McCREESH NO 1

WELL COMPLETION REPORT

PETROLEUM EXPLORATION PERMIT 137

VICTORIA

Distribution List
Victorian Department of Mines & Energy (1 Copy)
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ROMA PETROLEUM NL
Compiled by R A Meaney and W Lawson

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1.0 WELL SUMMARY

1.1 Technical Details

Well: McCreesh No 1

Petroleum Title: Petroleum Exploration Permit 137

Status: Plugged and abandoned

Operator: Roma Petroleum NL

Basins: Gippsland

Participants: Roma Petroleum NL

Elevation: GL 27.0 m AMSL
RT 31.4 m AMSL

Location:
Latitude: 38°22'27"S
Longitude: 147°06'17"E
Northing: 5752621.39
Easting: 509147.42

Seismic Line: GCR87A-13
Vibrator Point: 1080

Hole Sizes: 12.25" to 320 mKB
8.5" to 1803 mKB

Casing and Tubing Details: $9^5/_8$" to 318.2 m

Wireline Logging Contractor: BPB (Australia) Pty Ltd

Perforations: Nil

Drilling Contractor: OD&E (Rig # 30)

Consultant Drilling Supervisor: M Valentine

Mud Logging Contractor: Halliburton

Consultant Wellsite Geologist: D Horner

Spudded: 10/12/98 (1230 hours)

Reached T.D.: 23/12/98 (0900 hours)

Rig Released: 25/12/98 (1800 hours)

Plugs:

1	780 - 810 m RTKB
2	290 - 350 m RTKB
3	5 - 20 m RTKB

TABLE 1

McCREESH 1 STRATIGRAPHIC COLUMN

	Rock Unit	Depth KB (mRT)	Depth AMSL (mSS)	Thickness (m)
Seaspray Group	Jemmys Point Formation	4.4	427	?
	Tambo River Formation	**Not Picked (?)	Not Picked (?)	?
	Gippsland Limestone Formation	**Not Picked (≅300)	Not Picked (≅289)*	343+
	Lakes Entrance Formation	-	-	-
	Seacombe Marl Member	694	663	1064
	Giffard Sandstone Member	Not Present	Not Present	-
Latrobe Group	Traralgon Formation	800.5	769	-
	Upper Intra-Latrobe Group Seismic Marker	945	914	-
	Middle Intra-Latrobe Group Seismic Marker	1110	1079	500
	Lower Intra-Latrobe Group Seismic Marker	1300	1269	-
Golden Beach Group	Golden Beach Group Seismic Marker	1388	1357	355
	Top of Repeated Golden Beach Group Section	1743	1712	-
	Total Depth *	**1803**	**1772**	**60 m+**

*NB: * Due to drilling difficulties encountered in the coals of the Latrobe Group, the well was abandoned before the Strzelecki Group was penetrated.*

*** Both the Tambo River Formation and Gippsland Limestone Formations were encountered in the interval of the well covered by surface casing. No lithological sampling was conducted in this interval. When sampling commenced at 320m the well was in the Gippsland Limestone.*

DRILLSTEM TESTS

#	INTERVAL (m) TYPE	PF ISI	MF FSI	IFP	FFP	ISIP FSIP	IHH FHH	RESULTS
	NIL							

OPEN HOLE FLOW TESTS

#	INTERVAL (m)	RATE	#	INTERVAL (m)	RATE
	NIL				

WIRELINE LOGGING

LOG SUITE	RUN	INTERVAL (M)	DATE
DLL-MSFL-ML-SONIC-GR-CAL	1	813-0 m	24/12/98

NB: Due to the bridging effects of upper Latrobe Group coals the hole could not be logged below 813 mRT.

CONVENTIONAL CORES

Nil

VELOCITY SURVEY

Nil

NB: Due to the fact that the well could not be logged below 813 m in the upper Latrobe Group and the major seismic reflectors of interest are located below this depth it was decided not to conduct a velocity survey.

SIDEWALL CORES

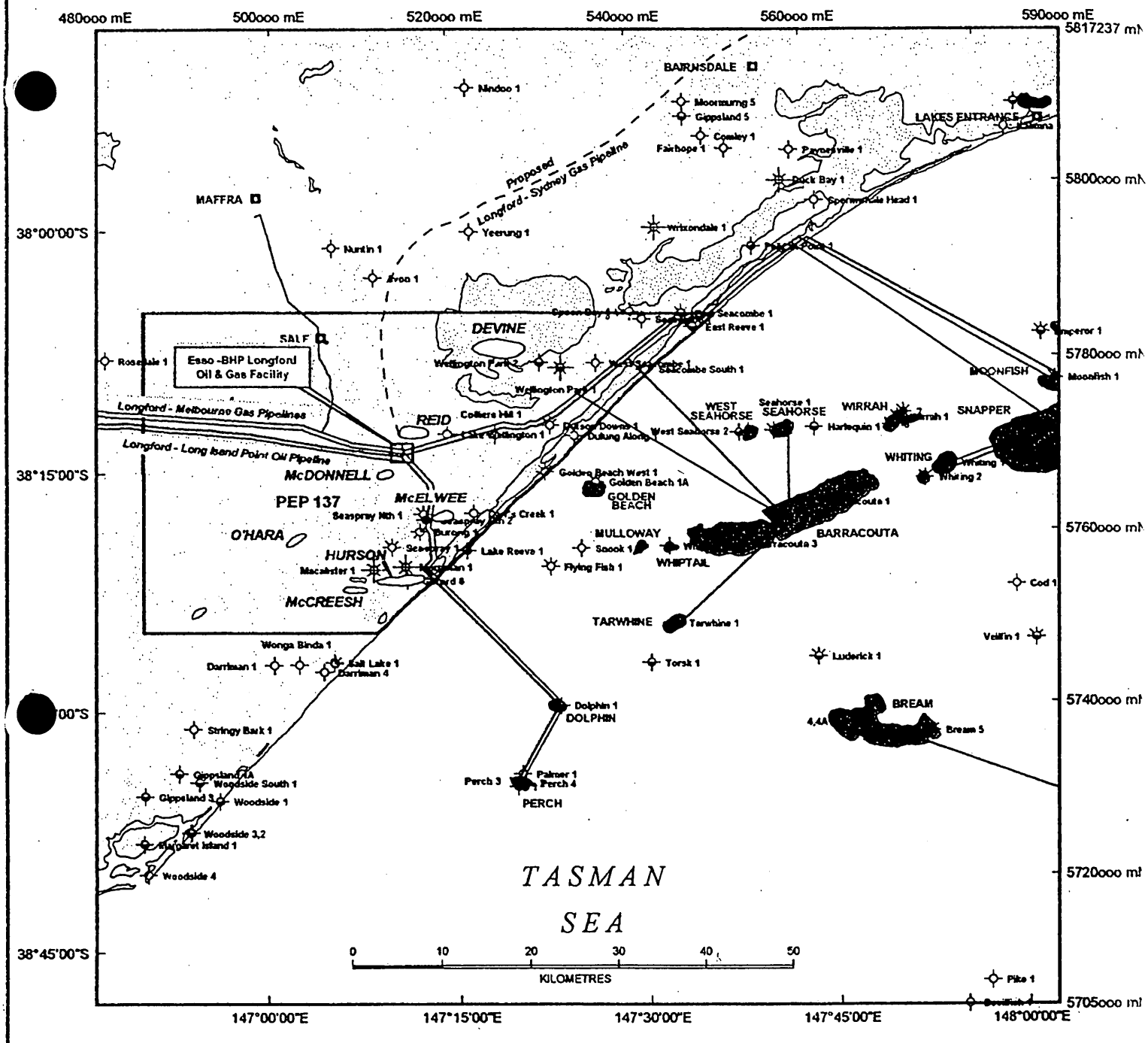
Nil

1.2 Synopsis

The McCreesh 1 exploration well is located in the central portion of PEP 137 in the onshore section of the Gippsland Basin as shown in Figure 1. The location, on the northern flank of the Seaspray Depression, was selected to test the hypothesis that hydrocarbons generated in the Western Depocentre of the Central Deep of the productive offshore sector of the basin have migrated to the onshore sector of the basin via the flanks of the Seaspray Depression, the onshore extension of the Central Deep. The robust, seismically defined McCreesh Structure sits broadside to what was perceived to be a major migration pathway from the Seaspray Depression.

The McCreesh Structure exhibits a structure style that is known to be productive in the offshore sector of the basin. It is a structure bound to the north by a down to the south high angle, reversed fault. The structure has been formed by what is thought to be Miocene compressive tectonics which are known to be widespread within the Gippsland Basin, Australia's most productive basin. This episode of structuring is known to have formed many of the similar structures which are oil and gas bearing offshore, particularly those which are located along the Northern Bounding Fault (≡Rosedale) Monocline.

The primarily objectives of the well were sandstones at the Top of the Latrobe Group as well as Intra-Latrobe Group sandstones. The former target, the 'Coarse Clastics', host 95 percent of the basins hydrocarbons whilst the latter hosts accumulations of oil at the Seahorse, West Seahorse, Perch, Dolphin, Mulloway and Whiptail oil fields, amongst others, offshore. These fields are the nearest to the shore. Significantly several of them, namely Whiptail and Mulloway are known to be filled to the structural spill point.



LEGEND

- Sub commercial gas flow
- Gas show
- Oil recovery
- Oil fluorescence
- Prospect

ROMA PETROLEUM N.L.
PROSPECT LOCATION MAP PEP 137 ONSHORE GIPPSLAND BASIN VICTORIA

FIGURE 1

A lesser target was the underlying Golden Beach Group which, whilst it exhibits lesser but still good reservoir development, is relatively unexplored. This unit exhibits excellent, large scale stratigraphic trapping geometry in the Seaspray Depression. The tight volcanoclastic Strzelecki Group was considered by Roma Petroleum NL (Roma Petroleum) to be economic basement and hence was not a target.

The rocks invoked to have generated hydrocarbons are the proven, prolific coals and carbonaceous shales of the Tertiary Latrobe Group and the unconformably underlying Late Cretaceous Golden Beach Group. Even the Early Cretaceous Strzelecki Group contains coals and carbonaceous shales which were also potential source units. Many people believe that the Strzelecki Group has played a significant part in sourcing the giant Latrobe Group oil and gas accumulations offshore. It is thought that the organic matter present in the Latrobe Group, whilst mature, is insufficient to have generated the vast volumes of hydrocarbons hosted in that unit.

No significant hydrocarbon indications were encountered in the well. A thin sandstone, only 0.5 m thick, capped by a claystone just beneath the Top of the Latrobe Group coals was gas saturated, however given the thinness of the sand it was not drillstem tested as it could be of no commercial importance. The gas was 100 percent methane and is believed to have been generated by Latrobe Group coals.

The McCreesh 1 exploration well was spudded at 1230 hours on 10 December 1998. The hole was drilled with PHPA polymer mud from surface casing of 320m to total depth of 1803m in repeated Golden Beach Group section. The well was not drilled to its potential total depth of 2091.4 m, predicted to be some 54 metres into the Strzelecki Group as a consequence of bridging in sloughing coals in the Tertiary Latrobe Group. These coals also precluded the running of wireline logs to total depth. This bridging of coals also prevented the acquisition of a velocity survey in the well. In spite of the above complications all the exploration objectives of the well were tested.

Wireline logs were run by BPB (Australia) Pty Ltd from 813 m, above the sloughing coals, to surface. No indications of hydrocarbons were noted, hence no post drill drillstem testing was conducted. Only 8m of Latrobe Group was logged. The well was plugged and abandoned on 24 December 1998.

1.3 Recommendations

Given the complete absence of any significant indications of hydrocarbons in the well and the strategic location of the McCreesh Prospect it is recommended that no further exploration drilling be conducted in PEP 137. The nearby and seismically defined O'Hara Prospect, to the northwest, would need to be charged via the McCreesh Prospect. Similarly the lack of hydrocarbon indications in the McCreesh 1 and nearby Merriman 1 well negates the reasons for drilling the other seismically defined prospect Hurson, the untested updip potential of the regional Merriman Anticline.

1.4 Conclusions

The results of the drilling of the McCreesh 1 well prove conclusively that no hydrocarbons have migrated out of the Seaspray Depression up its northern flank to robust traps on the Merriman Anticlinal Trend. Further exploration in PEP 137 can not be justified by the very negative and disappointing results obtained at McCreesh 1.

2.0 PROSPECT SUMMARY

The McCreesh 1 exploration well is located approximately 7.0 kms west the of the township of Seaspray in South Gippsland. This wildcat well, the first drilled by the company in Victoria, is sited in the onshore sector of the prolific Gippsland Basin on the northern flank of the Seaspray Depression.

The location was chosen to test the crest of a seismically defined, four way dip closure. The structure was formed by a classic, high angle reversed fault, typical of many along the Northern Bounding (≡Rosedale) Fault of the productive offshore sector of the basin. It was formed by compressive tectonics in the mid Miocene. Included as Enclosure 6 is crestal seismic line GCR 87A-13 which illustrates this style of trap in general and the McCreesh Structure in particular. Structures of this vintage are known to be productive in the offshore sector of the basin. Many of these structures are productive of hydrocarbons in the Esso-BHP acreage offshore. The Seaspray Depression is the onshore extension of the Western Depocentre of the Central Deep of the offshore portion of the basin. The latter feature is a known hydrocarbon generating kitchen.

Present at the location of the McCreesh 1 well is a thick and essentially complete Gippsland Basin sequence consisting of Early Cretaceous Strzelecki Group unconformably overlain by the Late Cretaceous Golden Beach Group which in turn is unconformably overlain by the Tertiary Latrobe Group. Unconformably overlying this unit is the non-prospective Seaspray Group of Tertiary age.

The McCreesh Prospect exhibited significant fault independent closure which is enhanced by appreciable fault dependent closure. The structure sits on the northern flank of the Seaspray Depression, broadside to the steep gradient out of this extension of the Central Deep. Hence the prospect was ideally sited on what was perceived to be a major migration pathway out of postulated hydrocarbon generative kitchen.

Excellent reservoirs are known to exist in the Tertiary aged Latrobe Group. The best of these sandstones, the "Coarse Clastics" at the top of the Latrobe Group has porosities of greater than 30 percent. Other good reservoirs, of lesser quality, are also known to be present lower down within the Latrobe Group. Within the underlying Golden Beach Group reservoir quality is further reduced but intervals of good reservoir are noted. The Strzelecki Group exhibits poor reservoir development due to the volcanoclastic origin of the unit.

Offshore wells are known to have flowed oil at rates up to 30,000 bbls per day from upper Latrobe Group reservoirs. The nearest hydrocarbon discovery is at the Golden Beach Gas Field located 4.5 kms off the shoreline, in Victorian territorial waters, where gas was tested at the rate of 4.6 MMCFD from a sandstone at the base of the Lakes Entrance Formation. The only measured recorded gas flowed from the onshore sector of the basin was obtained from the North Seaspray 1 well which flowed gas at the rate of 100,000 CFD. This flow, noted from the 'basal Latrobe Group', with remapping, appears to have occurred from the Golden Beach Group. This well which is located approximately 12.5 kms northeast of McCreesh 1 was drilled by the Arco Limited - Woodside (Lakes Entrance) Oil Company NL (Arco-Woodside) Joint Venture in 1963.

Excellent regional seals, the marls of the Lakes Entrance Formation, are present to seal Top Latrobe Group sandstones. Intra-formational seals are known to be present and to have sealed Intra-Latrobe Group oil pools in the offshore sector. Interestingly some of these seals are coals which hold oil pools down to the structural spill point. Intra-formational shales which are known to be seals in the offshore sector are also present within the Golden Beach Group. Roma Petroleum regard the Strzelecki Group as economic basement hence it was not an exploration target.

Many intervals of rich source rocks are known to exist in the prolifically petroliferous Gippsland Basin. These source rocks have been proven to be the coals and carbonaceous shales of the Latrobe Group as well as a lesser number of similar units in the underlying Golden Beach Group and even some within the Strzelecki Group. These source rocks, both from empirical and geochemical evidence, are known to be mature for oil and gas generation.

Many commercial oil and gas discoveries have been made in the offshore sector of the basin. These discoveries include amongst others the Perch, Dolphin, Tarwhine and Seahorse Oil Fields which are located some 23.5 kms, 20 kms, 22.5 kms and 16.25 kms offshore in southeasterly, easterly and northeasterly directions respectively. The undeveloped offshore Mulloway, Whiptail and West Seahorse oil fields are located approximately 13.75 kms, 12.5 kms and 20 kms from the shoreline in easterly and northeasterly directions from the McCreesh 1 location respectively.

Reports, of a less than definitive nature, have been made of hydrocarbon indications in many of the early Woodside wells, namely Woodside 1, 2 and 3. Almost all wells drilled by Woodside, it's predecessors, and even the Woodside - Arco joint venture are now known to be non-crestal and hence are considered to be non definitive tests of the hydrocarbon potential of the onshore sector of the Gippsland Basin. Roma Petroleum held the view that the few crestal tests onshore were less than optimally sited wells and did not truly evaluate the onshore sector of the basin.

Two way time structure maps of the prospect were prepared for the following horizons:

Top of Golden Beach Group Seismic Marker	***(Enclosure 1)***
Lower Intra-Latrobe Group Seismic Marker	***(Enclosure 2)***
Middle Intra-Latrobe Group Seismic Marker	***(Enclosure 3)***
Upper Intra-Latrobe Group Seismic Marker	***(Enclosure 4)***
Top of Latrobe Group Seismic Marker	***(Enclosure 5)***

The prospect is best illustrated on the two-way structure map of the Top of the Latrobe Group Seismic Marker, included as Enclosure 5. This map shows the structure sitting broadside to the migration pathway from the Seaspray Depression. It also shows that the structure is bound to the north by up to the south, high angle, reverse faults. Importantly, fault independent closure is present.

The two way time structure map of the Upper Intra-Latrobe Group Seismic Marker, which is enclosed as Enclosure 4, exhibits similar form. However at the level of the Middle Intra-Latrobe Group Seismic Marker, shown as Enclosure 3, additional faulting, close to the crest of the structure, and near the location of McCreesh 1, is evident. The area of fault independent closure is markedly reduced as the high angle reverse fault plane cuts into the structure with depth.

The situation is even more dramatic on Enclosure 2, the two way time structure map of the Lower Intra-Latrobe Group Seismic Marker. On this level additional faulting of an antithetical but normal style, is present. No fault independent structural closure is present. Significant fault dependent closure is evident. As for all the overlying horizons mapped the gross shape of the structure is similar.

The deepest seismic reflector mapped, the Top of the Golden Beach Group Seismic Marker, shows even more dramatically the effect of both the normal and reactivated reverse faults in cutting out the structural closure with depth. Some small amount of structural closure away from the McCreesh 1 location is present on this level as shown on Enclosure 1.

On all levels significant structural closure is present, generally of a fault dependent nature, at the McCreesh Structure. The trap has been formed by compressive tectonics of Miocene age which has resulted in the reactivation, in a reverse sense, of down to the south normal faults.

2.1 Depth Prediction

Given the difficulty of identifying seismic events on the severely band-limited seismic data within the lower Latrobe Group and the almost acoustically transparent Golden Beach and Strzelecki Groups the depth predictions were quite reasonable. The seismic data was calibrated, via a synthetic seismogram, to the modern Macalister 1 well, located on the same seismic grid. Jump corrections were also made to the only other well on the seismic grid, Merriman 1. A list of actual and predicted depths is given below in Table 2.

TABLE 2

PREDICTED versus ENCOUNTERED STRATIGRAPHY

Rock Unit	Predicted Depth (mRT)	Actual Depth (mRT)	Difference
Jemmys Point Formation	4.4	4.4	0
Tambo River Formation	* 123.2	Not Picked (?)	?
Gippsland Limestone Formation	* 257.2	Not Picked (≅320)	≅42.8 (high)
Seacombe Marl Member	718.1	694	24 (high)
Giffard Sandstone Member	Not Present	Not Present	-
Traralgon Formation	835.1	800.5	34.6 (high)
Upper Intra-Latrobe Group Seismic Marker	962.7	945.0	18 (high)
Middle Intra-Latrobe Group Seismic Marker	1119.3	1110.0	9 (high)
Lower Intra-Latrobe Group Seismic Marker	1346.5	1300	46.5 (high)
Top of Golden Beach Group	1466.9	1388	78.9 (high)
Top of Repeated Golden Beach Group Section	1868.9	1743	125.9 (high)
Top of Strzelecki Group	2091.4	Not Reached	-
TOTAL DEPTH	** **1803**	**2091.4**	**188 (high)**

*NB: * Both the Tambo River and Gippsland Limestone Formations were encountered in the interval of the well behind surface casing. This interval was not sampled. When lithological sampling commenced at 320m the well was in the Gippsland Limestone.*

** *The well was pulled up shallow, after penetrating the repeated Golden Beach Group section, as a result of drilling difficulties. These difficulties were due to sloughing Latrobe Group coals. A further reason for the forced termination of the well was the very non prospective nature of the Golden Beach Group which was devoid of reservoir section.*

2.2 Results Of Drilling

The well was spudded at 1230 hours on 10 December 1998. It was drilled with PHPA muds from the bottom of the surface casing, 318.2 m, to a total depth of 1803 m. The section encountered was generally as predicted and included the Seaspray, Latrobe and Golden Beach Groups. The well was terminated for operational reasons in repeated Golden Beach Group section.

No significant indications of hydrocarbons were encountered throughout the section. A small, 0.5 m thick, gas saturated sandstone at the base of a claystone beneath the Top of Latrobe Group coals was gas saturated. However a decision was made not to drillstem test this interval as even if it flowed gas it could not, due to its thinness, sustain commercial production. The gas was 100 percent methane and believed to be generated by the Latrobe Group coals.

All the porous and permeable massive and clean sandstones of the Latrobe Group were water wet and, more importantly, exhibited no discernible indications of hydrocarbons.

The thin, dirty siltstone bands, more damningly, showed no evidence of hydrocarbons indicating that no significant hydrocarbon charge has passed through the Latrobe Group section at the McCreesh Structure. This indicates that the Seaspray Depression and even the adjacent Western Depocentre of the offshore Central Deep have not provided a hydrocarbon charge to the onshore sector of the basin.

The underlying Golden Beach Group, which had not been tested with the drill in the Seaspray Depression, was very disappointing. The section encountered showed no real reservoir development. It was composed of sandstones contaminated with and grading to siltstone. They contained much silica and calcareous cement and much altered feldspar and volcanogenic lithics. The section was neither porous nor permeable and no significant indications of hydrocarbons were noted.

A summary of operations prepared by the well site geologist, David Horner, is included as Appendix 1.

A very minor interval of weak fluorescence, associated with the fault plane about which the Golden Beach Group was repeated, was reported. This is of no commercial significance.

The Strzelecki Group, even tighter than the Golden Beach Group, which is considered by Roma Petroleum to be economic basement was not encountered due to the previously mentioned drilling problems.

The results of the drilling of the McCreesh 1 exploration well significantly downgrade to hydrocarbon prospectivity of PEP 137, which is centred on the Seaspray Depression in particular, and the onshore Gippsland Basin in general.

3.0 WELL DATA

3.1 General

Well Name:	McCreesh No 1			
Operator:	Roma Petroleum			
Interests:	Roma Petroleum			
Petroleum Title:	Petroleum Exploration Permit 137			
Location:	Latitude:	38°22'27"S	Northing:	5752621.39
	Longitude:	147°06'17"E	Easting:	509147.42
	Seismic Line:	GCR87A-13	Vibrator Point:	1080
Elevation:	Ground Level 27.0 m AMSL			
	Kelly Bushing 31.4 m AMSL			
Total Depth:	Driller 1803 m RTKB			
	Logger Not reached			
Objectives:	*Primary:*	Top Latrobe Group "Coarse Clastics" sandstone and Intra-Latrobe Group sandstones		
	Secondary:	Golden Beach Group sandstones		
Spudded:	1230 hours, 10 December 1998			
Total Depth Reached:	0900 hours, 23 December 1998			
Rig Released:	1800 hours, 25 December 1998			
Status:	Dry hole, plugged and abandoned			

3.2 Drilling Data

Name and Address of Drilling Contractor

OD&E Pty Ltd
Level 10
74 Castlereagh Street
SYDNEY NSW 2000

Drilling Plant

Rig #30 Ideco Hydrair H-725-ED

Power Plant

Four (4) Caterpillar 3412 PCTA diesel engines

Mast

Dreco Model M12713-510 Floor Mounted Cantilever

Mud Pumps

Two (2) Gardner Denver Model PZ8, each driven by 800HP EMD motors

Blowout Preventors

One (1) Hydril $13^5/_8$" 3000 psi spherical
One (1) Hydril $13^5/_8$" 5000 psi flanged double gated
One (1) Galaxie $13^5/_8$" 5000 psi x 3000 psi double studded flange adaptor

Drill Pipe

2750 m x 16.6 lb/ft grade "G" $4^1/_2$" OD
250 m x 16.6 lb/ft grade "E" $4^1/_2$" OD
One (1) x 5.0' length grade "G" $4^1/_2$" OD pup joint
One (1) x 10'.0" length grade "G" $4^1/_2$" OD pup joint
One (1) x 15'.0" length grade "G" $4^1/_2$" OD pup joint
15 joints Hevi-wate drill pipe $4^1/_2$" OD
10 x 8" OD drill collars
19 x $6^1/_2$" OD drill collars

Kelly

One (1) 27 HDP Varco Kelly drive bushing
One (1) 40'-0" length $4^1/_2$" square Kelly drive complete with scabbard
One (1) 40'-0" length $4^1/_2$" hexagonal Kelly drive complete with scabbard
One (1) Griffith upper Kelly cock $7^3/_4$" with $6^5/_8$" ADI connections
One (1) Griffith lower Kelly cock $6^1/_2$" OD with 4" IF connections
One (1) Griffith lower Kelly cock $4^3/_4$" OD with $3^1/_2$" IF connections

Hole Sizes

Surface hole $12^1/_4$" to 320 m
Main hole $8^1/_2$" to 1803 m

Casing & Cementing Details

Surface Casing:	$9^5/_8$"
Weight:	36 lbs/ft
Grade:	J55
Range:	3
Shoe:	318.2 mKB
Float Collar:	305 mKB
Plugs:	Top only
Certralizers:	Nil
Cement used:	400 sacks Class G cement with 1% $CaCl_2$ (Primary) 114 sacks class G cement with 1% $CaCl_2$ (3xTop up)
Slurry weight:	15.8 lbs/gal
Cement to:	Surface after top up jobs

Drilling Fluids

The drilling fluid system for the McCreesh 1 was supplied and manned by Independent Drilling Fluid Services Pty Ltd of Adelaide. The drilling fluid system used, namely a KCL-PHPA Polymer system was selected to minimize formation damage and the masking of hydrocarbon shows in the extremely porous and permeable upper Latrobe Group sands particularly the 'Coarse Clastics'. The system worked well in spite of the difficulties caused by sloughing coals in the Latrobe Group and in practice very closely followed the proposed program which was included in the drilling proposal submitted to the Victorian Department of Natural Resources and Environment. The rationale for the design of the mud program was also given in that document.

Surface to 320 m: Spud mud - Gel and Caustic Soda

318.2 to 1803m: PHPA

Water Supply: Water used in the drilling of the McCreesh 1 exploration well was obtained from a water bore drilled on the McCreesh 1 site.

Plugs: The three plugs, which are detailed below, were set to isolate and protect artesian aquifers:

Plug 1 780-810 mKB
(88 sxs Class G cement in 15.8 lb/gal slurry)
Plug 2 290-350 mKB
(106 sxs Class G cement with 1% $CaCl_2$ in 15.8 lb/gal slurry)
Plug 3 5-20 mKB
(20 sxs Class G cement with 2% $CaCl_2$ in 15.8 lb/gal slurry)

3.3 Drilling History

The McCreesh 1 wildcat well, located in PEP 137 approximately 7 kilometres northwest of the township of Seaspray, was spudded in at 1230 hours, 10 December 1998. The well was drilled with OD&E rig 30 an Ideco Hydrair H-725-ED. Listed below is a summary of drilling operations.

10.12.98

Spudded well at 1230 hours. Drilled $12^1/_4$" hole from surface to 180 metres RTKB.

11.12.98

Drilled $12^1/_4$" hole from 180 to 320 metres RTKB. Circulated and conditioned hole. P.O.O.H. Laid down $12^1/_4$" bit and 8" collars. Rigged to run and ran 25 joints $9^5/_8$" Grade J55 36 lbs/ft Range 3 LT&C casing and cemented with shoe at 318.2 m RTKB using 400 sacks Class G cement treated with 1% $CaCl_2$. W.O.C.

12.12.98

W.O.C. Installed BOP's, choke manifold and degreaser. Topped up cement in annulus using 3 batches of 38 sacks of Class G cement treated with 1% $CaCl_2$ Made up BHA and RIH with $8^1/_2$" bit. Tagged and drilled out float collar at 305 metres RTKB.

13.12.98

Cleaned out cement to 313.8 metres RTKB. Pressure tested BOP's, kelly cocks and choke manifold. Cleaned out cement and shoe to 321.5 metres. Conducted Formation Integrity Test and drilled $8^1/_2$" hole to 617.85 metres RTKB.

14.12.98

Drilled $8^1/_2$" hole from 617.85 to 665.0 metres RTKB. Trip to change bits. Drilled 665-838.25 metres RTKB.

15.12.98

Drilled $8^1/_2$" hole from 838.25 to 1304 metres RTKB. P.O.O.H. for bit change.

16.12.98

P.O.O.H. Made up new bit and junk sub. R.I.H. to shoe. Slip drilling line. R.I.H. to 840 metres RTKB washed and reamed to 1160 metres RTKB with difficulty. P.O.O.H. Laid down junk sub and stabilizer. Picked up drilling jars. Repaired mud pump and R.I.H. to 597 metres RTKB.

17.12.98

R.I.H. to 797 metres RTKB. Washed and reamed to bottom at 1304 metres RTKB. Drilled $8^1/_2$" hole to 1408.24 metres RTKB.

19.12.98

Drilled $8^1/_2$" hole from 1408 to 1525 metres RTKB.

20.12.98

Drilled $8^1/_2$" hole from 1525 - 1631.69 metres RTKB.

21.12.98

Drilled $8^1/_2$" hole from 1631.69 metres RTKB. Survey and P.O.O.H. to change bits. R.I.H. to shoe. Slipped and cut drilling line. R.I.H. to 819.25 metres. Washed and reamed to 1161.45 metres RTKB. Drilled $8^1/_2$" hole to 1672.75 metres RTKB.

22.12.98

Drilled $8^1/_2$" hole from 1672.75 to 1756 metres RTKB.

23.12.98

Drilled $8^1/_2$" hole from 1756 to 1803 metres RTKB. Circulated. Made wiper trip to $9^5/_8$" casing shoe. Washed and reamed 857-1006 metres and 1786-1803 metres RTKB. Circulated high viscosity mud. Measured out of hole slowly with no pipe rotation.

24.12.98

Finished measure out of hole. Rigged to run BPB logs. Ran Resistivity/Sonic/Gamma Ray assembly. Logging tools unable to pass 813 metres. Logged from 813 metres to surface. Picked up bit and R.I.H. to 813 metres RTKB washed and reamed 813 to 832 metres. R.I.H. to 841 metres reamed 841-875 metres. R.I.H. to 951 metres. Reamed to 962 metres. String torquing up. Pulled back to 795 metres. Reaming with high torque. Pump pressure increasing due to packing off in annulus. P.O.O.H.

Ran in open ended to 810 metres and ran balanced cement Plug No 1 780-810 metres using 88 sacks Class G cement in a 15.8 lbs/gal slurry. Pulled back to 350 metres. Ran balanced Plug No 2 from 290-350 metres RTKB using 106 sacks Class G cement treated with 1% $CaCl_2$ in a 15.8 lbs/gal slurry. Pulled back, circulated and W.O.C. laying down drill pipe.

25.12.98

W.O.C. Ran in and tagged top of plug at 293 metres RTKB. P.O.O.H. Rigged down BOP's. Ran surface plugs of 20 sacks Class G cement treated with 2% $CaCl_2$ in a 15.8 lbs/gal slurry from 5-20 metres RTKB. P.O.O.H. laying down drill pipe.

Cleaned out tanks. Released drilling rig at 1800 hours, 25 December 1998.

Included as Appendix 2 are the Daily Geological Reports prepared by the Wellsite Geologist, David Horner.

Included as Figure 4 is the McCreesh 1 Time-Depth Curve.

3.4 Bit Record

The choice of bit appears to have been appropriate and no difficulties due to bit type were encountered during drilling. Included as Appendix 4 is the Bit and Hydraulic Record of the McCreesh 1 well.

4.0 FORMATION EVALUATION

4.1 Formation Sampling

4.1.1 Ditch Cuttings

Cuttings were collected at 10m intervals from surface casing (320 mKB) to the base of the Lakes Entrance Formation (800.5 mKB) and thereafter at 3m intervals to total depth of 1803 mKB. The cuttings were examined for indications of hydrocarbons, lithologically described, split and bagged. Sample sets comprised one set of unwashed, air dried cuttings and three sets of washed and dried cuttings. Descriptions of the cuttings, prepared by the wellsite geologist, D Horner, are included as Appendix 3.

Sample distribution was as follows:

1 x set of washed, dried plastic bagged and boxed samples.
1 x set of unwashed and air dried cloth bagged samples.
1 x set of Samplex trays.

Victorian Department of Natural Resources and Environment
Minerals and Energy Victoria
Core Sample Library
South Road
WERRIBEE VIC 3030

NB: No samples were retained by Roma Petroleum NL.

4.1.2 Conventional Cores

No conventional cores were taken from the McCreesh 1 well.

McCreesh No 1

904557 019

Time/Depth Curve

28 October 1997

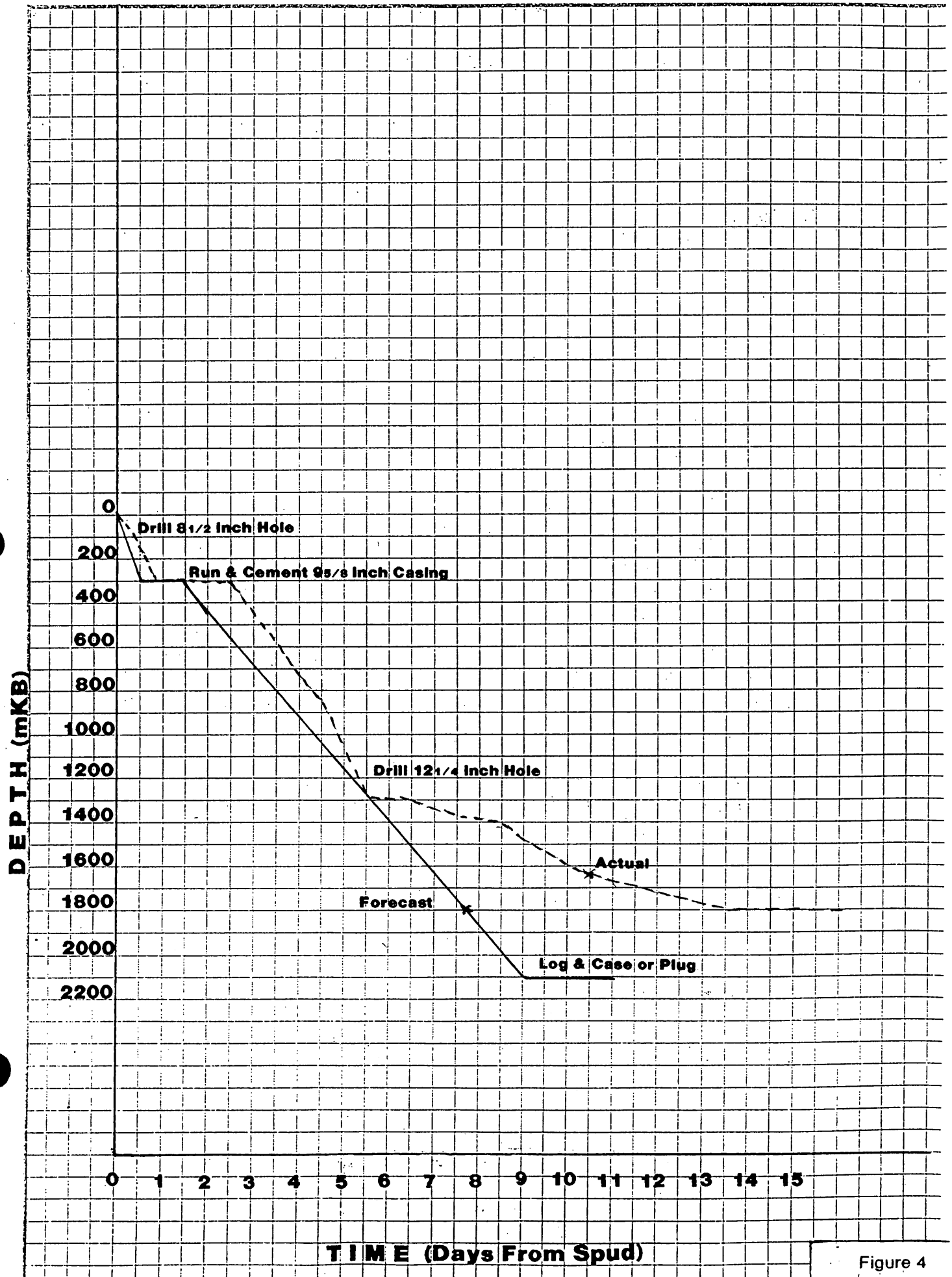


Figure 4

4.1.3 Sidewall Cores

No sidewall cores were taken from the McCreesh 1 well.

4.2 Logging and Surveys

4.2.1 Penetration Rate and Mud Log

Mud logging services were provided by Halliburton Australia Pty Ltd (Halliburton) of Perth for Roma Petroleum NL. Cuttings gas was monitored from surface casing (320 mKB) to total depth of 1803 mKB using a total gas detector and FID gas chromatography. In addition, penetration rate, pump strokes and pit levels were continuously monitored. A mud log prepared by Halliburton is included as Enclosure 7.

All cuttings were described and checked for hydrocarbon shows. A mud log plotted at the scale of 1:200 was kept up to date while drilling was in progress and is included as Enclosure 1.

4.2.2 Deviation Surveys

Table 3, below, lists the depths and corresponding deviations from vertical recorded during the drilling of the McCreesh 1 well.

Table 3

DEVIATION SURVEY

Depth (mKB)	Deviation (degrees)	Depth (mKB)	Deviation (degrees)	Depth (mKB)	Deviation (degrees)
58	0.25	539	0	1644	4.5
320	0.50	1304	0.5	1803	5.5

4.2.3 Wireline Logs

The suite of wireline logs, listed below, was run by BPB Instruments (Australia) Pty Ltd of Perth from 813 m to surface. It should be noted that due to bridging within Latrobe Group coals the logging tools were held up at a depth of 813 mKB and total depth of 1803 mKB was not reached. This consequently restricted the logging interval to that mentioned above. The majority of the Latrobe Group and all of the section of the Golden Beach Group drilled could not be logged.

Given the difficulties with logging just a single run was made. The suite was composed of Dual Laterolog - Micro Spherically Focused Log - Macrolog - Compensated Sonic Log - Gamma Ray and Caliper. A copy of these logs at both 1:200 and 1:500 scale are included as Enclosure 8a and Enclosure 8b respectively.

Log Suite	Interval (mKB)	Date	Run
DLL-MSFL-ML-SONIC-GR-CAL	0-813	24.12.98	1

4.2.4 Composite Log

Given the restricted logging run which is composed almost entirely of the non-prospective Seaspray Group it was decided that no purpose would be gained by preparing a composite log. As a consequence no composite log was generated for the McCreesh 1 exploration well.

4.2.5 Temperature Surveys

No temperature surveys were run. The following maximum 'bottom hole temperature' was recorded at a depth of 813 mKB during logging:

44°C (recorded 7.0 hours after circulation stopped).

4.2.6 Velocity Survey

Due to the severe bridging resulting from collapsing coals in the upper Latrobe Group wireline tools were unable to be lowered deeper than 813 mKB. This depth is very close to the Top of the Latrobe Group at 800.5 mKB. Given the limited use of a check shot survey run through the post-Latrobe Group section it was decided not to conduct a Velocity Survey on the McCreesh 1 exploration well.

4.3 Testing

4.3.1 Drillstem Testing

No drillstem tests, either 'off bottom' or post logging, were conducted on the McCreesh 1 exploration well.

4.3.2 Wireline Testing

No wireline tests were conducted on the McCreesh 1 exploration well.

5.0 GEOLOGY

Detailed below are the reasons for the test drilling of the McCreesh Prospect. Also discussed is the geological section present in the Gippsland Basin along with the pertinent petroleum geology.

5.1 Reasons for Drilling

The McCreesh 1 exploration well was drilled to test the hypothesis that the Seaspray Depression, the onshore extension of the Central Deep of the offshore sector of the basin, provided a migration pathway from the offshore hydrocarbon generative areas to large, robust structural traps onshore. In particular it was thought that hydrocarbons generated just offshore would migrate up the northern flank of the Seaspray Depression and became entrapped in the McCreesh Structure.

Whilst many wells had been unsuccessfully drilled in the onshore sector of the basin it was felt that none of these tests were definitive. Most previous wells are not crestal tests and many did not penetrate the prospective Latrobe Group.

The nearest hydrocarbon accumulations are oil at both Whiptail and Mulloway and both traps appear to be filled to the structural spill point.

The Gippsland Basin in the onshore sector is a prolific hydrocarbon bearing basin of world standing and is by far and away the most productive basin in Australia. The presence of robust, seismically defined traps within such a short distance of oil fields filled to the spill point was a very compelling reason to test the McCreesh Prospect.

Structural closure, which is known to be fault independent at the level of the upper Latrobe Group, is present at the McCreesh 1 location. This closure is confirmed by a modern seismic grid, of less than 0.5 km spacing in the dip direction, of 60 fold vibroseis data acquired in 1987.

The style of the McCreesh trap, which is bound to the north by a high angle reversed fault, up thrown to the south is similar to many structures which are known to be hydrocarbon productive in the offshore sector of the basin. This style of trap is very prevalent along the Northern Bounding Fault (≡Rosedale Monocline).

The robust McCreesh Prospect could have hosted potential recoverable oil reserves of 14.3 MMBBLS at the level of the Top of the Latrobe Group if a net effective hydrocarbon column of 24m is assumed and typical Latrobe Group reservoir parameters are used. If gas productive the structure could have hosted potential recoverable sales gas reserves of 11.8 BCF. In either case a significant volume of hydrocarbons so close to infra-structure and a major market.

5.2 Regional Geology

PEP 137 overlies the Seaspray Depression, an extension of the Central Deep of the offshore sector of the Gippsland Basin. Figure 1 shows the location of the permit.

A full section of the Gippsland Basin sequence is present in this structural low between the Rosedale Fault System in the north and the Darriman Fault System in the south. These two regional features form the northern and southern margins of the Central Deep, a half graben initiated in the Late Jurassic. A complete section of the prospective Latrobe and Golden Beach Groups are known to be present in the Seaspray Depression. The Latrobe Group thins away from the Seaspray Depression and the Golden Beach Group is restricted to it. A great thickness of non-prospective Strzelecki Group sequence is present in both PEP 137 and in the Seaspray Depression in particular.

5.2.1 Structure

The east west trending Gippsland Basin extends over an area of approximately 56,000 kms^2 of which a third is located onshore. It is the most easterly of a series of Mesozoic - Cainozoic basins lying along the southern coast of Australia. It is a post-orogenic continental margin type of basin with a marked degree of north-south symmetry but with great east-west asymmetry. The basin is wedge shaped, converging towards the onshore sector and is bound to the north by the metamorphased Paleozoic rocks deformed during the Tabberraberran Orogeny of Devonian age. These rocks constitute the Southern Highlands of Victoria. The southern boundary is the Bassian Rise, a granitic intrusion of Devonian age. The Bassian Rise which extends from South Gippsland through Wilson's Promontory to Flinders Island separates the Gippsland Basin to the east from the similarly aged Bass Basin in the west. The western boundary of the basin is less defined but seems to be the Strzelecki Group depositional edge on the structural high running north-east from Phillip Island through French Island and through South Gippsland to the Paleozoic outcrop just west of Warragul. The eastern boundary has arbitrarily been taken as the break in the continental slope at the 200m isobath.

The Gippsland Basin was initiated in the Late Jurassic when major east-west oriented rifting separated the Australian and Antarctic Plates of the former Gondwanaland. The resultant half graben, which is bound to the south by the steep Foster Fault System and to the north by the Lake Wellington Fault System, which exhibits less offset, is sometimes called the Strzelecki Basin. This half graben which is markedly deeper in the south collected non-marine sediments of the volcanoclastic Late Jurassic - Early Cretaceous Strzelecki Group. A simplified structural elements map is included as Figure 2.

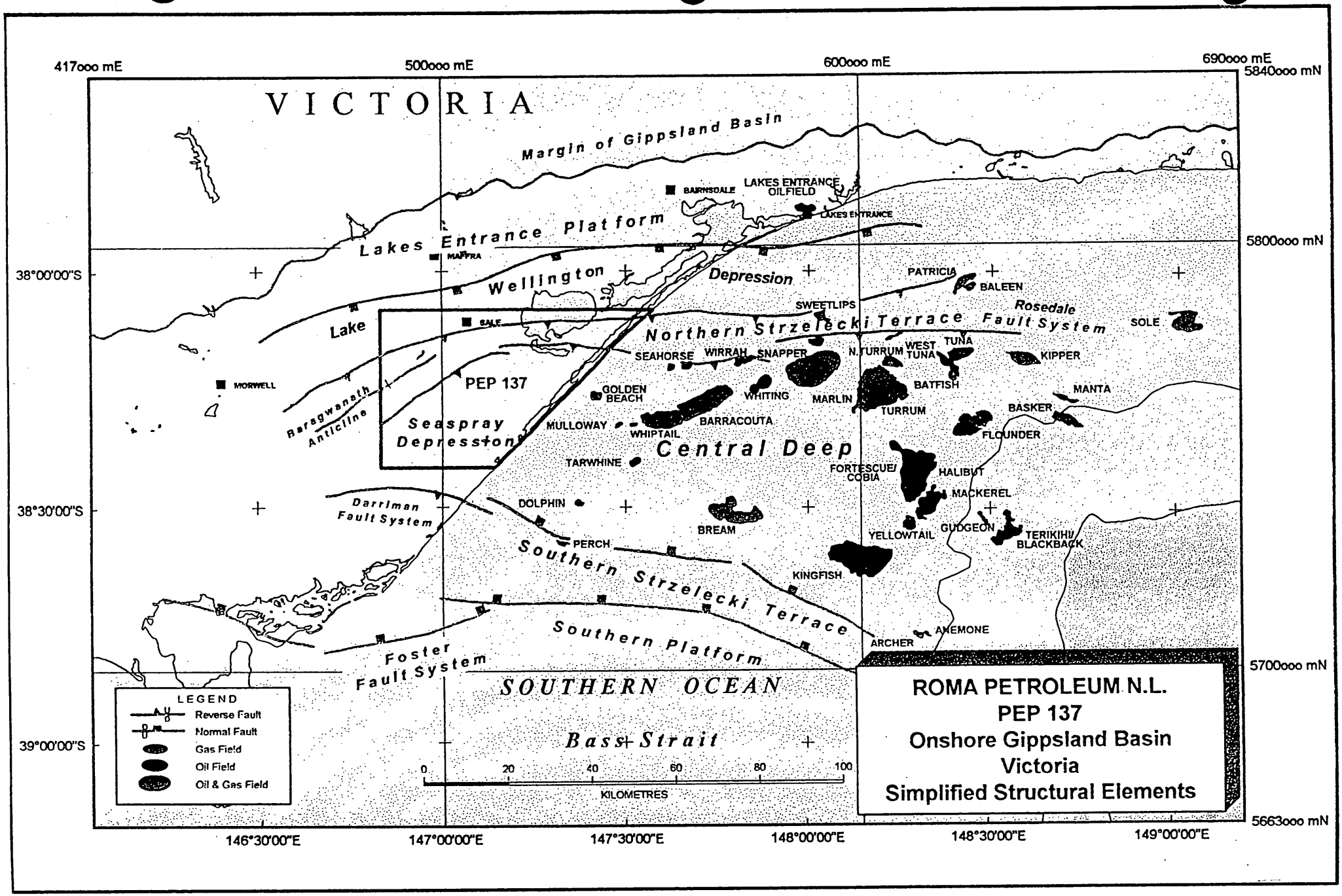


Figure 2

In the Middle Cretaceous additional extension occurred in a north-south direction although this rifting is believed to have been associated with the extension between the Lord Howe Rise and the Australian Plate which resulted in the formation of the Tasman Sea. This rifting occurred on and to the north of the Foster Fault, and along the Darriman Fault System in the south. Whilst in the north a new fault system, the Rosedale Fault System, some kilometres south of the earlier Lake Wellington Fault, was formed. The rifting in this episode was far more symmetrical. Associated with this Middle Cretaceous tectonic activity was uplift which resulted in erosion of much of the Strzelecki Group and, by the Late Cretaceous, deposition of the Golden Beach Group of non-marine clastics.

Continued differential movement on these faults resulted in very thick Golden Beach Group sedimentation in the symmetrical rift between the Rosedale and Darriman Faults. Thinner Golden Beach Group deposition occurred between the Rosedale and Lake Wellington Fault Systems on the Northern Strzelecki Platform and between the Darriman and Foster Fault Systems on the Southern Strzelecki Terrace. No Golden Beach Group section appears to have been deposited on the Northern (≡Lakes Entrance) Platform, the shallow shelfal area north of the Northern Strzelecki Terrace. Similarly no Golden Beach Section was deposited on the Southern Platform, south of the Foster Fault System. The area of thicker Golden Beach Group sedimentation is concentrated in the Central Deep of the Basin.

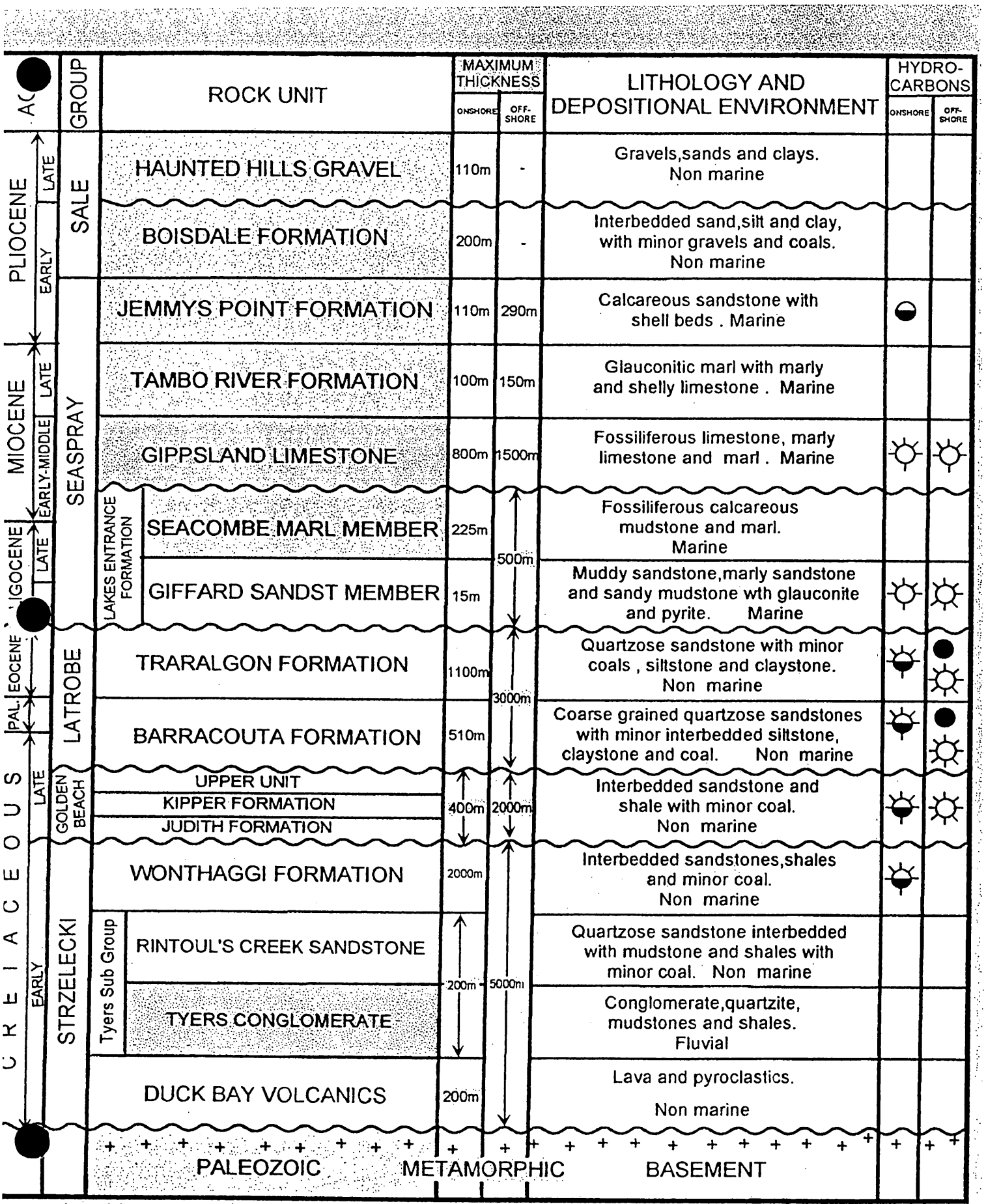
Following this tectonic activity non-marine lacustrine deposition of the Latrobe Group occurred with local and some regional tectonics. The first major regional activity was uplift at the end of the Eocene as evidenced by the unconformity at the Top of the Latrobe Group in the east of the basin. This activity formed the cores of many of the giant hydrocarbon bearing structures in the offshore sector of the basin. These features where greatly amplified by the right lateral wrenching which occurred in Middle Miocene time. The last major tectonic episode was the uplift of the Kosciuskian Orogeny of Late Pliocene - Early Pleistocene age which resulted in the unconformity present at the top of the Seaspray Group. Several episodes of subsequent local movement are documented by submarine channels in the offshore sector of the basin.

5.2.2 Stratigraphy

It is estimated from seismic data that up to 12 kms of section is present in the Central Deep of the Gippsland Basin. The section thins off across the Northern and Southern Strzelecki Terraces to a restricted section of less than 1 km, with just the Tertiary Seaspray Group overlying Paleozoic basement on the Southern Platform. A generalized stratigraphic column for the Gippsland Basin is shown in Figure 3.

Basement to most of the Gippsland Basin sequence consists of Ordovician - Middle Devonian weakly metamorphasied sediments of the Jordan River and Walhalla Groups and in some areas Devonian granite intrusions and in others, red beds of the Lower Carboniferous Avon River Group.

Overlying metasedimentary basement is the Early Cretaceous Strzelecki Group, a non-marine continental section of sandstones interbedded with siltstones, mudstones, claystones, shales and subordinate coals. In general the sandstones are both texturally and minerallogically immature, often greywackes. These sandstones often exhibit a very significant volcanic influence, which with the subsequent weathering, generally forms a limited reservoir and is effectively economic basement. They exhibit a distinctive green colour due to the alteration of pyroxenes to septichlorite.



ROMA PETROLEUM NL
Generalised Stratigraphy
Gippsland Basin

Figure 3

Some intervals of good quality reservoir are known, from drilling, to be present within the unit. Many workers believe that the basal units, identified in outcrop near the basin edge, are good quality reservoir units.

The presence of the fine clastics indicate a lower energy of deposition and identify lacustrine environments, whereas the coals record periods of development of coal swamps.

It is believed, from seismic data, that up to 5 kms of Strzelecki Group section is present in the Central Deep of the basin in the offshore sector. In the deepest well drilled in the onshore section of the basin, in the Lake Wellington Depression, some 2630 m of Strzelecki Group was drilled, with the Wellington Park 1 well reaching total depth within the unit.

This unit is unconformably overlain by the Late Cretaceous Golden Beach Group, a sequence of non-marine sandstones, siltstones, shales, claystones and minor coals. The maximum thickness of the unit in the onshore sector is greater than 510 m as intersected in the Golden Beach West 1 well. It could be up to 2000 m thick in the Central Deep of the offshore sector . The Golden Beach Group contains intervals of quite good quality reservoir as evidenced by the cores cut in the onshore Merriman 1 well. Some minor marine influence is noted in places.

The sandstones are generally composed of light grey, generally coarse grained, well rounded, frosted, quartzose grains and quite readily distinguished from the green coloured underlying lithic Strzelecki Group sandstones. A further difference is that the Golden Beach clastics are mineralogically mature although still texturally immature. Several intervals of high quality reservoir has been encountered in some onshore wells.

The Late Cretaceous to Oligocene Latrobe Group unconformably overlies the Golden Beach Group. It too is an aggradational non-marine unit composed primarily of clean, poorly cemented, quartzose, very coarse, sandstones, coals and minor shales and siltstones. Several depositional facies are recognized namely fluvial, deltaic, coal swamp, littoral, lacustrine and shallow marine. In the offshore sector the dominant facies present are fluvial, coal swamp and lacustrine.

Many subdivisions of the onshore sector of the basin have been made, however in the Seaspray Depression a two fold subdivision is accepted. It is expected that only the coal rich Traralgon Formation of the Latrobe Group is present in the north of the Seaspray Depression.

The Latrobe Group is time transgressive becoming younger shoreward or marginward. The Top of the Latrobe Group 'Coarse Clastics' is of Paleocene age in the eastern section of the offshore portion of the basin but only Oligocene in age in the far western, onshore sector of the basin, in the Latrobe Valley Depression.

5.3 Petroleum Geology

The Gippsland Basin sequence is the most prolific hydrocarbon producing sedimentary section in Australia. Since the discovery of the Barracouta Gas Field with the Esso Gippsland Shelf 1 well, later renamed Barracouta 1 in early 1965, this small basin has provided the vast majority of Australia's hydrocarbon requirements. The basin hosts several giant oil fields, namely Kingfish, Mackerel and Fortescue amongst others, several giant gas fields such as Snapper, Marlin and Barracouta as well as several giant fields hosting both oil and gas such as Flounder and Tuna. Many other smaller oil and gas fields have been discovered. To date potential recoverable reserves of 4 billion barrels of oil and 10 TCF of gas have been proven.

This small, essentially Tertiary basin has all the prerequisites for hydrocarbon generation and entrapment, namely very rich and mature source rocks, excellent reservoirs, thick competent seals and large structural traps which were formed prior to the major phase of hydrocarbon generation and expulsion. Short, unhindered migration pathways from the prolific hydrocarbon generation kitchens to the robust structural traps exist, hence the trapping and retention capacity of the basin has been high and hydrocarbons have not been dispersed and lost.

5.3.1 Source Rocks and Maturity

Few data are available for wells drilled in the onshore sector of the basin as most wells are shallow and were drilled from 1890's through until the early 1970's. Little geochemical analysis was done as a matter of course during those times. Little if any geochemical work appears to have been conducted on the handful of wells drilled during the middle - late 1980's.

Extensive geochemical studies have been conducted on all wells drilled in the offshore sector of the basin by the Esso-BHP consortium and to a lesser extent the other offshore operators particularly Shell Development (Australia) Pty Limited (Shell) in the north of the offshore sector.

Whilst variations occur in the conclusions of these studies the fundamental outcomes are the same, namely the coals and carbonaceous shales of the Late Cretaceous lower Latrobe and the Golden Beach Groups are the major hydrocarbon source for the Gippsland Basin. The studies also found that the key to maturity is the thickness of the Latrobe Group sedimentary pile rather than that of the overlying Seaspray Group.

The Total Organic Carbon (TOC) content of the Upper Cretaceous is very high ranging from 2-80% with values of 2-5% in the weakly carboniferous shales, 20-40% in the very carbonaceous shales and over 60-80% in the coals.

The vitrinite maceral is the most dominant followed by a lesser, although still high, concentration of exinite and even small amounts of inertinite. The fact that the source contains an unusually high exinite content, which is oil prone, probably explains the large volumes of oil generated in the Gippsland Basin by terrigenous source rocks.

Most workers believe that the oil and gas pools hosted in the Latrobe Group, whilst surrounded by organic matter, may have deeper source rocks. They invoke a large element of vertical migration to fill the Top Latrobe Group reservoirs, from both the lower Latrobe, Golden Beach and Strzelecki Group source rocks.

These studies indicate that bulk oil generation ranges from Vitrinite Reflectance (V_R) values of V_R=0.6-0.7 up to V_R=1.15-1.30 with some workers believing that the onset of oil generation is V_R=0.6 whilst many others believe that it is V_R=0.9. This is academic as the basin is incredibly rich in hydrocarbons and a large mature oil generating kitchen must be close by, in fact it is the Central Deep.

Most workers believe that the coals are the major source contributor as the amount of oil discovered exceeds that which could by sourced by the shales. Others believe that the mature organic material in the Latrobe Group is insufficient to have sourced the giant accumulations present within that unit and that the Strzelecki Group, with the rich mature coal intervals, has contributed to the charge hosted in the Latrobe Group.

Some geochemical work has been conducted on samples from the offshore Kipper 1 discovery well which discovered oil and gas pools in the Golden Beach Formation. This unit contains both source and reservoir section. The shales are quite good source rocks with TOC's of 2-3%. The macerials are predominately vitrinite but some liquids rich exinite macerals are present as well as some inertinite. The gas is quite wet and the oil has a API gravity of 40-43°. Vitrinite reflectance studies suggest that the Golden Beach Group shales are in the oil to wet gas window with V_R=0.9. The onset of oil generation has been determined at V_R=0.65 and studies indicate that to mobilize oil a V_R of 0.8 is required.

All studies conducted on the Strzelecki Group indicate that it is a rich, mature source rock and in the onshore and near offshore sectors it is in the oil window. In several onshore wells drilled by Woodside the V_R ranges from 0.6 - 0.85. Recent work conducted for the Victorian Department of Natural Resources and Environment indicates a rich hydrocarbon kitchen located in the Central Deep between the Barracouta Gas Field and the coastline. These studies indicate that the Strzelecki Group source rocks began generating oil 80 million years ago and are generating today.

All studies indicate that a depth of burial between 2-3 kms is needed for either Latrobe, Golden Beach or Strzelecki Group source rocks to begin generating hydrocarbons. This has been achieved in the Seaspray Depression embayment of the Central Deep.

5.3.2 Reservoirs

The Gippsland Basin contains many intervals of good to excellent quality clastic reservoirs. All with the exception of the Strzelecki Group host hydrocarbons.

The primary reservoir interval is the 'Coarse Clastics' at the Top of the Latrobe Group. This unit hosts 90% of the basin's oil in the offshore sector. It consists of clean, poorly compacted, frosted, uncemented, very coarse, well sorted, quartzose sands with porosities generally exceeding 30% and with permeabilities of several darcies. The reservoirs are so good that it is difficult to core the 'Coarse Clastics' sand pile. Most drillstem tests of the Top Latrobe Group in the onshore sector have failed as the tool is invariably plugged with these unconsolidated sands.

Very good sandstone reservoirs occur in the Intra-Latrobe Group section. The units are clean, generally coarse grained with little cement and composed primarily of quartz clastics. The porosities are generally in the order of 25% and permeabilities often exceed a darcy. These sandstones are consolidated and do not collapse when being tested.

The Giffard Sandstone which is the basal member of Lakes Entrance Formation is also a good reservoir unit. It flowed gas, during a cased hole production test, at rates of 4.6 MMCFD from the Golden Beach 1A well just 4.5 kms offshore. It is a glauconitic, near shore, marine sandstone with some mudstone and marl. In fact, it is a transitional unit between the fluvial sands of the Traralgon Formation of the Latrobe Group and the transgressive marls of the Lakes Entrance Formation.

The reservoir sands of the informally named Kipper Sand(stone) of the Golden Beach Group are believed to be of fluvial channel origin. The reservoir quality is fair to good with porosity values varying from 16 to 23% with an average value of 18%. The associated permeability values range from about 20 millidarcies to well over 1 darcy.

The composition of these sandstones is of coarse grained, quartzose clasts along with some lithic fragments which to some extent reduce primary intergranular porosity. Grain size varies from coarse lag deposits to a fine sandstone. The nett to gross sandstone ratio in the Kipper Sand(stone) is 66%. Intervals of similar sandstone of up to 6 metre thickness are present in the overlying Kipper Shale.

Whilst some reservoir intervals are present in the dirty, immature greywackes and siltstones of the Strzelecki Formation they are scattered through great thickness of non reservoir section and are too deep and of too poor quality to actively pursue. The best quality reservoirs, as seen from outcrop, are the basal units the Rintoul's Creek Sandstone and the Tyers Conglomerate which are buried too deeply in the Seaspray Depression to be viable economic targets.

5.3.3 Seals

In a similar vein to reservoirs there is no shortage of sealing units in the Gippsland Basin sequence.

An excellent regional top seal to the 'Coarse Clastics' of the Top of the Latrobe Group is present in the marls of the Lakes Entrance Formation. These marls of the Seacombe Marl Member of the Lakes Entrance Formation would also seal the Giffard Sandstone reservoir, if that glauconitic sandstone is present.

Several carbonaceous shales are present within the Latrobe Group and they provide extensive regional seals to the excellent Intra-Latrobe Group sandstones. It has been noted that the thick extensive coal beds within the Latrobe Group act as seals to oil pools in the offshore sector of the basin. These coal beds are present within the section present in and adjacent to the Seaspray Depression, onshore.

The Golden Beach Group is unconformably overlain by the Older Volcanics of the lower Latrobe Group (≡Thorpedale Volcanics) which are the seal to the Kipper Gas accumulation in the offshore sector of the basin. The thin section of tuff encountered in the Macalister 1 well drilled in 1988 in the Seaspray Depression are probably from this unit. Some shales are present within the Golden Beach Group and are known to provide Intra-formational seals to the Golden Beach Group hydrocarbon accumulations at the offshore Tuna Oil and Gas Field.

5.4 Lithology

Generalized lithological descriptions of the formations intersected in the McCreesh 1 well are listed below. These descriptive summaries were compiled by Roma Petroleum from the detailed descriptions of all cuttings samples which were prepared by the consultant Wellsite Geologist, D Horner. The wellsite geologist's sample descriptions are included as Appendix 3.

JEMMYS POINT FORMATION	***Thickness not known. Lithology not known.***
4.4 - ?	No samples were taken above the base of surface casing, at 320 mKB.
TAMBO RIVER FORMATION	***Thickness not known. Lithology not known.***
	It is not known if this formation was present in the unsampled portion of the hole.
GIPPSLAND LIMESTONE	***Thickness 374.0m? Interbedded Limestone and Marls.***
320 - 694 mKB	**INTERBEDDED LIMESTONES AND MARLS**
320-400 mKB	Light grey to medium brown grey, moderately to very calcareous grading to argillaceous calcilutile in part, trace bryozoic fragments, soft sticky, non fissile.
LIMESTONE	White to light brown, calcilutitic to slightly crystalline, slightly to very argillaceous, trace brown to black carbonaceous material, rare glauconite, common fossil fragements, soft to occasionally moderately hard, no visual porosity.
400-694 mKB	**INTERBEDDED LIMESTONE AND MARLS**
LIMESTONE	White to light brown, microcrystaline, slightly to very argillacous, grading in part to marl, common glauconite, common fossil fragments, moderately hard, no visual porosity.
MARL	Light grey to medium brown grey, moderately to very calcareous grading to argillacous calcilutite in part, trace glauconite, trace fossil fragments, soft to firm, sticky to firm, non fissile.
LAKES ENTRANCE FORMATION *694-800.5 mKB*	***Thickness 106.5 m. Interbedded Marls and minor Limestones.***
694-720 mKB	**INTERBEDDED MARL AND MINOR LIMESTONE**
MARL	Light green grey to medium brown grey, moderately to very calcareous, trace glauconite, trace to common fossil fragments, rare pyrite, firm, non fissile.
LIMESTONE	Off white to light brown to light green grey, crypto to microcrystalline, very argillaceous grading to marl, trace glauconite, trace fossil fragments, moderately hard, no visual porosity.

720-800.5 mKB

MARL	**INTERBEDDED MARL AND MINOR LIMESTONE**
	Light green grey occasionally to medium brown grey, moderately to very calcareous, trace fossil fragments, rare brown to black carbonaceous material, common to abundant glauconite, firm, non fissile.
LIMESTONE	Off white to light brown, crypto to microcrystalline, very argillaceous grading to marl, trace fossil fragments, abundant glauconite, moderately hard, no visual porosity, no oil fluorescence.

LATROBE GROUP

800.5 - 1388 mKB	***Thickness = 587.5 m. Interbedded Sandstone and minor Coals and Marls and subordinate Claystones.***
800.5-813 mKB	**INTERBEDDED COAL AND SUBORDINATE MARL**
COAL	Dark brown to black, earthy to occasionally subritreous texture, irregular to blocky fracture, moderately argillaceous in part, trace pyrite, moderately hard, no fluorescence or cut.
MARL	Light green grey occasionally to medium brown grey, moderately to very calcareous, trace fossil fragments, rare brown to black carbonaceous material, abundant glauconite, trace pyrite, firm, non fissile.
813-873 mKB	**INTERBEDDED SANDSTONE, COALS AND MINOR MARL AND CLAYSTONES**
SANDSTONE	Light orange brown to grey, very fine to very coarse, dominantly medium subangular, very weak silica and calcareous cements, trace orange brown argillaceous matrix in part, trace glauconite, trace mica flakes, trace black carbonaceous material, trace pyrite, unconsolidated to friable, very good inferred porosity, no oil fluorescence.
COAL	Dark brown to black, earthy to occasionally subvitreous texture, irregular to blocky fracture, moderately argillaceous in part, trace pyrite, moderately hard, no fluoescence, no cut.

MARL	Light green grey occasionally to medium brown grey, moderately to very calcareous, trace fossil fragments, rare brown to black carbonaceous material, abundant glauconite, trace pyrite, firm, non fissile.
CLAYSTONE	Medium to dark brown grey, very carbonaceous, moderately silty, occasionally very finely arenaceous, slightly calcareous in part, trace micro mica, firm, very dispersive, slightly sub fissile.
873-1017 mKB	**INTERBEDDED CLAYSTONE AND SANDSTONE AND SUBORDINATE COAL**
CLAYSTONE	Medium to dark brown grey, very carbonaceous, moderately silty, occasionally very finely arenaceous, slightly calcareous in part, trace micro mica, firm, very dispersive, slightly sub fissile.
SANDSTONE	Light brown, very fine to very coarse, dominantly coarse, subangular, poorly sorted, weak silica and calcareous cements, common medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace black coally detritus, friable, good inferred porosity, no oil fluorescence.
COAL	Dark brown to black, earthy to rarely subvitreous texture, irregular to blocky fracture, very argillaceous in part, grading to claystone trace pyrite, trace amber, moderately hard, no fluorescence, no cut.
1017-1116	**INTERBEDDED SANDSTONE AND CLAYSTONE WITH SUBORDINATE COAL**
SANDSTONE	Very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded poorly sorted, weak silica and calcareous cements common to abundant, medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, friable, fair to good inferred porosity, no oil fluorescence.
CLAYSTONE	Medium to dark brown, moderately to very carbonaceous grading to argillaceous coals, slightly to moderately silty, trace dispersed very fine to very coarse quartz sand grains in part, trace to common micro mica, very dispersive, sub fissile.
COAL	Dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, often very argillaceous grading to claystone, trace amber, moderately hard, no fluorescence, no cut.

1116-1164 mKB	**INTERBEDDED CLAYSTONE AND SANDSTONE WITH MINOR COAL**
CLAYSTONE	Off white to light green to dark brown, very carbonaceous in part, moderately silty in part, trace dispersed very fine to very coarse quartz sand grains in part, common micro mica, firm, very dispersive, non fissile to sub fissile.
SANDSTONE	Very light brown, very fine to very coarse dominantly coarse to very coarse, subangular to subround, poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains, common brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, good inferred porosity, no oil fluorescence.
COAL	Dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, very argillaceous grading to claystone in part, trace amber, rare pyrite, moderately hard, no fluorescence, no oil.
1164-1293 mKB	**INTERBEDDED SANDSTONE AND CLAYSTONE WITH SUBORDINATE COAL**
SANDSTONE	Light grey, very fine to coarse, dominantly coarse to very coarse, subangular to subrounded, poorly sorted, weak silica cement, trace off white agrillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, good inferred porosity, no oil fluorescence.
CLAYSTONE	Off white to occasionally light green and medium brown, moderately carbonaceous in part, moderately silty in part, common micro mica, very dispersive, sub fissile.
COAL	Dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, very argillaceous grading to claystone in part, trace amber, rare pyrite, moderately hard, no fluroescence, no cut.
1293-1359 mKB	**INTERBEDDED CLAYSTONE AND SANDSTONE WITH SUBORDINATE COAL**
CLAYSTONE	Off white to medium brown to dark brown grey, moderately silty, trace to common black carbonaceous flecks in part, slightly calcareous in part, trace to common micro mica, firm to moderately hard, very dispersive, sub fissile to fissile.

SANDSTONE	Very light brown grey, very fine to very coarse, subangular to subrounded, poorly sorted, weak to moderate silica cement, common white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, friable, good inferred porosity, no oil fluorescence.
COAL	Black to occasionally dark brown, earthy to subvitreous, blocky fracture, occasionally very argillaceous, trace amber, rare pyrite, moderately hard to brittle, no fluorescence, no cut.
1359-1588 mKB	**INTERBEDDED CLAYSTONE AND SANDSTONE WITH SUBORDINATE COAL**
CLAYSTONE	Off white to medium brown to dark brown grey, slightly silty, trace to common black carbonaceous flecks and detritus, trace to common micro mica, rare pyrite, firm to moderately hard, very dispersive, subfissile to fissile.
SANDSTONE	Very light brown, very fine to very coarse, dominantly fine, subangular to subrounded, poorly sorted, weak to moderate silica cement, common white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, friable, poor inferred porosity, no oil fluorescence.
COAL	Black to very dark brown, earthy to subvitreous, irregular to blocky fracture, very argillaceous in part, trace amber, hard, brittle, no cut.
GOLDEN BEACH GROUP ***1388-1803 mKB***	
1388-1743 mKB ***1743-1803 mKB***	***Primary Golden Beach section thickness - 355 m*** ***Repeated Golden Beach section thickness - 60m***
1388-1431 mKB	
SANDSTONE	Light grey to light brown, very fine to very coarse dominantly medium, angular to subangular, very poorly sorted, strong silica cement, common to abundant off white argillaceous matrix, clear to milky quartz grains, trace grey green volcanogenic, lithics, trace coarse mica flakes, very poor visual porosity, no oil fluorcscence.
SILTSTONE	Light brown grey to dark grey, moderately argillaceous, abundant very fine to fine dispersed quartz and altered feldspar sand grains in part, common black coally laminae and detritus, trace micro mica, moderately hard, very dispersive, sub fissile.

CLAYSTONE	Light to medium green, trace black carbonaceous specks, moderately hard, very dispersive, sub fissile.
1431-1743 mKB	**INTERBEDDED SANDSTONES AND SUBORDINATE SILTSTONES**
SANDSTONE	Off white to medium grey to occasionally medium brown, very fine, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported and grading to siltstone, clear to milky quartz grains, abundant altered feldspar grains, common grey green volcanogenic lithics, trace red and brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
SILTSTONE	Light grey to medium grey to occasionally medium green grey, dominantly medium grey, moderately to very argillaceous, often abundant very fine dispersed quartz and altered feldspar sand grains, grades to sandstone, trace black carbonaceous specks, trace micro mica, moderately hard, very dispersive, sub fissile.
1743-1782 mKB	**INTERBEDDED SANDSTONE AND SILTSTONES**
1743-1782 mKB	***(Repeated Section)***
SANDSTONE	Off white to medium green grey, very fine to medium dominantly fine, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, trace red brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, dull patchy light yellow fluorescence, dull weak yellow white crush oil fluorescence, trace residue.
SILTSTONE	Light to medium grey to medium brown grey, moderately to very argillaceous occasionally very finely arenaceous - grains to sandstone in part, trace black carbonaceous flecks and detritus trace micro mica, moderately hard, moderately dispersive, sub fissile.

1782-1803 mKB	**INTERBEDDED SANDSTONE AND MINOR SILTSTONE**
SANDSTONE	Light to medium green grey, very fine to coarse dominantly medium, angular to subangular, moderately abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, common red - brown lithics, trace black carbonaceous material, moderately hard, very poor visual porosity, no oil fluorescence.
SILTSTONE	Light to medium brown grey to medium green grey to medium grey, moderately to very argillaceous, very finely arenaceous in part - grades to sandstone, trace black carbonaceous flecks, trace micro mica, moderately hard, moderately dispersive, sub fissile.

5.5 Stratigraphic Section Encountered at McCreesh 1

The stratigraphic section encountered in the McCreesh 1 well was as expected with a near full Tertiary Latrobe Group sequence unconformably overlying the Late Cretaceous Golden Beach Group.

The predicted tops of two of the formations, the Tambo River and Gippsland Limestone respectively, were encountered in the interval of the well behind surface casing. This portion of the well was not sampled hence there is uncertainty in the depth of these formation tops. When sampling commenced at 320m the well was in the Gippsland Limestone. It is not known for sure that Tambo River Formation section was encountered.

The Giffard Sandstone Member of the Lakes Entrance Formation which was predicted to be absent was indeed not present.

The Latrobe Group section encountered was as predicted but was approximately 44.3 m thinner than expected.

Due to difficulties experienced in sloughing coals of the Latrobe Group the well was abandoned in the Golden Beach Group and the underlying Strzelecki Group was not penetrated. The predicted high angle fault and repeated section in the Golden Beach Group was encountered. The Golden Beach Group interval penetrated was 355m thick some 47m thinner than prediction. Some 60m of repeated Golden Beach Group was then drilled before the well was abandoned.

The stratigraphic table for the well is included as Table 1 and expanded in Table 2. The formation tops were picked by D Horner the consultant wellsite geologist.

The depth predictions, discussed previously in section 2.1 were all too deep and the formations were encountered high to prediction. This is invariably the case when using stacking velocities for depth prediction. The velocity necessary to stack the data is not the true vertical velocity, that which should be used in depth prediction. It is invariably greater, hence the errors.

The picked top of the Golden Beach Group is a pretty nebulous event and not too much certainty was placed upon it. It was encountered some 78.9m high to prediction. Depth prediction was much better for the Intra Latrobe events. These seismic markers are coals that can readily be recognised in the few existing wells, hence it is possible to more accurately calibrate these events. As a consequence it was possible to obtain a more accurate depth conversion for these units.

TABLE 1

McCREESH 1 STRATIGRAPHIC COLUMN

	Rock Unit	Depth KB (mRT)	Depth AMSL (mSS)	Thickness (m)
Seaspray Group	Jemmys Point Formation	4.4	427	?
	Tambo River Formation	**Not Picked (?)	Not Picked (?)	?
	Gippsland Limestone Formation	**Not Picked (≅300)	Not Picked (≅289)*	343+
	Lakes Entrance Formation	-	-	-
	Seacombe Marl Member	694	663	1064
	Giffard Sandstone Member	Not Present	Not Present	-
Latrobe Group	Traralgon Formation	800.5	769	-
	Upper Intra-Latrobe Group Seismic Marker	945	914	-
	Middle Intra-Latrobe Group Seismic Marker	1110	1079	500
	Lower Intra-Latrobe Group Seismic Marker	1300	1269	-
Golden Beach Group	Golden Beach Group Seismic Marker	1388	1357	355
	Top of Repeated Golden Beach Group Section	1743	1712	-
	Total Depth *	**1803**	**1772**	**60 m+**

*NB: * Due to drilling difficulties encountered in the coals of the Latrobe Group, the well was abandoned before the Strzelecki Group was penetrated.*

*** Both the Tambo River Formation and Gippsland Limestone Formations were encountered in the interval of the well covered by surface casing. No lithological sampling was conducted in this interval. When sampling commenced at 320m the well was in the Gippsland Limestone.*

TABLE 2

PREDICTED versus ENCOUNTERED STRATIGRAPHY

Rock Unit	Predicted Depth (mRT)	Actual Depth (mRT)	Difference
Jemmys Point Formation	4.4	4.4	0
Tambo River Formation	* 123.2	Not Picked (?)	?
Gippsland Limestone Formation	* 257.2	Not Picked (≅320)	≅42.8 (high)
Seacombe Marl Member	718.1	694	24 (high)
Giffard Sandstone Member	Not Present	Not Present	-
Traralgon Formation	835.1	800.5	34.6 (high)
Upper Intra-Latrobe Group Seismic Marker	962.7	945.0	18 (high)
Middle Intra-Latrobe Group Seismic Marker	1119.3	1110.0	9 (high)
Lower Intra-Latrobe Group Seismic Marker	1346.5	1300	46.5 (high)
Top of Golden Beach Group	1466.9	1388	78.9 (high)
Top of Repeated Golden Beach Group Section	1868.9	1743	125.9 (high)
Top of Strzelecki Group	2091.4	Not Reached	-
TOTAL DEPTH	** **1803**	**2091.4**	**188 (high)**

*NB: * Both the Tambo River and Gippsland Limestone Formations were encountered in the interval of the well behind surface casing. This interval was not sampled. When lithological sampling commenced at 320m the well was in the Gippsland Limestone.*

*** The well was pulled up shallow, after penetrating the repeated Golden Beach Group section, as a result of drilling difficulties. These difficulties were due to sloughing Latrobe Group coals. A further reason for the forced termination of the well was the very non prospective nature of the Golden Beach Group which was devoid of reservoir section.*

5.6 Hydrocarbon Indications

No significant indications of hydrocarbons were noted in the McCreesh 1 exploration well. A thin zone of 0.5m of gas saturation was noted in a muddy sandstone beneath a claystone which in turn lay beneath the Top of Latrobe Group coals. This interval, given its lack of substance was not tested as it is of no commercial or geological significance. It was 100 percent methane and hence is believed to be generated by Latrobe Group coals.

The good reservoirs within the Latrobe Group were devoid of indications of fluorescence or the presence of oil. The gas detector only encountered methane believed to be of low temperature origin and generated by the abundant Latrobe Group coals.

The Golden Beach Group besides showing no indications of hydrocarbons, either oil or gas, also appears to have no reservoir potential sector. All the sandstones were clay-choked and no siltstone of appreciable thickness to act as a seal was identified. Very minor indications of oil fluorescence were noted in the fault plane of the high reverse fault.

The results of McCreesh 1, with no significant indications of hydrocarbons, have greatly downgraded the prospectivty of PEP 137 and the onshore Gippsland Basin in general. A Summary of Operations prepared by the consultant Wellsite Geologist, D Horner, is attached as Appendix 1.

5.7 Contributions to Geological Concepts

No positive contribution to geological concepts resulted from the drilling of the McCreesh 1 well. The converse occurred and some very negative concepts have been established, namely it is obvious that a charge of oil has not migrated up the northern flank of the Seaspray Depression. This may result from a lack of generation within the Seaspray Depression and more disappointing from the Western Depocentre of the Central Deep just offshore. This is considered most unlikely given the accumulations of hydrocarbons located in the offshore section close to the coastline. The fact that the nearby Mulloway and Whiptail oil pools just offshore are filled to the spill point is puzzling. It appears that the oil charge which spilled marginward, as stipulated by Gussow's Theorem, may have occurred quite late and probably was of quite limited volume. The results greatly downgrade the entire onshore sector of the basin.

6.0 BIBLIOGRAPHY

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APPENDIX 1

McCreesh No.1 **Roma Petroleum N.L.**

SUMMARY OF OPERATIONS

By: David Horner (Wellsite Geologist)

McCreesh-1 was spudded in PEP137, situated approximately 10 kilometers North West of Seaspray in Eastern Victoria at 1230hrs, 10th December, 1998. 12.25" hole was drilled to 320m without problems, 9 5/8" casing was cemented in place at 318.2m. After nippling up the BOP's and pressure testing same, 8.5" hole was drilled to 321m, where a leak off test was conducted to 202PSI. Drilling ahead with 8.5" hole with bit trips and suveys as required then continued to T.D. at 1803m.

The top of the Latrobe group was encountered at 800.5m (mudlog) and confirmed later by wireline logs. The top of the Latrobe was a massive coal 13 meters thick, underlain by 0.4m thick claystone. Below this claystone was a small gas column of less than 0.5m thickness being apparently of locally generated coal gas (C1 100%), contained within a muddy sandstone and considered to be of no economic or geological significance. Throughout the Latrobe Group Section (800.5 - 1388m) no evidence of hydrocarbon accumulation was noted. Gas readings indicated only the presence of locally generated low temperature coal gas (C1 100%) with no evidence to suggest either mature generation or migration. The top of the Golden Beach section was picked from mudlog at 1388m with reliabilty of pick classed as good. From 1388 - 1743m a monotonous sequence of laminated very fine to medium grained tight lithic sandstones and argillaceous siltstones were present, gradually becoming greener with depth. The sandstones were all clay choked with very low permeability/porosity (no reservoir potential) and the siltstones were all of insufficient thickness to have any cap rock potential. No oil fluorescence was observed throughout this interval, and gas readings consisted entirely of C1. No evidence of either migration or mature generation from this zone was noted. At around 1743m, what appeared to be a major fault plane was crossed, as evidenced by a major increase in the calcification of the juxtaposed rock, and a loss of the greener material within the rock; ie. a return to a rock sequence similar to higher up in the Golden Beach section. Of importance is the fact the drill rate increased sharply below 1743m, indicating a decrease in the compaction level of rock. Hence a confident pick for the top of the Golden Beach repeat section at 1743m may be made. Below this fault, but starting at 1755m some tight sandstone aggregates had a trace of patchy fluorescence, increasing to 1% by 1767m and then gradually decreasing to nil by 1782m. Associated gas rose to a maximum of 37.5 units with C1 98%, C2 2%, C3+ 0. No cap rock of any significance covered this zone, and the sandstones were very tight, lithic and clay choked. No economic recovery potential was deemed to exist for this unit. Best assessment at time of drilling is for generation to have occurred locally within the Strzelecki sequence, followed by migration up the fault plane and the filling of any available pore space present in this tight sequence. Drilling ceased at 1803m after drilling sufficient rathole for logs to pass over this zone. On previous trips difficulty had been encountered passing through the coal seams of the LaTrobe Group. Mud properties had been brought to optimum in an attempt to control the coal sloughing. This sloughing progressively worsened with time. On the conditioning trip severe difficulties were encountered with the sloughing coal, with minor difficulties encountered on the trip out to log. The resistivity tool was in hole for suite-1, but was unable to pass a bridge at 813m. Due to unstable hole conditions, a decision was made to log from this depth back to surface. A conditioning trip was then made, but was unable to reach bottom due to extreme coal sloughing. A request was made to P&A the well due to an inability to control the sloughing coals, with no further improvements to the mud system deemed practical. Permission to abandon was granted on the 24th December, 1998 and the hole susequently plugged and abandoned.

APPENDIX 2

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 1

Date: 11-12-98 Report to 0600 hours

Depth: 320m **Progress:**320m **Days from Spud:** 1

0600 hour Operation: Circulate

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	at m

Previous 24 hour Operations:
Spud McCreesh No.1 at 1230hrs on the 10th of December, 1998, drill 12.25" hole to 320m, circulate.

Comments:

Interval (mRT)	Hydrocarbon Show Summary	Gas
	Surface hole not sampled	

Gas Summary

Interval (mRT)	ROP (min/m)	Total (Units)	C_1	C_2	C_3 (%)	C_4	C_5	Comments

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Lemmys Point	4.4	4.4	+27	0
Lambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1			
Giffard Sandstone Member	Absent			
Traralgon (Top Latrobe Group S/M)	835.1			
Upper Intra Latrobe Group S/M	962.7			
Middle Intra Latrobe Group S/M	1119.3			
Lower Intra Latrobe Group S/M	1346.5			
Near top Golden Beach S/M	1466.9			
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
	Surface hole not sampled.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 2

Date: 12-12-98 Report to 0600 hours

Depth: 320m **Progress:**0m **Days from Spud:** 2

0600 hour Operation: Nipple up BOP's.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
POOH, run 36 lb/ft 9 5/8" casing to 318.2m, cement casing, WOC, Nipple up BOP's.

Comments:

terval (mRT)	Hydrocarbon Show Summary	Gas
	No new hole drilled.	

Gas Summary								
Interval	ROP	Total	C_1	C_2	C_3	C_4	C_5	Comments
(mRT)	(min/m)	(Units)			(%)			

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Lammys Point	4.4	4.4	+27	0
Tambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1			
Giffard Sandstone Member	Absent			
Traralgon (Top Latrobe Group S/M)	835.1			
Upper Intra Latrobe Group S/M	962.7			
Middle Intra Latrobe Group S/M	1119.3			
Lower Intra Latrobe Group S/M	1346.5			
Near top Golden Beach S/M	1466.9			
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
	No new hole drilled.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 3

Date: 13-12-98 Report to 0600 hours

Depth: 332m **Progress:**12m **Days from Spud:** 3

0600 hour Operation: Drill ahead with 8.5"hole.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
Nipple up and pressure test BOP's, RIH with 8.5"drilling assembly, drill to 321m, perform leak off test to 202 PSI, drill ahead.

Comments:
Abundant cement contamination in sample.

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No Shows	

Gas Summary

Interval	ROP	Total	C_1	C_2	C_3	C_4	C_5	Comments
(mRT)	(min/m)	(Units)			(%)			
320-332	5	0	0	0	0	0	0	Gippsland Limestone

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
emmys Point	4.4	4.4	+27	0
Tambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1			
Giffard Sandstone Member	Absent			
Traralgon (Top Latrobe Group S/M)	835.1			
Upper Intra Latrobe Group S/M	962.7			
Middle Intra Latrobe Group S/M	1119.3			
Lower Intra Latrobe Group S/M	1346.5			
Near top Golden Beach S/M	1466.9			
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
320-332	**Gippsland Limestone** Massive Marl (100%) Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous calcilutite in part, trace bryozoa fragments, soft, sticky, non fissile.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 4

Date: 14-12-98 Report to 0600 hours

Depth: 665m **Progress:**333m **Days from Spud:** 4

0600 hour Operation: POOH for new bit.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
Drill ahead with 8.5" hole to 665m, POOH for new bit.

Comments:

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No Shows	

Gas Summary

Interval (mRT)	ROP (min/m)	Total (Units)	C_1	C_2	C_3 (%)	C_4	C_5	Comments
332-665	3	0	0	0	0	0	0	Gippsland Limestone

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Lemmys Point	4.4	4.4	+27	0
Lambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1			
Giffard Sandstone Member	Absent			
Traralgon (Top Latrobe Group S/M)	835.1			
Upper Intra Latrobe Group S/M	962.7			
Middle Intra Latrobe Group S/M	1119.3			
Lower Intra Latrobe Group S/M	1346.5			
Near top Golden Beach S/M	1466.9			
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
332-665	**Gippsland Limestone** Marl (30%) grading to Limestone (70%) Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous limestone in part, rare to common glauconite, trace to common fossil fragments, soft becoming firm with depth, non fissile. Limestone: white to light brown, calcilutitic at top becoming crystalline with depth, slightly to very argillaceous grading to marl, trace brown to black carbonaceous material in part, rare to common glauconite, trace to common fossil fragments, soft at top becoming moderately hard with depth, no visual porosity.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 5

Date: 15-12-98 Report to 0600 hours

Depth: 1001m **Progress:**336m **Days from Spud:** 5

0600 hour Operation: Drill ahead with 8.5" hole

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
POOH for new bit and BHA change, RIH and drill ahead with 8.5" hole..

Comments:
Top Seacombe Marl Member pick reliability - Poor.
Top Latrobe Group pick reliability - Good.
Top Upper Intra Latrobe Group S/M pick reliability - Fair
Circulate geological samples at 809m and 819m.

Interval (mRT)	Hydrocarbon Show Summary	Gas
813-813.5	There appears to be approximately 0.5 metres of gas saturation directly below the major coal seam at the top of the Latrobe group. The massive coal at the top of the Latrobe is underlain by the thin claystone band of approximately 0.4m thickness, and below this claystone the gas rose sharply to a peak of 51.4 units, maintaining this level for approximately 0.5 of a metre before dropping sharply. The gas analysis was 100% methane with no fluorescence or cut. This gas was contained within a sandy claystone being: Sandy Claystone: light orange brown, very fine to grit dominantly medium clear to opaque subangular quartz grains floating in an off white to orange brown argillaceous matrix, very weak calcareous cement, common glauconite, abundant brown to black carbonaceous material, friable, very poor to poor visual porosity, no oil fluorescence. Due to the very thin gas column present in a very poor porosity rock, no potential for gas recovery is deemed possible.	51.4 units 100% C1

Gas Summary								
Interval	**ROP**	**Total**	**C_1**	**C_2**	**C_3**	**C_4**	**C_5**	**Comments**
(mRT)	**(min/m)**	**(Units)**			**(%)**			
665-694	3	0	0	0	0	0	0	Gippsland Limestone
694-800.5	2.8	0.5	100	0	0	0	0	Seacombe Marl Member
800.5-813	1.0	8.9	100	0	0	0	0	Traralgon (top coal)
813-945	1.5	51.4	100	0	0	0	0	Upper Latrobe (top)
945-1001	1.2	11.0	100	0	0	0	0	Upper Latrobe (bottom)

Formation Tops:	**Prognosed (mRT)**	**Actual* (mRT)**	**Actual* (mSS)**	**Difference* (High/Low)**
Jemmys Point	4.4	4.4	+27	0
Tambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3			
Lower Intra Latrobe Group S/M	1346.5			
Near top Golden Beach S/M	1466.9			
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
665-694m	**Gippsland Limestone** Marl (70%) grading to Limestone (30%) Marl: light grey to light green grey to medium brown grey, moderately to very calcareous grading to argillaceous limestone in part, trace glauconite, common fossil fragments, firm, non fissile. Limestone: white to light brown, microcrystalline, slightly to very argillaceous grading in part to marl, trace glauconite, common fossil fragments, moderately hard, no visual porosity.
694-800.5m	**Seacombe Marl Member** Massive Marl (100%) with up to 10% Limestone at base Marl: light green grey occasionally to medium brown grey, poorly to very calcareous - decreases with depth then increases sharply at base, rare glauconite becoming abundant at base, trace to common fossil fragments, trace brown to black carbonaceous material, rare pyrite, firm, non fissile. Limestone: off white to light brown, crypto to microcrystalline, very argillaceous grading to marl, trace fossil fragments, abundant glauconite, moderately hard, no visual porosity, no oil fluorescence.
800.5-813	**Traralgon (Top Latrobe)** Coal Unit (top Latrobe) Coal (100%) Coal: dark brown to black, earthy to occasionally subvitreous texture, irregular to blocky fracture, moderately argillaceous in part, trace pyrite, moderately hard, no fluorescence or cut.
813-945	**Traralgon (Top Latrobe)** Sandstone (70%) with interbedded Coal (5%) and Claystone (25%) Sandy Claystone: light orange brown, very fine to grit dominantly medium clear to opaque subangular quartz grains floating in an off white to orange brown argillaceous matrix, very weak calcareous cement, common glauconite, abundant brown to black carbonaceous material, friable, very poor to poor visual porosity, no oil fluorescence at top grading rapidly to: Sandstone: light brown, very fine to very coarse, dominantly coarse, subangular, poorly sorted, weak silica and calcareous cements, common medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace black coaly detritus, friable, fair to good inferred porosity, no oil fluorescence. Claystone: medium to dark brown grey, very carbonaceous, moderately silty, occasionally very finely arenaceous, slightly calcareous in part, trace micromica, firm, very dispersive, slightly subfissile. Coal: dark brown to black, earthy to rarely subvitreous texture, irregular to blocky fracture, very argillaceous in part grading to claystone, trace pyrite, trace amber, moderately hard, no fluorescence or cut.
945-1001	**Traralgon (Top Latrobe - basal coaly section)** Claystone (60%) interbedded with Coal (10%) and Sandstone (30%) Claystone: medium to dark brown, moderately to very carbonaceous - grades to argillaceous coal, moderately silty, slightly calcareous, trace dispersed quartz sand grains, trace to common micromica, firm, very dispersive, subfissile. Sandstone: very light brown, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak silica and calcareous cements, abundant medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, friable, poor to good inferred porosity, no oil fluorescence. Coal: dark brown to black, earthy to rarely subvitreous texture, irregular to blocky fracture, very argillaceous in part grading to claystone, trace amber, moderately hard, no fluorescence or cut.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 6

Date: 16-12-98 Report to 0600 hours

Depth: 1304m **Progress:**303m **Days from Spud:** 6

0600 hour Operation: RIH with new bit.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
Drill ahead with 8.5" hole to 1304m, POOH for new bit.

Comments:
Middle Intra Latrobe S/M pick reliability - Fair.

terval (mRT)	Hydrocarbon Show Summary	Gas
	No Shows - no evidence of hydrocarbon generation or migration.	

Gas Summary								
Interval	**ROP**	**Total**	**C_1**	**C_2**	**C_3**	**C_4**	**C_5**	**Comments**
(mRT)	**(min/m)**	**(Units)**			**(%)**			
1001-1110	1.2	2.0	100	0	0	0	0	Upper Latrobe (bottom)
1110-1247	2.0	1.5	100	0	0	0	0	Mid Intra Latrobe S/M
1247-1304	3.0	1.0	100	0	0	0	0	Mid Intra Latrobe S/M

Formation Tops:	**Prognosed (mRT)**	**Actual* (mRT)**	**Actual* (mSS)**	**Difference* (High/Low)**
Jemmys Point	4.4	4.4	+27	0
Tambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5			
Near top Golden Beach S/M	1466.9			
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

****Provisional, based on mudlog***

Lithological and Fluorescence Description	
Interval (m)	**Description**
1001-1110m	**Traralgon (Top Latrobe - basal coaly section)** Claystone (40%) interbedded with Coal (10%) and Sandstone (50%) Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, common off white to medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, trace grey green and red brown lithics, friable, fair to good inferred porosity, no oil fluorescence. Claystone: off white to dark brown, non to very carbonaceous - grades to argillaceous coal in part, slightly to moderately silty, trace dispersed very fine to very coarse quartz sand grains in part, nil to common micromica, firm, very dispersive, nonfissile to subfissile. Coal: dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, often very argillaceous grading to claystone, trace amber, moderately hard, no fluorescence or cut.
1110-1247	**Middle Intra Latrobe** Sandstone (80%) interbedded with Claystone (20%) and Coal (Trace) Sandstone: light grey, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak silica cement, common off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, fair to good inferred porosity, no oil fluorescence. Claystone: off white to occasionally light green to medium brown, moderately carbonaceous in part, moderately silty in part, trace dispersed very fine to very coarse quartz sand grains in part, common micromica, firm, very dispersive, subfissile. Coal: dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, very argillaceous grading to claystone in part, trace amber, rare pyrite, moderately hard, no fluorescence or cut.
1247-1304	**Middle Intra Latrobe (Lower section)** Sandstone (50%) interbedded with Claystone (40%) and Coal (10%) Sandstone: light grey, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak silica cement, common off white argillaceous matrix, clear to opaque quartz grains, trace black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, fair inferred porosity, no oil fluorescence. Claystone: off white to light green, occasionally medium brown and moderately carbonaceous, slightly silty, trace black carbonaceous flecks, slightly calcareous, trace micromica, firm, very dispersive, subfissile. Coal: black to occasionally dark brown, earthy to subvitreous, blocky fracture, occasionally very argillaceous, trace amber, rare pyrite, moderately hard to brittle, no fluorescence or cut.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 7

Date: 17-12-98 Report to 0600 hours

Depth: 1304m **Progress:**0m **Days from Spud:** 7

0600 hour Operation: Clean and ream sloughing hole.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
POOH for new bit, attempt RIH with new bit reaming sloughing, POOH for BHA change, RIH reaming sloughing coals as necessary.

Comments:
Latrobe coals caving from cleaner coal sections - coal black and exhibits coarse cleating.

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No new formation drilled.	

Gas Summary								
Interval	ROP	Total	C_1	C_2	C_3	C_4	C_5	Comments
(mRT)	(min/m)	(Units)			(%)			

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Lemmys Point	4.4	4.4	+27	0
Lambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5			
Near top Golden Beach S/M	1466.9			
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
	No new hole drilled.

ROMA PETROLEUM N.L.

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McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 8

Date: 18-12-98 Report to 0600 hours

Depth: 1360m **Progress:**54m **Days from Spud:** 8

0600 hour Operation: POOH for new bit.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
RIH reaming sloughing coals as necessary, drill ahead with 8.5" hole to 1360m, prepare to POOH for new bit.

Comments:
Top of Lower Latrobe placed at 1300m based on increased compaction of the claystone and decreased grain size with increased matrix content and cementation of the sandstone.

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No Shows	

Gas Summary

Interval (mRT)	ROP (min/m)	Total (Units)	C_1	C_2	C_3 (%)	C_4	C_5	Comments
1304-1359	17	3.0	100	0	0	0	0	Lower Intra Latrobe

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Jammys Point	4.4	4.4	+27	0
Lambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5	1300	1269	46 High
Near top Golden Beach S/M	1466.9			
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
1304-1359	**Lower Intra Latrobe** Sandstone (60%) interbedded with Claystone (40%) and minor Coal (Trace) Sandstone: very light brown grey, very fine to very coarse, dominantly medium to coarse, occasionally dominantly fine, subangular to subrounded, poorly sorted, weak to moderate silica cement, trace to common off white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, trace coarse brown and clear mica flakes where dominantly fine, friable, poor to good inferred porosity, no oil fluorescence. Claystone: off white to dark brown grey, slightly silty, trace black carbonaceous flecks and coal detritus, trace to common micromica, firm to moderately hard, very dispersive, subfissile to fissile. Coal: black to occasionally dark brown, earthy to subvitreous, irregular to blocky fracture, occasionally very argillaceous, trace amber, trace pyrite, moderately hard to brittle, no cut.

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McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 9

Date: 19-12-98 Report to 0600 hours

Depth: 1436m **Progress:**76m **Days from Spud:** 9

0600 hour Operation: Drill ahead with 8.5" hole.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
POOH for new bit and BHA change, RIH, drill ahead with 8.5" hole.

Comments:
Top Golden Beach pick reliability - Good.

Note: as yet the Golden Beach has been tight - the sandstone present is probably tight enough to be passed as cap rock. Lithologically, the Golden Beach exhibits geological characteristics identical to that of the Eumeralla Formation in the Otway Basin - of interest is the fact electric logs across the Eumeralla Formation do not identify hydrocarbons (hydrocarbon saturation cannot be seen even where significant gas flows have been tested) and do not clearly show a discernible difference between sand and clay.

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No Shows	

Gas Summary

Interval (mRT)	ROP (min/m)	Total (Units)	C_1	C_2	C_3 (%)	C_4	C_5	Comments
1359-1388	3.5	3.5	100	0	0	0	0	Lower Intra Latrobe
1388-1436	13	2.0	100	0	0	0	0	Golden Beach

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Jemmys Point	4.4	4.4	+27	0
Lambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5	1300	1269	46 High
Near top Golden Beach S/M	1466.9	1388	1357	79 High
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description

Interval (m)	Description
1359-1388	**Lower Intra Latrobe** Sandstone (50%) interbedded with Claystone (40%) and Coal (10%) Sandstone: light brown grey, very fine to very coarse, dominantly fine, subangular to subrounded, poorly sorted, moderate silica cement, common to abundant white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, trace black coaly detritus, moderately hard, very poor to poor inferred porosity, no oil fluorescence. Claystone: off white to light brown to dark brown grey, moderately silty, slightly carbonaceous, abundant dispersed very fine to fine quartz sand grains in part, common black coaly material in part, common micromica, moderately hard, very dispersive, subfissile. Coal: black to very dark brown, earthy to subvitreous, irregular to blocky fracture, very argillaceous in part, trace amber, hard, brittle, no cut.
1388-1436	**Golden Beach** Sandstone (50%) laminated with and grading to Siltstone (50%) and Claystone (Trace) Sandstone: off white to medium grey to occasionally medium brown, very fine to medium, common coarse to very coarse grains decreasing to nil with depth, dominantly fine, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported and grading to siltstone, clear to milky quartz grains, common to abundant grey green volcanogenic lithics and altered feldspar grains, trace brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence. Siltstone: light grey to medium grey to occasionally medium green grey, moderately to very argillaceous, often abundant very fine to fine dispersed quartz and altered feldspar sand grains - grades to sandstone, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile. Claystone: light to medium green, trace black carbonaceous specks, moderately hard, very dispersive, subfissile.

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McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 10

Date: 20-12-98 Report to 0600 hours

Depth: 1553m **Progress:**117m **Days from Spud:** 10

0600 hour Operation: Drill ahead with 8.5" hole.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
Drill ahead with 8.5" hole.

Comments:

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No Shows	

Gas Summary

Interval (mRT)	ROP (min/m)	Total (Units)	C_1	C_2	C_3 (%)	C_4	C_5	Comments
1436-1548	12	5.8	100	0	0	0	0	Golden Beach

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
mmys Point	4.4	4.4	+27	0
ambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5	1300	1269	46 High
Near top Golden Beach S/M	1466.9	1388	1357	79 High
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
1436-1548	**Golden Beach** Sandstone (70%) laminated with and grading to Siltstone (30%). Sandstone: off white to medium grey, very fine to medium, dominantly fine, trace coarse to very coarse grains in part, trace coarse aggregates in part, angular to subangular, poor to moderate sorting, moderate to strong silica cement, nil to moderate calcareous cement - increases with depth, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, trace to common red and brown lithics, trace black carbonaceous material, hard, nil to very poor visual porosity, no oil fluorescence. Siltstone: light to medium grey to medium brown grey to medium green grey, moderately to very argillaceous, often abundant very fine to fine dispersed sand grains - grades to sandstone, trace black carbonaceous material, trace micromica, moderately hard, very dispersive, subfissile.

ROMA PETROLEUM N.L.

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McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 11

Date: 21-12-98 Report to 0600 hours

Depth: 1644m **Progress:**91m **Days from Spud:** 11

0600 hour Operation: POOH

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
Drill ahead with 8.5" hole to 1644m, POOH.

Comments:
No effective cap rock or reservoir development is present within the Golden Beach so far. No evidence so far of either migration or generation.

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No Shows	

Gas Summary

Interval (mRT)	ROP (min/m)	Total (Units)	C_1	C_2	C_3 (%)	C_4	C_5	Comments
1548-1644	11	13	100	0	0	0	0	Golden Beach

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Lammys Point	4.4	4.4	+27	0
Tambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5	1300	1269	46 High
Near top Golden Beach S/M	1466.9	1388	1357	79 High
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
1548-1644	**Golden Beach** Sandstone (60%) laminated with, grading to and occasionally interbedded with Siltstone (40%). Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence. Siltstone: off white to medium grey to medium brown grey, dominantly medium grey, moderately to very argillaceous, abundant very fine dispersed sand grains in part- grades to sandstone, trace black carbonaceous specks and occasional fine detritus, trace micromica, moderately hard, very dispersive, subfissile.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 12

Date: 22-12-98 Report to 0600 hours

Depth: 1694m **Progress:**50m **Days from Spud:** 12

0600 hour Operation: Drill ahead with 8.5" hole.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
POOH for suspected washout, change BHA and bit, RIH, drill ahead with 8.5" hole.

Comments:

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No Shows	

Gas Summary

Interval (mRT)	ROP (min/m)	Total (Units)	C_1	C_2	C_3 (%)	C_4	C_5	Comments
1644-1689	14	8	100	0	0	0	0	Golden Beach

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Lemmys Point	4.4	4.4	+27	0
Lambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5	1300	1269	46 High
Near top Golden Beach S/M	1466.9	1388	1357	79 High
Top of repeated Golden Beach Group Sect	1868.9			
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
1644-1689	**Golden Beach** Sandstone (80%) laminated with, grading to and occasionally interbedded with Siltstone (20%). Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, trace coarse grains, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence. Siltstone: off white to medium grey to medium brown grey, occasionally medium brown, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part-grades to sandstone, trace to common black carbonaceous specks and occasional fine detritus, trace micromica, moderately hard, very dispersive, subfissile.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 13

Date: 23-12-98 Report to 0600 hours

Depth: 1787m **Progress:**93m **Days from Spud:** 13

0600 hour Operation: Drill ahead with 8.5" hole.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
Drill ahead with 8.5" hole.

Comments:
Circulate geological sample at 1746m.
Reliability on pick for top of Golden Beach Repeat Section - good.

Interval (mRT)	Hydrocarbon Show Summary	Gas
1755-1782+	The section below 1755m to current depth of returns (1782m) consists of tight lithic sandstone's (50%) laminated with siltstones (50%) with the sandstone being: Sandstone: off white to medium green grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, trace red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity. The sandstone has trace to 1% dull moderately bright patchy light yellow fluorescence giving a weak dull yellow white crush cut, thin ring residue. Due to the tight nature of the sandstone's present, as indicated both visually and by the patchy nature of the fluorescence, it has no potential for any measurable oil recovery on test, however does show some migration or local generation has occurred. Should reasonable porosity be encountered, the potential for economic recovery does exist, however due to the low energy nature of this depositional sequence this is considered to be of low probability at this time. Note: This oil fluorescence may be associated with migration along the fault path present at around 1743m.	37.5 units C1 98% C2 2% C3 0 C4 0

Gas Summary

Interval (mRT)	ROP (min/m)	Total (Units)	C_1	C_2	C_3 (%)	C_4	C_5	Comments
1689-1743	13	12	100	0	0	0	0	Golden Beach
1743-1755	8	16	100	0	0	0	0	Golden Beach - Repeat

1755-1782	9	25	98	2	0	0	0	Golden Beach - Repeat

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Jemmys Point	4.4	4.4	+27	0
Tambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5	1300	1269	46 High
Near top Golden Beach S/M	1466.9	1388	1357	79 High
Top of repeated Golden Beach Group Sect	1868.9	1743	1712	126 High
Wonthaggi (Strzelecki Group)	2037.4			
Total Depth	2091.4			

**Provisional, based on mudlog*

Lithological and Fluorescence Description

Interval (m)	Description
1689-1743	**Golden Beach** Sandstone (70%) laminated with, grading to and occasionally interbedded with Siltstone (30%). Sandstone: off white to medium grey, very fine to medium, dominantly fine, rarely common coarse to very coarse quartz sand grains, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, trace pyrite, moderately hard, nil to very poor visual porosity, no oil fluorescence, grading to at base: Sandstone: light to medium green grey, very fine to medium, dominantly to medium, angular to subangular, moderately sorted, moderate to strong silica and calcareous cements, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, hard, no visual porosity, no oil fluorescence. Siltstone: off white to medium grey to medium brown grey, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part- grades to sandstone, trace to occasionally common black carbonaceous specks and detritus, trace pyrite in part, trace micromica, moderately hard, very dispersive, subfissile, grading to at base: Siltstone: light to medium brown grey, medium green, medium grey, moderately to very argillaceous, occasionally very finely arenaceous - grades to sandstone in part, slightly calcareous, trace to common black carbonaceous flecks, trace micromica, moderately hard, very dispersive, subfissile.

1743-1782	**Golden Beach Repeat Section** Sandstone (50%) laminated with, grading to and occasionally interbedded with Siltstone (50%). Sandstone: off white to medium green grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, trace red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity. Siltstone: light to medium brown grey, medium grey to medium green grey, moderately to very argillaceous, occasionally very finely arenaceous - grades to sandstone in part, trace black carbonaceous flecks and detritus, trace micromica, moderately hard, moderately dispersive, subfissile. Fluorescence (1755-1782+m.) The sandstone has trace to 1% dull moderately bright patchy light yellow fluorescence giving a weak dull yellow white crush cut, thin ring residue.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 14

Date: 24-12-98 Report to 0600 hours

Depth: 1803m **Progress:**0m **Days from Spud:** 14

0600 hour Operation: Rig down BPB.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:
Drill ahead with 8.5" hole to 1803m, POOH to shoe for cleanout trip, RIH, condition mud, POOH to log, Rig up BPB, unable to pass bridge at 813m, due to hole instability, run-1 DLL-MSFL-SP-BHC-GR-Cal (813-318) GR (318-surface), rig down BPB.

Comments:
Hole very unstable due to coal sloughing from 800 to 1100m (Upper Latrobe Group), severe difficulty in cleaning this section on conditioning trip - unable to properly stabilise coals.
NOTE: Coals exhibit a coarse open cleating appearing strongest in a unidirectional plane; possibly caused by a stretching and opening of the cleating (tensional stretching) across the crest of this pronounced anticlinal structure. As the hole becomes enlarged, a flat surface is exposed causing less mechanical stability to hole. Future prediction: hole condition with worsen with time regardless of what corrective measures are undertaken.
RECOMMENDATION: cancel neutron/density logging run due to risk of sticking and losing neutron source. Take care on cleanout trip due to the presence of pyrite cemented sand nodules within or juxtaposed to but associated with the sloughings - probability of wedging bit in hole from these nodules high, probability of shattering these nodules from jarring low.

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No Shows	

Gas Summary								
Interval	ROP	Total	C_1	C_2	C_3	C_4	C_5	Comments
(mRT)	(min/m)	(Units)			(%)			
1782-1803	10	22	98	2	0	0	0	Golden Beach - Repeat

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
Emmys Point	4.4	4.4	+27	0
Tambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5	1300	1269	46 High
Near top Golden Beach S/M	1466.9	1388	1357	79 High
Top of repeated Golden Beach Group Sect	1868.9	1743	1712	126 High
Total Depth	2091.4	1803	1772	188 High

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
1782-1803	**Golden Beach Repeat Section** Sandstone (70%) laminated with and grading to Siltstone (50%). Sandstone: light to medium green grey, very fine to coarse, dominantly fine to medium, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, common red and brown lithics, trace black carbonaceous material, trace pyrite, moderately hard, nil to very poor visual porosity, no oil fluorescence. Siltstone: light to medium brown grey to medium green grey to medium grey, moderately to very argillaceous, very finely arenaceous in part - grades to sandstone, trace black carbonaceous flecks, trace micromica, moderately hard, moderately dispersive, subfissile.

ROMA PETROLEUM N.L.

(A.C.N. 066 018 979)

McCreesh No.1 PEP 137

DAILY GEOLOGICAL REPORT No. 15

Date: 25-12-98 Report to 0600 hours

Depth: 1803m **Progress:**0m **Days from Spud:** 15

0600 hour Operation: P&A.

Rig:	O.D.E. Rig No.30	**GL*(AHD)*:**	27.0m
Drilling Rep:	Mick Valentine	**RT:** *(datum)*	31.4m
Geologist:	David Horner	**Last Casing:**	9 5/8" at 318.2m

Previous 24 hour Operations:

Rig down BPB, RIH for cleanout trip, encountered hole problems 812-1008m, clean and ream - hole tight, pull back, work tight pipe, pull back, POOH, lay out BHA, RIH open ended to P&A.

Comments:

Interval (mRT)	Hydrocarbon Show Summary	Gas
	No new formation drilled.	

Gas Summary

Interval	ROP	Total	C_1	C_2	C_3	C_4	C_5	Comments
(mRT)	(min/m)	(Units)			(%)			

Formation Tops:	Prognosed (mRT)	Actual* (mRT)	Actual* (mSS)	Difference* (High/Low)
mmys Point	4.4	4.4	+27	0
ambo River	123.2	N/P	N/P	-
Gippsland Limestone	257.2	N/P	N/P	-
Seacombe Marl Member	718.1	694	663	24 High
Giffard Sandstone Member	Absent	Absent	Absent	-
Traralgon (Top Latrobe Group S/M)	835.1	800.5	769	35 High
Upper Intra Latrobe Group S/M	962.7	945	914	18 High
Middle Intra Latrobe Group S/M	1119.3	1110	1079	9 High
Lower Intra Latrobe Group S/M	1346.5	1300	1269	46 High
Near top Golden Beach S/M	1466.9	1388	1357	79 High
Top of repeated Golden Beach Group Sect	1868.9	1743	1712	126 High
Total Depth	2091.4	1803	1772	188 High

**Provisional, based on mudlog*

Lithological and Fluorescence Description	
Interval (m)	**Description**
	No new formation drilled.

APPENDIX 3

ROMA PETROLEUM N.L. **CUTTINGS DESCRIPTIONS**

WELL NAME: McCreesh No.1 **DATE:** 13-12-98

GEOLOGIST: David Horner **PAGE:** 1

Interval (m)	%	Description
320-330	100	Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous calcilutite in part, trace bryozoa fragments, soft, sticky, non fissile.
330-340	100	Marl: as for 320-340m.
340-350	80	Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous calcilutite in part, trace glauconite, trace bryozoa fragments, soft, sticky, non fissile.
	20	Limestone: white to light brown, calcilutitic to slightly crystalline, slightly to very argillaceous, trace brown to black carbonaceous material, rare glauconite, trace fossil fragments, soft to occasionally moderately hard, no visual porosity.
350-360	30	Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous calcilutite in part, rare glauconite, trace bryozoa fragments, soft, sticky, non fissile.
	70	Limestone: as for 340-350m.
360-370	30	Marl: as for 350-360m.
	70	Limestone: white to light brown, calcilutitic to slightly crystalline, slightly to very argillaceous, trace brown to black carbonaceous material, rare glauconite, common fossil fragments, soft to occasionally moderately hard, no visual porosity.
370-380	20	Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous calcilutite in part, trace glauconite, trace bryozoa fragments, soft to slightly firm, sticky, non fissile.
	80	Limestone: white to light brown, calcilutitic to slightly crystalline, slightly to very argillaceous grading to marl, trace brown to black carbonaceous material, trace glauconite, trace fossil fragments, soft to occasionally moderately hard, no visual porosity.
380-400	30	Marl: as for 370-380m.
	70	Limestone: as for 370-380m.
400-420	30	Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous calcilutite in part, rare glauconite, trace fossil fragments, soft to firm, sticky, non fissile.
	70	Limestone: white to light brown grey, calcilutitic to microcrystalline, slightly to very argillaceous grading in part to marl, trace brown to black carbonaceous material, rare glauconite, trace fossil fragments, soft to moderately hard, no visual porosity.
420-430	40	Marl: as for 400-420m.
	60	Limestone: as for 400-420m.
430-440	60	Marl: as for 400-420m.
	40	Limestone: as for 400-420m.
440-450	80	Marl: as for 400-420m.
	20	Limestone: as for 400-420m.

Interval (m)	%	Description	PAGE: 2
450-470	60	Marl: as for 400-420m.	
	40	Limestone: as for 400-420m.	
470-490	50	Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous calcilutite in part, trace to common glauconite, trace fossil fragments, soft to firm, sticky, non fissile.	
	50	Limestone: white to light brown grey, calcilutitic to microcrystalline, slightly to very argillaceous grading in part to marl, trace brown to black carbonaceous material, trace to common glauconite, trace fossil fragments, soft to moderately hard, no visual porosity.	
490-500	40	Marl: as for 470-490m.	
	60	Limestone: as for 470-490m.	
500-530	50	Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous calcilutite in part, trace glauconite, trace fossil fragments, soft to firm, sticky, non fissile.	
	50	Limestone: white to light brown grey, calcilutitic to microcrystalline, slightly to very argillaceous grading in part to marl, trace brown to black carbonaceous material, trace glauconite, trace fossil fragments, soft to moderately hard, no visual porosity.	
530-550	40	Marl: light grey to medium brown, moderately to very calcareous grading to argillaceous limestone in part, rare glauconite, rare fossil fragments, firm, non fissile.	
	60	Limestone: white to light brown, microcrystalline, slightly to very argillaceous grading in part to marl, trace brown to black carbonaceous material, rare glauconite, rare fossil fragments, moderately hard, no visual porosity.	
550-560	50	Marl: as for 530-540m.	
	50	Limestone: as for 530-540m.	
560-590	40	Marl: as for 530-540m.	
	60	Limestone: as for 530-540m.	
590-630	30	Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous limestone in part, common glauconite, common fossil fragments, firm, non fissile.	
	70	Limestone: white to light brown, microcrystalline, slightly to very argillaceous grading in part to marl, common glauconite, common fossil fragments, moderately hard, no visual porosity.	
630-650	50	Marl: light grey to medium brown grey, moderately to very calcareous grading to argillaceous limestone in part, trace glauconite, common fossil fragments, firm, non fissile.	
	50	Limestone: white to light brown, microcrystalline, slightly to very argillaceous grading in part to marl, trace glauconite, common fossil fragments, moderately hard, no visual porosity.	
650-660	60	Marl: as for 630-650m.	
	40	Limestone: as for 630-650m.	
660-690	70	Marl: light grey to light green grey to medium brown grey, moderately to very calcareous grading to argillaceous limestone in part, trace glauconite, common fossil fragments, firm, non fissile.	
	30	Limestone: as for 630-650m.	
690-705	80	Marl: light green grey to medium brown grey, moderately to very calcareous, trace glauconite, trace to common fossil fragments, rare pyrite, firm, non fissile.	

Interval (m)	%	Description	PAGE: 3
	20	Limestone: off white to light brown to light green grey, crypto to microcrystalline, slightly to normally very argillaceous grading to marl, trace glauconite, trace fossil fragments, moderately hard, no visual porosity.
705-708	100	Marl: light green grey occasionally to medium brown grey, moderately to very calcareous, trace glauconite, trace to common fossil fragments, rare pyrite, firm, non fissile.
	Trace	Limestone: as for 690-705m.
708-720	100	Marl: as for 705-708m.
720-732	100	Marl: light green grey occasionally to medium brown grey, moderately calcareous, trace fossil fragments, rare brown to black carbonaceous material, firm, non fissile.
732-738	100	Marl: light green grey occasionally to medium brown grey, moderately calcareous, trace fossil fragments, rare brown to black carbonaceous material, trace glauconite, trace pyrite, firm, non fissile.
738-744	NR	Sample washed from shakers screens.
744-765	100	Marl: light green grey occasionally to medium brown grey, moderately calcareous, trace fossil fragments, rare brown to black carbonaceous material, firm, non fissile.
765-771	100	Marl: light green grey occasionally to medium brown grey, poorly to moderately calcareous, trace fossil fragments, rare brown to black carbonaceous material, rare glauconite, firm, non fissile.
771-777	90	Marl: light green grey occasionally to medium brown grey, moderately to very calcareous, trace fossil fragments, rare brown to black carbonaceous material, trace glauconite, firm, non fissile.
	10	Limestone: off white to light brown, crypto to microcrystalline, very argillaceous grading to marl, trace fossil fragments, trace glauconite, moderately hard, no visual porosity, no oil fluorescence.
777-783	90	Marl: light green grey occasionally to medium brown grey, moderately to very calcareous, trace fossil fragments, rare brown to black carbonaceous material, common to abundant glauconite, firm, non fissile.
	10	Limestone: off white to light brown, crypto to microcrystalline, very argillaceous grading to marl, trace fossil fragments, common to abundant glauconite, moderately hard, no visual porosity, no oil fluorescence.
783-789	90	Marl: light green grey occasionally to medium brown grey, moderately to very calcareous, trace fossil fragments, rare brown to black carbonaceous material, abundant glauconite, firm, non fissile.
	10	Limestone: off white to light brown, crypto to microcrystalline, very argillaceous grading to marl, trace fossil fragments, abundant glauconite, moderately hard, no visual porosity, no oil fluorescence.
789-795	90	Marl: light green grey occasionally to medium brown grey, moderately to very calcareous, trace fossil fragments, rare brown to black carbonaceous material, abundant glauconite, trace pyrite, firm, non fissile.
	10	Limestone: as for 783-789m.
795-801	70	Marl: as for 789-795m.
	20	Limestone: as for 783-789m.
	10	Coal: dark brown to black, earthy to occasionally subvitreous texture, irregular to blocky fracture, moderately argillaceous in part, trace pyrite, moderately hard, no fluorescence or cut.
801-804	50	Marl: as for 789-795m.

	50	Coal: as for 795-801m.
804-807	10	Marl: as for 789-795m.
	90	Coal: as for 795-801m.
807-810	40	Marl: as for 789-795m.
	60	Coal: as for 795-801m.
810-813	10	Marl: as for 789-795m.
	90	Coal: as for 795-801m.
813-816	80	Sandy Claystone: light orange brown, very fine to grit dominantly medium clear to opaque subangular quartz grains floating in an off white to orange brown argillaceous matrix, very weak calcareous cement, common glauconite, abundant brown to black carbonaceous material, friable, very poor to poor visual porosity, no oil fluorescence.
	20	Coal: as for 795-801m.
816-819	100	Sandstone: very light orange grey, very fine to very coarse, dominantly medium, subangular, very weak silica and calcareous cements, trace orange brown argillaceous matrix in part, trace glauconite, trace mica flakes, trace black carbonaceous material, trace pyrite, unconsolidated to friable, very good inferred porosity, no oil fluorescence,
819-828	40	Marl: as for 789-795m (cavings?).
	20	Coal: dark brown to black, earthy to occasionally subvitreous texture, irregular to blocky fracture, very argillaceous in part, trace pyrite, moderately hard, no fluorescence or cut.
	40	Sandstone: as for 816-819m.
828-837	100	Sandstone: light brown, very fine to very coarse, dominantly coarse, subangular, poorly sorted, weak silica cement, common medium brown argillaceous matrix, trace black coaly detritus, trace glauconite, trace mica flakes, friable, good inferred porosity, no oil fluorescence.
837-846	80	Coal: dark brown to black, earthy to occasionally subvitreous texture, irregular to blocky fracture, very argillaceous in part, trace pyrite, moderately hard, no fluorescence or cut.
	20	Sandstone: light brown, very fine to very coarse, dominantly coarse, subangular, poorly sorted, weak silica cement, common medium brown argillaceous matrix, trace black coaly detritus, trace glauconite, trace mica flakes, friable, good inferred porosity, no oil fluorescence.
846-855	30	Coal: as for 837-846m.
	10	Claystone: medium to dark brown grey, very carbonaceous, moderately silty, occasionally very finely arenaceous, slightly calcareous in part, trace micromica, firm, very dispersive, slightly subfissile.
	60	Sandstone: light brown, very fine to very coarse, dominantly coarse, subangular, poorly sorted, weak silica and calcareous cements, common medium brown argillaceous matrix, trace black coaly detritus, friable, fair to good inferred porosity, no oil fluorescence.
855-864	10	Coal: as for 837-846m.
	20	Claystone: as for 846-855m.
	70	Sandstone: light brown, very fine to very coarse, dominantly coarse, subangular, poorly sorted, weak silica and calcareous cements, common medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace black coaly detritus, friable, fair to good inferred porosity, no oil fluorescence.

Interval (m)	%	Description	PAGE: 5
864-873	10	Coal: as for 837-846m.	
	60	Claystone: as for 846-855m.	
	30	Sandstone: as for 855-864m.	
873-891	20	Claystone: medium to dark brown grey, moderately to very carbonaceous, moderately silty, occasionally very finely arenaceous, slightly calcareous in part, trace micromica, firm, very dispersive, slightly subfissile.	
	80	Sandstone: light brown, very fine to very coarse, dominantly coarse, subangular, poorly sorted, weak silica and calcareous cements, common medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace black coaly detritus, friable, good inferred porosity, no oil fluorescence.	
891-900	20	Claystone: medium to dark brown grey to occasionally off white, moderately to very carbonaceous, moderately silty, slightly calcareous, trace micromica, firm, very dispersive, slightly subfissile.	
	80	Sandstone: as for 873-891m.	
900-909	40	Claystone: as for 891-900m.	
	60	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica and calcareous cements, common to abundant medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, friable, poor to good inferred porosity, no oil fluorescence.	
909-915	10	Coal: dark brown to black, earthy to rarely subvitreous texture, irregular to blocky fracture, very argillaceous in part grading to claystone, trace pyrite, trace amber, moderately hard, no fluorescence or cut.	
	80	Claystone: as for 891-900m.	
	10	Sandstone: as for 900-909m.	
915-918	50	Claystone: as for 891-900m.	
	50	Sandstone: as for 900-909m.	
918-927	Trace	Coal: as for 909-915m.	
	20	Claystone: as for 891-900m.	
	80	Sandstone: very light brown, very fine to very coarse, dominantly medium, subangular to subrounded, poorly sorted, weak silica and calcareous cements, common to abundant medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, friable, good inferred porosity, no oil fluorescence.	
927-933	50	Claystone: medium to dark brown, moderately to very carbonaceous, moderately silty, slightly calcareous, trace to common micromica, firm, very dispersive, subfissile.	
	50	Sandstone: as for 918-927m.	
933-936	60	Claystone: as for 927-933m.	
	40	Sandstone: as for 918-927m.	
936-942	80	Claystone: as for 927-933m.	

Interval (m)	%	Description	PAGE: 6
	20	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica and calcareous cements, common to abundant medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, friable, good inferred porosity, no oil fluorescence.
942-945	10	Coal: dark brown to black, earthy to rarely subvitreous texture, irregular to blocky fracture, very argillaceous in part grading to claystone, trace pyrite, trace amber, moderately hard, no fluorescence or cut.
	40	Claystone: as for 927-933m.
	50	Sandstone: as for 936-942m.
945-954	100	Coal: dark brown to black, earthy to rarely subvitreous texture, irregular to blocky fracture, very argillaceous in part grading to claystone, trace disseminated pyrite, trace to common medium brown translucent amber, moderately hard, no fluorescence or cut.
954-963	60	Coal: as for 945-954m.
	30	Claystone: as for 927-933m.
	10	Sandstone: as for 936-942m.
963-972	30	Coal: dark brown to black, earthy to rarely subvitreous texture, irregular to blocky fracture, very argillaceous in part grading to claystone, trace disseminated pyrite, trace to common medium brown translucent amber, moderately hard, no fluorescence or cut.
	40	Claystone: medium to dark brown, moderately to very carbonaceous - grades to argillaceous coal, moderately silty, slightly calcareous, trace to common micromica, firm, very dispersive, subfissile.
	30	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica and calcareous cements, common to abundant medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, friable, fair inferred porosity, no oil fluorescence.
972-978	30	Coal: as for 963-972m.
	40	Claystone: as for 963-972m.
	30	Sandstone: as for 963-972m.
978-981	30	Coal: dark brown to black, earthy to rarely subvitreous texture, irregular to blocky fracture, very argillaceous in part grading to claystone, trace disseminated pyrite, trace amber, moderately hard, no fluorescence or cut.
	70	Claystone: as for 963-972m.
981-987	20	Coal: as for 978-981m.
	70	Claystone: as for 963-972m.
	10	Sandstone: as for 963-972m.
987-990	80	Claystone: medium to dark brown, moderately to very carbonaceous - grades to argillaceous coal, moderately silty, slightly calcareous, trace dispersed quartz sand grains, trace to common micromica, firm, very dispersive, subfissile.
	20	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica and calcareous cements, abundant medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, friable, poor inferred porosity, no oil fluorescence.

Interval (m)	%	Description	PAGE: 7
990-996	20	Coal: dark brown to black, earthy to rarely subvitreous texture, irregular to blocky fracture, very argillaceous in part grading to claystone, trace amber, moderately hard, no fluorescence or cut.
	60	Claystone: as for 987-990m.
	20	Sandstone: as for 987-990m.
996-999	70	Coal: as for 990-996m.
	20	Claystone: as for 987-990m.
	10	Sandstone: very light brown, very fine to very coarse, dominantly medium, subangular to subrounded, poorly sorted, weak silica and calcareous cements, abundant medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, friable, poor to fair inferred porosity, no oil fluorescence.
999-1008	80	Coal: dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, often very argillaceous grading to claystone, trace amber, moderately hard, no fluorescence or cut.
	20	Sandstone: as for 987-990m.
1008-1017	Trace	Coal: as for 999-1008m.
	20	Claystone: medium to dark brown, moderately to very carbonaceous - grades to argillaceous coal, slightly to moderately silty, trace dispersed very fine to very coarse quartz sand grains in part, trace to common micromica, firm, very dispersive, subfissile.
	80	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica and calcareous cements, common to abundant medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, friable, fair to good inferred porosity, no oil fluorescence.
1017-1026	10	Coal: as for 999-1008m.
	20	Claystone: as for 1008-1017m.
	70	Sandstone: as for 1008-1017m.
1026-1035	40	Coal: as for 999-1008m.
	20	Claystone: as for 1008-1017m.
	40	Sandstone: very light brown, very fine to very coarse, dominantly very coarse, subangular to subrounded, poorly sorted, weak silica and calcareous cements, common medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, friable, good inferred porosity, no oil fluorescence.
1035-1044	40	Coal: as for 999-1008m.
	20	Claystone: as for 1008-1017m.
	40	Sandstone: very light brown, very fine to very coarse, dominantly medium, subangular to subrounded, poorly sorted, weak silica and calcareous cements, common medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, friable, fair to good inferred porosity, no oil fluorescence.
1044-1053	Trace	Coal: as for 999-1008m.

	100	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, trace medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, trace grey green and red brown lithics, friable, very good inferred porosity, no oil fluorescence.
1053-1062	30	Coal: dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, often very argillaceous grading to claystone, trace amber, moderately hard, no fluorescence or cut.
	10	Claystone: medium to dark brown, moderately to very carbonaceous - grades to argillaceous coal, slightly to moderately silty, trace dispersed very fine to very coarse quartz sand grains in part, trace to common micromica, firm, very dispersive, subfissile.
	60	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, trace medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, trace grey green and red brown lithics, friable, good inferred porosity, no oil fluorescence.
1062-1068	50	Coal: as for 1053-1062m.
	10	Claystone: as for 1053-1062m.
	40	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, trace to common medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, trace grey green and red brown lithics, friable, fair to good inferred porosity, no oil fluorescence.
1068-1071	10	Coal: dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, often very argillaceous grading to claystone, trace amber, moderately hard, no fluorescence or cut.
	90	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, common off white to medium brown argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, trace grey green and red brown lithics, friable, fair to good inferred porosity, no oil fluorescence.
1071-1077	10	Coal: as for 1068-1071m.
	10	Claystone: off white to dark brown, non to very carbonaceous - grades to argillaceous coal in part, slightly to moderately silty, trace dispersed very fine to very coarse quartz sand grains in part, nil to common micromica, firm, very dispersive, nonfissile to subfissile.
	80	Sandstone: as for 1068-1071m.
1077-1083	Trace	Coal: as for 1068-1071m.
	90	Claystone: off white to light brown, trace brown to black coaly material, slightly silty in part, trace dispersed very fine to very coarse quartz sand grains in part, nil to common micromica, firm, very dispersive, nonfissile to subfissile.
	10	Sandstone: as for 1068-1071m.
1083-1092	Trace	Coal: as for 1068-1071m.
	20	Claystone: as for 1077-1083m.
	80	Sandstone: very light brown, very fine to very coarse, dominantly medium, subangular to subrounded, poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains, common brown to black coal detritus, trace grey green and red brown lithics, friable, fair inferred porosity, no oil fluorescence.

1092-1104	Trace	Coal: as for 1068-1071m.
	20	Claystone: off white to dark brown, trace brown to black coaly material, very carbonaceous in part, moderately silty in part, trace dispersed very fine to very coarse quartz sand grains in part, nil to common micromica, firm, very dispersive, nonfissile to subfissile.
	80	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains, common brown to black coal detritus, trace grey green and red brown lithics, trace coarse mica flakes, friable, fair inferred porosity, no oil fluorescence.
1104-1110	Trace	Coal: as for 1068-1071m.
	10	Claystone: as for 1092-1104m.
	90	Sandstone: very light brown, very fine to very coarse, dominantly medium, subangular to subrounded, poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains, common brown to black coal detritus, trace grey green and red brown lithics, trace coarse mica flakes, friable, fair inferred porosity, no oil fluorescence.
1110-1116	Trace	Coal: as for 1068-1071m.
	80	Claystone: off white to light green to dark brown, very carbonaceous in part, moderately silty in part, trace dispersed very fine to very coarse quartz sand grains in part, common micromica, firm, very dispersive, nonfissile to subfissile.
	20	Sandstone: as for 1104-1110m.
1116-1122	10	Coal: dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, very argillaceous grading to claystone in part, trace amber, rare pyrite, moderately hard, no fluorescence or cut.
	80	Claystone: as for 1110-1116m.
	10	Sandstone: as for 1104-1110m.
1122-1125	Trace	Coal: as for 1116-1122m.
	90	Claystone: as for 1110-1116m.
	10	Sandstone: as for 1104-1110m.
1125-1131	10	Coal: as for 1116-1122m.
	10	Claystone: as for 1110-1116m.
	80	Sandstone: very light brown, very fine to very coarse, dominantly coarse to very coarse, subangular to subrounded, poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains, common brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, good inferred porosity, no oil fluorescence.
1131-1137	20	Coal: as for 1116-1122m.
	70	Claystone: off white to medium brown, moderately carbonaceous in part, moderately silty in part, trace dispersed very fine to very coarse quartz sand grains in part, common micromica, firm, very dispersive, subfissile.
	10	Sandstone: very light brown, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains, common brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, fair to good inferred porosity, no oil fluorescence.

1137-1140	Trace	Coal: as for 1116-1122m.
	30	Claystone: as for 1131-1137m.
	70	Sandstone: as for 1131-1137m.
1140-1149	Trace	Coal: as for 1116-1122m.
	50	Claystone: off white to light green to medium brown, moderately carbonaceous in part, moderately silty in part, trace dispersed very fine to very coarse quartz sand grains in part, common micromica, firm, very dispersive, subfissile.
	50	Sandstone: as for 1131-1137m.
1149-1155	Trace	Coal: as for 1116-1122m.
	10	Claystone: as for 1140-1149m.
	90	Sandstone: very light brown grey, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, good inferred porosity, no oil fluorescence.
1155-1164	Trace	Coal: as for 1116-1122m.
	70	Claystone: as for 1140-1149m.
	30	Sandstone: very light brown grey, very fine to very coarse, dominantly medium, subangular to subrounded, poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, common brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, good inferred porosity, no oil fluorescence.
1164-1170	100	Sandstone: light grey, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak silica cement, trace off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, trace grey green and red brown lithics, friable, good inferred porosity, no oil fluorescence.
1170-1185	Trace	Coal: as for 1116-1122m.
	10	Claystone: off white to occasionally light green to medium brown, moderately carbonaceous in part, moderately silty in part, trace dispersed very fine to very coarse quartz sand grains in part, common micromica, firm, very dispersive, subfissile.
	90	Sandstone: light grey, very fine to very coarse, dominantly coarse to very coarse, subangular to subrounded, poorly sorted, weak silica cement, trace off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, good inferred porosity, no oil fluorescence.
1185-1194	100	Sandstone: as for 1170-1185m.
1194-1200	100	Sandstone: light grey, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak silica cement, trace off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, good inferred porosity, no oil fluorescence.
1200-1203	10	Claystone: off white to occasionally light green and medium brown, moderately carbonaceous in part, moderately silty in part, common micromica, firm, very dispersive, subfissile.

	90	Sandstone: as for 1194-1200m.
1203-1209	20	Claystone: as for 1200-1203m.
	80	Sandstone: light grey, very fine to very coarse, dominantly medium, subangular to subrounded, poorly sorted, weak silica cement, common off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, fair inferred porosity, no oil fluorescence.
1209-1218	100	Sandstone: light grey, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak silica cement, trace off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, good inferred porosity, no oil fluorescence.
1218-1227	10	Claystone: as for 1200-1203m.
	90	Sandstone: as for 1209-1218m.
1227-1233	Trace	Coal: dark brown to black, earthy to subvitreous where clean, irregular to blocky fracture, very argillaceous grading to claystone in part, trace amber, rare pyrite, moderately hard, no fluorescence or cut.
	30	Claystone: as for 1200-1203m.
	70	Sandstone: light grey, very fine to very coarse, dominantly medium, subangular to subrounded, poorly sorted, weak silica cement, common off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, fair inferred porosity, no oil fluorescence.
1233-1239	10	Coal: as for 1227-1233m.
	30	Claystone: as for 1200-1203m.
	60	Sandstone: as for 1227-1233m.
1239-1242	Trace	Coal: as for 1227-1233m.
	30	Claystone: as for 1200-1203m.
	70	Sandstone: light grey, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak silica cement, common off white argillaceous matrix, clear to opaque quartz grains occasionally with brown argillaceous staining, trace brown to black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, fair to good inferred porosity, no oil fluorescence.
1242-1254	Trace	Coal: as for 1227-1233m.
	20	Claystone: as for 1200-1203m.
	80	Sandstone: as for 1239-1242m.
1254-1266	20	Coal: black to occasionally dark brown, earthy to subvitreous, irregular to blocky fracture, occasionally very argillaceous, trace amber, rare pyrite, moderately hard to brittle, no fluorescence or cut.
	60	Claystone: off white to light green, occasionally medium brown and moderately carbonaceous, slightly silty, trace black carbonaceous flecks, slightly calcareous, trace micromica, firm, very dispersive, subfissile.
	20	Sandstone: as for 1239-1242m.

Interval (m)	%	Description	PAGE: 12
1266-1269	50	Coal: as for 1254-1266m.	
	50	Claystone: as for 1254-1266m.	
	Trace	Sandstone: as for 1239-1242m.	
1269-1272	30	Coal: black to occasionally dark brown, earthy to subvitreous, blocky fracture, occasionally very argillaceous, trace amber, rare pyrite, moderately hard to brittle, no fluorescence or cut.	
	70	Claystone: off white to light green, occasionally medium brown and moderately carbonaceous, slightly silty, trace black carbonaceous flecks, slightly calcareous, trace micromica, firm, very dispersive, subfissile.	
1272-1275	20	Coal: black to occasionally dark brown, earthy to subvitreous, blocky fracture, occasionally very argillaceous, trace amber, rare pyrite, moderately hard to brittle, no fluorescence or cut.	
	40	Claystone: off white to light green, occasionally medium brown and moderately carbonaceous, slightly silty, trace black carbonaceous flecks, slightly calcareous, trace micromica, firm, very dispersive, subfissile.	
	40	Sandstone: light grey, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains, trace black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, poor to fair inferred porosity, no oil fluorescence.	
1275-1278	10	Coal: as for 1272-1275m.	
	70	Claystone: as for 1272-1275m.	
	20	Sandstone: as for 1272-1275m.	
1278-1284	10	Coal: as for 1272-1275m.	
	40	Claystone: as for 1272-1275m.	
	50	Sandstone: light grey, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak silica cement, common off white argillaceous matrix, clear to opaque quartz grains, trace black coal detritus, trace grey green and red brown lithics, trace pyrite, friable, fair inferred porosity, no oil fluorescence.	
1284-1293	Trace	Coal: as for 1272-1275m.	
	10	Claystone: as for 1272-1275m.	
	90	Sandstone: light grey, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, trace off white argillaceous matrix, clear to opaque quartz grains, trace black coal detritus, trace grey green lithics, trace pyrite, friable, good inferred porosity, no oil fluorescence.	
1293-1299	10	Coal: as for 1272-1275m.	
	10	Claystone: as for 1272-1275m.	
	80	Sandstone: as for 1284-1293m.	
1299-1302	100	Sandstone: light grey, very fine to very coarse, dominantly coarse to very coarse, subangular to subrounded, poorly sorted, weak silica cement, trace off white argillaceous matrix, clear to opaque quartz grains, trace black coal detritus, trace grey green lithics, trace pyrite, friable, very good inferred porosity, no oil fluorescence.	
1302-1304	100	Sandstone: light grey, very fine to very coarse, dominantly coarse to very coarse, subangular to subrounded, poorly sorted, weak silica cement, trace off white argillaceous matrix, clear to opaque quartz grains, trace black coal detritus, trace grey green lithics, common pyrite, friable, very good inferred porosity, no oil fluorescence.	

1304-1308	10	Coal: black to occasionally dark brown, earthy to subvitreous, blocky fracture, occasionally very argillaceous, trace amber, trace pyrite, moderately hard to brittle, no fluorescence or cut.
	80	Claystone: off white to light green grey to light brown grey, rarely medium brown grey to dark grey, slightly silty, trace black carbonaceous flecks, slightly calcareous, trace to common micromica, trace pyrite, firm, very dispersive, subfissile.
	10	Sandstone: as for 1299-1302m.
1308-1311	10	Coal: as for 1304-1308m.
	90	Claystone: as for 1304-1308m.
	Trace	Sandstone: as for 1304-1308m.
1311-1314	10	Coal: as for 1304-1308m.
	40	Claystone: off white to light brown to light green grey, slightly silty, trace black carbonaceous flecks in part, slightly calcareous in part, trace to common micromica, firm to moderately hard, very dispersive, subfissile to fissile.
	50	Sandstone: light grey to light brown grey, very fine to very coarse, dominantly fine, subangular to subrounded, poorly sorted, weak to moderate silica cement, common off white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, trace coarse brown and clear mica flakes, friable, poor to fair inferred porosity, no oil fluorescence.
1314-1320	Trace	Coal: as for 1304-1308m.
	40	Claystone: as for 1311-1314m.
	60	Sandstone: as for 1311-1314m.
1320-1326	20	Claystone: as for 1311-1314m.
	80	Sandstone: light grey to light brown grey, very fine to very coarse, dominantly fine to medium, subangular to subrounded, poorly sorted, weak to moderate silica cement, common off white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, trace coarse brown and clear mica flakes, friable, poor to fair inferred porosity, no oil fluorescence.
1326-1329	100	Sandstone: very light brown grey, very fine to very coarse, dominantly medium to coarse, subangular to subrounded, poorly sorted, weak to moderate silica cement, trace white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, friable, good inferred porosity, no oil fluorescence.
1329-1332	10	Claystone: as for 1311-1314m.
	90	Sandstone: very light brown grey, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak to moderate silica cement, common white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, friable, good inferred porosity, no oil fluorescence.
1332-1335	10	Coal: as for 1304-1308m.
	40	Claystone: off white to medium brown to dark brown grey, moderately silty, trace to common black carbonaceous flecks in part, slightly calcareous in part, trace to common micromica, firm to moderately hard, very dispersive, subfissile to fissile.
	50	Sandstone: as for 1329-1332m.
1335-1338	Trace	Coal: as for 1304-1308m.
	30	Claystone: as for 1332-1335m.

	70	Sandstone: very light brown grey, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak to moderate silica cement, common white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, friable, fair to good inferred porosity, no oil fluorescence.
1338-1344	30	Claystone: as for 1332-1335m.
	70	Sandstone: as for 1335-1338m.
1344-1347	Trace	Coal: as for 1304-1308m.
	20	Claystone: as for 1332-1335m.
	80	Sandstone: very light brown grey, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak to moderate silica cement, trace to common white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, friable, fair to good inferred porosity, no oil fluorescence.
1347-1350	40	Claystone: off white to medium brown to dark brown grey, slightly silty, trace to common black carbonaceous flecks and detritus, trace to common micromica, rare pyrite, firm to moderately hard, very dispersive, subfissile to fissile.
	60	Sandstone: as for 1344-1347m.
1350-1353	50	Claystone: as for 1347-1350m.
	50	Sandstone: as for 1344-1347m.
1353-1356	20	Coal: black to occasionally dark brown, earthy to occasionally subvitreous, irregular to blocky fracture, occasionally very argillaceous, trace amber, trace pyrite, moderately hard to brittle, no cut.
	80	Claystone: as for 1347-1350m.
	Trace	Sandstone: as for 1344-1347m.
1356-1359	10	Coal: as for 1353-1356m.
	90	Claystone: as for 1347-1350m.
	Trace	Sandstone: as for 1344-1347m.
1359-1362	30	Coal: black to very dark brown, earthy to subvitreous, irregular to blocky fracture, very argillaceous in part, trace amber, hard, brittle, no cut.
	60	Claystone: off white to medium brown to dark brown grey, slightly silty, trace to common black carbonaceous flecks and detritus, trace to common micromica, rare pyrite, firm to moderately hard, very dispersive, subfissile to fissile.
	10	Sandstone: very light brown grey, very fine to very coarse, dominantly fine, subangular to subrounded, poorly sorted, weak to moderate silica cement, common white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, friable, poor inferred porosity, no oil fluorescence.
1362-1365	10	Coal: as for 1359-1362m.
	80	Claystone: off white, light brown to dark brown grey, slightly to moderately silty, nil to common black carbonaceous flecks and detritus, trace to common micromica, moderately hard, very dispersive, subfissile.
	10	Sandstone: as for 1362-1365m.
1365-1371	40	Coal: as for 1359-1362m.

	50	Claystone: as for 1362-1365m.
	10	Sandstone: very light brown grey, very fine to coarse, dominantly fine, subangular to subrounded, poorly sorted, weak to moderate silica cement, common white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, friable, poor inferred porosity, no oil fluorescence.
1371-1374	10	Coal: as for 1359-1362m.
	80	Claystone: off white to light brown to dark brown grey, moderately silty, slightly carbonaceous, common black coaly material in part, common micromica, moderately hard, very dispersive, subfissile.
	10	Sandstone: very light brown grey, very fine to very coarse, dominantly fine, subangular to subrounded, poorly sorted, weak to moderate silica cement, common white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, friable, poor inferred porosity, no oil fluorescence.
1374-1380	Trace	Coal: as for 1359-1362m.
	40	Claystone: off white to light brown to dark brown grey, moderately silty, slightly carbonaceous, abundant dispersed very fine to fine quartz sand grains in part, common black coaly material in part, common micromica, moderately hard, very dispersive, subfissile.
	60	Sandstone: light brown grey, very fine to fine, occasional medium to coarse grains, subangular to subrounded, poorly sorted, moderate silica cement, common to abundant white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, trace black coaly detritus, moderately hard, very poor inferred porosity, no oil fluorescence.
1380-1386	Trace	Coal: as for 1359-1362m.
	30	Claystone: as for 1374-1380m.
	70	Sandstone: light brown grey, very fine to very coarse, dominantly fine, subangular to subrounded, poorly sorted, moderate silica cement, common to abundant white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, trace black coaly detritus, moderately hard, very poor to poor inferred porosity, no oil fluorescence.
1386-1389	Trace	Coal: as for 1359-1362m.
	50	Claystone: as for 1374-1380m.
	50	Sandstone: as for 1380-1386m.
1389-1392	20	Siltstone: light brown grey to dark grey, moderately argillaceous, abundant very fine to fine dispersed quartz and altered feldspar sand grains in part, common black coaly laminae and detritus, trace micromica, moderately hard, very dispersive, subfissile.
	80	Sandstone: light grey to light brown, very fine to very coarse, dominantly medium, angular to subangular, very poorly sorted, strong silica cement, common to abundant off white argillaceous matrix, clear to milky quartz grains, trace grey green volcanogenic lithics, trace coarse mica flakes, hard, very poor visual porosity, no oil fluorescence.
1392-1395	10	Claystone: light to medium green, trace black carbonaceous specks, moderately hard, very dispersive, subfissile.
	10	Siltstone: light brown grey to dark grey, moderately argillaceous, abundant very fine to fine dispersed quartz and altered feldspar sand grains in part, common black coaly laminae and detritus, trace micromica, moderately hard, very dispersive, subfissile.
	80	Sandstone: light grey to light brown, very fine to very coarse, dominantly medium, angular to subangular, very poorly sorted, strong silica cement, abundant off white argillaceous matrix, clear to milky quartz grains, common grey green volcanogenic lithics, trace coarse mica flakes, trace pyrite, hard, very poor visual porosity, no oil fluorescence.
1395-1398	20	Siltstone: as for 1392-1395m.

Interval (m)	%	Description
	80	Sandstone: off white to light green grey to medium brown, very fine to very coarse, dominantly fine, angular to subangular, very poorly sorted, strong silica cement, abundant off white argillaceous matrix - matrix supported, clear to milky quartz grains, common to abundant grey green volcanogenic lithics, common black coaly detritus, trace pyrite, hard, no visual porosity, no oil fluorescence.
1398-1401	Trace	Siltstone: as for 1392-1395m.
	100	Sandstone: as for 1395-1398m.
1401-1404	10	Siltstone: light grey to light brown grey, moderately to very argillaceous, abundant very fine to fine dispersed quartz and altered feldspar sand grains in part, trace fine black carbonaceous detritus, trace micromica, moderately hard, very dispersive, subfissile.
	90	Sandstone: as for 1395-1398m.
1404-1407	10	Claystone: light grey to light green, trace black carbonaceous specks, moderately hard, very dispersive, subfissile.
	20	Siltstone: as for 1401-1404m.
	70	Sandstone: as for 1395-1398m.
1407-1416	40	Siltstone: light grey to medium grey, moderately to very argillaceous, often abundant very fine to fine dispersed quartz and altered feldspar sand grains - grades to sandstone, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile.
	60	Sandstone: off white to medium grey to occasionally medium brown, very fine to very coarse, dominantly fine, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported and grading to siltstone, clear to milky quartz grains, common to abundant grey green volcanogenic lithics and altered feldspar grains, trace brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
1416-1419	50	Siltstone: light grey to medium grey to occasionally medium green grey, moderately to very argillaceous, often abundant very fine to fine dispersed quartz and altered feldspar sand grains - grades to sandstone, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile.
	50	Sandstone: off white to medium grey to occasionally medium brown, very fine to medium, occasional coarse to very coarse grains, dominantly fine, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported and grading to siltstone, clear to milky quartz grains, common to abundant grey green volcanogenic lithics and altered feldspar grains, trace brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
1419-1425	60	Siltstone: as for 1416-1419m.
	40	Sandstone: as for 1419-1425m.
1425-1431	70	Siltstone: as for 1416-1419m.
	30	Sandstone: off white to medium grey to occasionally medium brown, very fine to medium, dominantly fine, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported and grading to siltstone, clear to milky quartz grains, common to abundant grey green volcanogenic lithics and altered feldspar grains, trace brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
1431-1434	60	Siltstone: as for 1416-1419m.
	40	Sandstone: as for 1425-1431m.

1434-1437	30	Siltstone: light grey to medium grey to occasionally medium green grey, moderately to very argillaceous, often abundant very fine dispersed quartz and altered feldspar sand grains - grades to sandstone, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile.
	70	Sandstone: as for 1425-1431m.
1437-1440	20	Siltstone: as for 1434-1437m.
	80	Sandstone: off white to medium grey to occasionally medium brown, very fine to fine, dominantly very fine, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported and grading to siltstone, clear to milky quartz grains, abundant altered feldspar grains, common grey green volcanogenic lithics, trace red and brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
1440-1446	10	Siltstone: light grey to medium grey to occasionally medium green grey, dominantly medium grey, moderately to very argillaceous, often abundant very fine dispersed quartz and altered feldspar sand grains - grades to sandstone, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar grains, common grey green volcanogenic lithics, trace red and brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
1446-1452	Trace	Siltstone: as for 1440-1446m.
	100	Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar grains, common grey green volcanogenic lithics, trace red and brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
1452-1458	Trace	Siltstone: as for 1440-1446m.
	100	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar grains, common grey green volcanogenic lithics, trace red and brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
1458-1464	100	Sandstone: off white to medium grey, very fine to medium, dominantly medium, occasional coarse to very coarse grains, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar grains, common grey green volcanogenic lithics, trace red and brown lithics, trace black carbonaceous material, trace pyrite, hard, nil to very poor visual porosity, no oil fluorescence.
1464-1467	10	Siltstone: as for 1440-1446m.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, poorly sorted, moderate to strong silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar grains, common grey green volcanogenic lithics, trace red and brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
1467-1473	30	Siltstone: light to medium grey to medium brown grey, moderately to very argillaceous, often abundant very fine dispersed quartz and altered feldspar sand grains - grades to sandstone, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile.
	70	Sandstone: as for 1464-1467m.

1473-1479	50	Siltstone: as for 1467-1473m.
	50	Siltstone: as for 1467-1473m.
1479-1485	30	Siltstone: as for 1467-1473m.
	70	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, poorly sorted, moderate silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar grains, common to abundant grey green volcanogenic lithics, trace to common red and brown lithics, trace black carbonaceous material, trace pyrite, hard, no visual porosity, no oil fluorescence.
1485-1488	10	Siltstone: as for 1467-1473m.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, trace to common red and brown lithics, trace black carbonaceous material, trace pyrite, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1488-1491	10	Siltstone: as for 1467-1473m.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, occasional coarse aggregates, angular to subangular, moderately sorted, moderate silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, trace to common red and brown lithics, trace black carbonaceous material, trace pyrite, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1491-1494	10	Siltstone: light to medium grey to medium brown grey, dominantly medium grey, moderately to very argillaceous, often abundant very fine dispersed quartz and altered feldspar sand grains - grades to sandstone, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, trace to common red and brown lithics, trace black carbonaceous material, trace pyrite, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1494-1500	10	Siltstone: as for 1491-1494m.
	90	Sandstone: as for 1491-1494m.
1500-1506	10	Siltstone: as for 1491-1494m.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, occasional coarse aggregates, angular to subangular, moderately sorted, moderate silica cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, trace to common red and brown lithics, trace black carbonaceous material, trace pyrite, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1506-1518	10	Siltstone: light to medium grey to medium brown grey to medium green grey, moderately to very argillaceous, often abundant very fine to fine dispersed sand grains - grades to sandstone, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, occasional coarse aggregates, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.

1518-1524	30	Siltstone: light to medium grey to medium green grey to occasionally medium brown grey, moderately to very argillaceous, often abundant very fine to fine dispersed sand grains - grades to sandstone, trace black carbonaceous material, trace micromica, moderately hard, very dispersive, subfissile.
	70	Sandstone: as for 1506-1518m.
1524-1527	50	Siltstone: as for 1518-1524m.
	50	Sandstone: off white to medium grey, very fine to medium, dominantly fine, occasional coarse aggregates, angular to subangular, moderately sorted, moderate silica cement, weak to moderate calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1527-1530	40	Siltstone: as for 1518-1524m.
	60	Sandstone: as for 1524-1527m.
1530-1533	30	Siltstone: as for 1518-1524m.
	70	Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, angular to subangular, moderately sorted, moderate silica cement, weak to moderate calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1533-1539	40	Siltstone: light to medium grey to medium green grey to occasionally medium brown grey, moderately to very argillaceous, often abundant very fine to fine dispersed sand grains - grades to sandstone, common black carbonaceous material, trace micromica, moderately hard, very dispersive, subfissile.
	60	Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, angular to subangular, moderately sorted, moderate silica cement, weak to moderate calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, common black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1539-1542	50	Siltstone: light to medium grey to medium green grey to occasionally medium brown grey, moderately to very argillaceous, often abundant very fine to fine dispersed sand grains - grades to sandstone, trace black carbonaceous material, trace micromica, moderately hard, very dispersive, subfissile.
	50	Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, angular to subangular, moderately sorted, moderate silica cement, weak to moderate calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1542-1545	60	Siltstone: as for 1539-1542m.
	40	Sandstone: as for 1539-1542m.
1545-1554	50	Siltstone: as for 1539-1542m.

	50	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1554-1557	30	Siltstone: as for 1539-1542m.
	70	Sandstone: as for 1545-1554m.
1557-1560	10	Siltstone: light to medium grey to medium green grey, moderately to very argillaceous, often abundant very fine to fine dispersed sand grains - grades to sandstone, trace black carbonaceous material, trace micromica, moderately hard, very dispersive, subfissile.
	90	Sandstone: as for 1545-1554m.
1560-1566	20	Siltstone: as for 1557-1560m.
	80	Sandstone: as for 1545-1554m.
1566-1569	10	Siltstone: as for 1557-1560m.
	90	Sandstone: as for 1545-1554m.
1569-1572	10	Siltstone: as for 1557-1560m.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine, occasional coarse grains, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1572-1578	Trace	Siltstone: light to medium grey to medium green grey, moderately to very argillaceous, often abundant very fine to fine dispersed sand grains - grades to sandstone, trace black carbonaceous material, trace micromica, moderately hard, very dispersive, subfissile.
	100	Sandstone: off white to medium grey, very fine to medium, dominantly medium, occasional coarse grains, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, very poor visual porosity, no oil fluorescence.
1578-1593	10	Siltstone: as for 1572-1578m.
	90	Sandstone: as for 1572-1578m.
1593-1596	70	Siltstone: medium grey to medium brown grey, very argillaceous, trace very fine to fine dispersed sand grains - grades to sandstone in part, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile.
	30	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1596-1602	50	Siltstone: as for 1593-1596m.
	50	Sandstone: as for 1593-1596m.
1602-1614	60	Siltstone: as for 1593-1596m.

	40	Sandstone: as for 1593-1596m.
1614-1620	40	Siltstone: off white to medium grey to medium brown grey, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part- grades to sandstone, trace black carbonaceous specks, trace micromica, moderately hard, very dispersive, subfissile.
	60	Sandstone: off white to medium grey, very fine to dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1620-1623	20	Siltstone: as for 1614-1620m.
	80	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1623-1626	60	Siltstone: as for 1614-1620m.
	40	Sandstone: as for 1620-1623m.
1626-1629	50	Siltstone: as for 1614-1620m.
	50	Sandstone: as for 1614-1620m.
1629-1635	40	Siltstone: off white to medium grey to medium brown grey, moderately to very argillaceous, abundant very fine dispersed sand grains in part- grades to sandstone, trace black carbonaceous specks and occasional fine detritus, trace micromica, moderately hard, very dispersive, subfissile.
	60	Sandstone: off white to medium grey, very fine to fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1635-1638	30	Siltstone: as for 1629-1638m.
	70	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1638-1641	10	Siltstone: as for 1629-1638m.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green volcanogenic lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1641-1647	20	Siltstone: as for 1629-1638m.
	80	Sandstone: as for 1638-1641m.
1647-1650	30	Siltstone: as for 1629-1638m.
	70	Sandstone: as for 1638-1641m., with abundant c-vc quartz sand grain cavings after trip.

1650-1662	10	Siltstone: off white to medium grey to medium brown grey, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part- grades to sandstone, trace to common black carbonaceous specks and occasional fine detritus, trace micromica, moderately hard, very dispersive, subfissile.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1662-1674	10	Siltstone: off white to medium grey to medium brown grey, occasionally medium brown, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part- grades to sandstone, trace to common black carbonaceous specks and occasional fine detritus, trace micromica, moderately hard, very dispersive, subfissile.
	90	Sandstone: as for 1650-1662m.
1674-1683	10	Siltstone: as for 1662-1674m.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, trace coarse grains, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1683-1686	70	Siltstone: light to medium grey to medium brown grey, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part- grades to sandstone, trace to common black carbonaceous specks and occasional fine detritus, trace micromica, moderately hard, very dispersive, subfissile.
	30	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1686-1689	60	Siltstone: as for 1683-1686m.
	40	Sandstone: as for 1683-1686m.
1689-1692	30	Siltstone: as for 1683-1686m.
	70	Sandstone: as for 1683-1686m.
1692-1695	40	Siltstone: light to medium grey to medium brown grey, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part- grades to sandstone, common black carbonaceous specks and detritus, trace micromica, moderately hard, very dispersive, subfissile.
	60	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, common black coaly material, moderately hard, no visual porosity, no oil fluorescence.
1695-1698	40	Siltstone: light to medium grey to medium brown grey, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part- grades to sandstone, common black coal detritus with abundant pyrite, trace micromica, moderately hard, very dispersive, subfissile.

	60	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, strong pyrite cement in part, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, common black coal detritus with associated pyrite, moderately hard, no visual porosity, no oil fluorescence.
1698-1704	50	Siltstone: light to medium grey to medium brown grey, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part- grades to sandstone, trace to common black carbonaceous specks and occasional detritus, trace micromica, moderately hard, very dispersive, subfissile.
	50	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1704-1710	40	Siltstone: as for 1698-1704m.
	60	Sandstone: off white to medium grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1710-1716	30	Siltstone: as for 1698-1704m.
	70	Sandstone: as for 1704-1710m.
1716-1725	20	Siltstone: as for 1698-1704m.
	80	Sandstone: as for 1704-1710m.
1725-1728	10	Siltstone: off white to medium grey to medium brown grey, moderately to very argillaceous, abundant very fine to fine dispersed sand grains in part- grades to sandstone, trace to common black carbonaceous specks and occasional detritus, trace micromica, moderately hard, very dispersive, subfissile.
	90	Sandstone: off white to medium grey, very fine to medium, dominantly fine to medium, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1728-1731	30	Siltstone: as for 1725-1728m.
	70	Sandstone: light to medium green grey, very fine to medium, dominantly to medium, angular to subangular, moderately sorted, moderate to strong silica and calcareous cements, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace to common red and brown lithics, trace black carbonaceous material, hard, no visual porosity, no oil fluorescence.
1731-1737	60	Siltstone: as for 1725-1728m.
	40	Sandstone: as for 1728-1731m.
1737-1740	90	Siltstone: light to medium brown grey, light to medium green grey, medium grey, moderately to very argillaceous, occasionally very finely arenaceous - grades to sandstone in part, slightly calcareous, trace to common black carbonaceous flecks, trace micromica, moderately hard, very dispersive, subfissile.
	10	Sandstone: as for 1728-1731m.

1740-1743	90	Siltstone: light to medium brown grey, medium green, medium grey, moderately to very argillaceous, occasionally very finely arenaceous - grades to sandstone in part, slightly calcareous, trace to common black carbonaceous flecks, trace micromica, moderately hard, very dispersive, subfissile.
	10	Sandstone: as for 1728-1731m.
1743-1746	70	Siltstone: light to medium brown grey, light to medium green grey, medium grey, moderately to very argillaceous, occasionally very finely arenaceous - grades to sandstone in part, slightly calcareous, trace to common black carbonaceous flecks, trace micromica, moderately hard, very dispersive, subfissile.
	30	Sandstone: off white to medium green grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica cement, weak calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, clear to milky quartz grains, abundant altered feldspar and grey green lithics, trace red and brown lithics, trace black carbonaceous material, moderately hard, no visual porosity, no oil fluorescence.
1746-1749	70	Siltstone: as for 1743-1746m.
	30	Sandstone: as for 1743-1746m.
1749-1755	50	Siltstone: as for 1743-1746m.
	50	Sandstone: as for 1743-1746m.
1755-1761	40	Siltstone: light to medium grey to medium brown grey, moderately to very argillaceous, occasionally very finely arenaceous - grades to sandstone in part, trace black carbonaceous flecks and detritus, trace micromica, moderately hard, moderately dispersive, subfissile.
	60	Sandstone: off white to medium green grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, trace red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity.
	Fluor	The sandstone has trace dull patchy light yellow fluorescence giving a weak dull yellow white crush cut, trace residue.
1761-1764	40	Siltstone: as for 1755-1761m.
	60	Sandstone: as for 1755-1761m.
	Fluor	The sandstone has trace dull moderately bright patchy light yellow fluorescence giving a weak dull yellow white crush cut, thin ring residue.
1764-1767	60	Siltstone: light to medium brown grey, medium grey to medium green grey, moderately to very argillaceous, occasionally very finely arenaceous - grades to sandstone in part, trace black carbonaceous flecks and detritus, trace micromica, moderately hard, moderately dispersive, subfissile.
	40	Sandstone: as for 1755-1761m.
	Fluor	The sandstone has trace to 1% dull moderately bright patchy light yellow fluorescence giving a weak dull yellow white crush cut, thin ring residue.
1767-1773	80	Siltstone: light to medium brown grey, medium grey to medium green grey, moderately to very argillaceous, occasionally very finely arenaceous - grades to sandstone in part, trace black carbonaceous flecks and detritus, trace micromica, moderately hard, moderately dispersive, subfissile.
	20	Sandstone: off white to medium green grey, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, trace red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity.

	Fluor	The sandstone has trace to 1% dull moderately bright patchy light yellow fluorescence giving a weak dull yellow white crush cut, thin ring residue.
1773-1776	50	Siltstone: as for 1767-1773m.
	50	Sandstone: as for 1767-1773m.
	Fluor	The sandstone has trace dull moderately bright patchy light yellow fluorescence giving a weak dull yellow white crush cut, thin ring residue.
1776-1779	40	Siltstone: as for 1767-1773m.
	60	Sandstone: as for 1767-1773m.
	Fluor	Fluorescence: as for 1773-1776m.
1779-1782	30	Siltstone: as for 1767-1773m.
	70	Sandstone: off white to medium green grey to medium green, very fine to medium, dominantly fine, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, nil to very poor visual porosity.
	Fluor	Fluorescence: as for 1773-1776m.
1782-1785	10	Siltstone: medium grey to medium green grey to medium brown grey, moderately to very argillaceous, very finely arenaceous in part - grades to sandstone, trace black carbonaceous flecks, trace micromica, moderately hard, moderately dispersive, subfissile.
	90	Sandstone: light to medium green grey, very fine to medium, dominantly medium, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, very poor visual porosity, no oil fluorescence.
1785-1788	40	Siltstone: as for 1773-1776m.
	60	Sandstone: as for 1782-1785m.
1788-1791	20	Siltstone: as for 1773-1776m.
	80	Sandstone: light to medium green grey, very fine to medium, dominantly fine to medium, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, very poor visual porosity, no oil fluorescence.
1791-1794	10	Siltstone: as for 1773-1776m.
	90	Sandstone: light to medium green grey, very fine to coarse, dominantly medium, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, common red and brown lithics, trace black carbonaceous material, moderately hard, very poor visual porosity, no oil fluorescence.
1794-1797	50	Siltstone: light to medium brown grey to medium green grey to medium grey, moderately to very argillaceous, very finely arenaceous in part - grades to sandstone, trace black carbonaceous flecks, trace micromica, moderately hard, moderately dispersive, subfissile.
	50	Sandstone: as for 1791-1794m.
1797-1800	70	Siltstone: as for 1794-1797m.

Interval (m)	%	Description	PAGE: 26
	30	Sandstone: as for 1791-1794m.	
1800-1803 T.D.	80	Siltstone: light to medium brown grey to medium green grey to medium grey, moderately to very argillaceous, very finely arenaceous in part - grades to sandstone, trace black carbonaceous flecks, trace micromica, moderately hard, moderately dispersive, subfissile.	
	20	Sandstone: light to medium green grey, very fine to coarse, dominantly medium, angular to subangular, moderately sorted, moderate silica and calcareous cement, abundant off white argillaceous and silt matrix - matrix supported, abundant altered feldspar and grey green lithics, common red and brown lithics, trace black carbonaceous material, trace pyrite, moderately hard, very poor visual porosity, no oil fluorescence.	
		TOTAL DEPTH 1803m REACHED 0900 hrs 23rd December, 1998.	

APPENDIX 4

APPENDIX 4

BIT & HYDRAULIC RECORD

Contractor: OD&E Rig #30					**Location:** Gippsland Basin, Victoria							**Well:** McCreesh No 1				
Operator: Roma Petroleum NL					**Permit:** PEP 137							**Engineer:** M Docherty				
Pump Name		**Model**	**Liner Size/Stroke**		**Drill Collars OD & ID x Length**		**Drill Pipe**		**Tool Joint Size & Type**		**Wt/ft**	**Pump Output Bbls/stroke**				
Gardner-Denver		PZ8	6" x 8"		6 1/2" x 2 1/4" x 30'		4 1/2" Grade G		6 1/4" IF		16.60	0.0699				
Date 1998	**Bit #**	**Size (ins)**	**Make**	**Type**	**Jet Size**	**Depth Out**	**Metres Drilled**	**Hours Run**	**Wt on Bit**	**Rpm**	**Pump Pressure**	**Stks min**	**Annular Velocity (m/min)**	**Condition**		
11 Dec	1	12 1/4	Varel	L114	3 x 18	320	320	17 1/2	5/10	150	750	2 x 125	40	T	B	G
12 Dec	2	8 1/2	Varel	L137	3 x 11	665	345	22 1/2	20	120	1000	100	40	1	1	In
14 Dec	3 (RR)	8 1/2	HTC	ATJ05	3 x 11	1304	639	32 1/2	20/25	120	1350	120	48	2	2	1/8"
16 Dec	4 (RR)	8 1/2	HTC	J22	3 x 11	1360	56	15	20	100-110	1400	115	46	7	8	1/2"
18 Dec	5	8 1/2	HTC	ATJ05	3 x 11	1644	284	59 1/2	25	50	1250	120	48	6	4	1/8"
21 Dec	6	8 1/2	HTC	ATJ33	3 x 11	1803TD	139	38	25	70	1400	115	46	3	3	1/8"

PE904558

This is an enclosure indicator page.
The enclosure PE904558 is enclosed within the container PE904557 at this location in this document.

The enclosure PE904558 has the following characteristics:

ITEM_BARCODE	PE904558
CONTAINER_BARCODE	PE904557
NAME	TWT Structure Map - Golden Beach
BASIN	GIPPSLAND
ONSHORE?	Y
DATA_TYPE	SEISMIC
DATA_SUB_TYPE	ISOCHRON_MAP
DESCRIPTION	Two Way Time Structure Map Near Top Golden Beach Seismic Marker, 1:15000, C.I.10msec, Enclosure 1 from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227
REMARKS	
DATE_WRITTEN	30-SEP-1997
DATE_PROCESSED	
DATE_RECEIVED	17-JUN-1999
RECEIVED_FROM	Roma Petroleum NL
WELL_NAME	McCreesh-1
CONTRACTOR	
AUTHOR	R.Meaney
ORIGINATOR	Roma Petroleum NL
TOP_DEPTH	
BOTTOM_DEPTH	
ROW_CREATED_BY	TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE904559

This is an enclosure indicator page.
The enclosure PE904559 is enclosed within the container PE904557 at this location in this document.

The enclosure PE904559 has the following characteristics:

ITEM_BARCODE	= PE904559
CONTAINER_BARCODE	= PE904557
NAME	= TWT Structure Map - Lower Intra Latrobe
BASIN	= GIPPSLAND
ONSHORE?	= Y
DATA_TYPE	= SEISMIC
DATA_SUB_TYPE	= ISOCHRON_MAP
DESCRIPTION	= Two Way Time Structure Map Lower Intra Latrobe Seismic Marker, 1:15000, C.I.10msec, Enclosure 2 from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227
REMARKS	=
DATE_WRITTEN	= 30-SEP-1997
DATE_PROCESSED	=
DATE_RECEIVED	= 17-JUN-1999
RECEIVED_FROM	= Roma Petroleum NL
WELL_NAME	= McCreesh-1
CONTRACTOR	=
AUTHOR	= R.Meaney
ORIGINATOR	= Roma Petroleum NL
TOP_DEPTH	=
BOTTOM_DEPTH	=
ROW_CREATED_BY	= TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE904560

This is an enclosure indicator page.
The enclosure PE904560 is enclosed within the container PE904557 at this location in this document.

The enclosure PE904560 has the following characteristics:

ITEM_BARCODE	= PE904560
CONTAINER_BARCODE	= PE904557
NAME	= TWT Structure Map - Middle Intra Latrobe
BASIN	= GIPPSLAND
ONSHORE?	= Y
DATA_TYPE	= SEISMIC
DATA_SUB_TYPE	= ISOCHRON_MAP
DESCRIPTION	= Two Way Time Structure Map Middle Intra Latrobe Seismic Marker, 1:15000, C.I.10msec, Enclosure 3 from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227
REMARKS	=
DATE_WRITTEN	= 30-SEP-1997
DATE_PROCESSED	=
DATE_RECEIVED	= 17-JUN-1999
RECEIVED_FROM	= Roma Petroleum NL
WELL_NAME	= McCreesh-1
CONTRACTOR	=
AUTHOR	= R.Meaney
ORIGINATOR	= Roma Petroleum NL
TOP_DEPTH	=
BOTTOM_DEPTH	=
ROW_CREATED_BY	= TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE904561

This is an enclosure indicator page.
The enclosure PE904561 is enclosed within the container PE904557 at this location in this document.

The enclosure PE904561 has the following characteristics:

ITEM_BARCODE	= PE904561
CONTAINER_BARCODE	= PE904557
NAME	= TWT Structure Map - Upper Intra Latrobe
BASIN	= GIPPSLAND
ONSHORE?	= Y
DATA_TYPE	= SEISMIC
DATA_SUB_TYPE	= ISOCHRON_MAP
DESCRIPTION	= Two Way Time Structure Map Upper Intra Latrobe Seismic Marker, 1:15000, C.I.10msec, Enclosure 4 from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227
REMARKS	=
DATE_WRITTEN	= 30-SEP-1997
DATE_PROCESSED	=
DATE_RECEIVED	= 17-JUN-1999
RECEIVED_FROM	= Roma Petroleum NL
WELL_NAME	= McCreesh-1
CONTRACTOR	=
AUTHOR	= R.Meaney
ORIGINATOR	= Roma Petroleum NL
TOP_DEPTH	=
BOTTOM_DEPTH	=
ROW_CREATED_BY	= TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE904562

This is an enclosure indicator page.
The enclosure PE904562 is enclosed within the container PE904557 at this location in this document.

The enclosure PE904562 has the following characteristics:

ITEM_BARCODE	PE904562
CONTAINER_BARCODE	PE904557
NAME	TWT Structure Map - Top Latrobe Group
BASIN	GIPPSLAND
ONSHORE?	Y
DATA_TYPE	SEISMIC
DATA_SUB_TYPE	ISOCHRON_MAP
DESCRIPTION	Two Way Time Structure Map Top Latrobe Group Seismic Marker, 1:15000, C.I.10msec, Enclosure 5 from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227
REMARKS	
DATE_WRITTEN	30-SEP-1997
DATE_PROCESSED	
DATE_RECEIVED	17-JUN-1999
RECEIVED_FROM	Roma Petroleum NL
WELL_NAME	McCreesh-1
CONTRACTOR	
AUTHOR	R.Meaney
ORIGINATOR	Roma Petroleum NL
TOP_DEPTH	
BOTTOM_DEPTH	
ROW_CREATED_BY	TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE904563

This is an enclosure indicator page.
The enclosure PE904563 is enclosed within the container PE904557 at this location in this document.

The enclosure PE904563 has the following characteristics:

ITEM_BARCODE	= PE904563
CONTAINER_BARCODE	= PE904557
NAME	= GCR-87A-13 Monkey Creek Seismic Survey
BASIN	= GIPPSLAND
ONSHORE?	= Y
DATA_TYPE	= SEISMIC
DATA_SUB_TYPE	= INTERP_SECTION
DESCRIPTION	= Seismic Line GRCR-87A-13, showing McCreesh-1 Location. Crusader Resources N.L. PEP120 Victoria. Migrated Stack, VPS 1000 to 1276, Enclosure 6 from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227
REMARKS	=
DATE_WRITTEN	= 19-AUG-1987
DATE_PROCESSED	=
DATE_RECEIVED	= 17-JUN-1999
RECEIVED_FROM	= Roma Petroleum NL
WELL_NAME	= McCreesh-1
CONTRACTOR	=
AUTHOR	=
ORIGINATOR	= Roma Petroleum NL
TOP_DEPTH	=
BOTTOM_DEPTH	=
ROW_CREATED_BY	= TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE605394

This is an enclosure indicator page.
The enclosure PE605394 is enclosed within the container PE904557 at this location in this document.

The enclosure PE605394 has the following characteristics:

ITEM_BARCODE	PE605394
CONTAINER_BARCODE	PE904557
NAME	Formation Evaluation Log
BASIN	GIPPSLAND
ONSHORE?	Y
DATA_TYPE	WELL
DATA_SUB_TYPE	MUD_LOG
DESCRIPTION	Formation Evaluation Log McCreesh-1, Enclosure 7 from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227
REMARKS	
DATE_WRITTEN	24-DEC-1998
DATE_PROCESSED	
DATE_RECEIVED	17-JUN-1999
RECEIVED_FROM	Roma Petroleum NL
WELL_NAME	McCreesh-1
CONTRACTOR	
AUTHOR	
ORIGINATOR	Roma Petroleum NL
TOP_DEPTH	310
BOTTOM_DEPTH	1803
ROW_CREATED_BY	TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE605395

This is an enclosure indicator page.
The enclosure PE605395 is enclosed within the container PE904557 at this location in this document.

The enclosure PE605395 has the following characteristics:

ITEM_BARCODE	PE605395
CONTAINER_BARCODE	PE904557
NAME	Wireline Log McCreesh-1
BASIN	GIPPSLAND
ONSHORE?	Y
DATA_TYPE	WELL
DATA_SUB_TYPE	WELL_LOG
DESCRIPTION	Wireline Log McCreesh-1, DLL-ML-MLL-SONIC LOG, 1:200, Enclosure 8a from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227, Photocopy of original log
REMARKS	
DATE_WRITTEN	24-DEC-1998
DATE_PROCESSED	
DATE_RECEIVED	17-JUN-1999
RECEIVED_FROM	Roma Petroleum NL
WELL_NAME	McCreesh-1
CONTRACTOR	
AUTHOR	
ORIGINATOR	Roma Petroleum NL
TOP_DEPTH	0
BOTTOM_DEPTH	811.5
ROW_CREATED_BY	TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE605396

This is an enclosure indicator page.
The enclosure PE605396 is enclosed within the container PE904557 at this location in this document.

The enclosure PE605396 has the following characteristics:

ITEM_BARCODE	PE605396
CONTAINER_BARCODE	PE904557
NAME	Wireline Log McCreesh-1
BASIN	GIPPSLAND
ONSHORE?	Y
DATA_TYPE	WELL
DATA_SUB_TYPE	WELL_LOG
DESCRIPTION	Wireline Log McCreesh-1, DLL-ML-MLL-SONIC LOG, 1:500, Enclosure 8b from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227, Photocopy of original log
REMARKS	
DATE_WRITTEN	24-DEC-1998
DATE_PROCESSED	
DATE_RECEIVED	17-JUN-1999
RECEIVED_FROM	Roma Petroleum NL
WELL_NAME	McCreesh-1
CONTRACTOR	
AUTHOR	
ORIGINATOR	Roma Petroleum NL
TOP_DEPTH	0
BOTTOM_DEPTH	811.5
ROW_CREATED_BY	TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE605397

This is an enclosure indicator page.
The enclosure PE605397 is enclosed within the container PE904557 at this location in this document.

The enclosure PE605397 has the following characteristics:

ITEM_BARCODE	PE605397
CONTAINER_BARCODE	PE904557
NAME	Wireline Log McCreesh-1
BASIN	GIPPSLAND
ONSHORE?	Y
DATA_TYPE	WELL
DATA_SUB_TYPE	WELL_LOG
DESCRIPTION	Wireline Log McCreesh-1, DLL-ML-MLL-SONIC LOG, 1:200, Enclosure from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227
REMARKS	
DATE_WRITTEN	24-DEC-1998
DATE_PROCESSED	
DATE_RECEIVED	17-JUN-1999
RECEIVED_FROM	Roma Petroleum NL
WELL_NAME	McCreesh-1
CONTRACTOR	
AUTHOR	
ORIGINATOR	Roma Petroleum NL
TOP_DEPTH	0
BOTTOM_DEPTH	811.5
ROW_CREATED_BY	TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)

PE605398

This is an enclosure indicator page.
The enclosure PE605398 is enclosed within the container PE904557 at this location in this document.

The enclosure PE605398 has the following characteristics:

ITEM_BARCODE	PE605398
CONTAINER_BARCODE	PE904557
NAME	Wireline Log McCreesh-1
BASIN	GIPPSLAND
ONSHORE?	Y
DATA_TYPE	WELL
DATA_SUB_TYPE	WELL_LOG
DESCRIPTION	Wireline Log McCreesh-1, DLL-ML-MLL-SONIC LOG, 1:500, Enclosure from WCR MCreesh-1, PEP 137, Roma Petroleum NL, September 1997, W1227
REMARKS	
DATE_WRITTEN	24-DEC-1998
DATE_PROCESSED	
DATE_RECEIVED	17-JUN-1999
RECEIVED_FROM	Roma Petroleum NL
WELL_NAME	McCreesh-1
CONTRACTOR	
AUTHOR	
ORIGINATOR	Roma Petroleum NL
TOP_DEPTH	0
BOTTOM_DEPTH	811.5
ROW_CREATED_BY	TB09_TADMIN

(Inserted by DNRE - Vic Govt Mines Dept)