VIC/P45
MEGAMOUTH-1 & -1/ST1
WELL COMPLETION REPORT
INTERPRETIVE VOLUME

PREPARED BY: C. Ellis

DATE: May, 2004

BHP BILLITON PETROLEUM PTY. LTD.
A.B.N. 97 006 918 832

Acknowledgments

This report was completed with the assistance of the following people:

Grant McMurtrie	Geoscientist
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Rig Positioning Report
MWD/LWD Logs

1 WELL INDEX SHEET

Well:	Megamouth-1 & -1/ST1		
Permit/Basin:	VIC/P45, Gippsland		
Well Path:	Megamouth-1:	Vertical	
	Megamouth-1/ST1:	Deviated	
Planned Location:	Lat: 38º 35' 44.23" S		
	Long: 148º 16' 31.87" E		
Actual Location:	Lat: 38º 35' 44.230" S		
	Long: 148º 16' 31.859" E		
	Easting: 611 077.19 m		
	Northing: 5 727 325.06 m		
	Datum/Projection: GDA94/GRS80, MGA Zone 55 (C.M. 147°E)		
Seismic Reference:	Line HGP2002A; Inline 1707 & Trace 1361		
Elevation:	RT to LAT:	22.4 m	
Water Depth:	LAT to Seabed:	81.5 m	
Total Depth Drillers:	Megamouth-1:	2546 mRT (2522.4 mTVDSS)	
	Megamouth-1/ST1:	2688 mRT (2654.9 mTVDSS)	
Rig on Contract:	1900 hrs, 13-November-2003		
Rig on Location:	2108 hrs, 15-November-2003		
Spudded:	1615 hrs, 17-November-2003		
Reached TD:	1000 hrs, 26-November-2003		
Rig Released to MM-1/ST1:	1200 hrs, 28-November-2003		
Kicked off ST1:	2300 hrs, 30-November-2003		
Reached TD:	1900 hrs, 02-December-2003		
Rig Released:	0900 hrs, 05-December-2003		
Total Rig Days:	21.58 days		
Well Status:	Plugged & Abandoned – Dry Hole		
Operator:	BHP Billiton Petroleum (Victoria) Pty Ltd		Interest: 50%
Joint Venture Partners:	Inpex Alpha Ltd		Interest: 40%
	Moby Oil and Gas Limited		Interest: 10%
Rig Name:	Ocean Epoch		
Drilling Contractor:	Diamond Offshore Drilling Inc.		
Total Hole Cost:	AUD$7.77 MM (source: BHPBP final drilling report)		

Drilling Summary:

Bit Size	**Interval**	**Casing**	**Shoe Depth**
36" x 26"	102.6 - 148m	30" x 20"	148m
17.5"	148 - 831m	3.375"	820.5m
12.25"	831 - 2546m		
12.25" (ST1)	2393 - 2688m		

Plugs:

Type	**No.**	**Interval**	**Tagged**
KO	1	2510-2446m	Y
KO	2	2510-2347m	Y
ABN	1	850 - 750m	N
ABN	2	200 - 150m	N

Conventional Cores/DST & Production Tests/Wireline Logs: None

Formation Tops:

Formation/Horizon	**Depth (mRT)**
Sea Floor (Top Gippsland Limestone)	102.6
Base Carbonate Channel	914.0
Top Lakes Entrance Formation	1902.0
Intra Lakes Entrance Formation	2110.0
Top Latrobe Group	2450.0
60Ma Sequence Boundary (ST1)*	2534.0
Total Depth (ST1)	2688.0

2 WELL SUMMARY

Megamouth-1 was drilled to evaluate the hydrocarbon prospectivity of a stratigraphically induced Paleocene 4-way dip closure with an upside fault dependent component. The Megamouth prospect is located on the Southern Margin of the Gippsland Basin in northern VIC/P45, approximately 120 km southwest of the Southern Victorian Coast and 4 km east of the giant Kingfish Oilfield (Figure 1).

The semi-submersible Ocean Epoch spudded Megamouth-1 on the 17th November 2003 in 80.2mRT water depth. A 36" x 26" hole was drilled to 148mRT and a 30" x 20" conductor string was run and cemented with the 20" casing shoe set at 148mRT. A 17.5" hole was then drilled riserless to 831mRT. After setting the 13-3/8" casing at 820.5mRT, a 12-1/4" hole was drilled to 2546mRT. At this depth, a 900psi pressure drop was observed, the bit was unable to drill and a 3" washout was observed from 2480mRT to TD. Upon POOH it was discovered that the top sub above the bit motor was sheared and an 8.24m fish was left in the hole. A failed fishing attempt resulted in a damaged overshot. An initial attempt to sidetrack was aborted due to the poor cement-plug bond and inadequate cement fill of the hole (tagged at 2446mRT). The second attempt successfully sidetracked at 2450mRT (Top Latrobe) after tagging cement at 2347mRT.

Megamouth-1/ST1 reached a total depth of 2688mRT (2678mTVDRT) at 1900 hours on 2nd December 2003. The target horizon within the Intra-Latrobe Group was intersected 19m deep to prognosis and found to lack the postulated transgressive seal unit at the 60Ma sequence boundary. Approximately 20m below the 60Ma sequence boundary was a 12m thick siltstone unit. The lack of shows and interpreted log porosity of up to 15% over this interval suggests it is a poor seal. Furthermore, post-drill mapping indicates that this siltstone has <15m structural closure and is likely to lack sufficient lateral continuity to focus vertical migration.

The entire reservoir section is interpreted to be essentially water saturated. The high-net reservoir and log-derived porosity of greater than 20% are consistent with pre-drill predictions. Log-derived permeability ranging from 100 – 1000mD is lower than that predicted probably due to a higher than predicted clay matrix in the reservoir sandstones. Sidewall cores were not acquired given the lack of hydrocarbon shows so these porosity and permeability measurements from the log interpretation cannot be calibrated. Wireline logs were not run.

Megamouth-1/ST1 was plugged and abandoned as a dry hole and the rig released on 5th December, 2003.

3 HYDROCARBONS

A detailed analysis of the ditch gas can be found in the Baker-Hughes Inteq Final Well Report (Appendix 2, Basic Data Volume of this well completion report). Indications of ditch gas were recorded from 831mRT and continued to the total depth of 2688mRT in Megamouth-1 and from 2448mRT to 2688mRT total depth in Megamouth-1/ST1.

<u>36" Hole Section</u> (102.6-148mRT)

No background gas or fluorescence was recorded in this section.

<u>17.5" Hole Section</u> (148-831mRT)

No background gas or fluorescence was recorded in this section.

<u>12.25" Hole Section</u> (831-2546mRT and ST1: 2448-2688mRT)

No oil shows were observed in the cuttings throughout the reservoir interval and gas shows were restricted to background (<1%). A 1% increase in background gas of C_1-C_5 within the Lakes Entrance Formation over the interval ~2300-2450mRT is interpreted to originate from siltstone stringers within the calcareous claystone of the regional seal.

The wireline log interpretation (Appendix 1) indicates that the reservoir section is essentially water saturated. Reservoir quality sand occurs over the gross interval 2450.7m-2654.0m. Porosity is generally greater than 20% and ranges up to a maximum of approximately 27%.

4 STRATIGRAPHY

4.1 Predicted vs. Actual

The predicted vs. actual stratigraphic sequence encountered in Megamouth-1 & -1/ST1 is shown in Figure 2. A summary of the prognosed horizons and their actual occurrences are presented in Table 1. Note that RT is 22.4m above sea level.

Table 1: Predicted vs Actual Formation Tops

FORMATION/ MARKER	PREDICTED (mRT)	ACTUAL (mRT)	ACTUAL (mTVDSS)	Thickness (m)	Difference (m)
Sea Floor (Top Gippsland Limestone)	80.0	102.6	80.2	811.4	0.2 Low
Base Carbonate Channel	895.0	914.0	891.6	986.9	3.4 High
Top Lakes Entrance Formation	1855.0	1902.0	1878.5	208.0	23.5 Low
Intra Lakes Entrance Formation	2090.0	2110.0	2086.5	340.6	3.5 High
Top Latrobe Group	2400.0	2450.0	2427.1	78.5	27.1 Low
60Ma Sequence Boundary (ST1)*	2487.0	2534.0	2505.6	150.0	18.6 Low
Total Depth (ST1)	2630.0	2688.0	2655.6		

All geophysical tops were intersected close to prognosis.

4.2 Stratigraphic Summary

Delineation of age units in Figure 2 is based on log correlation with nearby wells. Age, lithology and drilling data have been collated on the composite well log accompanying this report (Enclosure 1). No cuttings were recovered over the interval 102.6-831mRT. A chronostratigraphic section for the Gippsland Basin is displayed in Figure 3.

<u>Gippsland Limestone</u>

Depth: 102.6 (Seafloor) – 1902.0mRT; 80.2 – 1878.5mTVDSS
Thickness: 1798.3m
Age: Recent to Miocene

The Gippsland Limestone was not sampled above 831mRT as this section was drilled without a marine riser. From 831mRT, the Gippsland Limestone consists of light grey to light brownish grey marl grading to and interbedded with minor light grey to medium greyish brown calcareous claystone. Minor limestone interbeds are also encountered from 1150 to 1240mRT and from 1670 to 1902mRT. The base of this interval is marked by an increase in gamma and sonic readings.

Lakes Entrance Formation

Depth:	1902.0 – 2450.0mRT; 1878.5–2427.1mTVDSS
Thickness:	548.6m
Age:	Miocene to Oligocene

The upper Lakes Entrance Formation consists of light grey to medium light grey and light brownish grey calcareous claystone with minor interbeds of light grey to occasionally light brownish grey marl. This interval contains traces of carbonaceous material.

The Intra-Lakes Entrance marker occurs at 2110mRT reflecting a change to predominantly very light to medium grey and brownish grey silty claystone grading to very light to light brownish grey claystone with minor interbeds of white to very light grey kaolinitic siltstone and light grey marl.

The base of the Lakes Entrance Formation is a marked change in lithology from claystone to sandstones of the Latrobe Group. This change is reflected on wireline logs by a decrease in gamma and resistivity readings.

Latrobe Group

Depth:	2450.0 – 2688mRT (TD ST1); 2427.1 – 2655.6mTVDSS
Thickness:	228.5m
Age:	Eocene to Paleocene

The upper Latrobe Group comprises clear, translucent, very fine to very coarse-grained sandstone with poor to moderate sorting, grading in part to light grey siltstone and silty claystone, and interbedded with dark greenish grey and olive grey claystone with abundant disseminated glauconite and pyrite.

From the 60Ma sequence boundary at 2534mRT, the Latrobe Group consists of clear to very light grey, very fine to very coarse grained sandstone with poor to moderate sorting, grading to very light grey siltstone and silty claystone with fine micromicaceous laminations in part. Traces of glauconite can be found throughout this interval.

Wellsite descriptions from 2532mRT to 2550mRT recorded up to 50% clay matrix suggesting a poorer quality reservoir than the petrophysical interpretation indicates (due to the presence of orthoclase feldspar). Sands below this depth are described as fine to very coarse with some silica cement, a white clay matrix (feldspar dissolution?) and common rock flour.

5 GEOPHYSICAL DISCUSSION

5.1 Seismic Coverage

The principal dataset for structural and stratigraphic interpretation of the Megamouth Prospect is the HGP2002-3D that covers most of VIC/P45. Seismic from the Kingfish 3D to the west aided in the establishment of depositional models and tying depth converted maps to wells.

5.2 Pre-Drill Mapping

Seven horizons were interpreted and mapped in detail around the Megamouth location:

1. Water bottom
2. Base Miocene Channel
3. Top Lakes Entrance
4. Top Latrobe Group (50Ma)
5. Bottle Green (60Ma)
6. Oriental Blue (67Ma)
7. Bronze (69Ma)

The Megamouth structure was defined by the 60Ma (Bottle Green) Sequence Boundary, interpreted from the base of a 15m thick package of transgressive shale in Roundhead-1 to Megamouth by following a strong peak on zero phase data. The confidence in this correlation decreased toward Ayu-1 and Hermes-1 as the seal was interpreted to thin and the reservoir section condenses beneath.

Mapping on TWT data showed a 3-way dip closure with faulted closure to the NE along the main Hermes Fault and associated splinter fault. Depth closure at Megamouth was interpreted to result from a combination of stratigraphic thinning of the reservoir package to the SE toward Hermes-1 and Ayu-1, Miocene westerly tilting, and folding about an E-W axis extending from the Kingfish Field.

5.3 Depth Conversion

Depth conversion is problematic in this area due to velocity variation caused by changes in the thickness and stratigraphy of the overlying Kingfish Channel succession. At the time of processing the HGP2002A 3D survey, WesternGeco were contracted to carry out high-density velocity analysis (HDVA) to provide a dense 50x50m grid of automatically picked PrSTM migration velocities for depth conversion purposes. A velocity cube was then creating by generating smoothed velocities at 100ms timeslices, with the smoothing carried out using a complexity constraining method. This velocity model was then calibrated to wells using an error ratio map tied to the Top Latrobe. This velocity model was then used to stretch the pre-stack time migrated volume to depth. This depth conversion resulted a 20m four-way dip closure at Megamouth, with and additional 15m of fault dependent relief.

5.4 Post-Drill Mapping

The Megamouth-1/ST1 well largely confirmed the seismic interpretation and mapping that was carried out prior to the drilling of the well. All mapped seismic events were close to prognosis and within the specified error margins. A comparison between the predicted and actual formation tops & velocities is shown in Table 2. The TWT picks were all correct with the exception of the Top Latrobe, which had a 12m (8ms) error. Given the complex shallow velocity field, the depth conversion provided reasonable predictive accuracy, with the key Top Latrobe mapping surface 15m deep (after accounting for TWT picking error) and the average velocity to the primary target reservoir within 0.75% of the predicted value.

Table 3: Comparison of predicted and actual formation tops & velocities

Marker	Predicted				Actual				Depth Error	TWT Pick Error	Depth Conv Error	Vint Error (%)
	Depth	TWT	Vint	Vave	Depth	TWT	Vint	Vave				
			1481	1481			1485	1485				0.3%
Seafloor	**80**	**108**			**80.2**	**108**			0.2	0	0.2	
			2516	2366			2536	2384				0.8%
Base HiVel Channel	**885**	**748**			**891.6**	**748**			6.6	0	6.6	
			3843	2965			3870	2986				0.7%
Top Lake Entrance	**1865**	**1258**			**1878.5**	**1258**			13.5	0	13.5	
			3214	2990			2971	2985				-7.6%
Intra Lakes Entrance	**2090**	**1398**			**2086.5**	**1398**			-3.5	0	**-3.5**	
			2831	2968			3001	2987				6.0%
Top Latrobe	**2400**	**1617**			**2427.1**	**1625**			27.1	8	15.1	
			3412	2982			3651	3004				7.0%
Top Reservoir	**2487**	**1668**			**2506**	**1668**			18.6	0	18.6	
TD	**2630**				**2655**							

The Top Reservoir mapping horizon (interpreted at the 60Ma sequence boundary) was encountered 19 metres deep to prognosis and did not coincide with the presence of a seal. Post-drill mapping indicates 20m of 4-way dip closure (2506-2525mTVDSS) but no 3-way closure at the 60Ma sequence boundary.

6 GEOLOGICAL DISCUSSION

6.1 Offset Wells

The closest relevant wells to the Megamouth prospect are Ayu-1 (1.8 km SE), Hermes-1 (2.1 km E) and Roundhead-1 (5.3 km SW). Other significant offset wells are Bonita-1A and Albacore-1 (Figure 2).

Ayu-1 (Petrofina, 1990) was located to test a trap interpreted as a truncation of a westerly dipping Paleocene shale at the Top Latrobe. No shows were encountered, as this trapping geometry does not exist.

Hermes-1 (Philips, 1983) tested an Intra-Latrobe faulted anticline that failed due to the absence of a seal. The well recorded shows throughout the Upper Cretaceous coastal plain section below the 69Ma Sequence Boundary. This Upper Cretaceous section is modelled to be mature so it is likely that these shows are locally generated oil from the interbedded coals. Small volumes of oil may be present up-dip of the Hermes-1 well at Top Latrobe level.

Roundhead-1 (Esso 1988) targeted a fault dependant closure beneath the shale that is mapped as the seal at Megamouth (60Ma Sequence Boundary). No closure exists at this horizon as it spills west toward Kingfish. No shows were recorded through the Latrobe Group, despite the well being located just outside of the Kingfish Field closure.

Bonita-1A (Esso 1969) was a Top Latrobe test, along depositional strike from Roundhead-1 with a similar thickness of sealing shale above the 60Ma Sequence Boundary. The failure of Bonita-1A is attributed to a lack of closure at the Top Latrobe.

Albacore-1 (Esso 1970) was another dry well at Top Latrobe that was drilled outside closure. Albacroe-1, like Ayu-1 and Hermes-1 is a down-dip penetration of the 60Ma Sequence Boundary that is the prognosed topseal at Megamouth.

Table 3: Relevant Offset Wells Drilled in and Adjacent to WA-255-P

WELL NAME (OPERATOR)	CURRENT PERMIT	SPUD DATE (COMP'N DATE)	TOTAL DEPTH	TARGET PET. SYSTEM (PLAY F'WAY)	STATUS
Ayu-1 (Petrofina)	VIC/P45	30/01/90 (19/02/90)	2750m	Latrobe (Paleocene sands)	P & A – Dry Hole
Hermes-1 (Philips)	VIC/P45	15/02/83 (22/04/83)	4565m	Latrobe (Upper Cretaceous sands)	P & A – Oil & Gas Shows
Roundhead-1 (Esso)	VIC/L7	06/12/88 (04/01/89)	3021m	Latrobe (Paleocene sands)	P & A – Dry Hole
Bonita-1A (Esso)	VIC/L5	22/10/69 (13/11/69)	3179m	Latrobe (Paleocene sands)	P & A – Dry Hole
Albacore-1 (Esso)	VIC/L5	06/05/70 (08/06/70)	3257m	Latrobe (Paleocene sands)	P & A – Dry Hole

6.2 Regional Tectonostratigraphy

The tectonostratigraphy of the Gippsland Basin is here compiled from Norvick et al 2001, Holgate et al 2001, Johnstone et al 2001, Rahmanian et al 1990 and recent BHPB mapping in VIC/P45.

The onset of Gondwana rifting in the Gippsland Basin began in the Tithonian – Berriasian (~140Ma), with the development of a SE trending basin margin fault system. The post rift phase that followed in the Barremian (~120Ma) resulted in the deposition of the volcaniclastic-rich greywackes and mudstones of the Upper Strzelecki Group.

Following a Cenomanian hiatus (~90Ma) a second rifting phase occurred during the Turonian to Campanian (~85Ma). The Emperor and Golden Beach Subgroups were then deposited into this ESE trending rift basin. The Emperor subgroup consists dominantly of alluvial fan facies on the basin margins with a contemporaneous thick lacustrine succession toward the rift axis (i.e. Kipper Shale). This rift fill succession gradually evolved into a fluvial delta plain system.

The Mid-Santonian boundary between the Emperor and Golden Beach Subgroups the opening of the Tasman Sea and the onset of marine influenced sedimentation. Recent mapping has identified two second-order SE trending extensional phases within the Golden Beach that became successively more localised into the axis of the basin. Thick marine shales of the Golden Beach in the Anemone Syncline mark the axis of deposition in the south. Mafic intrusive bodies emplaced between 80-85Ma (i.e. Kipper Volcanics), are less pervasive in the south than the Northern Gippsland Margin.

A substantial basinward shift in facies at around 75Ma marks a rapid reduction in subsidence rates associated with the cessation of Tasman Sea spreading. This event is somewhat younger than the Top Golden Beach Group (defined as the top of the N. senectus zone at ~80Ma) but appears to be of greater tectonostratigraphic significance, at least on the southern margin of the Gippsland Basin. On the northern margin of the basin, basaltic volcanics around the 80Ma event mark the transition to post-rift sag sequences. A change in provenance from lithic rich sediments to more quartzose prograding deltaics coincides with this boundary.

Recent mapping has also highlighted a third phase of Cretaceous rifting in the Southern Gippsland Basin from the Latest Cretaceous (69Ma) to Late Paleocene (55-60Ma). Rotational block faulting appears to have initiated around the 69Ma event around the same time as the onset of a broad second order marine transgression, which combined with reduced sediment supply caused a gradual retreating of the Latrobe delta. In VIC/P45 the Latrobe group consists of a series of stacked highstand coastal plain, shoreface and delta front facies within an overall regressive system. The upper Latrobe group is characterised by Eocene aged glauconitic sands of the Gurnard Formation that became widespread as sedimentation rates declined.

Several major channelling events occurred during the Paleocene and Eocene. The Eocene channelling is interpreted to be associated with a period of inversion that lowered the base level initiating fluvial incision. The channel fill sediments show repeated pulses of incision and subsequent deposition of transgressional fine-grained neritic facies.

The Oligocene marks the onset of carbonate deposition on the shelf with the deposition of the Lakes Entrance Formation and Gippsland Limestone, while clastic deltaics continued to be deposited to the west until the Late Miocene (in what is now the Latrobe Valley). Major incisions during the Mid to Late Miocene near the base of the Gippsland Limestone are interpreted as offshore erosion/mass wasting events that may have been initiated by compressional reactivation. The prograding carbonates of the Gippsland Limestone infilled these channels and created the present day shelf break.

6.3 Contribution to Geological Concepts and Conclusions

Megamouth-1 was designed to evaluate the hydrocarbon prospectivity of a 4-way dip closure at the 60Ma Sequence Boundary. The trap was reliant on the presence of a thin transgressive marine shale overlying the Paleocene highstand shoreface reservoir sands. The main objectives were to:

- Determine the presence of the proposed seal and trapping geometry at the 60Ma Sequence Boundary
- Confirm the reservoir quality of the Paleocene shoreface sandstones · In the event of a discovery, obtain checkshot and full-waveform sonic data to assist in depth migration
- Obtain pressures and reservoir fluid samples if a significant hydrocarbon column is identified

The reservoir section of the Paleocene sandstones was found to be essentially water saturated. Seal lithologies did not coincide with structural closure.

6.3.1 Reservoir

The target reservoir for the Megamouth Prospect was a Paleocene highstand shoreline within the Latrobe Group. The high-energy upper shoreface facies within closure were estimated to have a net-to-gross of >80% with porosity ranging from 15-25% and a permeability range of 500-5000 mD.

The well encountered 143m thick gross reservoir between the 60Ma sequence boundary (2505.6 mTVDSS) and total depth (2655.6 mTVDSS), with 97% net sand.

Log-derived porosity averages between 20-25%, with corresponding permeability ranging from 100-1000mD. This is at the high end of the porosity range estimated pre-drill (P_{10} 23%).

The net/gross ratio of 97% is above the pre-drill P_{10} estimate of 93%. Wellsite descriptions from 2532mRT to 2550mRT recorded up to 50% clay matrix suggesting a poorer quality reservoir over this interval than the petrophysical interpretation indicates (due to the presence of orthoclase feldspar). Sands below this depth are described as fine to very coarse with some silica cement, a white clay matrix (feldspar dissolution?) and common rock flour. Given the lack of hydrocarbon indications, no sidewall cores were taken to calibrate the FEWD estimates for porosity and permeability.

6.3.2 Source and Migration

Megamouth-1/ST1 is surrounded by large oilfields (Kingfish, Halibut, Fortescue, Cobia and Blackback) and sits within a proven source kitchen for the Upper Cretaceous coastal plain source interval. Given the absence of an extensive and/or competent seal at Megamouth hydrocarbons are interpreted to migrate vertically to the base of the Lakes Entrance Formation, then westward toward the Kingfish Field.

6.3.3 Seal

The target horizon at the 60Ma sequence boundary was intersected 19m shallow to the original prognosis and found to lack the postulated thin transgressive shale seal unit.

Some 20m below the 60Ma sequence boundary, a 12m thick siltstone unit was intersected, which may act as a potential seal. However, the siltstone has log-derived porosity up of to 15% and lacks hydrocarbon shows beneath it; accordingly, it is probable that it is a waste-zone rather than a seal. Furthermore, post-drill mapping indicates that this siltstone may be a 4th order event that has minimal closure (approximately 10m) and lacks sufficient lateral continuity to trap vertically migrating hydrocarbons. An alternative interpretation correlates this siltstone in Megamouth-1/ST1 with the 60Ma shale in Roundhead-1. This low-confidence interpretation has approximately 15m of closure at Megamouth-1/ST1.

Another potential Intra-Latrobe seal in Megamouth-1/ST1 is a 4m thick claystone interval above the 60Ma sequence boundary from 2503-2507mRT. These thin siltstone/claystone intervals in Megamouth-1/ST1, like those in the offset wells, are now interpreted to be 4th order events of limited lateral extent.

6.3.4 Stratigraphy

The seismic picks for Megamouth-1/ST1 were generally close to prognosis. The top Latrobe was intersected 27m deep to prognosis. The 60Ma sequence boundary was intersected 19m deep to prognosis and did not coincide with the presence of a seal.

7 REFERENCES

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FIGURES

Figure 1

Megamouth-1 & -1/ST1 Location Map

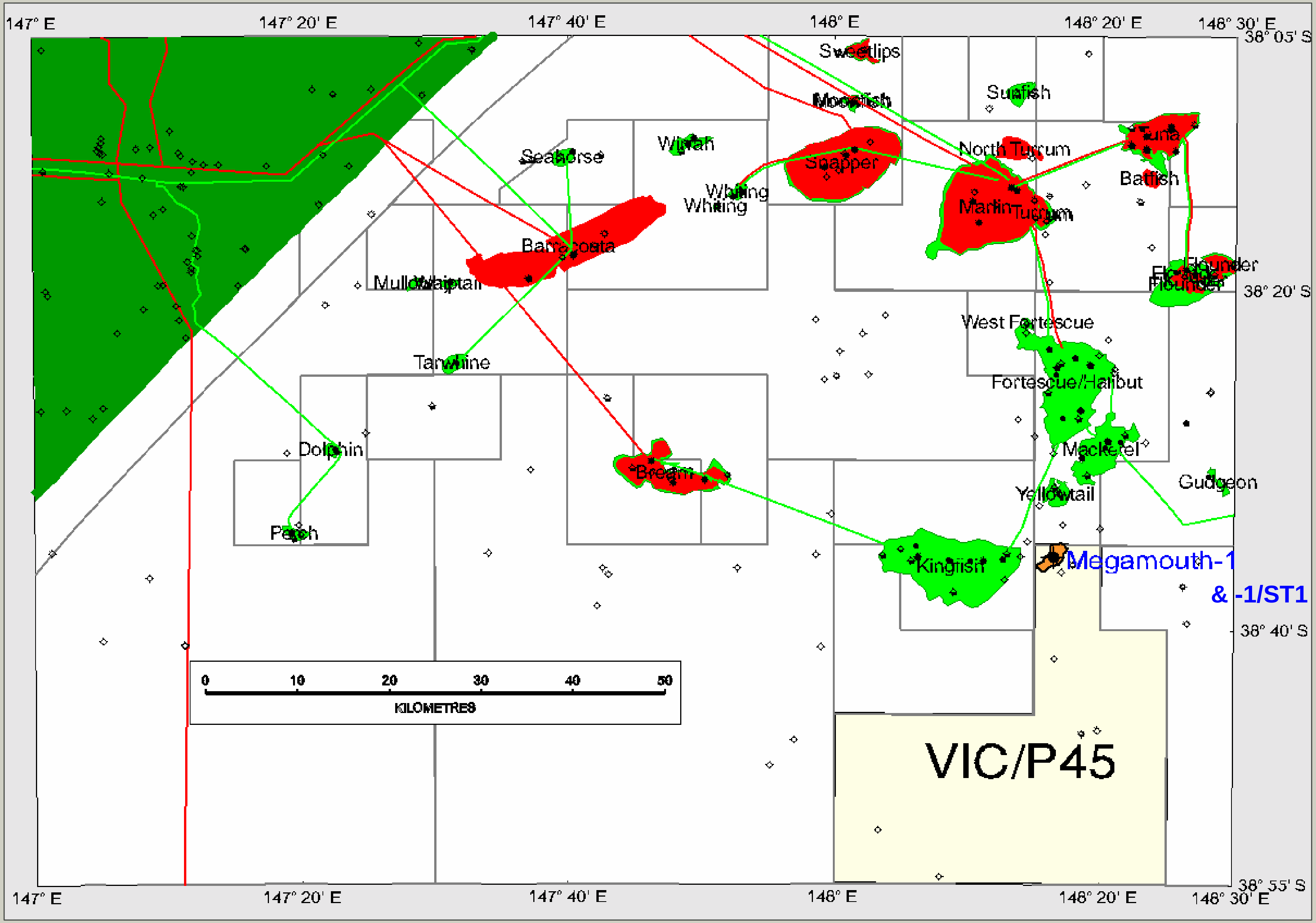


Figure 2

Megamouth-1 & -1/ST1
Predicted vs. Actual Stratigraphy

Well:	**Megamouth-1/ST1**	Latitude:	38° 35' 44.23" S
Permit:	VIC/P45	Longitude:	148° 16' 31.86" E
Spud:	17 Nov 2003	Datum&Spheroid:	GDA94, GRS80
TD:	5 December 2003	Seismic:	HGP2002: IL1707, XL1361

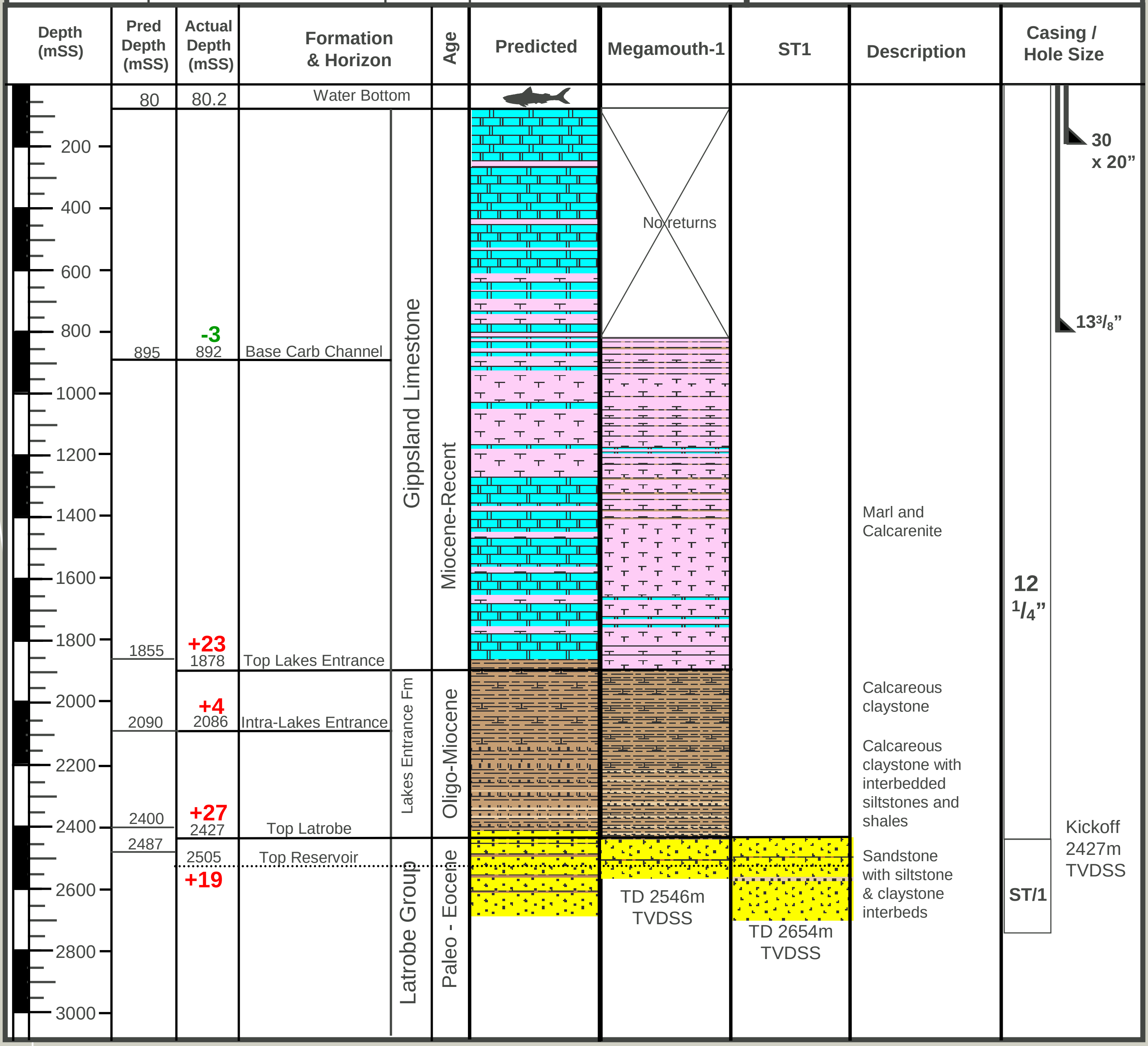
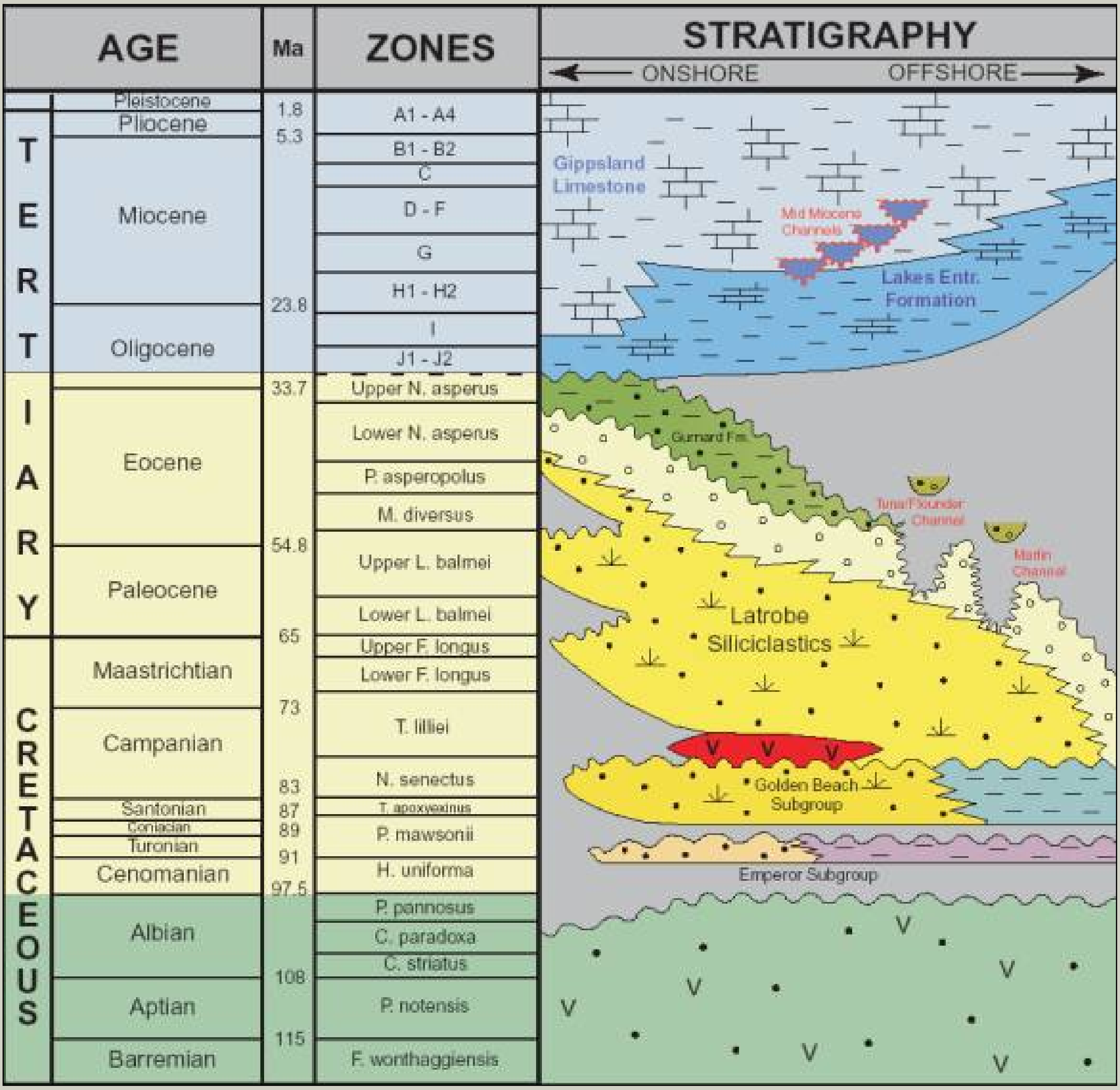


Figure 3

Gippsland Basin Chronostratigraphy



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APPENDICES

APPENDIX 1. Petrophysical Interpretation Report

MEGAMOUTH-1/1ST

PETROPHYSICAL INTERPRETATION

REPORT

PREPARED BY: Mark Locke
Senior Petrophysicist

DATE: 5th April, 2004

BHP BILLITON PETROLEUM PTY. LTD.

SUMMARY

Megamouth-1, operated by BHPB Petroleum, was spudded on 17th November 2003 in a water depth of 80.2m. It was drilled as a vertical well on the northern edge of Exploration Permit VIC/P45. The primary objective was to evaluate the hydrocarbon potential of a progradational sand package within a stratigraphically induced Paleocene 4-way dip closure. While drilling at 2546m, in the 12-1/4” hole section, the bottom-hole assembly twisted-off in the motor housing. An attempt to recover the fish was unsuccessful and the hole was sidetracked around the fish. Megamouth-1ST was kicked-off at 2393m and drilled to the final total depth of 2688m. The well was plugged and abandoned as a dry hole and the rig released on 5th December 2003.

The interpreted section consists dominantly of sandstone, siltstone and claystone. However, large sections of the reservoir that appear to be clean sandstone on the neutron-density crossplot exhibit a relatively high gamma ray response. This response was modelled to be due to the presence of potassium feldspar (orthoclase).

Analysis of the reservoir sands in the interval 2450m-2654m indicates that the formation water resistivity, Rw, is 0.073 ohmm at 72^{o}C which equates to a salinity of 44,000 ppm NaCl equivalent. The analysis also suggests that the cementation exponent, m, is 1.80 (assuming that a = 1).

The entire section is interpreted to be essentially water saturated. Reservoir quality sand occurs over the gross interval 2450.7m-2654.0m. Porosity is generally greater than 20% and ranges up to a maximum of approximately 27%.

The interval 2557.1m-2568.0m has relatively high clay with interpreted porosity less than 20%. It is still defined as net reservoir based on the cutoffs used for the analysis. The section is described from cuttings to consist of sandstone grading to siltstone with minor silty claystone. The sandstone is predominantly very fine grained and argillaceous with abundant silt and clay.

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1. INTRODUCTION

This report documents the results of a petrophysical interpretation of the LWD log data acquired during the drilling of the Megamouth-1/1ST well.

Megamouth-1, operated by BHPB Petroleum, was spudded on 17th November 2003 in a water depth of 80.2m. It was drilled as a vertical well on the northern edge of Exploration Permit VIC/P45. The primary objective was to evaluate the hydrocarbon potential of a progradational sand package within a stratigraphically induced Paleocene 4-way dip closure.

While drilling at 2546m, in the 12-1/4" hole section, the bottom-hole assembly twisted-off in the motor housing. An attempt to recover the fish was unsuccessful and the hole was sidetracked around the fish. Megamouth-1ST was kicked-off at 2393m and drilled to the final total depth of 2688m. The well was plugged and abandoned as a dry hole and the rig released on 5th December 2003.

Note that all depths in this report, unless specified otherwise, are measured depths referenced to the rotary table (RT) which is 22.4m above sea level.

2. HOLE CONDITIONS

2.1 Hole Size and Borehole Fluids

Table 1 gives a summary of the mud properties used while drilling the objective section in Megamouth-1ST. The mud was water based (KCl/Glycol/PHPA) with a weight of 1.20 g/cc.

The acoustic caliper, recorded as part of the LWD logging suite, indicates that the hole conditions in Megamouth-1 were very good down to 2478m. Below this depth the hole was severely washed-out with the neutron and density logs affected by the hole rugosity (refer to **Figure 1**). The logs over the correlative section in Megamouth-1ST are good quality despite some "cork-screwing" apparent on the caliper and DRHO curves. The sidetrack hole is washed-out and rugose over the interval 2408m-2424m resulting in spurious neutron and density measurements.

2.2 Hole Direction

Deviation survey information is given in **Appendix 1**. The maximum well deviation measured in Megamouth-1 was 1.87^{o} at 1831.75m. Deviation in Megamouth-1ST is greater reaching a maximum of 17.94^{o} at total depth.

2.3 Temperature

An extrapolated bottom hole formation temperature of 78°C at 2688m was estimated from wells in the area. Note that the maximum tool temperature recorded from the LWD was 66.0°C.

3. AVAILABLE DATA

3.1 Wireline Logs

No wireline logs were run in either Megamouth-1 or Megamouth-1ST.

3.2 Wireline Formation Testing

No wireline formation testing was attempted.

3.3 MWD/LWD Data

Sperry-Sun provided MWD services in the 17-1/2" and 12-1/4" hole sections of Megamouth-1. Both real time and memory data were acquired. Only directional information was acquired in the 17-1/2" hole. A Quad Combo was used while drilling the 12-1/4" hole. This suite was made up of the following sensors – Dual Gamma Ray (DGR), Four Phase Electromagnetic Resistivity (EWR-P4), Compensated Neutron Porosity (CNP), Stabilised Litho Density (SLD), Acoustic Caliper (ACAL), Bimodal Acoustic Tool (BAT) and Directional module (DM). Refer to **Table 2** for details.

The Quad Combo suite of sensors was also used to log the 12-1/4" hole section in Megamouth-1ST.

3.4 Conventional Cores

No conventional coring was attempted.

3.5 Wireline Coring

No wireline coring was attempted.

3.6 Drillstem Tests

No drill stem tests were conducted.

4. INTERPRETATION PROCEDURE

The LWD logs from Megamouth-1ST were quantitatively interpreted over the interval 2400m-2654m using GeoQuest's *ELAN* program module.

4.1 Data Preparation

All log data were depth matched and input to a GeoFrame database. Environmental corrections were applied to the gamma ray, neutron and density logs using GeoQuest's *PREPLUS* program module which emulates the chart book corrections.

The Megamouth-1 logs were used for the interpretation above 2450m. This was done to avoid the spurious neutron and density log measurements recorded in the sidetrack hole. A small gap appears where the logs are combined due to differences in the true vertical depth.

4.2 ELAN Interpretation Method

The section was processed using the *ELAN* log interpretation program. *ELAN* (Elemental Analysis) generates a quantitative formation evaluation using an optimized simultaneous equation solver described by one or more interpretation models[1]. Log measurements and input parameters are used together with tool response equations to compute volumetric results for formation components.

The interpreted section consists dominantly of sandstone, siltstone and claystone. This is consistent with the neutron-density crossplot shown in **Figure 2**. However, large sections of the reservoir that appear to be clean sandstone on the neutron-density crossplot exhibit a relatively high gamma ray response (refer to **Figure 3**). This response was modelled to be due to the presence of potassium feldspar (orthoclase). The formation components and tool responses used in the *ELAN* processing are summarised as follows:

Tool Response	Formation Component
Gamma Ray	Sandstone (quartz)
Density	Feldspar (orthoclase)
Neutron	Clay
Sonic	Porosity
Uninvaded resistivity (Rt)	Invaded water (Sxo)
Invaded resistivity (Rxo)	Uninvaded water (Sw)

[1] J. Quirein, S. Kimminau, J. Lavigne, J. Singer and F. Wendel, "A Coherent Framework for Developing and Applying Multiple Formation Evaluation Models", 1986, SPWLA 27th Annual Logging Symposium Transactions; paper DD.

4.3 ELAN Permeability Estimation

The permeability algorithm used in *ELAN* is the geochemical relationship proposed by Herron (1987)[1]. The permeability is displayed in **Enclosure 1** but, given the lack of permeability data from the well, has not been calibrated to local conditions. It should only be used as a qualitative guide.

4.4 Formation Water Salinity and Electrical Properties

A summary of the interpretation parameters used for the *ELAN* processing is given in **Table 3**.

Figure 4(a) shows a Pickett Plot across the reservoir sands in the interval 2450m-2654m. Analysis of this plot indicates that the formation water resistivity, Rw, is 0.073 ohmm at 72^{o}C which equates to a salinity of 44,000 ppm NaCl equivalent. The plot also suggests that the cementation exponent, m, is 1.80 (assuming that a = 1). An SP log is not available as the resistivity was acquired by LWD. A similar Pickett Plot using the shallow resistivity response is given as **Figure 4(b)**. A mud filtrate resistivity, Rmf, of 0.040 ohmm at 72^{o}C is inferred from the trend of water saturated points.

In the absence of other information a saturation exponent, n, of 2.00 was used to determine water saturation.

5. INTERPRETATION RESULTS

A plot of the *ELAN* interpretation results for Megamouth-1ST is provided in **Enclosure 1**. A tabulated summary of the net reservoir intervals is given as **Table 4**.

5.1 Net Reservoir and Pay Determination

The *ELAN* derived permeability was used with a cutoff of 1mD to determine net reservoir. A Vsh cutoff of 50% was also applied to exclude sands with high clay content. A water saturation cutoff of 80% was used for the determination of net pay. Cutoffs are summarised below.

Permeability	>=	1mD,
Vsh	<=	50%, and
Sw	<=	80%.

5.2 Discussion of Results

The entire section is interpreted to be essentially water saturated. Reservoir quality sand occurs over the gross interval 2450.7m-2654.0m. Porosity is generally greater than 20% and ranges up to a maximum of approximately 27%.

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[1] Herron, M., "Estimating the Intrinsic Permeability of Clastic Sediments from Geochemical Data", 1987, SPWLA 28th Annual Symposium, paper HH.

The interval 2557.1m-2568.0m has relatively high clay with interpreted porosity less than 20%. It is still defined as net reservoir based on the cutoffs used for the analysis. The section is described from cuttings to consist of sandstone grading to siltstone with minor silty claystone. The sandstone is predominantly very fine grained and argillaceous with abundant silt and clay.

Table 1: Borehole Fluids

Suite Number	LWD
Mud Type	KCl-Glycol-PHPA
Bit Size	12-1/4"
Last Casing	13-3/8" at 821.0m
Mud Weight	1.20 g/cm^3
Filtrate Salinity	38,500 ppm Cl^-
R_m	0.120 ohmm @ 20^{o}C
R_{mf}	0.110 ohmm @ 20^{o}C
R_{mc}	0.240 ohmm @ 20^{o}C

Table 2 : MWD/LWD Data (Sperry-Sun)

Run No.	Drilled Interval (mRT)	Begin/End Log	Hole Size (inches)	Fluid Type	Tool String	Note
Megamouth-1						
0100	148.1 - 831.0	19-Nov-03 to 20-Nov-03	17-1/2	Sea Water	DIR	(1)
0200	831.0 - 2546.0	22-Nov-03 to 26-Nov-03	12-1/4	Aqua-Drill	DGR-EWR(P4)-SLD-CNP-BAT-DIR	(2)
Megamouth-1ST						
0300	2450.0 - 2483.0	28-Nov-03 to 29-Nov-03	12-1/4	Aqua-Drill	DGR-EWR(P4)-SLD-CNP-BAT-DIR	(3)
0400	2393.0 - 2688.0	30-Nov-03 to 03-Dec-03	12-1/4	Aqua-Drill	DGR-EWR(P4)-SLD-CNP-BAT-DIR	(4)

(1) Pull out of hole to run 13-3/8” casing.
(2) The well was plugged back and abandoned when the downhole motor parted at 2546.0m and an attempt to fish it was unsuccessful.
(3) An attempt to kick-off Megamouth-1ST was unsuccessful. POOH to reset cement plug.
(4) Kicked-off Megamouth-1ST at 2393.0m.

Table 3 : Input Parameters (ELAN Interpretation Model)

Tool Responses:	Gamma Ray	:	GR from LWD	
	Density	:	SBD2 from LWD	
	Neutron	:	NUCL from LWD	
	Sonic	:	DT from LWD	
	Rt	:	SEDP from LWD	
	Rxo	:	SEXP from LWD	

Formation Components: Quartz (sandstone), Feldspar (orthoclase), Clay, Porosity, Invaded water (Sxo), Uninvaded water (Sw)

General Parameters:	Interval	=	2360m to 2654m	a = 1.00
	TD	=	2688m (driller's depth)	m = 1.80
	BHT	=	78°C at 26886m	n = 2.00
	Rw	=	see text	
	Rmf	=	see text	

Interval (mMD)	Clay Parameters						Quartz Parameters				Feldspar Parameters			
	Density (g/cm^3)	Neutron (lst pu)	GR (api)	Sonic (usec/ft)	WCLP (%)	Resist'ty (ohmm)	Density (g/cm^3)	Neutron (lst pu)	Sonic (usec/ft)	GR (api)	Density (g/cm^3)	Neutron (lst pu)	Sonic (usec/ft)	GR (api)
2360.0 - 2411.0	2.60	42.0	95	95	10.8	1.0	2.65	-7.0	55.5	60	2.61	-3.0	60.0	450
2411.0 - 2451.0	2.60	42.0	110	95	10.8	1.0	2.65	-7.0	55.5	60	2.61	-3.0	60.0	450
2451.0 - 2557.0	2.63	45.0	130	80	10.8	1.0	2.65	-7.0	55.5	60	2.61	-3.0	60.0	450
2557.0 - 2654.0	2.63	45.0	130	80	10.8	6.0	2.65	-7.0	55.5	60	2.61	-3.0	60.0	450

Table 4 : Reservoir Summary

Zone Interval	Thickness					
Measured Depth (mMD)	**Gross (mMD)**	**Net[1] (mMD)**	**Average Porosity (%)**	**Average Vsh (%)**	**Average Perm[2] (mD)**	**Notes**
2450.7 - 2463.5	12.8	12.8	21.0	8.9	280.7	
2463.5 - 2478.0	14.5	14.5	21.0	2.7	415.0	
2478.0 - 2496.6	18.6	18.6	23.0	4.7	538.2	
2496.6 - 2503.7	7.1	7.1	24.5	6.6	576.6	
2505.9 - 2515.5	9.6	9.6	22.9	10.6	458.4	
2515.5 - 2535.4	19.9	19.9	26.3	2.6	1443.4	
2535.4 - 2557.1	21.7	21.7	23.6	3.7	721.6	
2557.1 - 2568.0	10.9	10.9	17.6	26.8	15.7	(3)
2568.0 - 2582.0	14.0	14.0	23.7	6.0	743.3	
2582.0 - 2608.1	26.1	26.1	21.5	3.9	391.1	
2608.1 - 2634.0	25.9	25.9	19.4	5.5	210.2	
2634.0 - 2654.0	20.0	20.0	23.7	6.6	502.7	

Notes (1) Cutoff used: Permeability >= 1mD and Vcl <= 50%.
(2) Arithmetic average of *ELAN* derived permeability.
(3) Poor reservoir properties.

Figure 1 : Comparison of Megamouth-1 and -1ST Logs

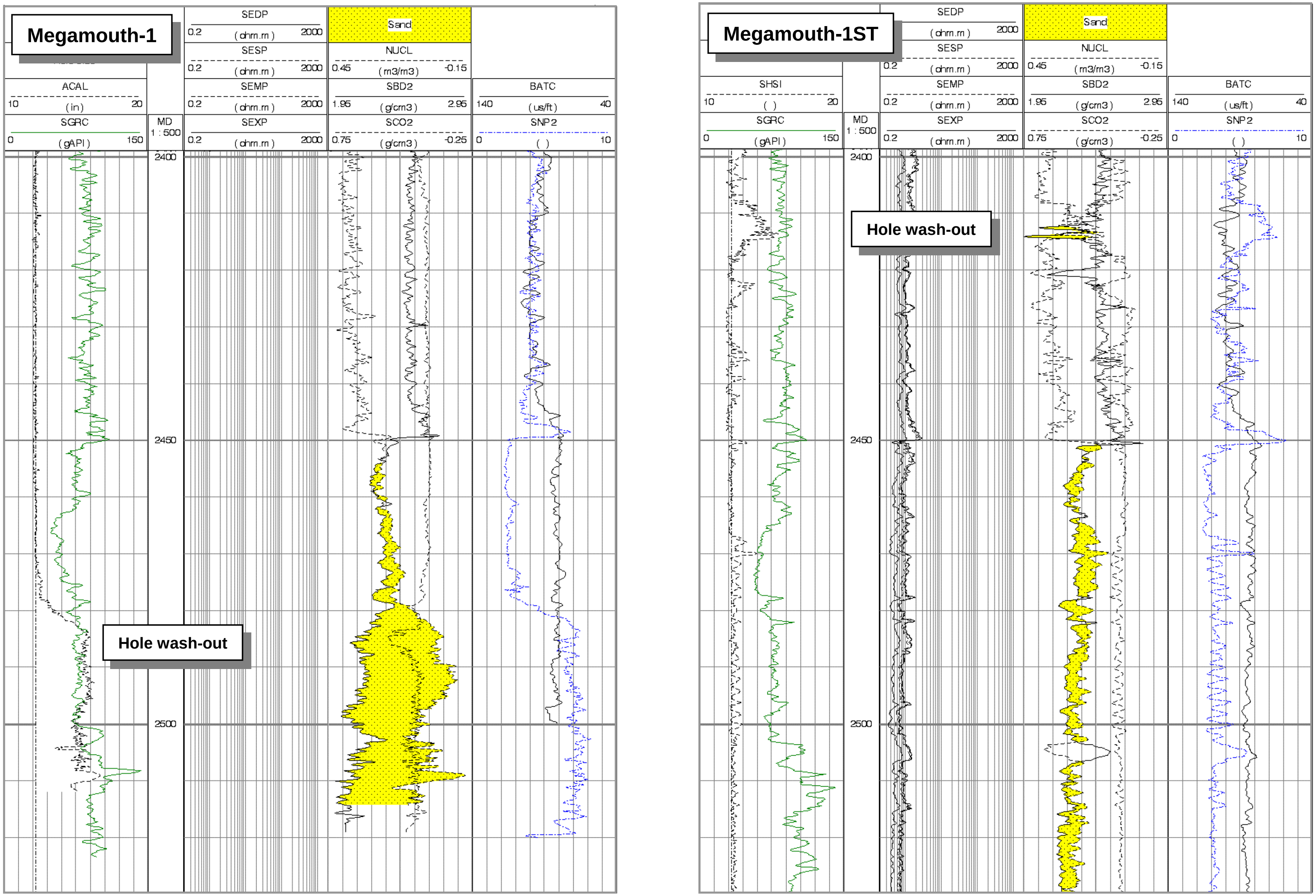


Figure 2 : Neutron-Density Crossplot (2400m-2689m)

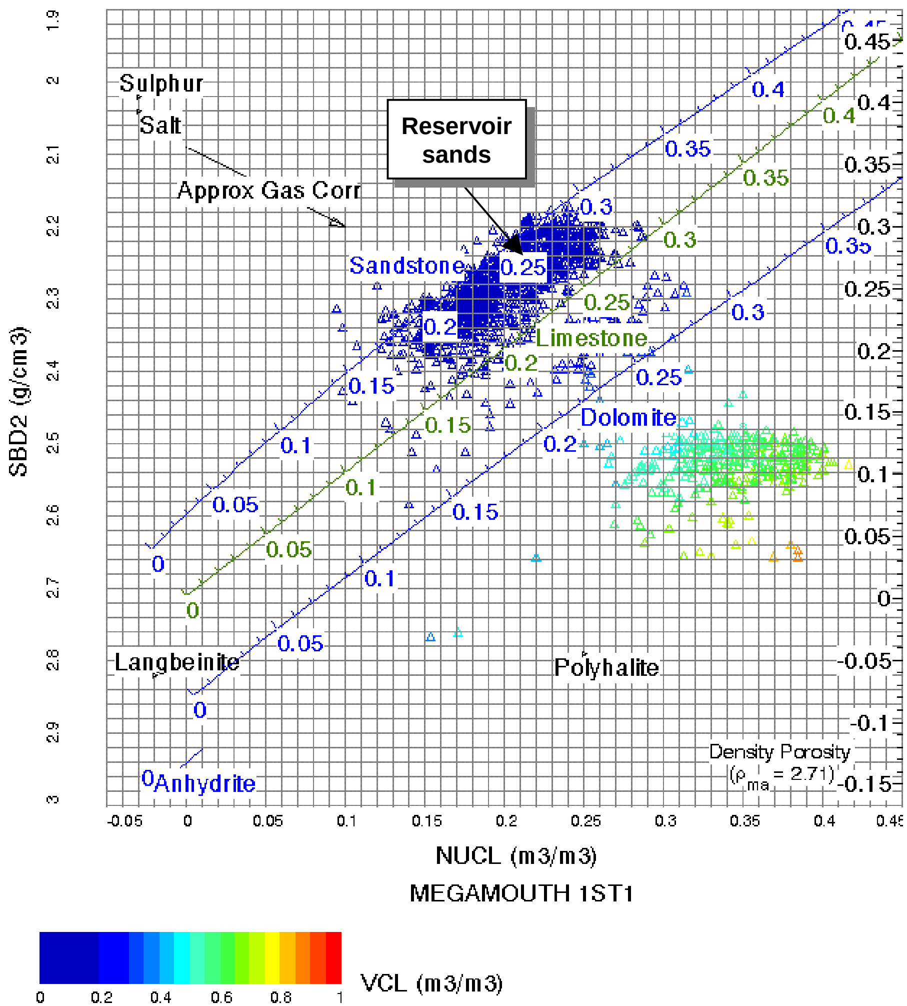


Figure 3 : Log Results (2450m-2650m)

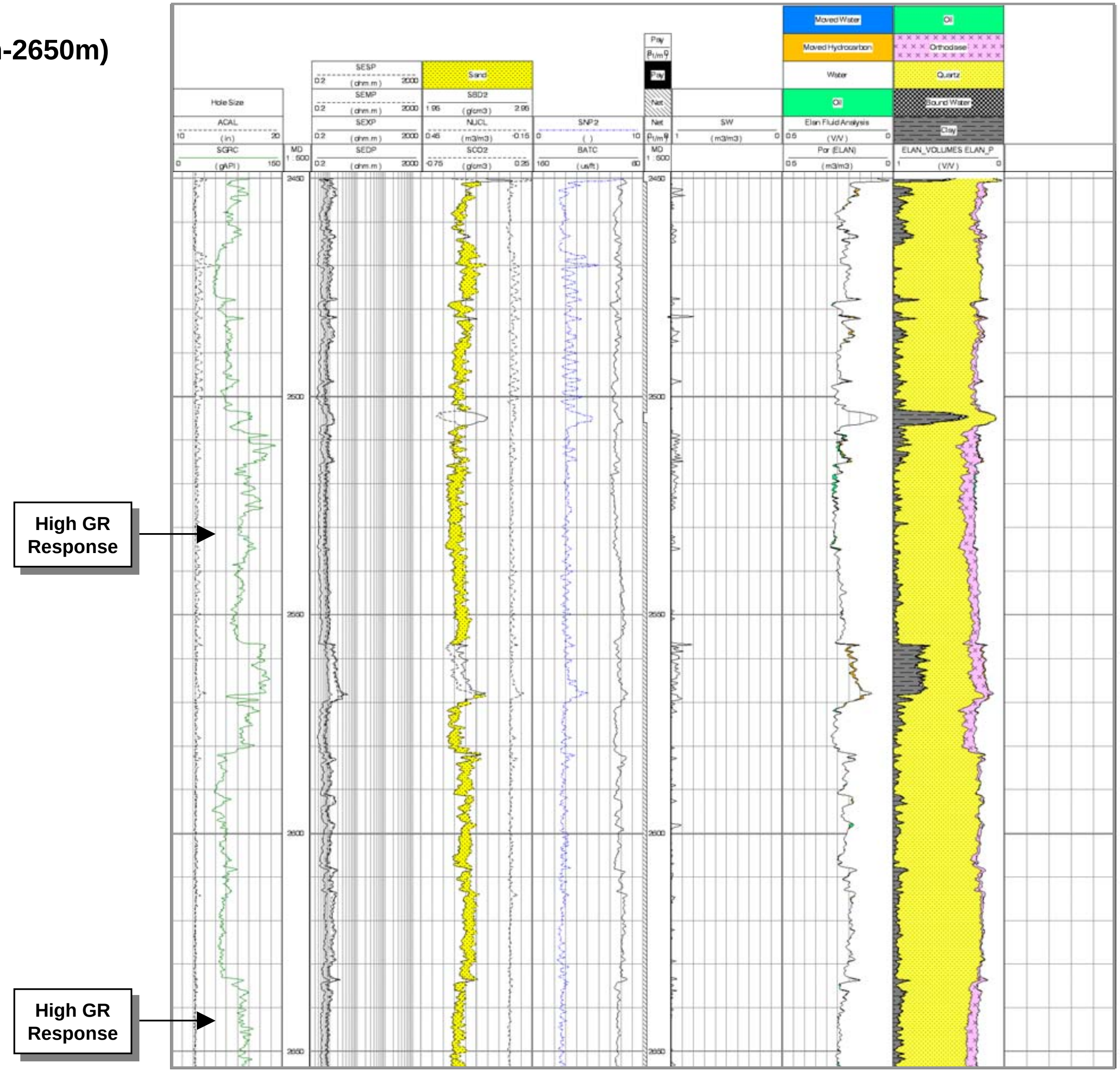


Figure 4 : Pickett Plot (2450m-2654m)

Figure 4(a)

Rw = 0.073 ohmm at 72ºC

m = 1.80

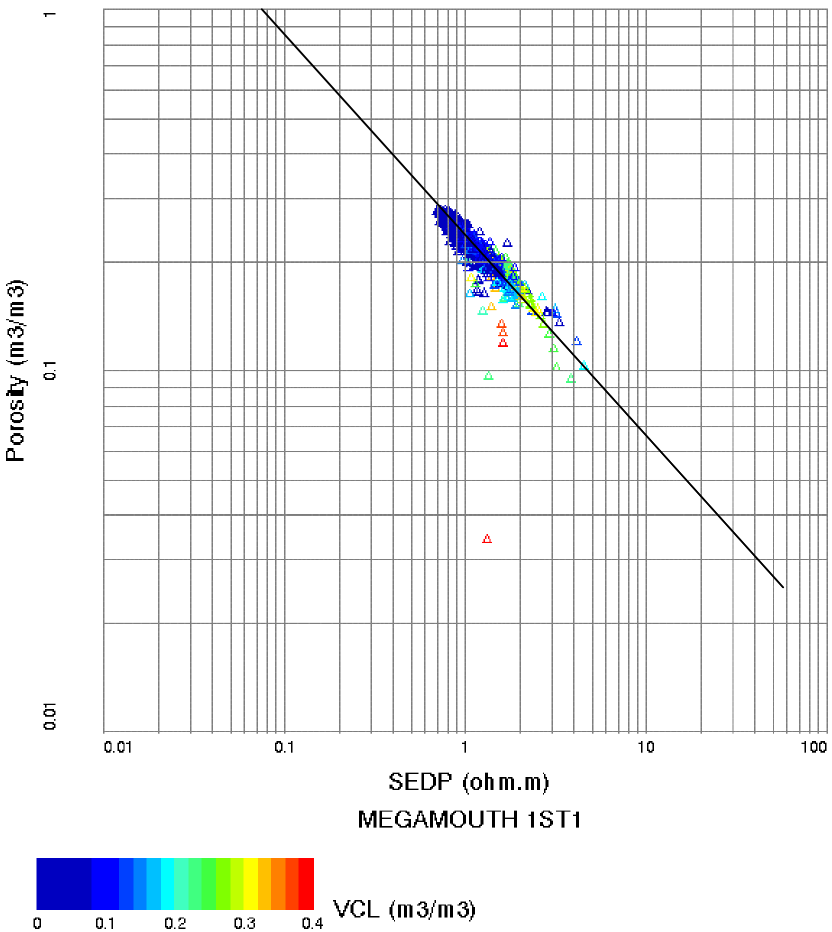
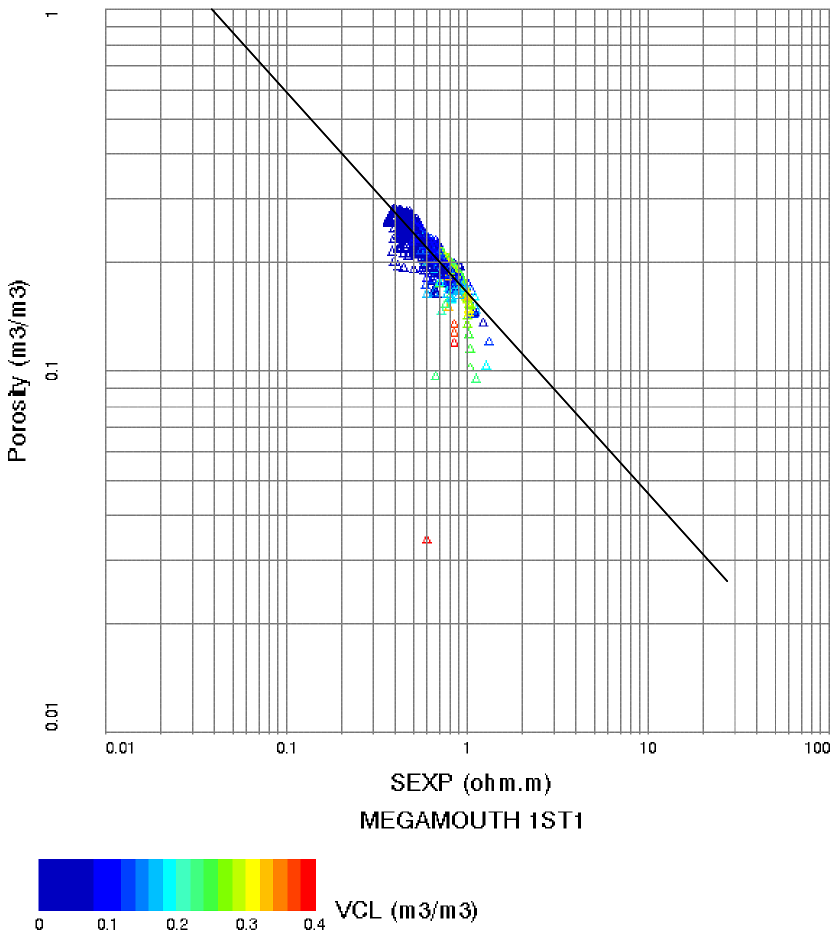


Figure 4(b)

Rmf = 0.040 ohmm at 72ºC

m = 1.80



APPENDIX 1

HOLE DEVIATION SURVEY

Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
81.50	0.00	0.00	81.50	0.00 N	0.00 E	0.00	TIE-IN
166.00	0.62	207.17	166.00	0.41 S	0.21 W	-0.40	0.22
195.90	0.61	179.98	195.90	0.71 S	0.28 W	-0.70	0.29
250.50	0.57	192.84	250.49	1.27 S	0.34 W	-1.25	0.07
279.30	0.44	183.73	279.29	1.52 S	0.38 W	-1.50	0.16
367.30	0.37	206.52	367.29	2.11 S	0.53 W	-2.08	0.06
454.00	0.50	187.15	453.99	2.73 S	0.70 W	-2.70	0.07
541.50	0.15	197.89	541.49	3.23 S	0.79 W	-3.19	0.12
628.70	0.26	209.80	628.69	3.51 S	0.92 W	-3.47	0.04
684.50	0.13	189.38	684.49	3.69 S	1.00 W	-3.64	0.08
714.20	0.13	239.71	714.19	3.74 S	1.03 W	-3.69	0.11
821.00	0.19	228.46	820.99	3.92 S	1.27 W	-3.86	0.02
827.40	0.20	228.02	827.39	3.93 S	1.29 W	-3.87	0.02
769.89	0.28	307.01	769.88	3.82 S	1.15 W	-3.76	0.02
845.67	0.09	72.72	845.66	3.95 S	1.30 W	-3.89	0.45
875.61	0.14	47.32	875.59	3.92 S	1.25 W	-3.86	0.07
905.10	0.26	40.22	905.08	3.84 S	1.18 W	-3.79	0.12
933.83	0.28	47.23	933.81	3.75 S	1.09 W	-3.69	0.04
962.40	0.35	27.79	962.38	3.62 S	1.00 W	-3.57	0.13
991.89	0.31	21.75	991.87	3.47 S	0.92 W	-3.42	0.05
1021.90	0.50	21.35	1021.88	3.27 S	0.85 W	-3.23	0.18
1049.70	0.49	8.82	1049.68	3.04 S	0.78 W	-3.00	0.12
1107.73	0.64	8.83	1107.71	2.47 S	0.70 W	-2.44	0.07
1136.80	0.91	4.66	1136.78	2.08 S	0.65 W	-2.05	0.29
1195.40	1.47	359.86	1195.36	0.87 S	0.62 W	-0.84	0.29
1282.00	2.90	3.60	1281.90	2.43 N	0.48 W	2.45	0.50
1312.10	3.07	3.39	1311.96	3.99 N	0.39 W	4.01	0.17
1397.40	3.67	2.54	1397.11	9.00 N	0.13 W	9.00	0.21
1458.10	4.02	1.09	1457.67	13.07 N	0.00 W	13.06	0.18
1484.80	3.92	0.93	1484.31	14.92 N	0.03 E	14.91	0.12
1514.41	3.77	0.58	1513.85	16.91 N	0.06 E	16.89	0.15
1539.66	3.69	1.00	1539.05	18.55 N	0.08 E	18.53	0.10
1570.32	3.85	1.88	1569.64	20.56 N	0.13 E	20.54	0.16
1597.80	3.86	0.11	1597.06	22.41 N	0.16 E	22.38	0.13
1627.80	3.73	359.86	1626.99	24.39 N	0.16 E	24.36	0.13
1654.50	3.53	1.04	1653.64	26.08 N	0.17 E	26.05	0.24
1716.00	2.75	0.13	1715.05	29.45 N	0.21 E	29.41	0.38
1744.20	2.57	359.92	1743.22	30.76 N	0.21 E	30.72	0.19
1773.87	2.29	358.46	1772.86	32.02 N	0.19 E	31.98	0.29
1801.50	2.06	358.97	1800.47	33.06 N	0.17 E	33.02	0.25

Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
1831.75	1.87	355.50	1830.70	34.10 N	0.12 E	34.06	0.23
1861.75	1.82	353.71	1860.69	35.06 N	0.03 E	35.02	0.08
1887.01	1.74	356.67	1885.94	35.84 N	0.03 W	35.80	0.14
1917.63	1.57	355.94	1916.54	36.72 N	0.09 W	36.69	0.17
1949.31	1.51	352.76	1948.21	37.57 N	0.17 W	37.54	0.10
1974.67	1.50	351.45	1973.56	38.23 N	0.27 W	38.20	0.04
2003.17	1.49	349.21	2002.05	38.96 N	0.39 W	38.94	0.06
2032.80	1.37	350.27	2031.67	39.68 N	0.52 W	39.67	0.12
2121.70	1.27	350.42	2120.55	41.70 N	0.87 W	41.70	0.03
2209.50	1.05	346.85	2208.33	43.45 N	1.21 W	43.46	0.08
2297.70	0.88	349.11	2296.52	44.90 N	1.52 W	44.92	0.06
2354.83	0.88	347.07	2353.64	45.76 N	1.70 W	45.79	0.02
2383.08	0.83	351.30	2381.89	46.17 N	1.78 W	46.20	0.09
2466.60	0.69	350.51	2465.40	47.27 N	1.96 W	47.31	0.05
2546.00	0.69	350.51	2544.80	48.21 N	2.11 W	48.25	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 357.49 DEGREES (GRID)
A TOTAL CORRECTION OF 14.07 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 2546.00 METRES
IS 48.25 METRES ALONG 357.49 DEGREES (GRID)

Final Survey projected to TD.

Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
2383.08	0.83	351.30	2381.89	46.19 N	1.78 W	46.19	TIE-IN
2384.75	0.76	350.33	2383.56	46.21 N	1.78 W	-41.05	1.22
2412.80	0.28	303.92	2411.61	46.43 N	1.87 W	-41.22	0.65
2443.80	7.35	186.91	2442.53	44.51 N	2.17 W	-39.34	7.23
2469.50	14.35	185.33	2467.75	39.70 N	2.67 W	-34.78	8.18
2499.76	15.12	185.79	2497.02	32.04 N	3.41 W	-27.54	0.78
2528.50	15.52	186.75	2524.73	24.49 N	4.24 W	-20.35	0.49
2553.50	16.08	187.06	2548.79	17.73 N	5.06 W	-13.89	0.68
2585.90	16.57	187.44	2579.88	8.70 N	6.21 W	-5.22	0.47
2614.75	17.07	187.73	2607.50	0.42 N	7.31 W	2.73	0.53
2656.60	17.94	187.31	2647.41	12.06 S	8.96 W	14.73	0.63
2688.00	17.94	187.31	2677.28	21.65 S	10.19 W	23.93	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 205.21 DEGREES (GRID)
A TOTAL CORRECTION OF 14.07 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 2688.00 METRES
IS 23.93 METRES ALONG 205.21 DEGREES (GRID)

Final Survey Projected to TD.

ENCLOSURES

ENCLOSURE 1. Composite Log

This log is displayed at 50% scale. Print at 200% to get a full scale plot.

102.6-891MRT: RETURNS TO SEAFLOOR.

891-914MRT: DOMINANTLY MARL WITH MINOR CALCAREOUS CLAYSTONE.
MARL (80%): LIGHT GREY, PALE BROWNISH GREY, SOFT, DISPERSIVE, AMORPHOUS, TRACE LITHICS, TRACE VERY FINE GLAUCONITE.
CALCAREOUS CLAYSTONE (20%): LIGHT GREY, MINOR PALE BROWNISH GREY, SOFT, AMORPHOUS, TRACE VERY FINE SAND AND SILT SIZED QUARTZ, TRACE CARBONACEOUS SPECKS.

914MRT (-891.6MTVDSS)

914-1150MRT: MARL GRADING TO AND INTERBEDDED WITH MINOR CALCAREOUS CLAYSTONE.
MARL (80-90%): LIGHT GREY, WHITE, LIGHT BROWNISH GREY, VERY SOFT TO SOFT, DISPERSIVE, AMORPHOUS, OCCASIONALLY FIRM AND SUBBLOCKY TO MODERATELY HARD CALCITE GRAINS, TRACE LITHICS, ARGILLACEOUS AND GRADING TO CALCAREOUS CLAYSTONE IN PART.
CALCAREOUS CLAYSTONE (10-20%): LIGHT GREY TO VERY LIGHT BROWN, SOFT, SUBBLOCKY IN PART, AMORPHOUS, DISPERSIVE TO FIRM IN PART, TRACE VERY FINE AND SILT SIZED QUARTZ, TRACE LITHICS & CARBONACEOUS SPECKS IN PART, SLIGHT MICROMICACEOUS IN PART. GRADES TO MARL IN PART.

GIPPSLAND LIMESTONE

MIOCENE TO RECENT

1150-1220MRT: MARL GRADING TO AND INTERBEDDED WITH MINOR LIMESTONE AND CALCAREOUS CLAYSTONE.
MARL (40-90%): VERY LIGHT GREY TO LIGHT BROWNISH GREY, SOFT TO FIRM, BLOCKY TO AMORPHOUS, SLIGHTLY ARENEACEOUS IN PART, GRADES TO LIMESTONE IN PART.
CALCAREOUS CLAYSTONE (10-90%): LIGHT TO MEDIUM GREYISH BROWN, SOFT, OCCASIONALLY