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TPR
OR-496

WOODSIDE ENERGY LTD

DRILLING PROGRAMME

Thylacine -1

T/30P

Rev. 0

OR-496

CONTENTS

1 FIELD INFORMATION

1.1 Data Summary

Well Name :	Thylacine 1
Well Designation :	Exploration
Permit :	T/30P
Well owner:	Joint Ventures; Origin, Woodside & Benaris
Operator :	Origin Energy.
Well Type :	Vertical
Expected Reservoir Fluid :	Gas
Anticipated spud date :	May 2001
Drilling Contractor / Rig :	Diamond Offshore General Company (DOGC) / Ocean Bounty
RT - SL / Water Depth:	25m / 97mLAT
Geographic Location :	Lat 39° 14' 27.524" S Long 142° 54' 43.914" E
Surface Tolerance (Positioning)	50m radius
Primary Objective :	Upper Waarre Formation
Depth of Primary Objective :	2055mRT ± 75m
Secondary Objective :	Basal Waarre Sandstone
Depth of Secondary Objective :	2585mRT ± 75m
Well Depth (TD) :	2390 mRT ± 75m (dry hole) / 2695 mRT ±75m (success)
Target Tolerance :	150m radius
Budget Duration :	20 days (excluding tow to location)

1.2 Potential Hazards:

Shallow Gas	No amplitude anomalies indicative of shallow gas have been observed on seismic. No shallow gas has been encountered on any of the offset wells. In addition, there are no observable closures in any of the overburden seismic markers.
Toxic & Hazardous Gas	No H_2S has been encountered on any of the offsets. In the event of a discovery high CO_2 may be present in the reservoir.
Lost Circulation	Thylacine-1 has been positioned away from regional faulting and losses are unlikely. 36" hole & 17½" hole may encounter losses in the Port Campbell Limestone due to the potential of encountering cavernous zones. This may prove troublesome for cement returns to surface. 12¼" hole may experience losses in the unconsolidated Mepunga Sandstone. Offsets reported seepage losses only with the exception of Conan-1 which reported a single 20bbl loss drilling through the Dilwyn Sandstone. Though associated losses were not reported on offsets, minor coals may be encountered in the Eumeralla in the event of drilling to the success case TD.
Differential Sticking	Differential sticking is not expected to pose problems on Thylacine-1 at the programmed mud weights.
Abnormal Pressure	The Thylacine-1 well is expected to be normally pressured down to Paaratte and Belfast Mudstone where minor overpressure is expected. In 8½" hole inflated pressures may be encountered due to gas cap effect in the Target reservoir. This is expected to be in the range 1.14 – 1.2 sg though a low probability of up to 1.55sg exists.
Borehole Stability	Sloughing was observed in the Belfast Mudstone when low mud weights were used (eg Minerva-2A with 1.06sg mud). Offsets raised their mud weights up to 1.17sg to counter this problem. This interval will be drilled with a minimum of 1.18 sg mud in Thylacine-1.
Fracture Gradient	Good formation integrity has been seen on the offset wells. LOT's in the range of 1.7-

	2.0sg are expected.
Hard Drilling	36" hole may encounter cemented layers and calcarenite outcrops. These could continue some way into he 17½" hole. 12¼" hole may encounter hard drilling with potential pyritic and dolomitic bands in the Dilwyn / Pember. 8½" hole is expected to encounter hard and abrasive drilling in the Waarre, Lower Waarre and Eumeralla formations.
Bit Balling	Bit balling may be problematic in the 17½" hole section through the Gellibrand Marl. In 12¼" & 8½" hole sections this should not be the case with inhibitive mud systems utilised, though care should be taken if heavy set PDC bits are used in anticipation of hard zones.
Drillstring Vibrations	Drill string vibration was not monitored in offset wells the most recent of which was drilled in 1995. Vibrations may be problematic in regions of hard drilling such as the Dilwyn Fm in 12¼" hole and Lower Waare & Eumeralla Vibrations can be reduced through the use of a mud motor and varying drillstring rpm. Stick Slip vibrations may be more severe with the use of a motor due to the effects of reactive torque on drillstring rotation.
Temperature	The BHT is expected to be 118 °C in the event of the success case TD.
Offset Wells	LaBella-1 (32.3km NW), Mussell-1 (33km NW); Conan-1 (42.7 km NNW); Minerva-1 (60km NNE); Minerva-2/2A (58.6km NNE), Eric the Red-1(35 km NE), Loch Ard-1 (40 km NE), Prawn-1 (20 km SE)
Weather	Bass Strait weather conditions can be extreme and could delay weather dependant activities such as anchoring and riser/BOP operations. In the event of severe weather it may be required to suspend drilling.
Seabed Conditions Anchoring	Offset well site surveys suggested anchoring could be problematic due to lack of superficial sediment. All offset wells experienced no problems in relation to foundations and anchor holding.
Environmental	The Thylacine-1 location is in an area of seasonal Pigmy Blue Whale aggregation. Thylacine-1 spud is conditional on results of whale survey flights prior to May 16th.

1.3 Programme Basis

This Drilling Programme describes the activities that have been programmed for the well. This document is to be used in conjunction with the documents that are referenced below.

This document constitutes the primary reference for well activities and is to be utilised in this capacity for correspondence and discussions with Minerals & Resources Tasmania, Department of Natural Resources & Environment (Victoria) as appropriate, contractors and Woodside personnel.

Any changes to this programme can only be made with the written approval of the Well Engineering MODU Team Leader or his delegate.

1.4 Documents

The following documents are to be utilised in conjunction with this Drilling Programme

- Well Design Workbook — Doc A6000RD131573
- Well Specific Guidelines for Thylacine -1 — Not controlled
- Drilling Operations Guidelines – MODU — Not controlled
- DOGC Well control manual — EHS-WCM-01

1.5 Health, Safety & Environment

The following documents, in conjunction with this Drilling Programme, describe Woodside's management of HS&E.

- Safety Case Bridging Document - Ocean Bounty — A6000RF130379
- Environmental Assessment for Otway Basin — ENV-538
- WEL OHSE Manual — WO209
- MODU Emergency Response Plan — ERP-2800
- Well Engineering Project Management Guide — A6000AD036
- HSE Plan for Ocean Bounty — A6000AF130363

1.6 Formal Safety Assessment

The table compares the general safety case assumptions with the actual values for this well.

QRA subject	Safety Case Assumption	Actual for this well	Within QRA envelope?
Flight time to rig	180 min one way.	58 min one way.	Yes
Flights/person	10.67 return flights per person per year for non-service personnel. 15 return flights per person per year for service personnel.	Average for all rig personnel is <10	Yes
Rig manning level	The normal manning level for Ocean Bounty is 97 persons.	Average manning <85 personnel	Yes
Shipping lane proximity	The rig is located 3km from a recognised shipping lane with 200 vessels passing per annum.	Thylacine-1 is located 18nm from the primary regional shipping lane and 7nm from the secondary. Frequency of vessels TBA.	To be determined
Number/ Type of Wells per year	14 wells per year - 2 exploration, 3 development and 2 completions for gas and 2 exploration, 3 development and 2 completions for oil.	Thylacine-1 is an exploration well. Gas is the primary fluid objective.	Yes
Metocean Conditions	Assessment of Ocean Bounty indicates vessel structure/stability and mooring were all capable of withstanding 185 kph (100 kn) winds.	In the event of adverse weather beyond the drilling design criteria for the MODU, drilling will be suspended.	Yes
Are the risks associated with drilling this well within the assessed risk envelope for the MODU?		Overall, the risks which have been evaluated for this well are within the assessed risk envelope used in the Ocean Bounty vessel safety case.	Yes

1.7 Operational Setting

Thylacine-1 will be drilled by the semi-submersible mobile offshore drilling unit (MODU) Ocean Bounty, which is operated by Diamond Offshore General Company.

Supply operations for drilling operations will be from a Supply Base in Portland.

Two anchor handling supply vessels, Pacific Sentinel & Pacific Conqueror, will be utilised during Thylacine-1 operations for towing, anchor running and supply. One vessel will remain in the vicinity of the MODU at all times during operations to provide support in the event of an emergency.

Distance from the Supply Base to the Thylacine-1 location is ca. 80nm. One way economy sailing time is ca. 7 hours. One way helicopter flying duration is ca 58 minutes depending on the weather.

2 GEOLOGICAL OBJECTIVES & PREDICTED SECTION

2.1 Objectives

Thylacine-1 is planned as a vertical exploration well to evaluate the hydrocarbon bearing potential of the Waarre formation on the Thylacine structure. There is a secondary objective in the Basal Waarre Sandstone.

2.2 Predicted Stratigraphic Section (See also Figure 4)

The predicted section for Thylacine-1 is presented in graphical form in Figure 4.

Formation	Depth mTVDSS	Depth mTVDRT	Uncertainty ± m
Seafloor / Top Port Campbell	97	122	5
Top Tertiary Channel	455	480	30
Top Top Gellibrand Marl	615	640	75
Top Niranda Group	790	815	75
Top Narrawaturk Marl	1140	1165	75
Top Mepunga	1190	1215	75
Top Dilwyn	1335	1360	75
Top Pember	1455	1480	75
Top Paarate	1475	1500	100
Top Belfast	1620	1645	100
Top Flaxman	1960	1985	75
Top Upper Waare	2030	2055	75
Top Lower Waare	2200	2225	75
Dry Hole TD	**2365**	**2390**	**75**
Top Basal Waare Sandstone	2560	2585	75
Top Eumeralla	2620	2645	75
Total Depth (Success Case)	**2670**	**2695**	**75**

3 DRILLING SUMMARY

3.1 Overview of Well Design

The Thylacine-1 well has been designed as a vertical exploration well with the potential to suspend for completion in the event of exploration success. A summary of critical information relating to the well design is shown in Figure 4.

After drilling the 36" hole, a 5 joint 30" conductor swedged to a 20" shoe will be run and cemented to seabed. The 17½" surface hole will be drilled riserless to the Gellibrand Marl Formation using seawater with Hi-vis sweeps for hole cleaning. The hole will then be displaced to mud and 13⅜" 72ppf casing run with Dril-Quip SS10C 18¾" 10,000psi wellhead.

The BOP stack and riser will be run and 12¼" intermediate hole will be drilled using a KCL/PHPA/Glycol water based (Aquadril) mud system to the lower Belfast Formation and 10¾ 55.5ppf x 9⅝" 47ppf casing will be run.

The 8½" hole will be drilled to final TD using a KCL/PHPA/Glycol water based (Aquadril) mud system Initial mud weight will be 1.22sg and will be raised as required on indications of overpressure.

Primary data acquisition will be by wireline logging (as per logging program). In the dry hole/uneconomic case the well will be plugged and abandoned. In the success case the well will be suspended for later completion.

Refer to Figure 3 for the Thylacine-1 proposed casing schematic.

3.2 · Pore Pressure

Pore pressure modelling suggests minimal overpressure due to under-compaction in the 12¼" hole section. Although problems were encountered in Paaratte & Belfast Mudstone on offsets, the mud weight will be maintained at 1.18sg through these formations to aid well bore stability.

In the 8½" hole section minimal overpressure is expected due to under-compaction, though significant potential exists for inflation of pressure through gas cap effect in the Waarre and potentially Flaxman. The most likely range for pore pressure is 1.14 – 1.20sg in the event that a gas column is present. There is a very low probability of a column height of ±1100m that would yield an equivalent pore pressure of 1.55sg at the Flaxman sandstone if present.

The planned mud weight of 1.22sg in 8½" hole will provide an over balance at the highside of the most likely pore pressure range. Any increase in background connection gas may warrant an increase in mud weight.

3.3 Drilling Fluid Summary

Hole mBRT	Casing mBRT	Mud Properties	Mud Type
Sea Bed @ 122m. 36" @ ~181m.	30" cond. @ 180 m.	Mud Wt. < 1.08 PV n/a YP n/a 6 rpm > 40 API FL No Control	***SEA WATER + HIGH VIS SWEEPS*** ***Sweeps:*** Prehydrated Gel Sweeps No returns to seabed anticipated through the vugular Port Campbell Limestone. ***TD Displacement:*** Prehydrated Gel @ 1.5 x Hole Volume.
17 ½" hole @~755 m.	13 $^{3}/_{8}$" csg @ ~750 m.	Mud Wt. < 1.08 PV N/A YP N/A 6 rpm > 40 API FL No Control ***@ TD Inhibitive Pill*** Mud Wt. 1.15 YP 20 - 30 6 rpm > 25 API FL < 10 KCl 8% wt/wt	***SEA WATER + HIGH VIS SWEEPS*** ***Sweeps:*** Alternate Guar Gum and Prehydrated Gel Sweeps • 2 x 15.9m^3 (100 bbl) sweeps per stand when ROP > 100 m/hr • 2 x 11.92m^3 (75 bbl) , 1 x 15.9m^3 (100 bbl) sweeps per stand when ROP > 100 m/hr Or if slow drilling, pump 11.92m^3 (75 bbl) on time basis every 15 minutes Always pump a 15.9m^3 (100 bbl) Gel sweep just prior to a connection. ***TD Displacement:*** 1.5 x hole volume of unweighted Gel/Drispac SL. 23.8m^3 (150 bbls) of 8% KCl/Gel/Drispac SL pill across exposed Gellibrand marl.
12¼" hole @~1,855 m.	9$^{5}/_{8}$" csg @ ~1,850 m.	Mud Wt. 1.10 – 1.18 sg PV ALAP 6 rpm 8 -12 API FL < 5.0 KCl 8 % wt/ wt The mud weight will be initially controlled at 1.10 sg and increased gradually to 1.18 sg by 1425 mRT (Dilwyn Formation). Further mud weight increases should be as hole conditions dictate, in order to counter wellbore instability and/or overpressure in the Paaratte / Belfast formations	***AQUADRILL*** • BHCT in the 'Belfast' anticipated 40 - 50 °C – Aquacol selected based on cloud point behaviour. • Maintain 3% Aquacol in the mud system to the top of the Belfast formation @ 1,690 mRT. Add Aquacol B from this point to interval TD to ensure optimum cloud point behaviour. • Observe cuttings integrity at shakers at all times. If shards or splintered cuttings present weight up immediately. • 3% Penetrex will be injected into the suction line as a proactive approach to alleviate bit balling and enhance ROP.
8½" hole T.Depth @~2,695m. (Hydrocarbon Discovery case)		Mud Wt. 1.22 - 1.55 sg PV ALAP 6 rpm 6 -10 API FL < 5.0 HTHP FL < 12.0 mL @ 110 °C KCl 8 % wt/ wt The mud weight will be initially controlled at 1.22 sg. Any increase in background connection gas may warrant an increase in mud weight. A "worst case" pore pressure modelling indicates a low probability of encountering a 1134m gas column at ~1,985 mRT	***AQUADRILL*** • Maintain 3% polyol in the mud system. Add 1.5% Aquacol and 1.5% Aquacol B from this point to interval TD to ensure optimum cloud point behaviour. • $CaCO_3$ should be added just prior to and during drilling of the sand sequence at 8 sx per 30 m of hole drilled. • 100 Bbls of LCM pill #4 to be prepared and held in reserve prior to drilling out the 9$^{5}/_{8}$" shoe track. • BHST at 2,745 TD anticipated ~ 118 °C. BHCT estimated to be ~ 90 °C.

3.4 Wellhead and Casing Programme

Hole Size	Casing Size	Joint & Wellhead Details	Casing Rating			S.F. Actual (Reqd)	Design Case		
Depth	Setting Depth		Burst Mpa (psi)	Collapse Mpa (psi)	Tension KdaN (kips)		Burst	Collapse	Tension
36" 181 mRT	30" x20" 180 mRT	30" DQ housing (1.5" wt/ X52 HD90 box) 3 x 30" int jnt (1.0" wt/X52 HD90 PxB) 30" x 20" shoe jnt (1.0" wt/X52 HD90 pin).	-	-	-				
17½" 755 mRT	13⅜" 750 mRT	18 ¾" DQ SS10c WH with ~6m 20" ext. (1.0" wt/X52/welded) & 20" x 13⅜" x'over (72# L80 BTC with no cross coupling) – made up onshore. 13⅜" casing (approx. 56 jnts 47# L80 BTC) 13⅜" float jnt (72# L80 BTC) 13⅜" int jnt (72# L80 BTC) 13⅜" float shoe (72# L80 BTC)	34.5[1] (5,000) 37.0 (5,380)	15.6 (2,260) 18.4 (2,670)	692 (1,556) 739 (1,661)	1.75 (1.10) Burst 2.28 (1.00) Collapse 3.36 (1.30) Tension 1.95 (1.25) Triaxial	Internal: Displacement to gas External: Mud & cement mix water	Internal: Full Evacuation External: Fluid gradients with pore pressure	Casing running speed of 2m/sec
12¼" 1855mRT	10¾"x9⅝" 1850mRT	10¾" csg. (approx. 15 jnts 55.5# L80 NVAM) 10¾"x9⅝" x-over L80 NVAM x NVAM 9⅝" casing (approx. 131 jnts 47# L80 NVAM) 9⅝" float jnt (47# L80 NVAM) 9⅝" int jnt (47# L80 NVAM) 9⅝" float shoe (47# L80 NVAM)	44.4 (6440) 47.3 (6,860)	27.7 (4017) 32.8 (4,757)	567 (1276) 483 (1,086)	1.77 (1.10) Burst 1.54 (1.00) Collapse 2.44 (1.30) Tension 2.15 (1.25) Triaxial	Internal: Tubing leak during production with 1.2sg fluid in annulus. External: Mud & cement mix water	Internal: Full Evacuation External: Fluid gradients with pore pressure	Casing running speed of 2m/sec
8½" 2695mRT (success case)[2]	7" 2690mRT (if required)	7" Nodeco hanger 7" casing (approx 83 jnts 29# L-80 NVAM) liner top set ca. 100m into 9 ⅝" casing 7" float jnt (29# L80 NVAM) 7" int jnt (29# L80 NVAM) 7" float shoe (29# L80 NVAM)	56.3 (8,165)	48.5 (7,034)	301 (676)	1.90 (1.10) Burst 1.51 (1.00) Collapse 2.99 (1.3) Tension 2.11 (1.25) Triaxial	Internal: Pressure test of 27.6MPa (4000psi) External: Mud & cement mix water	Internal: Full Evacuation External: Fluid gradients with pore pressure	Casing running speed of 2m/sec.

[1] - Burst pressure determined by DQ SS10c 18¾" exploration wellhead with 20" (1" wt) x 13⅜" extension, shop pressure tested to 34.47MPa (5,000psi) working pressure.
[2] - 7" liner in success case only. Dry hole TD is 2390mRT±75m
Note: Casing Design was performed using StressCheck ver 1998.7 (SP1)

3.5 Cementing Programme

HOLE	CASING	CEMENT SLURRY									NOTES
SIZE	SIZE/SETTING DEPTH (mRT)	TYPE	REQUIREMENTS	WATER	WEIGHT (sg)	VOL m^3	Excess (%)	TOC (mRT)	Additives (gal/sx)		PRE-FLUSH/ POST FLUSH
36"	30" x20" 180 mRT	Tail 'G' (1067sx)	Free water: <1% Fluid Loss: N/A Min. Thickening Time: 2.3hr Max. Thickening Time: 2.7hr Compressive strength: >3,500 psi	SW	1.91	35 (220bbl)	200%	Seabed	D-Air 3000L:	(0.003)	1.6 m^3 (10bbl) of sea water ahead
17½"	13⅜" 750 mRT	Lead 'G' (927sx)	Free water: <1% Fluid Loss: N/A Min. Thickening Time: 4.1hr Max. Thickening Time: 4.7hr Compressive strength: >500 psi	SW	1.50	50.5 (368bbl)	50%	Seabed	D-Air 3000L: Liq. Econolite	(0.008) (0.625)	4.8 m^3 (25bbl) of sea water ahead
		Tail 'G' (499sx)	Free water: <1% Fluid Loss: N/A Min. Thickening Time: 2.6hr Max. Thickening Time: 3.0hr Compressive strength: >3,500 psi	SW	1.91	16.4 (103bbl)	50%	600mRT	D-Air 3000L:	(0.003)	
12¼"	10¾"x9⅝" 1850mRT	Lead 'G' (324sx)	Free water: <1% Fluid Loss: N/A Min. Thickening Time: 3.5hr Max. Thickening Time: 4.1hr Compressive strength: >500 psi	Drill Water	1.50	19.7 (124bbl)	50%	1250mRT	D-Air 3000L: Liq. Econolite	(0.007) (0.594)	4.8 m^3 (30bbl) of water ahead 1.6 m^3 (10bbl) of drill water behind
		Tail 'G' (228sx)	Free water: <1% Fluid Loss: <100 cc/30min Min. Thickening Time: 3.0hr Max. Thickening Time: 3.5hr Compressive strength: >3,500 psi	Drill Water	1.91	7.5 (47bbl)	50%	1700mRT	D-Air 3000L: Halad 413L: HR 6L:	(0.003) (0.246) (0.049)	

HOLE	CASING	CEMENT SLURRY								NOTES
SIZE	SIZE/SETTING DEPTH (mRT)	TYPE	REQUIREMENTS	WATER	WEIGHT (sg)	VOL m^3	Excess (%)	TOC (mRT)	Additives (gal/sx)	PRE-FLUSH/ POST FLUSH
8½"	7" 2690mRT (if required)	Tail 'HTB' 35% Silica (395 sx)	Free water: <1% Fluid Loss: <50 cc/30min Min. Thickening Time: 2.8hr Max. Thickening Time: 3.3hr Compressive strength: >3,500psi.	Drill Water	1.90	12.7 (80bbl)	10%	1750mRT (Top liner)	SSA-1 35% bwoc SCR-100L (0.046) D-Air 3000L: (0.003) Halad 413L: (0.287) CFR-3L: (0.230) Gascon 469 (0.222)	6.4 m^3 (40bbl) of drill water ahead* 1.6m3 (10bbl) of drill water behind

Centralisers:

13⅜"	2 x STA-3 per joint over the first 2 joints 1 x STA-3 per joint for the next 6 joints
9⅝"	2 x STA-3 per joint over the first 2 joints 1 x STA-3 per joint for the next 6 joints
7"	2 x "spiroliser" aluminium per joint over the first 2 joints 1 x "spiroliser" aluminium per joint over next 6 jts and significant hydrocarbons

Notes:

(1) Volume include excess as stated
(2) Mix and pump rates used for calculations 0.79 m^3 /min (5bbl/min)
(3) Displacement volumes should be confirmed with Haliburton prior to the job
(4) Additive quantities and thickening times shall be confirmed with rig samples (WEP 8 - Section 8.2.6 Sampling and Testing)
(5) Additives for 8½" HTB slurry as gallons/HTB sacks ie – after blend of SSA-1.
(6) Drill water ahead of liner slurry to be carefully calculated such that hydrostatic head is not lost while cementing. This should be recalculated after MDT pressures are known.

Additives:

Econolite	Liquid extender
D-Air 3000L	Defoamer
HR 6L	Retarder
Halad 413L	Fluid Loss
SCR 100L	Retarder
Gascon 469	Gas Scavenger/Stability Agent
CFR-3L	Dispersant (rheology enhancer)

3.6 Pressure Testing Schedule

Test Performed	On Stump		13⅜" Casing		10¾" x 9⅝" Casing	
	MPa	psi	MPa	psi	MPa	psi
Pressure testing after bumping the cement top plug:						
Initial casing test – contingent upon bumping the plug			24.1	3,500	24.1	3,500
BOP testing:						
Pressure at BOP/wellhead during pressure test (displacement mud in hole) [3]			25.4	3678	32.4	4,704
Max. Anticipated BOP Pressure Assumes gas to wellhead			19.5	2827	30.0	4,349
70% of casing burst (information only)			24.1	3,500 (20" ext)	31.1	4508
Casing Test			24.1	3,500[1]	34.5	4,500
Shear Ram	34.5	5,000	24.1	3,500[1]	34.5	4,500
Wellhead Connector			24.1	3,500[1]	34.5	4,500
Annular Preventers, LMRP connectors	24.1	3,500	24.1	3,500[2]	24.1	3,500
Pipe Rams	34.5	5,000	Function Test Only	Function Test Only	34.5	4,500
Choke Manifold, C&K lines, TDS Safety valves, Standpipe Manifold			34.5	5,000	34.5	5,000

Full BOP test on stump prior to running.

[1] - The wellhead connector, and casing are to be tested against the shear rams (off the critical path) once surface cement samples are hard. Test duration to be 1 hour to allow for the increased volume under test.

[2] - The LMRP connector is to be tested against casing and annular for 5/10mins, once the next BHA is below the wellhead. A full BOP function test is to be conducted once the next BHA is below the wellhead.

[3] - The Pressure at BOP/wellhead during pressure test is based on using 1.03sg MW (displacement fluid of seawater) in the 13⅜" casing and 1.18sg MW in the 9⅝ casing. All pressures are to be re-calculated based upon actual mud weights used

Tests must include a 5 minute low pressure test 200-300psi (1.38-2.07MPa). All tests to be recorded.

A satisfactory pressure test shall be achieved when the test pressure has been maintained for 10 minutes (exception: note 1 above).

A pressure drop of up to 2% within the first half of the allotted time for the pressure test is acceptable, provided the pressure then remains constant for the remaining half of the allotted time.

Burst pressure for the surface 13⅜" casing string is determined by DQ SS10c 18¾" exploration wellhead with 20" (1" wt) x 13⅜" extension, shop pressure tested to 34.47MPa (5,000psi) working pressure.

Surface equipment to be tested off critical path (preferably during rig move).

3.7 13⅜" Shoe Setting Criteria

13⅜" casing is to be set on depth at 755mRT (includes rathole) to ensure that the shoe is below the prognosed channel facies. The base of the Channel facies is prognosed at 640mRT +/-75m uncertainty. This setting depth is anticipated to be in the Gellibrand Marl, though in the event that tops come in high it may penetrate the Niranda Group which is also a suitable casing seat.

3.8 9⅝" Shoe Setting Criteria

9⅝" casing is to be set on depth at 1855mRT (includes rathole). This depth is based on setting as deep as possible into the Belfast Mudstone whilst ensuring that the Flaxman formation is not penetrated. A Flaxman sand was found to be in communication with the Upper Waarre sand in La Bella-1 where elevated pressures due to gas cap were in place.

The setting criteria is based on top Flaxman (prognosed at 1985mRT ±75m) such that:

1985mRT minus 75m (depth uncertainty) with some additional contingency (55m) = 1855mRT.

3.9 LOT Criteria

A formation leak off test is to be conducted after drilling 3m of new formation below the 13⅜" & 9⅝" casing shoes.

At 13⅜" Casing Shoe

A leak off in the range of 1.4 – 1.6sg is expected based on offset data.

A lower bound leak off of 1.40sg would allow safe circulation of a 40bbl 1.14sg EMW kick swabbed from a sandstone in the base of the Belfast Mudstone. Offset data and pore pressure analysis indicates that the pore pressure of these formations will not exceed 1.14sg EMW. The casing shoe depth has been set such that the highside possible pore pressures in the Flaxman and Upper Waarre will not be penetrated in this hole section.

At 9⅝" Casing Shoe

A leak off in the range of 1.7 – 2.0sg is expected based on offset data.

A lower bound leak-off of 1.7sg will provide infinite kick tolerance at the most likely pore pressure range of 1.14 – 1.20sg at the Flaxman/Upper Waarre sands. This would also allow a 100bbl 1.2sg swab kick from the success case deeper TD.

A leak-off value of 1.75sg will provide infinite kick tolerance to allow safe circulation of the low probability case 1.55sg from the deepest possible Top Flaxman.

Kick tolerances for both sections will be recalculated when the actual casing shoe depths and leak off values are known.

3.10 Criteria for Total Depth Determination

In the event of a dry hole total depth is planned at 2390 mRT ±75 m. This depth is to be determined by drilling to 335 m below the top Waarre Fm.

The actual depth will allow evaluation of the primary objective, the Upper Waarre Formation, and the immediately underlying section, with sufficient rathole for logs. The lower section of the Upper Waarre Formation will be fully evaluated for assisting with further evaluation of other prospects in the permit.

In the event of encountering a hydrocarbon column in the Upper Waarre, TD will be selected based on the observed top of Eumeralla Formation plus 50 m for logging rathole (anticipated as 2695 mRT ±75 m).

This will allow evaluation of the secondary objective, the Basal Waare sandstone. If ROP is <5 m/hr in the Eumarella for more than 5 m, then a shallower TD of 30 m below the Top Eumarella can be called (c. 2675 mRT).

The TD will only be determined after consultation with the Operations and Project Geologists.

3.11 Well Abandonment

In the success case where economic hydrocarbons are discovered, Thylacine-1 will be suspended for later completion. In the event that Thylacine is dry or uneconomic, the well will be plugged and abandoned after TD logging.

4 FORMATION EVALUATION REQUIREMENTS

4.1 Directional Surveying Programme

Hole Section	Survey Type
36"	Totco at TD
17½	EMS
12¼"	EMS
8½ "	MWD

4.2 Real-time Logging Requirements (FEWD)

Hole Section	Survey Type
8½"	Gamma-Res (ARC6)

After core point has been passed there is no requirement to trip in the event of FEWD failure in the 8½" hole

4.3 Sampling Programme

Cuttings samples will be collected at 5m intervals from beneath the 13⅜" shoe to TD. A detailed sampling programme will be available at the wellsite. If penetration rate is higher or lower than anticipated, the sample rate may be subject to change under the instruction from the Wellsite Geologist.

4.4 Coring

A 27m Core will be cut in the primary objective contingent on the following criteria:

- U. Waarre porous reservoir established with MWD
- presence of a hydrocarbon column established with MWD or
- strong gas peak or fluorescence on bottoms up samples and sandstones present in bottoms-up samples

Core point is set at 15 m into the Upper Waarre.

It is intended to cut a 27m core with a 36m core barrel, and coring should continue to 36m if the drilling parameters indicate successful collection of core in a timely manner is occurring. A minimum of 10m of cored reservoir is required to evaluate the reservoir.

4.5 Wireline Logging

Hole Section	Logging Tools
17½"	No wireline logs are planned for this hole section
12¼"	Run 1: PEX / DSI
8½" (dry hole case)	Run 1: PEX / DSI Run 2: Checkshots Run 3: Sidewall cores
8½" (success case)	Run 1: PEX/DSI Run 2: MDT Run 3: FMI Run 4: Checkshots Run 5: Sidewall cores

4.6 Testing

There is no requirement for testing on Thylacine-1.

Attachment A
MODU EMERGENCY RESPONSE LISTING - Ocean Bounty

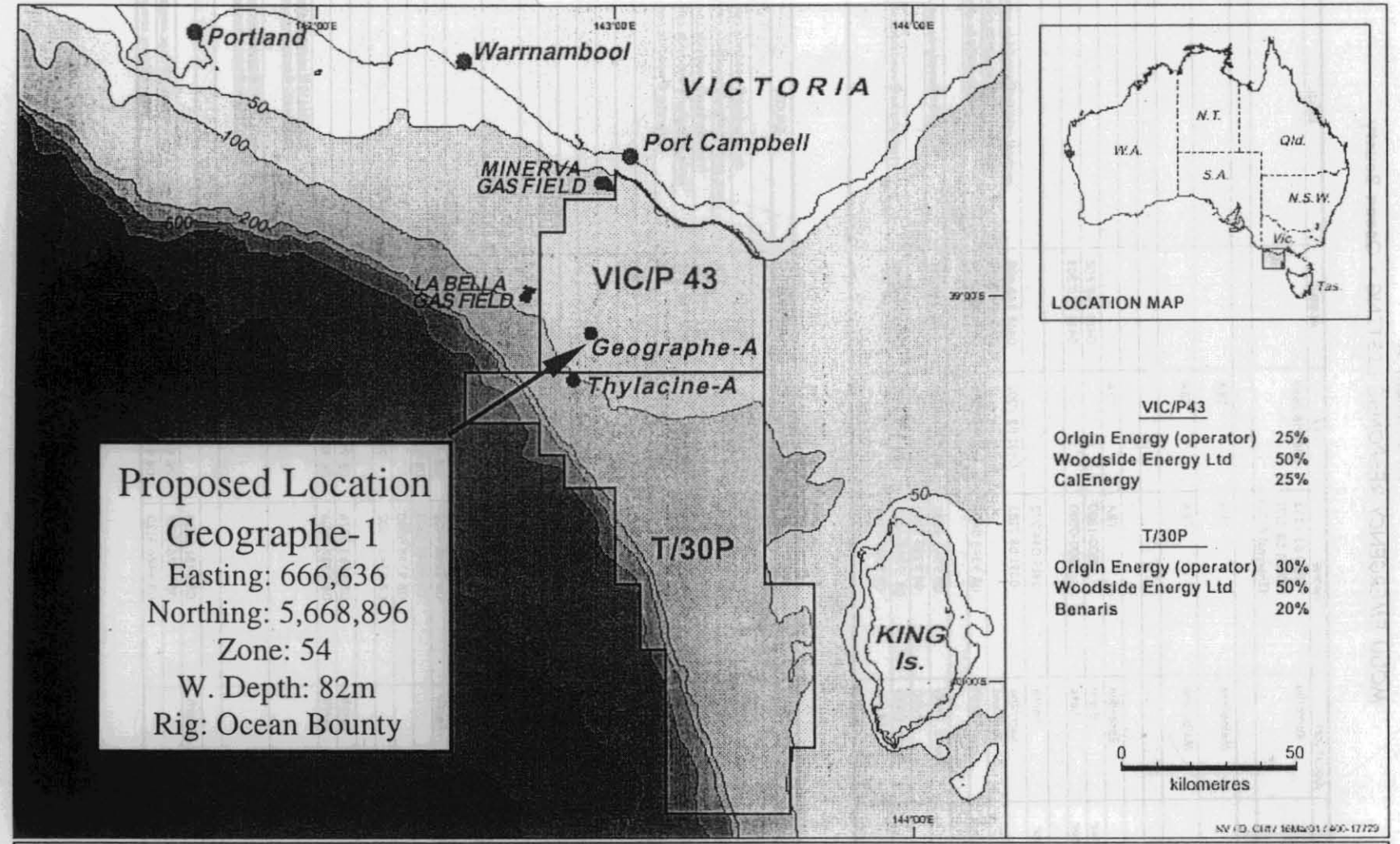
Last updated: 2 March 2001
Verified By: Kathleen Candlish

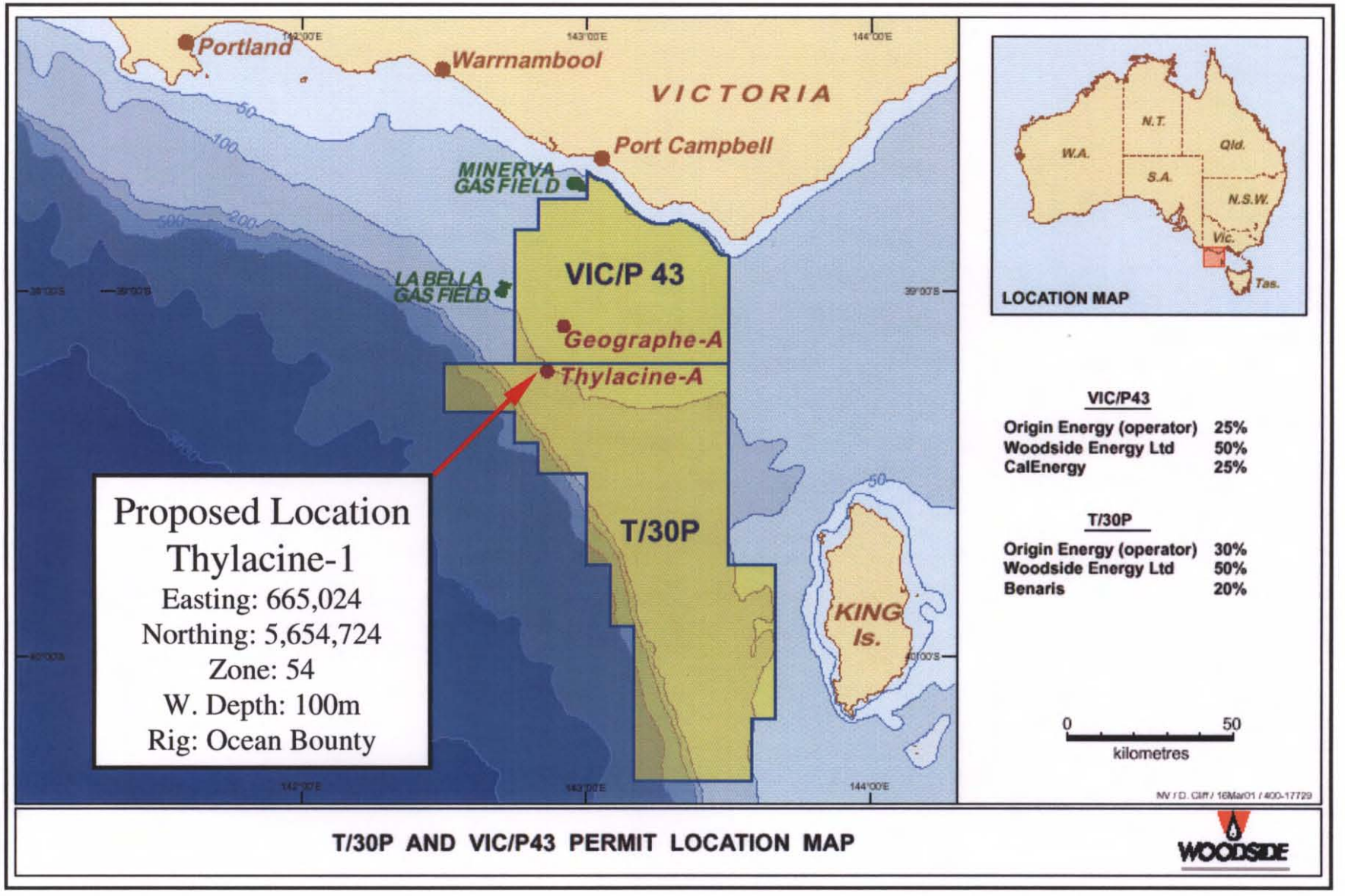
CONTACT	LOCATION	PHONE	FAX	MOBILE	EMAIL	PERSON
Karratha Main Gate	Karratha	1800 833 333 0891 58 8171 (Internal 8171)	0891 58 8669			
MEDIVAC CONTACTS						
Melbourne Hospital 1 Accident & Emergency	Melbourne	TBA	TBA			Duty Doctor
Melbourne Hospital 2 Accident & Emergency	Melbourne	TBA	TBA			Duty Doctor
HELICOPTER OPERATOR						
Bristows Helicopters						
Office / Hanger	Essendon	TBA	TBA			
Duty Operations Co-ordinator	Early	0500-1300		0419 769 202		
Duty Operations Co-ordinator	Late	1300-0500		0419 769 203		
WOODSIDE CONTACTS						
O.B. Weekend Duty Manager	Perth	0419 044 972				Duty Officer
Onshore Logistics	Karratha	0891 58 7183	0891 58 7002	0419 948 405	michael.reklitis@woodside.com.au	
Onshore Logistics	Portland			040 226 5214	max.blakiston@woodside.com.au	Max Blakiston
Onshore Logistics	Perth	08 9348 5607	9348 5255	0409 554 339	neil.burns@woodside.com.ai	Neil Burns
MEDICAL CONSULT						
Duty Doctor 1	Perth (WK)	08 9348 4032	08 9348 4431	0419 844 191	rob.gillet@woodside.com..au	Dr Rob Gillett
	(A/H)	08 9383 3169				
Duty Doctor 2	Perth (WK)	08 9348 4032	08 9348 4431	0414 934 880	steve.clarke@woodside.com.au	Dr Steve Clarke
	(A/H)	08 9381 2469				

RIG SPECIFIC

CONTACT	LOCATION	PHONE	FAX	MOBILE	EMAIL	PERSON
MANAGEMENT TEAM						
Well Engineering Manager	Perth	08 9348 4398	08 9348 4853	0418 901 564	doug.hodson@woodside.com.au	Doug Hodson
Team Leader - MODU Team	Perth	08 9348 5341	08 9348 5255	0417 938 596	vince.santostefano@woodside.com.au	Vince Santostefano
Drilling Superintendent	Perth	08 9348 4592	08 9348 5255	0407 478 245	frank.barker@woodside.com.au	Frank Barker
Drilling Engineer Supervisor	Perth	08 9348 4395	08 9348 5255	0419 956 835	kevin.gallagher@woodside.com.au	Kevin Gallagher
Drilling TA	Perth	08 9348 4726	08 9348 5255		jo.forster@woodide.com.au	Jo Forster
MODU COMMUNICATIONS						
Radio Room		08 9348 6804				
Radio Room - Fax		08 9348 6803				
Inmarsat Phone		0011 873 134 1174				
Inmarsat Fax		0011 873 134 1210				
Woodside Sat Phone		0011 872 761 958 661				
Woodside Sat Fax		0011 872 761 958 662				
Woodside Inmarsat Phone (WS fice)		N/A				
Diam. Mobilsat Phone (OIM Office)		N/A				
Perth Emergency Centre (PEC)	Perth	08 9348 4400	08 9325 2410			
Well Site Manager		08 9348 6801	08 9348 6802			
OIM		08 9348 6805				
Logistics		08 9348 6802	9348 6802			
SUPPORT VESSELS						
General Manager	Perth	08 9433 3376	08 9433 3375	0411 430 669		Sam Pullen
Safety Manager	Perth	08 9337 8906	08 9337 6357	0412 928 275		I. Del Rosso
Pacific Sentenel				0427 103 859	435334410@telstra.ves.net 435334420@telstra.ves.net	
Pacific Conqueror				0427 103 865	456316440@telstra.ves.net 456316450@telstra.ves.net	
RIG CONTRACTOR						
Diamond Offshore	Perth	08 9481 8333				
Ocean Bounty		08 9426 9122	08 9481 8103	0411 600 431	toneill@dogc.com.au	Tom O'Neill
Ocean General		08 9426 9120	08 9481 8103	0413 443 140	jmoore@dogc.com.au	Jimmy Moore

Figure 1 - Location Map





5 cm

Fig. 1

6490618

WOODSIDE ENERGY LTD. MODU – WELL ENGINEERING		DRILLING PROGRAMME THYLACINE-1

Figure 2 - Time vs Depth Chart (Dry Hole)

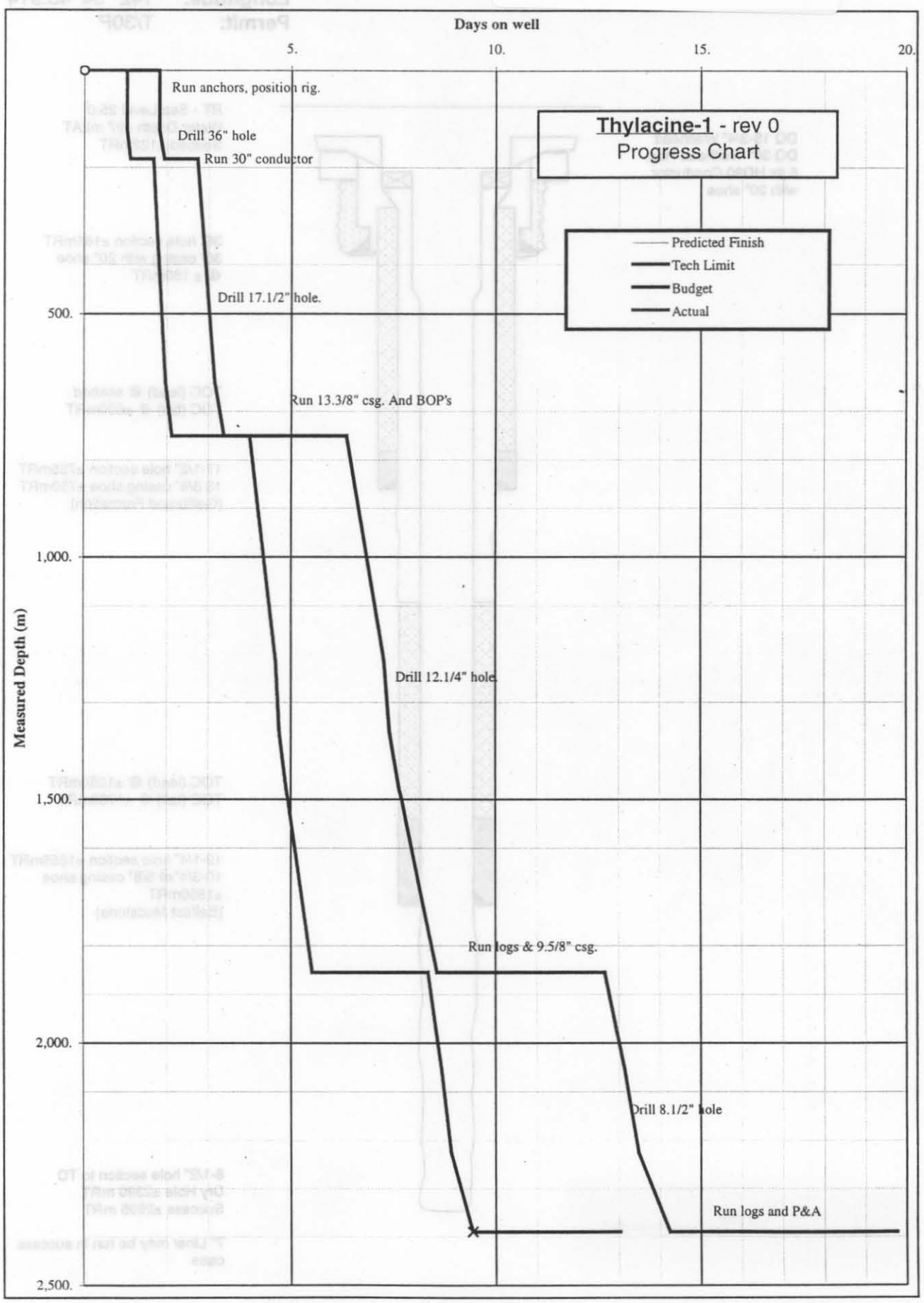
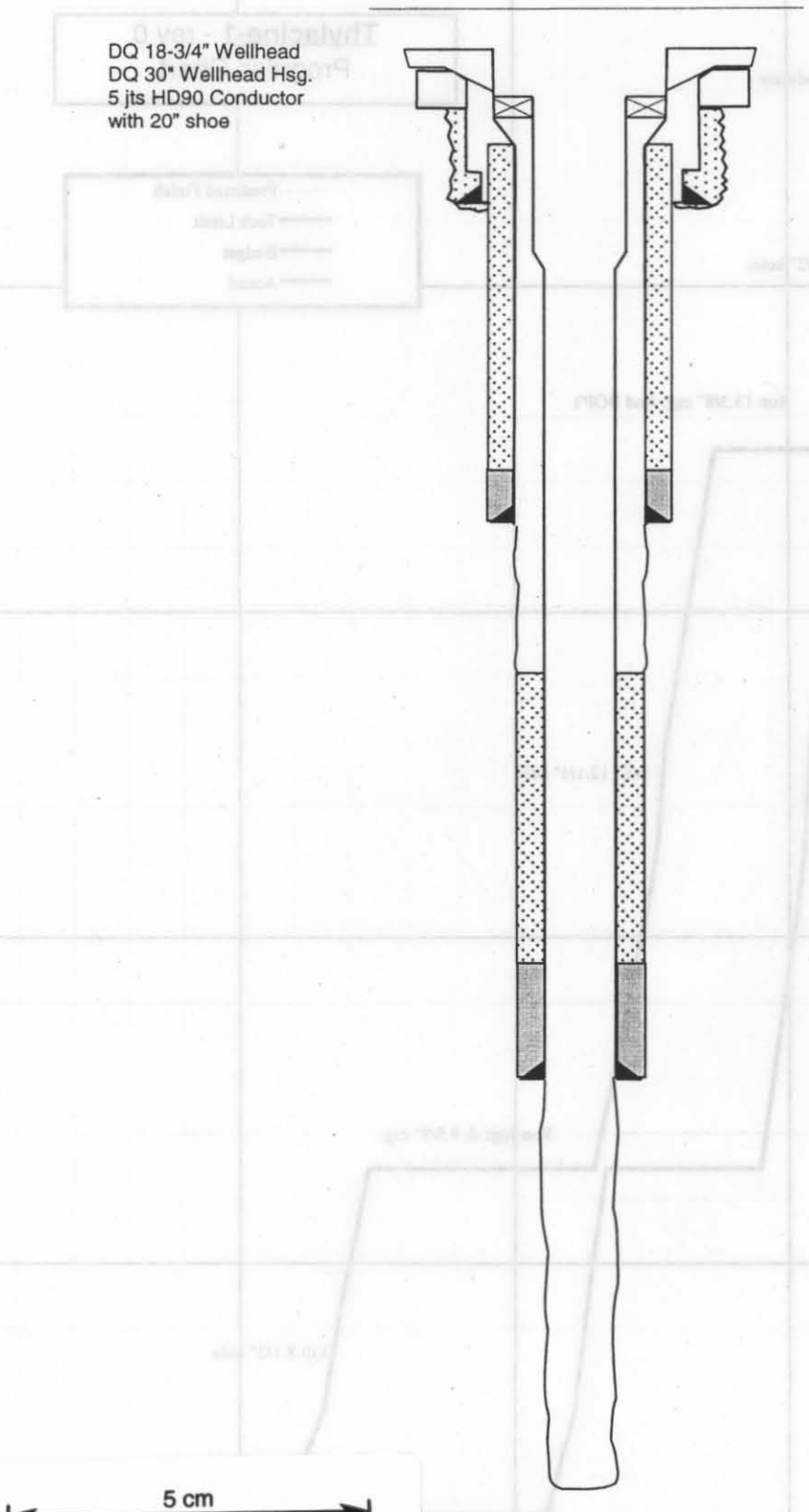
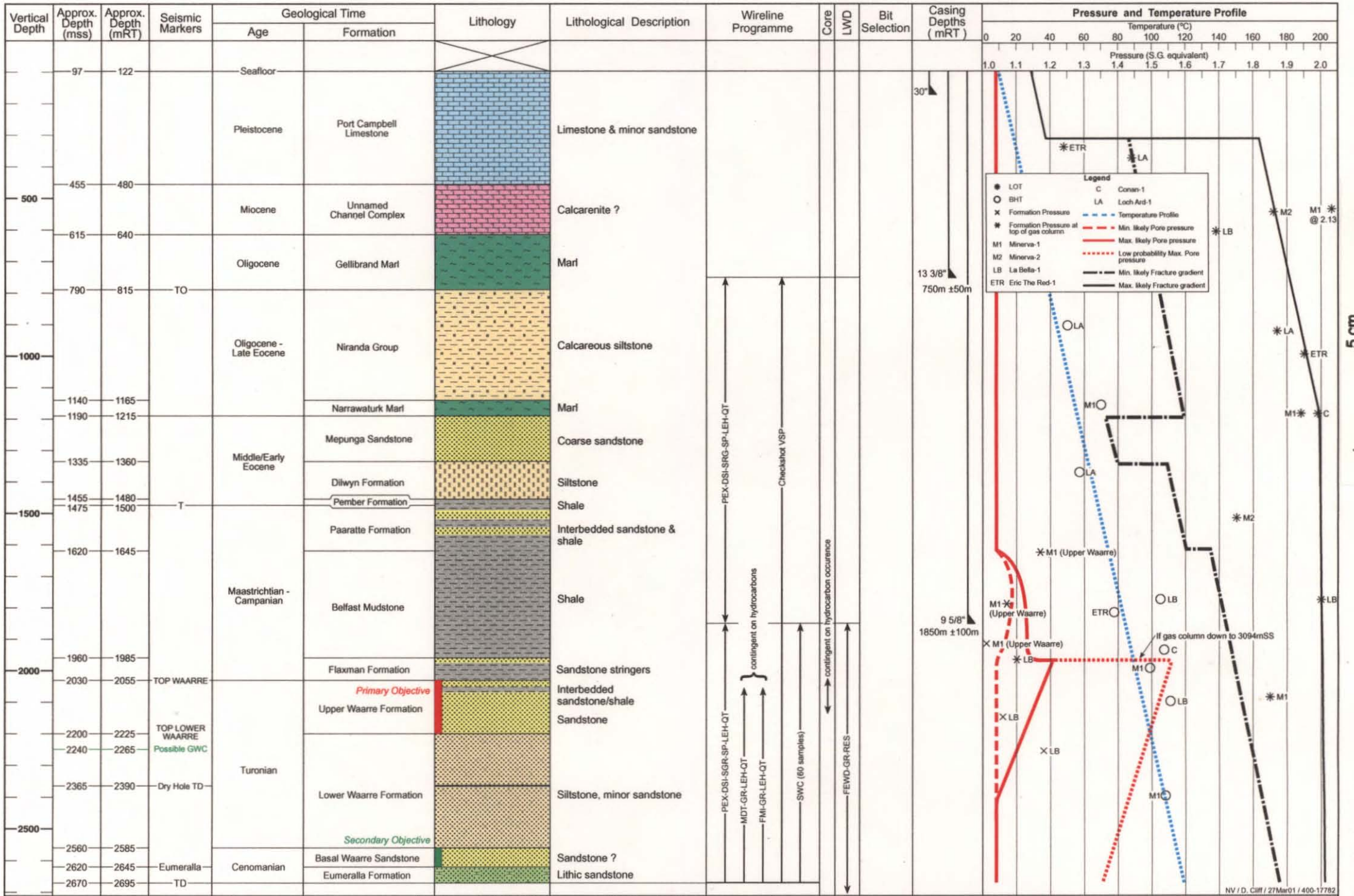


Figure 3 - Well Schematic

Well: Thylacine-1
Latitude: 039° 14' 27.524" S
Longitude: 142° 54' 43.914" E
Permit: T/30P





OCEAN BOUNTY Rotary Table : 25m
Datum : Lowest Astronomical Lowest

Surface Location	Latitude	039° 14' 27.524" S	Easting	665 024 mE
	Longitude	142° 54' 43.914" E	Northing	5 654 724 mN
Sub-Surface Location	Latitude	039° 14' 27.524" S	Easting	665 024 mE
	Longitude	142° 54' 43.914" E	Northing	5 654 724 mN

THYLACINE-1
PREDICTED SECTION AND PRESSURE PROFILE

Fig. 4

WOODSIDE
AUSTRALIAN ENERGY

69921

Thylacine 1 Seismic Section

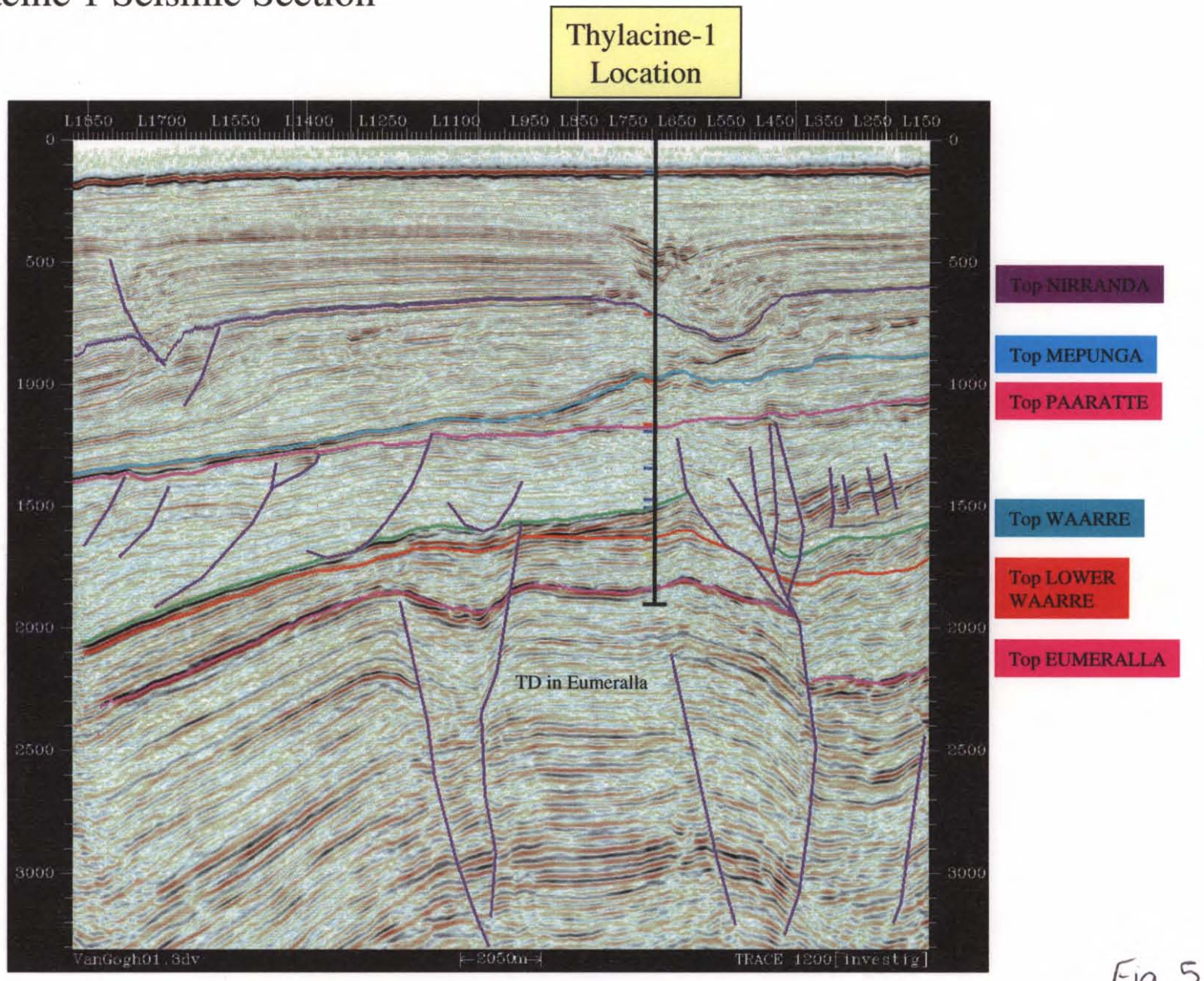


Fig. 5