and water (taken at the oil/condensate separator inlet or upstream - if running in 2 phase)
* BSW from upstream of separator was used for the calculation.

Water Rate and cumulative calculation (This method was used)

*Water rate and cumulative are determined from BSW readings applied to the gross rate.

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	OIL/CONDENSATE CALCULATION SHEET TANK	CONDENSATE 2004-029	1

Date - Time		Tank		Tank	Tank Volume		Oil Gravity						Net STO	Nets STO	Cumulative	Water	Cumulative
Time	Interval	Left	Right	Factor	Vol V	Temp	Gravity	Temp.	Gravity	Gravity	K	BSW	Vol (Vo)	Prod. Rate	Production	Rate	H2O Prod.
	mins	cm	cm		bbl	degC	SG/API	degC	Sg60	API60		%	bbl	stbd	bbl	bbl/d	bbl

TEST #1 Lower Zone (Perforation: 3141m - 3150m)

11-Dec-04																	
21:33		Switch to 48/64" fixed choke			(Clean Up and Main Flow Period)										0.0		0.0
23:00	87	123		Initial tank reading											9.8		2.2
23:15	15	135		0.176	2.11	37	0.785	16.7	0.786	48.6	0.9770	18	1.69	162.4	11.5	36.5	2.6
23:30	15	145		0.176	1.76	37	0.785	16.7	0.786	48.6	0.9770	18	1.41	135.4	12.9	30.4	2.9
23:45	15	158		0.176	2.29	37	0.785	16.7	0.786	48.6	0.9770	18	1.83	176.0	14.7	39.5	3.3
12-Dec-04																	
0:00	15	169		0.176	1.94	37	0.785	16.7	0.786	48.6	0.9770	24	1.44	138.0	16.2	44.6	3.8
0:15	15	182		0.176	2.29	37	0.785	16.7	0.786	48.6	0.9770	24	1.70	163.1	17.9	52.7	4.3
0:30	15	195		0.176	2.29	37	0.785	16.7	0.786	48.6	0.9770	24	1.70	163.1	19.6	52.7	4.9
0:45	15	205		0.176	1.76	38	0.785	16.7	0.786	48.6	0.9759	24	1.31	125.3	20.9	40.6	5.3
0:55	10	Start pumping out Surge tank contents to burner.													21.9		5.6
1:30	35	Stop pumping. Initial depth 132 cm													25.3		6.6
1:45	15	143		0.176	1.94	38	0.785	16.7	0.786	48.6	0.9759	22	1.47	141.5	26.8	40.9	7.0
2:00	15	154		0.176	1.94	36	0.785	16.7	0.786	48.6	0.9781	20	1.51	145.4	28.3	37.2	7.4
2:15	15	167		0.176	2.29	36	0.785	16.7	0.786	48.6	0.9781	20	1.79	171.9	30.1	43.9	7.8
2:20	5	Start pumping out Surge tank contents to burner.													30.5		8.0
3:00	40	Stop pumping. Initial depth 42 cm													33.8		8.8
3:15	15	51		0.176	1.58	39	0.788	16.1	0.788	48.0	0.9750	20	1.24	118.6	35.0	30.4	9.1
3:30	15	62		0.176	1.94	39	0.788	16.1	0.788	48.0	0.9750	20	1.51	145.0	36.5	37.2	9.5
3:45	15	71		0.176	1.58	39	0.788	16.1	0.788	48.0	0.9750	20	1.24	118.6	37.8	30.4	9.8
4:00	15	82		0.176	1.94	39	0.788	16.1	0.788	48.0	0.9750	23	1.45	139.5	39.2	42.7	10.3
4:15	15	94		0.176	2.11	39	0.788	16.1	0.788	48.0	0.9750	23	1.59	152.2	40.8	46.6	10.7
4:30	15	105		0.176	1.94	39	0.788	16.1	0.788	48.0	0.9750	23	1.45	139.5	42.3	42.7	11.2
4:45	15	114		0.176	1.58	39	0.788	16.1	0.788	48.0	0.9750	23	1.19	114.2	43.5	35.0	11.6
5:00	15	125		0.176	1.94	39	0.788	16.1	0.788	48.0	0.9750	23	1.45	139.5	44.9	42.7	12.0
5:03	3	Bleed off Annulus to close PCT															

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	OIL/CONDENSATE CALCULATION SHEET TANK	CONDENSATE 2 2004-029

Date - Time		Tank		Tank	Tank Volume		Oil Gravity						Net STO	Nets STO	Cumulative	Water	Cumulative
Time	Interval	Left	Right	Factor	Vol V	Temp	Gravity	Temp.	Gravity	Gravity	K	BSW	Vol (Vo)	Prod. Rate	Production	Rate	H2O Prod.
	mins	cm	cm		bbl	degC	SG/API	degC	Sg60	API60		%	bbl	stbd	bbl	bbl/d	bbl
20:15		Divert flow through 36/64" fixed choke. (Sampling Flow Period)															
21:15	60	143		Initial tank reading													
21:30	15	158		0.176	2.64	30	0.788	16.1	0.788	48.0	0.9846	20	2.08	199.6	2.1	50.7	0.5
21:45	15	172		0.176	2.46	30	0.788	16.1	0.788	48.0	0.9846	20	1.94	186.3	4.0	47.3	1.0
22:00	15	184		0.176	2.11	32	0.788	16.1	0.788	48.0	0.9825	20	1.66	159.4	5.7	40.6	1.4
22:15	15	195		0.176	1.94	32	0.788	16.1	0.788	48.0	0.9825	20	1.52	146.1	7.2	37.2	1.8
22:30	15	209		0.176	2.46	32	0.788	16.1	0.788	48.0	0.9825	20	1.94	185.9	9.1	47.3	2.3
22:45	15	223		0.176	2.46	32	0.788	16.1	0.788	48.0	0.9825	20	1.94	185.9	11.1	47.3	2.8
23:00	15	237		0.176	2.46	28	0.788	16.1	0.788	48.0	0.9867	20	1.95	186.7	13.0	47.3	3.3
23:15	15	251		0.176	2.46	26	0.788	16.1	0.788	48.0	0.9889	20	1.95	187.1	15.0	47.3	3.8
23:30	15	264		0.176	2.29	24	0.788	16.1	0.788	48.0	0.9910	20	1.81	174.1	16.8	43.9	4.3
23:31		Start pumping out Surge tank contents to burner.															
23:35		Stop pumping. Initial depth 265 cm															
23:45	10	272.5		0.176	7.50	27	0.788	16.1	0.788	48.0	0.9878	20	5.93	170.2	18.0	43.1	4.6
23:56	11	Close Choke manifold															
14-Dec-04							TEST #2 Upper Zone (Perforation: 3040.5m - 3046.5m)										
5:45		Switch to 32/64" fixed choke													0.0		0.0
9:30	225	38		Initial tank reading											19.7		1.1
9:45	15	46		0.176	1.41	32	0.761	25.5	0.768	52.7	0.9816	5	1.31	126.0	21.0	6.8	1.1
10:00	15	54		0.176	1.41	32	0.761	25.5	0.768	52.7	0.9816	5	1.31	126.0	22.3	6.8	1.2
10:07	7	Commence dumping all Separator liquid before sampling.															
11:00	53	88		Initial tank reading											26.9		1.5
11:15	15	96		0.176	1.41	32	0.761	25.5	0.768	52.7	0.9816	5	1.31	126.0	28.2	6.8	1.6
11:30	15	105		0.176	1.58	32	0.761	25.5	0.768	52.7	0.9816	5	1.48	141.8	29.7	7.6	1.6
11:45	15	114		0.176	1.58	32	0.761	25.5	0.768	52.7	0.9816	5	1.48	141.8	31.2	7.6	1.7
12:00	15	122		0.176	1.41	32	0.761	25.5	0.768	52.7	0.9816	5	1.31	126.0	32.5	6.8	1.8
12:15	15	131		0.176	1.58	32	0.761	25.5	0.768	52.7	0.9816	5	1.48	141.8	34.0	7.6	1.9
12:30	15	138		0.176	1.23	32	0.761	25.5	0.768	52.7	0.9816	3	1.17	112.6	35.1	3.5	1.9

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	OIL/CONDENSATE CALCULATION SHEET TANK	CONDENSATE 3 2004-029

Date - Time		Tank		Tank	Tank Volume		Oil Gravity						Net STO	Nets STO	Cumulative	Water	Cumulative
Time	Interval	Left	Right	Factor	Vol V	Temp	Gravity	Temp.	Gravity	Gravity	K	BSW	Vol (Vo)	Prod. Rate	Production	Rate	H2O Prod.
	mins	cm	cm		bbl	degC	SG/API	degC	Sg60	API60		%	bbl	stbd	bbl	bbl/d	bbl
12:45	15	145		0.176	1.23	32	0.761	25.5	0.768	52.7	0.9816	3	1.17	112.6	36.3	3.5	1.9
12:46	1	By-pass orifice meter, gradually increase adjustable choke												112.6	36.4	3.5	2.0
13:04	18	Divert flow through 56/64" fixed choke													39.1		2.1
13:30	26	188		Initial tank reading											43.1		2.2
13:45	60	200		0.176	2.11	30	0.761	25.5	0.768	52.7	0.9838	4	9.14	219.4	45.5	9.3	2.6
14:00	15	216		0.176	2.82	30	0.761	25.5	0.768	52.7	0.9838	4	2.66	255.3	48.1	10.8	2.7
14:01	1	Start pumping out Surge tank contents to burner.													48.3		2.7
15:00	59	Stop pumping. Initial depth 91 cm													57.3		3.2
15:15	15	105		0.176	2.46	30	0.761	25.5	0.768	52.7	0.9838	5	2.30	221.1	59.6	11.8	3.3
15:30	15	122		0.176	2.99	30	0.758	27.7	0.767	53.0	0.9838	5	2.80	268.4	62.4	14.4	3.5
15:45	15	139		0.176	2.99	30	0.761	25.5	0.768	52.7	0.9838	5	2.80	268.5	65.2	14.4	3.6
16:00	15	155		0.176	2.82	30	0.761	25.5	0.768	52.7	0.9838	5	2.63	252.7	67.9	13.5	3.8
16:02	2	Bleed off Annulus to close PCT															

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WELL TESTING REPORT

GAS COMPUTATION RESULTS

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

Gas Production Rate Measurement by Orifice Meter

Reference is made to the rules and coefficients given in AGA gas measurement Committee Report No. 3 for orifice metering.

I) EQUATIONS

$$Q = C \sqrt{Hw \times Pf}$$

Q : Production rate at reference conditions
C : Orifice flow coefficient*
Hw : Differential pressure in inches of water
Pf : Flowing pressure in psiA

$$C = Fu \times Fb \times Fg \times Y \times Ftf \times Fpv$$

Fu : Unit conversion factor in desired reference conditions
Fb : Basic orifice factor (Q in Cu. ft/day)
Fg : Specific gravity factor
Y : Expansion factor
Ftf : Flowing temperature factor
Fpv : Supercompressibilty factor (estimated)
*C is computed with 6 decimal points and could differ slightly from hand calculator results

Remarks
Fm : Manometer factor is equal one since only bellows type meter are used.
Fr : Reynolds factor is considered to be one.

TABLE of Fu FACTOR

UNITS	REFERENCE CONDITIONS			
	60 degF 14.73 psia	0 degC 760 mm Hg*	15 degC 760 mm Hg*	15 degC 750 mm Hg*
Cu. ft/hr	1	0.9483	1.0004	1.0137
Cu. ft/D	24	22.76	24.009	24.329
m3/hr	0.02832	0.02685	0.02833	0.0287
m3/D	0.6796	0.6445	0.6799	0.6889

** mercury at 32 F*

II) METER DATA

ID of meter tube : 5.761"

III) SUPERCOMPRESSIBILITY FACTOR Fpv

The coefficient is calculated from AGA NX 19 manual for natural gas free of air, CO2 and H2S. The method used to correct Fpv for CO2 and H2S is based on Wichert and Aziz data (Hydrocarbon Processing - May 1972).
Pressure and Specific gravity are adjusted according to percentages.

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	GAS CALCULATION SHEET	GAS 1 2004-029

Pipe Dia. 5.761

Date - Time		Flowing	Pf	Hw	SQRT	Orifice	Gas	CO2	H2S	Fb	Fg	Y2	Ftf	Fpv	C	Gas Prod.	Cumulative
Time	Interval	Temp.	Absolute		(Pf x Hw)	Diameter	Gravity									Rate : Q	Production
	mins	degC	psiA	" of H2O		Inches	Air=1	%	ppm							MMscfd	MMscf
11-Dec-04		TEST #1 Lower Zone (Perforation: 3141m - 3150m)															
20:41		Pass flow through Separator on 48/64" fixed choke. (Clean Up and Main Flow Period)															0.000
21:08	27	Lower 2.75 " orifice plate.						CO 2 & H2S not included in the computation.									0.312
21:10	2	31	410	316	359.80	2.75	0.688	2.4	0	1582.05	1.2056	1.0048	0.9738	1.0339	46308	16.662	0.336
21:15	5	31	413	317	362.01	2.75	0.688	2.4	0	1582.05	1.2056	1.0048	0.9741	1.0342	46338	16.775	0.394
21:20	5	32	413	321	364.20	2.75	0.688	2.4	0	1582.05	1.2056	1.0048	0.9730	1.0340	46275	16.853	0.452
21:25	5	31	413	320	363.50	2.75	0.688	2.4	0	1582.05	1.2056	1.0048	0.9737	1.0341	46310	16.834	0.511
21:28	3	Lift up 2.75 orifice plate															0.547
21:33	5	Divert flow through 48/64" fixed choke.															0.605
21:46	18	Lower 3.25 " orifice plate.															0.804
21:50	4	33	412	139	239.56	3.25	0.692	2.4	0	2276.51	1.2021	1.0019	0.9710	1.0337	66049	15.823	0.848
21:55	5	33	415	142	242.34	3.25	0.692	2.4	0	2276.51	1.2021	1.0019	0.9705	1.0339	66029	16.001	0.904
22:00	5	35	416	144	244.52	3.25	0.692	2.4	0	2276.51	1.2021	1.0020	0.9673	1.0332	65771	16.082	0.959
22:05	5	37	414	144	244.23	3.25	0.692	2.4	0	2276.51	1.2021	1.0020	0.9653	1.0325	65593	16.020	1.015
22:10	5	38	413	142	241.95	3.25	0.692	2.4	0	2276.51	1.2021	1.0020	0.9641	1.0321	65481	15.843	1.070
22:15	5	38	412	148	246.73	3.25	0.692	2.4	0	2276.51	1.2021	1.0020	0.9639	1.0320	65468	16.153	1.126
22:20	5	38	428	141	245.83	3.25	0.692	2.4	0	2276.51	1.2021	1.0019	0.9641	1.0334	65556	16.115	1.182
22:25	5	39	466	131	246.64	3.25	0.692	2.4	0	2276.51	1.2021	1.0016	0.9617	1.0359	65541	16.165	1.238
22:30	5	39	466	130	246.64	3.25	0.692	2.4	0	2276.51	1.2021	1.0016	0.9622	1.0361	65584	16.175	1.294
22:35	5	40	467	131	247.06	3.25	0.692	2.4	0	2276.51	1.2021	1.0016	0.9600	1.0356	65403	16.158	1.350
22:40	5	39	466	130	246.27	3.25	0.692	2.4	0	2276.51	1.2021	1.0016	0.9617	1.0359	65541	16.141	1.406
22:45	5	40	468	131	247.42	3.25	0.692	2.4	0	2276.51	1.2021	1.0016	0.9599	1.0356	65395	16.180	1.463
22:50	5	40	468	131	247.24	3.25	0.692	2.4	0	2276.51	1.2021	1.0016	0.9602	1.0357	65420	16.175	1.519
22:55	5	41	469	131	247.75	3.25	0.692	2.4	0	2276.51	1.2021	1.0016	0.9593	1.0355	65346	16.189	1.575
23:00	5	40	468	131	247.74	3.25	0.692	2.4	0	2276.51	1.2021	1.0016	0.9596	1.0356	65371	16.195	1.631
23:15	15	41	469	131	248.18	3.25	0.706	2.4	0	2276.51	1.1901	1.0016	0.9593	1.0371	64793	16.080	1.799
23:30	15	42	469	133	249.44	3.25	0.706	2.4	0	2276.51	1.1901	1.0016	0.9573	1.0365	64627	16.120	1.967
23:45	15	41	467	133	248.99	3.25	0.706	2.4	0	2276.51	1.1901	1.0016	0.9584	1.0367	64708	16.111	2.135

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	GAS CALCULATION SHEET	GAS 2 2004-029

Pipe Dia. 5.761

Date - Time		Flowing	Pf	Hw	SQRT	Orifice	Gas	CO2	H2S	Fb	Fg	Y2	Ftf	Fpv	C	Gas Prod.	Cumulative
Time	Interval	Temp.	Absolute		(Pf x Hw)	Diameter	Gravity									Rate : Q	Production
	mins	degC	psiA	" of H2O		Inches	Air=1	%	ppm							MMscfd	MMscf
12-Dec-04																	
0:00	15	42	469	134	250.46	3.25	0.706	2.4	0	2276.51	1.1901	1.0016	0.9565	1.0363	64561	16.170	2.303
0:15	15	43	468	134	250.98	3.25	0.706	2.4	0	2276.51	1.1901	1.0016	0.9558	1.0361	64497	16.187	2.472
0:30	15	43	467	135	250.71	3.25	0.706	2.4	0	2276.51	1.1901	1.0016	0.9558	1.0360	64491	16.169	2.640
0:45	15	43	467	134	250.14	3.25	0.698	2.4	0	2276.51	1.1969	1.0016	0.9562	1.0352	64841	16.219	2.809
1:00	15	43	468	134	250.75	3.25	0.698	2.4	0	2276.51	1.1969	1.0016	0.9558	1.0351	64808	16.250	2.978
1:15	15	44	470	135	251.91	3.25	0.698	2.4	0	2276.51	1.1969	1.0016	0.9535	1.0347	64628	16.280	3.148
1:30	15	44	469	135	251.73	3.25	0.698	2.4	0	2276.51	1.1969	1.0016	0.9540	1.0347	64660	16.277	3.317
1:45	15	45	469	136	252.68	3.25	0.698	2.4	0	2276.51	1.1969	1.0017	0.9529	1.0345	64575	16.317	3.487
2:00	15	46	469	135	251.23	3.25	0.698	2.4	0	2276.51	1.1969	1.0016	0.9519	1.0342	64485	16.201	3.656
2:15	15	45	467	137	253.03	3.25	0.698	2.4	0	2276.51	1.1969	1.0017	0.9526	1.0343	64540	16.330	3.826
2:30	15	46	468	138	253.58	3.25	0.698	2.4	0	2276.51	1.1969	1.0017	0.9513	1.0339	64430	16.338	3.996
2:45	15	47	468	138	253.85	3.25	0.698	2.4	0	2276.51	1.1969	1.0017	0.9501	1.0337	64334	16.331	4.166
3:00	15	47	468	138	253.85	3.25	0.700	2.4	0	2276.51	1.1952	1.0017	0.9499	1.0339	64243	16.308	4.336
3:15	15	47	468	137	253.58	3.25	0.700	2.4	0	2276.51	1.1952	1.0017	0.9504	1.0340	64279	16.300	4.506
3:30	15	46	468	137	253.32	3.25	0.700	2.4	0	2276.51	1.1952	1.0017	0.9507	1.0340	64302	16.289	4.676
3:45	15	47	470	138	254.25	3.25	0.700	2.4	0	2276.51	1.1952	1.0017	0.9491	1.0337	64174	16.316	4.846
4:00	15	47	469	137	253.94	3.25	0.700	2.4	0	2276.51	1.1952	1.0017	0.9497	1.0338	64221	16.309	5.016
4:15	15	48	471	138	254.63	3.25	0.700	2.4	0	2276.51	1.1952	1.0017	0.9483	1.0336	64116	16.326	5.186
4:30	15	47	469	137	253.72	3.25	0.700	2.4	0	2276.51	1.1952	1.0017	0.9501	1.0340	64258	16.304	5.356
4:45	15	47	470	137	254.14	3.25	0.700	2.4	0	2276.51	1.1952	1.0017	0.9491	1.0338	64175	16.310	5.525
5:00	15	48	471	138	254.91	3.25	0.700	2.4	0	2276.51	1.1952	1.0017	0.9476	1.0335	64058	16.329	5.696
5:03	3	Bleed off Annulus to close PCT															5.730
20:15		Divert flow through 36/64" fixed choke.(Sampling Flow Period)															0.000
21:20	65	Lower 2.75" orifice plate.															0.658
21:25	5	35	490	204	316.02	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9683	1.0395	46125	14.576	0.709
21:30	5	34	488	203	314.83	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9698	1.0397	46212	14.549	0.759

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Origin Energy Ltd T18-P / Trefoil-1 / DST-1	GAS CALCULATION SHEET	GAS 3 2004-029

Pipe Dia. 5.761

Date - Time		Flowing	Pf	Hw	SQRT	Orifice	Gas	CO2	H2S	Fb	Fg	Y2	Ftf	Fpv	C	Gas Prod.	Cumulative
Time	Interval	Temp.	Absolute		(Pf x Hw)	Diameter	Gravity									Rate : Q	Production
	mins	degC	psiA	" of H2O		Inches	Air=1	%	ppm							MMscfd	MMscf
21:35	5	35	489	204	315.84	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9680	1.0393	46103	14.561	0.810
21:40	5	35	488	203	314.99	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9683	1.0393	46118	14.527	0.860
21:45	5	35	489	203	314.81	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9681	1.0393	46109	14.515	0.911
21:50	5	36	491	205	316.88	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9659	1.0388	45984	14.572	0.961
21:55	5	37	490	205	316.81	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9648	1.0385	45917	14.547	1.012
22:00	5	39	492	206	318.24	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9617	1.0377	45736	14.555	1.062
22:05	5	40	493	206	318.94	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9602	1.0373	45647	14.558	1.113
22:10	5	41	493	207	319.12	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9588	1.0370	45565	14.540	1.163
22:15	5	40	491	206	317.99	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9607	1.0373	45668	14.522	1.214
22:20	5	41	492	206	318.68	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9594	1.0371	45599	14.531	1.264
22:25	5	42	494	207	319.78	2.75	0.690	2.6	0	1582.05	1.2039	1.0026	0.9573	1.0366	45478	14.543	1.315
22:30	5	42	493	207	319.18	2.75	0.700	2.6	0	1582.05	1.1952	1.0026	0.9578	1.0378	45224	14.435	1.365
22:35	5	42	493	207	319.36	2.75	0.700	2.6	0	1582.05	1.1952	1.0026	0.9567	1.0375	45161	14.422	1.415
22:40	5	21	482	190	302.28	2.75	0.700	2.6	0	1582.05	1.1952	1.0024	0.9912	1.0475	47236	14.278	1.464
22:45	5	14	494	175	294.39	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	1.0022	1.0531	48000	14.131	1.513
22:50	5	21	503	179	300.16	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9916	1.0500	47350	14.213	1.563
22:55	5	22	505	180	301.65	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9885	1.0490	47164	14.227	1.612
23:00	5	20	501	179	299.42	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9919	1.0499	47364	14.182	1.661
23:05	5	19	499	178	298.11	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9941	1.0505	47498	14.159	1.711
23:10	5	18	495	175	294.40	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9960	1.0507	47595	14.012	1.759
23:15	5	10	493	170	289.50	2.75	0.700	2.6	0	1582.05	1.1952	1.0021	1.0096	1.0560	48484	14.036	1.808
23:20	5	14	501	174	295.07	2.75	0.700	2.6	0	1582.05	1.1952	1.0021	1.0022	1.0539	48035	14.173	1.857
23:25	5	22	505	181	301.97	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9894	1.0493	47217	14.258	1.907
23:30	5	27	512	183	306.22	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9803	1.0468	46670	14.291	1.956
23:35	5	30	515	184	307.63	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9764	1.0457	46436	14.285	2.006
23:40	5	30	514	184	307.30	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9756	1.0453	46383	14.254	2.055
23:45	5	32	516	184	308.32	2.75	0.700	2.6	0	1582.05	1.1952	1.0022	0.9735	1.0448	46260	14.263	2.105
23:56	11	Close Choke manifold															

Gas Computation Results

Schlumberger

Origin Energy Ltd T18-P / Trefoil-1 / DST-1	GAS CALCULATION SHEET	GAS 4 2004-029

Pipe Dia. 5.761

Date - Time		Flowing	Pf	Hw	SQRT	Orifice	Gas	CO2	H2S	Fb	Fg	Y2	Ftf	Fpv	C	Gas Prod.	Cumulative
Time	Interval	Temp.	Absolute		(Pf x Hw)	Diameter	Gravity									Rate : Q	Production
	mins	degC	psiA	" of H2O		Inches	Air=1	%	ppm							MMscfd	MMscf
14-Dec-04		TEST #2 Upper Zone (Perforation: 3040.5m - 3046.5m)															
5:45		Pass flow through Separator on 32/64" fixed choke. (Sampling and Maximum Flow Period)															0.000
7:27	102	Lower 2.25 " orifice plate.														6.824	0.483
7:35	8	44	256	215	234.34	2.25	0.741	3.6	0	1039.47	1.1617	1.0054	0.9543	1.0200	28363	6.647	0.520
7:40	5	43	256	215	234.80	2.25	0.741	3.6	0	1039.47	1.1617	1.0055	0.9552	1.0201	28394	6.667	0.543
7:45	5	44	256	218	235.87	2.25	0.741	3.6	0	1039.47	1.1617	1.0055	0.9546	1.0200	28375	6.693	0.567
7:50	5	44	256	219	236.96	2.25	0.741	3.6	0	1039.47	1.1617	1.0056	0.9540	1.0200	28356	6.719	0.590
7:55	5	44	256	222	238.40	2.25	0.741	3.6	0	1039.47	1.1617	1.0056	0.9549	1.0201	28388	6.768	0.614
8:00	5	44	256	228	241.63	2.25	0.741	2.8	0	1039.47	1.1617	1.0058	0.9549	1.0205	28402	6.863	0.637
8:15	15	43	256	233	243.94	2.25	0.741	2.8	0	1039.47	1.1617	1.0059	0.9552	1.0205	28415	6.932	0.710
8:30	15	42	256	235	245.19	2.25	0.741	2.8	0	1039.47	1.1617	1.0060	0.9565	1.0207	28463	6.979	0.782
8:45	15	43	256	238	246.74	2.25	0.748	2.8	0	1039.47	1.1562	1.0060	0.9559	1.0210	28323	6.988	0.855
9:00	15	43	263	234	248.11	2.25	0.748	2.8	0	1039.47	1.1562	1.0057	0.9556	1.0216	28323	7.027	0.928
9:15	15	43	269	229	247.82	2.25	0.748	2.8	0	1039.47	1.1562	1.0055	0.9555	1.0221	28324	7.019	1.001
9:30	15	43	268	231	248.84	2.25	0.748	2.8	0	1039.47	1.1562	1.0056	0.9564	1.0221	28356	7.056	1.075
9:45	15	43	267	234	249.82	2.25	0.746	2.8	0	1039.47	1.1578	1.0057	0.9562	1.0219	28385	7.091	1.149
10:00	15	42	268	235	250.72	2.25	0.746	2.8	0	1039.47	1.1578	1.0057	0.9568	1.0221	28408	7.122	1.223
10:07		Commence dumping all Separator liquid before sampling.															
10:15	15	43	268	216	240.48	2.25	0.746	2.8	0	1039.47	1.1578	1.0052	0.9562	1.0220	28374	6.823	1.294
10:30	15	41	270	234	251.10	2.25	0.746	2.8	0	1039.47	1.1578	1.0056	0.9587	1.0226	28474	7.150	1.368
10:45	15	43	269	240	253.87	2.25	0.746	2.8	0	1039.47	1.1578	1.0058	0.9555	1.0220	28367	7.202	1.443
11:00	15	44	272	237	253.89	2.25	0.746	2.0	0	1039.47	1.1578	1.0057	0.9546	1.0224	28350	7.198	1.518
11:15	15	44	272	240	255.23	2.25	0.746	2.0	0	1039.47	1.1578	1.0057	0.9538	1.0223	28326	7.230	1.594
11:30	15	45	271	243	256.61	2.25	0.746	2.0	0	1039.47	1.1578	1.0058	0.9529	1.0221	28297	7.261	1.669
11:45	15	45	270	246	257.43	2.25	0.747	2.0	0	1039.47	1.1570	1.0059	0.9534	1.0221	28294	7.284	1.745
12:00	15	45	269	247	257.88	2.25	0.747	2.0	0	1039.47	1.1570	1.0060	0.9528	1.0220	28273	7.291	1.821
12:15	15	45	270	249	259.00	2.25	0.747	2.0	0	1039.47	1.1570	1.0060	0.9529	1.0221	28281	7.325	1.898

Schlumberger

Origin Energy Ltd T18-P / Trefoil-1 / DST-1	GAS CALCULATION SHEET	GAS 5 2004-029

Pipe Dia. 5.761

Date - Time		Flowing	Pf	Hw	SQRT	Orifice	Gas	CO2	H2S	Fb	Fg	Y2	Ftf	Fpv	C	Gas Prod.	Cumulative
Time	Interval	Temp.	Absolute		(Pf x Hw)	Diameter	Gravity									Rate : Q	Production
	mins	degC	psiA	" of H2O		Inches	Air=1	%	ppm							MMscfd	MMscf
12:30	15	45	270	250	259.79	2.25	0.747	2.0	0	1039.47	1.1570	1.0060	0.9532	1.0221	28292	7.350	1.974
12:45	15	46	273	252	262.16	2.25	0.747	2.0	0	1039.47	1.1570	1.0060	0.9517	1.0221	28248	7.406	2.051
12:46	1	By-pass orifice meter, gradually increase adjustable choke															2.057
13:04	18	Divert flow through 56/64" fixed choke															2.157
13:21	17	Lower down 2.75" orifice plate															2.262
13:25	4	42	283	152	207.18	2.75	0.747	2.8	0	1582.05	1.1570	1.0033	0.9576	1.0236	43205	8.951	2.287
13:30	5	43	283	152	207.49	2.75	0.747	2.8	0	1582.05	1.1570	1.0033	0.9564	1.0234	43143	8.952	2.318
13:35	5	43	282	153	207.70	2.75	0.747	2.8	0	1582.05	1.1570	1.0033	0.9555	1.0232	43094	8.951	2.350
13:40	5	43	283	155	209.42	2.75	0.747	2.8	0	1582.05	1.1570	1.0034	0.9552	1.0232	43083	9.022	2.381
13:45	5	44	283	156	209.76	2.75	0.747	2.8	0	1582.05	1.1570	1.0034	0.9547	1.0231	43059	9.032	2.412
13:50	5	44	283	157	210.72	2.75	0.747	2.8	0	1582.05	1.1570	1.0034	0.9544	1.0231	43044	9.070	2.444
13:55	5	44	282	159	211.65	2.75	0.747	2.8	0	1582.05	1.1570	1.0035	0.9543	1.0230	43037	9.109	2.475
14:00	5	44	282	160	212.57	2.75	0.747	2.8	0	1582.05	1.1570	1.0035	0.9540	1.0230	43022	9.145	2.507
14:05	5	44	282	162	213.32	2.75	0.747	2.8	0	1582.05	1.1570	1.0035	0.9540	1.0229	43022	9.177	2.539
14:10	5	44	281	164	214.45	2.75	0.747	2.8	0	1582.05	1.1570	1.0036	0.9535	1.0228	42999	9.221	2.571
14:15	5	45	281	165	215.26	2.75	0.747	2.8	0	1582.05	1.1570	1.0036	0.9534	1.0227	42991	9.254	2.603
14:20	5	44	280	166	215.45	2.75	0.747	2.8	0	1582.05	1.1570	1.0037	0.9537	1.0228	43006	9.266	2.635
14:25	5	44	280	166	215.86	2.75	0.747	2.8	0	1582.05	1.1570	1.0037	0.9537	1.0227	43006	9.283	2.668
14:30	5	45	280	167	215.90	2.75	0.747	2.8	0	1582.05	1.1570	1.0037	0.9534	1.0226	42989	9.281	2.700
14:35	5	44	279	167	216.22	2.75	0.747	2.8	0	1582.05	1.1570	1.0037	0.9535	1.0226	42996	9.297	2.732
14:40	5	44	279	169	216.80	2.75	0.747	2.8	0	1582.05	1.1570	1.0037	0.9535	1.0226	42996	9.322	2.764
14:45	5	44	279	173	219.23	2.75	0.742	2.8	0	1582.05	1.1609	1.0038	0.9535	1.0223	43131	9.456	2.797
14:50	5	44	279	179	223.31	2.75	0.742	2.8	0	1582.05	1.1609	1.0040	0.9537	1.0223	43145	9.635	2.831
14:55	5	44	278	183	225.54	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9541	1.0223	43171	9.737	2.864
15:00	5	44	279	184	226.11	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9540	1.0223	43165	9.760	2.898
15:05	5	44	278	184	226.17	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9540	1.0223	43165	9.762	2.932
15:10	5	44	279	184	226.46	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9541	1.0224	43174	9.777	2.966
15:15	5	44	279	184	226.48	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9543	1.0224	43182	9.780	3.000

Gas Computation Results

Schlumberger

Origin Energy Ltd T18-P / Trefoil-1 / DST-1	GAS CALCULATION SHEET	GAS 6 2004-029

Pipe Dia. 5.761

Date - Time		Flowing	Pf	Hw	SQRT	Orifice	Gas	CO2	H2S	Fb	Fg	Y2	Ftf	Fpv	C	Gas Prod.	Cumulative
Time	Interval	Temp.	Absolute		(Pf x Hw)	Diameter	Gravity									Rate : Q	Production
	mins	degC	psiA	" of H2O		Inches	Air=1	%	ppm							MMscfd	MMscf
15:20	5	44	279	184	226.82	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9543	1.0224	43183	9.795	3.034
15:25	5	44	280	184	227.19	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9543	1.0225	43185	9.811	3.068
15:30	5	44	280	184	227.13	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9543	1.0225	43185	9.809	3.102
15:35	5	44	281	184	227.39	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9541	1.0225	43179	9.819	3.136
15:40	5	44	281	184	227.61	2.75	0.742	2.8	0	1582.05	1.1609	1.0041	0.9541	1.0226	43181	9.828	3.171
15:45	5	44	282	184	227.89	2.75	0.742	2.8	0	1582.05	1.1609	1.0040	0.9540	1.0227	43176	9.840	3.205
15:50	5	44	283	184	228.26	2.75	0.742	2.8	0	1582.05	1.1609	1.0040	0.9538	1.0227	43171	9.854	3.239
15:55	5	44	284	184	228.52	2.75	0.742	2.8	0	1582.05	1.1609	1.0040	0.9538	1.0228	43173	9.866	3.273
16:00	5	44	284	184	228.57	2.75	0.742	2.8	0	1582.05	1.1609	1.0040	0.9538	1.0228	43174	9.868	3.307
16:02	2	Bleed off Annulus to close PCT.															

Schlumberger

WELL TESTING REPORT

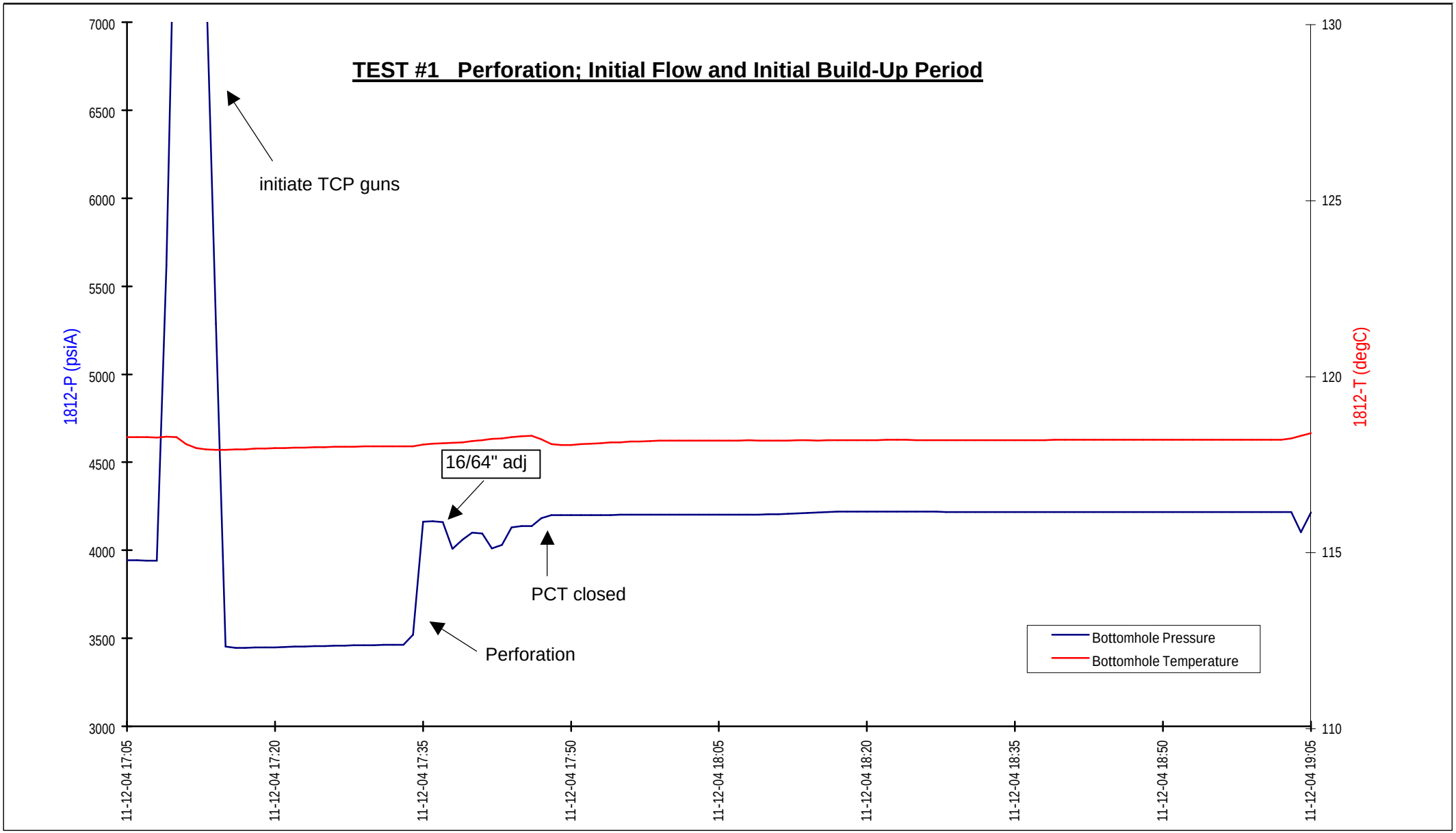
BOTTOM HOLE RESULTS PLOTS

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Bottomhole Pressure and Temperature Plot	Bottomhole 1 2004-029

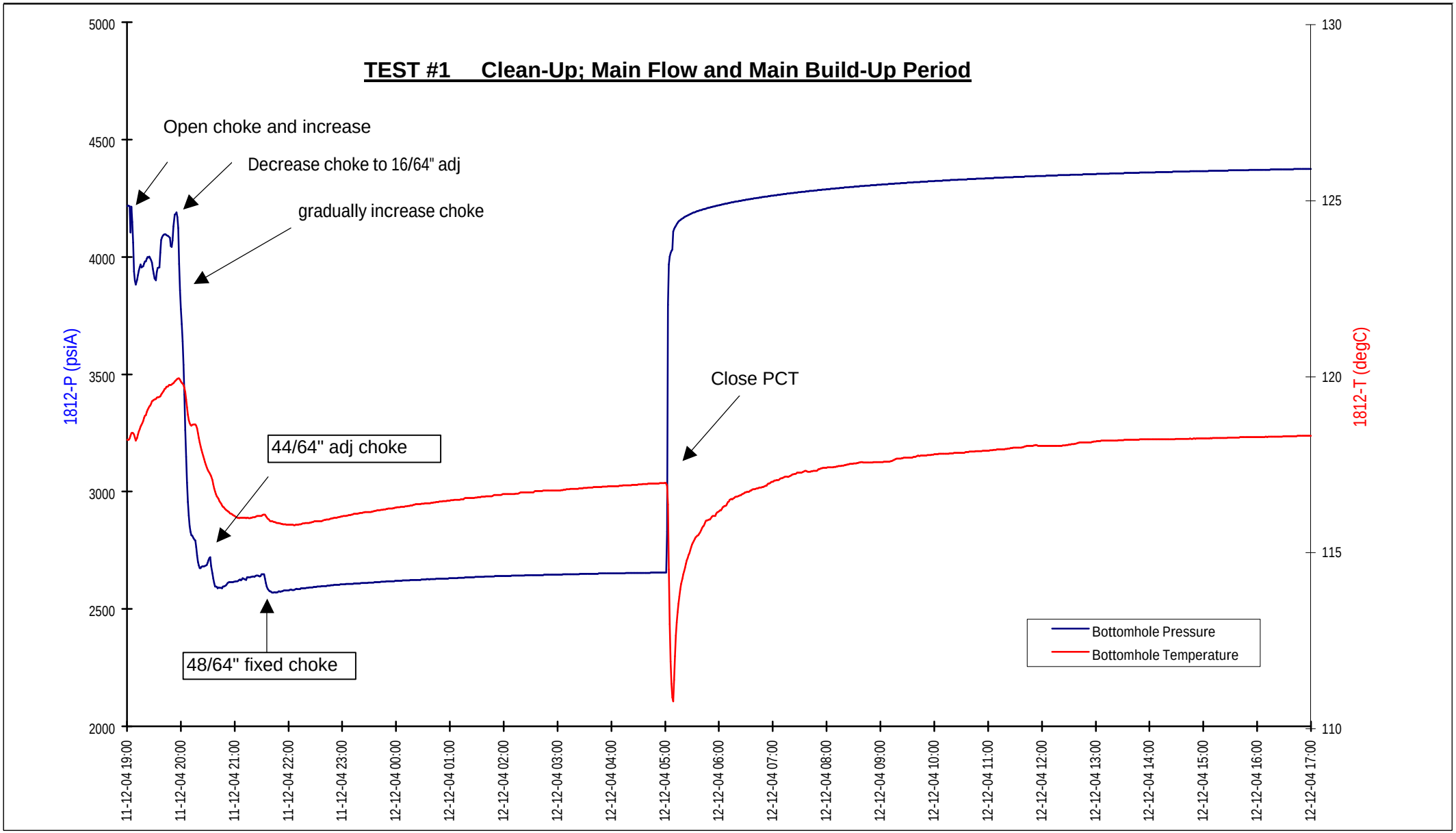
From Date Time : 11-Dec-04 17:05 To Date Time : 11-Dec-04 19:05



Bottomhole Pressure and Temperature Plot

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Bottomhole Pressure and Temperature Plot	Bottomhole 2 2004-029

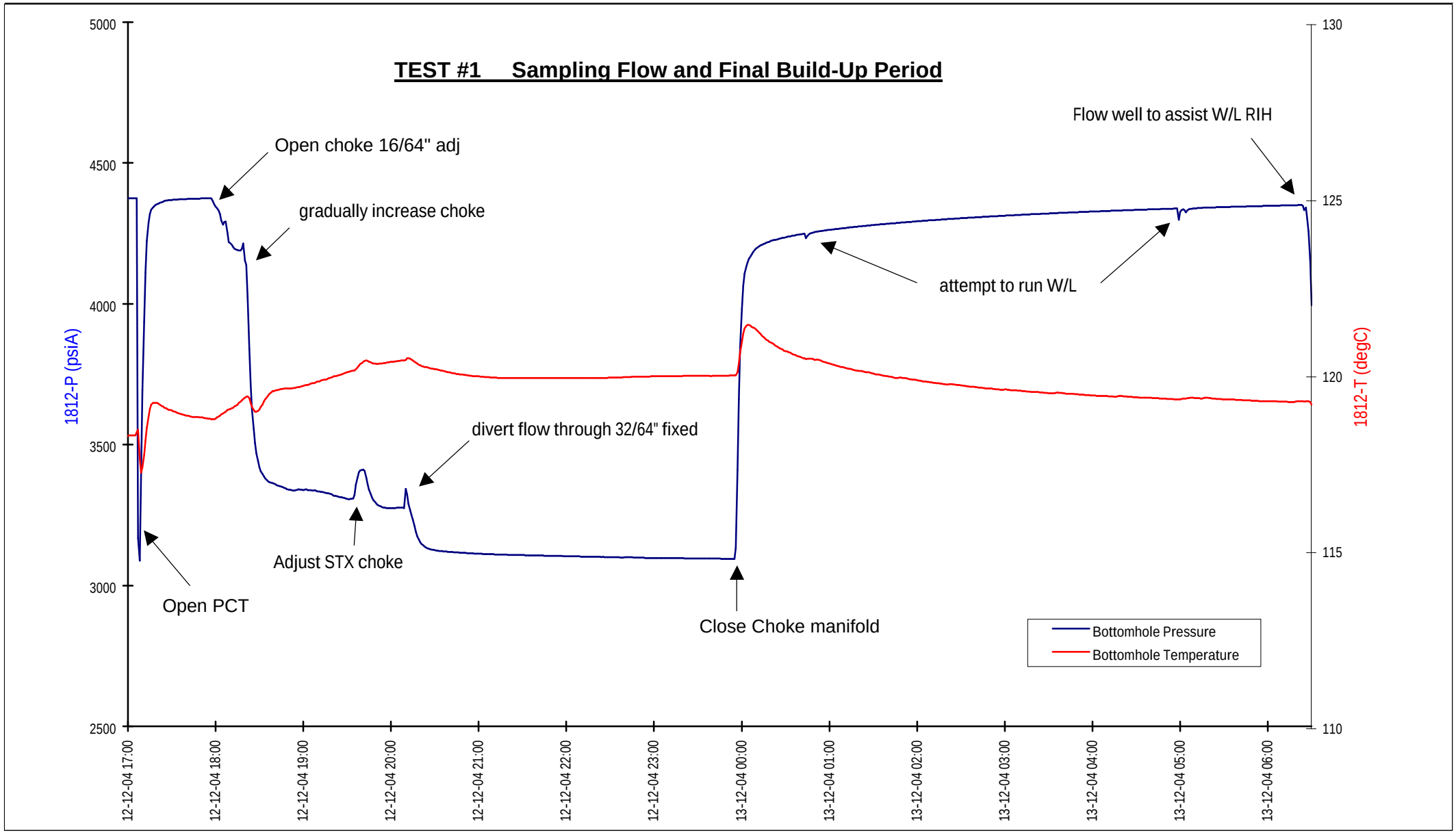
From Date Time : 11-Dec-04 19:00 To Date Time : 12-Dec-04 17:00



Bottomhole Pressure and Temperature Plot

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Bottomhole Pressure and Temperature Plot	Bottomhole 3 2004-029

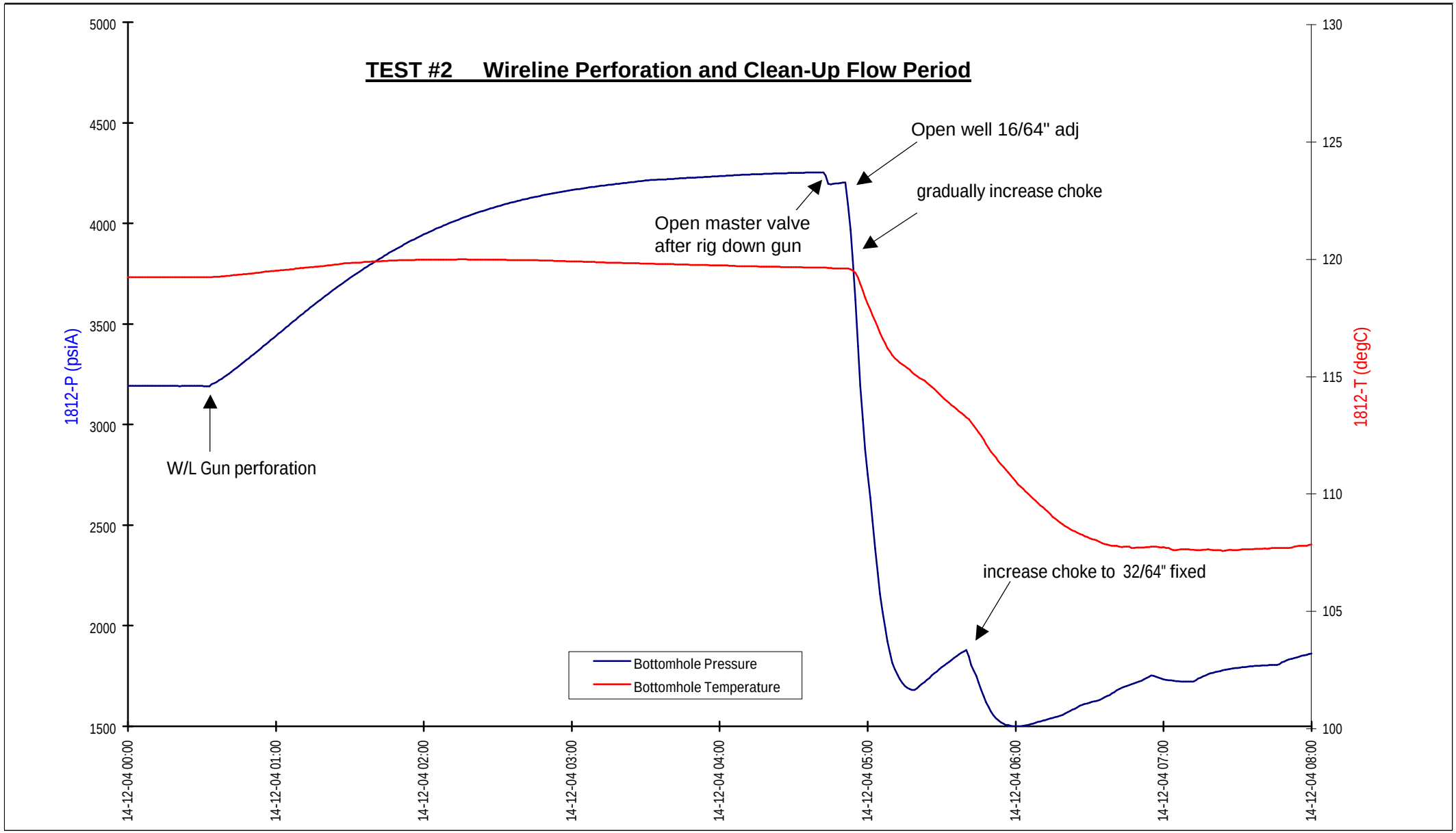
From Date Time : 12-Dec-04 17:00 To Date Time : 13-Dec-04 06:30



Bottomhole Pressure and Temperature Plot

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Bottomhole Pressure and Temperature Plot	Bottomhole 4 2004-029

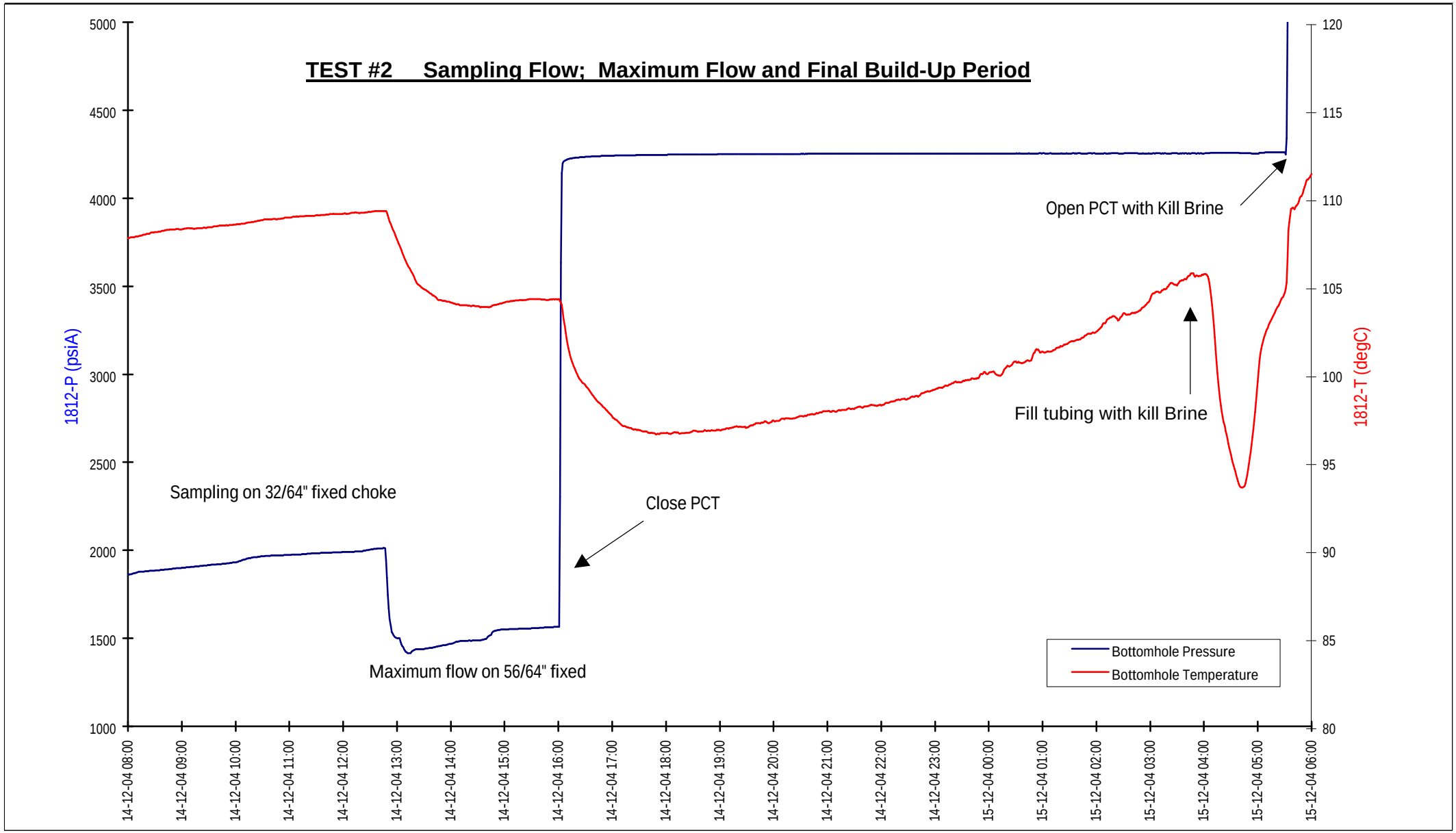
From Date Time : 14-Dec-04 00:00 To Date Time : 14-Dec-04 08:00



Bottomhole Pressure and Temperature Plot

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Bottomhole Pressure and Temperature Plot	Bottomhole 5 2004-029

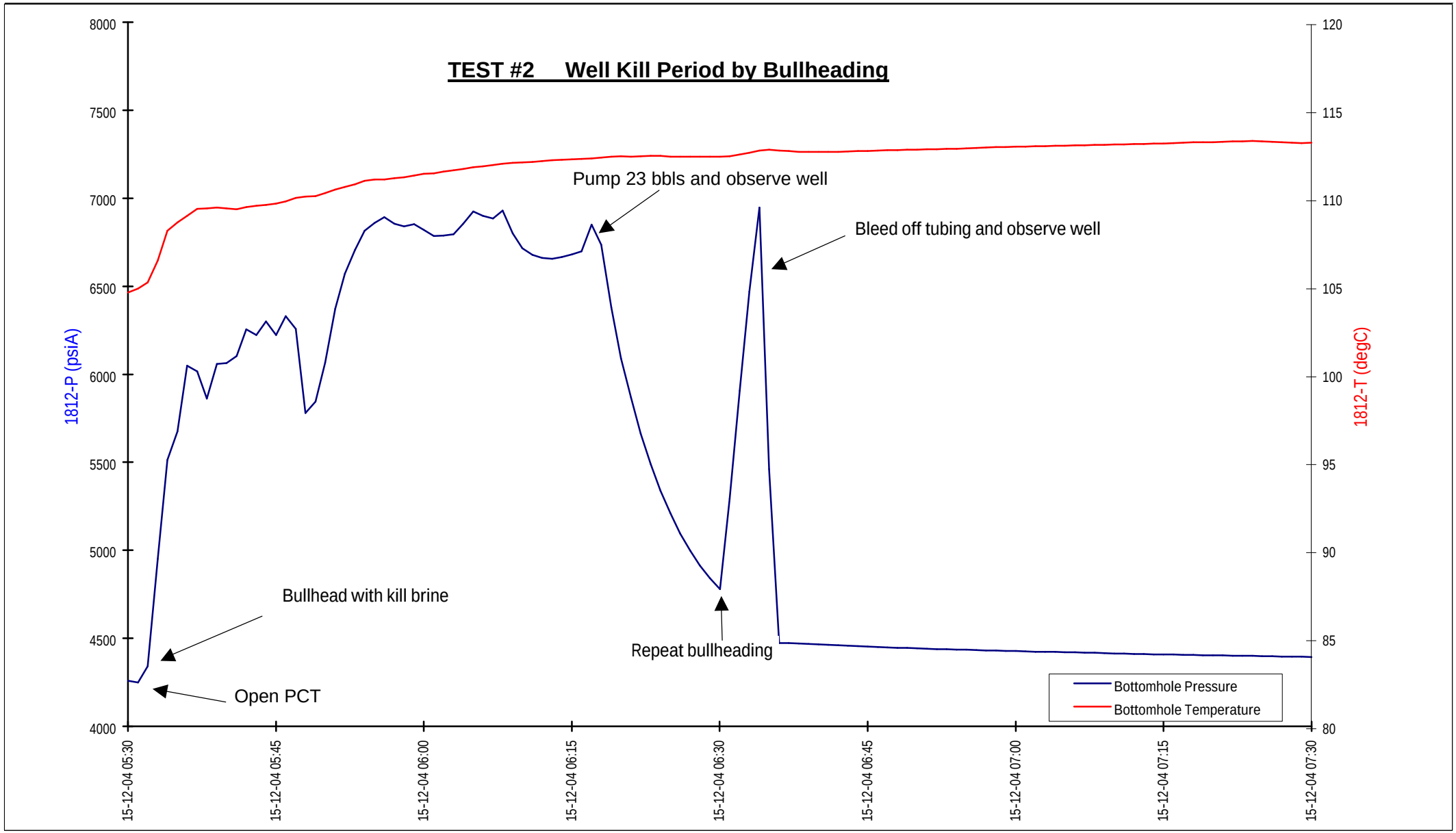
From Date Time : 14-Dec-04 08:00 To Date Time : 15-Dec-04 06:00



Bottomhole Pressure and Temperature Plot

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Bottomhole Pressure and Temperature Plot	Bottomhole 6 2004-029

From Date Time : 15-Dec-04 05:30 To Date Time : 15-Dec-04 07:30



Bottomhole Pressure and Temperature Plot

Schlumberger

WELL TESTING REPORT

BOTTOM HOLE RESULTS - Upper DGA Carrier

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

Schlumberger

Origin Energy Ltd	Upper Gauge 1
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

WTQR-A #1812 WTQR-A #835 WTQR-A #851 WCQR-A #776

Measuring Point 2924.54 m MDRT

DATE TIME	Below valve		Below valve		Below valve		Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
			TEST #1 Lower Zone (Perforation: 3141m - 3150m)					
11-Dec-04 09:35:00	4480.01	117.9	4479.88	117.9	4479.62	117.6	4378.03	117.9
11-Dec-04 09:40:00	Pull DST string to position Packer.							
11-Dec-04 09:40:00	4479.58	117.9	4478.37	117.9	4478.74	117.6	4374.52	117.9
11-Dec-04 09:45:00	4469.93	117.9	4473.01	117.9	4471.29	117.6	4374.15	117.9
11-Dec-04 09:47:00	Rotate DST clockwise 3 turns, lower string to set Packer.							
11-Dec-04 09:50:00	4507.32	117.9	4508.25	117.9	4507.29	117.6	4373.00	117.9
11-Dec-04 09:55:00	4506.83	117.9	4506.66	117.9	4506.45	117.6	4372.87	117.9
11-Dec-04 10:00:00	4508.99	117.9	4508.86	117.9	4508.60	117.6	4372.88	117.9
11-Dec-04 10:05:00	4510.22	117.9	4510.08	117.9	4509.82	117.6	4372.88	117.9
11-Dec-04 10:10:00	4510.93	117.9	4510.81	117.9	4510.56	117.6	4372.88	117.9
11-Dec-04 10:15:00	4511.42	117.9	4511.29	117.9	4511.01	117.6	4372.88	117.9
11-Dec-04 10:20:00	4511.75	117.9	4511.58	117.9	4511.36	117.6	4372.87	117.9
11-Dec-04 10:25:00	4394.03	117.9	4390.40	117.9	4387.73	117.6	4374.93	117.9
11-Dec-04 10:30:00	4392.75	117.9	4392.36	117.9	4392.72	117.6	4812.20	117.9
11-Dec-04 10:31:00	Pressue Annulus 850 psi to actuate PORT, MCVL and lock open TFTV.							
11-Dec-04 10:35:00	4392.21	118.0	4393.31	118.0	4392.84	117.7	5259.74	118.0
11-Dec-04 10:36:00	Increase Annulus 1050 psi to test Positrieve Packer integrity.							
11-Dec-04 10:40:00	4393.08	118.1	4392.90	118.1	4392.65	117.8	5470.16	118.0
11-Dec-04 10:45:00	4393.03	118.0	4392.90	118.0	4392.65	117.7	5461.19	118.0
11-Dec-04 10:50:00	4393.00	118.0	4392.88	118.0	4392.62	117.7	5453.12	118.0
11-Dec-04 10:53:00	Good test, bleed off Annulus.							
11-Dec-04 10:55:00	4391.33	117.9	4392.00	117.9	4391.24	117.6	4500.12	117.9
11-Dec-04 11:00:00	4391.05	117.9	4390.96	117.9	4390.70	117.6	4404.23	117.9
11-Dec-04 11:05:00	4389.99	117.9	4389.88	117.9	4389.61	117.6	4401.21	117.9
11-Dec-04 11:10:00	4389.68	117.9	4389.57	117.9	4389.29	117.6	4398.70	117.9
11-Dec-04 11:15:00	4389.72	117.9	4389.60	117.9	4389.32	117.6	4396.55	117.9
11-Dec-04 11:20:00	4389.89	117.9	4389.78	117.9	4389.49	117.6	4394.80	117.9
11-Dec-04 11:25:00	4390.12	118.0	4390.01	117.9	4389.72	117.6	4393.44	117.9
11-Dec-04 11:30:00	4390.39	118.0	4390.28	117.9	4389.98	117.6	4392.32	118.0
11-Dec-04 11:35:00	4390.66	118.0	4390.54	117.9	4390.25	117.6	4391.45	118.0
11-Dec-04 11:38:00	Pressure Annulus to cycle PCT.							
11-Dec-04 11:40:00	4391.17	118.1	4390.55	118.2	4390.43	117.8	5633.07	118.1
11-Dec-04 11:45:00	Bleed off Annulus, PCT out of hold-open position.							
11-Dec-04 11:45:00	4390.59	118.1	4390.16	118.1	4389.98	117.8	5221.75	118.1
11-Dec-04 11:50:00	4389.21	117.9	4389.12	117.9	4388.82	117.6	4407.18	118.0
11-Dec-04 11:55:00	4389.65	117.9	4389.55	117.9	4389.26	117.6	4403.00	118.0
11-Dec-04 12:00:00	4390.13	118.0	4390.02	117.9	4389.73	117.6	4399.81	118.0
11-Dec-04 12:15:00	4391.51	118.0	4391.40	118.0	4391.10	117.7	4394.06	118.0
11-Dec-04 12:30:00	4392.88	118.0	4392.77	118.0	4392.47	117.7	4391.18	118.0
11-Dec-04 12:45:00	4394.24	118.0	4394.13	118.0	4393.83	117.7	4389.79	118.0
11-Dec-04 13:00:00	4395.59	118.0	4395.47	118.0	4395.17	117.7	4389.05	118.0
11-Dec-04 13:15:00	4396.92	118.0	4396.80	118.0	4396.50	117.7	4388.53	118.0
11-Dec-04 13:30:00	4398.25	118.0	4398.13	118.0	4397.83	117.7	4388.06	118.0
11-Dec-04 13:45:00	4399.57	118.0	4399.45	118.0	4399.16	117.7	4387.49	118.0
11-Dec-04 14:00:00	4400.89	118.0	4400.77	118.0	4400.47	117.7	4387.05	118.0
11-Dec-04 14:15:00	4402.13	118.0	4402.01	118.0	4401.71	117.7	4386.60	118.0
11-Dec-04 14:30:00	4389.15	118.0	4389.03	118.0	4388.74	117.7	4386.22	118.0
11-Dec-04 14:43:00	Apply 500 psi on annulus to assist cycling MCVL.							
11-Dec-04 14:45:00	4405.94	118.1	4405.78	118.1	4405.57	117.8	4936.17	118.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 14:50:00	4406.33	118.1	4406.19	118.1	4405.92	117.8	4922.25	118.1
11-Dec-04 14:55:00	4406.68	118.1	4406.55	118.1	4406.28	117.8	4914.87	118.1
11-Dec-04 14:58:00	Pressure up tubing 1200 psi, start cycling MCVL.							
11-Dec-04 15:00:00	4407.11	118.2	4407.02	118.1	4406.72	117.8	4923.78	118.2
11-Dec-04 15:03:00	Bleed off tubing pressure.							
11-Dec-04 15:05:00	Pressure up tubing 1200 psi.							
11-Dec-04 15:05:00	4407.66	118.1	4407.50	118.1	4407.23	117.8	4905.75	118.1
11-Dec-04 15:10:00	Bleed off tubing pressure. Good indication of MCVL port opened.							
11-Dec-04 15:10:00	4407.89	118.2	4407.77	118.1	4407.49	117.8	4588.08	118.1
11-Dec-04 15:15:00	4393.07	118.0	4392.92	118.0	4392.65	117.7	4390.74	118.0
11-Dec-04 15:19:00	Start displacing tubing contents with diesel cushion.							
11-Dec-04 15:20:00	4392.02	118.0	4391.89	118.0	4391.62	117.7	4392.28	118.0
11-Dec-04 15:25:00	4392.71	118.0	4392.58	118.0	4392.29	117.7	4405.39	118.0
11-Dec-04 15:30:00	4393.24	118.1	4393.11	118.0	4392.82	117.7	4406.36	118.1
11-Dec-04 15:35:00	4393.75	118.1	4393.62	118.1	4393.34	117.7	4405.85	118.1
11-Dec-04 15:40:00	4394.26	118.1	4394.13	118.1	4393.84	117.7	4405.53	118.1
11-Dec-04 15:45:00	4394.74	118.1	4394.60	118.1	4394.32	117.7	4405.70	118.1
11-Dec-04 15:50:00	4395.21	118.1	4395.07	118.1	4394.79	117.8	4406.41	118.1
11-Dec-04 15:55:00	4386.26	118.1	4389.60	118.1	4381.40	117.8	4385.81	118.1
11-Dec-04 15:56:00	Finish displacing with 64 bbls diesel cushion.							
11-Dec-04 15:59:00	Close Master valve, flush surface line to Surge tank.							
11-Dec-04 16:00:00	4389.79	118.1	4389.65	118.1	4389.37	117.8	4388.08	118.1
11-Dec-04 16:05:00	4390.32	118.1	4390.18	118.1	4389.90	117.8	4388.18	118.1
11-Dec-04 16:10:00	4390.78	118.1	4390.64	118.1	4390.36	117.8	4384.98	118.1
11-Dec-04 16:12:00	Open Master valve, pressure up tubing for PCT opening indication.							
11-Dec-04 16:14:00	Reduce tubing pressure.							
11-Dec-04 16:15:00	4385.84	118.0	4385.68	118.0	4385.38	117.7	4383.44	118.0
11-Dec-04 16:17:00	Pressure Annulus to open PCT, good indication.							
11-Dec-04 16:20:00	3936.92	118.2	3936.29	118.2	3936.03	117.9	5934.66	118.2
11-Dec-04 16:25:00	3946.72	118.2	3946.61	118.2	3946.24	117.9	5930.42	118.2
11-Dec-04 16:30:00	3948.08	118.2	3947.98	118.2	3947.63	117.9	5917.64	118.2
11-Dec-04 16:35:00	3947.40	118.2	3947.32	118.2	3946.97	117.9	5907.18	118.2
11-Dec-04 16:40:00	3945.73	118.2	3945.64	118.2	3945.29	117.9	5897.92	118.2
11-Dec-04 16:45:00	3943.42	118.2	3943.33	118.2	3942.99	117.9	5889.19	118.2
11-Dec-04 16:50:00	3948.58	118.2	3948.47	118.2	3948.14	117.9	6099.53	118.2
11-Dec-04 16:55:00	3949.77	118.2	3949.66	118.2	3949.34	117.9	6140.73	118.2
11-Dec-04 17:00:00	3946.75	118.2	3946.65	118.2	3946.32	117.9	6133.07	118.2
11-Dec-04 17:05:00	3943.44	118.2	3943.34	118.2	3943.03	117.9	6126.17	118.2
11-Dec-04 17:09:00	Commence pressuring up tubing to initiate TCP guns.							
11-Dec-04 17:10:00	8214.36	118.2	8148.73	118.2	8172.88	117.9	6186.67	118.2
11-Dec-04 17:11:00	Stop pumping but hold tubing pressure.							
11-Dec-04 17:11:00	8218.44	118.0	8217.66	118.0	8214.44	117.7	6187.87	118.0
11-Dec-04 17:12:00	8236.75	117.9	8236.39	117.9	8235.48	117.6	6186.84	117.9
11-Dec-04 17:13:00	Bleed off tubing pressure to obtain circ. underbalance.							
11-Dec-04 17:13:00	7296.39	117.9	7367.47	117.9	7342.40	117.6	6166.01	117.8
11-Dec-04 17:14:00	5287.32	117.9	5321.61	117.8	5308.83	117.6	6134.30	117.9
11-Dec-04 17:15:00	Close Choke manifold.							
11-Dec-04 17:15:00	3451.79	117.9	3451.02	117.8	3454.43	117.6	6109.71	117.9
11-Dec-04 17:16:00	3444.97	117.9	3445.77	117.9	3444.61	117.6	6107.88	117.9
11-Dec-04 17:17:00	3446.16	117.9	3446.23	117.9	3445.76	117.6	6105.88	117.9

Schlumberger

Origin Energy Ltd	Upper Gauge 3
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 17:18:00	3446.95	117.9	3446.98	117.9	3446.52	117.6	6104.15	117.9
11-Dec-04 17:19:00	3448.00	117.9	3447.94	117.9	3447.58	117.6	6102.31	117.9
11-Dec-04 17:20:00	3449.27	117.9	3449.19	117.9	3448.86	117.6	6100.70	117.9
11-Dec-04 17:21:00	3450.70	117.9	3450.61	117.9	3450.30	117.6	6099.19	117.9
11-Dec-04 17:22:00	3452.16	117.9	3452.07	117.9	3451.76	117.6	6097.58	117.9
11-Dec-04 17:23:00	3453.62	117.9	3453.51	117.9	3453.22	117.6	6096.19	117.9
11-Dec-04 17:24:00	3455.00	117.9	3454.89	117.9	3454.60	117.6	6094.88	117.9
11-Dec-04 17:25:00	3456.38	117.9	3456.26	117.9	3455.99	117.6	6093.36	117.9
11-Dec-04 17:26:00	3457.65	117.9	3457.54	117.9	3457.26	117.6	6092.00	118.0
11-Dec-04 17:27:00	3458.80	117.9	3458.69	117.9	3458.42	117.7	6090.62	118.0
11-Dec-04 17:28:00	3459.82	117.9	3459.70	117.9	3459.43	117.7	6089.31	118.0
11-Dec-04 17:29:00	3460.68	118.0	3460.57	118.0	3460.29	117.7	6088.07	118.0
11-Dec-04 17:30:00	3461.41	118.0	3461.31	118.0	3461.03	117.7	6086.77	118.0
11-Dec-04 17:31:00	3462.12	118.0	3462.02	118.0	3461.73	117.7	6085.45	118.0
11-Dec-04 17:32:00	3462.76	118.0	3462.66	118.0	3462.37	117.7	6084.22	118.0
11-Dec-04 17:33:00	3463.29	118.0	3463.19	118.0	3462.91	117.7	6083.07	118.0
11-Dec-04 17:34:00	3520.51	118.0	3546.26	118.0	3447.16	117.7	6084.32	118.0
11-Dec-04 17:35:00	Good surface indication of TCP guns fired.							
11-Dec-04 17:35:00	4162.14	118.0	4161.48	118.0	4161.63	117.7	6091.10	118.0
11-Dec-04 17:36:00	4165.44	118.0	4165.20	118.0	4165.29	117.7	6089.49	118.0
11-Dec-04 17:37:00	Open well on 16/64" adjustable choke to Surge tank. (Initial Flow Period)							
11-Dec-04 17:37:00	4160.30	118.0	4160.16	118.0	4159.98	117.7	6089.84	118.1
11-Dec-04 17:38:00	4008.04	118.1	4009.65	118.1	4009.00	117.7	6086.67	118.1
11-Dec-04 17:39:00	4059.48	118.1	4057.53	118.1	4058.17	117.8	6088.27	118.1
11-Dec-04 17:40:00	4101.10	118.1	4100.49	118.1	4100.70	117.8	6089.24	118.1
11-Dec-04 17:41:00	4094.00	118.1	4092.72	118.1	4090.90	117.8	6089.80	118.2
11-Dec-04 17:42:00	4009.87	118.2	4010.30	118.2	4010.12	117.8	6090.56	118.2
11-Dec-04 17:43:00	4030.34	118.2	4030.79	118.2	4033.62	117.9	6093.85	118.2
11-Dec-04 17:44:00	4129.66	118.2	4128.93	118.2	4129.22	117.9	6096.67	118.3
11-Dec-04 17:45:00	4136.86	118.2	4136.58	118.3	4136.68	117.9	6097.94	118.3
11-Dec-04 17:46:00	4138.29	118.3	4138.54	118.3	4138.91	117.9	5690.74	118.3
11-Dec-04 17:47:00	Bleed off Annulus to close PCT. (Initial Pressure Build Up Period)							
11-Dec-04 17:47:00	4183.44	118.2	4178.47	118.2	4179.71	117.8	4581.16	118.2
11-Dec-04 17:48:00	4200.75	118.0	4200.64	118.0	4200.14	117.8	4391.75	118.2
11-Dec-04 17:49:00	Close Choke manifold. Recover 3.7 bbls diesel cushion.							
11-Dec-04 17:49:00	4200.32	118.0	4200.25	118.0	4199.81	117.8	4392.39	118.2
11-Dec-04 17:50:00	4200.50	118.0	4200.37	118.0	4200.18	117.8	4392.37	118.2
11-Dec-04 17:51:00	4200.63	118.0	4200.44	118.0	4200.43	117.8	4392.18	118.2
11-Dec-04 17:52:00	4200.77	118.0	4200.61	118.0	4200.63	117.9	4392.00	118.2
11-Dec-04 17:53:00	4200.89	118.0	4200.75	118.1	4200.78	117.9	4391.81	118.2
11-Dec-04 17:54:00	4200.99	118.1	4200.85	118.1	4200.90	117.8	4391.68	118.2
11-Dec-04 17:55:00	4201.07	118.1	4200.94	118.1	4200.98	117.8	4391.57	118.2
11-Dec-04 17:56:00	4201.13	118.1	4201.00	118.1	4201.05	117.8	4391.50	118.2
11-Dec-04 17:57:00	4201.22	118.1	4201.07	118.1	4201.12	117.8	4391.43	118.2
11-Dec-04 17:58:00	4201.29	118.1	4201.15	118.1	4201.18	117.8	4391.40	118.2
11-Dec-04 17:59:00	4201.48	118.1	4201.34	118.1	4201.35	117.8	4391.35	118.2
11-Dec-04 18:00:00	4201.61	118.1	4201.48	118.1	4201.47	117.8	4391.31	118.2
11-Dec-04 18:05:00	4201.67	118.1	4201.54	118.1	4201.51	117.8	4391.19	118.2
11-Dec-04 18:10:00	4204.25	118.1	4204.09	118.1	4204.07	117.8	4391.09	118.2
11-Dec-04 18:15:00	4215.80	118.1	4215.56	118.1	4215.54	117.8	4391.01	118.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

	WTQR-A #1812		WTQR-A #835		WTQR-A #851		WCQR-A #776	
	Measuring Point 2924.54 m MDRT							
DATE TIME	Below valve		Below valve		Below valve		Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 18:20:00	4219.93	118.1	4219.69	118.1	4219.65	117.8	4390.94	118.1
11-Dec-04 18:25:00	4219.07	118.1	4218.80	118.1	4218.77	117.8	4390.87	118.1
11-Dec-04 18:30:00	4217.52	118.1	4217.27	118.1	4217.23	117.8	4390.74	118.1
11-Dec-04 18:35:00	4217.02	118.1	4216.77	118.1	4216.73	117.8	4390.61	118.1
11-Dec-04 18:40:00	4216.60	118.1	4216.34	118.1	4216.31	117.8	4390.48	118.1
11-Dec-04 18:45:00	4216.53	118.1	4216.28	118.1	4216.24	117.8	4390.35	118.1
11-Dec-04 18:50:00	4216.72	118.1	4216.46	118.1	4216.42	117.8	4390.23	118.2
11-Dec-04 18:55:00	4216.81	118.1	4216.55	118.1	4216.51	117.8	4390.11	118.2
11-Dec-04 19:00:00	4216.86	118.1	4216.61	118.1	4216.56	117.8	4389.99	118.2
11-Dec-04 19:04:00	Pressure Annulus to open PCT (Clean Up Flow Period)							
11-Dec-04 19:05:00	4213.47	118.3	4211.93	118.3	4212.90	118.0	5830.35	118.3
11-Dec-04 19:06:00	Open well on 16/64" adjustable choke to Surge tank.							
11-Dec-04 19:06:00	4147.98	118.3	4146.57	118.4	4146.87	118.0	5640.08	118.3
11-Dec-04 19:07:00	4060.47	118.3	4063.09	118.3	4061.89	118.0	5854.09	118.3
11-Dec-04 19:08:00	Increase adjustable choke to 20/64"							
11-Dec-04 19:08:00	3937.82	118.3	3938.88	118.3	3938.74	117.9	5681.17	118.2
11-Dec-04 19:09:00	3898.00	118.2	3898.19	118.2	3897.93	117.9	5906.46	118.2
11-Dec-04 19:10:00	3881.61	118.1	3880.94	118.1	3881.05	117.8	5913.69	118.1
11-Dec-04 19:11:00	3902.21	118.2	3901.69	118.2	3901.63	117.9	5918.99	118.2
11-Dec-04 19:12:00	3922.51	118.3	3922.21	118.3	3922.08	117.9	5925.72	118.3
11-Dec-04 19:13:00	3942.22	118.4	3941.62	118.4	3941.76	118.0	5932.97	118.3
11-Dec-04 19:14:00	3956.27	118.4	3955.62	118.5	3955.78	118.1	5940.45	118.4
11-Dec-04 19:15:00	3967.47	118.5	3966.97	118.5	3967.16	118.2	5948.52	118.5
11-Dec-04 19:16:00	Increase adjustable choke to 24/64"							
11-Dec-04 19:16:00	3954.77	118.6	3956.53	118.6	3956.26	118.2	5956.58	118.6
11-Dec-04 19:17:00	Total recovery 14 bbls diesel cushion.							
11-Dec-04 19:17:00	3958.30	118.6	3955.26	118.7	3955.35	118.3	5965.78	118.7
11-Dec-04 19:18:00	3959.26	118.7	3959.12	118.7	3959.40	118.3	5975.04	118.8
11-Dec-04 19:19:00	3971.63	118.8	3970.89	118.8	3970.87	118.4	5985.57	118.9
11-Dec-04 19:20:00	3981.16	118.8	3980.84	118.9	3980.75	118.4	5995.63	118.9
11-Dec-04 19:21:00	3981.18	118.8	3980.87	118.9	3981.05	118.5	6006.39	119.0
11-Dec-04 19:22:00	3991.60	118.9	3990.55	119.0	3990.83	118.6	6017.35	119.1
11-Dec-04 19:23:00	3999.70	119.0	3998.52	119.0	3998.80	118.6	6028.82	119.2
11-Dec-04 19:24:00	3997.60	119.0	3997.76	119.1	3997.86	118.7	6040.52	119.3
11-Dec-04 19:25:00	4001.00	119.1	4001.13	119.2	4001.02	118.8	5921.05	119.3
11-Dec-04 19:26:00	3993.02	119.1	3993.64	119.2	3993.43	118.8	5925.09	119.4
11-Dec-04 19:27:00	3986.62	119.2	3986.40	119.2	3986.29	118.9	5939.78	119.4
11-Dec-04 19:28:00	3975.57	119.2	3975.92	119.3	3975.72	118.9	5954.52	119.4
11-Dec-04 19:29:00	3949.39	119.3	3949.77	119.3	3949.50	119.0	5969.66	119.5
11-Dec-04 19:30:00	3929.32	119.3	3928.67	119.3	3928.61	119.0	5985.93	119.5
11-Dec-04 19:31:00	3907.68	119.3	3907.67	119.3	3907.68	119.0	6002.65	119.5
11-Dec-04 19:32:00	Divert flow to Portside burner. Total recovery 31 bbls diesel cushion.							
11-Dec-04 19:32:00	3900.13	119.3	3899.39	119.3	3899.79	119.0	6019.89	119.4
11-Dec-04 19:33:00	3936.15	119.3	3935.40	119.4	3935.71	119.0	5951.48	119.4
11-Dec-04 19:34:00	3952.59	119.4	3952.26	119.4	3952.36	119.0	5900.31	119.4
11-Dec-04 19:35:00	3954.40	119.4	3954.07	119.4	3954.07	119.0	5914.58	119.5
11-Dec-04 19:36:00	3954.66	119.4	3954.21	119.4	3954.30	119.1	5929.00	119.5
11-Dec-04 19:37:00	4017.41	119.4	4013.87	119.4	4015.48	119.1	5941.34	119.5
11-Dec-04 19:38:00	4073.00	119.4	4071.77	119.5	4072.38	119.1	5950.27	119.6
11-Dec-04 19:39:00	Increase adjustable choke to 28/64"							

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 19:39:00	4083.57	119.5	4083.00	119.5	4083.34	119.1	5958.84	119.6
11-Dec-04 19:40:00	4090.73	119.5	4090.22	119.6	4090.57	119.1	5966.93	119.6
11-Dec-04 19:41:00	4094.26	119.5	4093.80	119.6	4094.19	119.2	5974.80	119.7
11-Dec-04 19:42:00	4096.33	119.6	4095.96	119.6	4096.16	119.2	5982.60	119.7
11-Dec-04 19:43:00	4096.50	119.6	4096.04	119.7	4096.17	119.3	5990.13	119.7
11-Dec-04 19:44:00	4093.64	119.6	4093.36	119.7	4093.43	119.3	5997.64	119.8
11-Dec-04 19:45:00	4090.88	119.6	4090.50	119.7	4090.53	119.3	6004.84	119.8
11-Dec-04 19:46:00	4088.10	119.7	4087.74	119.7	4088.03	119.3	6012.25	119.8
11-Dec-04 19:47:00	4084.95	119.7	4084.63	119.7	4084.85	119.3	6019.30	119.8
11-Dec-04 19:48:00	4080.77	119.7	4080.48	119.8	4080.53	119.4	5962.07	119.9
11-Dec-04 19:49:00	Increase adjustable choke to 32/64"							
11-Dec-04 19:49:00	4046.79	119.7	4048.74	119.7	4048.77	119.4	5869.17	119.9
11-Dec-04 19:50:00	4043.13	119.7	4043.16	119.8	4043.19	119.4	5876.98	119.9
11-Dec-04 19:51:00	4070.63	119.7	4068.74	119.8	4069.59	119.4	5885.15	119.9
11-Dec-04 19:52:00	Gas and Brine at surface.							
11-Dec-04 19:52:00	4130.54	119.8	4128.80	119.8	4129.74	119.4	5890.20	119.9
11-Dec-04 19:53:00	Decrease choke to 16/64". Divert flow through Steam Exchanger							
11-Dec-04 19:53:00	4180.87	119.8	4179.25	119.8	4179.95	119.4	5893.51	119.9
11-Dec-04 19:54:00	Decrease choke to 20/64" adjustable.							
11-Dec-04 19:54:00	4182.10	119.8	4181.57	119.9	4181.91	119.5	5896.55	120.0
11-Dec-04 19:55:00	Divert flow to burner gas flare.							
11-Dec-04 19:55:00	4189.86	119.8	4189.32	119.9	4189.59	119.5	5899.18	120.0
11-Dec-04 19:56:00	Increase adjustable choke to 24/64".							
11-Dec-04 19:56:00	4168.96	119.9	4168.67	119.9	4168.89	119.5	5902.64	120.0
11-Dec-04 19:57:00	Gradually increase to 32/64" adjustable choke.							
11-Dec-04 19:57:00	4123.27	119.9	4124.60	119.9	4124.14	119.5	5906.75	120.0
11-Dec-04 19:58:00	3968.66	119.9	3973.83	119.9	3971.77	119.5	5913.41	120.0
11-Dec-04 19:59:00	3857.40	119.8	3858.87	119.9	3858.24	119.5	5923.20	119.9
11-Dec-04 20:00:00	3777.83	119.8	3779.30	119.8	3778.59	119.5	5932.35	119.8
11-Dec-04 20:01:00	3713.60	119.8	3714.81	119.8	3714.20	119.4	5940.83	119.8
11-Dec-04 20:02:00	3640.45	119.7	3641.93	119.7	3641.17	119.4	5948.38	119.7
11-Dec-04 20:03:00	3539.28	119.7	3541.26	119.7	3540.39	119.3	5955.03	119.6
11-Dec-04 20:04:00	Increase adjustable choke to 36/64".							
11-Dec-04 20:04:00	3413.26	119.6	3416.76	119.6	3415.29	119.3	5960.37	119.6
11-Dec-04 20:05:00	3262.03	119.5	3265.39	119.5	3263.97	119.1	5965.56	119.4
11-Dec-04 20:06:00	3147.85	119.3	3149.20	119.3	3148.21	118.9	5971.83	119.3
11-Dec-04 20:07:00	3037.10	119.1	3038.81	119.1	3037.74	118.7	5979.12	119.1
11-Dec-04 20:08:00	2956.54	118.9	2957.51	119.0	2956.58	118.5	5988.51	118.9
11-Dec-04 20:09:00	2897.83	118.7	2898.19	118.8	2897.26	118.4	5999.49	118.8
11-Dec-04 20:10:00	2852.24	118.6	2852.96	118.7	2851.95	118.3	6011.41	118.7
11-Dec-04 20:11:00	2828.67	118.6	2829.02	118.7	2828.11	118.2	5970.98	118.6
11-Dec-04 20:12:00	2813.05	118.5	2812.85	118.6	2812.00	118.2	5891.34	118.6
11-Dec-04 20:13:00	2811.23	118.6	2811.08	118.6	2810.29	118.2	5904.21	118.6
11-Dec-04 20:14:00	2801.42	118.6	2801.01	118.6	2800.36	118.2	5915.60	118.6
11-Dec-04 20:15:00	2794.78	118.6	2794.67	118.6	2794.02	118.3	5926.76	118.6
11-Dec-04 20:16:00	2790.96	118.6	2790.71	118.6	2790.10	118.2	5937.65	118.6
11-Dec-04 20:17:00	Increase adjustable choke to 40/64".							
11-Dec-04 20:17:00	2763.96	118.5	2764.50	118.6	2763.65	118.2	5946.98	118.6
11-Dec-04 20:18:00	2727.82	118.5	2728.20	118.5	2727.45	118.1	5957.28	118.5
11-Dec-04 20:19:00	2700.36	118.3	2700.41	118.4	2699.76	118.0	5967.88	118.4

Schlumberger

Origin Energy Ltd	Upper Gauge 6
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 20:20:00	2684.53	118.2	2684.29	118.3	2683.70	117.9	5978.62	118.2
11-Dec-04 20:21:00	2674.48	118.1	2674.04	118.2	2673.49	117.7	5989.44	118.1
11-Dec-04 20:22:00	2673.82	118.0	2673.13	118.1	2672.57	117.6	6000.52	118.0
11-Dec-04 20:23:00	2679.00	117.9	2678.14	118.0	2677.57	117.5	6011.63	117.9
11-Dec-04 20:24:00	2680.67	117.8	2680.11	117.9	2679.43	117.4	5876.65	117.8
11-Dec-04 20:25:00	2680.52	117.7	2680.02	117.8	2679.27	117.3	5808.28	117.7
11-Dec-04 20:26:00	2681.40	117.6	2680.88	117.7	2680.13	117.3	5861.70	117.6
11-Dec-04 20:27:00	2683.00	117.5	2682.35	117.6	2681.64	117.2	5871.07	117.6
11-Dec-04 20:28:00	2684.92	117.4	2684.25	117.6	2683.56	117.1	5882.04	117.5
11-Dec-04 20:29:00	2686.78	117.4	2686.15	117.5	2685.45	117.0	5892.56	117.4
11-Dec-04 20:30:00	2695.69	117.3	2694.78	117.4	2694.20	117.0	5903.02	117.3
11-Dec-04 20:31:00	2707.80	117.2	2707.04	117.4	2706.36	116.9	5913.60	117.3
11-Dec-04 20:32:00	2717.00	117.2	2716.25	117.3	2715.61	116.9	5923.80	117.2
11-Dec-04 20:33:00	Increase adjustable choke to 44/64".							
11-Dec-04 20:33:00	2719.84	117.2	2719.53	117.3	2718.68	116.8	5932.52	117.2
11-Dec-04 20:34:00	2684.01	117.1	2684.35	117.2	2683.37	116.8	5940.61	117.1
11-Dec-04 20:35:00	2651.32	117.0	2651.43	117.1	2650.53	116.7	5949.07	117.0
11-Dec-04 20:36:00	2628.23	116.9	2628.01	117.0	2627.15	116.5	5957.78	116.9
11-Dec-04 20:37:00	2610.93	116.8	2610.54	116.9	2609.69	116.4	5966.98	116.8
11-Dec-04 20:38:00	2595.18	116.7	2594.97	116.8	2593.99	116.3	5976.18	116.7
11-Dec-04 20:39:00	2594.84	116.6	2593.95	116.7	2593.17	116.3	5985.36	116.6
11-Dec-04 20:40:00	2593.76	116.5	2593.15	116.7	2592.26	116.2	5994.67	116.6
11-Dec-04 20:41:00	Divert flow through separator.							
11-Dec-04 20:41:00	2588.46	116.5	2588.09	116.6	2587.16	116.2	6003.90	116.5
11-Dec-04 20:42:00	2591.89	116.5	2590.99	116.6	2590.23	116.1	5959.89	116.5
11-Dec-04 20:43:00	2590.51	116.4	2590.06	116.5	2589.10	116.1	5870.14	116.4
11-Dec-04 20:44:00	2590.80	116.4	2590.27	116.5	2589.32	116.0	5879.60	116.4
11-Dec-04 20:45:00	2589.10	116.3	2588.65	116.4	2587.74	116.0	5889.42	116.3
11-Dec-04 20:46:00	2587.85	116.3	2587.18	116.4	2586.44	115.9	5898.92	116.3
11-Dec-04 20:47:00	2595.70	116.2	2595.20	116.4	2594.39	115.9	5907.96	116.3
11-Dec-04 20:48:00	2596.14	116.2	2595.60	116.3	2594.79	115.9	5917.31	116.2
11-Dec-04 20:49:00	2598.03	116.2	2597.54	116.3	2596.70	115.8	5926.12	116.2
11-Dec-04 20:50:00	2599.16	116.2	2598.61	116.3	2597.81	115.8	5935.40	116.2
11-Dec-04 20:51:00	2602.47	116.1	2601.87	116.3	2601.06	115.8	5944.54	116.2
11-Dec-04 20:52:00	2608.19	116.1	2607.63	116.2	2606.83	115.8	5953.43	116.1
11-Dec-04 20:53:00	2612.96	116.1	2612.48	116.2	2611.63	115.7	5962.43	116.1
11-Dec-04 20:54:00	2613.79	116.1	2613.36	116.2	2612.53	115.7	5971.37	116.1
11-Dec-04 20:55:00	2614.99	116.1	2614.44	116.2	2613.68	115.7	5979.92	116.1
11-Dec-04 20:56:00	2614.50	116.0	2614.10	116.2	2613.29	115.7	5988.60	116.1
11-Dec-04 20:57:00	2613.71	116.0	2613.32	116.1	2612.47	115.7	5997.27	116.1
11-Dec-04 20:58:00	2615.02	116.0	2614.66	116.1	2613.78	115.7	6005.75	116.0
11-Dec-04 20:59:00	2615.51	116.0	2615.11	116.1	2614.31	115.7	6013.86	116.0
11-Dec-04 21:00:00	2616.56	116.0	2616.15	116.1	2615.37	115.6	5893.90	116.0
11-Dec-04 21:05:00	2623.35	115.9	2622.87	116.0	2622.17	115.6	5936.91	116.0
11-Dec-04 21:10:00	2628.61	115.9	2628.39	116.0	2627.64	115.6	5977.68	116.0
11-Dec-04 21:15:00	2634.04	115.9	2633.82	116.0	2633.11	115.6	5902.87	116.0
11-Dec-04 21:20:00	2637.87	115.9	2637.55	116.0	2636.90	115.6	5890.05	116.0
11-Dec-04 21:25:00	2641.76	116.0	2641.49	116.0	2640.82	115.6	5927.98	116.0
11-Dec-04 21:30:00	2647.86	116.0	2647.63	116.0	2646.98	115.6	5965.46	116.0
11-Dec-04 21:31:00	2647.78	116.0	2647.52	116.1	2646.90	115.7	5972.50	116.0

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 21:32:00	2648.39	116.0	2648.18	116.1	2647.52	115.7	5979.77	116.0
11-Dec-04 21:33:00	Divert flow through 48/64" fixed choke, fully open STX adjustable choke.							
11-Dec-04 21:33:00	2647.54	116.0	2647.26	116.1	2646.57	115.7	5986.29	116.0
11-Dec-04 21:34:00	2628.88	116.0	2629.15	116.1	2628.33	115.7	5992.20	116.0
11-Dec-04 21:35:00	2610.75	116.0	2610.78	116.0	2610.03	115.6	5998.54	116.0
11-Dec-04 21:36:00	2595.25	115.9	2595.23	116.0	2594.49	115.6	6004.91	116.0
11-Dec-04 21:37:00	2586.05	115.9	2585.86	116.0	2585.14	115.6	6011.46	116.0
11-Dec-04 21:38:00	2579.27	115.9	2579.10	115.9	2578.33	115.5	5834.90	115.9
11-Dec-04 21:39:00	2575.22	115.8	2574.99	115.9	2574.23	115.5	5842.65	115.9
11-Dec-04 21:40:00	2574.10	115.8	2573.82	115.9	2573.10	115.5	5848.73	115.9
11-Dec-04 21:41:00	2571.85	115.8	2571.57	115.9	2570.86	115.5	5856.22	115.9
11-Dec-04 21:42:00	2569.72	115.8	2569.46	115.9	2568.75	115.5	5863.22	115.9
11-Dec-04 21:43:00	2569.32	115.8	2569.03	115.9	2568.33	115.5	5869.91	115.9
11-Dec-04 21:44:00	2570.44	115.8	2570.11	115.9	2569.44	115.5	5876.84	115.9
11-Dec-04 21:45:00	2570.43	115.8	2570.16	115.9	2569.45	115.5	5883.52	115.8
11-Dec-04 21:46:00	2570.13	115.8	2569.82	115.9	2569.13	115.5	5890.26	115.8
11-Dec-04 21:47:00	2570.59	115.8	2570.25	115.8	2569.58	115.4	5897.05	115.8
11-Dec-04 21:48:00	2571.72	115.8	2571.40	115.8	2570.72	115.4	5903.76	115.8
11-Dec-04 21:49:00	2574.19	115.8	2573.83	115.8	2573.17	115.4	5910.28	115.8
11-Dec-04 21:50:00	2574.09	115.8	2573.84	115.8	2573.15	115.4	5916.92	115.8
11-Dec-04 21:51:00	2573.48	115.8	2573.17	115.8	2572.48	115.4	5923.40	115.8
11-Dec-04 21:52:00	2574.66	115.8	2574.34	115.8	2573.67	115.4	5930.24	115.8
11-Dec-04 21:53:00	2574.87	115.8	2574.55	115.8	2573.86	115.4	5936.63	115.8
11-Dec-04 21:54:00	2576.58	115.7	2576.25	115.8	2575.57	115.4	5943.00	115.8
11-Dec-04 21:55:00	2579.28	115.7	2579.00	115.8	2578.30	115.4	5949.38	115.8
11-Dec-04 21:56:00	2578.71	115.7	2578.45	115.8	2577.75	115.4	5955.72	115.8
11-Dec-04 21:57:00	2578.30	115.7	2577.97	115.8	2577.30	115.4	5961.91	115.8
11-Dec-04 21:58:00	2578.99	115.7	2578.67	115.8	2578.00	115.4	5967.90	115.8
11-Dec-04 21:59:00	2578.31	115.7	2578.01	115.8	2577.33	115.4	5974.00	115.8
11-Dec-04 22:00:00	2578.58	115.7	2578.27	115.8	2577.61	115.4	5979.78	115.8
11-Dec-04 22:05:00	2580.73	115.7	2580.45	115.8	2579.80	115.4	5955.10	115.8
11-Dec-04 22:10:00	2584.60	115.7	2584.35	115.8	2583.70	115.4	5879.83	115.8
11-Dec-04 22:15:00	2588.68	115.8	2588.47	115.8	2587.78	115.4	5909.01	115.8
11-Dec-04 22:18:00	Increase separator pressure to prevent liquid being carry-over.							
11-Dec-04 22:20:00	2589.40	115.8	2589.14	115.8	2588.49	115.4	5937.24	115.8
11-Dec-04 22:25:00	2591.97	115.8	2591.72	115.8	2591.10	115.5	5964.58	115.8
11-Dec-04 22:30:00	2594.22	115.8	2593.96	115.9	2593.34	115.5	5991.42	115.9
11-Dec-04 22:35:00	2595.72	115.8	2595.46	115.9	2594.81	115.5	5854.48	115.9
11-Dec-04 22:40:00	2597.62	115.9	2597.41	115.9	2596.79	115.5	5876.24	115.9
11-Dec-04 22:45:00	2599.55	115.9	2599.30	115.9	2598.69	115.6	5895.74	115.9
11-Dec-04 22:50:00	2601.49	115.9	2601.23	115.9	2600.62	115.6	5912.13	116.0
11-Dec-04 22:55:00	2603.15	115.9	2602.93	116.0	2602.31	115.6	5927.11	116.0
11-Dec-04 23:00:00	(Main Flow Period)							
11-Dec-04 23:00:00	2604.84	116.0	2604.61	116.0	2603.99	115.6	5942.72	116.0
11-Dec-04 23:05:00	2606.41	116.0	2606.20	116.0	2605.58	115.7	5955.40	116.0
11-Dec-04 23:10:00	2606.91	116.0	2606.69	116.0	2606.09	115.7	5966.36	116.1
11-Dec-04 23:15:00	2608.50	116.0	2608.27	116.1	2607.65	115.7	5977.17	116.1
11-Dec-04 23:20:00	2609.46	116.1	2609.26	116.1	2608.66	115.7	5987.52	116.1
11-Dec-04 23:25:00	2610.40	116.1	2610.19	116.1	2609.58	115.8	5996.16	116.1
11-Dec-04 23:30:00	2611.92	116.1	2611.72	116.1	2611.09	115.8	5866.81	116.1

Schlumberger

Origin Energy Ltd	Upper Gauge 8
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 23:35:00	2613.14	116.1	2612.91	116.1	2612.32	115.8	5864.34	116.1
11-Dec-04 23:40:00	2614.59	116.1	2614.37	116.2	2613.77	115.8	5861.81	116.2
11-Dec-04 23:45:00	2615.77	116.2	2615.58	116.2	2614.97	115.8	5857.40	116.2
11-Dec-04 23:50:00	2617.16	116.2	2616.96	116.2	2616.36	115.9	5851.86	116.2
11-Dec-04 23:55:00	2618.00	116.2	2617.80	116.2	2617.20	115.9	5845.69	116.2
12-Dec-04 00:00:00	2619.47	116.2	2619.29	116.2	2618.68	115.9	5836.74	116.3
12-Dec-04 00:05:00	2620.26	116.2	2620.07	116.3	2619.47	115.9	5827.78	116.3
12-Dec-04 00:10:00	2621.27	116.3	2621.09	116.3	2620.49	115.9	5816.21	116.3
12-Dec-04 00:15:00	2622.49	116.3	2622.30	116.3	2621.70	115.9	5804.90	116.3
12-Dec-04 00:20:00	2623.70	116.3	2623.50	116.3	2622.92	116.0	5918.10	116.3
12-Dec-04 00:25:00	2623.72	116.3	2623.56	116.3	2622.94	116.0	5903.77	116.3
12-Dec-04 00:30:00	2625.26	116.3	2625.06	116.4	2624.47	116.0	5890.04	116.4
12-Dec-04 00:35:00	2626.63	116.3	2626.46	116.4	2625.86	116.0	5873.56	116.4
12-Dec-04 00:40:00	2627.43	116.4	2627.21	116.4	2626.63	116.0	5856.11	116.4
12-Dec-04 00:45:00	2628.28	116.4	2628.10	116.4	2627.51	116.1	5838.11	116.4
12-Dec-04 00:50:00	2628.98	116.4	2628.78	116.4	2628.20	116.1	5926.81	116.4
12-Dec-04 00:55:00	2629.42	116.4	2629.26	116.4	2628.65	116.1	5904.48	116.4
12-Dec-04 01:00:00	2630.43	116.4	2630.26	116.4	2629.67	116.1	5883.21	116.4
12-Dec-04 01:05:00	2631.37	116.4	2631.18	116.5	2630.59	116.1	5861.11	116.5
12-Dec-04 01:10:00	2632.35	116.4	2632.18	116.5	2631.59	116.1	5840.14	116.5
12-Dec-04 01:15:00	2632.93	116.5	2632.75	116.5	2632.15	116.1	5842.02	116.5
12-Dec-04 01:20:00	2634.32	116.5	2634.14	116.5	2633.55	116.2	5968.97	116.5
12-Dec-04 01:25:00	2634.86	116.5	2634.69	116.5	2634.09	116.2	5942.93	116.5
12-Dec-04 01:30:00	2636.47	116.5	2636.30	116.5	2635.71	116.2	5917.62	116.5
12-Dec-04 01:35:00	2636.60	116.5	2636.44	116.5	2635.85	116.2	5892.84	116.6
12-Dec-04 01:40:00	2638.47	116.5	2638.29	116.5	2637.70	116.2	5867.66	116.6
12-Dec-04 01:45:00	2638.77	116.5	2638.61	116.6	2638.02	116.2	5842.19	116.6
12-Dec-04 01:50:00	2639.80	116.6	2639.61	116.6	2639.04	116.3	5915.18	116.6
12-Dec-04 01:55:00	2640.01	116.6	2639.87	116.6	2639.29	116.3	5866.02	116.6
12-Dec-04 02:00:00	2640.70	116.6	2640.53	116.6	2639.96	116.3	5953.92	116.6
12-Dec-04 02:05:00	2640.96	116.6	2640.81	116.6	2640.22	116.3	5904.24	116.6
12-Dec-04 02:10:00	2641.50	116.6	2641.35	116.6	2640.77	116.3	5856.69	116.6
12-Dec-04 02:15:00	2642.01	116.6	2641.86	116.6	2641.27	116.3	5810.87	116.6
12-Dec-04 02:20:00	2642.37	116.6	2642.22	116.7	2641.63	116.3	5926.71	116.7
12-Dec-04 02:25:00	2643.27	116.6	2643.11	116.7	2642.53	116.3	5878.66	116.7
12-Dec-04 02:30:00	2643.64	116.6	2643.50	116.7	2642.92	116.3	5831.77	116.7
12-Dec-04 02:35:00	2644.29	116.7	2644.12	116.7	2643.58	116.4	5964.85	116.7
12-Dec-04 02:40:00	2644.46	116.7	2644.29	116.7	2643.70	116.4	5975.16	116.7
12-Dec-04 02:45:00	2645.14	116.7	2644.97	116.7	2644.39	116.4	5985.93	116.7
12-Dec-04 02:50:00	2645.50	116.7	2645.34	116.7	2644.75	116.4	5953.99	116.7
12-Dec-04 02:55:00	2645.87	116.7	2645.71	116.7	2645.13	116.4	5887.18	116.7
12-Dec-04 03:00:00	2646.60	116.7	2646.47	116.7	2645.89	116.4	5823.23	116.7
12-Dec-04 03:05:00	2646.84	116.7	2646.70	116.7	2646.13	116.4	5813.20	116.7
12-Dec-04 03:10:00	2647.33	116.7	2647.18	116.7	2646.60	116.4	5823.56	116.8
12-Dec-04 03:15:00	2647.71	116.7	2647.55	116.8	2646.98	116.4	5833.70	116.8
12-Dec-04 03:20:00	2648.10	116.8	2647.97	116.8	2647.40	116.4	5843.44	116.8
12-Dec-04 03:25:00	2648.81	116.8	2648.65	116.8	2648.08	116.4	5853.24	116.8
12-Dec-04 03:30:00	2648.92	116.8	2648.78	116.8	2648.20	116.5	5862.58	116.8
12-Dec-04 03:35:00	2649.33	116.8	2649.16	116.8	2648.59	116.5	5872.21	116.8
12-Dec-04 03:40:00	2649.96	116.8	2649.81	116.8	2649.23	116.5	5881.55	116.8

Schlumberger

Origin Energy Ltd	Upper Gauge 9
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 03:45:00	2650.39	116.8	2650.25	116.8	2649.67	116.5	5890.94	116.8
12-Dec-04 03:50:00	2650.90	116.8	2650.75	116.8	2650.19	116.5	5900.09	116.8
12-Dec-04 03:55:00	2651.27	116.8	2651.11	116.8	2650.54	116.5	5909.03	116.8
12-Dec-04 04:00:00	2651.63	116.8	2651.49	116.8	2650.91	116.5	5900.25	116.9
12-Dec-04 04:05:00	2651.82	116.8	2651.69	116.8	2651.10	116.5	5840.78	116.9
12-Dec-04 04:10:00	2652.19	116.8	2652.05	116.8	2651.48	116.5	5823.42	116.9
12-Dec-04 04:15:00	2652.38	116.8	2652.21	116.9	2651.65	116.5	5832.08	116.9
12-Dec-04 04:20:00	2652.62	116.9	2652.49	116.9	2651.91	116.5	5840.55	116.9
12-Dec-04 04:25:00	2652.76	116.9	2652.62	116.9	2652.04	116.6	5848.63	116.9
12-Dec-04 04:30:00	2653.40	116.9	2653.27	116.9	2652.70	116.6	5856.63	116.9
12-Dec-04 04:35:00	2653.91	116.9	2653.76	116.9	2653.19	116.6	5864.54	116.9
12-Dec-04 04:40:00	2654.05	116.9	2653.89	116.9	2653.33	116.6	5872.24	116.9
12-Dec-04 04:45:00	2654.56	116.9	2654.42	116.9	2653.84	116.6	5879.95	116.9
12-Dec-04 04:50:00	2654.99	116.9	2654.84	116.9	2654.26	116.6	5887.40	116.9
12-Dec-04 04:55:00	2655.47	116.9	2655.34	116.9	2654.76	116.6	5894.82	116.9
12-Dec-04 05:00:00	2655.87	116.9	2655.75	116.9	2655.18	116.6	5848.20	116.9
12-Dec-04 05:01:00	2655.77	116.9	2655.67	116.9	2655.04	116.6	5439.09	116.9
12-Dec-04 05:02:00	2828.80	116.8	2807.29	116.8	2816.21	116.5	4735.38	116.8
12-Dec-04 05:03:00	Bleed off pressure to close PCT (Main Build Up Period)							
12-Dec-04 05:03:00	3795.88	116.3	3783.28	116.4	3788.22	116.1	4383.00	116.2
12-Dec-04 05:04:00	Close Choke manifold.							
12-Dec-04 05:04:00	3968.27	114.5	3962.98	115.1	3965.39	114.5	4363.34	114.3
12-Dec-04 05:05:00	4001.87	112.9	3998.65	113.6	3999.10	112.9	4363.11	112.7
12-Dec-04 05:06:00	4016.06	111.8	4013.53	112.6	4013.05	111.9	4360.22	111.7
12-Dec-04 05:07:00	4025.01	111.2	4022.87	111.9	4022.10	111.3	4358.09	111.2
12-Dec-04 05:08:00	4031.89	110.8	4030.11	111.5	4029.33	110.9	4356.70	110.7
12-Dec-04 05:09:00	4107.15	110.7	4105.32	111.3	4104.91	110.6	4354.66	110.6
12-Dec-04 05:10:00	4119.62	111.3	4119.23	111.7	4118.57	111.1	4351.82	111.2
12-Dec-04 05:11:00	4127.04	112.0	4126.77	112.3	4126.30	111.7	4350.74	111.7
12-Dec-04 05:12:00	4132.79	112.6	4132.54	112.8	4132.42	112.1	4350.49	112.2
12-Dec-04 05:13:00	4138.86	113.0	4138.35	113.1	4138.28	112.5	4350.68	112.6
12-Dec-04 05:14:00	4144.73	113.2	4144.26	113.4	4144.34	112.8	4350.85	112.9
12-Dec-04 05:15:00	4150.00	113.5	4149.42	113.6	4149.66	113.0	4350.95	113.2
12-Dec-04 05:16:00	4153.90	113.7	4153.42	113.8	4153.54	113.2	4351.14	113.4
12-Dec-04 05:17:00	4157.12	113.9	4156.77	114.0	4156.79	113.4	4350.98	113.6
12-Dec-04 05:18:00	4160.30	114.0	4159.74	114.2	4159.90	113.5	4350.90	113.8
12-Dec-04 05:19:00	4163.11	114.2	4162.65	114.3	4162.78	113.7	4350.86	113.9
12-Dec-04 05:20:00	4165.85	114.3	4165.51	114.4	4165.45	113.8	4350.78	114.1
12-Dec-04 05:21:00	4168.48	114.4	4168.03	114.5	4167.95	113.9	4350.73	114.2
12-Dec-04 05:22:00	4170.73	114.5	4170.23	114.6	4170.28	114.0	4350.70	114.3
12-Dec-04 05:23:00	4172.79	114.6	4172.42	114.7	4172.50	114.1	4350.64	114.4
12-Dec-04 05:24:00	4175.07	114.7	4174.58	114.8	4174.65	114.2	4350.51	114.5
12-Dec-04 05:25:00	4177.16	114.8	4176.56	114.8	4176.67	114.2	4350.42	114.6
12-Dec-04 05:26:00	4179.07	114.9	4178.48	114.9	4178.59	114.3	4350.33	114.7
12-Dec-04 05:27:00	4180.87	114.9	4180.46	115.0	4180.46	114.4	4350.24	114.7
12-Dec-04 05:28:00	4182.44	115.0	4182.17	115.0	4182.21	114.5	4350.12	114.8
12-Dec-04 05:29:00	4184.17	115.1	4183.84	115.1	4183.95	114.5	4350.05	114.9
12-Dec-04 05:30:00	4185.82	115.2	4185.51	115.1	4185.60	114.6	4349.94	114.9
12-Dec-04 05:31:00	4187.51	115.2	4187.11	115.2	4187.18	114.6	4349.86	115.0
12-Dec-04 05:32:00	4189.01	115.3	4188.74	115.2	4188.77	114.7	4349.71	115.0

Schlumberger

Origin Energy Ltd	Upper Gauge 10
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 05:33:00	4190.45	115.3	4190.09	115.2	4190.26	114.7	4349.63	115.1
12-Dec-04 05:34:00	4192.04	115.4	4191.58	115.3	4191.70	114.7	4349.56	115.2
12-Dec-04 05:35:00	4193.34	115.4	4192.71	115.3	4193.07	114.8	4349.45	115.2
12-Dec-04 05:36:00	4194.77	115.4	4194.33	115.3	4194.45	114.8	4349.33	115.3
12-Dec-04 05:37:00	4196.08	115.4	4195.49	115.4	4195.79	114.9	4349.28	115.3
12-Dec-04 05:38:00	4197.32	115.5	4196.60	115.4	4197.04	114.9	4349.19	115.3
12-Dec-04 05:39:00	4198.37	115.5	4197.79	115.5	4198.31	114.9	4349.06	115.4
12-Dec-04 05:40:00	4199.58	115.6	4199.36	115.5	4199.52	115.0	4348.94	115.4
12-Dec-04 05:41:00	4200.92	115.6	4200.92	115.6	4200.75	115.0	4348.84	115.4
12-Dec-04 05:42:00	4202.21	115.7	4202.14	115.6	4201.93	115.1	4348.72	115.5
12-Dec-04 05:43:00	4203.38	115.7	4203.21	115.6	4203.09	115.1	4348.63	115.5
12-Dec-04 05:44:00	4204.31	115.8	4204.21	115.7	4204.24	115.1	4348.62	115.6
12-Dec-04 05:45:00	4205.53	115.8	4205.35	115.7	4205.35	115.2	4348.43	115.6
12-Dec-04 05:50:00	4210.92	115.9	4210.69	115.8	4210.69	115.3	4348.63	115.7
12-Dec-04 05:55:00	4215.87	116.0	4215.68	115.9	4215.61	115.5	4349.10	115.9
12-Dec-04 06:00:00	4220.29	116.1	4220.01	116.0	4220.21	115.6	4349.51	116.0
12-Dec-04 06:05:00	4224.71	116.2	4224.52	116.2	4224.55	115.7	4349.76	116.1
12-Dec-04 06:10:00	4228.66	116.4	4228.40	116.3	4228.61	115.8	4348.98	116.2
12-Dec-04 06:15:00	4232.73	116.5	4232.38	116.4	4232.44	115.9	4349.33	116.3
12-Dec-04 06:20:00	4236.41	116.5	4236.19	116.4	4236.21	116.0	4349.67	116.4
12-Dec-04 06:25:00	4239.85	116.6	4239.61	116.5	4239.74	116.1	4348.97	116.5
12-Dec-04 06:30:00	4243.29	116.7	4243.08	116.6	4243.13	116.2	4347.32	116.6
12-Dec-04 06:35:00	4246.49	116.7	4246.26	116.7	4246.39	116.3	4347.27	116.6
12-Dec-04 06:40:00	4249.65	116.7	4249.47	116.7	4249.56	116.3	4347.58	116.7
12-Dec-04 06:45:00	4252.68	116.8	4252.41	116.7	4252.55	116.4	4347.81	116.7
12-Dec-04 06:50:00	4255.57	116.8	4255.31	116.8	4255.47	116.4	4348.23	116.8
12-Dec-04 06:55:00	4258.35	116.9	4258.17	116.9	4258.24	116.5	4348.52	116.8
12-Dec-04 07:00:00	4261.13	117.0	4260.91	116.9	4261.04	116.6	4348.79	116.9
12-Dec-04 07:05:00	4263.77	117.0	4263.49	117.0	4263.64	116.6	4349.09	117.0
12-Dec-04 07:10:00	4266.30	117.1	4266.01	117.0	4266.20	116.6	4349.37	117.0
12-Dec-04 07:15:00	4268.80	117.1	4268.61	117.0	4268.68	116.7	4349.54	117.0
12-Dec-04 07:20:00	4271.16	117.1	4270.93	117.1	4271.06	116.8	4348.42	117.1
12-Dec-04 07:25:00	4273.51	117.2	4273.30	117.1	4273.42	116.8	4347.10	117.1
12-Dec-04 07:30:00	4275.81	117.2	4275.60	117.1	4275.68	116.8	4345.86	117.2
12-Dec-04 07:35:00	4277.94	117.2	4277.68	117.2	4277.88	116.8	4344.74	117.2
12-Dec-04 07:40:00	4280.14	117.2	4279.87	117.2	4280.01	116.9	4343.66	117.2
12-Dec-04 07:45:00	4282.15	117.3	4281.91	117.2	4282.09	116.9	4342.51	117.2
12-Dec-04 07:50:00	4284.15	117.3	4283.98	117.2	4284.14	116.9	4341.64	117.3
12-Dec-04 07:55:00	4286.19	117.3	4285.90	117.3	4286.10	116.9	4340.91	117.3
12-Dec-04 08:00:00	4288.09	117.3	4287.87	117.3	4288.03	117.0	4340.73	117.3
12-Dec-04 08:05:00	4289.99	117.4	4289.75	117.3	4289.91	117.0	4340.33	117.3
12-Dec-04 08:10:00	4291.81	117.4	4291.56	117.4	4291.73	117.0	4339.36	117.4
12-Dec-04 08:15:00	4293.59	117.4	4293.33	117.4	4293.51	117.1	4338.46	117.4
12-Dec-04 08:20:00	4295.31	117.4	4295.07	117.4	4295.25	117.1	4337.58	117.4
12-Dec-04 08:25:00	4297.03	117.4	4296.80	117.4	4296.96	117.1	4336.74	117.4
12-Dec-04 08:30:00	4298.68	117.5	4298.45	117.5	4298.62	117.1	4335.92	117.4
12-Dec-04 08:35:00	4300.30	117.5	4300.07	117.5	4300.24	117.2	4335.76	117.5
12-Dec-04 08:40:00	4301.92	117.5	4301.66	117.5	4301.82	117.2	4336.05	117.5
12-Dec-04 08:45:00	4303.46	117.5	4303.21	117.5	4303.38	117.2	4336.19	117.5
12-Dec-04 08:50:00	4304.95	117.5	4304.74	117.5	4304.89	117.2	4336.38	117.5

Schlumberger

Origin Energy Ltd	Upper Gauge 11
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 08:55:00	4306.44	117.5	4306.18	117.5	4306.38	117.2	4336.56	117.5
12-Dec-04 09:00:00	4307.89	117.5	4307.67	117.5	4307.82	117.3	4336.73	117.5
12-Dec-04 09:15:00	4311.98	117.6	4311.78	117.6	4312.01	117.3	4337.28	117.6
12-Dec-04 09:30:00	4315.97	117.6	4315.69	117.7	4315.90	117.3	4337.80	117.6
12-Dec-04 09:45:00	4319.65	117.7	4319.38	117.7	4319.58	117.4	4338.29	117.7
12-Dec-04 10:00:00	4323.13	117.7	4322.85	117.7	4323.05	117.4	4338.74	117.7
12-Dec-04 10:06:00	Close Master valve.							
12-Dec-04 10:15:00	4326.39	117.7	4326.15	117.8	4326.32	117.5	4339.19	117.8
12-Dec-04 10:30:00	4329.49	117.8	4329.25	117.8	4329.41	117.5	4339.63	117.8
12-Dec-04 10:34:00	Commence bleeding off pressure at choke manifold to gas flare.							
12-Dec-04 10:36:00	Open Choke manifold.							
12-Dec-04 10:38:00	Commence rigging up wireline prior to running 1.875" Owen bridge plug.							
12-Dec-04 10:45:00	4332.40	117.8	4332.17	117.8	4332.36	117.5	4340.02	117.8
12-Dec-04 11:00:00	4335.19	117.8	4334.95	117.8	4335.13	117.5	4340.41	117.8
12-Dec-04 11:15:00	4337.82	117.9	4337.58	117.9	4337.77	117.6	4340.75	117.9
12-Dec-04 11:30:00	4340.35	117.9	4340.08	117.9	4340.27	117.6	4341.15	117.9
12-Dec-04 11:45:00	4342.71	118.0	4342.46	117.9	4342.67	117.6	4341.49	117.9
12-Dec-04 12:00:00	4345.02	118.0	4344.73	118.0	4344.94	117.6	4341.84	118.0
12-Dec-04 12:15:00	4347.19	118.0	4346.93	118.0	4347.11	117.7	4342.09	118.0
12-Dec-04 12:30:00	4349.24	118.0	4349.00	118.0	4349.19	117.7	4342.46	118.0
12-Dec-04 12:45:00	4351.24	118.1	4350.94	118.1	4351.16	117.7	4342.77	118.0
12-Dec-04 13:00:00	4353.13	118.1	4352.86	118.1	4353.06	117.7	4343.06	118.0
12-Dec-04 13:15:00	4354.95	118.1	4354.67	118.1	4354.87	117.7	4343.35	118.1
12-Dec-04 13:30:00	4356.69	118.1	4356.41	118.1	4356.61	117.8	4343.62	118.1
12-Dec-04 13:45:00	4358.35	118.1	4358.07	118.1	4358.27	117.8	4343.89	118.1
12-Dec-04 14:00:00	4359.95	118.2	4359.67	118.1	4359.87	117.8	4344.14	118.1
12-Dec-04 14:15:00	4361.48	118.2	4361.20	118.1	4361.40	117.8	4344.39	118.1
12-Dec-04 14:30:00	4362.95	118.2	4362.67	118.1	4362.88	117.8	4344.63	118.1
12-Dec-04 14:45:00	4364.35	118.2	4364.08	118.2	4364.29	117.8	4344.87	118.2
12-Dec-04 15:00:00	4365.72	118.2	4365.44	118.2	4365.65	117.8	4345.09	118.2
12-Dec-04 15:15:00	4367.03	118.2	4366.75	118.2	4366.96	117.9	4345.31	118.2
12-Dec-04 15:30:00	4368.30	118.2	4368.02	118.2	4368.22	117.9	4345.53	118.2
12-Dec-04 15:45:00	4369.51	118.2	4369.24	118.2	4369.44	117.9	4345.73	118.2
12-Dec-04 16:00:00	4370.69	118.2	4370.40	118.2	4370.62	117.9	4345.93	118.2
12-Dec-04 16:15:00	Commence pressure testing wireline lubricator to 5000 psi.							
12-Dec-04 16:15:00	4371.83	118.2	4371.54	118.2	4371.75	117.9	4346.12	118.2
12-Dec-04 16:30:00	4372.92	118.2	4372.63	118.2	4372.84	117.9	4346.31	118.2
12-Dec-04 16:35:00	Good test. Bleed off pressure.							
12-Dec-04 16:39:00	Open choke manifold and bleed remaining pressure through to gas flare.							
12-Dec-04 16:45:00	4373.97	118.3	4373.69	118.2	4373.90	117.9	4346.48	118.2
12-Dec-04 16:46:00	Close Choke manifold.							
12-Dec-04 17:00:00	Open Master valve.							
12-Dec-04 17:00:00	4375.00	118.3	4374.71	118.2	4374.92	117.9	4346.61	118.2
12-Dec-04 17:01:00	4375.07	118.3	4374.78	118.2	4374.98	117.9	4346.74	118.3
12-Dec-04 17:02:00	4375.14	118.3	4374.85	118.2	4375.05	117.9	4346.63	118.3
12-Dec-04 17:03:00	4375.20	118.3	4374.91	118.3	4375.12	117.9	4352.36	118.3
12-Dec-04 17:04:00	4375.26	118.3	4374.97	118.3	4375.18	117.9	4382.19	118.3
12-Dec-04 17:05:00	4375.26	118.3	4374.96	118.3	4375.19	118.0	4742.17	118.3
12-Dec-04 17:06:00	Pressure Annulus to open PCT. (Sampling Flow Period)							
12-Dec-04 17:06:00	4374.99	118.4	4374.74	118.4	4375.02	118.0	5456.26	118.4

Schlumberger

Origin Energy Ltd	Upper Gauge 12
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 17:07:00	3168.32	118.4	3206.26	118.4	3193.04	118.1	5955.86	118.3
12-Dec-04 17:08:00	3088.13	117.6	3082.80	117.6	3087.44	116.8	5985.81	117.2
12-Dec-04 17:09:00	3398.00	117.2	3390.90	117.2	3394.04	116.5	6010.89	116.9
12-Dec-04 17:10:00	3692.95	117.4	3686.71	117.4	3688.71	116.8	5974.16	117.2
12-Dec-04 17:11:00	3935.38	117.7	3930.75	117.8	3932.05	117.3	5892.79	117.7
12-Dec-04 17:12:00	4111.57	118.1	4108.62	118.2	4109.60	117.7	5901.60	118.1
12-Dec-04 17:13:00	4224.38	118.5	4222.94	118.5	4223.47	118.1	5905.29	118.5
12-Dec-04 17:14:00	4287.10	118.8	4286.62	118.7	4286.96	118.4	5904.06	118.7
12-Dec-04 17:15:00	4318.28	119.0	4318.22	118.9	4318.50	118.6	5899.93	118.9
12-Dec-04 17:16:00	4333.52	119.1	4333.52	119.0	4333.82	118.7	5894.00	119.0
12-Dec-04 17:17:00	4341.47	119.2	4341.36	119.0	4341.66	118.7	5887.14	119.0
12-Dec-04 17:18:00	4346.70	119.2	4346.51	119.0	4346.84	118.7	5879.90	119.0
12-Dec-04 17:19:00	4350.59	119.2	4350.37	119.0	4350.72	118.7	5872.39	119.0
12-Dec-04 17:20:00	4353.68	119.2	4353.43	119.0	4353.75	118.7	5864.92	119.0
12-Dec-04 17:21:00	4356.22	119.2	4355.99	119.0	4356.21	118.7	5857.20	119.0
12-Dec-04 17:22:00	4358.41	119.1	4358.17	119.0	4358.33	118.6	5849.75	119.0
12-Dec-04 17:23:00	4360.28	119.1	4360.00	119.0	4360.19	118.6	5842.08	119.0
12-Dec-04 17:24:00	4362.48	119.1	4362.16	119.0	4362.37	118.6	5834.37	119.0
12-Dec-04 17:25:00	4364.70	119.1	4364.38	119.0	4364.57	118.6	5826.77	119.0
12-Dec-04 17:26:00	4366.10	119.0	4365.83	118.9	4366.02	118.6	5819.19	119.0
12-Dec-04 17:27:00	4367.11	119.0	4366.81	118.9	4367.02	118.6	5811.62	118.9
12-Dec-04 17:28:00	4367.99	119.0	4367.69	118.9	4367.88	118.6	5892.46	118.9
12-Dec-04 17:29:00	4368.64	119.0	4368.35	118.9	4368.54	118.6	5937.74	118.9
12-Dec-04 17:30:00	4369.11	119.0	4368.84	118.9	4369.01	118.6	5928.91	118.9
12-Dec-04 17:31:00	4369.54	119.0	4369.27	118.9	4369.44	118.6	5920.85	118.9
12-Dec-04 17:32:00	4369.95	118.9	4369.67	118.9	4369.84	118.6	5912.55	118.9
12-Dec-04 17:33:00	4370.31	118.9	4370.04	118.9	4370.21	118.6	5904.57	118.9
12-Dec-04 17:34:00	4370.66	118.9	4370.39	118.9	4370.55	118.5	5896.78	118.9
12-Dec-04 17:35:00	4370.96	118.9	4370.68	118.9	4370.86	118.5	5888.93	118.9
12-Dec-04 17:36:00	4371.24	118.9	4370.98	118.8	4371.15	118.5	5881.31	118.8
12-Dec-04 17:37:00	4371.51	118.9	4371.24	118.8	4371.41	118.5	5873.74	118.8
12-Dec-04 17:38:00	4371.76	118.9	4371.50	118.8	4371.67	118.5	5866.19	118.8
12-Dec-04 17:39:00	4371.98	118.8	4371.73	118.8	4371.90	118.5	5858.77	118.8
12-Dec-04 17:40:00	4372.21	118.8	4371.94	118.8	4372.12	118.5	5851.43	118.8
12-Dec-04 17:41:00	4372.41	118.8	4372.15	118.8	4372.33	118.5	5843.94	118.8
12-Dec-04 17:42:00	4372.60	118.8	4372.34	118.8	4372.52	118.5	5836.81	118.8
12-Dec-04 17:43:00	4372.79	118.8	4372.53	118.8	4372.71	118.5	5829.46	118.8
12-Dec-04 17:44:00	4372.98	118.8	4372.72	118.8	4372.90	118.5	5822.25	118.8
12-Dec-04 17:45:00	4373.15	118.8	4372.89	118.8	4373.07	118.5	5814.95	118.8
12-Dec-04 17:46:00	4373.48	118.8	4373.21	118.8	4373.40	118.5	5954.66	118.8
12-Dec-04 17:47:00	4373.55	118.8	4373.29	118.8	4373.51	118.5	5944.38	118.8
12-Dec-04 17:48:00	4373.67	118.8	4373.42	118.8	4373.62	118.5	5937.00	118.8
12-Dec-04 17:49:00	4373.79	118.8	4373.54	118.8	4373.73	118.5	5928.96	118.8
12-Dec-04 17:50:00	4373.92	118.8	4373.67	118.8	4373.85	118.4	5921.51	118.8
12-Dec-04 17:51:00	4374.06	118.8	4373.80	118.8	4373.98	118.4	5913.67	118.7
12-Dec-04 17:52:00	4374.19	118.8	4373.93	118.8	4374.11	118.4	5906.57	118.7
12-Dec-04 17:53:00	4374.30	118.8	4374.05	118.7	4374.23	118.4	5898.90	118.7
12-Dec-04 17:54:00	4374.43	118.8	4374.18	118.7	4374.36	118.4	5891.75	118.7
12-Dec-04 17:55:00	4374.54	118.7	4374.30	118.7	4374.48	118.4	5884.05	118.7
12-Dec-04 17:56:00	4374.67	118.7	4374.42	118.7	4374.60	118.4	5876.75	118.7

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 17:57:00	4374.79	118.7	4374.54	118.7	4374.71	118.4	5869.26	118.7
12-Dec-04 17:58:00	4366.88	118.7	4366.92	118.7	4366.89	118.4	5862.06	118.7
12-Dec-04 17:59:00	Open well on 16/64" adjustable choke to flare.							
12-Dec-04 17:59:00	4353.23	118.7	4353.05	118.7	4352.98	118.4	5854.58	118.7
12-Dec-04 18:00:00	4345.62	118.7	4345.49	118.7	4345.60	118.4	5848.27	118.7
12-Dec-04 18:01:00	4341.08	118.8	4340.97	118.8	4341.16	118.4	5841.84	118.8
12-Dec-04 18:02:00	4331.73	118.8	4331.70	118.8	4332.60	118.5	5835.76	118.8
12-Dec-04 18:03:00	Increase adjustable choke to 20/64".							
12-Dec-04 18:03:00	4319.09	118.8	4318.49	118.8	4318.73	118.5	5830.19	118.8
12-Dec-04 18:04:00	4295.98	118.9	4298.18	118.8	4297.85	118.5	5824.58	118.9
12-Dec-04 18:05:00	Increase adjustable choke to 24/64".							
12-Dec-04 18:05:00	4281.75	118.9	4283.50	118.9	4283.47	118.6	5820.00	118.9
12-Dec-04 18:06:00	Divert flow through separator.							
12-Dec-04 18:06:00	4290.30	118.9	4289.40	118.9	4289.56	118.6	5835.53	118.9
12-Dec-04 18:07:00	4292.74	118.9	4291.71	118.9	4291.66	118.6	5835.15	118.9
12-Dec-04 18:08:00	Increase adjustable choke to 28/64".							
12-Dec-04 18:08:00	4253.82	119.0	4253.72	119.0	4253.43	118.6	5940.18	119.0
12-Dec-04 18:09:00	4219.06	119.0	4218.95	119.0	4219.09	118.7	5934.48	119.0
12-Dec-04 18:10:00	Increase adjustable choke to 32/64" .							
12-Dec-04 18:10:00	4215.71	119.0	4215.82	119.0	4215.85	118.7	5932.14	119.0
12-Dec-04 18:11:00	4210.13	119.0	4209.94	119.0	4210.13	118.7	5929.31	119.0
12-Dec-04 18:12:00	Reduce STX choke to 32/64"							
12-Dec-04 18:12:00	4202.03	119.1	4202.08	119.0	4202.17	118.7	5927.00	119.0
12-Dec-04 18:13:00	4196.25	119.1	4196.23	119.1	4196.36	118.7	5924.77	119.1
12-Dec-04 18:14:00	4193.06	119.1	4193.00	119.1	4193.13	118.8	5922.84	119.1
12-Dec-04 18:15:00	4191.11	119.1	4191.06	119.1	4191.19	118.8	5920.89	119.1
12-Dec-04 18:16:00	4190.11	119.2	4190.00	119.2	4190.18	118.8	5919.17	119.2
12-Dec-04 18:17:00	4190.00	119.2	4189.92	119.2	4190.09	118.9	5917.26	119.2
12-Dec-04 18:18:00	4195.91	119.3	4195.50	119.2	4195.84	118.9	5915.56	119.2
12-Dec-04 18:19:00	4214.93	119.3	4212.61	119.3	4212.24	118.9	5913.03	119.3
12-Dec-04 18:20:00	4153.14	119.3	4153.89	119.3	4153.66	119.0	5910.26	119.3
12-Dec-04 18:21:00	4137.51	119.4	4137.63	119.3	4137.70	119.0	5908.76	119.3
12-Dec-04 18:22:00	Divert flow through 32/64" fixed choke.							
12-Dec-04 18:22:00	4026.10	119.4	4030.60	119.3	4028.72	119.0	5904.11	119.3
12-Dec-04 18:23:00	3839.74	119.3	3842.96	119.3	3841.64	119.0	5901.59	119.3
12-Dec-04 18:24:00	3715.60	119.2	3717.71	119.2	3716.68	118.8	5902.92	119.2
12-Dec-04 18:25:00	3623.12	119.1	3624.57	119.0	3623.76	118.7	5906.72	119.0
12-Dec-04 18:26:00	3555.93	119.0	3556.92	119.0	3556.25	118.7	5912.47	119.0
12-Dec-04 18:27:00	3504.94	118.9	3505.71	118.9	3505.10	118.6	5919.38	118.9
12-Dec-04 18:28:00	3468.42	118.9	3469.00	118.9	3468.44	118.6	5927.00	118.9
12-Dec-04 18:29:00	3441.20	119.0	3441.73	119.0	3441.19	118.7	5935.18	119.0
12-Dec-04 18:30:00	3419.76	119.0	3420.27	119.0	3419.75	118.7	5943.10	119.0
12-Dec-04 18:31:00	3406.17	119.1	3406.60	119.1	3406.17	118.8	5951.54	119.1
12-Dec-04 18:32:00	3396.48	119.1	3396.90	119.1	3396.52	118.8	5959.70	119.2
12-Dec-04 18:33:00	3388.02	119.2	3388.42	119.2	3388.11	118.9	5967.72	119.2
12-Dec-04 18:34:00	3380.29	119.3	3380.64	119.3	3380.38	119.0	5975.69	119.3
12-Dec-04 18:35:00	3374.11	119.4	3374.41	119.3	3374.19	119.0	5983.30	119.3
12-Dec-04 18:36:00	3369.23	119.4	3369.48	119.4	3369.28	119.0	5990.87	119.4
12-Dec-04 18:37:00	3366.65	119.4	3366.83	119.4	3366.65	119.1	5998.01	119.4
12-Dec-04 18:38:00	3364.88	119.5	3365.02	119.4	3364.87	119.1	6005.19	119.4

Schlumberger

Origin Energy Ltd	Upper Gauge 14
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 18:39:00	3362.93	119.5	3363.05	119.5	3362.92	119.1	5942.80	119.5
12-Dec-04 18:40:00	3361.64	119.5	3361.72	119.5	3361.57	119.1	5884.02	119.5
12-Dec-04 18:41:00	3358.79	119.5	3358.91	119.5	3358.70	119.2	5889.16	119.5
12-Dec-04 18:42:00	3356.29	119.6	3356.37	119.5	3356.20	119.2	5895.05	119.5
12-Dec-04 18:43:00	3354.10	119.6	3354.17	119.5	3353.98	119.2	5900.08	119.5
12-Dec-04 18:44:00	3352.12	119.6	3352.19	119.5	3351.99	119.2	5904.97	119.5
12-Dec-04 18:45:00	3350.22	119.6	3350.24	119.5	3350.07	119.2	5909.83	119.5
12-Dec-04 18:50:00	3340.65	119.6	3340.64	119.6	3340.49	119.2	5931.32	119.6
12-Dec-04 18:55:00	3338.00	119.6	3337.94	119.6	3337.83	119.3	5948.93	119.6
12-Dec-04 19:00:00	3338.60	119.7	3338.59	119.6	3338.46	119.3	5963.15	119.6
12-Dec-04 19:05:00	3338.90	119.7	3338.95	119.7	3338.80	119.4	5974.34	119.7
12-Dec-04 19:10:00	3334.39	119.8	3334.34	119.8	3334.25	119.4	5982.68	119.8
12-Dec-04 19:15:00	3329.59	119.9	3329.58	119.8	3329.45	119.5	5987.59	119.8
12-Dec-04 19:20:00	3322.03	119.9	3322.09	119.9	3321.94	119.6	5991.11	119.9
12-Dec-04 19:24:00	By-pass Separator.							
12-Dec-04 19:25:00	3313.06	120.0	3313.00	120.0	3312.90	119.6	5993.80	120.0
12-Dec-04 19:30:00	3306.64	120.1	3306.60	120.0	3306.49	119.7	5995.16	120.0
12-Dec-04 19:35:00	Adjust STX choke to eliminate hydrate							
12-Dec-04 19:35:00	3321.77	120.1	3321.10	120.1	3321.28	119.8	5996.66	120.1
12-Dec-04 19:40:00	3409.67	120.3	3409.60	120.3	3409.56	120.0	5996.14	120.3
12-Dec-04 19:45:00	3339.78	120.4	3339.96	120.3	3339.72	120.0	5988.16	120.3
12-Dec-04 19:50:00	3290.44	120.3	3290.44	120.3	3290.24	119.9	5982.86	120.3
12-Dec-04 19:55:00	Divert flow through separator.							
12-Dec-04 19:55:00	3276.89	120.3	3276.85	120.3	3276.69	120.0	5978.96	120.3
12-Dec-04 20:00:00	3274.52	120.4	3274.44	120.3	3274.30	120.0	5974.67	120.3
12-Dec-04 20:05:00	3275.74	120.4	3275.66	120.3	3275.51	120.0	5969.09	120.3
12-Dec-04 20:09:00	By-pass Separator.							
12-Dec-04 20:10:00	Commence changing choke to 36/64" fixed choke.							
12-Dec-04 20:10:00	3343.05	120.4	3341.49	120.4	3341.76	120.0	5964.73	120.4
12-Dec-04 20:11:00	3323.15	120.5	3323.74	120.4	3323.32	120.1	5961.70	120.4
12-Dec-04 20:12:00	3290.51	120.5	3291.00	120.4	3290.61	120.1	5959.02	120.4
12-Dec-04 20:13:00	3266.78	120.4	3267.14	120.4	3266.80	120.1	5956.67	120.4
12-Dec-04 20:14:00	3249.92	120.4	3250.14	120.4	3249.85	120.0	5954.59	120.4
12-Dec-04 20:15:00	3234.66	120.4	3234.96	120.4	3234.57	120.0	5952.26	120.4
12-Dec-04 20:16:00	3211.58	120.4	3211.91	120.3	3211.50	120.0	5950.08	120.3
12-Dec-04 20:17:00	3191.33	120.3	3191.61	120.3	3191.21	120.0	5948.00	120.3
12-Dec-04 20:18:00	3175.11	120.3	3175.33	120.3	3174.93	119.9	5946.29	120.3
12-Dec-04 20:19:00	Divert flow through separator.							
12-Dec-04 20:19:00	3162.25	120.3	3162.42	120.3	3162.03	119.9	5944.79	120.2
12-Dec-04 20:20:00	3153.39	120.3	3153.50	120.2	3153.13	119.9	5943.24	120.2
12-Dec-04 20:21:00	3146.85	120.2	3146.96	120.2	3146.57	119.9	5941.62	120.2
12-Dec-04 20:22:00	3141.80	120.2	3141.91	120.2	3141.51	119.9	5940.23	120.2
12-Dec-04 20:23:00	3137.75	120.2	3137.87	120.2	3137.46	119.9	5939.01	120.2
12-Dec-04 20:24:00	3134.66	120.2	3134.80	120.2	3134.39	119.9	5937.62	120.2
12-Dec-04 20:25:00	3132.19	120.2	3132.35	120.2	3131.93	119.9	5936.41	120.2
12-Dec-04 20:26:00	3130.12	120.2	3130.31	120.2	3129.85	119.8	5937.54	120.2
12-Dec-04 20:27:00	3128.52	120.2	3128.74	120.2	3128.24	119.8	5943.95	120.2
12-Dec-04 20:28:00	3127.27	120.2	3127.52	120.2	3126.99	119.8	5950.47	120.1
12-Dec-04 20:29:00	3126.18	120.2	3126.44	120.1	3125.88	119.8	5956.90	120.1
12-Dec-04 20:30:00	3125.14	120.1	3125.44	120.1	3124.85	119.8	5963.17	120.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 20:35:00	3121.73	120.1	3121.01	120.1	3121.43	119.8	5993.99	120.1
12-Dec-04 20:40:00	3119.24	120.1	3118.74	120.0	3118.94	119.7	5985.75	120.0
12-Dec-04 20:45:00	3117.37	120.0	3117.01	120.0	3117.06	119.7	5966.97	120.0
12-Dec-04 20:50:00	3115.78	120.0	3115.50	120.0	3115.50	119.6	5947.82	120.0
12-Dec-04 20:55:00	3114.16	120.0	3113.87	119.9	3113.86	119.6	5929.55	119.9
12-Dec-04 21:00:00	3112.93	119.9	3112.66	119.9	3112.61	119.6	5911.37	119.9
12-Dec-04 21:05:00	3111.78	119.9	3111.53	119.9	3111.47	119.6	5893.22	119.9
12-Dec-04 21:10:00	3110.95	119.9	3110.72	119.9	3110.66	119.6	5874.59	119.9
12-Dec-04 21:15:00	3109.91	119.9	3109.68	119.9	3109.60	119.6	5855.21	119.9
12-Dec-04 21:20:00	3109.00	119.9	3108.76	119.9	3108.69	119.6	5835.13	119.9
12-Dec-04 21:25:00	3108.02	119.9	3107.79	119.9	3107.72	119.6	5842.94	119.9
12-Dec-04 21:30:00	3107.61	119.9	3107.40	119.9	3107.32	119.6	5865.64	119.9
12-Dec-04 21:35:00	3106.89	119.9	3106.66	119.9	3106.58	119.6	5887.57	119.9
12-Dec-04 21:40:00	3106.33	119.9	3106.11	119.9	3106.03	119.6	5909.15	119.9
12-Dec-04 21:45:00	3105.93	119.9	3105.72	119.9	3105.64	119.6	5930.15	119.9
12-Dec-04 21:50:00	3105.05	119.9	3104.83	119.9	3104.76	119.6	5950.51	119.9
12-Dec-04 21:55:00	3104.56	119.9	3104.34	119.9	3104.26	119.6	5970.24	119.9
12-Dec-04 22:00:00	3104.08	119.9	3103.88	119.9	3103.80	119.6	5989.45	119.9
12-Dec-04 22:05:00	3103.51	119.9	3103.31	119.9	3103.22	119.6	5961.42	119.9
12-Dec-04 22:10:00	3102.74	119.9	3102.54	119.9	3102.45	119.6	5921.43	119.9
12-Dec-04 22:15:00	3102.38	119.9	3102.16	119.9	3102.07	119.6	5883.91	119.9
12-Dec-04 22:20:00	3101.51	119.9	3101.30	119.9	3101.23	119.6	5847.93	119.9
12-Dec-04 22:25:00	3101.28	119.9	3101.08	119.9	3100.99	119.6	5813.23	119.9
12-Dec-04 22:30:00	3100.91	119.9	3100.72	119.9	3100.62	119.6	5815.16	119.9
12-Dec-04 22:35:00	3100.47	119.9	3100.25	119.9	3100.17	119.6	5831.63	119.9
12-Dec-04 22:40:00	3099.75	119.9	3099.54	119.9	3099.46	119.6	5847.74	119.9
12-Dec-04 22:45:00	3099.72	119.9	3099.52	119.9	3099.44	119.6	5863.50	119.9
12-Dec-04 22:50:00	3098.79	119.9	3098.58	119.9	3098.53	119.6	5878.87	119.9
12-Dec-04 22:55:00	3097.99	119.9	3097.78	119.9	3097.72	119.6	5894.00	119.9
12-Dec-04 23:00:00	3097.92	119.9	3097.70	119.9	3097.64	119.6	5908.81	119.9
12-Dec-04 23:05:00	3097.51	119.9	3097.30	119.9	3097.23	119.6	5923.28	119.9
12-Dec-04 23:10:00	3097.25	119.9	3097.04	119.9	3096.99	119.6	5937.51	119.9
12-Dec-04 23:15:00	3097.43	120.0	3097.21	119.9	3097.16	119.6	5951.49	119.9
12-Dec-04 23:20:00	3096.70	120.0	3096.49	119.9	3096.44	119.6	5965.07	119.9
12-Dec-04 23:25:00	3096.08	120.0	3095.86	119.9	3095.80	119.6	5978.40	119.9
12-Dec-04 23:30:00	3095.83	120.0	3095.61	119.9	3095.55	119.6	5972.50	119.9
12-Dec-04 23:35:00	3095.37	120.0	3095.16	119.9	3095.10	119.6	5921.46	119.9
12-Dec-04 23:40:00	3095.17	120.0	3094.96	119.9	3094.91	119.6	5875.10	119.9
12-Dec-04 23:45:00	3095.07	120.0	3094.86	119.9	3094.80	119.6	5831.10	119.9
12-Dec-04 23:50:00	3094.77	120.0	3094.56	119.9	3094.50	119.6	5804.73	119.9
12-Dec-04 23:51:00	3094.37	120.0	3094.15	119.9	3094.10	119.6	5807.17	119.9
12-Dec-04 23:52:00	3094.41	120.0	3094.20	119.9	3094.14	119.6	5809.61	120.0
12-Dec-04 23:53:00	3094.44	120.0	3094.22	120.0	3094.16	119.6	5811.94	120.0
12-Dec-04 23:54:00	3094.45	120.0	3094.22	120.0	3094.16	119.6	5814.35	120.0
12-Dec-04 23:55:00	3094.60	120.0	3094.37	120.0	3094.33	119.6	5816.66	120.0
12-Dec-04 23:56:00	Close Choke manifold. (Final Build Up Period)							
12-Dec-04 23:56:00	3133.18	120.0	3129.92	120.0	3131.90	119.6	5824.62	120.0
12-Dec-04 23:57:00	3411.32	120.1	3405.94	120.0	3408.41	119.7	5835.18	120.1
12-Dec-04 23:58:00	3660.26	120.3	3655.75	120.3	3658.00	119.9	5841.90	120.3
12-Dec-04 23:59:00	3851.03	120.6	3847.89	120.6	3849.80	120.2	5844.28	120.6

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 00:00:00	3983.12	120.9	3981.09	120.9	3982.57	120.5	5842.18	120.9
13-Dec-04 00:01:00	4063.94	121.2	4062.72	121.1	4063.88	120.6	5836.29	121.1
13-Dec-04 00:02:00	4107.64	121.3	4106.94	121.2	4107.81	120.8	5827.50	121.3
13-Dec-04 00:03:00	4131.22	121.4	4130.76	121.3	4131.38	120.8	5816.95	121.4
13-Dec-04 00:04:00	4147.58	121.4	4147.19	121.3	4147.68	120.8	5805.51	121.4
13-Dec-04 00:05:00	4159.65	121.4	4159.25	121.3	4159.66	120.8	5793.84	121.4
13-Dec-04 00:06:00	4169.20	121.4	4168.84	121.3	4169.18	120.8	5782.83	121.4
13-Dec-04 00:07:00	4177.66	121.3	4177.25	121.2	4177.56	120.8	5912.67	121.4
13-Dec-04 00:08:00	4185.20	121.3	4184.81	121.2	4185.13	120.8	5904.05	121.3
13-Dec-04 00:09:00	4191.95	121.3	4191.57	121.2	4191.89	120.8	5890.67	121.3
13-Dec-04 00:10:00	4197.03	121.3	4196.63	121.2	4196.92	120.8	5878.69	121.3
13-Dec-04 00:11:00	4201.07	121.2	4200.70	121.1	4201.00	120.8	5867.11	121.2
13-Dec-04 00:12:00	4204.53	121.2	4204.18	121.1	4204.44	120.7	5855.72	121.2
13-Dec-04 00:13:00	4207.58	121.1	4207.20	121.1	4207.46	120.7	5844.57	121.1
13-Dec-04 00:14:00	4210.30	121.1	4209.91	121.0	4210.17	120.7	5833.62	121.1
13-Dec-04 00:15:00	4212.75	121.1	4212.39	121.0	4212.65	120.7	5822.80	121.1
13-Dec-04 00:20:00	4222.98	120.9	4222.63	120.9	4222.94	120.6	5966.04	120.9
13-Dec-04 00:25:00	4230.30	120.8	4230.00	120.8	4230.27	120.5	5916.53	120.8
13-Dec-04 00:30:00	4236.68	120.7	4236.39	120.6	4236.66	120.3	5976.39	120.7
13-Dec-04 00:35:00	4241.97	120.6	4241.70	120.6	4241.96	120.3	5930.46	120.6
13-Dec-04 00:40:00	4246.72	120.5	4246.45	120.5	4246.72	120.2	5889.29	120.5
13-Dec-04 00:42:00	Open Flowhead Swab valve.							
13-Dec-04 00:45:00	Attempt and fail to lower wireline tool string.							
13-Dec-04 00:45:00	4242.13	120.4	4241.74	120.4	4242.05	120.1	5850.42	120.4
13-Dec-04 00:50:00	4254.40	120.4	4254.16	120.4	4254.42	120.1	5832.92	120.4
13-Dec-04 00:55:00	4258.93	120.4	4258.69	120.4	4258.93	120.1	5952.58	120.4
13-Dec-04 01:00:00	Close Master valve, bleed off surface pressure to flare.							
13-Dec-04 01:00:00	4262.49	120.3	4262.24	120.3	4262.49	120.0	5917.33	120.3
13-Dec-04 01:05:00	4265.83	120.2	4265.60	120.2	4265.85	119.9	5883.67	120.2
13-Dec-04 01:07:00	Close back Choke manifold and Flowhead Swab valve.							
13-Dec-04 01:10:00	4268.92	120.2	4268.68	120.2	4268.93	119.9	5891.95	120.2
13-Dec-04 01:15:00	4271.78	120.1	4271.55	120.1	4271.80	119.8	5860.27	120.1
13-Dec-04 01:20:00	4274.54	120.1	4274.35	120.1	4274.55	119.8	5830.34	120.1
13-Dec-04 01:25:00	4277.20	120.1	4277.01	120.1	4277.21	119.7	5919.65	120.1
13-Dec-04 01:30:00	4279.70	120.0	4279.51	120.0	4279.71	119.7	5890.57	120.0
13-Dec-04 01:35:00	4282.11	120.0	4281.92	120.0	4282.13	119.7	5862.36	120.0
13-Dec-04 01:40:00	4284.45	119.9	4284.26	119.9	4284.47	119.6	5835.46	119.9
13-Dec-04 01:45:00	4286.70	119.9	4286.52	119.9	4286.71	119.6	5806.82	119.9
13-Dec-04 01:50:00	4288.95	119.9	4288.76	119.9	4288.96	119.6	5979.78	119.9
13-Dec-04 01:55:00	4290.97	119.9	4290.79	119.9	4290.98	119.5	5950.92	119.9
13-Dec-04 02:00:00	4292.97	119.8	4292.80	119.8	4292.98	119.5	5923.27	119.8
13-Dec-04 02:05:00	4294.91	119.8	4294.74	119.8	4294.93	119.5	5896.39	119.8
13-Dec-04 02:10:00	4296.79	119.8	4296.62	119.8	4296.81	119.4	5869.96	119.8
13-Dec-04 02:15:00	4298.63	119.7	4298.45	119.7	4298.65	119.4	5844.40	119.7
13-Dec-04 02:20:00	4300.41	119.7	4300.24	119.7	4300.43	119.4	5820.26	119.7
13-Dec-04 02:25:00	4302.18	119.7	4302.01	119.7	4302.19	119.4	5963.58	119.7
13-Dec-04 02:30:00	4303.85	119.7	4303.68	119.7	4303.87	119.4	5939.23	119.7
13-Dec-04 02:35:00	4305.47	119.7	4305.31	119.7	4305.49	119.3	5915.87	119.7
13-Dec-04 02:40:00	4307.08	119.6	4306.89	119.6	4307.09	119.3	5893.07	119.6
13-Dec-04 02:45:00	4308.62	119.6	4308.46	119.6	4308.64	119.3	5870.58	119.6

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 02:50:00	4310.13	119.6	4309.98	119.6	4310.15	119.3	5848.70	119.6
13-Dec-04 02:55:00	4311.60	119.6	4311.45	119.6	4311.62	119.3	5827.51	119.6
13-Dec-04 03:00:00	4313.13	119.6	4312.97	119.6	4313.17	119.2	5935.30	119.6
13-Dec-04 03:15:00	4317.10	119.5	4316.95	119.5	4317.11	119.2	5870.53	119.5
13-Dec-04 03:30:00	4320.86	119.5	4320.70	119.5	4320.88	119.1	5811.79	119.5
13-Dec-04 03:45:00	4324.36	119.4	4324.21	119.4	4324.38	119.1	5948.51	119.4
13-Dec-04 04:00:00	4327.62	119.4	4327.47	119.4	4327.65	119.1	5893.04	119.4
13-Dec-04 04:12:00	Make up Wireline lubricator with new toolstring.							
13-Dec-04 04:15:00	4330.69	119.4	4330.54	119.4	4330.71	119.0	5838.57	119.4
13-Dec-04 04:30:00	4333.58	119.4	4333.42	119.3	4333.59	119.0	5952.22	119.3
13-Dec-04 04:45:00	4336.26	119.3	4336.10	119.3	4336.27	119.0	5903.44	119.3
13-Dec-04 04:59:00	Open Master valve and Swab valve.							
13-Dec-04 05:00:00	4326.75	119.3	4326.38	119.3	4326.59	119.0	5856.20	119.3
13-Dec-04 05:10:00	Attempt and fail to lower wireline tool string.							
13-Dec-04 05:15:00	4340.81	119.3	4340.64	119.3	4340.81	119.0	5811.77	119.3
13-Dec-04 05:30:00	4343.55	119.3	4343.39	119.3	4343.56	119.0	5955.49	119.3
13-Dec-04 05:45:00	4345.75	119.3	4345.60	119.3	4345.77	118.9	5906.26	119.3
13-Dec-04 06:00:00	4347.80	119.2	4347.65	119.2	4347.82	118.9	5859.07	119.2
13-Dec-04 06:09:00	Open Master valve.							
13-Dec-04 06:10:00	Open Choke manifold to flow well in order to reduce wellhead pressure.							
13-Dec-04 06:11:00	Fail to run in, close Choke manifold and Master valve.							
13-Dec-04 06:13:00	Slowly bleed down pressure to free toolstring.							
13-Dec-04 06:15:00	4349.75	119.2	4349.60	119.2	4349.76	118.9	5814.94	119.2
13-Dec-04 06:16:00	Close Choke manifold.							
13-Dec-04 06:20:00	4350.49	119.2	4350.32	119.2	4350.52	118.9	5991.05	119.2
13-Dec-04 06:24:00	Open Master valve.							
13-Dec-04 06:25:00	4332.90	119.2	4332.53	119.2	4332.85	118.9	5974.41	119.2
13-Dec-04 06:28:00	Open well on 20/64" adjustable choke to assist Wireline lowering toolstring.							
13-Dec-04 06:29:00	Increase choke to 24/64" adjustable.							
13-Dec-04 06:30:00	3994.30	119.1	3996.91	119.1	3995.76	118.8	5965.94	119.1
13-Dec-04 06:33:00	Increase choke to 36/64" adjustable.							
13-Dec-04 06:35:00	3419.53	118.5	3420.21	118.5	3419.59	118.3	5999.62	118.5
13-Dec-04 06:40:00	3259.96	118.8	3260.32	118.8	3260.17	118.6	5925.81	118.9
13-Dec-04 06:45:00	3220.05	119.3	3220.15	119.3	3220.25	118.9	5944.59	119.3
13-Dec-04 06:50:00	3237.45	119.6	3237.23	119.5	3237.42	119.1	5939.03	119.5
13-Dec-04 06:55:00	3240.66	119.7	3240.06	119.6	3240.55	119.2	5922.41	119.6
13-Dec-04 06:56:00	Decrease choke to 32/64" adjustable. Wireline able to run in slowly.							
13-Dec-04 07:00:00	3435.22	119.9	3434.30	119.9	3434.86	119.5	5904.07	119.9
13-Dec-04 07:04:00	Gradually decrease choke to 20/64" adjustable.							
13-Dec-04 07:05:00	3934.46	120.6	3930.48	120.5	3932.83	120.1	5874.49	120.6
13-Dec-04 07:06:00	Wireline running in hole freely, Close choke manifold.							
13-Dec-04 07:10:00	4262.47	121.2	4262.11	121.1	4262.60	120.6	5842.58	121.2
13-Dec-04 07:15:00	4297.47	121.1	4297.14	121.0	4297.45	120.6	5805.73	121.0
13-Dec-04 07:30:00	4322.60	120.5	4322.33	120.6	4322.62	120.2	5898.77	120.5
13-Dec-04 07:45:00	4331.27	120.3	4331.00	120.3	4331.31	120.0	5974.95	120.3
13-Dec-04 08:00:00	4335.79	120.1	4335.55	120.1	4335.83	119.8	5913.18	120.1
13-Dec-04 08:15:00	4339.57	120.0	4339.33	120.0	4339.61	119.7	5850.51	120.0
13-Dec-04 08:25:00	Wireline drift to 3130mMDRT.							
13-Dec-04 08:30:00	Commence wireline pulling out of hole.							
13-Dec-04 08:30:00	4342.59	119.9	4342.35	119.9	4342.64	119.6	5969.22	119.9

Schlumberger

Origin Energy Ltd	Upper Gauge 18
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 08:45:00	4345.44	119.8	4345.21	119.8	4345.48	119.5	5915.81	119.8
13-Dec-04 09:00:00	4347.61	119.7	4347.38	119.7	4347.65	119.4	5867.25	119.7
13-Dec-04 09:15:00	4349.73	119.7	4349.50	119.7	4349.78	119.3	5821.99	119.7
13-Dec-04 09:30:00	4352.49	119.6	4352.26	119.6	4352.53	119.3	5947.73	119.6
13-Dec-04 09:45:00	4354.67	119.6	4354.44	119.6	4354.71	119.3	5903.24	119.6
13-Dec-04 10:00:00	4356.27	119.5	4356.04	119.5	4356.31	119.2	5860.96	119.5
13-Dec-04 10:15:00	4357.97	119.5	4357.74	119.5	4358.01	119.2	5820.33	119.5
13-Dec-04 10:30:00	Wireline out of hole.							
13-Dec-04 10:30:00	4359.88	119.5	4359.64	119.5	4359.92	119.2	5962.55	119.5
13-Dec-04 10:45:00	Close Master valve, bleed off surface pressure to flare.							
13-Dec-04 10:45:00	4361.49	119.5	4361.26	119.4	4361.53	119.1	5922.95	119.4
13-Dec-04 10:50:00	Close Swab valve. Commence changing out Wireline toolstring.							
13-Dec-04 11:00:00	4363.00	119.4	4362.77	119.4	4363.03	119.1	5884.98	119.4
13-Dec-04 11:15:00	4364.38	119.4	4364.14	119.4	4364.41	119.1	5848.86	119.4
13-Dec-04 11:30:00	4365.79	119.4	4365.57	119.4	4365.84	119.1	5933.49	119.4
13-Dec-04 11:45:00	4366.88	119.4	4366.64	119.4	4366.91	119.0	5940.53	119.4
13-Dec-04 12:00:00	4368.04	119.3	4367.81	119.3	4368.08	119.0	5906.38	119.3
13-Dec-04 12:15:00	4369.16	119.3	4368.93	119.3	4369.19	119.0	5873.28	119.3
13-Dec-04 12:19:00	Conduct JSA on rig floor. Arm Wireline 1.875" Owen Bridge plug.							
13-Dec-04 12:30:00	4370.21	119.3	4369.98	119.3	4370.24	119.0	5842.97	119.3
13-Dec-04 12:45:00	Close Choke manifold.							
13-Dec-04 12:45:00	4371.24	119.3	4371.00	119.3	4371.27	119.0	5935.58	119.3
13-Dec-04 12:48:00	Opened Master valve.							
13-Dec-04 13:00:00	Open well on 16/64" adjustable choke to Portside flare.							
13-Dec-04 13:00:00	4271.05	119.3	4272.21	119.3	4271.58	119.0	5910.45	119.3
13-Dec-04 13:04:00	Close Choke manifold, no flare ignition.							
13-Dec-04 13:05:00	4221.35	119.1	4219.24	119.1	4220.30	118.8	5941.65	119.1
13-Dec-04 13:10:00	4347.02	119.6	4346.74	119.5	4347.09	119.2	5948.47	119.5
13-Dec-04 13:15:00	4362.45	119.6	4362.22	119.6	4362.51	119.3	5937.96	119.6
13-Dec-04 13:20:00	Open well on 16/64" adjustable choke to Portside flare.							
13-Dec-04 13:20:00	4365.83	119.6	4363.60	119.6	4363.60	119.2	5925.03	119.5
13-Dec-04 13:23:00	Gradually increase to 36/64" adjustable choke.							
13-Dec-04 13:25:00	3648.04	119.1	3649.06	119.2	3648.26	118.8	5936.69	119.1
13-Dec-04 13:28:00	Wireline able to run in hole, slowly reduce choke.							
13-Dec-04 13:30:00	3542.57	119.2	3539.33	119.2	3541.22	118.9	6010.01	119.2
13-Dec-04 13:34:00	Shut in at choke manifold.							
13-Dec-04 13:35:00	4224.43	120.6	4223.28	120.5	4224.31	120.2	5941.62	120.6
13-Dec-04 13:40:00	4334.20	121.1	4334.03	121.0	4334.45	120.6	5929.96	120.9
13-Dec-04 13:45:00	4348.63	121.0	4348.41	121.0	4348.67	120.5	5908.08	120.8
13-Dec-04 13:50:00	4355.78	120.9	4355.53	120.9	4355.81	120.4	5888.24	120.6
13-Dec-04 13:55:00	4362.07	120.7	4361.76	120.8	4362.04	120.3	5869.79	120.5
13-Dec-04 14:00:00	4365.99	120.6	4365.69	120.6	4365.96	120.2	5852.25	120.4
13-Dec-04 14:15:00	4368.75	120.2	4368.49	120.3	4368.71	119.8	5804.15	120.1
13-Dec-04 14:30:00	4370.14	120.1	4369.85	120.1	4370.07	119.7	5932.92	120.0
13-Dec-04 14:45:00	4371.46	120.0	4371.19	119.9	4371.41	119.6	5895.00	119.9
13-Dec-04 15:00:00	4372.71	119.8	4372.46	119.8	4372.69	119.5	5860.45	119.8
13-Dec-04 15:15:00	4368.40	119.7	4368.15	119.7	4368.39	119.4	5828.18	119.7
13-Dec-04 15:20:00	Wireline set Bridge plug at 3125.3m, Start pulling out with running toolstring.							
13-Dec-04 15:30:00	4362.07	119.7	4361.83	119.7	4362.06	119.4	5988.15	119.7
13-Dec-04 15:45:00	4354.55	119.6	4354.31	119.6	4354.53	119.3	5957.40	119.6

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 16:00:00	4340.81	119.6	4340.57	119.6	4340.79	119.3	5929.02	119.6
13-Dec-04 16:15:00	4323.67	119.5	4323.44	119.5	4323.65	119.2	5901.49	119.5
13-Dec-04 16:30:00	4306.88	119.5	4306.66	119.5	4306.88	119.2	5874.14	119.5
13-Dec-04 16:45:00	4298.18	119.5	4297.94	119.4	4298.17	119.1	5846.63	119.4
13-Dec-04 16:49:00	Wireline out of hole.							
13-Dec-04 17:00:00	4292.50	119.4	4292.26	119.4	4292.49	119.1	5844.40	119.4
13-Dec-04 17:01:00	4292.56	119.4	4292.34	119.4	4292.58	119.1	5919.19	119.4
13-Dec-04 17:02:00	4292.44	119.4	4292.21	119.4	4292.45	119.1	5917.13	119.4
13-Dec-04 17:03:00	4292.29	119.4	4292.05	119.4	4292.29	119.1	5914.87	119.4
13-Dec-04 17:04:00	4292.14	119.4	4291.91	119.4	4292.14	119.1	5913.09	119.4
13-Dec-04 17:05:00	Open Choke manifold, bleed down tubing pressure 500 psi for inflw test Bridge plug.							
13-Dec-04 17:05:00	4252.83	119.4	4252.80	119.4	4252.91	119.1	5910.24	119.4
13-Dec-04 17:06:00	4244.77	119.4	4245.15	119.4	4246.01	119.1	5908.24	119.4
13-Dec-04 17:07:00	4189.53	119.4	4186.60	119.4	4187.93	119.1	5905.47	119.4
13-Dec-04 17:08:00	4156.89	119.4	4157.24	119.4	4156.47	119.1	5903.15	119.4
13-Dec-04 17:09:00	4083.79	119.4	4084.89	119.4	4083.58	119.1	5899.30	119.4
13-Dec-04 17:10:00	3778.49	119.3	3789.83	119.3	3789.33	119.0	5892.43	119.3
13-Dec-04 17:11:00	3773.57	119.2	3772.94	119.2	3773.14	118.9	5890.19	119.2
13-Dec-04 17:12:00	3773.48	119.1	3773.21	119.1	3773.14	118.9	5887.89	119.1
13-Dec-04 17:13:00	3773.29	119.1	3773.05	119.1	3773.00	118.8	5886.04	119.1
13-Dec-04 17:14:00	3773.10	119.1	3772.86	119.1	3772.84	118.8	5883.99	119.1
13-Dec-04 17:15:00	3773.01	119.1	3772.78	119.1	3772.77	118.8	5882.31	119.1
13-Dec-04 17:16:00	3772.97	119.1	3772.74	119.1	3772.75	118.8	5880.37	119.1
13-Dec-04 17:17:00	Good test. Close Master valve, bleed off surface pressure.							
13-Dec-04 17:17:00	3772.92	119.1	3772.72	119.2	3772.73	118.9	5878.85	119.2
13-Dec-04 17:18:00	3772.89	119.1	3772.70	119.2	3772.72	118.9	5877.23	119.2
13-Dec-04 17:19:00	3772.88	119.2	3772.69	119.2	3772.71	118.9	5875.42	119.2
13-Dec-04 17:20:00			TEST #2 Upper Zone (Perforation: 3040.5m - 3046.5m)					
13-Dec-04 17:20:00	3772.87	119.2	3772.68	119.2	3772.70	118.9	5873.71	119.2
13-Dec-04 17:21:00	3772.85	119.2	3772.66	119.2	3772.69	118.9	5872.05	119.2
13-Dec-04 17:22:00	Closed Swab valve. Commence changing out Wireline toolstring to run perforation guns.							
13-Dec-04 17:22:00	3772.82	119.2	3772.64	119.2	3772.67	118.9	5870.41	119.2
13-Dec-04 17:23:00	3772.80	119.2	3772.61	119.2	3772.65	118.9	5868.73	119.2
13-Dec-04 17:24:00	3772.77	119.2	3772.60	119.2	3772.62	118.9	5867.02	119.2
13-Dec-04 17:25:00	3772.72	119.2	3772.56	119.2	3772.57	118.9	5865.21	119.2
13-Dec-04 17:26:00	3772.66	119.2	3772.51	119.2	3772.52	118.9	5863.56	119.2
13-Dec-04 17:27:00	3772.61	119.2	3772.45	119.2	3772.46	118.9	5861.95	119.2
13-Dec-04 17:28:00	3772.55	119.2	3772.40	119.2	3772.41	118.9	5860.10	119.2
13-Dec-04 17:29:00	3772.50	119.2	3772.35	119.2	3772.36	118.9	5858.51	119.2
13-Dec-04 17:30:00	3772.44	119.2	3772.30	119.2	3772.31	118.9	5856.86	119.2
13-Dec-04 17:45:00	3771.83	119.3	3771.67	119.3	3771.69	118.9	5979.85	119.3
13-Dec-04 18:00:00	3770.60	119.3	3770.44	119.3	3770.45	118.9	5954.19	119.3
13-Dec-04 18:15:00	3769.22	119.2	3769.06	119.2	3769.07	118.9	5929.50	119.3
13-Dec-04 18:30:00	3767.67	119.2	3767.51	119.2	3767.52	118.9	5905.99	119.3
13-Dec-04 18:45:00	3766.18	119.2	3766.01	119.2	3766.03	118.9	5882.74	119.2
13-Dec-04 19:00:00	3764.75	119.2	3764.58	119.2	3764.60	118.9	5858.50	119.2
13-Dec-04 19:10:00	Connect 1-11/16" PJ Enerjet Gun to toolstring.							
13-Dec-04 19:15:00	3763.37	119.2	3763.21	119.2	3763.22	118.9	5834.87	119.2
13-Dec-04 19:30:00	3762.32	119.2	3762.16	119.2	3762.17	118.9	5917.23	119.2

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 19:45:00	3761.03	119.2	3760.86	119.2	3760.87	118.9	5893.85	119.2
13-Dec-04 20:00:00	3759.78	119.2	3759.61	119.2	3759.62	118.9	5870.86	119.2
13-Dec-04 20:10:00	Make up Wireline lubricator with Perforation toolstring.							
13-Dec-04 20:15:00	3758.58	119.2	3758.41	119.2	3758.42	118.9	5848.66	119.2
13-Dec-04 20:18:00	Open Master valve.							
13-Dec-04 20:20:00	3709.50	119.2	3709.30	119.2	3709.22	118.9	5840.36	119.2
13-Dec-04 20:22:00	Open Swab valve.							
13-Dec-04 20:25:00	3677.70	119.2	3677.54	119.2	3677.51	118.9	5832.56	119.2
13-Dec-04 20:26:00	Open choke, bleed down tubing to required underbalance.							
13-Dec-04 20:30:00	3160.27	118.9	3160.49	118.9	3160.19	118.6	5853.90	118.9
13-Dec-04 20:31:00	Close Choke manifold with approximately 1000 psi underbalance.							
13-Dec-04 20:33:00	Wireline running in hole with Perforation toolstring.							
13-Dec-04 20:35:00	3162.77	118.8	3162.63	118.9	3162.27	118.6	5868.52	118.8
13-Dec-04 20:40:00	3164.65	118.9	3164.54	118.9	3164.24	118.6	5861.10	118.9
13-Dec-04 20:45:00	3165.32	118.9	3165.21	118.9	3164.93	118.7	5861.54	119.0
13-Dec-04 21:00:00	3172.82	119.0	3172.69	119.0	3172.42	118.7	5964.95	119.0
13-Dec-04 21:15:00	3179.15	119.1	3179.01	119.1	3178.74	118.8	5940.18	119.1
13-Dec-04 21:30:00	3185.28	119.1	3185.15	119.1	3184.87	118.8	5915.15	119.1
13-Dec-04 21:45:00	3191.03	119.1	3190.90	119.1	3190.62	118.8	5890.17	119.1
13-Dec-04 22:00:00	3194.54	119.1	3194.38	119.1	3194.11	118.8	5985.97	119.1
13-Dec-04 22:15:00	3196.23	119.1	3196.09	119.1	3195.82	118.8	5960.52	119.1
13-Dec-04 22:30:00	3195.64	119.1	3195.48	119.1	3195.22	118.8	5938.17	119.1
13-Dec-04 22:45:00	3194.41	119.1	3194.26	119.1	3193.99	118.8	5916.51	119.1
13-Dec-04 23:00:00	3193.51	119.1	3193.36	119.1	3193.09	118.8	5894.80	119.1
13-Dec-04 23:15:00	3191.73	119.1	3191.54	119.1	3191.29	118.8	6003.98	119.2
13-Dec-04 23:30:00	3192.75	119.2	3192.60	119.2	3192.34	118.9	5977.47	119.2
13-Dec-04 23:45:00	3191.91	119.1	3191.86	119.1	3191.58	118.8	5955.26	119.2
14-Dec-04 00:00:00	Wireline on depth, start depth correlation.							
14-Dec-04 00:00:00	3192.67	119.1	3192.52	119.1	3192.27	118.8	5934.79	119.1
14-Dec-04 00:15:00	3191.92	119.1	3191.77	119.1	3191.51	118.8	5927.39	119.2
14-Dec-04 00:30:00	3191.21	119.1	3191.06	119.1	3190.80	118.8	5919.43	119.2
14-Dec-04 00:31:00	3191.12	119.1	3190.96	119.1	3190.70	118.8	5918.99	119.2
14-Dec-04 00:32:00	3191.04	119.1	3190.89	119.1	3190.63	118.8	5918.42	119.2
14-Dec-04 00:33:00	3190.98	119.1	3190.83	119.1	3190.57	118.8	5918.02	119.2
14-Dec-04 00:34:00	3201.17	119.1	3201.01	119.1	3204.79	118.8	5917.71	119.2
14-Dec-04 00:35:00	Wireline perforate 3040.5m - 3046.5m							
14-Dec-04 00:35:00	3205.09	119.2	3204.08	119.2	3203.93	118.9	5917.42	119.2
14-Dec-04 00:36:00	3211.95	119.2	3211.71	119.2	3211.38	118.9	5917.12	119.2
14-Dec-04 00:37:00	3219.69	119.2	3219.50	119.2	3219.22	118.9	5917.23	119.2
14-Dec-04 00:38:00	3227.70	119.2	3227.47	119.2	3227.20	118.9	5917.17	119.2
14-Dec-04 00:39:00	3236.18	119.2	3235.94	119.2	3235.68	118.9	5917.31	119.2
14-Dec-04 00:40:00	3244.92	119.2	3244.66	119.2	3244.42	118.9	5917.37	119.2
14-Dec-04 00:41:00	3253.85	119.2	3253.58	119.2	3253.36	118.9	5917.58	119.2
14-Dec-04 00:42:00	3262.92	119.2	3262.63	119.2	3262.44	118.9	5917.64	119.2
14-Dec-04 00:43:00	3272.13	119.2	3271.82	119.2	3271.65	118.9	5917.72	119.2
14-Dec-04 00:44:00	3281.46	119.2	3281.13	119.2	3280.98	118.9	5917.90	119.2
14-Dec-04 00:45:00	3290.90	119.2	3290.53	119.2	3290.43	118.9	5918.15	119.2
14-Dec-04 00:46:00	3300.45	119.3	3300.01	119.2	3299.98	118.9	5918.20	119.3
14-Dec-04 00:47:00	3310.09	119.3	3309.53	119.3	3309.63	118.9	5918.37	119.3
14-Dec-04 00:48:00	3319.86	119.3	3319.07	119.3	3319.41	118.9	5918.62	119.3

Schlumberger

Origin Energy Ltd	Upper Gauge 21
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 00:49:00	3329.71	119.3	3329.91	119.3	3329.26	119.0	5918.63	119.3
14-Dec-04 00:50:00	3339.60	119.3	3339.71	119.3	3339.17	119.0	5918.82	119.3
14-Dec-04 00:51:00	3349.57	119.3	3349.58	119.3	3349.14	119.0	5918.99	119.3
14-Dec-04 00:52:00	3359.59	119.3	3359.54	119.3	3359.17	119.0	5919.20	119.3
14-Dec-04 00:53:00	3369.64	119.3	3369.56	119.3	3369.22	119.0	5919.27	119.3
14-Dec-04 00:54:00	3379.75	119.3	3379.64	119.3	3379.34	119.0	5919.53	119.3
14-Dec-04 00:55:00	3389.89	119.4	3389.77	119.3	3389.48	119.0	5919.59	119.3
14-Dec-04 00:56:00	3400.06	119.4	3399.93	119.4	3399.66	119.0	5919.79	119.4
14-Dec-04 00:57:00	3410.21	119.4	3410.07	119.4	3409.82	119.0	5919.72	119.4
14-Dec-04 00:58:00	3420.41	119.4	3420.24	119.4	3420.01	119.0	5919.98	119.4
14-Dec-04 00:59:00	3430.60	119.4	3430.43	119.4	3430.21	119.1	5920.10	119.4
14-Dec-04 01:00:00	3440.84	119.4	3440.66	119.4	3440.44	119.1	5920.18	119.4
14-Dec-04 01:05:00	3491.75	119.5	3491.58	119.5	3491.41	119.1	5920.79	119.5
14-Dec-04 01:10:00	3542.12	119.5	3541.91	119.5	3541.78	119.2	5921.10	119.5
14-Dec-04 01:15:00	Wireline pull out of hole with spent guns.							
14-Dec-04 01:15:00	3591.36	119.6	3591.16	119.6	3591.04	119.2	5921.28	119.5
14-Dec-04 01:20:00	3638.88	119.6	3638.66	119.6	3638.58	119.3	5921.40	119.6
14-Dec-04 01:25:00	3684.24	119.7	3684.05	119.7	3683.98	119.3	5921.44	119.6
14-Dec-04 01:30:00	3727.94	119.7	3727.75	119.7	3727.71	119.4	5921.15	119.7
14-Dec-04 01:35:00	3769.22	119.8	3769.02	119.8	3768.98	119.4	5920.96	119.7
14-Dec-04 01:40:00	3808.35	119.8	3808.15	119.8	3808.12	119.4	5920.43	119.8
14-Dec-04 01:45:00	3846.13	119.8	3845.93	119.8	3845.92	119.4	5919.89	119.8
14-Dec-04 01:50:00	3881.39	119.9	3881.16	119.8	3881.17	119.5	5918.95	119.8
14-Dec-04 01:55:00	3914.29	119.9	3914.07	119.9	3914.07	119.5	5917.96	119.8
14-Dec-04 02:00:00	3944.83	119.9	3944.62	119.9	3944.62	119.5	5916.62	119.8
14-Dec-04 02:05:00	3973.12	119.9	3972.88	119.9	3972.90	119.5	5915.45	119.8
14-Dec-04 02:10:00	3999.40	119.9	3999.19	119.9	3999.19	119.5	5914.04	119.8
14-Dec-04 02:15:00	4023.50	119.9	4023.28	119.9	4023.30	119.5	5912.70	119.8
14-Dec-04 02:20:00	4045.80	119.9	4045.58	119.9	4045.60	119.5	5911.12	119.8
14-Dec-04 02:25:00	4066.13	119.9	4065.91	119.9	4065.94	119.5	5909.21	119.8
14-Dec-04 02:30:00	4084.62	119.9	4084.40	119.9	4084.42	119.5	5907.30	119.8
14-Dec-04 02:45:00	4131.22	119.9	4131.04	119.8	4131.06	119.5	5965.33	119.8
14-Dec-04 03:00:00	4165.49	119.8	4165.29	119.8	4165.31	119.5	5957.04	119.8
14-Dec-04 03:15:00	4191.19	119.8	4191.00	119.8	4191.02	119.4	5948.67	119.7
14-Dec-04 03:30:00	4212.77	119.7	4212.58	119.7	4212.60	119.4	5940.26	119.7
14-Dec-04 03:45:00	4224.46	119.7	4224.28	119.7	4224.29	119.3	5931.90	119.7
14-Dec-04 04:00:00	Wireline on surface, close Master valve.							
14-Dec-04 04:00:00	4235.16	119.6	4234.98	119.6	4235.00	119.3	5923.17	119.6
14-Dec-04 04:02:00	Bleed off surface pressure.							
14-Dec-04 04:05:00	Close Swab valve, rig down spent guns.							
14-Dec-04 04:15:00	4244.37	119.6	4244.20	119.6	4244.21	119.3	5914.82	119.6
14-Dec-04 04:30:00	Make up Lubricator.							
14-Dec-04 04:30:00	4250.44	119.6	4250.27	119.6	4250.28	119.2	5906.59	119.6
14-Dec-04 04:43:00	Open Master valve.							
14-Dec-04 04:45:00	4194.84	119.5	4195.04	119.5	4195.33	119.2	5897.55	119.5
14-Dec-04 04:46:00	4196.32	119.5	4196.33	119.5	4196.17	119.2	5897.14	119.5
14-Dec-04 04:47:00	4197.96	119.5	4197.61	119.5	4197.69	119.2	5896.46	119.5
14-Dec-04 04:48:00	4199.28	119.5	4199.21	119.5	4199.23	119.2	5896.06	119.5
14-Dec-04 04:49:00	4200.76	119.5	4200.58	119.5	4200.59	119.2	5895.52	119.5
14-Dec-04 04:50:00	4202.16	119.5	4202.00	119.5	4202.03	119.2	5895.10	119.5

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

WTQR-A #1812 WTQR-A #835 WTQR-A #851 WCQR-A #776

Measuring Point 2924.54 m MDRT

DATE TIME	Below valve		Below valve		Below valve		Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 04:51:00	4203.51	119.5	4203.25	119.5	4202.32	119.2	5894.53	119.5
14-Dec-04 04:52:00	Open well on 16/64" adjustable choke to Portside flare. (Clean Up Flow Period)							
14-Dec-04 04:52:00	4093.55	119.5	4095.55	119.5	4094.19	119.2	5892.28	119.5
14-Dec-04 04:53:00	3968.07	119.5	3969.98	119.5	3968.66	119.2	5889.88	119.5
14-Dec-04 04:54:00	3816.37	119.4	3819.61	119.4	3817.40	119.1	5886.66	119.4
14-Dec-04 04:55:00	Gradually increase adjustable choke to 24/64".							
14-Dec-04 04:55:00	3618.36	119.3	3622.23	119.3	3619.35	119.0	5882.05	119.3
14-Dec-04 04:56:00	3388.50	119.1	3391.79	119.1	3388.98	118.8	5877.68	119.1
14-Dec-04 04:57:00	3195.38	118.9	3197.99	118.9	3195.50	118.6	5874.01	118.8
14-Dec-04 04:58:00	3025.39	118.6	3027.56	118.6	3025.03	118.3	5871.12	118.5
14-Dec-04 04:59:00	2879.31	118.3	2881.09	118.3	2878.58	118.0	5868.82	118.1
14-Dec-04 05:00:00	2752.39	118.0	2753.84	118.0	2751.50	117.7	5867.09	117.8
14-Dec-04 05:01:00	2635.85	117.8	2637.06	117.8	2634.63	117.5	5942.01	117.5
14-Dec-04 05:02:00	2521.21	117.5	2522.90	117.6	2520.07	117.3	5938.18	117.2
14-Dec-04 05:03:00	Gradually increase adjustable choke to 28/64".							
14-Dec-04 05:03:00	2384.71	117.3	2386.26	117.3	2383.33	117.0	5938.45	117.0
14-Dec-04 05:04:00	2262.99	117.0	2264.08	117.1	2261.30	116.8	5937.82	116.7
14-Dec-04 05:05:00	2158.04	116.8	2159.05	116.8	2156.31	116.5	5938.31	116.5
14-Dec-04 05:06:00	2068.51	116.5	2069.39	116.6	2066.57	116.3	5938.81	116.3
14-Dec-04 05:07:00	1990.16	116.3	1990.74	116.4	1987.98	116.1	5940.13	116.1
14-Dec-04 05:08:00	1922.59	116.1	1922.99	116.2	1920.24	115.9	5942.11	115.9
14-Dec-04 05:09:00	1863.18	116.0	1863.56	116.0	1860.85	115.8	5944.36	115.8
14-Dec-04 05:10:00	1816.60	115.8	1816.80	115.9	1814.24	115.6	5947.24	115.7
14-Dec-04 05:11:00	1783.68	115.7	1783.69	115.8	1781.21	115.5	5950.34	115.6
14-Dec-04 05:12:00	1756.91	115.6	1756.84	115.7	1754.40	115.4	5953.68	115.5
14-Dec-04 05:13:00	1734.40	115.5	1734.29	115.6	1731.92	115.4	5957.31	115.4
14-Dec-04 05:14:00	1716.06	115.4	1715.91	115.5	1713.57	115.3	5961.16	115.4
14-Dec-04 05:15:00	1701.32	115.4	1701.15	115.4	1698.90	115.2	5965.07	115.3
14-Dec-04 05:16:00	1691.58	115.3	1691.34	115.4	1689.05	115.1	5968.66	115.2
14-Dec-04 05:17:00	1684.81	115.2	1684.57	115.3	1682.39	115.1	5972.37	115.1
14-Dec-04 05:18:00	1679.76	115.1	1679.36	115.2	1677.28	115.0	5976.45	115.1
14-Dec-04 05:19:00	1680.71	115.0	1680.22	115.1	1678.17	114.9	5980.45	115.0
14-Dec-04 05:20:00	1689.61	114.9	1689.12	115.1	1687.15	114.8	5984.88	114.9
14-Dec-04 05:21:00	1700.82	114.9	1700.28	115.0	1698.36	114.8	5989.36	114.8
14-Dec-04 05:22:00	1711.34	114.8	1710.87	114.9	1708.94	114.7	5993.20	114.8
14-Dec-04 05:23:00	1721.02	114.7	1720.54	114.8	1718.64	114.6	5997.83	114.7
14-Dec-04 05:24:00	1731.82	114.6	1731.27	114.7	1729.43	114.5	6001.88	114.6
14-Dec-04 05:25:00	1740.62	114.6	1740.06	114.7	1738.17	114.4	6006.00	114.5
14-Dec-04 05:26:00	1753.70	114.5	1753.14	114.6	1751.28	114.3	6010.03	114.4
14-Dec-04 05:27:00	1763.00	114.4	1762.46	114.5	1760.62	114.3	6013.71	114.4
14-Dec-04 05:28:00	1772.76	114.3	1772.12	114.4	1770.34	114.2	6017.66	114.3
14-Dec-04 05:29:00	1782.90	114.2	1782.30	114.3	1780.51	114.1	6021.30	114.2
14-Dec-04 05:30:00	1793.12	114.1	1792.43	114.2	1790.68	114.0	5890.05	114.1
14-Dec-04 05:31:00	1802.49	114.0	1801.91	114.1	1800.14	113.9	5894.28	114.0
14-Dec-04 05:32:00	1811.44	113.9	1810.88	114.0	1809.18	113.8	5897.70	113.9
14-Dec-04 05:33:00	1820.44	113.8	1819.85	113.9	1818.19	113.7	5900.86	113.8
14-Dec-04 05:34:00	1829.40	113.7	1828.90	113.8	1827.09	113.6	5903.84	113.7
14-Dec-04 05:35:00	1838.93	113.6	1838.40	113.7	1836.71	113.5	5907.31	113.6
14-Dec-04 05:36:00	1848.16	113.5	1847.58	113.6	1845.91	113.4	5910.67	113.5
14-Dec-04 05:37:00	1856.97	113.4	1856.36	113.5	1854.66	113.3	5913.66	113.5

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 05:38:00	1865.33	113.3	1864.79	113.4	1863.03	113.3	5916.97	113.4
14-Dec-04 05:39:00	1872.93	113.3	1872.36	113.4	1870.69	113.2	5919.88	113.3
14-Dec-04 05:40:00	1878.05	113.2	1877.70	113.3	1875.91	113.1	5922.96	113.2
14-Dec-04 05:41:00	Increase adjustable choke to 32/64".							
14-Dec-04 05:41:00	1845.29	113.1	1845.60	113.2	1843.35	113.0	5925.34	113.1
14-Dec-04 05:42:00	1804.55	113.0	1804.54	113.1	1802.37	112.9	5928.10	113.0
14-Dec-04 05:43:00	1775.75	112.8	1775.64	112.9	1773.52	112.7	5930.83	112.8
14-Dec-04 05:44:00	1749.44	112.7	1749.32	112.8	1747.11	112.6	5933.39	112.7
14-Dec-04 05:45:00	Divert flow through 32/64" fixed choke.							
14-Dec-04 05:45:00	1718.40	112.5	1718.58	112.6	1716.19	112.5	5935.61	112.5
14-Dec-04 05:46:00	1680.42	112.4	1680.44	112.5	1678.01	112.3	5937.90	112.4
14-Dec-04 05:47:00	1648.24	112.2	1648.06	112.3	1645.51	112.1	5940.36	112.2
14-Dec-04 05:48:00	1619.97	112.0	1619.71	112.2	1617.30	112.0	5942.81	112.0
14-Dec-04 05:49:00	1595.45	111.9	1595.16	112.0	1592.67	111.8	5945.17	111.9
14-Dec-04 05:50:00	1573.98	111.7	1573.71	111.9	1571.15	111.7	5947.58	111.7
14-Dec-04 05:51:00	1555.52	111.6	1555.35	111.7	1552.65	111.6	5950.14	111.6
14-Dec-04 05:52:00	1539.85	111.5	1539.54	111.6	1537.14	111.4	5952.73	111.4
14-Dec-04 05:53:00	1530.08	111.3	1529.57	111.4	1527.12	111.3	5955.37	111.3
14-Dec-04 05:54:00	1520.58	111.2	1520.10	111.3	1517.61	111.2	5958.26	111.2
14-Dec-04 05:55:00	1512.63	111.1	1512.18	111.2	1509.76	111.0	5961.33	111.0
14-Dec-04 05:56:00	1506.56	110.9	1506.31	111.0	1503.67	110.9	5964.10	110.9
14-Dec-04 05:57:00	1505.88	110.8	1505.65	110.9	1503.05	110.8	5967.39	110.8
14-Dec-04 05:58:00	1502.43	110.7	1502.09	110.8	1499.50	110.7	5859.51	110.7
14-Dec-04 05:59:00	1500.27	110.6	1499.65	110.7	1497.39	110.5	5855.54	110.5
14-Dec-04 06:00:00	1499.76	110.4	1499.01	110.6	1496.70	110.4	5857.17	110.4
14-Dec-04 06:05:00	1507.23	109.9	1506.83	110.0	1504.49	109.8	5871.83	109.9
14-Dec-04 06:10:00	1524.61	109.4	1524.25	109.5	1521.64	109.4	5886.16	109.4
14-Dec-04 06:15:00	1541.40	108.9	1540.99	109.0	1538.56	108.9	5900.04	109.0
14-Dec-04 06:20:00	1563.01	108.5	1562.29	108.6	1560.36	108.5	5914.44	108.6
14-Dec-04 06:25:00	Reduce slowly the STX adjustable choke.							
14-Dec-04 06:25:00	1594.41	108.3	1593.93	108.3	1591.97	108.1	5929.94	108.3
14-Dec-04 06:30:00	1618.08	108.0	1617.63	108.1	1615.50	108.0	5944.43	108.1
14-Dec-04 06:35:00	1636.67	107.8	1636.20	107.9	1634.23	107.8	5958.77	108.0
14-Dec-04 06:40:00	1670.31	107.7	1669.85	107.8	1667.98	107.7	5972.87	107.9
14-Dec-04 06:41:00	Divert flow through Separator.							
14-Dec-04 06:42:00	Fully open STX choke.							
14-Dec-04 06:45:00	1701.19	107.7	1700.87	107.8	1699.15	107.6	5986.22	107.8
14-Dec-04 06:50:00	1722.43	107.6	1722.04	107.7	1720.39	107.5	5847.62	107.8
14-Dec-04 06:55:00	By-pass Separator. Start Methanol Injection.							
14-Dec-04 06:55:00	1752.66	107.7	1752.32	107.7	1750.61	107.6	5861.27	107.8
14-Dec-04 07:00:00	1734.03	107.6	1733.85	107.7	1732.17	107.6	5873.78	107.8
14-Dec-04 07:01:00	By-pass STX.							
14-Dec-04 07:05:00	1724.87	107.5	1724.67	107.6	1722.95	107.5	5885.70	107.7
14-Dec-04 07:07:00	Divert flow through STX and inject Methanol at low rate 20 strokes/min.							
14-Dec-04 07:08:00	Divert flow through Separator.							
14-Dec-04 07:10:00	1722.30	107.5	1722.03	107.6	1720.33	107.5	5897.57	107.7
14-Dec-04 07:15:00	1742.75	107.5	1742.40	107.6	1740.82	107.4	5910.11	107.7
14-Dec-04 07:20:00	1766.25	107.5	1765.86	107.6	1764.25	107.4	5924.06	107.7
14-Dec-04 07:25:00	1780.53	107.5	1780.29	107.6	1778.66	107.4	5937.07	107.7
14-Dec-04 07:30:00	1790.45	107.5	1790.38	107.6	1788.57	107.5	5950.35	107.7

Schlumberger

Origin Energy Ltd	Upper Gauge 24
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 07:35:00	1797.39	107.5	1797.16	107.6	1795.47	107.5	5962.93	107.7
14-Dec-04 07:40:00	1801.86	107.6	1801.75	107.6	1799.94	107.5	5975.66	107.8
14-Dec-04 07:45:00	1804.96	107.6	1804.83	107.6	1803.09	107.5	5987.71	107.8
14-Dec-04 07:50:00	1827.83	107.6	1827.49	107.6	1825.89	107.5	5813.39	107.8
14-Dec-04 07:55:00	1846.69	107.7	1846.59	107.7	1844.92	107.6	5826.00	107.9
14-Dec-04 08:00:00	1860.81	107.7	1860.66	107.8	1859.04	107.6	5838.66	107.9
14-Dec-04 08:00:01	(Sampling Flow Period)							
14-Dec-04 08:05:00	1866.17	107.8	1866.01	107.8	1864.43	107.7	5850.94	108.0
14-Dec-04 08:10:00	1874.25	107.8	1874.17	107.8	1872.60	107.7	5863.13	108.0
14-Dec-04 08:15:00	1879.58	107.9	1879.52	107.9	1877.89	107.8	5874.91	108.1
14-Dec-04 08:20:00	1880.54	108.0	1880.37	108.0	1878.90	107.8	5886.36	108.1
14-Dec-04 08:25:00	1882.78	108.0	1882.80	108.1	1881.20	107.9	5897.82	108.2
14-Dec-04 08:30:00	1884.82	108.1	1884.78	108.1	1883.17	108.0	5909.15	108.2
14-Dec-04 08:35:00	1887.34	108.1	1887.22	108.1	1885.67	108.0	5920.59	108.3
14-Dec-04 08:40:00	1889.60	108.2	1889.41	108.2	1887.99	108.0	5931.48	108.3
14-Dec-04 08:45:00	1891.82	108.2	1891.68	108.3	1890.27	108.1	5941.98	108.4
14-Dec-04 08:50:00	1895.20	108.2	1895.18	108.3	1893.57	108.1	5952.93	108.4
14-Dec-04 08:55:00	1897.89	108.3	1897.76	108.3	1896.33	108.1	5963.73	108.4
14-Dec-04 09:00:00	1900.03	108.2	1899.88	108.3	1898.40	108.1	5812.26	108.4
14-Dec-04 09:15:00	1907.53	108.3	1907.42	108.3	1905.97	108.2	5842.08	108.5
14-Dec-04 09:30:00	1915.89	108.4	1915.86	108.4	1914.36	108.2	5871.98	108.5
14-Dec-04 09:37:00	Ajust STX choke to increase inlet pressure.							
14-Dec-04 09:45:00	1922.33	108.5	1922.25	108.5	1920.75	108.3	5900.55	108.6
14-Dec-04 10:00:00	1931.86	108.5	1931.78	108.5	1930.28	108.4	5928.41	108.7
14-Dec-04 10:01:00	Increase upstream STX pressure.							
14-Dec-04 10:15:00	1954.71	108.6	1954.53	108.7	1953.16	108.5	5956.36	108.8
14-Dec-04 10:30:00	1966.45	108.8	1966.38	108.8	1964.94	108.6	5982.77	108.9
14-Dec-04 10:45:00	1969.82	108.8	1969.76	108.8	1968.27	108.7	5806.31	109.0
14-Dec-04 11:00:00	1973.80	108.9	1973.72	109.0	1972.29	108.8	5824.99	109.1
14-Dec-04 11:15:00	1977.41	109.0	1977.31	109.0	1975.94	108.8	5844.10	109.1
14-Dec-04 11:30:00	1983.42	109.0	1983.36	109.1	1981.99	108.9	5862.87	109.2
14-Dec-04 11:45:00	1986.34	109.1	1986.25	109.2	1984.89	108.9	5881.13	109.2
14-Dec-04 12:00:00	1990.08	109.1	1989.99	109.2	1988.63	109.0	5898.35	109.3
14-Dec-04 12:15:00	1992.63	109.2	1992.51	109.2	1991.14	109.0	5915.77	109.3
14-Dec-04 12:30:00	2004.25	109.2	2004.23	109.3	2002.84	109.1	5932.44	109.4
14-Dec-04 12:45:00	2011.94	109.3	2011.90	109.3	2010.51	109.1	5948.46	109.4
14-Dec-04 12:46:00	2012.03	109.3	2011.97	109.3	2010.63	109.1	5949.68	109.4
14-Dec-04 12:47:00	Switch to adjustable choke and gradually increase choke. (Maximum Flow Period)							
14-Dec-04 12:47:00	2011.34	109.3	2011.42	109.3	2009.75	109.1	5949.82	109.5
14-Dec-04 12:48:00	1943.64	109.3	1944.91	109.3	1942.54	109.1	5948.34	109.4
14-Dec-04 12:49:00	1843.38	109.2	1844.78	109.2	1842.11	109.1	5946.21	109.3
14-Dec-04 12:50:00	By-pass STX.							
14-Dec-04 12:50:00	1746.48	109.0	1747.71	109.1	1745.05	108.9	5944.47	109.2
14-Dec-04 12:51:00	1669.21	108.8	1670.18	108.9	1667.58	108.7	5942.70	109.0
14-Dec-04 12:52:00	1610.59	108.7	1611.16	108.7	1608.64	108.6	5941.59	108.8
14-Dec-04 12:53:00	1566.94	108.5	1567.32	108.6	1564.81	108.4	5940.66	108.6
14-Dec-04 12:54:00	1534.62	108.4	1534.84	108.4	1532.42	108.3	5940.28	108.5
14-Dec-04 12:55:00	1526.75	108.3	1526.65	108.3	1524.41	108.2	5940.37	108.4
14-Dec-04 12:56:00	1517.78	108.2	1517.62	108.2	1515.44	108.1	5940.58	108.2
14-Dec-04 12:57:00	1510.81	108.0	1510.58	108.1	1508.39	107.9	5941.10	108.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 12:58:00	1506.29	107.9	1506.03	108.0	1503.81	107.8	5941.59	108.0
14-Dec-04 12:59:00	1503.17	107.8	1502.79	107.9	1500.61	107.7	5942.02	107.8
14-Dec-04 13:00:00	1501.44	107.7	1501.05	107.7	1498.90	107.6	5942.47	107.7
14-Dec-04 13:01:00	1500.46	107.5	1500.07	107.6	1497.89	107.5	5943.23	107.6
14-Dec-04 13:02:00	1500.99	107.4	1500.44	107.5	1498.39	107.4	5943.78	107.5
14-Dec-04 13:03:00	Well flow on 56/64" adjustable choke.							
14-Dec-04 13:03:00	1500.34	107.3	1500.01	107.4	1497.79	107.3	5943.58	107.3
14-Dec-04 13:04:00	Divert flow 56/64" fixed choke.							
14-Dec-04 13:04:00	1480.54	107.2	1480.35	107.3	1478.09	107.1	5943.09	107.2
14-Dec-04 13:05:00	1464.93	107.1	1464.55	107.2	1462.28	107.0	5943.16	107.1
14-Dec-04 13:06:00	1456.27	106.9	1456.13	107.0	1453.75	106.9	5943.12	106.9
14-Dec-04 13:07:00	1450.49	106.8	1450.16	106.9	1447.83	106.7	5943.15	106.8
14-Dec-04 13:08:00	1438.31	106.7	1438.10	106.8	1435.65	106.6	5943.27	106.7
14-Dec-04 13:09:00	1429.87	106.5	1429.46	106.7	1427.20	106.5	5943.13	106.6
14-Dec-04 13:10:00	1424.06	106.4	1423.68	106.6	1421.40	106.4	5942.71	106.5
14-Dec-04 13:11:00	1419.43	106.3	1419.15	106.4	1416.76	106.3	5942.60	106.4
14-Dec-04 13:12:00	1416.43	106.2	1416.05	106.3	1413.76	106.2	5942.24	106.3
14-Dec-04 13:13:00	1414.83	106.1	1414.48	106.2	1412.12	106.1	5942.21	106.2
14-Dec-04 13:14:00	1415.17	106.0	1414.76	106.1	1412.49	106.0	5942.06	106.1
14-Dec-04 13:15:00	1415.35	105.9	1415.10	106.0	1412.75	105.9	5942.08	106.0
14-Dec-04 13:20:00	1436.00	105.4	1435.48	105.5	1433.30	105.4	5943.34	105.6
14-Dec-04 13:25:00	1438.27	105.1	1437.92	105.2	1435.84	105.1	5944.17	105.2
14-Dec-04 13:30:00	1439.27	104.8	1438.84	105.0	1436.83	104.8	5944.70	105.0
14-Dec-04 13:35:00	1444.00	104.7	1443.65	104.8	1441.53	104.7	5945.59	104.8
14-Dec-04 13:40:00	1447.03	104.5	1446.82	104.6	1444.72	104.5	5946.45	104.6
14-Dec-04 13:45:00	1453.63	104.3	1453.27	104.4	1451.12	104.3	5946.98	104.5
14-Dec-04 13:50:00	1458.57	104.2	1458.28	104.3	1456.30	104.2	5947.36	104.3
14-Dec-04 13:55:00	1462.43	104.2	1462.16	104.2	1460.17	104.1	5947.96	104.3
14-Dec-04 14:00:00	1469.05	104.1	1468.76	104.2	1466.84	104.0	5948.54	104.2
14-Dec-04 14:05:00	1477.03	104.0	1476.71	104.1	1474.79	103.9	5949.89	104.1
14-Dec-04 14:10:00	1483.70	103.9	1483.40	104.0	1481.41	103.9	5950.97	104.1
14-Dec-04 14:15:00	1484.99	103.9	1484.74	104.0	1482.78	103.9	5949.24	104.1
14-Dec-04 14:20:00	1487.03	103.9	1486.74	104.0	1484.84	103.8	5947.52	104.1
14-Dec-04 14:25:00	1486.91	103.9	1486.70	104.0	1484.76	103.8	5945.87	104.0
14-Dec-04 14:30:00	1488.17	103.9	1488.02	103.9	1486.03	103.8	5944.53	104.0
14-Dec-04 14:35:00	1491.41	103.8	1491.12	103.9	1489.19	103.8	5942.55	104.0
14-Dec-04 14:40:00	1496.81	103.8	1497.06	103.9	1495.18	103.8	5940.82	104.0
14-Dec-04 14:45:00	1521.24	103.9	1520.68	104.0	1518.96	103.8	5940.57	104.0
14-Dec-04 14:50:00	1543.45	104.0	1543.34	104.0	1541.41	103.9	5941.02	104.1
14-Dec-04 14:55:00	1547.93	104.0	1547.97	104.0	1545.98	103.9	5941.29	104.2
14-Dec-04 15:00:00	1549.83	104.1	1549.81	104.1	1547.85	104.0	5940.98	104.2
14-Dec-04 15:05:00	1551.58	104.1	1551.39	104.2	1549.57	104.1	5940.54	104.3
14-Dec-04 15:10:00	1552.29	104.2	1552.09	104.2	1550.31	104.1	5939.19	104.3
14-Dec-04 15:15:00	1553.74	104.2	1553.58	104.3	1551.73	104.1	5938.06	104.3
14-Dec-04 15:20:00	1555.59	104.2	1555.41	104.3	1553.56	104.1	5937.18	104.4
14-Dec-04 15:25:00	1555.71	104.2	1555.63	104.3	1553.75	104.1	5936.40	104.4
14-Dec-04 15:30:00	1556.37	104.3	1556.24	104.3	1554.40	104.2	5935.36	104.4
14-Dec-04 15:35:00	1557.79	104.3	1557.63	104.3	1555.80	104.2	5934.32	104.4
14-Dec-04 15:40:00	1559.71	104.3	1559.64	104.3	1557.71	104.2	5933.55	104.4
14-Dec-04 15:45:00	1561.39	104.2	1561.36	104.3	1559.41	104.2	5932.73	104.4

Schlumberger

Origin Energy Ltd	Upper Gauge 26
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 15:50:00	1562.55	104.3	1562.50	104.3	1560.76	104.2	5931.98	104.4
14-Dec-04 15:55:00	1564.06	104.3	1563.95	104.3	1562.06	104.2	5931.07	104.4
14-Dec-04 16:00:00	1565.55	104.3	1565.42	104.3	1563.61	104.2	5929.64	104.4
14-Dec-04 16:01:00	1565.83	104.3	1565.72	104.3	1563.92	104.1	5378.67	104.4
14-Dec-04 16:02:00	Bleed off Annulus to close PCT. (Final Build Up Period)							
14-Dec-04 16:02:00	2304.27	104.2	2278.48	104.2	2294.98	104.0	4367.65	104.3
14-Dec-04 16:03:00	3634.64	104.1	3617.53	104.1	3627.59	104.0	4367.57	104.2
14-Dec-04 16:04:00	4142.27	103.9	4138.14	104.0	4139.79	103.9	4368.37	104.1
14-Dec-04 16:05:00	4197.67	103.6	4196.47	103.6	4196.74	103.6	4369.15	103.7
14-Dec-04 16:06:00	Close Choke manifold.							
14-Dec-04 16:06:00	4208.33	103.1	4207.50	103.2	4207.60	103.2	4369.37	103.2
14-Dec-04 16:07:00	4213.44	102.7	4212.65	102.8	4212.81	102.7	4369.33	102.8
14-Dec-04 16:08:00	4216.64	102.4	4215.89	102.4	4216.03	102.3	4369.13	102.4
14-Dec-04 16:09:00	4219.00	102.0	4218.25	102.1	4218.35	102.0	4368.83	102.0
14-Dec-04 16:10:00	4220.87	101.7	4220.20	101.8	4220.24	101.7	4368.60	101.7
14-Dec-04 16:11:00	4222.36	101.5	4221.81	101.6	4221.75	101.5	4368.37	101.4
14-Dec-04 16:12:00	4223.69	101.3	4223.15	101.4	4223.15	101.2	4368.15	101.2
14-Dec-04 16:13:00	4224.88	101.1	4224.35	101.2	4224.32	101.0	4367.95	101.0
14-Dec-04 16:14:00	4225.90	100.9	4225.39	101.0	4225.35	100.8	4367.75	100.8
14-Dec-04 16:15:00	4226.78	100.7	4226.36	100.9	4226.31	100.7	4367.60	100.6
14-Dec-04 16:16:00	4227.66	100.6	4227.23	100.7	4227.17	100.5	4367.44	100.5
14-Dec-04 16:17:00	4228.38	100.5	4228.00	100.6	4227.93	100.4	4367.32	100.3
14-Dec-04 16:18:00	4229.14	100.4	4228.71	100.5	4228.67	100.3	4367.20	100.2
14-Dec-04 16:19:00	4229.85	100.2	4229.47	100.4	4229.35	100.2	4367.12	100.1
14-Dec-04 16:20:00	4230.48	100.1	4230.14	100.2	4230.01	100.0	4367.03	100.0
14-Dec-04 16:21:00	4231.09	100.0	4230.77	100.1	4230.61	99.9	4366.91	99.9
14-Dec-04 16:22:00	4231.62	99.9	4231.32	100.0	4231.16	99.8	4366.83	99.7
14-Dec-04 16:23:00	4232.10	99.8	4231.75	99.9	4231.70	99.7	4366.74	99.7
14-Dec-04 16:24:00	4232.55	99.7	4232.20	99.8	4232.15	99.6	4366.64	99.6
14-Dec-04 16:25:00	4233.01	99.7	4232.67	99.8	4232.63	99.5	4366.59	99.5
14-Dec-04 16:26:00	4233.45	99.6	4233.14	99.7	4232.97	99.5	4366.50	99.4
14-Dec-04 16:27:00	4233.86	99.5	4233.51	99.7	4233.44	99.4	4366.40	99.3
14-Dec-04 16:28:00	4234.13	99.5	4233.89	99.6	4233.89	99.3	4366.34	99.2
14-Dec-04 16:29:00	4234.55	99.4	4234.33	99.6	4234.27	99.2	4366.29	99.1
14-Dec-04 16:30:00	4235.01	99.4	4234.74	99.5	4234.64	99.2	4366.22	99.1
14-Dec-04 16:34:00	Close Master valve.							
14-Dec-04 16:35:00	Bleed off surface pressure.							
14-Dec-04 16:35:00	4236.74	99.1	4236.42	99.2	4236.23	98.8	4365.89	98.7
14-Dec-04 16:40:00	4238.01	98.7	4237.74	98.9	4237.61	98.5	4365.63	98.3
14-Dec-04 16:45:00	4239.11	98.4	4238.86	98.6	4238.74	98.1	4365.33	98.0
14-Dec-04 16:50:00	4240.08	98.2	4239.82	98.3	4239.70	97.8	4365.04	97.7
14-Dec-04 16:55:00	4241.03	97.9	4240.73	98.0	4240.54	97.6	4364.78	97.4
14-Dec-04 17:00:00	4241.75	97.6	4241.58	97.8	4241.30	97.3	4364.53	97.1
14-Dec-04 17:05:00	4242.36	97.4	4242.14	97.5	4241.99	97.1	4364.08	96.9
14-Dec-04 17:10:00	4242.99	97.2	4242.87	97.3	4242.61	96.9	4363.64	96.7
14-Dec-04 17:12:00	Commence rigging down Wireline equipment.							
14-Dec-04 17:15:00	4243.44	97.0	4243.23	97.2	4243.16	96.7	4363.16	96.5
14-Dec-04 17:20:00	4243.89	97.0	4243.89	97.1	4243.60	96.6	4362.78	96.4
14-Dec-04 17:25:00	4244.34	96.9	4244.19	97.1	4244.10	96.4	4362.36	96.3
14-Dec-04 17:30:00	4244.81	96.8	4244.72	97.0	4244.53	96.4	4361.99	96.2

Schlumberger

Origin Energy Ltd	Upper Gauge 27
T18-P / Trefoil-1 / DST-1	2004-029

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 17:35:00	4245.28	96.8	4245.16	97.0	4244.90	96.3	4361.62	96.1
14-Dec-04 17:40:00	4245.78	96.7	4245.60	96.9	4245.32	96.2	4361.33	96.0
14-Dec-04 17:45:00	4246.06	96.7	4245.89	96.9	4245.66	96.2	4360.97	96.0
14-Dec-04 17:50:00	4246.24	96.6	4246.17	96.8	4245.98	96.1	4360.63	95.9
14-Dec-04 17:55:00	4246.54	96.7	4246.52	96.8	4246.28	96.1	4360.39	95.9
14-Dec-04 18:00:00	4246.91	96.7	4246.86	96.8	4246.55	96.1	4360.48	95.9
14-Dec-04 18:05:00	4247.23	96.6	4247.13	96.8	4246.87	96.1	4360.55	95.9
14-Dec-04 18:10:00	4247.52	96.7	4247.36	96.9	4247.12	96.1	4360.66	95.9
14-Dec-04 18:15:00	4247.81	96.6	4247.70	96.8	4247.43	96.1	4360.79	95.9
14-Dec-04 18:20:00	4247.96	96.7	4247.89	96.8	4247.64	96.0	4360.87	95.8
14-Dec-04 18:25:00	4248.20	96.7	4248.07	96.9	4247.89	96.0	4360.93	95.8
14-Dec-04 18:30:00	4248.32	96.8	4248.33	97.0	4248.09	96.1	4361.02	95.9
14-Dec-04 18:35:00	4248.76	96.8	4248.60	96.9	4248.31	96.1	4361.15	95.9
14-Dec-04 18:40:00	4248.86	96.8	4248.82	96.9	4248.52	96.1	4361.06	95.9
14-Dec-04 18:45:00	4249.10	96.8	4248.92	97.0	4248.71	96.1	4360.71	95.9
14-Dec-04 18:50:00	4249.14	96.8	4249.10	97.0	4248.89	96.1	4360.33	95.9
14-Dec-04 18:55:00	4249.39	96.8	4249.24	97.0	4249.06	96.1	4360.01	95.9
14-Dec-04 19:00:00	4249.60	96.8	4249.50	97.0	4249.25	96.1	4360.11	95.9
14-Dec-04 19:15:00	4250.03	97.0	4249.85	97.2	4249.72	96.2	4360.32	96.0
14-Dec-04 19:30:00	4250.56	97.0	4250.44	97.2	4250.17	96.2	4360.34	96.1
14-Dec-04 19:45:00	4250.90	97.2	4250.75	97.4	4250.57	96.4	4359.72	96.2
14-Dec-04 20:00:00	4251.35	97.4	4251.15	97.5	4250.92	96.6	4359.17	96.3
14-Dec-04 20:15:00	4251.61	97.5	4251.51	97.7	4251.25	96.7	4358.66	96.4
14-Dec-04 20:30:00	4251.92	97.6	4251.79	97.8	4251.61	96.8	4358.18	96.5
14-Dec-04 20:45:00	4252.37	97.7	4252.26	97.9	4251.89	96.9	4358.29	96.7
14-Dec-04 21:00:00	4252.43	97.9	4252.38	98.1	4252.13	97.1	4358.52	96.8
14-Dec-04 21:15:00	4252.76	97.9	4252.66	98.2	4252.40	97.1	4358.75	96.9
14-Dec-04 21:30:00	4252.93	98.0	4252.79	98.3	4252.58	97.2	4358.94	97.0
14-Dec-04 21:45:00	4253.13	98.2	4253.01	98.5	4252.76	97.4	4359.15	97.1
14-Dec-04 22:00:00	4253.47	98.2	4253.19	98.5	4252.97	97.5	4359.33	97.3
14-Dec-04 22:15:00	4253.48	98.5	4253.30	98.8	4253.04	97.7	4359.52	97.4
14-Dec-04 22:30:00	4253.51	98.6	4253.38	98.9	4253.18	97.8	4359.67	97.6
14-Dec-04 22:45:00	4253.53	98.9	4253.56	99.2	4253.32	98.1	4359.83	97.8
14-Dec-04 23:00:00	4253.76	99.1	4253.66	99.5	4253.41	98.3	4360.01	98.1
14-Dec-04 23:15:00	4253.97	99.4	4253.80	99.7	4253.53	98.6	4360.19	98.4
14-Dec-04 23:30:00	4254.07	99.6	4253.91	99.9	4253.56	98.8	4360.35	98.6
14-Dec-04 23:45:00	4254.04	99.8	4253.96	100.1	4253.71	99.0	4360.25	98.8
15-Dec-04 00:00:00	4254.18	100.1	4254.07	100.4	4253.75	99.3	4359.99	99.1
15-Dec-04 00:15:00	4254.12	100.0	4253.96	100.3	4253.84	99.4	4359.75	99.3
15-Dec-04 00:30:00	4254.44	100.7	4254.31	101.0	4253.85	99.9	4359.45	99.7
15-Dec-04 00:45:00	4254.56	100.8	4254.45	101.1	4253.98	100.1	4359.29	100.0
15-Dec-04 01:00:00	4254.53	101.3	4254.38	101.6	4254.17	100.7	4359.12	100.5
15-Dec-04 01:15:00	4254.29	101.5	4254.27	101.8	4254.03	100.8	4358.90	100.7
15-Dec-04 01:30:00	4254.33	101.8	4254.34	102.2	4254.03	101.2	4358.68	101.0
15-Dec-04 01:45:00	4254.51	102.1	4254.37	102.4	4254.04	101.5	4358.49	101.3
15-Dec-04 02:00:00	4254.46	102.4	4254.34	102.7	4254.09	101.8	4358.36	101.7
15-Dec-04 02:15:00	4254.46	103.2	4254.26	103.5	4254.00	102.4	4358.10	102.3
15-Dec-04 02:30:00	4254.17	103.5	4254.11	103.7	4254.15	102.7	4358.02	102.6
15-Dec-04 02:45:00	4254.65	103.5	4254.42	103.8	4254.12	103.0	4357.93	102.9
15-Dec-04 03:00:00	4254.19	104.3	4254.30	104.5	4254.09	103.4	4357.71	103.4

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
15-Dec-04 03:15:00	4254.48	104.8	4254.37	105.0	4254.13	104.0	4357.66	104.0
15-Dec-04 03:30:00	4254.62	105.1	4254.49	105.2	4254.07	104.3	4357.67	104.4
15-Dec-04 03:45:00	4254.23	105.7	4254.13	105.8	4253.96	104.7	4357.46	104.9
15-Dec-04 03:58:00	Open Master valve.							
15-Dec-04 04:00:00	4254.41	105.7	4254.29	105.9	4254.05	105.1	4357.47	105.1
15-Dec-04 04:01:00	Open Choke manifold. Bleed off tubing pressure to flare.							
15-Dec-04 04:05:00	4255.97	105.4	4255.74	105.7	4255.39	104.9	4357.86	104.9
15-Dec-04 04:10:00	4258.44	103.4	4257.81	103.6	4257.72	102.9	4358.98	102.5
15-Dec-04 04:15:00	4259.01	100.1	4258.29	100.4	4258.58	99.7	4359.32	98.9
15-Dec-04 04:20:00	4257.85	97.9	4257.20	98.2	4257.48	97.1	4357.93	96.3
15-Dec-04 04:25:00	4257.28	96.6	4256.93	96.9	4257.10	95.6	4357.49	94.7
15-Dec-04 04:30:00	4257.30	95.4	4256.91	95.8	4257.04	94.3	4357.27	93.4
15-Dec-04 04:35:00	4257.06	94.5	4256.83	94.8	4256.94	93.3	4356.88	92.4
15-Dec-04 04:36:00	Top fill tubing with 8.9 ppg kill Brine.							
15-Dec-04 04:40:00	4256.93	93.7	4256.86	94.0	4256.79	92.5	4356.32	91.7
15-Dec-04 04:45:00	4256.46	93.7	4256.43	94.0	4256.14	92.4	4354.26	91.7
15-Dec-04 04:50:00	4254.99	94.9	4254.95	95.3	4254.76	93.6	4352.48	93.1
15-Dec-04 04:55:00	4253.55	96.9	4253.82	97.1	4253.35	95.5	4351.42	95.3
15-Dec-04 05:00:00	4252.49	99.6	4252.66	99.9	4251.96	98.4	4350.94	98.4
15-Dec-04 05:05:00	4259.21	101.7	4259.42	101.9	4258.76	100.8	4352.17	100.8
15-Dec-04 05:08:00	65 bbls Brine in tubing, close Choke manifold.							
15-Dec-04 05:10:00	4259.75	102.6	4259.82	102.8	4259.32	101.9	4352.83	101.9
15-Dec-04 05:15:00	4259.91	103.1	4259.90	103.4	4259.51	102.5	4352.97	102.6
15-Dec-04 05:20:00	4259.96	103.6	4260.07	103.9	4259.64	103.1	4353.07	103.2
15-Dec-04 05:25:00	4259.95	104.1	4259.96	104.4	4259.72	103.6	4353.11	103.8
15-Dec-04 05:30:00	Pressure Annulus to open PCT.							
15-Dec-04 05:30:00	4260.09	104.6	4260.15	104.8	4259.72	104.1	4944.10	104.3
15-Dec-04 05:31:00	4248.59	104.9	4248.93	105.0	4248.39	104.4	5815.83	104.6
15-Dec-04 05:32:00	Start bullheading formation with kill Brine.							
15-Dec-04 05:32:00	4341.39	105.2	4338.68	105.4	4343.14	104.7	5928.10	104.9
15-Dec-04 05:33:00	4951.23	106.5	4946.99	106.5	4948.21	106.1	5898.21	106.5
15-Dec-04 05:34:00	5513.12	108.1	5499.39	107.9	5488.33	107.6	5849.21	107.9
15-Dec-04 05:35:00	5674.32	108.6	5667.18	108.7	5672.29	107.6	5930.71	108.1
15-Dec-04 05:36:00	6047.64	109.0	6045.37	108.9	6049.02	108.1	5898.75	108.4
15-Dec-04 05:37:00	6016.52	109.4	6039.10	109.2	6021.54	108.5	5862.69	108.7
15-Dec-04 05:38:00	5860.88	109.4	5859.38	109.2	5859.00	108.5	5838.11	108.8
15-Dec-04 05:39:00	6057.39	109.5	6056.17	109.3	6056.31	108.5	5818.42	108.9
15-Dec-04 05:40:00	6064.66	109.4	6064.72	109.2	6063.40	108.7	5980.37	109.1
15-Dec-04 05:41:00	6102.64	109.4	6101.94	109.3	6101.73	108.9	5960.37	109.3
15-Dec-04 05:42:00	6254.01	109.5	6252.09	109.4	6252.78	109.0	5941.23	109.5
15-Dec-04 05:43:00	6222.64	109.6	6216.56	109.5	6213.03	109.2	5921.05	109.7
15-Dec-04 05:44:00	6300.23	109.6	6277.54	109.7	6278.92	109.2	5906.90	109.9
15-Dec-04 05:45:00	6222.51	109.7	6222.50	109.8	6221.55	109.4	5889.73	110.1
15-Dec-04 05:46:00	6328.57	109.8	6326.52	110.0	6327.22	109.5	5876.62	110.2
15-Dec-04 05:47:00	6258.60	110.0	6268.33	110.1	6260.88	109.6	5859.29	110.3
15-Dec-04 05:48:00	5780.50	110.1	5782.83	110.2	5778.55	109.7	5835.46	110.4
15-Dec-04 05:49:00	5845.39	110.1	5844.73	110.3	5846.05	109.8	5828.83	110.5
15-Dec-04 05:50:00	6066.32	110.3	6064.37	110.5	6066.17	110.0	6001.61	110.6
15-Dec-04 05:51:00	6371.01	110.5	6366.93	110.6	6369.24	110.1	5988.90	110.6
15-Dec-04 05:52:00	6570.97	110.7	6568.78	110.7	6569.58	110.1	5976.61	110.7

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
15-Dec-04 05:53:00	6706.67	110.8	6705.14	110.9	6705.65	110.3	5963.17	110.8
15-Dec-04 05:54:00	6815.79	111.0	6814.66	110.9	6814.70	110.4	5949.75	110.9
15-Dec-04 05:55:00	6859.37	111.1	6859.10	111.0	6858.36	110.5	5934.90	111.0
15-Dec-04 05:56:00	6893.38	111.1	6892.83	111.1	6892.39	110.6	5920.18	111.1
15-Dec-04 05:57:00	6855.22	111.1	6855.64	111.2	6854.27	110.8	5904.37	111.3
15-Dec-04 05:58:00	6840.40	111.2	6840.20	111.3	6839.37	110.8	5888.76	111.3
15-Dec-04 05:59:00	6851.31	111.3	6851.03	111.4	6850.25	110.9	5874.10	111.4
15-Dec-04 06:00:00	6818.99	111.4	6819.77	111.4	6818.27	111.0	5858.59	111.4
15-Dec-04 06:01:00	6786.27	111.4	6786.44	111.5	6785.36	111.1	5923.22	111.4
15-Dec-04 06:02:00	6786.75	111.5	6786.57	111.6	6785.87	111.2	6024.27	111.5
15-Dec-04 06:03:00	6795.20	111.6	6794.97	111.7	6794.15	111.2	6009.89	111.6
15-Dec-04 06:04:00	6856.03	111.7	6853.96	111.8	6854.58	111.3	5992.31	111.6
15-Dec-04 06:05:00	6924.40	111.8	6924.45	111.8	6923.34	111.4	5975.77	111.7
15-Dec-04 06:06:00	6900.30	111.8	6899.72	111.9	6898.63	111.4	5958.43	111.8
15-Dec-04 06:07:00	6884.87	111.9	6894.23	111.9	6891.84	111.5	5941.39	111.8
15-Dec-04 06:08:00	6930.67	112.0	6929.98	112.0	6929.57	111.5	5924.87	111.8
15-Dec-04 06:09:00	6801.48	112.0	6803.44	112.0	6800.80	111.6	5906.03	111.9
15-Dec-04 06:10:00	6716.55	112.0	6717.49	112.0	6716.27	111.6	5887.91	112.0
15-Dec-04 06:11:00	6677.31	112.1	6677.68	112.0	6676.48	111.6	5870.28	112.0
15-Dec-04 06:12:00	6659.71	112.1	6659.75	112.1	6659.06	111.7	5853.04	112.1
15-Dec-04 06:13:00	6656.91	112.2	6656.93	112.1	6656.02	111.7	5841.06	112.1
15-Dec-04 06:14:00	6665.30	112.2	6665.05	112.2	6664.31	111.7	5830.10	112.1
15-Dec-04 06:15:00	6679.98	112.2	6679.65	112.2	6679.08	111.8	5819.61	112.2
15-Dec-04 06:16:00	6698.80	112.2	6698.47	112.3	6697.84	111.8	5808.98	112.2
15-Dec-04 06:17:00	6850.22	112.3	6847.33	112.3	6848.60	111.9	5801.10	112.2
15-Dec-04 06:18:00	6734.87	112.3	6741.20	112.4	6736.05	111.9	5902.22	112.3
15-Dec-04 06:19:00	Finish bullheading 23 bbls into formation.							
15-Dec-04 06:19:00	6378.91	112.4	6384.29	112.4	6379.60	112.0	6004.51	112.3
15-Dec-04 06:20:00	6090.09	112.4	6094.09	112.4	6090.29	112.0	5994.39	112.3
15-Dec-04 06:21:00	5866.95	112.4	5870.48	112.4	5867.58	112.0	5975.18	112.3
15-Dec-04 06:22:00	Bleed down tubing pressure and observe well condition.							
15-Dec-04 06:22:00	5662.29	112.4	5665.60	112.4	5662.63	112.1	5962.78	112.4
15-Dec-04 06:23:00	5488.83	112.4	5491.39	112.4	5488.88	112.1	5950.13	112.4
15-Dec-04 06:24:00	5338.77	112.4	5341.10	112.4	5338.72	112.1	5937.85	112.4
15-Dec-04 06:25:00	5209.13	112.4	5211.06	112.4	5208.94	112.1	5925.99	112.3
15-Dec-04 06:26:00	5096.23	112.4	5097.97	112.4	5095.97	112.0	5914.66	112.3
15-Dec-04 06:27:00	4998.89	112.4	5000.40	112.4	4998.56	112.0	5903.43	112.3
15-Dec-04 06:28:00	4914.53	112.4	4916.22	112.4	4914.27	112.0	5892.75	112.3
15-Dec-04 06:29:00	4842.14	112.4	4843.09	112.4	4841.74	112.0	5882.06	112.3
15-Dec-04 06:30:00	4780.31	112.4	4781.15	112.4	4779.91	112.0	5872.13	112.3
15-Dec-04 06:31:00	Pressure up tubing.							
15-Dec-04 06:31:00	5291.35	112.4	5282.17	112.4	5288.24	112.0	5869.80	112.3
15-Dec-04 06:32:00	5905.94	112.5	5901.10	112.5	5907.14	112.1	5871.34	112.4
15-Dec-04 06:33:00	6470.02	112.6	6461.61	112.6	6466.84	112.2	5869.63	112.5
15-Dec-04 06:34:00	6947.31	112.7	6933.69	112.7	6929.70	112.3	5864.01	112.7
15-Dec-04 06:35:00	Bleed down tubing pressure and observe well condition.							
15-Dec-04 06:35:00	5460.66	112.8	5623.66	112.7	5600.31	112.4	5815.10	112.7
15-Dec-04 06:36:00	4472.16	112.7	4473.00	112.7	4470.29	112.4	6013.53	112.7
15-Dec-04 06:37:00	4471.86	112.7	4471.96	112.6	4471.36	112.3	5999.54	112.7
15-Dec-04 06:38:00	4469.96	112.6	4470.16	112.6	4469.55	112.3	5989.73	112.6

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

Measuring Point 2924.54 m MDRT

DATE TIME	WTQR-A #1812 Below valve		WTQR-A #835 Below valve		WTQR-A #851 Below valve		WCQR-A #776 Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
15-Dec-04 06:39:00	4467.66	112.6	4467.79	112.6	4467.22	112.3	5979.04	112.6
15-Dec-04 06:40:00	4465.25	112.6	4465.30	112.6	4464.78	112.3	5968.75	112.6
15-Dec-04 06:41:00	4462.77	112.6	4462.83	112.6	4462.29	112.3	5958.46	112.6
15-Dec-04 06:42:00	4460.27	112.6	4460.32	112.6	4459.82	112.3	5948.43	112.6
15-Dec-04 06:43:00	4457.80	112.7	4457.87	112.6	4457.33	112.3	5938.34	112.6
15-Dec-04 06:44:00	4455.38	112.7	4455.44	112.7	4454.91	112.3	5928.37	112.6
15-Dec-04 06:45:00	4452.97	112.7	4453.07	112.7	4452.52	112.3	5918.51	112.6
15-Dec-04 06:50:00	4442.79	112.8	4442.80	112.7	4442.27	112.4	5869.25	112.7
15-Dec-04 06:55:00	4434.45	112.8	4434.50	112.8	4433.93	112.5	5965.74	112.8
15-Dec-04 07:00:00	4427.11	112.9	4427.11	112.9	4426.64	112.6	5976.62	112.8
15-Dec-04 07:05:00	4420.75	113.0	4420.76	113.0	4420.24	112.6	5927.96	112.9
15-Dec-04 07:10:00	4414.42	113.1	4414.41	113.0	4413.91	112.7	5879.63	113.0
15-Dec-04 07:15:00	4408.49	113.1	4408.23	113.1	4407.85	112.7	5872.97	113.0
15-Dec-04 07:20:00	4403.47	113.2	4403.46	113.2	4402.94	112.8	5966.17	113.1
15-Dec-04 07:25:00	Bleed down Annulus. PCT in hold-open position.							
15-Dec-04 07:25:00	4398.50	113.2	4399.15	113.2	4398.14	112.9	5566.91	113.2
15-Dec-04 07:30:00	4394.10	113.2	4394.11	113.1	4393.58	112.8	4999.74	113.2
15-Dec-04 07:35:00	4389.82	113.2	4389.81	113.2	4389.33	112.9	4971.07	113.2
15-Dec-04 07:38:00	Pressure tubing, commence cycling MCVL to circulating position.							
15-Dec-04 07:40:00	5611.07	113.5	5603.39	113.4	5599.26	113.1	4958.95	113.5
15-Dec-04 07:45:00	4427.23	113.5	4428.21	113.4	4427.43	113.1	4953.66	113.5
15-Dec-04 07:50:00	5016.10	113.7	5028.46	113.7	5018.31	113.3	4998.40	113.6
15-Dec-04 07:52:00	MCVL opened, open Choke manifold.							
15-Dec-04 07:55:00	Commence reversing out salt pill to burner.							
15-Dec-04 07:55:00	4566.16	113.5	4566.22	113.5	4565.64	113.2	4591.08	113.6
15-Dec-04 08:00:00	4536.71	113.6	4536.19	113.6	4535.94	113.3	4566.67	113.6
15-Dec-04 08:05:00	4527.55	113.7	4527.90	113.7	4527.43	113.3	4557.82	113.6
15-Dec-04 08:10:00	4468.12	113.7	4468.76	113.7	4467.81	113.4	4497.38	113.7
15-Dec-04 08:15:00	4477.83	113.8	4476.01	113.7	4477.30	113.4	4521.40	113.7
15-Dec-04 08:20:00	4645.56	113.9	4644.86	113.8	4644.65	113.5	4673.96	113.8
15-Dec-04 08:23:00	Complete reversing out 140 bbls, close Choke manifold and observe well.							
15-Dec-04 08:25:00	4376.50	113.8	4374.59	113.8	4375.23	113.5	4373.32	113.8
15-Dec-04 08:30:00	4372.70	113.8	4372.56	113.8	4372.17	113.5	4373.64	113.8
15-Dec-04 08:35:00	Pump down tubing to reset MCVL.							
15-Dec-04 08:35:00	4429.09	113.8	4428.84	113.8	4430.62	113.5	4373.82	113.8
15-Dec-04 08:40:00	4421.73	113.8	4421.81	113.8	4420.79	113.5	4378.88	113.8
15-Dec-04 08:45:00	Pump down Annulus to close MCVL.							
15-Dec-04 08:45:00	4419.06	113.8	4416.05	113.8	4416.90	113.5	4707.24	113.8
15-Dec-04 08:50:00	4409.81	113.8	4409.71	113.8	4409.27	113.5	4382.35	113.8
15-Dec-04 08:55:00	4406.75	113.8	4406.58	113.8	4406.17	113.4	4382.26	113.7
15-Dec-04 08:58:00	Pull DST string to open Packer by-pass.							
15-Dec-04 09:00:00	4401.57	113.7	4403.17	113.7	4400.93	113.4	4365.09	113.7
15-Dec-04 09:05:00	Open Choke manifold.							
15-Dec-04 09:05:00	4357.45	114.1	4357.44	114.0	4356.89	113.7	4358.94	113.9
15-Dec-04 09:08:00	Commence reversing out tubing to burner.							
15-Dec-04 09:10:00	4712.90	113.1	4712.97	113.2	4712.25	113.0	4729.74	113.3
15-Dec-04 09:15:00	4629.39	112.4	4635.62	112.4	4632.27	112.1	4624.36	112.4
15-Dec-04 09:20:00	4598.02	111.8	4597.94	111.8	4597.47	111.5	4621.91	111.8
15-Dec-04 09:25:00	4563.10	111.4	4563.24	111.4	4562.67	111.1	4586.46	111.4
15-Dec-04 09:30:00	4466.04	111.1	4466.79	111.0	4465.90	110.8	4487.09	111.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Upper DGA

	WTQR-A #1812		WTQR-A #835		WTQR-A #851		WCQR-A #776	
	Measuring Point 2924.54 m MDRT							
DATE TIME	Below valve		Below valve		Below valve		Annulus	
	psiA	degC	psiA	degC	psiA	degC	psiA	degC
15-Dec-04 09:35:00	4674.90	110.9	4675.04	110.9	4674.51	110.6	4696.57	110.9
15-Dec-04 09:40:00	4689.48	110.7	4689.39	110.7	4688.83	110.4	4710.99	110.7
15-Dec-04 09:45:00	4684.72	110.6	4684.54	110.6	4684.14	110.3	4705.89	110.5
15-Dec-04 09:50:00	4674.00	110.4	4673.99	110.4	4673.55	110.1	4695.53	110.4
15-Dec-04 09:55:00	4670.58	110.3	4670.57	110.3	4670.03	110.0	4691.70	110.3
15-Dec-04 10:00:00	Finish reversing, close Choke manifold and observe well.							
15-Dec-04 10:00:00	4374.98	110.1	4375.05	110.1	4374.51	109.8	4373.45	110.1
15-Dec-04 10:05:00	4372.70	110.2	4372.69	110.2	4372.23	109.9	4371.34	110.2
15-Dec-04 10:10:00	4372.42	110.4	4372.41	110.4	4371.94	110.0	4371.07	110.4
15-Dec-04 10:15:00	4370.65	110.6	4372.46	110.6	4371.33	110.2	4370.40	110.5
15-Dec-04 10:16:00	Lower down DST string.							
15-Dec-04 10:19:00	Close Master valve.							
15-Dec-04 10:20:00	4367.63	110.7	4367.62	110.7	4366.94	110.4	4370.54	110.7
15-Dec-04 10:22:00	Flush surface lines prior to rig down Flowhead.							
15-Dec-04 10:25:00	4362.49	110.9	4362.43	110.9	4361.97	110.5	4370.49	110.9

Schlumberger

WELL TESTING REPORT

BOTTOM HOLE RESULTS - Lower DGA Carrier

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
	TEST #1 Lower Zone (Perforation: 3141m - 3150m)					
11-Dec-04 09:35:00	4406.76	118.4	4407.31	118.3	4406.23	117.9
11-Dec-04 09:40:00	Pull DST string to position Packer.					
11-Dec-04 09:40:00	4404.27	118.3	4407.31	118.3	4403.50	117.9
11-Dec-04 09:45:00	4402.93	118.3	4404.02	118.3	4402.80	117.8
11-Dec-04 09:47:00	Rotate DST clockwise 3 turns, lower string to set Packer.					
11-Dec-04 09:50:00	4399.43	118.3	4400.54	118.3	4398.90	117.9
11-Dec-04 09:55:00	4400.23	118.3	4400.83	118.3	4399.70	117.9
11-Dec-04 10:00:00	4400.78	118.3	4401.37	118.3	4400.25	117.9
11-Dec-04 10:05:00	4401.30	118.3	4401.89	118.3	4400.77	117.9
11-Dec-04 10:10:00	4401.81	118.3	4402.41	118.3	4401.28	117.9
11-Dec-04 10:15:00	4402.32	118.3	4402.91	118.3	4401.79	117.9
11-Dec-04 10:20:00	4402.82	118.3	4403.42	118.3	4402.29	117.9
11-Dec-04 10:25:00	4329.46	118.3	4330.13	118.3	4328.89	117.8
11-Dec-04 10:30:00	4333.02	118.3	4333.83	118.3	4332.43	117.8
11-Dec-04 10:31:00	Pressue Annulus 850 psi to actuate PORT, MCVL and lock open TFTV.					
11-Dec-04 10:35:00	4420.16	118.3	4421.93	118.3	4419.81	117.9
11-Dec-04 10:36:00	Increase Annulus 1050 psi to test Positrieve Packer integrity.					
11-Dec-04 10:40:00	4421.02	118.3	4421.57	118.3	4420.49	117.9
11-Dec-04 10:45:00	4420.97	118.3	4421.55	118.3	4420.44	117.9
11-Dec-04 10:50:00	4420.95	118.3	4421.57	118.3	4420.42	117.9
11-Dec-04 10:53:00	Good test, bleed off Annulus.					
11-Dec-04 10:55:00	4419.15	118.3	4420.08	118.3	4418.62	117.9
11-Dec-04 11:00:00	4419.07	118.3	4419.67	118.3	4418.54	117.9
11-Dec-04 11:05:00	4417.99	118.3	4418.58	118.3	4417.46	117.9
11-Dec-04 11:10:00	4417.67	118.3	4418.24	118.3	4417.13	117.9
11-Dec-04 11:15:00	4417.69	118.3	4418.27	118.3	4417.16	117.9
11-Dec-04 11:20:00	4417.85	118.3	4418.45	118.3	4417.31	117.9
11-Dec-04 11:25:00	4418.09	118.3	4418.66	118.3	4417.55	117.9
11-Dec-04 11:30:00	4418.34	118.3	4418.94	118.3	4417.81	117.9
11-Dec-04 11:35:00	4418.61	118.3	4419.21	118.3	4418.08	117.9
11-Dec-04 11:38:00	Pressure Annulus to cycle PCT.					
11-Dec-04 11:40:00	4419.19	118.3	4419.72	118.3	4418.58	117.9
11-Dec-04 11:45:00	Bleed off Annulus, PCT out of hold-open position.					
11-Dec-04 11:45:00	4418.31	118.3	4418.54	118.3	4417.83	117.9
11-Dec-04 11:50:00	4417.18	118.3	4417.78	118.3	4416.64	117.9
11-Dec-04 11:55:00	4417.63	118.3	4418.23	118.3	4417.09	117.9
11-Dec-04 12:00:00	4418.09	118.3	4418.69	118.3	4417.56	117.9
11-Dec-04 12:15:00	4419.46	118.3	4420.06	118.3	4418.93	117.9
11-Dec-04 12:30:00	4420.83	118.3	4421.43	118.3	4420.29	117.9
11-Dec-04 12:45:00	4422.18	118.3	4422.79	118.3	4421.65	117.9
11-Dec-04 13:00:00	4423.53	118.3	4424.14	118.3	4423.00	117.9
11-Dec-04 13:15:00	4424.86	118.4	4425.47	118.3	4424.33	117.9
11-Dec-04 13:30:00	4426.19	118.4	4426.80	118.3	4425.65	117.9
11-Dec-04 13:45:00	4427.51	118.4	4428.12	118.3	4426.97	117.9
11-Dec-04 14:00:00	4428.82	118.4	4429.44	118.4	4428.29	117.9
11-Dec-04 14:15:00	4430.07	118.4	4430.68	118.4	4429.53	117.9
11-Dec-04 14:30:00	4417.10	118.4	4417.70	118.4	4416.56	117.9
11-Dec-04 14:43:00	Apply 500 psi on annulus to assist cycling MCVL.					
11-Dec-04 14:45:00	4433.99	118.4	4434.58	118.4	4433.44	117.9

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 14:50:00	4434.24	118.4	4434.84	118.4	4433.69	117.9
11-Dec-04 14:55:00	4434.61	118.4	4435.20	118.4	4434.05	117.9
11-Dec-04 14:58:00	Pressure up tubing 1200 psi, start cycling MCVL.					
11-Dec-04 15:00:00	4435.14	118.4	4435.74	118.4	4434.60	117.9
11-Dec-04 15:03:00	Bleed off tubing pressure.					
11-Dec-04 15:05:00	Pressure up tubing 1200 psi.					
11-Dec-04 15:05:00	4435.47	118.4	4436.08	118.4	4434.93	117.9
11-Dec-04 15:10:00	Bleed off tubing pressure. Good indication of MCVL port opened.					
11-Dec-04 15:10:00	4435.80	118.4	4436.35	118.4	4435.27	117.9
11-Dec-04 15:15:00	4421.00	118.4	4421.59	118.4	4420.45	117.9
11-Dec-04 15:19:00	Start displacing tubing contents with diesel cushion.					
11-Dec-04 15:20:00	4419.98	118.4	4420.59	118.4	4419.44	117.9
11-Dec-04 15:25:00	4420.65	118.4	4421.26	118.4	4420.10	117.9
11-Dec-04 15:30:00	4421.18	118.4	4421.79	118.4	4420.64	118.0
11-Dec-04 15:35:00	4421.69	118.4	4422.30	118.4	4421.15	118.0
11-Dec-04 15:40:00	4422.19	118.4	4422.80	118.4	4421.66	118.0
11-Dec-04 15:45:00	4422.67	118.4	4423.28	118.4	4422.14	118.0
11-Dec-04 15:50:00	4423.14	118.4	4423.74	118.4	4422.61	118.0
11-Dec-04 15:55:00	4421.48	118.4	4408.99	118.4	4417.57	118.0
11-Dec-04 15:56:00	Finish displacing with 64 bbls diesel cushion.					
11-Dec-04 15:59:00	Close Master valve, flush surface line to Surge tank.					
11-Dec-04 16:00:00	4417.73	118.4	4418.33	118.4	4417.18	118.0
11-Dec-04 16:05:00	4418.25	118.4	4418.86	118.4	4417.71	118.0
11-Dec-04 16:10:00	4418.72	118.4	4419.32	118.4	4418.17	118.0
11-Dec-04 16:12:00	Open Master valve, pressure up tubing for PCT opening indication.					
11-Dec-04 16:14:00	Reduce tubing pressure.					
11-Dec-04 16:15:00	4413.71	118.4	4414.31	118.4	4413.17	118.0
11-Dec-04 16:17:00	Pressure Annulus to open PCT, good indication.					
11-Dec-04 16:20:00	3964.72	118.3	3967.26	118.3	3963.80	117.9
11-Dec-04 16:25:00	3974.57	118.3	3975.15	118.3	3973.98	117.9
11-Dec-04 16:30:00	3975.97	118.4	3976.51	118.3	3975.39	117.9
11-Dec-04 16:35:00	3975.32	118.4	3975.86	118.3	3974.75	117.9
11-Dec-04 16:40:00	3973.66	118.4	3974.18	118.3	3973.10	117.9
11-Dec-04 16:45:00	3971.36	118.4	3971.87	118.3	3970.80	117.9
11-Dec-04 16:50:00	3976.71	118.4	3977.41	118.4	3976.00	117.9
11-Dec-04 16:55:00	3977.69	118.4	3978.20	118.4	3977.14	117.9
11-Dec-04 17:00:00	3974.69	118.4	3975.21	118.4	3974.15	117.9
11-Dec-04 17:05:00	3971.40	118.4	3971.91	118.4	3970.86	117.9
11-Dec-04 17:09:00	Commence pressuring up tubing to initiate TCP guns.					
11-Dec-04 17:10:00	8202.04	118.9	8307.40	118.9	8192.22	118.6
11-Dec-04 17:11:00	Stop pumping but hold tubing pressure.					
11-Dec-04 17:11:00	8239.66	119.0	8248.96	119.0	8239.95	118.8
11-Dec-04 17:12:00	8262.55	119.1	8264.12	119.0	8262.88	118.8
11-Dec-04 17:13:00	Bleed off tubing pressure to obtain circ. underbalance.					
11-Dec-04 17:13:00	7344.89	119.0	7161.63	118.9	7390.46	118.7
11-Dec-04 17:14:00	5327.92	118.7	5198.11	118.6	5357.32	118.3
11-Dec-04 17:15:00	Close Choke manifold.					
11-Dec-04 17:15:00	3480.67	118.4	3473.17	118.3	3483.58	117.9
11-Dec-04 17:16:00	3474.41	118.2	3475.33	118.1	3473.95	117.6
11-Dec-04 17:17:00	3474.74	118.2	3474.96	118.1	3474.14	117.6

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 17:18:00	3475.24	118.2	3475.48	118.1	3474.37	117.6
11-Dec-04 17:19:00	3476.11	118.2	3476.41	118.1	3475.15	117.6
11-Dec-04 17:20:00	3477.30	118.2	3477.66	118.1	3476.35	117.6
11-Dec-04 17:21:00	3478.69	118.2	3479.10	118.1	3477.77	117.6
11-Dec-04 17:22:00	3480.16	118.2	3480.59	118.1	3479.28	117.7
11-Dec-04 17:23:00	3481.59	118.2	3482.08	118.1	3480.76	117.7
11-Dec-04 17:24:00	3482.98	118.2	3483.45	118.2	3482.18	117.7
11-Dec-04 17:25:00	3484.35	118.2	3484.87	118.2	3483.58	117.7
11-Dec-04 17:26:00	3485.62	118.2	3486.11	118.2	3484.87	117.7
11-Dec-04 17:27:00	3486.78	118.2	3487.26	118.2	3486.05	117.7
11-Dec-04 17:28:00	3487.77	118.2	3488.30	118.2	3487.06	117.7
11-Dec-04 17:29:00	3488.65	118.2	3489.13	118.2	3487.95	117.7
11-Dec-04 17:30:00	3489.38	118.2	3489.87	118.2	3488.70	117.7
11-Dec-04 17:31:00	3490.08	118.2	3490.57	118.2	3489.40	117.7
11-Dec-04 17:32:00	3490.72	118.2	3491.20	118.2	3490.05	117.8
11-Dec-04 17:33:00	3491.25	118.2	3491.75	118.2	3490.58	117.8
11-Dec-04 17:34:00	3610.67	118.2	3646.94	118.2	3542.32	117.8
11-Dec-04 17:35:00	Good surface indication of TCP guns fired.					
11-Dec-04 17:35:00	4189.82	118.4	4191.00	118.3	4188.92	117.9
11-Dec-04 17:36:00	4193.22	118.4	4193.89	118.4	4192.65	117.9
11-Dec-04 17:37:00	Open well on 16/64" adjustable choke to Surge tank. (Initial Flow Period)					
11-Dec-04 17:37:00	4188.53	118.4	4189.14	118.4	4187.76	118.0
11-Dec-04 17:38:00	4036.58	118.4	4034.08	118.4	4036.95	117.9
11-Dec-04 17:39:00	4086.83	118.4	4091.53	118.4	4085.38	118.0
11-Dec-04 17:40:00	4128.98	118.4	4131.11	118.4	4127.97	118.0
11-Dec-04 17:41:00	4123.69	118.5	4115.21	118.5	4123.01	118.0
11-Dec-04 17:42:00	4038.14	118.5	4037.84	118.5	4037.89	118.0
11-Dec-04 17:43:00	4055.24	118.5	4077.88	118.5	4053.37	118.1
11-Dec-04 17:44:00	4157.41	118.6	4159.16	118.6	4156.55	118.1
11-Dec-04 17:45:00	4164.72	118.6	4165.55	118.6	4164.11	118.1
11-Dec-04 17:46:00	4165.95	118.6	4166.86	118.6	4165.75	118.2
11-Dec-04 17:47:00	Bleed off Annulus to close PCT. (Initial Pressure Build Up Period)					
11-Dec-04 17:47:00	4209.80	118.6	4217.67	118.7	4206.99	118.2
11-Dec-04 17:48:00	4227.90	118.7	4228.42	118.7	4227.37	118.2
11-Dec-04 17:49:00	Close Choke manifold. Recover 3.7 bbls diesel cushion.					
11-Dec-04 17:49:00	4227.92	118.7	4228.52	118.7	4227.38	118.2
11-Dec-04 17:50:00	4228.34	118.7	4228.90	118.7	4227.80	118.2
11-Dec-04 17:51:00	4228.59	118.7	4229.14	118.7	4228.01	118.2
11-Dec-04 17:52:00	4228.79	118.7	4229.33	118.7	4228.22	118.2
11-Dec-04 17:53:00	4228.93	118.7	4229.47	118.7	4228.35	118.2
11-Dec-04 17:54:00	4229.04	118.7	4229.59	118.7	4228.46	118.2
11-Dec-04 17:55:00	4229.13	118.7	4229.67	118.7	4228.56	118.2
11-Dec-04 17:56:00	4229.19	118.7	4229.72	118.6	4228.62	118.2
11-Dec-04 17:57:00	4229.25	118.6	4229.79	118.6	4228.68	118.2
11-Dec-04 17:58:00	4229.32	118.6	4229.86	118.6	4228.75	118.2
11-Dec-04 17:59:00	4229.50	118.6	4230.06	118.6	4228.92	118.2
11-Dec-04 18:00:00	4229.61	118.6	4230.14	118.6	4229.04	118.2
11-Dec-04 18:05:00	4229.65	118.6	4230.18	118.6	4229.08	118.2
11-Dec-04 18:10:00	4228.31	118.6	4228.79	118.6	4227.93	118.1
11-Dec-04 18:15:00	4225.86	118.6	4226.40	118.5	4225.46	118.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 18:20:00	4225.09	118.5	4225.65	118.5	4224.78	118.1
11-Dec-04 18:25:00	4224.21	118.5	4224.79	118.5	4223.89	118.1
11-Dec-04 18:30:00	4222.66	118.5	4223.23	118.5	4222.36	118.1
11-Dec-04 18:35:00	4222.16	118.5	4222.73	118.5	4221.85	118.1
11-Dec-04 18:40:00	4221.73	118.5	4222.31	118.5	4221.44	118.1
11-Dec-04 18:45:00	4221.66	118.5	4222.24	118.5	4221.36	118.1
11-Dec-04 18:50:00	4221.84	118.5	4222.43	118.5	4221.54	118.1
11-Dec-04 18:55:00	4221.93	118.5	4222.51	118.5	4221.63	118.1
11-Dec-04 19:00:00	4221.98	118.5	4222.56	118.5	4221.68	118.1
11-Dec-04 19:04:00	Pressure Annulus to open PCT (Clean Up Flow Period)					
11-Dec-04 19:05:00	4220.46	118.5	4221.76	118.4	4220.58	118.0
11-Dec-04 19:06:00	Open well on 16/64" adjustable choke to Surge tank.					
11-Dec-04 19:06:00	4154.86	118.5	4155.59	118.4	4154.52	117.9
11-Dec-04 19:07:00	4068.06	118.4	4062.01	118.3	4069.48	117.9
11-Dec-04 19:08:00	Increase adjustable choke to 20/64"					
11-Dec-04 19:08:00	3945.05	118.1	3939.44	118.0	3946.91	117.5
11-Dec-04 19:09:00	3904.74	117.8	3903.09	117.8	3905.36	117.2
11-Dec-04 19:10:00	3909.72	117.8	3911.41	117.8	3908.80	117.2
11-Dec-04 19:11:00	3930.22	117.9	3931.81	118.0	3929.15	117.4
11-Dec-04 19:12:00	3950.39	118.0	3952.91	118.1	3949.34	117.6
11-Dec-04 19:13:00	3970.00	118.1	3971.83	118.3	3969.07	117.7
11-Dec-04 19:14:00	3984.01	118.2	3985.41	118.4	3983.08	117.9
11-Dec-04 19:15:00	3994.95	118.3	3996.34	118.5	3994.15	118.0
11-Dec-04 19:16:00	Increase adjustable choke to 24/64"					
11-Dec-04 19:16:00	3981.98	118.4	3982.43	118.5	3982.14	118.0
11-Dec-04 19:17:00	Total recovery 14 bbls diesel cushion.					
11-Dec-04 19:17:00	3984.81	118.4	3983.65	118.5	3983.76	118.0
11-Dec-04 19:18:00	3984.26	118.5	3984.54	118.6	3984.20	118.1
11-Dec-04 19:19:00	3995.49	118.6	3996.29	118.7	3994.75	118.2
11-Dec-04 19:20:00	4003.91	118.6	4004.23	118.8	4003.19	118.3
11-Dec-04 19:21:00	4002.46	118.7	4002.94	118.8	4002.23	118.3
11-Dec-04 19:22:00	4011.81	118.8	4012.54	118.9	4011.34	118.4
11-Dec-04 19:23:00	4018.71	118.8	4017.94	119.0	4018.35	118.4
11-Dec-04 19:24:00	4015.37	118.9	4015.93	119.0	4014.86	118.5
11-Dec-04 19:25:00	4017.62	118.9	4018.66	119.1	4017.18	118.5
11-Dec-04 19:26:00	4008.64	119.0	4008.44	119.2	4008.69	118.5
11-Dec-04 19:27:00	3999.11	119.0	3998.23	119.2	3999.01	118.5
11-Dec-04 19:28:00	3983.31	119.0	3982.65	119.2	3983.21	118.6
11-Dec-04 19:29:00	3956.61	119.1	3954.54	119.2	3956.96	118.6
11-Dec-04 19:30:00	3935.74	119.1	3934.81	119.3	3935.94	118.5
11-Dec-04 19:31:00	3914.26	119.2	3913.47	119.3	3914.52	118.6
11-Dec-04 19:32:00	Divert flow to Portside burner. Total recovery 31 bbls diesel cushion.					
11-Dec-04 19:32:00	3906.92	119.2	3910.91	119.3	3906.00	118.6
11-Dec-04 19:33:00	3943.34	119.2	3945.22	119.3	3942.36	118.7
11-Dec-04 19:34:00	3960.24	119.3	3960.98	119.4	3959.28	118.8
11-Dec-04 19:35:00	3962.31	119.3	3962.51	119.4	3961.74	118.8
11-Dec-04 19:36:00	3962.68	119.3	3963.72	119.4	3962.13	118.8
11-Dec-04 19:37:00	4023.77	119.3	4029.76	119.4	4021.57	118.9
11-Dec-04 19:38:00	4079.19	119.4	4082.58	119.6	4077.75	119.1
11-Dec-04 19:39:00	Increase adjustable choke to 28/64"					

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 19:39:00	4089.90	119.5	4091.18	119.6	4089.22	119.1
11-Dec-04 19:40:00	4096.98	119.6	4097.83	119.7	4096.47	119.2
11-Dec-04 19:41:00	4100.42	119.6	4100.94	119.7	4099.86	119.2
11-Dec-04 19:42:00	4102.49	119.6	4102.77	119.7	4102.04	119.2
11-Dec-04 19:43:00	4102.51	119.6	4102.85	119.7	4102.15	119.2
11-Dec-04 19:44:00	4099.73	119.6	4099.70	119.8	4099.40	119.2
11-Dec-04 19:45:00	4096.69	119.6	4096.85	119.8	4096.49	119.2
11-Dec-04 19:46:00	4094.03	119.6	4094.16	119.8	4093.66	119.3
11-Dec-04 19:47:00	4090.84	119.7	4090.83	119.8	4090.57	119.2
11-Dec-04 19:48:00	4086.62	119.7	4086.55	119.8	4086.31	119.3
11-Dec-04 19:49:00	Increase adjustable choke to 32/64"					
11-Dec-04 19:49:00	4052.38	119.7	4053.92	119.9	4052.81	119.2
11-Dec-04 19:50:00	4048.70	119.8	4048.29	119.9	4048.92	119.2
11-Dec-04 19:51:00	4075.62	119.8	4080.84	119.9	4074.30	119.2
11-Dec-04 19:52:00	Gas and Brine at surface.					
11-Dec-04 19:52:00	4135.32	119.8	4139.58	120.0	4133.66	119.4
11-Dec-04 19:53:00	Decrease choke to 16/64". Divert flow through Steam Exchanger					
11-Dec-04 19:53:00	4185.49	119.9	4189.47	120.1	4183.90	119.5
11-Dec-04 19:54:00	Decrease choke to 20/64" adjustable.					
11-Dec-04 19:54:00	4187.26	120.0	4188.62	120.1	4186.54	119.6
11-Dec-04 19:55:00	Divert flow to burner gas flare.					
11-Dec-04 19:55:00	4195.07	120.0	4195.83	120.1	4194.53	119.6
11-Dec-04 19:56:00	Increase adjustable choke to 24/64".					
11-Dec-04 19:56:00	4174.55	120.0	4173.53	120.1	4174.34	119.6
11-Dec-04 19:57:00	Gradually increase to 32/64" adjustable choke.					
11-Dec-04 19:57:00	4129.20	120.0	4122.98	120.1	4130.59	119.5
11-Dec-04 19:58:00	3975.78	119.9	3964.12	120.0	3979.39	119.3
11-Dec-04 19:59:00	3865.22	119.7	3860.07	119.8	3867.24	118.9
11-Dec-04 20:00:00	3785.80	119.6	3780.86	119.6	3787.55	118.7
11-Dec-04 20:01:00	3721.73	119.5	3716.96	119.5	3723.10	118.6
11-Dec-04 20:02:00	3648.90	119.4	3642.92	119.4	3650.32	118.5
11-Dec-04 20:03:00	3547.84	119.3	3540.82	119.2	3549.61	118.3
11-Dec-04 20:04:00	Increase adjustable choke to 36/64".					
11-Dec-04 20:04:00	3423.62	119.1	3413.01	119.1	3426.13	118.1
11-Dec-04 20:05:00	3272.62	118.9	3260.79	118.8	3275.60	117.8
11-Dec-04 20:06:00	3158.10	118.6	3150.82	118.6	3159.79	117.6
11-Dec-04 20:07:00	3048.12	118.5	3041.31	118.4	3049.88	117.4
11-Dec-04 20:08:00	2965.93	118.3	2960.09	118.2	2967.31	117.2
11-Dec-04 20:09:00	2907.32	118.2	2903.42	118.1	2907.97	117.1
11-Dec-04 20:10:00	2862.02	118.1	2858.95	118.0	2862.51	117.1
11-Dec-04 20:11:00	2840.49	118.0	2840.43	118.0	2839.98	117.1
11-Dec-04 20:12:00	2824.88	118.0	2825.38	118.0	2824.29	117.1
11-Dec-04 20:13:00	2822.94	118.0	2822.44	118.0	2822.47	117.2
11-Dec-04 20:14:00	2813.69	118.0	2813.46	118.0	2813.14	117.3
11-Dec-04 20:15:00	2807.03	118.1	2807.03	118.0	2806.55	117.4
11-Dec-04 20:16:00	2803.15	118.1	2803.18	118.1	2802.67	117.4
11-Dec-04 20:17:00	Increase adjustable choke to 40/64".					
11-Dec-04 20:17:00	2777.29	118.1	2774.87	118.1	2777.56	117.4
11-Dec-04 20:18:00	2740.99	118.1	2739.05	118.0	2741.35	117.4
11-Dec-04 20:19:00	2712.78	118.0	2711.53	118.0	2713.09	117.4

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 20:20:00	2697.23	118.0	2696.64	117.9	2697.46	117.3
11-Dec-04 20:21:00	2687.29	117.9	2687.27	117.9	2687.29	117.3
11-Dec-04 20:22:00	2686.38	117.9	2686.91	117.8	2686.18	117.2
11-Dec-04 20:23:00	2690.91	117.8	2691.89	117.8	2690.57	117.2
11-Dec-04 20:24:00	2692.88	117.8	2693.30	117.7	2692.67	117.2
11-Dec-04 20:25:00	2692.81	117.8	2693.14	117.7	2692.64	117.2
11-Dec-04 20:26:00	2693.82	117.7	2694.19	117.7	2693.65	117.1
11-Dec-04 20:27:00	2695.63	117.7	2696.14	117.6	2695.44	117.1
11-Dec-04 20:28:00	2697.71	117.7	2698.23	117.6	2697.50	117.1
11-Dec-04 20:29:00	2699.77	117.7	2700.38	117.6	2699.57	117.1
11-Dec-04 20:30:00	2708.38	117.6	2709.70	117.5	2708.01	117.0
11-Dec-04 20:31:00	2720.42	117.6	2721.47	117.5	2720.07	117.1
11-Dec-04 20:32:00	2729.41	117.6	2730.54	117.5	2729.04	117.1
11-Dec-04 20:33:00	Increase adjustable choke to 44/64".					
11-Dec-04 20:33:00	2732.97	117.6	2732.13	117.5	2733.00	117.0
11-Dec-04 20:34:00	2698.26	117.5	2695.82	117.4	2698.84	117.0
11-Dec-04 20:35:00	2665.55	117.4	2663.71	117.3	2666.11	116.8
11-Dec-04 20:36:00	2642.20	117.3	2640.94	117.2	2642.71	116.7
11-Dec-04 20:37:00	2624.43	117.2	2623.69	117.1	2624.85	116.6
11-Dec-04 20:38:00	2608.73	117.1	2607.58	117.0	2609.20	116.5
11-Dec-04 20:39:00	2608.94	117.1	2609.07	116.9	2608.96	116.4
11-Dec-04 20:40:00	2607.58	117.0	2607.71	116.9	2607.45	116.4
11-Dec-04 20:41:00	Divert flow through separator.					
11-Dec-04 20:41:00	2601.97	117.0	2601.50	116.9	2601.95	116.4
11-Dec-04 20:42:00	2606.25	117.0	2606.81	116.9	2605.92	116.4
11-Dec-04 20:43:00	2604.42	117.0	2604.67	116.9	2604.25	116.4
11-Dec-04 20:44:00	2604.60	116.9	2604.90	116.8	2604.45	116.3
11-Dec-04 20:45:00	2602.73	116.9	2602.81	116.8	2602.66	116.3
11-Dec-04 20:46:00	2602.21	116.9	2603.63	116.8	2601.86	116.3
11-Dec-04 20:47:00	2609.63	116.8	2609.98	116.8	2609.45	116.3
11-Dec-04 20:48:00	2610.06	116.8	2610.63	116.7	2609.86	116.3
11-Dec-04 20:49:00	2611.96	116.8	2612.50	116.7	2611.79	116.2
11-Dec-04 20:50:00	2612.99	116.8	2613.52	116.7	2612.82	116.2
11-Dec-04 20:51:00	2616.29	116.8	2617.13	116.7	2616.05	116.2
11-Dec-04 20:52:00	2621.99	116.8	2622.85	116.7	2621.75	116.2
11-Dec-04 20:53:00	2626.66	116.8	2627.23	116.7	2626.47	116.2
11-Dec-04 20:54:00	2627.56	116.7	2627.96	116.6	2627.44	116.2
11-Dec-04 20:55:00	2628.94	116.7	2629.55	116.6	2628.73	116.2
11-Dec-04 20:56:00	2628.40	116.7	2628.66	116.6	2628.30	116.2
11-Dec-04 20:57:00	2627.69	116.7	2628.16	116.6	2627.55	116.1
11-Dec-04 20:58:00	2629.00	116.7	2629.44	116.6	2628.86	116.1
11-Dec-04 20:59:00	2629.50	116.6	2629.95	116.6	2629.36	116.1
11-Dec-04 21:00:00	2630.45	116.6	2630.94	116.5	2630.29	116.1
11-Dec-04 21:05:00	2637.36	116.6	2638.16	116.5	2637.14	116.0
11-Dec-04 21:10:00	2642.58	116.6	2642.92	116.5	2642.48	116.0
11-Dec-04 21:15:00	2648.08	116.6	2648.54	116.5	2647.96	116.0
11-Dec-04 21:20:00	2651.88	116.6	2652.47	116.5	2651.74	116.0
11-Dec-04 21:25:00	2655.70	116.6	2656.17	116.5	2655.60	116.0
11-Dec-04 21:30:00	2661.88	116.6	2662.31	116.5	2661.79	116.0
11-Dec-04 21:31:00	2661.83	116.6	2662.44	116.5	2661.70	116.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 21:32:00	2662.40	116.6	2662.86	116.5	2662.30	116.1
11-Dec-04 21:33:00	Divert flow through 48/64" fixed choke, fully open STX adjustable choke.					
11-Dec-04 21:33:00	2661.61	116.6	2661.72	116.5	2661.55	116.1
11-Dec-04 21:34:00	2643.66	116.6	2642.65	116.5	2643.95	116.0
11-Dec-04 21:35:00	2625.53	116.5	2624.69	116.4	2625.81	116.0
11-Dec-04 21:36:00	2610.07	116.5	2609.55	116.4	2610.27	115.9
11-Dec-04 21:37:00	2600.84	116.4	2600.72	116.4	2600.93	115.9
11-Dec-04 21:38:00	2594.00	116.4	2593.95	116.3	2594.07	115.9
11-Dec-04 21:39:00	2589.95	116.4	2590.21	116.3	2589.94	115.9
11-Dec-04 21:40:00	2588.90	116.4	2589.21	116.3	2588.85	115.9
11-Dec-04 21:41:00	2586.63	116.4	2586.95	116.3	2586.57	115.9
11-Dec-04 21:42:00	2584.51	116.4	2584.84	116.3	2584.46	115.8
11-Dec-04 21:43:00	2584.10	116.4	2584.54	116.3	2584.03	115.8
11-Dec-04 21:44:00	2585.22	116.4	2585.75	116.3	2585.12	115.8
11-Dec-04 21:45:00	2585.20	116.4	2585.63	116.3	2585.13	115.8
11-Dec-04 21:46:00	2584.87	116.4	2585.32	116.3	2584.80	115.8
11-Dec-04 21:47:00	2585.34	116.4	2585.87	116.3	2585.24	115.8
11-Dec-04 21:48:00	2586.53	116.4	2587.11	116.3	2586.42	115.8
11-Dec-04 21:49:00	2589.00	116.4	2589.59	116.3	2588.89	115.8
11-Dec-04 21:50:00	2588.90	116.4	2589.29	116.3	2588.84	115.8
11-Dec-04 21:51:00	2588.28	116.4	2588.78	116.3	2588.19	115.8
11-Dec-04 21:52:00	2589.46	116.4	2589.97	116.3	2589.38	115.8
11-Dec-04 21:53:00	2589.66	116.4	2590.17	116.3	2589.59	115.8
11-Dec-04 21:54:00	2591.46	116.4	2592.10	116.3	2591.35	115.8
11-Dec-04 21:55:00	2594.18	116.4	2594.68	116.3	2594.08	115.8
11-Dec-04 21:56:00	2593.55	116.4	2593.89	116.3	2593.50	115.8
11-Dec-04 21:57:00	2593.11	116.4	2593.62	116.3	2593.03	115.8
11-Dec-04 21:58:00	2593.77	116.4	2594.22	116.3	2593.71	115.8
11-Dec-04 21:59:00	2593.07	116.4	2593.52	116.3	2593.01	115.8
11-Dec-04 22:00:00	2593.38	116.4	2593.92	116.3	2593.30	115.8
11-Dec-04 22:05:00	2595.58	116.3	2596.03	116.3	2595.52	115.8
11-Dec-04 22:10:00	2599.49	116.4	2599.89	116.3	2599.44	115.8
11-Dec-04 22:15:00	2603.57	116.4	2603.98	116.3	2603.51	115.8
11-Dec-04 22:18:00	Increase separator pressure to prevent liquid being carry-over.					
11-Dec-04 22:20:00	2604.27	116.4	2604.82	116.3	2604.20	115.8
11-Dec-04 22:25:00	2606.85	116.4	2607.39	116.3	2606.78	115.9
11-Dec-04 22:30:00	2609.08	116.4	2609.58	116.3	2609.01	115.9
11-Dec-04 22:35:00	2610.51	116.4	2611.04	116.4	2610.43	115.9
11-Dec-04 22:40:00	2612.52	116.4	2613.04	116.4	2612.44	115.9
11-Dec-04 22:45:00	2614.42	116.5	2614.93	116.4	2614.34	115.9
11-Dec-04 22:50:00	2616.36	116.5	2616.91	116.4	2616.27	116.0
11-Dec-04 22:55:00	2618.05	116.5	2618.60	116.4	2617.96	116.0
11-Dec-04 23:00:00			(Main Flow Period)			
11-Dec-04 23:00:00	2619.71	116.5	2620.24	116.4	2619.62	116.0
11-Dec-04 23:05:00	2621.28	116.5	2621.82	116.5	2621.20	116.0
11-Dec-04 23:10:00	2621.79	116.5	2622.30	116.5	2621.72	116.0
11-Dec-04 23:15:00	2623.35	116.6	2623.87	116.5	2623.27	116.0
11-Dec-04 23:20:00	2624.36	116.6	2624.85	116.5	2624.28	116.1
11-Dec-04 23:25:00	2625.26	116.6	2625.77	116.5	2625.18	116.1
11-Dec-04 23:30:00	2626.76	116.6	2627.29	116.6	2626.67	116.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
11-Dec-04 23:35:00	2628.01	116.6	2628.54	116.6	2627.92	116.1
11-Dec-04 23:40:00	2629.47	116.6	2630.00	116.6	2629.37	116.1
11-Dec-04 23:45:00	2630.65	116.7	2631.17	116.6	2630.55	116.2
11-Dec-04 23:50:00	2632.03	116.7	2632.55	116.6	2631.94	116.2
11-Dec-04 23:55:00	2632.87	116.7	2633.39	116.6	2632.78	116.2
12-Dec-04 00:00:00	2634.33	116.7	2634.84	116.7	2634.24	116.2
12-Dec-04 00:05:00	2635.13	116.7	2635.66	116.7	2635.03	116.2
12-Dec-04 00:10:00	2636.14	116.7	2636.66	116.7	2636.04	116.2
12-Dec-04 00:15:00	2637.35	116.8	2637.86	116.7	2637.26	116.3
12-Dec-04 00:20:00	2638.59	116.8	2639.09	116.7	2638.49	116.3
12-Dec-04 00:25:00	2638.59	116.8	2639.09	116.7	2638.49	116.3
12-Dec-04 00:30:00	2640.11	116.8	2640.61	116.7	2640.01	116.3
12-Dec-04 00:35:00	2641.52	116.8	2642.04	116.8	2641.40	116.3
12-Dec-04 00:40:00	2642.28	116.8	2642.81	116.8	2642.17	116.3
12-Dec-04 00:45:00	2643.15	116.8	2643.66	116.8	2643.03	116.3
12-Dec-04 00:50:00	2643.83	116.9	2644.37	116.8	2643.72	116.4
12-Dec-04 00:55:00	2644.29	116.9	2644.79	116.8	2644.18	116.4
12-Dec-04 01:00:00	2645.29	116.9	2645.82	116.8	2645.18	116.4
12-Dec-04 01:05:00	2646.22	116.9	2646.76	116.8	2646.12	116.4
12-Dec-04 01:10:00	2647.21	116.9	2647.74	116.9	2647.10	116.4
12-Dec-04 01:15:00	2647.78	116.9	2648.28	116.9	2647.68	116.4
12-Dec-04 01:20:00	2649.17	116.9	2649.69	116.9	2649.06	116.4
12-Dec-04 01:25:00	2649.70	117.0	2650.24	116.9	2649.59	116.5
12-Dec-04 01:30:00	2651.35	117.0	2651.85	116.9	2651.22	116.5
12-Dec-04 01:35:00	2651.48	117.0	2651.95	116.9	2651.37	116.5
12-Dec-04 01:40:00	2653.31	117.0	2653.84	116.9	2653.17	116.5
12-Dec-04 01:45:00	2653.62	117.0	2654.13	116.9	2653.50	116.5
12-Dec-04 01:50:00	2654.61	117.0	2655.15	117.0	2654.48	116.5
12-Dec-04 01:55:00	2654.89	117.0	2655.37	117.0	2654.77	116.5
12-Dec-04 02:00:00	2655.58	117.0	2656.08	117.0	2655.45	116.5
12-Dec-04 02:05:00	2655.81	117.0	2656.29	117.0	2655.69	116.6
12-Dec-04 02:10:00	2656.35	117.1	2656.87	117.0	2656.22	116.6
12-Dec-04 02:15:00	2656.87	117.1	2657.36	117.0	2656.74	116.6
12-Dec-04 02:20:00	2657.24	117.1	2657.74	117.0	2657.11	116.6
12-Dec-04 02:25:00	2658.11	117.1	2658.61	117.0	2658.00	116.6
12-Dec-04 02:30:00	2658.49	117.1	2659.00	117.0	2658.37	116.6
12-Dec-04 02:35:00	2659.17	117.1	2659.66	117.1	2659.06	116.6
12-Dec-04 02:40:00	2659.28	117.1	2659.78	117.1	2659.16	116.6
12-Dec-04 02:45:00	2659.97	117.1	2660.48	117.1	2659.84	116.6
12-Dec-04 02:50:00	2660.32	117.1	2660.82	117.1	2660.20	116.6
12-Dec-04 02:55:00	2660.70	117.1	2661.22	117.1	2660.57	116.6
12-Dec-04 03:00:00	2661.44	117.2	2661.95	117.1	2661.31	116.7
12-Dec-04 03:05:00	2661.70	117.2	2662.20	117.1	2661.57	116.7
12-Dec-04 03:10:00	2662.18	117.2	2662.66	117.1	2662.06	116.7
12-Dec-04 03:15:00	2662.54	117.2	2663.05	117.1	2662.42	116.7
12-Dec-04 03:20:00	2662.95	117.2	2663.44	117.1	2662.83	116.7
12-Dec-04 03:25:00	2663.64	117.2	2664.14	117.1	2663.52	116.7
12-Dec-04 03:30:00	2663.77	117.2	2664.26	117.1	2663.64	116.7
12-Dec-04 03:35:00	2664.15	117.2	2664.65	117.2	2664.03	116.7
12-Dec-04 03:40:00	2664.78	117.2	2665.32	117.2	2664.64	116.7

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 03:45:00	2665.22	117.2	2665.72	117.2	2665.09	116.7
12-Dec-04 03:50:00	2665.74	117.2	2666.24	117.2	2665.61	116.7
12-Dec-04 03:55:00	2666.10	117.2	2666.59	117.2	2665.97	116.8
12-Dec-04 04:00:00	2666.45	117.3	2666.95	117.2	2666.33	116.8
12-Dec-04 04:05:00	2666.64	117.3	2667.13	117.2	2666.52	116.8
12-Dec-04 04:10:00	2667.03	117.3	2667.53	117.2	2666.91	116.8
12-Dec-04 04:15:00	2667.21	117.3	2667.70	117.2	2667.07	116.8
12-Dec-04 04:20:00	2667.47	117.3	2667.96	117.2	2667.32	116.8
12-Dec-04 04:25:00	2667.60	117.3	2668.10	117.2	2667.46	116.8
12-Dec-04 04:30:00	2668.25	117.3	2668.73	117.2	2668.10	116.8
12-Dec-04 04:35:00	2668.74	117.3	2669.21	117.2	2668.60	116.8
12-Dec-04 04:40:00	2668.88	117.3	2669.39	117.3	2668.73	116.8
12-Dec-04 04:45:00	2669.39	117.3	2669.89	117.3	2669.24	116.8
12-Dec-04 04:50:00	2669.80	117.3	2670.32	117.3	2669.65	116.8
12-Dec-04 04:55:00	2670.29	117.3	2670.78	117.3	2670.14	116.8
12-Dec-04 05:00:00	2670.71	117.3	2671.19	117.3	2670.56	116.8
12-Dec-04 05:01:00	2670.45	117.3	2670.91	117.3	2670.31	116.8
12-Dec-04 05:02:00	2830.49	117.3	2929.64	117.3	2803.96	116.9
12-Dec-04 05:03:00	Bleed off pressure to close PCT (Main Build Up Period)					
12-Dec-04 05:03:00	3788.77	118.8	3816.85	118.8	3778.40	118.6
12-Dec-04 05:04:00	Close Choke manifold.					
12-Dec-04 05:04:00	3956.49	119.9	3960.71	120.4	3951.00	120.4
12-Dec-04 05:05:00	3992.37	120.5	3995.19	120.9	3990.33	120.9
12-Dec-04 05:06:00	4010.40	120.8	4012.73	121.1	4009.89	121.1
12-Dec-04 05:07:00	4022.56	120.9	4024.58	121.2	4022.55	121.1
12-Dec-04 05:08:00	4031.81	121.0	4033.32	121.2	4031.80	121.1
12-Dec-04 05:09:00	4109.17	121.0	4111.90	121.3	4108.38	121.2
12-Dec-04 05:10:00	4125.32	121.1	4127.01	121.3	4125.22	121.2
12-Dec-04 05:11:00	4133.93	121.1	4135.19	121.3	4134.02	121.1
12-Dec-04 05:12:00	4140.00	121.1	4141.14	121.4	4140.12	121.1
12-Dec-04 05:13:00	4145.52	121.1	4146.64	121.3	4145.60	121.1
12-Dec-04 05:14:00	4151.24	121.1	4152.38	121.3	4151.28	121.1
12-Dec-04 05:15:00	4156.29	121.1	4157.31	121.3	4156.36	121.0
12-Dec-04 05:16:00	4160.10	121.1	4160.95	121.3	4160.25	120.9
12-Dec-04 05:17:00	4163.45	121.1	4164.18	121.2	4163.31	120.9
12-Dec-04 05:18:00	4166.20	121.1	4167.07	121.2	4166.24	120.9
12-Dec-04 05:19:00	4168.98	121.0	4169.78	121.2	4169.10	120.8
12-Dec-04 05:20:00	4171.61	121.0	4172.41	121.2	4171.65	120.8
12-Dec-04 05:21:00	4174.09	121.0	4174.83	121.1	4174.07	120.7
12-Dec-04 05:22:00	4176.56	121.0	4177.18	121.1	4176.36	120.7
12-Dec-04 05:23:00	4178.64	120.9	4179.32	121.0	4178.44	120.6
12-Dec-04 05:24:00	4180.73	120.9	4181.38	121.0	4180.54	120.6
12-Dec-04 05:25:00	4182.67	120.9	4183.37	121.0	4182.47	120.6
12-Dec-04 05:26:00	4184.47	120.9	4185.22	120.9	4184.32	120.6
12-Dec-04 05:27:00	4186.40	120.8	4187.02	120.9	4186.22	120.5
12-Dec-04 05:28:00	4188.18	120.8	4188.81	120.8	4187.96	120.5
12-Dec-04 05:29:00	4189.78	120.8	4190.42	120.8	4189.65	120.4
12-Dec-04 05:30:00	4191.33	120.8	4192.04	120.8	4191.22	120.4
12-Dec-04 05:31:00	4193.02	120.7	4193.56	120.8	4192.84	120.4
12-Dec-04 05:32:00	4194.62	120.7	4195.13	120.7	4194.36	120.3

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 05:33:00	4196.05	120.7	4196.63	120.7	4195.73	120.3
12-Dec-04 05:34:00	4197.42	120.6	4198.02	120.7	4197.10	120.3
12-Dec-04 05:35:00	4198.80	120.6	4199.39	120.6	4198.50	120.3
12-Dec-04 05:36:00	4200.13	120.6	4200.71	120.6	4199.87	120.3
12-Dec-04 05:37:00	4201.50	120.6	4202.05	120.6	4201.25	120.2
12-Dec-04 05:38:00	4202.77	120.5	4203.33	120.6	4202.50	120.2
12-Dec-04 05:39:00	4203.98	120.5	4204.58	120.5	4203.75	120.2
12-Dec-04 05:40:00	4205.23	120.5	4205.75	120.5	4204.97	120.2
12-Dec-04 05:41:00	4206.41	120.5	4206.99	120.5	4206.21	120.1
12-Dec-04 05:42:00	4207.57	120.5	4208.15	120.5	4207.38	120.1
12-Dec-04 05:43:00	4208.75	120.4	4209.28	120.4	4208.55	120.1
12-Dec-04 05:44:00	4209.90	120.4	4210.44	120.4	4209.69	120.1
12-Dec-04 05:45:00	4211.05	120.4	4211.55	120.4	4210.80	120.0
12-Dec-04 05:50:00	4216.27	120.3	4216.82	120.3	4216.03	119.9
12-Dec-04 05:55:00	4221.17	120.2	4221.66	120.2	4220.93	119.8
12-Dec-04 06:00:00	4225.71	120.1	4226.22	120.1	4225.50	119.7
12-Dec-04 06:05:00	4230.02	120.0	4230.50	120.0	4229.78	119.7
12-Dec-04 06:10:00	4234.07	120.0	4234.57	119.9	4233.84	119.6
12-Dec-04 06:15:00	4237.93	119.9	4238.44	119.9	4237.70	119.5
12-Dec-04 06:20:00	4241.63	119.8	4242.13	119.8	4241.40	119.4
12-Dec-04 06:25:00	4245.16	119.8	4245.65	119.7	4244.94	119.4
12-Dec-04 06:30:00	4248.53	119.7	4249.04	119.7	4248.32	119.3
12-Dec-04 06:35:00	4251.79	119.7	4252.30	119.6	4251.56	119.3
12-Dec-04 06:40:00	4254.91	119.6	4255.43	119.6	4254.68	119.2
12-Dec-04 06:45:00	4257.92	119.6	4258.44	119.6	4257.69	119.2
12-Dec-04 06:50:00	4260.83	119.5	4261.35	119.5	4260.60	119.1
12-Dec-04 06:55:00	4263.64	119.5	4264.16	119.5	4263.41	119.1
12-Dec-04 07:00:00	4266.35	119.5	4266.88	119.4	4266.13	119.0
12-Dec-04 07:05:00	4268.98	119.4	4269.51	119.4	4268.76	119.0
12-Dec-04 07:10:00	4271.53	119.4	4272.06	119.4	4271.31	119.0
12-Dec-04 07:15:00	4274.00	119.4	4274.54	119.3	4273.78	118.9
12-Dec-04 07:20:00	4276.39	119.3	4276.94	119.3	4276.18	118.9
12-Dec-04 07:25:00	4278.72	119.3	4279.27	119.3	4278.51	118.9
12-Dec-04 07:30:00	4280.98	119.3	4281.53	119.3	4280.76	118.9
12-Dec-04 07:35:00	4283.17	119.3	4283.73	119.2	4282.96	118.8
12-Dec-04 07:40:00	4285.31	119.2	4285.86	119.2	4285.10	118.8
12-Dec-04 07:45:00	4287.39	119.2	4287.94	119.2	4287.18	118.8
12-Dec-04 07:50:00	4289.41	119.2	4289.97	119.2	4289.20	118.8
12-Dec-04 07:55:00	4291.38	119.2	4291.94	119.2	4291.17	118.8
12-Dec-04 08:00:00	4293.31	119.2	4293.86	119.2	4293.10	118.7
12-Dec-04 08:05:00	4295.18	119.1	4295.74	119.1	4294.97	118.7
12-Dec-04 08:10:00	4297.01	119.1	4297.56	119.1	4296.79	118.7
12-Dec-04 08:15:00	4298.80	119.1	4299.35	119.1	4298.58	118.7
12-Dec-04 08:20:00	4300.53	119.1	4301.09	119.1	4300.32	118.7
12-Dec-04 08:25:00	4302.23	119.1	4302.78	119.1	4302.02	118.7
12-Dec-04 08:30:00	4303.89	119.1	4304.44	119.1	4303.68	118.7
12-Dec-04 08:35:00	4305.51	119.1	4306.06	119.1	4305.30	118.6
12-Dec-04 08:40:00	4307.10	119.1	4307.65	119.1	4306.88	118.6
12-Dec-04 08:45:00	4308.65	119.1	4309.20	119.0	4308.43	118.6
12-Dec-04 08:50:00	4310.17	119.1	4310.71	119.0	4309.94	118.6

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 08:55:00	4311.64	119.0	4312.19	119.0	4311.43	118.6
12-Dec-04 09:00:00	4313.09	119.0	4313.64	119.0	4312.87	118.6
12-Dec-04 09:15:00	4317.25	119.0	4317.80	119.0	4317.03	118.6
12-Dec-04 09:30:00	4321.16	119.0	4321.72	119.0	4320.95	118.6
12-Dec-04 09:45:00	4324.85	119.0	4325.40	119.0	4324.63	118.5
12-Dec-04 10:00:00	4328.31	119.0	4328.87	119.0	4328.10	118.5
12-Dec-04 10:06:00	Close Master valve.					
12-Dec-04 10:15:00	4331.58	119.0	4332.14	118.9	4331.37	118.5
12-Dec-04 10:30:00	4334.69	119.0	4335.23	118.9	4334.46	118.5
12-Dec-04 10:34:00	Commence bleeding off pressure at choke manifold to gas flare.					
12-Dec-04 10:36:00	Open Choke manifold.					
12-Dec-04 10:38:00	Commence rigging up wireline prior to running 1.875" Owen bridge plug.					
12-Dec-04 10:45:00	4337.61	118.9	4338.16	118.9	4337.39	118.5
12-Dec-04 11:00:00	4340.39	118.9	4340.94	118.9	4340.18	118.5
12-Dec-04 11:15:00	4343.02	118.9	4343.59	118.9	4342.82	118.5
12-Dec-04 11:30:00	4345.54	118.9	4346.10	118.9	4345.33	118.5
12-Dec-04 11:45:00	4347.92	118.9	4348.48	118.9	4347.72	118.5
12-Dec-04 12:00:00	4350.21	118.9	4350.76	118.9	4349.99	118.5
12-Dec-04 12:15:00	4352.37	118.9	4352.93	118.9	4352.17	118.5
12-Dec-04 12:30:00	4354.45	118.9	4355.00	118.9	4354.24	118.5
12-Dec-04 12:45:00	4356.43	118.9	4356.99	118.9	4356.22	118.5
12-Dec-04 13:00:00	4358.32	118.9	4358.88	118.9	4358.11	118.5
12-Dec-04 13:15:00	4360.13	118.9	4360.69	118.9	4359.92	118.5
12-Dec-04 13:30:00	4361.86	118.9	4362.43	118.9	4361.66	118.5
12-Dec-04 13:45:00	4363.53	118.9	4364.09	118.9	4363.33	118.5
12-Dec-04 14:00:00	4365.12	118.9	4365.69	118.9	4364.92	118.5
12-Dec-04 14:15:00	4366.66	118.9	4367.22	118.9	4366.46	118.5
12-Dec-04 14:30:00	4368.13	118.9	4368.70	118.9	4367.93	118.5
12-Dec-04 14:45:00	4369.54	118.9	4370.11	118.9	4369.34	118.5
12-Dec-04 15:00:00	4370.91	118.9	4371.47	118.9	4370.70	118.5
12-Dec-04 15:15:00	4372.22	118.9	4372.79	118.9	4372.01	118.5
12-Dec-04 15:30:00	4373.48	118.9	4374.05	118.9	4373.28	118.5
12-Dec-04 15:45:00	4374.70	118.9	4375.27	118.9	4374.51	118.5
12-Dec-04 16:00:00	4375.88	118.9	4376.44	118.9	4375.69	118.5
12-Dec-04 16:15:00	Commence pressure testing wireline lubricator to 5000 psi.					
12-Dec-04 16:15:00	4377.01	118.9	4377.58	118.9	4376.82	118.5
12-Dec-04 16:30:00	4378.10	118.9	4378.68	118.9	4377.92	118.5
12-Dec-04 16:35:00	Good test. Bleed off pressure.					
12-Dec-04 16:39:00	Open choke manifold and bleed remaining pressure through to gas flare.					
12-Dec-04 16:45:00	4379.17	118.9	4379.73	118.9	4378.97	118.5
12-Dec-04 16:46:00	Close Choke manifold.					
12-Dec-04 17:00:00	Open Master valve.					
12-Dec-04 17:00:00	4380.19	118.9	4380.75	118.9	4379.99	118.5
12-Dec-04 17:01:00	4380.25	118.9	4380.82	118.9	4380.06	118.5
12-Dec-04 17:02:00	4380.32	118.9	4380.89	118.9	4380.13	118.5
12-Dec-04 17:03:00	4380.39	118.9	4380.96	118.9	4380.19	118.5
12-Dec-04 17:04:00	4380.45	118.9	4381.02	118.9	4380.26	118.5
12-Dec-04 17:05:00	4380.53	118.9	4381.09	118.9	4380.33	118.5
12-Dec-04 17:06:00	Pressure Annulus to open PCT. (Sampling Flow Period)					
12-Dec-04 17:06:00	4380.60	118.9	4381.16	118.9	4380.40	118.5

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 17:07:00	3197.97	118.5	3141.57	118.3	3227.31	117.9
12-Dec-04 17:08:00	3105.70	116.7	3122.51	116.4	3103.38	115.4
12-Dec-04 17:09:00	3408.51	116.6	3429.05	116.3	3400.34	115.5
12-Dec-04 17:10:00	3700.22	117.1	3718.21	117.0	3690.67	116.4
12-Dec-04 17:11:00	3941.46	117.6	3955.36	117.7	3932.91	117.3
12-Dec-04 17:12:00	4116.63	118.1	4126.03	118.5	4109.92	118.3
12-Dec-04 17:13:00	4228.63	118.8	4235.15	119.1	4224.16	119.1
12-Dec-04 17:14:00	4291.24	119.2	4295.07	119.6	4288.96	119.6
12-Dec-04 17:15:00	4322.50	119.6	4324.95	120.0	4321.49	119.9
12-Dec-04 17:16:00	4337.94	119.8	4339.70	120.1	4337.73	120.0
12-Dec-04 17:17:00	4345.75	120.0	4347.33	120.2	4345.71	120.1
12-Dec-04 17:18:00	4351.21	120.1	4352.54	120.3	4351.00	120.1
12-Dec-04 17:19:00	4355.31	120.2	4356.45	120.3	4355.21	120.2
12-Dec-04 17:20:00	4358.59	120.2	4359.39	120.3	4358.41	120.2
12-Dec-04 17:21:00	4361.12	120.2	4361.86	120.4	4361.02	120.2
12-Dec-04 17:22:00	4363.27	120.2	4364.01	120.4	4363.29	120.1
12-Dec-04 17:23:00	4365.25	120.3	4365.93	120.4	4365.23	120.1
12-Dec-04 17:24:00	4367.50	120.3	4368.17	120.4	4367.42	120.1
12-Dec-04 17:25:00	4369.75	120.3	4370.39	120.4	4369.71	120.1
12-Dec-04 17:26:00	4371.18	120.3	4371.82	120.4	4371.18	120.1
12-Dec-04 17:27:00	4372.20	120.3	4372.82	120.4	4372.14	120.1
12-Dec-04 17:28:00	4373.08	120.3	4373.70	120.4	4373.01	120.1
12-Dec-04 17:29:00	4373.86	120.3	4374.39	120.4	4373.73	120.1
12-Dec-04 17:30:00	4374.27	120.3	4374.83	120.4	4374.20	120.0
12-Dec-04 17:31:00	4374.73	120.3	4375.26	120.4	4374.60	120.0
12-Dec-04 17:32:00	4375.13	120.3	4375.65	120.4	4375.00	120.0
12-Dec-04 17:33:00	4375.54	120.3	4376.02	120.4	4375.40	120.0
12-Dec-04 17:34:00	4375.85	120.3	4376.37	120.3	4375.73	120.0
12-Dec-04 17:35:00	4376.17	120.3	4376.67	120.3	4376.04	120.0
12-Dec-04 17:36:00	4376.46	120.2	4376.97	120.3	4376.35	119.9
12-Dec-04 17:37:00	4376.77	120.2	4377.24	120.3	4376.62	119.9
12-Dec-04 17:38:00	4376.99	120.2	4377.50	120.3	4376.87	119.9
12-Dec-04 17:39:00	4377.23	120.2	4377.74	120.3	4377.10	119.9
12-Dec-04 17:40:00	4377.48	120.2	4377.95	120.3	4377.32	119.9
12-Dec-04 17:41:00	4377.68	120.2	4378.16	120.2	4377.51	119.9
12-Dec-04 17:42:00	4377.88	120.2	4378.35	120.2	4377.70	119.8
12-Dec-04 17:43:00	4378.07	120.2	4378.54	120.2	4377.88	119.8
12-Dec-04 17:44:00	4378.25	120.1	4378.72	120.2	4378.08	119.8
12-Dec-04 17:45:00	4378.40	120.1	4378.90	120.2	4378.26	119.8
12-Dec-04 17:46:00	4378.77	120.1	4379.29	120.2	4378.61	119.8
12-Dec-04 17:47:00	4378.88	120.1	4379.35	120.2	4378.70	119.8
12-Dec-04 17:48:00	4378.96	120.1	4379.44	120.2	4378.79	119.8
12-Dec-04 17:49:00	4379.08	120.1	4379.53	120.1	4378.92	119.7
12-Dec-04 17:50:00	4379.19	120.1	4379.65	120.1	4379.03	119.7
12-Dec-04 17:51:00	4379.32	120.1	4379.79	120.1	4379.15	119.7
12-Dec-04 17:52:00	4379.44	120.1	4379.92	120.1	4379.26	119.7
12-Dec-04 17:53:00	4379.56	120.1	4380.02	120.1	4379.39	119.7
12-Dec-04 17:54:00	4379.69	120.0	4380.15	120.1	4379.53	119.7
12-Dec-04 17:55:00	4379.80	120.0	4380.29	120.1	4379.63	119.7
12-Dec-04 17:56:00	4379.95	120.0	4380.40	120.1	4379.75	119.7

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 17:57:00	4380.04	120.0	4380.52	120.0	4379.87	119.6
12-Dec-04 17:58:00	4372.35	120.0	4372.67	120.0	4372.11	119.6
12-Dec-04 17:59:00	Open well on 16/64" adjustable choke to flare.					
12-Dec-04 17:59:00	4358.36	120.0	4358.76	120.0	4358.37	119.6
12-Dec-04 18:00:00	4351.05	120.0	4351.23	120.0	4351.04	119.6
12-Dec-04 18:01:00	4346.64	119.9	4346.87	119.9	4346.58	119.5
12-Dec-04 18:02:00	4337.10	119.9	4335.99	119.9	4337.76	119.5
12-Dec-04 18:03:00	Increase adjustable choke to 20/64".					
12-Dec-04 18:03:00	4324.90	119.9	4326.38	119.9	4324.23	119.5
12-Dec-04 18:04:00	4301.25	119.9	4296.17	119.9	4303.54	119.4
12-Dec-04 18:05:00	Increase adjustable choke to 24/64".					
12-Dec-04 18:05:00	4287.48	119.8	4289.27	119.8	4287.68	119.4
12-Dec-04 18:06:00	Divert flow through separator.					
12-Dec-04 18:06:00	4296.17	119.8	4294.84	119.8	4295.96	119.4
12-Dec-04 18:07:00	4298.74	119.8	4297.53	119.8	4298.12	119.3
12-Dec-04 18:08:00	Increase adjustable choke to 28/64".					
12-Dec-04 18:08:00	4259.69	119.8	4256.62	119.8	4260.21	119.3
12-Dec-04 18:09:00	4225.03	119.7	4225.35	119.7	4224.96	119.2
12-Dec-04 18:10:00	Increase adjustable choke to 32/64" .					
12-Dec-04 18:10:00	4221.42	119.7	4220.38	119.7	4221.80	119.2
12-Dec-04 18:11:00	4215.87	119.7	4216.23	119.7	4215.70	119.2
12-Dec-04 18:12:00	Reduce STX choke to 32/64"					
12-Dec-04 18:12:00	4207.77	119.7	4207.70	119.7	4207.74	119.2
12-Dec-04 18:13:00	4202.01	119.7	4202.11	119.7	4201.92	119.2
12-Dec-04 18:14:00	4198.81	119.7	4199.06	119.7	4198.64	119.2
12-Dec-04 18:15:00	4196.85	119.7	4197.12	119.7	4196.66	119.2
12-Dec-04 18:16:00	4195.86	119.7	4196.22	119.7	4195.62	119.2
12-Dec-04 18:17:00	4195.74	119.7	4196.14	119.7	4195.50	119.2
12-Dec-04 18:18:00	4201.68	119.7	4203.43	119.8	4200.93	119.3
12-Dec-04 18:19:00	4220.71	119.7	4215.49	119.8	4220.80	119.3
12-Dec-04 18:20:00	4158.97	119.7	4157.19	119.8	4159.68	119.3
12-Dec-04 18:21:00	4143.36	119.7	4143.09	119.8	4143.57	119.3
12-Dec-04 18:22:00	Divert flow through 32/64" fixed choke.					
12-Dec-04 18:22:00	4032.15	119.7	4019.63	119.8	4037.37	119.2
12-Dec-04 18:23:00	3847.71	119.5	3838.13	119.5	3851.78	119.0
12-Dec-04 18:24:00	3724.20	119.3	3717.65	119.3	3727.20	118.7
12-Dec-04 18:25:00	3632.19	119.2	3627.48	119.1	3634.71	118.5
12-Dec-04 18:26:00	3565.58	119.1	3562.18	118.9	3567.92	118.2
12-Dec-04 18:27:00	3515.02	119.0	3512.32	118.9	3516.90	118.0
12-Dec-04 18:28:00	3478.79	118.9	3476.96	118.9	3479.89	117.9
12-Dec-04 18:29:00	3451.78	118.9	3450.37	118.9	3452.59	117.9
12-Dec-04 18:30:00	3430.55	118.9	3429.72	118.9	3431.04	117.9
12-Dec-04 18:31:00	3417.15	118.9	3416.66	118.9	3417.24	117.9
12-Dec-04 18:32:00	3407.60	118.9	3407.21	118.9	3407.32	118.0
12-Dec-04 18:33:00	3399.17	118.9	3398.78	119.0	3398.71	118.1
12-Dec-04 18:34:00	3391.42	118.9	3391.22	119.0	3390.94	118.1
12-Dec-04 18:35:00	3385.21	118.9	3385.17	119.1	3384.75	118.2
12-Dec-04 18:36:00	3380.25	118.9	3380.37	119.1	3379.78	118.3
12-Dec-04 18:37:00	3377.57	119.0	3377.90	119.1	3377.08	118.3
12-Dec-04 18:38:00	3375.76	119.0	3376.09	119.2	3375.28	118.4

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 18:39:00	3373.77	119.0	3374.09	119.2	3373.33	118.4
12-Dec-04 18:40:00	3372.37	119.0	3372.71	119.2	3371.91	118.5
12-Dec-04 18:41:00	3369.54	119.1	3369.88	119.2	3369.15	118.5
12-Dec-04 18:42:00	3367.03	119.1	3367.41	119.3	3366.67	118.6
12-Dec-04 18:43:00	3364.82	119.1	3365.20	119.3	3364.46	118.6
12-Dec-04 18:44:00	3362.87	119.1	3363.27	119.3	3362.46	118.6
12-Dec-04 18:45:00	3360.93	119.2	3361.37	119.3	3360.54	118.7
12-Dec-04 18:50:00	3351.54	119.2	3351.96	119.4	3351.73	118.8
12-Dec-04 18:55:00	3348.96	119.3	3349.55	119.5	3348.80	118.9
12-Dec-04 19:00:00	3349.55	119.4	3349.91	119.5	3349.33	118.9
12-Dec-04 19:05:00	3349.70	119.4	3349.79	119.6	3349.58	119.0
12-Dec-04 19:10:00	3345.15	119.5	3345.50	119.6	3344.90	119.1
12-Dec-04 19:15:00	3340.33	119.6	3340.45	119.7	3340.15	119.1
12-Dec-04 19:20:00	3332.77	119.6	3332.76	119.7	3332.65	119.2
12-Dec-04 19:24:00	By-pass Separator.					
12-Dec-04 19:25:00	3323.74	119.7	3324.01	119.8	3323.50	119.2
12-Dec-04 19:30:00	3317.29	119.8	3317.44	119.9	3317.09	119.3
12-Dec-04 19:35:00	Adjust STX choke to eliminate hydrate					
12-Dec-04 19:35:00	3332.15	119.8	3334.76	119.9	3330.95	119.4
12-Dec-04 19:40:00	3419.54	120.0	3420.00	120.1	3419.29	119.6
12-Dec-04 19:45:00	3350.02	120.0	3349.26	120.1	3350.49	119.5
12-Dec-04 19:50:00	3301.07	120.0	3301.13	120.1	3300.95	119.4
12-Dec-04 19:55:00	Divert flow through separator.					
12-Dec-04 19:55:00	3287.68	120.0	3287.83	120.1	3287.33	119.5
12-Dec-04 20:00:00	3285.29	120.0	3285.56	120.1	3284.96	119.6
12-Dec-04 20:05:00	3286.43	120.1	3286.71	120.2	3286.11	119.6
12-Dec-04 20:09:00	By-pass Separator.					
12-Dec-04 20:10:00	Commence changing choke to 36/64" fixed choke.					
12-Dec-04 20:10:00	3352.82	120.1	3354.72	120.2	3351.28	119.7
12-Dec-04 20:11:00	3333.43	120.2	3331.52	120.3	3334.00	119.8
12-Dec-04 20:12:00	3301.13	120.2	3299.82	120.2	3301.95	119.7
12-Dec-04 20:13:00	3277.63	120.1	3276.75	120.2	3278.26	119.6
12-Dec-04 20:14:00	3260.82	120.1	3260.30	120.2	3261.17	119.6
12-Dec-04 20:15:00	3245.57	120.1	3244.48	120.2	3246.10	119.6
12-Dec-04 20:16:00	3222.76	120.1	3221.69	120.1	3223.29	119.5
12-Dec-04 20:17:00	3202.68	120.1	3201.83	120.1	3203.22	119.5
12-Dec-04 20:18:00	3186.59	120.1	3185.98	120.1	3187.11	119.4
12-Dec-04 20:19:00	Divert flow through separator.					
12-Dec-04 20:19:00	3173.81	120.1	3173.48	120.1	3174.01	119.4
12-Dec-04 20:20:00	3165.03	120.1	3164.89	120.1	3164.79	119.4
12-Dec-04 20:21:00	3158.54	120.0	3158.51	120.1	3158.24	119.4
12-Dec-04 20:22:00	3153.50	120.0	3153.54	120.1	3153.17	119.4
12-Dec-04 20:23:00	3149.49	120.0	3149.62	120.1	3149.12	119.4
12-Dec-04 20:24:00	3146.46	120.0	3146.60	120.1	3146.02	119.5
12-Dec-04 20:25:00	3143.95	120.0	3144.16	120.1	3143.55	119.5
12-Dec-04 20:26:00	3141.94	120.0	3142.13	120.0	3141.51	119.5
12-Dec-04 20:27:00	3140.39	120.0	3140.61	120.0	3139.87	119.5
12-Dec-04 20:28:00	3139.04	120.0	3139.35	120.0	3138.64	119.5
12-Dec-04 20:29:00	3137.94	120.0	3138.29	120.0	3137.58	119.5
12-Dec-04 20:30:00	3136.92	120.0	3137.20	120.0	3136.51	119.5

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
12-Dec-04 20:35:00	3133.57	120.0	3133.86	120.0	3133.17	119.5
12-Dec-04 20:40:00	3131.03	119.9	3131.36	120.0	3130.67	119.5
12-Dec-04 20:45:00	3129.17	119.9	3129.53	120.0	3128.80	119.5
12-Dec-04 20:50:00	3127.58	119.9	3127.92	120.0	3127.25	119.5
12-Dec-04 20:55:00	3125.96	119.9	3126.30	119.9	3125.59	119.5
12-Dec-04 21:00:00	3124.70	119.9	3125.06	119.9	3124.36	119.4
12-Dec-04 21:05:00	3123.51	119.9	3123.89	119.9	3123.23	119.4
12-Dec-04 21:10:00	3122.71	119.9	3123.05	119.9	3122.42	119.4
12-Dec-04 21:15:00	3121.62	119.9	3122.01	119.9	3121.30	119.4
12-Dec-04 21:20:00	3120.72	119.9	3121.11	119.9	3120.44	119.4
12-Dec-04 21:25:00	3119.74	119.9	3120.14	119.9	3119.46	119.4
12-Dec-04 21:30:00	3119.36	119.9	3119.72	119.9	3119.08	119.4
12-Dec-04 21:35:00	3118.59	119.9	3118.96	119.9	3118.30	119.4
12-Dec-04 21:40:00	3118.03	119.9	3118.38	119.9	3117.74	119.4
12-Dec-04 21:45:00	3117.65	119.9	3117.98	119.9	3117.31	119.4
12-Dec-04 21:50:00	3116.73	119.9	3117.08	119.9	3116.45	119.4
12-Dec-04 21:55:00	3116.21	119.9	3116.58	119.9	3115.95	119.4
12-Dec-04 22:00:00	3115.74	119.9	3116.10	119.9	3115.47	119.4
12-Dec-04 22:05:00	3115.16	119.9	3115.50	119.9	3114.88	119.4
12-Dec-04 22:10:00	3114.39	119.9	3114.76	119.9	3114.09	119.4
12-Dec-04 22:15:00	3114.01	119.9	3114.38	119.9	3113.70	119.4
12-Dec-04 22:20:00	3113.15	119.9	3113.52	119.9	3112.86	119.4
12-Dec-04 22:25:00	3112.91	119.9	3113.31	119.9	3112.60	119.4
12-Dec-04 22:30:00	3112.54	119.9	3112.90	119.9	3112.23	119.4
12-Dec-04 22:35:00	3112.08	119.9	3112.43	119.9	3111.80	119.5
12-Dec-04 22:40:00	3111.36	119.9	3111.75	119.9	3111.05	119.5
12-Dec-04 22:45:00	3111.33	119.9	3111.68	119.9	3111.03	119.5
12-Dec-04 22:50:00	3110.38	119.9	3110.77	119.9	3110.10	119.5
12-Dec-04 22:55:00	3109.59	119.9	3109.94	119.9	3109.29	119.5
12-Dec-04 23:00:00	3109.50	119.9	3109.86	119.9	3109.20	119.5
12-Dec-04 23:05:00	3109.08	119.9	3109.46	120.0	3108.77	119.5
12-Dec-04 23:10:00	3108.81	119.9	3109.16	120.0	3108.52	119.5
12-Dec-04 23:15:00	3109.00	119.9	3109.36	120.0	3108.68	119.5
12-Dec-04 23:20:00	3108.26	119.9	3108.62	120.0	3107.96	119.5
12-Dec-04 23:25:00	3107.60	119.9	3107.98	120.0	3107.31	119.5
12-Dec-04 23:30:00	3107.37	119.9	3107.75	120.0	3107.05	119.5
12-Dec-04 23:35:00	3106.91	119.9	3107.31	120.0	3106.58	119.5
12-Dec-04 23:40:00	3106.69	119.9	3107.10	120.0	3106.36	119.5
12-Dec-04 23:45:00	3106.56	119.9	3106.98	120.0	3106.25	119.5
12-Dec-04 23:50:00	3106.27	119.9	3106.69	120.0	3105.98	119.5
12-Dec-04 23:51:00	3105.90	119.9	3106.26	120.0	3105.62	119.5
12-Dec-04 23:52:00	3105.96	119.9	3106.30	120.0	3105.66	119.5
12-Dec-04 23:53:00	3105.96	119.9	3106.35	120.0	3105.68	119.5
12-Dec-04 23:54:00	3105.99	119.9	3106.37	120.0	3105.69	119.5
12-Dec-04 23:55:00	3106.13	119.9	3106.47	120.0	3105.83	119.5
12-Dec-04 23:56:00	Close Choke manifold. (Final Build Up Period)					
12-Dec-04 23:56:00	3144.39	119.9	3159.73	120.0	3138.34	119.5
12-Dec-04 23:57:00	3419.75	120.2	3437.88	120.3	3411.45	119.8
12-Dec-04 23:58:00	3667.03	120.6	3682.00	120.8	3659.90	120.4
12-Dec-04 23:59:00	3857.08	121.0	3868.19	121.2	3852.10	120.7

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 00:00:00	3987.96	121.5	3995.23	121.8	3984.29	121.2
13-Dec-04 00:01:00	4068.16	121.9	4072.72	122.3	4065.09	121.8
13-Dec-04 00:02:00	4111.74	122.1	4114.64	122.5	4109.78	122.2
13-Dec-04 00:03:00	4135.30	122.3	4137.84	122.6	4134.13	122.4
13-Dec-04 00:04:00	4151.83	122.4	4153.76	122.7	4151.20	122.5
13-Dec-04 00:05:00	4163.93	122.5	4165.65	122.7	4163.62	122.5
13-Dec-04 00:06:00	4173.63	122.5	4175.06	122.8	4173.31	122.5
13-Dec-04 00:07:00	4182.21	122.5	4183.61	122.8	4181.88	122.6
13-Dec-04 00:08:00	4189.94	122.5	4191.15	122.8	4189.67	122.6
13-Dec-04 00:09:00	4196.75	122.5	4197.76	122.8	4196.45	122.6
13-Dec-04 00:10:00	4201.77	122.6	4202.70	122.8	4201.66	122.5
13-Dec-04 00:11:00	4205.92	122.5	4206.79	122.8	4205.81	122.5
13-Dec-04 00:12:00	4209.42	122.5	4210.22	122.8	4209.28	122.5
13-Dec-04 00:13:00	4212.48	122.5	4213.26	122.8	4212.36	122.5
13-Dec-04 00:14:00	4215.15	122.5	4215.98	122.8	4215.10	122.4
13-Dec-04 00:15:00	4217.73	122.5	4218.50	122.7	4217.63	122.4
13-Dec-04 00:20:00	4228.17	122.4	4228.85	122.5	4228.07	122.2
13-Dec-04 00:25:00	4235.50	122.2	4236.13	122.3	4235.33	122.0
13-Dec-04 00:30:00	4241.94	122.0	4242.58	122.1	4241.68	121.8
13-Dec-04 00:35:00	4247.21	121.9	4247.78	122.0	4246.96	121.6
13-Dec-04 00:40:00	4251.95	121.8	4252.53	121.8	4251.71	121.5
13-Dec-04 00:42:00	Open Flowhead Swab valve.					
13-Dec-04 00:45:00	Attempt and fail to lower wireline tool string.					
13-Dec-04 00:45:00	4247.52	121.6	4248.40	121.6	4247.16	121.3
13-Dec-04 00:50:00	4259.63	121.5	4260.21	121.5	4259.34	121.2
13-Dec-04 00:55:00	4264.14	121.4	4264.70	121.4	4263.89	121.1
13-Dec-04 01:00:00	Close Master valve, bleed off surface pressure to flare.					
13-Dec-04 01:00:00	4267.70	121.3	4268.24	121.3	4267.45	120.9
13-Dec-04 01:05:00	4271.03	121.2	4271.59	121.2	4270.78	120.8
13-Dec-04 01:07:00	Close back Choke manifold and Flowhead Swab valve.					
13-Dec-04 01:10:00	4274.11	121.1	4274.67	121.1	4273.86	120.8
13-Dec-04 01:15:00	4276.98	121.0	4277.53	121.0	4276.72	120.7
13-Dec-04 01:20:00	4279.74	121.0	4280.29	121.0	4279.48	120.6
13-Dec-04 01:25:00	4282.38	120.9	4282.94	120.9	4282.13	120.5
13-Dec-04 01:30:00	4284.88	120.8	4285.44	120.8	4284.62	120.4
13-Dec-04 01:35:00	4287.29	120.8	4287.85	120.8	4287.04	120.4
13-Dec-04 01:40:00	4289.63	120.7	4290.19	120.7	4289.38	120.3
13-Dec-04 01:45:00	4291.88	120.7	4292.43	120.7	4291.62	120.3
13-Dec-04 01:50:00	4294.13	120.6	4294.69	120.6	4293.88	120.2
13-Dec-04 01:55:00	4296.13	120.6	4296.69	120.6	4295.88	120.2
13-Dec-04 02:00:00	4298.13	120.5	4298.68	120.5	4297.88	120.1
13-Dec-04 02:05:00	4300.07	120.5	4300.63	120.5	4299.83	120.1
13-Dec-04 02:10:00	4301.96	120.4	4302.51	120.4	4301.71	120.0
13-Dec-04 02:15:00	4303.80	120.4	4304.35	120.4	4303.55	120.0
13-Dec-04 02:20:00	4305.59	120.4	4306.13	120.4	4305.34	120.0
13-Dec-04 02:25:00	4307.34	120.3	4307.89	120.3	4307.10	119.9
13-Dec-04 02:30:00	4309.01	120.3	4309.55	120.3	4308.77	119.9
13-Dec-04 02:35:00	4310.63	120.3	4311.17	120.3	4310.39	119.9
13-Dec-04 02:40:00	4312.23	120.3	4312.76	120.2	4311.99	119.8
13-Dec-04 02:45:00	4313.78	120.2	4314.32	120.2	4313.55	119.8

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 02:50:00	4315.29	120.2	4315.83	120.2	4315.06	119.8
13-Dec-04 02:55:00	4316.77	120.2	4317.31	120.2	4316.53	119.8
13-Dec-04 03:00:00	4318.35	120.2	4318.88	120.2	4318.11	119.7
13-Dec-04 03:15:00	4322.26	120.1	4322.79	120.1	4322.02	119.7
13-Dec-04 03:30:00	4326.02	120.0	4326.55	120.0	4325.79	119.6
13-Dec-04 03:45:00	4329.52	120.0	4330.04	120.0	4329.29	119.6
13-Dec-04 04:00:00	4332.80	119.9	4333.32	119.9	4332.57	119.5
13-Dec-04 04:12:00	Make up Wireline lubricator with new toolstring.					
13-Dec-04 04:15:00	4335.86	119.9	4336.39	119.9	4335.64	119.5
13-Dec-04 04:30:00	4338.74	119.9	4339.26	119.9	4338.51	119.4
13-Dec-04 04:45:00	4341.43	119.8	4341.96	119.8	4341.20	119.4
13-Dec-04 04:59:00	Open Master valve and Swab valve.					
13-Dec-04 05:00:00	4332.08	119.8	4333.12	119.8	4331.61	119.4
13-Dec-04 05:10:00	Attempt and fail to lower wireline tool string.					
13-Dec-04 05:15:00	4345.96	119.8	4346.50	119.8	4345.73	119.4
13-Dec-04 05:30:00	4348.71	119.8	4349.24	119.8	4348.49	119.4
13-Dec-04 05:45:00	4350.93	119.8	4351.46	119.8	4350.70	119.3
13-Dec-04 06:00:00	4352.98	119.7	4353.52	119.7	4352.76	119.3
13-Dec-04 06:09:00	Open Master valve.					
13-Dec-04 06:10:00	Open Choke manifold to flow well in order to reduce wellhead pressure.					
13-Dec-04 06:11:00	Fail to run in, close Choke manifold and Master valve.					
13-Dec-04 06:13:00	Slowly bleed down pressure to free toolstring.					
13-Dec-04 06:15:00	4354.94	119.7	4355.47	119.7	4354.71	119.3
13-Dec-04 06:16:00	Close Choke manifold.					
13-Dec-04 06:20:00	4355.72	119.7	4356.25	119.7	4355.49	119.3
13-Dec-04 06:24:00	Open Master valve.					
13-Dec-04 06:25:00	4338.37	119.7	4340.26	119.7	4337.63	119.2
13-Dec-04 06:28:00	Open well on 20/64" adjustable choke to assist Wireline lowering toolstring.					
13-Dec-04 06:29:00	Increase choke to 24/64" adjustable.					
13-Dec-04 06:30:00	4000.54	119.3	3993.46	119.3	4004.33	118.8
13-Dec-04 06:33:00	Increase choke to 36/64" adjustable.					
13-Dec-04 06:35:00	3430.42	118.4	3427.41	118.1	3432.56	117.3
13-Dec-04 06:40:00	3272.20	118.3	3271.49	118.3	3271.85	117.4
13-Dec-04 06:45:00	3232.01	118.5	3232.51	118.7	3231.33	118.0
13-Dec-04 06:50:00	3248.82	118.9	3249.60	119.1	3248.44	118.5
13-Dec-04 06:55:00	3252.01	119.1	3252.73	119.3	3251.53	118.7
13-Dec-04 06:56:00	Decrease choke to 32/64" adjustable. Wireline able to run in slowly.					
13-Dec-04 07:00:00	3444.93	119.5	3448.88	119.7	3442.76	119.2
13-Dec-04 07:04:00	Gradually decrease choke to 20/64" adjustable.					
13-Dec-04 07:05:00	3941.38	120.6	3953.60	121.0	3934.68	120.3
13-Dec-04 07:06:00	Wireline running in hole freely, Close choke manifold.					
13-Dec-04 07:10:00	4266.98	121.9	4268.62	122.2	4266.29	122.0
13-Dec-04 07:15:00	4302.26	122.1	4303.26	122.3	4302.09	122.0
13-Dec-04 07:30:00	4327.81	121.9	4328.36	122.0	4327.56	121.6
13-Dec-04 07:45:00	4336.54	121.5	4337.10	121.6	4336.27	121.2
13-Dec-04 08:00:00	4340.98	121.2	4341.55	121.2	4340.69	120.9
13-Dec-04 08:15:00	4344.80	121.0	4345.32	121.0	4344.48	120.6
13-Dec-04 08:25:00	Wireline drift to 3130mMDRT.					
13-Dec-04 08:30:00	Commence wireline pulling out of hole.					
13-Dec-04 08:30:00	4347.82	120.8	4348.35	120.8	4347.49	120.4

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 08:45:00	4350.60	120.7	4351.17	120.6	4350.31	120.3
13-Dec-04 09:00:00	4352.77	120.5	4353.33	120.5	4352.49	120.1
13-Dec-04 09:15:00	4354.90	120.4	4355.46	120.4	4354.62	120.0
13-Dec-04 09:30:00	4357.65	120.3	4358.19	120.3	4357.35	119.9
13-Dec-04 09:45:00	4359.82	120.3	4360.37	120.2	4359.52	119.8
13-Dec-04 10:00:00	4361.41	120.2	4361.96	120.2	4361.13	119.8
13-Dec-04 10:15:00	4363.12	120.1	4363.67	120.1	4362.84	119.7
13-Dec-04 10:30:00	Wireline out of hole.					
13-Dec-04 10:30:00	4365.02	120.1	4365.56	120.1	4364.75	119.7
13-Dec-04 10:45:00	Close Master valve, bleed off surface pressure to flare.					
13-Dec-04 10:45:00	4366.63	120.1	4367.18	120.0	4366.36	119.6
13-Dec-04 10:50:00	Close Swab valve. Commence changing out Wireline toolstring.					
13-Dec-04 11:00:00	4368.14	120.0	4368.68	120.0	4367.86	119.6
13-Dec-04 11:15:00	4369.52	120.0	4370.06	120.0	4369.24	119.6
13-Dec-04 11:30:00	4370.97	120.0	4371.55	119.9	4370.68	119.5
13-Dec-04 11:45:00	4372.03	119.9	4372.57	119.9	4371.76	119.5
13-Dec-04 12:00:00	4373.19	119.9	4373.74	119.9	4372.93	119.5
13-Dec-04 12:15:00	4374.31	119.9	4374.86	119.9	4374.05	119.5
13-Dec-04 12:19:00	Conduct JSA on rig floor. Arm Wireline 1.875" Owen Bridge plug.					
13-Dec-04 12:30:00	4375.37	119.9	4375.92	119.8	4375.11	119.4
13-Dec-04 12:45:00	Close Choke manifold.					
13-Dec-04 12:45:00	4376.38	119.8	4376.94	119.8	4376.13	119.4
13-Dec-04 12:48:00	Opened Master valve.					
13-Dec-04 13:00:00	Open well on 16/64" adjustable choke to Portside flare.					
13-Dec-04 13:00:00	4275.18	119.8	4269.27	119.8	4278.45	119.3
13-Dec-04 13:04:00	Close Choke manifold, no flare ignition.					
13-Dec-04 13:05:00	4227.37	119.5	4233.58	119.6	4222.84	119.1
13-Dec-04 13:10:00	4352.21	120.0	4353.36	120.1	4351.62	119.8
13-Dec-04 13:15:00	4367.43	120.2	4368.16	120.2	4367.26	119.9
13-Dec-04 13:20:00	Open well on 16/64" adjustable choke to Portside flare.					
13-Dec-04 13:20:00	4370.35	120.2	4364.60	120.3	4371.83	119.9
13-Dec-04 13:23:00	Gradually increase to 36/64" adjustable choke.					
13-Dec-04 13:25:00	3656.50	119.3	3652.68	119.2	3658.98	118.6
13-Dec-04 13:28:00	Wireline able to run in hole, slowly reduce choke.					
13-Dec-04 13:30:00	3554.21	119.1	3567.80	119.1	3546.78	118.1
13-Dec-04 13:34:00	Shut in at choke manifold.					
13-Dec-04 13:35:00	4230.13	121.0	4235.56	121.4	4226.01	121.1
13-Dec-04 13:40:00	4339.02	121.7	4340.29	122.0	4338.74	121.6
13-Dec-04 13:45:00	4353.54	121.8	4354.35	122.0	4353.27	121.7
13-Dec-04 13:50:00	4360.78	121.8	4361.58	122.0	4360.62	121.6
13-Dec-04 13:55:00	4367.13	121.8	4367.91	121.9	4366.80	121.5
13-Dec-04 14:00:00	4371.08	121.7	4371.73	121.8	4370.85	121.4
13-Dec-04 14:15:00	4373.85	121.3	4374.46	121.3	4373.57	121.0
13-Dec-04 14:30:00	4375.23	121.1	4375.83	121.0	4374.94	120.7
13-Dec-04 14:45:00	4376.55	120.9	4377.14	120.8	4376.29	120.5
13-Dec-04 15:00:00	4377.77	120.7	4378.37	120.7	4377.50	120.3
13-Dec-04 15:15:00	4373.51	120.6	4374.08	120.6	4373.25	120.2
13-Dec-04 15:20:00	Wireline set Bridge plug at 3125.3m, Start pulling out with running toolstring.					
13-Dec-04 15:30:00	4367.19	120.5	4367.75	120.5	4366.96	120.1
13-Dec-04 15:45:00	4359.66	120.4	4360.21	120.3	4359.40	119.9

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 16:00:00	4345.88	120.3	4346.38	120.2	4345.65	119.8
13-Dec-04 16:15:00	4328.74	120.2	4329.21	120.2	4328.50	119.7
13-Dec-04 16:30:00	4311.94	120.1	4312.42	120.1	4311.71	119.7
13-Dec-04 16:45:00	4303.23	120.1	4303.75	120.0	4302.98	119.6
13-Dec-04 16:49:00	Wireline out of hole.					
13-Dec-04 17:00:00	4297.54	120.0	4298.07	120.0	4297.31	119.6
13-Dec-04 17:01:00	4297.66	120.0	4298.20	120.0	4297.43	119.6
13-Dec-04 17:02:00	4297.52	120.0	4298.05	120.0	4297.28	119.6
13-Dec-04 17:03:00	4297.35	120.0	4297.88	120.0	4297.11	119.6
13-Dec-04 17:04:00	4297.20	120.0	4297.72	120.0	4296.95	119.6
13-Dec-04 17:05:00	Open Choke manifold, bleed down tubing pressure 500 psi for inflw test Bridge plug.					
13-Dec-04 17:05:00	4256.61	120.0	4253.63	120.0	4258.52	119.6
13-Dec-04 17:06:00	4247.29	120.0	4243.95	120.0	4250.79	119.5
13-Dec-04 17:07:00	4194.09	119.9	4192.20	119.9	4194.35	119.4
13-Dec-04 17:08:00	4161.09	119.9	4155.35	119.8	4163.32	119.4
13-Dec-04 17:09:00	4086.54	119.8	4076.64	119.8	4091.39	119.3
13-Dec-04 17:10:00	3777.21	119.6	3773.35	119.5	3789.28	119.0
13-Dec-04 17:11:00	3778.84	119.3	3778.99	119.1	3779.30	118.6
13-Dec-04 17:12:00	3778.30	119.2	3778.83	119.1	3778.28	118.5
13-Dec-04 17:13:00	3777.92	119.2	3778.51	119.0	3777.69	118.5
13-Dec-04 17:14:00	3777.68	119.2	3778.23	119.0	3777.31	118.5
13-Dec-04 17:15:00	3777.55	119.2	3778.07	119.0	3777.07	118.5
13-Dec-04 17:16:00	3777.46	119.2	3777.98	119.0	3776.90	118.6
13-Dec-04 17:17:00	Good test. Close Master valve, bleed off surface pressure.					
13-Dec-04 17:17:00	3777.39	119.2	3777.93	119.0	3776.88	118.6
13-Dec-04 17:18:00	3777.34	119.2	3777.89	119.0	3776.90	118.6
13-Dec-04 17:19:00	3777.31	119.2	3777.87	119.1	3776.89	118.7
13-Dec-04 17:20:00	TEST #2 Upper Zone (Perforation: 3040.5m - 3046.5m)					
13-Dec-04 17:20:00	3777.28	119.2	3777.85	119.1	3776.87	118.7
13-Dec-04 17:21:00	3777.26	119.2	3777.84	119.1	3776.88	118.7
13-Dec-04 17:22:00	Closed Swab valve. Commence changing out Wireline toolstring to run perforation guns.					
13-Dec-04 17:22:00	3777.24	119.2	3777.82	119.1	3776.88	118.7
13-Dec-04 17:23:00	3777.21	119.2	3777.79	119.1	3776.88	118.8
13-Dec-04 17:24:00	3777.18	119.2	3777.76	119.1	3776.87	118.8
13-Dec-04 17:25:00	3777.14	119.2	3777.73	119.1	3776.86	118.8
13-Dec-04 17:26:00	3777.09	119.2	3777.67	119.1	3776.82	118.8
13-Dec-04 17:27:00	3777.03	119.2	3777.63	119.1	3776.77	118.8
13-Dec-04 17:28:00	3776.98	119.2	3777.57	119.2	3776.73	118.8
13-Dec-04 17:29:00	3776.93	119.2	3777.52	119.2	3776.68	118.8
13-Dec-04 17:30:00	3776.88	119.2	3777.47	119.2	3776.64	118.8
13-Dec-04 17:45:00	3776.27	119.3	3776.86	119.2	3776.04	118.9
13-Dec-04 18:00:00	3775.05	119.3	3775.64	119.3	3774.83	118.9
13-Dec-04 18:15:00	3773.70	119.4	3774.28	119.3	3773.48	118.9
13-Dec-04 18:30:00	3772.18	119.4	3772.74	119.4	3771.97	119.0
13-Dec-04 18:45:00	3770.68	119.4	3771.24	119.4	3770.46	119.0
13-Dec-04 19:00:00	3769.25	119.4	3769.81	119.4	3769.03	119.0
13-Dec-04 19:10:00	Connect 1-11/16" PJ Enerjet Gun to toolstring.					
13-Dec-04 19:15:00	3767.87	119.5	3768.43	119.4	3767.64	119.0
13-Dec-04 19:30:00	3766.81	119.5	3767.38	119.5	3766.58	119.0

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
13-Dec-04 19:45:00	3765.52	119.5	3766.08	119.5	3765.29	119.1
13-Dec-04 20:00:00	3764.26	119.5	3764.83	119.5	3764.03	119.1
13-Dec-04 20:10:00	Make up Wireline lubricator with Perforation toolstring.					
13-Dec-04 20:15:00	3763.07	119.5	3763.63	119.5	3762.83	119.1
13-Dec-04 20:18:00	Open Master valve.					
13-Dec-04 20:20:00	3714.00	119.5	3714.50	119.5	3713.81	119.0
13-Dec-04 20:22:00	Open Swab valve.					
13-Dec-04 20:25:00	3682.15	119.4	3682.67	119.4	3681.97	118.9
13-Dec-04 20:26:00	Open choke, bleed down tubing to required underbalance.					
13-Dec-04 20:30:00	3165.87	118.2	3164.07	118.0	3167.70	117.2
13-Dec-04 20:31:00	Close Choke manifold with approximately 1000 psi underbalance.					
13-Dec-04 20:33:00	Wireline running in hole with Perforation toolstring.					
13-Dec-04 20:35:00	3166.67	118.0	3167.06	117.9	3165.96	117.3
13-Dec-04 20:40:00	3168.43	118.1	3168.99	118.1	3168.03	117.6
13-Dec-04 20:45:00	3169.10	118.2	3169.70	118.2	3168.79	117.8
13-Dec-04 21:00:00	3176.62	118.5	3177.24	118.5	3176.34	118.0
13-Dec-04 21:15:00	3182.97	118.7	3183.60	118.7	3182.71	118.2
13-Dec-04 21:30:00	3189.13	118.8	3189.75	118.8	3188.87	118.4
13-Dec-04 21:45:00	3194.89	118.9	3195.53	118.9	3194.63	118.5
13-Dec-04 22:00:00	3198.46	119.0	3199.05	119.0	3198.19	118.6
13-Dec-04 22:15:00	3200.14	119.1	3200.74	119.1	3199.90	118.7
13-Dec-04 22:30:00	3199.52	119.2	3200.10	119.1	3199.27	118.7
13-Dec-04 22:45:00	3198.30	119.2	3198.88	119.2	3198.04	118.8
13-Dec-04 23:00:00	3197.40	119.2	3197.98	119.2	3197.14	118.8
13-Dec-04 23:15:00	3195.66	119.3	3196.23	119.3	3195.38	118.8
13-Dec-04 23:30:00	3196.66	119.3	3197.22	119.3	3196.39	118.9
13-Dec-04 23:45:00	3195.75	119.3	3196.42	119.3	3195.60	118.9
14-Dec-04 00:00:00	Wireline on depth, start depth correlation.					
14-Dec-04 00:00:00	3196.61	119.4	3197.19	119.3	3196.32	118.9
14-Dec-04 00:15:00	3195.85	119.4	3196.42	119.4	3195.56	118.9
14-Dec-04 00:30:00	3195.14	119.4	3195.71	119.4	3194.85	119.0
14-Dec-04 00:31:00	3195.05	119.4	3195.61	119.4	3194.75	119.0
14-Dec-04 00:32:00	3194.98	119.4	3195.54	119.4	3194.68	119.0
14-Dec-04 00:33:00	3194.92	119.4	3195.48	119.4	3194.62	119.0
14-Dec-04 00:34:00	3203.59	119.4	3200.98	119.4	3207.91	119.0
14-Dec-04 00:35:00	Wireline perforate 3040.5m - 3046.5m					
14-Dec-04 00:35:00	3208.72	119.5	3209.55	119.5	3208.12	119.1
14-Dec-04 00:36:00	3215.92	119.5	3217.06	119.5	3215.25	119.1
14-Dec-04 00:37:00	3223.66	119.5	3224.81	119.5	3223.02	119.1
14-Dec-04 00:38:00	3231.69	119.5	3232.82	119.5	3230.99	119.1
14-Dec-04 00:39:00	3240.17	119.6	3241.34	119.5	3239.40	119.1
14-Dec-04 00:40:00	3248.93	119.6	3250.11	119.6	3248.04	119.2
14-Dec-04 00:41:00	3257.87	119.6	3259.06	119.6	3257.63	119.2
14-Dec-04 00:42:00	3266.94	119.6	3268.14	119.6	3266.54	119.2
14-Dec-04 00:43:00	3276.16	119.6	3277.37	119.6	3275.65	119.2
14-Dec-04 00:44:00	3285.50	119.6	3286.71	119.6	3284.94	119.2
14-Dec-04 00:45:00	3294.95	119.7	3296.18	119.7	3294.37	119.3
14-Dec-04 00:46:00	3304.51	119.7	3305.73	119.7	3303.92	119.3
14-Dec-04 00:47:00	3314.16	119.7	3315.38	119.7	3313.56	119.3
14-Dec-04 00:48:00	3323.94	119.7	3325.19	119.7	3323.33	119.3

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 00:49:00	3333.80	119.7	3335.05	119.8	3333.20	119.4
14-Dec-04 00:50:00	3343.70	119.8	3344.95	119.8	3343.09	119.4
14-Dec-04 00:51:00	3353.68	119.8	3354.93	119.8	3353.09	119.4
14-Dec-04 00:52:00	3363.70	119.8	3364.94	119.8	3363.12	119.4
14-Dec-04 00:53:00	3373.76	119.8	3375.00	119.9	3373.18	119.4
14-Dec-04 00:54:00	3383.88	119.8	3385.13	119.9	3383.29	119.5
14-Dec-04 00:55:00	3394.03	119.9	3395.29	119.9	3393.46	119.5
14-Dec-04 00:56:00	3404.22	119.9	3405.50	119.9	3403.68	119.5
14-Dec-04 00:57:00	3414.40	119.9	3415.66	120.0	3413.85	119.5
14-Dec-04 00:58:00	3424.60	119.9	3425.87	120.0	3424.05	119.6
14-Dec-04 00:59:00	3434.79	120.0	3436.07	120.0	3434.24	119.6
14-Dec-04 01:00:00	3445.03	120.0	3446.30	120.0	3444.48	119.6
14-Dec-04 01:05:00	3496.00	120.1	3497.31	120.2	3495.42	119.8
14-Dec-04 01:10:00	3546.41	120.2	3547.74	120.3	3545.86	119.9
14-Dec-04 01:15:00	Wireline pull out of hole with spent guns.					
14-Dec-04 01:15:00	3595.69	120.3	3597.05	120.3	3595.20	119.9
14-Dec-04 01:20:00	3643.51	120.4	3644.54	120.5	3642.65	120.1
14-Dec-04 01:25:00	3688.75	120.5	3689.98	120.6	3688.17	120.2
14-Dec-04 01:30:00	3732.45	120.6	3733.73	120.6	3731.93	120.2
14-Dec-04 01:35:00	3773.92	120.6	3775.15	120.6	3773.39	120.2
14-Dec-04 01:40:00	3813.42	120.6	3814.65	120.6	3812.96	120.3
14-Dec-04 01:45:00	3851.42	120.6	3852.53	120.6	3850.96	120.2
14-Dec-04 01:50:00	3886.73	120.6	3887.81	120.7	3886.30	120.2
14-Dec-04 01:55:00	3919.69	120.6	3920.75	120.6	3919.31	120.2
14-Dec-04 02:00:00	3950.29	120.6	3951.30	120.6	3949.92	120.2
14-Dec-04 02:05:00	3978.63	120.6	3979.61	120.6	3978.25	120.2
14-Dec-04 02:10:00	4004.90	120.7	4005.88	120.7	4004.50	120.3
14-Dec-04 02:15:00	4028.83	120.8	4029.85	120.8	4028.42	120.4
14-Dec-04 02:20:00	4051.17	120.9	4052.17	120.9	4050.76	120.5
14-Dec-04 02:25:00	4071.48	120.9	4072.48	120.9	4071.11	120.5
14-Dec-04 02:30:00	4090.00	120.9	4090.96	120.9	4089.63	120.5
14-Dec-04 02:45:00	4136.63	120.8	4137.56	120.8	4136.31	120.4
14-Dec-04 03:00:00	4170.91	120.8	4171.79	120.8	4170.61	120.4
14-Dec-04 03:15:00	4196.63	120.7	4197.47	120.7	4196.35	120.3
14-Dec-04 03:30:00	4218.21	120.6	4219.06	120.6	4217.95	120.2
14-Dec-04 03:45:00	4229.92	120.5	4230.70	120.5	4229.67	120.1
14-Dec-04 04:00:00	Wireline on surface, close Master valve.					
14-Dec-04 04:00:00	4240.63	120.4	4241.41	120.4	4240.37	120.0
14-Dec-04 04:02:00	Bleed off surface pressure.					
14-Dec-04 04:05:00	Close Swab valve, rig down spent guns.					
14-Dec-04 04:15:00	4249.85	120.4	4250.61	120.4	4249.59	120.0
14-Dec-04 04:30:00	Make up Lubricator.					
14-Dec-04 04:30:00	4255.94	120.3	4256.67	120.3	4255.68	119.9
14-Dec-04 04:43:00	Open Master valve.					
14-Dec-04 04:45:00	4200.21	120.2	4201.32	120.2	4200.31	119.8
14-Dec-04 04:46:00	4202.10	120.2	4202.90	120.2	4201.63	119.7
14-Dec-04 04:47:00	4203.42	120.2	4204.08	120.2	4203.19	119.7
14-Dec-04 04:48:00	4204.83	120.2	4205.65	120.1	4204.54	119.7
14-Dec-04 04:49:00	4206.31	120.2	4207.03	120.1	4205.99	119.7
14-Dec-04 04:50:00	4207.66	120.2	4208.43	120.1	4207.37	119.7

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 04:51:00	4209.05	120.2	4209.60	120.1	4208.73	119.7
14-Dec-04 04:52:00	Open well on 16/64" adjustable choke to Portside flare. (Clean Up Flow Period)					
14-Dec-04 04:52:00	4096.39	120.1	4089.77	120.1	4101.23	119.6
14-Dec-04 04:53:00	3971.41	120.0	3965.20	119.9	3976.01	119.5
14-Dec-04 04:54:00	3818.65	119.8	3809.18	119.7	3825.72	119.2
14-Dec-04 04:55:00	Gradually increase adjustable choke to 24/64".					
14-Dec-04 04:55:00	3619.84	119.4	3605.70	119.3	3629.71	118.7
14-Dec-04 04:56:00	3391.85	118.7	3380.17	118.6	3400.34	118.0
14-Dec-04 04:57:00	3199.77	118.0	3189.07	117.9	3208.51	116.9
14-Dec-04 04:58:00	3030.25	117.2	3020.84	117.1	3037.25	116.1
14-Dec-04 04:59:00	2883.81	116.7	2875.80	116.5	2889.27	115.5
14-Dec-04 05:00:00	2756.53	116.2	2749.90	116.1	2760.91	115.1
14-Dec-04 05:01:00	2639.13	115.9	2632.42	115.7	2643.57	114.8
14-Dec-04 05:02:00	2523.36	115.6	2515.32	115.4	2528.79	114.5
14-Dec-04 05:03:00	Gradually increase adjustable choke to 28/64".					
14-Dec-04 05:03:00	2386.82	115.3	2379.40	115.1	2391.66	114.2
14-Dec-04 05:04:00	2265.35	114.9	2258.66	114.8	2269.78	113.9
14-Dec-04 05:05:00	2160.48	114.7	2155.07	114.5	2164.26	113.6
14-Dec-04 05:06:00	2070.78	114.5	2066.17	114.3	2074.01	113.4
14-Dec-04 05:07:00	1992.51	114.3	1988.59	114.1	1994.96	113.2
14-Dec-04 05:08:00	1924.80	114.2	1921.07	114.0	1926.83	113.1
14-Dec-04 05:09:00	1865.60	114.1	1862.65	113.8	1867.02	113.1
14-Dec-04 05:10:00	1819.11	114.0	1817.22	113.8	1819.91	113.0
14-Dec-04 05:11:00	1786.30	113.9	1784.67	113.8	1786.57	113.0
14-Dec-04 05:12:00	1759.51	113.9	1758.17	113.8	1759.56	113.1
14-Dec-04 05:13:00	1737.07	113.9	1736.06	113.8	1736.91	113.1
14-Dec-04 05:14:00	1718.86	113.9	1718.20	113.8	1718.61	113.1
14-Dec-04 05:15:00	1704.20	113.9	1703.84	113.8	1703.98	113.2
14-Dec-04 05:16:00	1694.46	113.9	1694.36	113.8	1694.25	113.2
14-Dec-04 05:17:00	1687.74	113.9	1687.81	113.8	1687.58	113.2
14-Dec-04 05:18:00	1682.69	113.9	1683.05	113.8	1682.48	113.1
14-Dec-04 05:19:00	1683.69	113.9	1684.53	113.8	1683.37	113.1
14-Dec-04 05:20:00	1692.69	113.9	1693.90	113.8	1692.24	113.1
14-Dec-04 05:21:00	1703.91	113.9	1705.23	113.8	1703.41	113.1
14-Dec-04 05:22:00	1714.46	113.9	1715.68	113.8	1714.07	113.1
14-Dec-04 05:23:00	1724.26	113.9	1725.45	113.8	1723.75	113.1
14-Dec-04 05:24:00	1735.10	113.9	1736.37	113.8	1734.55	113.1
14-Dec-04 05:25:00	1744.03	113.9	1745.34	113.8	1743.37	113.1
14-Dec-04 05:26:00	1757.09	113.9	1758.26	113.7	1756.46	113.0
14-Dec-04 05:27:00	1766.46	113.8	1767.53	113.7	1765.85	113.0
14-Dec-04 05:28:00	1776.24	113.8	1777.39	113.6	1775.58	113.0
14-Dec-04 05:29:00	1786.44	113.7	1787.58	113.6	1785.80	112.9
14-Dec-04 05:30:00	1796.59	113.7	1797.70	113.5	1795.98	112.9
14-Dec-04 05:31:00	1805.97	113.7	1807.06	113.5	1805.42	112.8
14-Dec-04 05:32:00	1815.11	113.6	1816.15	113.4	1814.49	112.7
14-Dec-04 05:33:00	1824.14	113.6	1825.15	113.4	1823.50	112.7
14-Dec-04 05:34:00	1833.15	113.5	1834.17	113.3	1832.46	112.6
14-Dec-04 05:35:00	1842.65	113.4	1843.73	113.2	1842.05	112.6
14-Dec-04 05:36:00	1851.92	113.4	1852.92	113.2	1851.22	112.5
14-Dec-04 05:37:00	1860.68	113.3	1861.72	113.1	1860.06	112.5

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 05:38:00	1869.20	113.3	1870.12	113.1	1868.51	112.4
14-Dec-04 05:39:00	1876.80	113.2	1877.70	113.0	1876.19	112.3
14-Dec-04 05:40:00	1881.71	113.1	1881.80	113.0	1881.59	112.3
14-Dec-04 05:41:00	Increase adjustable choke to 32/64".					
14-Dec-04 05:41:00	1848.64	113.0	1846.25	112.8	1850.14	112.1
14-Dec-04 05:42:00	1808.60	112.8	1806.93	112.6	1809.64	111.9
14-Dec-04 05:43:00	1779.81	112.6	1778.45	112.4	1780.74	111.6
14-Dec-04 05:44:00	1753.41	112.4	1752.18	112.2	1754.25	111.4
14-Dec-04 05:45:00	Divert flow through 32/64" fixed choke.					
14-Dec-04 05:45:00	1721.93	112.2	1719.75	112.1	1723.48	111.3
14-Dec-04 05:46:00	1684.28	112.0	1682.58	111.8	1685.41	111.0
14-Dec-04 05:47:00	1652.02	111.8	1650.44	111.6	1653.00	110.8
14-Dec-04 05:48:00	1623.64	111.6	1622.41	111.5	1624.50	110.7
14-Dec-04 05:49:00	1599.18	111.5	1598.04	111.3	1599.88	110.5
14-Dec-04 05:50:00	1577.78	111.3	1576.86	111.2	1578.31	110.3
14-Dec-04 05:51:00	1559.42	111.2	1558.64	111.0	1559.81	110.2
14-Dec-04 05:52:00	1543.67	111.1	1543.11	110.9	1544.01	110.1
14-Dec-04 05:53:00	1534.02	111.0	1533.59	110.8	1534.05	110.0
14-Dec-04 05:54:00	1524.50	110.9	1524.28	110.7	1524.56	109.9
14-Dec-04 05:55:00	1516.65	110.8	1516.57	110.5	1516.76	109.8
14-Dec-04 05:56:00	1510.60	110.7	1510.61	110.4	1510.56	109.7
14-Dec-04 05:57:00	1509.94	110.6	1510.01	110.4	1509.81	109.6
14-Dec-04 05:58:00	1506.53	110.5	1506.63	110.3	1506.49	109.5
14-Dec-04 05:59:00	1504.37	110.4	1504.62	110.2	1504.28	109.4
14-Dec-04 06:00:00	1503.92	110.3	1504.22	110.1	1503.74	109.3
14-Dec-04 06:05:00	1511.88	109.9	1512.27	109.6	1511.49	108.9
14-Dec-04 06:10:00	1529.25	109.6	1529.80	109.2	1529.15	108.5
14-Dec-04 06:15:00	1546.13	109.2	1546.69	108.9	1546.02	108.1
14-Dec-04 06:20:00	1568.19	108.9	1569.24	108.6	1567.75	107.8
14-Dec-04 06:25:00	Reduce slowly the STX adjustable choke.					
14-Dec-04 06:25:00	1599.63	108.7	1600.46	108.4	1599.33	107.6
14-Dec-04 06:30:00	1623.12	108.5	1623.85	108.2	1622.95	107.4
14-Dec-04 06:35:00	1641.69	108.3	1642.57	108.1	1641.40	107.3
14-Dec-04 06:40:00	1675.54	108.3	1676.71	108.1	1675.34	107.3
14-Dec-04 06:41:00	Divert flow through Separator.					
14-Dec-04 06:42:00	Fully open STX choke.					
14-Dec-04 06:45:00	1706.43	108.3	1707.40	108.0	1706.40	107.3
14-Dec-04 06:50:00	1727.91	108.2	1728.80	108.0	1727.69	107.3
14-Dec-04 06:55:00	By-pass Separator. Start Methanol Injection.					
14-Dec-04 06:55:00	1757.94	108.2	1758.81	108.0	1757.80	107.3
14-Dec-04 07:00:00	1739.43	108.1	1740.00	107.9	1739.64	107.2
14-Dec-04 07:01:00	By-pass STX.					
14-Dec-04 07:05:00	1730.19	108.1	1730.88	107.9	1730.32	107.2
14-Dec-04 07:07:00	Divert flow through STX and inject Methanol at low rate 20 strokes/min.					
14-Dec-04 07:08:00	Divert flow through Separator.					
14-Dec-04 07:10:00	1727.70	108.1	1728.42	107.9	1727.75	107.2
14-Dec-04 07:15:00	1748.45	108.1	1749.59	107.9	1748.18	107.2
14-Dec-04 07:20:00	1771.96	108.1	1772.81	107.9	1771.56	107.3
14-Dec-04 07:25:00	1786.32	108.0	1787.20	107.9	1786.01	107.3
14-Dec-04 07:30:00	1796.09	108.0	1797.02	107.9	1795.99	107.3

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 07:35:00	1802.93	108.0	1803.89	107.9	1802.83	107.3
14-Dec-04 07:40:00	1807.42	108.1	1808.37	107.9	1807.40	107.3
14-Dec-04 07:45:00	1810.58	108.1	1811.52	108.0	1810.57	107.3
14-Dec-04 07:50:00	1833.92	108.1	1834.83	108.0	1833.31	107.4
14-Dec-04 07:55:00	1852.76	108.1	1853.68	108.0	1852.33	107.5
14-Dec-04 08:00:00	1866.70	108.2	1867.69	108.1	1866.49	107.6
14-Dec-04 08:00:01	(Sampling Flow Period)					
14-Dec-04 08:05:00	1871.97	108.3	1872.99	108.2	1871.87	107.6
14-Dec-04 08:10:00	1880.15	108.4	1881.16	108.3	1879.98	107.7
14-Dec-04 08:15:00	1885.48	108.4	1886.38	108.3	1885.46	107.7
14-Dec-04 08:20:00	1886.47	108.5	1887.42	108.4	1886.43	107.8
14-Dec-04 08:25:00	1888.85	108.6	1889.79	108.4	1888.75	107.8
14-Dec-04 08:30:00	1890.83	108.6	1891.72	108.5	1890.71	107.9
14-Dec-04 08:35:00	1893.31	108.6	1894.22	108.5	1893.19	107.9
14-Dec-04 08:40:00	1895.62	108.7	1896.53	108.6	1895.49	107.9
14-Dec-04 08:45:00	1897.87	108.7	1898.76	108.6	1897.77	108.0
14-Dec-04 08:50:00	1901.17	108.7	1902.08	108.6	1901.02	108.0
14-Dec-04 08:55:00	1903.95	108.7	1904.86	108.6	1903.83	108.0
14-Dec-04 09:00:00	1906.05	108.8	1906.97	108.7	1905.95	108.1
14-Dec-04 09:15:00	1913.64	108.8	1914.58	108.7	1913.54	108.1
14-Dec-04 09:30:00	1922.04	108.9	1923.04	108.8	1921.90	108.2
14-Dec-04 09:37:00	Ajust STX choke to increase inlet pressure.					
14-Dec-04 09:45:00	1928.46	109.0	1929.36	108.9	1928.34	108.3
14-Dec-04 10:00:00	1938.00	109.1	1938.95	108.9	1937.91	108.4
14-Dec-04 10:01:00	Increase upstream STX pressure.					
14-Dec-04 10:15:00	1960.86	109.1	1961.90	109.0	1960.71	108.5
14-Dec-04 10:30:00	1972.57	109.3	1973.56	109.2	1972.46	108.6
14-Dec-04 10:45:00	1975.86	109.4	1976.79	109.3	1975.80	108.7
14-Dec-04 11:00:00	1980.02	109.4	1980.92	109.3	1979.91	108.8
14-Dec-04 11:15:00	1983.60	109.5	1984.53	109.4	1983.52	108.8
14-Dec-04 11:30:00	1989.73	109.6	1990.68	109.5	1989.61	108.9
14-Dec-04 11:45:00	1992.66	109.6	1993.57	109.5	1992.57	108.9
14-Dec-04 12:00:00	1996.42	109.7	1997.35	109.5	1996.34	109.0
14-Dec-04 12:15:00	1998.87	109.7	1999.79	109.6	1998.75	109.0
14-Dec-04 12:30:00	2010.61	109.8	2011.61	109.6	2010.51	109.1
14-Dec-04 12:45:00	2018.32	109.8	2019.24	109.7	2018.21	109.1
14-Dec-04 12:46:00	2018.38	109.8	2019.36	109.7	2018.29	109.1
14-Dec-04 12:47:00	Switch to adjustable choke and gradually increase choke. (Maximum Flow Period)					
14-Dec-04 12:47:00	2016.92	109.8	2015.89	109.7	2018.14	109.1
14-Dec-04 12:48:00	1948.80	109.7	1944.68	109.6	1952.39	109.1
14-Dec-04 12:49:00	1849.04	109.5	1844.29	109.4	1853.38	108.8
14-Dec-04 12:50:00	By-pass STX.					
14-Dec-04 12:50:00	1752.90	109.2	1748.70	109.0	1757.05	108.4
14-Dec-04 12:51:00	1676.23	108.9	1673.08	108.7	1679.45	108.0
14-Dec-04 12:52:00	1617.93	108.7	1615.66	108.5	1620.25	107.8
14-Dec-04 12:53:00	1574.41	108.5	1572.70	108.3	1576.02	107.6
14-Dec-04 12:54:00	1542.58	108.4	1541.80	108.2	1543.27	107.4
14-Dec-04 12:55:00	1535.05	108.3	1534.82	108.1	1535.26	107.4
14-Dec-04 12:56:00	1526.00	108.2	1526.00	108.0	1526.20	107.3
14-Dec-04 12:57:00	1519.05	108.1	1519.17	107.9	1519.16	107.2

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 12:58:00	1514.58	108.0	1514.77	107.8	1514.62	107.1
14-Dec-04 12:59:00	1511.34	108.0	1511.70	107.7	1511.45	107.0
14-Dec-04 13:00:00	1509.85	107.9	1510.20	107.7	1509.79	106.9
14-Dec-04 13:01:00	1508.83	107.8	1509.31	107.6	1508.85	106.8
14-Dec-04 13:02:00	1509.56	107.7	1510.09	107.5	1509.39	106.7
14-Dec-04 13:03:00	Well flow on 56/64" adjustable choke.					
14-Dec-04 13:03:00	1508.69	107.7	1508.55	107.4	1509.03	106.6
14-Dec-04 13:04:00	Divert flow 56/64" fixed choke.					
14-Dec-04 13:04:00	1489.13	107.5	1488.42	107.3	1489.74	106.5
14-Dec-04 13:05:00	1473.75	107.4	1473.55	107.1	1474.04	106.4
14-Dec-04 13:06:00	1465.20	107.3	1465.22	107.0	1465.44	106.2
14-Dec-04 13:07:00	1459.42	107.2	1459.64	106.9	1459.49	106.1
14-Dec-04 13:08:00	1446.85	107.1	1446.65	106.8	1447.27	106.0
14-Dec-04 13:09:00	1438.58	107.0	1438.63	106.7	1438.79	105.9
14-Dec-04 13:10:00	1432.76	106.9	1432.93	106.6	1432.87	105.8
14-Dec-04 13:11:00	1428.18	106.8	1428.37	106.5	1428.11	105.7
14-Dec-04 13:12:00	1425.16	106.7	1425.51	106.4	1425.10	105.6
14-Dec-04 13:13:00	1423.53	106.6	1424.01	106.3	1423.43	105.5
14-Dec-04 13:14:00	1423.91	106.6	1424.47	106.2	1423.73	105.5
14-Dec-04 13:15:00	1424.12	106.5	1424.74	106.2	1424.01	105.4
14-Dec-04 13:20:00	1444.76	106.3	1445.50	105.9	1444.47	105.2
14-Dec-04 13:25:00	1447.44	106.0	1448.07	105.6	1447.34	104.9
14-Dec-04 13:30:00	1448.45	105.8	1449.10	105.4	1448.25	104.7
14-Dec-04 13:35:00	1453.06	105.6	1453.83	105.3	1452.90	104.5
14-Dec-04 13:40:00	1456.15	105.5	1456.92	105.1	1455.99	104.4
14-Dec-04 13:45:00	1462.56	105.3	1463.32	105.0	1462.47	104.3
14-Dec-04 13:50:00	1467.81	105.3	1468.64	104.9	1467.75	104.2
14-Dec-04 13:55:00	1471.71	105.2	1472.53	104.8	1471.63	104.1
14-Dec-04 14:00:00	1478.29	105.1	1479.08	104.7	1478.18	104.0
14-Dec-04 14:05:00	1486.13	105.0	1487.08	104.7	1485.97	104.0
14-Dec-04 14:10:00	1492.69	105.0	1493.54	104.7	1492.62	104.0
14-Dec-04 14:15:00	1494.17	105.0	1495.03	104.7	1494.11	104.0
14-Dec-04 14:20:00	1496.29	105.0	1497.28	104.7	1496.12	104.0
14-Dec-04 14:25:00	1496.19	104.9	1497.10	104.6	1496.12	104.0
14-Dec-04 14:30:00	1497.38	104.9	1498.33	104.6	1497.33	103.9
14-Dec-04 14:35:00	1500.63	104.9	1501.69	104.6	1500.53	103.9
14-Dec-04 14:40:00	1506.79	104.9	1508.86	104.6	1506.02	103.9
14-Dec-04 14:45:00	1531.63	105.0	1533.69	104.7	1530.49	104.0
14-Dec-04 14:50:00	1553.16	105.1	1554.22	104.8	1553.00	104.1
14-Dec-04 14:55:00	1557.68	105.1	1558.73	104.9	1557.60	104.2
14-Dec-04 15:00:00	1559.52	105.1	1560.53	104.9	1559.46	104.2
14-Dec-04 15:05:00	1561.33	105.2	1562.35	104.9	1561.21	104.3
14-Dec-04 15:10:00	1562.01	105.2	1563.03	105.0	1561.95	104.3
14-Dec-04 15:15:00	1563.45	105.2	1564.48	105.0	1563.38	104.3
14-Dec-04 15:20:00	1565.30	105.2	1566.28	105.0	1565.21	104.3
14-Dec-04 15:25:00	1565.48	105.3	1566.45	105.0	1565.43	104.3
14-Dec-04 15:30:00	1566.15	105.3	1567.17	105.0	1566.03	104.4
14-Dec-04 15:35:00	1567.56	105.3	1568.54	105.0	1567.46	104.4
14-Dec-04 15:40:00	1569.48	105.3	1570.46	105.0	1569.40	104.4
14-Dec-04 15:45:00	1571.14	105.3	1572.20	105.0	1571.06	104.4

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 15:50:00	1572.43	105.3	1573.47	105.1	1572.39	104.4
14-Dec-04 15:55:00	1573.85	105.3	1574.87	105.1	1573.75	104.4
14-Dec-04 16:00:00	1575.34	105.3	1576.35	105.1	1575.28	104.4
14-Dec-04 16:01:00	1575.54	105.3	1576.52	105.1	1575.49	104.4
14-Dec-04 16:02:00	Bleed off Annulus to close PCT. (Final Build Up Period)					
14-Dec-04 16:02:00	2347.30	105.8	2430.86	105.7	2277.88	105.1
14-Dec-04 16:03:00	3652.93	108.8	3704.75	108.8	3608.33	108.8
14-Dec-04 16:04:00	4138.26	111.6	4149.39	111.5	4127.99	112.1
14-Dec-04 16:05:00	4195.37	112.6	4199.11	112.5	4193.55	112.9
14-Dec-04 16:06:00	Close Choke manifold.					
14-Dec-04 16:06:00	4209.27	112.9	4211.58	112.9	4209.00	113.0
14-Dec-04 16:07:00	4215.79	113.1	4217.64	113.1	4215.95	113.1
14-Dec-04 16:08:00	4219.46	113.3	4221.13	113.3	4219.97	113.2
14-Dec-04 16:09:00	4222.24	113.5	4223.69	113.5	4222.33	113.4
14-Dec-04 16:10:00	4224.77	113.6	4226.05	113.7	4224.63	113.5
14-Dec-04 16:11:00	4226.77	113.7	4227.93	113.8	4226.63	113.5
14-Dec-04 16:12:00	4228.33	113.7	4229.47	113.8	4228.19	113.6
14-Dec-04 16:13:00	4229.65	113.8	4230.85	113.9	4229.55	113.6
14-Dec-04 16:14:00	4230.81	113.8	4231.95	113.9	4230.64	113.6
14-Dec-04 16:15:00	4231.94	113.8	4233.01	114.0	4231.75	113.6
14-Dec-04 16:16:00	4232.83	113.9	4233.93	114.0	4232.64	113.6
14-Dec-04 16:17:00	4233.70	113.9	4234.79	114.0	4233.52	113.7
14-Dec-04 16:18:00	4234.52	113.9	4235.56	114.0	4234.28	113.7
14-Dec-04 16:19:00	4235.25	114.0	4236.28	114.0	4235.02	113.7
14-Dec-04 16:20:00	4235.95	114.0	4236.94	114.1	4235.69	113.7
14-Dec-04 16:21:00	4236.57	114.0	4237.55	114.1	4236.32	113.7
14-Dec-04 16:22:00	4237.15	114.0	4238.14	114.1	4236.91	113.7
14-Dec-04 16:23:00	4237.69	114.0	4238.69	114.1	4237.46	113.7
14-Dec-04 16:24:00	4238.21	114.0	4239.19	114.1	4237.96	113.7
14-Dec-04 16:25:00	4238.70	114.0	4239.68	114.1	4238.43	113.7
14-Dec-04 16:26:00	4239.17	114.0	4240.13	114.1	4238.90	113.7
14-Dec-04 16:27:00	4239.60	114.0	4240.56	114.1	4239.33	113.7
14-Dec-04 16:28:00	4240.02	114.1	4240.97	114.1	4239.74	113.7
14-Dec-04 16:29:00	4240.42	114.1	4241.36	114.1	4240.13	113.7
14-Dec-04 16:30:00	4240.80	114.1	4241.73	114.1	4240.49	113.6
14-Dec-04 16:34:00	Close Master valve.					
14-Dec-04 16:35:00	Bleed off surface pressure.					
14-Dec-04 16:35:00	4242.47	114.1	4243.36	114.1	4242.12	113.6
14-Dec-04 16:40:00	4243.85	114.1	4244.71	114.1	4243.47	113.6
14-Dec-04 16:45:00	4244.98	114.1	4245.85	114.1	4244.60	113.6
14-Dec-04 16:50:00	4245.94	114.1	4246.81	114.1	4245.56	113.6
14-Dec-04 16:55:00	4246.80	114.1	4247.67	114.1	4246.44	113.7
14-Dec-04 17:00:00	4247.59	114.2	4248.44	114.1	4247.24	113.7
14-Dec-04 17:05:00	4248.30	114.2	4249.13	114.2	4247.89	113.7
14-Dec-04 17:10:00	4248.89	114.2	4249.75	114.2	4248.50	113.7
14-Dec-04 17:12:00	Commence rigging down Wireline equipment.					
14-Dec-04 17:15:00	4249.47	114.3	4250.32	114.2	4249.08	113.8
14-Dec-04 17:20:00	4249.99	114.3	4250.84	114.3	4249.60	113.8
14-Dec-04 17:25:00	4250.48	114.4	4251.32	114.3	4250.09	113.9
14-Dec-04 17:30:00	4250.93	114.4	4251.76	114.4	4250.53	113.9

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
14-Dec-04 17:35:00	4251.35	114.5	4252.18	114.4	4250.95	114.0
14-Dec-04 17:40:00	4251.74	114.5	4252.56	114.5	4251.33	114.0
14-Dec-04 17:45:00	4252.11	114.6	4252.93	114.5	4251.70	114.1
14-Dec-04 17:50:00	4252.46	114.6	4253.28	114.5	4252.04	114.1
14-Dec-04 17:55:00	4252.79	114.6	4253.60	114.6	4252.37	114.1
14-Dec-04 18:00:00	4253.09	114.7	4253.91	114.6	4252.67	114.2
14-Dec-04 18:05:00	4253.38	114.7	4254.20	114.7	4252.97	114.2
14-Dec-04 18:10:00	4253.65	114.8	4254.48	114.7	4253.24	114.3
14-Dec-04 18:15:00	4253.92	114.8	4254.74	114.8	4253.50	114.3
14-Dec-04 18:20:00	4254.16	114.9	4254.98	114.8	4253.73	114.4
14-Dec-04 18:25:00	4254.40	114.9	4255.22	114.9	4253.97	114.4
14-Dec-04 18:30:00	4254.62	115.0	4255.44	114.9	4254.19	114.5
14-Dec-04 18:35:00	4254.84	115.0	4255.66	115.0	4254.40	114.5
14-Dec-04 18:40:00	4255.04	115.1	4255.85	115.0	4254.59	114.6
14-Dec-04 18:45:00	4255.23	115.1	4256.05	115.1	4254.78	114.6
14-Dec-04 18:50:00	4255.43	115.2	4256.24	115.1	4254.97	114.7
14-Dec-04 18:55:00	4255.61	115.2	4256.43	115.1	4255.14	114.7
14-Dec-04 19:00:00	4255.79	115.2	4256.60	115.2	4255.30	114.8
14-Dec-04 19:15:00	4256.27	115.4	4257.09	115.3	4255.71	114.9
14-Dec-04 19:30:00	4256.72	115.5	4257.53	115.4	4256.68	115.0
14-Dec-04 19:45:00	4257.13	115.6	4257.94	115.6	4256.83	115.1
14-Dec-04 20:00:00	4257.51	115.7	4258.31	115.7	4257.15	115.2
14-Dec-04 20:15:00	4257.84	115.8	4258.64	115.8	4257.46	115.4
14-Dec-04 20:30:00	4258.14	115.9	4258.94	115.9	4257.75	115.5
14-Dec-04 20:45:00	4258.41	116.0	4259.21	116.0	4258.00	115.5
14-Dec-04 21:00:00	4258.64	116.1	4259.44	116.1	4258.23	115.6
14-Dec-04 21:15:00	4258.88	116.2	4259.67	116.2	4258.46	115.7
14-Dec-04 21:30:00	4259.08	116.3	4259.87	116.2	4258.66	115.8
14-Dec-04 21:45:00	4259.25	116.4	4260.04	116.3	4258.83	115.9
14-Dec-04 22:00:00	4259.41	116.4	4260.20	116.4	4258.99	116.0
14-Dec-04 22:15:00	4259.56	116.5	4260.35	116.5	4259.13	116.1
14-Dec-04 22:30:00	4259.69	116.6	4260.48	116.6	4259.26	116.1
14-Dec-04 22:45:00	4259.81	116.7	4260.60	116.6	4259.38	116.2
14-Dec-04 23:00:00	4259.92	116.7	4260.70	116.7	4259.49	116.3
14-Dec-04 23:15:00	4260.00	116.8	4260.79	116.8	4259.58	116.3
14-Dec-04 23:30:00	4260.09	116.9	4260.88	116.8	4259.67	116.4
14-Dec-04 23:45:00	4260.16	116.9	4260.94	116.9	4259.74	116.4
15-Dec-04 00:00:00	4260.24	117.0	4261.02	116.9	4259.81	116.5
15-Dec-04 00:15:00	4260.30	117.0	4261.08	117.0	4259.88	116.6
15-Dec-04 00:30:00	4260.35	117.1	4261.14	117.0	4259.93	116.6
15-Dec-04 00:45:00	4260.39	117.1	4261.17	117.1	4259.97	116.7
15-Dec-04 01:00:00	4260.37	117.2	4261.24	117.2	4260.04	116.7
15-Dec-04 01:15:00	4260.37	117.2	4261.24	117.2	4260.04	116.8
15-Dec-04 01:30:00	4260.40	117.3	4261.26	117.2	4260.06	116.8
15-Dec-04 01:45:00	4260.42	117.3	4261.28	117.3	4260.09	116.9
15-Dec-04 02:00:00	4260.43	117.4	4261.30	117.3	4260.11	116.9
15-Dec-04 02:15:00	4260.44	117.4	4261.31	117.4	4260.12	117.0
15-Dec-04 02:30:00	4260.47	117.5	4261.34	117.4	4260.15	117.0
15-Dec-04 02:45:00	4260.48	117.5	4261.35	117.5	4260.16	117.0
15-Dec-04 03:00:00	4260.48	117.5	4261.35	117.5	4260.16	117.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
15-Dec-04 03:15:00	4260.48	117.6	4261.35	117.6	4260.17	117.1
15-Dec-04 03:30:00	4260.43	117.6	4261.31	117.6	4260.13	117.2
15-Dec-04 03:45:00	4260.41	117.7	4261.29	117.6	4260.11	117.2
15-Dec-04 03:58:00	Open Master valve.					
15-Dec-04 04:00:00	4260.38	117.7	4261.27	117.7	4260.09	117.2
15-Dec-04 04:01:00	Open Choke manifold. Bleed off tubing pressure to flare.					
15-Dec-04 04:05:00	4261.06	117.7	4261.97	117.7	4260.75	117.2
15-Dec-04 04:10:00	4261.95	117.7	4262.85	117.7	4261.65	117.3
15-Dec-04 04:15:00	4262.27	117.7	4263.17	117.7	4261.98	117.3
15-Dec-04 04:20:00	4262.29	117.7	4263.19	117.7	4262.00	117.3
15-Dec-04 04:25:00	4262.29	117.8	4263.20	117.7	4262.01	117.3
15-Dec-04 04:30:00	4262.32	117.8	4263.22	117.7	4262.03	117.3
15-Dec-04 04:35:00	4262.40	117.8	4263.31	117.7	4262.12	117.3
15-Dec-04 04:36:00	Top fill tubing with 8.9 ppg kill Brine.					
15-Dec-04 04:40:00	4262.46	117.8	4263.38	117.8	4262.19	117.3
15-Dec-04 04:45:00	4262.46	117.8	4263.37	117.8	4262.19	117.3
15-Dec-04 04:50:00	4261.89	117.8	4262.79	117.8	4261.63	117.3
15-Dec-04 04:55:00	4261.05	117.8	4261.95	117.8	4260.78	117.4
15-Dec-04 05:00:00	4260.62	117.8	4261.61	117.8	4260.25	117.4
15-Dec-04 05:05:00	4266.34	117.8	4266.97	117.8	4265.77	117.4
15-Dec-04 05:08:00	65 bbls Brine in tubing, close Choke manifold.					
15-Dec-04 05:10:00	4266.42	117.9	4267.11	117.8	4265.92	117.4
15-Dec-04 05:15:00	4266.46	117.9	4267.19	117.9	4266.00	117.4
15-Dec-04 05:20:00	4266.49	117.9	4267.25	117.9	4266.06	117.4
15-Dec-04 05:25:00	4266.52	117.9	4267.30	117.9	4266.11	117.4
15-Dec-04 05:30:00	Pressure Annulus to open PCT.					
15-Dec-04 05:30:00	4266.57	117.9	4267.35	117.9	4266.16	117.5
15-Dec-04 05:31:00	4256.82	117.9	4258.16	117.9	4255.84	117.5
15-Dec-04 05:32:00	Start bullheading formation with kill Brine.					
15-Dec-04 05:32:00	4373.27	117.9	4402.55	117.9	4348.06	117.5
15-Dec-04 05:33:00	4968.85	118.2	4968.00	118.3	4967.88	117.9
15-Dec-04 05:34:00	5596.34	118.5	5595.06	118.6	5530.38	118.4
15-Dec-04 05:35:00	5721.47	118.4	5745.39	118.6	5697.89	118.3
15-Dec-04 05:36:00	6093.26	118.2	6117.02	118.4	6073.59	118.0
15-Dec-04 05:37:00	6005.90	118.1	5971.01	118.0	6053.81	117.5
15-Dec-04 05:38:00	5894.27	117.7	5899.10	117.6	5889.00	117.1
15-Dec-04 05:39:00	6086.22	117.4	6086.36	117.3	6086.36	117.0
15-Dec-04 05:40:00	6094.05	117.1	6094.41	117.0	6093.90	116.6
15-Dec-04 05:41:00	6134.79	117.1	6143.93	116.6	6130.94	116.3
15-Dec-04 05:42:00	6287.92	117.2	6296.70	116.3	6282.37	116.0
15-Dec-04 05:43:00	6219.35	117.0	6196.23	116.3	6252.78	115.7
15-Dec-04 05:44:00	6360.59	116.6	6373.25	116.1	6322.03	115.5
15-Dec-04 05:45:00	6251.47	116.3	6253.06	116.0	6251.03	115.4
15-Dec-04 05:46:00	6362.53	116.0	6369.28	115.8	6356.21	115.3
15-Dec-04 05:47:00	6264.53	115.8	6230.93	115.6	6294.17	115.2
15-Dec-04 05:48:00	5794.96	115.5	5774.47	115.3	5811.80	114.8
15-Dec-04 05:49:00	5881.98	115.3	5894.54	115.1	5872.16	114.6
15-Dec-04 05:50:00	6105.46	115.6	6120.62	115.4	6091.58	114.9
15-Dec-04 05:51:00	6409.26	115.7	6423.05	115.7	6395.77	115.2
15-Dec-04 05:52:00	6605.34	115.6	6614.54	115.7	6597.32	115.3

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
15-Dec-04 05:53:00	6739.79	115.5	6745.23	115.7	6733.54	115.2
15-Dec-04 05:54:00	6845.68	115.7	6848.07	115.9	6842.84	115.5
15-Dec-04 05:55:00	6888.01	115.8	6891.21	115.9	6886.92	115.5
15-Dec-04 05:56:00	6922.56	115.8	6926.42	115.8	6920.65	115.5
15-Dec-04 05:57:00	6881.75	115.8	6881.47	115.8	6883.28	115.6
15-Dec-04 05:58:00	6868.40	115.7	6870.08	115.7	6868.28	115.5
15-Dec-04 05:59:00	6879.47	115.7	6881.02	115.6	6879.36	115.4
15-Dec-04 06:00:00	6844.94	115.7	6843.65	115.6	6847.47	115.3
15-Dec-04 06:01:00	6813.84	115.6	6814.39	115.5	6814.46	115.2
15-Dec-04 06:02:00	6814.82	115.6	6816.07	115.5	6814.70	115.2
15-Dec-04 06:03:00	6823.60	115.6	6825.91	115.4	6823.00	115.2
15-Dec-04 06:04:00	6888.64	115.6	6895.90	115.4	6882.74	115.1
15-Dec-04 06:05:00	6952.38	115.6	6953.76	115.5	6951.83	115.2
15-Dec-04 06:06:00	6929.02	115.6	6930.02	115.4	6926.95	115.1
15-Dec-04 06:07:00	6913.04	115.6	6914.00	115.4	6915.35	115.1
15-Dec-04 06:08:00	6960.28	115.5	6963.88	115.4	6957.90	115.1
15-Dec-04 06:09:00	6824.85	115.5	6818.88	115.3	6829.87	115.0
15-Dec-04 06:10:00	6742.56	115.4	6740.92	115.3	6745.17	114.9
15-Dec-04 06:11:00	6704.03	115.4	6700.67	115.2	6705.35	114.8
15-Dec-04 06:12:00	6687.35	115.3	6686.74	115.2	6687.40	114.8
15-Dec-04 06:13:00	6684.83	115.2	6689.52	115.2	6684.47	114.8
15-Dec-04 06:14:00	6693.44	115.1	6691.69	115.2	6692.62	114.7
15-Dec-04 06:15:00	6708.35	115.1	6711.19	115.2	6707.17	114.7
15-Dec-04 06:16:00	6727.25	115.1	6731.83	115.2	6725.98	114.7
15-Dec-04 06:17:00	6887.08	115.2	6900.12	115.2	6875.32	114.8
15-Dec-04 06:18:00	6747.03	115.3	6733.09	115.2	6766.50	114.8
15-Dec-04 06:19:00	Finish bullheading 23 bbls into formation.					
15-Dec-04 06:19:00	6395.49	115.0	6380.71	115.0	6410.07	114.5
15-Dec-04 06:20:00	6108.69	114.6	6096.34	114.5	6121.27	114.0
15-Dec-04 06:21:00	5886.50	114.3	5876.86	114.2	5897.59	113.6
15-Dec-04 06:22:00	Bleed down tubing pressure and observe well condition.					
15-Dec-04 06:22:00	5683.20	114.1	5674.47	114.0	5691.67	113.4
15-Dec-04 06:23:00	5509.81	113.9	5502.52	113.9	5517.05	113.3
15-Dec-04 06:24:00	5360.04	113.8	5353.97	113.8	5366.18	113.2
15-Dec-04 06:25:00	5230.64	113.8	5225.29	113.7	5235.72	113.1
15-Dec-04 06:26:00	5117.81	113.7	5113.30	113.7	5122.12	113.1
15-Dec-04 06:27:00	5020.66	113.7	5016.89	113.6	5024.22	113.1
15-Dec-04 06:28:00	4936.56	113.7	4933.35	113.6	4939.58	113.1
15-Dec-04 06:29:00	4864.24	113.7	4861.55	113.7	4866.72	113.1
15-Dec-04 06:30:00	4802.57	113.7	4800.45	113.7	4804.54	113.1
15-Dec-04 06:31:00	Pressure up tubing.					
15-Dec-04 06:31:00	5338.81	114.1	5371.67	114.1	5307.47	113.5
15-Dec-04 06:32:00	5948.78	114.9	5985.40	114.8	5924.10	114.3
15-Dec-04 06:33:00	6515.92	115.4	6541.12	115.4	6489.17	114.9
15-Dec-04 06:34:00	6984.80	115.6	6962.83	115.7	6972.71	115.3
15-Dec-04 06:35:00	Bleed down tubing pressure and observe well condition.					
15-Dec-04 06:35:00	5045.53	115.4	4692.06	115.5	5561.64	115.4
15-Dec-04 06:36:00	4498.53	112.9	4496.73	113.0	4499.18	111.9
15-Dec-04 06:37:00	4491.05	112.7	4490.40	112.7	4490.39	111.8
15-Dec-04 06:38:00	4486.54	112.8	4486.49	112.8	4485.19	112.1

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
15-Dec-04 06:39:00	4483.76	113.0	4484.06	113.0	4482.30	112.3
15-Dec-04 06:40:00	4481.88	113.2	4482.25	113.2	4480.46	112.6
15-Dec-04 06:41:00	4480.31	113.3	4480.81	113.3	4479.07	112.8
15-Dec-04 06:42:00	4478.59	113.5	4478.96	113.5	4477.46	112.9
15-Dec-04 06:43:00	4476.73	113.6	4477.20	113.6	4475.71	113.0
15-Dec-04 06:44:00	4474.93	113.7	4475.38	113.7	4473.95	113.2
15-Dec-04 06:45:00	4473.10	113.8	4473.57	113.8	4472.16	113.3
15-Dec-04 06:50:00	4464.26	114.2	4464.72	114.2	4463.45	113.7
15-Dec-04 06:55:00	4456.25	114.5	4456.72	114.5	4455.34	114.0
15-Dec-04 07:00:00	4448.98	114.7	4449.48	114.7	4448.07	114.2
15-Dec-04 07:05:00	4442.69	114.9	4443.22	114.9	4442.12	114.4
15-Dec-04 07:10:00	4436.40	115.0	4436.91	115.0	4435.80	114.5
15-Dec-04 07:15:00	4430.42	115.1	4430.55	115.1	4429.82	114.6
15-Dec-04 07:20:00	4425.58	115.2	4426.13	115.2	4424.96	114.7
15-Dec-04 07:25:00	Bleed down Annulus. PCT in hold-open position.					
15-Dec-04 07:25:00	4421.08	115.3	4421.91	115.3	4420.05	114.8
15-Dec-04 07:30:00	4416.28	115.4	4416.81	115.4	4415.60	114.9
15-Dec-04 07:35:00	4412.07	115.4	4412.59	115.4	4411.42	114.9
15-Dec-04 07:38:00	Pressure tubing, commence cycling MCVL to circulating position.					
15-Dec-04 07:40:00	5638.69	116.8	5624.08	116.7	5624.27	116.3
15-Dec-04 07:45:00	4451.96	115.0	4453.43	114.9	4450.21	114.2
15-Dec-04 07:50:00	5018.72	116.1	4990.30	116.0	5043.72	115.6
15-Dec-04 07:52:00	MCVL opened, open Choke manifold.					
15-Dec-04 07:55:00	Commence reversing out salt pill to burner.					
15-Dec-04 07:55:00	4589.15	115.1	4588.65	115.0	4589.37	114.4
15-Dec-04 08:00:00	4559.00	115.2	4559.48	115.2	4558.86	114.7
15-Dec-04 08:05:00	4550.18	115.4	4550.41	115.3	4549.68	114.8
15-Dec-04 08:10:00	4489.74	115.4	4489.68	115.4	4490.27	114.9
15-Dec-04 08:15:00	4505.98	115.4	4514.72	115.4	4498.01	114.9
15-Dec-04 08:20:00	4667.99	115.8	4667.61	115.8	4667.41	115.3
15-Dec-04 08:23:00	Complete reversing out 140 bbls, close Choke manifold and observe well.					
15-Dec-04 08:25:00	4396.67	115.4	4395.71	115.4	4398.38	114.9
15-Dec-04 08:30:00	4394.31	115.6	4394.91	115.5	4393.67	115.0
15-Dec-04 08:35:00	Pump down tubing to reset MCVL.					
15-Dec-04 08:35:00	4453.95	115.7	4461.59	115.7	4449.09	115.2
15-Dec-04 08:40:00	4452.83	115.8	4461.55	115.7	4442.13	115.2
15-Dec-04 08:45:00	Pump down Annulus to close MCVL.					
15-Dec-04 08:45:00	4439.16	115.9	4440.16	115.8	4440.15	115.4
15-Dec-04 08:50:00	4432.22	115.9	4432.83	115.9	4431.63	115.4
15-Dec-04 08:55:00	4428.95	115.9	4429.53	115.9	4428.39	115.4
15-Dec-04 08:58:00	Pull DST string to open Packer by-pass.					
15-Dec-04 09:00:00	4425.27	116.0	4426.51	116.0	4423.57	115.5
15-Dec-04 09:05:00	Open Choke manifold.					
15-Dec-04 09:05:00	4381.29	115.4	4381.86	115.4	4380.90	114.9
15-Dec-04 09:08:00	Commence reversing out tubing to burner.					
15-Dec-04 09:10:00	4745.97	113.6	4746.51	113.6	4745.26	113.1
15-Dec-04 09:15:00	4649.94	112.6	4641.13	112.6	4663.83	112.1
15-Dec-04 09:20:00	4630.86	112.0	4630.69	112.0	4630.32	111.5
15-Dec-04 09:25:00	4595.72	111.6	4595.94	111.6	4595.85	111.1
15-Dec-04 09:30:00	4497.95	111.2	4497.04	111.2	4499.31	110.7

BOTTOMHOLE PRESSURE AND TEMPERATURE RESULTS - Lower DGA

WTQR-A #937 WTQR-A #979 WTQR-A #769

Measuring Point 2943.58 m MDRT

DATE TIME	Below valve		Below valve		Below valve	
	psiA	degC	psiA	degC	psiA	degC
15-Dec-04 09:35:00	4707.50	111.1	4707.08	111.1	4707.15	110.6
15-Dec-04 09:40:00	4722.17	110.9	4722.60	110.9	4721.45	110.4
15-Dec-04 09:45:00	4717.06	110.7	4718.28	110.7	4716.81	110.2
15-Dec-04 09:50:00	4706.57	110.6	4707.45	110.6	4706.17	110.1
15-Dec-04 09:55:00	4703.26	110.4	4703.13	110.5	4702.62	110.0
15-Dec-04 10:00:00	Finish reversing, close Choke manifold and observe well.					
15-Dec-04 10:00:00	4402.98	110.3	4403.51	110.3	4402.50	109.8
15-Dec-04 10:05:00	4400.75	110.5	4401.35	110.5	4400.18	109.9
15-Dec-04 10:10:00	4400.43	110.8	4401.17	110.8	4399.85	110.2
15-Dec-04 10:15:00	4399.50	111.0	4400.59	111.1	4398.07	110.5
15-Dec-04 10:16:00	Lower down DST string.					
15-Dec-04 10:19:00	Close Master valve.					
15-Dec-04 10:20:00	4395.21	111.3	4395.66	111.3	4394.72	110.7
15-Dec-04 10:22:00	Flush surface lines prior to rig down Flowhead.					
15-Dec-04 10:25:00	4390.09	111.6	4390.81	111.6	4389.57	111.0

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WELL TESTING REPORT

ANNEXES

Company	:	Origin Energy Ltd
Field / Well / Zone	:	T18-P / Trefoil-1 / DST-1
Country	:	Australia
Test date	:	08-Dec-04 to 16-Dec-04
Report number	:	2004-029
Region / Distr / base	:	MEA/APG/AUF

Company representative	:	John Lennon; Daniel Barrow
Schlumberger representative	:	Eng Loke Goh

Schlumberger

Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Gauge Setup Info 1 2004-029

Downhole Pressure and Temperature Gauge Setup Information

	Upper DGA Gauge Carrier											
Gauge Type	WTQR-A			WTQR-A			WTQR-A			WTQR-A		
Gauge Serial Number	1812			835			851			776		
Sensor Serial Number	32617			835			30168			21109		
Type of Sensor	Quartzdyne			Quartzdyne			Quartzdyne			Quartzdyne		
Maximum Pressure Rating (psi)	18,000			18,000			18,000			18,000		
Calibrated Pressure Range (psi)	15 - 16,000			15 - 16,000			15 - 16,000			15 - 16,000		
Pressure Accuracy (psi)	+/- 3.2			+/- 3.2			+/- 3.2			+/- 3.2		
Pressure Resolution @ 5 sec scan	0.003 psi			0.003 psi			0.003 psi			0.003 psi		
First Day Pressure Drift (psi)	< 2.0			< 2.0			< 2.0			< 2.0		
Calibrated Temperature Range ^{o}C	35-177			35-177			35-177			35-177		
Temperature Accuracy ^{o}C	+/- 0.5			+/- 0.5			+/- 0.5			+/- 0.5		
Temperature resolution ^{o}C	0.01 @ 1 sec			0.01 @ 1 sec			0.01 @ 1 sec			0.01 @ 1 sec		
Measure Name	WP1/WCT1			WP2/WCT2			WP3/WCT3			WP4/WCT4		
Measuring Depth (m-MDRT)	2924.54			2924.54			2924.54			2924.54		
Measuring Depth m-TVDRT	2924.54			2924.54			2924.54			2924.54		
Measuring Location	Below Valve			Below Valve			Below Valve			Annulus		
Power on Date	9-Dec-04			9-Dec-04			9-Dec-04			9-Dec-04		
Power on Time	18:10:56			18:06:51			18:32:22			18:36:39		
Memory Guard	Yes			Yes			Yes			Yes		
Delay Time (hours)	No			No			No			No		
Recording session Breakdown	Duration hrs	Rate sec	Data Reduction	Duration hrs	Rate sec	Data Reduction	Duration hrs	Rate sec	Data Reduction	Duration hrs	Rate sec	Data Reduction
Session #1	24	30	No	24	30	No	24	30	No	24	30	No
Session #2	Full	5	No	Full	10	No	Full	10	No	Full	10	No
Session #3												
Session #4												
Session #5												
Battery Type (P/N)	T6017050 (175 degC)			T6017050 (175 degC)			T6017050 (175 degC)			T6017050 (175 degC)		
Number of Data Sets Available	120,000			120,000			120,000			120,000		
Power off Date	16-Dec-04			16-Dec-04			16-Dec-04			16-Dec-04		
Power off Time	22:19:00			22:10:00			22:15:00			22:05:00		
Pressure Data Points	103581			56186			56053			55981		
Memory Usage (percentage)	81.4			51.5			49.5			52.7		

Annexes

Schlumberger

Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Gauge Setup Info 2 2004-029

Downhole Pressure and Temperature Gauge Setup Information

	Lower DGA Gauge Carrier									
Gauge Type	WTQR-A			WTQR-A			WTQR-A			
Gauge Serial Number	937			979			769			
Sensor Serial Number	30781			33518			43192			
Type of Sensor	Quartzdyne			Quartzdyne			Quartzdyne			
Maximum Pressure Rating (psi)	18,000			18,000			18,000			
Calibrated Pressure Range (psi)	15 - 16,000			15 - 16,000			15 - 16,000			
Pressure Accuracy (psi)	+/- 3.2			+/- 3.2			+/- 3.2			
Pressure Resolution @ 5 sec scan	0.003 psi			0.003 psi			0.003 psi			
First Day Pressure Drift (psi)	< 2.0			< 2.0			< 2.0			
Calibrated Temperature Range ^{o}C	35-177			35-177			35-177			
Temperature Accuracy ^{o}C	+/- 0.5			+/- 0.5			+/- 0.5			
Temperature resolution ^{o}C	0.01 @ 1 sec			0.01 @ 1 sec			0.01 @ 1 sec			
Measure Name	WP5/WCT5			WP6/WCT6			WP7/WCT7			
Measuring Depth (m-MDRT)	2943.58			2943.58			2943.58			
Measuring Depth m-TVDRT	2943.58			2943.58			2943.58			
Measuring Location	Below Valve			Below Valve			Below Valve			
Power on Date	9-Dec-04			9-Dec-04			9-Dec-04			
Power on Time	17:48:17			17:41:19			17:45:03			
Memory Guard	Yes			Yes			Yes			
Delay Time (hours)	No			No			No			
Recording session Breakdown	Duration hrs	Rate sec	Data Reduction	Duration hrs	Rate sec	Data Reduction	Duration hrs	Rate sec	Data Reduction	
Session #1	24	30	No	24	30	No	24	30	No	
Session #2	Full	5	No	Full	5	No	Full	5	No	
Session #3										
Session #4										
Session #5										
Battery Type (P/N)	T6017050 (175 degC)			T6017050 (175 degC)			T6017050 (175 degC)			
Number of Data Sets Available	120,000			120,000			120,000			
Power off Date	15-Dec-04			15-Dec-04			15-Dec-04			
Power off Time	23:35:00			23:30:00			23:25:00			
Pressure Data Points	106198			104802			105803			
Memory Usage (percentage)	81.1			81.4			81.2			

Annexes

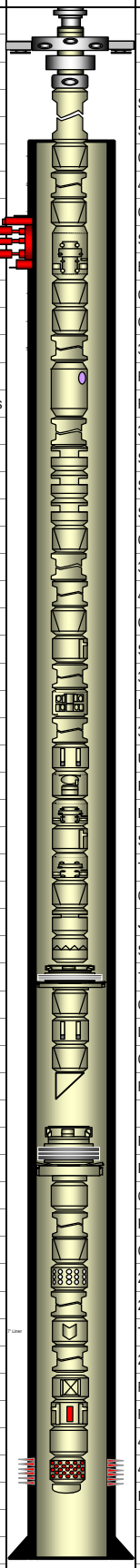
Schlumberger

Origin Energy Ltd
T18-P / Trefoil-1 / DST-1

DRILL STEM TEST "DST" TOOL STRING CONFIGURATION

DST-TCP # 1
2004-029

Packer Set

Casing Talley	String	Descriptions	OD	ID	Top Connection	Bottom Connection	Length	Depth	
								Top	Bottom
m MDBRT			in	in			m	m MDBRT	m MDBRT
									
		Stiff joint (Above RT)	5.00	3.00	4 1/2" SA PIN		1.430	-1.43	0.00
		Stiff joint (Below RT)	5.00	3.00		4 1/2" SA BOX	0.600	0.00	0.60
		Crossover	5.00	3.00	4 1/2" SA PIN	4 1/2" PH6 PIN	0.400	0.60	1.00
		4 1/2" Tubing pups (4 off)	4.50	3.83	4 1/2" PH6 BOX	4 1/2" PH6 PIN	8.985	1.00	9.99
		Crossover	5.00	3.00	4 1/2" PH6 BOX	5" SA PIN	0.345	9.99	10.33
		Slick Joint (0.81 from top)	8.25	3.00	5" SA BOX		0.810	10.33	11.14
		E-Z Valve	8.25	3.00		5" SA BOX	1.655	11.14	12.80
Tubing joints		Crossover	5.00	3.00	5" SA PIN	4 1/2" PH6 PIN	0.280	12.80	13.08
365 to 88		Crossover	5.00	3.00	4 1/2" PH6 BOX	3 1/2" PH6 Pin	0.370	13.08	13.45
		3 1/2" PH6 Tubing (275 joints)	3.50	2.75	3 1/2" PH6 Box	3 1/2" PH6 Pin	2625.690	13.45	2639.14
		RA Sub (Above pip tag)	4.50	2.25	3 1/2" PH6 BOX		0.270	2639.14	2639.41
4.5" pup joints		RA Sub (Below pip tag)	4.50	2.25		3 1/2" PH6 PIN	0.100	2639.41	2639.51
1.45		3 1/2" PH6 Tubing 12.95 Lb	3.50	2.75	3 1/2" PH6 Box	3 1/2" PH6 Pin	9.530	2639.51	2649.04
2.96		Slip Joint F (Open)	5.00	2.25	3 1/2" PH6 Box	3 1/2" PH6 Pin	8.624	2649.04	2657.66
1.71		Slip Joint F (Closed)	5.00	2.25	3 1/2" PH6 Box	3 1/2" PH6 Pin	7.095	2657.66	2664.75
2.87		Slip Joint F (Closed)	5.00	2.25	3 1/2" PH6 Box	3 1/2" PH6 Pin	7.090	2664.75	2671.84
		Crossover	5.00	2.75	3 1/2" PH6 Box	3 1/2 IF Pin	0.250	2671.84	2672.09
		3 1/2" Drill pipe (12 joints)	5.00	2.06	3 1/2" IF Box	3 1/2 IF Pin	112.570	2672.09	2784.66
		4-3/4" Drill Collar (4 Stands)	4.75	2.30	3 1/2 IF Box	3 1/2 IF Pin	113.650	2784.66	2898.31
		Crossover	5.00	2.75	3 1/2 IF Box	3 1/2" PH6 Pin	0.275	2898.31	2898.59
		SHRV	5.00	2.25	3 1/2" PH6 Box	3 1/2" PH6 Pin	1.380	2898.59	2899.97
		3 1/2 PH6 Tubing joint	3.50	2.75	3 1/2" PH6 Box	3 1/2" PH6 Pin	9.540	2899.97	2909.51
		MCVL 6 cycle	5.00	2.25	3 1/2" PH6 Box	3 1/2" PH6 Pin	2.935	2909.51	2912.44
		3 1/2 PH6 Tubing joint	3.50	2.75	3 1/2" PH6 Box	3 1/2" PH6 Pin	9.530	2912.44	2921.97
		Upper DGA Carrier	5.00	2.25	3 1/2" PH6 Box	3 1/2 Mod IF Pin	2.965	2921.97	2924.94
		PCTH with HOOP 4x2	5.00	2.25	3 1/2 Mod IF Box	3 1/2" M.API Box	6.020	2924.94	2930.96
		PORT	5.00	2.25	3 1/2" M.API Pin	3 1/2" PH6 Pin	1.515	2930.96	2932.47
		SHRV	5.00	2.25	3 1/2" PH6 Box	3 1/2" PH6 Pin	1.380	2932.47	2933.85
		TFTV	5.00	2.25	3 1/2" PH6 Box	3 1/2" PH6 Pin	1.780	2933.85	2935.63
		Crossover	5.00	2.75	3 1/2" PH6 Box	3 1/2 IF Pin	0.250	2935.63	2935.88
		Jar-C	5.00	2.25	3 1/2 IF Box	3 1/2 IF Pin	1.985	2935.88	2937.87
		Safety Joint	5.00	2.25	3 1/2 IF Box	3 1/2 IF Pin	0.515	2937.87	2938.38
element at		7" positrieve packer 38#	6.00	2.25	3 1/2 IF Box	2 7/8" EUE PIN	2.265	2938.38	2940.65
2939.84		Crossover	4.50	2.44	2 7/8" EUE BoX	3 1/2" PH6 PIN	0.375	2940.65	2941.02
		Lower DGA Carrier	5.00	2.25	3 1/2" PH6 Box	3 1/2" PH6 Pin	3.555	2941.02	2944.58
		Crossover	4.50	2.44	3 1/2" PH6 Box	2 7/8" EUE PIN	0.505	2944.58	2945.08
		Re entry guide	3.67	2.44	2 7/8" EUE BoX		0.140	2945.08	2945.22
		Packer (top to mid element)					0.850	3119.37	3120.22
		Packer (mid element to x-over)					0.573	3120.22	3120.80
		Crossover	5.00	2.44	4 1/2" Fox PIN	2 3/8" Fox PIN	0.275	3120.80	3121.07
		Pup Joint	3.06	1.99	2 3/8" Fox BOX	2 3/8" Fox PIN	5.300	3121.07	3126.37
		Crossover	3.67	2.44	2 3/8" Fox BOX	2 7/8" EUE PIN	0.360	3126.37	3126.73
		2-7/8" EUE Perforated Pup.	3.67	2.44	2 7/8" EUE BOX	2 7/8" EUE PIN	1.555	3126.73	3128.29
		2 7/8" EUE Tubing Pup	3.67	2.44	2 7/8" EUE BOX	2 7/8" EUE PIN	1.255	3128.29	3129.54
		TCR-B (2.75 ID" After drop)	3.62	1.79	2 7/8" EUE BOX	2 7/8" EUE PIN	0.775	3129.54	3130.32
		2 7/8" EUE Tubing Pup	3.67	2.44	2 7/8" EUE BoX	2 7/8" EUE PIN	1.255	3130.32	3131.57
		Fluid Isolation Sub	3.67	2.44	2 7/8" EUE BOX	2 7/8" EUE PIN	0.660	3131.57	3132.23
		Firing Head TCF HDF/HDF	3.67	N/A	2 7/8" EUE BOX	2 3/8" Mod Reg PIN	5.110	3132.23	3137.34
		4 1/2" Safety spacer	4.50	N/A	2 3/8" Mod Reg BOX	2 3/8" Mod PIN	3.660	3137.34	3141.00
		4 1/2" HTX 34JL Charges @12spf	4.50	N/A	2 3/8" Mod BOX	2 3/8" Mod Reg PIN	9.000	3141.00	3150.00
		Bullnose	4.50	N/A	N/A	N/A	0.250	3150.00	3150.25

Rupture Disc Calculation

SHRV Primary

Well Data

Temp. :	260	**ºF**	**Mud :**	8.90	**lb/gl**
Depth :	2899	**meters**	**Ph :**	4402	**psi**

Disc Selected

Part Nr.	Code	Size	Min	Max	ºF
79404	NA	7250	7150	7400	170

Pressure Corrected	
Minimum	**Maximum**
6961 psi	7205 psi

Pump Pressure	
Minimum	**Maximum**
2559 psi	2803 psi

Rated Temperature factor
0.9681

Actual Temperature factor
0.9426

Rupture Disc Calculation

MCVL

Well Data

Temp. :	260	**ºF**	**Mud :**	8.90	**lb/gl**
Depth :	2912	**meters**	**Ph :**	4422	**psi**

Disc Selected

Part Nr.	Code	Size	Min	Max	ºF
79400	JA	5250	5150	5350	145

Pressure Corrected	
Minimum	**Maximum**
4972 psi	5165 psi

Pump Pressure	
Minimum	**Maximum**
551 psi	744 psi

Rated Temperature factor
0.9763

Actual Temperature factor
0.9426

Rupture Disc Calculation

TFTV + PORT

Well Data

Temp. :	260	**ºF**	**Mud :**	8.90	**lb/gl**
Depth :	2932	**meters**	**Ph :**	4452	**psi**

Disc Selected

Part Nr.	Code	Size	Min	Max	ºF
79400	JA	5250	5150	5350	145

Pressure Corrected	
Minimum	**Maximum**
4972 psi	5165 psi

Pump Pressure	
Minimum	**Maximum**
520 psi	713 psi

Rated Temperature factor
0.9763

Actual Temperature factor
0.9426

Rupture Disc Calculation

SHRV Secondary

Well Data

Temp. :	260	**ºF**	**Mud :**	8.90	**lb/gl**
Depth :	2933	**meters**	**Ph :**	4454	**psi**

Disc Selected

Part Nr.	Code	Size	Min	Max	ºF
79406	PA	8300	8100	8400	190

Pressure Corrected	
Minimum	**Maximum**
7938 psi	8232 psi

Pump Pressure	
Minimum	**Maximum**
3485 psi	3779 psi

Rated Temperature factor
0.9618

Actual Temperature factor
0.9426

HDF - CALCULATION SHEET

Schlumberger

CLIENT	RIG	WELL No.	JOB No.	DATE	REV #	ENGINEER
Origin Energy	Ensco 102	Trefoil-1 Lower	2004-29	12/8/04	1	AMF

HDF Depth TVD :	10282.7 ft	**3134.0** m	**BHT :**	322.0 degF	**161.1** degC
HDF Depth MD :	10282.7 ft	**3134.0** m	**Brine Wt :**	8.90 ppg	**1.067** SG

Hydrostatic Pressure @ HDF :	4759.1 psi	328.1 Bar		**INPUT**
Casing / Liner Tested @ :	**4000** psi	**1.067** SG		
Casing Test Pressure :	8758.2 psi		**Diesel Wt:**	**6.9** ppg
Cushion Hydrostatic Pressure :	3769.3		Diesel Wt:	0.827 SG
Max Firing Pressure :	8053.4 psi		**Interface Depth TVD:**	**2900** m

Pc = 3769

Hydrostatic Pressure Ph= **4759**

Safety Margin Ps= **1000**

Select highest value of following Additional Pressures

	1000
Pa =	1000

Theoretical Actuating Pressure

Pt = Ph + Ps + Pa

Pt = 4759 + 1000 + 1000

Pt = 6759

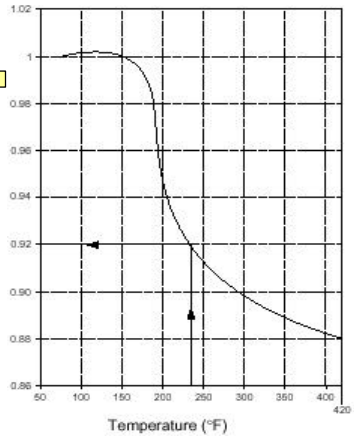
Verify P sp(LL) > Pt

Determine Shear Pin temperature correction factor from graph

Ftc= **0.8958**

Then determine temperature corrected Nominal Shear Pin value

Short:	**481**	x	0.896	=	430.88
Long:	**951**	x	0.896	=	851.91



Determine lower tolerance value for temperature corrected pins

Short:	0.95	x	430.88	=	409.34
Long:	0.95	x	851.91	=	809.31

Determine quantity of long Shear Pins.

Divide Pt by temperature/tolerance corrected value of long pins

(Pt) 6759.10 divide by 809.31 = 8.35

If remainder is greater than or equal to .5 add a long pin.

If not add a short pin

Quantity of short Shear Pins **1**

Quantity of long Shear Pins **8**

Determine lower shear value as nominal value less 5% Shear Pin setting, P sp(LL)

P sp(LL) = 6884

Determine nominal shear value as total true value x temp. correction Shear Pin setting, P sp (Nom.)

P sp(Nom) = 7246

Determine upper shear value as nominal value plus 7% + 300 psi Shear Pin setting, P sp (UL)

P sp (UL) = 8053

Pc = Pcushion

SHEAR PIN LOWER LIMIT WITH CUSHION

Pp (LL) = Psp (LL) - Pc

Pp (LL) = 6884 - 3769

PUMP PRESSURE LOWER LIMIT - Cushion **3115**

SHEAR PIN UPPER LIMIT WITH CUSHION

Pp (UL) = Psp (UL) - Pc

Pp (UL) = 8053 - 3769

PUMP PRESSURE UPPER LIMIT - Cushion **4284**

SHEAR PIN LOWER LIMIT WITH KILL FLUID

Pp (LL) = Psp (LL) - Ph

Pp (LL) = 6884 - 4759

PUMP PRESSURE LOWER LIMIT - Brine / Mud **2125**

SHEAR PIN UPPER LIMIT WITH KILL FLUID

Pp (UL) = Psp (UL) - Ph

Pp (UL) = 8053 - 4759

PUMP PRESSURE UPPER LIMIT - Brine / Mud **3294**

OK - HDF pinned above Pt Press

OK - HDF pinned below Csg Test Press

Pump pressure upper limit to activate HDF:

FIRING HEAD OPERATING PRESSURE => ***4284*** **PSI**

Compiled by:	**Ann-Marie Farnworth**	Verified by:		Client Verified:	**John Lennon**
Date:	**08.12.04**	Date:		Date:	**08.12.04**

K FACTOR CALCULATIONS FOR HDF

Calculate the Delay:

K Factor	1.9481	
Temperature	322	deg F
Pressure	8053	psi
Delay	**8.31**	min

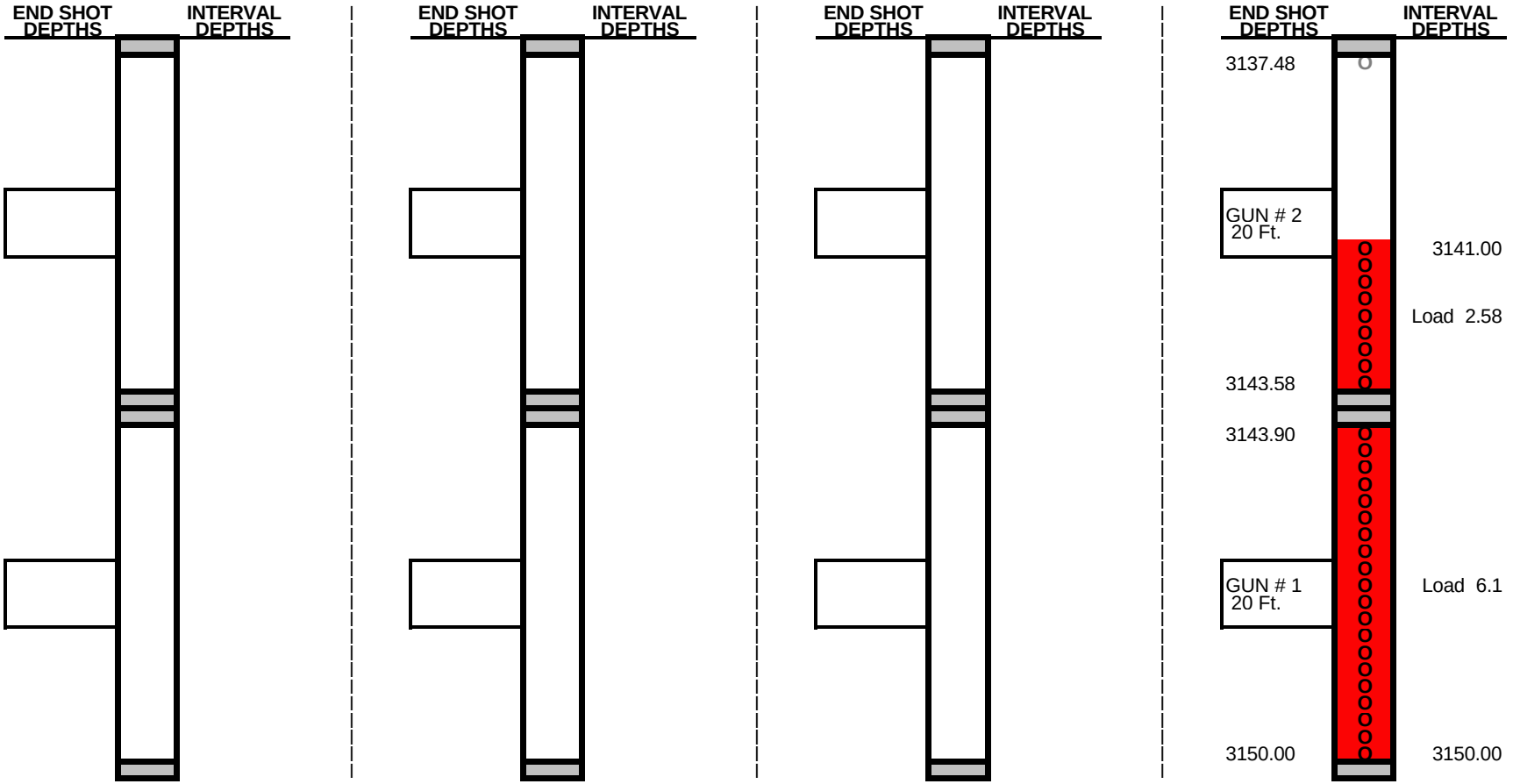
Note: fill in the fields with a border
Other cells are protected.

Calculate the combined K Factor of two stacked orifices:

K_1	0	
K_2	0	
Kstacked	**0.3010**	

Calculate Delay for Dual Pressure applications:

K Factor	1.9481		
Temperature	322	deg F	
Pressure 1	8053	psi	
			Max Delay at Pressure 1
Time 1	1	min	**8.31** min
Pressure 2	3769	psi	
Time 2	**15.61**	min	



ALL LENGTHS IN METERS **SUM OF PERF INTERVALS = 9 METERS** **4 1/2" in. 12 SPF GUNS**

INTERVALS	8	7	6		5	4	3		2	1
TOP DEPTH										3141.00
BOT. DEPTH										3150.00

LENGTH	METERS
Top Adaptor	0.03
Bottom Adaptor	0.03
End to 1st Shot	0.13
End Shot-Shot	0.32
Top to Bot. Shot	6.10
TOTAL GUN	6.42

TOTAL LENGTH LOADED	8.68	METERS
CORD LENGTH (ADVISED)	29	METERS

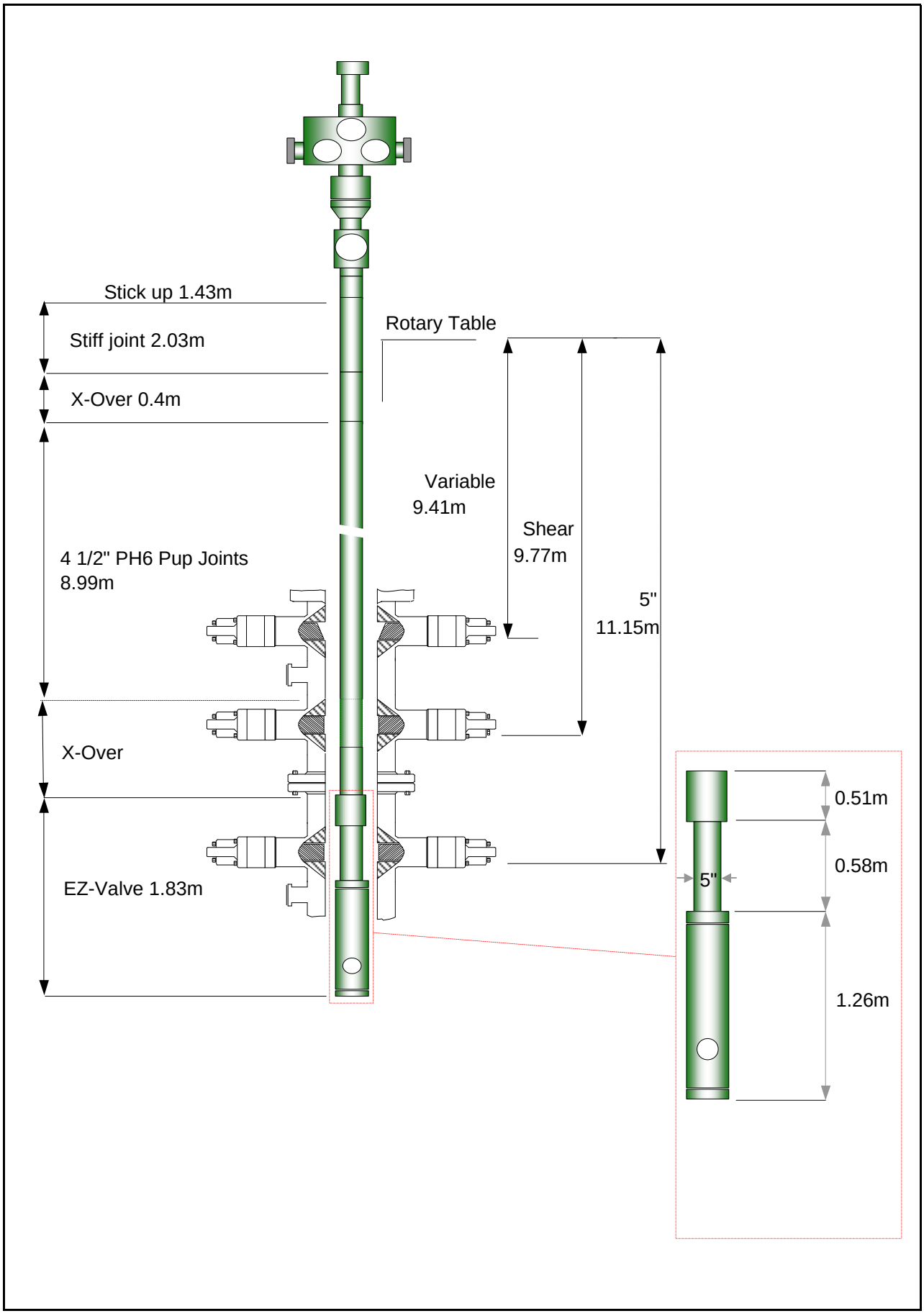
TOTAL CHARGES	342	LOADED AT 12 SPF
TOTAL BOOSTERS	7	WITH SBS FIRING HEAD

GUN LOADING SHEET #1

CLIENT : Origin Energy Ltd **WELL : Trefoil-1 / Test #1**

Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Landing 2004-029	1

LANDING STRING ENSCO 102



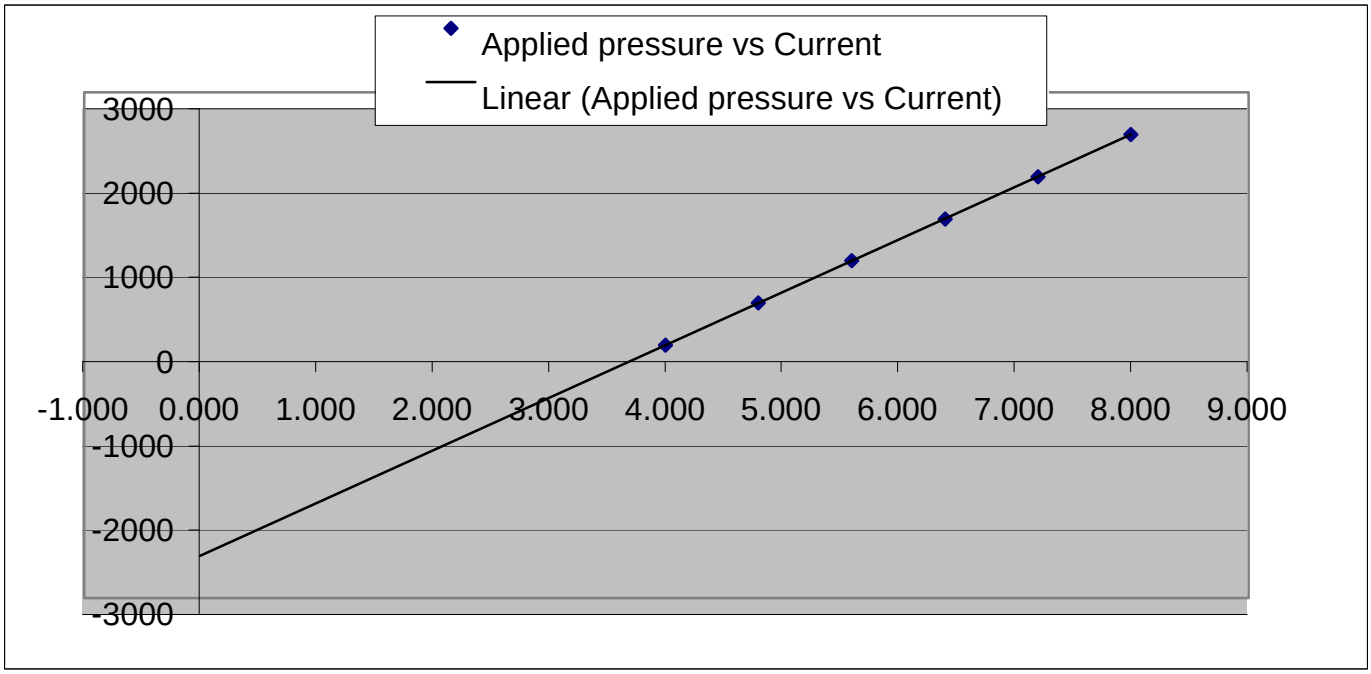
STAN SENSOR CALIBRATION

STAF-819 Channel A1

Sensor Type : Delta Control STPS-C
Sensor Serial No : 21491
Calibartion Date : 5-Dec-04

Measure Name: WHP

Item	Sensor Current	Applied Pressure	Applied Pressure	Different (Current)	Different (pressure)	SLOPE C1	SLOPE C1 (Mean value)	INTERCEPT C0	Final Check
	mA	psi	psiA						psiA
1	3.993	0	15						15
2	4.789	500	515	0.796	500	628.14070			514
3	5.592	1000	1015	0.803	500	622.66501			1015
4	6.392	1500	1515	0.800	500	625.00000	**625.47408**	**-2482.5**	1516
5	7.192	2000	2015	0.800	500	625.00000			2016
6	7.988	2500	2515	0.796	500	628.14070			2516
7	8.788	3000	3015	0.800	500	625.00000			3016
8									
9									
10									



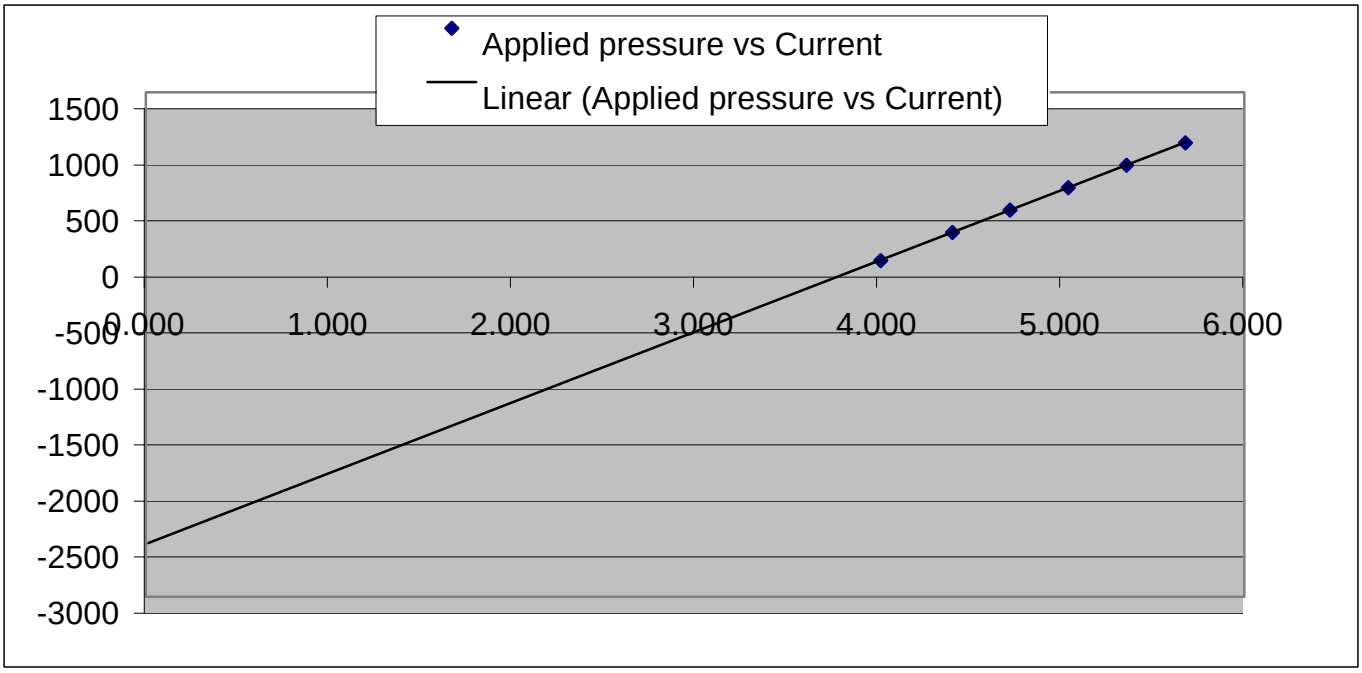
STAN SENSOR CALIBRATION

STAF-819 Channel A3

Sensor Type : Delta Control STPS-C
Sensor Serial No : 325458
Calibartion Date : 23-Oct-03

Measure Name: WHDCP

Item	Sensor Current	Applied Pressure	Applied Pressure	Different (Current)	Different (pressure)	SLOPE C1	SLOPE C1 (Mean value)	INTERCEPT C0	Final Check
	mA	psi	psiA						psiA
1	4.013	0	15						15
2	4.404	250	265	0.391	250	639.38619			264
3	4.720	450	465	0.316	200	632.91139	**630.68779**	**-2516.0**	464
4	5.038	650	665	0.318	200	628.93082			665
5	5.357	850	865	0.319	200	626.95925			865
6	5.677	1050	1065	0.320	200	625.00000			1066
7									
8									
9									
10									



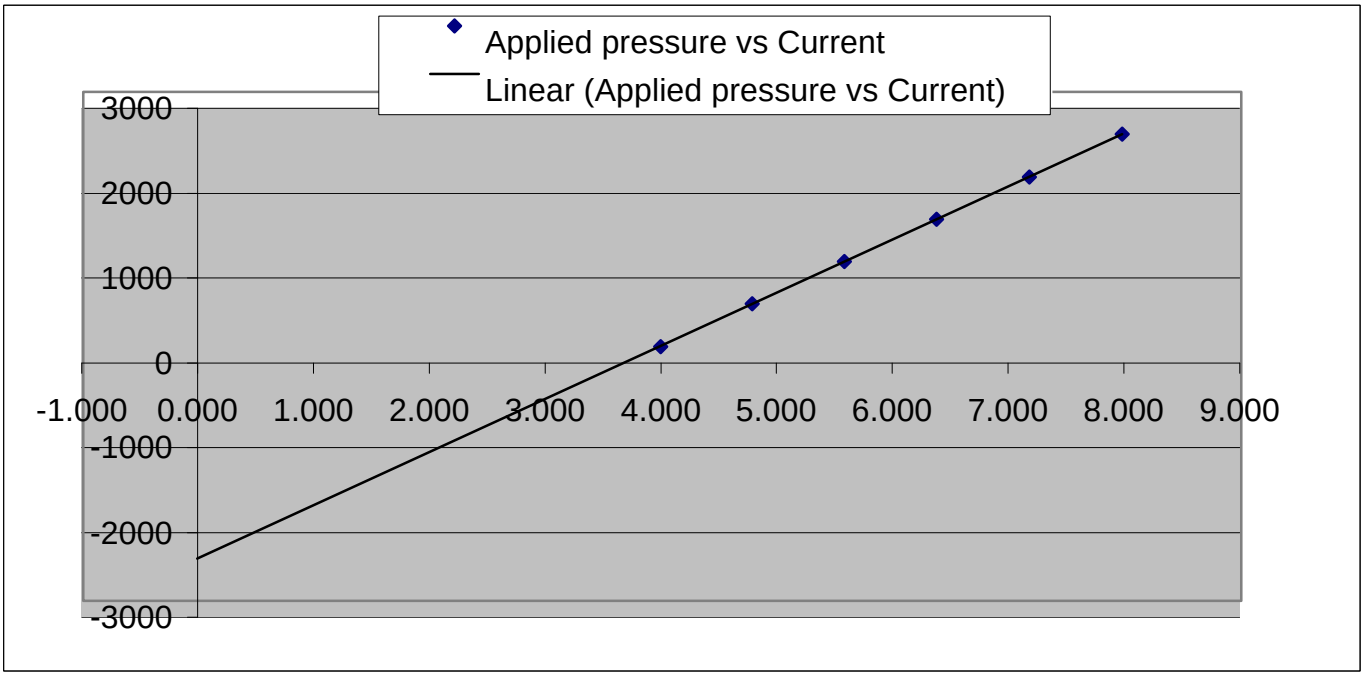
STAN SENSOR CALIBRATION

STAF-819 Channel A4

Sensor Type : Delta Control STPS-C
Sensor Serial No : 24577
Calibartion Date : 5-Dec-04

Measure Name: CSGP

Item	Sensor Current	Applied Pressure	Applied Pressure	Different (Current)	Different (pressure)	SLOPE C1	SLOPE C1 (Mean value)	INTERCEPT C0	Final Check
	mA	psi	psiA						psiA
1	3.984	0	15						14
2	4.777	500	515	0.793	500	630.51702			513
3	5.573	1000	1015	0.796	500	628.14070	**626.87881**	**-2482.5**	1013
4	6.371	1500	1515	0.798	500	626.56642			1513
5	7.173	2000	2015	0.802	500	623.44140			2014
6	7.970	2500	2515	0.797	500	627.35257			2514
7									
8									
9									
10									



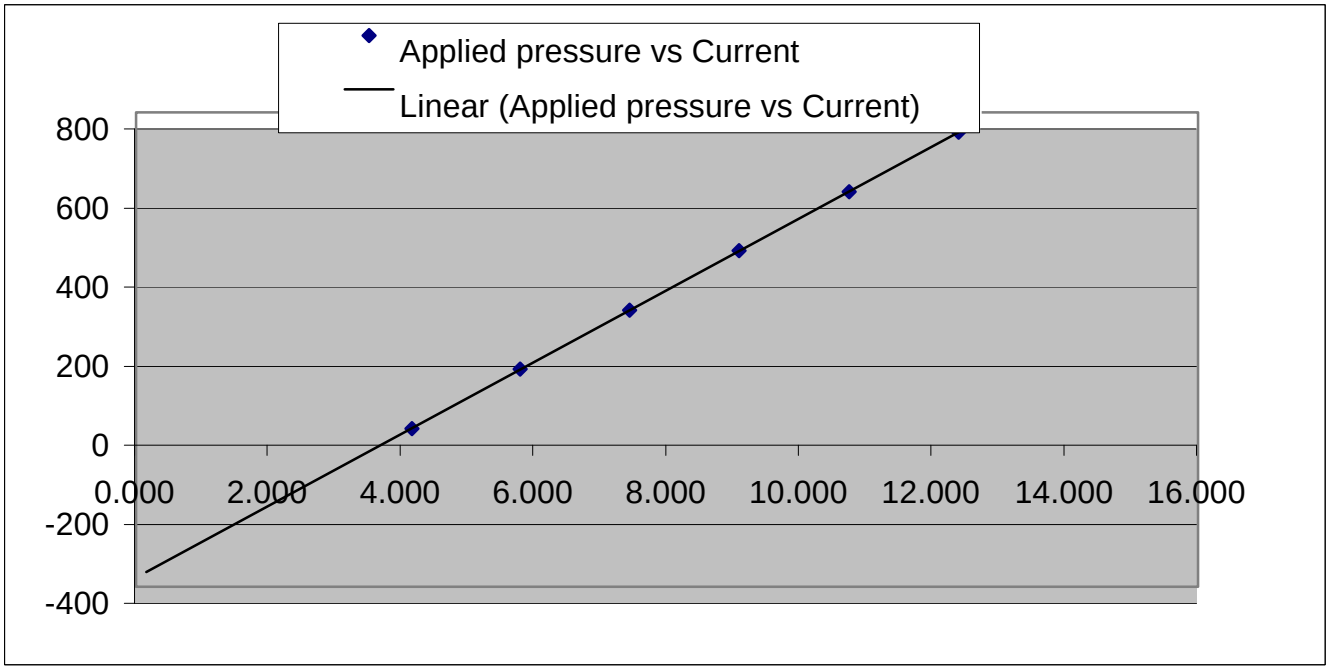
STAN SENSOR CALIBRATION STPS-A

STAF-819 Channel B1

Sensor Type : Sensotec 1.5K
Sensor Serial N : 944235
Calibartion Dat : 6-Dec-04

Measure Name: GASP

Item	Sensor Current	Applied Pressure	Applied Pressure	Different (Current)	Different (pressure)	SLOPE C1	SLOPE C1 (Mean value)	INTERCEPT C0	Final Check
	mA	psi	psiA						psiA
1	4.157	0	15						14
2	5.783	150	165	1.63	150	92.25092			164
3	7.434	300	315	1.65	150	90.85403	**90.95869**	**-363.1**	314
4	9.084	450	465	1.65	150	90.90909			464
5	10.744	600	615	1.66	150	90.36145			615
6	12.394	750	765	1.65	150	90.90909			765
7									
8									
9									
10									

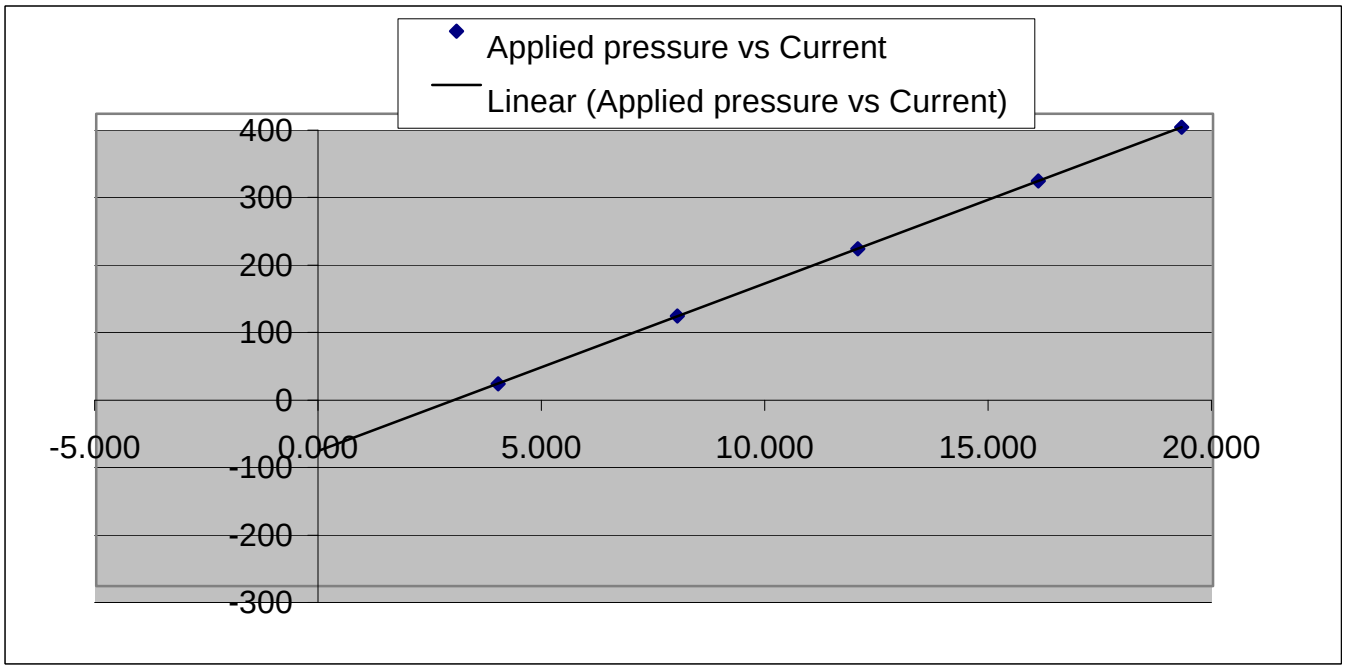


STAN SENSOR CALIBRATION differential pressure

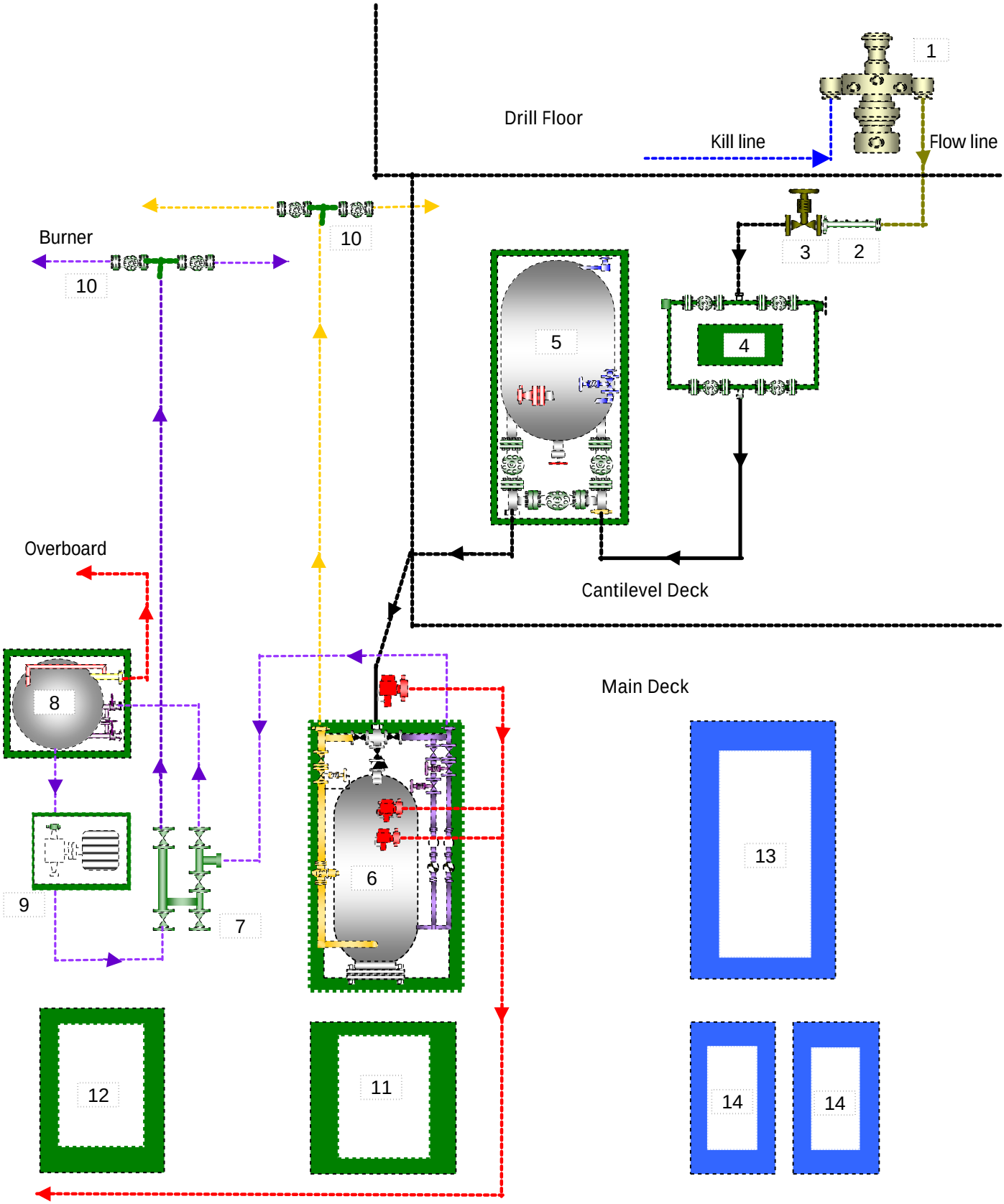
Sensor Type : Honey STAF-819 Channel B2
Sensor Serial Nc : 3884010 (0-400" H2O) STD-930
Calibartion Date : 6-Dec-04

Measure Name: GASDP

Item	Meter Current	Applied DP	Diff Pressure	Different (Current)	Different (pressure)	SLOPE C1	SLOPE C1 (Mean value)	INTERCEPT C0	Measured DP
	mA	"water	"water		"water				"water
1	3.999	0	0						0
2	8.010	100	100	4.011	100	24.93144	**24.81718**	**-99.2**	100
3	12.050	200	200	4.04	100	24.75248			200
4	16.090	300	300	4.04	100	24.75248			300
5	19.300	380	380	3.21	80	24.92212			381
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									



Schlumberger	Origin Energy Ltd T18-P / Trefoil-1 / DST-1	Surface Lay-out 1 2004-029



Item no	Equipment Description	Item no	Equipment Description
1	Flow Control Head	8	Surge Tank
2	Data Header	9	Transfer Pump
3	Surface Safety Valve	10	Divider Manifold
4	Choke Manifold	11	Lab Cabin / Office
5	Heat Exchanger	12	Welltest Workshop
6	1440 psi Three-phase Separator	13	Steam Generator
7	5-way Oil Manifold	14	900 scf/min Air Compressor

ITEM	DESCRIPTION	T(°F)	P(psi)	WT(kg)	L(m)	W(m)	H(m)
1	Well Test Workshop	—	—	15000	4.57	2.43	2.4
2	ESD Shut Down Valve	250	10K	350	1.1	1.0	1.18
3	Choke Manifold	250	10K	3380	2.50	2.24	0.70
4	Separator	212	1.4K	16500	5.705	2.19	2.28
5	Surge Tank	212	0.05K	17200	2.40	2.40	6.00
6	Oil Manifold	250	1.4K	500	2.05	0.7	0.4
7	Transfer Pump	200	0.4K	3500	3.5	1.7	3.0
8	Lab Cabin	—	—	12000	5.0	2.4	2.7
9	Steam Exchanger	350	10K	12000	6.0	2.3	2.8
10	Compressor	—	0.15K	6000	4.5	2.1	2.3
11	Steam Generator	—	0.15K	18000	6.0	2.4	2.9
12	DST Workshop	—	—	17200	7.0	2.4	2.8
①	ESD Button						

* IS WET WEIGHTS

ZONE 1
ZONE 2
① ESD STATION

FEET 0' 10' 20' 30' 40' 50' 60' 70'
METERS 0m 10m 15m 20m

MAN DECK ARRANGEMENT

ENSCO 102

REV.	DATE	DESCRIPTION	DRN.	CHK.	APR.
0	06-11-04	REV 0 ISSUE	KD	LB	DD

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Schlumberger Oilfield Australia
Level 5, 248 St Georges Tce, Perth WA, Australia

LAYOUT & HAZARDOUS AREA DRAWING

ORIGIN — TREFOIL-1

DRN.	KD	05-11-04
DES.		
DOC.	LB	06-11-04
APP.	DB	06-11-04

SCALE	NTS	JOB No.	2004-029	REV. 0
SHEET	1 OF 1	DWG No.	2004-029 L1	

FSV1
FSV1 HAS THE ABILITY TO BE LOCKED OPEN

F001
⌀ 3/8" FLOWHEAD
NOMINAL SIZE – 8"
DESIGN PRESSURE – 5Kpsi
DESIGN TEMPERATURE – 250 'F
DESIGN SERVICE – H2S

HOSE
.5" DOFLEXIP HOSE
NOMINAL SIZE – 3"
DESIGN PRESSURE – 10Kpsi @ 7.3Kpsi
DESIGN TEMPERATURE – 250 'F
DESIGN SERVICE – H2S

V001
ESD VALVE
NOMINAL SIZE – 3"
DESIGN PRESSURE – 10Kpsi
DESIGN TEMPERATURE – 250 'F
DESIGN SERVICE – H2S

A001
CHOKE MANIFOLD
NOMINAL SIZE – 3"
DESIGN PRESSURE – 10K x 10Kpsi
DESIGN TEMPERATURE – 250 'F
DESIGN SERVICE – H2S

D001
STEAM EXCHANGER
NOMINAL SIZE – 3"
DESIGN PRESSURE – 5K x 5Kpsi
DESIGN TEMPERATURE – 350'F
HEATING CAPACITY – 4.5MN BTU/HR
DESIGN SERVICE – H2S

DX02
HORIZONTAL SEPARATOR
NOMINAL SIZE – 42" x 10'
DESIGN PRESSURE – 1440psi
DESIGN TEMPERATURE – 250'F
DESIGN SERVICE – H2S

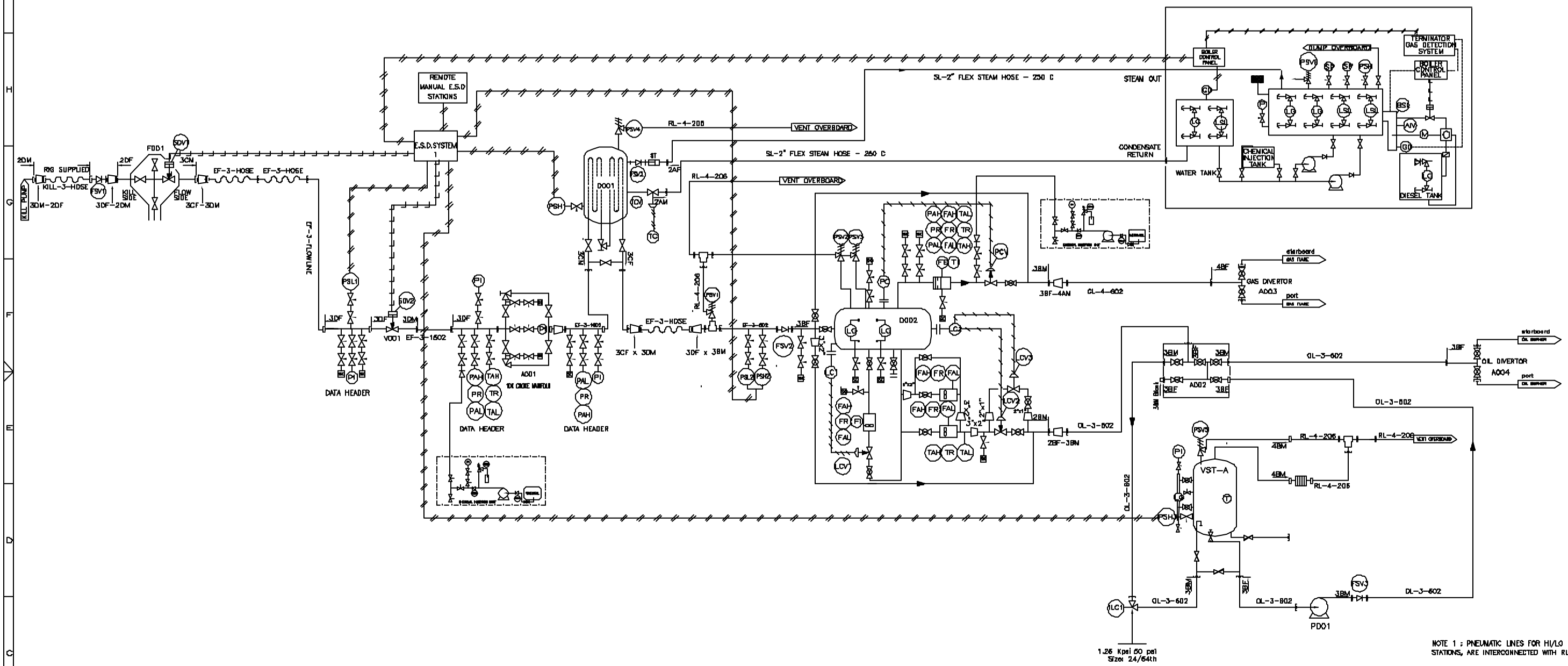
A002
OIL MANIFOLD
NOMINAL SIZE – 3"
DESIGN PRESSURE – 1440psi
DESIGN TEMPERATURE – 250 'F
DESIGN SERVICE – H2S

VST–A
SURGE TANK
CAPACITY – 80bbl
DESIGN PRESSURE – 50psi
DESIGN TEMPERATURE – 62'F / 200'F
DESIGN SERVICE – H2S

P001
TRANSFER PUMP
TYPE – POSITIVE DISPLACEMENT
OUTLET PRESSURE – 900psi (MAX)
CAPACITY – 8000 bbl/day (MAX)
DESIGN SERVICE – H2S

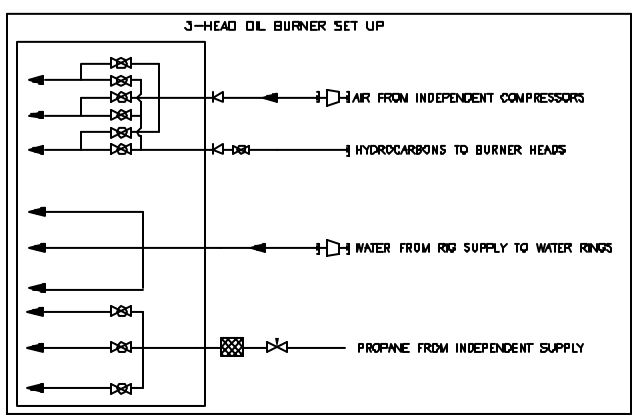
A003
GAS MANIFOLD
NOMINAL SIZE – 4"
DESIGN PRESSURE – 1,440psi
DESIGN TEMPERATURE – 250 'F
DESIGN SERVICE – H2S

A004
OIL MANIFOLD
NOMINAL SIZE – 3"
DESIGN PRESSURE – 1,440psi
DESIGN TEMPERATURE – 250 'F
DESIGN SERVICE – H2S



NOTE 1 : PNEUMATIC LINES FOR HI/LO PILOTS AND ESD STATIONS, ARE INTERCONNECTED WITH RUBBER TUBING.

NOTE 2 : SDV1 AND SDV2 ARE FAILSAFE CLOSE



SET POINTS	psi
PSV1	1260
PSV2	1260
PSV3	1260
PSV4	235
PSV5	50
PSL1	200
PSL2	200
PSH1	200
PSH2	1150
PSH3	45

INSTRUMENTATION NOTATION LEGEND

PSV	PRESSURE SAFETY VALVE	LAL	LEVEL ALARM LOW
PSE	RUPTURE DISK	TCV	TEMP. CONTROLLED VALVE
FSV	FLOW SAFETY VALVE	LCV	LEVEL CONTROLLED VALVE
SDV	SHUTDOWN VALVE	FR	PRESSURE RECORDER
PSH	HIGH PRESSURE PILOT	PAH	PRESSURE ALARM HIGH
PSL	LOW PRESSURE PILOT	PAL	PRESSURE ALARM LOW
DD	GAS DETECTOR	TR	TEMPERATURE RECORDER
PI	PRESSURE INDICATOR	TAH	TEMPERATURE ALARM HIGH
TI	TEMPERATURE INDICATOR	TAL	TEMPERATURE ALARM LOW
PC	PRESSURE CONTROLLER	FR	FLOW RECORDER
TC	TEMPERATURE CONTROLLER	FAH	FLOW ALARM HIGH
LC	LEVEL CONTROLLER	FAL	FLOW ALARM LOW
LG	LEVEL GAUGE	FE	ORIFICE METER
SC	SAMPLE POINT	FI	ROTARY METER
LSH	LEVEL SAFETY HIGH	ST	STEAM TRAP
LSL	LEVEL SAFETY LOW	LG	VALVE LOCKED OPEN
LAH	LEVEL ALARM HIGH	LC	VALVE LOCKED CLOSED

PROCESS SYMBOL LEGEND

UNDEFINED VALVE	RUPTURE DISK
BALL VALVE	FIXED CHOKE
NEEDLE VALVE	ADJUSTABLE CHOKE
BUTTERFLY VALVE	CROSSOVER
FLOW SAFETY VALVE	FLANGE CONNECTION
SHUTDOWN VALVE	WECO CONNECTION
FLOW CONTROL VALVE	TEE PIECE
PRESSURE RELIEF VALVE	ORIFICE METER
FLAME ARRESTOR	ROTARY DISP. METER
	PUMPING DEVICE

CONTROL LINE LEGEND

ELECTRICAL LINE	
PNEUMATIC LINE	
HYDRAULIC LINE	

REV.	DATE	DESCRIPTION	DRN.	CHK.	APP.
0	98-11-04	Rev 0 Submission	KD	DG	DG

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Schlumberger Oilfield Australia
Level 5, 256 St Georges Tce, Perth WA, Australia

DRN	K.D.	98-11-04
CHK	K.D.	98-11-04
APP	D.G.	98-11-04
APP	D.G.	98-11-04

PIPING & INSTRUMENTATION

TREFOIL–1 ORIGIN ENSCO 102

SCALE	DRG. No.	REV.
NTS	2004-029 P1	0

SHT. 1 OF 1

(B) Fluid Sampling - Oilphase Report

Schlumberger

FROM RESERVOIR TO RESULTS.

Oilphase-DBR Sampling & Analysis Services
23 Brennan Way
Belmont Western Australia
Australia 6104

Origin Energy
Field Operations Report

FIELD: T18-P

WELL: Trefoil-1

DATE: 7th to 16th December, 2004

TEST: Surface Well Test

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Prepared By:	Date:	Reviewed By:	Date:
Michael Robbie – Field Specialist	23rd December, 2004	Chris Forde – Field Service Manager, APG	23rd December, 2004

Index

1. Summary

2. Sample Listing

3. Sequence of Events

4. Choke manifold H_2S, R-SH and CO_2 Analysis

5. Sample Data Sheets

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Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Summary

Oilphase-DBR, the sampling and analysis specialists of Schlumberger, were contracted by Origin Energy to conduct the sampling and analysis during the production test on the well, Trefoil-1. One DST was conducted with a total of two zones being tested. The main objectives for the two-zone test was to establish the water contacts and reservoir boundaries and to obtain quality PVT, water, condensate and heavy metals samples. The following is a list of the samples captured and on site measurements performed.

DST #1, Zone 1 - Lower Cretaceous

Clean up Flow

During the clean up flow, hydrogen sulphide, mercaptans and carbon dioxide measurements were taken at the choke manifold using Kitagawa detection tubes, to identify parameters of the produced gas. Analysis for chlorides in the produced water was carried out by Geo-services, to determine the well clean up period and identify the production of formation water.

Main Flow Period

During the main flow period the choke was beaned up to 48/64" (fixed) and once stable conditions were achieved flow was diverted through the separator. One separator PVT recombination oil and gas sample set was captured at the separator oil sight glass and separator gas line respectively - a set consisting of one 600 cc conventional sample bottle (CSB), and one 20 litre gas sample bottle (GSB). Seven 1 litre water samples were captured at the separator water line and two heavy metals samples were captured from the separator gas line.

Hydrogen sulphide, mercaptans and carbon dioxide measurements were taken at the choke manifold throughout the flow period, using Kitagawa detection tubes.

Sampling Flow Period

During the sampling flow period, the choke was beaned to 40/64" and flow was diverted through the separator. Two separator PVT recombination oil and gas sample sets were captured at the separator oil sight glass and separator gas line respectively - a set consisting of one 600 cc CSB and one 20 litre GSB. Two 10 litre dead condensate samples were captured at the separator oil outlet line and a further three water samples were captured from the separator water line.

Hydrogen sulphide, mercaptans and carbon dioxide measurements were taken at the choke manifold throughout the flow period, using Kitagawa detection tubes.

DST #1, Zone 2 - Upper Cretaceous

Clean up Flow

During the clean up flow, hydrogen sulphide, mercaptans and carbon dioxide measurements were taken at the choke manifold using Kitagawa detection tubes, to identify parameters of the produced gas. Analysis for chlorides in the produced water was to be carried out again by Geo-services, however, it was observed that there was insufficient water production to carry out the analysis on samples collected at the choke manifold.

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Summary Continued

Main Flow Period

For the Upper Cretaceous zone, it was decided that all the required samples would be captured during the main flow period, thereby optimising the well test duration by removing the sampling flow period. During the main flow period the choke was beaned up to 32/64" (fixed) and once stable conditions were achieved, flow was diverted through the separator. Two separator PVT recombination oil and gas sample sets were captured at the separator oil sight glass and separator gas line respectively - a set consisting of one 600 cc CSB and one 20 litre GSB.

Throughout this flow period, separator liquid was purged through the water line to ensure that representative water samples could be obtained. In total, eight 1 litre water samples were captured at the separator water line, two heavy metals samples were captured from the separator gas line and two 10 litre condensate samples were captured at the separator oil outlet line.

After the bulk of the sampling had been performed, the choke was beaned up to 56/64" and a maximum flow rate test conducted. As soon as stable conditions were re-established, flow was again diverted through the separator. Near the end of the flow period, a final separator PVT recombination oil and gas sample set was taken - a set consisting of one 600 cc CSB and one 20 litre GSB.

Hydrogen sulphide, mercaptans and carbon dioxide measurements were taken at the choke manifold throughout the flow period, using Kitagawa detection tubes.

All samples were shipped from the rig in an Ensco transportation container and in accordance with the IMO Dangerous Goods Regulations and OilphaseDBR dangerous goods guidelines, via the Melbourne supply base to Petrolab, Adelaide, for detailed analysis.

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Schlumberger

Client: Origin Energy Ltd
Job No: AOH 448
Date: 07 Dec – 16 Dec, 2004
Field: T18-P
Well: Trefoil-1
Installation: Ensco 102

Sample Listing

Test No : DST #1 (Lower Cretaceous)

Flow : DST #1

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
1.01	11/12/04	23:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.02	12/12/04	00:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.03	12/12/04	01:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.04	12/12/04	02:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.05	12/12/04	02:15	Heavy Metals Analysis	Separator Gas Line	50cc Plastic	N/A
1.06	12/12/04	02:15	Heavy Metals Analysis	Separator Gas Line	50cc Plastic	N/A
1.07	12/12/04	02:30	PVT Oil	Separator Oil Sight Glass	Conventional (CSB)	4664-EA
1.08	12/12/04	02:30	PVT Gas	Separator Gas Line	20 Litre Luxfer	4349A
1.09	12/12/04	03:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.10	12/12/04	04:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.11	12/12/04	05:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.12	12/12/04	21:55	Stock Tank Oil	Separator Oil Line	20 Litre IATA can	N/A
1.13	12/12/04	22:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.14	12/12/04	22:00	PVT Oil	Separator Oil Sight Glass	Conventional (CSB)	5022-EA
1.15	12/12/04	22:00	PVT Gas	Separator Gas Line	20 Litre Luxfer	4277A
1.16	12/12/04	22:31	Stock Tank Oil	Separator Oil Line	20 Litre IATA can	N/A
1.17	12/12/04	23:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.18	12/12/04	23:35	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
1.19	12/12/04	23:40	PVT Oil	Separator Oil Sight Glass	Conventional (CSB)	5142-EA
1.20	12/12/04	23:40	PVT Gas	Separator Gas Line	20 Litre Luxfer	3189A

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Schlumberger

Client: Origin Energy Ltd
Job No: AOH 448
Date: 07 Dec – 16 Dec, 2004
Field: T18-P
Well: Trefoil-1
Installation: Ensco 102

Sample Listing

Test No : DST #1 (Upper Cretaceous)

Flow : DST #1

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
2.01	14/12/04	08:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
2.02	14/12/04	09:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
2.03	14/12/04	10:00	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
2.04	14/12/04	10:55	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
2.05	14/12/04	11:00	Stock Tank Oil	Separator Oil Line	20 Litre IATA can	N/A
2.06	14/12/04	11:02	Heavy Metals Analysis	Separator Gas Line	50cc Plastic	N/A
2.07	14/12/04	11:02	Heavy Metals Analysis	Separator Gas Line	50cc Plastic	N/A
2.08	14/12/04	11:05	PVT Oil	Separator Oil Sight Glass	Conventional (CSB)	6341-MA
2.09	14/12/04	11:05	PVT Gas	Separator Gas Line	20 Litre Luxfer	5235A
2.10	14/12/04	11:34	Stock Tank Oil	Separator Oil Line	20 Litre IATA can	N/A
2.11	14/12/04	11:45	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
2.12	14/12/04	11:50	PVT Oil	Separator Oil Sight Glass	Conventional (CSB)	4990-EA
2.13	14/12/04	11:50	PVT Gas	Separator Gas Line	20 Litre Luxfer	2494A
2.14	14/12/04	13:30	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
2.15	14/12/04	14:30	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
2.16	14/12/04	14:55	Water sample	Separator water Line	1 Litre Plastic cont.	N/A
2.17	14/12/04	15:00	PVT Oil	Separator Oil Sight Glass	Conventional (CSB)	4986-EA
2.18	14/12/04	15:00	PVT Gas	Separator Gas Line	20 Litre Luxfer	4564A

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Client: Origin Energy Ltd
Job No: AOH 448
Date: 07 Dec - 16 Dec, 2004
Field: T18-P
Well: Trefoil-1
Installation: Ensco 102

Sequence of Events

Date	Time	Event
Surface sampling		
07-Dec-04	14:30	Oilphase arrive at the Ensco 102.
	16:00	Oilphase equipment still on the boat. Unable to offload due to bad weather.
09-Dec-04	08:30	Offload Oilphase sampling equipment.
	10:00	Set up and test Oilphase surface sampling equipment.
	14:00	Set up Heavy Metals equipment and chemicals.
11-Dec-04	17:35	Indication that TCP guns fired.
	17:37	Open well on 16/64” adj choke (Lower Cretaceous).
	17:47	Initial pressure build up.
	19:06	Open well on 16/64” adj choke.
	19:08	Increase to a 20/64” adj choke.
	19:16	Increase to a 24/64” adj choke.
	19:39	Increase to a 28/64” adj choke.
	19:49	Increase to a 32/64” adj choke.
	19:52	Gas and brine at surface.
	20:04	Increase to a 36/64” adj choke.
	20:10	Start taking Kitagawa detection tubes at the Choke Manifold.
	20:17	Increase to a 40/64” adj choke.
	20:33	Increase to a 44/64” adj choke.
	21:33	Divert flow through 48/64” Fixed choke and flow to separator.
	23:00	Take 1Ltr water sample from separator water line, (sample #1.01).
12-Dec-04	00:00	Take 1Ltr water sample from separator water line, (sample #1.02).
	01:00	Take 1Ltr water sample from separator water line, (sample #1.03).
	02:00	Take 1Ltr water sample from separator water line, (sample #1.04).
	02:15	Take Heavy Metals samples from separator gas line, (sample #1.05, 1.06).
	02:30	Take PVT sample set from separator Oil sight glass and gas line, (sample #1.07, 1.08).
	03:00	Take 1Ltr water sample from separator water line, (sample #1.09).
	04:00	Take 1Ltr water sample from separator water line, (sample #1.10).
	05:00	Take 1Ltr water sample from separator water line, (sample #1.11).
	05:03	Shut in well at PCT for main build up period.
	17:06	Pressure annulus to open PCT.
	17:59	Open Well on 16/64” adj choke.
	18:03	Increase to a 20/64” adj choke.
	18:04	Start Methanol injection.
	18:05	Increase to a 24/64” adj choke.

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Sequence of Events

Date	Time	Event
Surface sampling		
12-Dec-04	18:06	Divert flow through separator.
	18:08	Increase to a 28/64" adj choke.
	18:10	Increase to a 32/64" adj choke.
	18:20	Stop Methanol injection.
	18:22	Divert flow through 32/64" Fixed choke.
	20:10	Increase to a 36/64" Fixed choke.
	21:55	Take 10Ltr dead condensate sample from separator oil line, (sample #1.12).
	22:00	Take 1Ltr water sample from separator water line, (sample #1.13).
		Take PVT sample set from separator Oil sight glass and gas line, (sample #1.14, 1.15).
	22:31	Take 10Ltr dead condensate sample from separator oil line, (sample #1.16).
	23:00	Take 1Ltr water sample from separator water line, (sample #1.17).
	23:35	Take 1Ltr water sample from separator water line, (sample #1.18).
	23:40	Take PVT sample set from separator Oil sight glass and gas line, (sample #1.19, 1.20).
	23:56	Shut in at PCT for final build up.
14-Dec-04	04:52	Open Well on 16/64" adj choke (Upper Cretaceous).
	04:55	Increase to a 24/64" adj choke.
	05:03	Increase to a 28/64" adj choke.
	05:41	Increase to a 32/64" adj choke.
	05:45	Divert flow through 32/64" Fixed choke.
	06:35	Stop Methanol injection.
	06:41	Divert flow through separator.
	06:55	Start Methanol Injection.
	08:00	Take 1Ltr water sample from separator water line, (sample #2.01).
	08:32	Dump separator water.
	09:00	Take 1Ltr water sample from separator water line, (sample #2.02).
	10:00	Take 1Ltr water sample from separator water line, (sample #2.03).
	10:01	Stop Methanol Injection.
	10:07	Dump liquid in Separator.
	10:55	Take 1Ltr water sample from separator water line, (sample #2.04).
	11:00	Take 10Ltr dead condensate sample from separator oil line, (sample #2.05).
	11:02	Take Heavy Metals samples from separator gas line, (sample #2.06, 2.07).
	11:05	Take PVT sample set from separator Oil sight glass and gas line, (sample #2.08, 2.09).

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Client: Origin Energy Ltd
Job No: AOH 448
Date: 07 Dec - 16 Dec, 2004
Field: T18-P
Well: Trefoil-1
Installation: Ensco 102

Sequence of Events

Date	Time	Event
Surface sampling		
14-Dec-04	11:34	Take 10Ltr dead condensate sample from separator oil line, (sample #2.10).
	11:45	Take 1Ltr water sample from separator water line, (sample #2.11).
	11:50	Take PVT sample set from separator Oil sight glass and gas line, (sample #2.12, 2.13).
	12:47	Switch to adjustable choke and bean up to 56/64".
	13:04	Divert flow through a 56/64" Fixed choke.
	14:00	Take 1Ltr water sample from separator water line, (sample #2.14).
	14:30	Take 1Ltr water sample from separator water line, (sample #2.15).
	14:55	Take 1Ltr water sample from separator water line, (sample #2.16).
	15:00	Take PVT sample set from separator Oil sight glass and gas line, (sample #2.17, 2.18).
	16:02	Close PCT for main build up period.
		End DST Sampling.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 to 16 Dec 2004	**Installation:**	Ensco 102

H_2S, R-SH and CO_2 in Hydrocarbon Gases by Gas Detection Tubes

Date	Time	Sample No.	Sampling Point	H_2S (ppm Vol)	CO_2 (% Vol)	R-SH
DST #1 (Zone #1)						
11-Dec-04	20:10	1	Choke Manifold	BDL*	2.0	BDL*
11-Dec-04	20:15	2	Choke Manifold	BDL*	2.4	BDL*
11-Dec-04	20:20	3	Choke Manifold	BDL*	2.4	BDL*
11-Dec-04	20:25	4	Choke Manifold	BDL*	2.4	BDL*
11-Dec-04	20:30	5	Choke Manifold	BDL*	2.4	BDL*
11-Dec-04	20:35	6	Choke Manifold	BDL*	2.4	BDL*
11-Dec-04	20:45	7	Choke Manifold	BDL*	2.0	BDL*
11-Dec-04	21:00	8	Choke Manifold	BDL*	2.4	BDL*
11-Dec-04	21:30	9	Choke Manifold	BDL*	2.4	BDL*
11-Dec-04	22:00	10	Choke Manifold	BDL*	2.4	BDL*
11-Dec-04	22:30	11	Choke Manifold	BDL*	2.4	BDL*
11-Dec-04	23:00	12	Choke Manifold	BDL*	2.4	BDL*
12-Dec-04	0:00	13	Choke Manifold	BDL*	2.4	BDL*
12-Dec-04	1:00	14	Choke Manifold	BDL*	2.4	BDL*
12-Dec-04	2:00	15	Choke Manifold	BDL*	2.4	BDL*
12-Dec-04	3:00	16	Choke Manifold	BDL*	2.4	BDL*
12-Dec-04	4:00	17	Choke Manifold	BDL*	2.4	BDL*
12-Dec-04	5:00	18	Choke Manifold	BDL*	2.4	BDL*
12-Dec-04	18:00	19	Choke Manifold	BDL*	2.6	BDL*
12-Dec-04	19:00	20	Choke Manifold	BDL*	2.6	BDL*
12-Dec-04	20:00	21	Choke Manifold	BDL*	2.6	BDL*
12-Dec-04	21:00	22	Choke Manifold	BDL*	2.6	BDL*
12-Dec-04	22:00	23	Choke Manifold	BDL*	2.6	BDL*
12-Dec-04	23:00	24	Choke Manifold	BDL*	2.6	BDL*
DST #1 (Zone #2)						
14-Dec-04	5:00	1	Choke Manifold	BDL*	3.5	BDL*
14-Dec-04	5:05	2	Choke Manifold	BDL*	3.5	BDL*
14-Dec-04	5:10	3	Choke Manifold	BDL*	3.5	BDL*
14-Dec-04	5:15	4	Choke Manifold	BDL*	3.5	BDL*
14-Dec-04	5:30	5	Choke Manifold	BDL*	3.5	BDL*
14-Dec-04	6:00	6	Choke Manifold	BDL*	3.5	BDL*
14-Dec-04	7:00	7	Choke Manifold	BDL*	3.5	BDL*
14-Dec-04	8:00	8	Choke Manifold	BDL*	3.6	BDL*
14-Dec-04	9:00	9	Choke Manifold	BDL*	2.8	BDL*
14-Dec-04	10:00	10	Choke Manifold	BDL*	2.8	BDL*
14-Dec-04	11:00	11	Choke Manifold	BDL*	2.0	BDL*
14-Dec-04	12:00	12	Choke Manifold	BDL*	2.0	BDL*
14-Dec-04	13:00	13	Choke Manifold	BDL*	2.8	BDL*
14-Dec-04	14:00	14	Choke Manifold	BDL*	2.8	BDL*
14-Dec-04	15:00	15	Choke Manifold	BDL*	2.8	BDL*

Remarks

Measurements carried out using Kitagawa gas detection tubes.

*BDL; Below Detection Limit of gas detection tubes.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.01 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 11/12/04

Sampling Time **Start:** 23:00 **Finish:** 23:05

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 6,400 mg/l.
Resistivity: 0.46 Ohm m @ 67deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.02 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 00:00 **Finish:** 00:05

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 6,000 mg/l.
Resistivity: 0.50 Ohm m @ 68deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.03 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 01:00 **Finish:** 01:05

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 5,800 mg/l.
Resistivity: 0.53 Ohm m @ 67deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.04 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 02:00 **Finish:** 02:05

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 5,600 mg/l.
Resistivity: 0.80 Ohm m @ 66deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.05 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 02:15 **Finish:** 02:55

Sampling Point: Separator Gas Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Heavy Metals in Gas

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 50cc Plastic

Sample Bottle Volume: 50cc

Sample Volume: 50cc

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	2656.8psia	**Sep pressure:**	469psia	**Oil rate (std cond):**	168stbd
BHT:	117.9deg C	**Sep temp:**	47deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	16.33 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1317psia	**Gas gravity (air = 1):**	0.698	**Oil gravity 60/60:**	48.56 ° API
WHT:	35deg C	**Gas diff pressure:**	467”H2O	**Oil line temp:**	30deg C
Choke size:	48/64” Fixed	**Gas pressure:**	469psia	**Water rate:**	48bwpd
Stable since:	02:00hrs	**Gas temp:**	45deg C	**CGR (total):**	10 stb/MMscf
H2S:	0 ppm	**FB factor:**	2276.51	**WOR:**	0.3stbw/stbo
CO_2:	2.4%	**FPV factor:**	1.0343	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 02:15 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 02:15 on 12/12/04
Gas volume flowed: 20 Litres @ ½ Litre/min
Gas Temp: 13deg C, Patm: 14.68 psia

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.06 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 02:15 **Finish:** 02:55

Sampling Point: Separator Gas Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Heavy Metals in Gas

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 50cc Plastic

Sample Bottle Volume: 50cc

Sample Volume: 50cc

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	2656.8psia	**Sep pressure:**	469psia	**Oil rate (std cond):**	168stbd
BHT:	117.9deg C	**Sep temp:**	47deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	16.33 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1317psia	**Gas gravity (air = 1):**	0.698	**Oil gravity 60/60:**	48.56 ° API
WHT:	35deg C	**Gas diff pressure:**	467"H2O	**Oil line temp:**	30deg C
Choke size:	48/64" Fixed	**Gas pressure:**	469psia	**Water rate:**	48bwpd
Stable since:	02:00hrs	**Gas temp:**	45deg C	**CGR (total):**	10 stb/MMscf
H2S:	0 ppm	**FB factor:**	2276.51	**WOR:**	0.3stbw/stbo
CO_2:	2.4%	**FPV factor:**	1.0343	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 02:15 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 02:15 on 12/12/04
Gas volume flowed: 20 Litres @ ½ Litre/min
Gas Temp: 13deg C, Patm: 14.68 psia

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.07 **Test No:** DST #1

Bottle No: 4664-EA

Sampling Date: 12/12/04

Sampling Time **Start:** 02:30 **Finish:** 03:15

Sampling Point: Separator Oil Sight Glass

Perforations : 3141m - 3150m MDBRT

Sample Nature: PVT Condensate

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: Conventional (CSB)

Sample Bottle Volume: 700 cc

Sample Volume: 600cc

Gas Cap Created: 60 cc

Fluid Remaining: 40 cc (Water/ Glycol)

Final Pressure: 200psig @ 13deg C

Matched With Samples

Sample No:	1.08	**In Bottle No:**	4349A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	2662.5psia	**Sep pressure:**	468psia	**Oil rate (std cond):**	119stbd
BHT:	117.9deg C	**Sep temp:**	47deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	16.3 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1323psia	**Gas gravity (air = 1):**	0.700	**Oil gravity 60/60:**	47.98 ° API
WHT:	36deg C	**Gas diff pressure:**	138"H2O	**Oil line temp:**	44deg C
Choke size:	48/64" Fixed	**Gas pressure:**	468psia	**Water rate:**	30bwpd
Stable since:	02:00hrs	**Gas temp:**	47deg C	**CGR (total):**	7 stb/MMscf
H2S:	0 ppm	**FB factor:**	2276.51	**WOR:**	0.25stbw/stbo
CO_2:	2.4%	**FPV factor:**	1.0340	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 03:15 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 03:15 on 12/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.08 **Test No:** DST #1

Bottle No: 4349A

Sampling Date: 12/12/04

Sampling Time **Start:** 02:30 **Finish:** 03:15

Sampling Point: Separator Gas Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: PVT Gas

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Luxfer

Sample Bottle Volume: 20 Litre

Sample Volume: 20 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: 468psig @ 13deg C

Matched With Samples

Sample No:	1.07	**In Bottle No:**	4664-EA	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	2662.5psia	**Sep pressure:**	468psia	**Oil rate (std cond):**	119stbd
BHT:	117.9deg C	**Sep temp:**	47deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	16.3 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1323psia	**Gas gravity (air = 1):**	0.700	**Oil gravity 60/60:**	47.98 ° API
WHT:	36deg C	**Gas diff pressure:**	138"H2O	**Oil line temp:**	44deg C
Choke size:	48/64" Fixed	**Gas pressure:**	468psia	**Water rate:**	30bwpd
Stable since:	02:00hrs	**Gas temp:**	47deg C	**CGR (total):**	7 stb/MMscf
H2S:	0 ppm	**FB factor:**	2276.51	**WOR:**	0.25stbw/stbo
CO_2:	2.4%	**FPV factor:**	1.0340	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 03:15 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 03:15 on 12/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.09 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 03:00 **Finish:** 03:05

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 5,800 mg/l.
Resistivity: 0.80 Ohm m @ 65deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.10 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 04:00 **Finish:** 04:05

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 6,000 mg/l.
Resistivity: 0.79 Ohm m @ 65deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.11 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 05:00 **Finish:** 05:05

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 5,800 mg/l.
Resistivity: 0.76 Ohm m @ 65deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.12 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 21:55 **Finish:** 22:30

Sampling Point: Separator Oil Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Condensate

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Drum

Sample Bottle Volume: 20 Litre

Sample Volume: 18 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	3112.5psia	**Sep pressure:**	493psia	**Oil rate (std cond):**	186stbd
BHT:	119.9deg C	**Sep temp:**	42deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	14.43 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	2006psia	**Gas gravity (air = 1):**	0.700	**Oil gravity 60/60:**	47.98 °API
WHT:	37deg C	**Gas diff pressure:**	207"H2O	**Oil line temp:**	37deg C
Choke size:	36/64" Fixed	**Gas pressure:**	493psia	**Water rate:**	47bwpd
Stable since:	21:45hrs	**Gas temp:**	42deg C	**CGR (total):**	13stb/MMscf
H2S:	0 ppm	**FB factor:**	1582.05	**WOR:**	0.25stbw/stbo
CO_2:	2.6%	**FPV factor:**	1.0378	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 22:30 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 22:30 on 12/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.13 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 22:00 **Finish:** 22:05

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 2,000 mg/l.
Resistivity: 1.4 Ohm m @ 65deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.14 **Test No:** DST #1

Bottle No: 5022-EA

Sampling Date: 12/12/04

Sampling Time **Start:** 22:00 **Finish:** 22:30

Sampling Point: Separator Oil Sight Glass

Perforations : 3141m - 3150m MDBRT

Sample Nature: PVT Condensate

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: Conventional (CSB)

Sample Bottle Volume: 700 cc

Sample Volume: 600cc

Gas Cap Created: 60 cc

Fluid Remaining: 40 cc (Water/ Glycol)

Final Pressure: 225psig @ 14deg C

Matched With Samples

Sample No:	1.15	**In Bottle No:**	4277A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	3112.5psia	**Sep pressure:**	493psia	**Oil rate (std cond):**	186stbd
BHT:	119.9deg C	**Sep temp:**	42deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	14.43 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	2006psia	**Gas gravity (air = 1):**	0.700	**Oil gravity 60/60:**	47.98 ° API
WHT:	37deg C	**Gas diff pressure:**	207"H2O	**Oil line temp:**	37deg C
Choke size:	36/64" Fixed	**Gas pressure:**	493psia	**Water rate:**	47bwpd
Stable since:	21:10hrs	**Gas temp:**	42deg C	**CGR (total):**	13 stb/MMscf
H2S:	0 ppm	**FB factor:**	1582.08	**WOR:**	0.25stbw/stbo
CO_2:	2.6%	**FPV factor:**	1.0378	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 22:30 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 22:30 on 12/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.15 **Test No:** DST #1

Bottle No: 4277A

Sampling Date: 12/12/04

Sampling Time **Start:** 22:00 **Finish:** 22:30

Sampling Point: Separator Gas Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: PVT Gas

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Luxfer

Sample Bottle Volume: 20 Litre

Sample Volume: 20 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: 493psig @ 14deg C

Matched With Samples

Sample No:	1.14	**In Bottle No:**	5022-EA	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	3112.5psia	**Sep pressure:**	493psia	**Oil rate (std cond):**	186stbd
BHT:	119.9deg C	**Sep temp:**	42deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	14.43 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	2006psia	**Gas gravity (air = 1):**	0.700	**Oil gravity 60/60:**	47.98 ° API
WHT:	37deg C	**Gas diff pressure:**	207"H2O	**Oil line temp:**	37deg C
Choke size:	36/64" Fixed	**Gas pressure:**	493psia	**Water rate:**	47bwpd
Stable since:	21:10hrs	**Gas temp:**	42deg C	**CGR (total):**	13 stb/MMscf
H2S:	0 ppm	**FB factor:**	1582.08	**WOR:**	0.25stbw/stbo
CO_2:	2.6%	**FPV factor:**	1.0378	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 22:30 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 22:30 on 12/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.16 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 22:31 **Finish:** 23:00

Sampling Point: Separator Oil Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Condensate

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Drum

Sample Bottle Volume: 20 Litre

Sample Volume: 18 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	3109.5psia	**Sep pressure:**	500psia	**Oil rate (std cond):**	187stbd
BHT:	119.9deg C	**Sep temp:**	20deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	14.18 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	2004psia	**Gas gravity (air = 1):**	0.700	**Oil gravity 60/60:**	47.98 ° API
WHT:	38deg C	**Gas diff pressure:**	179"H2O	**Oil line temp:**	25deg C
Choke size:	36/64" Fixed	**Gas pressure:**	501psia	**Water rate:**	47bwpd
Stable since:	21:45hrs	**Gas temp:**	20deg C	**CGR (total):**	13 stb/MMscf
H2S:	0 ppm	**FB factor:**	1582.08	**WOR:**	0.25stbw/stbo
CO_2:	2.6%	**FPV factor:**	1.0499	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 23:00 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 23:00 on 12/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.17 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 23:00 **Finish:** 23:05

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 2,000 mg/l.
Resistivity: 1.4 Ohm m @ 65deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.18 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 12/12/04

Sampling Time **Start:** 23:35 **Finish:** 23:40

Sampling Point: Separator Water Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 2,000 mg/l.
Resistivity: 1.34 Ohm m @ 65deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.19 **Test No:** DST #1

Bottle No: 5142-EA

Sampling Date: 12/12/04

Sampling Time **Start:** 23:40 **Finish:** 23:55

Sampling Point: Separator Oil Sight Glass

Perforations : 3141m - 3150m MDBRT

Sample Nature: PVT Condensate

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: Conventional (CSB)

Sample Bottle Volume: 700 cc

Sample Volume: 600cc

Gas Cap Created: 60 cc

Fluid Remaining: 40 cc (Water/ Glycol)

Final Pressure: 160psig @ 14deg C

Matched With Samples

Sample No:	1.20	**In Bottle No:**	3189A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	3106.5psia	**Sep pressure:**	517psia	**Oil rate (std cond):**	170stbd
BHT:	119.9deg C	**Sep temp:**	32deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	14.26 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	2004psia	**Gas gravity (air = 1):**	0.700	**Oil gravity 60/60:**	47.98 ° API
WHT:	38deg C	**Gas diff pressure:**	184"H2O	**Oil line temp:**	27deg C
Choke size:	36/64" Fixed	**Gas pressure:**	517psia	**Water rate:**	43bwpd
Stable since:	21:10hrs	**Gas temp:**	32deg C	**CGR (total):**	12 stb/MMscf
H2S:	0 ppm	**FB factor:**	1582.08	**WOR:**	0.25stbw/stbo
CO_2:	2.6%	**FPV factor:**	1.0448	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 23:45 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 23:45 on 12/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 1.20 **Test No:** DST #1

Bottle No: 3189A

Sampling Date: 12/12/04

Sampling Time **Start:** 23:40 **Finish:** 23:55

Sampling Point: Separator Gas Line

Perforations : 3141m - 3150m MDBRT

Sample Nature: PVT Gas

Flow Period: Main Flow

Formation: Lower Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Luxfer

Sample Bottle Volume: 20 Litre

Sample Volume: 20 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: 517psig @ 14deg C

Matched With Samples

Sample No:	1.19	**In Bottle No:**	5142-EA	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	3106.5psia	**Sep pressure:**	517psia	**Oil rate (std cond):**	170stbd
BHT:	119.9deg C	**Sep temp:**	32deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	14.26 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	2004psia	**Gas gravity (air = 1):**	0.700	**Oil gravity 60/60:**	47.98 ° API
WHT:	38deg C	**Gas diff pressure:**	184"H2O	**Oil line temp:**	27deg C
Choke size:	36/64" Fixed	**Gas pressure:**	517psia	**Water rate:**	43bwpd
Stable since:	21:10hrs	**Gas temp:**	32deg C	**CGR (total):**	12 stb/MMscf
H2S:	0 ppm	**FB factor:**	1582.08	**WOR:**	0.25stbw/stbo
CO_2:	2.6%	**FPV factor:**	1.0448	**BSW (choke):**	20%

Remarks

Production conditions taken from Schlumberger surface data at 23:45 on 12/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 23:45 on 12/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.01 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 08:00 **Finish:** 08:05

Sampling Point: Separator Water Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 800 mg/l.
Resistivity: 3.10 Ohm m @ 68deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.02 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 09:00 **Finish:** 09:05

Sampling Point: Separator Water Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 600 mg/l.
Resistivity: 3.50 Ohm m @ 68deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.03 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 10:00 **Finish:** 10:05

Sampling Point: Separator Water Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 500 mg/l.
Resistivity: 3.80 Ohm m @ 66deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.04 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 10:55 **Finish:** 11:00

Sampling Point: Separator Water Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 600 mg/l.
Resistivity: 3.10 Ohm m @ 67deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.05 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 11:00 **Finish:** 11:30

Sampling Point: Separator Oil Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Condensate

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Drum

Sample Bottle Volume: 20 Litre

Sample Volume: 18 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	1989.7psia	**Sep pressure:**	271psia	**Oil rate (std cond):**	140stbd
BHT:	105.5deg C	**Sep temp:**	45deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	7.26 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1328psia	**Gas gravity (air = 1):**	0.746	**Oil gravity 60/60:**	52.68 ° API
WHT:	30deg C	**Gas diff pressure:**	243”H2O	**Oil line temp:**	40deg C
Choke size:	32/64" Fixed	**Gas pressure:**	271psia	**Water rate:**	9bwpd
Stable since:	10:30hrs	**Gas temp:**	45deg C	**CGR (total):**	19 stb/MMscf
H2S:	0 ppm	**FB factor:**	1039.47	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0221	**BSW (choke):**	6%

Remarks

Production conditions taken from Schlumberger surface data at 11:30 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 11:30 on 14/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.06 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 11:02 **Finish:** 11:45

Sampling Point: Separator Gas Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Heavy Metals in Gas

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 50cc Plastic

Sample Bottle Volume: 50cc

Sample Volume: 50cc

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	1992.7psia	**Sep pressure:**	268psia	**Oil rate (std cond):**	140stbd
BHT:	109.6deg C	**Sep temp:**	45deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	7.28 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1332psia	**Gas gravity (air = 1):**	0.747	**Oil gravity 60/60:**	52.68 ° API
WHT:	31deg C	**Gas diff pressure:**	270"H2O	**Oil line temp:**	36deg C
Choke size:	32/64" Fixed	**Gas pressure:**	270psia	**Water rate:**	9bwpd
Stable since:	10:30hrs	**Gas temp:**	45deg C	**CGR (total):**	19 stb/MMscf
H2S:	0 ppm	**FB factor:**	1039.47	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0221	**BSW (choke):**	6%

Remarks

Production conditions taken from Schlumberger surface data at 11:45 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 11:45 on 14/12/04
Gas volume flowed: 20 Litres @ ½ Litre/min
Gas Temp: 14deg C, Patm: 14.68 psia

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.07 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 11:02 **Finish:** 11:45

Sampling Point: Separator Gas Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Heavy Metals in Gas

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 50cc Plastic

Sample Bottle Volume: 50cc

Sample Volume: 50cc

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	1992.7psia	**Sep pressure:**	268psia	**Oil rate (std cond):**	140stbd
BHT:	109.6deg C	**Sep temp:**	45deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	7.28MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1332psia	**Gas gravity (air = 1):**	0.747	**Oil gravity 60/60:**	52.68 ° API
WHT:	31deg C	**Gas diff pressure:**	270"H2O	**Oil line temp:**	36deg C
Choke size:	32/64" Fixed	**Gas pressure:**	270psia	**Water rate:**	9bwpd
Stable since:	10:30hrs	**Gas temp:**	45deg C	**CGR (total):**	19 stb/MMscf
H2S:	0 ppm	**FB factor:**	1039.47	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0221	**BSW (choke):**	6%

Remarks

Production conditions taken from Schlumberger surface data at 11:45 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 11:45 on 14/12/04
Gas volume flowed: 20 Litres @ ½ Litre/min
Gas Temp: 14deg C, Patm: 14.68 psia

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.08 **Test No:** DST #1

Bottle No: 6341-MA

Sampling Date: 14/12/04

Sampling Time **Start:** 11:05 **Finish:** 11:30

Sampling Point: Separator Oil Sight Glass

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: PVT Condensate

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: Conventional (CSB)

Sample Bottle Volume: 700 cc

Sample Volume: 600cc

Gas Cap Created: 60 cc

Fluid Remaining: 40 cc (Water/ Glycol)

Final Pressure: 110psig @ 15deg C

Matched With Samples

Sample No:	2.09	**In Bottle No:**	5235A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	1989.7psia	**Sep pressure:**	271psia	**Oil rate (std cond):**	140stbd
BHT:	109.5deg C	**Sep temp:**	45deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	7.26 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1328psia	**Gas gravity (air = 1):**	0.746	**Oil gravity 60/60:**	52.68 ° API
WHT:	30deg C	**Gas diff pressure:**	243"H2O	**Oil line temp:**	40deg C
Choke size:	32/64" Fixed	**Gas pressure:**	271psia	**Water rate:**	9bwpd
Stable since:	10:30hrs	**Gas temp:**	45deg C	**CGR (total):**	19 stb/MMscf
H2S:	0 ppm	**FB factor:**	1039.47	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0221	**BSW (choke):**	6%

Remarks

Production conditions taken from Schlumberger surface data at 11:30 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 11:30 on 14/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.09 **Test No:** DST #1

Bottle No: 5235A

Sampling Date: 14/12/04

Sampling Time **Start:** 11:05 **Finish:** 11:30

Sampling Point: Separator Gas Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: PVT Gas

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Luxfer

Sample Bottle Volume: 20 Litre

Sample Volume: 20 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: 271psig @ 15deg C

Matched With Samples

Sample No:	2.08	**In Bottle No:**	6341-MA	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	1989.7psia	**Sep pressure:**	271psia	**Oil rate (std cond):**	140stbd
BHT:	109.5deg C	**Sep temp:**	45deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	7.26 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1328psia	**Gas gravity (air = 1):**	0.746	**Oil gravity 60/60:**	52.68 ° API
WHT:	30deg C	**Gas diff pressure:**	243"H2O	**Oil line temp:**	40deg C
Choke size:	32/64" Fixed	**Gas pressure:**	271psia	**Water rate:**	9bwpd
Stable since:	10:30hrs	**Gas temp:**	45deg C	**CGR (total):**	19 stb/MMscf
H2S:	0 ppm	**FB factor:**	1039.47	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0221	**BSW (choke):**	6%

Remarks

Production conditions taken from Schlumberger surface data at 11:30 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 11:30 on 14/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.10 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 11:34 **Finish:** 12:00

Sampling Point: Separator Oil Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Condensate

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Drum

Sample Bottle Volume: 20 Litre

Sample Volume: 18 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	1996.4psia	**Sep pressure:**	268psia	**Oil rate (std cond):**	125stbd
BHT:	109.6deg C	**Sep temp:**	45deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	7.29 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1334psia	**Gas gravity (air = 1):**	0.747	**Oil gravity 60/60:**	52.68 ° API
WHT:	31deg C	**Gas diff pressure:**	247"H2O	**Oil line temp:**	41deg C
Choke size:	32/64" Fixed	**Gas pressure:**	269psia	**Water rate:**	8bwpd
Stable since:	10:30hrs	**Gas temp:**	45deg C	**CGR (total):**	17 stb/MMscf
H2S:	0 ppm	**FB factor:**	1039.47	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0221	**BSW (choke):**	6%

Remarks

Production conditions taken from Schlumberger surface data at 12:00 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 12:00 on 14/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.11 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 11:45 **Finish:** 11:50

Sampling Point: Separator Water Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 500 mg/l.
Resistivity: 3.60 Ohm m @ 69deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.12 **Test No:** DST #1

Bottle No: 4990-EA

Sampling Date: 14/12/04

Sampling Time **Start:** 11:50 **Finish:** 12:15

Sampling Point: Separator Oil Sight Glass

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: PVT Condensate

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: Conventional (CSB)

Sample Bottle Volume: 700 cc

Sample Volume: 600cc

Gas Cap Created: 60 cc

Fluid Remaining: 40 cc (Water/ Glycol)

Final Pressure: 110psig @ 15deg C

Matched With Samples

Sample No:	2.13	**In Bottle No:**	2494A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	1998.8psia	**Sep pressure:**	270psia	**Oil rate (std cond):**	142stbd
BHT:	109.7deg C	**Sep temp:**	45deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	7.32 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1334psia	**Gas gravity (air = 1):**	0.747	**Oil gravity 60/60:**	52.68 ° API
WHT:	31deg C	**Gas diff pressure:**	249"H2O	**Oil line temp:**	40deg C
Choke size:	32/64" Fixed	**Gas pressure:**	270psia	**Water rate:**	8bwpd
Stable since:	10:30hrs	**Gas temp:**	45deg C	**CGR (total):**	19 stb/MMscf
H2S:	0 ppm	**FB factor:**	1039.47	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0221	**BSW (choke):**	6%

Remarks

Production conditions taken from Schlumberger surface data at 12:15 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 12:15 on 14/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.13 **Test No:** DST #1

Bottle No: 2494A

Sampling Date: 14/12/04

Sampling Time **Start:** 11:50 **Finish:** 12:15

Sampling Point: Separator Gas Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: PVT Gas

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Luxfer

Sample Bottle Volume: 20 Litre

Sample Volume: 20 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: 270psig @ 15deg C

Matched With Samples

Sample No:	2.12	**In Bottle No:**	4990-EA	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	1998.8psia	**Sep pressure:**	270psia	**Oil rate (std cond):**	142stbd
BHT:	109.7deg C	**Sep temp:**	45deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	7.32 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	1334psia	**Gas gravity (air = 1):**	0.747	**Oil gravity 60/60:**	52.68 ° API
WHT:	31deg C	**Gas diff pressure:**	249"H2O	**Oil line temp:**	40deg C
Choke size:	32/64" Fixed	**Gas pressure:**	270psia	**Water rate:**	8bwpd
Stable since:	10:30hrs	**Gas temp:**	45deg C	**CGR (total):**	19 stb/MMscf
H2S:	0 ppm	**FB factor:**	1039.47	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0221	**BSW (choke):**	6%

Remarks

Production conditions taken from Schlumberger surface data at 12:15 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 12:15 on 14/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.14 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 13:30 **Finish:** 13:35

Sampling Point: Separator Water Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 600 mg/l.
Resistivity: 3.0 Ohm m @ 65deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.15 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 14:30 **Finish:** 14:35

Sampling Point: Separator Water Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 5,600 mg/l.
Resistivity: 0.75 Ohm m @ 67deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.16 **Test No:** DST #1

Bottle No: N/A

Sampling Date: 14/12/04

Sampling Time **Start:** 14:55 **Finish:** 15:00

Sampling Point: Separator Water Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: Stock Tank Water

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 1 Litre Plastic cont.

Sample Bottle Volume: 1 Litre

Sample Volume: 1 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: N/A @ N/A

Matched With Samples

Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	N/A	**Sep pressure:**	N/A	**Oil rate (std cond):**	N/A
BHT:	N/A	**Sep temp:**	N/A	**Corrected by:**	N/A
At depth:	N/A	**Gas rate (std cond):**	N/A	**Oil rate (sep cond):**	N/A
WHP:	N/A	**Gas gravity (air = 1):**	N/A	**Oil gravity 60/60:**	N/A
WHT:	N/A	**Gas diff pressure:**	N/A	**Oil line temp:**	N/A
Choke size:	N/A	**Gas pressure:**	N/A	**Water rate:**	N/A
Stable since:	N/A	**Gas temp:**	N/A	**CGR (total):**	N/A
H2S:	N/A	**FB factor:**	N/A	**WOR:**	N/A
CO_2:	N/A	**FPV factor:**	N/A	**BSW (choke):**	N/A

Remarks

Chlorides: 5,200 mg/l.
Resistivity: 0.87 Ohm m @ 66deg C.

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.17 **Test No:** DST #1

Bottle No: 4986-EA

Sampling Date: 14/12/04

Sampling Time **Start:** 15:00 **Finish:** 15:30

Sampling Point: Separator Oil Sight Glass

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: PVT Condensate

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: Conventional (CSB)

Sample Bottle Volume: 700 cc

Sample Volume: 600cc

Gas Cap Created: 60 cc

Fluid Remaining: 40 cc (Water/ Glycol)

Final Pressure: 110psig @ 16deg C

Matched With Samples

Sample No:	2.18	**In Bottle No:**	4564A	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	2010.6psia	**Sep pressure:**	280psia	**Oil rate (std cond):**	268stbd
BHT:	109.7deg C	**Sep temp:**	44deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	9.81 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	639psia	**Gas gravity (air = 1):**	0.742	**Oil gravity 60/60:**	53.02 ° API
WHT:	31deg C	**Gas diff pressure:**	184"H2O	**Oil line temp:**	42deg C
Choke size:	56/64" Fixed	**Gas pressure:**	280psia	**Water rate:**	14bwpd
Stable since:	14:35hrs	**Gas temp:**	44deg C	**CGR (total):**	27 stb/MMscf
H2S:	0 ppm	**FB factor:**	1582.05	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0225	**BSW (choke):**	5%

Remarks

Production conditions taken from Schlumberger surface data at 15:30 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 15:30 on 14/12/04

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Schlumberger

Client:	Origin Energy Ltd	**Field:**	T18-P
Job No:	AOH 448	**Well:**	Trefoil-1
Date:	07 Dec - 16 Dec, 2004	**Installation:**	Ensco 102

Surface Sample Data Sheet

Identification

Sample No: 2.18 **Test No:** DST #1

Bottle No: 4564A

Sampling Date: 14/12/04

Sampling Time **Start:** 15:00 **Finish:** 15:30

Sampling Point: Separator Gas Line

Perforations : 3040.5m - 3046.5m MDBRT

Sample Nature: PVT Gas

Flow Period: Main Flow

Formation: Upper Cretaceous

Shipping Conditions

Sample Bottle Type: 20 Litre Luxfer

Sample Bottle Volume: 20 Litre

Sample Volume: 20 Litre

Gas Cap Created: N/A

Fluid Remaining: N/A

Final Pressure: 280psig @ 16deg C

Matched With Samples

Sample No:	2.17	**In Bottle No:**	4986-EA	**Sample No:**	N/A	**In Bottle No:**	N/A
Sample No:	N/A	**In Bottle No:**	N/A	**Sample No:**	N/A	**In Bottle No:**	N/A

Production Conditions During Sampling

BHP:	2010.6psia	**Sep pressure:**	280psia	**Oil rate (std cond):**	268stbd
BHT:	109.7deg C	**Sep temp:**	44deg C	**Corrected by:**	N/A
At depth:	2943.58m MDBRT	**Gas rate (std cond):**	9.81 MMscf/d	**Oil rate (sep cond):**	N/A
WHP:	639psia	**Gas gravity (air = 1):**	0.742	**Oil gravity 60/60:**	53.02 ° API
WHT:	31deg C	**Gas diff pressure:**	184"H2O	**Oil line temp:**	42deg C
Choke size:	56/64" Fixed	**Gas pressure:**	280psia	**Water rate:**	14bwpd
Stable since:	14:35hrs	**Gas temp:**	44deg C	**CGR (total):**	27 stb/MMscf
H2S:	0 ppm	**FB factor:**	1582.05	**WOR:**	N/A
CO_2:	2.0%	**FPV factor:**	1.0225	**BSW (choke):**	5%

Remarks

Production conditions taken from Schlumberger surface data at 15:30 on 14/12/04
Bottomhole conditions taken from Schlumberger bottomhole gauge (WCQR #937) at 15:30 on 14/12/04

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APPENDIX 21: PROCESSED DSI RESULTS

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Open Hole
DSI* Sonic Processing
Report

Products:	• MPS: Compressional Slowness • UDP-LDP: Shear Slowness
Company:	• Origin Energy Resources Ltd
Well(s):	• Trefoil-1
Interval:	• 3545 to 2421m MD (1124m)
Analysis Date:	• January 17th, 2005
Logging Date:	• Nov 24th, 2004
Location:	• Schlumberger Data Services Centre • Perth, Western Australia
Analyst(s):	• Francis Advent
Logging Engineer:	• J. Robertson

Prepared by:
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*Mark of Schlumberger

1 Executive Summary

The DSI* (Dipole Shear Sonic Imager tool with Upper Dipole (UDP), Lower Dipole (LDP) and Monopole (MPS) mode) logs were acquired in vertical exploration well Trefoil-1 (Longitude 145°22'30.87" East and Latitude 39°51' 41.58" South) logged on the 24th of November 2004 and processed on the 17th of January, 2005.

The data was acquired in both 8.5in open hole section and 9.25in cased hole section, with water-based mud (Seawater/Drispac/Soltex). Measurements were made both in MPS and Dipole modes. Subsequently, the entire open hole interval was processed and analysed to obtain a continuous compressional and shear slowness. No processing was required for the cased hole section.

Overall, open hole data quality was good. Based on the borehole condition, there were slight washout sections throughout the borehole and short intervals of large washout sections, from 2680 to 2686m and below 3400m MD. The large washouts tended to affect the compressional more, with an increased uncertainty on results. Overall, however, there was minimal effect of borehole condition on the BestDT 3* processed results (MPS and Dipole) as the processing used DDBHC (Depth Derived Borehole Compensated) result, that is, compensated for borehole effects. Notable improvement to the compressional sonic can be seen above 2885m by direct comparison with the field result.

Schlumberger

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2 Processing Result and Evaluation

2.1 Open Hole Lower Dipole (LDP) and Monopole P & S (MPS) Results

Compressional slowness was obtained from the MPS mode processing using both the *Receiver* and *Transmitter Arrays* and used to produce Depth Derived Borehole Compensated (DDBHC) final output. Processing used the latest BestDT-3* technique that is based on STC (Slowness Time Coherence) computation, on GeoQuest's GeoFrame 4.0.3 platform. The final DT compressional (DTCO) is therefore an average of DT output from receiver and transmitter array processing, and used in the computation of the Poisson's ratio and VpVs ratio on the final DSI presentation. **Figure 1** shows a section of the results for open hole. Using the DDBHC method corrects for any slight eccentralising and unfavourable borehole conditions such as small washouts, tool tilt and changes in borehole size

Shear curves were obtained from LDP Processing. Unlike MPS, dipole shear is usually derived using receiver array only. In this case, both the LDP receiver and transmitter arrays were used to produce DDBHC output in order to minimize bed boundary effects as both curves showed good coherence and cable motion was uniform. BestDT-3* processing uses sophisticated dispersion correction to give a more accurate true formation shear slowness. This is based on using the entire waveform as opposed to part of a waveform and look up chart, which is used in the field. Refer to **Appendix C** for theory and **Appendix A** for mnemonics description.

Figure 2 shows the STC versus depth for the Lower Dipole. Note the strong and consistent coherence.

A crossplot of Vp/Vs vs DTCO can be examined to help interpret the data (Figure 3). The x-axis can also be seen as a porosity axis since DTCO increases with porosity, while the Vp/Vs axis provides indication of consolidation of rock formation. The trends represented by the data consist of: 1) blue line indicating water-wet sand; 2) green dashed line representing average shale trend; and 3) red dashed line representing gas-bearing sandstone and is drawn at constant Vp/Vs value of 1.58.

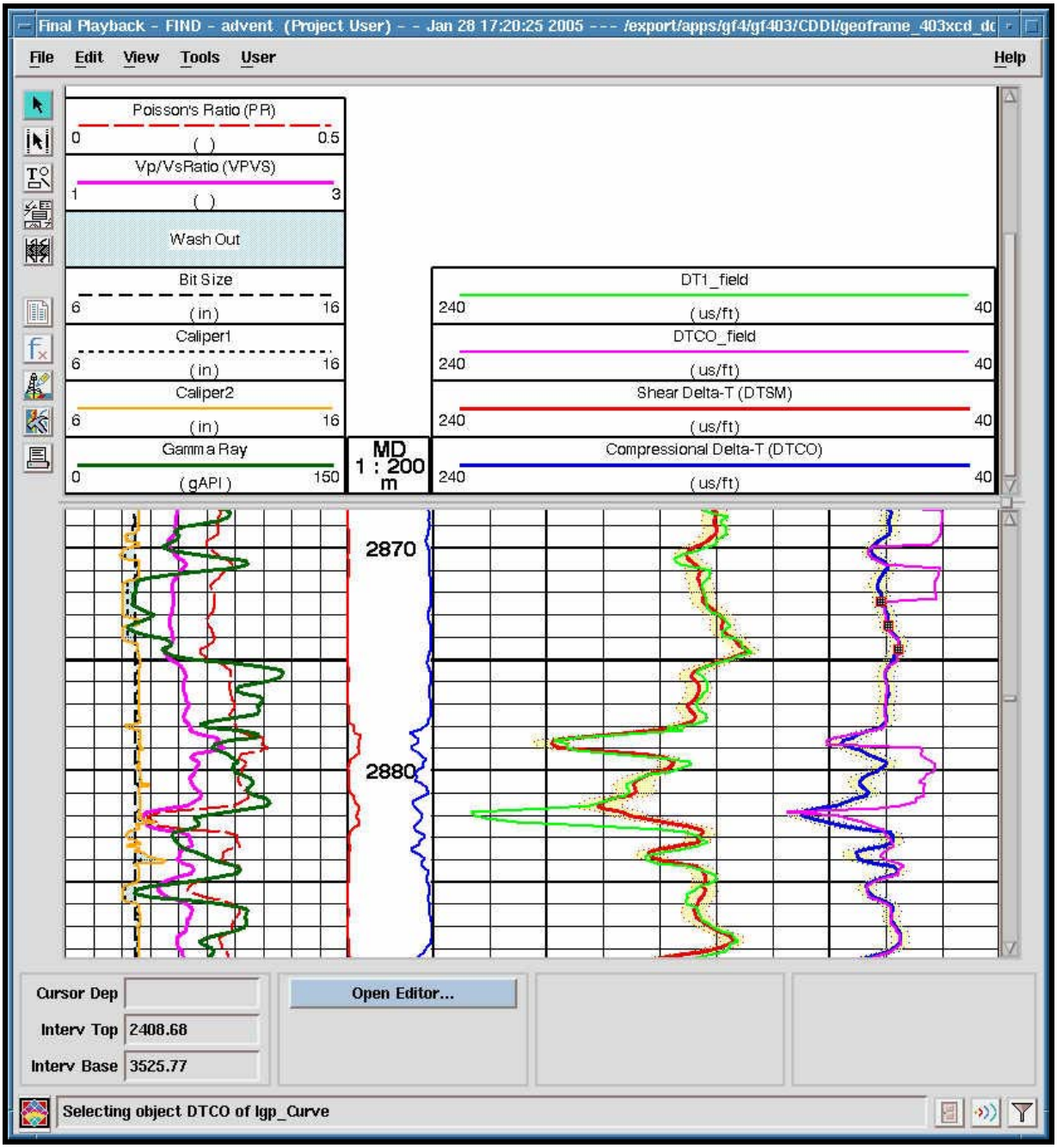


Figure 1: Open Hole Best DT-3* Results for part of the log

Track 1 shows GR, BS, C1, C2, Poisson's Ratio and VpVS Ratio. The VpVs ratio tends towards 1.6 to 1.8 in the reservoir zones. See attached print for entire depth section. Depth track contains Label Peak Coherence curves for MPS (blue) and LDP (red), which tend to increase (high uncertainty) across washout zones. The last track compares the BestDT-3* results to that of the field. Results indicate that field data was not 'picked' correctly and hence BestDT-3* processing provided a higher quality answer product.

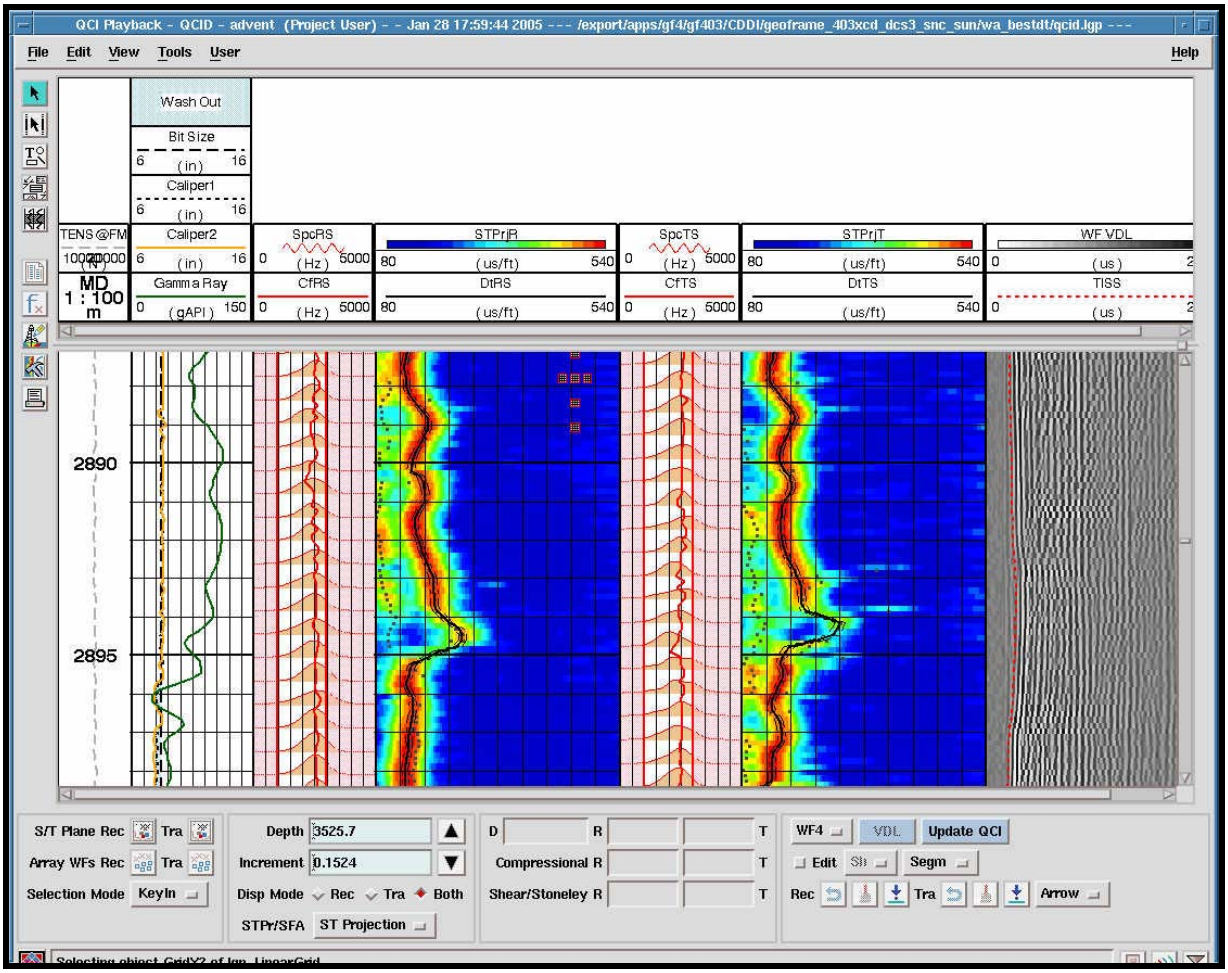


Figure 2: Open Hole LDP Quality Control for part log

Figure 2, representing the STC quality for open hole**,** shows that overall, output quality is good, shear arrivals were shown by strong coherency on both receiver and transmitter array.

Depth track shows tension and track 1 shows the GR, BS and caliper information. Tracks 2 and 4 show the shear curve and the frequency window, which the data was processed. The processing window in this example is 0 to 5 KHz. Tracks 3 and 5 shows the STC plane in relation to depth. In this example the shear is very coherent, represented here by a red band. Where the band is not red, the coherency is not as good. This occurs mostly in washed out sections. The software then selects the most coherent path by using a similar method to 'Tracking and Classification' as discussed in **Appendix C**. Track 6 represents the waveform in variable density log format (VDL). The TISS curve is the shear transit time. Note that the shear transit curve matches very well with the first formation arrivals, indicating good quality data whereby the STC semblance processing has detected the correct shear.

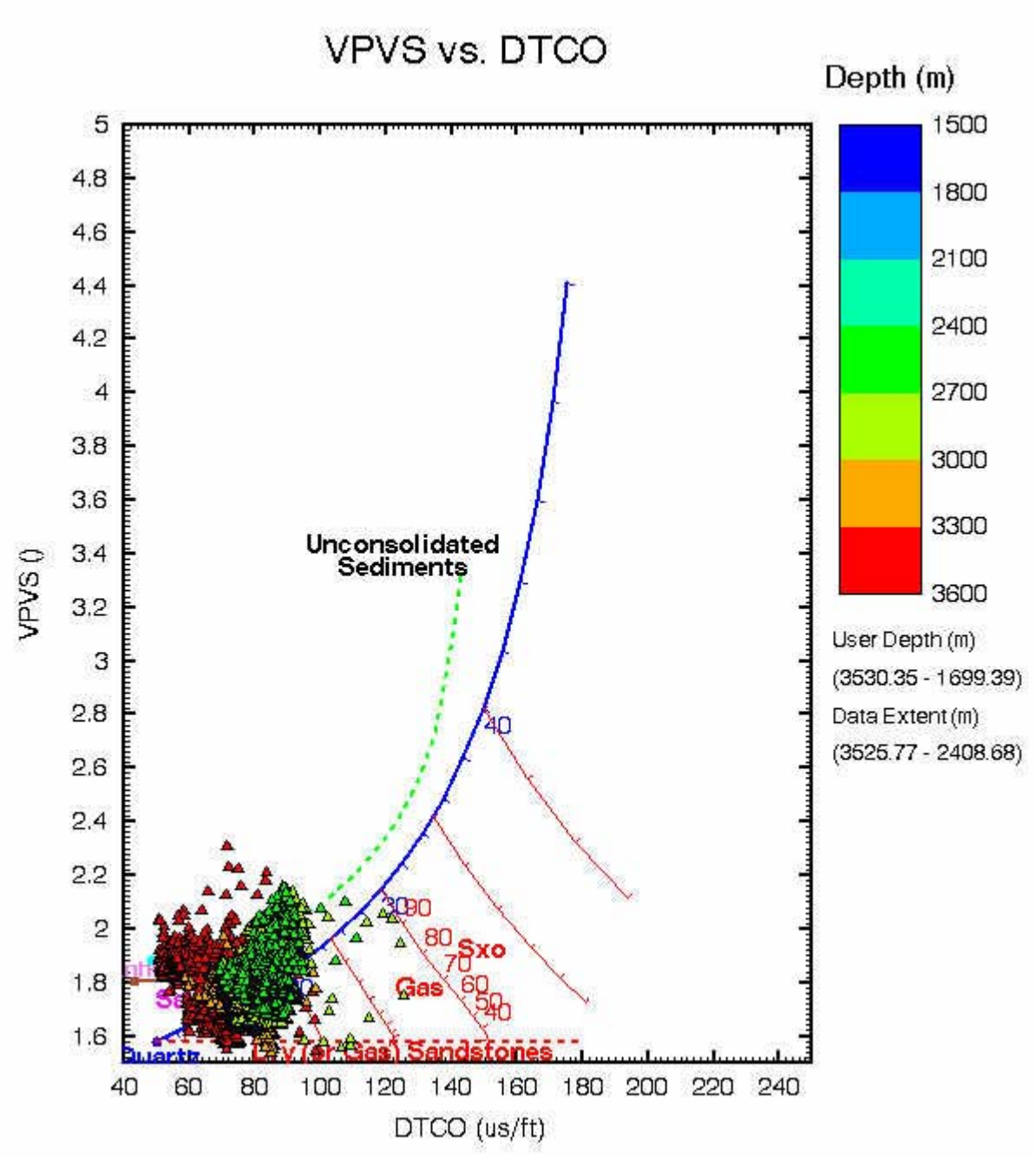


Figure 3: Display of DTCO versus VpVs ratio from (DSI shear and compressional curves) The sands fall between Vp/Vs values of 1.6 and 1.8.

Appendix A: Mnemonics

CfRC	Coherency (Stacked Signal Center Frequency – Receiver Array)
CfTC	Coherency (Stacked Signal Center Frequency – Transmitter Array)
CHRP	Label peak coherence, receiver array – monopole.
CHR2	Label peak coherence, receiver array – upper dipole
CHTP	Label peak coherence, transmitter array – monopole
DDBHC	Depth derived borehole compensated
DT1	Delta-T Shear – Lower Dipole
DT2	Delta-T Shear – Upper Dipole
DT4P	Delta-T Compressional – Monopole P&S
DtRC	Delta-T Compressional – Receiver Array
DtRS	Delta-T Shear – Receiver Array
DtTC	Delta-T Compressional – Transmitter Array
DtTS	Delta-T Shear – Transmitter Array
DTCO	Final BestDT-3* Delta-T Compressional Curve
DTSM	Final BestDT-3* Delta-T Shear Curve
LDP	Lower Dipole Mode
MPS	Monopole P&S Mode
PR	Poisson's Ratio
REC	Receiver
SPcRC	Frequency Spectrum – Receiver Array
SPcTC	Frequency Spectrum – Transmitter Array
STPrjR	STC Slowness Projection – Receiver Array
STPrjT	STC Slowness Projection – Transmitter Array
TICS	Compressional Integrated Transit Time
TISS	Shear Integrated Transit Time
TENS	Tension
UDP	Upper Dipole Mode
VPVS	Ratio of Compressional Velocity to Shear Velocity

Appendix B: Parameters

Table 1: Open Hole MPS

Parameter	Value	Description
Dtmud	194 us/ft	Mud Slowness
SFTY	Intermediate	Formation Type
HD	8.5 in	Hole diameter
CSIZ	9.625 in	Casing Size
BHS	Open	Borehole Status
TWI	320 ms	Integrated Time Window
SLL	40	Slowness Lower Limit
SUL	240	Slowness Upper Limit
SST	2	Slowness Step
TLL	400	Time Lower Limit
TUL	4100	Time Upper Limit
TST	100	Time Step
SBW	2390	Search Band Width
SBO	350	Search Band Offset
SWD	20	Slowness Width
TWD	1792	Time Width
SEM	0.35	Semblance Threshold
FLENG	49	Filter Length
FLOW	4000	Filter Band Low
FHIGH	16000	Filter Band High

Table 2: Open Hole Dipole

Parameter	Value	Description
Dtmud	194 us/ft	Mud Slowness
SFTY	Intermediate	Formation Type
HD	8.5 in	Hole diameter
CSIZ	9.625 in	Casing Size
BHS	Open	Borehole Status
TWI	1500 ms	Integration Time Window
SLL	80	Slowness Lower Limit
SUL	540	Slowness Upper Limit
SST	4	Slowness Step
TLL	1200	Time Lower Limit
TUL	12800	Time Upper Limit
TST	400	Time Step
SBW	8200	Search Band Width
SBO	1480	Search Band Offset
SWD	60	Slowness Width
TWD	6150	Time Width
SEM	0.35	Semblance Threshold
FLENG	47	Filter Length
FLOW	1000	Filter Band Low
FHIGH	3000	Filter Band High

Appendix C: Theory

Monopole P and S Mode (MPS)

A set of eight monopole sonic waveforms is shown in **Figure 4**. As expected the arrival time of the various arrivals in the waveforms increases with the transmitter-receiver spacing. The slope of a line drawn through the arrival of the same component at each waveform is called the move-out. It represents how much the arrival time is moving out as the distance from the transmitter increases. The moveout can be expressed in µsec/ft and actually represents the slowness of the wave component over the interval covered by the array.

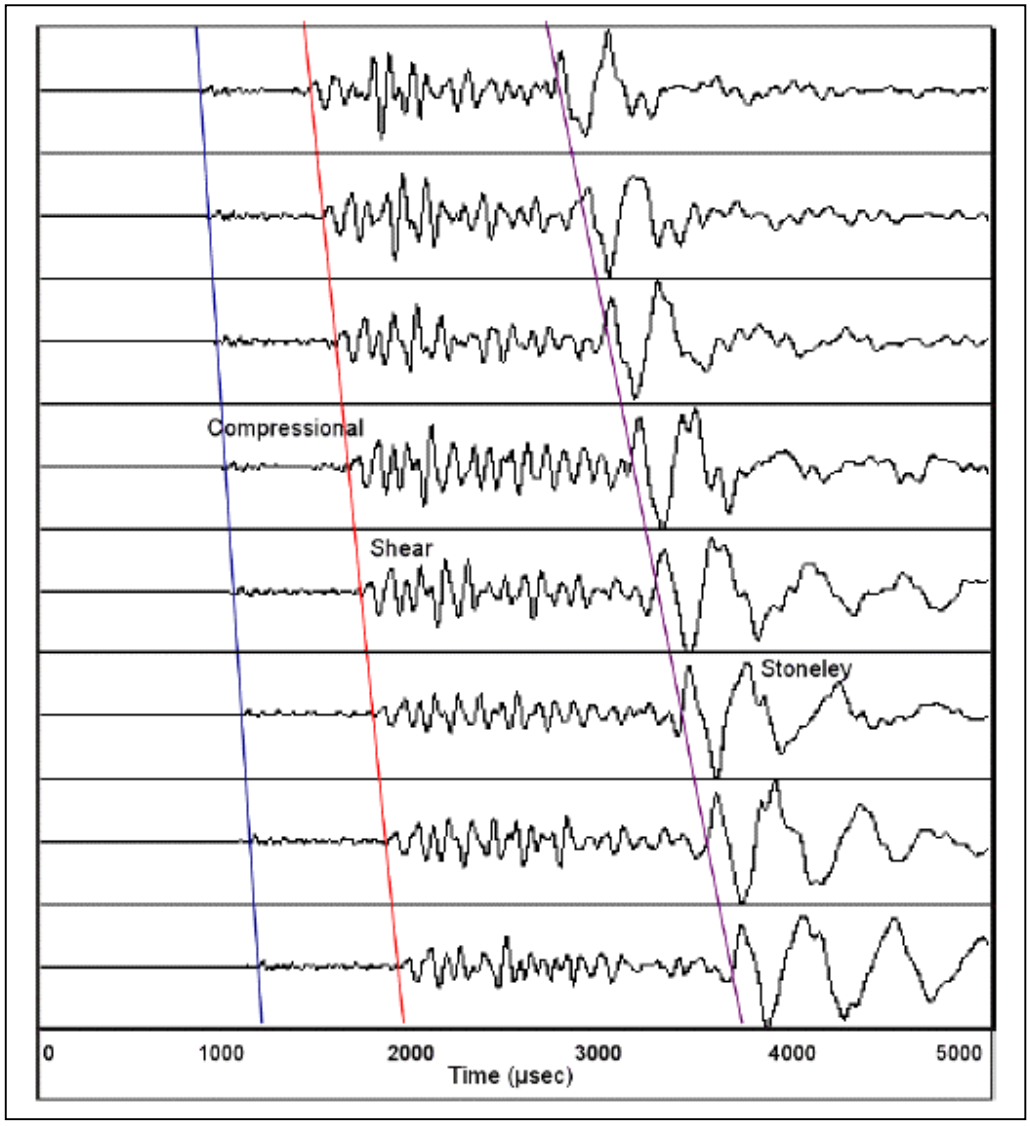


Figure 4: Move-out determination on a set of monopole array waveforms

Slowness time coherence processing, STC, is a processing technique based on semblance that performs this operation automatically. It searches for coherent components along all moveouts in a waveform array. We start by positioning a time window on the reference waveform at time *T* and then defining a corridor through the array with a move-out *S* (**Figure 5**). The total or incoherent energy, *Ei*, is calculated as the sum of the squares of the samples within the corridor (**Eq. 2-1**). The coherent energy, *Ec*, is then calculated as the arithmetic sum of the samples along the moveout squared (**Eq. 2-2**). When the signal on all waveforms within the window are perfectly correlated, the coherent energy is equal to the total energy times the number of waveforms.

$$E_i(T,S)=\sum_{i=1}^{n}\int_0^{Tw}\left[x_i\left(t-\left[T+S(z_i-z_1)\right]\right)\right]^2 dt \qquad (2\text{-}1)$$

$$E_c(T,S)=\int_0^{Tw}\left[\sum_{i=1}^{n}x_i\left(t-\left[T+S(z_i-z_1)\right]\right)\right]^2 dt \qquad (2\text{-}2)$$

Where *i* is the waveform number, *xi* is the value of the waveform sample at time *t*, *Tw* the length of the integration time window and *zi* the waveform depth.
The coherence is defined as:

$$Coh(T,S)=\frac{1}{n}\frac{E_c(T,S)}{E_i(T,S)} \qquad (2\text{-}3)$$

The coherence varies between 0 and 1. A value of 0 means that there is no correlated arrival in the window. On the opposite, a value of 1 means that the waveform components in the window correlate perfectly.

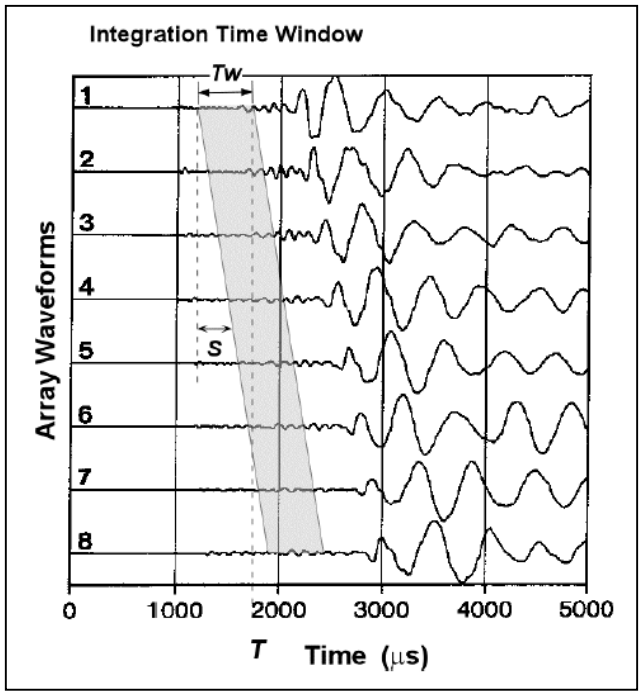
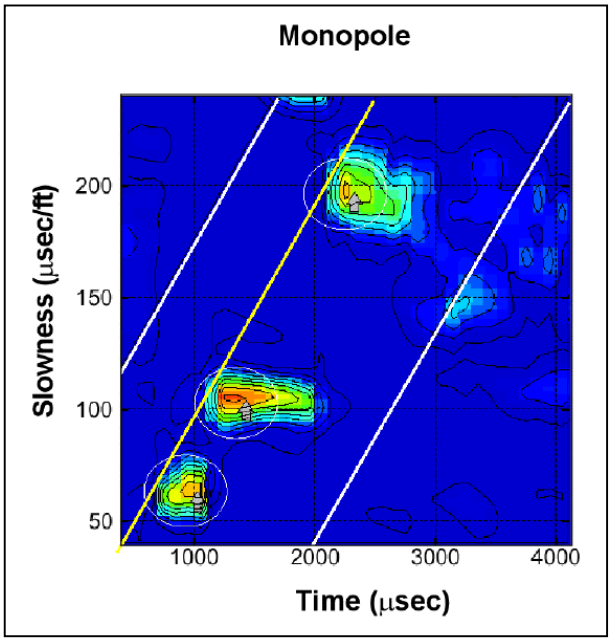


Figure 5: Slowness time coherence computation principle

The computation is done for a range of moveout *S*, for every possible position of the window in time *T*. A convenient representation of the coherence results is to display them on a contour plot versus time and slowness, the ST-Plane (**Figure. 6**). On such a plot each point represents the value of the coherence for a specific time and move out (slowness).

Coherence has a low value unless the integration corridor is positioned over a wave propagating at the considered moveout. Therefore, most of the ST plane is filled with coherence values close to 0 (blue). However, when a coherent arrival is present in the waveforms it shows as a peak of coherence with values that can go up to 1. The process locates the position of the maximum coherence at each peak and outputs the value of slowness, time and coherence in a list. For a given tool configuration, we expect that the time of arrival of a wave will be approximately the product of the slowness by the spacing between the transmitter and the reference receiver. This relation is represented on the plot by the TR line. The ST-plane shown on the example is from a set of monopole waveforms. The three main peaks observed, starting from bottom left, probably represent the compressional, the shear and the Stoneley arrivals. However, at this stage the peaks only represent coherent arrivals in the waveforms and are not identified. The process is repeated for each set of waveforms acquired by the tool at each depth sample.



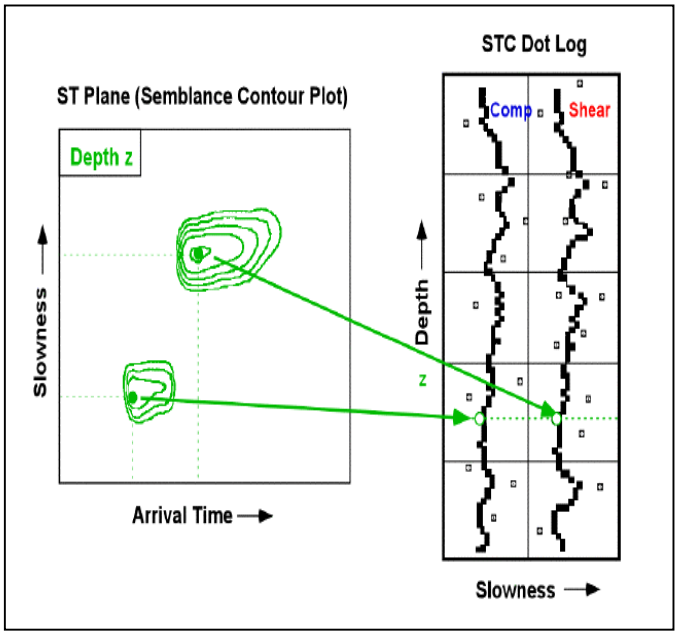


Figure 6: Slowness-Time Plane monopole example. Figure 7: Coherence peak labelling and slowness dot-logs generation

STC processing outputs a list of coherence peaks at every measurement depth. We can represent these peaks as dots on a slowness versus depth plot (**Figure 7**). On such a plot, coherent arrivals display as continuous series of dots. There may also be scattered coherence peaks caused by noise, bed boundaries or other spurious effects that do not match with continuous trends. 'Tracking and classification' identifies the peaks that belong to consistent arrivals versus depth, assigns them to a specific wave type, for example compressional or shear, and output the values in the form of a continuous slowness log. Tracking and classification uses rules to identify the different waves. Typical rules used by tracking and classification are that the peaks have sufficient continuity in depth, sufficient coherence, that the compressional is faster than the shear arrival and that the ratio of their respective slownesses is larger than 1.45.

Sometimes, dots are missing and there are gaps in the trends. These may originate among other causes from unfavourable borehole conditions, layering or noise. As long as the gap is small, tracking and classification interpolates in between existing peaks to obtain a continuous log, but if the gap is larger than a couple of feet, the log is set to absent.

Upper and Lower Dipole Mode (UDP & LDP)

A flexural wave is propagated through the borehole by inducing a pressure wave perpendicular to the borehole wall and propagates throughout the borehole wall. The borehole wall then experiences a transverse displacement as indicated in **Figure 8,** which is similar to the shear velocity of the formation.

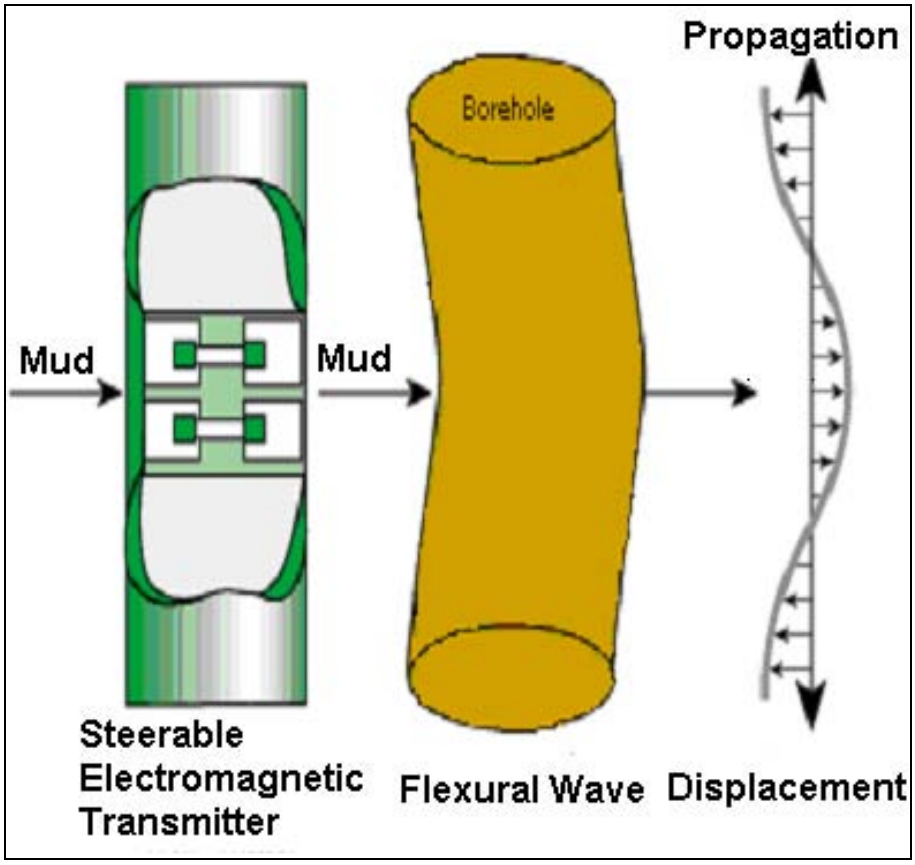


Figure 8: Flexural wave propagation to measure shear velocity

A problem of dispersion effects occurs with shear velocity measurements. Dispersion is the effect of variation of velocity with frequency and makes it difficult to determine a true formation shear. The higher the frequency, the more dispersion occurs. A method known as Bias Correction is applied real time in the field, which basically uses a correction based on numerical modelling. It is also based on a narrow frequency band at low frequencies where dispersion effect is less and so does not take into account the entire waveform. Although this is a fast and simple technique, it is not the best. Best-DT 3* uses a more advanced technique known as Dispersive STC Processing and is based on the entire waveform and uses model dispersion curves to correct for dispersion rather than a look up table, as with Bias correction. Correction is therefore more refined and accurate.

Dispersion depends on frequency, borehole size, formation shear slowness, mud slowness and formation to mud density ratio. In hard formations, mud slowness has less of an effect on dispersion.

Shear Anisotropy Measurement

For sonic measurements, it is well recognized that sedimentary rocks generally exhibit some degree of anisotropy. Anisotropy may arise from intrinsic structural effects, such as aligned fractures and layering of thin zones, or from unequal stresses within the formation. These effects lead to differences in formation elastic properties, and if they are on a smaller scale than the sonic wavelengths, then sonic wave propagation can be used to detect and quantify the anisotropy.

Sonic waves travel fastest when the direction of particle motion (polarization) is aligned with the material's stiffest direction. Shear-wave particle motion is in a plane perpendicular to the wave propagation direction. If the formation is anisotropic in this plane, meaning that there is one direction that is stiffer than another, then the shear-wave polarization aligned in the stiff direction will travel faster than one aligned in the other, more compliant direction. As a result, the shear wave splits into two components, one polarized along the formation's stiff (or fast) direction, and the other polarized along the formation's compliant (or slow) direction.

For example, in the case of vertically aligned dense micro-cracks or fractures, a shear wave that is polarized parallel to the fracture strike will propagate faster than a shear wave polarized perpendicular to it (**Figure 9**). In general, a shear (or flexural) wave, generated by a dipole source, will split into two orthogonal components polarized along the X- and Y-directions in the formation. As they propagate along the borehole, the fast wave will be polarized along the direction parallel to the fracture strike and a slow wave in the direction perpendicular to it.

With two orthogonal dipole transmitters and multiple receiver pairs aligned in orthogonal directions, the DSI Dipole Shear Sonic Imager tool can measure the components of shear slowness in any direction in a plane perpendicular to the borehole axis (**Figure 10**). The measurement involves recording the waveforms on receivers pointing in directions parallel and normal to each transmitter along the tool x- and y-axes.

Four sets of waveforms are recorded at each depth and receiver level. These measurements are labelled xx, xy, yx and yy. The first direction refers to the transmitter and the second direction to the receiver. The direction and speed of the fast and slow split shear waveforms travelling in the formation can be easily determined by mathematically rotating the measured waveforms through an azimuthal angle so that they line up with the two orthogonal formation X- and Y-directions. This is done by minimizing the cross-receiver energies, xy and yx.

The rotated direction of the fastest shear wave becomes the fast-shear tool azimuth; and the tool orientation, measured by a magnetometer, is used to determine the fast shear azimuth relative to true north. This rotation, called the Alford method, uses the fact that the anisotropy model expects the amplitude of the cross-receiver measurements to vanish when the measured axes x and y align with the anisotropy axes X and Y.

In addition to the fast and slow shear-wave velocities, determined by a slowness time coherence (STC) processing on the rotated waveforms, three measurements of anisotropy are computed. These are **energy anisotropy, slowness anisotropy** and **time anisotropy.**

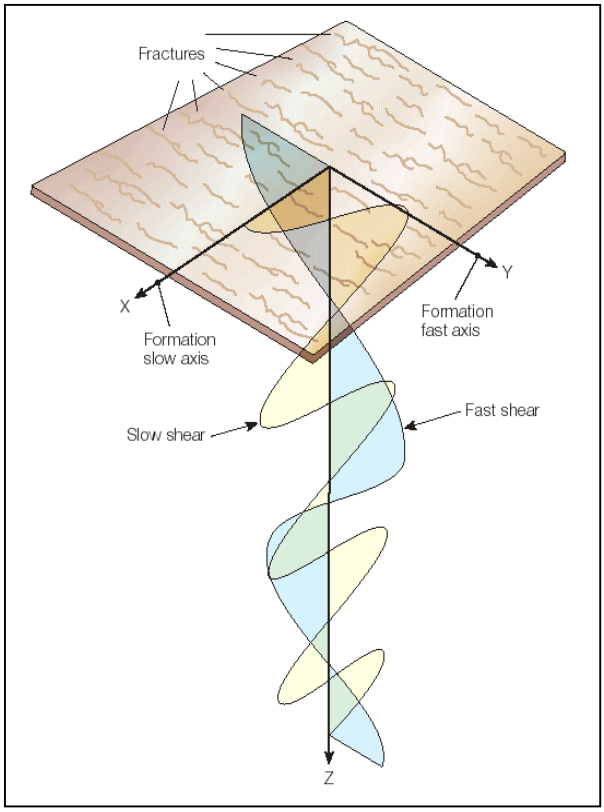


Figure 9: Shear wave splitting

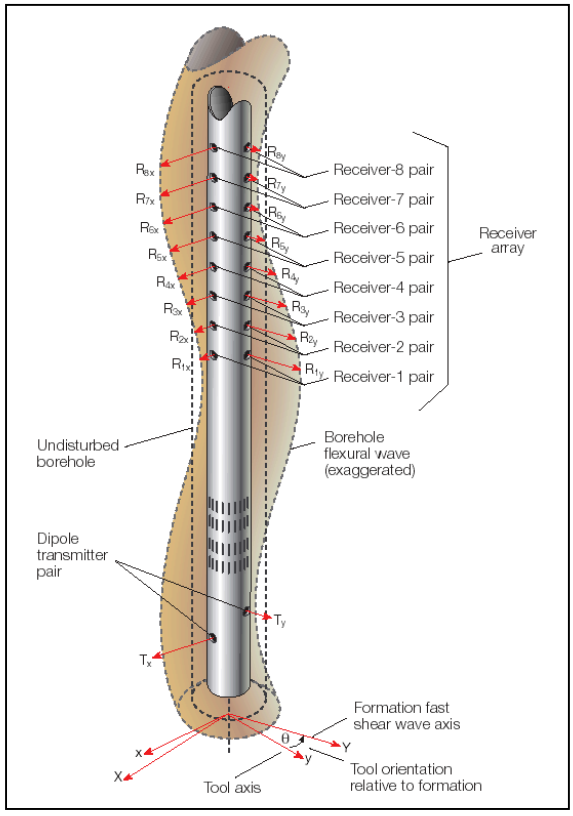


Figure 10: DSI tool showing X-Dipole (BCR) Mode

Figure 9. Shear-wave splitting. Shear waves travel in an anisotropic formation with different speeds along the directions of the formation anisotropy. In this example, anisotropy is caused by the vertical fractures (or micro-cracks) with a strike direction along the formation Y-axis, and the fastest shear wave, with the longer wavelength component, will be polarized along the fracture strike direction as it propagates along the borehole (Z-axis). When shear wave splitting is the result of stress anisotropy, the Y-axis corresponds to the direction of maximum stress, and the X-axis corresponds to the direction of minimum stress.

Figure 10. During logging, flexural waves are induced by dipole transmitters fired sequentially in two perpendicular directions, first along the tool x and then the tool y-axes. In this example, the fastest component of the induced shear wave is polarized along the formation Y-axis direction, which is aligned along the fracture strike or maximum stress direction. The sloTrefoil-1 component of the shear wave is polarized along the formation X-axis. Projections of these two shear-wave components are received by each of the dipole sonic tool x- and y-receiver pairs. The inline signals xx and yy are the x-receiver and y-receiver waveforms received when the x and y- transmitters are fired. Cross-signal components xy and yx are the y- and x-receiver waveforms received as the x- and y-transmitters are fired. The Alford rotation angle, q, is determined by minimizing the cross signal components. This would happen automatically if the tool axes were rotated through an angle, q, and aligned with the two orthogonal directions in the anisotropic formation.

Slowness anisotropy is the difference between the fast and slow slownesses calculated by STC on the rotated waveforms. It yields a quantitative measure of slowness anisotropy, and has the best vertical resolution at about 3 ft [1 m]; the size of the receiver array. It can be compared directly with seismic or core measurements of slowness anisotropy.

Travel time anisotropy is the arrival-time difference between the fast- and slow-shear waves at the receivers. It is obtained from a cross-correlation between fast and slow shear-wave arrivals at each receiver spacing. Time lags computed at each receiver are referenced to the largest offset receiver and averaged across the receiver array. This is divided by the average of the fast and slow arrival times to compute a percentage difference. The travel time anisotropy indicator is robust and quantitative, and has the vertical resolution of the average transmitter-receiver spacing, 13 ft [4 m]. Slowness and travel time anisotropy indicators are identical in formations with homogeneous beds thicker than 13 ft.

Energy anisotropy is the energy in the cross component waveforms as a percentage of energy in all four components. In an isotropic formation, energy anisotropy reads zero. In an anisotropic formation, the reading depends on the degree of anisotropy. Two curves are computed from the waveforms: minimum and maximum cross-energy.

The minimum cross-energy is the energy in the cross-components when the tool measurement axis lines up with the formation anisotropy axis. Minimum cross-energy reads zero in an ideal formation whether anisotropic or not. This curve is a good relative measure of whether the assumed model for anisotropy inversion fits the real formation.

The maximum cross-energy is a measure of the amount or strength of anisotropy. Unlike the two previous anisotropy measurements (slowness and time), energy anisotropy is a measure of both slowness and amplitude differences of the fast and slow shear waves. Large differences between the maximum and minimum values, especially when the minimum energy is low, indicate zones of significant anisotropy. Energy anisotropy, though qualitative, is little affected by processing, and is the principal measure of anisotropy.

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BestDT*
VPVS vs. DTCO Crossplot
Sonic Processing

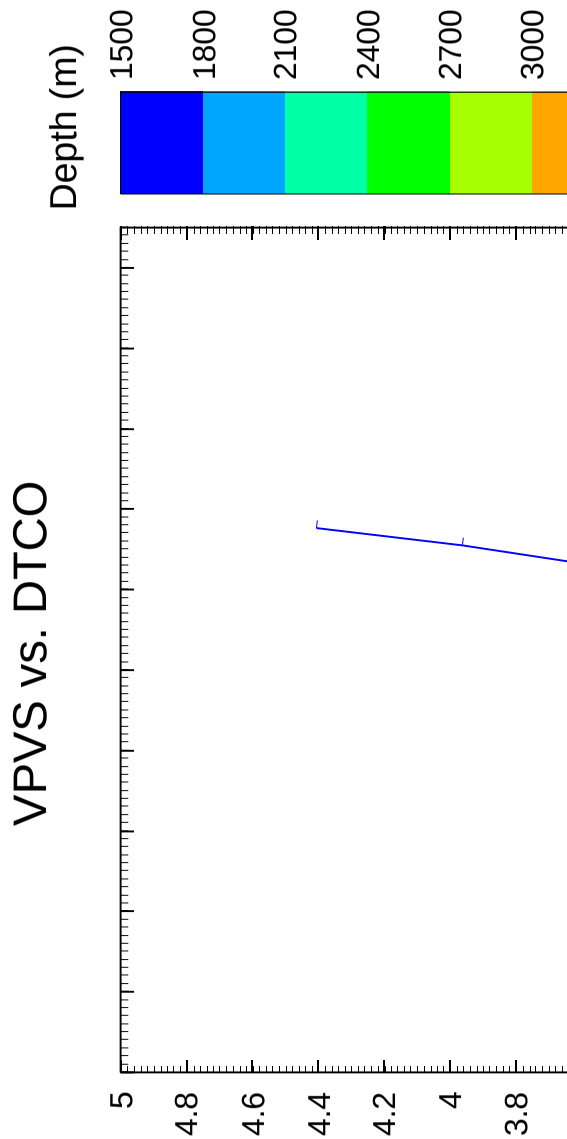
COMPANY:	Origin Energy Resources Ltd.
WELL:	Trefoil−1
FIELD:	Trefoil
State:	Tasmania
COUNTRY:	Australia

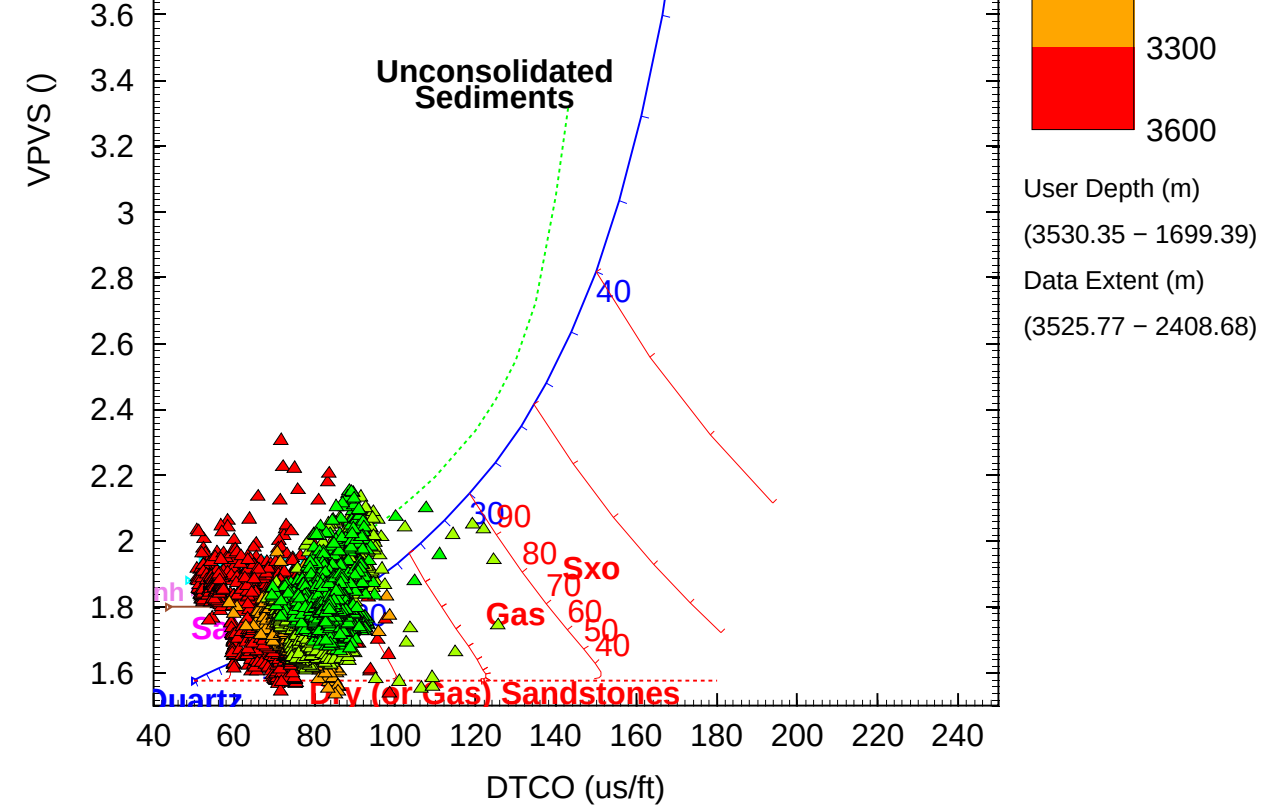
Date Processed:	17−Jan−05	Date Logged:	24−Nov−2004
Job Number:		Processed at:	DCS−Perth
Well Location:	GDA94 Zone 55		
Latitude:	39 51’ 41.58"S	Longitude:	145 22’ 30.87"E
Elevations:	KB:	DF:	GL:

FOLD HERE

The well name, location and borehole reference data were furnished by the customer.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretations made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.





Template: empirical relationship for vertical wells (vertically polarized compressional, horizontally polarized shear)

Schlumberger

GEOFRAME
PROCESSED
INTERPRETATION

BestDT*
Final Result

Custom Sonic Processing

*A Mark of Schlumberger

Using the following logs: DSI

COMPANY: Origin Energy Resources Ltd.
WELL: Trefoil−1
FIELD: Trefoil
Rig: ENSCO 102
State: Tasmania
COUNTRY: Australia
Date Logged: 24−Nov−2004 Date Processed: 17−Jan−05
Well Location: GDA94 Zone 55
Northings 5,586,346 m
Elevations: KB: DF: GL:
API Number: Job Number:

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretations made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

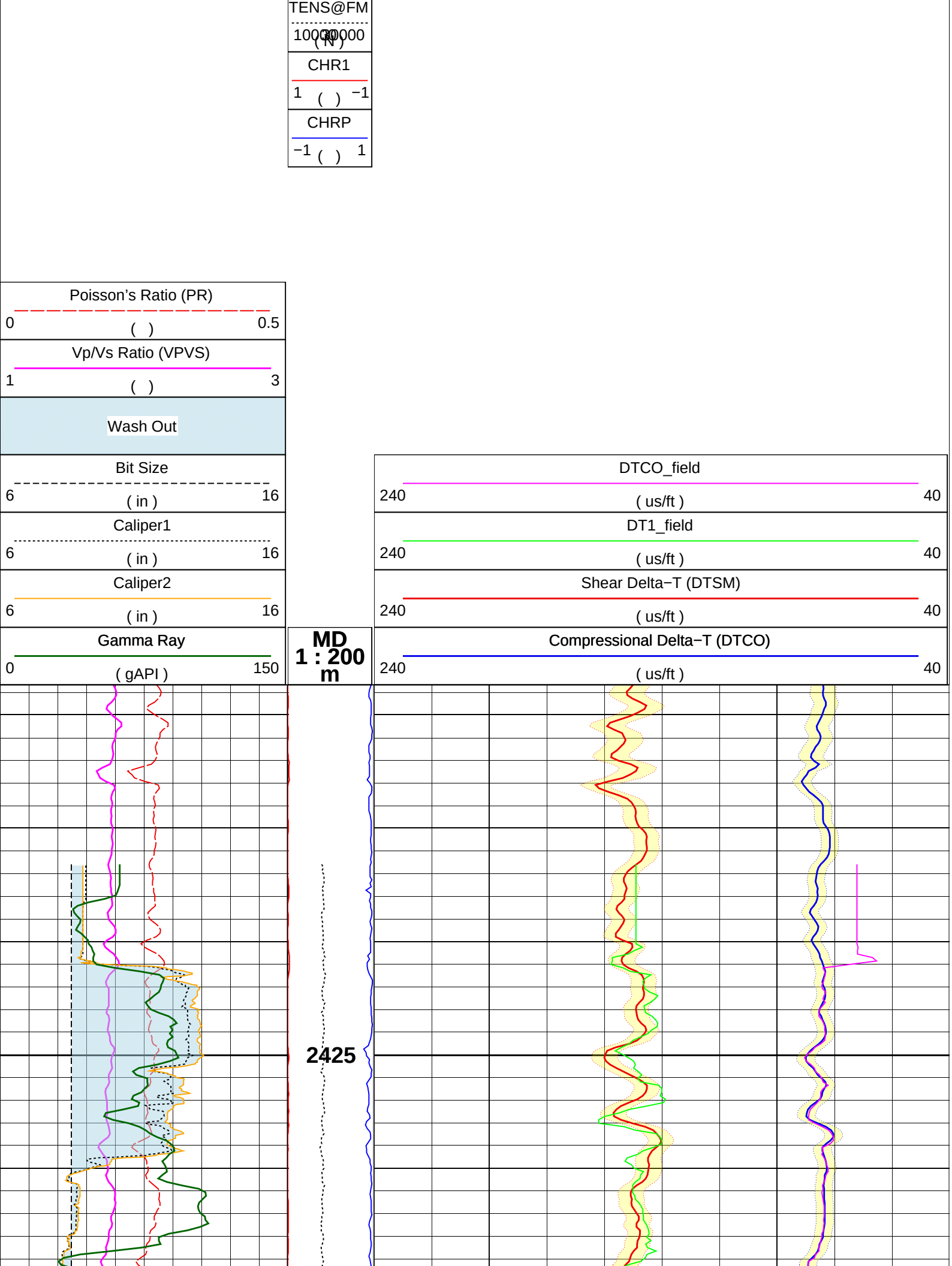
Field Recording:	Location: AUSL	Software Version: 12C0−301	Engineer: J. Robertson/C. Bassig
Office Recording:	ICS Center: DCS−Perth	Baseline:	Log Analyst: F. Advent

Mud and Borehole Measurements:

Rm @ Measured Temperature: 0.206ohm.m @ 24.6degC	BHT: 100degC	Bitsize: 8.5in
Rmf @ Measured Temperature: 0.1738ohm.m @ 25degC	Type Fluid in Hole:	Seawater/Drispac/Soltex
Rmc @ Measured Temperature: 0.28ohm.m @ 24.9degC	Mud Density: 1.12637g/cm3	

Remarks:

Compressional Slowness (DTCO) from Monopole DSI
Shear Slowness (DTSM) from Lower Dipole DSI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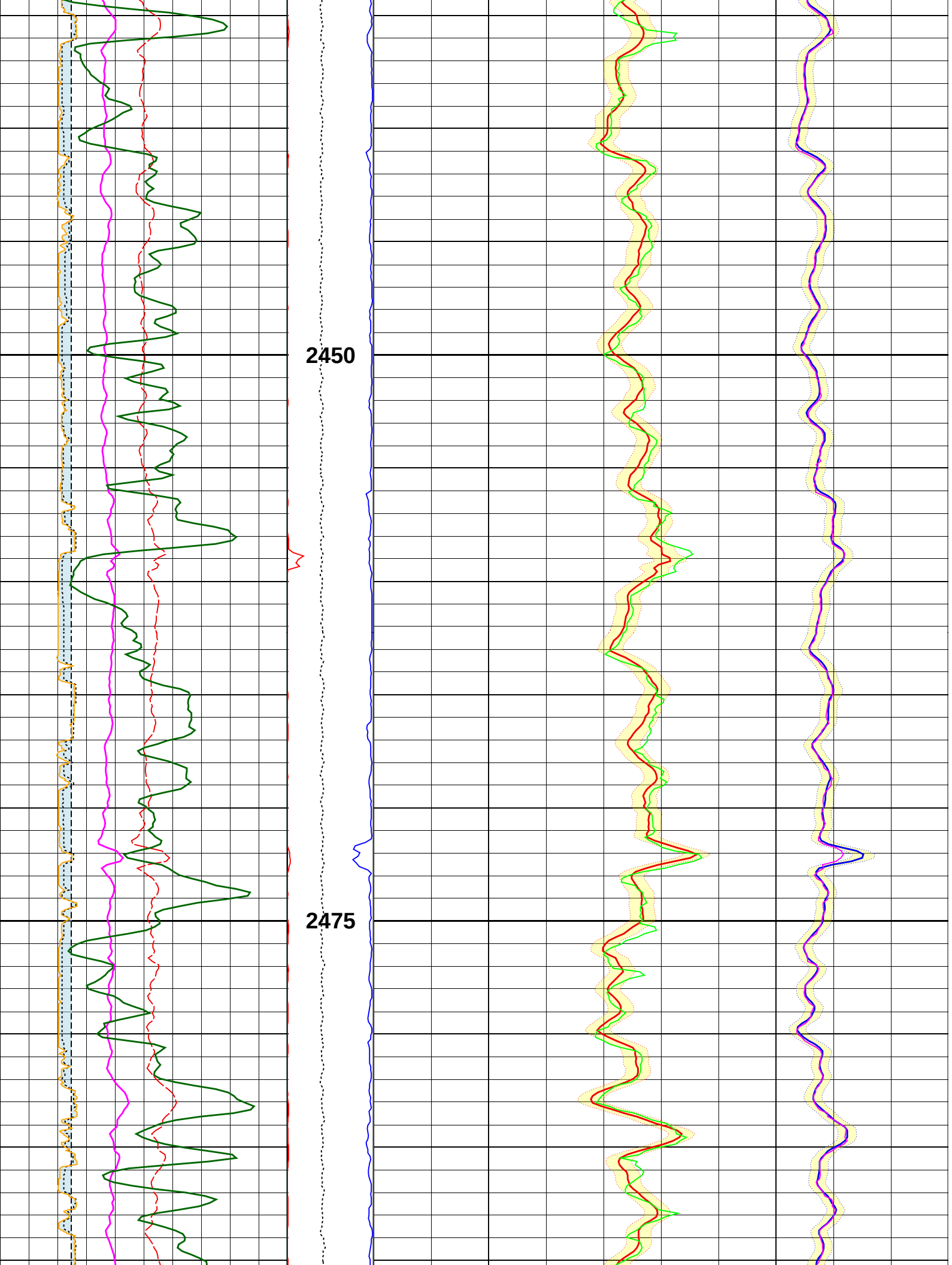
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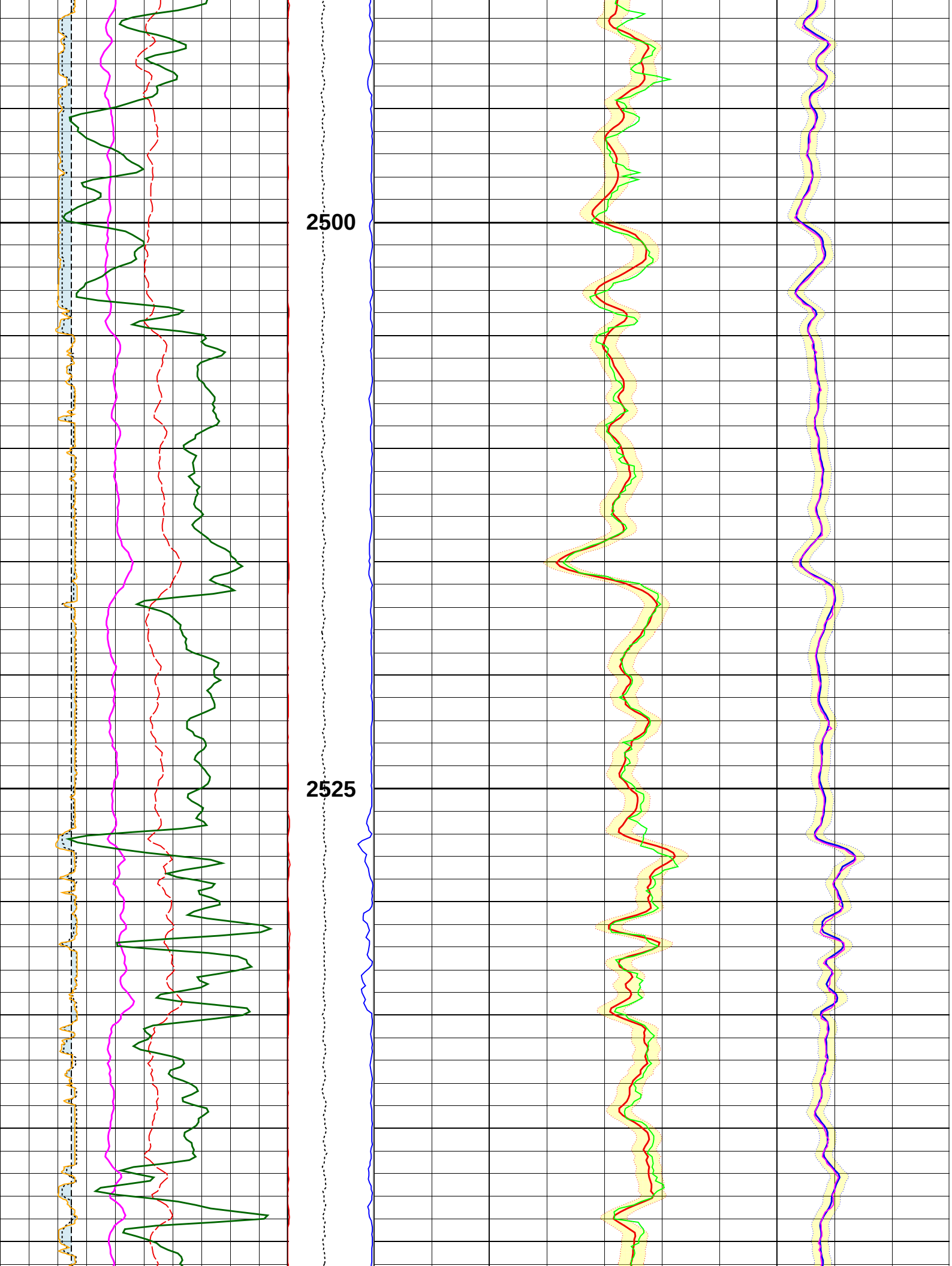
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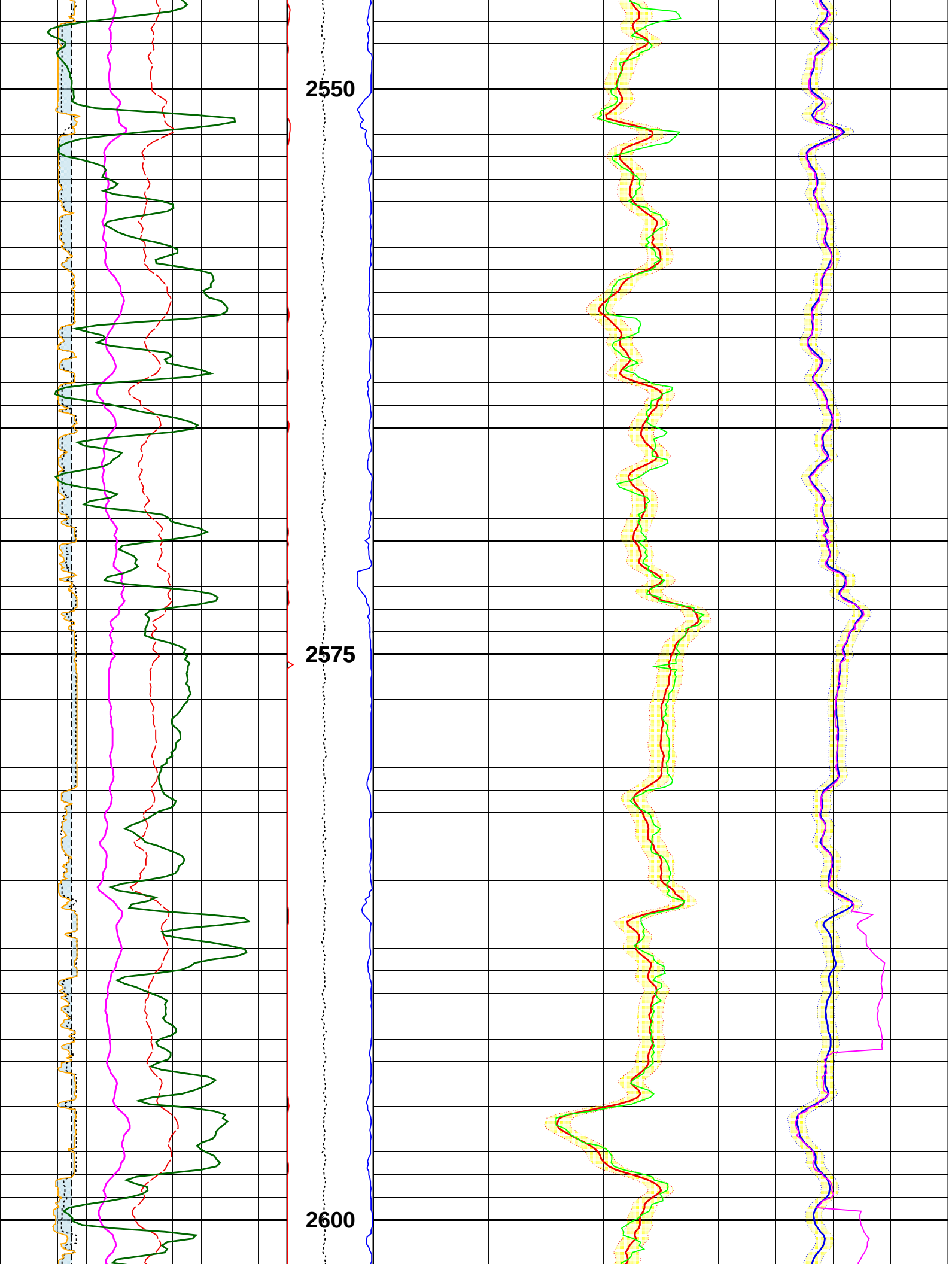
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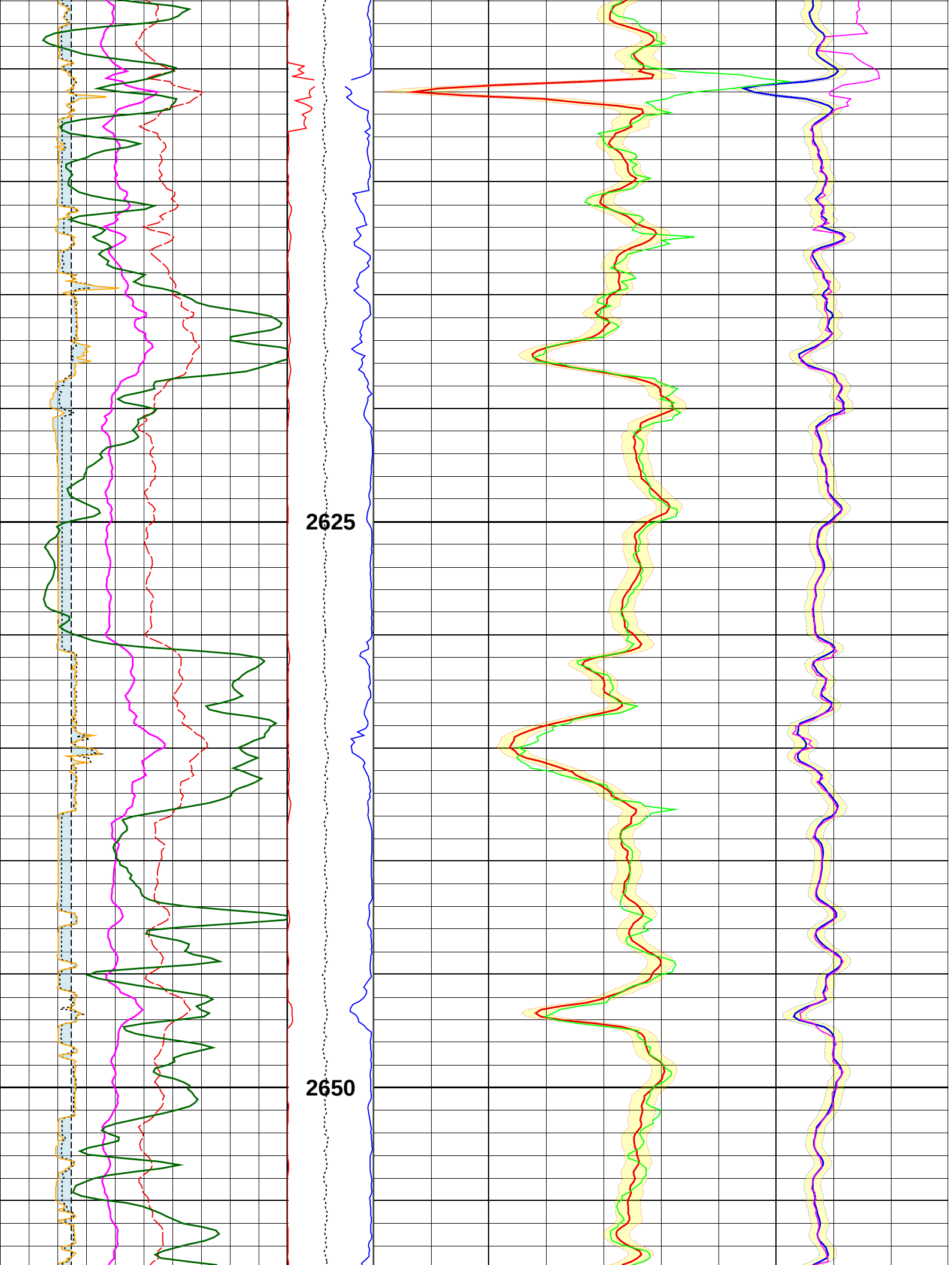
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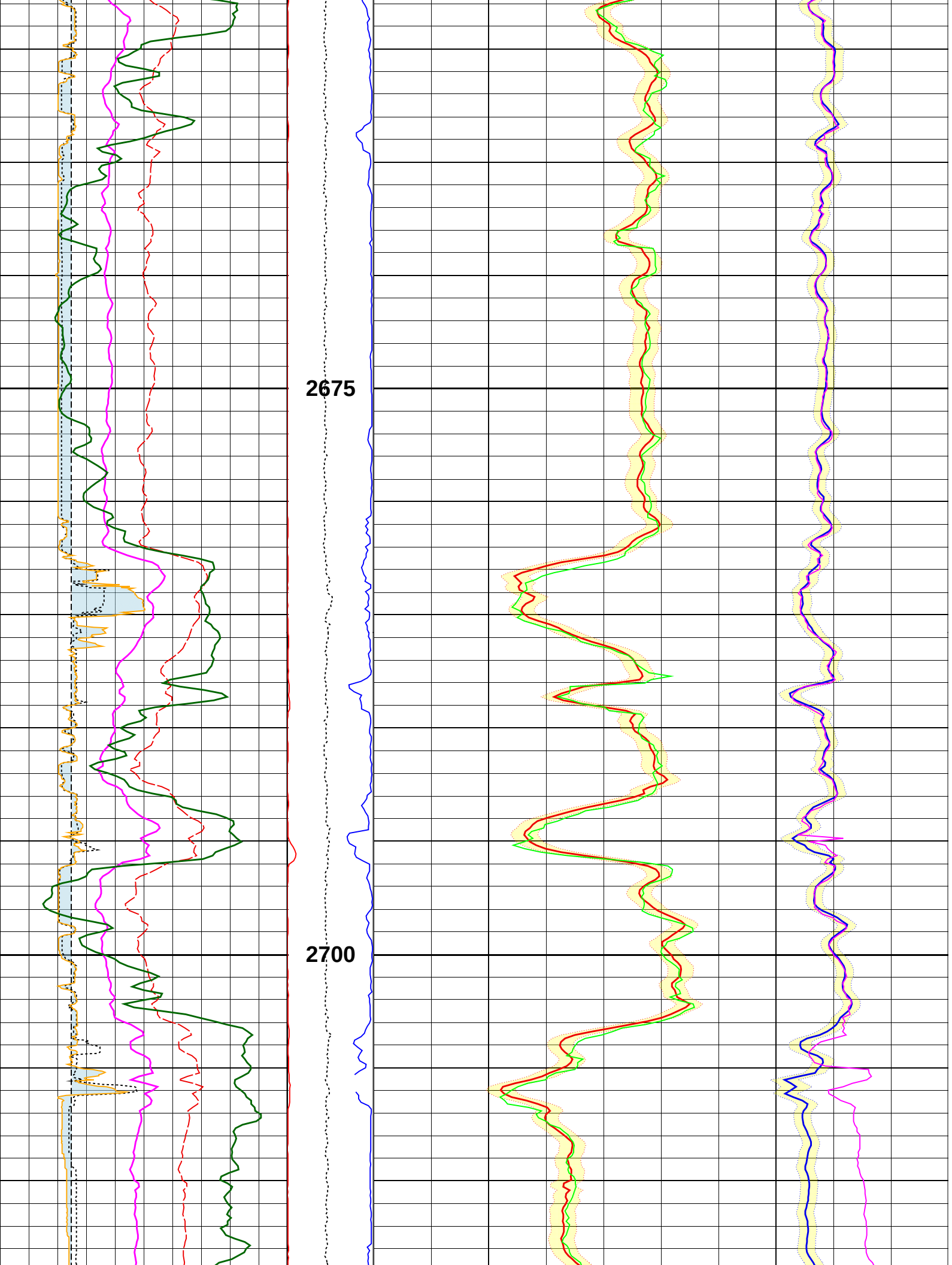
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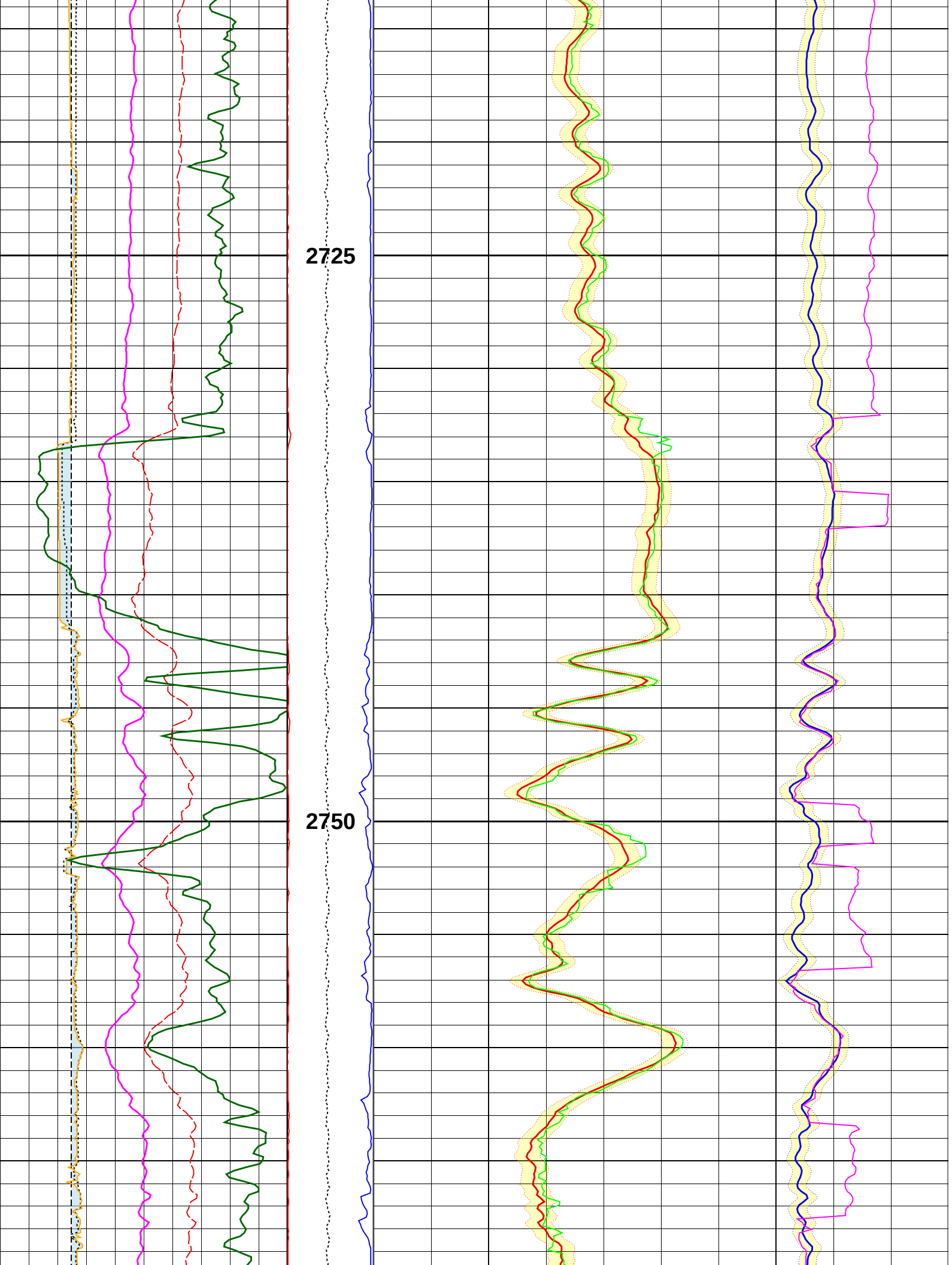
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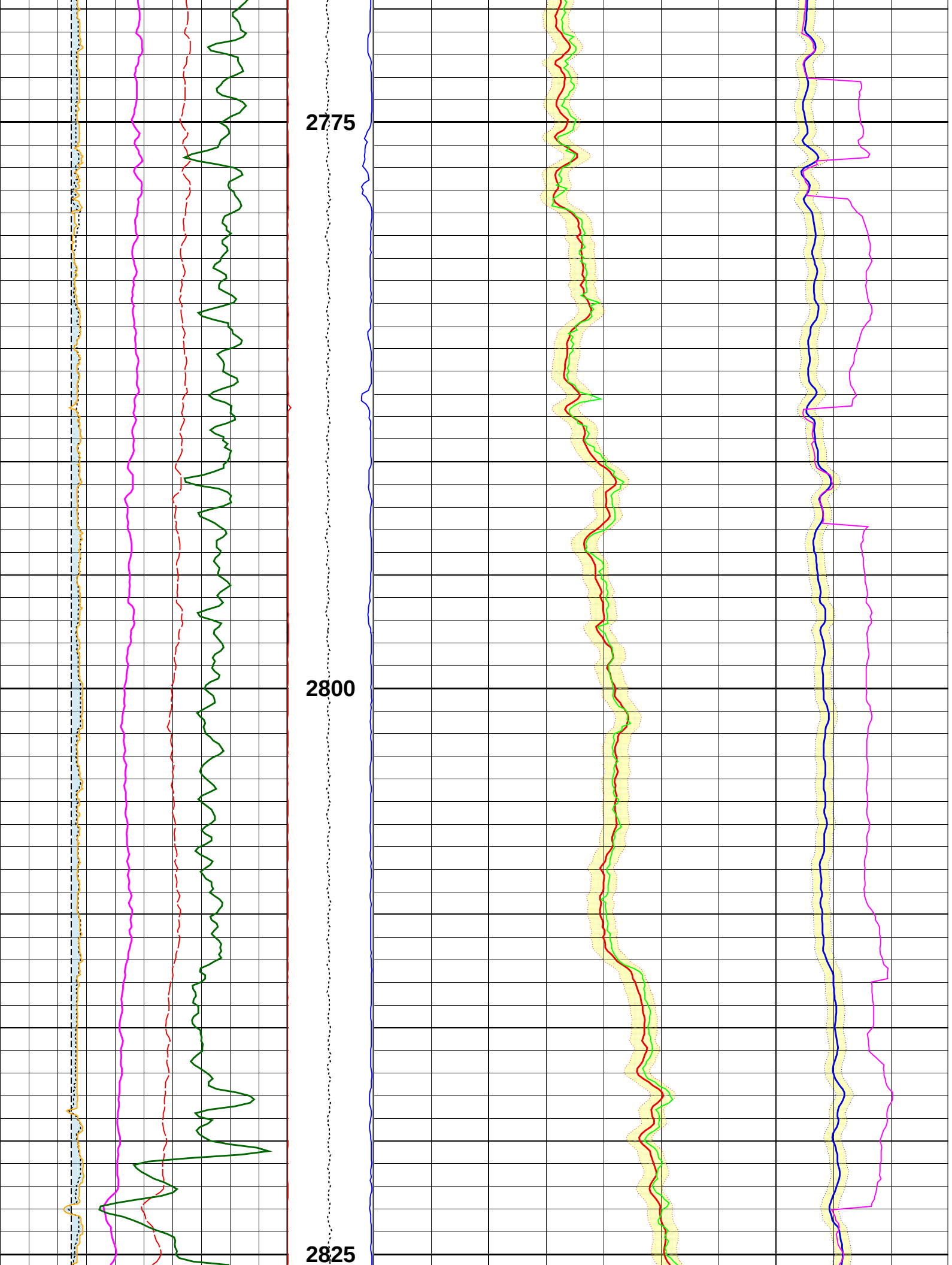
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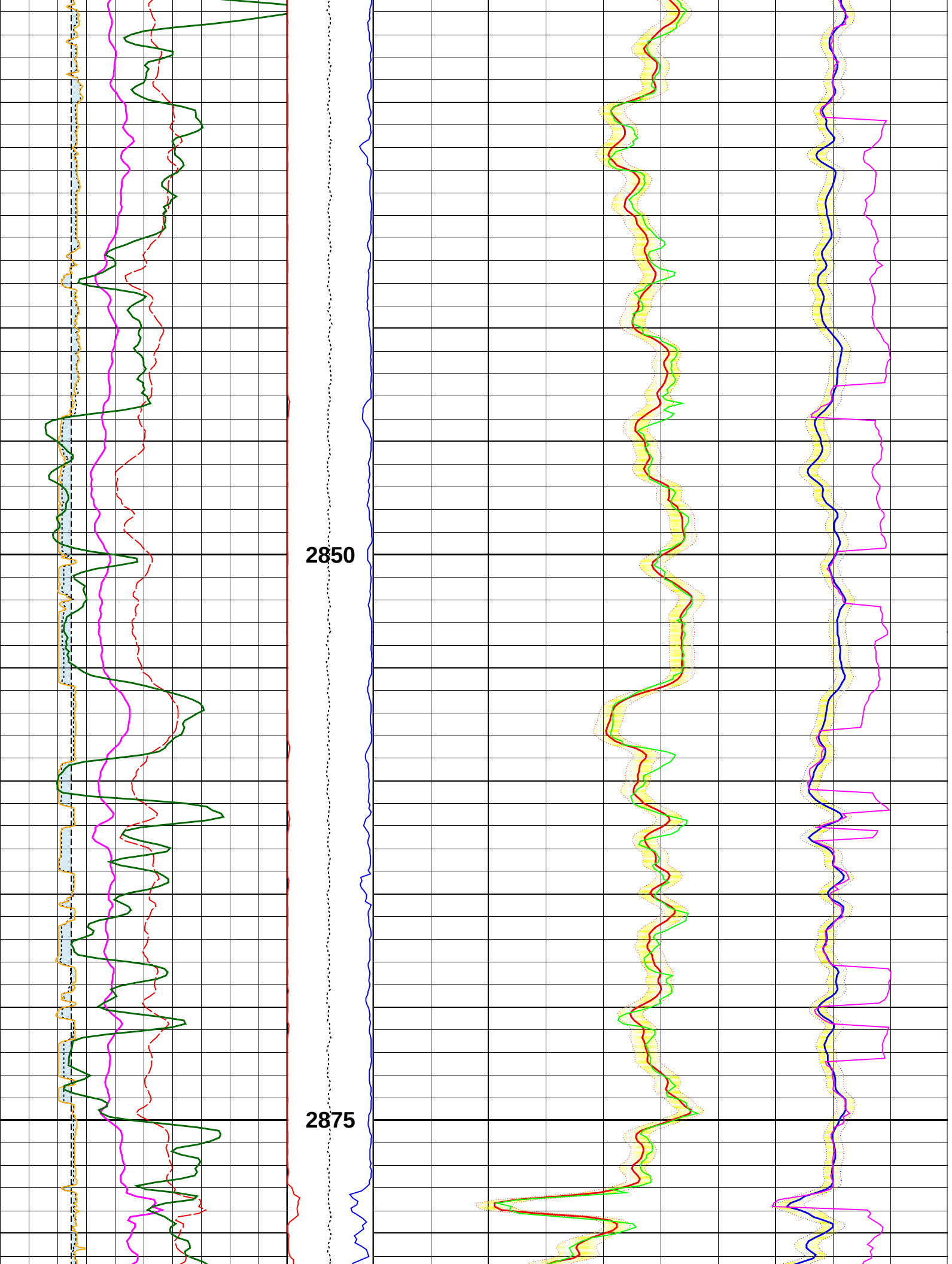
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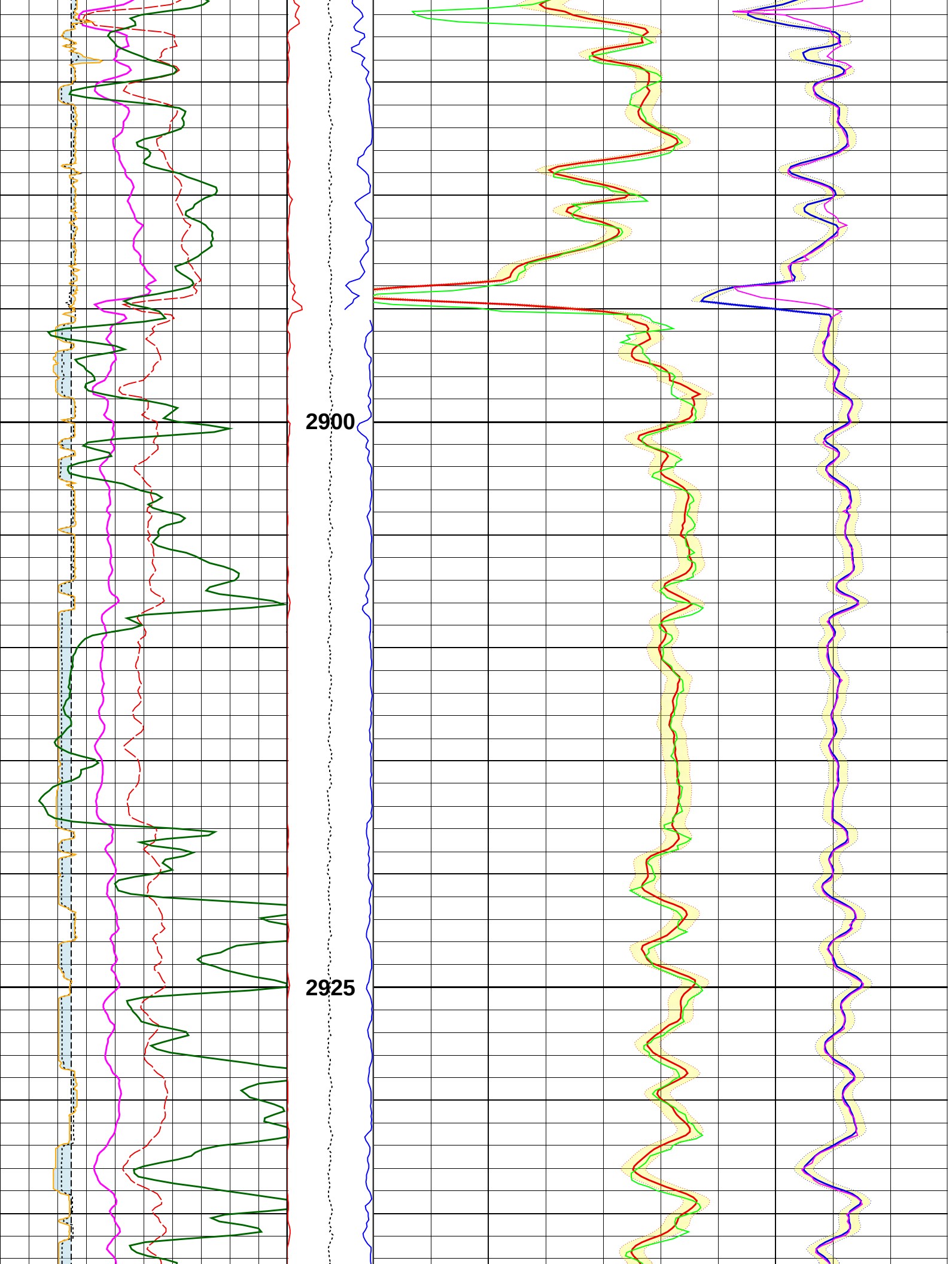
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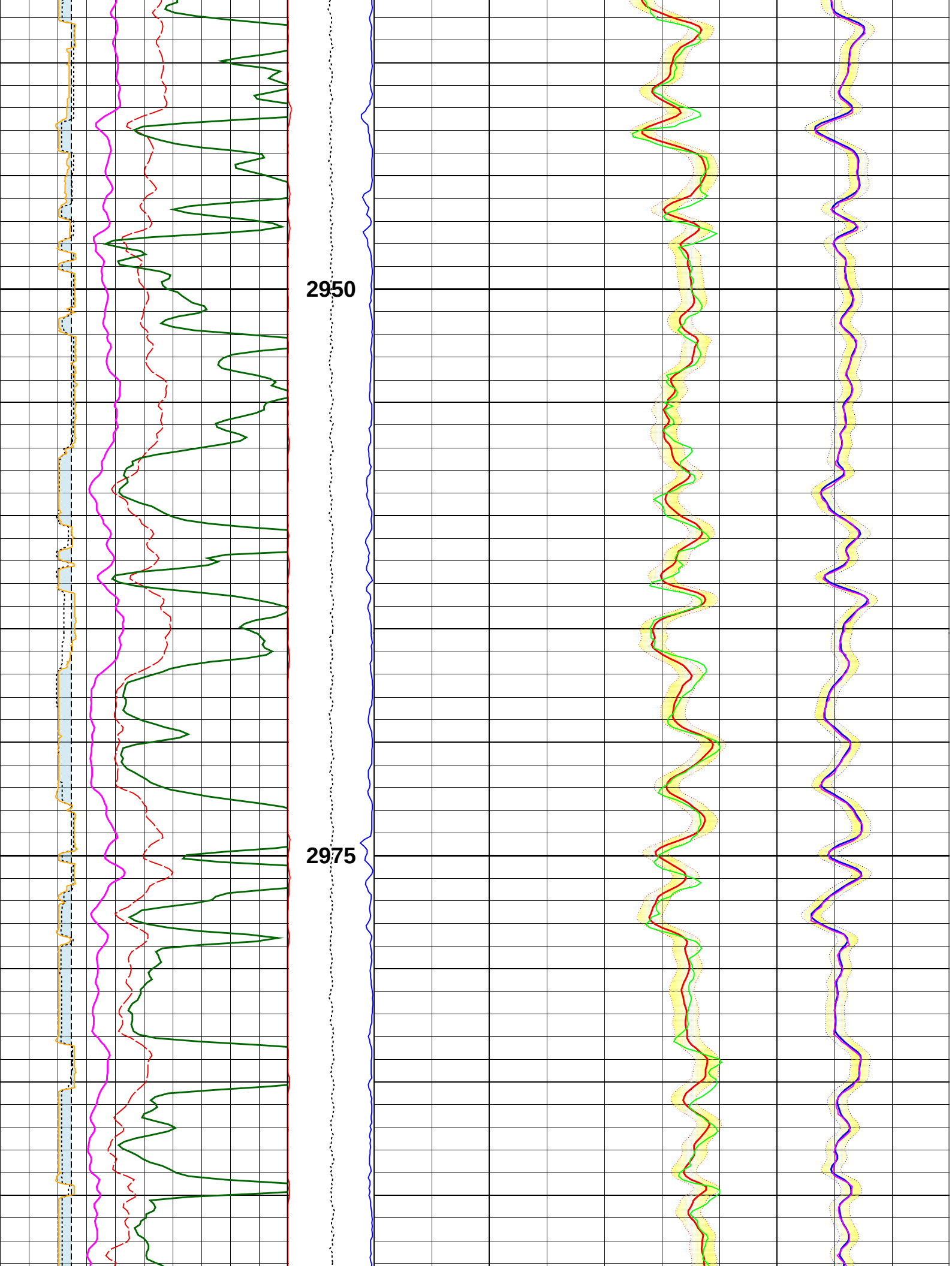
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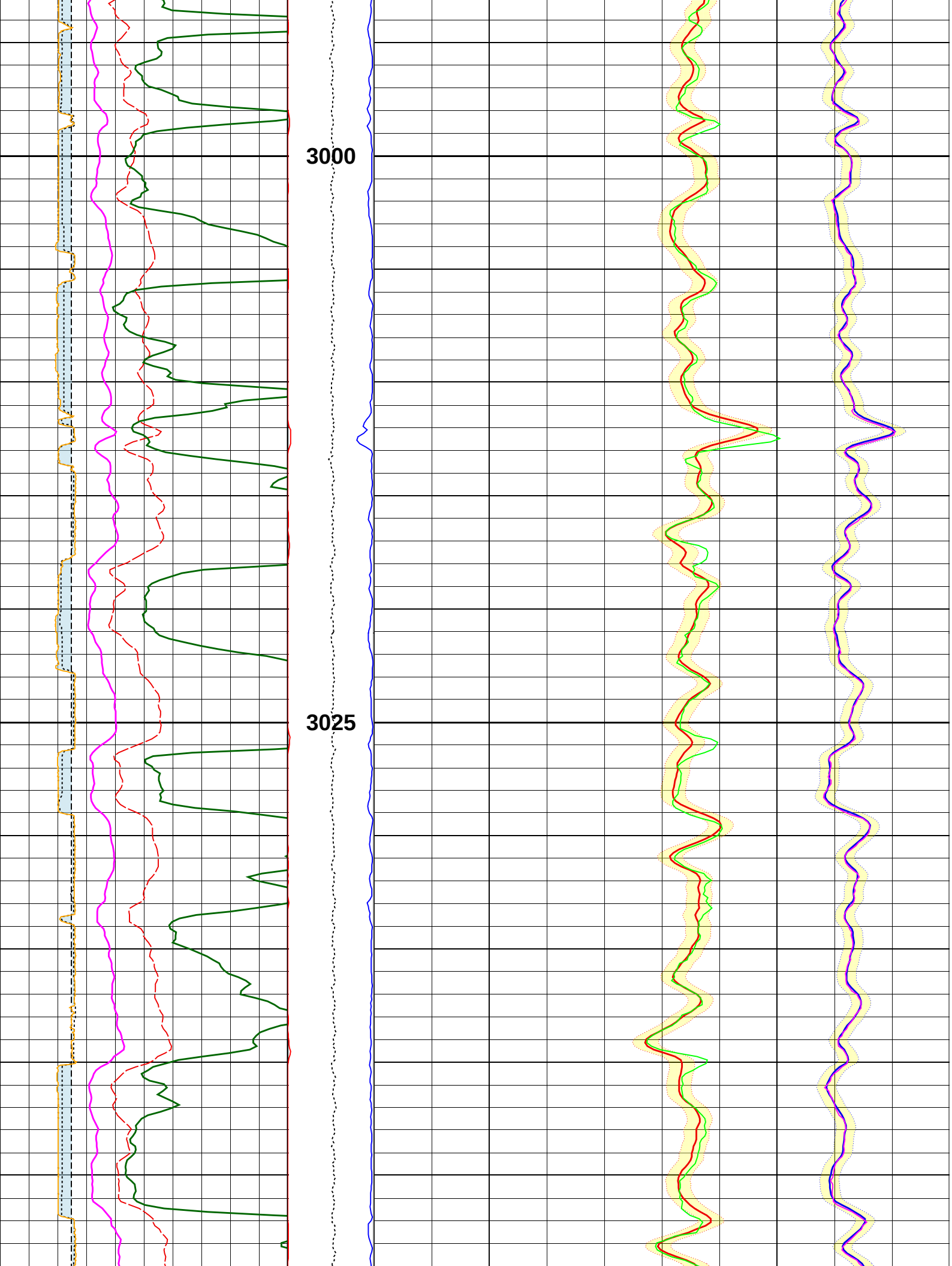
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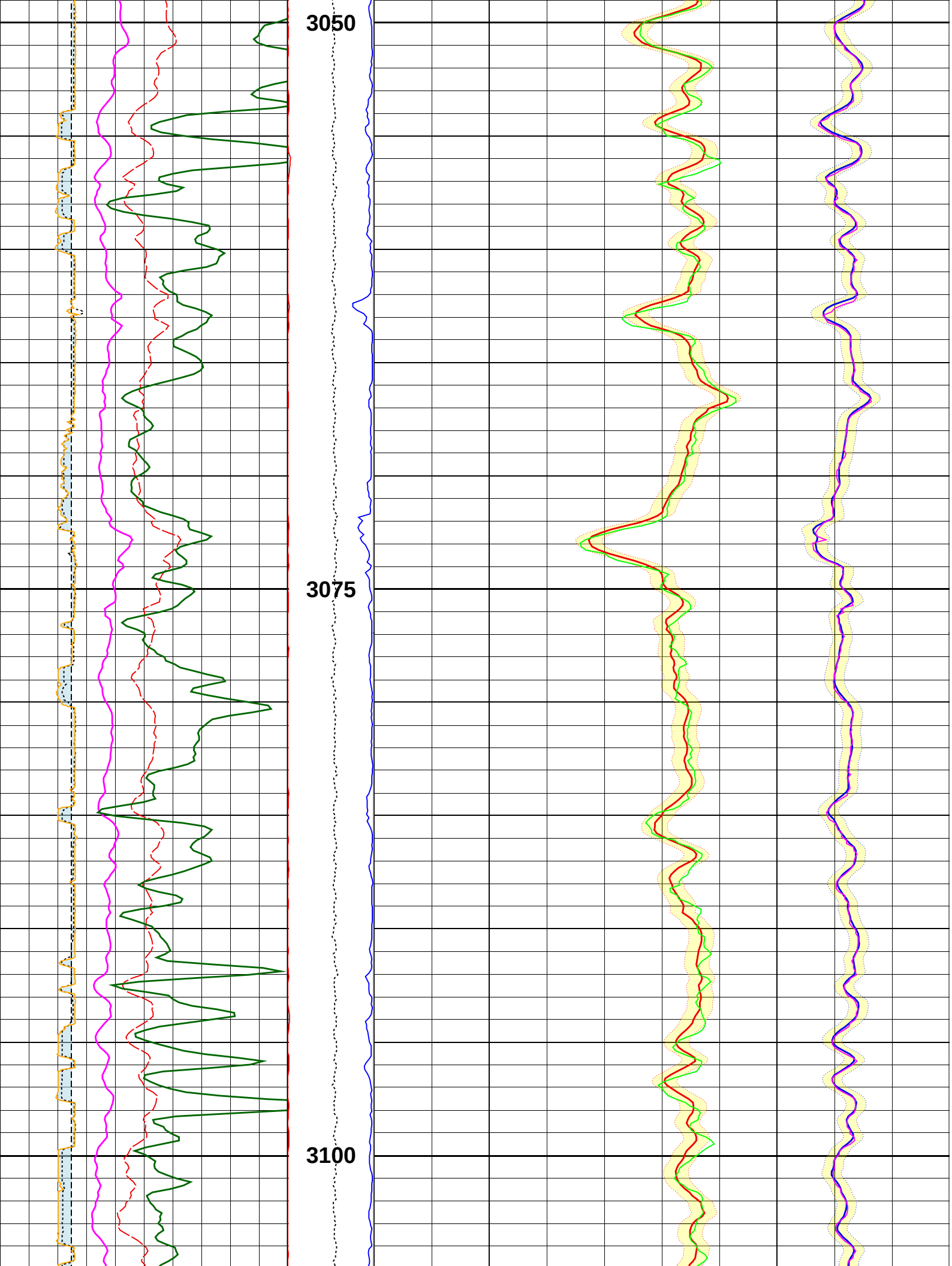
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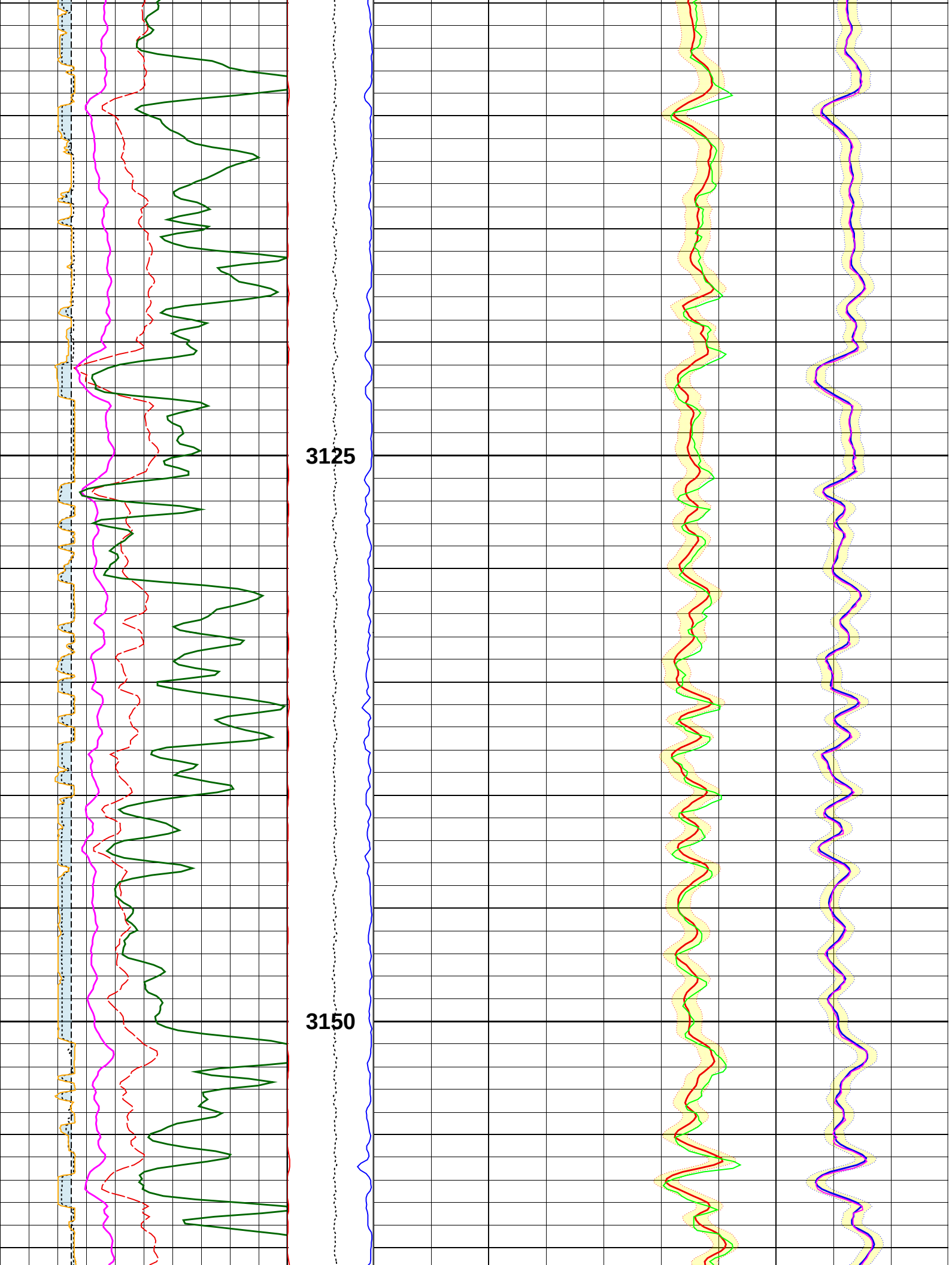
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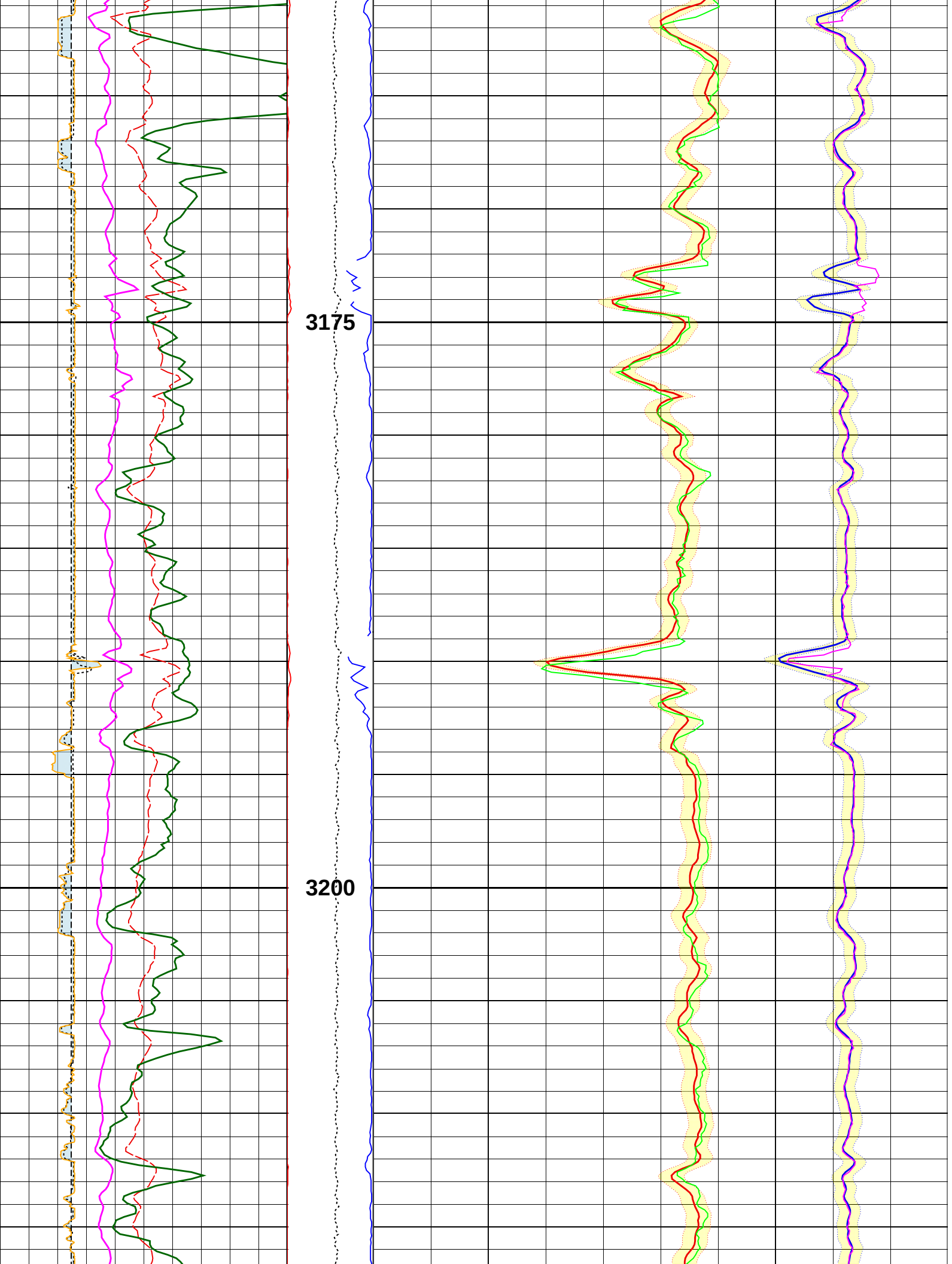
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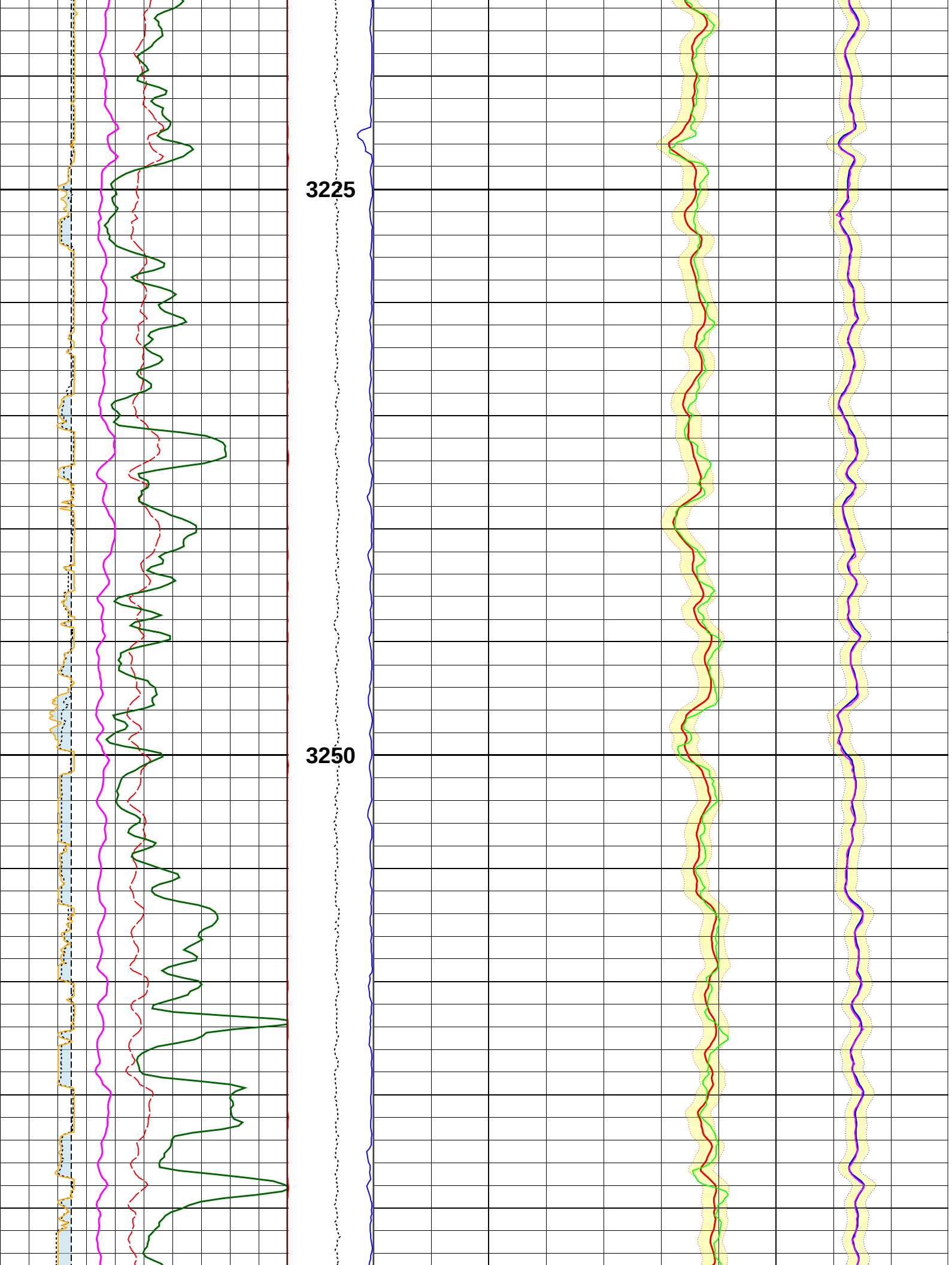
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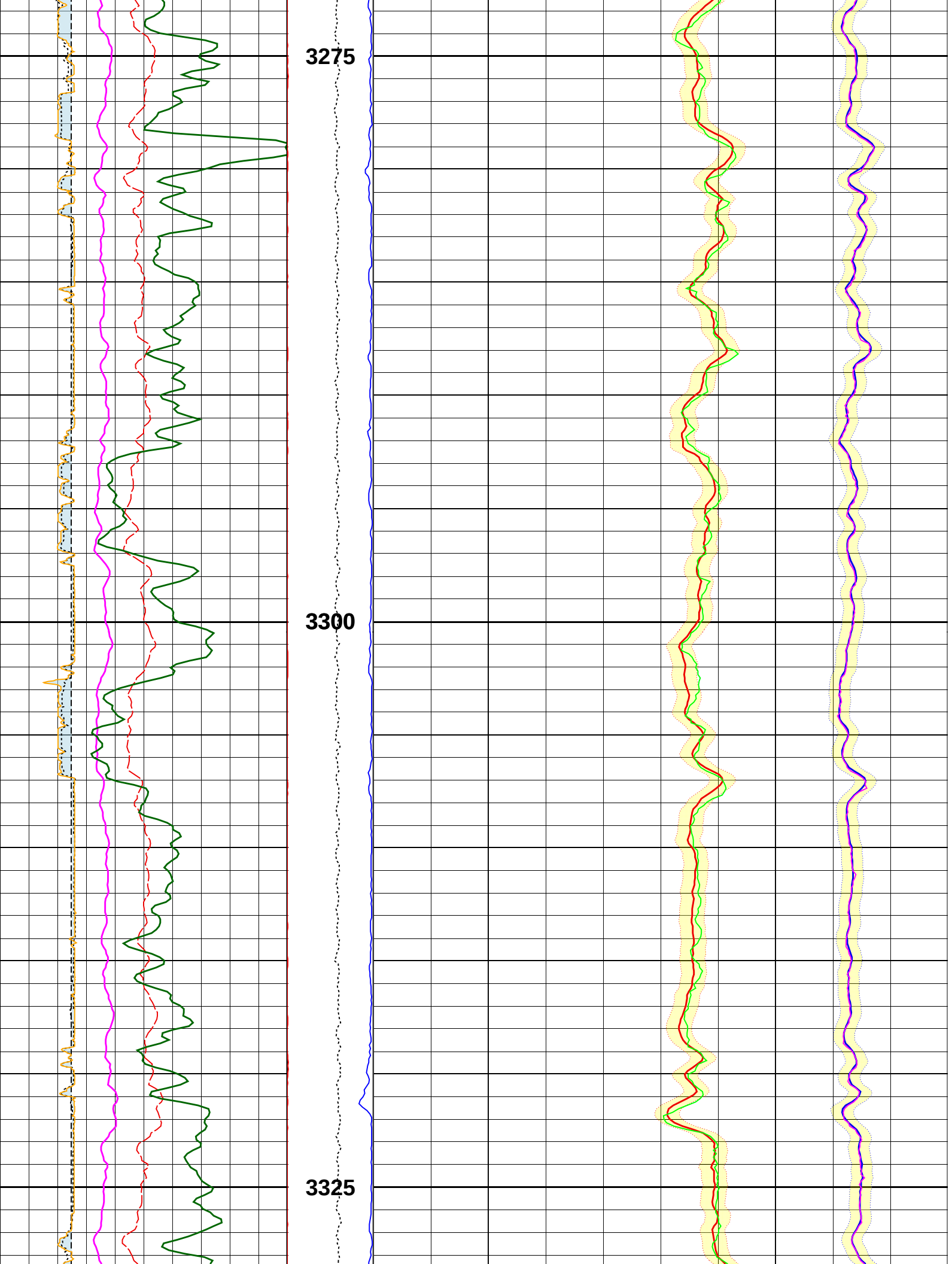
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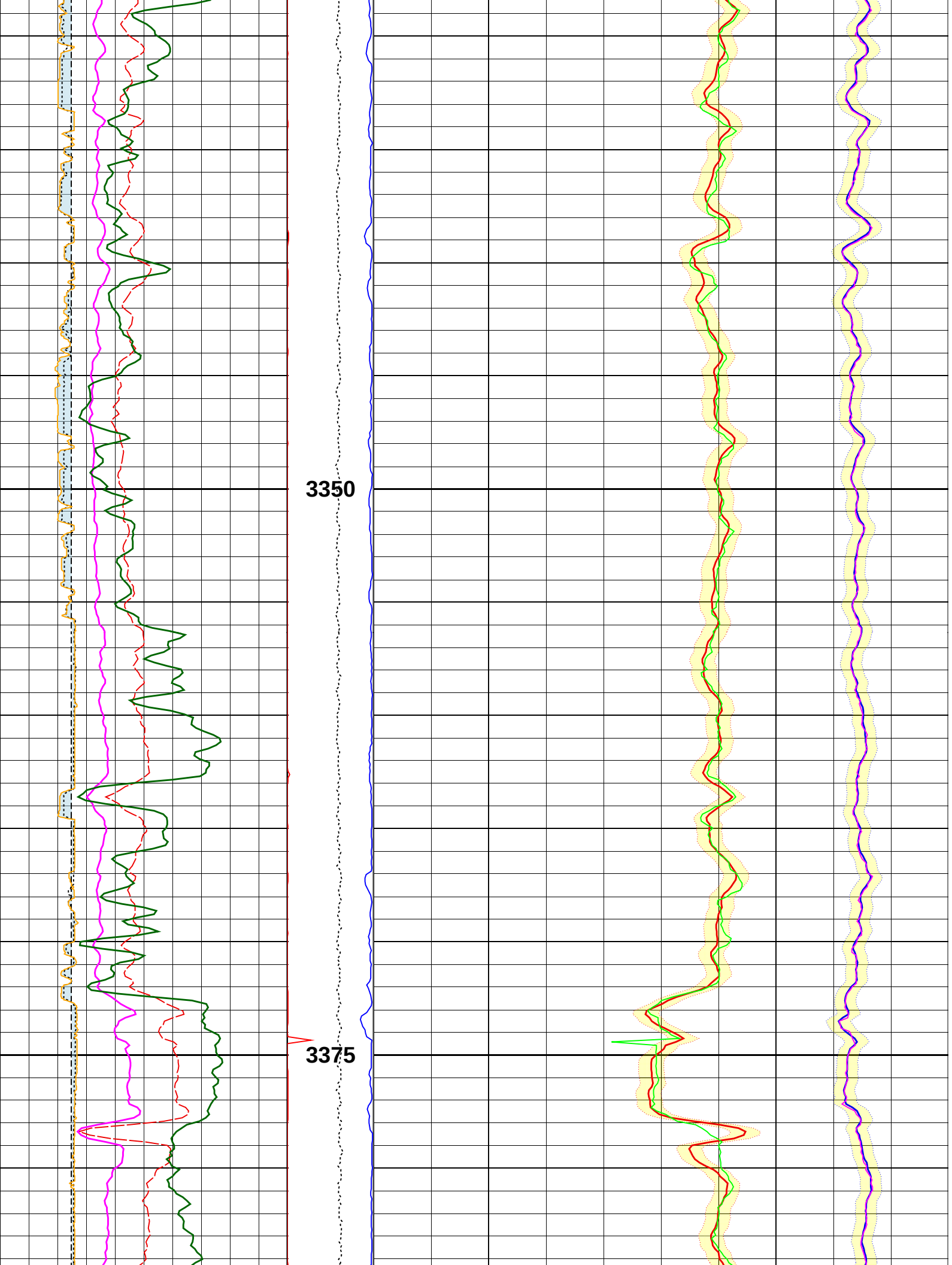
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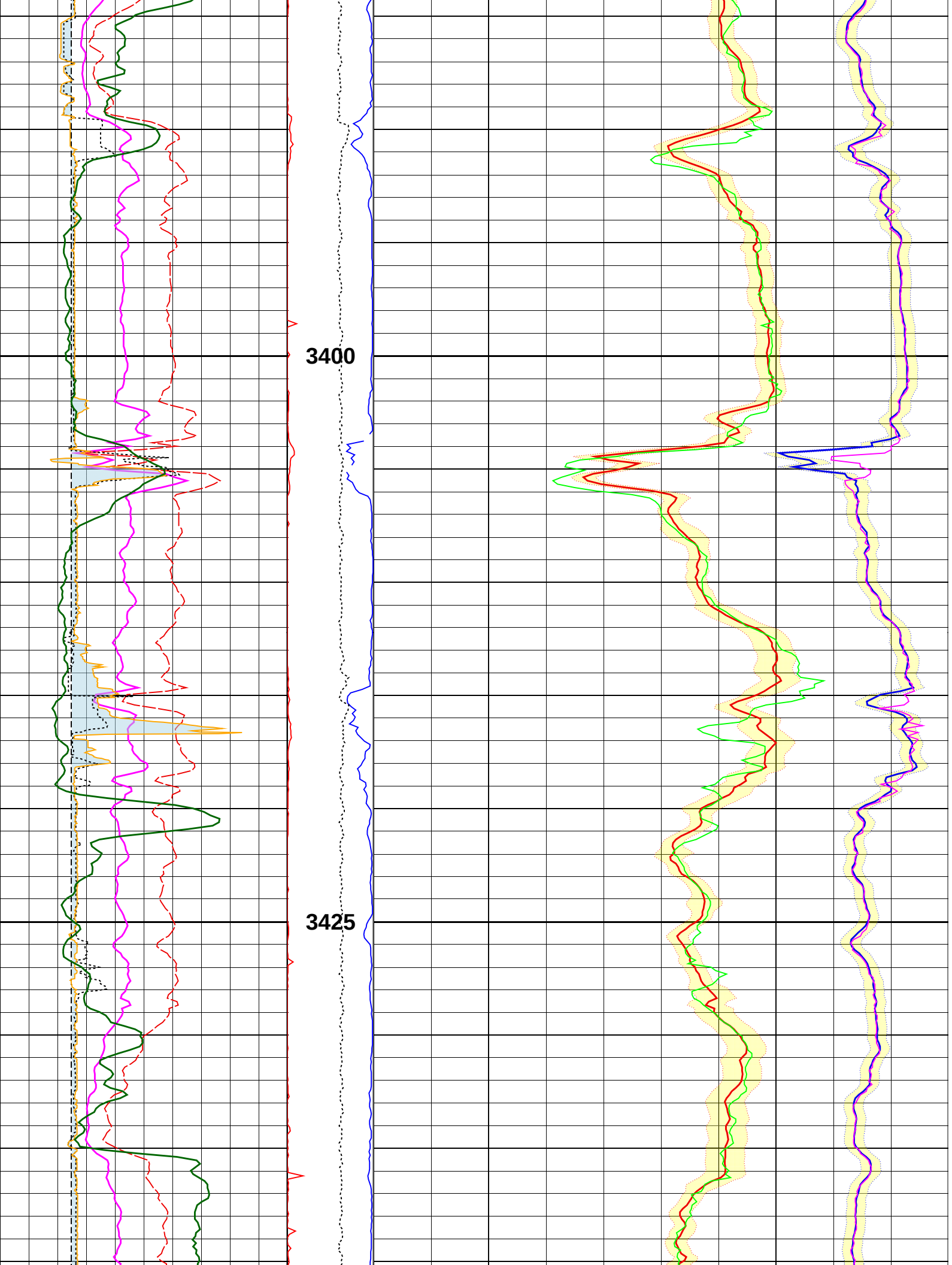
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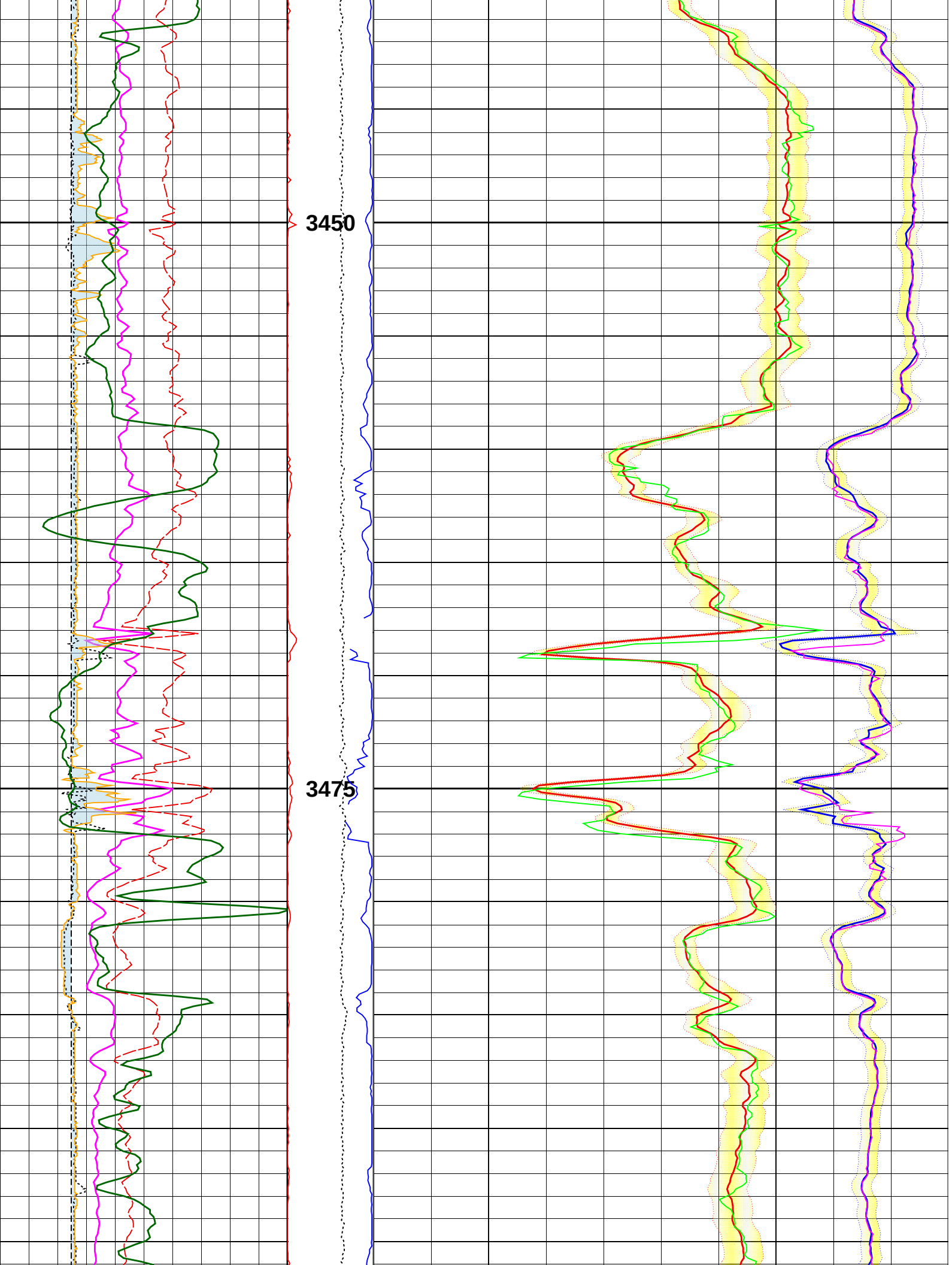
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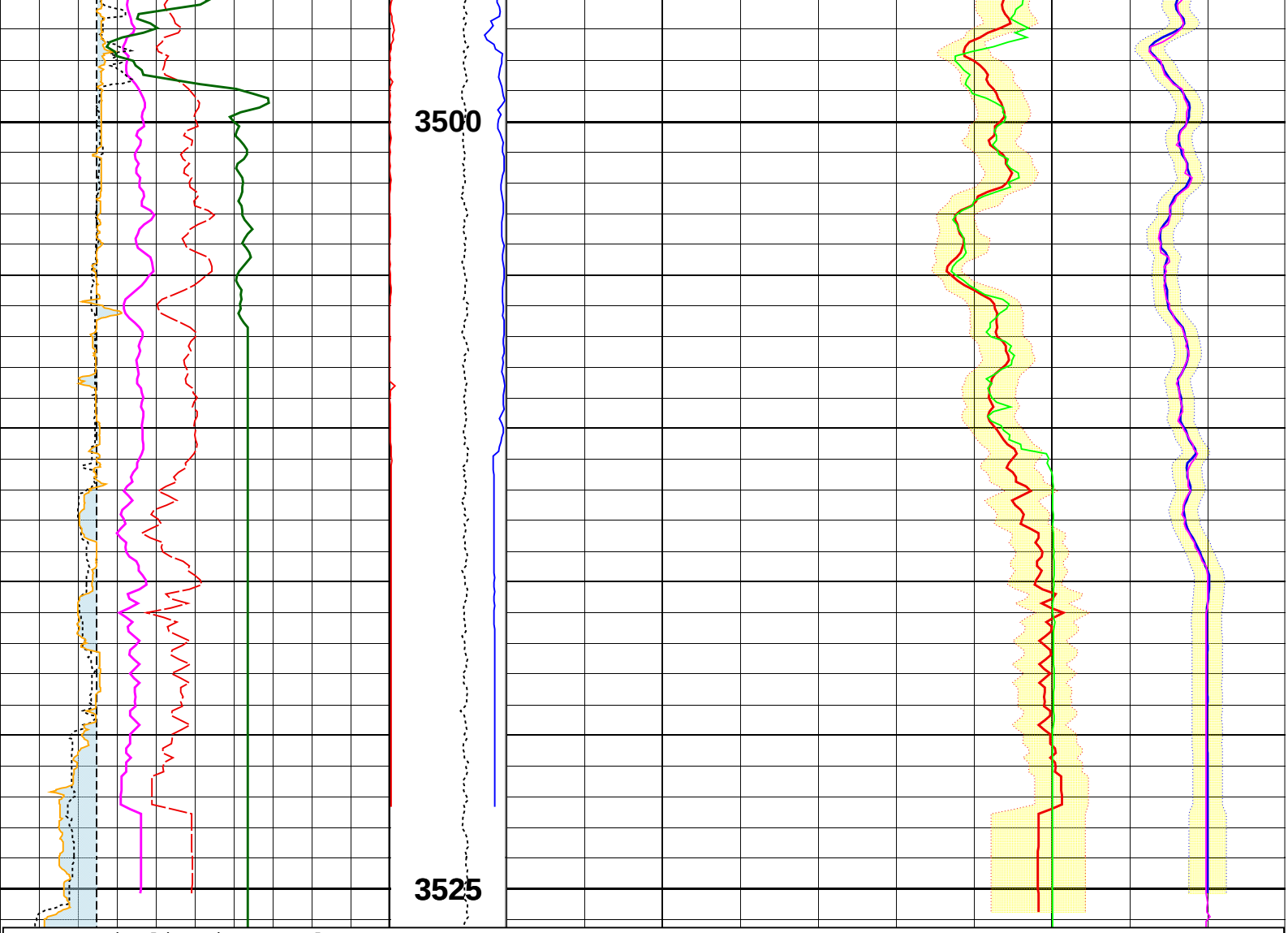


```
 --- Finalization Result ---
 1 MPS Compressional    Receiver        Absent levels=   18
 1 MPS Compressional    Transmitter     Absent levels=   24
 1 MPS Shear            Receiver        Absent levels=  214
 1 MPS Shear            Transmitter     Absent levels=  303
 1 LDP Shear            Receiver        Absent levels=    0
 1 LDP Shear            Transmitter     Absent levels=    7

 1 MPS Compressional    DDBHC           Absent levels=    0    *Selected*
 1 MPS Shear            DDBHC           Absent levels=  111
 1 LDP Shear            DDBHC           Absent levels=    0    *Selected*
```

Gamma Ray 0 (gAPI) 150	**MD** **1 : 200** **m**	Compressional Delta−T (DTCO) 240 (us/ft) 40
Caliper2 6 (in) 16		Shear Delta−T (DTSM) 240 (us/ft) 40
Caliper1 6 (in) 16		DT1_field 240 (us/ft) 40
Bit Size 6 (in) 16		DTCO_field 240 (us/ft) 40
Wash Out		
Vp/Vs Ratio (VPVS)		

Vp/Vs Ratio (VP VS)		
1	( )	3

Poisson’s Ratio (PR)		
0	( )	0.5

CHRP		
−1	( )	1

CHR1		
1	( )	−1

TENS@FM		
10000	(₦)	30000

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INTERPRETATION

BestDT*
QC Plot – DSI MPS

Sonic Processing

*A Mark of Schlumberger

Using the following logs: DSI

COMPANY:	Origin Energy Resources Ltd.
WELL:	Trefoil–1
FIELD:	Trefoil
Rig:	ENSCO 102
State:	Tasmania
COUNTRY:	Australia
Date Logged:	24–Nov–2004
Date Processed:	17–Jan–05
Well Location:	GDA94 Zone 55
	Northings 5,586,346 m
Elevations:	KB:
	DF:
	GL:
API Number:	
Job Number:	

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretations made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

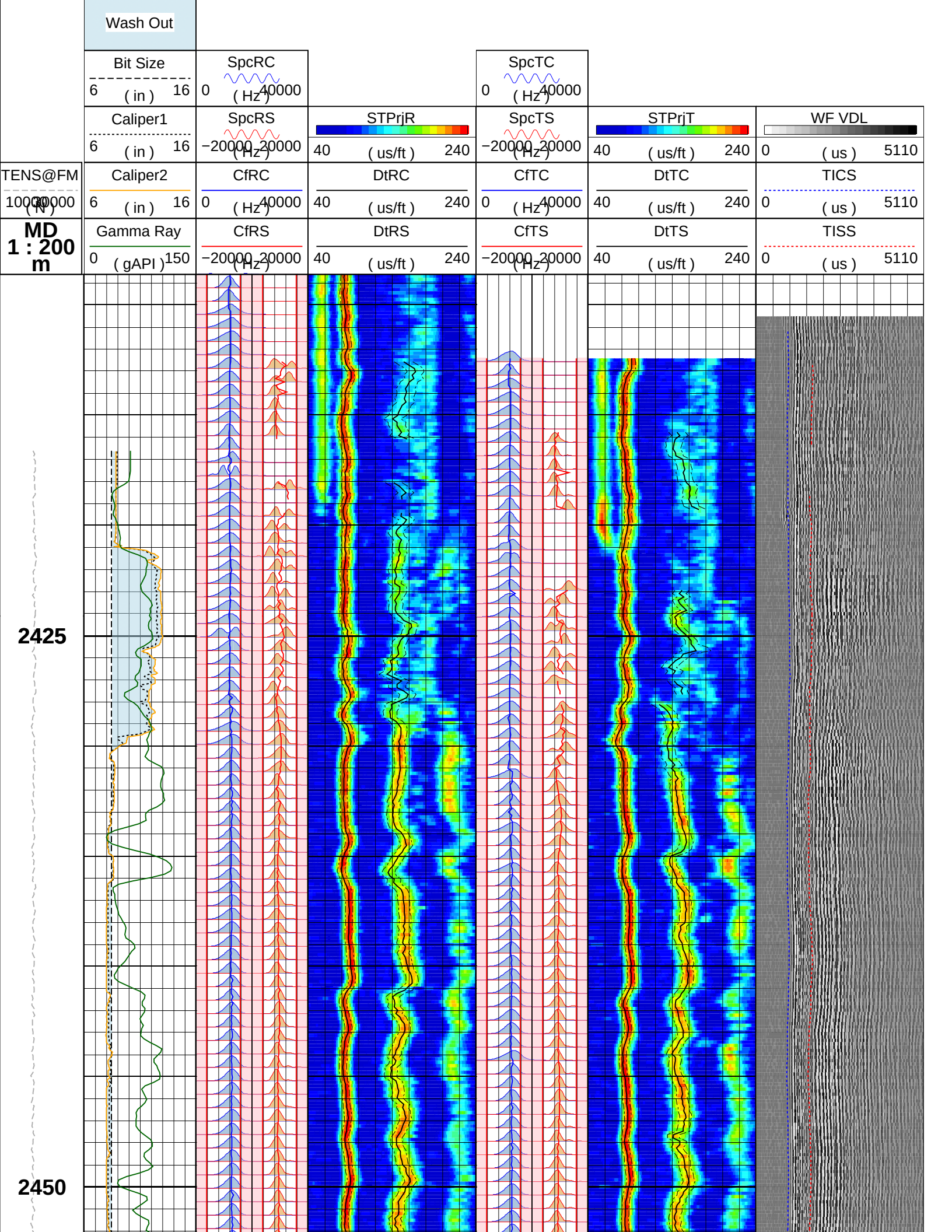
Field Recording:	Location: AUSL	Software Version: 12C0–301	Engineer: J. Robertson/C. Bassig
Office Recording:	ICS Center: DCS–Perth	Baseline:	Log Analyst: F. Advent

Mud and Borehole Measurements:

Rm @ Measured Temperature: 0.206ohm.m @ 24.6degC	BHT: 100degC	Bitsize: 8.5in
Rmf @ Measured Temperature: 0.1738ohm.m @ 25degC	Type Fluid in Hole:	Seawater/Drispac/Soltex
Rmc @ Measured Temperature: 0.28ohm.m @ 24.9degC	Mud Density: 1.12637g/cm3	

Remarks:

Compressional Slowness (DTCO) from Monopole DSI
Shear Slowness (DTSM) from Lower Dipole DSI


Wash Out
Bit Size
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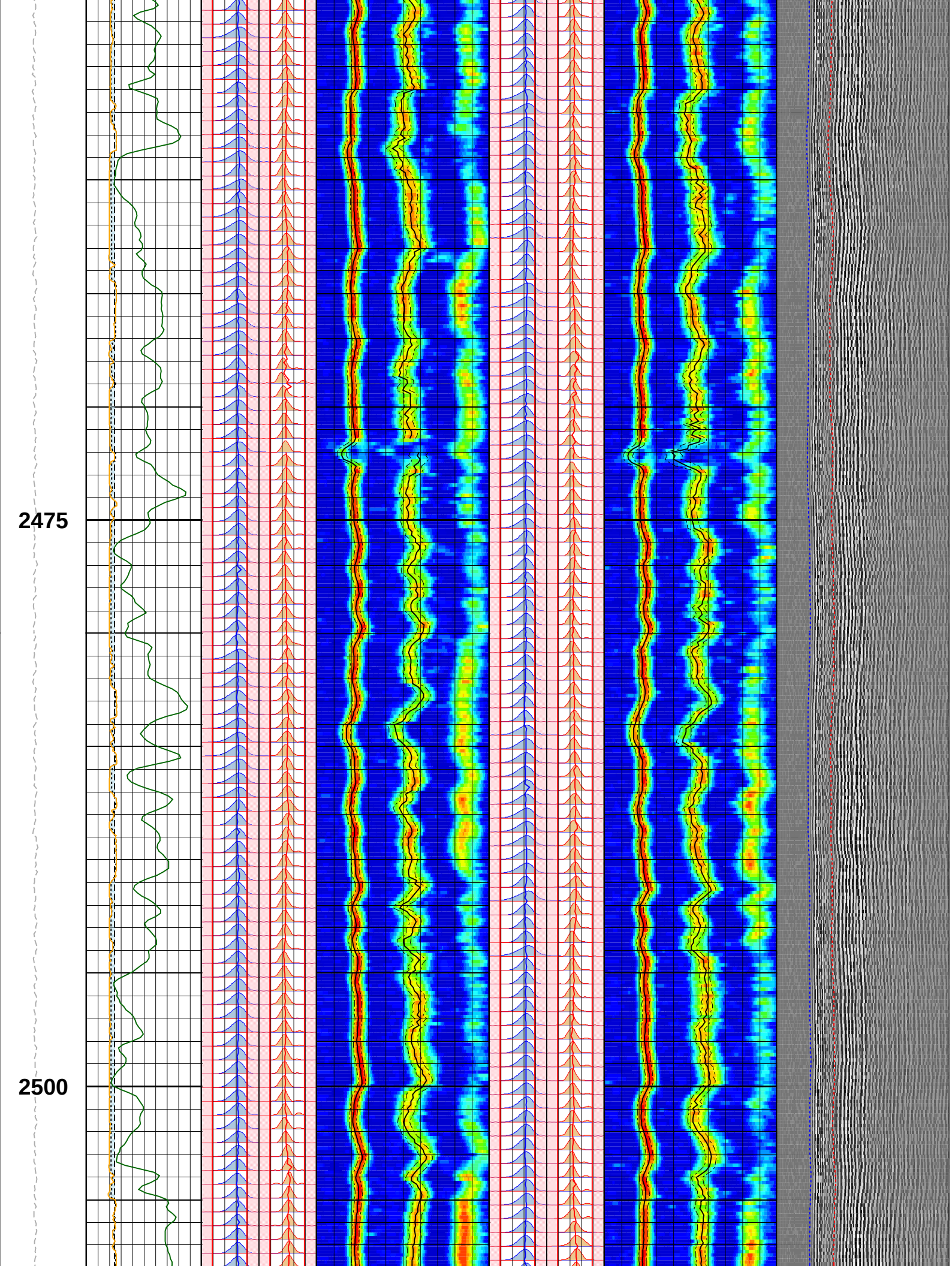
SpcRC
0 (Hz) 40000
SpcTC
0 (Hz) 40000
Caliper1
6 (in) 16
SpcRS
−20000 (Hz) 20000
STPrjR
40 (us/ft) 240
SpcTS
−20000 (Hz) 20000
STPrjT
40 (us/ft) 240
WF VDL
0 (us) 5110
TENS@FM
10000 (N) 30000
Caliper2
6 (in) 16
CfRC
0 (Hz) 40000
DtRC
40 (us/ft) 240
CfTC
0 (Hz) 40000
DtTC
40 (us/ft) 240
TICS
0 (us) 5110
MD
1 : 200
m
Gamma Ray
0 (gAPI) 150
CfRS
−20000 (Hz) 20000
DtRS
40 (us/ft) 240
CfTS
−20000 (Hz) 20000
DtTS
40 (us/ft) 240
TISS
0 (us) 5110
2425
2450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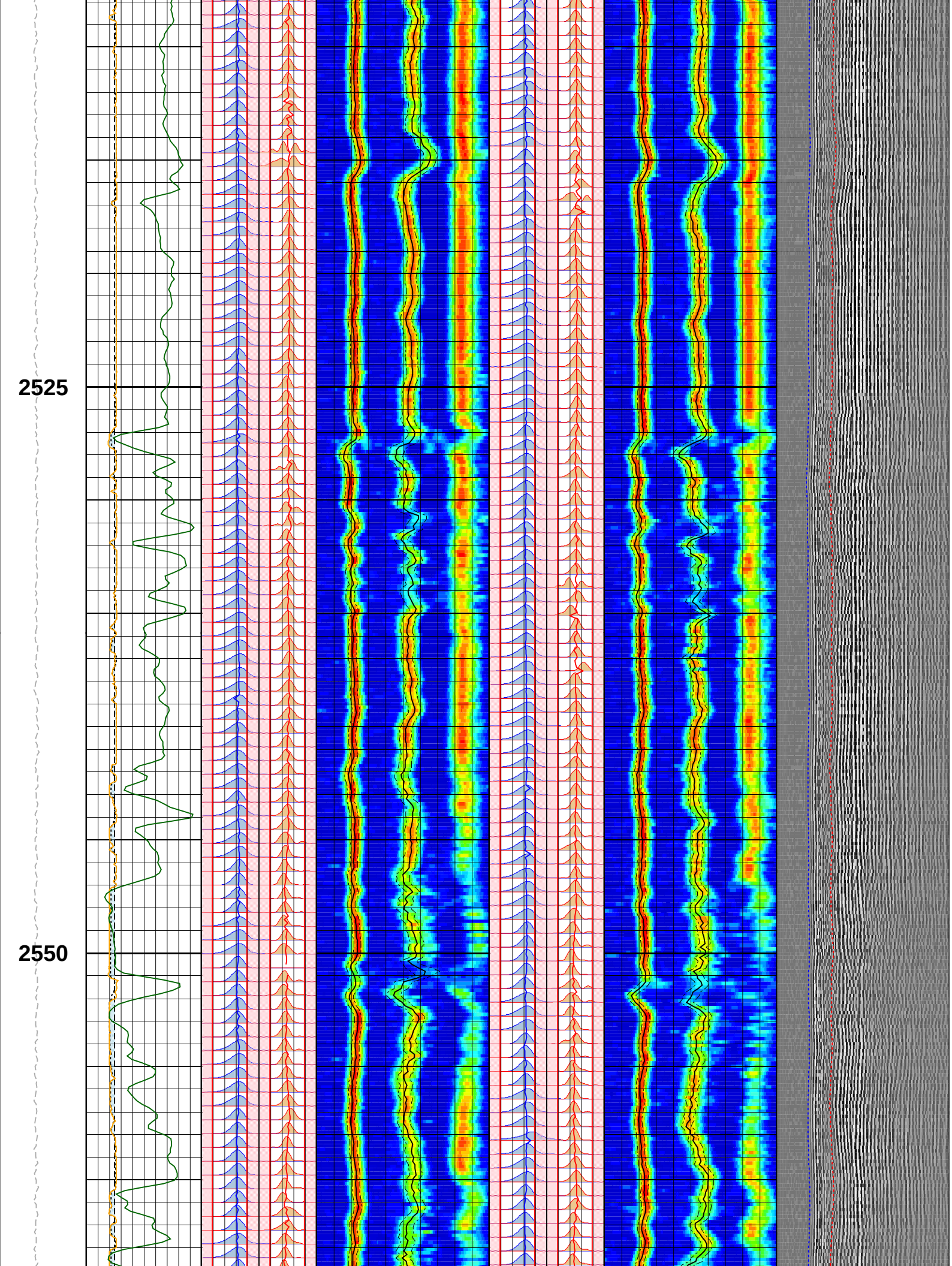
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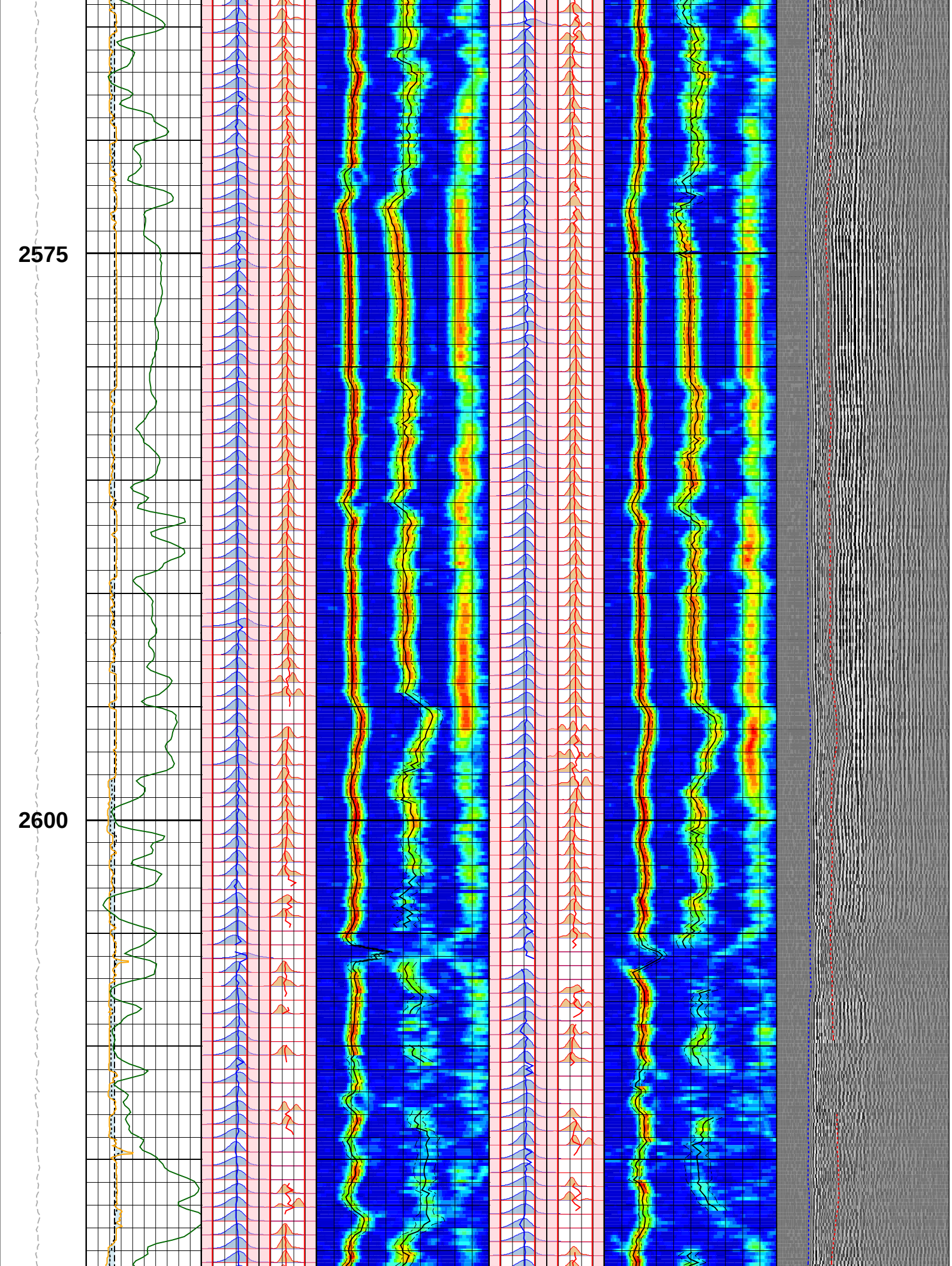
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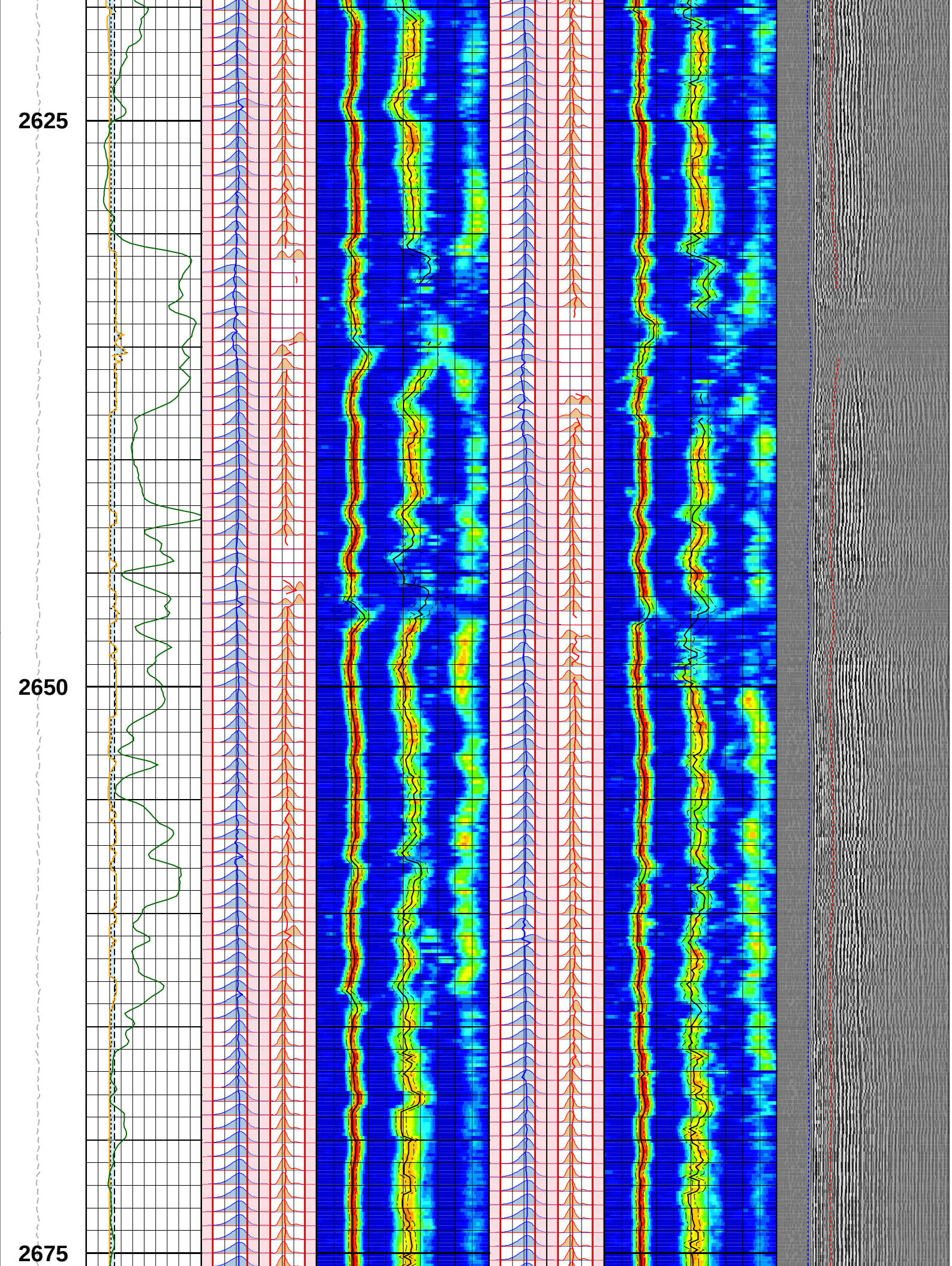
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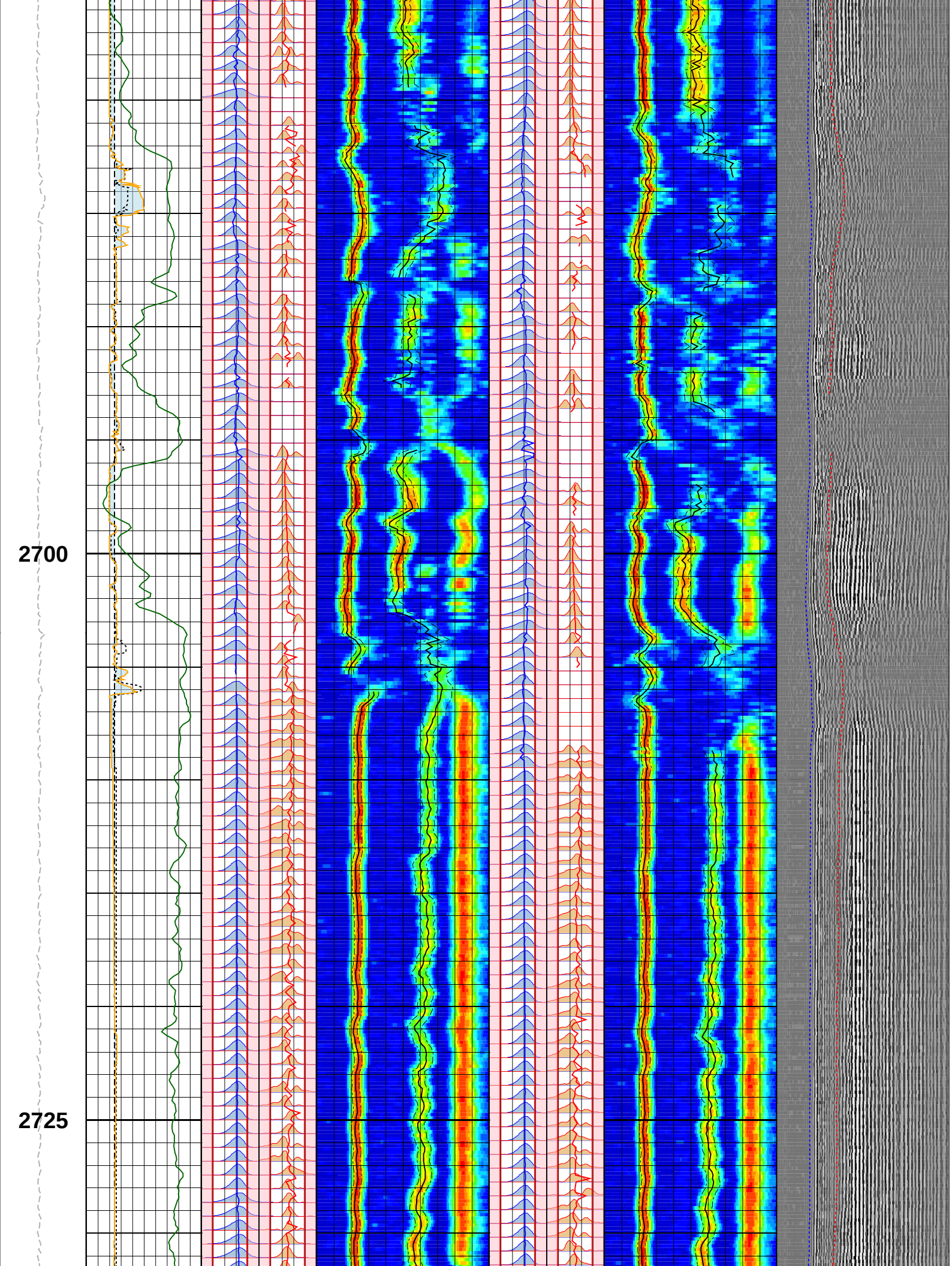
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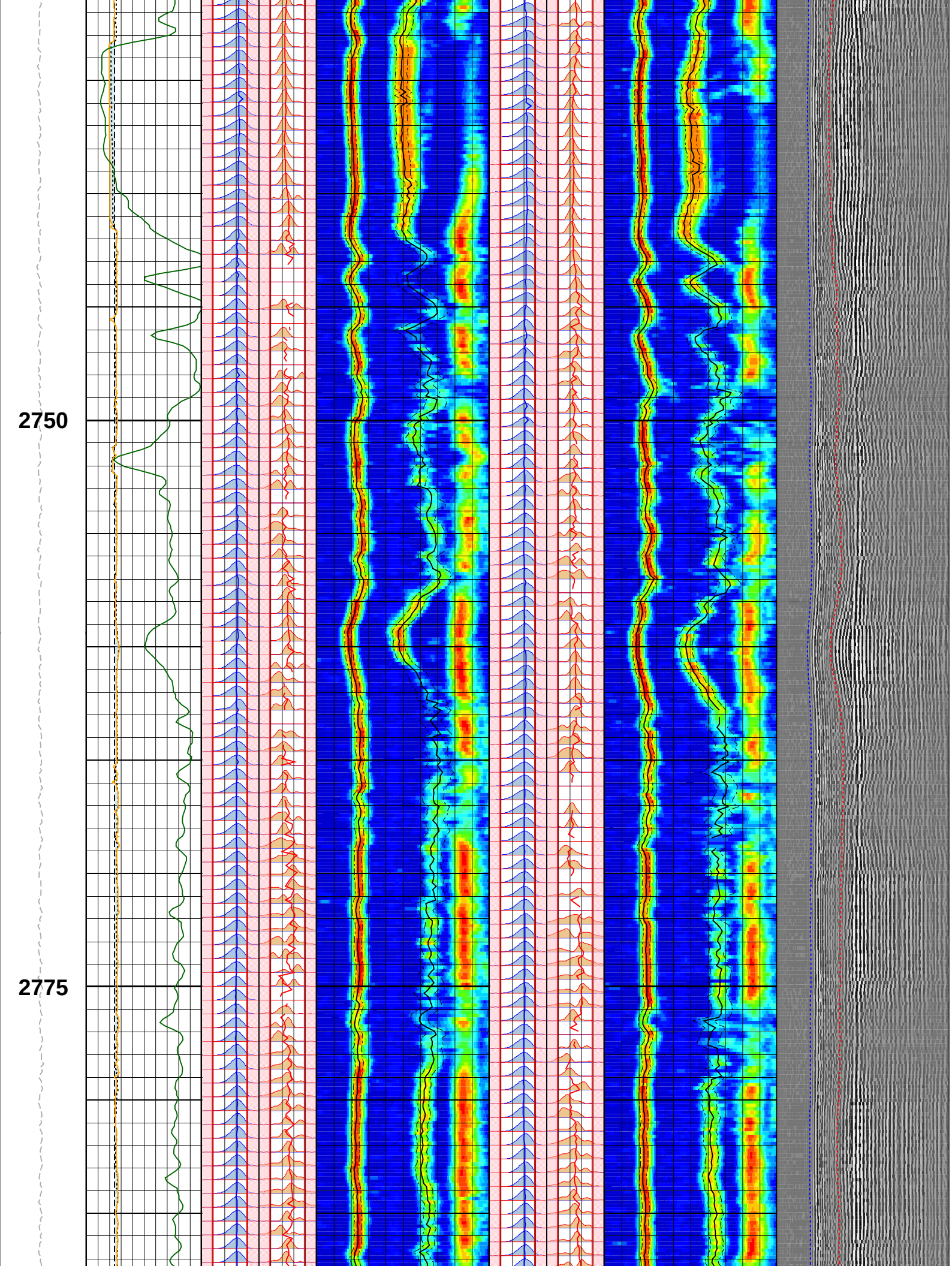
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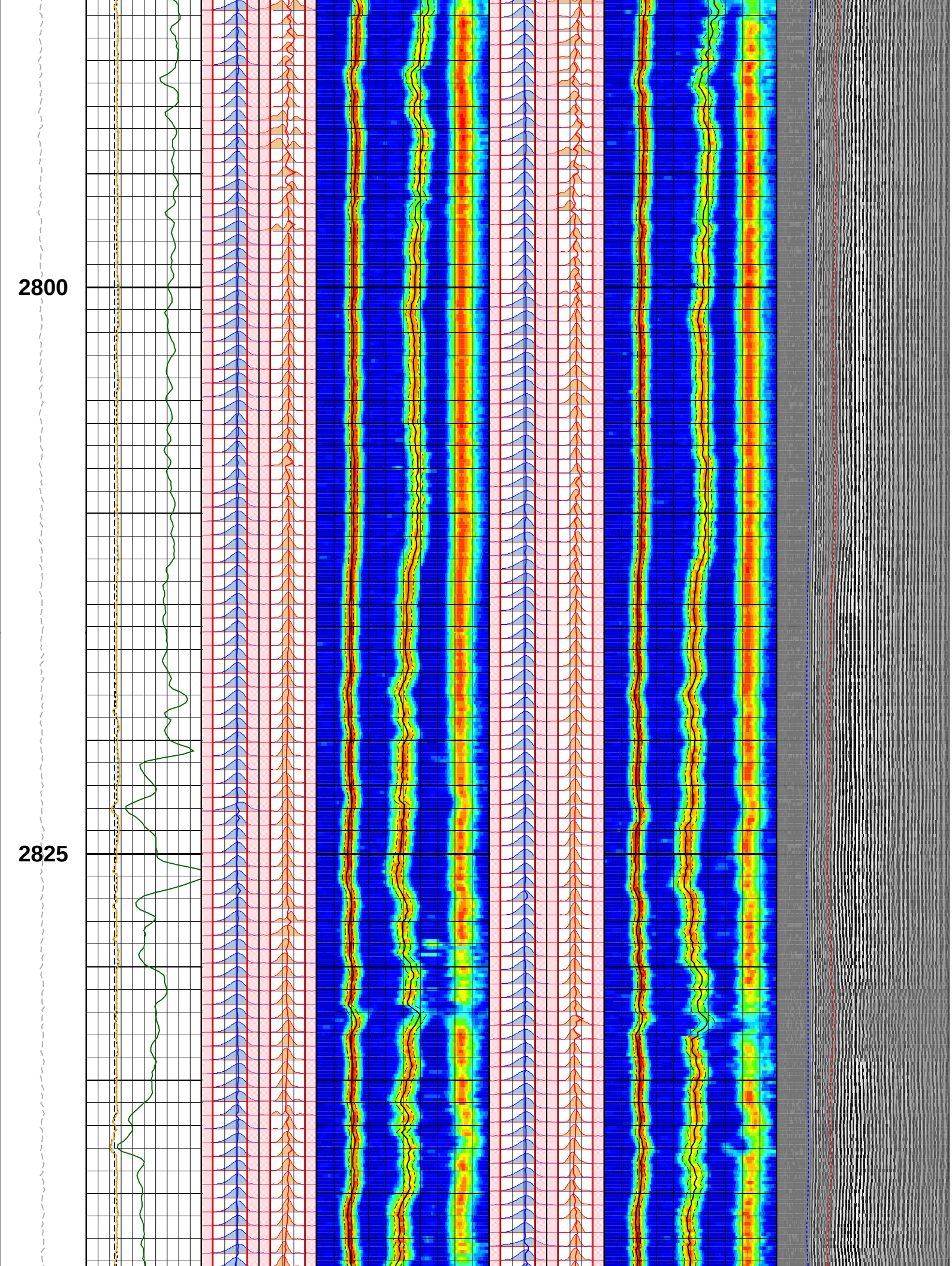
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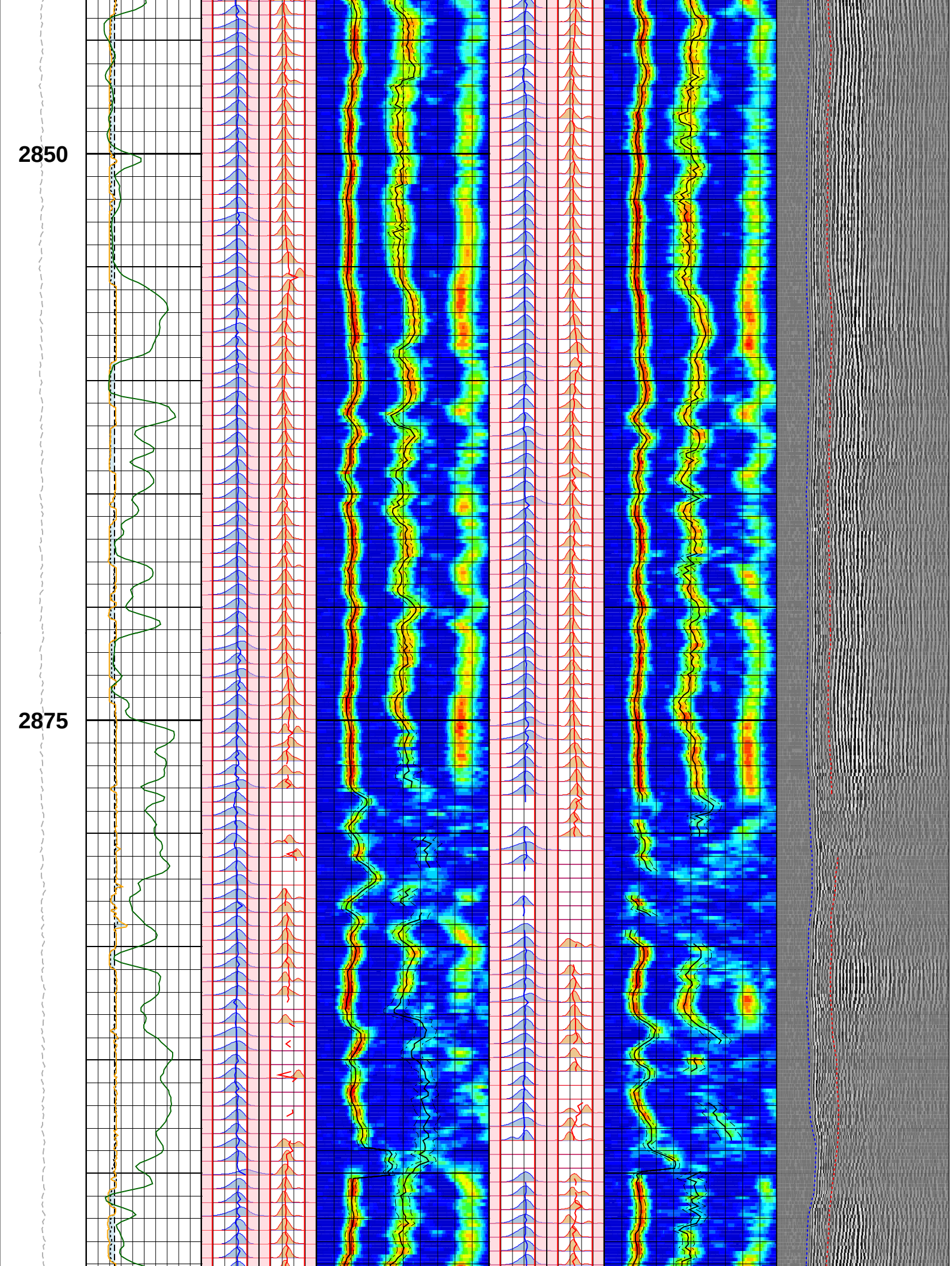
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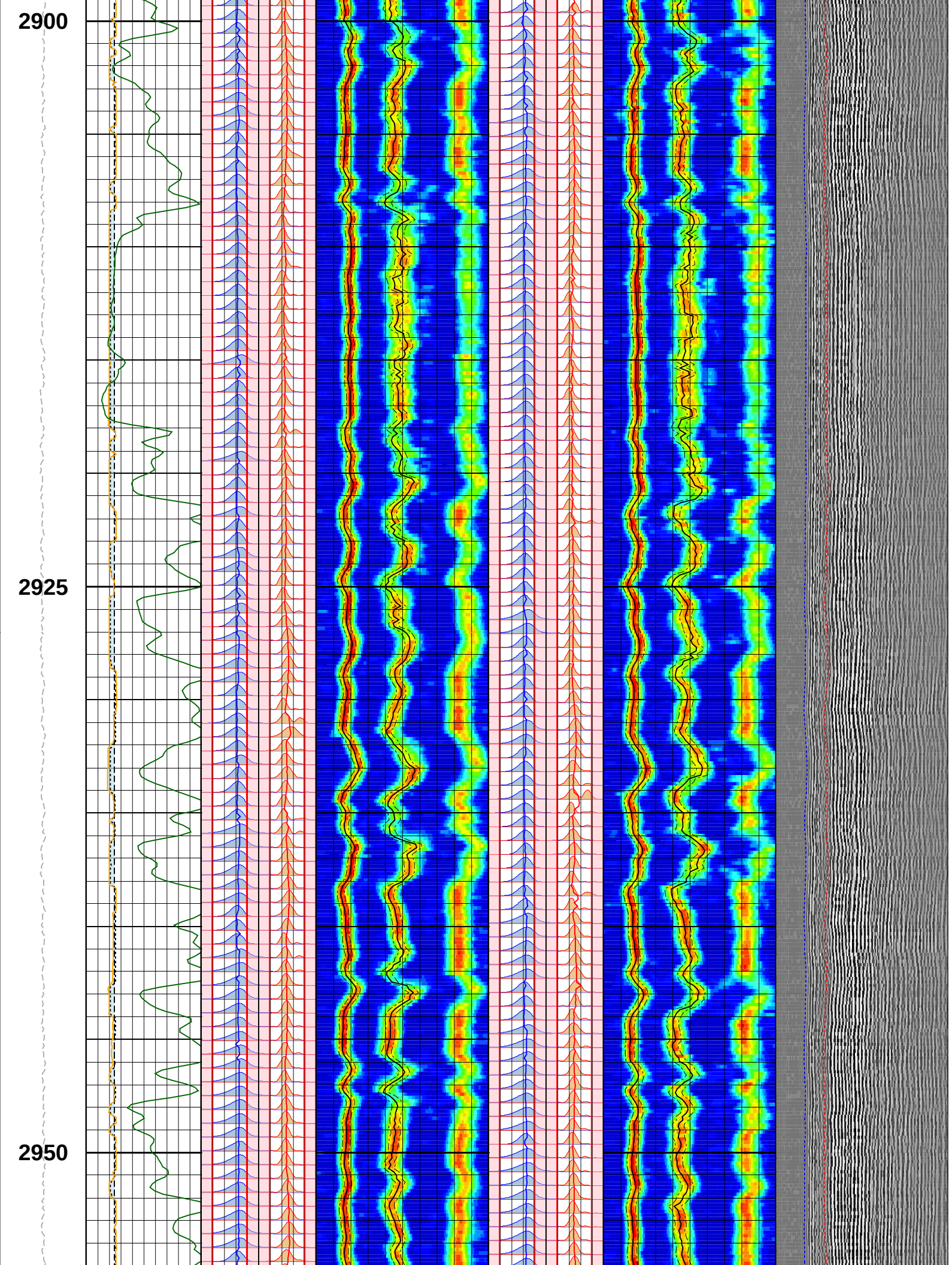
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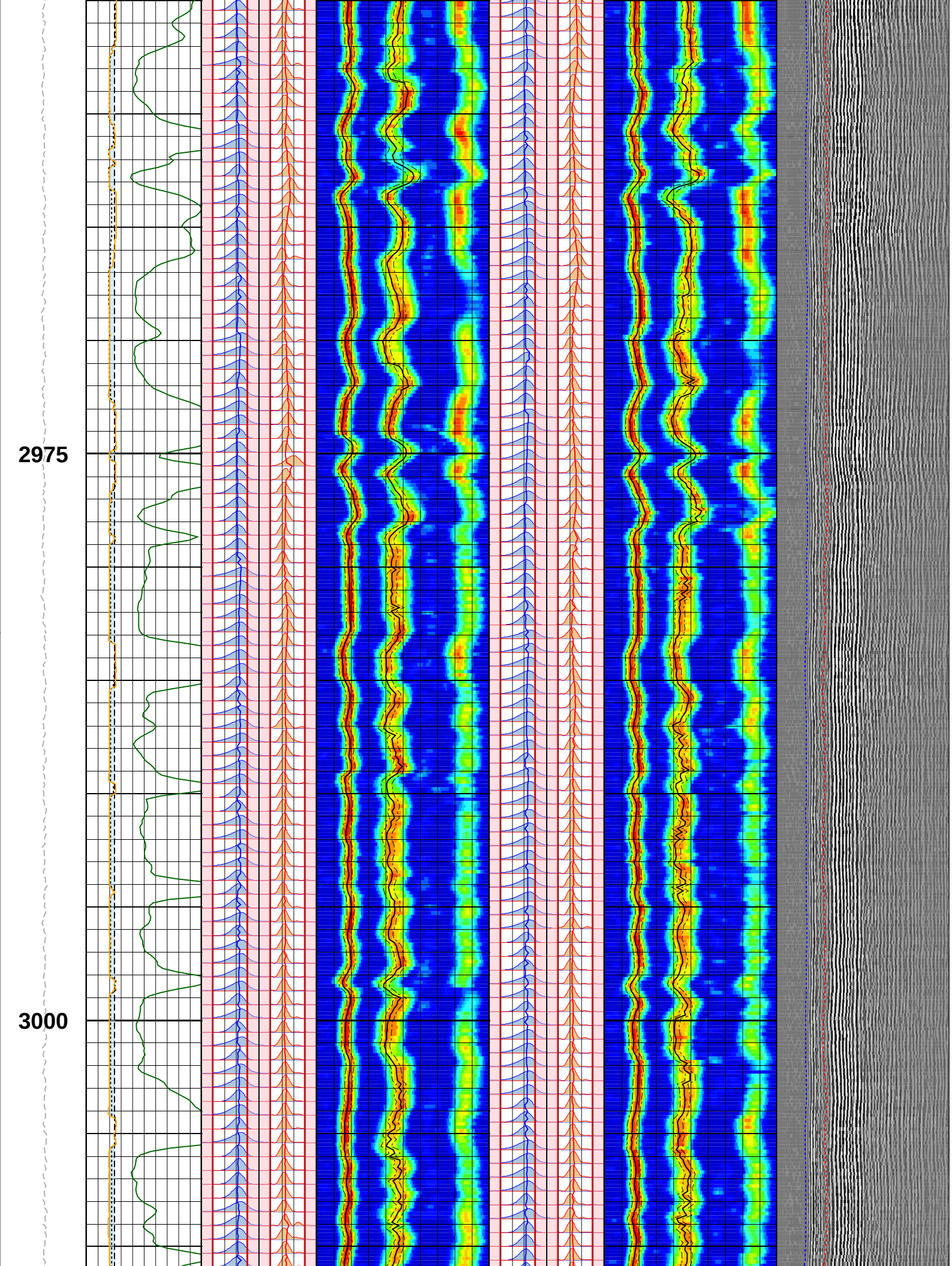
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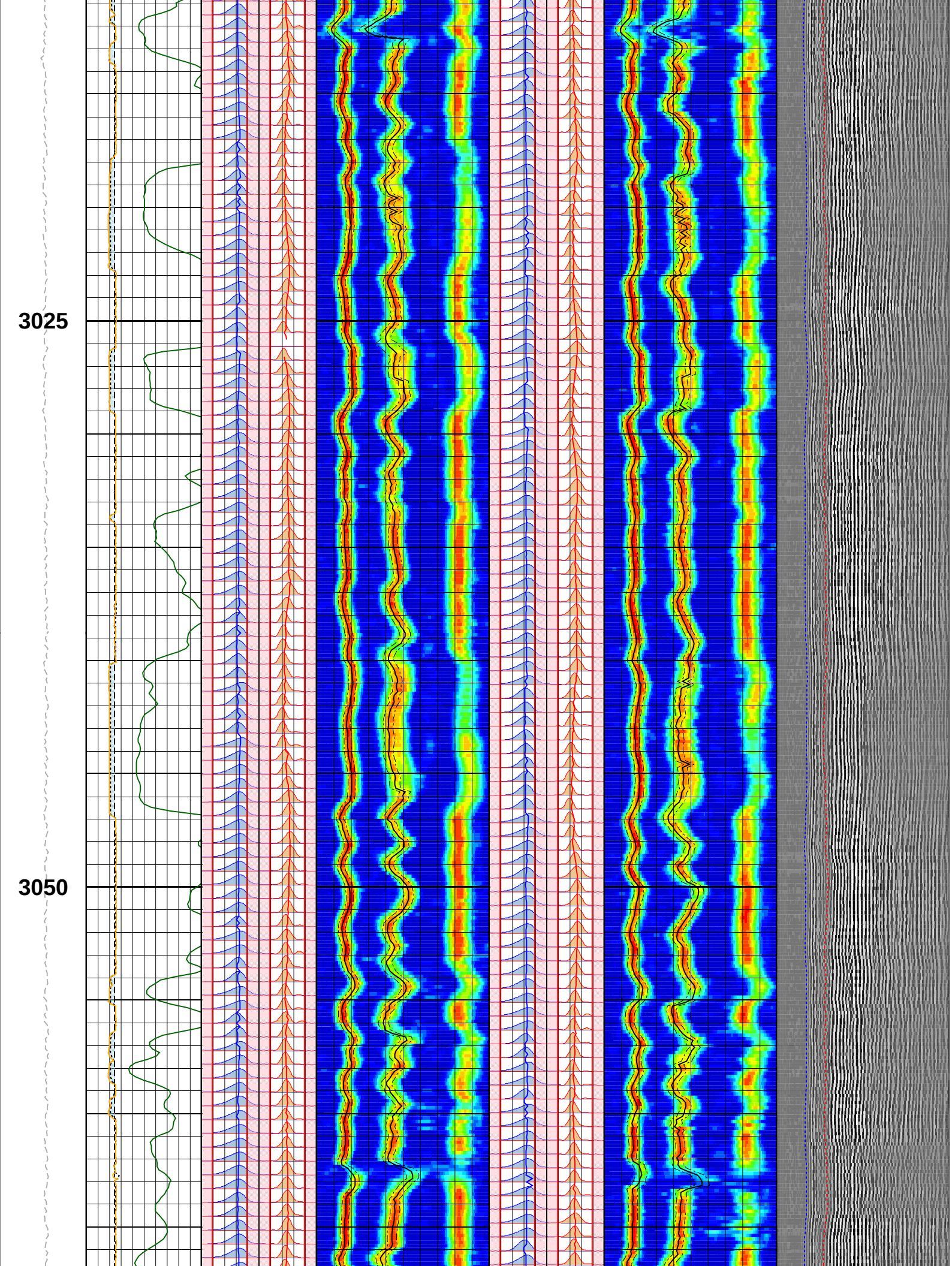
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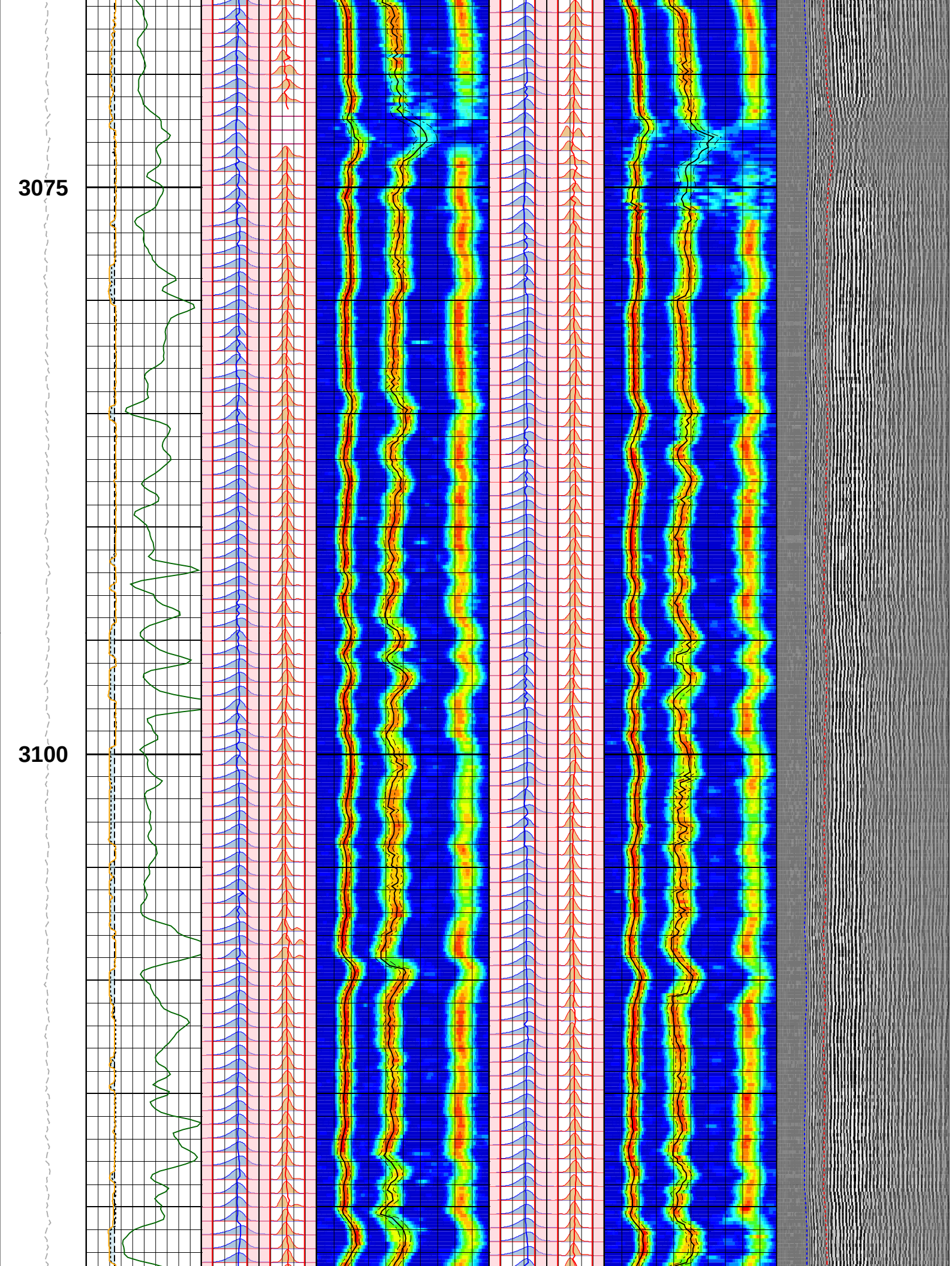
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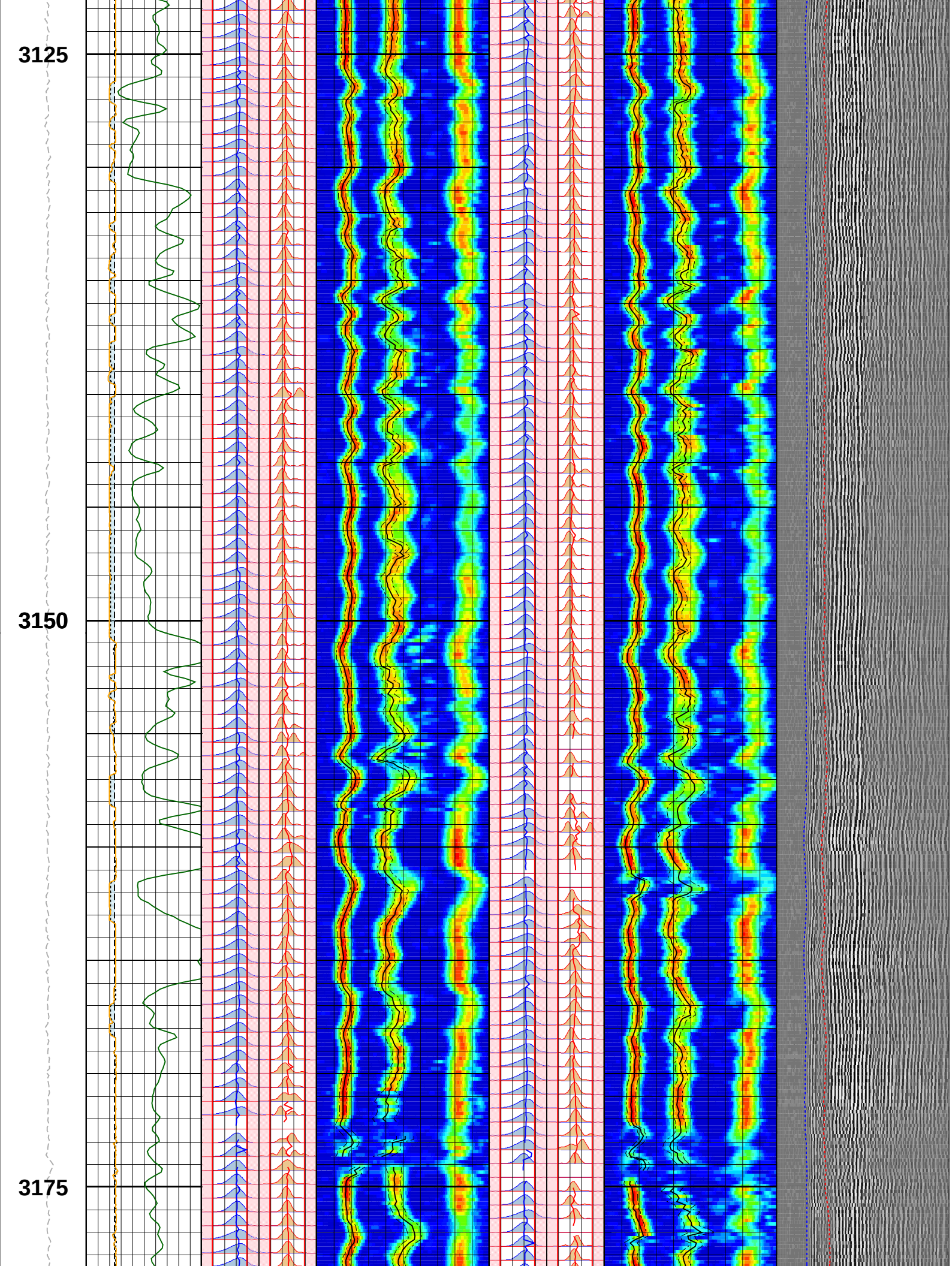
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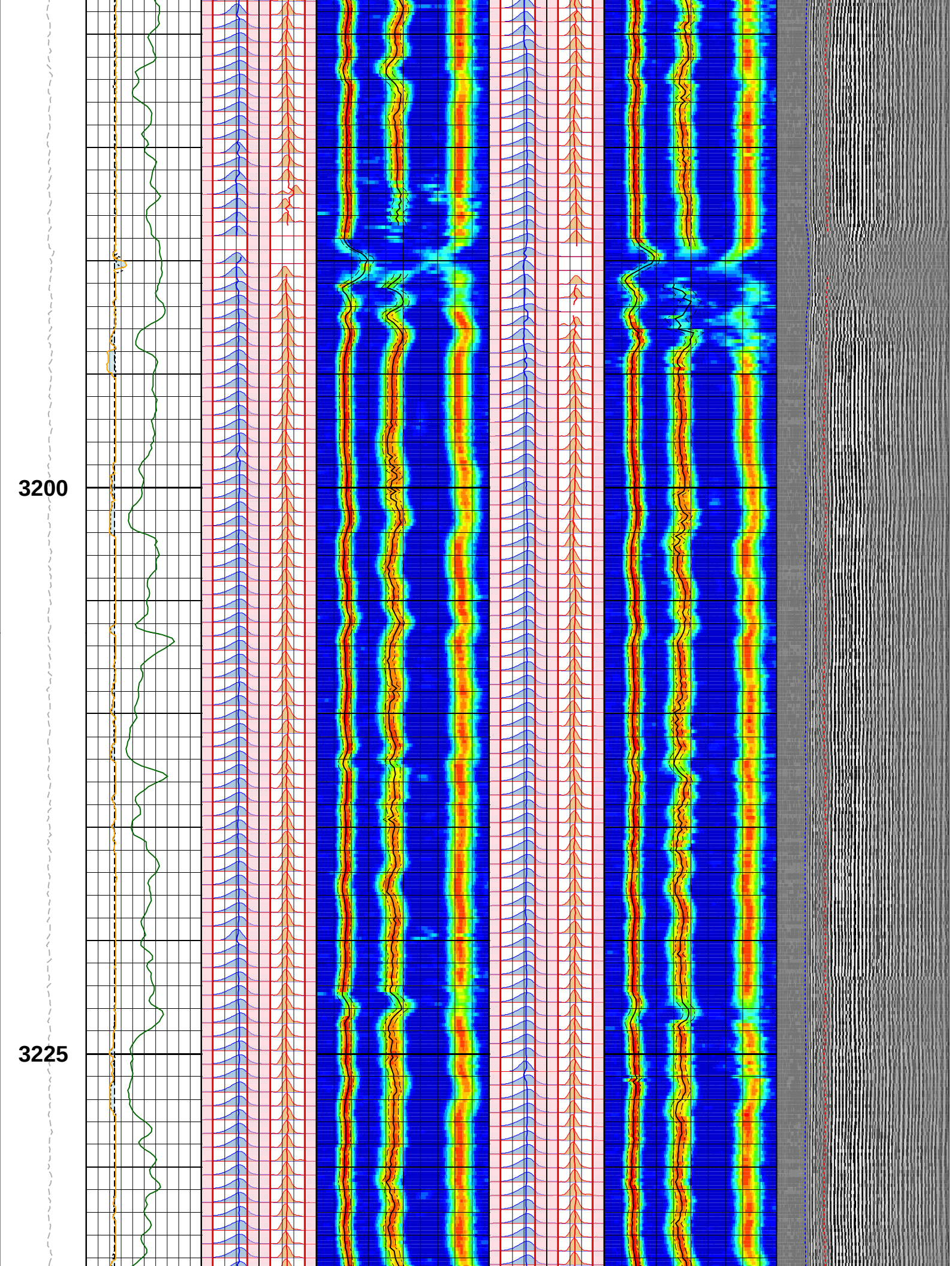
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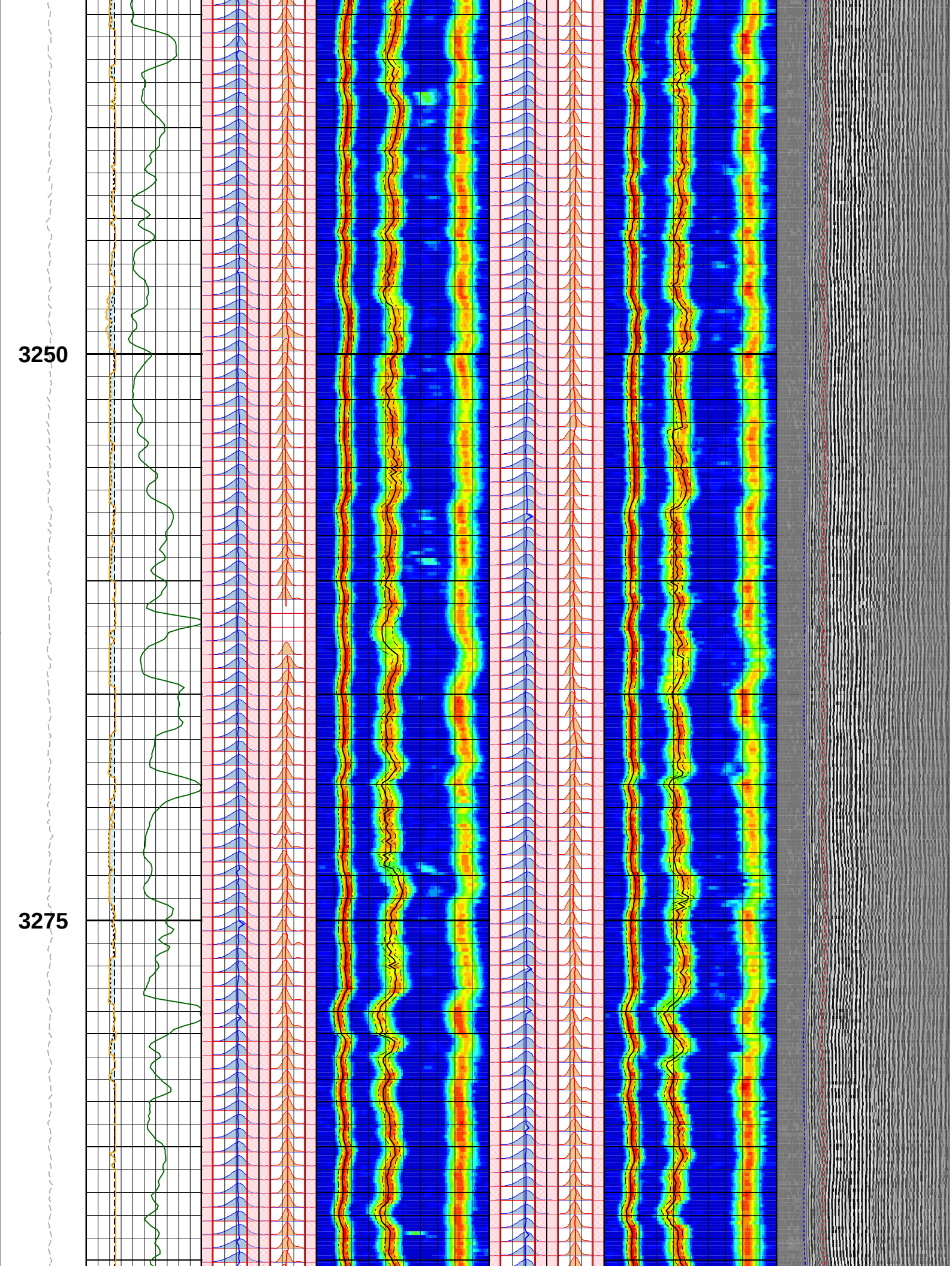
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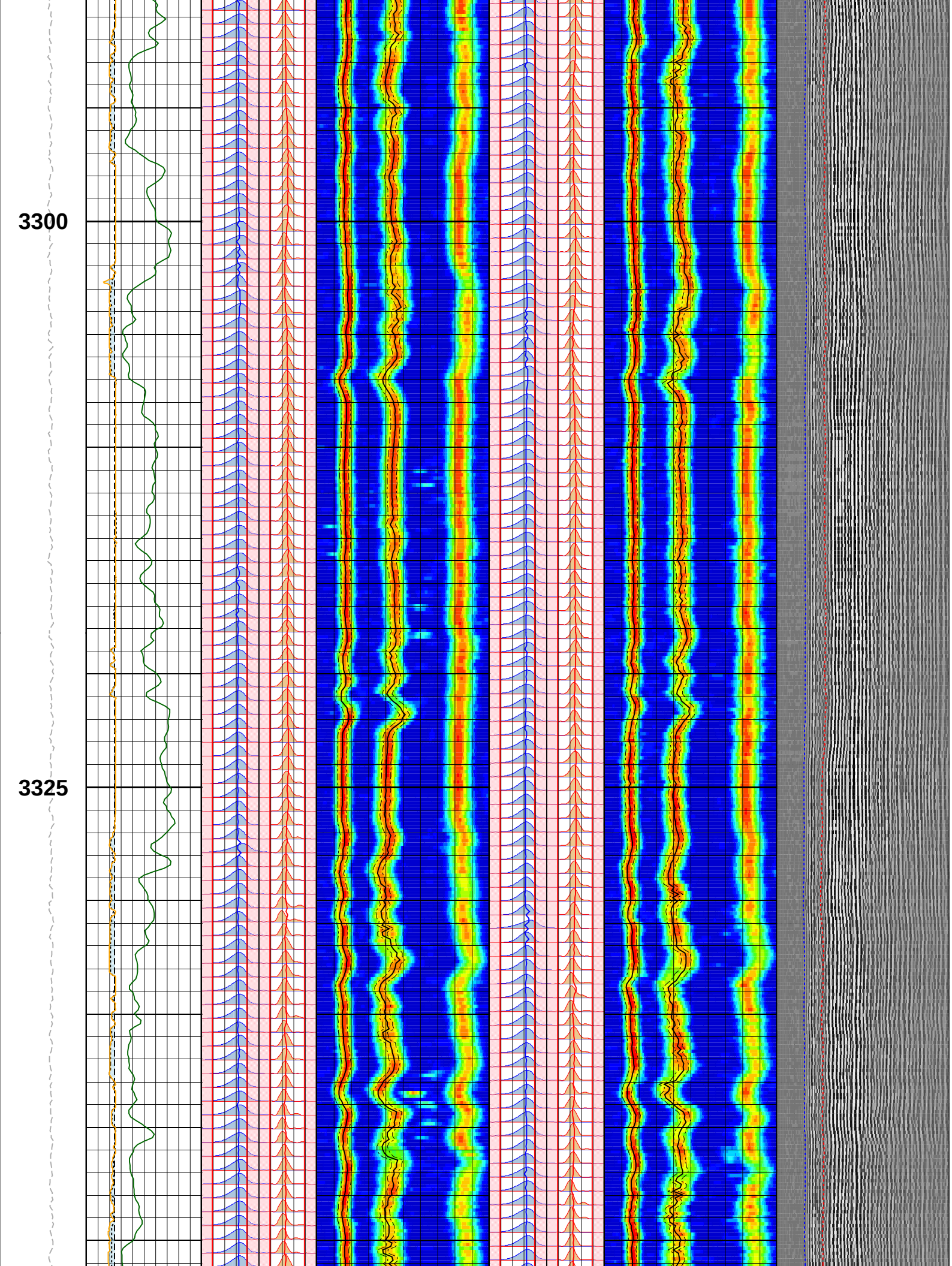
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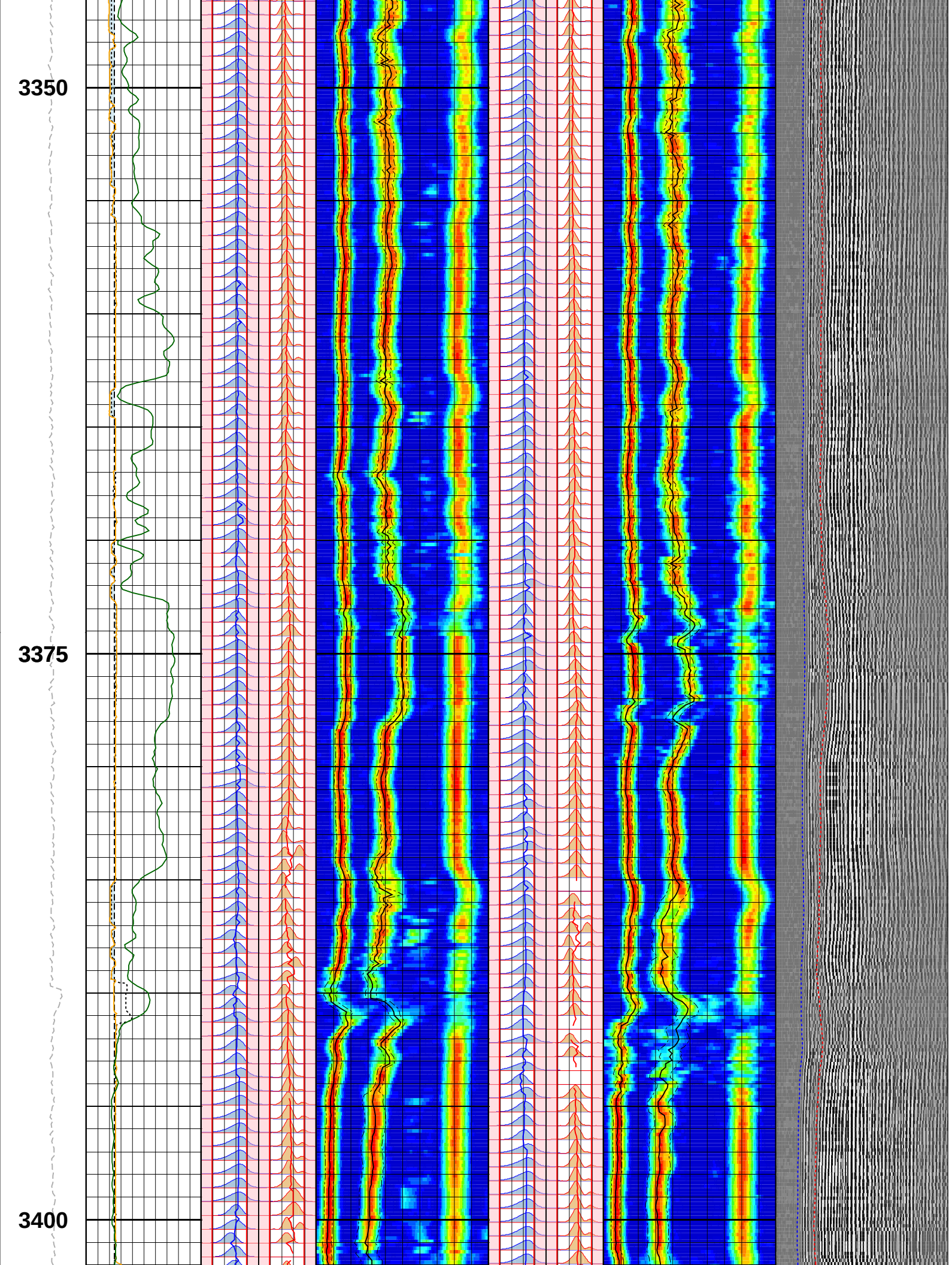
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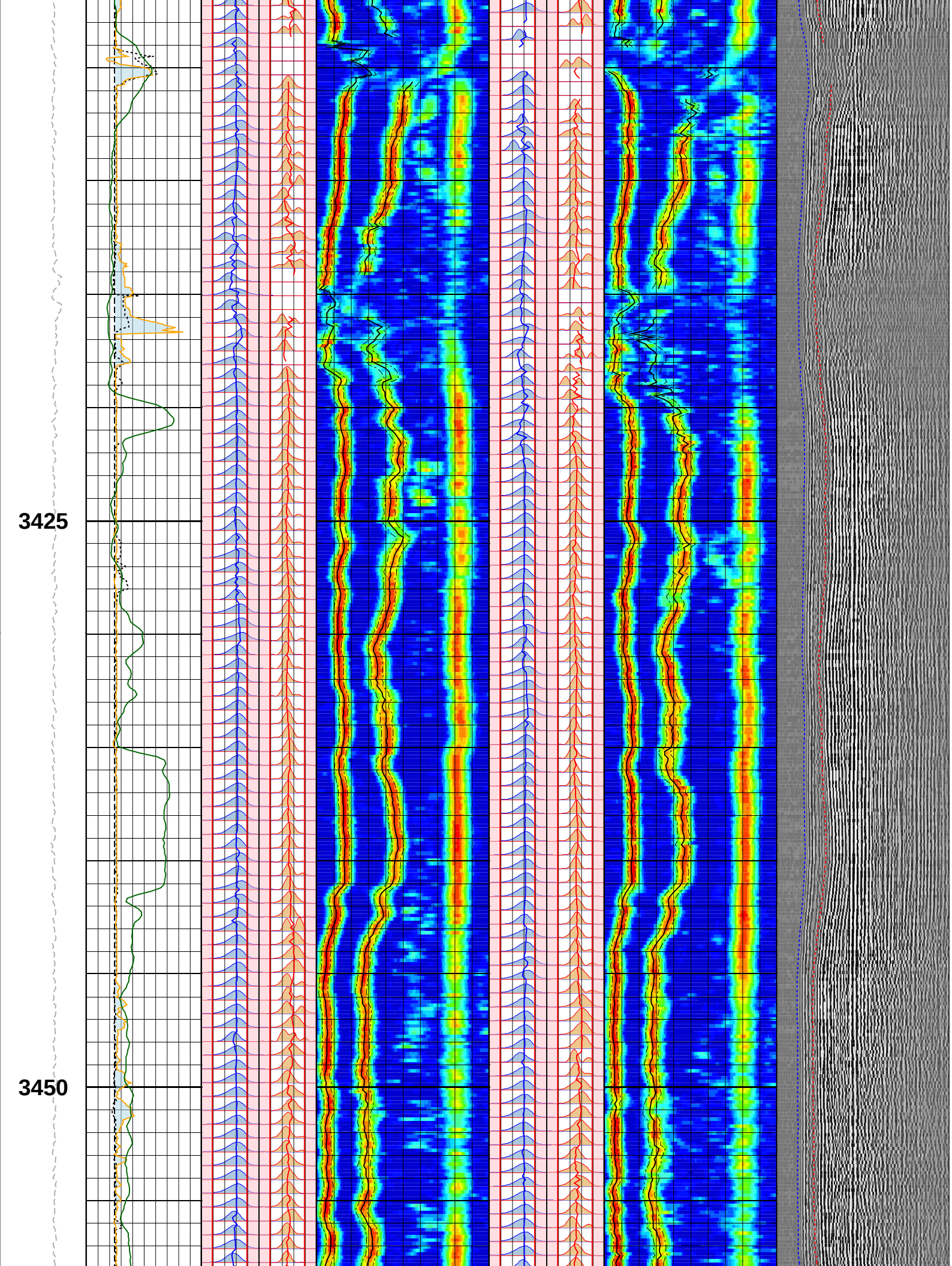
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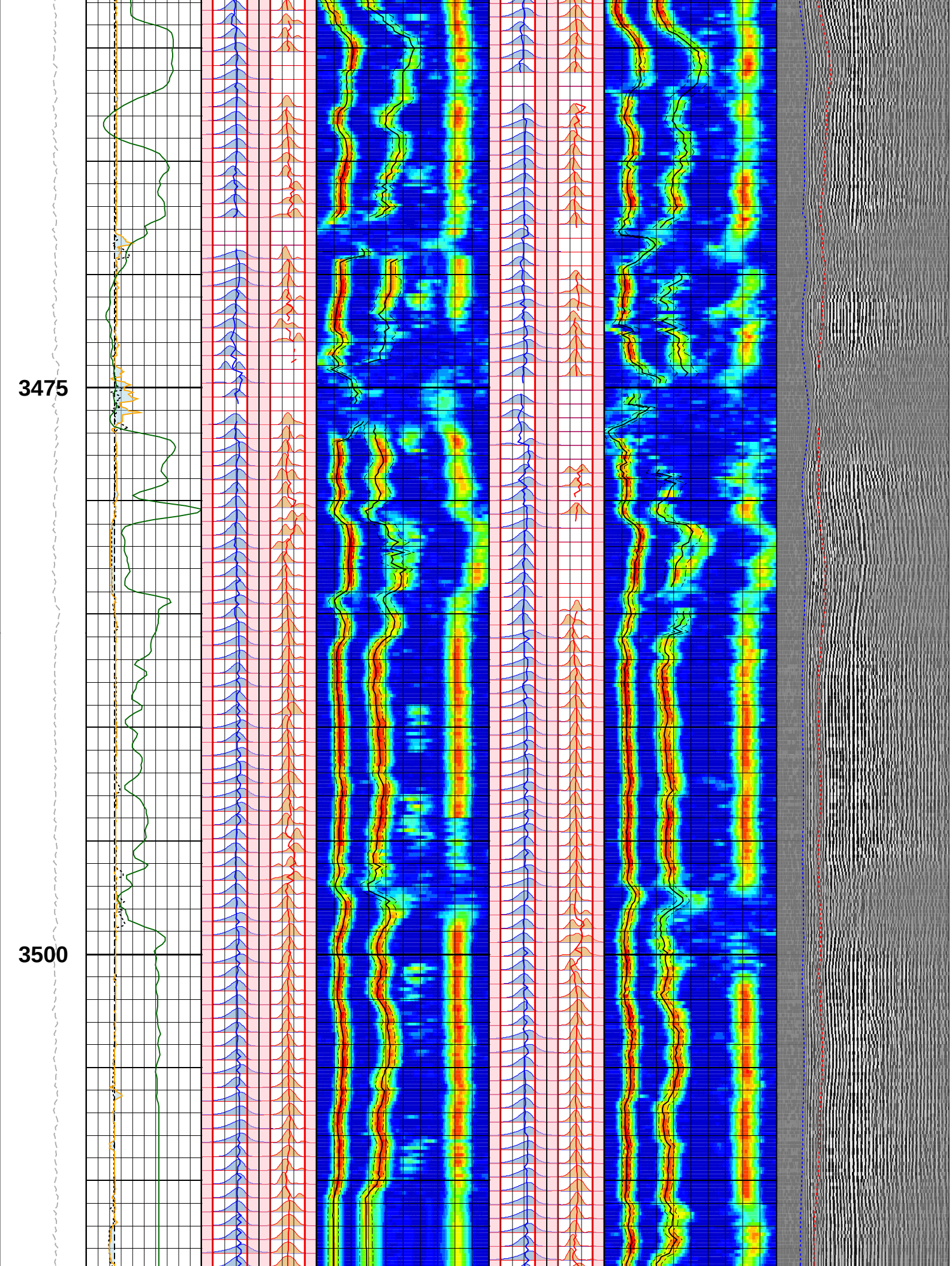
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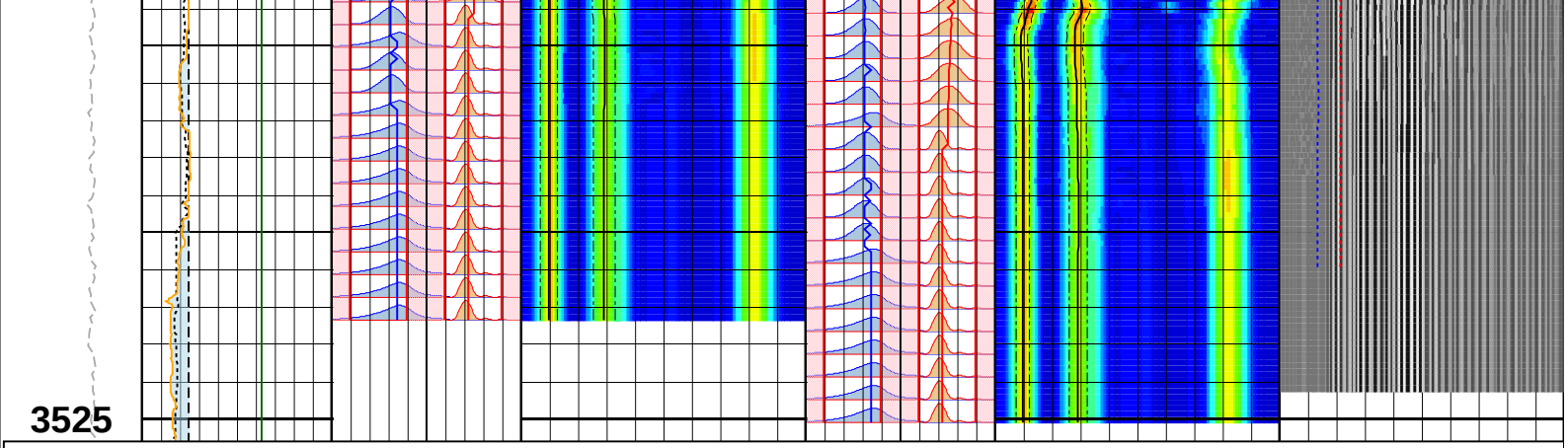

Customized Process: Start Depth (3525.09 m), Stop Depth (2408.61 m), Logging Mode (DSI − MPS)
Noise Cut Filtering(No), Casing Cut Filtering(No)
WF_FLG(1 1 1 1 1 1 1 1), MUD_TYPE(WBM), DTMUD(194.057), STCAL(Full Array)
TRSPAC(2.7432), RRSPAC(0 0.1524 0.3048 0.4572 0.6096 0.762 0.9144 1.0668)
Hole Diameter (HDAR@FMI_DSI_NGS_042PUP;2 (3530.35 − 2416.61 m))
Zoning Guide (DTCO@FMI_DSI_NGS_042PUP;2 (3530.35 − 2416.61 m))
Tracking Guide (no input)

−−− Zone Top Depth (0), Zone Name (Zone1) −−·
SFTY(Intermediate), BHS(OPEN), CSIZ(9.625), HDM(HDAR), HD(8.5)
TWI(320), SLL(40), SUL(240), SST(2), TLL(400), TUL(4100), TST(100)
SBW(2390), SBO(350), SWD(20), TWD(1792), SEM(0.35), FLENG(49), FLOW(4000), FHIGH(16000)
TKO_MODEL_ORDER(2), TKO_TOLERANCE(50) TKO_FLOW(0), TKO_FHIGH(12000)

MD 1 : 200 m	Gamma Ray	CfRS	DtRS	CfTS	DtTS	TISS
	0 (gAPI) 150	−20000 (Hz) 20000	40 (us/ft) 240	−20000 (Hz) 20000	40 (us/ft) 240	0 (us) 5110
TENS@FM	Caliper2	CfRC	DtRC	CfTC	DtTC	TICS
10000 (N) 30000	6 (in) 16	0 (Hz) 40000	40 (us/ft) 240	0 (Hz) 40000	40 (us/ft) 240	0 (us) 5110
	Caliper1	SpcRS	STPrjR	SpcTS	STPrjT	WF VDL
	6 (in) 16	−20000 (Hz) 20000	40 (us/ft) 240	−20000 (Hz) 20000	40 (us/ft) 240	0 (us) 5110
	Bit Size	SpcRC		SpcTC		
	6 (in) 16	0 (Hz) 40000		0 (Hz) 40000		
	Wash Out					

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BestDT*
QC Plot – DSI LDP

Sonic Processing

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Using the following logs: DSI

COMPANY:	Origin Energy Resources Ltd.
WELL:	Trefoil–1
FIELD:	Trefoil
Rig:	ENSCO 102
State:	Tasmania
COUNTRY:	Australia
Date Logged:	24–Nov–2004
Date Processed:	17–Jan–05
Well Location:	GDA94 Zone 55
	Northings 5,586,346 m
Elevations:	KB:
	DF:
	GL:
API Number:	
Job Number:	

FOLD HERE

The well name, location and borehole reference data were furnished by the customer.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretations made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

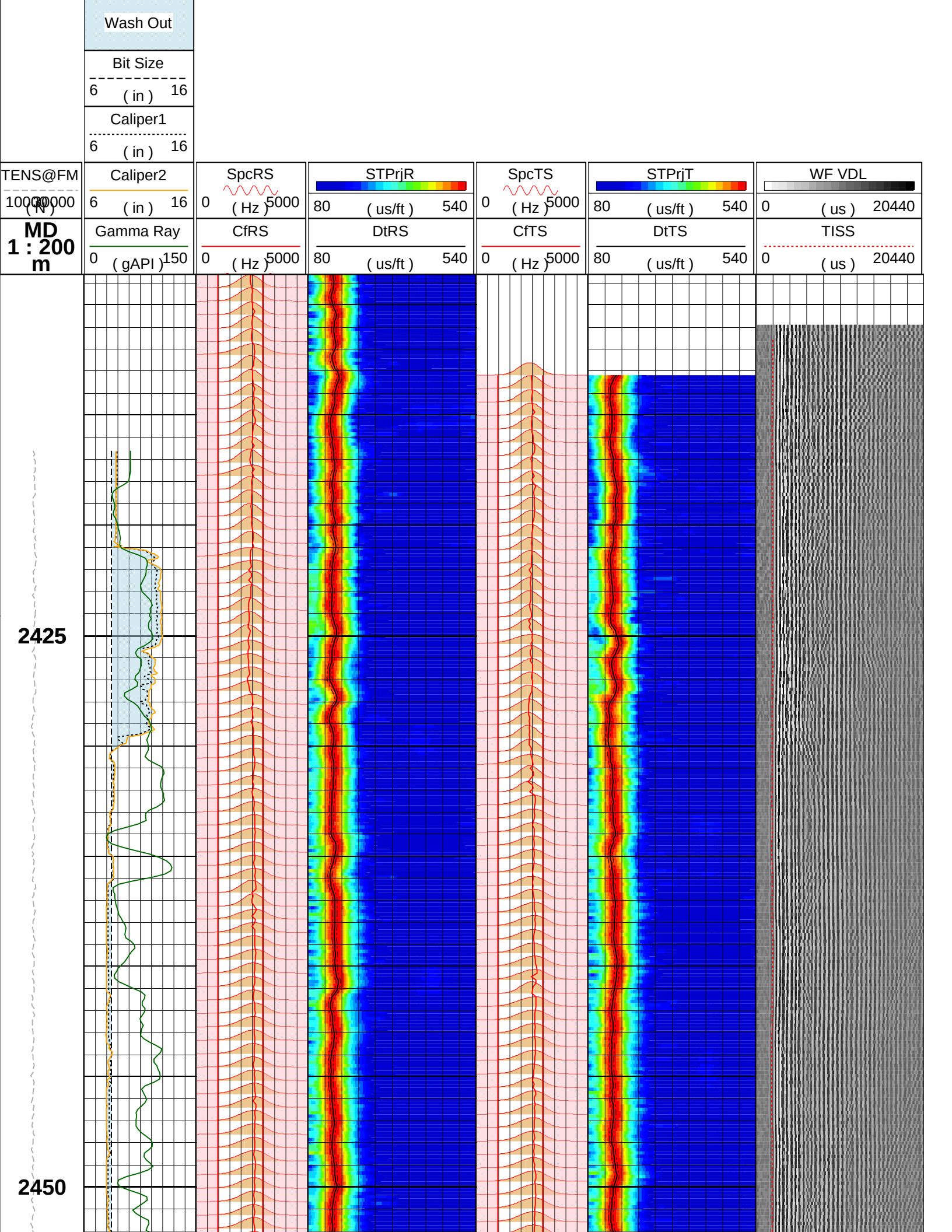
Field Recording:	Location: AUSL	Software Version: 12C0–301	Engineer: J. Robertson/C. Bassig
Office Recording:	ICS Center: DCS–Perth	Baseline:	Log Analyst: F. Advent

Mud and Borehole Measurements:

Rm @ Measured Temperature: 0.206ohm.m @ 24.6degC	BHT: 100degC	Bitsize: 8.5in
Rmf @ Measured Temperature: 0.1738ohm.m @ 25degC	Type Fluid in Hole:	Seawater/Drispac/Soltex
Rmc @ Measured Temperature: 0.28ohm.m @ 24.9degC	Mud Density: 1.12637g/cm3	

Remarks:

Compressional Slowness (DTCO) from Monopole DSI
Shear Slowness (DTSM) from Lower Dipole DSI


Wash Out
Bit Size
6 (in) 16
Caliper1
6 (in) 16
TENS@FM
10000 (lb) 30000
Caliper2
6 (in) 16
SpcRS
0 (Hz) 5000
STPrjR
80 (us/ft) 540
SpcTS
0 (Hz) 5000
STPrjT
80 (us/ft) 540
WF VDL
0 (us) 20440
MD
1 : 200
m
Gamma Ray
0 (gAPI) 150
CfRS
0 (Hz) 5000
DtRS
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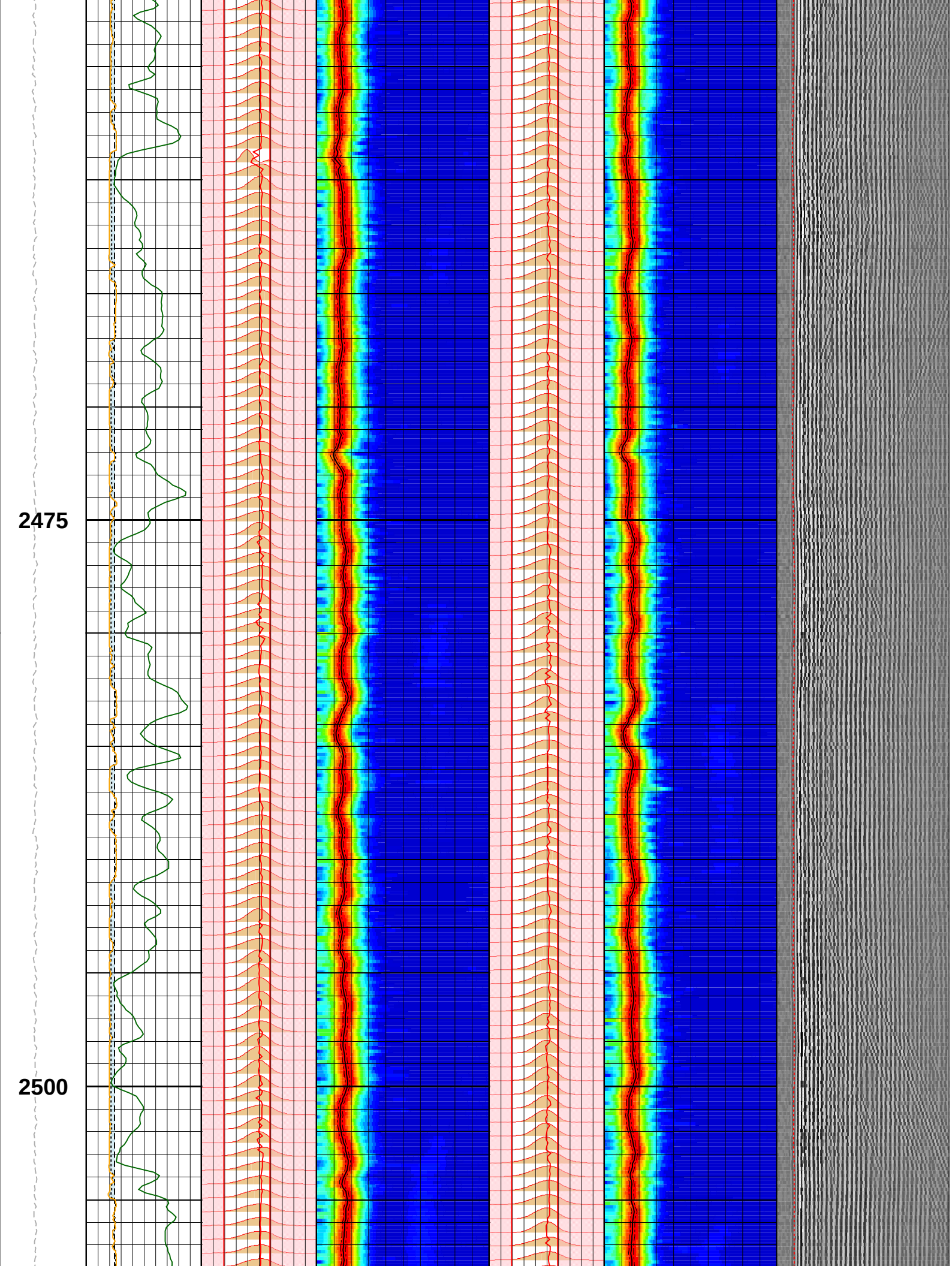
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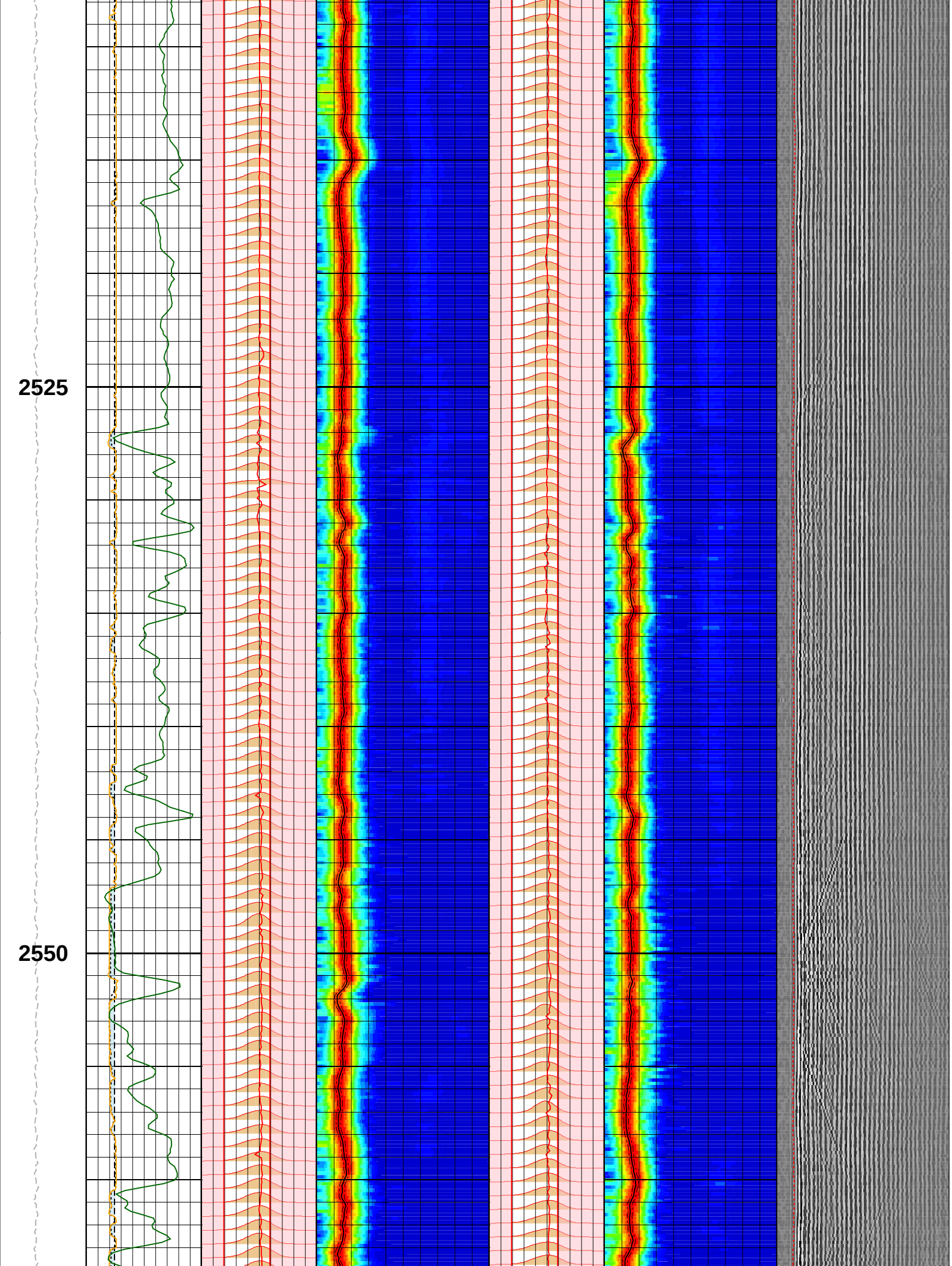
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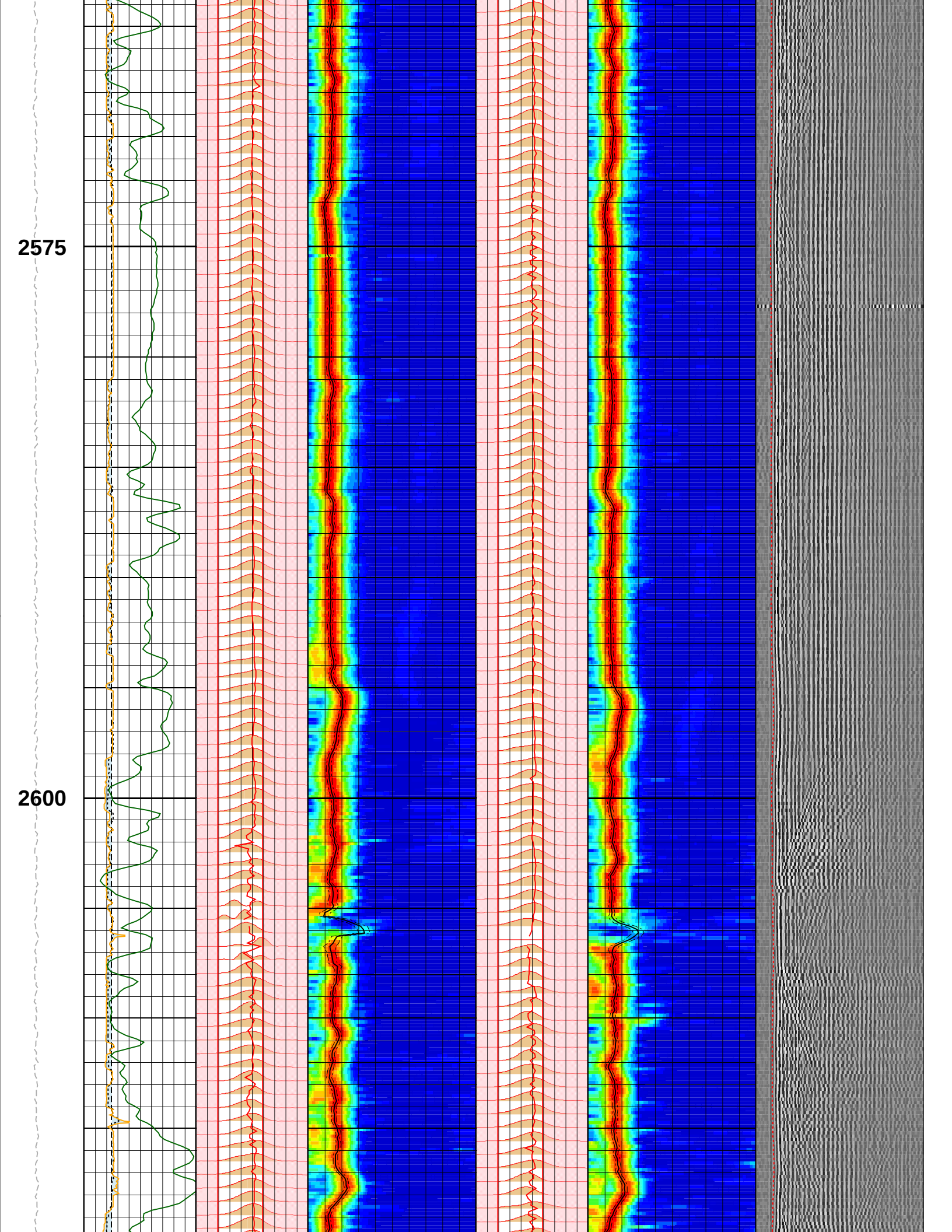
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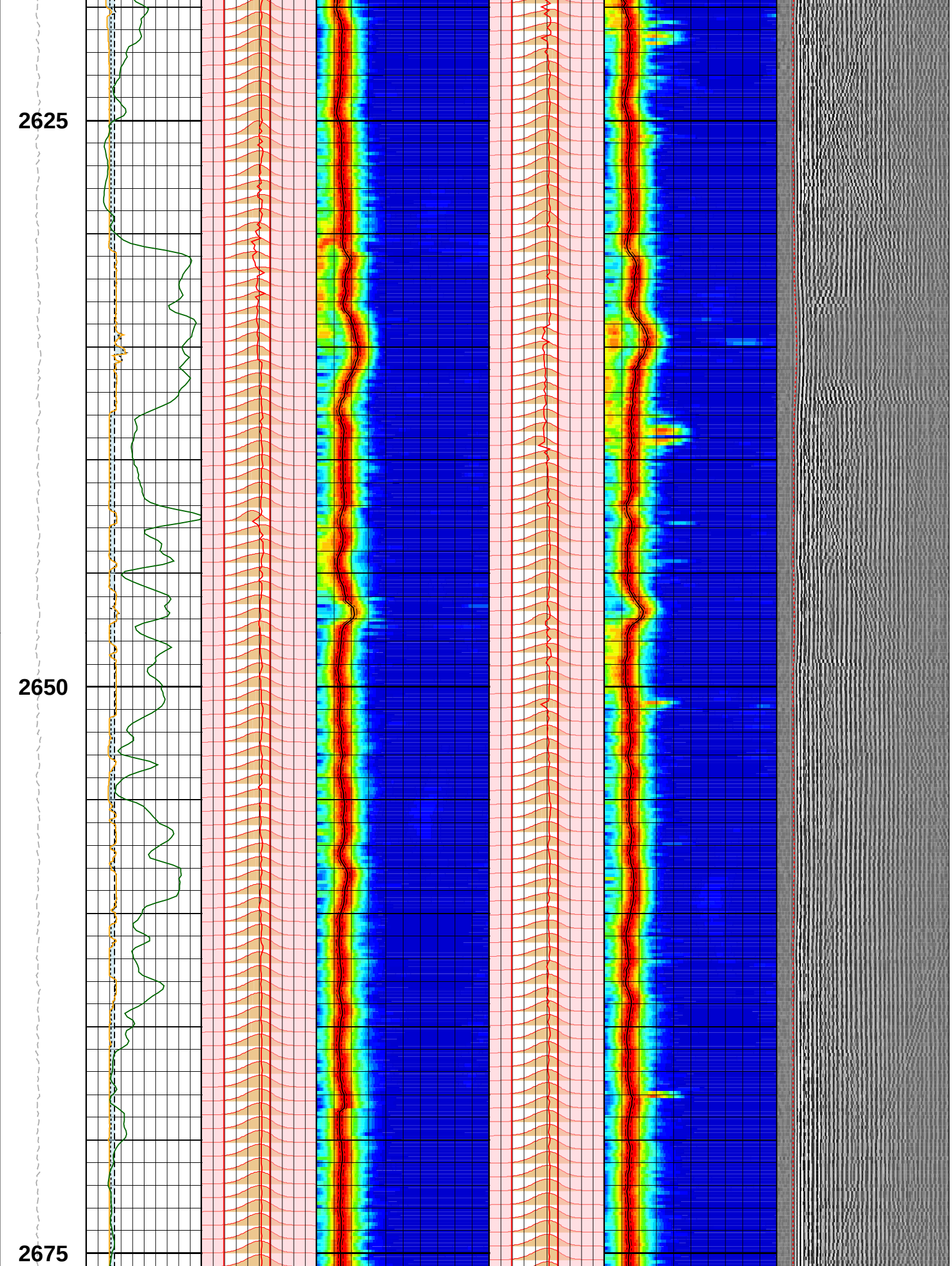
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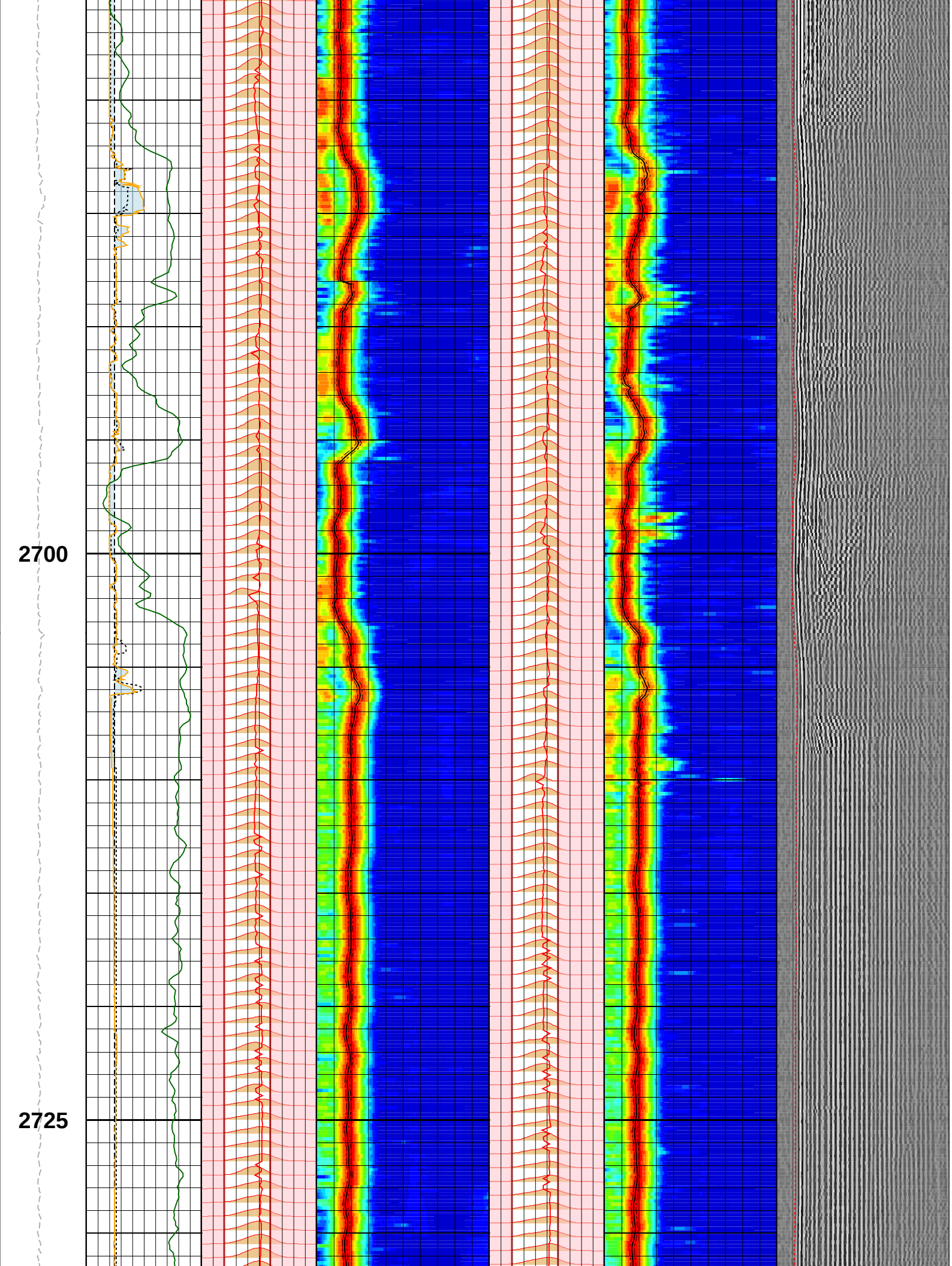
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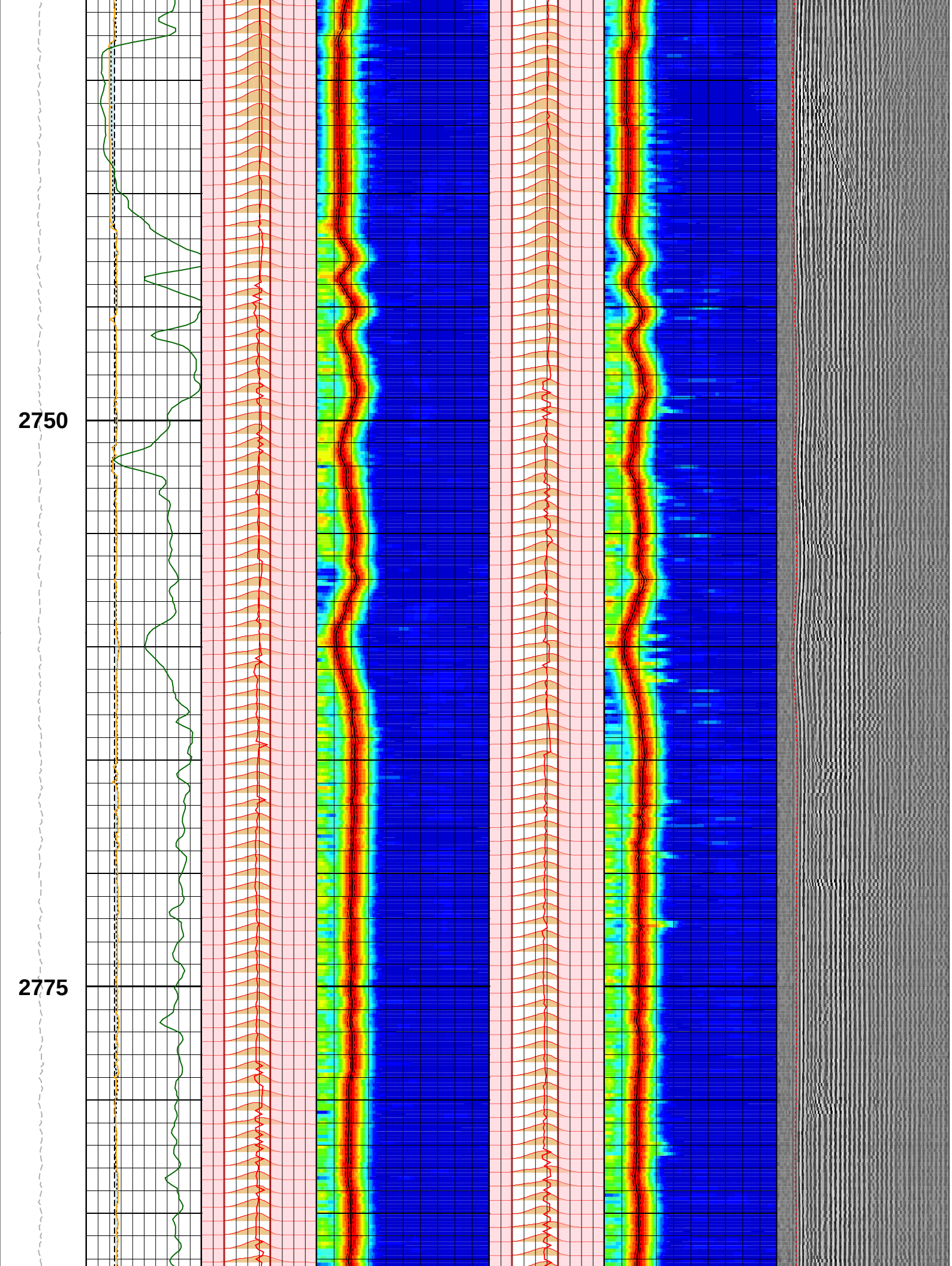
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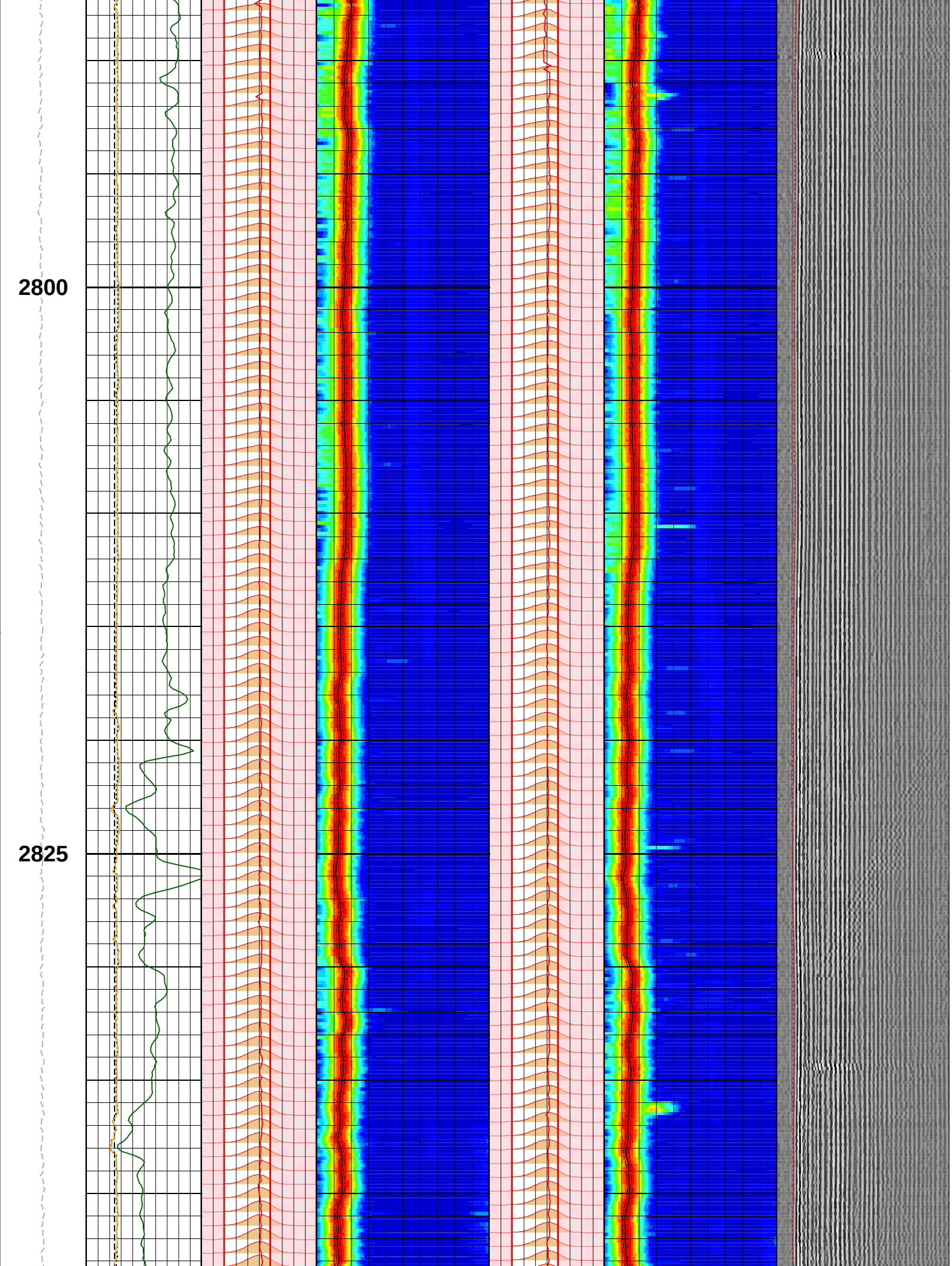
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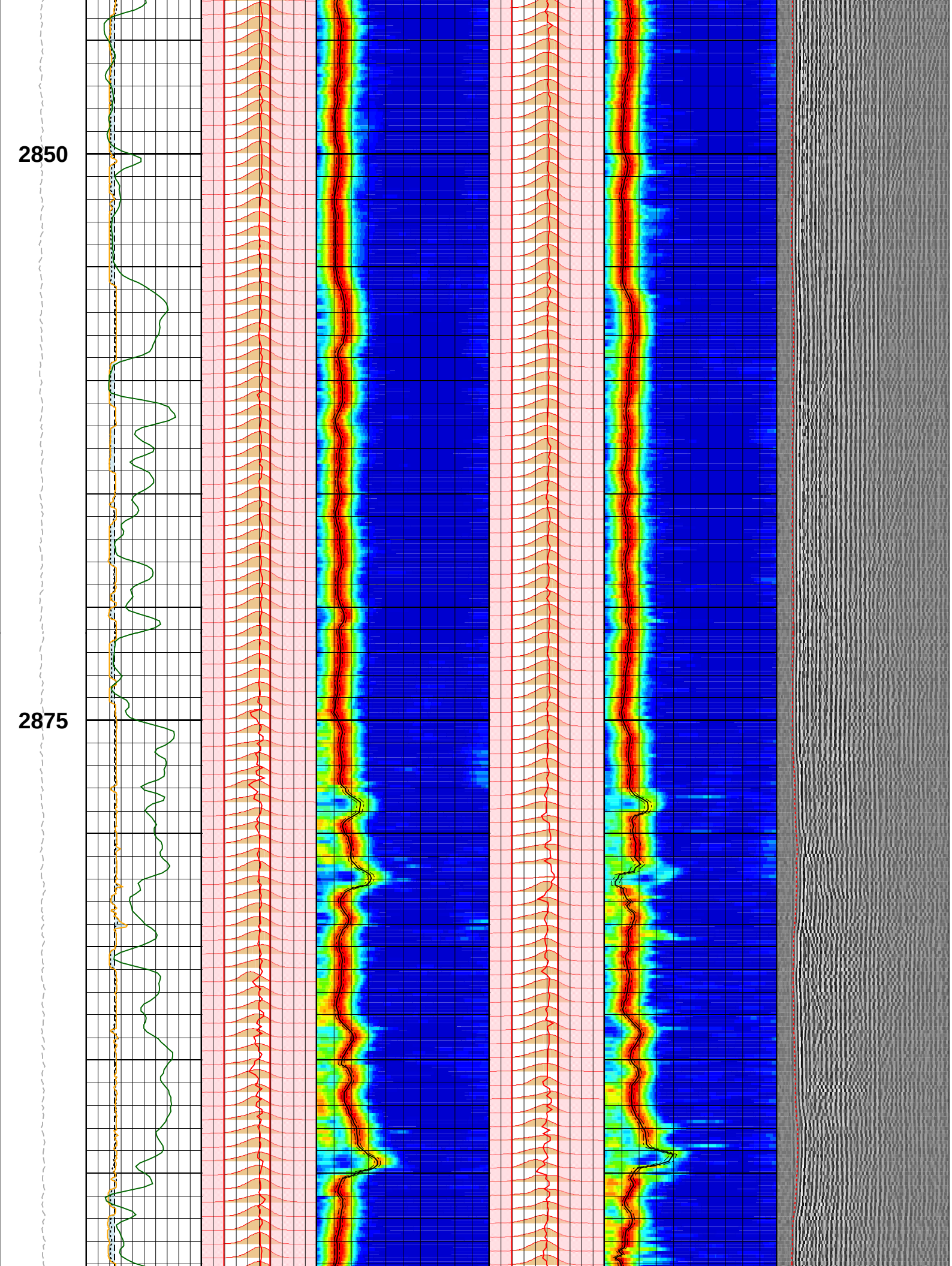
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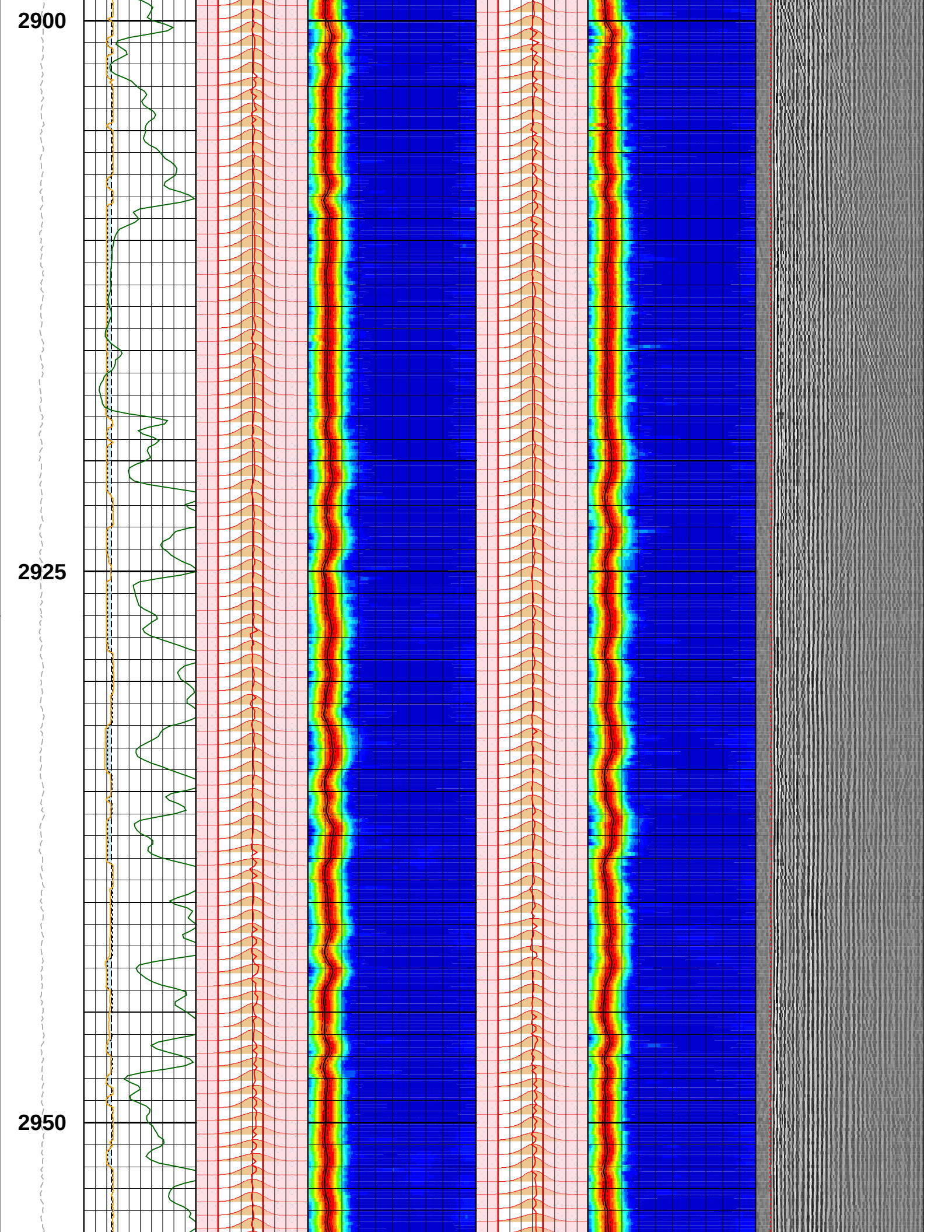
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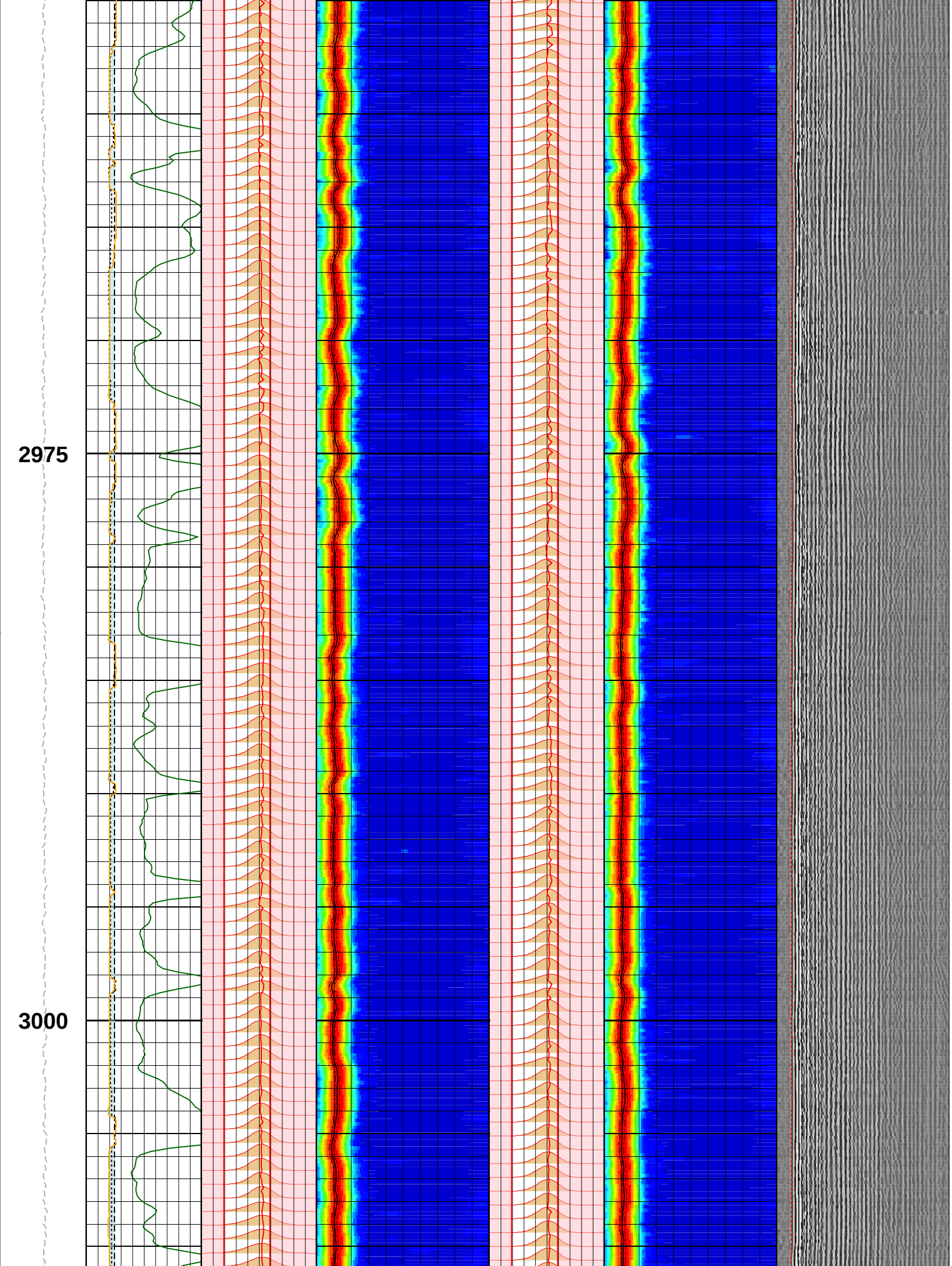
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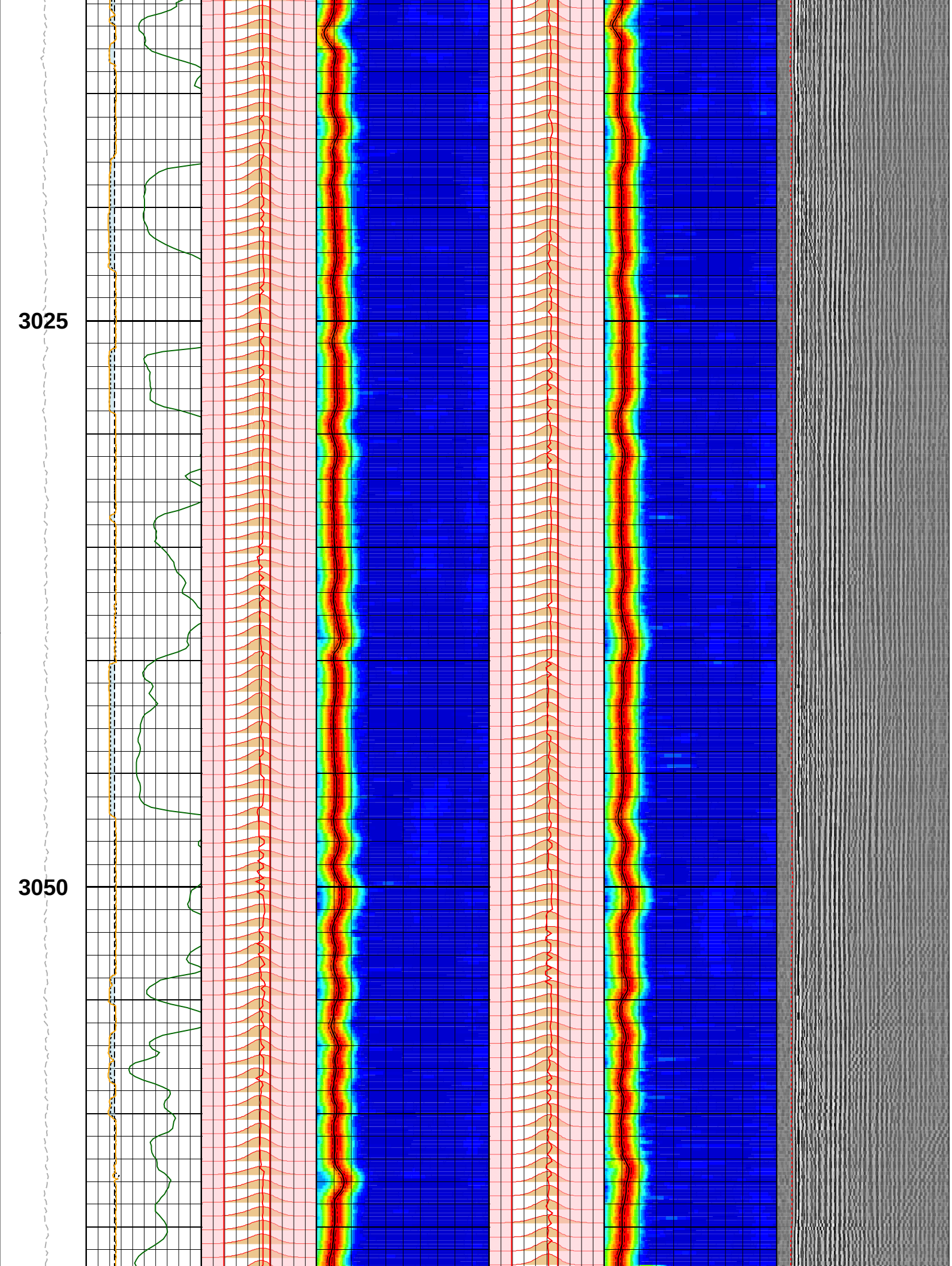
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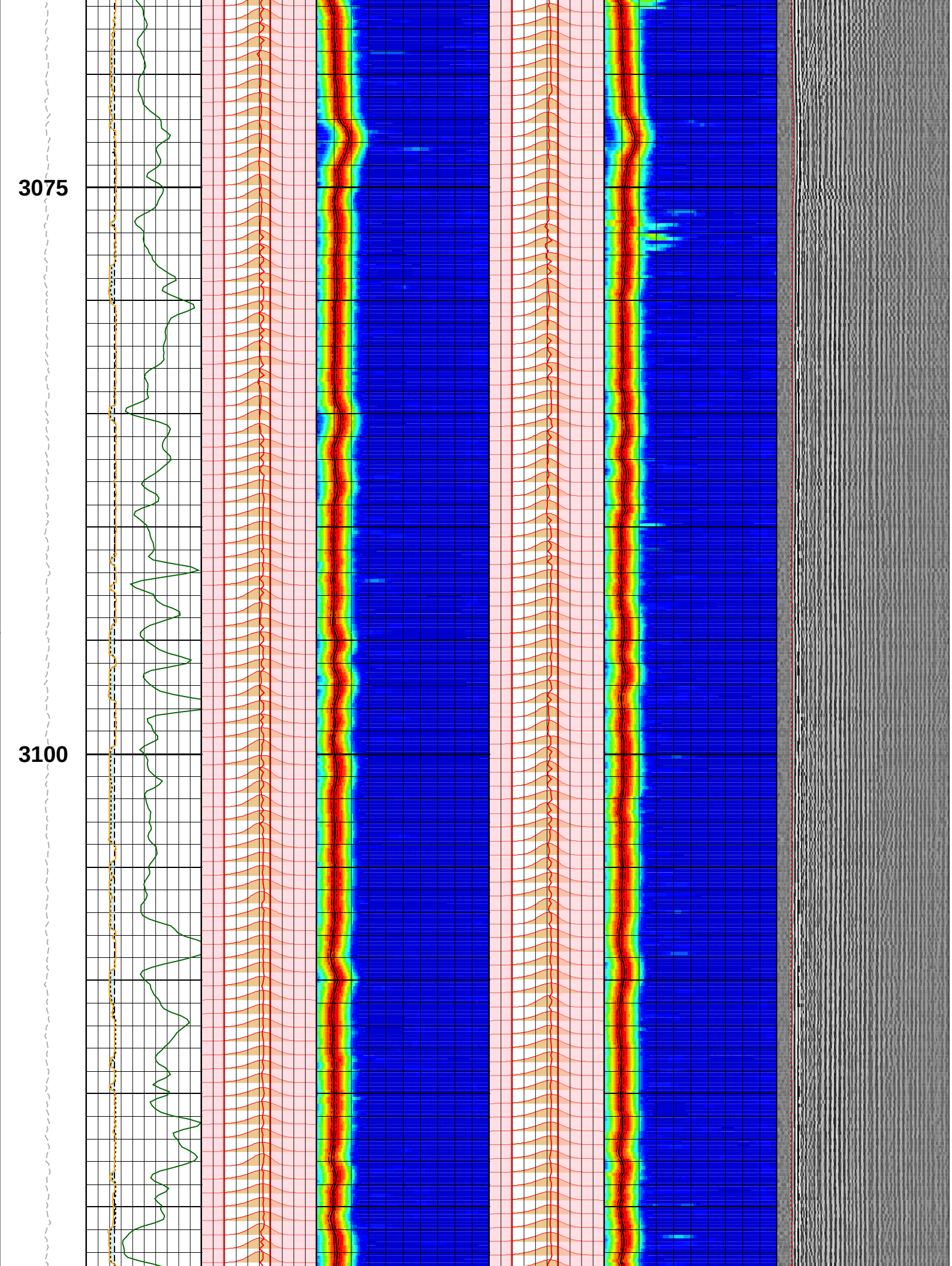
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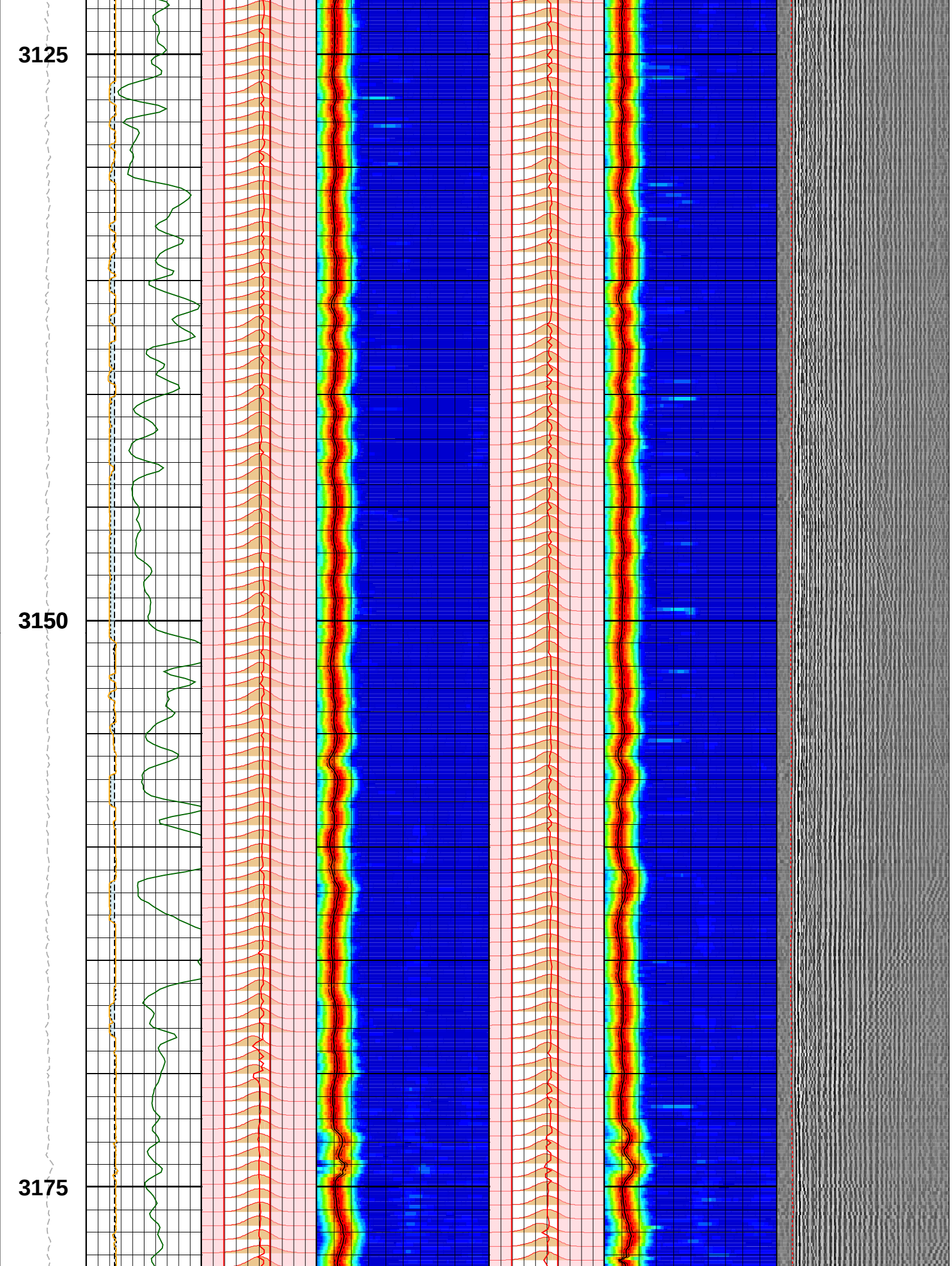
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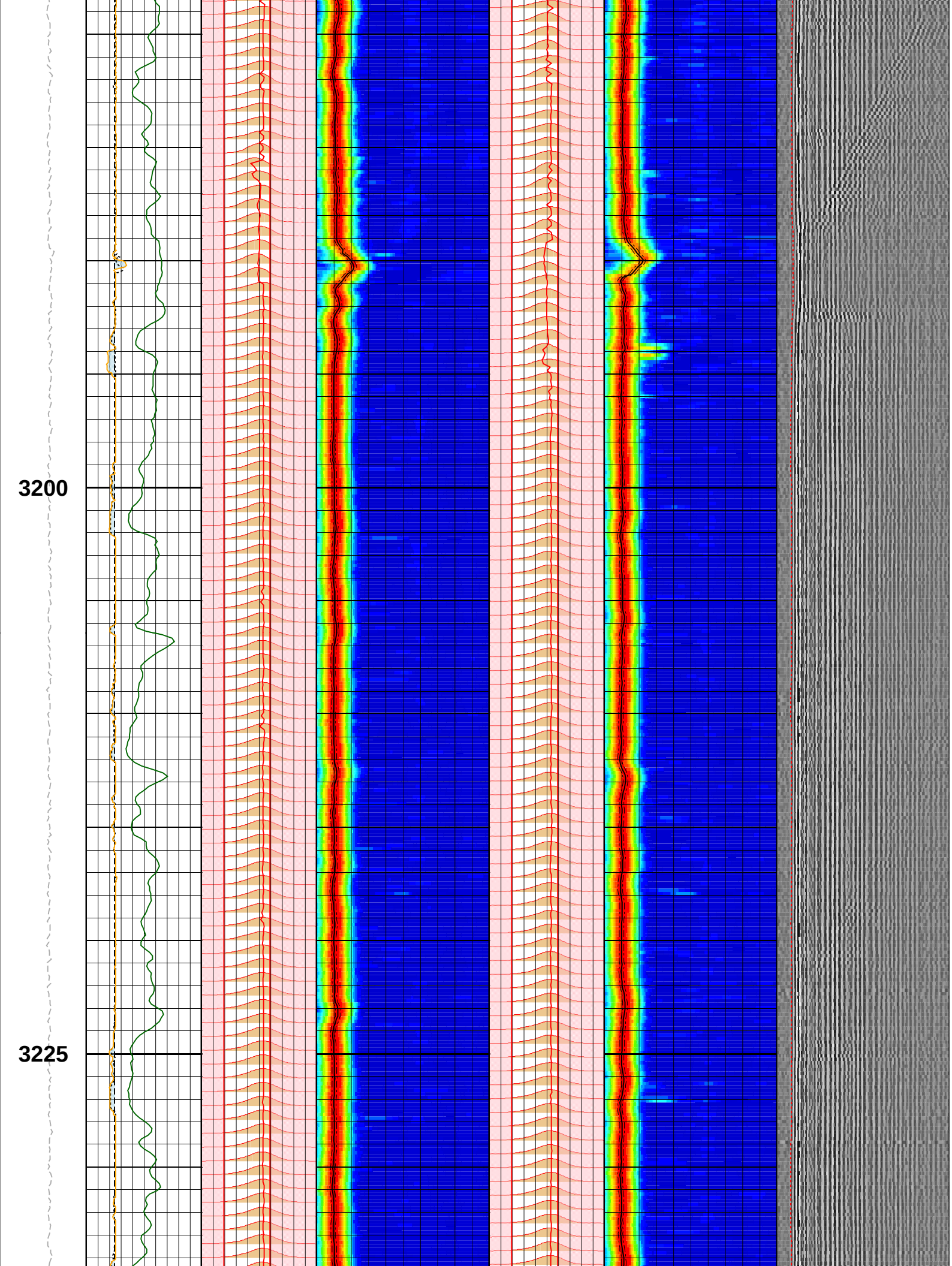
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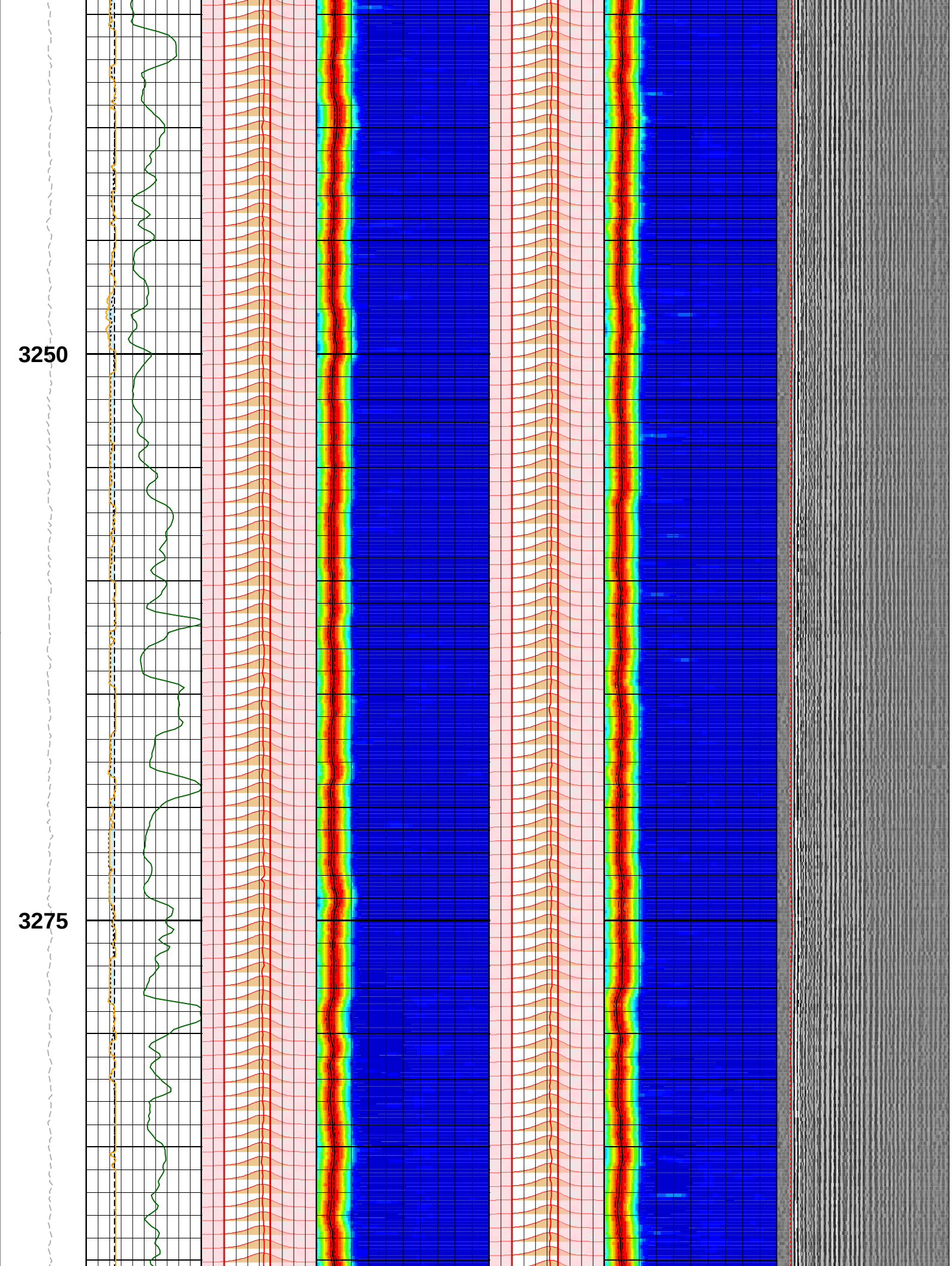
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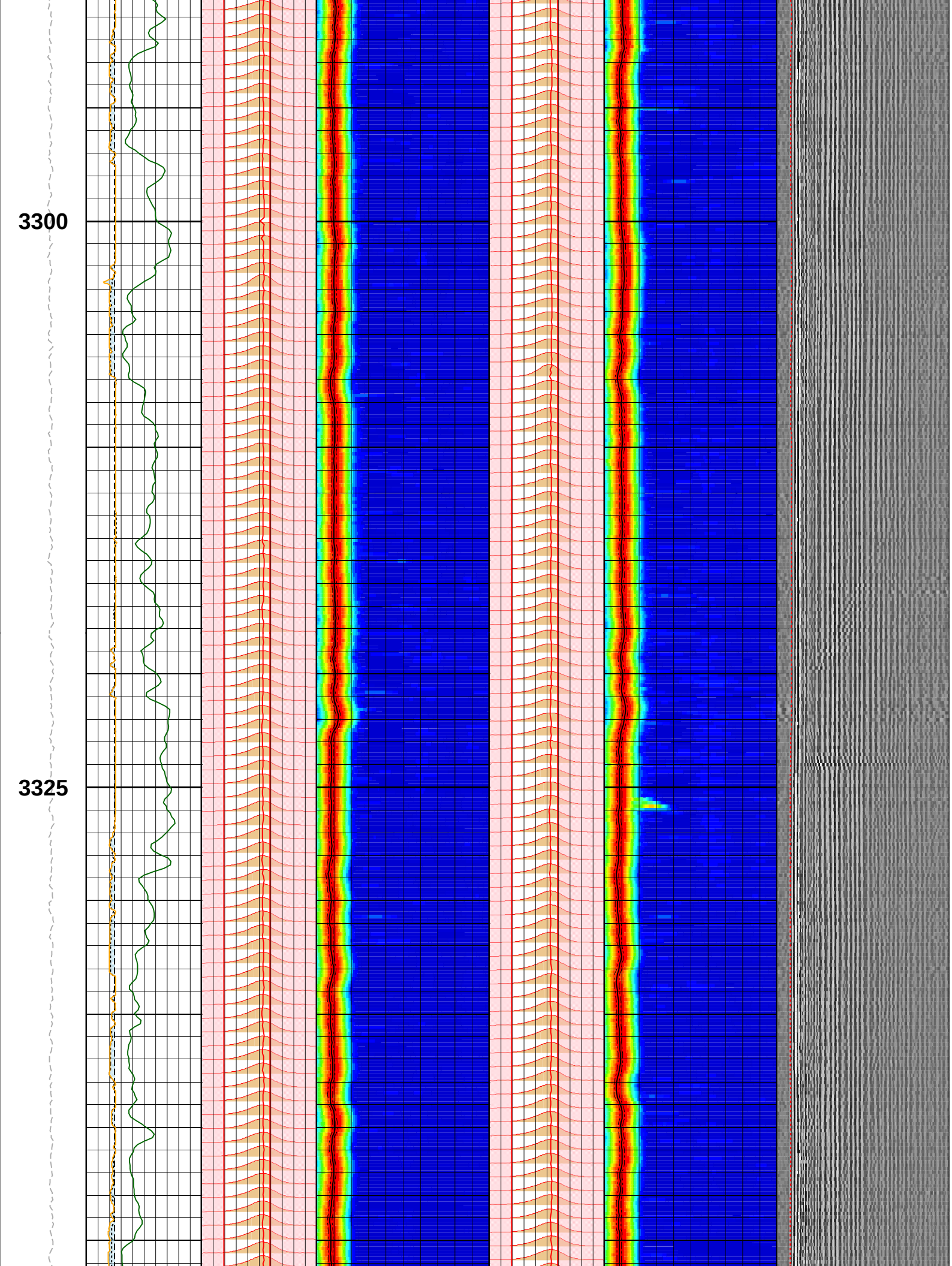
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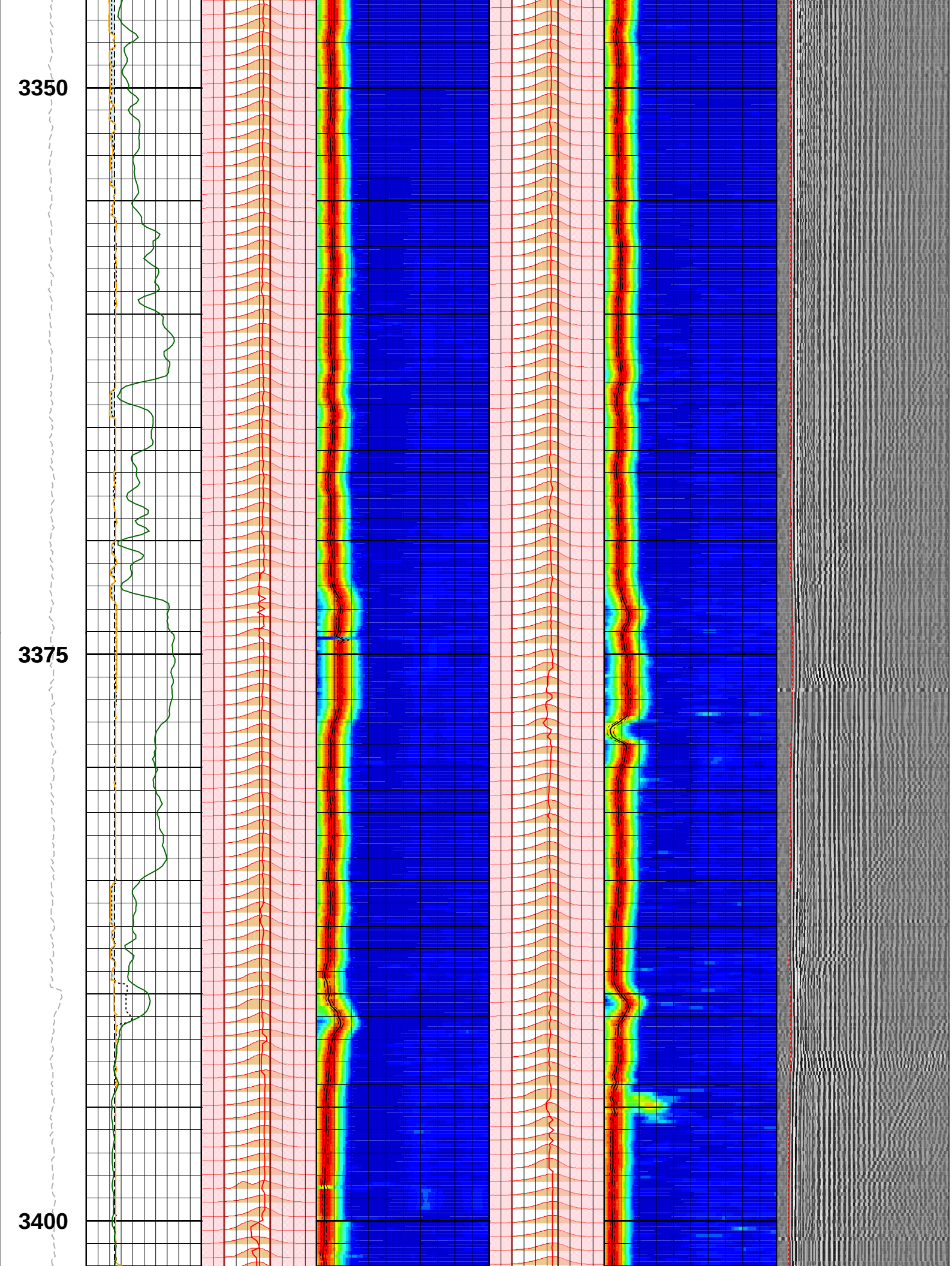
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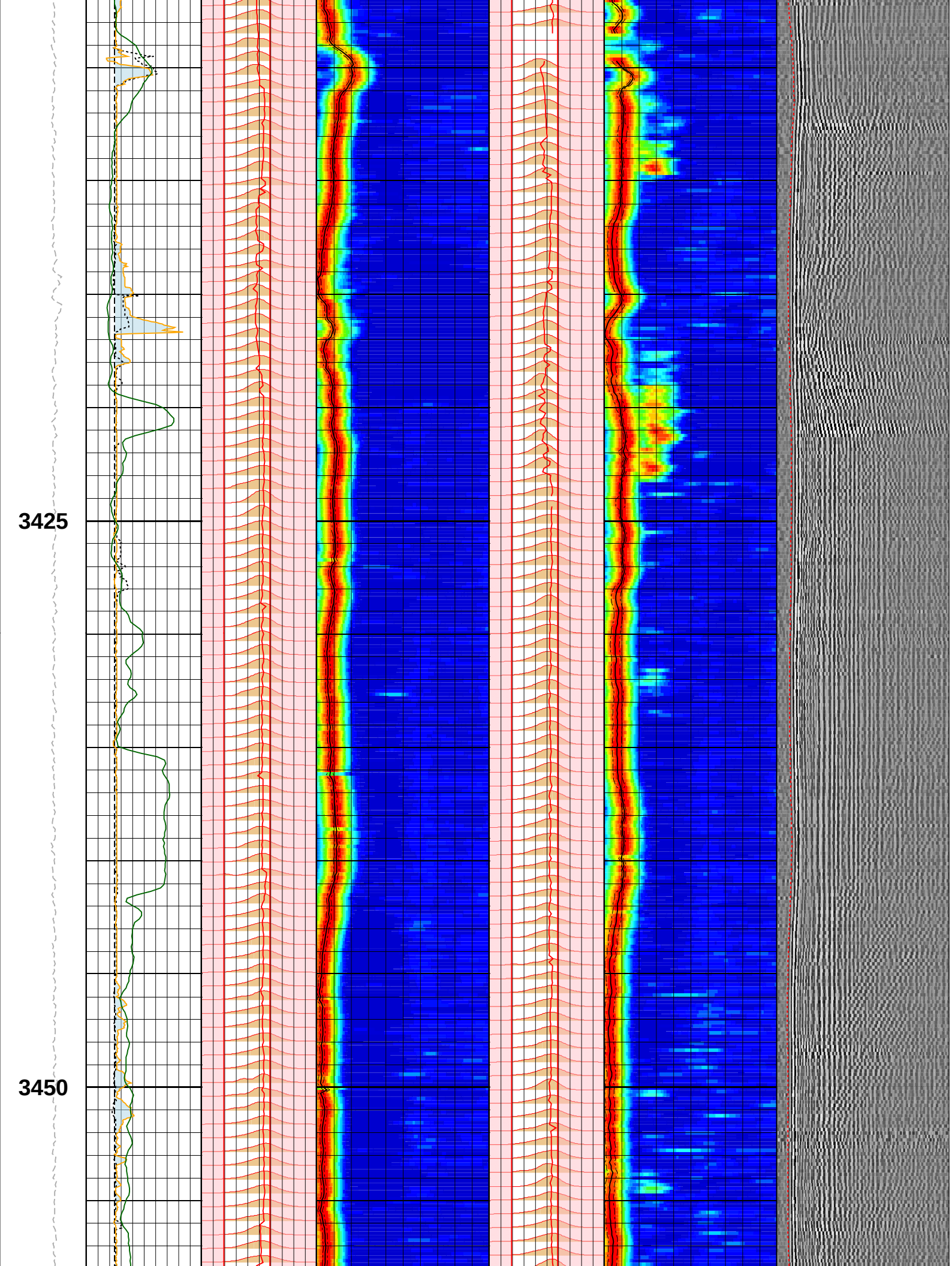
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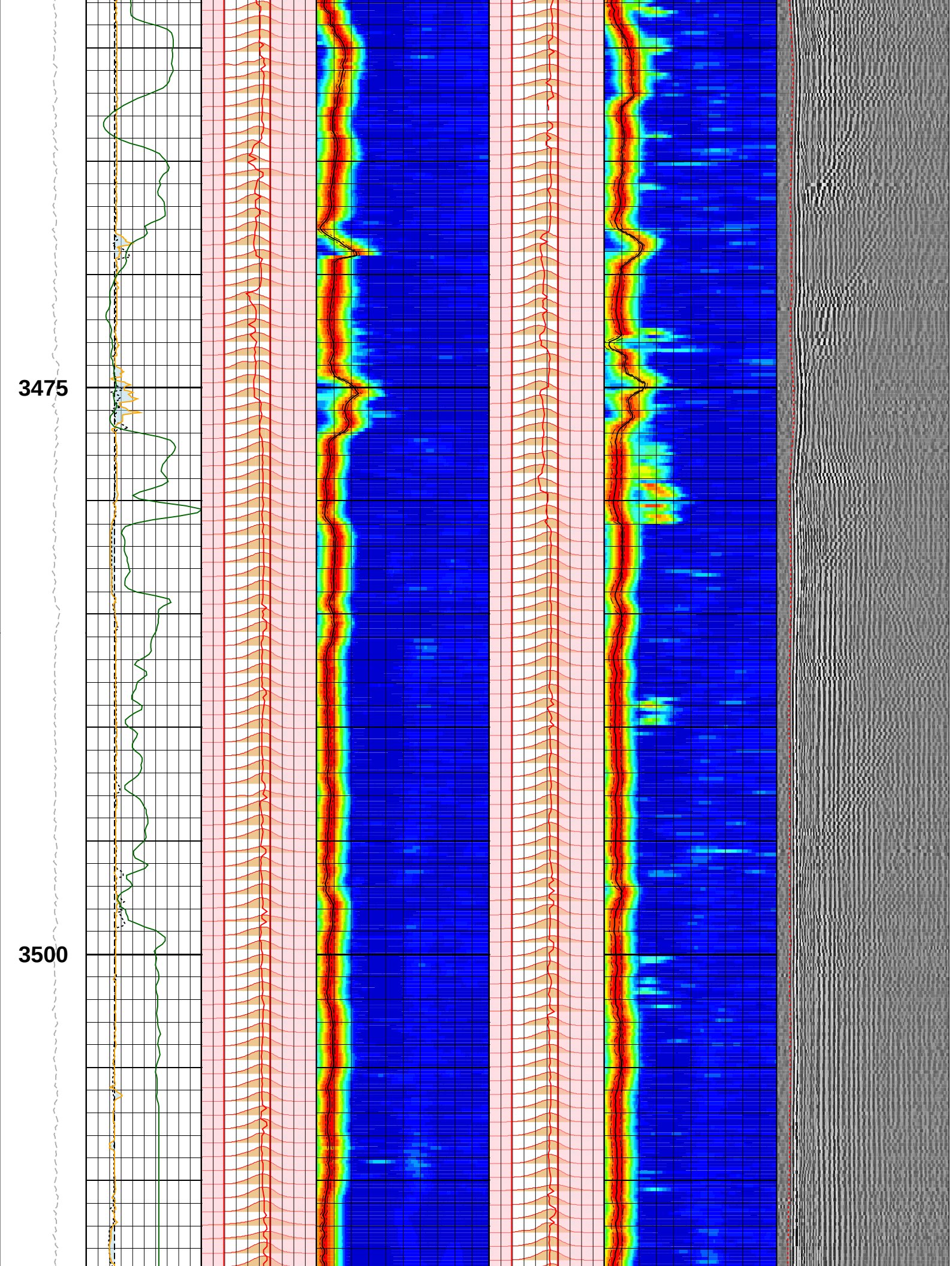
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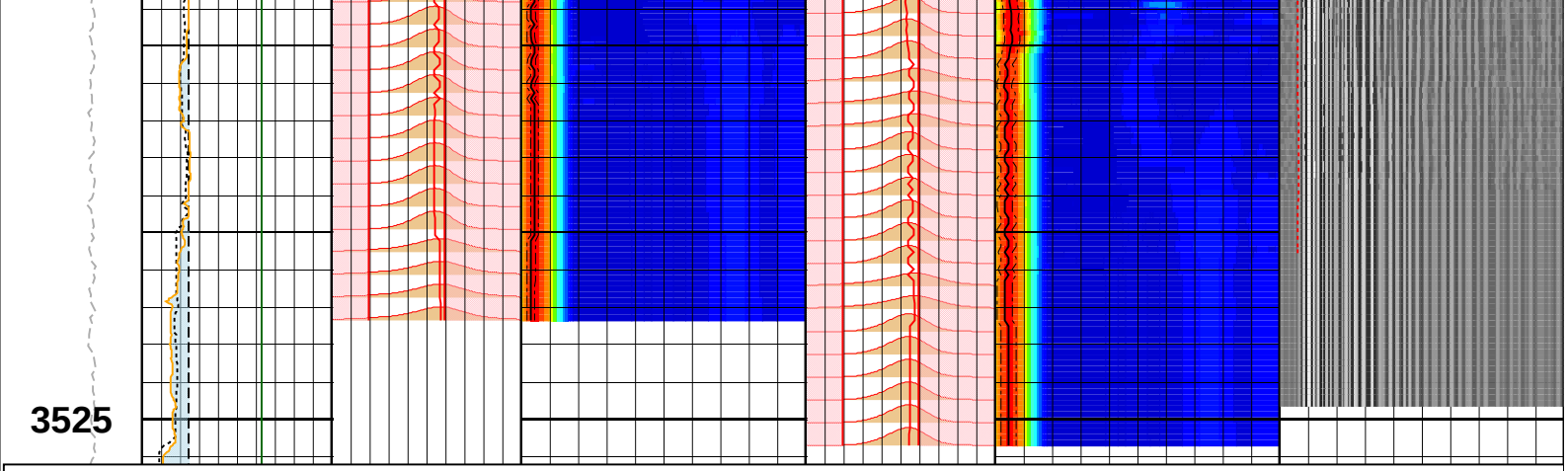

Customized Process: Start Depth (3525.7 m), Stop Depth (2408.61 m), Logging Mode (DSI − LDP)
Noise Cut Filtering(No)
WF_FLG(1 1 1 1 1 1 1 1), MUD_TYPE(Brine), DTMUD(194.053), STCAL(Full Array)
TRSPAC(3.5052), RRSPAC(0 0.1524 0.3048 0.4572 0.6096 0.762 0.9144 1.0668)
Hole Diameter (HDAR@FMI_DSI_NGS_042PUP;2 (3530.35 − 2416.61 m))
Zoning Guide (DTCO@FMI_DSI_NGS_042PUP;2 (3530.35 − 2416.61 m))
Tracking Guide (DTRP@BestDT−3;6 .CO .MPS .042 .BDT .EDT (3522.35 − 2408.61 m))

−−− Zone Top Depth (0), Zone Name (Zone1) −−·
SFTY(Intermediate), BHS(OPEN), CSIZ(9.625), HDM(HDAR), HD(8.5), DFNM(Vp Based), DFVPVS(2)
TWI(1500), SLL(80), SUL(540), SST(4), TLL(1200), TUL(12800), TST(400)
SBW(8200), SBO(1480), SWD(60), TWD(6150), SEM(0.35), FLENG(47), FLOW(1000), FHIGH(3000)
TKO_MODEL_ORDER(2), TKO_TOLERANCE(50) TKO_FLOW(0), TKO_FHIGH(8000)

MD 1 : 200 m	Gamma Ray	CfRS	DtRS	CfTS	DtTS	TISS
	0 (gAPI) 150	0 (Hz) 5000	80 (us/ft) 540	0 (Hz) 5000	80 (us/ft) 540	0 (us) 20440
TENS@FM	Caliper2	SpcRS	STPrjR	SpcTS	STPrjT	WF VDL
1000 (lb) 3000	6 (in) 16	0 (Hz) 5000	80 (us/ft) 540	0 (Hz) 5000	80 (us/ft) 540	0 (us) 20440
	Caliper1					
	6 (in) 16					
	Bit Size					
	6 (in) 16					
	Wash Out					