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W915 WHIPTAIL-1A

ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

WELL COMPLETION REPORT
WHIPTAIL-1A
INTERPRETED DATA
VOLUME 11

GIPPSLAND BASIN
VICTORIA

ESSO AUSTRALIA LIMITED

Compiled by: P.A.ARDITTO / G.F.BIRCH SEPT. 1986

WHIPTAIL-1A

WELL COMPLETION REPORT

VOLUME II

(Interpreted Data)

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WHIPTAIL-1A

GEOLOGICAL AND GEOPHYSICAL ANALYSIS

AGE	FORMATION TOPS	DEPTH		
		Predicted	Drilled	
		(mKB)	(mKB)	(mSS)
Not sampled	Gippsland Limestone	60	61	40
Earliest Oligocene	Lakes Entrance Formation	691	797	776
Late Eocene	Latrobe Group (unnamed Marl)	1114	1125	1104
Late Eocene	Gurnard Formation	-	1147	1126
Middle Eocene	"Coarse Clastics"	1149	1152	1131
Middle Eocene	Lower *N. asperus* seismic marker	1354	1372	1351
	TOTAL DEPTH	2021	2821	2800

Introduction

The primary objective of Whiptail-1 was to test a small anticlinal closure at the top of Latrobe Group "coarse clastics" with secondary objectives within the upper Latrobe Group. Mechanical difficulties encountered in the spudding of Whiptail-1 resulted in abandonment and subsequent spudding of Whiptail-1A.

Formation tops in Whiptail-1A came in close to prediction, but the anticipated primary objective at the top of "coarse clastics" was water-wet. An oil column was encountered deeper within the Latrobe Group. Two RFT tests recovered oil from this column, which comprises four lower *N. asperus* age sands, designated N-1.1 to N-1.4.

The hole was deepened from the proposed T.D. of 2021 mKB to a final T.D. of 2821 mKB on encouragement from these oil sands. However, the section below 2021 mKB lacked significant hydrocarbon shows.

The well was suspended, pending a sub-sea completion to produce from the N-1 *N. asperus* oil sands.

Previous Drilling History

The Whiptail structure is colinear with the Barracouta anticlinal feature. It is located to the west of Barracouta and is separated from it by a structural low. The western end of the Barracouta structure was tested by Barracouta-3. Whiptail-1A, 7.6 km to the west of Barracouta-3, is the first well to test the separate Whiptail structure.

GEOLOGICAL ANALYSIS

Structure

The Whiptail structure is a small, elongated anticlinal closure. It is associated with a relaying, E-W trending, partially inverted normal fault system situated on the northern flank. The Whiptail anticlinal trend begins at the western end of the Barracouta Field and extends for 9 km westwards into the adjacent vacant acreage. Whiptail is the largest of four culminations on this trend.

The closure is currently interpreted to be 2.0 km long and 0.9 km wide. It is asymetical, dipping more steeply into the fault on the northern flank. Whiptail-1A is located close to the crestal position towards the western end of the structure.

Mapped closure decreases from 33m at the top of "coarse clastics" to 24m at the top of the N-1.1 sand and flexure appears to continue to decrease with depth. The closure is independent of faulting at the "coarse clastics" level, but at the N-1.1 level it is intersected by a small displacement NE-SW trending normal fault, to the east of the structure. The oil accumulation in the N-1 reservoir appears to spill where it intersects this fault.

STRATIGRAPHY

Latrobe Group

The stratigraphy encountered in the Whiptail-1A well is close to prediction. All depths referred to are in metres KB (+21m).

The top of Latrobe Group was intersected at 1125m and sediments below consisted of an upper, slightly glauconitic, lime-rich argillaceous siltstone (unnamed marl unit) to 1147m and a lower glauconitic siltstone (Gurnard Formation) from 1147m to 1152m. The unnamed marl unit comprises a number of upward "coarsening" cycles, as revealed by the gamma log, suggestive of progradational sedimentation.

Top of "coarse clastics" is taken at 1152m at the change from glauconitic siltstone to carbonaceous shales (SWC data). The interval from 1152m to 1166m is a coastal plain sequence of siltstones, shale and minor coal with some thin shaley sands. This overlies a thick interval of sand down to 1201.5m. A conventional core cut from 1165.4m to 1175.2m comprises coarse to very coarse, clean, trough cross bedded, stacked, basal fluvial channel sands. Log character indicates that the entire sand interval is a stacked fluvial channel sand. The base of this unit is sharp on the gamma log, possibly an erosional contact. These sediments are of lower N. asperus age.

The interval from 1201.5m to 1538m is a sequence of sands, shale and coal. The sands have a blocky to fining upward gamma character and are interpreted as fluvial to point bar channel deposits interspersed with flood plain/abandoned channel shales and coastal plain swamp coals. These sediments are lower N. asperus to P. asperopolus in age.

From 1538m to 1701m the section is very sandy with relatively minor shales and coals. The sandstone units are thick and display a coarsening upward character on the gamma log. This interval is interpreted as a series of stacked (aggrading) progradational shoreface to coastal plain cycles. The sediments are probably of M. diversus age.

Between 1701m and 1985m the well intersected sand with an absence of coals and only minor shales. Dating of this section is difficult, but it is most likely upper L. balmei throughout. The base of this interval is sharp, suggesting an erosional base. Sandstones in the lower part display a blocky to fining upward gamma log, whereas some of the sandstones in the upper portion give a subtle coarsening upward gamma log character. The package probably represents aggrading, stacked fluvial-estuarine incised valley fill sediments.

From 1985m to 2431m is a sequence of thick fining-upward point bar sands, interspersed with thick flood plain/abandoned channel shales and thin coals/carbonaceous shales. This interval is interpreted as a coastal plain sequence. The section 1985m to 2060.8m is of Upper L. balmei age and from 2060.8m to 2415m is T. longus in age.

From 2431m to 2821m (T.D.) is a sequence of fining-upward and "blocky" gamma sandstone units and flood plain shales. A conventional core cut from 2737.2m to 2754.6m revealed an upward-fining point bar channel sand overlain by a slumped floodplain/abandoned channel shale, containing roots and pyrite, but no coals. This basal portion of the well is interpreted to be deltaic to fluvial and of T. lilliei age.

Seaspray Group

The top of the Lakes Entrance Formation marls is taken at 797m KB. At this depth there is a significant increase in log sonic interval transit time, and a subtle increase in gamma log response, indicating an increase in argillaceous content with depth. The Gippsland Limestone is interpreted to occur between 797m and sea floor (61m).

Hydrocarbons

The primary objective, the sandstone interval at the top of Latrobe Group "coarse clastics", is water-wet despite some gas anomalies on the mud log at the top of the unit. A post-drill remap of the Whiptail feature still indicates structural closure (over 30m) at this level despite the absence of even residual hydrocarbons.

Given the proximity of the Whiptail feature to the Barracouta gas field, small quantities of gas may have originally accumulated at this level. Detailed log analysis indicates a zone of fresh water flushing over the interval 1145m to 2315m. This may have dissolved a small gas cap had it been present at the top of "coarse clastics".

The intra Latrobe Group objective directly beneath the lower N. asperus seismic marker contains oil. An 18.0m oil column with 13.25m net sand is interpreted over the interval 1379.75m-1397.75m KB. A clear OWC was not observed on the logs and the base of the lowest oil sand is on a non-net interval. Four oil sands are recognised (N-1.1 to N-1.4) over the intervals 1379.75m-1381.25m, 1382.50m-1382.75m, 1385.25m-1393.50m and 1394.50m-1397.75m. Based on RFT pressure data the most likely position for the OWC is 1400 mKB.

No other hydrocarbon occurrences are interpreted below the N-1 oil reservoir.

GEOPHYSICAL ANALYSIS

Pre-Drill vs Post-Drill Analysis

Horizon	Predicted		Actual	
	2WT* (sec)	Depth (mSS)	2WT** (sec)	Depth (mSS)
Top of Latrobe	.929	1093	.941	1104
Top of "coarse clastics"	.959	1128	.959	1131
Lower *N. asperus* seismic marker	1.116	1354	1.121	1351

*: Lag-corrected.

**: Interpolated from checkshot times using integrated sonic times.

Whiptail-1A has, for the most part, substantiated the pre-drill interpretation (see table above). The pre-drill mapped horizons, the top of "coarse clastics" and the lower *N. asperus* seismic marker, were intersected 3m deep and 3m shallow to prediction, respectively. The top of Latrobe Group however was 11m deep to prediction. This larger error in depth prediction was due to an error in the time pick at the top of Latrobe arising from the virtual absence of any seismic reflection.

The post-drill incorporation of migrated seismic data from the G84A seismic survey (only brute stacks were available pre-drill) has steepened the northern flank of the structure on the post-drill maps.

Seismic Coverage

Seismic control in the vicinity of the Whiptail Discovery is provided primarily by a 0.5 X 1.0 km grid of 48 fold airgun data from the G84A survey. Additional control in the vicinity of the well is provided by one line from each of the G80A and G81A surveys and, to the east of the structure, by a 1.0 km grid of reprocessed lines from the G74A survey. These data were migrated prior to the commencement of the post-drill mapping.

In the vacant acreage to the west of the Whiptail Discovery additional control was provided by a 1.5 x 1.5 km grid recorded for the Endeavour Oil Co. N.L. in 1970.

Subsequent to the drilling of Whiptail-1A, two seismic surveys which included lines in the Whiptail area have been recorded. Three lines from a speculative seismic survey recorded by G.S.I. in 1985 intersect the Whiptail anticlinal trend in the vacant acreage to the west and fourteen lines from the G85A seismic survey provide infill over that part of the trend that lies within the VIC/L1 licence. The interpretation described here was completed before data from either of these two surveys became available.

Seismic Interpretation

Three horizons have been carried on the migrated final stacks: top of Latrobe Group "coarse clastics", middle N. asperus seismic marker, and lower N. asperus seismic marker.

Data quality is good down to the middle N. asperus seismic marker, with the exception that the events at the top of Latrobe and top of "coarse clastics" are very weak over some parts of the area mapped. The middle N. asperus marker is an excellent seismic event, but below it the data quality deteriorates because of the water bottom "pegs" it generates. The lower N. asperus seismic marker is the deepest level that can be mapped with confidence in the Whiptail area.

Time maps are enclosed for the top of Latrobe Group "coarse clastics" and the Lower N. asperus seismic marker. Poor reflection quality causes irregularities in both of these seismic events. These irregularities have been smoothed to follow the form of the more reliable time structure map for the middle N. asperus seismic marker.

Velocity Analysis

A copy of the post-drill average velocity map for the top of Latrobe Group "coarse clastics" is enclosed. This map was derived primarily from VNMO and conversion factor maps, however where applicable it incorporates the average velocity implied at the intersection of the Barracouta Field GWC direct hydrocarbon indicator with the top of "coarse clastics" seismic event.

Depth Conversion

Structure maps at the top of Latrobe Group "coarse clastics" and at the top of the N-1.1 sand are enclosed.

Depth conversion at the top of "coarse clastics" was effected by multiplying the gridded time and average velocity maps, following a lag correction of 13msec.

The depth map at the top of the N-1.1 sand was generated by multiplying interval times from the top of "coarse clastics" to the lower N. asperus seismic marker by a constant interval velocity and adding the depths so produced to the top of "corse clastics" depth map. A lag correction was applied to correct for the 8m interval between the top of the N-1.1 sand and the coal which generates the lower N. asperus seismic marker.

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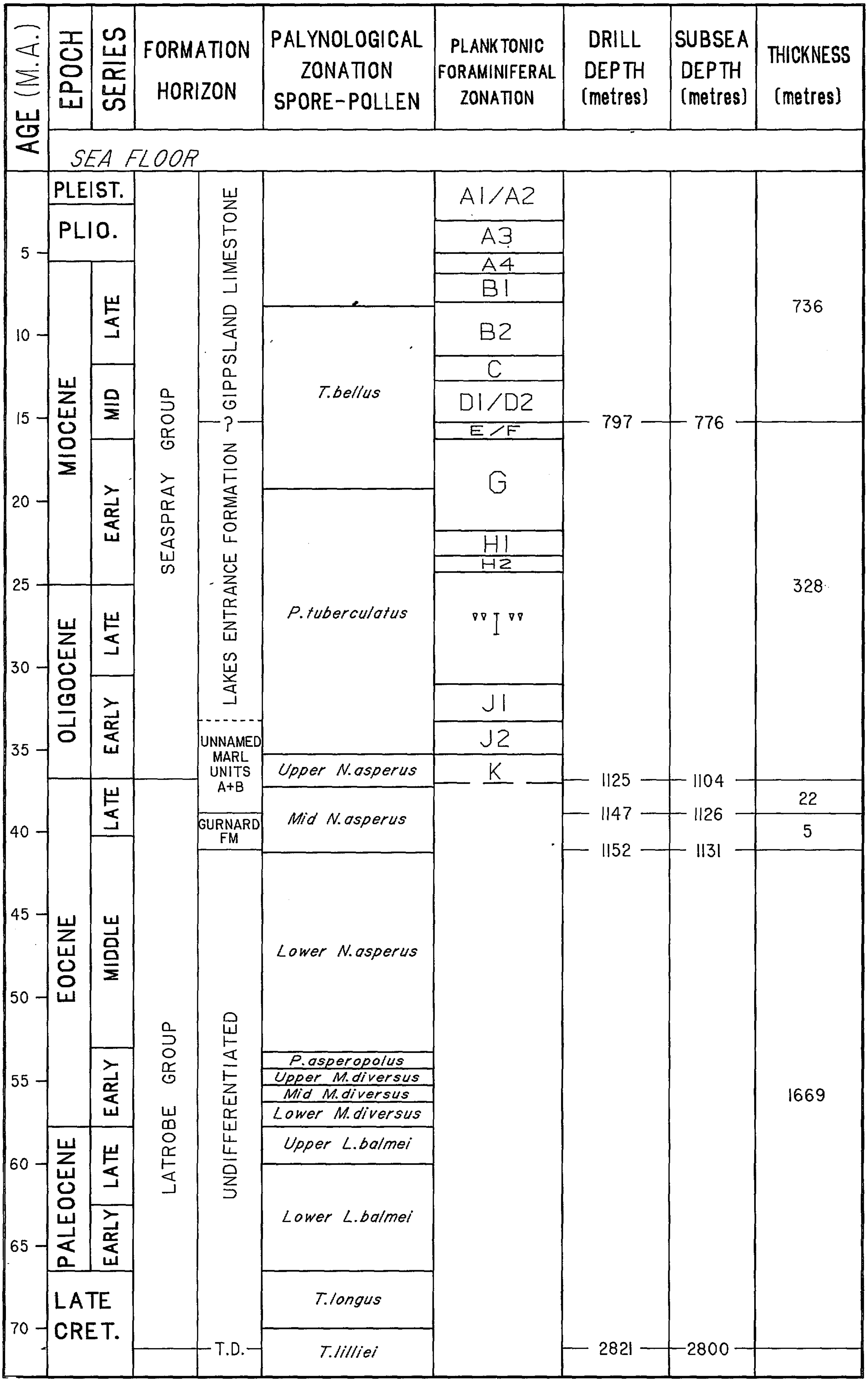
FIGURES

WHIPTAIL-1A
STRATIGRAPHIC TABLE



APPENDIX 1

APPENDIX 1

FORAMINIFERAL ANALYSIS
OF WHIPTAIL-1A,
GIPPSLAND BASIN

by

M.J. HANNAH

Esso Australia Ltd. January 1986

Palaeontology Report: 1986/1

2063L/1

INTRODUCTION

GEOLOGICAL SUMMARY

BIOSTRATIGRAPHY

DATA COMMENTS

2063L/2

INTRODUCTION

The foraminiferal content of nine sidewall cores has been examined. Of these only the top three, (between 1134.7m and 1120.0m) actually contained any foraminifera and these were poor, low diversity assemblages with poor preservation.

GEOLOGICAL COMMENTS

The washed residues of all the residues have been examined. Lithological comments are noted in Table 1.

A major lithological break occurs between sidewall cores 55 at 1154.7m and 56 at 1147.8m where a shale/sand sequence gives way upsection to a unit completely dominated by pelletal glauconite. Within this greensand unit lithology is very consistent with glauconite making up about 80-90% of the residues. Foraminifera were recovered from the upper portion of this greensand.

BIOSTRATIGRAPHY

Only three sidewall cores (at 1134.7m, 1128.5m and 1120.0m) yielded any foraminifera. All assemblages are of very low diversity (one or two species) and are very poorly preserved.

ZONE K (1134.7-1128.5m) LATE EOCENE-EARLIEST OLIGOCENE

Both of these samples contained Subbotina angiporioides and Subbotina linopenta indicating Zone K. The lack of other Zone K indicators means that only a low degree of confidence can be assigned to this determination.

ZONE K/J (1120.0) LATE EOCENE-EARLY OLIGOCENE

This sample contained S. angiporioides, Globigerina officinalis and Globorotalia postoretacea. The lack of S. linopenta plus any younger zonal indicators, however, means that only a K/J zonal assignment can be made.

TABLE 1: DATA SUMMARY, WHIPTAIL-1, GIPPSLAND BASIN

DEPTH (M)	SWC NO.	YIELD	PRESERVATION	ZONE	AGE	LITHOLOGY
1257.5	51	Barren		?	Indeterminate	fine micaceous sand with rare glauconite grains
1228.6	52	Barren		?	Indeterminate	micaceous shale with fine quartz grains
1202.5	53	Barren		?	Indeterminate	shale with fine quartz grains
1164.0	54	Barren		?	Indeterminate	fine clean quartz sand
1157.4	55	Barren		?	Indeterminate	shale, rare mica flakes
1147.8	56	Barren		?	Indeterminate	pelletal glauconite with few shaley particles
1134.7	58	V. low	V. poor	K (2)	Late Eocene/ Earliest Oligocene	pelletal glauconite with shaley fragments and fine quartz grains
1128.5	59	V. low	V. poor	K (2)	Late Eocene/ Earliest Oligocene	pelletal glauconite with few shaley fragments
1120.0	60	V. low	V. poor	K/J (5)	Late Eocene/ Early Oligocene	pelletal glauconite with few shaley fragments

APPENDIX 2

APPENDIX 2

APPENDIX

PALYNOLOGICAL ANALYSIS OF WHIPTAIL-1A, GIPPSLAND BASIN

by

M.K. Macphail

Esso Australia Ltd.
Palaeontology Report 1986/2

January, 1986

2054L/1

INTERPRETATIVE DATA

INTRODUCTION

Thirty eight sidewall core samples were processed and analysed for spore-pollen and dinoflagellates. Recovery and preservation were good only in the Middle-Late Eocene N. asperus Zone section (1120.0 to 1383.5m). Below this depth few samples provided confident dates.

Lithological units and palynological zones from the base of the Lakes Entrance Formation to T.D. are summarized below; anomalous and unusual occurrences of taxa are listed in Table 2. Basic data are given in Table 3.

SUMMARY

AGE	UNIT	ZONE	DEPTH (m)
Early Oligocene	Unnamed marl unit A	P. tuberculatus	1120.0m
	——log break at 1125m——		
Late Eocene	Unnamed marl unit B	Middle N. asperus	1128.5-1134.7m
	——log break at 1147m——		
Late Eocene	Gurnard Fm. Equivalent	Middle N. asperus	1147.8m
	——log break at 1152.0m——		
Middle Eocene	Latrobe Group coarse clastics	Lower N. asperus	1154.7-1383.5m
Early Eocene		P. asperopolus	1409.5-1571.8m
Early Eocene		M. diversus	1635.2-1698.0m
Paleocene		Upper L. balmei	1811.0-2060.8m
Maastrichtian		Upper T. longus	2218.2m
Maastrichtian		Lower T. longus	2415.0m
Late Cretaceous		T. lilliei	2547.0-2780.9m

GEOLOGICAL COMMENTS

1. Although no Lower L. balmei Zone sediments were recorded and the M. diversus Zone interval could not be confidently subdivided in Whiptail-1A, biostratigraphic data from the adjacent Barracouta Field indicate that Whiptail-1A does contain a continuous sequence of zones from the Late Cretaceous T. lilliei Zone to the Early Oligocene basal P. tuberculatus Zone.

2. The highest unit within the Latrobe Group coarse clastics is a carbonaceous siltstone occurring between (log data) 1152 and 1166m. This interval contains the highest coal recorded in Whiptail-1A (at approx. 1157m). The unit represents a coastal plain environment, developed during Lower N. asperus Zone times.

3. Lithological and palynological data indicate this coastal plain facies is overlain, probably conformably, by three calcareous units. Although cited here as unnamed marls, the upper two units appear to be equivalent to the "Bullseye Marl" glauconitic marl unit recognized by Rexilius (1985a). Interval boundaries are log picks:

   (a) Gurnard Formation equivalent, 1147-1152m

   This unit, sampled by one sidewall core at 1147.8m, is a slightly (5%) calcareous, very fine siltstone containing moderate amounts of pelletal glauconite. Visual inspection suggests that the amount of glauconite is less than is usually present within the Gurnard Formation in inner shelfal wells. However, the age of the sample (Middle N. asperus/C. incompositum Zone) and abundance of the dinoflagellate Vozzhenikovia extensa demonstrate the unit is the time-equivalent of thick (22-26.5m) greensands present in Barracouta-4 and -5 (see Macphail 1985).

   (b) Unnamed marl unit A, 1125-1147m

   This unit, comprising a number of small, upward coarsening parasequences, was sampled at 1134.7m and 1128.5m. These samples are moderately calcareous (12.2, 17.6% respectively), very fine siltstones containing low amounts of glauconite. The sidewall cores at 1134.7 and 1128.5m contain excellent Middle N. asperus Zone spore-pollen and dinoflagellate assemblages. This age is supported by the occurrence of sparse Zone K forams in both samples (M.J. Hannah, pers. com.). The presence of the dinoflagellate Corrudinium incompositum and an abundance of Vozzhenikovia extensa in the sample at 1134.7m suggests that this unnamed marl unit A is conformable with the underlying "Gurnard equivalent" unit between 1147 and 1152m and also a time-equivalent of the Gurnard Formation facies in the Barracouta Field.

(c) Unnamed marl unit B, above 1125m

This unit is distinguished from the underlying marl on the basis of (i) its relatively subdued log character and (ii) the basal P. tuberculatus Zone date of the calcareous (14.4%) siltstone sample at 1120.0m. This sample lacks datable forams but contains Cyatheacidites annulatus (the zone indicator species of the P. tuberculatus Zone). Otherwise the assemblage is typical of the Upper N. asperus Zone. This association which is dominated by spore-pollen (rather than dinoflagellates as is mostly the case with P. tuberculatus Zone sediments in offshore wells) is rarely encountered in Gippsland wells and is likely to have been deposited relatively close to the paleoshoreline. An Early Oligocene age is indicated. Early Oligocene P. tuberculatus Zone sediments in Barracouta-5, identified (Rexilius 1985b) as the basal member of the Seaspray Group (the "Fortescue Shale") are dominated by dinoflagellates and therefore likely to have been deposited further away from the Early Oligocene shoreline than was the Whiptail-1A sample at 1120.0m.

4. The data confirm a Lower N. asperus Zone age for the thick coal between 1372 and 1379m (the Lower N. asperus seismic marker), used to datum Whiptail-1A with the Barracouta Field wells. Similarly, a thin sequence of P. asperopolus Zone coals in the Barracouta wells is present between approx. 1410 and 1530m in Whiptail-1A. Given the strength of these coal correlations, either the P. asperopolus Zone date for the sample at 1409.2m in Whiptail is anomalously old or the Lower N. asperus Zone age for the sample at 1492.0m in Barracouta-5 is anomalously young. As both dates are of good to high confidence, the section is likely to be transitional between the Lower N. asperus and P. asperopolus Zones.

5. The relatively shallow depth and low thicknesses of Late Cretaceous Upper T. longus to T. lilliei Zone in Whiptail-1A is consistent with the shallow depth of Late Cretaceous sediments in Flying Fish-1. Both wells are structurally higher at the Late Cretaceous level than the Barracouta wells. Although the T. lilliei Zone for the basal sidewall core (2780.9m) is of low confidence, the sample is highly unlikely to be younger than Lower T. longus Zone.

BIOSTRATIGRAPHY

Zone boundaries were established using the criteria of Stover & Partridge (1973) and subsequent proprietary revisions.

Tricolporites lilliei Zone: 2476.5-2780.9m

Samples within this interval are dominated by Nothofagidites and, below 2547.0m, contain frequent to common Tricolpites labrum. The lowest sample, 2780.9, lacks the nominate species but contains Gambierina rudata and Triporopollenites sectilis, species which first appear in this zone. Tricolporites lilliei is first recorded at 2547.0m. The upper boundary is picked at 2476.5m, based on T. lilliei and frequent Tricolpites renmarkensis.

Lower Tricolpites longus Zone: 2415.0m

One sample is provisionally assigned to this zone, based on an abundance of Gambierina rudata. Triporopollenites sectilis is frequent in this sample. The sample at 2292.8, contains a sparse, general T. longus Zone palynoflora.

Upper Tricolpites longus Zone: 2218.2m

This sample contains Stereisporites punctatus and, relative to the (low) yield, frequent Gambiera rudata. However only one species is present that is not known to range above the T. longus Zone - Proteacidites palisadus.

Upper Lygistepollenites balmei Zone: 1811.0-2060.8m

Two samples are assigned to this zone. The lowermost lacks L. balmei but contains rare specimens of Apectodinium homomorpha, a dinoflagellate that first appears in the upper part of the Lower L. balmei Zone. The date is therefore provisional. The upper sample at 1811.0m contains a good Upper L. balmei Zone palynoflora, with common Lygistepollenites balmei, Polycolpites langstonii and Proteacidites annularis in gymnosperm-dominated assemblage.

Malvacipollis diversus Zone: 1635.2-1698.0m

Samples within this interval contain general Early Eocene palynofloras, lacking more specific zonal indicator species. Nevertheless Crassiretitriletes vanraadshoovenii indicates the sample at 1698.0m is no older than Lower M. diversus Zone, and Proteacidites tuberculiformis that the sample at 1635.2m is no older than Middle M. diversus Zone. A possibly freshwater Palaeoperidinium species is abundant in this latter sample.

Proteacidites asperopolus Zone: 1409.5-1571.8m

The majority of samples within this interval contained sparse to very sparse palynofloras although most included the nominate species. The base of the zone is picked at the first occurrence of Proteacidites asperopolus (1571.8m). Homotryblium tasmaniense occurs at 1501.5m and Myrtaceidites tenuis (in a coal) at 1447.0m. The upper boundary is well-defined by occurrences of Proteacidites asperopolus and Conbaculites apiculatus associated with species which range no higher than this zone, e.g. Proteacidites leightonii and Myrtaceidites tenuis.

Lower Nothofagidites asperus Zone: 1154.7-1383.5m

Samples within this interval are characterised by Nothofagidites-dominated assemblages, mostly including Proteacidites asperopolus. The base is provisionally picked at 1383.5m, a sample containing common P. asperopolus. The first appearance of Nothofagidites falcatus is at 1381.5m. Tricolpites delicatus and T. leuros first appear at 1375.5m and 1344.0m respectively. The upper boundary is placed at 1154.7m, the highest sample containing a general N. asperus Zone assemblage lacking Middle N. asperus Zone indicators. The sample at 1164.0m contains a general Lower N. asperus Zone palynoflora and provides an alternative, slightly more confident upper boundary.

Middle Nothofagidites asperus Zone: 1128.5-1147.8m

Age-determinations of samples within this zone are highly confident since all samples contained the indicator species Triorites magnificus and Corrudinium incompositum. Tricolpites thomasii and Proteacidites pachypolus occur at 1147.8m, Agloareidia qualumis at 1134.7m and Proteacidites rectomarginis at 1128.5m. The dinoflagellate Vozzhenikovia extensa is present throughout the interval and abundant at 1134.7m and 1147.8m

P. tuberculatus Zone: 1120.0m

Cyatheacidites annulatus in the highest sidewall core taken, at 1120.0m confirms a P. tuberculatus Zone age for this sample. Proteacidites stipplatus shows the sample is no older than Upper N. asperus Zone. The dominance of the palynoflora by spore-pollen, in particular Nothofagidites species, and lack of dinoflagellate species such as Protoellipsodinium simplex, indicate that this sample belongs to the lower subdivision of the P. tuberculatus Zone.

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P A L Y N O L O G Y   D A T A   S H E E T

BASIN: Gippsland ELEVATION: KB: +21.0m GL: 39.0m

WELL NAME: Whiptail-1A TOTAL DEPTH: 2815.5m

AGE	PALYNOLOGICAL ZONES	HIGHEST DATA Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	LOWEST DATA Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
NEOGENE	*T. pleistocenicus*										
	M. lipsis										
	C. bifurcatus										
	T. bellus										
PALEOGENE	*P. tuberculatus*	1120.0	0				1120.0				
	Upper *N. asperus*										
	Mid *N. asperus*	1128.5	0				1147.8	0			
	Lower *N. asperus*	1154.7	2				1383.5	2	1381.5	1	
	P. asperopolus	1409.5	0				1571.8	1			
	Upper *M. diversus*										
	Mid *M. diversus*										
	Lower *M. diversus*										
	Upper *L. balmei*	1811.0	1				2060.8	2			
	Lower *L. balmei*										
LATE CRETACEOUS	Upper *T. longus*	2218.2	2				2218.2	2			
	Lower *T. longus*	2415.0	2				2415.0	2			
	T. lilliei	2476.5	1				2780.9	1			
	N. senectus										
	T. apoxyexinus										
	P. mawsonii										
	A. distocarinatus										
EARLY CRET.	*P. pannosus*										
	C. paradoxa										
	C. striatus										
	C. hughesi										
	F. wonthaggiensis										
	C. australiensis										

COMMENTS: M. diversus Zone undiff. 1635.2-1698.0m

C. incompositum Zone 1128.5-1134.7m

CONFIDENCE RATING:

O: SWC or Core, Excellent Confidence, assemblage with zone species of spores, pollen and microplankton.

1: SWC or Core, Good Confidence, assemblage with zone species of spores and pollen or microplankton.

2: SWC or Core, Poor Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

3: Cuttings, Fair Confidence, assemblage with zone species of either spores and pollen or microplankton, or both.

4: Cuttings, No Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

NOTE: If an entry is given a 3 or 4 confidence rating, an alternative depth with a better confidence rating should be entered, if possible. If a sample cannot be assigned to one particular zone, then no entry should be made, unless a range of zones is given where the highest possible limit will appear in one zone and the lowest possible limit in another.

DATA RECORDED BY: M.K. Macphail DATE: 24/12/1985

DATA REVISED BY: DATE:

TABLE 1: SUMMARY OF INTERPRETATIVE PALYNOLOGICAL DATA

WHIPTAIL-1A

SAMPLE NO.	DEPTH (m)	SPORE-POLLEN ZONE	DINOFLAGELLATE ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 60	1120.0	Upper N. asperus	-	Late Eocene	2	A. qualumis, abund. Nothofagidites
SWC 59	1128.5	Middle N. asperus	C. incompositum	Late Eocene	0	T. magnificus, P. rectomarginis, C. incompositum
SWC 58	1134.7	Middle N. asperus	C. incompositum	Late Eocene	0	A. qualumis, T. magnificus, abund. V. extensa and S. speciosus, C. incompositum
SWC 56	1147.8	Middle N. asperus	-	Late Eocene	0	T. magnificus, T. thomasii, P. pachypolus, abund. V. extensa
SWC 55	1154.7	N. asperus	-		-	P. recavus, abund. Nothofagidites
SWC 54	1164.0	Lower N. asperus	-	Middle Eocene	2	N. falcatus
SWC 53	1202.0	Lower N. asperus	-	Middle Eocene	2	N. falcatus
SWC 52	1228.6	Lower N. asperus	-	Middle Eocene	1	N. falcatus, T. delicatus, T. leuros
SWC 51	1257.5	Lower N. asperus	-	Middle Eocene	1	Freq. P. asperopolus
SWC 50	1278.0	Lower N. asperus	-	Middle Eocene	1	P. asperopolus, T. leuros, N. falcatus
SWC 49	1312.0	No older than P. asperopolus Zone				P. asperopolus, abund. H. harrisii
SWC 48	1344.0	Lower N. asperus	-	Middle Eocene	1	P. asperopolus, T. delicatus, T. leuros, abund. Nothofagidites
SWC 46	1375.5	Lower N. asperus	-	Middle eocene	1	P. asperopolus, T. delicatus, P. rugulatus
SWC 45	1380.0	Indeterminate	-	-	-	Barren sample
SWC 44	1381.5	Lower N. asperus	-	Middle Eocene	1	P. asperopolus, N. falcatus
SWC 43	1382.5	Lower N. asperus	-	Middle Eocene	2	P. asperopolus, common Nothofagidites, V. extensa
SWC 42	1383.5	Lower N. asperus	-	Middle Eocene	2	P. asperopolus common, P. recavus, P. rugulatus

TABLE 1: SUMMARY OF INTERPRETATIVE PALYNOLOGICAL DATA

WHIPTAIL-1A

SAMPLE NO.	DEPTH (m)	SPORE-POLLEN ZONE	DINOFLAGELLATE ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 40	1409.5	P. asperopolus	-	Early Eocene	0	P. asperopolus, P. leightonii, M. tenuis
SWC 38	1447.0	P. asperopolus	-	Early Eocene	2	M. tenuis, P. pachypolus
SWC 37	1451.8	Indeterminate	-	-	-	-
SWC 36	1478.0	Indeterminate	-	-	-	P. pachypolus
SWC 35	1501.5	P. asperopolus	-	Early Eocene	1	P. asperopolus
SWC 34	1571.8	P. asperopolus	-	Early Eocene	1	P. asperopolus
SWC 31	1635.2	No older than Middle M. diversus	-	Early Eocene	-	P. tuberculiformis, abund. M. diversus
SWC 30	1660.0	Indeterminate	-	-	-	-
SWC 29	1698.0	No older than Lower M. diversus	-	Early Eocene	2	C. vanraadshoovenii, freq. C. splendens
SWC 27	1811.0	Upper L. balmei	-	Paleocene	1	L. balmei common, P. langstonii, P. annularis
SWC 23	2060.8	Upper L. balmei	A. homomorpha	Paleocene	2	A. homomorpha
SWC 19	2126.0	Indeterminate	-	-	-	-
SWC 17	2218.2	Upper T. longus	-	Maastrichtian	2	G. rudata freq., S. punctatus, P. palisadus
SWC 15	2292.8	T. longus	-	Maastrichtian	2	G. rudata freq. in sparse assemblage
SWC 13	2415.0	Lower T. longus	-	Maastrichtian	2	Abund. G. rudata
SWC 11	2476.5	T. lilliei	-	Late Cretaceous	1	T. lilliei, freq. T. remarkensis, common Nothofagidites
SWC 10	2547.0	T. lilliei	-	Late Cretaceous	1	T. lilliei, T. sectilis, freq. T. labrum
SWC 9	2600.0	T. lilliei	-	Late Cretaceous	2	Abund. Nothofagidites, freq. T. labrum

TABLE 1: SUMMARY OF INTERPRETATIVE PALYNOLOGICAL DATA

WHIPTAIL-1A

SAMPLE NO.	DEPTH (m)	SPORE-POLLEN ZONE	DINOFLAGELLATE ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 3	2712.0	*T. lilliei*	-	Late Cretaceous	2	Abund. *Nothofagidites*, freq. *T. labrum*
SWC 2	2715.0	*T. lilliei*	-	Late Cretaceous	2	Freq. *Nothofagidites* and *T. labrum*
SWC 1	2780.9	*T. lilliei*	-	Late Cretaceous	1	*G. rudata*, *T. sectilis*

TABLE 2

ANOMALOUS AND UNUSUAL OCCURRENCES OF SPORE-POLLEN TAXA IN WHIPTAIL-IA

SAMPLE NO.	DEPTH(m)	ZONE	TAXON	COMMENTS
SWC 60	1120.0	Upper N. asperus (2)	Aglaoreidia qualumis	Rare sp.
SWC 58	1134.7	Middle N. asperus (0)	Aglaoreidia qualumis	Rare sp.
SWC 58	1134.7	Middle N. asperus (0)	Foveosporites palaequetrus	Rare sp.
SWC 58	1134.7	Middle N. asperus (0)	Proteacidites grandis	Not prev. recorded above Lower N. asperus Zone
SWC 58	1134.7	Middle N. asperus (0)	P. reticulatus	Rare sp.
SWC 58	1134.7	Middle N. asperus (0)	Peromonolites vellosus	Rare sp.
SWC 56	1147.8	Middle N. asperus (0)	Proteacidites grandis	Rare sp. in this zone
SWC 56	1147.8	Middle N. asperus (0)	Tricolpites thomasii	Rare sp.
SWC 56	1147.8	Middle N. asperus (0)	Simplicepollis meridianus	Planar tetrad form
SWC 56	1147.8	Middle N. asperus (0)	Stoveripollis	Rare ms.
SWC 56	1147.8	Middle N. asperus (0)	Polyorificites oblatus	Rare sp. (=Heliciporites astrus)
SWC 55	1154.7	(Lower N. asperus)	Banksieaeidites elongatus	Uncommon sp.
SWC 52	1228.6	Lower N. asperus (I)	Heliciporites astrus	Uncommon sp.
SWC 52	1228.6	Lower N. asperus (I)	Proteacidites pachypolus	Unusually frequent occurrence
SWC 51	1257.5	Lower N. asperus (I)	Tricolpites reticulatus Cookson	Uncommon sp.
SWC 51	1257.5	Lower N. asperus (I)	Tricolporites paeneretequetrus	Uncommon ms. sp.
SWC 51	1257.5	Lower N. asperus (I)	Cyathidites paleospora	Unusually frequent occurrence in this zone
SWC 50	1278.0	Lower N. asperus (I)	Dryptopollenites semilunatus	Rare sp.
SWC 50	1278.0	Lower N. asperus (I)	Triporopollenites delicatus	Rare sp.
SWC 50	1278.0	Lower N. asperus (I)	Plicodiporites crecsentis	Very rare sp.
SWC 50	1278.0	Lower N. asperus (I)	Proteacidites plemmelus	Uncommon in this zone. Also at 1344.0m

TABLE 2

ANOMALOUS AND UNUSUAL OCCURRENCES OF SPORE-POLLEN TAXA IN WHIPTAIL-1A

SAMPLE NO.	DEPTH(m)	ZONE	TAXON	COMMENTS
SWC 50	1278.0	Lower N. asperus (1)	P. reticulatus	Rare sp.
SWC 50	1278.0	Lower N. asperus (1)	Gamblerina rudata	Reworked in (?) non-marine sample
SWC 49	1312.0m	Lower N. asperus (2)	Gyrostemonaceae	Modern taxon
SWC 49	1312.0m	Lower N. asperus (2)	Cranwellia striatus	Very rare sp.
SWC 49	1312.0m	Lower N. asperus (2)	Santalumidites cainozoicus	Unusually frequent occurrence
SWC 40	1375.5	Lower N. asperus (1)	Micrantheum spinyspore	Very rare sp.
SWC 40	1375.5	Lower N. asperus (1)	Proteacidites callosus	Uncommon sp.
SWC 44	1381.5	Lower N. asperus (2)	Elphedripites notensis	Uncommon sp.
SWC 44	1381.5	Lower N. asperus (2)	Proteacidites grandis	Uncommon in this zone
SWC 43	1382.5	Lower N. asperus (2)	Polycolpites simplex	Very rare sp.
SWC 43	1382.5	Lower N. asperus (2)	Conbaculites apiculatus	Uncommon sp. in this zone
SWC 42	1383.5	Lower N. asperus (2)	Conbaculites apiculatus	Uncommon sp. in this zone
SWC 42	1383.5	Lower N. asperus (2)	Elphedripites notensis	Uncommon sp. in this zone
SWC 42	1383.5	Lower N. asperus (2)	Proteacidites xestoformis	Rare sp.
SWC 42	1383.5	Lower N. asperus (2)	Umbelliferae	Modern taxon
SWC 40	1409.5	P. asperopolus (0)	Dryptopollenites semilunatus	Rare sp.
SWC 40	1409.5	P. asperopolus (0)	Tricolpites reticulatus Cookson	Rare sp.
SWC 38	1447.0	(P. asperopolus)	Proteacidites reticulatus	In coal palynoflora with M. tenuis, T. heleosus and T. reticulatus Cookson
SWC 31	1635.2	(Middle M. diversus)	Haloragicidites verrucatoharrisii	Rare ms. sp.
SWC 13	2415.0	Lower T. longus (2)	Stoveripollis sp.	Rare ms. sp.

TABLE 2

ANOMALOUS AND UNUSUAL OCCURRENCES OF SPORE-POLLEN TAXA IN WHIPTAIL-1A

SAMPLE NO.	DEPTH(m)	ZONE	TAXON	COMMENTS
SWC 11	2476.5	*T. lilliei* (1)	*Tricolpites remarkensis*	Frequent.
SWC 10	2547.0	*T. lilliei* (2)	*Tricolpites labrum*	Freq. in this sample and at 2600.0, 2712.0, 2715.0 and 2780.9m
SWC 3	2712.0	(*T. lilliei*)	*Stoveripollis*	Rare ms. sp.
SWC 2	2715.0	(*T. lilliei*)	*Stoveripollis*	Rare ms. sp.
SWC 1	2780.9	*T. lilliei* (1)	*Nothofagidites brachyspinulosus*	Uncommon in this zone
SWC 1	2780.9	*T. lilliei* (1)	*Tricolpites confessus*	Abundant in sample

TABLE 3: SUMMARY OF BASIC PALYNOLOGICAL DATA

WHIPTAIL-1A

DIVERSITY -	low	medium	high
S & P	less than 10	10-30	greater than 30
D	1-3	3-10	10

SAMPLE NO.	DEPTH (m)	YIELD		DIVERSITY		PRESERVATION	LITHOLOGY	PYRITIZATION	COMMENTS
		SPORE-POLLEN	DINOS	SPORE-POLLEN	DINOS				
SWC 60	1120.0	Good	Fair	Medium	Medium	Poor	Slst., carb	-	
SWC 59	1128.5	Good	Good	High	Medium	Poor	Slst., carb.	Moderate	
SWC 58	1134.7	V. good	Good	High	Medium	Good	Slst., carb.	-	
SWC 56	1147.8	Good	Good	High	High	Good	Slst., carb.	-	
SWC 55	1154.7	Good	Low	Medium	Low	Good	Slst., carb.	-	
SWC 54	1164.0	Fair	V. low	Medium	Low	Fair	Ss., carb.	-	
SWC 53	1202.0	Fair	-	Medium	-	Fair	Slst. carb.	minor	
SWC 52	1228.6	Fair	Low	Medium	Medium	Fair	Clyst., carb.	-	
SWC 51	1257.5	Low	-	Medium	-	Good	Clyst.	-	spore-dominated
SWC 50	1278.0	Low	-	High	-	Good	Slst., carb.	-	
SWC 49	1312.0	Low	-	Medium	-	Fair	Slst., carb.	-	
SWC 48	1344.0	Good	-	High	-	Good	Slst., carb.	-	
SWC 46	1377.5	Good	Low	High	Low	Good	Slst., carb., coaly	minor	
SWC 45	1380.0	-	-	-	-	-	Ss.	-	Barren
SWC 44	1381.5	Fair	Low	Medium	Low	Poor	Slst., carb.	-	
SWC 43	1382.5	Good	V. low	High	Low	Fair	Slst., coaly	minor	
SWC 42	1383.5	V. good	-	High	-	Good	Ss.	-	
SWC 40	1409.5	Good	-	High	-	Good	Ss./Slst.	-	

TABLE 3: SUMMARY OF BASIC PALYNOLOGICAL DATA

WHIPTAIL-1A

DIVERSITY -	low	medium	high
S & P	less than 10	10-30	greater than 30
D	1-3	3-10	10

SAMPLE NO.	DEPTH (m)	YIELD SPORE-POLLEN	YIELD DINOS	DIVERSITY SPORE-POLLEN	DIVERSITY DINOS	PRESERVATION	LITHOLOGY	PYRITIZATION	COMMENTS
SWC 38	1447.0	Low	-	Medium	-	Fair	Coal	-	
SWC 37	1451.8	V. low	-	Low	-	Fair	Slst., coaly	-	
SWC 36	1478.0	V. low	Low	Low	Medium	Poor	Clyst.	moderate	
SWC 35	1501.5	V. low	V. low	Low	Low	Good	Slst.	-	
SWC 34	1571.8	Low	V. low	Medium	Low	Fair	Slst.	minor	
SWC 31	1635.2	V. good	Low	Medium	Low	Good	Clyst.	minor	freshwater?
SWC 30	1660.0	Low	-	Low	-	Good	Ss.	-	
SWC 29	1698.0	V. low	-	Low	-	Good	Ss., carb.	-	
SWC 27	1811.0	V. good	Fair	Medium	?Medium	Poor	Slst., carb.	-	
SWC 23	2060.8	V. low	V. low	Low	Low	Fair	Ss., carb.	-	contaminated
SWC 19	2126.0	V. low	-	Low	-	Poor	Ss.	moderate	contaminated
SWC 17	2218.2	Low	-	Medium	-	Poor	Clyst.	-	
SWC 15	2292.8	Low	-	Low	-	Fair	Ss., carb.	-	
SWC 13	2415.0	Fair	-	Medium	-	Fair	Slst.	-	
SWC 11	2476.5	Fair	-	Medium	-	Poor	Clyst.	-	
SWC 10	2347.0	Fair	-	Medium	-	Poor	Slst. carb.	-	
SWC 9	2600.0	Good	-	Low	-	Fair	Clyst.	-	
SWC 3	2712.0	Low	-	Medium	-	Fair	Slst., coaly	-	
SWC 2	2715.0	Low	-	Medium	-	Fair	Slst.	-	

APPENDIX 3

APPENDIX 3

WHIPTAIL-1A

QUANTITATIVE LOG ANALYSIS

Interval: 1145 - 2800m KB

Analyst : L.J. Finlayson

Date : September, 1985

WHIPTAIL-1A QUANTITATIVE LOG ANALYSIS

Whiptail-1A wireline logs have been analysed for effective porosity and water saturation over the interval 1145-2800m KB. Analysis was carried out using a reiterative technique which incorporates hydrocarbon correction to the porosity logs, density-neutron crossplot porosities, a Dual Water saturation relationship and convergence on a preselected grain density window by shale volume adjustment.

Logs Used

LLD, LLS (DLTE), MSFC, RHOB (LDTC), CAL, GR, NPHI (CNTH).

The NPHI curve was corrected for borehole and environmental effects. The borehole corrected MSFC was used with the LLD and LLS to derive Rt and invasion diameter logs.

Log Quality

Most logs appeared (both visually and from calibration data) to be of reasonable quality except for the LDT. The surface calibration data and quality ratios seemed to be of reasonable quality however the downhole QC curve for the short spacing detector (QSS) was marginal to out of tolerance for much of the log. The negative DRHO also suggests that this log is of suspect quality. Schlumberger have been made aware of these problems. The SLS was not used in this analysis although it was noted that the 'noise' seen on the TT1 receiver in previous wells was not present in this log.

Analysis Parameters

a	1
m	2
N	2
Grain Density - lower limit	2.65 gm/cc
Grain Density - upper limit	2.67 gm/cc
Mud Filtrate Density (RHOF)	1.00 gm/cc
Bottom Hole Temperature	82°

Depth Interval (m)	RHOBSH (gm/cc)	NPHISH (gm/cc)	RSH (ohm-m)
1145 - 1350	2.40	0.39	25
1350 - 1450	2.45	0.40	30
1450 - 1990	2.53	0.37	30
1990 - 2200	2.57	0.29	40
2200 - 2485	2.57	0.29	15
2485 - 2700	2.60	0.24	15
2700 - 2815	2.60	0.24	25

Shale Volume

An initial estimate of VSH was calculated from density-neutron separation.

$$VSHND = \frac{NPHI - \frac{2.65 - RHOB}{1.65}}{NPHISH - \frac{2.65 - RHOBSH}{1.65}} \qquad - 1$$

Total Porosities

Total porosity was initially calculated from a density-neutron logs using the following algorithms:

$$h = 2.71 - RHOB + NPHI\ (RHOF - 2.71) \qquad - 2$$

if h is greater than 0, then

$$\text{apparent matrix density, } RHOMa = 2.71 - h/2 \qquad - 3$$

if h is less than 0, then

$$\text{apparent matrix density, } RHOMa = 2.71 - 0.64h \qquad - 4$$

$$\text{Total porosity: } PHIT = \frac{RHOMa - RHOB}{RHOMa - RHOF} \qquad - 5$$

where RHOB = bulk density in gms/cc
NPHI = environ. corrected neutron porosity in limestone porosity units.
RHOF = fluid density (1.00 gms.cc)

Free Formation Water (Rw) and Bound Water (Rwb) Resistivities

Apparent water resistivity (Rwa) was derived as follows:

$$Rwa = Rt * PHIT^{m} \quad (m = 2) \qquad - 6$$

Free formation water resistivity (Rw) was taken from the clean, water sand Rwa. Bound water resistivity (Rwb) was calculated from the input shale resistivity value (RSH) read directly from the Rt log.

Listed below are the selected Salinity.

Depth Interval (m)	Salinity (ppm NaCleq.)
1145 - 1530	8,000
1530 - 1698	1,200
1698 - 2160	3,000
2160 - 2257	9,000
2257 - 2315	14,000
2315 - 2372	25,000
2372 - 2420	30,000
2420 - 2616	25,000
2616 - 2720	15,000
2720 - 2800	10,000

In the zone of fresh water flushing it was considered appropriate to derive the Rw used in the hydrocarbon zones from the unflushed water sands below 2315m KB. A salinity of 20,000 ppm NaCleq. was therefore used in the oil sands between 1379.75-1397.75m KB.

Water Saturations

Water saturations were determined from the Dual Water model which uses the following relationship:

$$\frac{1}{Rt} = SwT^{n} * \left(\frac{PHIT^{m}}{aRw}\right) + SwT^{(n-1)} \left[\frac{Swb * PHIT^{m}}{a}\left(\frac{1}{Rwb} - \frac{1}{Rw}\right)\right] \quad -7$$

or

$$\frac{1}{Rxo} = SxoT^{n} * \left(\frac{PHIT^{n}}{aRmf}\right) + SxoT^{(n-1)} \left[\frac{Swb * PHIT^{m}}{a}\left(\frac{1}{Rwb} - \frac{1}{Rmf}\right)\right] \quad -8$$

where: SwT and SxoT are "total" water saturations

and Swb (bound water saturation) $= \frac{VSH * PHISH}{PHIT}$ -9

where: PHISH = total porosity in shale derived from density-neutron crossplot.

with a = 1
m = 2
n = 2

Hydrocarbon correction to the porosity logs utilised the following algorithms:

RHOB (Hydrocarbon corrected) $= RHOB(raw) + 1.07\ PHIT\ (1-SxoT)\ [(1.11-0.15P)RHOF - 1.15RHOH]$ -10

NPHI (Hydrocarbon corrected) $= NPHI(raw) + 1.3\ PHIT\ (1-SxoT)\ \frac{RHOF(1-P)-1.5RHOH + 0.2}{RHOF(1-P)}$ -11

where: P = mud filtrate salinity in parts per unity
RHOF = mud filtrate density
RHOH = hydrocarbon density (0.70 gm/cc for oil)

The calculated "grain density" was derived by removing the shale component from the rock using the following algorithms:

$$RHOBSC = \frac{RHOB\ (hydrocarbon\ corrected) - VSH * RHOBSH}{1-VSH} \quad -12$$

$$NPHISC = \frac{NPHI\ (hydrocarbon\ corrected) - VSH * NPHISH}{1-VSH} \quad -13$$

The shale corrected density and neutron values were then entered into the cross-plot algorithms (equations 3, 4 and 5) to derive grain density (RHOG).

If calculated RHOG fell inside the specified grain density window, then PHIE and Swe were calculated as follows:

$$PHIE = PHIT - VSH * PHISH \quad -14$$

$$Swe = 1 - \frac{PHIT}{PHIE}(1-SwT) \quad -15$$

If VSH was greater than 0.50 and PHIE less than 0.10, Swe was set to 1.

If the calculated RHOG fell outside the specified grain density window, VSH was adjusted appropriately and the process repeated.

Comments

1. An 18.0m oil column with 13.25m net sand is interpreted over the interval 1379.75-1397.75m KB.

2. No OWC is interpreted from the logs.

3. All other zones are interpreted as being water productive.

4. No hydrocarbons are calculated in the 'Top of Latrobe' sands despite the gas shows on the mud log.

5. Mud log shows suggest residual oil over the following intervals: 2455-2470m, 2620-2625m and 2660-2670m KB. Log analysis however is unable to confirm or quantify these shows.

6. Attached is a Summary of Results, a Porosity vs. Depth Crossplot, a Log Analysis Depth Plot and a Listing of Results.

26551/68-72

WHIPTAIL-1A

SUMMARY OF RESULTS

Interval Evaluated: 1145m to 2800m KB

Depth Interval (m KB)	Gross Thickness (m)	* Net Thickness (m)	*Porosity Average	* Swe Average	Fluid Content
1157.50 - 1201.25	43.75	43.75	0.264 ± 0.031	1.000	Water
1211.25 - 1213.00	1.75	1.75	0.257 ± 0.038	1.000	Water
1220.00 - 1221.75	1.75	1.75	0.276 ± 0.021	1.000	Water
1229.25 - 1237.00	7.75	7.75	0.287 ± 0.022	1.000	Water
1242.50 - 1244.75	2.25	2.25	0.254 ± 0.037	1.000	Water
1248.25 - 1249.75	1.50	1.50	0.276 ± 0.022	1.000	Water
1252.25 - 1255.75	3.50	3.50	0.258 ± 0.051	1.000	Water
1258.50 - 1272.50	6.50	6.25	0.253 ± 0.048	1.000	Water
1284.25 - 1286.25	2.00	2.00	0.266 ± 0.041	1.000	Water
1292.25 - 1304.75	12.50	11.75	0.255 ± 0.031	1.000	Water
1307.00 - 1309.00	2.00	2.00	0.253 ± 0.043	1.000	Water
1313.75 - 1317.75	4.00	4.00	0.292 ± 0.016	1.000	Water
1321.75 - 1349.25	27.50	26.50	0.253 ± 0.046	1.000	Water
1351.00 - 1355.75	4.75	4.75	0.273 ± 0.051	1.000	Water
1363.75 - 1370.75	7.00	7.00	0.288 ± 0.025	1.000	Water
1375.25 - 1375.75	0.50	0.50	0.129 ± 0.006	1.000	Water
1379.75 - 1381.25	1.50	1.50	0.242 ± 0.006	0.078 ± 0.023	Oil
1382.50 - 1382.75	0.25	0.25	0.148 ± 0.027	0.388 ± 0.083	Oil
1385.25 - 1393.50	8.25	8.25	0.278 ± 0.047	0.098 ± 0.028	Oil
1394.50 - 1397.75	3.25	3.25	0.235 ± 0.049	0.147 ± 0.040	Oil
1401.00 - 1428.00	27.00	26.50	0.266 ± 0.039	1.000	Water
1433.75 - 1437.80	4.00	4.00	0.261 ± 0.039	1.000	Water
1452.30 - 1454.30	2.00	2.00	0.181 ± 0.052	1.00	Water
1456.00 - 1475.25	19.25	19.25	0.250 ± 0.031	1.000	Water
1478.75 - 1485.75	7.00	7.00	0.232 ± 0.035	1.000	Water
1494.75 - 1500.25	5.50	5.50	0.262 ± 0.036	1.000	Water
1502.25 - 1509.75	7.50	7.50	0.267 ± 0.015	1.000	Water
1515.75 - 1525.25	9.50	8.50	0.238 ± 0.039	1.000	Water
1534.25 - 1543.00	8.75	8.50	0.190 ± 0.042	1.000	Water
1545.50 - 1559.25	13.75	13.75	0.206 ± 0.032	1.000	Water
1561.00 - 1569.75	9.00	7.75	0.195 ± 0.046	1.000	Water
1572.50 - 1602.75	30.25	30.25	0.234 ± 0.031	1.000	Water
1604.50 - 1674.25	69.75	66.25	0.229 ± 0.048	1.000	Water
1677.25 - 1681.75	4.50	4.00	0.222 ± 0.032	1.000	Water
1687.75 - 1696.75	9.00	9.00	0.211 ± 0.029	1.000	Water

SUMMARY OF RESULTS (CON'T)

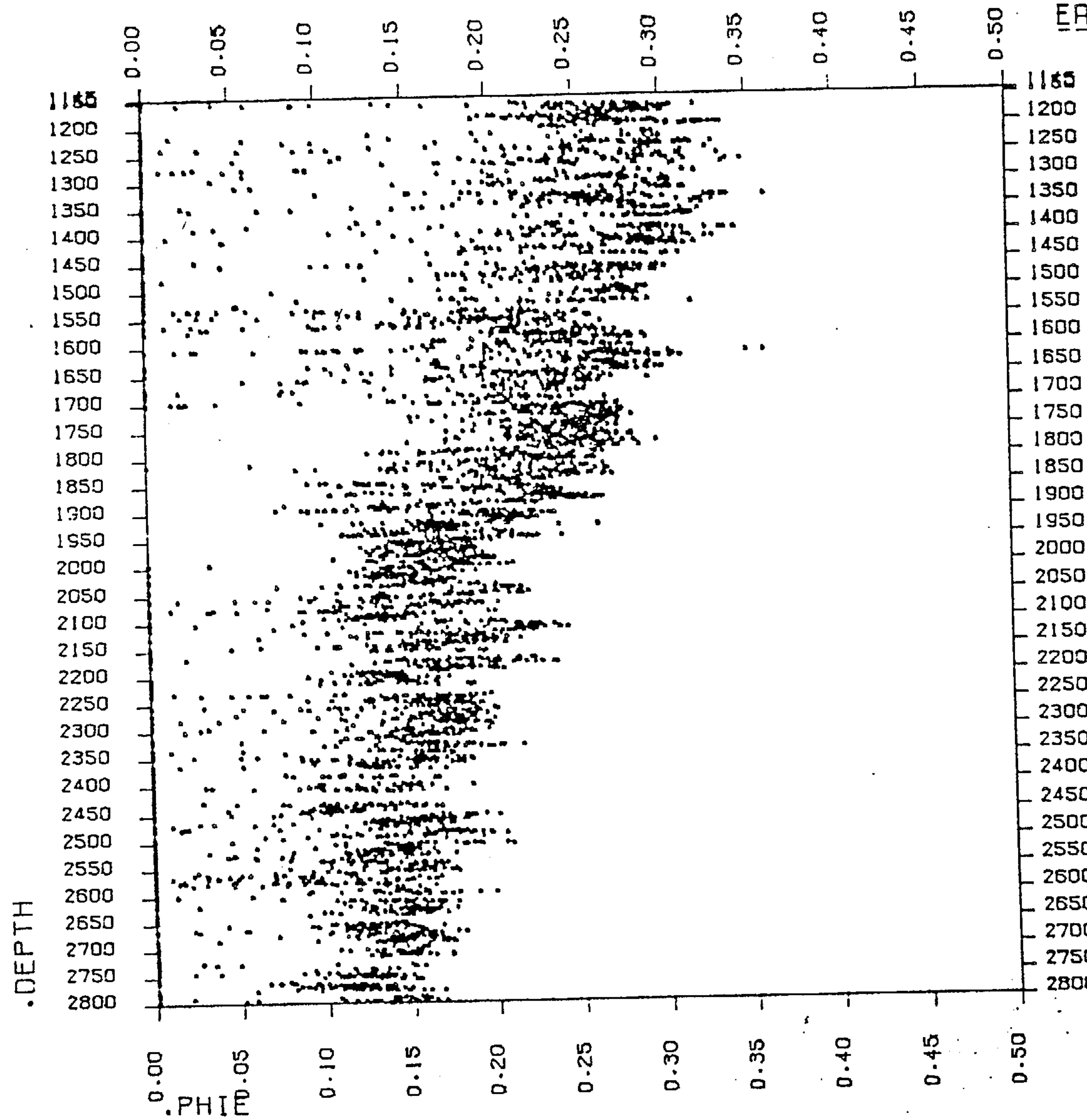
Depth Interval (m KB)	Gross Thickness (m)	* Net Thickness (m)	*Porosity Average	* Swe Average	Fluid Content
1699.00 - 1810.00	111.00	110.25	0.231 ± 0.031	1.000	Water
1812.25 - 1991.75	179.00	177.25	0.186 ± 0.037	1.000	Water
1993.25 - 2007.75	14.50	14.00	0.166 ± 0.023	1.000	Water
2008.50 - 2020.75	12.25	12.25	0.144 ± 0.014	1.000	Water
2023.25 - 2039.25	16.00	15.75	0.166 ± 0.029	1.000	Water
2044.25 - 2057.25	13.00	12.50	0.166 ± 0.030	1.000	Water
2060.75 - 2074.25	13.50	13.50	0.157 ± 0.028	1.000	Water
2078.75 - 2081.25	2.50	2.25	0.132 ± 0.037	1.000	Water
2083.50 - 2095.75	12.25	12.25	0.134 ± 0.015	1.000	Water
2098.50 - 2102.50	4.00	4.00	0.179 ± 0.018	1.000	Water
2104.00 - 2107.75	3.75	3.75	0.202 ± 0.035	1.000	Water
2111.00 - 2145.75	34.75	33.75	0.181 ± 0.030	1.000	Water
2148.50 - 2155.25	6.75	6.75	0.160 ± 0.022	1.000	Water
2166.50 - 2176.50	10.00	10.00	0.188 ± 0.030	0.956	Water
2178.50 - 2202.75	24.25	24.00	0.158 ± 0.024	0.962	Water
2206.50 - 2208.75	2.25	2.25	0.139 ± 0.014	1.000	Water
2211.25 - 2215.75	4.50	4.25	0.151 ± 0.025	1.000	Water
2234.25 - 2255.00	20.50	20.25	0.161 ± 0.021	1.000	Water
2257.25 - 2278.50	21.25	19.75	0.166 ± 0.024	0.984	Water
2280.75 - 2288.75	8.00	8.00	0.170 ± 0.022	1.000	Water
2294.25 - 2313.00	18.75	17.75	0.155 ± 0.021	1.000	Water
2319.25 - 2331.00	18.75	17.75	0.155 ± 0.021	0.966	Water
2334.75 - 2339.75	5.00	5.00	0.153 ± 0.014	0.996	Water
2346.25 - 2361.50	15.25	14.00	0.146 ± 0.022	0.975	Water
2364.00 - 2367.75	3.75	3.75	0.140 ± 0.014	1.000	Water
2382.50 - 2384.50	2.00	2.00	0.143 ± 0.013	1.000	Water
2396.00 - 2400.00	4.00	4.00	0.148 ± 0.015	0.938	Water
2404.75 - 2409.75	5.00	5.00	0.133 ± 0.016	0.969	Water
2431.00 - 2438.75	7.75	6.25	0.132 ± 0.019	1.000	Water
2441.50 - 2446.75	5.25	3.75	0.114 ± 0.011	0.879	Water
2452.00 - 2454.50	2.50	2.50	0.179 ± 0.013	0.873	Water
2456.75 - 2494.00	37.25	29.75	0.153 ± 0.022	0.975	Water
2502.25 - 2508.50	6.25	6.25	0.157 ± 0.029	0.961	Water
2512.75 - 2518.50	5.75	5.75	0.139 ± 0.012	0.971	Water
2520.25 - 2527.25	7.00	6.25	0.136 ± 0.017	0.924	Water
2535.25 - 2541.25	6.00	5.50	0.134 ± 0.022	0.904	Water
2544.25 - 2541.25	1.25	1.25	0.140 ± 0.021	1.000	Water
2549.75 - 2558.50	8.75	7.50	0.145 ± 0.019	0.928	Water

SUMMARY OF RESULTS (CON'T)

Depth Interval (m KB)	Gross Thickness (m)	* Net Thickness (m)	*Porosity Average	* Swe Average	Fluid Content
2568.25 - 2571.75	3.50	3.50	0.140 ± 0.016	0.888	Water
2577.25 - 2578.75	1.50	1.50	0.122 ± 0.011	1.000	Water
2581.50 - 2582.75	1.25	1.25	0.138 ± 0.019	1.000	Water
2589.75 - 2598.00	8.25	7.75	0.149 ± 0.021	0.826	Water
2606.75 - 2613.75	7.00	7.00	0.142 ± 0.019	0.882	Water
2618.50 - 2632.75	14.25	14.00	0.145 ± 0.016	0.957	Water
2635.50 - 2636.75	1.25	1.25	0.141 ± 0.006	0.872	Water
2647.75 - 2686.75	39.00	35.50	0.138 ± 0.017	0.995	Water
2692.25 - 2693.75	1.50	1.50	0.149 ± 0.009	1.000	Water
2699.25 - 2703.75	4.50	4.50	0.138 ± 0.014	1.000	Water
2707.00 - 2711.75	4.75	4.75	0.144 ± 0.014	0.988	Water
2735.25 - 2737.00	1.75	1.75	0.125 ± 0.008	1.000	Water
2743.50 - 2754.75	11.25	10.50	0.128 ± 0.013	1.000	Water
2764.00 - 2777.50	13.50	11.50	0.124 ± 0.015	0.939	Water
2788.25 - 2790.50	2.25	2.25	0.143 ± 0.015	0.980	Water
2794.75 - 2798.75	4.00	4.00	0.140 ± 0.016	1.000	Water

* Net Thickness, Porosity Average and Swe Average refer to those zones where porosity is greater than 10%.

EALOG CROSS PLOT [3.0]



WHIPTAIL#1A POROSITY VS DEPTH

0 EXIT
1 NEXT CROSS PLOT
2 DIGITIZE POLYGON
3 DEPTH STICK PLOT
4 DEPTH LIST
5 CREATE DEPTH TABLE
6 FIT POLYNOMIAL

PE601142

This is an enclosure indicator page.
The enclosure PE601142 is enclosed within the container PE902381 at this location in this document.

The enclosure PE601142 has the following characteristics:

ITEM_BARCODE =	PE601142
CONTAINER_BARCODE =	PE902381
NAME =	Quantitative Log Analysis
BASIN =	GIPPSLAND
PERMIT =	VIC/L1
TYPE =	WELL
SUBTYPE =	WELL_LOG
DESCRIPTION =	Quantitative Log Analysis (enclosure from WCR vol.2) for Whiptail-1
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/10/86
W_NO =	W915
WELL_NAME =	Whiptail-1A
CONTRACTOR =	
CLIENT_OP_CO =	ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 4

WHIPTAIL 1A

RFT SURVEYS

August 1985

R.D. Langusch
January, 1986

(6884f)

WHIPTAIL 1A RFT SURVEYS

SUMMARY:

Whiptail 1A was drilled in August 1985 to a total depth of 2800m SS to test the hydrocarbon potential of a simple Top of Latrobe group anticlinal closure with a secondary objective as the faulted Intra-Latrobe group.

No hydrocarbons were intersected at the Top of Latrobe Coarse Clastics level, however drilling shows and log analysis indicated an 18 metre gross oil column at the Upper N. asperus level within the Intra-Latrobe group.

A series of RFT tests was conducted over the period 18-28 August, 1985. The test objectives were to confirm the presence of the N-1 oil zone, to collect an oil sample for PVT and compositional analysis and to sample at various depths over the gross interval 1133.0-2645.8m SS to validate log analysis.

In summary, RFT pressure data indicated a 20m gross oil column from 1359.0m to an interpreted most likely oil-water contact at 1379.0m SS. Four oil samples of a highly undersaturated 42°API crude were collected from this interval with one sample retained for laboratory analysis.

No other hydrocarbon columns were detected and RFT pressure and sample data showed other sands to be water-bearing and lying on the normal Gippsland basin water gradient.

TEST PROCEDURE

A total of nine RFT runs were made in Whiptail 1A exploration well during two surveys conducted on 18-19 August and 28 August, 1985, as follows:

Date	Run No.	No. Seats	Pretests	Samples	Interval (m SS)
18 Aug	1	1		2	1376.5
	2	1		2	1359.2
	3	1		2	1264.5
	4	1		2	1274.0
19 Aug	5	3	1	2	1133.0-1137.0
	6	3	1	2	1476.0-1476.5
	7	14	10	2	1254.5-1433.0
28 Aug	8	10	6	1	2627.5-2645.8
	9	8	7	2	1359.0-2644.0

From the total of 42 successful sets of the RFT tool, 25 pretests provided formation pressures only whilst fluid samples were also collected on a further 9 sets. Of the 25 pressure tests obtained, all were considered valid formation pressures except for seat number 5/5 which is affected by supercharging.

Pressure data from the Hewlett-Packard Quartz gauge was used in all subsequent results analysis. Comparison with the Schlumberger strain gauge pressures showed that whilst strain gauge values were consistent, they ranged from 1 to 13 psi higher than the HP gauge, which has been taken as reference. Full details of all pressure information obtained are tabulated in Table 1 and presented graphically in Figures 1-3 attached.

Segregated samples were successfully obtained on 8 sets (1/1, 2/2, 3/3, 4/4, 5/7, 6/10, 7/24, 9/40). However multiple attempts to sample over the interval 2628.5-2645.8m SS (seats 8/23, 8/24, 8/30, 8/32) were generally unsuccessful with only a very slow flow observed into the sample chamber, and a composite filtrate sample only obtained from this interval. Details of all samples recovered are contained in Table 2.

RESULTS ANALYSIS AND DISCUSSION

The main results of the pressures obtained, illustrated in Figures 1 through 3 are as follows:

(1) The presence of a most-likely 20.0m gross vertical oil column is interpreted over the interval 1359.0-1379.0m SS. An average oil gradient of 1.09psi/m was measured over this interval. Sample run number 1/1 (1376.5m SS) recovered 9.6 litres of oil (42°API) in the upper chamber and 22.0 litres of oil (37°API) with a GOR of 5 SCF/bbl from the lower chamber. Sample run number 2/2 (1359.2m SS) recovered 17.3 litres of oil (41°API) with a GOR of 2 SCF/bbl and 5.25 litres of filtrate from the lower chamber.

(2) The oil water contact in the N-1 sands was interpreted at 1379.0m SS. Several OWC interpretations are possible by drawing various water gradient lines to intersect the N-1 oil gradient. A shift in the basin water line due to drawdown from Gippsland production decreasing with depth, compounded by water salinity changes with depth, result in different water gradients above and below the oil zone as shown in Figure 2.

Figure 1 presents a plot of all pressure data from both RFT surveys showing an overall (water) gradient of 1.43 psi/m from mean sea level. Figure 2 presents pressure data above and below the N-1 oil zone. Differences between the water points above with a gradient of 1.40 psi/m (seats 7/23, 7/22, 7/24, 7/21) and the water points below with a gradient of 1.44 psi/m (7/16, 9/36, 7/15, 9/35, 7/14, 9/34) can be seen on this plot.

Figure 2A illustrates the maximum possible OWC interpretation as deep as 1389.0m SS using the water gradient of 1.40 psi/m defined by the upper water points. This intersection lies below high proved water at 1380.5m SS and would indicate a seal at the base of the N-1.4 with a contact downdip of the Whiptail 1A intersection.

Figure 2B illustrates a minimum interpretation constructing a 1.40 psi/m water gradient through point 7/16. However this results in a contact above low proved oil at 1376.8m SS which is not feasible.

The OWC lies between the deep contact at 1389.0m SS defined by the upper 1.40 psi/m line and the low proved oil at 1376.8m SS. By using a 1.44 psi/m water gradient with best fit through points 7/14, 7/15 and 7/16, the most likely OWC is interpreted at 1379.0m SS in a non-net reservoir section between low proved oil and high proved water.

Figure 3 presents an expanded plot of the interpreted OWC of 1379.0m SS.

(3) As shown by Figure 1, all pressures lie on a water gradient of 1.43 psi/m from mean sea level, which is in good agreement with the Gippsland Basin average of 1.42 psi/m. The four N-1 oil sand units are in hydraulic communication with the aquifer hence one would expect strong pressure support during any production. The reservoir pressure is drawn down by 55 psi from the original Gippsland pressure, compared with the 50 psi drawdown observed in nearby Barracouta-5 in February 1985.

(4) Results of the RFT sample analyses are presented in Table 3. For each seat where a segregated sample was attempted, fluid recovery data for the upper RFT chamber only is presented as it is considered most representative of formation fluids. In summary, samples in the N-1 oil zone at seats 1/1 (1376.5m SS) and 2/2 (1359.2m SS) recovered good oil samples with gravities in range 37-42°API and very low GOR's from 2 to 5 SCF/bbl.

All other samples recovered either formation water or filtrate. For seats 3/3 (1264.5m SS), 4/4 (1274.0m SS), 5/7 (1137.0m SS), 6/10 (1476.0m SS) and 7/24 (1342.5m SS), formation water samples were recovered. Measured salinities covered the range 2600-9000 ppm NaCl confirming fresh water flushing and shows good agreement with the apparent Rwa of 8000 ppm NaCl used for log analysis.

Attempts to recover formation fluids from the deeper interval 2626.7-2665.7m SS during seats 8/23, 30, 32 and 9/40 were unsuccessful with mud filtrate only being sampled on both runs. Very low sampling pressures for all of these seats indicated low permeabilities over this interval.

TABLE 1

WHIPTAIL 1A RFT RESULTS
(HP Gauge Pressures)

Run/ Seat	Date	Depth mMDKB	Depth m SS	Formation Pressure (psig)	Test Type	Remarks
1/1	18 Aug	1397.5	1376.5	1967.0	S	Segregated sample
2/2	18 Aug	1380.2	1359.2	1948.2	S	Segregated sample
3/3	18 Aug	1285.5	1264.5	1807.8	S	Segregated sample
4/4	18 Aug	1295.0	1274.0	1822.1	S	Segregated sample
5/5	19 Aug	1154.0	1133.0	1674.5	P	Valid, supercharged
5/6	19 Aug	1154.2	1133.2	-	P	Tight
5/7	19 Aug	1158.0	1137.0	1623.7	S	Segregated sample
6/8,9	19 Aug	1497.5	1476.5	2110.6	P	Valid
6/10	19 Aug	1497.0	1476.0	2109.9	S	Segregated sample
7/11	19 Aug	1275.5	1254.5	-	P	Tight
7/12	19 Aug	1276.5	1255.5	-	P	Tight
7/13	19 Aug	1278.5	1257.5	-	P	Tight
7/14	19 Aug	1454.0	1433.0	2049.6	P	Valid
7/15	19 Aug	1420.0	1399.0	1999.6	P	Valid
7/16	19 Aug	1403.5	1382.5	1976.8	P	Valid
7/17	19 Aug	1397.5	1376.5	1967.3	P	Valid
7/18	19 Aug	1392.0	1371.0	1961.1	P	Valid
7/19	19 Aug	1385.5	1364.5	1954.2	P	Valid
7/20	19 Aug	1380.0	1359.0	1948.5	P	Valid
7/21	19 Aug	1369.0	1348.0	1924.5	P	Valid
7/22	19 Aug	1352.5	1331.5	1902.1	P	Valid
7/23	19 Aug	1331.0	1310.0	1872.1	P	Valid
7/24	19 Aug	1363.5	1342.5	1917.0	S	Segregated sample

TABLE 1 (cont'd)

Run/ Seat	Date	Depth mMDKB	Depth m SS	Formation Pressure (psig)	Test Type	Remarks
8/23	28 Aug	2664.5	2643.5	3788.2	S	Tight, no flow
8/24	28 Aug	2665.0	2664.0	3780.3	S	Tight, no flow
8/25	28 Aug	2666.8	2645.8	-	P	Tight
8/26	28 Aug	2663.7	2642.7	-	P	Tight
8/27,28	28 Aug	2665.0	2644.0	-	P	Tight
8/29	28 Aug	2650.0	2629.0	3749.5	P	Valid, tight
8/30	28 Aug	2649.5	2628.5	3748.0	S	Tight, slow flow
8/31	28 Aug	2648.5	2627.5	3745.5	P	Valid, tight
8/32	28 Aug	2651.0	2630.0	3747.9	S	Tight, slow flow
9/33	28 Aug	1497.0	1478.0	2109.6	P	Valid
9/34	28 Aug	1467.0	1446.0	2067.2	P	Valid
9/35	28 Aug	1436.0	1415.0	2023.5	P	Valid
9/36	28 Aug	1407.0	1386.0	1981.3	P	Valid
9/37	28 Aug	1380.0	1359.0	1947.8	P	Valid
9/38	28 Aug	2665.0	2644.0	3783.4	P	Valid, tight
9/39	28 Aug	2665.0	2644.0	3784.8	P	Valid, tight
9/40	28 Aug	2664.5	2643.5	3786.2	S	Tight, slow flow

Note: (i) All pressures measured with Hewlett-Packard quartz gauge.
(ii) KB elevation = 21.0m above mean sea level.

TABLE 2

Whiptail 1A RFT Samples Summary

Run/ Seat	Date	Depth mMDKB	Depth m SS	Chamber Size (l)	Sample Recovery
1/1	18 Aug	1397.5	1376.5	10.4	9.6 litres oil (42°API) no gas
				22.7	22.0 litres oil (37°API) 0.71 cu.ft. gas GOR = 5 SCF/bbl.
2/2	18 Aug	1380.2	1359.2	10.4	Sample retained for PVT analysis
				22.7	16.3 litres oil (41°API) 0.2 cu.ft. gas 5.25 litres filtrate GOR = 2 SCF/bbl.
3/3	18 Aug	1285.5	1264.5	10.4	9.7 litres fitrate and formation water
				22.7	21.5 litres fitrate 0.64 cu.ft. gas
4/4	18 Aug	1295.0	1274.0	10.4	9.75 litres fresh water
				22.7	21.5 litres fresh water
5/7	19 Aug	1158.0	1137.0	10.4	10.2 litres fresh water
				22.7	22.0 litres fresh water 0.85 cu.ft. gas
6/10	19 Aug	1497.0	1476.0	10.4	9.0 litres fresh water
				22.7	20.5 litres filtrate and water
7/24	19 Aug	1363.5	1342.5	10.4	10.0 litres filtrate/water
				22.7	22.0 litres filtrate/water 0.5 cu.ft. gas
8/23,24 30,32	28 Aug	2649.5 -2665.0	2628.5 -2644.0	45.4	Composite sample 20.0 litres filtrate 0.8 cu.ft. gas
9/40	28 Aug	2664.5	2643.5	10.4	3.0 litres filtrate
				45.4	7.3 filtrate 0.6 cu.ft. gas

(6884f:7)

TABLE 3

Whiptail 1A RFT Sample Analysis
(Upper Chamber Sample Data Only)

Run/ Seat	Depth (mMDKB)	Ø (by log analysis)	Sw	Recovery	Salinity ppm NaCl	Tritium dpm	Remarks
1/1	1397.5	23.5	14.7	9.6 l oil	-	-	42°API oil
2/2	1380.2	24.2	7.8				Oil sample for PVT analysis
3/3	1285.5	26.6	100.0	9.7 l water and filtrate	9000	855	Fresh water and some filtrate (Mud 30000ppm NaCl, 3200dpm)
4/4	1295.0	25.5	100.0	9.75 l water	2600	295	Fresh water
5/7	1158.0	26.4	100.0	10.2 l water	3500	532	Fresh water
6/10	1497.0	26.2	100.0	9.0 l water	3700	N/R	Fresh water
7/24	1363.5	28.8	100.0	10.0 l water	9000	N/R	Fresh water and filtrate
8/23,24 30,32	2649.5 -2665.0	13.8	99.5	20.0 l filtrate	30000	3020	Filtrate only (composite sample)
9/40	2664.5	13.8	99.5	3.0 l filtrate	30000	2692	Filtrate only

(6884f:8)

WHIPTAIL 1A RFT SURVEY

18-19 & 28 AUGUST 1985

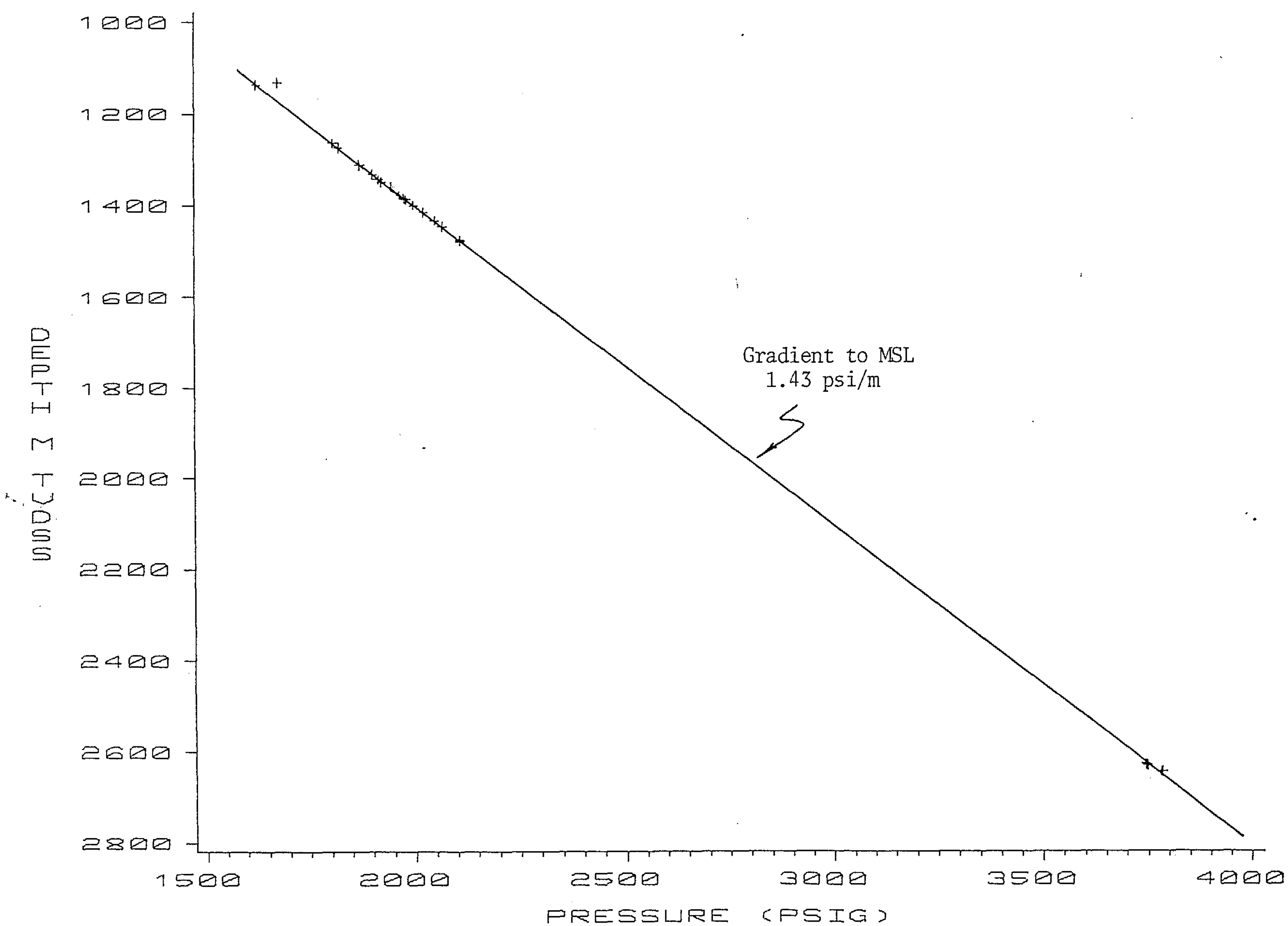


FIGURE 1

WHIPTAIL 1A RFT

N-1 OIL ZONE
OWC INTERPRETATION

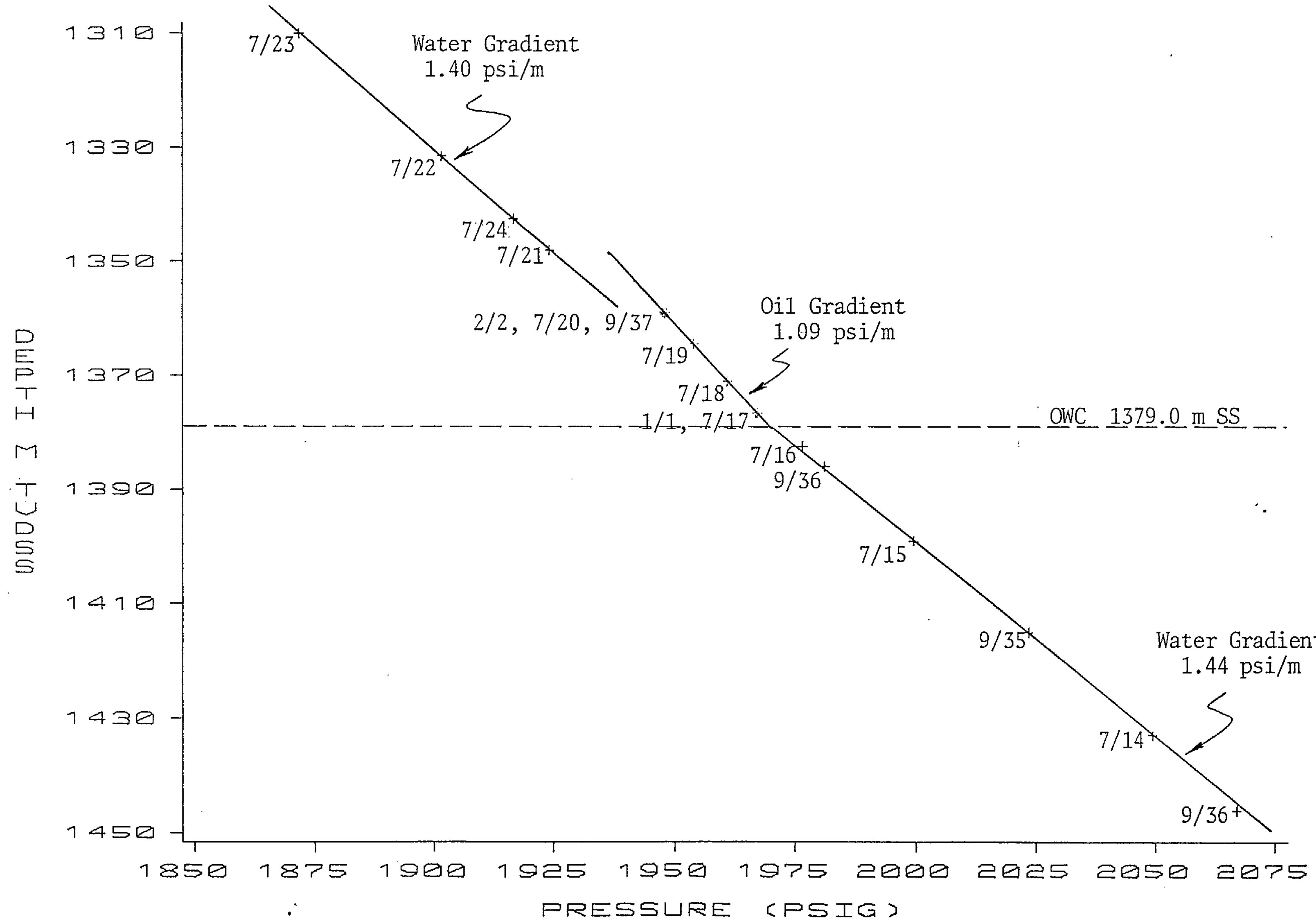


FIGURE 2

WHIPTAIL 1A RFT

N-1 OIL ZONE

OWC MAXIMUM CASE

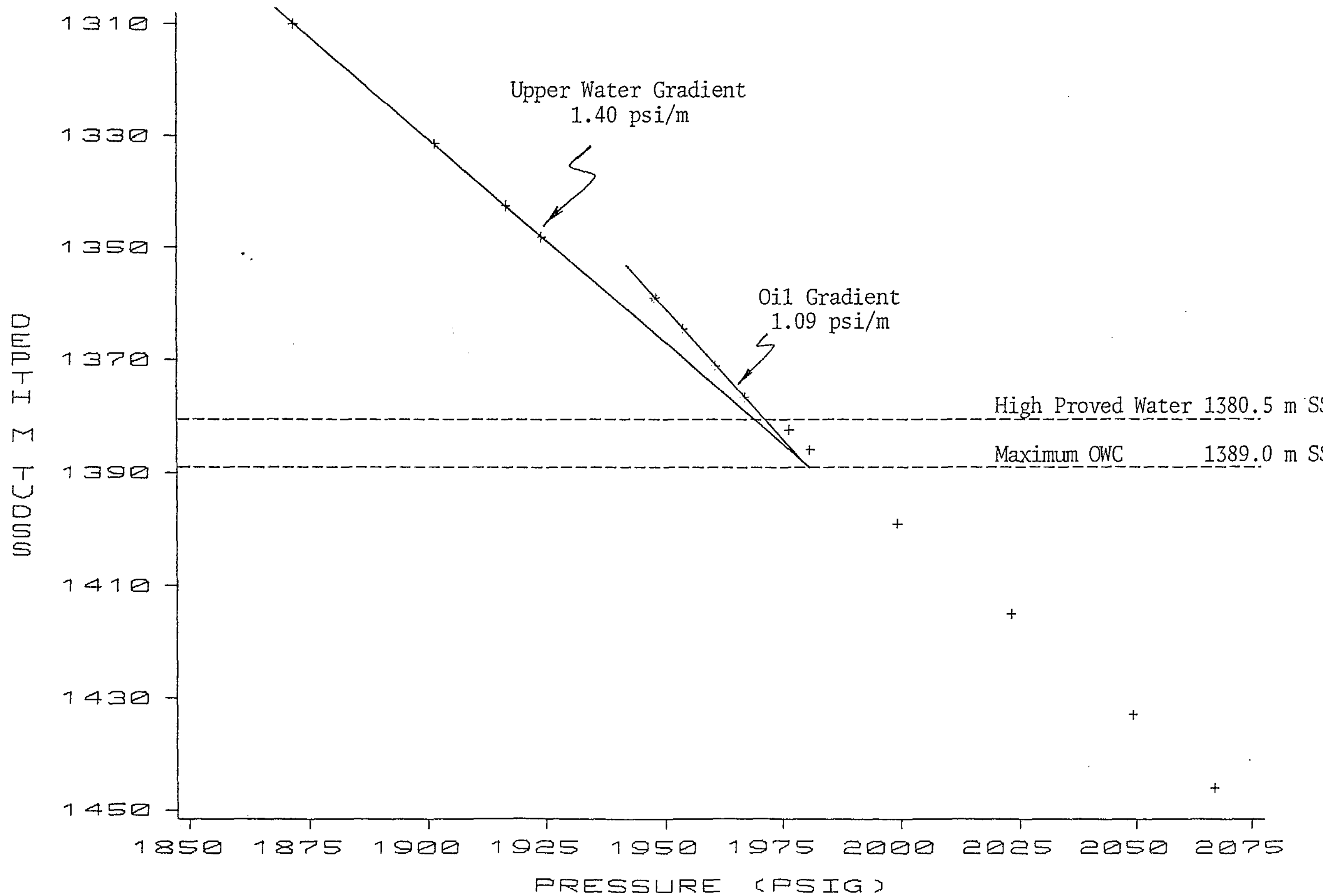


FIGURE 2A

WHIPTAIL 1A RFT

N-1 OIL ZONE

OWC MINIMUM CASE

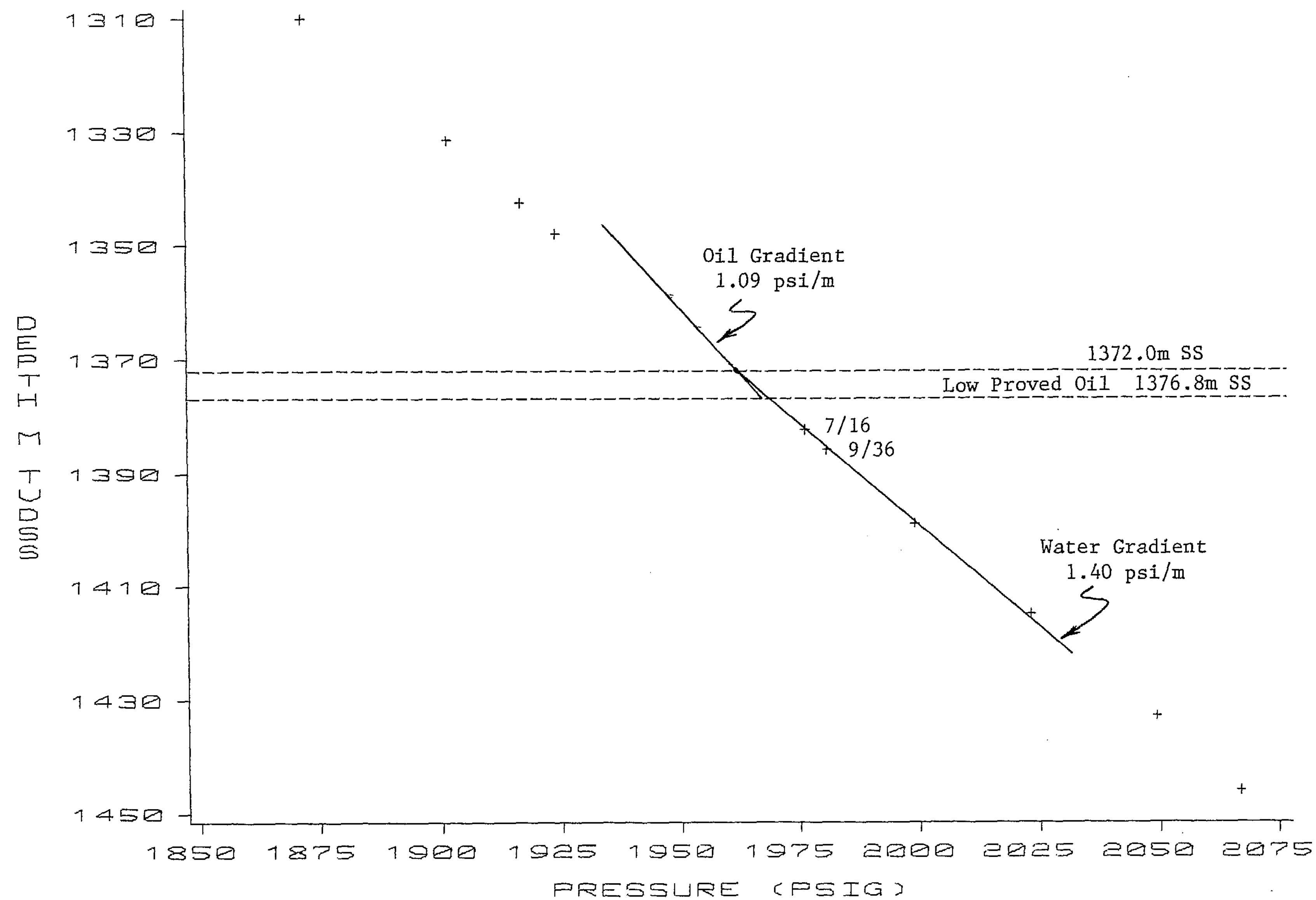


FIGURE 2B

WHIPTAIL 1A RFT

N-1 OIL ZONE

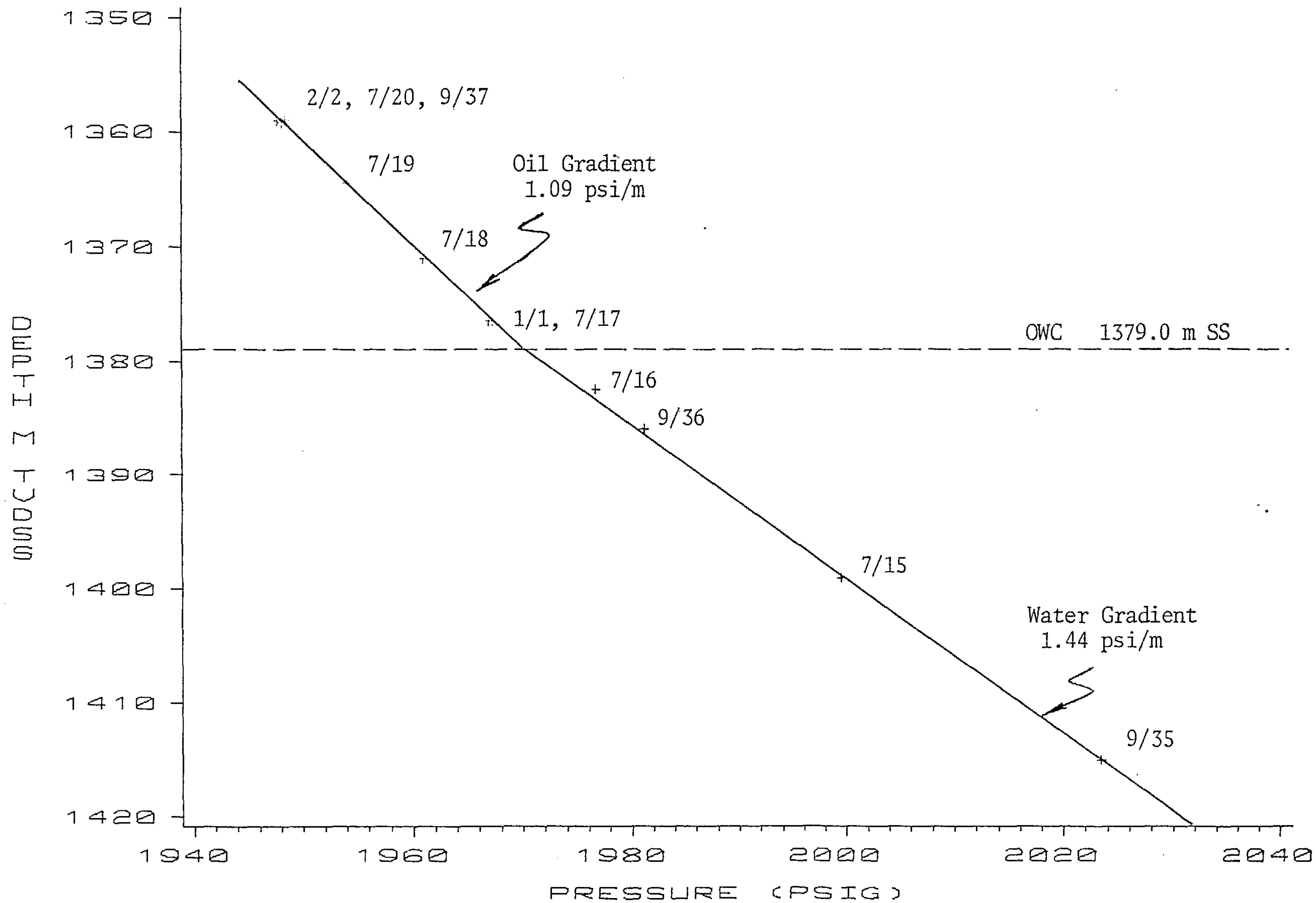


FIGURE 3

APPENDIX 5

GEOCHEMICAL REPORT

WHIPTAIL-1A WELL, GIPPSLAND BASIN

VICTORIA

by

T.R. Bostwick

Sample handling and Analyses by:

- D.M. Hill - D.M. Ford - J. McCardle - H. Schiller - M.A. Sparke	)	ESSO AUSTRALIA LTD.
- A.C. Cook	)	University of Wollongong
- Exxon Production Research Company - Geochem Laboratories	)	Houston, Texas

Esso Australia Ltd.
Geochemical Report

18/3/86

2189L

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Appendix

WHIPTAIL-1A

INTRODUCTION

Canned cuttings and sidewall cores from the Whiptail 1A well, Gippsland Basin, have been analysed for their geochemical characteristics. The canned cuttings were composited over 15-metre intervals from 215 mKB to total depth (T.D.) at 2821 mKB. Alternate 15-metre samples between 245 mKB and T.D. were analysed for light hydrocarbons (C_{1-4}) headspace gas compositions. Selected sidewall cores were analysed for total organic carbon (TOC), Rock-Eval pyrolysis, kerogen isolation and elemental analysis, and vitrinite reflectance. One oil sample was analysed for its API gravity and by whole oil gas chromatography.

The vitrinite reflectance analyses were performed by A.C. Cook of Wollongong University. The other analyses were carried out at Esso Australia's Geochemical Laboratories in Sydney.

Selected cuttings samples were "picked" to obtain uniform lithologies, where practical, and then analysed for TOC and light (C_{4-7}) gasolines at Exxon Production Research Laboratories in Houston. Eight relatively "unpicked" samples were analysed for heavy (C_{15}+) hydrocarbons by Geochem Laboratories of Houston.

The results of the analyses are recorded in Tables 1 through 7 and Figures 1 through 16. Detailed C_{4-7} data sheets and vitrinite reflectance reports are recorded in Appendices 1 and 2.

DISCUSSION OF RESULTS AND INTERPRETATIONS

Richness

Headspace cuttings gas (C_{1-4}) compositions are recorded in Table 1 and Figure 1A. Yields are poor in the Gippsland Limestone and Lakes Entrance Formations, and fair to good in the Latrobe Group sediments, reflecting the organic content and source potential of the drilled section. The organic richness of the Latrobe Group sediments is confirmed by several TOC measurements (Table 2, Figure 2) in excess of 1%, though organic-poor Latrobe sediments are also present within the section.

Pyrolysis yields (Table 3a) from the sidewall cores indicate that the best source potential occurs in the coaly/carbonaceous Latrobe sediments of the 1154.7 - 1447 mKB interval (Mid. Eocene - Paleocene). Other Latrobe samples (of Early Oligocene, Late Eocene and Late Cretaceous ages) are rated as poor. This includes the Late Cretaceous samples at 2476.5 mKB and 2712 mKB which had yielded "good" TOCs, and suggests that these Cretaceous samples through organic rich probably contain poor quality organic matter (i.e. reworked or oxidised kerogen).

The total extract and heavy hydrocarbon yields (Table 4) from the "unpicked" cuttings samples indicate fair hydrocarbon source potential for the Mid. Eocene-Paleocene and Late Cretaceous sediments at 2120 mKB and deeper. This optimistic rating for the Late Cretaceous while in contrast to the poor rating from the pyrolysis data is in line with good ratings from adjacent wells. It is possible that the discrepancy between sidewall core and cuttings data may simply be a function of sampling (i.e. the composite cuttings sample "sees" a 15-metre interval relative to the sidewall core). Admittedly it is also possible that cavings from the rich Mid. Eocene - Paleocene section may have been included in the "unpicked" cuttings thereby rendering the fair interpretation invalid for the Late Cretaceous section.

Hydrocarbon Type

Hydrogen indices (HI) for the section are listed in Table 3b. It appears that the 1154 - 1811.2 mKB interval of Mid. Eocene - Paleocene Latrobe Group sediments contain the most hydrogen-rich organic matter in the drilled section. When plotted against TMAX in the Van Krevelen type plot, the organic matter present throughout the section appears to be land-derived, hydrogen-deficient, Type III kerogen. Traditionally hydrogen-deficient Type III kerogen is considered gas-prone, however the more hydrogen-rich Mid.Eocene - Paleocene kerogens (HIs greater than 200) may have some waxy oil potential if they reach maturity. The Late Cretaceous samples are among the most hydrogen-deficient of the samples analysed and at best may be gas-prone.

The results of elemental analysis on isolated kerogens are listed in Table 5a. The atomic hydrogen: carbon (H/C), atomic oxygen: carbon (O/C) and atomic nitrogen: carbon (N/C) ratios are tabulated in Table 5b. The atomic O/C ratio is approximate since the oxygen value is calculated by difference and the sulphur content, which may be up to a few percent was not determined. The plot of atomic H/C vs atomic O/C (Figure 4) confirms the presence of Type III, land-derived, hydrogen-poor kerogen for most of the section. Several of the Mid Eocene-Paleocene kerogens have H/C ratios in excess of 0.90, and some including a Late Cretaceous sample plot within the mixed Type II and III region. These relatively hydrogen-rich kerogens most likely contain a higher portion of cuticular lipids and can probably by considered a potential source of waxy oil. It is interesting to note that the H/C ratios for two of the four Late Cretaceous kerogens indicate a more hydrogen-rich assemblage than the equivalent hydrogen indicies suggest. This would support the optimistic source potential rating indicated for the Late Cretaceous by the $C_{15}+$ extract data.

Light gasoline (C_{4-7}) yields are summarized in Table 6 and displayed in Figure 5. On the whole the yields are low (most likely a result of low maturity) except in the coals where yields mostly in excess of 50ppm were recorded. The high gasoline content in the coals is a reflection of the oil-generating capacity of the coal macerals present, and the occurrence of these high C_{4-7} yields in immature (as discussed later) coals may be an indication of the role specific coal macerals play in the generation of wet gas and condensates.

Chromatograms of the $C_{15}+$ saturate hydrocarbons extracted from "unpicked" cuttings are shown in Figures 6 through 13. The patterns indicate that the organic facies in the Gippsland Limestone is marine; the Lakes Entrance Formation - mixed marine and terrestrial; the Mid. Eocene - Paleocene Latrobe Group sediments - mixed marine and terrestrial (1145-60 mKB and 1805-20 mKB), and terrestrial (2105-20 mKB); and the Cretaceous Latrobe sediments - terrestrial. Based on the total extract yields, only the Mid. Eocene-Paleocene sample at 2105-20 mKB and the deeper Late Cretaceous samples have any hydrocarbon source potential, therefore a waxy oil could be sourced from the terrestrial organic matter in these sediments.

Maturity

The pronounced odd-over-even carbon preference exhibited by the chromatograms (Figure 6-13), together with pristane being more abundant relative to $n-C_{17}$ indicate that the section is still immature at 2810 mKB. This is supported by the TMAX measurements (Table 3a) and in part by the location of data on the Van Krevelen type plot of atomic H/C vs (approximate) atomic O/C (Figure 4). Also, the low C_{4-7} yields in the non-coal sediments suggest that very little hydrocarbon generation has occurred in situ except for some early generation in the 2495 - 2810 mKB interval.

The vitrinite reflectance data are recorded in Table 1 and plotted versus depth in Figure 14. The interpreted best fit line through the data indicates that full maturity (R_v^{max} = 0.75) for the predominantly land-derived organic matter in the section would be attained around 2900 mKB (which is below T.D. (2821 mKB). An early mature zone (R_v^{max} = 0.65 - 0.75) may be interpreted for the 2500-2821 mKB interval. This interpretation is compatible with the qualitative indications discussed above.

Hydrocarbons

A crude oil sample recovered at 1397.5 mKB was analysed for its API gravity and by whole oil gas chromatography.

The whole oil gas chromatogram (Figure 15) shows that the medium gravity (API = 42^{o}) oil is quite paraffinic with a relatively large component of C_{9-20} paraffins. It is depleted of C_{4-8} paraffins suggesting that some biodegradation has occurred. This evidence of biodegradation is not unexpected since well log interpretations indicate that the Latrobe Group sediments at the Whiptail 1A site have been flushed with freshwater. The slight depletion of the C_{12-14} n-paraffins may be additional evidence of the degradation of the oil.

The paraffinic nature of the oil together with the abundance of pristane relative to phytane (Figure 15) points to a source for the oil that is enriched in terrestrial organic matter.

CONCLUSIONS

1. The section encountered by the Whiptail 1A well is immature to 2500 mKB and at best early mature from 2500 mKB to T.D. at 2821 mKB.

2. Coaly/carbonaceous Latrobe Group sediments encountered in the 1154.7 - 1447 mKB interval (Mid. Eocene - Paleocene age) have good to excellent potential to source waxy oil when mature.

3. Late Cretaceous Latrobe Group sediments also have fair waxy oil-source potential.

4. The medium gravity (API=42^{o}) paraffinic oil recovered at 1397.4 mKB is slightly biodegraded. Like other Gippsland Basin oils, the Whiptail 1A crude has been sourced from terrestrial organic matter.

2189L:7

07/11/85 TABLE 1

ESSO AUSTRALIA LTD.

C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

SAMPLE NO.	DEPTH	METHANE C1	ETHANE C2	PROPANE C3	IBUTANE IC4	NBUTANE C4	WET C2-C4	TOTAL C1-C4	WET/TOTAL PERCENT	TOTAL GAS M	TOTAL GAS E	TOTAL GAS P	TOTAL GAS IB	TOTAL GAS NB	WET GAS E	WET GAS P	WET GAS IB	WET GAS NB
		GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS)								GAS COMPOSITION (PERCENT)								
77851 B	260.00	3	0	0	0	0	0	3	.00	100.	0.	0.	0.	0.	0.	0.	0.	0.
77851 D	320.00	0	0	0	0	0	0	0	.00	0.	0.	0.	0.	0.	0.	0.	0.	0.
77851 F	380.00	11	0	0	0	0	0	11	.00	100.	0.	0.	0.	0.	0.	0.	0.	0.
77851 H	440.00	5	4	0	0	0	4	9	44.44	56.	44.	0.	0.	0.	100.	0.	0.	0.
77851 J	500.00	6	0	0	0	0	0	6	.00	100.	0.	0.	0.	0.	0.	0.	0.	0.
77851 L	560.00	9	0	0	0	0	0	9	.00	100.	0.	0.	0.	0.	0.	0.	0.	0.
77851 N	620.00	6	0	0	0	0	0	6	.00	100.	0.	0.	0.	0.	0.	0.	0.	0.
77851 P	680.00	6	0	0	0	0	0	6	.00	100.	0.	0.	0.	0.	0.	0.	0.	0.
77851 R	710.00	8	0	0	0	0	0	8	.00	100.	0.	0.	0.	0.	0.	0.	0.	0.
77851 T	800.00	16	2	0	0	0	2	18	11.11	89.	11.	0.	0.	0.	100.	0.	0.	0.
77851 V	860.00	81	9	4	2	2	17	98	17.35	83.	9.	4.	2.	2.	53.	24.	12.	12.
77851 X	920.00	28	0	10	5	4	19	47	40.43	60.	0.	21.	11.	9.	0.	53.	26.	21.
77851 Z	980.00	86	4	4	2	2	12	98	12.24	88.	4.	4.	2.	2.	33.	33.	17.	17.
77852 B	1025.00	517	20	9	6	4	39	556	7.01	93.	4.	2.	1.	1.	51.	23.	15.	10.
77852 D	1055.00	16	0	3	3	3	9	25	36.00	64.	0.	12.	12.	12.	0.	33.	33.	33.
77852 F	1085.00	1739	156	46	15	10	227	1966	11.55	88.	8.	2.	1.	1.	69.	20.	7.	4.
77852 H	1115.00	3631	760	433	36	25	1254	4885	25.67	74.	16.	9.	1.	1.	61.	35.	3.	2.
77852 J	1145.00	701	448	394	116	105	1063	1764	60.26	40.	25.	22.	7.	6.	42.	37.	11.	10.
77852 K	1160.00	267	454	140	10627	12	11233	11500	97.68	2.	4.	1.	92.	0.	4.	1.	95.	0.
77852 L	1175.00	4063	2193	810	26201	102	29306	33389	87.77	12.	7.	2.	78.	0.	7.	3.	89.	0.
77852 M	1190.00	2832	901	271	420	55	1647	4479	36.77	63.	20.	6.	9.	1.	55.	16.	26.	3.
77852 N	1205.00	2871	534	286	114	55	989	3860	25.62	74.	14.	7.	3.	1.	54.	29.	12.	6.
77852 P	1235.00	5530	687	52	41	9	789	6319	12.49	88.	11.	1.	1.	0.	87.	7.	5.	1.
77852 R	1265.00	1429	495	95	45	18	653	2082	31.36	69.	24.	5.	2.	1.	76.	15.	7.	3.
77852 T	1295.00	2613	164	13	12	0	189	2802	6.75	93.	6.	0.	0.	0.	87.	7.	6.	0.
77852 V	1325.00	2210	230	61	36	12	339	2549	13.30	87.	9.	2.	1.	0.	68.	18.	11.	4.
77852 X	1355.00	548	53	10	4	1	68	616	11.04	89.	9.	2.	1.	0.	78.	15.	6.	1.
77852 Z	1385.00	12544	1215	502	71	50	1838	14382	12.78	87.	8.	3.	0.	0.	66.	27.	4.	3.
77853 B	1415.00	8797	794	400	63	50	1307	10104	12.94	87.	8.	4.	1.	0.	61.	31.	5.	4.
77853 D	1445.00	3959	511	294	57	66	928	4887	18.99	81.	10.	6.	1.	1.	55.	32.	6.	7.
77853 F	1475.00	6760	572	255	49	60	936	7696	12.16	88.	7.	3.	1.	1.	61.	27.	5.	6.
77853 H	1505.00	4931	363	197	50	49	659	5590	11.79	88.	6.	4.	1.	1.	55.	30.	8.	7.
77853 J	1535.00	5674	358	161	44	42	605	6279	9.64	90.	6.	3.	1.	1.	59.	27.	7.	7.
77853 L	1565.00	298	114	66	21	17	218	516	42.25	58.	22.	13.	4.	3.	52.	30.	10.	8.
77853 N	1595.00	1077	144	65	15	18	242	1319	18.35	82.	11.	5.	1.	1.	60.	27.	6.	7.
77853 P	1625.00	782	94	52	14	14	174	956	18.20	82.	10.	5.	1.	1.	54.	30.	8.	8.
77853 R	1655.00	1520	217	134	40	40	431	1951	22.09	78.	11.	7.	2.	2.	50.	31.	9.	9.
77853 T	1700.00	6231	436	318	47	47	848	7079	11.98	88.	6.	4.	1.	1.	51.	38.	6.	6.
77853 V	1715.00	7227	549	513	96	80	1238	8465	14.62	85.	6.	6.	1.	1.	44.	41.	8.	6.
77853 X	1745.00	3490	290	169	37	26	542	4032	13.44	87.	7.	5.	1.	1.	54.	35.	7.	5.
77853 Z	1775.00	4393	678	430	70	72	1250	5643	22.15	78.	12.	8.	1.	1.	54.	34.	6.	6.
77854 B	1805.00	2498	494	263	142	51	950	3448	27.55	72.	14.	8.	4.	1.	52.	28.	15.	5.
77854 D	1835.00	1716	335	201	91	39	666	2382	27.96	72.	14.	8.	4.	2.	50.	30.	14.	6.
77854 F	1865.00	2751	375	167	43	30	635	3386	18.75	81.	11.	6.	1.	1.	59.	29.	7.	5.
77854 H	1895.00	1328	326	183	63	32	604	1932	31.26	69.	17.	9.	3.	2.	54.	30.	10.	5.
77854 J	1925.00	1844	345	175	27	29	576	2420	23.80	76.	14.	7.	1.	1.	60.	30.	5.	5.
77854 L	1955.00	1190	309	207	38	43	597	1787	33.41	67.	17.	12.	2.	2.	52.	35.	6.	7.

C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

SAMPLE NO.	DEPTH	GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS) METHANE C1	ETHANE C2	PROPANE C3	IBUTANE IC4	NBUTANE C4	WET C2-C4	TOTAL C1-C4	WET/TOTAL PERCENT	GAS COMPOSITION (PERCENT) TOTAL GAS M	E	P	IB	NB	WET GAS E	P	IB	NB
77854 N	1985.00	901	239	154	33	33	459	1360	33.75	66.	18.	11.	2.	2.	52.	34.	7.	7.
77854 P	2015.00	747	209	115	25	27	376	1123	33.48	67.	19.	10.	2.	2.	56.	31.	7.	7.
77854 R	2045.00	1167	197	95	23	18	333	1500	22.20	78.	13.	6.	2.	1.	59.	29.	7.	5.
77854 T	2075.00	668	162	94	13	11	280	948	29.54	70.	17.	10.	1.	1.	58.	34.	5.	4.
77854 V	2105.00	2148	333	196	43	35	607	2755	22.03	78.	12.	7.	2.	1.	55.	32.	7.	6.
77854 X	2135.00	2138	523	237	36	38	834	2972	28.06	72.	18.	8.	1.	1.	63.	28.	4.	5.
77854 Z	2165.00	59043	7942	2216	234	217	10609	69652	15.23	85.	11.	3.	0.	0.	75.	21.	2.	2.
77855 B	2195.00	3386	576	242	33	31	882	4268	20.67	79.	13.	6.	1.	1.	65.	27.	4.	4.
77855 D	2225.00	4363	483	190	35	32	740	5123	14.44	86.	9.	4.	1.	1.	65.	26.	5.	4.
77855 F	2255.00	8426	1319	458	62	54	1893	10319	18.34	82.	13.	4.	1.	1.	70.	24.	3.	3.
77855 H	2285.00	10619	1089	316	42	42	1489	12108	12.30	88.	9.	3.	0.	0.	73.	21.	3.	3.
77855 J	2315.00	17342	1216	371	53	55	1695	19037	8.90	91.	6.	2.	0.	0.	72.	22.	3.	3.
77855 L	2345.00	14868	797	229	38	34	1098	15966	6.88	93.	5.	1.	0.	0.	73.	21.	3.	3.
77855 N	2375.00	18185	1932	514	72	78	2596	20781	12.49	88.	9.	2.	0.	0.	74.	20.	3.	3.
77855 P	2405.00	7857	647	203	42	42	934	8791	10.62	89.	7.	2.	0.	0.	69.	22.	4.	4.
77855 R	2435.00	6095	831	295	44	49	1219	7314	16.67	83.	11.	4.	1.	1.	68.	24.	4.	4.
77855 T	2465.00	7618	624	203	34	37	898	8516	10.54	89.	7.	2.	0.	0.	69.	23.	4.	4.
77855 V	2495.00	2154	170	61	11	13	255	2409	10.59	89.	7.	3.	0.	1.	67.	24.	4.	5.
77855 X	2525.00	5981	361	97	13	15	486	6467	7.52	92.	6.	1.	0.	0.	74.	20.	3.	3.
77855 Z	2555.00	2435	270	91	12	16	389	2824	13.77	86.	10.	3.	0.	1.	69.	23.	3.	4.
77856 B	2585.00	2059	234	66	12	12	324	2383	13.60	86.	10.	3.	1.	1.	72.	20.	4.	4.
77856 D	2615.00	1987	258	69	9	10	346	2333	14.83	85.	11.	3.	0.	0.	75.	20.	3.	3.
77856 F	2645.00	3646	324	93	7	8	432	4078	10.59	89.	8.	2.	0.	0.	75.	22.	2.	2.
77856 H	2675.00	2682	196	51	5	5	257	2939	8.74	91.	7.	2.	0.	0.	76.	20.	2.	2.
77856 J	2705.00	5935	411	95	8	12	526	6461	8.14	92.	6.	1.	0.	0.	78.	18.	2.	2.
77856 L	2735.00	1991	443	106	11	12	572	2563	22.32	78.	17.	4.	0.	0.	77.	19.	2.	2.
77856 N	2765.00	15723	1297	265	30	31	1623	17346	9.36	91.	7.	2.	0.	0.	80.	16.	2.	2.
77856 P	2795.00	5255	440	85	7	8	540	5795	9.32	91.	8.	1.	0.	0.	81.	16.	1.	1.
77856 R	2821.00	4761	501	63	6	7	597	5358	11.14	89.	9.	2.	0.	0.	84.	14.	1.	1.

TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	TOC%	DESCRIPTION
77851 A	230.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.05					PNK/GY LMST
77851 C	290.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.03					GY/OR/PNK LMST
77851 E	350.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.03					GY/OR/PNK LMST
77851 G	410.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.03					GY/OR/PNK LMST
77851 I	470.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.03					GY/OR/PNK LMST
77851 K	530.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.02					GY/GN LMST
77851 M	590.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.04					PNK/GY SLTY LMST
77851 O	650.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.07					PNK/GY SLTY LMST
77851 Q	740.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.19					PNK/GY SLTY LMST
77851 S	770.00	PLEIST-MID MIOCENE	GIPPSLAND LMST	2	.30					LT OL/GY CLYST
77851 U	830.00	MID-EARLY MIOCENE	LAKES ENTRANCE	2	.03					CEMENT
77851 W	890.00	MID-EARLY MIOCENE	LAKES ENTRANCE	2	.30					LT OL/GY CLYST
77851 Y	950.00	MID-EARLY MIOCENE	LAKES ENTRANCE	2	.33					GR/GY CALC CLYST
77852 A	1010.00	MID-EARLY MIOCENE	LAKES ENTRANCE	2	.28					LT OL/GT CLYST
77852 C	1040.00	MID-EARLY MIOCENE	LAKES ENTRANCE	2	.27					OL/GY CLYST
77852 G	1100.00	MID-EARLY MIOCENE	LAKES ENTRANCE	2	.29					LT OL/GY CALC SLTY CLYST
77831 C	1120.00	EARLY OLIGOCENE	LATROBE GP/UNNAMED MARL	1	1.63					DK BRN SH,CARB
77831 B	1128.50	LATE EOCENE	LATROBE GP/UNNAMED MARL	1	1.81					DK BRN SH,CARB
77852 I	1130.00	LATE EOCENE	LATROBE GP/UNNAMED MARL	2	.24					LT OL/GY CALC SLTY CLYST
77831 A	1134.70	LATE EOCENE	LATROBE GP/UNNAMED MARL	1	1.61					DK BRN SLTST,CARB
77830 Z	1147.80	LATE EOCENE	LATROBE GP/GURNARD FM	1	1.31					BLK SLTST,CARB
77830 Y	1154.70	MID EOCENE-PALEOCENE	LATROBE GROUP	1	8.71					BLK SH,CARB
77852 K	1160.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.39					LT OL/GY CALC LESS SLTY
77852 M	1190.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.48					LT GN/GY CALC CLYST
77830 W	1202.50	MID EOCENE-PALEOCENE	LATROBE GROUP	1	11.37					BLK SH,CARB
77852 O	1220.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	35.80					COAL
77830 V	1228.60	MID EOCENE-PALEOCENE	LATROBE GROUP	1	3.20					DK BRN CLYST,CARB
77852 Q	1250.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.16					LT OL/GY CLYST
77830 U	1257.50	MID EOCENE-PALEOCENE	LATROBE GROUP	1	.42					PALE BRN SLTY CLYST
77830 T	1278.00	MID EOCENE-PALEOCENE	LATROBE GROUP	1	1.06					DK GY-BLK SLTST,CARB
77852 U	1310.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.24					LT OL/GY CLYST
77830 S	1312.00	MID EOCENE-PALEOCENE	LATROBE GROUP	1	3.50					LT GY SLTST,QTZ,CARB
77830 R	1344.00	MID EOCENE-PALEOCENE	LATROBE GROUP	1	1.99					LT GY SLTST,QTZ,CARB
77852 Y	1370.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	42.60					COAL
77830 Q	1375.50	MID EOCENE-PALEOCENE	LATROBE GROUP	1	5.68					DK BRN SLTST,CARB,COALY
77830 O	1381.50	MID EOCENE-PALEOCENE	LATROBE GROUP	1	3.39					DK BRN SLTST,CARB,MICA
77830 M	1382.50	MID EOCENE-PALEOCENE	LATROBE GROUP	1	8.18					GY-BLK SLTST,SST,COAL
77853 A	1400.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	6.30					BR/GY CLYST
77830 K	1409.50	MID EOCENE-PALEOCENE	LATROBE GROUP	1	2.11					WHT GY SLTST,CARB,QTZ
77830 J	1447.00	MID EOCENE-PALEOCENE	LATROBE GROUP	1	49.79					BLK COAL
77830 I	1451.80	MID EOCENE-PALEOCENE	LATROBE GROUP	1	.26					WHT SLTST,QTZ,MICA,COAL
77853 E	1460.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	44.80					COAL
77830 H	1478.00	MID EOCENE-PALEOCENE	LATROBE GROUP	1	.26					GY SLTY CLYST
77830 G	1501.50	MID EOCENE-PALEOCENE	LATROBE GROUP	1	.27					GY SLTST,QTZ
77853 K	1550.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.32					LT GY CLYST
77830 F	1571.80	MID EOCENE-PALEOCENE	LATROBE GROUP	1	.16					WHT SLTST,QTZ
77830 C	1635.20	MID EOCENE-PALEOCENE	LATROBE GROUP	1	1.46					LT BRN CLYST

TOTAL ORGANIC CARBON REPORT

*BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	TOC%	DESCRIPTION
**********	*******	***	*********	*********		*********		*********		***********
77853 U	1700.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	44.00					COAL
77853 W	1730.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.33					LT OL/GY CLYST
77854 A	1790.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.24					LT OL/GY CLYST
77829 Y	1811.00	MID EOCENE-PALEOCENE	LATROBE GROUP	1	1.62					DK GY SH,CARB
77854 C	1820.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.15					GR/GY CALC SLTY CLYST
77854 E	1850.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.29					LT OL/GY CLYST
77854 G	1860.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.87					BR/GY CLYST
77854 O	2000.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	1.40					BR/GY CLYST
77854 S	2060.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	1.16					LT OL/GY CLYST
77854 U	2090.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.17					LT OL/GY CLYST
77854 W	2120.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	.32					GR/GY CALC SLTY CLYST
77855 A	2160.00	MID EOCENE-PALEOCENE	LATROBE GROUP	2	1.76					OL/GY CLYST
77829 P	2218.20	LATE CRETACEOUS	LATROBE GROUP	1	.63					DK BRN CLYST,CARB
77855 E	2240.00	LATE CRETACEOUS	LATROBE GROUP	2	.45					QTZ GR;BR/GY CLYST
77855 G	2270.00	LATE CRETACEOUS	LATROBE GROUP	2	.04					QTZ GR
77855 I	2300.00	LATE CRETACEOUS	LATROBE GROUP	2	42.00					COAL
77855 K	2330.00	LATE CRETACEOUS	LATROBE GROUP	2	1.44					BR/GY CLYST
77855 O	2390.00	LATE CRETACEOUS	LATROBE GROUP	2	40.40					COAL
77829 N	2415.00	LATE CRETACEOUS	LATROBE GROUP	1	.37					LT BRN SLTST,QTZ
77855 Q	2420.00	LATE CRETACEOUS	LATROBE GROUP	2	.92					DK GR/GY CLYST
77829 K	2476.50	LATE CRETACEOUS	LATROBE GROUP	1	1.20					DK BRN CLYST,CARB
77855 U	2480.00	LATE CRETACEOUS	LATROBE GROUP	2	.31					LT OL/GY CLYST
77855 W	2510.00	LATE CRETACEOUS	LATROBE GROUP	2	1.18					LT OL/GY & BR/GY CLYSTCL
77855 Y	2540.00	LATE CRETACEOUS	LATROBE GROUP	2	1.51					BR/GY & V.LT GY CLYST
77829 J	2547.00	LATE CRETACEOUS	LATROBE GROUP	1	.45					DK BRN SH
77856 A	2570.00	LATE CRETACEOUS	LATROBE GROUP	2	.51					M GY CLYST
77829 I	2600.00	LATE CRETACEOUS	LATROBE GROUP	1	.25					LT BRN CLYST,ARG
77856 C	2600.00	LATE CRETACEOUS	LATROBE GROUP	2	1.39					M LT GY CLYST
77856 E	2630.00	LATE CRETACEOUS	LATROBE GROUP	2	1.29					OL/GY-LT OL/GY CLYST
77829 C	2712.00	LATE CRETACEOUS	LATROBE GROUP	1	2.62					BLK GY SLTST,COALY,ARG
77829 B	2715.00	LATE CRETACEOUS	LATROBE GROUP	1	.51					LT GY SLTST,QTZ,ARG
77856 K	2720.00	LATE CRETACEOUS	LATROBE GROUP	2	.26					M GY CLYST;V.LT GY SS
77856 M	2750.00	LATE CRETACEOUS	LATROBE GROUP	2	.29					LT OL/GY CLYST
77856 O	2780.00	LATE CRETACEOUS	LATROBE GROUP	2	1.80					BR/GY CLYST & SH
77829 A	2780.90	LATE CRETACEOUS	LATROBE GROUP	1	.57					LT GY SLTST,QTZ,ARG
77856 Q	2810.00	LATE CRETACEOUS	LATROBE GROUP	2	1.19					M DK GY V.SLTY CLYST

AN

1.= sidewall core analysed by EAL

2 = cuttings analysed by EPRCo.

ROCK EVAL ANALYSES

BASIN - GIPPSLAND REPORT A - SULPHUR & PYROLYZABLE CARBON
WELL - WHIPTAIL 1A

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	TMAX	S1	S2	S3	PI	S2/S3	PC	COMMENTS
77831 C	1120.0	SWC	EARLY OLIGOCENE	416.	.03	.34	.61	.09	.56	.03	
77831 B	1128.5	SWC	LATE EOCENE	418.	.07	.97	.61	.07	1.59	.09	
77831 A	1134.7	SWC	LATE EOCENE	411.	.11	.90	.79	.11	1.13	.08	
77830 Z	1147.8	SWC	LATE EOCENE	409.	.06	.42	.68	.12	.61	.04	
77830 Y	1154.7	SWC	MID EOCENE-PALEOCENE	410.	1.76	22.13	1.89	.07	11.72	1.98	
77830 W	1202.5	SWC	MID EOCENE-PALEOCENE	414.	.99	14.31	3.41	.06	4.20	1.27	
77830 V	1228.6	SWC	MID EOCENE-PALEOCENE	418.	.17	3.55	.94	.05	3.78	.31	
77830 T	1278.0	SWC	MID EOCENE-PALEOCENE	420.	.04	.22	.37	.15	.59	.02	
77830 S	1312.0	SWC	MID EOCENE-PALEOCENE	415.	.39	7.61	1.03	.05	7.37	.66	
77830 R	1344.0	SWC	MID EOCENE-PALEOCENE	420.	.32	3.79	.73	.08	5.20	.34	
77830 Q	1375.5	SWC	MID EOCENE-PALEOCENE	418.	.59	12.17	1.17	.05	10.40	1.06	
77830 O	1381.5	SWC	MID EOCENE-PALEOCENE	424.	1.70	7.32	.58	.19	12.59	.75	
77830 N	1382.5	SWC	MID EOCENE-PALEOCENE	425.	1.98	13.26	1.29	.13	10.29	1.27	
77830 K	1409.5	SWC	MID EOCENE-PALEOCENE	424.	.25	1.63	.23	.13	7.17	.16	
77830 J	1447.0	SWC	MID EOCENE-PALEOCENE	428.	.92	78.51	14.43	.01	5.39	6.51	
77830 C	1635.2	SWC	MID EOCENE-PALEOCENE	419.	.35	1.65	.43	.18	3.81	.17	
77829 Y	1811.0	SWC	MID EOCENE-PALEOCENE	430.	.24	1.78	.52	.12	3.43	.17	
77829 P	2218.2	SWC	LATE CRETACEOUS	428.	.06	.09	.14	.40	.64	.01	
77829 K	2476.5	SWC	LATE CRETACEOUS	434.	.22	.76	.18	.23	4.32	.08	
77829 C	2712.0	SWC	LATE CRETACEOUS	429.	.07	.22	.22	.25	1.00	.02	
77829 B	2715.0	SWC	LATE CRETACEOUS	434.	.07	.15	.21	.33	.73	.02	
77829 A	2780.9	SWC	LATE CRETACEOUS	432.	.06	.17	.19	.25	.90	.02	

PI=PRODUCTIVITY INDEX PC=PYROLYZABLE CARBON TC=TOTAL CARBON HI=HYDROGEN INDEX OI=OXYGEN INDEX

ROCK EVAL ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

REPORT B - TOTAL CARBON,H/O INDICES

SAMPLE NO.	DEPTH	SAMPLE TYPE	FORMATION	TC	HI	OI	HI/OI	COMMENTS
77831 C	1120.0	SWC	LATROBE GP/UNNAMED MARL	1.63	21.	37.	.56	
77831 B	1128.5	SWC	LATROBE GP/UNNAMED MARL	1.81	54.	34.	1.59	
77831 A	1134.7	SWC	LATROBE GP/UNNAMED MARL	1.61	56.	49.	1.13	
77830 Z	1147.8	SWC	LATROBE GP/GURNARD FM	1.31	32.	52.	.61	
77830 Y	1154.7	SWC	LATROBE GROUP	8.71	254.	22.	11.72	
77830 W	1202.5	SWC	LATROBE GROUP	11.37	126.	30.	4.20	
77830 V	1228.6	SWC	LATROBE GROUP	3.20	111.	29.	3.78	
77830 T	1278.0	SWC	LATROBE GROUP	1.06	21.	35.	.59	
77830 S	1312.0	SWC	LATROBE GROUP	3.50	217.	29.	7.37	
77830 R	1344.0	SWC	LATROBE GROUP	1.99	191.	37.	5.20	
77830 Q	1375.5	SWC	LATROBE GROUP	5.68	214.	21.	10.40	
77830 O	1381.5	SWC	LATROBE GROUP	3.39	216.	17.	12.59	
77830 N	1382.5	SWC	LATROBE GROUP	8.18	162.	16.	10.29	
77830 K	1409.5	SWC	LATROBE GROUP	2.11	77.	11.	7.17	
77830 J	1447.0	SWC	LATROBE GROUP	49.79	158.	29.	5.45	
77830 C	1635.2	SWC	LATROBE GROUP	1.46	113.	30.	3.81	
77829 Y	1811.0	SWC	LATROBE GROUP	1.62	110.	32.	3.43	
77829 P	2218.2	SWC	LATROBE GROUP	.63	14.	22.	.64	
77829 K	2476.5	SWC	LATROBE GROUP	1.20	63.	15.	4.32	
77829 C	2712.0	SWC	LATROBE GROUP	2.62	9.	9.	1.00	
77829 B	2715.0	SWC	LATROBE GROUP	.51	29.	40.	.73	
77829 A	2780.9	SWC	LATROBE GROUP	.57	29.	33.	.90	

PI=PRODUCTIVITY INDEX PC=PYROLYZABLE CARBON TC=TOTAL CARBON HI=HYDROGEN INDEX OI=OXYGEN INDEX

C15+ EXTRACT ANALYSES (OILS FLAGGED BY %)

REPORT A - EXTRACT DATA - PPM (OIL=%)

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

						--- HYDROCARBONS ---			*--- NON-HYDROCARBONS					---*
SAMPLE NO.	DEPTH	TYPE	AN	AGE	TOTAL EXTRACT	SATS.	AROMS.	TOTAL H/CARBS	ASPH.	ELUTED NSO	NON-ELT NSO	TOTAL NSO	SULPHUR	TOTAL NON/HCS
77851 I	470.00	CTS	2	PLEIST-MID MIOCENE	219.	0.	0.	0.	198.	0.	0.	0.	0.	198.
77851 W	890.00	CTS	2	MID-EARLY MIOCENE	396.	0.	0.	0.	325.	0.	0.	0.	0.	325.
77852 K	1160.00	CTS	2	MID EOCENE-PALEOCENE	580.	19.	81.	100.	384.	89.	4.	93.	3.	480.
77854 C	1820.00	CTS	2	MID EOCENE-PALEOCENE	450.	19.	35.	54.	328.	63.	2.	65.	3.	396.
77854 W	2120.00	CTS	2	MID EOCENE-PALEOCENE	989.	55.	185.	240.	599.	137.	7.	144.	6.	749.
77855 O	2420.00	CTS	2	LATE CRETACEOUS	952.	82.	168.	250.	562.	110.	15.	125.	15.	702.
77856 E	2630.00	CTS	2	LATE CRETACEOUS	701.	73.	117.	190.	434.	63.	4.	67.	10.	511.
77856 O	2810.00	CTS	2	LATE CRETACEOUS	756.	59.	124.	183.	491.	72.	1.	73.	9.	573.

C15+ EXTRACT ANALYSES (OILS FLAGGED BY %)

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

REPORT B - EXTRACTS % OF TOTAL

SAMPLE NO.	DEPTH	FORMATION	*HYDROCARBONS* SAT. %	AROM.%	*- NON-HYDROCARBONS -* NSO. %	ASPH.%	SULPH%	*	SAT/AR	*	HC/NHC	*	COMMENTS
77851 I	470.00	GIPPSLAND LMST	.0	.0	.0	90.4	.0	*	.0	*	.0	*	
77851 W	690.00	LAKES ENTRANCE	.0	.0	.0	82.1	.0	*	.0	*	.0	*	
77852 K	1160.00	LATROBE GROUP	3.3	14.0	16.0	66.2	.5	*	.2	*	.2	*	
77854 C	1820.00	LATROBE GROUP	4.2	7.8	14.4	72.9	.7	*	.5	*	.1	*	
77854 W	2120.00	LATROBE GROUP	5.6	18.7	14.6	60.6	.6	*	.3	*	.3	*	
77855 D	2420.00	LATROBE GROUP	8.6	17.6	13.1	59.0	1.6	*	.5	*	.4	*	
77856 E	2630.00	LATROBE GROUP	10.4	16.7	9.6	61.9	1.4	*	.6	*	.4	*	
77856 O	2810.00	LATROBE GROUP	7.8	16.4	9.7	64.9	1.2	*	.5	*	.3	*	

TABLE 5a

ESSO AUSTRALIA LTD.

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

SAMPLE NO.	DEPTH	SAMPLE TYPE	N%	C%	H%	S%	O%	ASH%	COMMENTS
			--- ELEMENTAL % (ASH FREE) ---						
77831 C	1120.00	SWC	1.83	47.37	3.70	0.00	40.60	6.50	
77830 Y	1154.70	SWC	0.36	60.32	4.52	0.00	29.57	5.23	
77830 W	1202.50	SWC	0.45	57.70	4.28	0.00	28.55	9.02	
77830 V	1228.60	SWC	0.71	60.64	4.48	0.00	29.07	5.10	
77830 T	1278.00	SWC	0.75	54.63	3.93	0.00	27.46	13.23	HIGH ASH
77830 S	1312.00	SWC	0.66	69.16	5.17	0.00	23.19	1.82	
77830 R	1344.00	SWC	0.64	66.05	5.35	0.00	20.50	7.46	
77830 Q	1375.50	SWC	0.68	64.10	4.73	0.00	24.95	5.54	
77830 O	1381.50	SWC	0.72	68.47	5.24	0.00	22.38	3.19	
77830 N	1382.50	SWC	0.57	68.09	4.86	0.00	22.28	4.20	
77830 M	1383.50	SWC	0.42	72.49	6.56	0.00	16.38	4.15	
77830 K	1409.50	SWC	0.78	68.92	5.27	0.00	21.55	3.48	
77830 I	1451.80	SWC	0.88	70.74	4.87	0.00	20.31	3.20	
77830 G	1501.50	SWC	0.40	65.04	4.70	0.00	19.82	10.04	HIGH ASH
77830 C	1635.20	SWC	0.85	52.38	4.60	0.00	20.51	21.66	V HIGH ASH
77829 Y	1811.00	SWC	0.82	66.85	5.80	0.00	17.40	9.13	
77829 P	2218.20	SWC	1.38	78.98	4.38	0.00	12.26	3.00	
77829 N	2292.80	SWC	1.06	77.08	4.02	0.00	15.45	2.39	
77829 K	2476.50	SWC	1.43	78.17	5.68	0.00	10.90	3.82	
77829 C	2712.00	SWC	1.55	75.54	5.31	0.00	14.79	2.81	

TABLE 5b

ESSO AUSTRALIA LTD.

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	FORMATION	ATOMIC RATIOS H/C	ATOMIC RATIOS O/C	ATOMIC RATIOS N/C	COMMENTS
77831 C	1120.00	SWC	EARLY OLIGOCENE	LATROBE GP/UNNAMED MARL	0.94	0.64	0.03	
77830 Y	1154.70	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.90	0.37	0.01	
77830 W	1202.50	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.89	0.37	0.01	
77830 V	1228.60	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.89	0.36	0.01	
77830 T	1278.00	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.86	0.38	0.01	HIGH ASH
77830 S	1312.00	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.90	0.25	0.01	
77830 R	1344.00	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.97	0.23	0.01	
77830 Q	1375.50	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.89	0.29	0.01	
77830 O	1381.50	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.92	0.25	0.01	
77830 N	1382.50	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.86	0.25	0.01	
77830 M	1383.50	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	1.09	0.17	0.00	
77830 K	1409.50	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.92	0.23	0.01	
77830 I	1451.80	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.83	0.22	0.01	
77830 G	1501.50	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	0.87	0.23	0.01	HIGH ASH
77830 C	1635.20	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	1.05	0.29	0.01	V HIGH ASH
77829 Y	1811.00	SWC	MID EOCENE-PALEOCENE	LATROBE GROUP	1.04	0.20	0.01	
77829 P	2218.20	SWC	LATE CRETACEOUS	LATROBE GROUP	0.67	0.12	0.01	
77829 N	2292.80	SWC	LATE CRETACEOUS	LATROBE GROUP	0.63	0.15	0.01	
77829 K	2476.50	SWC	LATE CRETACEOUS	LATROBE GROUP	0.87	0.10	0.02	
77829 C	2712.00	SWC	LATE CRETACEOUS	LATROBE GROUP	0.84	0.15	0.02	

LIGHT GASOLINES (C4-C7) SUMMARY

BASIN - WHIPTAIL 1A
WELL - GIPPSLAND

SAMPLE NO.	DEPTH	FORMATION	AGE	TOC%	TOTAL C4-C7 (PPM)	C1/C2	A/D2	C1/D2	CH/MCP	N-PENT/ I-PENT
77851 A	230.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.05	0.02	.	.	.	.	0.87
77851 C	290.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.03	0.06	.	.	.	.	0.73
77851 E	350.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.03	0.03	.	.	.	.	1.31
77851 G	410.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.03	0.06	.	.	.	.	1.16
77851 I	470.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.03	0.04	.	.	.	.	1.23
77851 K	530.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.02	0.04	.	.	.	.	0.32
77851 M	590.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.04	0.06	.	.	.	.	1.59
77851 O	650.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.07	0.08	.	.	.	.	2.57
77851 Q	740.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.19	0.06	.	.	.	.	0.73
77851 S	770.00	GIPPSLAND LMST	PLEIST-MID MIOCENE	0.30	0.05	.	.	.	.	0.67
77851 U	830.00	LAKES ENTRANCE	MID-EARLY MIOCENE	0.03	0.03	.	.	.	.	5.12
77851 W	890.00	LAKES ENTRANCE	MID-EARLY MIOCENE	0.30	0.02	.	.	.	.	0.50
77851 Y	950.00	LAKES ENTRANCE	MID-EARLY MIOCENE	0.33	0.02	.	.	.	.	1.65
77852 A	1010.00	LAKES ENTRANCE	MID-EARLY MIOCENE	0.28	0.04	.	.	.	.	0.44
77852 C	1040.00	LAKES ENTRANCE	MID-EARLY MIOCENE	0.27	0.01	.	.	.	.	.
77852 E	1070.00	LAKES ENTRANCE	MID-EARLY MIOCENE	.	0.03	.	.	.	.	0.46
77852 G	1100.00	LAKES ENTRANCE	MID-EARLY MIOCENE	0.29	0.04	.	.	.	.	0.57
77852 I	1130.00	LATROBE GP/UNNAMED MARL	LATE EOCENE	0.24	0.07	0.00	.	.	0.00	2.00
77852 K	1160.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.39	0.24	2.80	.	.	0.62	4.10
77852 M	1190.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.48	0.08	0.81	.	.	0.81	4.11
77852 O	1220.00	LATROBE GROUP	MID EOCENE-PALEOCENE	35.80	50.82	0.27	5.89	2.36	0.28	0.38
77852 Q	1250.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.16	0.03	.	.	.	.	0.46
77852 U	1310.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.24	0.11	.	.	.	.	1.39
77852 Y	1370.00	LATROBE GROUP	MID EOCENE-PALEOCENE	42.60	105.77	1.20	5.84	8.11	0.78	0.24
77853 A	1400.00	LATROBE GROUP	MID EOCENE-PALEOCENE	6.30	7.61	1.15	4.59	3.77	0.38	0.56
77853 E	1460.00	LATROBE GROUP	MID EOCENE-PALEOCENE	44.80	446.18	1.25	11.92	17.80	0.76	0.88
77853 K	1550.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.32	7.41	2.63	4.91	3.99	0.55	1.26
77853 U	1700.00	LATROBE GROUP	MID EOCENE-PALEOCENE	44.00	143.49	1.29	9.67	15.59	0.75	0.93
77853 W	1730.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.33	1.21	1.94	10.23	17.00	0.68	0.97
77854 A	1790.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.24	0.94	1.69	8.20	13.42	0.68	0.88
77854 E	1850.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.29	0.25	4.78	17.13	7.11	0.72	0.23
77854 G	1680.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.87	0.89	0.64	9.94	8.43	0.50	0.92
77854 O	2000.00	LATROBE GROUP	MID EOCENE-PALEOCENE	1.40	5.54	2.09	4.04	5.06	0.69	1.23
77854 S	2060.00	LATROBE GROUP	MID EOCENE-PALEOCENE	1.16	0.56	1.71	12.23	10.42	0.56	1.00
77854 U	2090.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.17	0.13	2.75	.	.	0.68	0.92
77854 W	2120.00	LATROBE GROUP	MID EOCENE-PALEOCENE	0.32	1.09	1.31	8.50	10.19	0.75	1.17
77855 A	2180.00	LATROBE GROUP	MID EOCENE-PALEOCENE	1.76	1.01	0.82	10.69	10.89	0.53	0.85
77855 E	2240.00	LATROBE GROUP	LATE CRETACEOUS	0.45	8.33	1.33	5.77	8.21	0.63	1.03
77855 G	2270.00	LATROBE GROUP	LATE CRETACEOUS	0.04	0.13	0.58	.	.	0.22	1.18
77855 I	2300.00	LATROBE GROUP	LATE CRETACEOUS	42.00	611.78	1.27	9.23	17.15	0.86	0.81
77855 K	2330.00	LATROBE GROUP	LATE CRETACEOUS	1.44	34.06	0.90	11.83	14.67	0.66	1.47
77855 O	2390.00	LATROBE GROUP	LATE CRETACEOUS	40.40	3.45	.	.	.	.	0.18
77855 Q	2420.00	LATROBE GROUP	LATE CRETACEOUS	0.92	1.97	0.79	3.66	2.72	0.36	1.32
77855 U	2480.00	LATROBE GROUP	LATE CRETACEOUS	0.31	14.86	1.05	3.22	6.33	0.74	0.36
77855 W	2510.00	LATROBE GROUP	LATE CRETACEOUS	1.18	2.75	0.88	.	.	0.63	1.46
77855 Y	2540.00	LATROBE GROUP	LATE CRETACEOUS	1.51	7.51	1.20	4.78	7.65	0.88	1.00

LIGHT GASOLINES (C4-C7) SUMMARY

BASIN - WHIPTAIL 1A
WELL - GIPPSLAND

SAMPLE NO.	DEPTH	FORMATION	AGE	TOC%		TOTAL C4-C7 (PPM)	C1/C2	A/D2	C1/D2	CH/MCP	N-PENT/ I-PENT
77856 A	2570.00	LATROBE GROUP	LATE CRETACEOUS	0.51	clst	6.05	2.48	3.84	12.93	1.16	1.12
77856 C	2600.00	LATROBE GROUP	LATE CRETACEOUS	1.39		1.26	4.41	6.63	32.05	1.62	1.41
77856 E	2630.00	LATROBE GROUP	LATE CRETACEOUS	1.29		0.07	0.54	.	.	0.54	1.21
77856 K	2720.00	LATROBE GROUP	LATE CRETACEOUS	0.26	ss	0.75	2.92	6.59	11.48	0.95	1.32
77856 M	2750.00	LATROBE GROUP	LATE CRETACEOUS	0.29	clst	3.65	1.83	4.43	11.49	1.00	1.26
77856 O	2780.00	LATROBE GROUP	LATE CRETACEOUS	1.80	clst + sl.	5.25	2.56	3.77	9.43	0.93	1.28
77856 Q	2610.00	LATROBE GROUP	LATE CRETACEOUS	1.19	silty	10.56	1.33	5.35	12.77	0.97	2.53

TABLE 7

ESSO AUSTRALIA LTD.

VITRINITE REFLECTANCE REPORT

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	MAX RV	FLUORESCENCE	COUNTS	MACERAL TYPE
77830 Y	1154.70	MID EOCENE-PALEOCENE	LATROBE GROUP	5	0.38	YEL-YEL OR	27	V>E>I,DOM ABUNDANT
77830 J	1447.00	MID EOCENE-PALEOCENE	LATROBE GROUP	5	0.46	YEL-DULL OR	25	V>E>I
77829 Y	1811.00	MID EOCENE-PALEOCENE	LATROBE GROUP	5	0.49	YEL-DULL OR	18	E>V>I,DOM ABUNDANT
77829 P	2218.20	LATE CRETACEOUS	LATROBE GROUP	5	0.47	YEL-DULL OR	1	I>E>V,DOM ABUNDANT
77829 C	2712.00	LATE CRETACEOUS	LATROBE GROUP	5	0.00	YEL OR-OR	0	I>E,NO V,DOM COMMON

APPENDIX I

Detailed C_{4-7} Data Sheets

2189L

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 A DEPTH(M) = 230.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1.4	5.60	224-TMP	.0	.00
NBUTANE	2.4	9.60	NHEPTANE	.0	.00
IPENTANE	5.5	22.00	1C2-DMCP	.0	.00
NPENTANE	4.8	19.20	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	2.4	9.60			
3-MP	.9	3.60			
NHEXANE	7.6	30.40			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	25.		C1/C2	.00
GASOLINE	25.		A /D2	7.60
NAPTHENES	0.	.00	C1/D2	.00
C6-7	8.	30.40	CH/MCP	.00
			PENT/IPENT	.87

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPFC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 C DEPTH(M) = 290.00

	TOTAL PPB	NORM PERCENT
METHANE	.0	
ETHANE	.0	
PROPANE	.0	.00
IBUTANE	21.1	36.07
NBUTANE	9.3	15.90
IPENTANE	8.1	13.85
NPENTANE	5.9	10.09
22-DMB	.0	.00
CPENTANE	.0	.00
23-DMB	.0	.00
2-MP	2.7	4.62
3-MP	3.0	5.13
NHEXANE	8.4	14.36
MCP	.0	.00
22-DMP	.0	.00
24-DMP	.0	.00
223-TMB	.0	.00
CHEXANE	.0	.00
33-DMP	.0	.00
11-DMCP	.0	.00
2-MHEX	.0	.00
23-DMP	.0	.00
3-MHEX	.0	.00
1C3-DMCP	.0	.00

	TOTAL PPB	NORM PERCENT
1T3-DMCP	.0	.00
1T2-DMCP	.0	.00
3-EPENT	.0	.00
224-TMP	.0	.00
NHEPTANE	.0	.00
1C2-DMCP	.0	.00
MCH	.0	.00

	TOTALS PPB	NORM PERCENT
ALL COMP	58.	
GASOLINE	58.	
NAPTHENES	0.	.00
C6-7	8.	14.36

SIG COMP RATIOS	
C1/C2	.00
A /D2	8.40
C1/D2	.00
CH/MCP	.00
PENT/IPENT	.73

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A
REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77851 E DEPTH(M) = 350.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	2.4	8.36	224-TMP	.0	.00
NBUTANE	1.7	5.92	NHEPTANE	.0	.00
IPENTANE	5.2	18.12	1C2-DMCP	.0	.00
NPENTANE	6.8	23.69	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	2.4	8.36			
3-MP	2.2	7.67			
NHEXANE	8.0	27.87			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	29.		C1/C2	.00
GASOLINE	29.		A /D2	8.00
NAPTHENES	0.	.00	C1/D2	.00
C6-7	8.	27.87	CH/MCP	.00
			PENT/IPENT	1.31

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 G . DEPTH(M) = 410.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	18.5	30.38	224-TMP	.0	.00
NBUTANE	9.0	14.78	NHEPTANE	.0	.00
IPENTANE	7.0	11.49	1C2-DMCP	.0	.00
NPENTANE	8.1	13.30	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	4.4	7.22			
3-MP	3.3	5.42			
NHEXANE	10.6	17.41			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	61.		C1/C2	.00
GASOLINE	61.		A /D2	10.60
NAPTHENES	0.	.00	C1/D2	.00
C6-7	11.	17.41	CH/MCP	.00
			PENT/IPENT	1.16

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 T DEPTH(M) = 470.00

	TOTAL PPB	NORM PERCENT
METHANE	.0	
ETHANE	.0	
PROPANE	.0	.00
IBUTANE	9.3	23.31
NBUTANE	4.0	10.03
IPENTANE	6.4	16.04
NPENTANE	7.9	19.80
22-DMB	.0	.00
CPENTANE	.0	.00
23-DMB	.0	.00
2-MP	4.0	10.03
3-MP	1.5	3.76
NHEXANE	6.8	17.04
MCP	.0	.00
22-DMP	.0	.00
24-DMP	.0	.00
223-TMB	.0	.00
CHEXANE	.0	.00
33-DMP	.0	.00
11-DMCP	.0	.00
2-MHEX	.0	.00
23-DMP	.0	.00
3-MHEX	.0	.00
1C3-DMCP	.0	.00

	TOTAL PPB	NORM PERCENT
1T3-DMCP	.0	.00
1T2-DMCP	.0	.00
3-EPENT	.0	.00
224-TMP	.0	.00
NHEPTANE	.0	.00
1C2-DMCP	.0	.00
MCH	.0	.00

	TOTALS PPB	NORM PERCENT
ALL COMP	40.	
GASOLINE	40.	
NAPTHENES	0.	.00
C6-7	7.	17.04

SIG COMP RATIOS	
C1/C2	.00
A /D2	6.80
C1/D2	.00
CH/MCP	.00
PENT/IPENT	1.23

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 K DEPTH(M) = 530.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1.1	2.66	224-TMP	.0	.00
NBUTANE	5.9	14.36	NHEPTANE	.0	.00
IPENTANE	12.1	29.44	1C2-DMCP	.0	.00
NPENTANE	3.9	9.49	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	3.4	8.27			
3-MP	3.3	8.03			
NHEXANE	11.4	27.74			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	41.		C1/C2	.00
GASOLINE	41.		A /D2	11.40
NAPTHENES	0.	.00	C1/D2	.00
C6-7	11.	27.74	CH/MCP	.00
			PENT/IPENT	.32

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

*BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 M REPORT = UNSPEC. ANALYSIS DEPTH(M) = 590.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	7.0	12.66	224-TMP	.0	.00
NBUTANE	3.6	6.51	NHEPTANE	.0	.00
IPENTANE	10.6	19.17	1C2-DMCP	.0	.00
NPENTANE	16.9	30.56	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	3.6	6.51			
3-MP	3.6	6.51			
NHEXANE	10.0	18.08			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	55.		C1/C2	.00
GASOLINE	55.		A /D2	10.00
NAPTHENES	0.	.00	C1/D2	.00
C6-7	10.	18.08	CH/MCP	.00
			PENT/IPENT	1.59

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 0 DEPTH(M) = 650.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	18.4	22.94	224-TMP	.0	.00
NBUTANE	3.8	4.74	NHEPTANE	3.3	4.11
IPENTANE	9.7	12.09	1C2-DMCP	.0	.00
NPENTANE	24.9	31.05	MCH	.0	.00
22-DMB	3.6	4.49			
CPENTANE	2.7	3.37			
23-DMB	13.8	17.21			
2-MP	.0	.00			
3-MP	.0	.00			
NHEXANE	.0	.00			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	80.		C1/C2	.00
GASOLINE	80.		A /D2	3.30
NAPTHENES	3.	3.37	C1/D2	.00
C6-7	3.	4.11	CH/MCP	.00
			PENT/IPENT	2.57

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 D DEPTH(M) = 740.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	6.2	10.97	224-TMP	.0	.00
NBUTANE	4.1	7.26	NHEPTANE	4.4	7.79
IPENTANE	8.4	14.87	1C2-DMCP	.0	.00
NPENTANE	6.1	10.80	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	5.4	9.56			
3-MP	4.7	8.32			
NHEXANE	17.2	30.44			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	56.		C1/C2	.00
GASOLINE	56.		A /D2	21.60
NAPTHENES	0.	.00	C1/D2	.00
C6-7	22.	38.23	CH/MCP	.00
			PENT/IPENT	.73

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 S DEPTH(M) = 770.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	9.4	17.57	224-TMP	.0	.00
NBUTANE	1.6	2.99	NHEPTANE	6.9	12.90
IPENTANE	2.7	5.05	1C2-DMCP	.0	.00
NPENTANE	1.8	3.36	MCH	18.3	34.21
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	3.0	5.61			
3-MP	2.1	3.93			
NHEXANE	7.7	14.39			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	53.		C1/C2	18.30
GASOLINE	53.		A /D2	14.60
NAPTHENES	18.	34.21	C1/D2	18.30
C6-7	33.	61.50	CH/MCP	.00
			PENT/IPENT	.67

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	18.3	100.0
TOTAL	18.3	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 U . DEPTH(M) = 830.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	2.1	7.19	224-TMP	.0	.00
NBUTANE	6.2	21.23	NHEPTANE	.0	.00
IPENTANE	.8	2.74	1C2-DMCP	.0	.00
NPENTANE	4.1	14.04	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	3.2	10.96			
3-MP	3.3	11.30			
NHEXANE	9.5	32.53			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	29.		C1/C2	.00
GASOLINE	29.		A /D2	9.50
NAPTHENES	0.	.00	C1/D2	.00
C6-7	10.	32.53	CH/MCP	.00
			PENT/IPENT	5.12

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77851 W DEPTH(M) = 890.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1.8	7.53	224-TMP	.0	.00
NBUTANE	2.0	8.37	NHEPTANE	.0	.00
IPENTANE	2.0	8.37	1C2-DMCP	.0	.00
NPENTANE	1.0	4.18	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	4.4	18.41			
3-MP	2.7	11.30			
NHEXANE	10.0	41.84			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	24.		C1/C2	.00
GASOLINE	24.		A /D2	10.00
NAPTHENES	0.	.00	C1/D2	.00
C6-7	10.	41.84	CH/MCP	.00
			PENT/IPENT	.50

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A
REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77851 Y DEPTH(M) = 950.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	4.9	29.17	224-TMP	.0	.00
NBUTANE	1.0	5.95	NHEPTANE	.0	.00
IPENTANE	1.7	10.12	1C2-DMCP	.0	.00
NPENTANE	2.8	16.67	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	1.8	10.71			
3-MP	.0	.00			
NHEXANE	4.6	27.38			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	17.		C1/C2	.00
GASOLINE	17.		A /D2	4.60
NAPTHENES	0.	.00	C1/D2	.00
C6-7	5.	27.38	CH/MCP	.00
			PENT/IPENT	1.65

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77852 A DEPTH(M) = 1010.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	4.6	12.37	224-TMP	.0	.00
NBUTANE	3.6	9.68	NHEPTANE	.0	.00
IPENTANE	5.5	14.78	1C2-DMCP	.0	.00
NPENTANE	2.4	6.45	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	3.5	9.41			
3-MP	5.2	13.98			
NHEXANE	12.4	33.33			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT
ALL COMP	37.	
GASOLINE	37.	
NAPTHENES	0.	.00
C6-7	12.	33.33

SIG COMP RATIOS

C1/C2	.00
A /D2	12.40
C1/D2	.00
CH/MCP	.00
PENT/IPENT	.44

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77852 C REPORT = UNSPEC. ANALYSIS DEPTH(M) = 1040.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	.8	7.48	224-TMP	.0	.00
NBUTANE	1.6	14.95	NHEPTANE	.0	.00
IPENTANE	.0	.00	1C2-DMCP	.0	.00
NPENTANE	.0	.00	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	1.0	9.35			
3-MP	.0	.00			
NHEXANE	7.3	68.22			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	11.		C1/C2	.00
GASOLINE	11.		A /D2	7.30
NAPTHENES	0.	.00	C1/D2	.00
C6-7	7.	66.22	CH/MCP	.00
			PENT/IPENT	.00

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77852 E . DEPTH(M) = 1070.00

	TOTAL PPB	NORM PERCENT
METHANE	.0	
ETHANE	.0	
PROPANE	.0	.00
IBUTANE	1.0	3.28
NBUTANE	2.0	6.56
IPENTANE	2.6	8.52
NPENTANE	1.2	3.93
22-DMB	.0	.00
CPENTANE	.0	.00
23-DMB	.0	.00
2-MP	4.3	14.10
3-MP	2.0	6.56
NHEXANE	11.2	36.72
MCP	.0	.00
22-DMP	.0	.00
24-DMP	.0	.00
223-TMB	.0	.00
CHEXANE	.0	.00
33-DMP	.0	.00
11-DMCP	.0	.00
2-MHEX	.0	.00
23-DMP	.0	.00
3-MHEX	.0	.00
1C3-DMCP	.0	.00

	TOTAL PPB	NORM PERCENT
1T3-DMCP	.0	.00
1T2-DMCP	.0	.00
3-EPENT	.0	.00
224-TMP	.0	.00
NHEPTANE	6.2	20.33
1C2-DMCP	.0	.00
MCH	.0	.00

	TOTALS PPB	NORM PERCENT
ALL COMP	30.	
GASOLINE	30.	
NAPTHENES	0.	.00
C6-7	17.	57.05

SIG COMP RATIOS

C1/C2	.00
A /D2	17.40
C1/D2	.00
CH/MCP	.00
PENT/IPENT	.46

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77852 G . DEPTH(M) = 1100.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	.0	.00	224-TMP	.0	.00
NBUTANE	.0	.00	NHEPTANE	9.9	27.50
IPENTANE	3.0	8.33	1C2-DMCP	.0	.00
NPENTANE	1.7	4.72	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	5.6	15.56			
3-MP	2.7	7.50			
NHEXANE	13.1	36.39			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT
ALL COMP	36.	
GASOLINE	36.	
NAPTHENES	0.	.00
C6-7	23.	63.89

SIG COMP RATIOS

C1/C2	.00
A /D2	23.00
C1/D2	.00
CH/MCP	.00
PENT/IPENT	.57

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A
REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77852 I . DEPTH(M) = 1130.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	4.1	6.06	224-TMP	.0	.00
NBUTANE	9.7	14.33	NHEPTANE	11.3	16.69
IPENTANE	2.4	3.55	1C2-DMCP	.0	.00
NPENTANE	4.8	7.09	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.9	1.33			
2-MP	8.4	12.41			
3-MP	5.0	7.39			
NHEXANE	16.2	23.93			
MCP	4.9	7.24			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT
ALL COMP	68.	
GASOLINE	68.	
NAPTHENES	5.	7.24
C6-7	32.	47.86

SIG COMP RATIOS	
C1/C2	.00
A /D2	27.50
C1/D2	.00
CH/MCP	.00
PENT/IPENT	2.00

	PPB	NORM PERCENT
MCP	4.9	100.0
CH	.0	.0
MCH	.0	.0
TOTAL	4.9	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77852 K DEPTH(M) = 1160.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1.8	.77	224-TMP	.0	.00
NBUTANE	2.1	.89	NHEPTANE	8.7	3.70
IPENTANE	6.3	2.68	1C2-DMCP	.0	.00
NPENTANE	25.8	10.97	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	31.0	13.18			
23-DMB	74.1	31.51			
2-MP	19.9	8.46			
3-MP	13.3	5.65			
NHEXANE	17.1	7.27			
MCP	6.0	2.55			
22-DMP	.0	.00			
24-DMP	12.3	5.23			
223-TMB	.0	.00			
CHEXANE	3.7	1.57			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	13.1	5.57			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	235.		C1/C2	2.80
GASOLINE	235.		A /D2	25.80
NAPTHENES	41.	17.30	C1/D2	16.80
C6-7	61.	25.89	CH/MCP	.62
			PENT/IPENT	4.10

	PPB	NORM PERCENT
MCP	6.0	61.9
CH	3.7	38.1
MCH	.0	.0
TOTAL	9.7	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77852 M . DEPTH(M) = 1190.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1.1	1.31	224-TMP	.0	.00
NBUTANE	1.7	2.03	NHEPTANE	8.5	10.13
IPENTANE	3.5	4.17	1C2-DMCP	.0	.00
NPENTANE	14.4	17.16	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	2.2	2.62			
23-DMB	9.3	11.08			
2-MP	12.2	14.54			
3-MP	7.1	8.46			
NHEXANE	14.2	16.92			
MCP	2.7	3.22			
22-DMP	.0	.00			
24-DMP	4.8	5.72			
223-TMB	.0	.00			
CHEXANE	2.2	2.62			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT
ALL COMP	84.	
GASOLINE	84.	
NAPTHENES	7.	8.46
C6-7	32.	38.62

SIG COMP RATIOS	
C1/C2	.81
A /D2	22.70
C1/D2	2.20
CH/MCP	.81
PENT/IPENT	4.11

	PPB	NORM PERCENT
MCP	2.7	55.1
CH	2.2	44.9
MCH	.0	.0
TOTAL	4.9	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77852 0 DEPTH(M) = 1220.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	278.8	.55
ETHANE	.0		1T2-DMCP	163.7	.32
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	13323.5	26.22	224-TMP	.0	.00
NBUTANE	18995.9	37.38	NHEPTANE	141.1	.28
IPENTANE	5926.9	11.66	1C2-DMCP	.0	.00
NPENTANE	2227.4	4.38	MCH	90.6	.18
22-DMB	96.4	.19			
CPENTANE	315.2	.62			
23-DMB	712.1	1.40			
2-MP	2556.9	5.03			
3-MP	964.5	1.90			
NHEXANE	1618.7	3.19			
MCP	1859.9	3.66			
22-DMP	.0	.00			
24-DMP	115.7	.23			
223-TMB	11.0	.02			
CHEXANE	527.8	1.04			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	87.8	.17			
23-DMP	241.7	.48			
3-MHEX	299.0	.59			
1C3-DMCP	267.7	.53			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	50822.		C1/C2	.27
GASOLINE	50822.		A /D2	5.89
NAPTHENES	3504.	6.89	C1/D2	2.36
C6-7	5703.	11.22	CH/MCP	.28
			PENT/IPENT	.38

	PPB	NORM PERCENT
MCP	1659.9	75.0
CH	527.8	21.3
MCH	90.6	3.7
TOTAL	2478.3	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77852 Q . DEPTH(M) = 1250.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	3.5	11.71	224-TMP	.0	.00
NBUTANE	5.4	18.06	NHEPTANE	.0	.00
IPENTANE	7.9	26.42	1C2-DMCP	.0	.00
NPENTANE	3.6	12.04	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	2.5	8.36			
3-MP	.0	.00			
NHEXANE	7.0	23.41			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	30.		C1/C2	.00
GASOLINE	30.		A /D2	7.00
NAPTHENES	0.	.00	C1/D2	.00
C6-7	7.	23.41	CH/MCP	.00
			PENT/IPENT	.46

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77852 H DEPTH(M) = 1310.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	2.4	2.24	224-TMP	.0	.00
NBUTANE	18.3	17.07	NHEPTANE	7.9	7.37
IPENTANE	23.1	21.55	1C2-DMCP	.0	.00
NPENTANE	32.0	29.85	MCH	6.7	6.25
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	5.0	4.66			
3-MP	2.1	1.96			
NHEXANE	9.7	9.05			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT
ALL COMP	107.	
GASOLINE	107.	
NAPTHENES	7.	6.25
C6-7	24.	22.67

SIG COMP RATIOS

C1/C2	6.70
A /D2	17.60
C1/D2	6.70
CH/MCP	.00
PENT/IPENT	1.39

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	6.7	100.0
TOTAL	6.7	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77852 Y DEPTH(M) = 1370.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	1982.4	1.87
ETHANE	.0		1T2-DMCP	268.7	.25
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	9593.0	9.07	224-TMP	.0	.00
NBUTANE	11184.8	10.57	NHEPTANE	5143.7	4.86
IPENTANE	24628.3	23.29	1C2-DMCP	179.1	.17
NPENTANE	5790.3	5.47	MCH	6736.3	6.37
22-DMB	.0	.00			
CPENTANE	646.9	.61			
23-DMB	536.6	.51			
2-MP	11021.2	10.42			
3-MP	5573.5	5.27			
NHEXANE	3959.6	3.74			
MCP	6063.0	5.73			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	4736.6	4.48			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	1161.9	1.10			
23-DMP	2994.4	2.83			
3-MHEX	1558.9	1.47			
1C3-DMCP	2006.4	1.90			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	105767.		C1/C2	1.20
GASOLINE	105767.		A /D2	5.84
NAPTHENES	22622.	21.39	C1/D2	8.11
C6-7	36793.	34.79	CH/MCP	.78
			PENT/IPENT	.24

	PPB	NORM PERCENT
MCP	6063.0	34.6
CH	4736.6	27.0
MCH	6736.3	38.4
TOTAL	17536.1	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77853 A . DEPTH(M) = 1400.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	106.7	1.40
ETHANE	.0		1T2-DMCP	137.5	1.81
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	84.9	1.12	224-TMP	.0	.00
NBUTANE	453.8	5.96	NHEPTANE	834.9	10.97
IPENTANE	882.8	11.60	1C2-DMCP	15.8	.21
NPENTANE	490.4	6.44	MCH	533.6	7.01
22-DMB	60.9	.80			
CPENTANE	713.5	9.37			
23-DMB	187.8	2.47			
2-MP	515.3	6.77			
3-MP	244.6	3.21			
NHEXANE	535.2	7.03			
MCP	608.8	8.00			
22-DMP	.0	.00			
24-DMP	68.3	.90			
223-TMB	12.5	.16			
CHEXANE	232.2	3.05			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	358.5	4.71			
23-DMP	131.4	1.73			
3-MHEX	298.5	3.92			
1C3-DMCP	105.2	1.38			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	7613.		C1/C2	1.15
GASOLINE	7613.		A /D2	4.59
NAPTHENES	2453.	32.22	C1/D2	3.77
C6-7	3979.	52.27	CH/MCP	.38
			PENT/IPENT	.56

	PPB	NORM PERCENT
MCP	608.8	44.3
CH	232.2	16.9
MCH	533.6	38.8
TOTAL	1374.6	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77853 E . DEPTH(M) = 1460.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	4497.7	1.01
ETHANE	.0		1T2-DMCP	7627.4	1.71
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	7236.7	1.62	224-TMP	.0	.00
NBUTANE	24424.6	5.47	NHEPTANE	14219.9	3.19
IPENTANE	83326.4	18.66	1C2-DMCP	2055.0	.46
NPENTANE	72981.6	16.36	MCH	40281.8	9.03
22-DMB	1966.3	.44			
CPENTANE	7594.8	1.70			
23-DMB	5804.3	1.30			
2-MP	34853.0	7.81			
3-MP	15422.2	3.46			
NHEXANE	35292.6	7.91			
MCP	39573.2	8.87			
22-DMP	.0	.00			
24-DMP	734.8	.16			
223-TMB	149.0	.03			
CHEXANE	30020.9	6.73			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	3657.1	.82			
23-DMP	4952.5	1.11			
3-MHEX	4154.8	.93			
1C3-DMCP	5349.5	1.20			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	446176.		C1/C2	1.25
GASOLINE	446176.		A /D2	11.92
NAPTHENES	137000.	30.71	C1/D2	17.80
C6-7	192566.	43.16	CH/MCP	.76
			PENT/IPENT	.88

	PPB	NORM PERCENT
MCP	39573.2	36.0
CH	30020.9	27.3
MCH	40281.8	36.7
TOTAL	109875.8	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77853 K DEPTH(M) = 1550.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	114.5	1.55
ETHANE	.0		1T2-DMCP	200.4	2.71
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	45.9	.62	224-TMP	.0	.00
NBUTANE	70.5	.95	NHEPTANE	1729.5	23.35
IPENTANE	243.7	3.29	1C2-DMCP	18.8	.25
NPENTANE	307.3	4.15	MCH	1238.7	16.73
22-DMB	16.3	.22			
CPENTANE	16.9	.23			
23-DMB	55.6	.75			
2-MP	452.4	6.11			
3-MP	212.0	2.86			
NHEXANE	758.1	10.24			
MCP	322.3	4.35			
22-DMP	.0	.00			
24-DMP	73.8	1.00			
223-TMB	7.0	.09			
CHEXANE	176.7	2.39			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	607.7	8.21			
23-DMP	116.4	1.57			
3-MHEX	506.8	6.84			
1C3-DMCP	114.6	1.55			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	7406.		C1/C2	2.63
GASOLINE	7406.		A /D2	4.91
NAPTHENES	2203.	29.75	C1/D2	3.99
C6-7	5985.	80.82	CH/MCP	.55
			PENT/IPENT	1.26

	PPB	NORM PERCENT
MCP	322.3	18.5
CH	176.7	10.2
MCH	1238.7	71.3
TOTAL	1737.7	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77853 H . DEPTH(M) = 1700.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	1351.9	.94
ETHANE	.0		1T2-DMCP	2680.6	1.87
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	14375.9	10.02	224-TMP	.0	.00
NBUTANE	10327.6	7.20	NHEPTANE	3774.7	2.63
IPENTANE	21051.0	14.67	1C2-DMCP	407.1	.28
NPENTANE	19639.3	13.69	MCH	12922.4	9.01
22-DMB	450.4	.31			
CPENTANE	2735.8	1.91			
23-DMB	1497.4	1.04			
2-MP	9818.2	6.84			
3-MP	4818.9	3.36			
NHEXANE	10683.8	7.45			
MCP	12222.6	8.52			
22-DMP	.0	.00			
24-DMP	163.5	.11			
223-TMB	35.0	.02			
CHEXANE	9115.6	6.35			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	1271.1	.89			
23-DMP	1303.2	.91			
3-MHEX	1494.8	1.04			
1C3-DMCP	1348.9	.94			

	TOTALS PPB	NORM PERCENT
ALL COMP	143489.	
GASOLINE	143489.	
NAPTHENES	42785.	29.82
C6-7	58775.	40.96

SIG COMP RATIOS	
C1/C2	1.29
A /D2	9.67
C1/D2	15.59
CH/MCP	.75
PENT/IPENT	.93

	PPB	NORM PERCENT
MCP	12222.6	35.7
CH	9115.6	26.6
MCH	12922.4	37.7
TOTAL	34260.6	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77853 W DEPTH(M) = 1730.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	9.4	.78
ETHANE	.0		1T2-DMCP	19.7	1.63
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	99.3	8.20	224-TMP	.0	.00
NBUTANE	168.1	13.88	NHEPTANE	52.6	4.34
IPENTANE	141.7	11.70	1C2-DMCP	.0	.00
NPENTANE	137.8	11.38	MCH	172.7	14.26
22-DMB	1.3	.11			
CPENTANE	18.4	1.52			
23-DMB	9.8	.81			
2-MP	67.5	5.58			
3-MP	36.0	2.97			
NHEXANE	92.7	7.66			
MCP	83.3	6.88			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	56.6	4.67			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	12.1	1.00			
23-DMP	5.3	.44			
3-MHEX	14.2	1.17			
1C3-DMCP	12.2	1.01			

	TOTALS PPB	NORM PERCENT
ALL COMP	1211.	
GASOLINE	1211.	
NAPTHENES	372.	30.75
C6-7	531.	43.84

SIG COMP RATIOS

C1/C2	1.94
A /D2	10.23
C1/D2	17.00
CH/MCP	.68
PENT/IPENT	.97

	PPB	NORM PERCENT
MCP	83.3	26.6
CH	56.6	18.1
MCH	172.7	55.2
TOTAL	312.6	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77854 A DEPTH(M) = 1790.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	8.1	.86
ETHANE	.0		1T2-DMCP	19.2	2.04
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	61.4	6.53	224-TMP	.0	.00
NBUTANE	90.4	9.61	NHEPTANE	34.3	3.65
IPENTANE	113.4	12.05	1C2-DMCP	.0	.00
NPENTANE	99.3	10.55	MCH	128.2	13.63
22-DMB	2.2	.23			
CPENTANE	10.9	1.16			
23-DMB	11.6	1.23			
2-MP	71.4	7.59			
3-MP	38.7	4.11			
NHEXANE	82.1	8.73			
MCP	74.7	7.94			
22-DMP	.0	.00			
24-DMP	1.5	.16			
223-TMB	.0	.00			
CHEXANE	50.8	5.40			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	11.5	1.22			
23-DMP	6.1	.65			
3-MHEX	14.2	1.51			
1C3-DMCP	10.8	1.15			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	941.		C1/C2	1.69
GASOLINE	941.		A /D2	8.20
NAPTHENES	303.	32.17	C1/D2	13.42
C6-7	441.	46.93	CH/MCP	.68
			PENT/IPENT	.88

	PPB	NORM PERCENT
MCP	74.7	29.4
CH	50.8	20.0
MCH	128.2	50.5
TOTAL	253.7	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77854 C REPORT = UNSPEC. ANALYSTS DEPTH(M) = 1820.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	.9	2.16	224-TMP	.0	.00
NBUTANE	24.5	58.75	NHEPTANE	.0	.00
IPENTANE	6.7	16.07	1C2-DMCP	.0	.00
NPENTANE	9.6	23.02	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	.0	.00			
3-MP	.0	.00			
NHEXANE	.0	.00			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	42.		C1/C2	.00
GASOLINE	42.		A /D2	.00
NAPTHENES	0.	.00	C1/D2	.00
C6-7	0.	.00	CH/MCP	.00
			PENT/IPENT	1.43

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77854 E DEPTH(M) = 1850.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	23.6	9.42	224-TMP	.0	.00
NBUTANE	41.0	16.36	NHEPTANE	36.3	15.28
IPENTANE	23.0	9.18	1C2-DMCP	.0	.00
NPENTANE	5.2	2.06	MCH	21.7	8.66
22-DMB	3.8	1.52			
CPENTANE	1.4	.56			
23-DMB	15.8	6.30			
2-MP	11.6	4.63			
3-MP	4.9	1.96			
NHEXANE	38.8	15.48			
MCP	6.7	2.67			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	4.8	1.92			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	5.5	2.19			
23-DMP	.0	.00			
3-MHEX	4.5	1.80			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT
ALL COMP	251.	
GASOLINE	251.	
NAPTHENES	35.	13.81
C6-7	120.	48.00

SIG COMP RATIOS

C1/C2	4.78
A /D2	17.13
C1/D2	7.11
CH/MCP	.72
PENT/IPENT	.23

	PPB	NORM PERCENT
MCP	6.7	20.2
CH	4.8	14.5
MCH	21.7	65.4
TOTAL	33.2	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77854 G . DEPTH(M) = 1880.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	16.3	1.83
ETHANE	.0		1T2-DMCP	34.2	3.83
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	13.3	1.49	224-TMP	.0	.00
NBUTANE	23.6	2.64	NHEPTANE	38.2	4.28
IPENTANE	98.0	10.98	1C2-DMCP	3.6	.40
NPENTANE	90.4	10.13	MCH	54.9	6.15
22-DMB	8.5	.95			
CPENTANE	8.3	.93			
23-DMB	18.8	2.11			
2-MP	92.9	10.41			
3-MP	41.9	4.69			
NHEXANE	107.9	12.09			
MCP	118.9	13.32			
22-DMP	.0	.00			
24-DMP	8.2	.92			
223-TMB	.0	.00			
CHEXANE	59.0	6.61			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	10.0	1.12			
23-DMP	9.6	1.08			
3-MHEX	14.7	1.65			
1C3-DMCP	21.4	2.40			

	TOTALS PPB	NORM PERCENT
ALL COMP	893.	
GASOLINE	893.	
NAPTHENES	317.	35.47
C6-7	497.	55.67

SIG COMP RATIOS	
C1/C2	.64
A /D2	9.94
C1/D2	8.43
CH/MCP	.50
PENT/IPENT	.92

	PPB	NORM PERCENT
MCP	118.9	51.1
CH	59.0	25.3
MCH	54.9	23.6
TOTAL	232.8	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77854 0 DEPTH(M) = 2000.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	86.6	1.56
ETHANE	.0		1T2-DMCP	179.7	3.24
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	91.4	1.65	224-TMP	.0	.00
NBUTANE	189.4	3.42	NHEPTANE	454.2	8.20
IPENTANE	285.4	5.15	1C2-DMCP	.0	.00
NPENTANE	350.5	6.33	MCH	965.5	17.42
22-DMB	9.4	.17			
CPENTANE	29.6	.53			
23-DMB	65.7	1.19			
2-MP	480.7	8.67			
3-MP	235.2	4.24			
NHEXANE	736.4	13.29			
MCP	354.6	6.40			
22-DMP	.0	.00			
24-DMP	40.2	.73			
223-TMB	5.9	.11			
CHEXANE	243.1	4.39			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	282.8	5.10			
23-DMP	68.1	1.23			
3-MHEX	294.9	5.32			
1C3-DMCP	92.0	1.66			

	TOTALS PPB	NORM PERCENT
ALL COMP	5541.	
GASOLINE	5541.	
NAPTHENES	1951.	35.21
C6-7	3804.	68.65

SIG COMP RATIOS

C1/C2	2.09
A /D2	4.04
C1/D2	5.06
CH/MCP	.69
PENT/IPENT	1.23

	PPB	NORM PERCENT
MCP	354.6	22.7
CH	243.1	15.5
MCH	965.5	61.8
TOTAL	1563.4	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77854 S . DEPTH(M) = 2060.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	3.6	.65
ETHANE	.0		1T2-DMCP	11.1	2.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	37.0	6.67	224-TMP	.0	.00
NBUTANE	12.3	2.22	NHEPTANE	61.4	11.06
IPENTANE	51.3	9.24	1C2-DMCP	.0	.00
NPENTANE	51.5	9.28	MCH	74.9	13.49
22-DMB	3.6	.65			
CPENTANE	3.9	.70			
23-DMB	11.7	2.11			
2-MP	47.8	8.61			
3-MP	21.4	3.86			
NHEXANE	64.6	11.64			
MCP	39.5	7.12			
22-DMP	.0	.00			
24-DMP	2.1	.36			
223-TMB	.0	.00			
CHEXANE	22.0	3.96			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	10.4	1.87			
23-DMP	6.2	1.12			
3-MHEX	10.3	1.86			
1C3-DMCP	8.5	1.53			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	555.		C1/C2	1.71
GASOLINE	555.		A /D2	12.23
NAPTHENES	164.	29.45	C1/D2	10.42
C6-7	315.	56.67	CH/MCP	.56
			PENT/IPENT	1.00

	PPB	NORM PERCENT
MCP	39.5	29.0
CH	22.0	16.1
MCH	74.9	54.9
TOTAL	136.4	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77854 U DEPTH(M) = 2090.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	8.2	6.49	224-TMP	.0	.00
NBUTANE	8.0	6.33	NHEPTANE	8.3	6.57
IPENTANE	14.2	11.23	1C2-DMCP	.0	.00
NPENTANE	13.1	10.36	MCH	18.2	14.40
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	2.3	1.82			
2-MP	11.9	9.41			
3-MP	6.8	5.38			
NHEXANE	20.6	16.30			
MCP	8.8	6.96			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	6.0	4.75			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT
ALL COMP	126.	
GASOLINE	126.	
NAPTHENES	33.	26.11
C6-7	62.	48.97

SIG COMP RATIOS

C1/C2	2.75
A /D2	28.90
C1/D2	24.20
CH/MCP	.68
PENT/IPENT	.92

	PPB	NORM PERCENT
MCP	8.8	26.7
CH	6.0	18.2
MCH	18.2	55.2
TOTAL	33.0	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77854 W DEPTH(M) = 2120.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	13.4	1.23
ETHANE	.0		1T2-DMCP	28.0	2.58
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	25.9	2.39	224-TMP	.0	.00
NBUTANE	38.7	3.56	NHEPTANE	35.9	3.31
IPENTANE	101.5	9.35	1C2-DMCP	.0	.00
NPENTANE	118.5	10.92	MCH	117.5	10.82
22-DMB	6.2	.57			
CPENTANE	10.0	.92			
23-DMB	16.0	1.47			
2-MP	109.5	10.09			
3-MP	60.0	5.53			
NHEXANE	146.1	13.46			
MCP	110.7	10.20			
22-DMP	.0	.00			
24-DMP	3.9	.36			
223-TMB	.0	.00			
CHEXANE	83.3	7.67			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	17.2	1.58			
23-DMP	7.3	.67			
3-MHEX	21.4	1.97			
1C3-DMCP	14.6	1.34			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1086.		C1/C2	1.31
GASOLINE	1086.		A /D2	8.50
NAPTHENES	377.	34.77	C1/D2	10.19
C6-7	599.	55.20	CH/MCP	.75
			PENT/IPENT	1.17

	PPB	NORM PERCENT
MCP	110.7	35.5
CH	83.3	26.7
MCH	117.5	37.7
TOTAL	311.5	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77855 A DEPTH(M) = 2180.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	4.9	.49
ETHANE	.0		1T2-DMCP	9.0	.89
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	113.5	11.26	224-TMP	.0	.00
NBUTANE	184.5	18.33	NHEPTANE	16.3	1.62
IPENTANE	125.3	12.45	1C2-DMCP	.0	.00
NPENTANE	106.2	10.55	MCH	34.3	3.41
22-DMB	.0	.00			
CPENTANE	15.7	1.56			
23-DMB	59.1	5.87			
2-MP	70.7	7.03			
3-MP	29.3	2.91			
NHEXANE	62.8	6.24			
MCP	79.2	7.87			
22-DMP	.0	.00			
24-DMP	16.6	1.65			
223-TMB	.0	.00			
CHEXANE	42.0	4.17			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	4.3	.43			
23-DMP	19.8	1.97			
3-MHEX	7.4	.74			
1C3-DMCP	5.5	.55			

	TOTALS PPB	NORM PERCENT
ALL COMP	1006.	
GASOLINE	1006.	
NAPTHENES	191.	18.94
C6-7	302.	30.02

SIG COMP RATIOS	
C1/C2	.82
A /D2	10.69
C1/D2	10.89
CH/MCP	.53
PENT/IPENT	.85

	PPB	NORM PERCENT
MCP	79.2	50.9
CH	42.0	27.0
MCH	34.3	22.1
TOTAL	155.5	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77855 E . DEPTH(M) = 2240.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	96.7	1.16
ETHANE	.0		1T2-DMCP	179.4	2.15
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	477.6	5.73	224-TMP	.0	.00
NBUTANE	836.2	10.04	NHEPTANE	398.9	4.79
IPENTANE	981.0	11.77	1C2-DMCP	18.4	.22
NPENTANE	1013.8	12.17	MCH	935.0	11.22
22-DMB	28.4	.34			
CPENTANE	131.4	1.58			
23-DMB	72.7	.87			
2-MP	536.7	6.44			
3-MP	259.2	3.11			
NHEXANE	660.2	7.92			
MCP	734.2	8.81			
22-DMP	.0	.00			
24-DMP	15.1	.18			
223-TMB	1.4	.02			
CHEXANE	459.0	5.51			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	112.5	1.35			
23-DMP	99.9	1.20			
3-MHEX	183.6	2.20			
1C3-DMCP	101.3	1.22			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	8333.		C1/C2	1.33
GASOLINE	8333.		A /D2	5.77
NAPTHENES	2655.	31.87	C1/D2	8.21
C6-7	3996.	47.95	CH/MCP	.63
			PENT/IPENT	1.03

	PPB	NORM PERCENT
MCP	734.2	34.5
CH	459.0	21.6
MCH	935.0	43.9
TOTAL	2128.2	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77855 G DEPTH(M) = 2270.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	5.5	4.15	224-TMP	.0	.00
NBUTANE	8.0	6.03	NHEPTANE	21.4	16.14
IPENTANE	8.7	6.56	1C2-DMCP	.0	.00
NPENTANE	10.3	7.77	MCH	8.2	6.18
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	.0	.00			
2-MP	8.0	6.03			
3-MP	4.6	3.47			
NHEXANE	30.6	23.08			
MCP	22.4	16.89			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	4.9	3.70			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	133.		C1/C2	.58
GASOLINE	133.		A /D2	52.00
NAPTHENES	35.	26.77	C1/D2	13.10
C6-7	87.	65.99	CH/MCP	.22
			PENT/IPENT	1.18

	PPB	NORM PERCENT
MCP	22.4	63.1
CH	4.9	13.8
MCH	8.2	23.1
TOTAL	35.5	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77855 T REPORT = UNSPEC. ANALYSIS DEPTH(M) = 2300.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	6398.4	1.05
ETHANE	.0		1T2-DMCP	11778.2	1.93
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	26422.0	4.32	224-TMP	.0	.00
NBUTANE	87053.4	14.23	NHEPTANE	16171.3	2.64
IPENTANE	85529.6	13.98	1C2-DMCP	2586.0	.42
NPENTANE	69356.3	11.34	MCH	52007.2	8.50
22-DMB	1803.3	.29			
CPENTANE	14810.4	2.42			
23-DMB	6296.1	1.03			
2-MP	43500.9	7.11			
3-MP	19319.5	3.16			
NHEXANE	40472.0	6.62			
MCP	55086.5	9.00			
22-DMP	.0	.00			
24-DMP	363.4	.06			
223-TMB	182.9	.03			
CHEXANE	47549.7	7.77			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	5736.3	.94			
23-DMP	6110.1	1.00			
3-MHEX	6138.1	1.00			
1C3-DMCP	7103.9	1.16			

	TOTALS PPB	NORM PERCENT
ALL COMP	611775.	
GASULINE	611775.	
NAPTHENES	197320.	32.25
C6-7	257684.	42.12

SIG COMP RATIOS	
C1/C2	1.27
A /D2	9.23
C1/D2	17.15
CH/MCP	.86
PENT/IPENT	.81

	PPB	NORM PERCENT
MCP	55086.5	35.6
CH	47549.7	30.7
MCH	52007.2	33.6
TOTAL	154643.4	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A

REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77855 K DEPTH(M) = 2330.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		113-DMCP	356.7	1.05
ETHANE	.0		1T2-DMCP	665.2	1.95
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	24.0	.07	224-TMP	.0	.00
NBUTANE	324.7	.95	NHEPTANE	735.8	2.16
IPENTANE	3808.4	11.18	1C2-DMCP	41.6	.12
NPENTANE	5585.9	16.40	MCH	1989.5	5.84
22-DMB	192.1	.56			
CPENTANE	1889.1	5.55			
23-DMB	350.1	1.03			
2-MP	3203.0	9.40			
3-MP	1750.3	5.14			
NHEXANE	3699.1	10.86			
MCP	4745.4	13.93			
22-DMP	.0	.00			
24-DMP	77.7	.23			
223-TMB	16.0	.05			
CHEXANE	3144.5	9.23			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	366.2	1.08			
23-DMP	391.3	1.15			
3-MHEX	375.0	1.10			
1C3-DMCP	329.5	.97			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	34061.		C1/C2	.90
GASOLINE	34061.		A /D2	11.83
NAPTHENES	13161.	38.64	C1/D2	14.67
C6-7	16933.	49.72	CH/MCP	.66
			PENT/IPENT	1.47

	PPB	NORM PERCENT
MCP	4745.4	48.0
CH	3144.5	31.8
MCH	1989.5	20.1
TOTAL	9679.4	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77855 0 . DEPTH(M) = 2390.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1126.0	32.63	224-TMP	.0	.00
NBUTANE	1302.2	37.74	NHEPTANE	20.7	.60
IPENTANE	834.9	24.20	1C2-DMCP	.0	.00
NPENTANE	146.5	4.25	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	5.2	.15			
23-DMB	.0	.00			
2-MP	5.2	.15			
3-MP	.0	.00			
NHEXANE	9.9	.29			
MCP	.0	.00			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	.0	.00			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3451.		C1/C2	.00
GASOLINE	3451.		A /D2	30.60
NAPTHENES	5.	.15	C1/D2	.00
C6-7	31.	.89	CH/MCP	.00
			PENT/IPENT	.18

	PPB	NORM PERCENT
MCP	.0	.0
CH	.0	.0
MCH	.0	.0
TOTAL	.0	.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77855 Q . DEPTH(M) = 2420.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	69.0	3.50
ETHANE	.0		1T2-DMCP	77.1	3.91
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	24.4	1.24	224-TMP	.0	.00
NBUTANE	40.1	2.03	NHEPTANE	193.6	9.81
IPENTANE	85.5	4.33	1C2-DMCP	18.8	.95
NPENTANE	113.1	5.73	MCH	141.6	7.17
22-DMB	2.7	.14			
CPENTANE	18.8	.95			
23-DMB	22.9	1.16			
2-MP	70.2	3.56			
3-MP	37.1	1.88			
NHEXANE	295.0	14.95			
MCP	227.8	11.54			
22-DMP	.0	.00			
24-DMP	7.9	.40			
223-TMB	6.7	.34			
CHEXANE	82.2	4.16			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	140.2	7.10			
23-DMP	99.2	5.03			
3-MHEX	133.6	6.77			
1C3-DMCP	66.4	3.36			

	TOTALS PPB	NORM PERCENT
ALL COMP	1974.	
GASOLINE	1974.	
NAPTHENES	702.	35.55
C6-7	1559.	78.99

SIG COMP RATIOS

C1/C2	.79
A /D2	3.66
C1/D2	2.72
CH/MCP	.36
PENT/IPENT	1.32

	PPB	NORM PERCENT
MCP	227.8	50.4
CH	82.2	18.2
MCH	141.6	31.4
TOTAL	451.6	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77855 U DEPTH(M) = 2480.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	266.8	1.80
ETHANE	.0		1T2-DMCP	184.1	1.24
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	751.0	5.06	224-TMP	.0	.00
NBUTANE	1266.4	8.52	NHEPTANE	375.5	2.53
IPENTANE	2875.8	19.36	1C2-DMCP	27.4	.18
NPENTANE	1038.8	6.99	MCH	979.9	6.60
22-DMB	102.4	.69			
CPENTANE	232.3	1.56			
23-DMB	386.2	2.60			
2-MP	1240.4	8.35			
3-MP	1115.1	7.51			
NHEXANE	662.8	4.46			
MCP	1150.6	7.75			
22-DMP	.0	.00			
24-DMP	83.7	.56			
223-TMB	14.0	.09			
CHEXANE	857.1	5.77			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	206.9	1.39			
23-DMP	394.9	2.66			
3-MHEX	322.8	2.17			
1C3-DMCP	320.9	2.16			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	14856.		C1/C2	1.05
GASOLINE	14856.		A /D2	3.22
NAPTHENES	4019.	27.05	C1/D2	6.33
C6-7	5847.	39.36	CH/MCP	.74
			PENT/IPENT	.36

	PPB	NORM PERCENT
MCP	1150.6	38.5
CH	857.1	28.7
MCH	979.9	32.8
TOTAL	2987.6	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A
REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77855 W DEPTH(M) = 2510.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	31.6	1.15
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	157.4	5.73	224-TMP	.0	.00
NBUTANE	250.3	9.11	NHEPTANE	36.2	1.32
IPENTANE	282.5	10.28	1C2-DMCP	.0	.00
NPENTANE	412.3	15.00	MCH	129.9	4.73
22-DMB	14.9	.54			
CPENTANE	50.3	1.83			
23-DMB	45.2	1.64			
2-MP	325.4	11.84			
3-MP	122.8	4.47			
NHEXANE	284.2	10.34			
MCP	361.0	13.13			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	2.4	.09			
CHEXANE	229.1	8.34			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	13.1	.48			

	TOTALS PPB	NORM PERCENT
ALL COMP	2749.	
GASOLINE	2749.	
NAPTHENES	815.	29.65
C6-7	1087.	39.57

SIG COMP RATIOS

C1/C2	.68
A /D2	320.40
C1/D2	359.00
CH/MCP	.63
PENT/IPENT	1.46

	PPB	NORM PERCENT
MCP	361.0	50.1
CH	229.1	31.8
MCH	129.9	18.0
TOTAL	720.0	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77855 Y DEPTH(M) = 2540.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	88.8	1.18
ETHANE	.0		1T2-DMCP	179.4	2.39
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	327.0	4.35	224-TMP	.0	.00
NBUTANE	528.7	7.04	NHEPTANE	153.7	2.05
IPENTANE	789.1	10.50	1C2-DMCP	8.4	.11
NPENTANE	785.5	10.46	MCH	597.7	7.96
22-DMB	56.6	.75			
CPENTANE	178.3	2.37			
23-DMB	84.1	1.12			
2-MP	544.8	7.25			
3-MP	311.3	4.14			
NHEXANE	753.9	10.03			
MCP	840.6	11.19			
22-DMP	.0	.00			
24-DMP	23.5	.31			
223-TMB	4.2	.06			
CHEXANE	739.3	9.84			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	116.8	1.55			
23-DMP	119.2	1.59			
3-MHEX	190.0	2.53			
1C3-DMCP	92.0	1.22			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	7513.		C1/C2	1.20
GASOLINE	7513.		A /D2	4.78
NAPTHENES	2724.	36.26	C1/D2	7.65
C6-7	3907.	52.01	CH/MCP	.88
			PENT/IPENT	1.00

	PPB	NORM PERCENT
MCP	840.6	38.6
CH	739.3	34.0
MCH	597.7	27.4
TOTAL	2177.6	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77856 A DEPTH(M) = 2570.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	87.8	1.45
ETHANE	.0		1T2-DMCP	195.3	3.23
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	101.2	1.67	224-TMP	.0	.00
NBUTANE	162.0	2.68	NHEPTANE	336.6	5.57
IPENTANE	270.4	4.47	1C2-DMCP	20.0	.33
NPENTANE	303.0	5.01	MCH	1674.4	27.69
22-DMB	21.8	.36			
CPENTANE	74.2	1.23			
23-DMB	62.4	1.03			
2-MP	287.9	4.76			
3-MP	161.8	2.68			
NHEXANE	408.7	6.76			
MCP	622.3	10.29			
22-DMP	.0	.00			
24-DMP	19.2	.32			
223-TMB	5.5	.09			
CHEXANE	722.0	11.94			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	112.3	1.86			
23-DMP	116.6	1.93			
3-MHEX	194.0	3.21			
1C3-DMCP	87.8	1.45			

	TOTALS PPB	NORM PERCENT
ALL COMP	6047.	
GASOLINE	6047.	
NAPTHENES	3484.	57.61
C6-7	4602.	76.11

SIG COMP RATIOS

C1/C2	2.48
A /D2	3.84
C1/D2	12.93
CH/MCP	1.16
PENT/IPENT	1.12

	PPB	NORM PERCENT
MCP	622.3	20.6
CH	722.0	23.9
MCH	1674.4	55.5
TOTAL	3016.7	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77856 C DEPTH(M) = 2600.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	19.6	1.56
ETHANE	.0		1T2-DMCP	42.2	3.35
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	16.3	1.29	224-TMP	.0	.00
NBUTANE	17.3	1.37	NHEPTANE	109.7	8.71
IPENTANE	16.8	1.33	1C2-DMCP	5.2	.41
NPENTANE	23.7	1.88	MCH	595.1	47.27
22-DMB	6.2	.49			
CPENTANE	9.1	.72			
23-DMB	3.3	.26			
2-MP	22.3	1.77			
3-MP	12.1	.96			
NHEXANE	46.8	3.72			
MCP	84.0	6.67			
22-DMP	.0	.00			
24-DMP	2.7	.21			
223-TMB	.0	.00			
CHEXANE	135.9	10.80			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	25.3	2.01			
23-DMP	21.1	1.68			
3-MHEX	23.6	1.87			
1C3-DMCP	20.6	1.64			

	TOTALS PPB	NORM PERCENT
ALL COMP	1259.	
GASULINE	1259.	
NAPTHENES	912.	72.42
C6-7	1132.	89.90

SIG COMP RATIOS	
C1/C2	4.41
A /D2	6.63
C1/D2	32.05
CH/MCP	1.62
PENT/IPENT	1.41

	PPB	NORM PERCENT
MCP	84.0	10.3
CH	135.9	16.7
MCH	595.1	73.0
TOTAL	815.0	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A
REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77856 E DEPTH(M) = 2630.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	.0	.00
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	5.0	6.72	224-TMP	.0	.00
NBUTANE	4.0	5.38	NHEPTANE	.0	.00
IPENTANE	6.6	8.87	1C2-DMCP	.0	.00
NPENTANE	8.0	10.75	MCH	.0	.00
22-DMB	.0	.00			
CPENTANE	.0	.00			
23-DMB	1.4	1.88			
2-MP	8.5	11.42			
3-MP	5.7	7.66			
NHEXANE	15.7	21.10			
MCP	12.7	17.07			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	6.8	9.14			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	.0	.00			
23-DMP	.0	.00			
3-MHEX	.0	.00			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	74.		C1/C2	.54
GASOLINE	74.		A /D2	15.70
NAPTHENES	20.	26.21	C1/D2	6.80
C6-7	35.	47.31	CH/MCP	.54
			PENT/IPENT	1.21

	PPB	NORM PERCENT
MCP	12.7	65.1
CH	6.8	34.9
MCH	.0	.0
TOTAL	19.5	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSTS
WELL - WHIPTAIL 1A SAMPLE NO. = 77856 K DEPTH(M) = 2720.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	13.1	1.74
ETHANE	.0		1T2-DMCP	25.4	3.38
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	7.6	1.01	224-TMP	.0	.00
NBUTANE	19.3	2.57	NHEPTANE	92.9	12.36
IPENTANE	29.0	3.86	1C2-DMCP	.0	.00
NPENTANE	38.2	5.08	MCH	214.9	28.60
22-DMB	5.2	.69			
CPENTANE	6.1	.81			
23-DMB	5.7	.76			
2-MP	46.7	6.21			
3-MP	22.0	2.93			
NHEXANE	68.0	9.05			
MCP	46.4	6.17			
22-DMP	.0	.00			
24-DMP	1.9	.25			
223-TMB	.0	.00			
CHEXANE	44.0	5.85			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	21.1	2.81			
23-DMP	8.5	1.13			
3-MHEX	24.4	3.25			
1C3-DMCP	11.1	1.48			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	751.		C1/C2	2.92
GASOLINE	751.		A /D2	6.59
NAPTHENES	361.	48.04	C1/D2	11.48
C6-7	572.	76.07	CH/MCP	.95
			PENT/IPENT	1.32

	PPB	NORM PERCENT
MCP	46.4	15.2
CH	44.0	14.4
MCH	214.9	70.4
TOTAL	305.3	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A SAMPLE NO. = 77856 M . DEPTH(M) = 2750.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	55.6	1.52
ETHANE	.0		1T2-DMCP	109.1	2.99
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	8.1	.22	224-TMP	.0	.00
NBUTANE	154.5	4.23	NHEPTANE	157.2	4.31
IPENTANE	244.7	6.70	1C2-DMCP	9.7	.27
NPENTANE	308.5	8.45	MCH	704.7	19.30
22-DMB	11.9	.33			
CPENTANE	75.1	2.06			
23-DMB	40.4	1.11			
2-MP	216.1	5.92			
3-MP	118.3	3.24			
NHEXANE	302.2	8.28			
MCP	420.4	11.51			
22-DMP	.0	.00			
24-DMP	11.0	.30			
223-TMB	.0	.00			
CHEXANE	418.6	11.46			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	68.0	1.86			
23-DMP	56.0	1.53			
3-MHEX	103.7	2.84			
1C3-DMCP	57.4	1.57			

	TOTALS PPB	NORM PERCENT
ALL COMP	3651.	
GASOLINE	3651.	
NAPTHENES	1851.	50.68
C6-7	2474.	67.75

SIG COMP RATIOS

C1/C2	1.83
A /D2	4.43
C1/D2	11.49
CH/MCP	1.00
PENT/IPENT	1.26

	PPB	NORM PERCENT
MCP	420.4	27.2
CH	418.6	27.1
MCH	704.7	45.7
TOTAL	1543.7	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHIPTAIL 1A
REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77856 0 DEPTH(M) = 2780.00

	TOTAL PPB	NORM PERCENT
METHANE	.0	
ETHANE	.0	
PROPANE	.0	.00
IBUTANE	36.0	.72
NBUTANE	58.6	1.12
IPENTANE	110.8	2.11
NPENTANE	142.0	2.71
22-DMB	8.3	.16
CPENTANE	37.7	.72
23-DMB	29.5	.56
2-MP	211.7	4.03
3-MP	114.9	2.19
NHEXANE	360.8	6.88
MCP	395.2	7.53
22-DMP	.0	.00
24-DMP	21.4	.41
223-TMB	4.1	.06
CHEXANE	366.0	6.98
33-DMP	.0	.00
11-DMCP	.0	.00
2-MHEX	173.2	3.30
23-DMP	128.9	2.46
3-MHEX	242.8	4.63
1C3-DMCP	119.5	2.28

	TOTAL PPB	NORM PERCENT
1T3-DMCP	120.7	2.30
1T2-DMCP	233.2	4.44
3-EPENT	.0	.00
224-TMP	.0	.00
NHEPTANE	553.7	10.55
1C2-DMCP	25.3	.48
MCH	1750.5	33.36

	TOTALS PPB	NORM PERCENT
ALL COMP	5247.	
GASOLINE	5247.	
NAPTHENES	3048.	58.09
C6-7	4495.	85.68

SIG COMP RATIOS	
C1/C2	2.56
A /D2	3.77
C1/D2	9.43
CH/MCP	.93
PENT/IPENT	1.28

	PPB	NORM PERCENT
MCP	395.2	15.7
CH	366.0	14.6
MCH	1750.5	69.7
TOTAL	2511.7	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHIPTAIL 1A SAMPLE NO. = 77856 R . DEPTH(M) = 2810.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	132.2	1.25
ETHANE	.0		1T2-DMCP	254.9	2.41
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	5.6	.05	224-TMP	.0	.00
NBUTANE	41.0	.39	NHEPTANE	312.8	2.96
IPENTANE	503.6	4.77	1C2-DMCP	15.7	.15
NPENTANE	1275.9	12.08	MCH	1175.0	11.13
22-DMB	32.2	.30			
CPENTANE	483.9	4.58			
23-DMB	95.4	.90			
2-MP	647.4	6.13			
3-MP	346.0	3.28			
NHEXANE	975.5	9.24			
MCP	1777.0	16.83			
22-DMP	.0	.00			
24-DMP	32.8	.31			
223-TMB	6.9	.07			
CHEXANE	1716.8	16.26			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	186.2	1.76			
23-DMP	164.7	1.56			
3-MHEX	241.0	2.28			
1C3-DMCP	137.9	1.31			

	TOTALS. PPB	NORM PERCENT
ALL COMP	10560.	
GASOLINE	10560.	
NAPTHENES	5693.	53.91
C6-7	7129.	67.51

SIG COMP RATIOS

C1/C2	1.33
A /D2	5.35
C1/D2	12.77
CH/MCP	.97
PENT/IPENT	2.53

	PPB	NORM PERCENT
MCP	1777.0	38.1
CH	1716.8	36.8
MCH	1175.0	25.2
TOTAL	4668.8	100.0

APPENDIX 2

Detailed Vitrinite Reflectance and Exinite Fluorescence - Report by A.C. Cook

WHIPTAIL 1A

KK No.	Esso No.	Depth m	$\bar{R}_v$max %	Range $R_v$max %	N	Exinite fluorescence (Remarks)
x3375	77830 Y	1154.7 SWC 55	0.38	0.30-0.46	27	Common sporinite, yellow to yellow orange, sparse fluorinite, green, sparse resinite, yellow, rare cutinite, yellow orange. (Sandy siltstone>coal. Common coal. Vitrite>vitrinertite(V). Dom abundant, V>E>I. Vitrinite abundant, exinite common, inertinite rare. Sparse greenish yellow fluorescing oil droplets present. Framboidal pyrite abundant.)
		$\bar{R}_I$	0.60	-	1	
		$\bar{R}_E$	0.09	-	1	
x3376	77830 J	1447.0 SWC 38	0.46	0.40-0.52	25	Abundant sporinite and liptodetrinite, yellow to yellow orange, orange. Common cutinite and resinite, yellow to yellow orange, common suberinite, orange to dull orange, sparse fluorinite, green, rare ?*Botryococcus*-type telalginite. (Coal. Clarite>vitrite>duroclarite. Sclerotinite and inertodetrinite present. Large greenish yellow fluorescing oil droplets/ fluorinite present. Weak oil cut observed in vitrinite. Pyrite rare.)
		$\bar{R}_E$	0.15	0.12-0.23	4	
		$\bar{R}_I$	0.90	-	1	
x3377	77829 Y	1811.0 SWC 27	0.49	0.42-0.62	18	Common to abundant liptodetrinite and sporinite, yellow to yellow orange, orange to dull orange, sparse cutinite, yellow orange, sparse resinite, yellow orange to orange, sparse fluorinite, green. (Sandy siltstone. Dom abundant, E>V>I. Exinite abundant, vitrinite and inertinite sparse. Sparse greenish yellow fluorescing oil droplets present. Pyrite abundant, locally major.)
		$\bar{R}_I$	1.20	0.80-1.47	10	
x3378	77829 P	2218.2 SWC 17	0.47	-	1	Rare to sparse sporinite, yellow orange, orange to dull orange, rare cutinite, yellow orange, rare resinite, yellow orange. (Siltstone. Dom abundant, I>E>V. Inertinite abundant, exinite sparse, vitrinite rare. Pyrite abundant.)
		$\bar{R}_I$	1.50	1.08-2.42	25	
		$\bar{R}_v$max estimated from $\bar{R}_I$max = 0.50%				
x3379	77829 C	2712 SWC 3	-	-	-	Rare to sparse sporinite and cutinite, yellow orange, orange to dull orange, rare resinite, yellow orange. (Siltstone. Dom common, I>E. Inertinite and exinite sparse, vitrinite absent. Pyrite abundant.)
		$\bar{R}_I$	1.67	1.08-2.62	20	
		$\bar{R}_v$max estimated from $\bar{R}_I$max = 0.61%				

FIGURE 15
WHOLE OIL GAS CHROMATOGRAM
WHIPTAIL 1A
1397.5 mKB
API = 42°

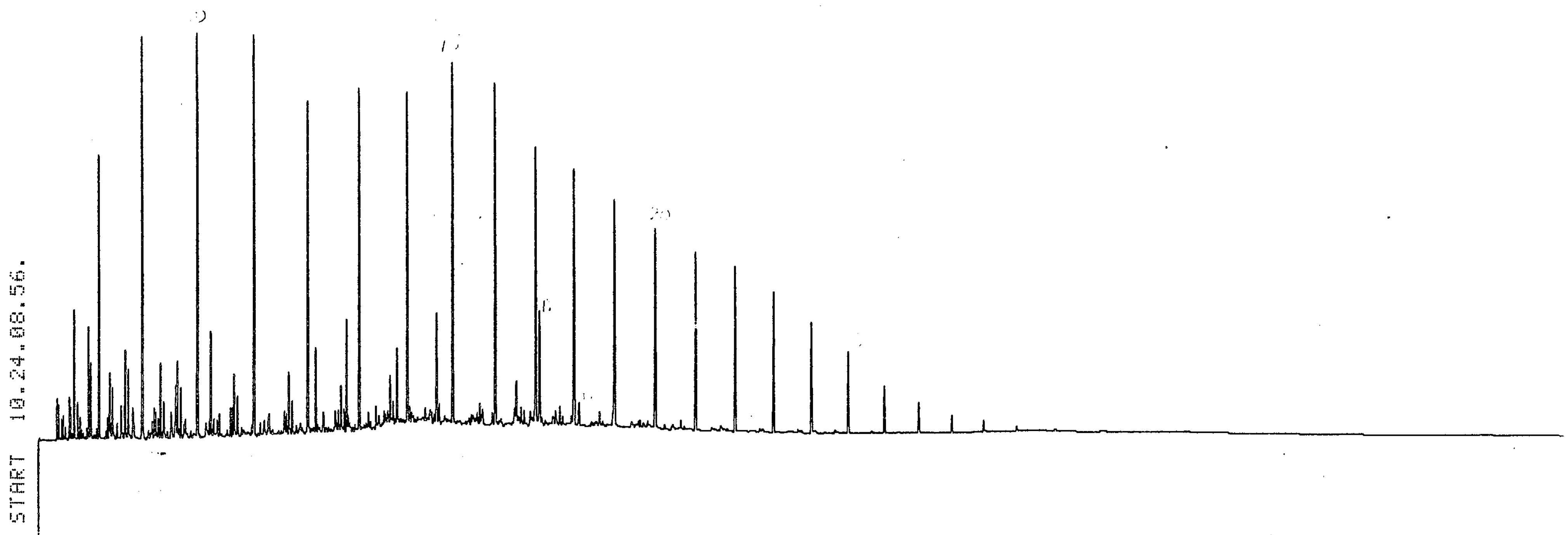


FIGURE 6

C_{15+} Paraffin-Naphthene (P-N) Hydrocarbon

GeoChem Sample No. E710-007

Exxon Identification No. 77851-I

WHIPTAIL 1A

440-470 mKB

Gippsland Limestone

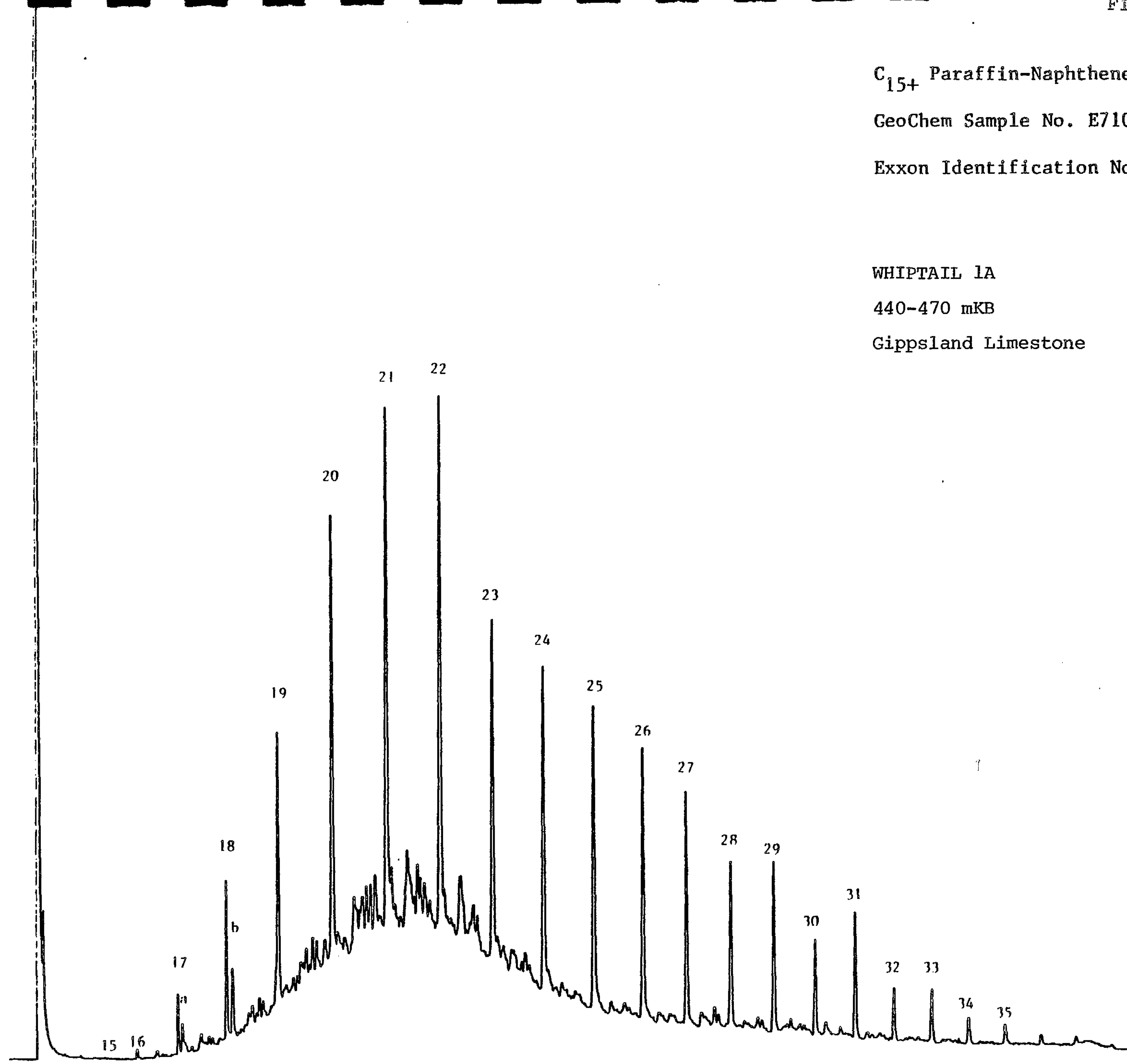


Figure 7

C_{15+} Paraffin-Naphthene (P-N) Hydrocarbon

GeoChem Sample No. E710-008

Exxon Identification No. 77851-W

WHIPTAIL 1A

860-890 mKB

Lakes Entrance Fm.

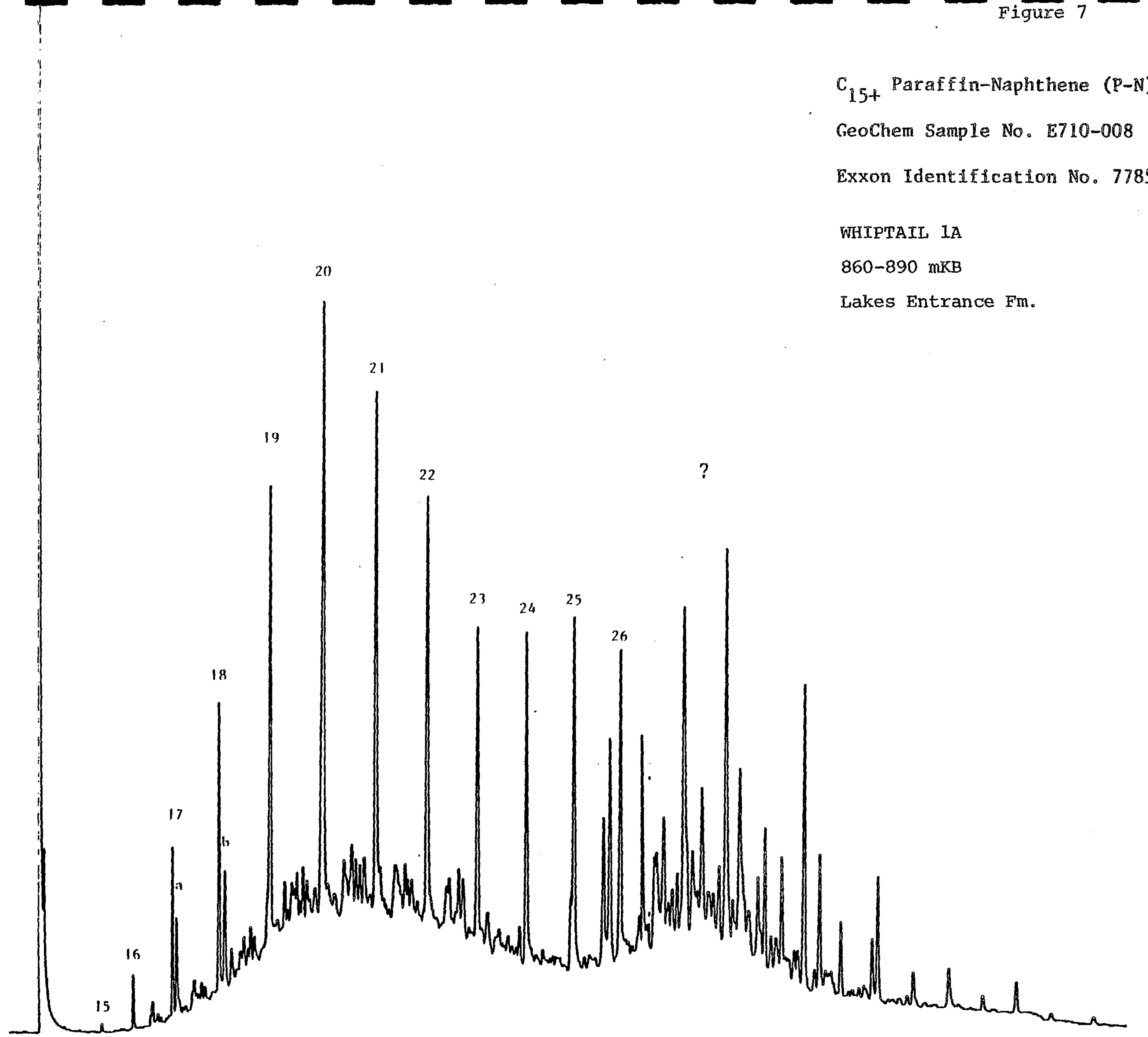


FIGURE 8

C_{15+} Paraffin-Naphthene (P-N) Hydrocarbon

GeoChem Sample No. E710-009

Exxon Identification No. 77852-K

WHIPTAIL 1A

1145-1160 mKB

Latrobe Group (Mid. Eocene - Paleocene)

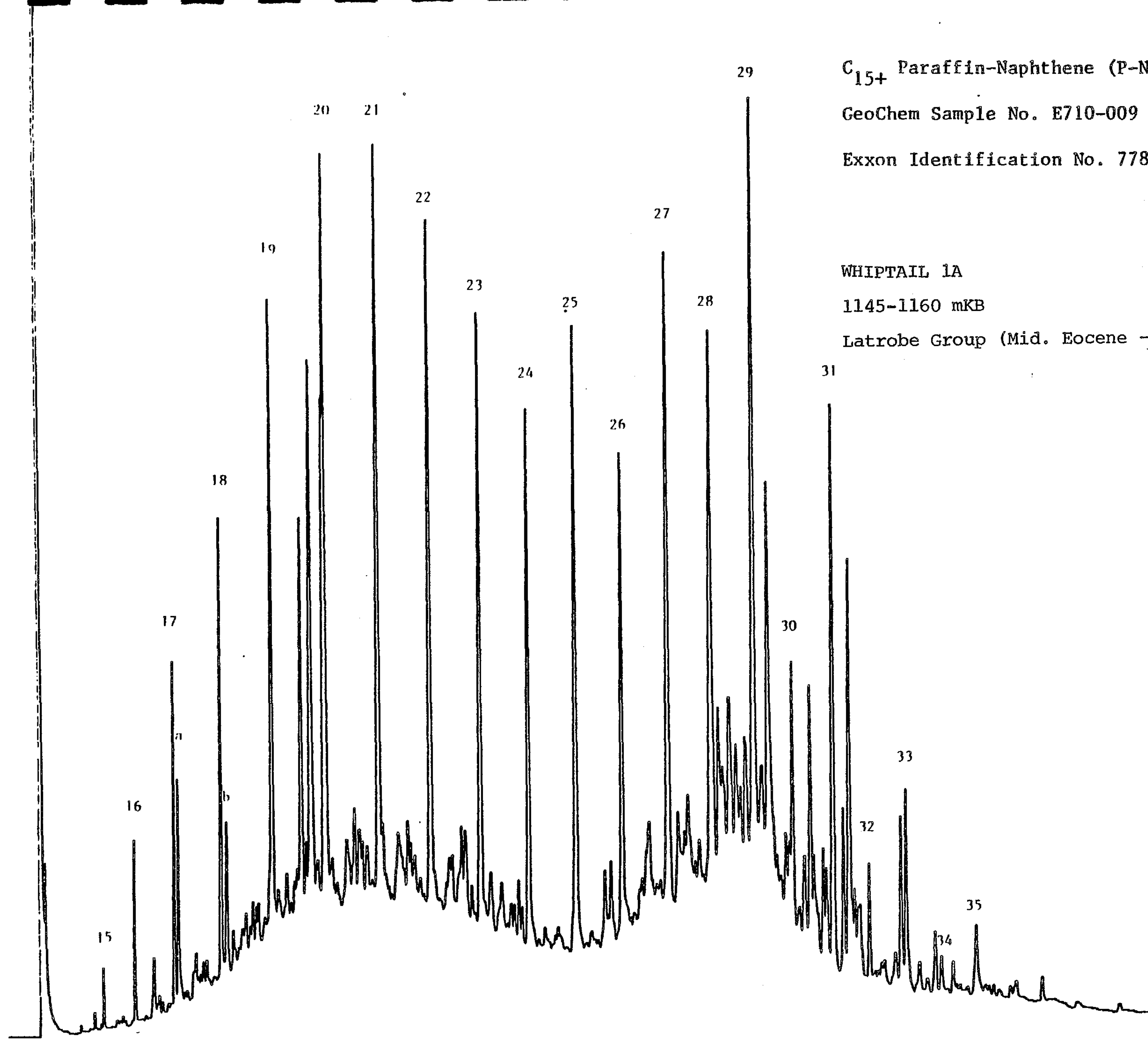


Figure 9

C_{15+} Paraffin-Naphthene (P-N) Hydrocarbon

GeoChem Sample No. E710-010

Exxon Identification No. 77854-C

WHIPTAIL 1A

1805-1820 mKB

Latrobe Group (Mid. Eocene - Paleocene)

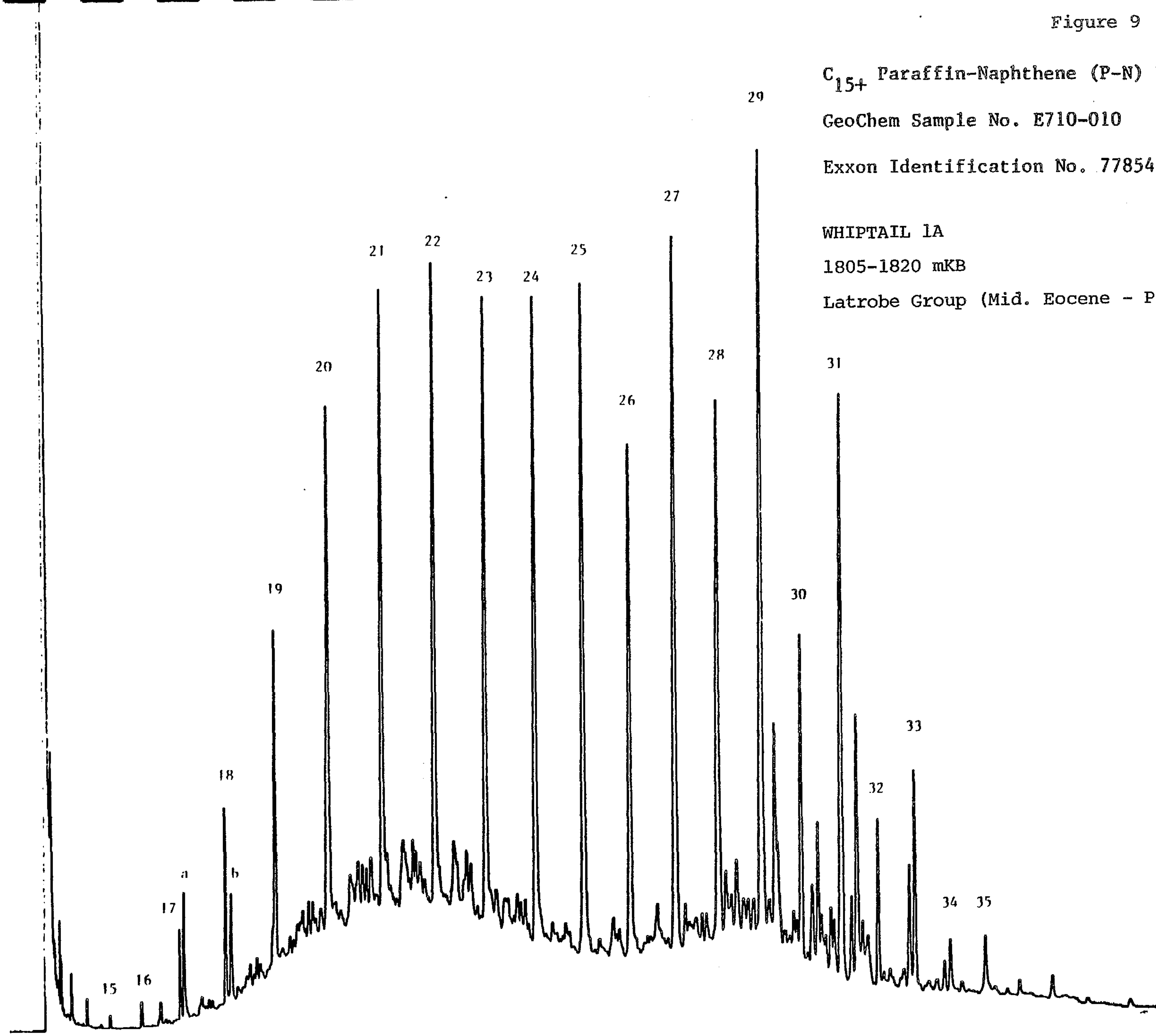


Figure 10

C_{15+} Paraffin-Naphthene (P-N) Hydrocarbon

GeoChem Sample No. E710-011

Exxon Identification No. 77854-W

WHIPTAIL 1A

2105-2120 mKB

Latrobe Group (Mid. Eocene - Paleocene)

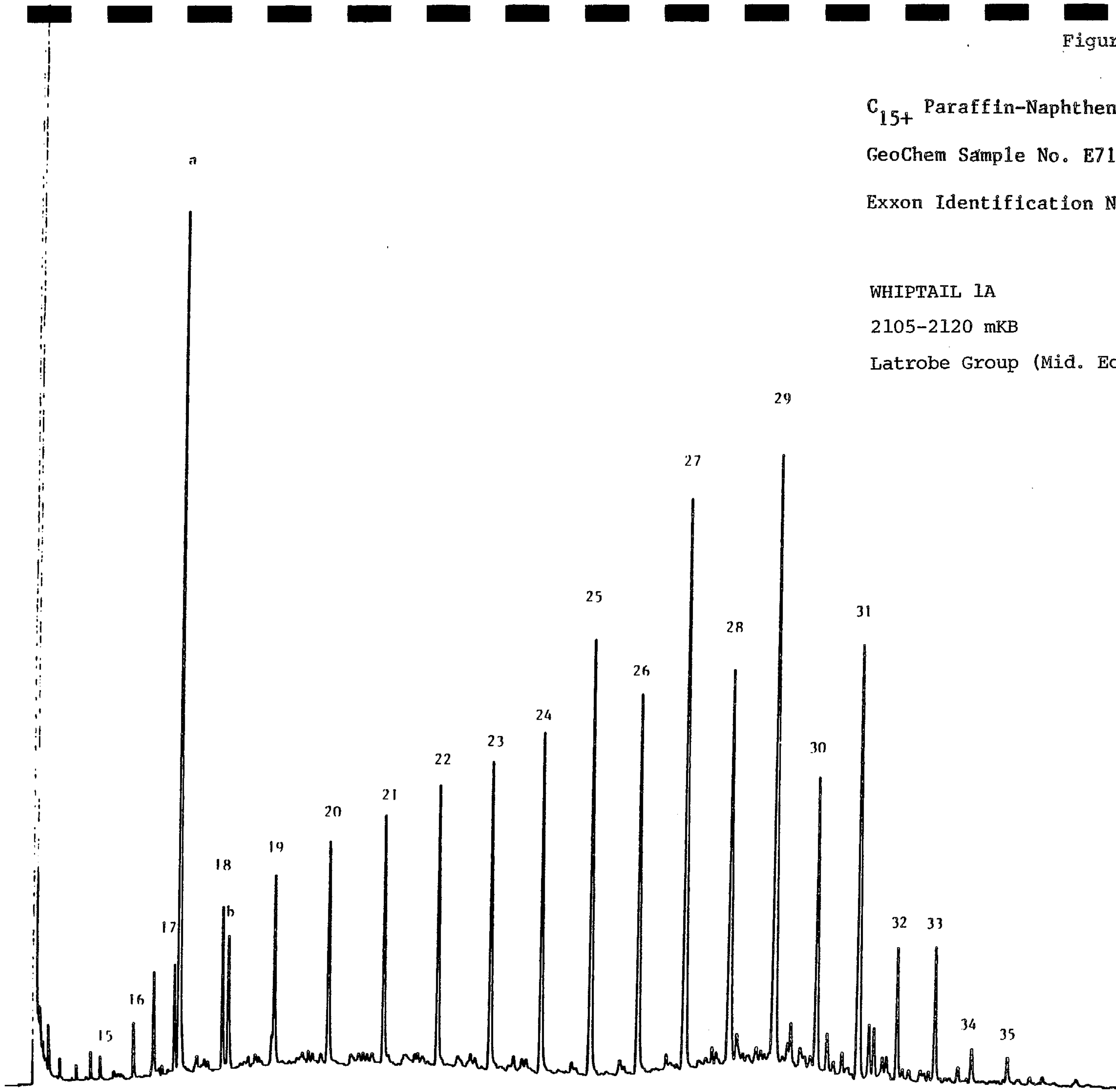


Figure 11

C_{15+} Paraffin-Naphthene (P-N) Hydrocarbon

GeoChem Sample No. E710-012

Exxon Identification No. 77855-Q

WHIPTAIL 1A

2405-20 mKB

Latrobe Group (Late Cretaceous)

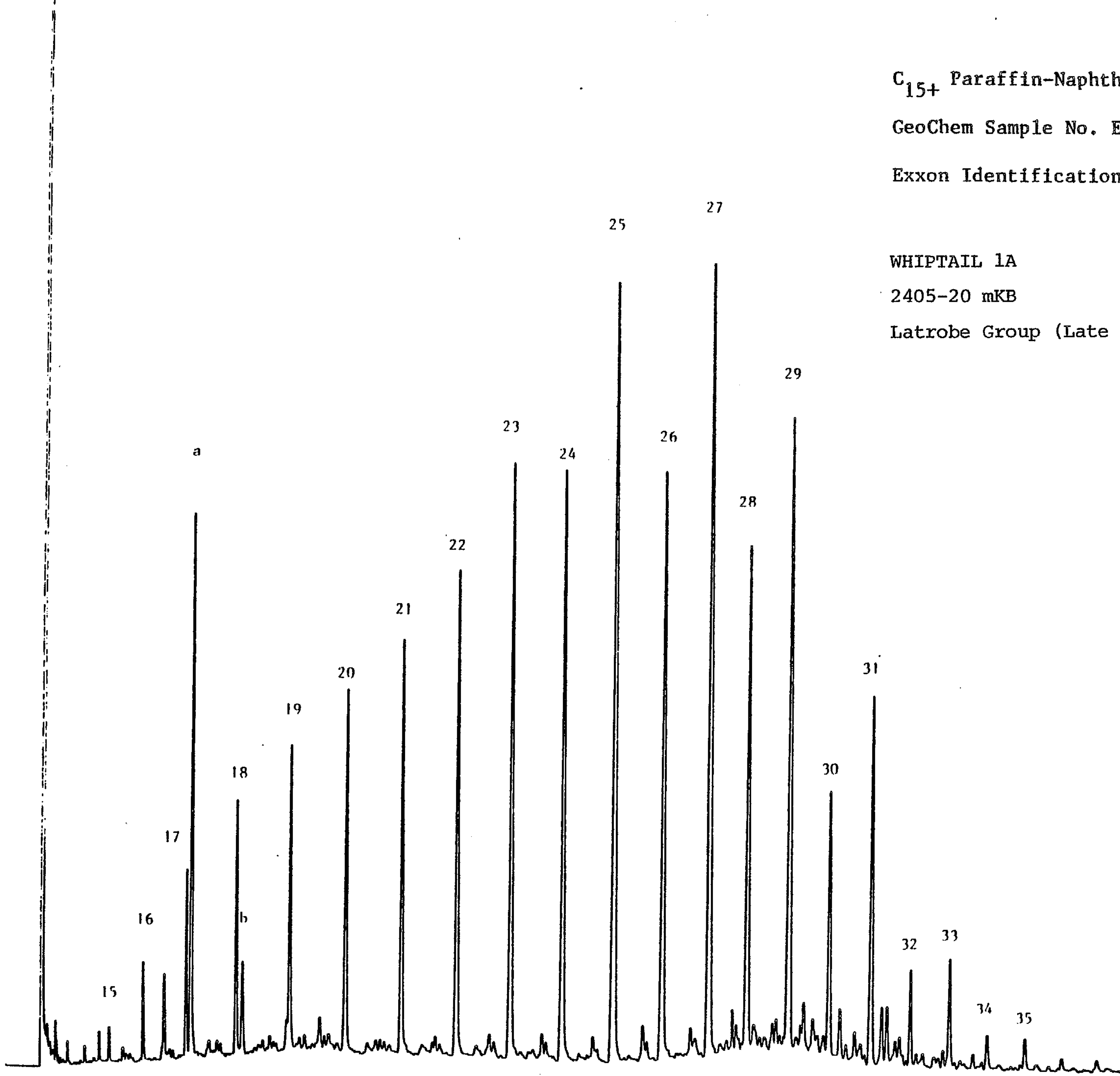


Figure 12

C_{15+} Paraffin-Naphthene (P-N) Hydrocarbon

GeoChem Sample No. E710-013

Exxon Identification No. 77856-E

Whiptail 1A

2615-30 mKB

Latrobe Group (Late Cretaceous)

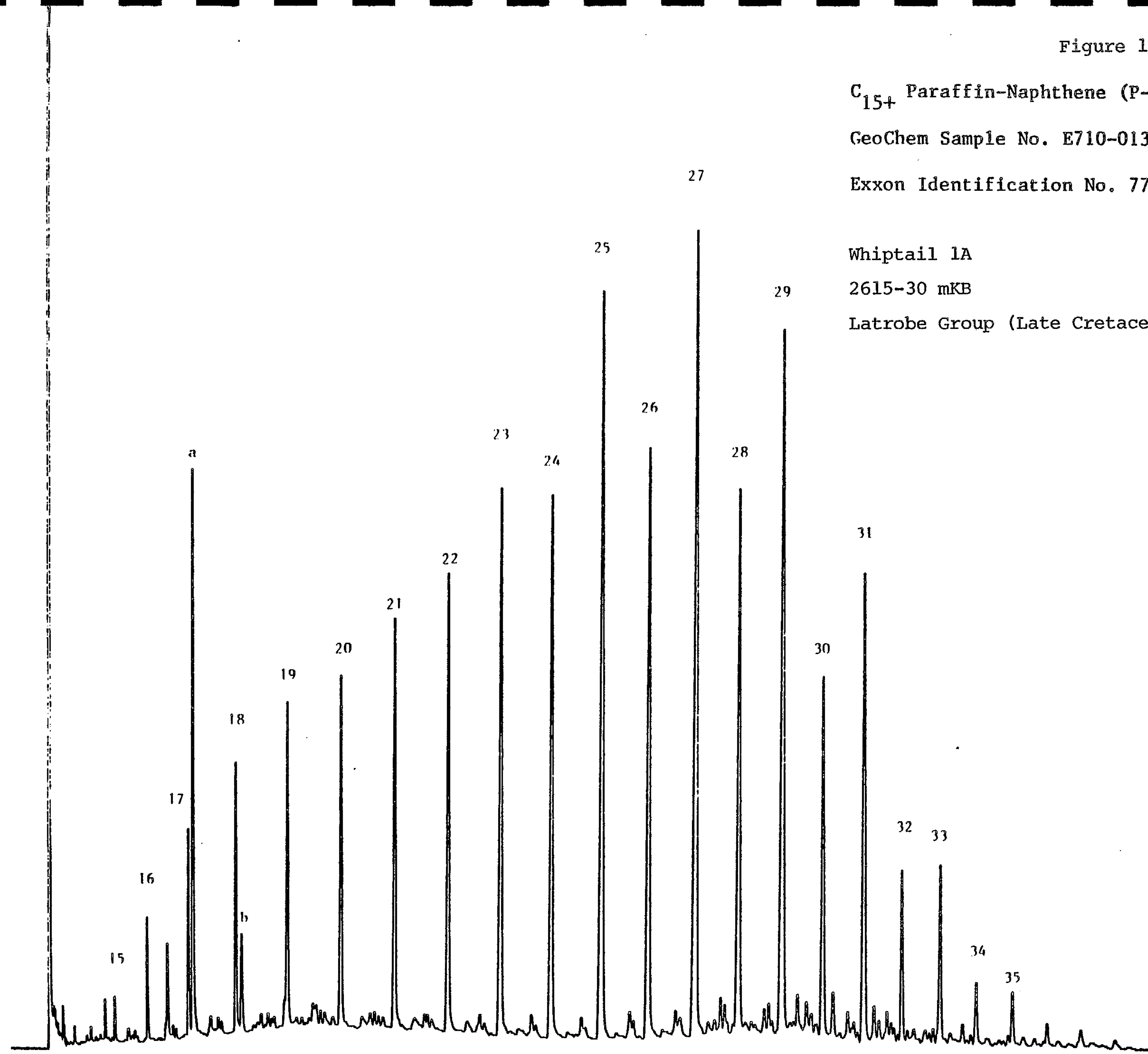


Figure 13

C_{15+} Paraffin-Naphthene (P-N) Hydrocarbon

GeoChem Sample No. E710-014

Client Identification No. 77856-Q

WHIPTAIL 1A

2795-2810 mKB

Latrobe Group (Late Cretaceous)

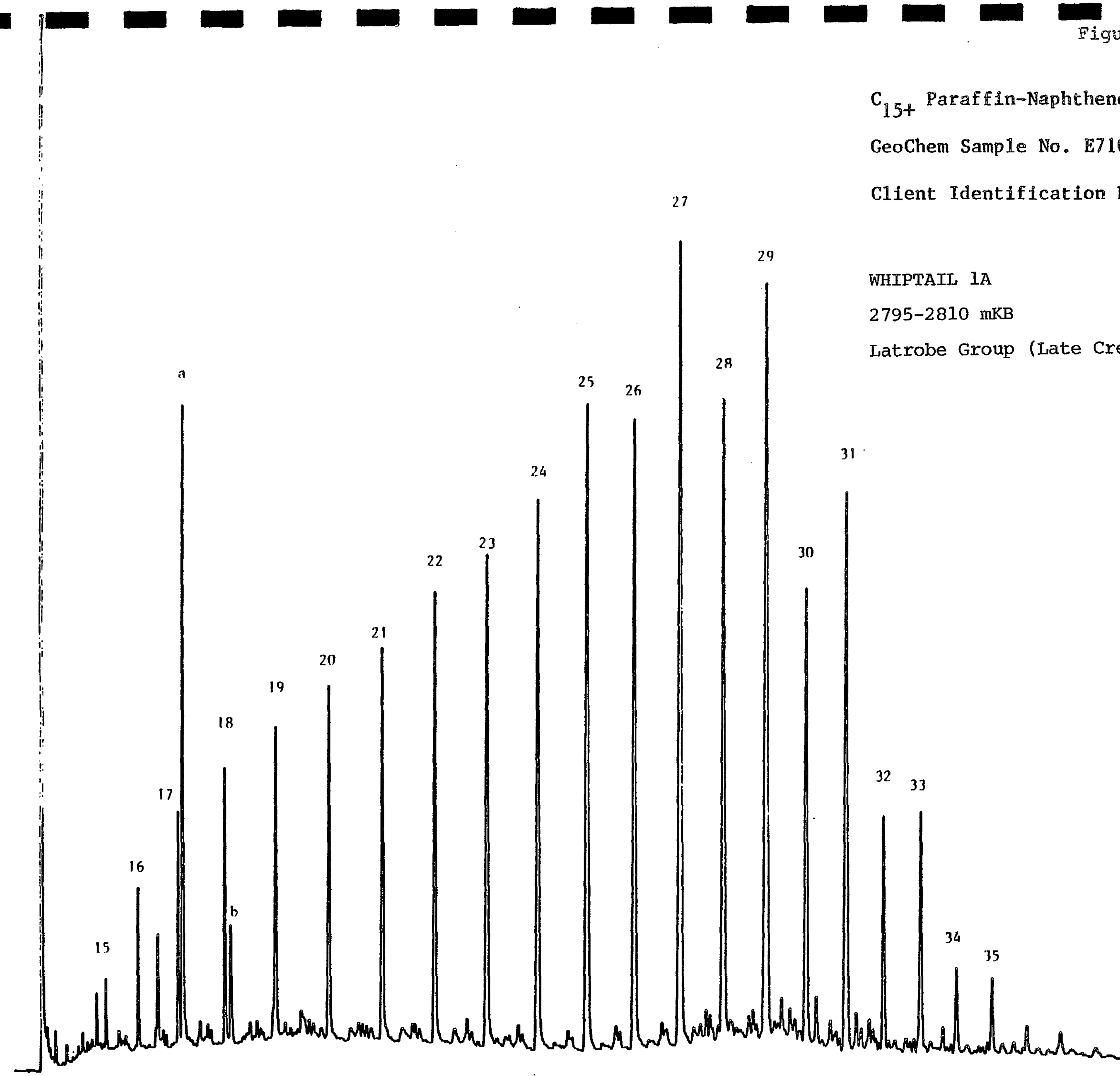


FIGURE 14

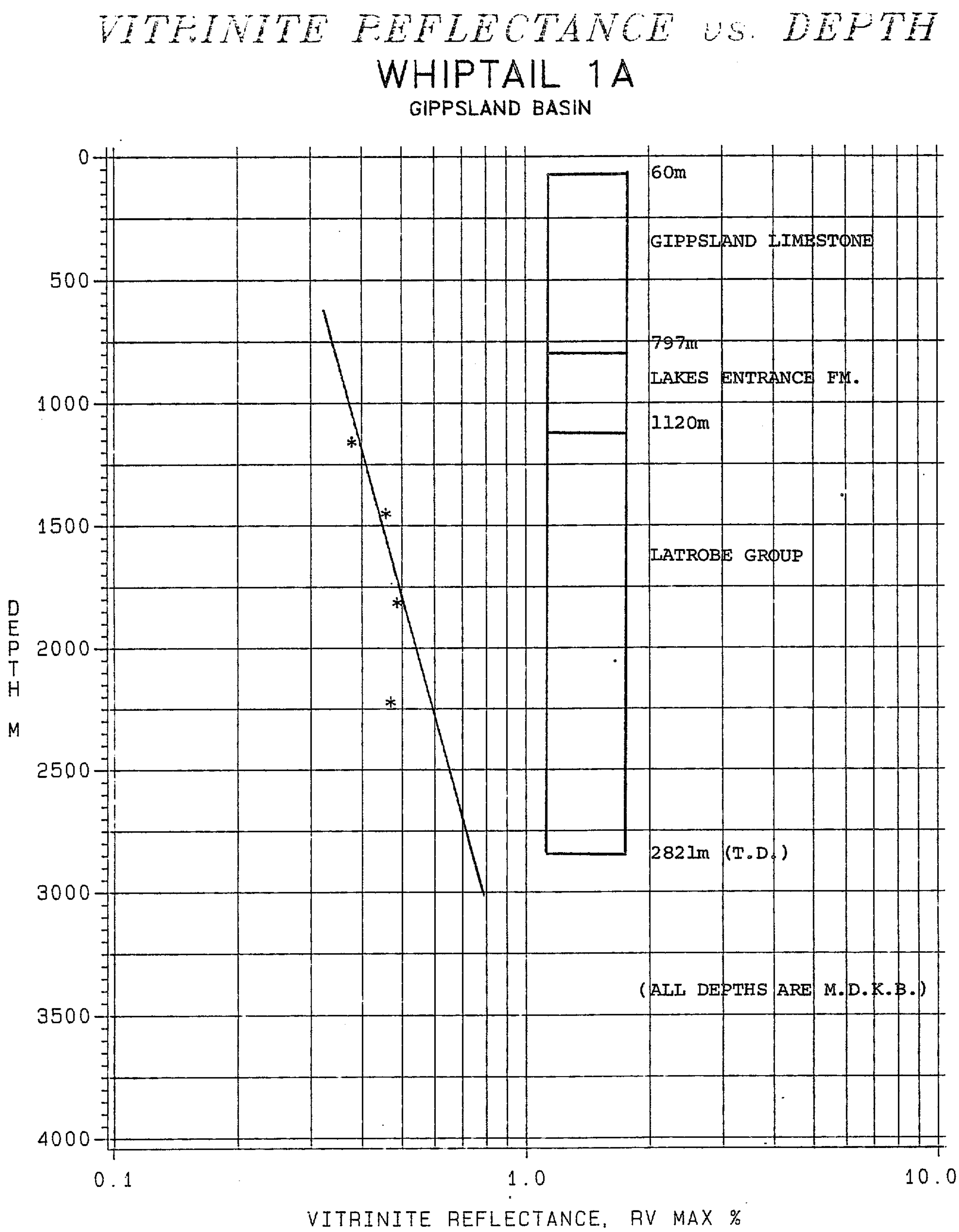
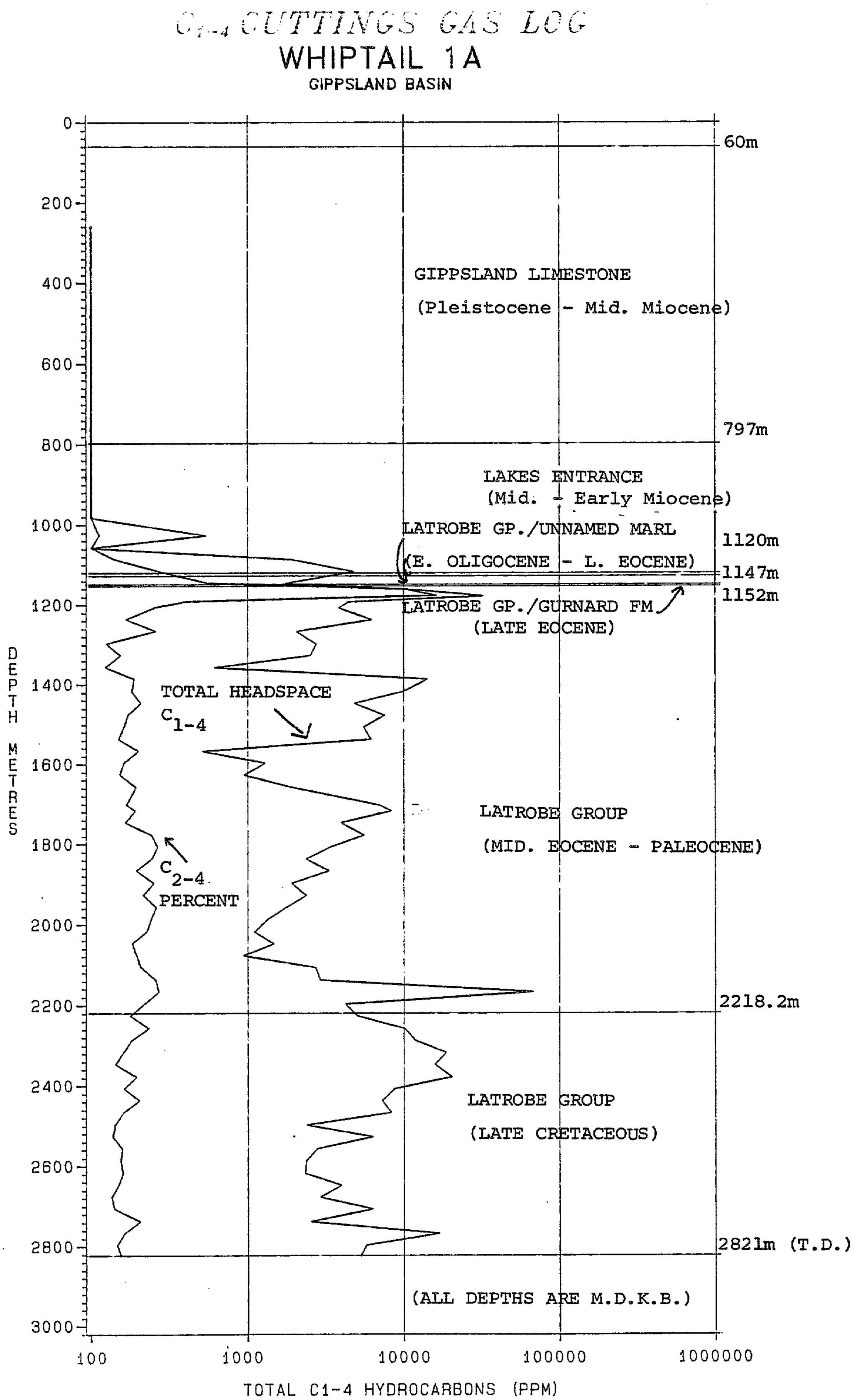
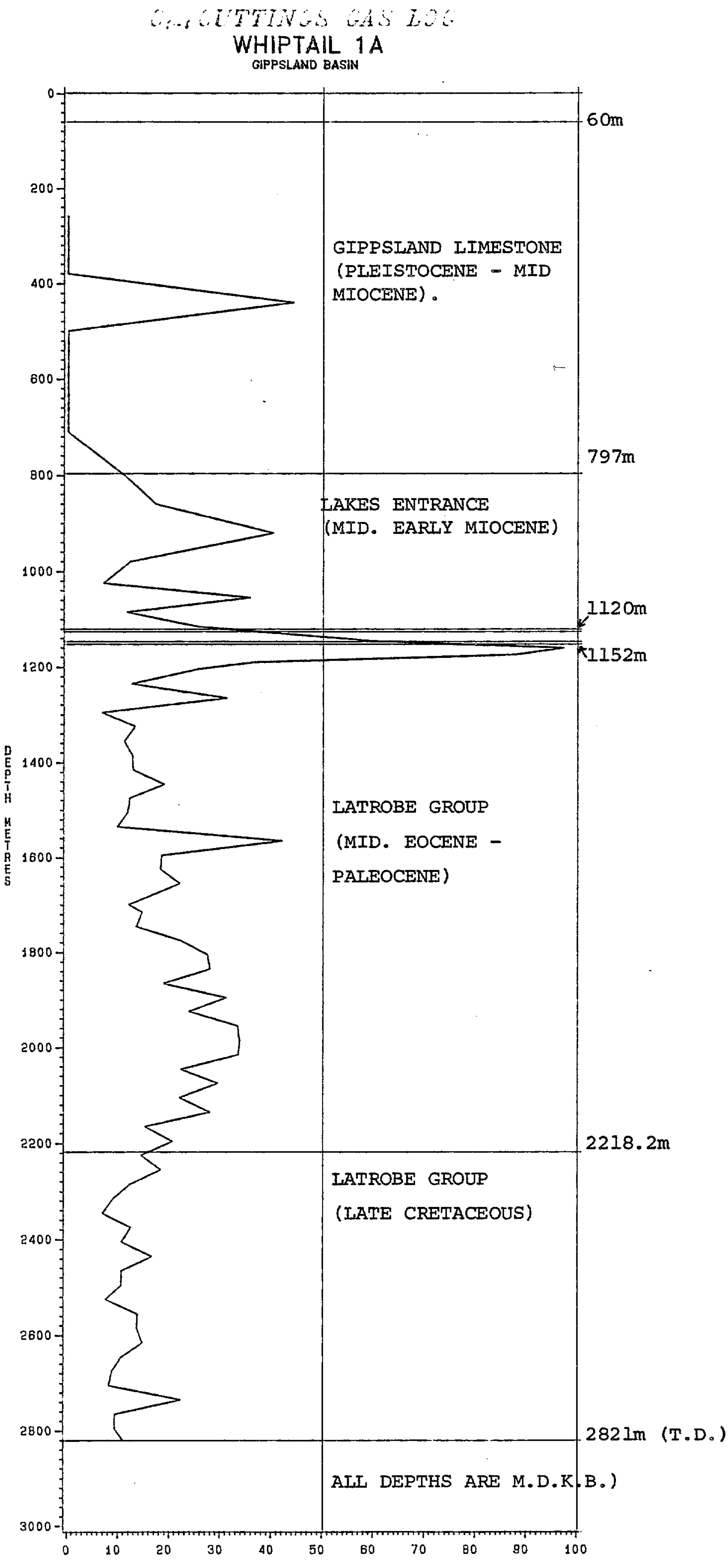

VITRINITE REFLECTANCE vs. DEPTH
WHIPTAIL 1A
GIPPSLAND BASIN
0
500
1000
1500
2000
2500
3000
3500
4000
DEPTH M
0.1
1.0
10.0
VITRINITE REFLECTANCE, RV MAX %
60m
GIPPSLAND LIMESTONE
797m
LAKES ENTRANCE FM.
1120m
LATROBE GROUP
2821m (T.D.)
(ALL DEPTHS ARE M.D.K.B.)

Figure 1a



C1-4 CUTTINGS GAS LOG
WHIPTAIL 1A
GIPPSLAND BASIN
60m
GIPPSLAND LIMESTONE
(Pleistocene - Mid. Miocene)
797m
LAKES ENTRANCE
(Mid. - Early Miocene)
LATROBE GP./UNNAMED MARL
(E. OLIGOCENE - L. EOCENE)
1120m
1147m
1152m
LATROBE GP./GURNARD FM
(LATE EOCENE)
TOTAL HEADSPACE
C1-4
LATROBE GROUP
(MID. EOCENE - PALEOCENE)
C2-4
PERCENT
2218.2m
LATROBE GROUP
(LATE CRETACEOUS)
2821m (T.D.)
(ALL DEPTHS ARE M.D.K.B.)
DEPTH METRES
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
100
1000
10000
100000
1000000
TOTAL C1-4 HYDROCARBONS (PPM)

Figure 1b



WHIPTAIL 1A
GIPPSLAND BASIN
60m
GIPPSLAND LIMESTONE (PLEISTOCENE - MID MIOCENE).
797m
LAKES ENTRANCE (MID. EARLY MIOCENE)
1120m
1152m
LATROBE GROUP (MID. EOCENE - PALEOCENE)
2218.2m
LATROBE GROUP (LATE CRETACEOUS)
2821m (T.D.)
ALL DEPTHS ARE M.D.K.B.)
DEPTH METRES
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
0 10 20 30 40 50 60 70 80 90 100
PERCENT C2-4 IN TOTAL C1-4 HYDROCARBONS

FIGURE 2

TOTAL ORGANIC CARBON

WHIPTAIL 1A

GIPPSLAND BASIN

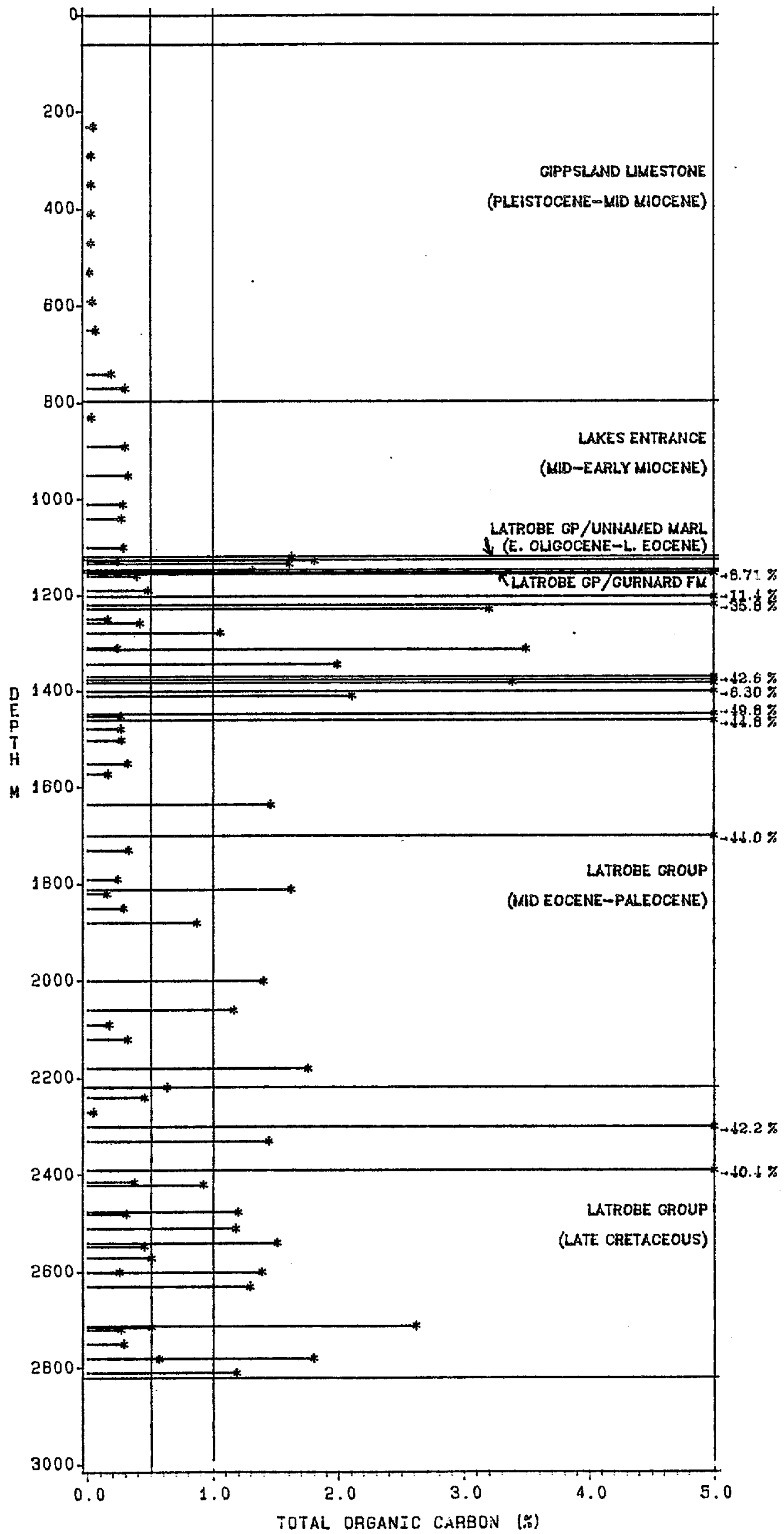


FIGURE 3

ROCKEVAL MATURATION PLOT

Tmax vs HYDROGEN INDEX

WHIPTAIL 1A

GIPPSLAND BASIN

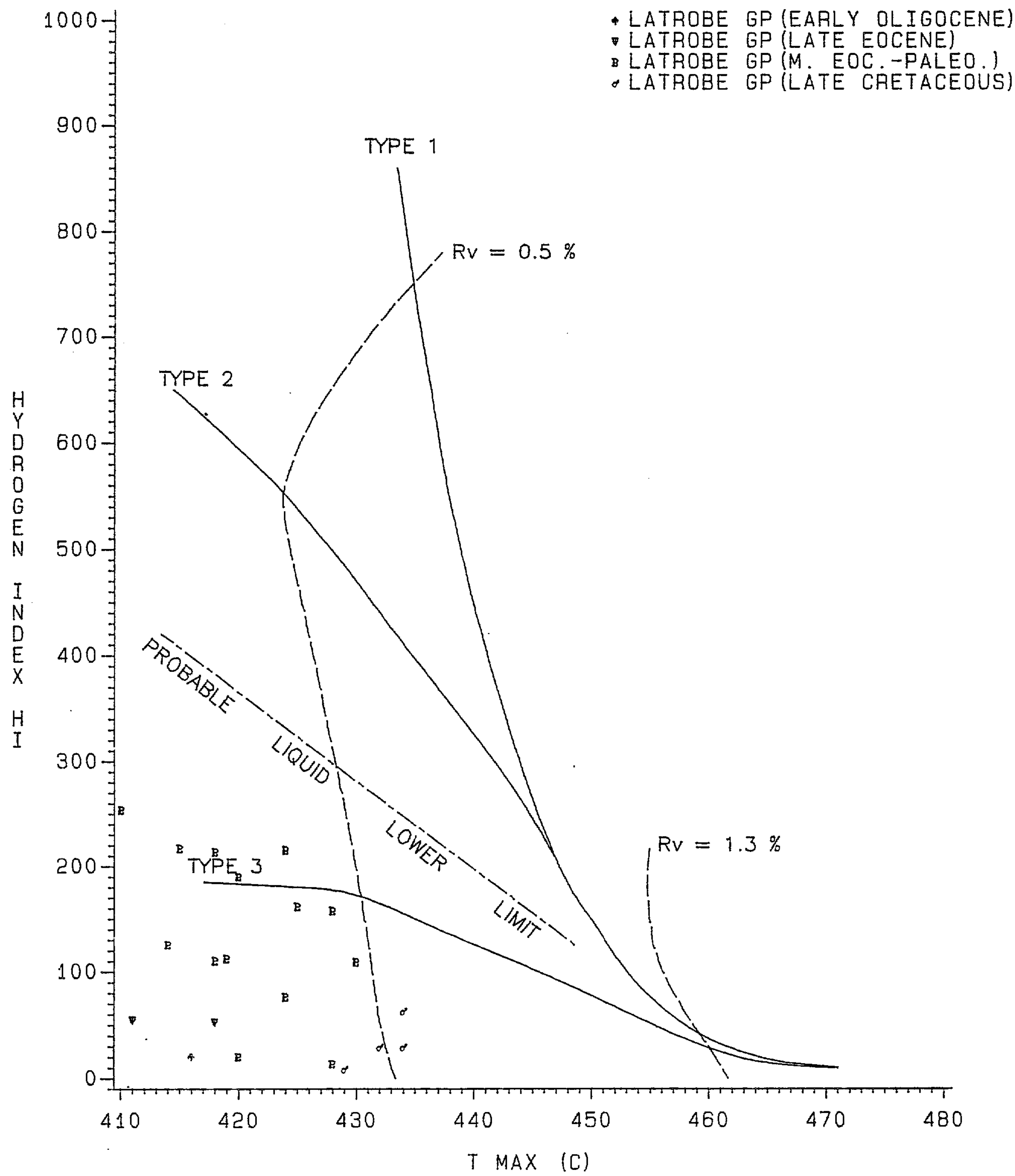
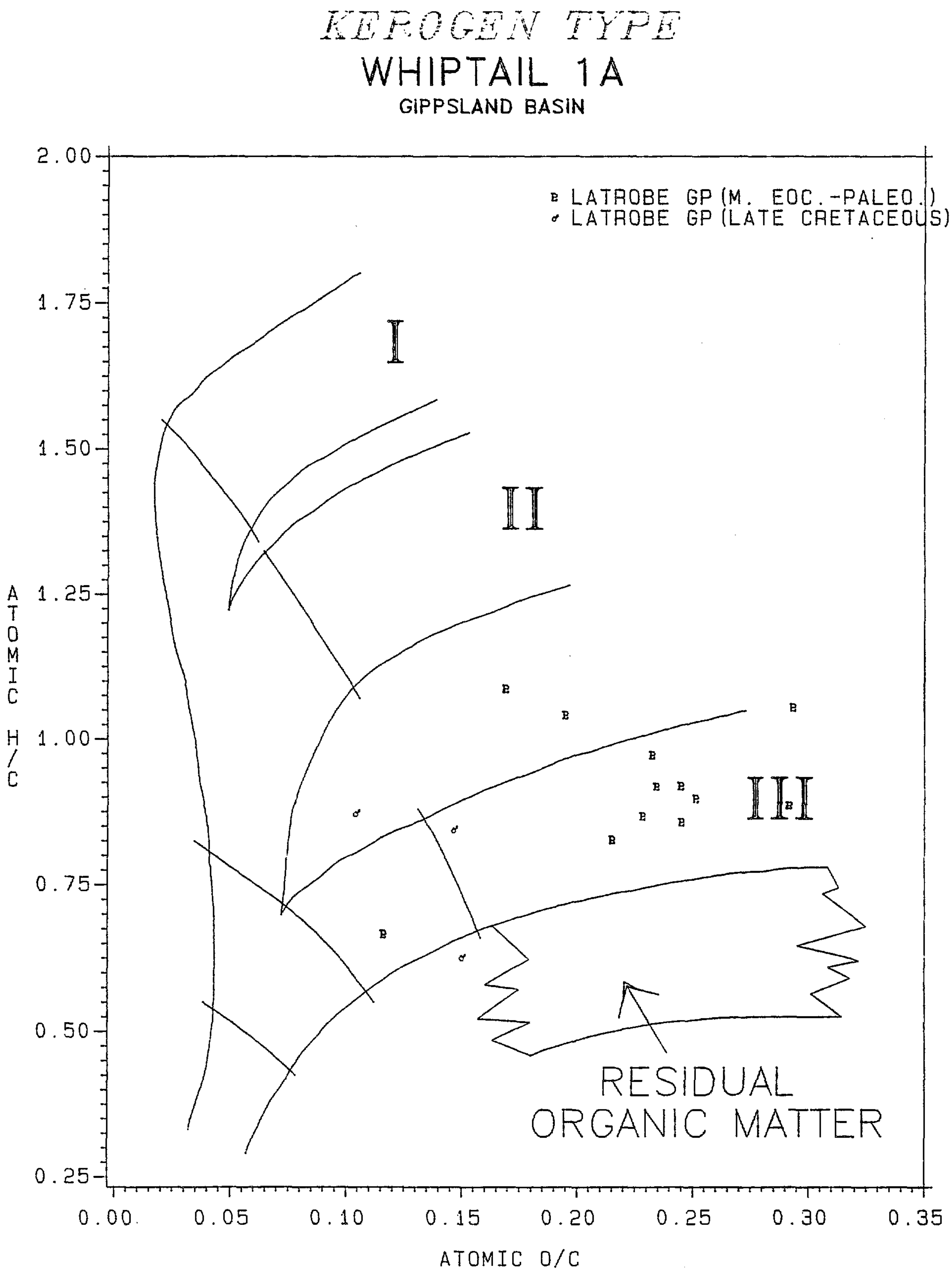
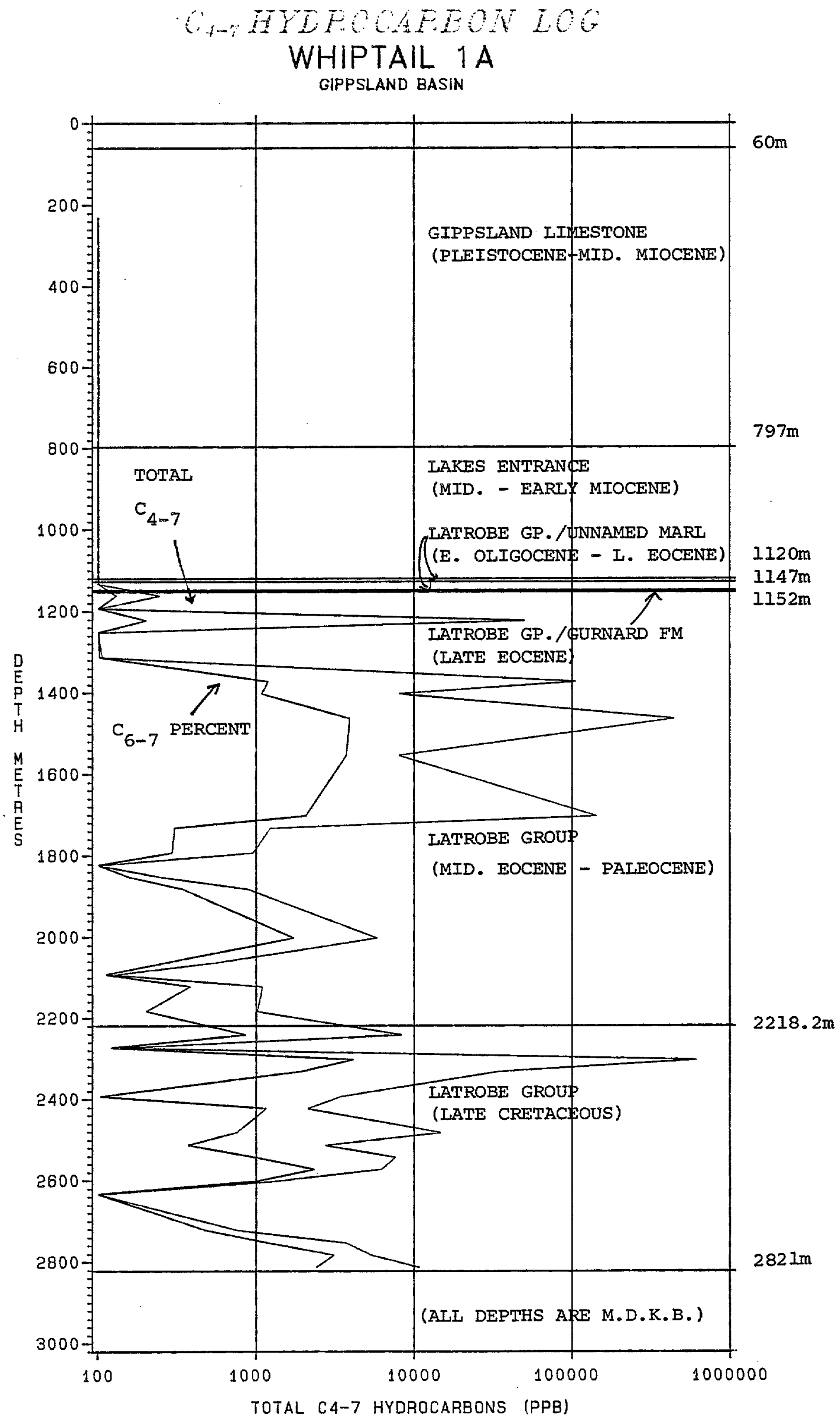


FIGURE 4



KEROGEN TYPE
WHIPTAIL 1A
GIPPSLAND BASIN
LATROBE GP (M. EOC.-PALEO.)
LATROBE GP (LATE CRETACEOUS)
I
II
III
RESIDUAL
ORGANIC MATTER
ATOMIC H/C
ATOMIC O/C
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35

FIGURE 5



C4-7 HYDROCARBON LOG
WHIPTAIL 1A
GIPPSLAND BASIN
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
DEPTH METRES
60m
797m
1120m
1147m
1152m
2218.2m
2821m
GIPPSLAND LIMESTONE
(PLEISTOCENE-MID. MIOCENE)
LAKES ENTRANCE
(MID. - EARLY MIOCENE)
LATROBE GP./UNNAMED MARL
(E. OLIGOCENE - L. EOCENE)
LATROBE GP./GURNARD FM
(LATE EOCENE)
LATROBE GROUP
(MID. EOCENE - PALEOCENE)
LATROBE GROUP
(LATE CRETACEOUS)
TOTAL
C4-7
C6-7 PERCENT
(ALL DEPTHS ARE M.D.K.B.)
100
1000
10000
100000
1000000
TOTAL C4-7 HYDROCARBONS (PPB)

ENCLOSURES

PE902382

This is an enclosure indicator page.
The enclosure PE902382 is enclosed within the container PE902381 at this location in this document.

The enclosure PE902382 has the following characteristics:

ITEM_BARCODE =	PE902382
CONTAINER_BARCODE =	PE902381
NAME =	Time Structure Map
BASIN =	GIPPSLAND
PERMIT =	VIC/L1
TYPE =	WELL
SUBTYPE =	HRZN_CNTR_MAP
DESCRIPTION =	Time Structure Map Top of Latrobe - coarse clastics (enclosure from WCR vol.2) for Whiptail-1
REMARKS =	
DATE_CREATED =	31/05/86
DATE_RECEIVED =	23/10/86
W_NO =	W915
WELL_NAME =	Whiptail-1A
CONTRACTOR =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

PE902383

This is an enclosure indicator page.
The enclosure PE902383 is enclosed within the container PE902381 at this location in this document.

The enclosure PE902383 has the following characteristics:

ITEM_BARCODE =	PE902383
CONTAINER_BARCODE =	PE902381
NAME =	Time Structure Map
BASIN =	GIPPSLAND
PERMIT =	VIC/L1
TYPE =	WELL
SUBTYPE =	HRZN_CNTR_MAP
DESCRIPTION =	Time Strcuture Map Lower N asperus Seismic Marker (enclosure from WCR vol.2) for Whiptail-1
REMARKS =	
DATE_CREATED =	31/05/86
DATE_RECEIVED =	23/10/86
W_NO =	W915
WELL_NAME =	Whiptail-1A
CONTRACTOR =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

PE902384

This is an enclosure indicator page.
The enclosure PE902384 is enclosed within the container PE902381 at this location in this document.

The enclosure PE902384 has the following characteristics:

ITEM_BARCODE =	PE902384
CONTAINER_BARCODE =	PE902381
NAME =	Average Velocity map Top of Latrobe - coarse clastics
BASIN =	GIPPSLAND
PERMIT =	VIC/L1
TYPE =	SEISMIC
SUBTYPE =	VEL_CNTR
DESCRIPTION =	Average Velocity map Top of Latrobe - coarse clastics (enclosure from WCR vol.2) for Whiptail-1
REMARKS =	
DATE_CREATED =	31/05/86
DATE_RECEIVED =	23/10/86
W_NO =	W915
WELL_NAME =	Whiptail-1A
CONTRACTOR =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

PE902385

This is an enclosure indicator page.
The enclosure PE902385 is enclosed within the container PE902381 at this location in this document.

The enclosure PE902385 has the following characteristics:

ITEM_BARCODE =	PE902385
CONTAINER_BARCODE =	PE902381
NAME =	Structure Map
BASIN =	GIPPSLAND
PERMIT =	VIC/L1
TYPE =	WELL
SUBTYPE =	HRZN_CNTR_MAP
DESCRIPTION =	Structure Map top of Latrobe group-corse clastics (enclosure from WCR vol.2) for Whiptail-1
REMARKS =	
DATE_CREATED =	31/05/86
DATE_RECEIVED =	23/10/86
W_NO =	W915
WELL_NAME =	Whiptail-1A
CONTRACTOR =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

PE902386

This is an enclosure indicator page.
The enclosure PE902386 is enclosed within the container PE902381 at this location in this document.

The enclosure PE902386 has the following characteristics:

ITEM_BARCODE = PE902386
CONTAINER_BARCODE = PE902381
NAME = Structure Map Top of N-11 sand
BASIN = GIPPSLAND
PERMIT = VIC/L1
TYPE = WELL
SUBTYPE = HRZN_CNTR_MAP
DESCRIPTION = Structure Map Top of N-11 sand (enclosure from WCR vol.2) for Whiptail-1
REMARKS =
DATE_CREATED = 31/05/86
DATE_RECEIVED = 23/10/86
W_NO = W915
WELL_NAME = Whiptail-1A
CONTRACTOR = ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

PE902387

This is an enclosure indicator page.
The enclosure PE902387 is enclosed within the container PE902381 at this location in this document.

The enclosure PE902387 has the following characteristics:

ITEM_BARCODE = PE902387
CONTAINER_BARCODE = PE902381
NAME = Geological Cross Section AA'
BASIN = GIPPSLAND
PERMIT = VIC/L1
TYPE = WELL
SUBTYPE = CROSS_SECTION
DESCRIPTION = Geological Cross Section AA' (enclosure from WCR vol.2) for Whiptail-1
REMARKS =
DATE_CREATED = 31/01/86
DATE_RECEIVED = 23/10/86
W_NO = W915
WELL_NAME = Whiptail-1A
CONTRACTOR = ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE601143

This is an enclosure indicator page.
The enclosure PE601143 is enclosed within the container PE902381 at this location in this document.

The enclosure PE601143 has the following characteristics:

ITEM_BARCODE = PE601143
CONTAINER_BARCODE = PE902381
NAME = Well Completion Log
BASIN = GIPPSLAND
PERMIT = VIC/L1
TYPE = WELL
SUBTYPE = COMPLETION_LOG
DESCRIPTION = Well Completion Log (enclosure from WCR vol.2) for Whiptail-1
REMARKS =
DATE_CREATED = 4/09/85
DATE_RECEIVED = 23/10/86
W_NO = W915
WELL_NAME = Whiptail-1A
CONTRACTOR =
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)