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WOODSIDE ENERGY LTD

DRILLING PROGRAMME

Geographe North - 1

VIC/P43

Rev. 0

DOCUMENT CONTROL AND SIGN-OFF

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Author(s) = Have written the document in accordance with WEL systems.

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1 FIELD INFORMATION

1.1 Data Summary

Well Name :	Geographe North - 1
Well Designation :	Exploration
Permit :	VIC/P43
Well owner:	Joint Venture; Origin, Woodside & Cal Energy
Operator :	Origin Energy
Well Type :	Vertical
Expected Reservoir Fluid :	Gas
Anticipated spud date :	September 2001
Drilling Contractor / Rig :	Diamond Offshore General Company (DOGC) / Ocean Bounty
RT - SL / Water Depth:	25m / 81m LAT ±5m
Geographic Location :	Lat 39° 04' 31.475" S Long 142° 55' 15.054" E
Surface Tolerance (Positioning)	50m radius
Primary Objective :	Flaxman Formation and Upper and Lower Waarre Formations.
Depth of Primary Objective :	1799mTVDSS ± 50m for top Flaxman Formation
Secondary Objective :	None
Depth of Secondary Objective :	N/A
Well Depth (TD) :	2131mTVDSS ± 100m (success)
Target Tolerance :	75m radius
Budget Duration :	25 days (excluding possible production test)

1.2 Potential Hazards:

Shallow Gas	No shallow gas has been encountered on any of the offset wells, including nearby Thylacine-1 and Geographe-1. No amplitude anomalies indicative of shallow gas have been observed on seismic. 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. Offset well information indicates that in the event of a discovery, there is a high chance that CO_2 levels of approximately 10% may be present in the reservoir.
Lost Circulation	Geographe North - 1 has been positioned away from regional faulting. Small sub-seismic faults may be present in the Flaxman/Waarre formations, as was seen on Geographe –1. The likely presence of Calcite cementation suggests that 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 minor losses in the sandstones of the Mepunga and Paaratte Formations. Offsets reported seepage losses only with the exception of Conan-1, which reported a single 20bbl loss whilst drilling through the Dilwyn Sandstone.
Differential Sticking	Differential sticking is not expected to pose problems on Geographe North - 1 at the programmed mud weights. However, in Thylacine-1 the MDT tool was stuck with higher overbalance than proposed in Geographe North -1.
Abnormal Pressure	The Geographe North –1 well is expected to be normally pressured down to Parratte and Belfast Mudstone where minor over pressure up to 1.11sg is expected. In 8-1/2" hole, inflated pressures may be encountered due to the gas cap effect in the target reservoir. This is expected to be up to 1.12sg.

Borehole Stability	Sloughing was observed in the Belfast Mudstone on Thylacine-1 and Geographe-1. A mud weight of 1.22sg was used to drill the Belfast Mudstone in Geographe-1 12¼" hole, with and ECD of 1.25sg. Unlike Thylacine – 1, evidence of cavings was not seen while drilling. However, logging tools hung up of 50m fill, indicating that the static mud weight of 1.22sg was not sufficient to prevent bore hole instability. Mud weights up to 1.25sg will be run in the 12-1/4" hole on Geographe North – 1.
Fracture Gradient	Good formation integrity has been seen on the offset wells. Refer to attachment E for fracture strength profile.
Hard Drilling	36" hole may encounter cemented layers and calcarenite outcrops. These could continue some way into the 17½" hole. 12¼" hole may encounter hard drilling with potential pyritic and dolomitic bands in the Narrawaturk Marl, Mepunga Sandstone and the Dilwyn / Pember Formations. 8½" hole is expected to encounter hard and abrasive drilling in the Waarre and Lower Waarre 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	A vibration sub was run in the Thylacine-1 8½" hole FEWD. Shock frequency and magnitude was observed to be low. Vibrations may be problematic in regions of hard drilling such as the Mepunga Sandstone and Dilwyn / Pember Formations in 12¼" hole. Particular attention should be given to shock information while drilling out float collars.
Temperature	The BHT is expected to be 97 °C in the event of the success case TD. Seabed temperature is expected to be 15°C with a geothermal gradient of 4°C/100m estimated.
Offset Wells	Geographe-1 (4.1km SE), Thylacine-1 (18.3km ESE), LaBella-1 (21.1km NW), Mussell-1 (17.9km NW); Conan-1 (25.9 km NNW); Minerva-1 (41.6km NNE).
Weather	Bass Strait weather conditions can be extreme and delay weather dependant activities such as anchoring and riser/BOP operations. In the event of severe weather it may be required to suspend drilling. 110.5hrs of time was spent waiting on weather conditions to improve to land and recover the BOP on Geographe-1.
Seabed Conditions Anchoring	Offset well site surveys suggested anchoring could be problematic due to lack of superficial sediment. No significant problems were encountered in relation to foundations and anchor holding.

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 the Department of Natural Resources & Environment (Victoria), 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 their delegate.

1.4 Documents

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

- Geographe North –1 Well Design Workbook A6000RD133451
- Well Specific Guidelines for Geographe North –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 below 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.	55 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 return flights for all rig personnel is <10.	Yes
Rig manning level	The normal manning level for Ocean Bounty is 97 persons.	Average manning level <90 persons.	Yes
Shipping lane proximity	The rig is located 3km from a recognised shipping lane with 200 vessels passing per annum.	Geographe North - 1 is located in the vicinity of a general shipping lane between Cape Otway and King Island. Regional shipping does not conform to a specific shipping lane. As such, shipping proximity and frequency data are not available.	Unknown, however, this hazard is being managed as if it were not within the QRA envelope.
Number and type of wells per year	12 exploration wells and 3 well tests per year.	Geographe North - 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?		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

Geographe North - 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 Geographe North –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.

The distance from the Portland Supply Base to the Geographe North - 1 location is ca. 80nm. One way economy sailing time is ca. 7 hours. One way helicopter flying duration is ca. 55 minutes depending on the weather.

2 GEOLOGICAL OBJECTIVES & PREDICTED SECTION

2.1 Objectives

Geographe North - 1 is planned as a vertical exploration/appraisal well to determine the presence and amount of gas accumulated in the Flaxman and Waarre Formations in the Geographe structure. It is intended to:

- Core the reservoir section based on indications of hydrocarbons.
- Suspend Geographe North –1 if volumetrically sufficient quantities of gas can be confirmed.
- Conduct a production test on either Geographe North - 1 or Geographe-1, depending upon the preliminary evaluation of Geographe North -1. A Geographe Production Test Programme describing the objectives and procedure of the test will be issued as a supplement to this Drilling Programme.

2.2 Predicted Stratigraphic Section (See also Figure 4)

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

Formation	Depth mTVDSS	Depth mTVDRT	Uncertainty ± m
Seafloor / Top Port Campbell	81	106	5
Top Gellibrand Marl	258	283	100
Top Niranda Group	520	545	30
Top Mepunga	690	715	30
Top Dilwyn	1045	1070	75
Top Pember	1070	1095	75
Top Pebble Point	Not Present in Geographe-1 mapped as top Paaratte		
Top Paaratte	1102	1127	75
Top Belfast	1431	1456	50
Top Flaxman (gas)	1799	1824	50
Top Upper Waarre (gas)	1799	1824	50
Top Lower Waarre (gas)	1894	1919	50
Predicted GWC	2031	2056	10
Total Depth (Success Case)	**2131**	**2156**	**100**

3 DRILLING SUMMARY

3.1 Overview of Well Design

The Geographe North -1 well has been designed as a vertical exploration well with the potential to suspend for later completion in the event that sufficient volumes of gas can be confirmed. 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 into the Gellibrand Marl Formation using seawater with hi-vis sweeps for hole cleaning. The hole will then be displaced to mud and 13⅜" casing run with a Dril-Quip SS10C 18¾" 10,000psi wellhead.

The BOP stack and riser will be run and 12¼" intermediate hole drilled with a KCL/PHPA/Glycol (Aquadril) water based mud system to casing point in the lower Belfast mudstone. The mud weight will be increased to 1.25sg by 1070mRT (Dilwyn formation) to ensure at required weight prior to drilling the Belfast formation. The hole will then be displaced (if required) and 10-3/4" x 9-5/8" casing run. Alplex will be added to the mud system prior to drilling the Belfast formation to improve well bore stability.

The 8½" hole will be drilled to final TD using a KCL/PHPA/Glycol water based (Aquadril) mud system. Mud weight will be reduced to between 1.15-1.18sg to minimise overpressure on the hydrostatically pressured formations below the GWC. The reservoir section will be cored as per section "4.4 Coring Criteria".

Primary data acquisition will be by wireline logging (as per logging program) and a 54m core. In the dry hole or uneconomic case the well will be plugged and abandoned. In the success case the well will be suspended for later completion. A production test may be conducted on Geographe North - 1, depending upon the preliminary well results.

Refer to Figure 3 for the Geographe North –1 proposed casing schematic.

3.2 Pore Pressure

Pore pressure modelling suggests that the Belfast Mudstone may be overpressured to 1.11sg due to under-compaction. Well bore stability problems have also been encountered in these formations while drilling offset wells. To mitigate the effects of well bore instability the mud weight will be maintained at 1.25sg while drilling the Belfast Formation.

In the 8½" hole section minimal overpressure is expected due to under-compaction. However, there is a low probability chance for inflation of pressure to 1.11sg through the gas cap effect in the Flaxman and Waarre Formations.

The planned mud weight of 1.15-1.18sg in 8½" hole will provide an over balance at the highside of the most likely pore pressure range. An increase in background or connection gas or signs of well bore instability may warrant an increase in mud weight.

3.3 Drilling Fluid Summary

Hole mBRT	Casing mBRT	Mud Properties	Mud Type
Sea Bed @ 106 m. 36" @ ~166 m.	30" cond. @ 165 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 Returns to seabed are expected, although losses are anticipated throughout the Vugular Port Campbell Limestone. ***TD Displacement:*** Prehydrated Gel @ 1.5 x Hole Volume.
17 ½" hole @~555 m.	13 $^{3}/_{8}$" csg @ ~550 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:*** 41 m^3 (260 bbls) (1.5 x hole volume) of unweighted Gel/Drispac SL. 43 m^3 (270 bbls) of 8% KCl/Gel/Drispac SL pill across exposed Gellibrand marl.
12¼" hole @ 1,750 m	9$^{5}/_{8}$" csg @ ~1,745 m	Mud Wt. 1.10 – 1.25 sg PV ALAP 6 rpm 8 -12 API FL < 6.0 KCl 8 % wt/ wt The mud weight will be initially controlled at 1.10 sg and increased gradually to 1.25 sg by 1070 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/ AQUADRILL PLUS*** • BHCT in the 'Belfast' anticipated 50 - 60 °C – Aquacol selected based on cloud point behaviour. • Maintain 3% Aquacol in the mud system to 1450 mRT (Top Belfast) . Add 0.5% Aquacol B and 2.5% Aquacol from this point to TD. • Initial mud weight shall be 1.10 sg. Weight up to 1.25 sg by 1070 mRT (Top Dilwyn). Hole may be displaced to 1.28sg prior to POOH. • Observe cuttings integrity at shakers at all times. If shards or splintered cuttings weight up immediately. • 3% Penetrex will be injected into the suction line as a proactive approach to alleviate bit balling and enhance ROP from 550m to 715 m. • 1400 m to 1755 m Alplex will be added to improve borehole stability when drilling Belfast formation. Condition mud prior to adding Alpex (MBT<5cc, LGS <3%) • 100 Bbls of LCM pill #2 to be prepared and held in reserve prior to drilling out the 13$^{3}/_{8}$" shoe track
8½" hole T.Depth @~2,156m	7" Liner set @ 2,156 mRT	Mud Wt. 1.15 - 1.18 sg PV ALAP 6 rpm 6 - 8 API FL < 5.0 KCl 8 % wt/ wt The mud weight will be initially controlled at 1.15 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 gas column to 1.12 sg EMW	***AQUADRILL*** • Maintain 3% polyol in the mud system. Add 2.0 % Aquacol and 1.0% Aquacol B from this point to interval TD to ensure optimum cloud point behaviour. • Allow the Alplex to deplete prior to drilling the reservoir either naturally or using Citric acid to precipitate the Alplex • $CaCO_3$ should be added just prior to and during drilling of the sand sequence, at 8 sxs per 30 m of hole drilled. • 100 Bbls of LCM pill #2 to be prepared and held in reserve prior to drilling / coring. If a PBL sub is incorporated in BHA , this pill should be upgraded to #4 • BHST at 2,156 mRT TD anticipated ~ 97 °C. BHCT estimated to be ~ 75 °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" 166mRT	30" x20" 165mRT	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" 555mRT	13⅜" 550mRT	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. 36 jnts 72# 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)	1.43 (1.10) Burst 3.10 (1.00) Collapse 2.80 (1.30) Tension 1.41 (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" 1750mRT	10¾"x9⅝" 1745mRT	10¾" csg. (15 jnts 55.5# L80 NVAM) 10¾"x9⅝" x-over L80 NVAM x NVAM 9⅝" casing (approx. 125 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)	1.82 (1.10) Burst 1.28 (1.00) Collapse 2.35 (1.30) Tension 2.11 (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" 2156mRT	7" 2150mRT	7" Nodeco hanger 7" casing (approx 49 jnts 29# L-80 NVAM) liner top set ca. 200m 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)	1.95 (1.10) Burst 1.57 (1.00) Collapse 3.39 (1.3) Tension 2.19 (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.
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" 165mRT	Tail 'G' (1397sx)	Free water: <1% Fluid Loss: N/A Min. Thickening Time: 2.5hr Max. Thickening Time: 2.9hr Compressive strength: >3,000 psi	SW	1.91	41 (285bbl)	200%	Seabed 106mRT	D-Air 3000L: (0.003)	1.6 m^3 (10bbl) of sea water ahead
17½"	13⅜" 550mRT	Lead 'G' (681sx)	Free water: <1% Fluid Loss: N/A Min. Thickening Time: 3.5hr Max. Thickening Time: 4.0hr Compressive strength: >800 psi	SW	1.50	40 (270.4bbl)	50%	Seabed 106mRT	D-Air 3000L: (0.007) Liq. Econolite (0.625)	4.8 m^3 (25bbl) of sea water ahead
		Tail 'G' (354 sx)	Free water: <1% Fluid Loss: N/A Min. Thickening Time: 2.3hr Max. Thickening Time: 2.7hr Compressive strength: >3,000 psi	SW	1.90	10.6 (73bbl)	50%	450mRT	D-Air 3000L: (0.003)	
12¼"	10¾" x 9⅝" 1745mRT	Lead 'G' (328sx)	Free water: <1% Fluid Loss: N/A Min. Thickening Time: 3.5hr Max. Thickening Time: 4.0hr Compressive strength: >800 psi	Drill Water	1.50	18.1 (125bbl)	50%	1145mRT	D-Air 3000L: (0.007) Liq. Econolite (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: >3,000 psi	Drill Water	1.90	6.8 (47bbl)	50%	1600mRT	D-Air 3000L: (0.003) Halad 413L: (0.246) HR 6L: (0.025)	

8 ½"	7 " 2150mRT	Tail 'G' (226sx)	Free water: <1% Fluid Loss: <50 cc/30min Min. Thickening Time: 2.5hr Max. Thickening Time: 3.0hr Compressive strength: >3,000 psi	Drill Water	1.90	6.8 (47bbl)	10%	1650mRT	D-Air 3000L: (0.003) Halad 413L: (0.312) SCR-100L: (0.037) CFR-3L: (0.250) Gascon 469 (0.300)	1.45m^3 (10bbl) water preflush 11.6m^3 (80bbl) dual spacer – weighted to mud weight 1.45m^3 (10bbl) 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)

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)	min	MPa (psi)	min	MPa (psi)	min
Pressure testing after bumping the cement top plug:						
Initial casing test – contingent upon bumping the plug			24.1 (3,500)	10[3]	31.0 (4,500)	5-10[3]
BOP testing:						
Pressure at BOP/wellhead during pressure test (displacement mud in hole)[4]			25.2 (3,660)		32.6 (4,687)	
Max. Anticipated BOP Pressure Assumes gas to wellhead			15.3 (2215)		16.5 (2400)	
70% of casing burst (information only)			24.1 (3,500) (20" ext)		31.1 (4508)	
Casing Test			24.1 (2,500)	60[1]	31.0 (4,500)	10[1]
Shear Ram	34.5 (5,000)		24.1 (3,500)	60[1]	31.0 (4,500)	5-10[1]
Wellhead Connector			24.1 (3,500)	60[1]	31.0 (4,500)	5-10[1]
Annular Preventers, LMRP connectors	24.1 (3,500)	10[3]	24.1 (3,500)	5-10[2]	24.1 (3,500)	5-10[2]
Pipe Rams	34.5 (5,000)	10[3]	Function Test Only		31.0 (4,500)	5-10[3]
Choke Manifold, C&K lines, TDS Safety valves, Standpipe Manifold			34.5 (5,000)	5-10[3]	34.5 (5,000)	5-10[3]

Full BOP test on stump prior to running.

All tests must include an initial 5 minute low pressure test at 200-300psi (1.38-2.07MPa). Record all tests (low and high pressure).

[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 for the 13⅜" casing 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] - A satisfactory pressure test shall be achieved when the test pressure has been maintained for 10 minutes (exception: notes 1 and 2 above or specified otherwise). 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.

[4] - The Pressure at BOP/wellhead during pressure test is based on using 1.03sg MW (displacement fluid of seawater) in the 13⅜" casing and 1.25sg MW in the 9⅝ casing. All pressures are to be re-calculated based upon actual mud weights used.

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 550mRT in the Gellibrand Marl/Nirranda Group.

3.8 9⅝" Shoe Setting Criteria

9⅝" casing is to be set on depth at 1750mRT. This depth is based on setting as deep as possible into the Belfast Mudstone whilst ensuring that the Flaxman formation is not penetrated and is calculated from the prognosed top of Flaxman @ 1824mRT minus the uncertainty of this top (50m) minus a contingency on the uncertainty of 24m. Elevated pressures due to a gas cap effect may be present in these formations as described in section "3.2 Pore Pressure".

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 1.45 –2.01sg is expected based on offset data.

The minimum expected leak off of 1.45sg would allow safe circulation of a 46bbl 1.11sg EMW kick swabbed from the base of the Belfast Mudstone before breaking down the formation at the shoe.

The 9-5/8" casing setting depth is such that the pore pressures in the Flaxman and Upper Waarre will not be penetrated while drilling 12 ¼" hole.

In the event that the Flaxman sands are penetrated the 13-3/8" casing setting depth provides a 29bbl (4.6m^3) kick tolerance from an 1.11sg EMW influx taken in the Flaxman sands (1825mRT) given a worst case minimum fracture gradient of 1.30sg through the Mepunga sandstones.

The most likely fracture strength information provides a kick tolerance in excess of 50bbl (7.9m3) from the Flaxman sands in the max pore pressure case.

At 9⅝" Casing Shoe

A leak off in the range of 1.65 – 2.2sg is expected based on offset data.

A lower bound leak-off of 1.65sg will provide infinite kick tolerance for a 1.11sg EMW kick swabbed from sands in the base of the Lower Waarre.

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

3.10 Criteria for Total Depth Determination

TD will be called at 2156mRT ±100m. The TD criteria is based on drilling a minimum of 100m below the GWC as seen in Geographe –1 (2056mRT).

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

3.11 Well Abandonment

In the success case where economic quantities of hydrocarbons are confirmed, Geographe North -1 will be suspended for later completion. In the event that Geographe North -1 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	Totco at TD
12¼"	MWD
8½ "	MWD

4.2 Real-time Logging Requirements (FEWD)

Hole Section	Survey Type
12¼"	Gamma-Resistivity (CDR)
8½ "	Gamma-Resistivity (CDR)

The 12¼" FEWD is replacement for intermediate wireline logs.

8 ½" FEWD will be used to pick core point (ref section 4.4 for coring criteria)

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 Criteria

One 54m core will be cut from the first indications of penetration into the fluvial sands (Lower Warre). FEWD has been included in the string to aid in picking core point.

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

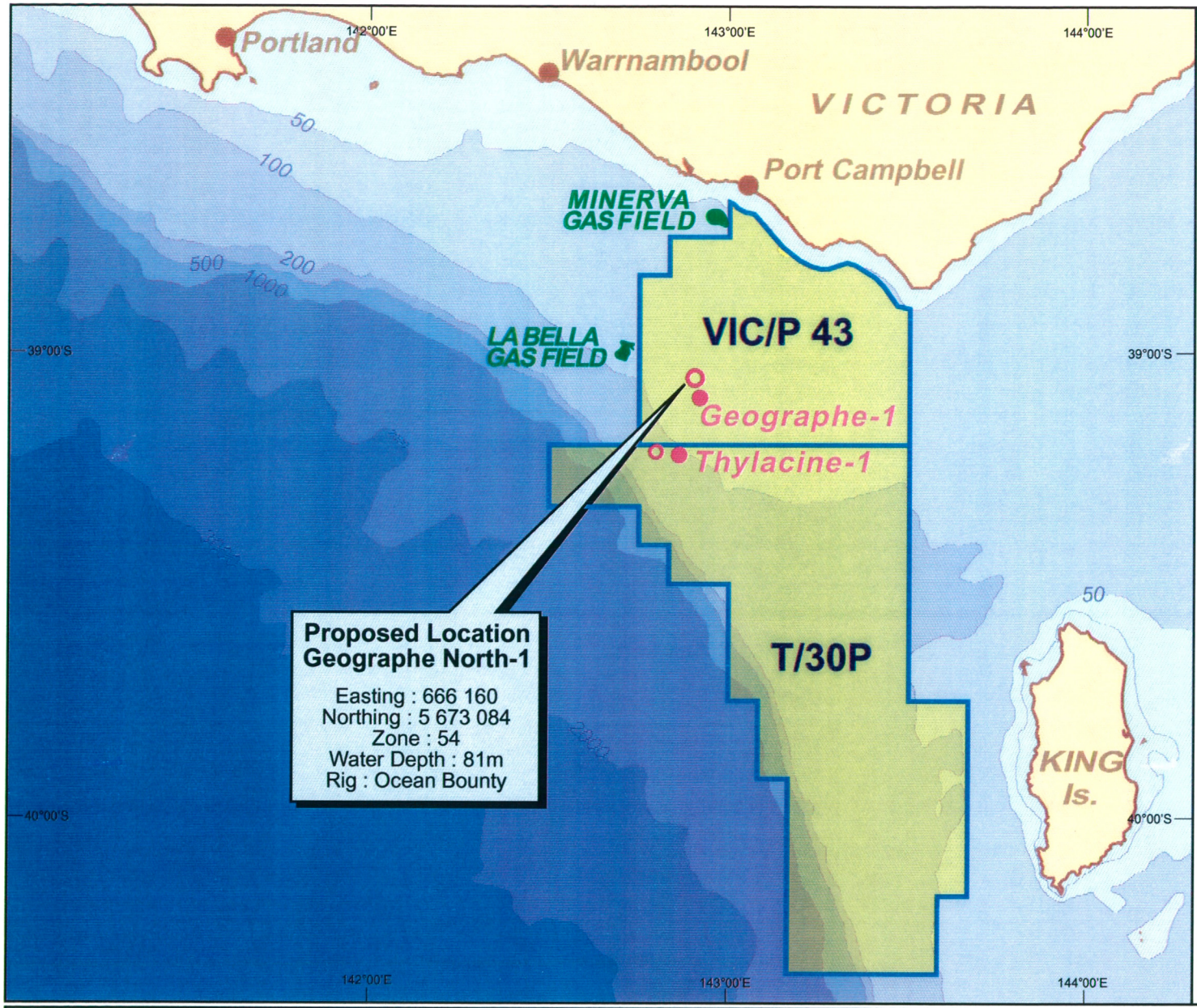
4.5 Wireline Logging

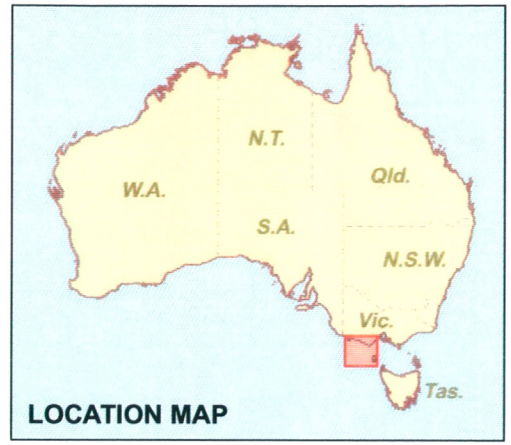
Hole Section	Logging Tools
17½"	No wireline logs are planned for this hole section
12¼"	No wireline logs are planned for this hole section
8½"	Run 1: PEX/DSI Run 2: MDT (contingent on hydrocarbons) Run 3: FMI (contingent on hydrocarbons) Run 4: Checkshots Run 5: Sidewall cores

4.6 Testing

A production test will be conducted on the Geographe field to confirm reservoir deliverability and fluid properties. The base case is to return to Geographe-1, however the test may be conducted on Geographe North -1 subject to the results of the preliminary evaluation of this well. A detailed well testing programme will be compiled once the final decision made.

Attachment A – Emergency Response Plan Listing





VIC/P43

Origin Energy (operator)	30%
Woodside Energy Ltd	55%
CalEnergy	15%

T/30P

Origin Energy (operator)	30%
Woodside Energy Ltd	50%
Benaris	20%

0 50
kilometres

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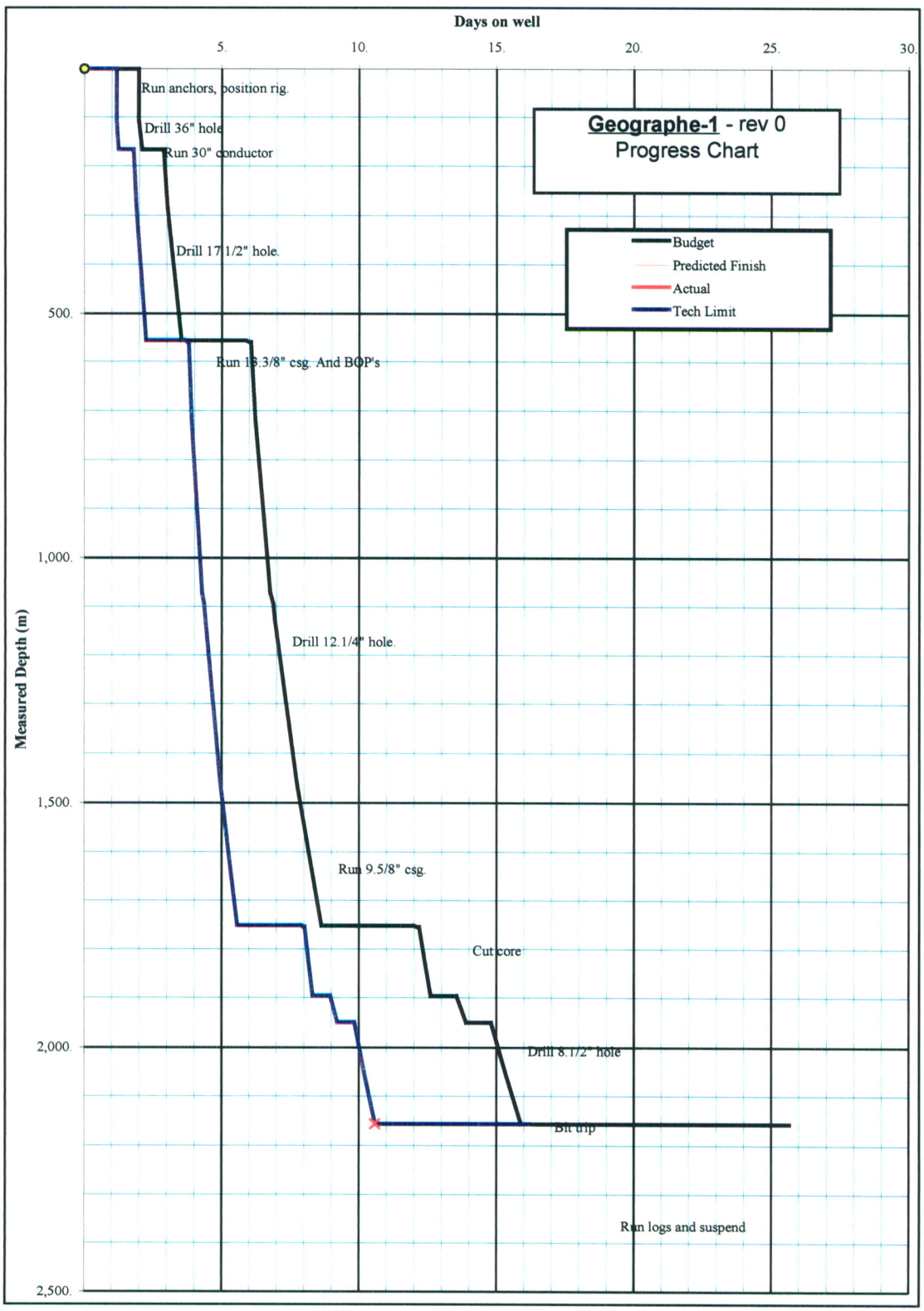
T/30P AND VIC/P43 PERMIT LOCATION MAP

WOODSIDE
AUSTRALIAN ENERGY

Attachment C - Time vs Depth Chart

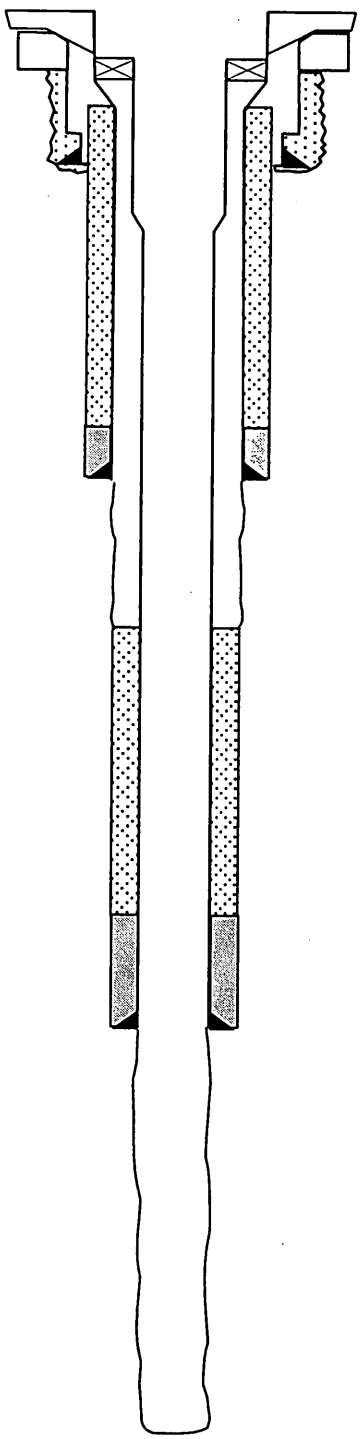


WOODSIDE ENERGY LTD. MODU – WELL ENGINEERING		DRILLING PROGRAMME GEOGRAPHE NORTH 1

Attachment D - Well Schematic

Well: Geographe North –1
Latitude: 039° 04' 31.475" S
Longitude: 142° 55' 15.054" E
Permit: VIC/P43

DQ 18-3/4" Wellhead
DQ 30" Wellhead Hsg.
5 jts HD90 Conductor
with 20" shoe



RT - Sea Level 25.0
Water Depth ±81 mLAT
Seabed ±106mRT

36" hole section ±165mRT
30" casing with 20" shoe
@ ± 165mRT

TOC (lead) @ seabed
TOC (tail) @ ±450mRT

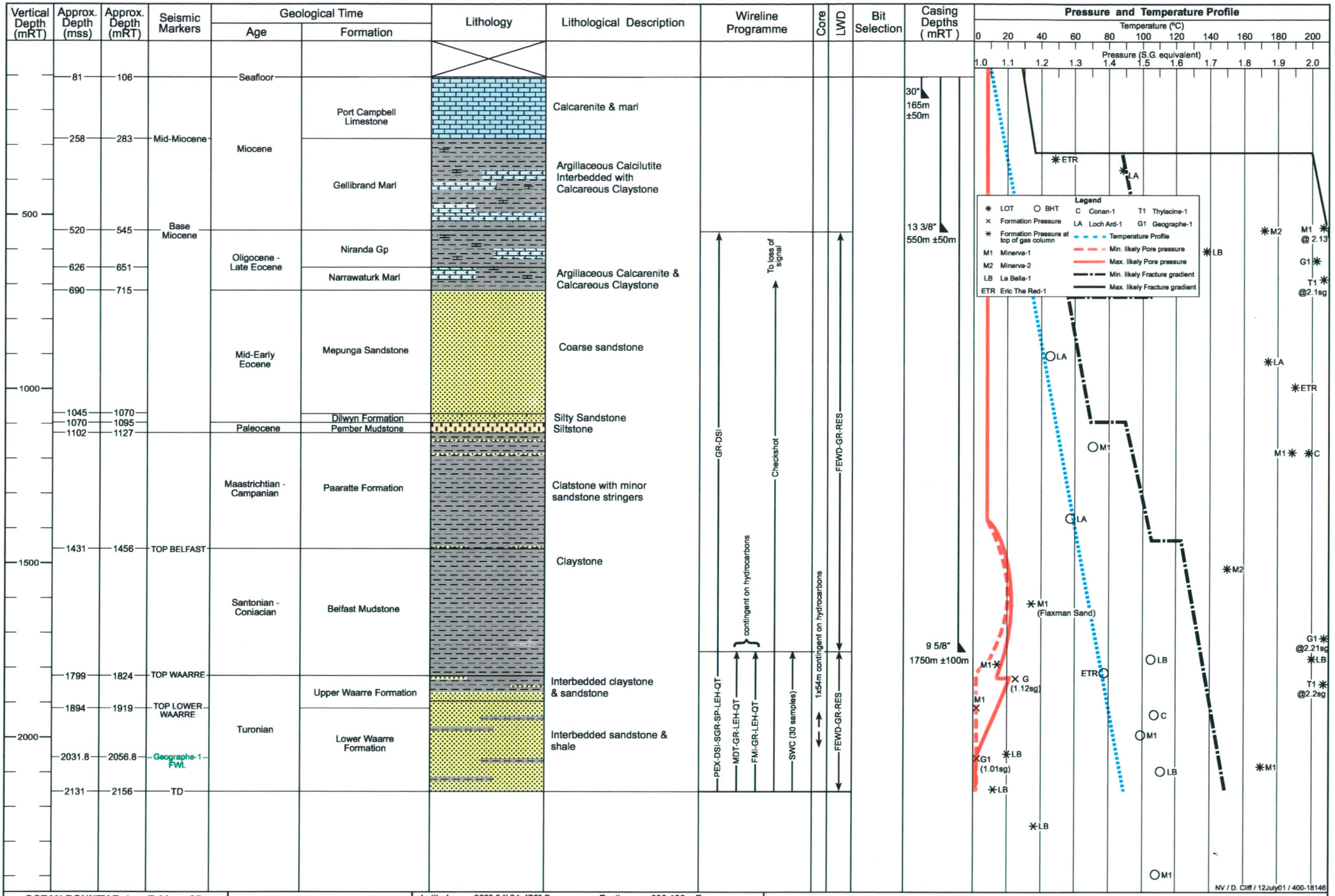
17-1/2" hole section ±555mRT
13 3/8" casing shoe ±550mRT
(Gellibrand Formation)

TOC (lead) @ ±1145mRT
TOC (tail) @ ±1600mRT

12-1/4" hole section ±1750mRT
10-3/4"x9 5/8" casing shoe
±1745mRT (Belfast Mudstone)

8-1/2" hole section to TD
Success ±2156 mRT

7" Liner will be run in success case



OCEAN BOUNTY Rotary Table : 25m
Datum : Lowest Astronomical Tide
Investigator 3D Inline 840 Xline 2665

Surface Location	Latitude	039° 04' 31.475" S	Easting	666 160 mE
	Longitude	142° 55' 15.054" E	Northing	5 673 084 mN
Sub-Surface Location	Latitude	039° 04' 31.475" S	Easting	666 160 mE
	Longitude	142° 55' 15.054" E	Northing	5 673 084 mN

GEOGRAPHE NORTH-1
PREDICTED SECTION AND PRESSURE PROFILE

WOODSIDE ENERGY

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