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WCR (VOL 2)
WHITING-2
W903

ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

169. PAGES & 10 ENCLOSURES.

WELL COMPLETION REPORT
WHITING-2
INTERPRETIVE DATA
VOLUME II

GIPPSLAND BASIN
VICTORIA

ESSO AUSTRALIA LIMITED

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

WCR.TITLE

WHITING-2

WELL COMPLETION REPORT

VOLUME II

(Interpreted Data)

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2001L/14

WHITING-2

GEOLOGICAL AND GEOPHYSICAL ANALYSIS

Age	Formation	Depth Predicted (mKB)	Depth Drilled (mKB)	Depth Drilled (MSS)
	Gippsland Limestone	74	74	53
Early-Mid Miocene	Lakes Entrance Formation	971	958	937
Undatable	Latrobe Group (Gurnard Formation)	1260	1263.5	1242.5
Late Eocene to Late Cretaceous	Latrobe Group ("coarse clastics")	1270	1269	1248
	P.asperopolus seismic marker	1475	1478	1457
	P250 Oil Zone	1484	1487	1466
	TOTAL DEPTH:	2921	3550	3529

1. INTRODUCTION

Whiting-2 situated in east Vic/L2 is an outpost/extension well designed to confirm platform development of the Whiting discovery by testing the south western portion of the Whiting structure. Formation tops came in close to prediction as shown above. Due to encouraging hydrocarbon shows, the well was deepened from the proposed T.D. of 2921m KB to a final T.D. of 3550m KB and in this section a number of additional oil and gas accumulations not seen in Whiting-1 were encountered.

The well was plugged and abandoned with oil and gas recovered by RFT and oil from a production test.

Previous Drilling History

The Whiting structure was tested in March 1983 by Whiting-1 , which intersected 6 oil and gas accumulations in Latrobe Group strata of *P.asperopolus* to *T. longus* age. The most significant oil accumulation (P250) has a 13.5m gross column (-1460.5 to -1474m) in strata of P.asperopolus age. Other significant hydrocarbon accumulations are a 2.75m gross oil leg (-1887 to -1890.25m) in the L410 reservoir of Upper *L.balmei* age, and the L460 gas accumulation of the same age.

Whiting-2 was designed to confirm the lateral extent and continuity of the P250 oil and L460 gas accumulations.

GEOLOGICAL SUMMARY

Structure

The Whiting discovery lies on the Barracouta-Snapper anticlinal trend which developed during a compressive phase in the Miocene. Whiting-1 and -2 were drilled on separate culminations on an elongated anticlinal closure. A shallow saddle related to deeper NW-SE faulting at the L.balmei level separates these culminations.

At the "coarse clastics" horizon closure is developed only at the Whiting-2 location, whereas at the P.asperopolus seismic marker, closure exists at both well locations. Closure continues to increase with depth to the deepest mappable horizon, the lower L.balmei seismic marker. A NW-SE fault intersects the Latrobe Group at this level with opposite throws at each end and zero displacement in the middle.

Seismic interpretation below the L.balmei is not possible due to lack of data resolution, but it is assumed that structural closure continues with depth with possibly increased flexure.

STRATIGRAPHY

Latrobe Group

The stratigraphy encountered in the Whiting-2 well is generally as predicted predrill. All depths referred to are in metres KB, unless otherwise stated.

The top of Latrobe Group is interpreted at 1263.5m where a slight log break marks the interface with the overlying Lakes Entrance Formation marls. The Gurnard Formation at Whiting-2 is thin, and is interpreted from 1263.5m to 1269m. A SWC taken at 1268m is a sandstone with abundant pelletal glauconite, whereas the following SWC at 1272m recovered carbonaceous sandstone interpreted as "coarse clastics". A subtle log break at 1269m is therefore taken as the top of "coarse clastics".

From 1269 to 1335m an upper unit of muddy sandstones with good coarsening upward cycles 3-5m thick is interpreted as a prograding lower shoreface and a lower, relatively clean, sandstone unit is interpreted as beach to upper shoreface. A general upward deepening is displayed over this interval

From 1335 - 1353m is interpreted a beach sandstone overlain by coastal plain shales and coals indicating an overall regressive phase of sedimentation. A coastal plain sequence of coals, shales and thin sandstones is intersected from 1353 to 1450m. From 1450 to 1839m the sandstone units become thicker and shales and coals are subordinate. The sandstones display a blocky to upward fining gamma ray response and have a more fluvial character. Conventional cores cut over the intervals 1499.9m - 1500.2m and 1501.0 - 1502.95m contain typical stacked fluvial channel sandstone units, however marginal marine influence is noted in some of the shale/siltstone intervals (see palynological analysis report - Appendix 2). The P.asperopolus oil sands (P240, P250 & P260) occur at the top of this interval .

Between 1839m and T.D a sequence of thick shales and thin coals are interpreted as coastal plain sediments (back swamp, flood plain and abandoned channels) interspersed with thin upward-fining sandstone units (point bar sands). Some sandstone units, such as the L500 oil reservoir, display a blocky gamma log pattern and are probably fluvial channels. A conventional core cut from 3321.9 to 3325.1m intersected the basal portion of a stacked fluvial channel sand overlying a flood plain/abandoned channel shale.

A zone of igneous material is interpreted between 2810m and 2891m. Cuttings over this interval are described as, predominantly pale emerald green, multicoloured, crystalline to coarsely crystalline (silicified?) volcanics. The gamma ray log response through the interval is uniformly low (less than 20 API), with the appearance of a clean sand. The sonic log character is also uniform with an interval transit time of 80 uS/m. The caliper log indicates washout at the upper and basal interface, probably indicating altered igneous material.

Vitrinite reflectance trends increase from 0.65% (regional gradient) to just over 2% near the top of the interval (see Figure 6, Appendix 6). These data suggest the volcanic to be intrusive.

Seaspray Group

The Gippsland Limestone and Lakes Entrance Formation tops are close to prediction. A SWC, comprising typical Lakes Entrance Formation marl, from 1260.0m is the deepest Miocene sediment whereas a SWC from 1265m yielded typical Gurnard Formation lithology. The base of the Seaspray Group is therefore taken at a log break at 1263.5m.

No SWC sample was taken from the top of the Lakes Entrance Formation and the pick for this top is based on a significant sonic log break at 958m. Changes in log character are also seen on the gamma and resistivity logs at this depth.

HYDROCARBONS

The primary objective, the P.asperopolus oil reservoir (P250) intersected in Whiting-1, comprised three separate accumulations, i.e. the P240 (1449.75 - 1453.5m), P250 (1487.5 - 1492.0) and the P260 (1537.0 - 1539.0m) all with clear OWC on logs. Only the P250 oil reservoir immediately below a thick coal can be correlated between Whiting-1 and Whiting-2, although at Whiting-1 the OWC is 3m deeper. The difference in OWC is attributed to the structural saddle between the two well locations separating the Whiting field into two structural culminations.

The higher P240 reservoir is absent in Whiting-1. The deeper P260 reservoir sand is present in Whiting-1, but it is water-wet, due possibly to a lack of regionally extensive seal. Figure 2 is a correlation summary of the P.asperopolus oil reservoirs for the Whiting-1 and -2 wells.

The L.balmei oil and gas reservoir (L410) and the gas reservoirs L450, L455 and L460 located in Whiting-1 were not intersected in Whiting-2. The lack in continuity between the two wells may be due to the fault located between the two wells being sealing in these deeper, more shaley sediments. Alternatively, the variable lithology normally associated with these delta plain sequences may also lack continuity and inhibit communication.

The L-500 (2627,75 - 2633,75m) reservoir in Whiting-2 is not present in Whiting-1, probably for reasons similar to those stated above. An OWC is not observed on logs, but RFT pressure data suggests 2650m. A production test of this reservoir over the interval 2627 - 2634m resulted in a flow of 234 stb/d of a waxy 41^{o} API oil with a GOR of over 1500 scf/stb. Total oil produced was 195 bbls with a watercut of less than 0.5%. This is the deepest reservoir intersected by Whiting-2.

A 4.25m residual oil zone was intersected at the top of Latrobe Group "coarse clastics" (1276.0 - 1280.25m), at a level where a small structural closure was mapped at Whiting-2. A scum of waxy oil was recovered by RFT from this interval.

GEOPHYSICAL SUMMARY

Three seismic markers have been mapped at the Whiting field. They are the Top of Latrobe Group "coarse clastics"; a P.asperopolus seismic marker corresponding to a thick coal unit overlying the P250 oil reservoir; and an Upper L.Balmei seismic marker near the L410 oil and gas reservoir at Whiting-1.

Seismic mapping on the P250 reservoir indicated a structural closure of 12m at the Whiting-2 location. On drilling, the P250 oil zone came in 3m deep to prediction and the OWC was 3m higher than encountered at Whiting-2 (1492mKB, instead of 1495mKB). The Top of Latrobe Group "coarse clastics" was 1m high to prediction.

The Upper L.Balmei seismic marker was the deepest horizon which could be reliably mapped in the Whiting location, possibly due to the major NW-SE trending fault between the two wells.

2061L/19-22

FIGURES

FIGURES

WHITING-2
STRATIGRAPHIC TABLE

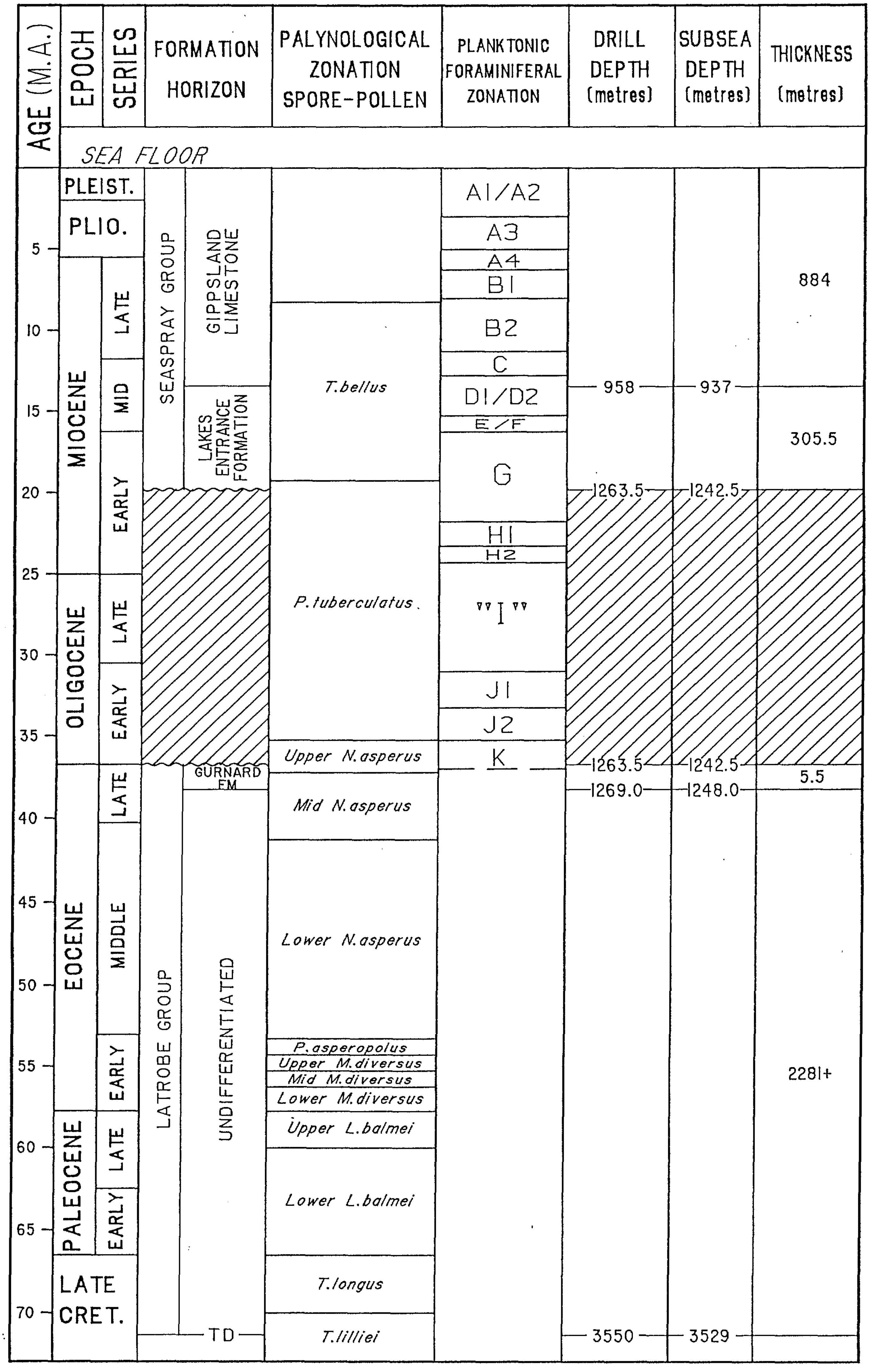

Figure 1.

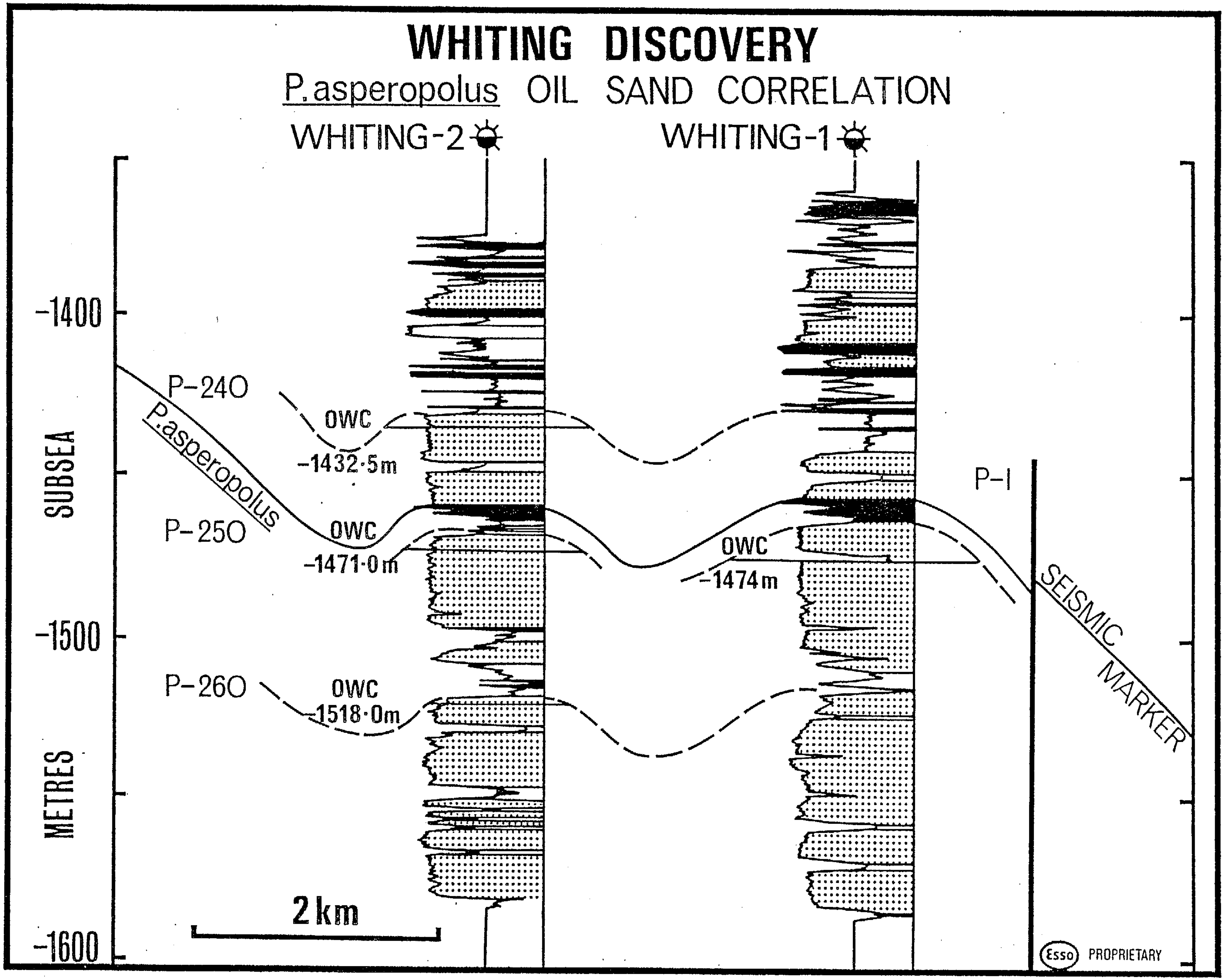
WHITING DISCOVERY
P. asperopolus OIL SAND CORRELATION
WHITING-2
WHITING-1
-1400
-1500
-1600
SUBSEA
METRES
P-240
P-250
P-260
P. asperopolus
OWC
-1432·5m
OWC
-1471·0m
OWC
-1474m
OWC
-1518·0m
P-I
SEISMIC
MARKER
2 km
Esso PROPRIETARY

FIGURE 2

APPENDIX 1

APPENDIX 1

FORAMINIFERAL ANALYSIS
OF WHITING-2,
GIPPSLAND BASIN

by

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Esso Australia Ltd. January 1986

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2084L/1

INTRODUCTION

Three sidewall cores have been processed and their residues examined. Only one sample (at 1260.0m) contained any significant numbers of foraminifera. This sample is considered to be Zone G (Early-Mid Miocene) in age.

BIOSTRATIGRAPHY

Sidewall cores 109 and 110 at 1268.0m and 1265.0m contain rare benthonic forams only. No age dating was obtained from these.

Sidewall core 111 at 1260.0m, however, yielded an abundant, diverse foraminiferal assemblage; preservation was moderate. The presence of Globigerinoides trilobus, Globorotalia miozea and Globorotalia zealandica is sufficient for a confident Zone G assignment. Other species present include Globigerina woodi woodi, Globigerina woodi connecta and Catapsiderax dissimilis which support the age determination.

TABLE 1: DATA SUMMARY, WHITING-2, GIPPSLAND BASIN

DEPTH (M)	SWC NO.	PLANKTONIC YIELD	PLANKTONIC PRESERVATION	ZONE	AGE	LITHOLOGY *
1268.0	109	Barren		?	Indeterminate	Non-pelletal Glauconite abundant pyrite
1265.0	110	Barren		?	Indeterminate	Angular fine grained quartz sand abundant glauconite and pyrite
1260.0	111	High	Poor-mod.	G	Early-mid Miocene	Foraminiferal tests dominate residue - small amounts of glauconite

* from washed residues

APPENDIX 2

APPENDIX 2

APPENDIX

PALYNOLOGICAL ANALYSIS OF WHITING-2, GIPPSLAND BASIN

by

M.K. Macphail

Esso Australia Ltd.

Palaeontology Report 1985/34 November 1985

1988L/1

INTERPRETATIVE DATA

INTRODUCTION

Eighty six sidewall core samples were processed and examined for spore-pollen and dinoflagellates. Despite the good sampling densities, recovery and preservation were mostly fair to poor with the Early Eocene and Paleocene sections providing few confident age determinations.

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 Miocene	Lakes Entrance Fm.	P. tuberculatus	1260.0m
minor log break at 1263.5m			
(undatable samples)	Gurnard Fm.	-	1265.0m-1268.0m
log break at 1269m			
Late Eocene	Latrobe Group coarse clastics	Middle N. asperus	1272.0-1285.0m
		Lower N. asperus	1289.0-1421.0m
Early Eocene	"	P. asperopolus	1440.9-1568.0m
Early Eocene	"	Upper M. diversus	1730.0m
Early Eocene	"	Middle M. diversus	not recognised
Early Eocene	"	Lower M. diversus	1754.0-1874.9m
Paleocene	"	Upper L. balmei	1899.9-2224.9m
Paleocene	"	Lower L. balmei	2308.0-2980.9m
Maastrichtian	"	Upper T. longus	3120.0-3235.0m
Late Cretaceous	"	Lower T. longus	3300.5-3434.0m
Late Cretaceous	'	T. lilliei	3489.0-3515.0m

T.D. 3353m

GEOLOGICAL COMMENTS

1. Although sediments of Middle M. diversus Zone age were not recognized in Whiting-2, it is highly likely that the well contains a continuous sequence of sediments from the Late Cretaceous T. lilliei Zone to the Late Eocene, Middle N. asperus Zone (see Biostratigraphy Section).

2. Unlike in Whiting-1 where a 4-5m thick section of Gurnard Formation is present (P. Arditto pers. comm.; cf. Macphail 1983; Rexilius 1985), the only evidence that the equivalent greensand occurs in Whiting-2 is sidewall cores 109 and 110, taken at 1268.0m and 1265.0m respectively. These are barren sandstones containing moderate to abundant pelletal glauconite and pyrite. A marked log break at 1269m separates this unit from the underlying glauconite-free, carbonaceous sandstones. Recognition of the Gurnard Formation in Whiting-2 is made more difficult by the fact that the typical 'Gurnard Formation log response' of (well-separated) high density, high neutron porosity between 1269.0-1277.0m is associated with the upper part of the unit of carbonaceous sandstones, dated as Middle N. asperus Zone in age. Based on log character, the maximum thickness of Gurnard Formation in Whiting-2 is 5.5m.

3. As in Whiting-1, dinoflagellates are rare to absent throughout most of the Latrobe Group coarse clastics section. In both wells, the earliest recorded marine influence is Early Eocene, basal Lower M. diversus Zone - the Apectodinium hyperacantha transgression, equated with the Rivernook Member, Princetown Section, onshore Otway Basin (see Cookson & Eisenack 1967). In both wells L. balmei Zone spore-pollen from the underlying

non-marine Paleocene sediments has been extensively reworked into the A. hyperacantha Zone sediments. This marine unit would appear to provide an ideal datum for correlating the two wells and also adjacent wells such as Snapper A-21 where the same transgression is recorded.

4. The absence of Paleocene-Late Cretaceous marine transgressions across the Whiting Field is consistent with data from the Barracouta Field. Evidently neither area was reached by the widespread Paleocene Apectodinium homomorpha marine transgression. This is not the case with the Snapper Field which lies closer to the axis of the Paleocene, Tuna-Flounder Channel. E.g. in Snapper-4, A. homomorpha Zone sediments occur at 1765.5m (overlying a non-marine basal Lower M. diversus Zone unit), and 2029.0m and 2078.9m (both Upper L. balmei Zone) (Macphail 1984).

5. Apart from the Lower M. diversus Zone, A. hyperacantha marine transgression, the only other marine-influenced sediments in Whiting-2 that can be assigned to a named (Partridge 1976) marine transgression is the carbonaceous sandstone at 1275.0m which is Corrudinium incompositum Zone in age. The equivalent marine-influenced unit was not recognized in Whiting-1 although dinoflagellates typically associated with C. incompositum, e.g. Vozzhenikovia extensa, occur in both wells. Of the other Eocene marginal marine sediments recognized in Whiting-2 (1421.0, 1466.0, 1530.0, 1766.0m), the one at 1530.0m which is characterized by common-abundant Homotryblium tasmaniense, is almost certainly the same as the P. asperopolus sediments at 1527.5m in Whiting-1 and 4498 ft in Barracouta-4. If correct this H. tasmaniense 'stratum' may prove to be a useful datum horizon.

6. The Whiting-2 well is unusual in that the Middle/Lower N. asperus Zone boundary is well-defined by confidently-dated samples only ca 4m apart. Logs indicate the intervening unsampled section (1285.0-1289.0m) is one of a number of small coarsening upwards parasequences occurring between

1372-1390m - possibly representing a lower shoreface environment although dinoflagellate numbers and diversity in samples taken within this interval are low.

7. Significant differences exist in the total thicknesses of Upper and Lower L. balmei sediments between Whiting-1 and -2. In the case of Upper L. balmei Zone sediments (469m in Whiting-1, 325m in Whiting-2) the difference largely disappears if the first occurrence of Malvacipollis spp., not Verrucosisporites kopukuensis (a species now known to first appear infrequently in the Lower L. balmei Zone), is used to define the base of the Upper L. balmei Zone. The revised thickness of Upper L. balmei Zone sediments in Whiting-1 is 333m (from 1889.5 to 2233.0m, see revised data sheet). Differences in the thickness of Lower L. balmei Zone sediments between the two wells (336m in Whiting-1, 673m in Whiting-2) are less easily resolved. The critical difference here is that the highest Upper T. longus Zone sediments occur at 2767.0m in Whiting-1 and 3120.0m in Whiting-2. Explanations include (i) the - very unlikely - mislabelling of SWC's 30 (2960.0m) and 29 (2980.9m) which contain good Lower L. balmei Zone palynofloras or (ii) intersection of an oblique growth fault.

8. Palynofloras at 2485, 2774.0m and between 3434.0-3515.0m have TAI values of 2.2-2.4, slightly above TAI values found in adjoining samples or in samples from similar depths in other Gippsland wells. This may be due to hydrothermal activity related to volcanic intrusions, e.g. 18m of volcanics were encountered near the base of the Lower L. balmei Zone in Whiting-1.

9. Consistent with its deeper T.D., Whiting-2 penetrated older Late Cretaceous sediments than Whiting-1 (T. lilliei Zone versus Upper T. Longus Zone respectively).

BIOSTRATIGRAPHY

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

Tricolporites lilliei Zone: 3489.0-3515.0m

Three samples are assigned to this zone on the basis of common to abundant Nothofagidites associated with two species which first appear in this zone, Gambierina edwardsii and G. rudata.

Lower Tricolpites longus Zone: 3300.5-3434.0m

Samples within this section contain either or both common to abundant Nothofagidites and Gambierina pollen. The base of the zone is defined by the first appearance of Tricolpites longus and the upper boundary is picked at the highest sample lacking Upper T. longus Zone indicator species.

Upper Tricolpites longus Zone: 3120.0-3235.0m

Occurrences of Stereisporites punctatus with frequent to common Gambierina rudata confirm an Upper T. longus Zone age for this section. Species which range no higher than this zone occur at: 3235.0m (Triporopollenites sectilis, Proteacidites reticuloconcavus, P. wahooensis), 3165.0m (Tricolporites lilliei) and 3120.0m (Triporopollenites megasectilis ms.).

Lower Lygistepollenites balmei Zone: 2308.0-2980.9m

Palynofloras within this and the Upper L. balmei Zone are dominated by (i) gymnosperms, in particular Lygistepollenites balmei and Podocarpidites spp., and (ii) Proteacidites spp. with sporadic but occasionally frequent occurrences of species which range no higher than the Upper L. balmei Zone e.g. Australopollis obscurus, Proteacidites angulatus, Gambierina spp., Tetracolporites verrucosus and Integricorpus antipodus.

The base of the Lower L. balmei Zone is picked at 2980.9m, the lowest sample lacking Late Cretaceous indicator species. Integricorpus antipodus shows this sample is no older than the Lower L. balmei Zone. Haloragacidites harrisii is first recorded at 2960.0m. Tetracolporites verrucosus is frequent in this sample and at 2739.0m, the highest sample containing T. verrucosus (3 specimens). the first appearance of Verrucosisporites kopukuensis is at 2390.0m

Upper Lygistepollenites balmei Zone: 1899.9-2224.9m

The lower boundary is provisionally placed at 2224.9m, based on the abundance of Gleicheniidites and presence of Verrucosisporites kopukuensis. Malvacipollis spp. pollen first occurs at 2105.9m, in a sample containing Polycolpites langstonii. The upper boundary is placed at 1899.9m, based on the occurrence of Banksieaeidites lunatus and frequent Lygistepollenites balmei and Nothofagidites endurus.

Lower Malvacipollis diversus Zone: 1754.0-1874.9m

Occurrences of Cyathidites gigantis, Crassiretitriletes vanraadshoovenii, Spinzonocolpites prominatus (abundant), and Polypodiaceosporites varus in a Malvacipollis diversus-dominated palynoflora at 1874.9m confirm a Lower M. diversus Zone age for this sample. The presence of Apectodinium hyperacantha, Fibrocysta bipolare and Proteacidites pachypolus in the same assemblage demonstrate this sample is the time-equivalent of the Rivernook Member, Princetown Section in the onshore Otway Basin (see Cookson & Eisenack 1967). Frequent occurrences of reworked Paleocene-Late Cretaceous species, including Lygistepollenites balmei and Australopollis obscurus, are consistent with the marine-nature of this sample. Other samples assigned to this zone contain general M. diversus Zone palynofloras (including Malvacipollis diversus, Tricolporites moultonii and Schizocolpus marlinensis) but lack indicator species. The upper boundary is provisionally placed at 1754.0m, the highest sample lacking species first appearing in the Middle M. diversus Zone.

Upper Malvacipollis diversus Zone: 1730.0m

One sample is provisonally assigned to this zone, based on the occurrence of a single poorly preserved specimen of Proteacidites pachypolus. Since spore-pollen yield from this sample was very low and the assemblage contained reworked Australopollis obscurus, the Upper M. diversus Zone age is of low confidence. The sample at 1703.0m contains Proteacidites tuberculiformis, Cupanieidites orthoteichus and Intratriporopollenites notabilis (all first occurrences) and is therefore no older than Middle M. diversus Zone in age. The overlying section from 1601.9 to 1670.9m was barren.

Proteacidites asperopolus Zone: 1440.9-1568.0m

The base of this zone is defined by the first appearances of Clavastephanocolporites meleosus and Proteacidites asperopolus at 1568.0m. This sample includes species which range no higher than this zone, e.g. Myrtaceidites tenuis, Proteacidites ornatus, P. tuberculiformis and (usually) Intratriporopollenites notabilis. Clavastephanocolporites meleosus and (frequent) Myrtaceidites tenuis also occur at 1547.5m, this time in association with Proteacidites leightonii and P. xestoformis. The typically Early Eocene dinoflagellate Homotryblium tasmaniense is common at 1530.0m, associated with Conbaculites apiculatus, Tricolpites incisus and Sapotaceoidaepollenites rotundus. The highest occurrence of Myrtaceidites tenuis is at 1460.0m. The upper boundary is picked at 1440.9m, the highest sample containing Proteacidites asperopolus and P. leightonii.

Lower Nothofagidites asperus Zone: 1289.0-1421.0m

The lower boundary is placed at 1421.0m, based on the simultaneous first appearance of Tricolpites simatus and Tricolporites leuros in a Nothofagidites- dominated palynoflora containing Proteacidites asperopolus. Tricolporites delicatus first appears at 1353.9m, associated with a rare instance of Intratriporopollenites notabilis occurring above the P. asperopolus Zone. The upper boundary is picked at the highest occurrence of Proteacidites asperopolus at 1289.0m.

Middle Nothofagidites asperus Zone: 1272.0-1285.0m

Three samples are assigned to this zone. The lowermost at 1285.0m contains multiple specimens of Tricolpites thomasii with Verrucatosporites attinatus, species which first appears in the uppermost Lower N. asperus Zone; the middle sample at 1275.0m contains the Middle N. asperus Zone indicator dinoflagellate Corrudinium incompositum; the uppermost at 1272.0m contains Proteacidites pachypolus, and Bysmapollis emaciatus, species which ranges no higher than this zone. This sample also includes Proteacidites rectomarginis and P. stipplatus, species which range no lower than the Middle N. asperus Zone.

Proteacidites tuberculatus Zone: 1260.0m.

The occurrence of the dinoflagellates Protoellipsodinium simplex and Pyxidinopsis pontus indicate a P. tuberculatus Zone age for this sample. The samples at 1265.0 and 1268.0m yielded insufficient microfossils for dating but did contain single specimens of Pyxidinopsis pontus.

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1988L/11

PALYNOLOGY DATA SHEET

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

WELL NAME: Whiting-2 TOTAL DEPTH: 3353m

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
	T. pleistocenicus										
NEOGENE	*M. lipsis*										
	C. bifurcatus										
	T. bellus										
	P. tuberculatus	1260.0	2				1260.0	2			
PALEOGENE	Upper *N. asperus*										
	Mid *N. asperus*	1272.0	1				1285.0	1			
	Lower *N. asperus*	1289.0	1				1421.0	1			
	P. asperopolus	1440.9	2	1466.0	0		1568.0	0			
	Upper *M. diversus*	1730.0	2				1730.0	2			
	Mid *M. diversus*										
	Lower *M. diversus*	1754.0	2				1874.9	0			
	Upper *L. balmei*	1899.9	1				2224.9	2			
	Lower *L. balmei*	2308.0	2				2980.9	1			
LATE CRETACEOUS	Upper *T. longus*	3120.0	1				3235.0	1			
	Lower *T. longus*	3300.0	2				3434.0	1			
	T. lilliei	3489.0	2				3515.0	1			
	N. senectus										
	T. apoxyexinus										
	P. mawsonii										
	A. distocarinatus										
EARLY CRET.	*P. pannosus*										
	C. paradoxa										
	C. striatus										
	C. hughesi										
	F. wonthaggiensis										
	C. australiensis										

COMMENTS: C. incompositum Zone 1275.0m

H. tasmaniense common at 1530.0m

A. hyperacantha Zone 1874.9m

CONFIDENCE RATING:

- 0: 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: 21 November 1985

DATA REVISED BY: DATE:

PALYNOLOGY DATA SHEET

BASIN: Gippsland ELEVATION: KB: +21.0m GL: -53.0m

WELL NAME: Whiting-1 TOTAL DEPTH: 3011m

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*	1276.6	0				1276.6	0			
	Upper *N. asperus*										
	Mid *N. asperus*	1301.2	2				1301.2	2			
	Lower *N. asperus*	1317.8	0				1417.0	1			
	P. asperopolus	1456.0	1				1542.0	0			
	Upper *M. diversus*	1577.5	1				1590.3	0			
	Mid *M. diversus*	1640.7	2				1715.8	1			
	Lower *M. diversus*	1734.0	0				1859.1	0			
	Upper *L. balmei*	1889.5	2				2233.0	1			
	Lower *L. balmei*	2358.5	2				2738.5	2	2551.0	1	
LATE CRETACEOUS	Upper *T. longus*	2767.0	1				2993.5	1			
	Lower *R. longus*										
	T. lilliei										
	N. senectus										
	T. apoxyexinus										
	P. mawsonii										
	A. distocarinatus										
EARLY CRET.	*P. pannosus*										
	C. paradoxa										
	C. striatus										
	C. hughesi										
	F. wonthaggiensis										
	C. australiensis										

COMMENTS: A. hyperacantha Zone 1859.1m
Homotryblium tasmaniense assemblage 1527.5m

CONFIDENCE RATING:
- 0: 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: 27 June 1983

DATA REVISED BY: M.K. Macphail DATE: 21 Nov. 1985

TABLE I: SUMMARY OF INTERPRETATIVE PALYNOLOGICAL DATA

WHITING-2

SAMPLE NO.	DEPTH (m)	SPORE-POLLEN ZONE	DINOFLAGELLATE ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 111	1260.0	P. tuberculatus	-	Early Miocene	2	P. simplex, P. pontus, V. attinatus
SWC 110	1265.0	Indeterminate	-			P. pontus
SWC 109	1268.0	Indeterminate	-			
SWC 108	1272.0	Middle N. asperus	-	Late Eocene	1	P. stipplatus, P. rectomarginis, P. pachypolus, S. punctatus
SWC 107	1275.0	Middle N. asperus	C. incompositum	Late Eocene	0	C. incompositum, T. thomasii, P. pachypolus
SWC 106	1280.0	N. asperus	-	Eocene	-	-
SWC 105	1285.0	Middle N. asperus	-	Late Eocene	1	T. thomasii, V. attinatus
SWC 104	1289.0	Lower N. asperus	-	Middle Eocene	1	P. asperopolus, abund. Nothofagidites
SWC 102	1302.0	Lower N. asperus	-	Middle Eocene	2	
SWC 101	1337.5	Lower N. asperus	-	Middle Eocene	1	P. asperopolus, abund. Nothofagidites
SWC 100	1353.9	Lower N. asperus	-	Middle Eocene	1	T. delicatus, I. notabilis
SWC 99	1374.0	Lower N. asperus	-	Middle Eocene	1	T. leuros, P. asperopolus, N. falcatus
SWC 98	1397.0	Lower N. asperus	-	Middle Eocene	1	T. leuros, P. recavus
SWC 97	1421.0	Lower N. asperus	-	Middle Eocene	1	T. leuros, T. simatus, P. asperopolus, abund. Nothofagidites
SWC 96	1440.9	P. asperopolus	-	Early Eocene	2	P. asperopolus, T. incisus, S. rotundus P. leightonii
SWC 95	1466.0	P. asperopolus	-	Early Eocene	0	P. asperopolus, M. tenuis, freq. P. leightonii

TABLE I: SUMMARY OF INTERPRETATIVE PALYNOLOGICAL DATA

WHITING-2

SAMPLE NO.	DEPTH (m)	SPORE-POLLEN ZONE	DINOFLAGELLATE ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 94	1484.9	-	-	-	-	
SWC 93	1517.5	No older than Upper M. diversus		Early Eocene	-	P. pachypolus, M. tenuis
SWC 92	1530.0	P. asperopolus	-	Early Eocene	1	S. rotundus, T. incisus, common H. tasmaniense
SWC 90	1547.5	P. asperopolus	-	Early Eocene	1	C. meleosus, M. tenuis, I. notabilis, P. leightonii, abund. P. pachypolus
SWC 89	1568.0	P. asperopolus	-	Early Eocene	0	P. asperopolus, C. meleosus, P. ornatus, M. tenuis
SWC 88	1601.9	-	-	-	-	
SWC 87	1603.0	-	-	-	-	
SWC 86	1613.0	-	-	-	-	
SWC 84	1670.9	-	-	-	-	
SWC 83	1703.0	No older than Middle M. diversus		Early Eocene	-	P. tuberculiformis
SWC 82	1730.0	Upper M. diversus	-	Early Eocene	2	Sing poor spm. of P. pachypolus
SWC 81	1754.0	Lower M. diversus	-	Early Eocene	2	General M. diversus Zone palynoflora
SWC 80	1766.0	Lower M. diversus	-	Early Eocene	2	M. diversus freq., S. marlinensis
SWC 78	1800.0	Lower M. diversus	-	Early Eocene	2	General M. diversus Zone palynoflora
SWC 77	1840.0	Lower M. diversus	-	Early Eocene	2	General M. diversus Zone palynoflora
SWC 76	1860.0	Lower M. diversus	-	Early Eocene	2	General M. diversus Zone palynoflora
SWC 75	1874.9	Lower M. diversus	A. hyperacantha	Early Eocene	0	M. diversus and S. prominatus abund., C. gigantis, P. varuno, P. pachypolus, A. hyperacantha

TABLE I: SUMMARY OF INTERPRETATIVE PALYNOLOGICAL DATA

WHITING-2

SAMPLE NO.	DEPTH (m)	SPORE-POLLEN ZONE	DINOFLAGELLATE ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 74	1899.9	Upper L. balmei	-	Paleocene	1	B. lunatus, freq. L. balmei and N. endurus
SWC 73	1924.0	Upper L. balmei	-	Paleocene	1	M. subtilis, freq. L. balmei
SWC 72	1945.0	Upper L. balmei	-	Paleocene	1	M. subtilis, freq. L. balmei
SWC 71	1970.0	Upper L. balmei	-	Paleocene	2	G. rudata, V. kopukuensis, freq. L. balmei
SWC 70	1985.0	Upper L. balmei	-	Paleocene	1	B. lunatus, G. rudata, freq. L. balmei
SWC 69	2000.0	L. balmei	-	Paleocene	-	I. antipodus, freq. L. balmei
SWC 67	2045.0	L. balmei	-	Paleocene	-	I. antipodus, L. amplus, H. elliotii, V. kopukuensis, common L. balmei
SWC 66	2073.0	L. balmei	-	Paleocene	-	common L. balmei
SWC 65	2105.9	Upper L. balmei	-	Paleocene	1	M. diversus, M. subtilis, P. langstonii
SWC 63	2144.9	L. balmei	-	Paleocene	-	common L. balmei
SWC 61	2185.0	L. balmei	-	Paleocene	-	L. balmei
SWC 60	2205.0	Upper L. balmei	-	Paleocene	2	Freq. L. balmei, V. kopukuensis
SWC 59	2224.9	Upper L. balmei	-	Paleocene	2	L. balmei and Gleicheniidites common, V. kopukuensis
SWC 58	2250.0	L. balmei	-	Paleocene	-	Abund. L. balmei
SWC 57	2285.0	L. balmei	-	Paleocene	-	H. harrisii
SWC 56	2308.0	Lower L. balmei	-	Paleocene	2	T. verrucosus, common L. balmei
SWC 55	2330.0	L. balmei	-	Paleocene	-	A. obscurus abundant

TABLE I: SUMMARY OF INTERPRETATIVE PALYNOLOGICAL DATA

WHITING-2

SAMPLE NO.	DEPTH (m)	SPORE-POLLEN ZONE	DINOFLAGELLATE ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 53	2370.0	L. balmei	-	Paleocene	-	L. balmei
SWC 52	2390.0	L. balmei	-	Paleocene	-	V. kopukuensis, L. balmei
SWC 51	2409.9	L. balmei	-	Paleocene	-	A. obscurus common
SWC 50	2438.0	Lower L. balmei	-	Paleocene	2	T. verrucosus, freq. L. balmei
SWC 48	2485.0	L. balmei	-	Paleocene	-	A. obscurus frequent
SWC 47	2505.0	L. balmei	-	Paleocene	-	L. balmei common
SWC 46	2526.0	L. balmei	-	Paleocene	-	L. balmei frequent
SWC 45	2548.0	L. balmei	-	Paleocene	-	L. balmei frequent
SWC 44	2570.0	L. balmei	-	Paleocene	-	A. obscurus common
SWC 43	2590.0	L. balmei	-	Paleocene	-	L. balmei
SWC 42	2608.0	Indeterminate	-	-	-	A. obscurus
SWC 40	2655.0	L. balmei	-	Paleocene	-	Abund. P. angulatus, sample extensively contaminated
SWC 39	2675.0	L. balmei	-	Paleocene	-	P. angulatus common
SWC 38	2694.0	No older than Upper T. longus	-	-	-	S. punctatus
SWC 36	2739.9	Lower L. balmei	-	Paleocene	-	L. balmei, freq. T. verrucosus
SWC 35	2774.0	Indeterminate	-	-	-	
SWC 34	2801.0	Indeterminate	-	-	-	A. obscurus
SWC 33	2892.9	Indeterminate	-	-	-	
SWC 30	2960.0	Lower L. balmei	-	Paleocene	1	H. harrisii, freq. L. balmei and T. verrucosus

TABLE 1: SUMMARY OF INTERPRETATIVE PALYNOLOGICAL DATA

WHITING-2

SAMPLE NO.	DEPTH (m)	SPORE-POLLEN ZONE	DINOFLAGELLATE ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 29	2980.9	Lower L. balmei	-	Paleocene	1	I. antipodus, T. verrucosus, L. balmei
SWC 26	3049.9	Indeterminate	-	-	-	
SWC 25	3075.0	Indeterminate	-	-	-	
SWC 23	3120.0	Upper T. longus	-	Maastrichtian	1	S. punctatus, freq. G. rudata
SWC 20	3133.5	Indeterminate	-	-	-	Badly contaminated sample
SWC 19	3165.0	T. longus	-	Late Cretaceous	-	T. verrucosus, T. lilliei, G. Rudata, N. endurus
SWC 14	3235.0	Upper T. longus	-	Maastrichtian	1	S. punctatus, T. sectilis, common G. rudata
SWC 6	3300.0	Lower T. longus	-	Late Cretaceous	2	G. rudata and Nothofagidites abund.
SWC 4	3318.0	Indeterminate	-	-	-	
SWC 2	3329.8	Lower T. longus	-	Late Cretaceous	2	G. rudata common
SWC	3417.3	Indeterminate	-	-	-	
SWC 129	3434.0	Lower T. longus	-	Late Cretaceous	1	Nothofagidites common, T. longus
SWC 121	3489.0	T. lilliei	-	Late Cretaceous	2	Nothofagidites common, T. sectilis
SWC 120	3492.3	T. lilliei	-	Late Cretaceous	2	Nothofagidites abund., G. rudata
SWC 118	3515.0	T. lilliei	-	Late Cretaceous	1	G. rudata, G. edwardsii
SWC 114	3534.3	Indeterminate	-	-	-	
SWC 112	3548.2	Indeterminate	-	-	-	

TABLE 2

ANOMALOUS AND UNUSUAL OCCURRENCES OF SPORE-POLLEN TAXA IN WHITING-2

SAMPLE NO.	DEPTH(m)	ZONE	TAXON	COMMENTS
SWC 108	1272.0	Middle N. asperus (1)	Lygistepollenites balmei	Reworked
SWC 108	1272.0	Middle N. asperus (1)	Proteacidites stipplatus	Rare sp. (assoc. with V. attinatus)
SWC 108	1272.0	Middle N. asperus (1)	Bysmapollis emaciatus	Close to top of rare
SWC 107	1275.0	Middle N. asperus (1)	Tricolpites thomasii	Rare sp.
SWC 107	1275.0	Middle N. asperus (1)	Helcisporites astrus	Uncommon sp.
SWC 106	1280.0	(Middle N. asperus)	Cunoniaceae 3-p	Modern taxon
SWC 105	1285.0	Middle N. asperus (1)	Tricolpites thomasii	Rare sp. (assoc. with V. attinatus)
SWC 105	1285.0	Middle N. asperus (1)	Beaupreadites trigonalis	Rare sp. (assoc. with V. attinatus)
SWC 104	1289.0	Lower N. asperus (1)	Clavatipollenites glarius	V. rare sp.
SWC 104	1289.0	Lower N. asperus (1)	Concolpites leptos	V. rare sp.
SWC 104	1289.0	Lower N. asperus (1)	Cunoniaceae 3-p	Modern taxon
SWC 104	1289.0	Lower N. asperus (1)	Matonisporites ornamentalis	Uncommon in this zone
SWC 104	1289.0	Lower N. asperus (1)	Phyllocladidites palaeogenicus	Uncommon sp.
SWC 102	1302.0	Lower N. asperus (2)	Proteacidites reflexus	Rare sp.
SWC 102	1302.0	Lower N. asperus (2)	Proteacidites echinatus	Ms. sp. (MKM)
SWC 100	1353.9	Lower N. asperus (1)	Cupanieidites reticulatus	Rare sp.
SWC 100	1353.9	Lower N. asperus (1)	Intratriporopollenites notabilis	Rare above P. asperopolus Zone
SWC 98	1397.0	Lower N. asperus (1)	Elphredripites notensis	Rare sp.
SWC 97	1421.0	Lower N. asperus (1)	Quintinia	Modern taxon
SWC 97	1421.0	Lower N. asperus (1)	Stephanocolpites sp.	cf. oblatus
SWC 97	1421.0	Lower N. asperus (1)	Tricolpites thomasii	Not prev. recorded below Middle N. asperus Zone
SWC 96	1440.9	P. asperopolus (2)	Droseraceae	Rare taxon

TABLE 2

ANOMALOUS AND UNUSUAL OCCURRENCES OF SPORE-POLLEN TAXA IN WHITING-2

SAMPLE NO.	DEPTH(m)	ZONE	TAXON	COMMENTS
SWC 96	1440.9	P. asperopolus (2)	Gyrostemonaceae-type	Modern taxon
SWC 96	1440.9	P. asperopolus (2)	Reticulosporis	Uncommon in Eocene
SWC 96	1440.9	P. asperopolus (2)	Stephanocolpites	cf. oblatus
SWC 95	1466.0	P. asperopolus (1)	Proteacidites obesolabrus	V. rare sp., first offshore record in Basin
SWC 95	1466.0	P. asperopolus (1)	Proteacidites tuberculotumulatus	Rare sp.
SWC 95	1466.0	P. asperopolus (1)	Proteacidites reticulatus	Rare sp.
SWC 95	1466.0	P. asperopolus (1)	Tricolpites palisadus	Ms. sp. (MKM)
SWC 92	1530.0	P. asperopolus (1)	Conbaculites apiculatus	Ms. sp. (ADP)
SWC 92	1530.0	P. asperopolus (1)	Triporopollenites heleosus	Uncommon sp.
SWC 92	1530.0	P. asperopolus (1)	Homotryblium tasmaniensis	Population of this dino. assoc. with Wetzeliella longispinosa
SWC 90	1547.5	P. asperopolus (1)	Clavastephinocolporites meleosus	Rare sp.
SWC 90	1547.5	P. asperopolus (1)	Dryptopollenites semilunatus	Rare sp.
SWC 90	1547.5	P. asperopolus (1)	Triporopollenites heleosus	Uncommon sp.
SWC 90	1547.5	P. asperopolus (1)	Gambierina rudata	In essentially non-marine sample
SWC 89	1568.0	P. asperopolus (1)	Crassiretitriletes vanraadshoovenii	Uncommon in this zone
SWC 89	1568.0	P. asperopolus (1)	Kuylisporites waterbolkii	Uncommon in this zone
SWC 89	1568.0	P. asperopolus (1)	Cupanieidites reticulatus	Rare sp.
SWC 83	1703.0	(Upper M. diversus)	Basopollis mutabilis	Uncommon in this zone
SWC 83	1703.0	(Upper M. diversus)	Retistephanocolpites nixonii	Rare sp.
SWC 81	1754.0	Lower M. diversus (2)	Tricolpites gigantis	Ms. sp. (MKM)
SWC 80	1766.0	Lower M. diversus (2)	Dryptopollenites semilunatus	Rare sp.

TABLE 2

ANOMALOUS AND UNUSUAL OCCURRENCES OF SPORE-POLLEN TAXA IN WHITING-2

SAMPLE NO.	DEPTH(m)	ZONE	TAXON	COMMENTS
SWC 80	1766.0	Lower *M. diversus* (2)	*Rouseisporites reticulatus*	Uncommon in Eocene
SWC 77	1840.0	Lower *M. diversus* (2)	*Retistephanocolpites nixonii*	Rare sp.
SWC 77	1840.0	Lower *M. diversus* (2)	*Rotverrusporites stellatus*	V. rare sp.
SWC 77	1840.0	Lower *M. diversus* (2)	*Selagosporis*	V. rare ms. sp. (Stough)
SWC 72	1945.0	Upper *L. balmei* (1)	*Triporopollenites* sp.	Rel. to *T. bellus*
SWC 72	1945.0	Upper *L. balmei* (1)	*Gleicheniidites apiculatus*	Ms. sp. (MKM)
SWC 71	1970.0	(Upper *L. balmei*)	*Schizaea digitatoides*	Uncommon sp.
SWC 66	2073.0	(Upper *L. balmei*)	*Peromonolites baculatus*	Uncommon sp.
SWC 65	2105.9	Upper *L. balmei* (1)	*Phyllocladidites verrucosus*	Uncommon in this zone
SWC 57	2285.0	(Upper *L. balmei*)	*Nothofagidites asperus*	Uncommon in this zone
SWC 56	2308.0	Lower *L. balmei* (2)	*Tricolporites scabratus*	Assoc. with *T. verrucosus*
SWC 56	2308.0	Lower *L. balmei* (2)	*Proteacidites ademonosus*	Not previously recorded in Paleocene

TABLE 3: SUMMARY OF BASIC PALYNOLOGICAL DATA

WHITING-2

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	PYRIZATION	COMMENTS
SWC 111	1260.0	Low	Low	Low	Low	Good	Slst., calc., glau.	-	
SWC 110	1265.0	Low	Low	Medium	Low	Fair	Ss., glau.	-	
SWC 109	1268.0	Negl.	Negl.	-	-	Good	Ss., glau.	-	
SWC 108	1272.0	Low	Fair	High	High	Good	Ss., carb.	-	
SWC 107	1275.0	Low	V. low	High	Low	Fair	Ss., slty, carb.	-	
SWC 106	1280.0	V. low	V. low	Medium	Low	Good	Ss., carb.	-	
SWC 105	1285.0	Fair	Low	High	Low	Good	Ss., carb.	-	
SWC 104	1289.0	Fair	V. low	High	Low	Fair	Ss., carb.	-	
SWC 102	1302.0	V. low	V. low	Medium	Low	Good	Ss., slty, carb.	-	
SWC 101	1337.5	Low	-	Low	-	Poor	Slst., clayey	-	hydrocarbon-affected?
SWC 100	1353.9	Low	-	Medium	-	Good	Slst.	Minor	
SWC 99	1374.0	Fair	-	Medium	-	Good	Slst.	-	
SWC 98	1397.0	Fair	-	Medium	-	Good	Slst./lignite	-	
SWC 97	1421.0	High	V. low	High	Low	V. good	Slst., carb.	-	
SWC 96	1440.9	High	-	High	-	Good	Slst., carb.	-	
SWC 95	1466.0	High	High	High	Low	Fair	Slst., carb.	-	

TABLE 3: SUMMARY OF BASIC PALYNOLOGICAL DATA

WHITING-2

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	PYRIZATION	COMMENTS
SWC 94	1484.9	Negl.	-	-	-	-	Ss., slty.	-	
SWC 93	1517.5	Low	-	:pw	-	Fair	Clyst.	-	
SWC 92	1530.0	High	High	High	Medium	Fair	Slst., carb.	-	
SWC 90	1547.5	Fair	V. low	High	Low	Fair	Slst., carb.	-	
SWC 89	1568.0	Fair	-	High	-	Good	Slst.	-	
SWC 88	1601.9	-	-	-	-	-	Clyst.	-	
SWC 87	1603.0	Negl.	-	-	-	Poor	Slst.	-	
SWC 86	1615.0	-	-	-	-	-	Ss.	-	
SWC 84	1670.9	-	-	-	-	-	Slst.	-	
SWC 83	1703	Fair	-	High	-	Good	Slst.	-	
SWC 82	1730.0	V. low	-	Low	-	Fair	Slst.	-	
SWC 81	1754.0	Good	-	Medium	-	Good	Slst.	-	
SWC 80	1766.0	Good	Medium	High	Low	Fair	Slst., carb.	-	
SWC 78	1800.0	Fair	-	High	-	Fair	Clyst.	-	
SWC 77	1840.0	Low	-	High	-	Fair	Slst.	-	
SWC 76	1860.0	Low	-	Medium	-	Fair	Slst.	-	
SWC 75	1874.9	High	High	High	Medium	Good	Slst., calc., carb.	-	

TABLE 3: SUMMARY OF BASIC PALYNOLOGICAL DATA

WHITING-2

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	PYRIZATION	COMMENTS
SWC 74	1899.9	Low	-	Medium	-	Fair	Slst.	-	
SWC 73	1924.0	Fair	-	Medium	-	Fair	Slst., carb.	-	
SWC 72	1945.0	High	-	Medium	-	Fair	Slst.	-	
SWC 71	1970.0	Low	-	Medium	-	Fair	Slst., carb.	-	
SWC 70	1985.0	High	-	Medium	-	Fair	Coal	-	
SWC 69	2000.0	Fair	-	Medium	-	Fair	Slst., carb.	-	
SWC 67	2045.0	Low	-	Medium	-	Fair	Slst.	-	
SWC 66	2073.0	Fair	-	Low	-	Fair	Slst., carb.	-	
SWC 65	2105.9	Low	-	Medium	-	Fair	Slst.	-	
SWC 63	2144.9	Fair	-	Medium	-	Poor	Slst., carb.	-	
SWC 61	2185.0	Negl.	-	-	-	Good	Ss.	-	
SWC 60	2205.0	Low-	-	Low	-	Poor	Slst., carb.	-	
SWC 59	2224.9	High	-	Medium	-	Poor	Slst.	-	
SWC 58	2250.0	Low	-	Medium	-	Poor	Slst.	-	
SWC 57	2285.0	Low	-	Medium	-	Fair	Slst., carb.	-	
SWC 55	2330.0	High	-	Low	-	Poor	Slst., carb.	-	
SWC 53	2370.0	V. low	-	Low	-	V. poor	Ss.	-	
SWC 52	2390.0	Low	-	Low	-	Poor	Slst.	-	

TABLE 3: SUMMARY OF BASIC PALYNOLOGICAL DATA

WHITING-2

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	PYRIZATION	COMMENTS
SWC 51	2409.9	Fair	-	Low	-	Poor	Slst.	-	contaminated
SWC 50	2438.0	Low	-	Low	-	Poor	Slst.	-	
SWC 48	2485.0	Low	-	Low	-	V. poor	Slst.	-	
SWC 47	2505.0	Fair	-	Low	-	Poor	Slst.	-	
SWC 46	2526.0	Low	-	Low	-	Poor	Slst.	-	
SWC 45	2548.0	Low	-	Low	-	V. poor	Slst., carb.	-ISWC 44	2570.0
Low	-	Low	-	Poor	Slst.	-			
SWC 43	2590.0	Low	-	Low	-	Poor	Slst.	-	
SWC 42	2608.0	V. low	-	Low	-	V. poor	Slst.	-	
SWC 40	2655.0	Low	-	Medium	-	Poor	Slst., carb.	-	contaminated
SWC 39	2675.0	Low	-	Low	-	Fair	Slst., carb.	-	
SWC 38	2694.0	V. low	-	Low	-	V. poor	Slst.	-	
SWC 36	2739.9	Low	-	Low	-	Poor	Carb., slst.	-	
SWC 35	2744.0	Negl.	-	-	-	-	Carb., slst.	-	
SWC 34	2801.4	Negl.	-	-	-	-	Coal	-	
SWC 33	2892.9	-	-	-	-	-	Slst.	-	
SWC 30	2960.0	High	-	High	-	Fair	Slst., carb.	-	
SWC 29	2980.9	High	-	Medium	-	Fair	Ss.	-	

TABLE 3: SUMMARY OF BASIC PALYNOLOGICAL DATA

WHITING-2

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	PYRIZATION	COMMENTS
SWC 26	3049.9	Negl.	-	-	-	-	Ss.	-	
SWC 25	3075.0	Negl.	-	-	-	-	Carb., ss.	-	
SWC 23	3120.0	Low	-	Medium	-	Poor	Ss.	-	
SWC 20	3133.5	Fair	-	Medium	-	Poor	Slst.	-	contaminated
SWC 19	3165.0	V. low	-	Low	-	Poor	Slst., carb.	-	
SWC 14	3235.0	Low	-	Medium	-	V. poor	Slst.	-	contaminated
SWC 6	3300.5	High	-	Medium	-	V. poor	Carb. shale	-	
SWC 4	3318.0	Negl.	-	-	-	-	Slst.	-	
SWC 2	3329.8	Fair	-	High	-	V. poor	Slst.	-	
SWC 132	3417.3	-	-	-	-	-	Coal	-	
SWC 129	3434.0	Low	-	Medium	-	V. poor	Slst., carb.	-	
SWC 121	3489.0	Fair	-	Low	-	V. poor	Slst., carb.	-	
SWC 120	3492.3	Fair	-	Low	-	V. poor	Slst./coal	-	
SWC 118	3515.0	Low	-	Medium	-	V. poor	Slst.	-	
SWC 114	3534.3	-	-	-	-	-	Slst., carb.	-	
SWC 112	3548.2	-	-	-	-	-	Coal	-	

PE900489

This is an enclosure indicator page.
The enclosure PE900489 is enclosed within the container PE902408 at this location in this document.

The enclosure PE900489 has the following characteristics:

ITEM_BARCODE = PE900489
CONTAINER_BARCODE = PE902408
NAME = Palynology Chart
BASIN = GIPPSLAND
PERMIT = VIC/L2
TYPE = WELL
SUBTYPE = DIAGRAM
DESCRIPTION = Palynology Chart for Whiting-2
REMARKS =
DATE_CREATED =
DATE_RECEIVED = 8/09/86
W_NO = W903
WELL_NAME = WHITING-2
CONTRACTOR =
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 3

APPENDIX 3

APPENDIX 3

WHITING-2

QUANTITATIVE LOG ANALYSIS

Interval: 1270 - 3545m KB

Analyst : L.J. Finlayson

Date : August, 1985

WHITING-2 QUANTITATIVE LOG ANALYSIS

Whiting-2 wireline logs have been analysed for effective porosity and water saturation over the interval 1270m - 3545m KB. Analysis was carried out over much of the logged section 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. Below 2895m the hole was badly washed out and porosity was estimated from a combination of logs and VSH estimated from the Gamma Ray.

Logs Used

LLD, LLS (DLTE), MSFL, RHOB (LDTC), CAL, GR, NPHI (CNTH), BHC, SLS.

The MSFL and neutron porosity logs were corrected for borehole and environmental effects. The borehole corrected MSFL 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 Suite 2 CNTH (1235-1652m, 1/5/85) which seemed to be reading 1 to 3 divisions high in clean water bearing quartz sands. A shift was therefore made to 'normalise' this log to the density log in clean intervals. The SLS was reading incorrectly in places due to 'noise' on one of the 10' receivers ((TT1). Schlumberger have been made aware of this problem.

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	131.6oC (LDT Suite 6)

Depth Interval (m)	RHOBSH (gm/cc)	NPHISH (gm/cc)	RSH (ohm-m)
1270 - 1530	2.40	0.30	15
1530 - 1645	2.45	0.30	20
1645 - 1805	2.50	0.30	15
1805 - 2000	2.55	0.27	10
2000 - 2420	2.58	0.21	15
2420 - 2895	2.60	0.24	20

Depth Interval	GR min	GR max	PHISH	RSH
(m)	(API units)	(API units)	(%)	(ohm-m)
2985 - 3141	40	140	0.15	50
3140 - 3342	30	120	0.12	75
3342 - 3545	35	100	0.10	100

Shale Volume

A. 1270 - 2895m

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

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

B. 2895 - 3545m

VSH was calculated from the Gamma Ray as follows:

$$VSHGR = \frac{GR - GR\ max}{GRmax - GRmin} \qquad - 2$$

Total Porosities

A. From 1270-2895m, total porosity was calculated as follows:

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

$$h = 2.71 - RHOB + NPHI\ (RHOF - 2.71) \qquad - 3$$

if h is greater than 0, then

apparent matrix density, $RHOMa = 2.71 - h/2$ — 4

if h is less than 0, then

apparent matrix density, $RHOMa = 2.71 - 0.64h$ — 5

Total porosity: $PHIT = \frac{RHOMa - RHOB}{RHOMa - RHOF}$ — 6

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

B. From 2895-3545m, total porosity was calculated as follows:

A minimum of density-neutron crossplot porosity, meutron porosity (in sandstone units) and sonic porosity (from the Hunt-Raymer transform) was regarded as total porosity. Where this value was unreasonably high, such as in very washed out sands, an estimate of likely porosity was made.

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

Apparent water resistivity (Rwa) was derived as follows:

$$Rwa = Rt * PHIT^{m} \quad (m = 2)$$ - 8

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.)
1270 - 1365	5,500
1365 - 1400	3,000
1400 - 1425	2,000
1425 - 1520	3,000
1520 - 1567	1,600
1567 - 1615	3,000
1615 - 1645	4,000
1645 - 1710	2,500
1710 - 1755	1,400
1755 - 1800	2,000
1800 - 1850	5,000
1850 - 1875	12,000
1875 - 2125	30,000
2125 - 2200	23,000
2200 - 2230	20,000
2230 - 3545	17,000

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 1875m KB. A salinity of 30,000 ppm NaCleq. was therefore used in the oil sands between 1449.75 - 1539m and the gas sands between 1717.25 - 1736.0m KB.

It is stressed that below 2895m no water bearing zones were encountered therefore water saturations must be treated with some caution.

Water Saturations

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

$$\frac{1}{Rt} = SwT^{n} * \left(\frac{PHIT^{m}}{aRw}\right) + SwT^{(n-1)} \left[\frac{Swb * PHIT^{m}}{a} \left(\frac{1}{Rwb} - \frac{1}{Rw}\right)\right]$$ - 8

or

$$\frac{1}{Rxo} = SxoT^{n} * \left(\frac{PHIT^{n}}{aRmf}\right) + SxoT^{(n-1)} \left[\frac{Swb * PHIT^{m}}{a} \left(\frac{1}{Rwb} - \frac{1}{Rmf}\right)\right]$$ -9

where: SwT and SxoT are "total" water saturations

and Swb (bound water saturation) $= \frac{VSH * PHISH}{PHIT}$ -10

where: PHISH = total porosity in shale derived from density-neutron crossplot or from a combination of porosity logs below 2895m.

with a = 1
m = 2
n = 2

A. Between 1270-2895m

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] -11

NPHI (Hydrocarbon corrected) = NPHI(raw) + 1.3 PHIT (1-SxoT) $\frac{RHOF(1-P)-1.5RHOH + 0.2}{RHOF(1-P)}$ -12

where: P = mud filtrate salinity in parts per unity
RHOF = mud filtrate density
RHOH = hydrocarbon density (0.70 gm/cc for oil, 0.25 gm/cc for gas)

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

RHOBSC $= \frac{\text{RHOB (hydrocarbon corrected)} - VSH * RHOBSH}{1-VSH}$ -13

NPHISC $= \frac{\text{NPHI (hydrocarbon corrected)} - VSH * NPHISH}{1-VSH}$ -14

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 -15

Swe $= 1 - \frac{PHIT}{PHIE}(1-SwT)$ -16

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.

B. Below 2895m:

Effective porosity and water saturation was calculated as follows:-

PHIE = PHIT - PHISH * VSH -18

where PHISH = PHIT in shales

$$Swe = 1 - \frac{PHIT}{PHIE} (1-SwT)$$ -19

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

Comments

1. Over the interval 1270 - 3120m four oil productive (total net thickness is 15.75m) and numerous gas productive sands are interpreted on the basis of log analysis, RFT data and production test data (see Summary of Results).

2. Below 3120m all sands are interpreted as being hydrocarbon bearing however they are considered to be non productive on the basis of RFT data and production test data.

3. A production test over the interval (2627 - 2634m) flowed oil at a rate of 200 BOPD.

4. Production test results over the intervals 3123.5-3129m and 3316-3326m indicate a tight formation with very low permeability.

5. Attached is a Porosity/Depth Crossplot, a Porosity/Saturation Depth Plot and a listing of results.

26551/19-24

WHITING #2

SUMMARY OF RESULTS

Depth Interval (m KB)	Gross Thickness (m)	* Net Thickness (m)	*Porosity Average	* Swe Average	Fluid Content
1276.00 - 1280.25	4.25	4.25	0.265 ± 0.044	0.848	Residual Oil
1280.50 - 1335.25	54.75	54.75	0.273 ± 0.019	1.000	Water
1339.25 - 1352.75	13.50	13.50	0.261 ± 0.022	1.000	Water
1361.00 - 1362.75	1.75	1.00	0.196 ± 0.040	1.000	Water
1372.50 - 1373.75	1.25	1.25	0.219 ± 0.043	0.968	Water
1391.75 - 1392.75	1.25	1.25	0.259 ± 0.061	1.000	Water
1410.00 - 1416.25	6.25	6.25	0.285 ± 0.025	0.989	Water
1430.25 - 1431.25	1.25	1.25	0.254 ± 0.023	1.000	Water
1449.75 - 1453.50	3.75	3.75	0.290 ± 0.10	0.161 ± 0.044	Oil
		OWC @ 1453.50m			
1453.75 - 1463.75	10.00	10.00	0.308 ± 0.009	0.970	Water
1470.75 - 1476.75	6.00	6.00	0.286 ± 0.024	1.000	Water
1487.50 - 1492.00	4.50	4.50	0.272 ± 0.021	0.149 ± 0.041	Oil
		OWC @ 1492.00m			
1492.25 - 1514.75	22.50	22.75	0.266 ± 0.031	0.991	Water
1523.00 - 1527.00	4.00	4.00	0.282 ± 0.030	1.000	Water
1537.00 - 1539.00	2.00	2.00	0.274 ± 0.046	0.162 ± 0.044	Oil
		OWC @ 1539.00m			
1539.25 - 1546.25	7.00	7.00	0.302 ± 0.017	1.000	Water
1548.50 - 1566.00	17.50	17.50	0.296 ± 0.023	1.000	Water
1569.75 - 1570.75	1.00	1.00	0.314 ± 0.010	0.811	Water
1573.00 - 1574.25	1.25	1.25	0.289 ± 0.038	0.902	Water
1606.25 - 1610.75	4.50	4.50	0.297 ± 0.010	0.981	Water
1617.00 - 1627.25	10.25	10.00	0.226 ± 0.037	1.000	Water
1635.25 - 1638.00	2.75	1.75	0.163 ± 0.044	1.000	Water
1673.75 - 1696.75	23.00	23.00	0.258 ± 0.038	0.996	Water
1705.25 - 1707.00	1.75	1.75	0.192 ± 0.038	0.930	Water
1717.25 - 1722.25	5.00	3.50	0.211 ± 0.050	0.111 ± 0.032	Gas
		GWC @ 1722.25m			
1722.50 - 1725.00	2.50	2.50	0.255 ± 0.026	0.931	Water
1731.75 - 1736.00	4.25	4.25	0.210 ± 0.053	0.140 ± 0.039	Gas
		GWC @ 1736.00m			
1736.25 - 1751.25	15.00	15.00	0.273 ± 0.029	0.978	Water
1756.50 - 1760.25	3.75	3.75	0.167 ± 0.025	1.000	Water
1768.75 - 1773.75	5.00	5.00	0.275 ± 0.027	0.989	Water
1777.00 - 1778.00	1.00	1.00	0.138 ± 0.029	0.844	Water
1782.00 - 1796.25	14.25	14.25	0.217 ± 0.045	1.000	Water
1811.25 - 1818.75	7.50	7.50	0.175 ± 0.022	0.948	Water
1820.75 - 1830.50	9.75	9.75	0.257 ± 0.017	1.000	Water
1831.50 - 1833.50	2.00	2.00	0.225 ± 0.034	1.000	Water

1855.00 - 1856.25	1.25	1.25	0.158 ± 0.030	1.000	Water
1862.00 - 1863.50	1.50	1.50	0.158 ± 0.030	1.000	Water
1865.00 - 1871.25	6.25	6.00	0.263 ± 0.039	0.987	Water
1925.75 - 1927.75	2.00	2.00	0.179 ± 0.015	0.985	Water
1929.75 - 1931.75	2.00	2.00	0.154 ± 0.031	0.895	Water
1932.75 - 1936.25	3.50	3.50	0.224 ± 0.022	0.877	Water
1940.50 - 1942.00	1.50	1.50	0.232 ± 0.037	0.963	Water
1946.00 - 1956.75	10.75	10.75	0.202 ± 0.041	1.000	Water
1958.75 - 1961.00	2.25	2.25	0.256 ± 0.021	0.954	Water
1979.50 - 1981.50	2.00	2.00	0.143 ± 0.020	1.000	Water
1988.00 - 1999.75	11.75	11.75	0.235 ± 0.055	0.992	Water
2021.75 - 2026.50	4.75	4.75	0.232 ± 0.041	0.916	Water
2066.25 - 2070.50	4.00	4.00	0.254 ± 0.027	0.431 ± 0.008	Gas
		GWC @ 2070.25m			
2070.50 - 2072.50	2.00	2.00	0.252 ± 0.035	0.847	Water
2077.50 - 2079.50	2.00	2.00	0.159 ± 0.026	1.000	Water
2093.00 - 2104.25	11.25	10.75	0.227 ± 0.031	1.000	Water
2111.75 - 2114.25	2.50	2.00	0.193 ± 0.033	0.816	Water
2128.00 - 2129.00	1.00	1.00	0.151 ± 0.023	0.816	Water
2168.75 - 2170.50	1.75	1.75	0.205 ± 0.051	0.541 ± 0.095	Gas
2182.50 - 2183.50	1.00	1.00	0.146 ± 0.022	0.968	Water
2192.50 - 2193.75	1.25	1.25	0.193 ± 0.034	0.981	Water
2196.25 - 2197.25	1.00	1.00	0.183 ± 0.023	0.976	Water
2213.25 - 2214.50	1.25	1.25	0.158 ± 0.034	0.780	Water
2253.25 - 2258.75	5.50	4.25	0.155 ± 0.024	0.515 ± 0.094	Gas
2274.25 - 2277.25	3.00	3.00	0.176 ± 0.022	0.965	Water
2278.75 - 2282.75	4.00	4.00	0.187 ± 0.023	1.000	Water
2305.50 - 2307.00	1.50	1.50	0.148 ± 0.016	0.869	Water
2311.25 - 2312.75	1.50	1.25	0.182 ± 0.054	0.558 ± 0.077	Gas
2318.00 - 2320.25	2.25	2.25	0.180 ± 0.035	0.479 ± 0.092	Gas
2353.75 - 2355.50	1.75	1.75	0.215 ± 0.040	0.346 ± 0.078	Gas
2358.50 - 2363.75	5.25	4.75	0.181 ± 0.034	0.327 ± 0.075	Gas
2371.50 - 2371.75	0.25	0.25	0.129 ± 0.008	0.487 ± 0.092	Gas
2426.25 - 2436.00	9.75	9.25	0.214 ± 0.039	0.977	Water
2487.75 - 2489.75	2.00	2.00	0.161 ± 0.024	0.480 ± 0.092	Gas
2537.00 - 2543.25	6.25	6.25	0.196 ± 0.041	0.985	Water
2578.50 - 2587.25	8.75	7.25	0.192 ± 0.041	0.230 ± 0.059	Gas
2596.50 - 2601.25	4.75	2.75	0.168 ± 0.039	0.311 ± 0.073	Gas
2606.25 - 2607.50	1.25	1.00	0.142 ± 0.009	0.685 ± 0.096	Gas
2609.50 - 2617.25	8.25	7.50	0.141 ± 0.025	0.518 ± 0.094	Gas
2627.75 - 2633.75	6.00	5.50	0.140 ± 0.021	0.602 ± 0.097	Oil
2650.50 - 2651.50	1.00	-	0.100	1.000	Water
2696.25 - 2703.25	7.00	6.75	0.152 ± 0.026	0.913	Water
2705.75 - 2706.75	1.00	1.00	0.132 ± 0.023	0.991	Water
2755.75 - 2758.25	2.50	2.50	0.155 ± 0.018	1.000	Water
2761.75 - 2768.75	7.00	6.50	0.131 ± 0.010	0.972	Water

2777.75 - 2782.75	5.00	5.00	0.137 ± 0.019	1.000	Water
2786.00 - 2796.50	10.50	9.25	0.128 ± 0.019	1.000	Water
2807.25 - 2809.75	2.50	2.25	0.133 ± 0.016	1.000	Water
2948.25 - 2954.75	6.50	6.00	0.171 ± 0.023	0.430 ± 0.088	Gas
3028.25 - 3034.25	6.00	3.25	0.118 ± 0.008	0.545 ± 0.095	Gas
3043.75 - 3048.50	4.75	3.00	0.119 ± 0.012	0.587 ± 0.096	Gas
3050.50 - 3055.00	4.50	3.00	0.126 ± 0.014	0.487 ± 0.092	Gas
3088.25 - 3092.25	4.00	3.50	0.138 ± 0.012	0.474 ± 0.091	Gas
3109.50 - 3111.75	2.25	1.25	0.132 ± 0.016	0.382 ± 0.083	Gas
3123.50 - 3129.00	5.50	4.00	0.124 ± 0.014	0.465	Oil
3149.75 - 3152.00	2.25	0.75	0.117 ± 0.008	0.451	Hydrocarbon
3205.00 - 3211.25	6.25	5.00	0.122 ± 0.011	0.441	Hydrocarbon
3247.25 - 3251.00	3.75	1.25	0.137 ± 0.013	0.381	Hydrocarbon
3268.25 - 3270.50	2.25	1.00	0.107 ± 0.005	0.451	Hydrocarbon
3273.25 - 3277.50	4.25	3.00	0.140 ± 0.010	0.428	Hydrocarbon
3281.00 - 3288.25	7.25	3.00	0.127 ± 0.015	0.432	Gas
3292.75 - 3296.25	3.50	1.75	0.113 ± 0.006	0.415	Hydrocarbon
3316.25 - 3325.25	9.00	7.50	0.124 ± 0.015	0.399	Gas
3333.50 - 3336.00	2.50	1.00	0.112 ± 0.007	0.411	Hydrocarbon
3339.25 - 3342.00	4.75	3.50	0.121 ± 0.006	0.557	Hydrocarbon
3368.00 - 3375.25	7.25	6.00	0.112 ± 0.007	0.512	Gas
3389.00 - 3396.00	7.00	2.75	0.110 ± 0.004	0.511	Hydrocarbon
3400.75 - 3412.50	11.75	4.75	0.118 ± 0.011	0.497	Gas
3426.50 - 3428.50	2.00	1.25	0.109 ± 0.007	0.451	Hydrocarbon
3442.25 - 3445.25	3.00	2.25	0.118 ± 0.008	0.506	Hydrocarbon
3447.00 - 3453.25	6.25	3.50	0.113 ± 0.006	0.519	Hydrocarbon
3467.50 - 3469.00	1.50	1.50	0.120 ± 0.010	0.553	Gas
3472.75 - 3477.25	4.50	2.00	0.125 ± 0.006	0.530	Hydrocarbon
3479.75 - 3482.50	2.75	1.75	0.116 ± 0.008	0.484	Hydrocarbon
3483.50 - 3486.50	3.00	1.50	0.108 ± 0.007	0.492	Hydrocarbon
3537.50 - 3544.25	6.75	1.25	0.112 ± 0.005	0.519	Gas

* Net Thickness, Porosity Average and Swe Average refer to zones with calculated porosities in excess of 10%.

It is stressed that below 2895m no water sands occur hence water saturations were calculated with an estimated Rw value and should be treated with caution. Hole conditions over this interval are not good and therefore porosities should also be treated with some caution.

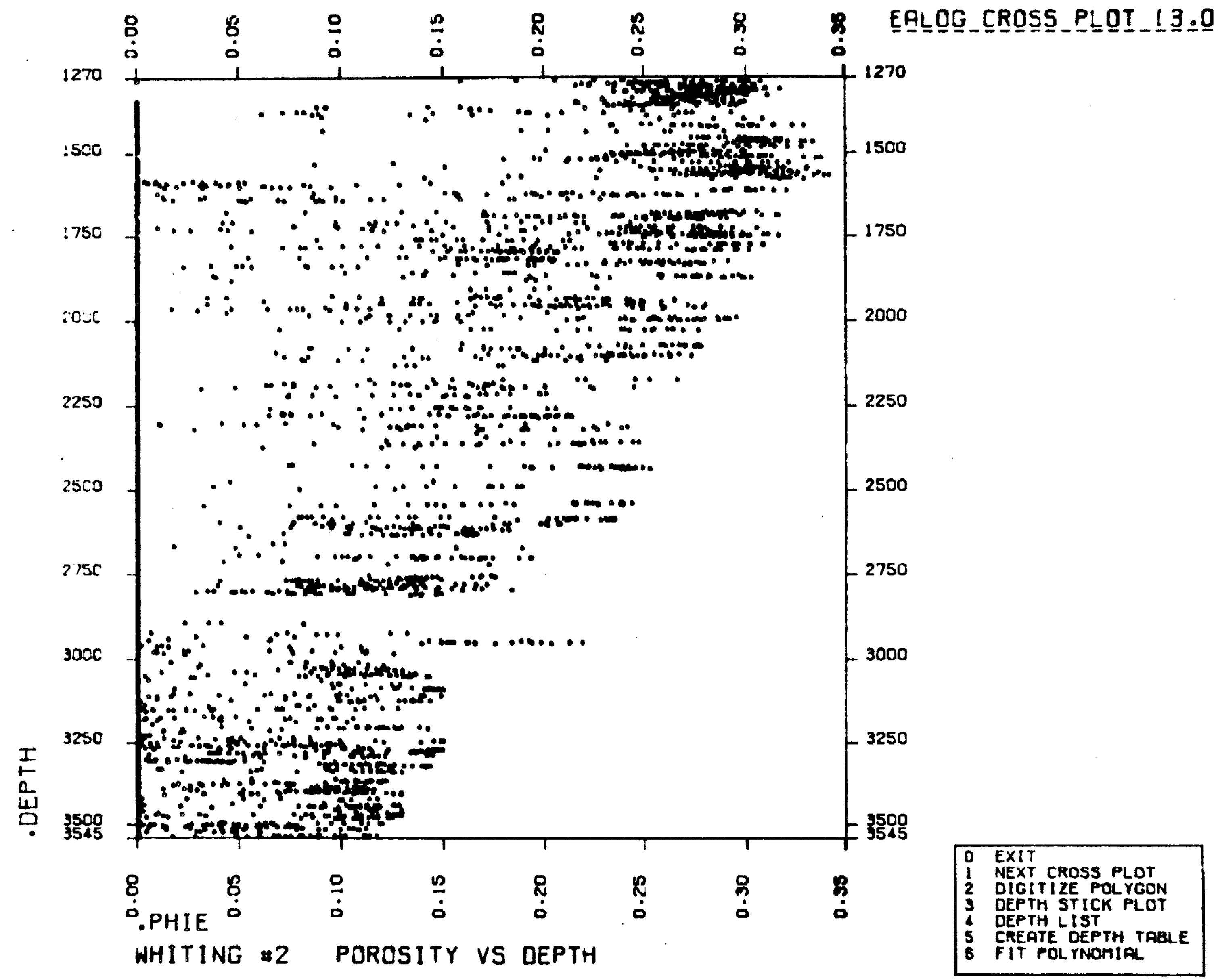
Sands below 3120m, although interpreted as being hydrocarbon bearing are considered to be non productive on the basis of RFT data and production test result.

26551/25-27

October 1985

ADDENDUM TO WHITING-2 LOG ANALYSIS

The intervals 3205-3211.25, 3389-3396, and 3483.5-3486.5mKB were interpreted as hydrocarbon bearing in the log analysis. Extraction of oil from sidewall cores at 3390.5 and 3485mKB indicates that oil is reservoired at these depths. The failure of extraction from sidewall core at 3207.4mKB suggests that gas is reservoired at this depth. These intervals have log porosities of 10-12% and water saturations of 45-55% and are considered non productive on the basis of RFT and production test data.



EALOG CROSS PLOT [3.0]
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1270
1500
1750
2000
2250
2500
2750
3000
3250
3500
3545
.DEPTH
.PHIE
WHITING #2 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

APPENDIX 4

APPENDIX 4

APPENDIX 4

WHITING-2 RFT TESTS

SUMMARY

A series of RFT tests was conducted on the Whiting-2 exploration well over the period May 1 to May 30, 1985. Results from this RFT program confirmed the presence of three shallow oil zones in good quality sands (P reservoirs), several non-commercial deep gas zones, and a deep oil non-commercial zone (L-500 reservoir). A scum of oil was recovered in tight sand at the Top of Latrobe.

Clear oil-water contacts were seen in logs of the P reservoirs. The shallowest P-reservoir oil accumulation confirmed by RFT sampling was a 3.75m net interval (P-240) located at the top of P. Asperopolus from 1449.75 to 1453.5m MDKB. The next P-reservoir oil accumulation was a 4.5m net oil interval (P-250) in the P. Asperopolus from 1487.5m to 1492.0m MDKB. This corresponds to the P-250 oil reservoir in Whiting-1 but is a separate accumulation. The third P-reservoir oil accumulation confirmed was a 2.0m net oil interval (P-260) in the P. Asperopolus from 1537.0m to 1539.0m MDKB.

The largest gas sands encountered at Whiting-2 were in the L. Balmei in the interval 2578.5m to 2617.25m MDKB. Directly below these gas sands was a separate oil intersection (L-500) from 2627.75m to 2633.75m MDKB. To further evaluate the L-500 oil reservoir, a production test was later carried out over the interval 2627m to 2634m MDKB. The well flowed at 200 STB/d with a low productivity index (0.08 STB/D/psi). Deeper production tests carried out at Whiting-2 over the intervals 3123.9m to 3129.0m MDKB and 3315.2m to 3325.1m MDKB, produced small quantities of gas and filtrate.

Results and Discussion

A total of 18 RFT runs were conducted over the interval 1272.8m to 3207.5m MDKB as follows:

Run/Seat	Pretests	Interval (m MDKB)
1/1-15	15	1272.8 - 1620.5
2/16	1	1278.0
3/17	1	1490.0
4/18	1	1451.5
5/19-44	26	1620.5 - 2756.5
6/45-47	3	2630.0 - 2633.0
7/48	1	2615.5
8/49	1	1538.0
9/50	1	2360.0
10/51-55	5	1723.5 - 2360.0
11/56-57	2	2254.0 - 2256.5
12/58	1	2617.0
13/59-61	3	2628.8 - 2629.1
14/62-71	10	3050.0 - 3126.1
15/72-82	11	3051.9 - 3126.1
16/83	1	2954.0
17/84-89	6	2606.0 - 2607.1
18/90	1	3207.5

Of the 90 pretests attempted, 56 were successful in providing formation pressures, 13 pretests were supercharged or tight and 21 tests were seal failure. The seal failures which occurred in the deep sands were mainly due to hole conditions. Both the Hewlett-Packard gauge and RFT strain gauge were used in runs 1-5 and only the RFT strain gauge was used in runs 6-18. Runs 2-4 and 6-18 were sample runs with oil being recovered in runs 2-4, 6, 8, and 13 and gas recovered in runs 7, 9-12, 16 and 18. The remaining three runs (14, 15 and 17) were unsuccessful due to a seal failure (run 14) or tight seats (runs 15 and 17). Full details of pretest pressures are given in Attachment 1 and Figures 1-4 and details of sample data are summarised in Table 1 and Attachment 2.

The main results which are illustrated in Figures 1-4 and Table 1 are:

1. The presence of oil at the Top of Latrobe indicated by logs was confirmed by the recovery of a scum of oil (39.5° API) in RFT run no. 2 with the seat located at 1278m MDKB (see Figure 1).

2. The presence of three low GOR oil zones was confirmed by sampling in the P. Asperopolus with seats located at 1451.5m, 1490.0m and 1538.0m respectively (see Figure 1). Main chamber sample recovery details were:

Run	Zone	Sample Depth (MDKB)	Sample Depth (m SS)	Recovery litres	API	GOR scf/stb
4	P240	1451.5m	1430.5m	21.0 oil	55.2	15
3	P250	1490.0m	1469.0m	21.75 oil	56.4	26
8	P260	1538.0m	1517.0m	21.0 oil	56.5	20

The three P oil reservoirs intersected at Whiting-2 contained a total of 10.25m of net oil sands over the interval from 1449.75 to 1539.0m MDKB. Clear oil-water contacts were seen in the logs of each reservoir.

3. The presence of an oil column from 2627.75 - 2633.75m MDKB was confirmed by the recovery of 40°API oil in the L-500 reservoir with seats located at 2632.5m MDKB (run no. 6) and 2629.1m MDKB (run no. 13). Estimated GOR of recovered oil was 859 SCF/STB based on laboratory analysis (1120 SCF/STB recorded in production test). Assuming an oil gradient of 0.95 psi/m through seat 5/22 at 2633m MDKB and a water gradient joining the seats 5/21 and 5/31, as shown in Figure 4, an OWC at 2650m MDKB (2629m SS) could be inferred for the L-500 oil reservoir. However there is considerable uncertainty regarding this contact due to uncertainty in the pressure data.

4. The presence of the following gas intersections was confirmed by sampling:

Depth m MDKB	Net Thickness m TVD	Sampled at m MDKB	Seat
2253.25-2258.75	4.25	2256.5	10/51
		2256.5	11/57
2358.5-2363.75	4.75	2360	9/50
2609.5-2617.25	7.50	2615.5	7/48
	-	2617	12/58
2948.25-2954.75	6.00	2954	16/83
3205.0-3211.25	5.00	3207.5	18/90
1717.25-1722.25	2.50	1723.5	10/55

5. Interpreted gas-water contacts for each gas zone from RFT data were as follows:

Logged Intersection Depth m MDKB	GWC (RFT) m MDKB	GWC (Log) m MDKB
1717.25-1722.25	1720.9	1722.25
1731.75-1736.0	1736.4	1736.0
2066.25-2072.50	2072.1	n.a.
2168.75-2170.5	n.a.	n.a.
2253.25-2258.75	2265.8	n.a.
2311.25-2371.75 (4 zones)	n.a.	n.a.
2487.75-2489.75	2525.0	n.a.
2578.75-2587.25	) assume same) zone with	n.a.
2596.5-2601.25	) contact at) 2625.0 mKB	n.a.
2606.25-2607.5	n.a.	n.a.
2609.5-2617.25	2629.4	
2948.25-2954.75	n.a.	n.a.

In the remaining gas zones the pressure data was insufficient to identify contacts.

6. Pressures compared to the original Gippsland basin gradient are:

Zone	Pressure Drawdown, psi
P-250 (Whiting-1, April, 1983	56.3
P-250 (Whiting-2, May, 1985)	69.8
L-500 (Whiting-2, May, 1985)	45.1

TABLE 1

SUMMARY OF WHITING-2 RFT SAMPLE RECOVERIES

Run/ Seat Nos.	Sample Depth (mMDKB)	Sample Depth (mTVDSS)	Fluid Type	Main/Segregated Chambers Recoveries: Oil or Condensate (litres)	Gas (cu ft)	Water/ Filtrate (litres)	Oil or Condensate Gravity (°API)
2/16	1278	1257	Oil	scum/scum	1.25/0.1	21.75/9.25	39.5
3/17	1490	1469	Oil	21.75/Preserved	3.6/Preserved	-	56.4
4/18	1451.5	1430.5	Oil	21.0/Preserved	2/Preserved	0.75/Preserved	55.2
6/45-7	2630-33	2609-12	Oil	scum/0.5	2.6/4.5	11.75/2.8	38-39
7/48	2615.5	2594.5	Gas	0.1/0.2	36.8/40.6	15.75/1.0	44-45
8/49	1538	1517	Oil	21.0/9.2	2.7/1.2	0/0	56.5
9/50	2360	2339	Gas	0.25/0.25	77.3/49.3	8/1.2	47-49
10/51-4	2254-6.5	2233-5.5	Gas	-	) 5.6/0.7	) 22.4/0	-
10/55	1723.5	1702.5	Water		)	)	
11/56-7	2254-6.5	2233-5.5	Gas	Trace/trace	68.5/45.3	6.7/1.5	50
12/58	2617	2596	Gas	1.1/0.27	228/58.2	7.0/5.8	49-52
13/59-61	2628.8-9.1	2607.8-8.1	Oil	0.5/2.0	-/10.6	1.5/4.25	40-42
14/63-68	3125.6-6.1	3104.6-5.6	-	Seal failures	-	-	-
15/82	3052.2	3031.2	-	Tight seat	-	7.5/5.25	-
16/83	2954	2933	Gas	0.3/0.2	56.6/37.5	18.5/4	50-51
17/89	2606	2585	-	Tight seat	-	1.5/0	-
18/90	3207.5	3186.5	Gas	-	1/0.2	34/9	-

ATTACHMENT 1

RFT PRESSURE DATA

(3760f:1)

WELL: WHITING-2

DATE: 1-2/5/1985

ENGINEER: P.R. ETTEMA

GEOLOGIST: S. WATTS

GAUGE TYPE: RFT/HP

PROBE TYPE: LONG NOSE/MARTINEAU

RFT NO. Run/Seat	DEPTH m MDKB	m TVDSS KB=21m	IHP psia	Time Set	Minimum Flowing Pressure psia	Formation Pressure RFT/HP psig/psia	Temp. °C	Time Retract	FHP psia	Comments
1/1	1620.5	1599.5	2709.5	1501,1/5	2055	2271/2279.5	75	1515	2704.7	Valid
1/2	1543.0	1522.0	2570.8	1525	2563	- -	75	1527	-	No seal
1/3	1543.5	1522.5	2573.2	1531	2092	2163/2170.6	74	1543	2575.8	Valid
1/4	1538.0	1517.0	2566.6	1547	2113	2155/2163.7	74	1555	2566.8	Valid
1/5	1493.0	1472.0	2488.7	1605	1916	2093/2101.1	73	1621	2490.6	Valid
1/6	1490.0	1469.0	2485.8	1626	2093	2088/2098.5	72	1631	2486.4	Valid
1/7	1455.0	1434.0	2425.5	1639	2030	2043/2051.9	71	1654	2427.6	Valid
1/8	1451.5	1430.5	2421.7	1700	2045	2039/2047.6	70	1706	2421.7	Valid
1/9	1411.5	1390.5	2354.3	1713	1961	1981/1986.6	69	1726	2355.0	Valid
1/10	1356.5	1335.5	2261.1	1736	143	1876/1909.7	67	1749	2262.4	Valid
1/11	1280.5	1259.5	2136.0	1758	1368	1785/1802.4	65	1801	2136.1	Valid
1/12	1278.2	1257.2	2132.3	1808	(1400)	1782/1800.3	64	1813	2132.3	Valid
1/13	1272.8	1251.8	2123.4	1817	127	1866/1889	64	1828	2123.4	Supercharged. Form press increasing.
1/14	1273.3	1252.3	2124.0	1832	134	- -	64	1833	2124.9	Tight
1/15	1276.5	1255.5	2129.5	1836	215	1790/1803	64	1840	2129.8	Supercharged. Form press increasing.
2/16	1278.0	1257.0	2134.5	2126	1595	1785/1800.4	63	2200	2133.2	Valid; sample
3/17	1490.0	1469.0	2491.1	0048,2/5	2084	2086/2101.5	70	0109	2486.0	Valid; sample
4/18	1451.5	1430.5	2422.7	0425	2039	2033/2048.2	69	0440	2422.0	Valid; sample

(3760f:2)

ATTACHMENT I

RFT PRESSURE DATA

WELL: WHITING-2

DATE: 17/5/1985

ENGINEER: JEFF ROCHE
PAUL ETTEMA

GAUGE TYPE: RFT/H.P.

PROBE TYPE: LONG NOSE

RFT NO. Run/Seat	DEPTH m MDKB	m TVDSS KB=21m	IHP psia	Time Set	Minimum Flowing Pressure psia	Formation Pressure RFT/HP psig/psia	Temp. °C	Time Retract	FHP psia	Comments
5/19	2756.5	2735.5	4529.5	1504, 17/5	3302.5	4080/3993.3	101.7	1512	4527.4	Computer not calibrating correctly, switch to other computer.
5/20	2756.5	2735.5	4529.0	1541	3272.4	3980/3989.6	103.6	1547	4525.3	Valid test
5/21	2701.5	2680.5	4433.0	1556	2991.0	3828/3850.0	102.5	1614	4437.9	Valid test
5/22	2633	2612	4318.0	1624	969.2	3731/3752.3	100.9	1640	4326.5	Valid test - tight
5/23	2629	2608	4320.5	1645	1969.2	3734/3755.1	100.3	1700	4320	Valid test - tight.
5/24	2617	2596	4301.6	1705	3565.8	3717/3732.9	100.1	1712	4301.6	Valid test - Good K
5/25	2615.5	2594.5	4297	1716	3302	3719/3733.1	99.8	1722	4297	Valid.
5/26	2612.0	2591.0	4292	1727	10	3824/3839	100.1	1739	4294	Very tight; supercharged; p increasing
5/27	2606.5	2585.5	4282	1744	-	-/4213	100.2	1745	4283	No seal
5/28	2606.2	2585.2	4282	1748	10	4000/3955	100.2	1756	4284	Very tight; supercharged; p increasing
5/29	2600.5	2579.5	4271	1800	3695	3709/3722.0	100.1	1806	4271	Valid
5/30	2583.0	2562.0	4242	1815	3701	3703/3718.5	99.8	1824	4245	Valid
5/31	2537.5	2516.5	4166	1829	3580	3578/3592.9	99.6	1843	4170	Valid
5/32	2489	2468	4082	1849	3393	3551/3564	98.1	1905	4090	Valid
5/33	2432	2411	3990	1912	3384	3429/3440.0	96.1	1928	3997	Valid
5/34	2279.5	2258.5	3736	1939	3000	3227/3235.5	94.1	1959	3748	Valid
5/35	2254.0	2233.0	3705	2009	2866	3205/3213.7	93.1	2019	3707	Valid
5/36	2214.0	2193.0	3637	2025	2515	3135/3145.2	92.5	2041	3642	Valid
5/37	2067.0	2046.0	3393	2051	2803	2927/2936.7	90.6	2107	3400	Valid
5/38	1747.5	1726.5	2867	2132	2445	2439/2465.2	84.6	2149	2873	Valid
5/39	1738.0	1717.0	2857	2154	2437	2425/2452.1	83.6	2207	2858	Valid
5/40	1735.0	1714.0	2852	2211	2377	2419/2449.4	83.0	2215	2852	Valid
5/41	1723.5	1702.5	2832	2221	2412	2402/2433.0	82.7	2232	2834	Valid
5/42	1720.0	1699.0	2828	2236	2393	2399/2429.0	82.5	2244	2828	Valid
5/43	1693.0	1672.0	2782	2250	2239	2353/2384.1	82.0	2300	2784	Valid
5/44	1620.5	1599.5	2660	2308	2270	2247/2278.0	80.3	2321	2664	Valid

ATTACHMENT I

RFT PRESSURE DATA

(3760f:3)

WELL: WHITING-2

DATE: 18/5/1985, 23/5/1985

ENGINEER: PAUL ETTEMA
JEFF ROCHE

GAUGE TYPE: RFT

PROBE TYPE: MARTINEAU

RFT NO. Run/Seat	DEPTH m MDKB	m TVDSS KB=21m	IHP psig	Time Set	Minimum Flowing Pressure psig	Formation Pressure RFT/HP psig/psia	Temp. °C	Time Retract	FHP psig	Comments
6/45	2633.0	2612.0	4310	0211,18/5	1880	3740/-	103.4	0223	4315	Very tight - try 2630
6/46	2630.0	2609.0	4313	0229	2006	3744/-	104	0232	4310	As for 6/45 - try 2632.5
6/47	2632.5	2611.5	4312	0235	2250	3744/-	103	0404	4316	Still tight but sample
7/48	2615.5	2594.5	4332	0800	3333	3736/-	103	0930	4299	Valid - tightish - oil
8/49	1538.0	1517.0	2519	1234	2143	2150/-	77	1252	2522	Valid; good perm. samp.
9/50	2360	2339	3878	1555	63	3361/-	99.6	1632	3873	Valid; good perm. samp.
10/51	2256.5	2235.5	3700	1931	2989	3202/-	97	1947	3706	Tight - try 2256.0
10/52	2256.0	2235.0	3706	1950	550	- -	98	1953	3706	V. tight - try 2254.0
10/53	2254.0	2233.0	3701	1956	999	3202/-	98	2006	3702	V. tight - back to 2256.5
10/54	2256.5	2235.5	3705	2008	2922	3204/-	97	2013	3707	Seal fail
10/55	1723.5	1702.5	2830	2025	2367	2416/-	89	2034	2808	Sample taken. Good K.
11/56	2254.0	2233.0	3697	2250	N.A.	- -	97	2255	3695	Tight - try 2256.5
11/57	2256.5	2235.5	3702	2258	N.A.	3208/-	98	2358	3714	Valid; sample
12/58	2617	2596	4337	0328,23/5	3563.5	3716/-	95.1	0455	4322	Valid; sample
13/59	2629	2608	4339	0835	3102	3743/-	98.3	0904	4347	V. tight
13/60	2628.8	2607.8	4345	0908	2586	3736/-	98.3	0917	4344	V. tight
13/61	2629.1	2608.1	4346	0920	2667	3730/-	100.5	1101	4347	Valid but tight
14/62	3111.5	3090.5	5165	1441	4596	4655/4652.81	117	1456	5123.4	EMW=9.70hyd; 8.80 F.P.: Pretest only
14/63	3125.8	3104.8	5152	1503	-	- -	118	1506	5150	- No seal
14/64	3125.6	3104.6	5149	1508	4622	4899/-	118	1513	5142	- Seal failure
14/65	3125.6	3104.6	5143	1515	-	- -		1517	5143	- No seal
14/66	3125.5	3104.5	5144	1522	-	- -	120	1523	5144	- No seal
14/67	3126.0	3105	5143	1527	4856	- -		1529	5135	- No seal
14/68	3126.1	3105.1	5141	1534	3959	4899/-	121	1538	5139	Seal failure
14/69	3053	3032	5025	1545	-	- -	120	1547	5030	- No seal

Note: Formation pressures recorded from strain gauge.

ATTACHMENT I

RFT PRESSURE DATA

(3760f:4)

WELL: WHITING-2

DATE: 23/5/1985,24/5/1985,30/5/1985

ENGINEER: J. ROCHE
R. NEWPORT

GAUGE TYPE: RFT/HP

PROBE TYPE: MARTINEAU
30-05 LONG NOSE (LARGE AREA PACKER)

RFT NO. Run/Seat	DEPTH m MDKB	m TVDSS KB=21	IHP psig	Time Set	Minimum Flowing Pressure psig	Formation Pressure RFT/HP psig/psia	Temp. °C	Time Retract	FHP psig	Comments
14/70	3052.5	3031.5	5030	15:53,23/5	-	-	119	15:55	5030	No seal
14/71	3050.0	3029.0	5025	15:58	-	-	118	15:59	5027	No seal (on shale; damaged seal)
15/72	3125.5	3104.5	5173	18:32	-	-	119	18:33	5172	No seal
15/73	3125.6	3104.6	5152	18:37	-	-	121	18:39	5151	No seal
15/74	3125.7	3104.7	5149	18:42	-	-	122	18:44	5149	No seal
15/75	3125.8	3104.8	3149	18:47	-	-	123	18:49	5149	No seal
15/76	3125.9	3104.9	5147	18:52	3810	-	123	18:53	5024	No seal
15/77	3126.0	3105	5147	18:56	4420	-	123	18:58	5128	No seal
15/78	3126.1	3105.1	5146	19:01	-	-	124	19:02	5139	No seal
15/79	3053	3032	5031	19:06	4741	-	122	19:08	5016	No seal
15/80	3052	3031	5032	19:11	504	4980/-	131	19:17	5030	V.V. tight
15/81	3051.9	3030.9	5030	19:20	-	-	-	19:22	5028	No seal
15/82	3052.2	3031.2	5016	19:26	2759	4940/-	120	21:05	5025	Valid. V.tight sample (supercharged)
16/83	2954.0	2933.0	4866	23:50	3625	4209/-	115.4	01:31	4867	Valid. Tight - fair sample
17/84	2607.0	2586.0	4296	04:33,24/5	246	-	105.5	04:35	4291	V.V. tight
17/85	2606.8	2585.8	4292	04:38	262	-	105.6	04:40	4292	V.V. tight
17/86	2606.6	2585.6	4292	04:43	164	-	105.7	04:45	4294	V.V. tight
17/87	2606.4	2585.4	4293	04:49	216	-	105.7	04:52	4294	V.V. tight
17/88	2607.1	2586.1	4294	04:59	-	-	105.7	05:01	4296	No seal
17/89	2606.0	2585.0	4295	05:04	229	4165/-		05:50	4297	V.V. tight - supercharged. No sample
18/90	3207.5	3186.5	5530	02:01,30/5	4906	4966/-	112.6	03:40	5531	Valid, tight; good sample

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/5)
OBSERVER: P.R. Ettema DATE: 1/5/1985 RUN: 2

	CHAMBER 1 (22.7 lit.)			CHAMBER 2 (10.4 lit.)		
SEAT NO.		2/16			2/16	
DEPTH (m KB)		1278.0			1278.0	
A. RECORDING TIMES						
Tool Set		2126			-	
Pretest Open		2126			-	
Time Open						
Chamber Open		2130			2146	
Chamber Full		2141			2152	
Fill Time (min)		11			6	
Start Build-up		2141			2152	
Finish Build-up		2145			2158	
Build-Up Time (min)		4			6	
Seal Chamber		2145			2158	
Tool Retract		-			-	
Total Time (min)					34	
B. SAMPLE PRESSURES						
IHP		2134.5	psia		-	psia
ISIP		1800.4			1798.6	
Initial Flowing Press.		806.4			700.7	
Final Flowing Press.		616.2			604.5	
Sampling Press. Range						
FSIP		1798.6			1798.9	
FHP		-			2133.2	
Form. Press. (Horner)		-			-	
C. TEMPERATURE						
Depth Tool Reached		1310	m		1310	m
Max. Rec. Temp.						
Time Circ. Stopped	30/4	1845	hrs	30/4	1845	hrs
Time since Circ.		26 1/2	hrs		26 1/2	hrs
Form. Temp. (Horner)						
D. SAMPLE RECOVERY						
Surface Pressure		250	psig		45	psig
Amt Gas		1.25	cu.ft.		0.1	cu.ft.
Amt Oil		Scum	litre		Scum	litre
Amt Water		21750	c.c.		9250	c.c.
Amt Others		-	lit.		-	lit.
E. SAMPLE PROPERTIES						
Gas Composition						
C1		93736	ppm			
C2		9504	ppm			
C3		1873	ppm			
IC4/nC4		1158	ppm			
C5		420	ppm			
C6+		232	ppm			
CO_2/H_2S		TR/8	ppm			
Oil Properties (R.I.)		39.5 °API @ 15	°C		38 °API @ 15	°C
Colour		Rust brown			Dark brown & tan	
Fluorescence		Grey/white			Grey/white	
GOR		-			-	
Water Properties						
Resistivity		0.307 @ 20	°C		0.323 @ 20	°C
NaCl Equivalent		21500	ppm		21000	ppm
Cl-titrated		13300	ppm		14000	ppm
Tritium (3362 Initial)		2350	dpm		2360	dpm
Est. Water Type		Filtrate			Filtrate	
Mud Properties						
Resistivity		0.275 @ 23	°C		0.275 @ 23°	C
NaCl Equivalent		24000	ppm		24000	ppm
Cl - titrated		16000	ppm		16000	ppm
Calibration						
Calibration Press.		-	psig		-	psig
Calibration Temp.		-	°C		-	°C
Hewlett Packard No.		980			980	
Mud Weight		9.5			9.5	
Calc. Hydrostatic						
RFT Chokesize		1 x 0.03			1 x 0.03	

Remarks:

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/6)
OBSERVER: P.R. Ettema DATE: 2/5/1985 RUN: 3

		CHAMBER 1 (22.7 lit.)			CHAMBER 2 (10.4 lit.)	
SEAT NO.		3/17			3/17	
DEPTH (mKB)		1490.0			1490.0	
A. RECORDING TIMES						
Tool Set		0048			-	
Pretest Open		0048			-	
Time Open						
Chamber Open		0052			0102	
Chamber Full		0059			0105	
Fill Time (min)		7			3	
Start Build-up		0059			0105	
Finish Build-up		0101			0106	
Build-Up Time (min)		2			1	
Seal Chamber		0101			0108	
Tool Retract		-			0109	
Total Time (min)		-			21	
B. SAMPLE PRESSURES						
IHP		2491.1	psia		-	psia
ISIP		2101.5			2098.8	
Initial Flowing Press.		684.7			1386.3	
Final Flowing Press.		2050.8			2062.2	
Sampling Press. Range						
FSIP		2098.9			2098.4	
FHP		-			2486.0	
Form. Press. (Horner)		-			-	
C. TEMPERATURE						
Depth Tool Reached		1510	m		1510	m
Max. Rec. Temp.						
Time Circ. Stopped	30/4	1845	hrs	30/4	1845	hrs
Time since Circ.		29 1/2	hrs		29 1/2	hrs
Form. Temp. (Horner)						
D. SAMPLE RECOVERY						
Surface Pressure		55	psig		Preserved	
Amt Gas		3.6	cu.ft.			
Amt Oil		21750	c.c.			
Amt Water		-	c.c.			
Amt Others		-	lit.			
E. SAMPLE PROPERTIES						
Gas Composition						
C1		175247	ppm			
C2		13824	ppm			
C3		7729	ppm			
IC4/nC4		2780	ppm			
C5		911	ppm			
C6+		175	ppm			
CO_2/H_2S		0.3%/160	ppm			
Oil Properties	API/RI	56.4/53 °API @ 15	°C			
Colour		Plum				
Fluorescence		White				
GOR		26	SCF/STB		-	
Water Properties						
Resistivity						
NaCl Equivalent						
Cl-titrated						
Tritium (3209 Initial)						
Est. Water Type						
Mud Properties						
Resistivity		0.275 @ 23	°C		0.275 @ 23	°C
NaCl Equivalent		24000	ppm		24000	ppm
Cl - titrated		16000	ppm		16000	ppm
Calibration						
Calibration Press.		-	psig		-	psig
Calibration Temp.		-	°C		-	°C
Hewlett Packard No.		980			980	
Mud Weight		9.5			9.5	
Calc. Hydrostatic						
RFT Chokesize		1 x 0.03			1 x 0.03	
Remarks:		V.high H_2S		RFS AE 1219		

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/7)
OBSERVER: P.R. Ettema DATE: 2/5/1985 RUN: 4

	CHAMBER 1 (22.7 lit.)			CHAMBER 2 (3.8 lit.)		
SEAT NO.		4/18			4/18	
DEPTH (mKB)		1451.5			1451.5	
A. RECORDING TIMES						
Tool Set		425			-	
Pretest Open		425			-	
Time Open						
Chamber Open		428			436	
Chamber Full		434			438	
Fill Time (min)		6			2	
Start Build-up		434			438	
Finish Build-up		435			439	
Build-Up Time (min)		1			1	
Seal Chamber		435			440	
Tool Retract		-			440	
Total Time (min)		-			15	
B. SAMPLE PRESSURES						
IHP		2422.7	psiA		-	psiA
ISIP		2048.2			2047.9	
Initial Flowing Press.		666.7			2019.3	
Final Flowing Press.		2018.2			2018.2	
Sampling Press. Range						
FSIP		2048.0			2047.9	
FHP		-			2422.0	
Form. Press. (Horner)		-			-	
C. TEMPERATURE						
Depth Tool Reached		1470	m		1470	m
Max. Rec. Temp.						
Time Circ. Stopped	30/4	1845	hrs	30/4	1845	hrs
Time since Circ.		33 1/2	hrs		33 1/2	hrs
Form. Temp. (Horner)						
D. SAMPLE RECOVERY						
Surface Pressure		35	psig		Preserved	
Amt Gas		2	cu.ft.			
Amt Oil		21000	c.c.			
Amt Water		750	c.c.			
Amt Others		Mud scum	lit.			
E. SAMPLE PROPERTIES						
Gas Composition						
C1		52981	ppm			
C2		42624	ppm			
C3		38883	ppm			
IC4/nC4		24558	ppm			
C5		16819	ppm			
C6+		19197	ppm		(abundant C7+)	
CO_2/H_2S	TR/	above 200	ppm			
Oil Properties		55.2 °API @ 15	°C		(from RI, 53°API @ 15°C)	
Colour		Dark brown-tan				
Fluorescence		White				
GOR		15 SCF/STB				
Water Properties						
Resistivity		0.542 @ 21	°C			
NaCl Equivalent		12000	ppm			
Cl-titrated			ppm			
Tritium (ave)		110	dpm			
Est. Water Type		Formation water				
Mud Properties						
Resistivity		0.275 @ °C 23			0.275 @ °C 23	
NaCl Equivalent		24000	ppm		24000	ppm
Cl - titrated		16000	ppm		16000	ppm
Calibration						
Calibration Press.		-	psig		-	psig
Calibration Temp.		-	°C		-	°C
Hewlett Packard No.		980			980	
Mud Weight		9.5			9.5	
Calc. Hydrostatic						
RFT Chokesize		1 x 0.03			1 x 0.03	

Remarks: Rw (separated) = .304 @ 21°C = 22500 NaCl RFS AD 1114
Rw (filtered) = .292 @ 21°C = 23000 NaCl

ATTACHMENT 2

RFT SAMPLE TEST REPORT

(3760f/8)

WELL: Whiting-2
OBSERVER: P.R. Ettema/J. Roche DATE: 18/5/1985 RUN: 6

	CHAMBER 1 (22.7 lit.)			CHAMBER 2 (10.4 lit.)	
SEAT NO.	6/45	6/46	6/47	6/47	
DEPTH (mKB)	2633.0	2630.0	2632.5	2632.5	
A. RECORDING TIMES					
Tool Set	0229	0235	0211	-	
Pretest Open	0229	0235	0211	-	
Time Open					
Chamber Open	Tight	0238	0215	0334	
Chamber Full	-	0238	Tight	0402	
Fill Time (min)	Aband	Not Full	-	Not full	
Start Build-up		0332	Aband	0402	
Finish Build-up		0334		0404	
Build-Up Time (min)		N/A		N/A	
Seal Chamber		0332	0223	0402	
Tool Retract	0232		0225	0404	
Total Time (min)	-	-	-	113	
B. SAMPLE PRESSURES					
IHP	4313	4312	4310	-	psig
ISIP	3744	3744	3740	3628	
Initial Flowing Press.		28	27	169	
Final Flowing Press.		180	51	365	
Sampling Press. Range					
FSIP		3628	3694	3506	
FHP		-	4315	4316	
Form. Press. (Horner)		-	-	-	
C. TEMPERATURE					
Depth Tool Reached					
Max. Rec. Temp.					
Time Circ. Stopped	16/5	2100	hrs	16/5 2100	hrs
Time since Circ.		26	hrs	26	hrs
Form. Temp. (Horner)					
D. SAMPLE RECOVERY					
Surface Pressure		100	psig	250	psig
Amt Gas		2.6	cu.ft.	4.5	cu.ft.
Amt Oil		Scum		500	c.c.
Amt Water		11750	c.c.	2800	c.c.
Amt Others		-	lit.	-	lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1			ppm	293785	ppm
C2			ppm	91852	ppm
C3			ppm	61286	ppm
iC4/nC4		-	ppm	41932	ppm
C5			ppm	19430	ppm
C6+			ppm	843	ppm
CO_2/H_2S			ppm	4%/0	ppm
Oil Properties (R.I./HYD)		39/- °API @ 15	°C	-/38 °API @ 15	°C
Colour		Pale brown		Pale brown	
Fluorescence		Bright blue yellow		Bright blue yellow	
GOR		0		1430	
Water Properties					
Resistivity		0.211 @ 17.5	°C	0.2275 @ 18.5	°C
NaCl Equivalent		36000	ppm	34000	ppm
Cl-titrated		23000	ppm	23000	ppm
Tritium (3170)		3063	dpm	3033	dpm
Est. Water Type in		Filtrate		Filtrate	
Mud Properties					
Resistivity					
NaCl Equivalent					
Cl - titrated		25000	ppm	25000	ppm
Calibration					
Calibration Press.		-	psig	-	psig
Calibration Temp.		-	°C	-	°C
Hewlett Packard No.		980		980	
Mud Weight		9.6		9.6	
Calc. Hydrostatic					
RFT Chokesize		1 x 0.03		1 x 0.03	
Remarks:		Pressures from strain gauge.			
		Very waxy		Very waxy	
		K est = 5md (based on pretest)			

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/9)
OBSERVER: P.R. Ettema/J. Roche DATE: 18/5/1985 RUN: 7

	CHAMBER 1 (22.7 lit.)			CHAMBER 2 (10.4 lit.)	
SEAT NO.	7/48				
DEPTH (mKB)	2615.5				
A. RECORDING TIMES					
Tool Set	0800			-	
Pretest Open	0800			-	
Time Open					
Chamber Open	0802			0849	
Chamber Full	-			-	
Fill Time (min)	Not full			Not full	
Start Build-up	-			-	
Finish Build-up	-			-	
Build-Up Time (min)	0847			-	
Seal Chamber	0847			0930	
Tool Retract	-			0930	
Total Time (min)	45			43	
B. SAMPLE PRESSURES					
IHP	4337	psig		-	psig
ISIP	3736			3733	
Initial Flowing Press.	104			1071 (min. 860)	
Final Flowing Press.	3609			3682	
Sampling Press. Range					
FSIP	3733			3733	
FHP	-			4299	
Form. Press. (Horner)	-			-	
C. TEMPERATURE					
Depth Tool Reached					
Max. Rec. Temp.					
Time Circ. Stopped	16/5 2100	hrs		16/5 2100	hrs
Time since Circ.	35	hrs		35	hrs
Form. Temp. (Horner)	-	°C		-	°C
D. SAMPLE RECOVERY					
Surface Pressure	1650	psig		1800	psig
Amt Gas	36.8	cu.ft.		40.6	cu.ft.
Amt Oil	0	lit.		0	lit.
Amt Water	15750	c.c.		1000	c.c.
Amt Others (Cond)	100	c.c.		200	c.c.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	350208	ppm		357990	ppm
C2	103629	ppm		80077	ppm
C3	21888	ppm		21401	ppm
iC4/nC4	6336	ppm		10137	ppm
C5	1549	ppm		985	ppm
C6+	545	ppm		496	ppm
CO_2/H_2S	12%/0	ppm		14%/0	ppm
Properties (Cond/Emulsion)	44.5 °API @ 15	°C		44.3 °API @ 15	°C
Colour	Straw yellow/white			Straw yellow/white	
Fluorescence	Bright white			Bright white	
GOR	-			-	
Water Properties					
Resistivity	0.208 @ 22	°C		0.210 @ 22	°C
NaCl Equivalent	33000	ppm		33000	ppm
Cl-titrated	23000	ppm		23000	ppm
Tritium (3185)	3010	dpm		3034	dpm
Est. Water Type	Filtrate			Filtrate	
Mud Properties					
Resistivity					
NaCl Equivalent					
Cl - titrated	25000	ppm		25000	ppm
Calibration					
Calibration Press.	-	psig		-	psig
Calibration Temp.	-	°C		-	°C
Hewlett Packard No.	980			980	
Mud Weight	9.6			9.6	
Calc. Hydrostatic					
RFT Chokesize	1/30			1/30	
Remarks:					

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/10)
OBSERVER: P.R. Ettema/J. Roche DATE: 18/5/1985 RUN: 8

	CHAMBER 1 (22.7 lit.)			CHAMBER 2 (10.4 lit.)		
SEAT NO.		8/49				
DEPTH (mKB)		1538.0				
A. RECORDING TIMES						
Tool Set		1234			-	
Pretest Open		1234			-	
Time Open						
Chamber Open		1236			1249	
Chamber Full		1243			1250	
Fill Time (min)		7			4	
Start Build-up		1243			1250	
Finish Build-up		1245			1251	
Build-Up Time (min)		2			1	
Seal Chamber		1246			1251	
Tool Retract		-			1252	
Total Time (min)		12			6	
B. SAMPLE PRESSURES						
IHP		2519	psig		-	psig
ISIP		2150			2149	
Initial Flowing Press.		1960			1970	
Final Flowing Press.		2099			2106	
Sampling Press. Range						
FSIP		2149			2150	
FHP		-			2522	
Form. Press. (Horner)		-			-	
C. TEMPERATURE						
Depth Tool Reached						
Max. Rec. Temp.						
Time Circ. Stopped	16/5	2100	hrs	16/5	2100	hrs
Time since Circ.		39	hrs		39	hrs
Form. Temp. (Horner)		-	°C		-	°C
D. SAMPLE RECOVERY						
Surface Pressure		100	psig		100	psig
Amt Gas		2.7	cu.ft.		1.2	cu.ft.
Amt Oil		21000	c.c.		9200	c.c.
Amt Water		0	c.c.		0	c.c.
Amt Others (Cond)		0	c.c.		0	c.c.
E. SAMPLE PROPERTIES						
Gas Composition						
C1		51750	ppm			ppm
C2		11776	ppm			ppm
C3		9728	ppm			ppm
iC4/nC4		691	ppm			ppm
C5		282	ppm			ppm
C6+		87	ppm			ppm
CO_2/H_2S		-/0	ppm		-/20	ppm
Oil Properties RI/HYD	56.5/59.3 °API @ 15		°C	56.5/59 °API @ 15		°C
Colour	Light Brown			Light Brown		
Fluorescence	Blue/White			Blue/White		
GOR		20			21	
Water Properties						
Resistivity		°C			°C	
NaCl Equivalent			ppm			ppm
Cl-titrated			ppm			ppm
NO3						
Est. Water Type						
Mud Properties						
Resistivity						
NaCl Equivalent						
Cl - titrated		25000	ppm		25000	ppm
Calibration						
Calibration Press.		-	psig		-	psig
Calibration Temp.		-	°C		-	°C
Hewlett Packard No.		980			980	
Mud Weight		9.6			9.6	
Calc. Hydrostatic						
RFT Chokesize		1/30			1/40	

Remarks:

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/11)
OBSERVER: P.R. Ettema/J. Roche DATE: 18/5/1985 RUN: 9

	CHAMBER 1 (22.7 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO.	9750		9750	
DEPTH mKB	2360		2360	
A. RECORDING TIMES				
Tool Set	1555		-	
Pretest Open	1556		-	
Time Open	1557			
Chamber Open	1557		1616	
Chamber Full	1604		1621	
Fill Time	7		3	
Start Build-up	1604		1621	
Finish Build-up	1614		1630	
Build-Up Time	10		9	
Seal Chamber	1614		1631	
Tool Retract	-		1632	
Total Time	19	mins	15 mins	
B. SAMPLE PRESSURES				
IHP	3878	psig	-	psig
ISIP	3361		3361	
Initial Flowing Press.	63		1944	
Final Flowing Press.	3312		1816	
Sampling Press. Range				
FSIP	3361		3353	
FHP	-		3873	
Form. Press. (Horner)	-		-	
C. TEMPERATURE				
Depth Tool Reached				
Max. Rec. Temp.				
Time Circ. Stopped	16/5 2100	hrs	16/5 2100	hrs
Time since Circ.	43	hrs	43	hrs
Form. Temp. (Horner)	-	°C	-	°C
D. SAMPLE RECOVERY				
Surface Pressure	1860	psig	1820	psig
Amt Gas	77.3	cu.ft.	49.3	cu.ft.
Amt Oil	0	lit.	0	lit.
Amt Water	8000	c.c.	1200	c.c.
Amt Others (Cond)	250	c.c.	250	c.c.
E. SAMPLE PROPERTIES				
Gas Composition				
C1	194560	ppm	381338	ppm
C2	80077	ppm	32973	ppm
C3	18483	ppm	12160	ppm
IC4/nC4	14285	ppm	3802	ppm
C5	7373	ppm	1197	ppm
C6+	3373	ppm	446	ppm
CO_2/H_2S	14%/0	ppm	16%/0	ppm
Properties COND (RI/HYD)	47/49 °API @ 15	°C	47/49 °API @ 15	°C
Colour	Clear Yellow		Clear Yellow	
Fluorescence	White/Blue		White/Blue	
GOR	-		-	
Water Properties				
Resistivity	0.210 @ 20	°C	0.223 @ 20	°C
NaCl Equivalent	34000	ppm	32000	ppm
Cl-titrated	23000	ppm	23000	ppm
Tritium (3103)	2956	dpm	2697	dpm
Est. Water Type	Filtrate		Filtrate	
Mud Properties				
Resistivity				
NaCl Equivalent				
Cl - titrated	25000	ppm	25000	ppm
Calibration				
Calibration Press.	-	psig	-	psig
Calibration Temp.	-	°C	-	°C
Hewlett Packard No.	980		980	
Mud Weight	9.6		9.6	
Calc. Hydrostatic			-	
RFT Chokesize	1/30		1/30	
Remarks:	Slow build-up, seal early		Seal early	

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/12)
OBSERVER: P.R. Ettema/J. Roche DATE: 18/5/1985 RUN: 10

	CHAMBER 1 (22.7 lit.)					CHAMBER 2 (10.4 lit.)
SEAT NO.	10/51	10/53	10/52	10/54	10/55	10/55
DEPTH mKB	2256.0	2256.0	2254.0	2256.5	1723.5	1723.5
A. RECORDING TIMES	1	2	3	4	5	
Tool Set	1931	1950	1956	2008	2025	-
Pretest Open	1931	1950	1956	2008	2025	-
Time Open						
Chamber Open	1934	V TIGHT	1959	PACKER	2027	2030
Chamber Full	TIGHT		V TIGHT	FAIL?	2028	2032
Fill Time (min)		ABAND			1	2
Start Build-up	ABAND		ABAND	ABAND	CHAMB	2037
Finish Build-up				-	ALREAD	2033
Build-Up Time (min)				-	FULL?	1
Seal Chamber	1946		2006	2012	2029	2033
Tool Retract	1947	1953	2006	2013	-	2034
Total Time (min)	16	3	10	5	4	4
B. SAMPLE PRESSURES psig						
IHP	3700	3706	3702	3705	2830	psig
ISIP	3202		3202	3204	2416	2404
Initial Flowing Press.	61		81	3204	2416	2404
Final Flowing Press.	138				2407	2276
Sampling Press. Range						
FSIP	3105					2400
FHP	3706		3702	3707	2830	2808
Form. Press. (Horner)		-			-	

	Chamber 1		Chamber 2	
C. TEMPERATURE				
Depth Tool Reached				
Max. Rec. Temp.				
Time Circ. Stopped	16/5/85; 2100	hrs	16/5/85; 2100	hrs
Time since Circ.	46	hrs	46	hrs
Form. Temp. (Horner)	-	°C	-	°C
D. SAMPLE RECOVERY				
Surface Pressure	1000	psig	300	psig
Amt Gas	5.6	cu.ft.	0.7	cu.ft.
Amt Oil	0	lit.	0	lit.
Amt Water	0	c.c.	9500	c.c.
Amt Others (mud)	22.4	lit.	0	lit.
E. SAMPLE PROPERTIES				
Gas Composition	Gas From 2256.5		Gas From 1723.5	
C1	225690	ppm	338534	ppm
C2	68301	ppm	82432	ppm
C3	33075	ppm	25293	ppm
iC4/nC4	11981	ppm	21427	ppm
C5	5210	ppm	9856	ppm
C6+	2778	ppm	2207	ppm
CO_2/H_2S	4%/0	ppm	1%/0	ppm
Oil Properties				
Colour HYD				
Fluorescence				
GOR				
Water Properties				
Resistivity		°C		°C
NaCl Equivalent		ppm	13000	ppm
Cl-titrated		ppm		ppm
Tritium (3200)		ppm	1357	Dpm
Est. Water Type	Mud		Formation Water	
Mud Properties				
Resistivity				
NaCl Equivalent				
Cl - titrated	23000	ppm	23000	ppm
Calibration				
Calibration Press.	-	psig	-	psig
Calibration Temp.	-	°C	-	°C
Hewlett Packard No.	980		980	
Mud Weight	9.6		9.6	
Calc. Hydrostatic				
RFT Chokesize	1/30		1/30	

Remarks:

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/13)
OBSERVER: P.R. Ettema/J. Roche DATE: 18/5/1985 RUN: 11

	CHAMBER 1 (22.7 lit.)			CHAMBER 2 (10.4 lit.)	
SEAT NO.	11/56	11/57			
DEPTH mKB	2254	2256.5		2256.5	
A. RECORDING TIMES					
Tool Set	2250	2258		-	
Pretest Open	2251	2258		-	
Time Open					
Chamber Open	2252	2300		2330	
Chamber Full	TIGHT	NOT FULL		2336	
Fill Time (min)				6	
Start Build-up	ABAND			2336	
Finish Build-up				2357	
Build-Up Time (min)				21	
Seal Chamber	2254	2328		2357	
Tool Retract	2255	-		2358	
Total Time (min)	5	30		27	
B. SAMPLE PRESSURES					
IHP	3697	3702	psig	-	psig
ISIP	3203	3209		3208	
Initial Flowing Press.	27	194		533	
Final Flowing Press.	57	2483		998	
Sampling Press. Range					
FSIP		3208		3213	
FHP	3695	-		3714	
Form. Press. (Horner)	-	-		-	
C. TEMPERATURE					
Depth Tool Reached					
Max. Rec. Temp.					
Time Circ. Stopped		16/5/85; 2100	hrs	16/5/85; 2100	hrs
Time since Circ.		50	hrs	50	hrs
Form. Temp. (Horner)	-		°C	-	°C
D. SAMPLE RECOVERY					
Surface Pressure		1500	psig	1750	psig
Amt Gas		68.5	cu.ft.	45.3	cu.ft.
Amt Oil		0	lit.	0	lit.
Amt Water		6700	c.c.	1500	c.c.
Amt Others (Cond)		Film	lit.	Film	lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1		354099	ppm	365773	ppm
C2		75366	ppm	75366	ppm
C3		27238	ppm	24320	ppm
IC4/nC4		9446	ppm	9216	ppm
C5		3379	ppm	3590	ppm
C6+		1091	ppm	1388	ppm
CO_2/H_2S		12%/0	ppm	15%/TR	ppm
Properties COND		°API @ 15	°C	RI 50 °API @ 15	°C
Colour				Clear	
Fluorescence				Bright Blue/White	
GOR				-	
Water Properties					
Resistivity		0.218 @ 17 °C		0.244 @ 13	°C
NaCl Equivalent		36000	ppm	36000	ppm
Cl-titrated		23000	ppm	23000	ppm
Tritium (3142)		2907	Dpm	2851	Dpm
Est. Water Type	Filtrate			Filtrate	
Mud Properties					
Resistivity					
NaCl Equivalent					
Cl - titrated		23000	ppm	23000	ppm
Calibration					
Calibration Press.		-	psig	-	psig
Calibration Temp.		-	°C	-	°C
Hewlett Packard No.		980		980	
Mud Weight		9.6		9.6	
Calc. Hydrostatic					
RFT Chokesize		1/30		1/30	
Remarks:	Tight				

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/14)
OBSERVER: J. Roche DATE: 23/5/1985 RUN: 12

	CHAMBER 1 (12 gal.)			CHAMBER 2 (2 3/4 gal.)		
SEAT NO.	58			58		
DEPTH mKB	2617			2617		
A. RECORDING TIMES						
Tool Set	0328					
Pretest Open	0328					
Time Open	0330					
Chamber Open	0330			0426		
Chamber Full	0349			0430		
Fill Time (min)	19			4		
Start Build-up	0349			0431		
Finish Build-up						
Build-Up Time (min)	0425					
Seal Chamber	0425			0454		
Tool Retract				0455		
Total Time (min)	57			29		
B. SAMPLE PRESSURES						
IHP	4334		psig	-		psig
ISIP	3716			3713		
Initial Flowing Press.	75			1738		
Final Flowing Press.	1462			1735		
Sampling Press. Range						
FSIP	3713			3718		
FHP		-		4322		
Form. Press. (Horner)	-	-		-		
C. TEMPERATURE						
Depth Tool Reached						
Max. Rec. Temp.	95°C					
Time Circ. Stopped	14:45 - 22/5			14:45 - 22/5		
Time since Circ.	12:55		hrs	13:51		hrs
Form. Temp. (Horner)	-		°C	-		°C
D. SAMPLE RECOVERY						
Surface Pressure		1900	psig		1900	psig
Amt Gas		228	cu.ft.		58.2	cu.ft.
Amt Oil		0	lit.		0	lit.
Amt Water - Filtrate		7000	cc		580	cc
Amt Others (Cond)		1100	cc		270	cc
E. SAMPLE PROPERTIES						
Gas Composition						
C1		561971	ppm		632217	ppm
C2		80936	ppm		72417	ppm
C3		35225	ppm		24657	ppm
iC4/nC4		9062	ppm		4648	ppm
C5		5811	ppm		2620	ppm
C6+		1104	ppm		607	ppm
CO_2/H_2S		2%/0	ppm		12%/-	ppm
Properties RI/HYD	45/49 °API @ 15		°C	45/52 °API @ 15		°C
Colour		Clear		Clear		
Fluorescence	Bright White			Bright White		
GOR					-	
Water Properties						
Resistivity		0.217 @ 19.5	°C		0.251 @ 18.5°C	
NaCl Equivalent		33000	ppm		27800	ppm
Cl-titrated		21000	ppm		18000	ppm
Tritium (3255)		2954	Dpm		2458	Dpm
Est. Water Type	Filtrate			Filtrate		
Mud Properties						
Resistivity						
NaCl Equivalent						
Cl - titrated		22000	ppm		22000	ppm
Calibration						
Calibration Press.		-	psig		-	psig
Calibration Temp.		-	°C		-	°C
Hewlett Packard No.						
Mud Weight		9.5			9.5	
Calc. Hydrostatic						
RFT Chokesize						
Remarks:	Clear Amber			Clear Amber		

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/15)
OBSERVER: J. Roche DATE: 23/5/1985 RUN: 13

	CHAMBER 1 (12 gal.)				CHAMBER 2 (2 3/4 gal.)	
SEAT NO.	59	60	61		61	
DEPTH mKB	2629	2628.8	2629.1		2629.1	
A. RECORDING TIMES						
Tool Set	0835	0908	0920			
Pretest Open	0835	0908	0920			
Time Open						
Chamber Open	0337	0910	0921		1012	
Chamber Full	ABAND	ABAND	NOT FULL		1045	
Fill Time (min)			V TIGHT		33	
Start Build-up					1045	
Finish Build-up					1057	
Build-Up Time (min)					N/A	
Seal Chamber	0903	0916	1007		1057	
Tool Retract	0904	0917			1101	
Total Time (min)	29	8	47		45 (129)	92 TOTAL
B. SAMPLE PRESSURES						
THP	4339	4345	4344		-	psig
ISIP	3743	3737	3730		3689	
Initial Flowing Press.	26	46	48		112	
Final Flowing Press.	79	55	184		998	
Sampling Press. Range					1529	
FSIP	3550	3480	3689		3692	
FHP	4347	4344			4347	
Form. Press. (Horner)	-	-			-	
C. TEMPERATURE						
Depth Tool Reached						
Max. Rec. Temp.	100.5					
Time Circ. Stopped	14:45 - 22/5				14:45 - 22/5	
Time since Circ.	18:46			hrs	19:37	hrs
Form. Temp. (Horner)	-			°C	-	°C
D. SAMPLE RECOVERY						
Surface Pressure		100		psig	800	psig
Amt Gas				cu.ft.	10.6	cu.ft.
Amt Oil		500		c.c.	2000	c.c.
Amt Water - Filtrate		1500		c.c.	4250	c.c.
Amt Others						
E. SAMPLE PROPERTIES						
Gas Composition						
C1				ppm	52826	ppm
C2				ppm	76212	ppm
C3				ppm	9279	ppm
IC4/nC4				ppm	7588	ppm
C5				ppm	1766	ppm
C6+				ppm	17.66	ppm
CO_2/H_2S				ppm	5%	ppm
Properties RI/HYD		40 °API @ 15		°C	42 °API @ 15	°C
Colour		Dark Brown			Dark Yellow Brown	
Fluorescence		Bright Blue Yellow			Bright Blue Yellow	
GOR					-	
Water Properties						
Resistivity		0.222 @		22°C	0.271 @	30°C
NaCl Equivalent		32000		ppm	25416	ppm
Cl-titrated		20000		ppm	19000	ppm
Tritium (3255 Dpm)		2960		Dpm	2729	Dpm
Est. Water Type						
Mud Properties						
Resistivity						
NaCl Equivalent						
Cl - titrated		22000		ppm	22000	ppm
Calibration						
Calibration Press.		-		psig	-	psig
Calibration Temp.		-		°C	-	°C
Hewlett Packard No.						
Mud Weight		9.5			9.5	
Calc. Hydrostatic						
RFT Chokesize						

Remarks:

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/16)
OBSERVER: J. Roche DATE: 23/5/1985 RUN: 14

	CHAMBER 1 (12 gal.)				CHAMBER 2 (2 3/4 gal.)	
SEAT NO.	63	65	68			
DEPTH mKB	3125.8	3125.6	3126.1			
A. RECORDING TIMES						
Tool Set	1503	1508	1534			
Pretest Open	1503	1508	1534			
Time Open	1503	1512	1536			
Chamber Open						
Chamber Full						
Fill Time						
Start Build-up						
Finish Build-up						
Build-Up Time						
Seal Chamber						
Tool Retract						
Total Time						
B. SAMPLE PRESSURES						
THP	5152		5141		-	psig
ISIP		4899	4899			
Initial Flowing Press.		56	40			
Final Flowing Press.						
Sampling Press. Range						
FSIP			51			
FHP		5142	5139			
Form. Press. (Horner)	-	-			-	
C. TEMPERATURE						
Depth Tool Reached						
Max. Rec. Temp.						
Time Circ. Stopped						hrs
Time since Circ.						hrs
Form. Temp. (Horner)	-			°C	-	°C
D. SAMPLE RECOVERY						
Surface Pressure				psig		psig
Amt Gas				cu.ft.		cu.ft.
Amt Oil				lit.		lit.
Amt Water - Filtrate				c.c.		c.c.
Amt Others (Cond)						
E. SAMPLE PROPERTIES						
Gas Composition						
C1				ppm		ppm
C2				ppm		ppm
C3				ppm		ppm
IC4/nC4				ppm		ppm
C5				ppm		ppm
C6+				ppm		ppm
CO_2/H_2S				ppm		ppm
Properties RI/HYD		°API @		°C	°API @	°C
Colour						
Fluorescence						
GOR					-	
Water Properties						
Resistivity		@		°C	@	°C
NaCl Equivalent				ppm		ppm
Cl-titrated				ppm		ppm
Tritium				Dpm		Dpm
Est. Water Type						
Mud Properties						
Resistivity						
NaCl Equivalent						
Cl - titrated				ppm		ppm
Calibration						
Calibration Press.			-	psig	-	psig
Calibration Temp.			-	°C	-	°C
Hewlett Packard No.						
Mud Weight						
Calc. Hydrostatic						
RFT Chokesize						

Remarks: All attempts at sampling unsuccessful in Run 14
2 valid pretests obtained

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/17)
OBSERVER: J. Roche/R. Newport DATE: 23/5/1985 RUN: 15

	CHAMBER 1 (12 lit.)		CHAMBER 2 (2 3/4 lit.)	
SEAT NO.	82		82	
DEPTH mKB	3052.2		3052.2	
A. RECORDING TIMES				
Tool Set	1926			
Pretest Open	1926			
Time Open				
Chamber Open	1929		20:20	
Chamber Full	20:16		21:05	
Fill Time (min)				
Start Build-up				
Finish Build-up				
Build-Up Time (min)				
Seal Chamber	20:16		21:05	
Tool Retract			21:11	
Total Time (min)	00:50		00:51	
B. SAMPLE PRESSURES				
THP	5016		-	psig
ISIP	4940 (Supercharged)		4350	
Initial Flowing Press.	37		41	
Final Flowing Press.	152		95	
Sampling Press. Range	15		54	
FSIP	4350		4387	
FHP			5025	
Form. Press. (Horner)	-	-	-	
C. TEMPERATURE				
Depth Tool Reached	3052.2	m		m
Max. Rec. Temp.	120.2	°C		°C
Time Circ. Stopped	14:45 - 22/5		14:45 - 22/5	
Time since Circ.	29:41	hrs	30:30	hrs
Form. Temp. (Horner)	-	°C	-	°C
D. SAMPLE RECOVERY				
Surface Pressure		psig		psig
Amt Gas		cu.ft.		cu.ft.
Amt Oil		lit.		lit.
Amt Water	7.5	lit.	5.25	c.c.
Amt Others (Cond)				
E. SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm		ppm
C3		ppm		ppm
IC4/nC4		ppm		ppm
C5		ppm		ppm
C6+		ppm		ppm
CO_2/H_2S		ppm		ppm
Properties RI/HYD	°API @	°C	°API @	°C
Colour				
Fluorescence				
GOR			-	
Water Properties				
Resistivity	0.238 @	25°C	0.213 @	23°C
NaCl Equivalent	29333	ppm	33250	ppm
Cl-titrated	18000	ppm	22000	ppm
Tritium (3035 Dpm)	2847	Dpm	3245	Dpm
Est. Water Type				
Mud Properties				
Resistivity				
NaCl Equivalent				
Cl - titrated	22000	ppm	22000	ppm
Calibration				
Calibration Press.	-	psig	-	psig
Calibration Temp.	-	°C	-	°C
Hewlett Packard No.				
Mud Weight	9.5		9.5	
Calc. Hydrostatic				
RFT Chokesize				
Remarks:	Very tight - (Chamber closed prematurely)		Very tight (Chamber closed prematurely)	

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/18)
OBSERVER: R. Newport DATE: 23/5/1985 - 24/5/1985 RUN: 16

	CHAMBER 1 (12 gal.)		CHAMBER 2 (2 3/4 lit.)	
SEAT NO.	83		83	
DEPTH mKB	2954		2954	
A. RECORDING TIMES				
Tool Set	23:50			
Pretest Open	23:50			
Time Open	00:03			
Chamber Open	23:54		00:43	
Chamber Full	00:22 24/5		00:46	
Fill Time			00:03	
Start Build-up	00:22		00:46	
Finish Build-up			01:27	
Build-Up Time				
Seal Chamber	00:42		01:27	
Tool Retract			01:31	
Total Time	00:52		00:48	
B. SAMPLE PRESSURES				
THP	4866		-	psig
ISIP	4209		4141	
Initial Flowing Press.	56		555	
Final Flowing Press.	1448		681	
Sampling Press. Range	1392		126	
FSIP	4141		4107	
FHP			4867	
Form. Press. (Horner)	-	-	-	
C. TEMPERATURE				
Depth Tool Reached	2454	m		m
Max. Rec. Temp.	115.4	°C		°C
Time Circ. Stopped	14:45 - 22/5	hrs	14:45 - 22/5	hrs
Time since Circ.	33:15	hrs	34:08	hrs
Form. Temp. (Horner)	-	°C	-	°C
D. SAMPLE RECOVERY				
Surface Pressure	810	psig	1800	psig
Amt Gas	56.55	cu.ft.	37.5	cu.ft.
Amt Oil		lit.		lit.
Amt Water	18.5	lit.	4.0	lit
Amt Others (Cond)	0.30		0.20	
E. SAMPLE PROPERTIES				
Gas Composition				
C1	632217	ppm	642755	ppm
C2	68157	ppm	72417	ppm
C3	22896	ppm	24657	ppm
IC4/nC4	3058	ppm	3625	ppm
C5	299	ppm	454	ppm
C6+	69	ppm	76	ppm
CO_2/H_2S	2%	ppm	7%	ppm
Properties RI/HYD	50 °API @ 15	°C	51 °API @ 15	°C
Colour	Light Pink		Clear	
Fluorescence	Bright White		Bright White	
GOR			-	
Water Properties				
Resistivity	0.184 @ 14°C		0.218 @ 16°C	
NaCl Equivalent	39250	ppm	32750	ppm
Cl-titrated		ppm		ppm
Tritium (3218 Dpm)	3030	Dpm	2780	Dpm
Est. Water Type				
Mud Properties				
Resistivity				
NaCl Equivalent				
Cl - titrated	22000	ppm	22000	ppm
Calibration				
Calibration Press.	-	psig	-	psig
Calibration Temp.	-	°C	-	°C
Hewlett Packard No.				
Mud Weight	9.5		9.5	
Calc. Hydrostatic				
RFT Chokesize				
Remarks:	Sealed Chamber Prematurely			

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/19)
OBSERVER: R. Newport DATE: 24/5/1985 RUN: 17

	CHAMBER 1 (12 gal.)		CHAMBER 2 (2 3/4 lit)	
SEAT NO.	89			
DEPTH mKB	2606.0			
A. RECORDING TIMES				
Tool Set				
Pretest Open	05:04			
Time Open				
Chamber Open	05:21			
Chamber Full				
Fill Time				
Start Build-up				
Finish Build-up				
Build-Up Time				
Seal Chamber	05:41			
Tool Retract	05:49			
Total Time				
B. SAMPLE PRESSURES				
IHP	4295		-	psig
ISIP	4165			
Initial Flowing Press.	32			
Final Flowing Press.	38			
Sampling Press. Range	6			
FSIP				
FHP	4297			
Form. Press. (Horner)	-	-	-	
C. TEMPERATURE				
Depth Tool Reached		m		m
Max. Rec. Temp.		°C		°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs		hrs
Form. Temp. (Horner)	-	°C	-	°C
D. SAMPLE RECOVERY				
Surface Pressure		psig		psig
Amt Gas		cu.ft.		cu.ft.
Amt Oil		lit.		lit.
Amt Water	1.5	lit.		cc lit.
Amt Others (Cond)				
E. SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm		ppm
C3		ppm		ppm
IC4/nC4		ppm		ppm
C5		ppm		ppm
C6+		ppm		ppm
CO_2/H_2S		ppm		ppm
Properties RI/HYD	°API @	°C	°API @	°C
Colour				
Fluorescence				
GOR			-	
Water Properties				
Resistivity	0.418 @	20°C	@	°C
NaCl Equivalent	16250	ppm		ppm
Cl-titrated		ppm		ppm
Tritium (3213 Dpm)	1300	Dpm		Dpm
Est. Water Type				
Mud Properties				
Resistivity				
NaCl Equivalent				
Cl - titrated		ppm		ppm
Calibration				
Calibration Press.	-	psig	-	psig
Calibration Temp.	-	°C	-	°C
Hewlett Packard No.				
Mud Weight				
Calc. Hydrostatic				
RFT Chokesize				
Remarks:	Very tight			

ATTACHMENT 2

RFT SAMPLE TEST REPORT

WELL: Whiting-2 (3760f/20)
OBSERVER: R. Newport DATE: 30/5/1985 RUN: 18

	CHAMBER 1 (45.3 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO. 90	90		90	
DEPTH mKB	3207.5		3207.5	
A. RECORDING TIMES				
Tool Set	02:01			
Pretest Open	02:01			
Time Open				
Chamber Open	02:05/02:08/02:09		03:04	
Chamber Full			03:22	
Fill Time			00:18	
Start Build-up			03:22	
Finish Build-up			03:37	
Build-Up Time			00:15	
Seal Chamber	03:03		03:39	
Tool Retract			03:40	
Total Time hr.			01:39	
B. SAMPLE PRESSURES				
IHP	5530		-	psig
ISIP	58		4959	
Initial Flowing Press.	16		55	
Final Flowing Press.	220 (Prem. Shut In)		4960	
Sampling Press. Range			4905	
FSIP	4959		4962	
FHP			5531	
Form. Press. (Horner)	-	-	-	
C. TEMPERATURE				
Depth Tool Reached	3207.5	m	3207.5	m
Max. Rec. Temp.	112.6	°C	120.4	°C
Time Circ. Stopped	01:57 29/05	hrs	01:57 24/5	hrs
Time since Circ.	24:00	hrs	25:30	hrs
Form. Temp. (Horner)	-	°C	-	°C
D. SAMPLE RECOVERY				
Surface Pressure	less than 100	psig	300	psig
Amt Gas	1.0	cu.ft.	0.20	cu.ft.
Amt Oil				
Amt Water	34.0	lit.	9.0	lit.
Amt Others (Cond)				
E. SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm		ppm
C3		ppm		ppm
iC4/nC4		ppm		ppm
C5		ppm		ppm
C6+		ppm		ppm
CO_2/H_2S		ppm		ppm
Properties RI/HYD	°API @	°C	°API @	°C
Colour				
Fluorescence				
GOR			-	
Water Properties				
Resistivity	0.209 @ 27°C		0.187 @ 23°C	
NaCl Equivalent	34250	ppm	38000	ppm
Cl-titrated	3000	ppm	2930	ppm
Tritium	FILTRATE		FILTRATE	
Est. Water Type				
Mud Properties				
Resistivity				
NaCl Equivalent				
Cl - titrated	22000	ppm	22000	ppm
Calibration				
Calibration Press.	-	psig	-	psig
Calibration Temp.	-	°C	-	°C
Hewlett Packard No.				
Mud Weight				
Calc. Hydrostatic				
RFT Chokesize				
Remarks:	Shut Chamber to determine if probe blocked - was OK Shut-In Prem. Slow Build Up		Chamber full (filled as fluid)	

FIGURE 1 WHITING - 2 RFT PRESSURES: TOP OF LATROBE AND P OIL SANDS

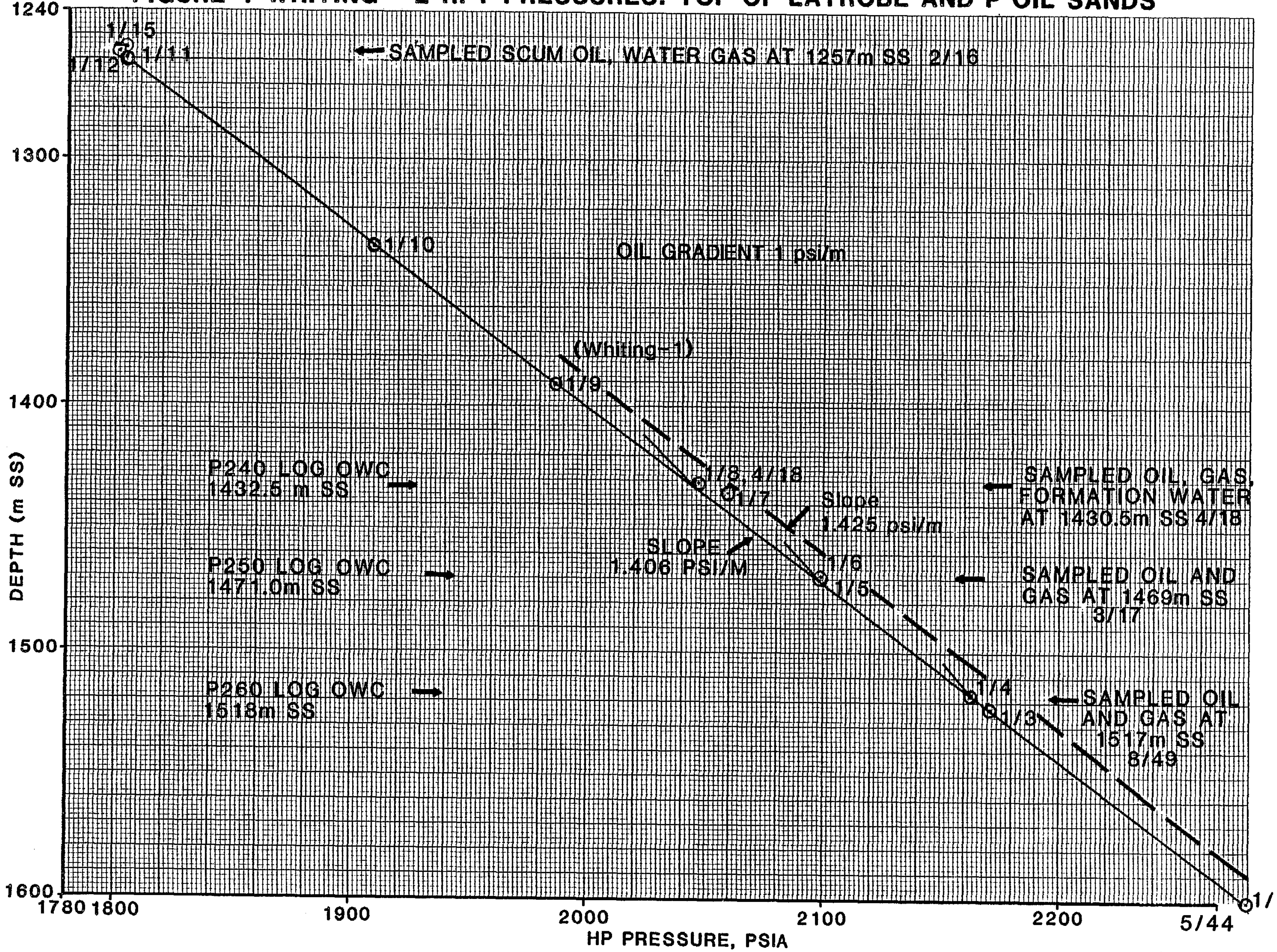
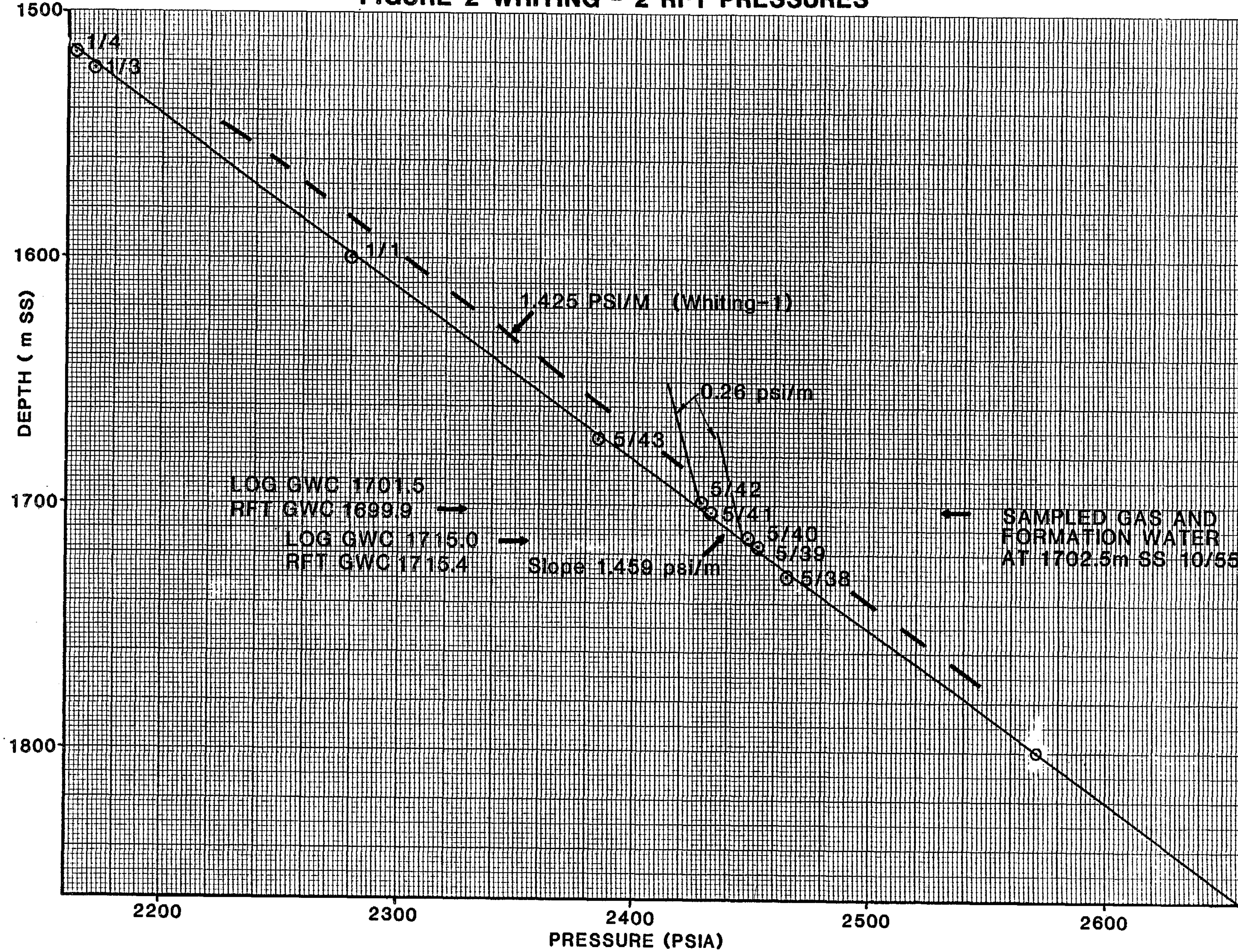
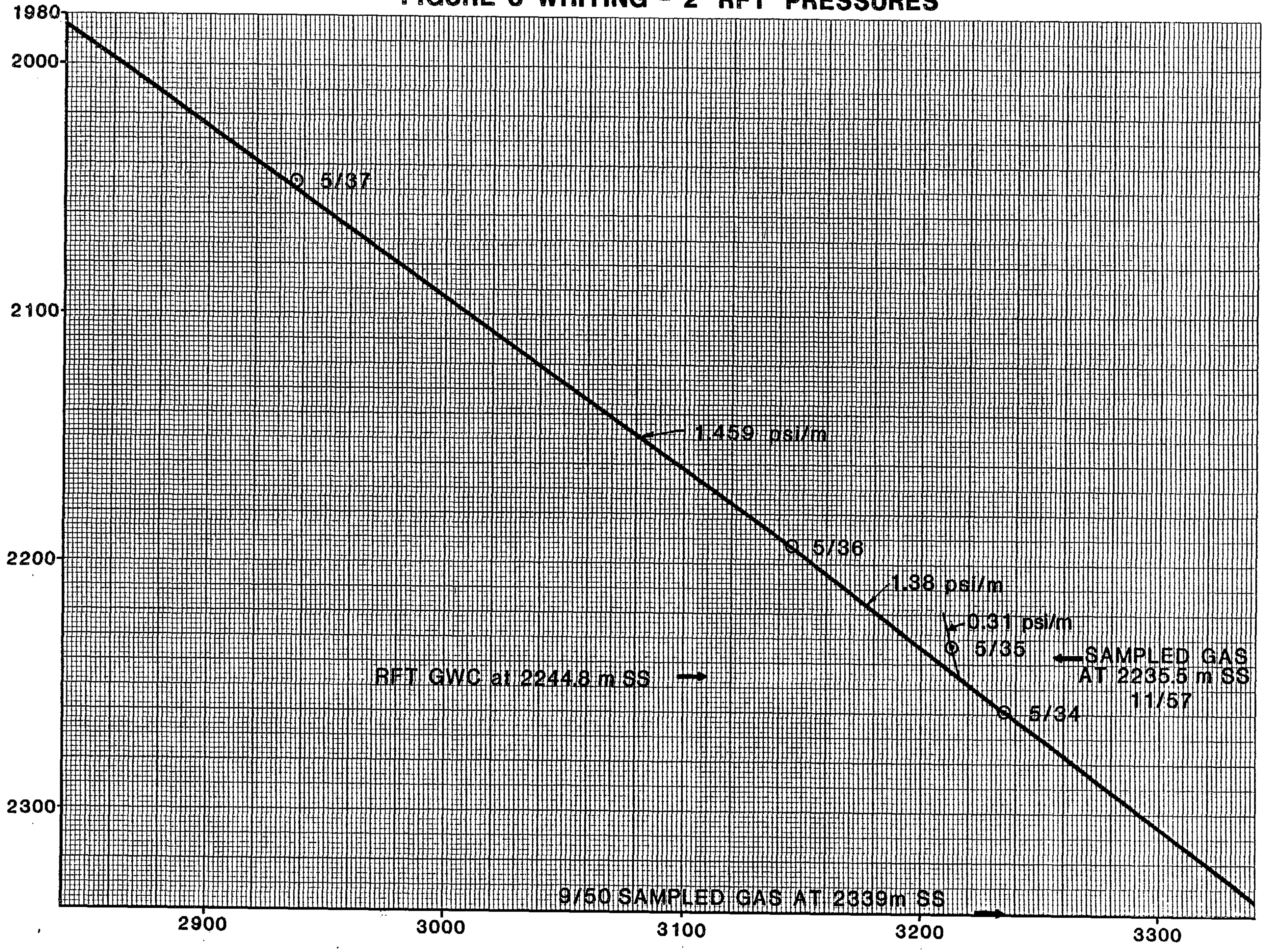


FIGURE 2 WHITING - 2 RFT PRESSURES



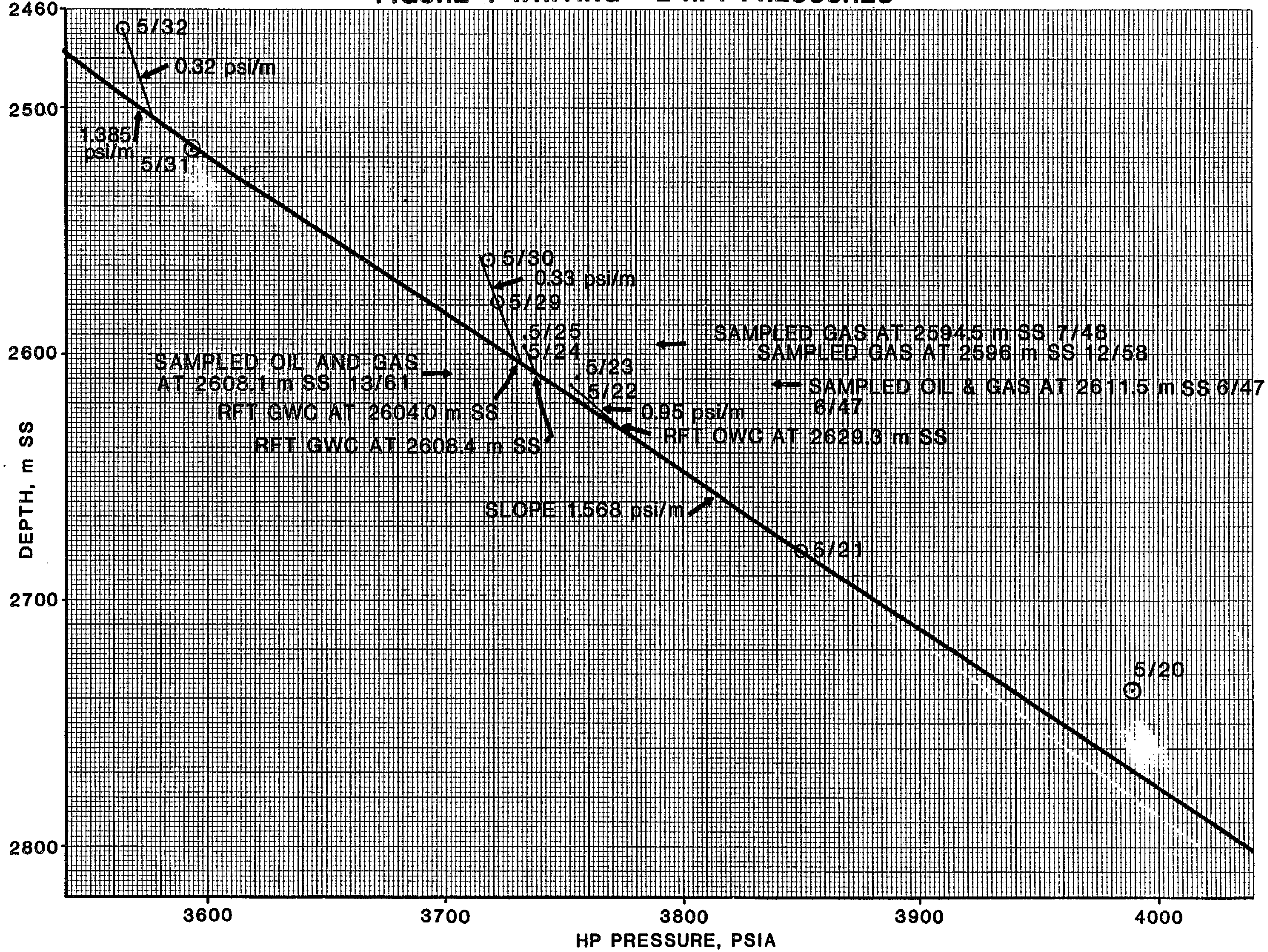
46 1516

FIGURE 3 WHITING - 2 RFT PRESSURES



K+E 10 X 10 TO THE CENTIMETER 18 X 25 CM. KEUFFEL & ESSER CO. MADE IN U.S.A. 46 1516

FIGURE 4 WHITING - 2 RFT PRESSURES



APPENDIX 5

APPENDIX 5

APPENDIX 5

WHITING NO. 2

PRODUCTION TESTS NOS. 1, 2 and 3

December, 1985
Russell Langusch

4055f

WHITING NO. 2 WELL

PRODUCTION TESTS NOS. 1, 2 & 3 REPORT

Intervals tested:

Test No. 1/1A	3315.2 - 3325.1m KB
Test No. 2/2A	3123.5 - 3129m KB
Test No. 3/3A	2627 - 2634m KB

13-27 June, 1985

xxXxxXxxXxx

TABLE OF CONTENTS

A. SUMMARY

Three production tests were conducted in Whiting-2 exploration well over the intervals 3315.2-3325.1m KB, 3123.5-3129m KB and 2627-2634m KB during June 13-27, 1985.

The main objectives of the test program were:

(i) To determine the fluid content and productive potential of the 9m sand interval 3316.5-3325.5m KB.

(ii) To determine the fluid content and productive potential of the 5.5m sand from 3123.5-3129m KB.

(iii) To determine the productive potential of the proven 7m oil bearing sand from 2627-2634m KB.

The main results of the tests were:

(i) The interval 3315.2-3325.1m KB, interpreted from wireline logs as a possible gas sand, average porosity 12.5%, water saturation 30%, flowed 1.46kL (9.2 bbls) of filtrate and a trace of gas at an average rate of 1.35kL/D (8.5 STB/D). No formation fluids were recovered at surface after a total 26:03 hour flow period. The productivity index was estimated at 0.005 STB/D/psi.

(ii) The interval 3123.5-3129m KB, interpreted as possible oil sand, average porosity 12.5%, water saturation 16%, flowed 1.3kL (8.2 bbls) of filtrate at an average rate of 1.64kL/D (10.3 STB/D). No formation fluids were recovered at surface after a total 19:05 hour flow period. The productivity index was estimated at 0.007 STB/D/psi.

(iii) The interval 2627-2634m KB, interpreted as oil sand, average porosity 14%, water saturation 60%, flowed 31.0kL (195 bbls) of waxy 40°API oil with a GOR of 267 std m^3/kL (1500 SCF/STB) and a trace of water, at an average rate of 37.2kL/D (234 STB/D). Buildup analysis indicated a permeability of 3.5 md, assuming a net contributing sand thickness of 6.5m. Skin factor of +2.5 was calculated from buildup data indicating minor near wellbore damage with a damage ratio of 1.36. The radius of investigation of the test during the buildup period of 12:00 hours was 81.8m.

Tables 1, 2 and 3 summarise the respective test results. More detailed test data are included in the Appendix.

The main conclusions of the tests were:

(i) The interval perforated for the first test (3315.2-3325.1m KB) could be classified as a tight, very low permeability nonproductive gas zone. However, test results did not conclusively confirm log interpretations.

(ii) The interval for the second test (3123.5-3129m KB) could also be classified as a very low permeability non-productive zone, however test results were inconclusive in validating log analysis of a possible oil zone.

(iii) The interval for the third test (2627-2634m KB) in a proven oil sand was confirmed, flowing 40°API gravity oil at a rate of 37.2 kL/D (234 STB/D). Permeability appears to be low (about 3.5 md).

B. BACKGROUND

Mudlog, electric log analysis and RFT testing for Whiting-2 indicated four oil and numerous gas zones over the interval 1270-3120m KB. Below 3120m KB log analysis had indicated all sands to be hydrocarbon bearing, although the poor hole conditions at the time of logging, the absence of a clear water zone and the failure to recover successful RFT samples in this hole section had not confirmed this interpretation.

A test program was designed to evaluate two possible hydrocarbon sands in this lower section of the well below 3120m KB, and also to evaluate a proven oil sand at 2627-2634m KB.

C. TEST PROCEDURE

Test No. 1 (Perforated Interval 3315.2-3325.1m KB)

The interval was perforated with approximately 500 psi overbalance using 4 inch end-loaded Hyperjet 2 casing guns, shot density 13 shots per metre (4 spf), 90° phasing at 09:42-09:46 on 13/6/85. The test string was run and the tubing displaced with nitrogen and diesel, then stabbed into the packer.

The well was opened for initial flow by bleeding off the nitrogen pressure starting at 10:02 on 15/6/85 at a steadily decreasing rate. A slight blow was observed in the bubble bucket throughout the flow period. An estimated 0.84 kL (5.3 bbls) of cumulative fluid was produced into the wellbore in the 13:26 hour flow period. The well influx rate was considered to have ceased at 13:30 on 15/6/85. No formation fluid was recovered at surface during this flow period.

Test No. 1A

To improve well productivity an attempt was made to reperforate the test interval with a $2^1/_8$" Enerjet through-tubing gun with about 2000 psi underbalance at 23:28 on 15/6/85. Subsequent events proved this reperforation was unsuccessful. The PLT tool was run and the well influx rate estimated at less than 1.59 kL/D (10 STB/D) throughout the test with the flow ending at 12:05 on 16/6/85 (12:37 hour flow period) when the test string was pressured up to 4500 psig to pull out of the packer. No loss of fluid to the formation was observed.

Reverse circulation of the string produced diesel, filtrate, a small amount of gas and a trace of condensate recovered at surface. Total cumulative fluid influx during the second flow period was estimated at 0.62 kL (3.9 bbls). The gas contained 7-10% CO_2. Tritium levels in the produced water were between 1972-2093 dpm (compared with 3050 dpm in mud while drilling). Water resistivity was measured 0.791 ohm-m @ 20°C (8000 ppm NaCl, 4848 ppm Cl^-). Six samples of filtrate and mud were retained.

On pulling the test string, the unfired Schlumberger through-tubing perforating gun was found stuck in the BH assembly. Attempts were made to recover downhole fluid samples from the test string during both flow periods, however neither was successful.

Test No. 2 (Perforated Interval 3123.5-3129m KB)

The second test interval was perforated with 500 psig underbalance with $2\ ^{1}/_{8}$" Enerjet guns at 13:38 on 18/6/85 and opened to flow at 15:10. The nitrogen cushion was bled down to atmospheric pressure after 40 minutes with no indications of flow at bubble hose. The PLT tool was run to bottom and the gradiomanometer used to monitor the nitrogen-diesel interface. This interface was subsequently used as a tie point to confirm and estimate fluid influx. Drawdown into the wellbore was about 1700 psig.

By 20:56 the estimated cumulative fluid influx was 0.76 kL (4.8 bbls) at an estimated rate of about 2.07 kL/D (13 STB/D). A downhole sample using the PLT tool was then attempted without success.

Test No. 2A

The same interval as for Test No. 2 was reperforated at 02:18 on 19/6/85. The reperforation was successful, but again no flow was observed from the well. At 05:00 the PLT was run in the hole with an Otis sampler substituted for the previous Schlumberger downhole sampler.

By 07:30 cumulative influx was estimated to be 1.19 kL (7.5 bbls) however because water/filtrate had entered the tubing, the rate had dropped to about 0.8 kL/D (5.0 STB/D). A bottom hole sample was successfully taken with the Otis sampler and later analysis showed a tritium concentration of 1776 dpm (cf 3250 dpm in mud) and Cl^- concentration 10000 ppm (cf 25000 ppm Cl^- in mud). Upon reverse circulation 5.57 kL (35 bbls) of diesel was recovered, plus 1.59 kL (10 bbls) of a diesel/water/mud mix and 2.39 kL (15 bbls) of water and mud.

Total cumulative influx for the test was estimated at 1.3 kL (8.2 bbls) over a total flow period of 19:05 hours.

Test No. 3 (Perforated Interval 2627-2634m KB)

The test interval was perforated with $2^{1}/_{8}$" Enerjets under about 500 psi underbalance at 11:45 on 21/6/85. The wellhead pressure increased by 39 psi (269 kPa) over the next hour as a weak blow was observed.

The well was opened to flow at 12:56 and gas surfaced at 17:52 followed by mud at 18:00 and formation fluid (oil and gas) at 18:12. The well rates were then affected by a leak between the packer and the annulus, so the well was shut-in after the production of 13.04 kL (82 bbls) of fluid (90% oil, 10% water) at 22:00 (9.07 hour flow period). The packer to tubing seals were found to be damaged after the test string was pulled.

Test No. 3A

The same interval was reperforated at 14:33 on 25/6/85. The well was opened to flow at 15:02 and gas surfaced at 17:54 followed by oil at 18:57. Oil at varying rates was produced until shut-in to rig up the downhole shut-in tool (DHSIT) at 23:07. The total initial flow period was 9:05 hours with an average flowrate of 36.6 kL/D (230 STB/D) at a wellhead pressure of 10 psi (68.9 kPa) downstream of the choke.

The DHSIT was run and flow restarted for the major flow period at 02:49 on 26/6/85. Well rates were again variable with gas slugging. At 13:36 on 26/6/85 the well was shut-in at the DHSIT, after a total cumulative oil production during the initial and major flow periods of estimated 31.0 kL (195 bbls). The pressure buildup was monitored until 13:52 on 27/6/85.

The produced oil was approximately 40° API gravity with a GOR of 267 std m /kL^3 (1500 SCF/STB) and a pour point in range of 23-24°C.

D. DISCUSSION OF RESULTS

TEST NO. 1/1A

The perforated interval 3315.2-3325.1m KB produced a total of 1.46 kL (9.2 bbls) filtrate with a trace of gas during a total flow period of 26:03 hours. Average influx rate was 1.35 kL/D (8.5 STB/D).

Fluid Content

Because of the low productivity, no formation fluids were recovered at surface. It is concluded that only filtrate and some gas were produced into the wellbore during the test period from analysis of the reversed-out fluids. Measured tritium doping levels in the water samples were in range 1972 to 2093 dpm (cf 3050 dpm tritium in drilling mud). Only one representative resistivity measurement was made giving 4900 ppm Cl^- concentration. This Cl^- value is considerably lower than either the drilling mud (22000 ppm) or the expected formation water (15000 ppm). This suggests contamination by fresh water used to reverse out the tubing and the validity of a single resistivity check is doubtful. Hence, in the absence of a valid downhole sample, it is assumed that the water recovered is filtrate based on tritium levels.

Reservoir Properties

Final flowing pressures were 3072 psig at 3320m KB for the first flow period and 3066 psig at the same depth for the second. Estimating initial reservoir pressure from the RFT gradient at 5043 psig at 3320m KB, gives an estimated PI value of 0.005 STB/D/psi.

No buildup data were obtained.

TEST NO. 2/2A

Total cumulative influx from the interval 3123.5-3129m KB of filtrate/water during both flow periods was 1.3 kL (8.2 bbls) over a total flow period of 19:05 hours, equivalent to an average rate of 1.64 kL/D (10.3 STB/D).

Fluid Content

Again no formation fluids were recovered at surface. However, production of mostly mud filtrate is confirmed by:

(i) A bottom hole sample taken after the second flow period contained water (1776 dpm tritium concentration, 10000 ppm Cl^-) which compares with the drilling mud (3250 dpm tritium, 20000 ppm Cl^-) and the expected formation water (15000 ppm Cl^-). Again the Cl^- concentration seems low, however the tritium level suggests a high proportion of filtrate.

(ii) From reverse circulation 5.57 kL (35 bbls) diesel, 1.59 kL (10 bbls) diesel/water/mud and 2.39 kL (15 bbls) of water/mud were recovered. Analysis of the three muddy water samples taken suggests mostly filtrate was produced (2527-2722 dpm tritium, 14000-18000 ppm Cl^-).

Reservoir Properties

Final flowing pressure measured during the second flow period was 3135 psig at 3115m KB after a cumulative influx of 1.21 kL (7.6 bbls) over a 16:33 hour period. Estimating reservoir pressure at 4676 psig from RFT gradient yields a PI estimate of 0.007 STB/D/psi.

No buildup data were obtained.

General Note for Tests 1/1A & 2/2A

For both tests, analysis of the recovered water samples by tritium concentration and chlorides measurement did not conclusively confirm fluid content. However because of the levels of tritium observed in both cases it seems likely that mostly filtrate was produced in each test and the production of any formation water is not obvious.

TEST NO. 3/3A

Fluid Content

Total oil production over the initial and major flow periods was 31.0 kL (195 bbls) with a watercut of less than 0.5%. Fluid properties are summarised in Table 3.

Measured GOR of 1500 SCF/STB during the production test compares with a similar value of 1431 SCF/STB from an RFT sample taken at 2631m KB. These observed values are both greater than the true value of GOR of 1070 SCF/STB from Corelab analysis of a segregated RFT sample. Due to low formation permeability with a large pressure drawdown imposed at the wellbore, preferential gas liberation has occurred resulting in an increased apparent GOR.

Reservoir Properties

Precise calculations from the pressure buildup data following shut-in of Test No. 3A were complicated by oil and gas slugging throughout the test period. A final flowrate of 37.21 kL/D (234 STB/D) was assumed by averaging over the final 4 hour flowing period. Oil flowrates throughout the test period are presented schematically in Figure 1.

Analysis of the Horner Buildup Plots shown in Figures 2 and 3 gives a formation permeability-thickness (kh) product of 73.7 md-ft. This results in a permeability of 3.5 md assuming a sand unit thickness of 6.5m from log analysis.

This compares with an average permeability of 2.57 md estimated from pressure drawdown analysis in an infinite acting reservoir, using the measured PI of 0.082 STB/D/psi.

The radius of investigation at the end of the major buildup period was 81.8m, reflecting low reservoir diffusivity from low reservoir permeability of 3.5 md.

Skin Effect

Using an extrapolated P_{w1hour} value, the calculated skin factor was +2.5 indicating minor near wellbore damage, corresponding to a damage ratio of 1.36.

Formation Pressure

The extrapolated Horner pressure P* was calculated at 3763 psia at a depth 2595m KB. The estimated reservoir pressure from RFT data was 3750 psia at 2595m KB.

There is no evidence from the pressure buildup data of any depletion or reservoir boundary effects.

TABLE 1

WHITING NO. 2

PRODUCTION TEST NO. 1/1A

SUMMARY OF RESULTS

Test Interval: 3315.2-3325.1m KB

1. Production

Est. Total Production	1.46 kL filtrate and gas (9.2 bbls)
Average Production Rate	1.35 kL/D (not stabilised) (8.5 STB/D)
Choke Size	1.75cm (44/64")

2. Fluid Properties (from reverse circulation)

Water (filtrate)

Resistivity	0.791 @ 20°C
Cl^- (from resistivity)	4900 ppm
Tritium	1972-2093 dpm (3050 dpm in mud)

Gas

Gravity	Not measurable
CO_2	7-10%
H_2S	Nil

3. Reservoir Properties

Final flowing BH pressure	3066 psig @ 3320m KB
Initial reservoir pressure (RFT)	5043 psig @ 3320m KB
P.I. estimated	0.005 STB/D/psi

TABLE 2

WHITING NO. 2

PRODUCTION TEST NO. 2/2A

SUMMARY OF RESULTS

Test Interval: 3123.5-3129m KB

1.	Production	
	Est. Total Production	1.3 kL filtrate/formation water (8.2 bbls)
	Average Production Rate	1.64 kL/D (not stabilised) (10.3 STB/D)
	Choke Size	1.27cm (32/64")
2.	Fluid Properties	
	Water (filtrate)	
	from bottomhole sample	
	Resistivity	0.389 @ 21°C
	Cl^- (from resistivity)	10000 ppm
	Tritium	1776 dpm (3250 dpm in mud)
	pH	6.6
	from reverse circulation (typical)	
	Resistivity	0.274 @ 27.5°C
	Cl^-	12700 ppm
	Tritium	2657 dpm
3.	Reservoir Properties	
	Final flowing BH pressure	3135 psig @ 3115m KB
	Initial reservoir pressure (RFT)	4676 psig @ 3115m KB
	P.I. estimated	0.007 STB/D/psi

TABLE 3

WHITING NO. 2

PRODUCTION TEST NO. 3/3A

SUMMARY OF RESULTS

Test Interval: 2627-2634m KB

1. **Production**

Total Production	31.0 kL oil (195 bbls)
Final Production Rate	37.21 kL/D* oil (234 STB/D* oil)

(* not stabilised - averaged over final 4 hours)

Water Cut	less than 0.5%
Choke Size	1.27cm (32/64")

2. **Fluid Properties**

Oil

Gravity	37.6-42.4° API (40.1° average)
GOR	267 std m^3/kL (1500 SCF/STB)(Test) 255 std m^3/kL (1431 SCF/STB)(RFT) 190 std m^3/kL (1070 SCF/STB) (PVT Analysis)
Pour Point	23.5°C

Gas

Gravity	0.914
CO_2	11-12% of gas volume
H_2S	Nil
Water	Not measurable

3. **Reservoir Properties**

Initial BH Pressure (RFT)	3750 psia @ 2595m KB
Final flowing BH pressure	900 psia @ 2595m KB
Extrapolated Horner P*	3763 psia @ 2595m KB
Permeability - thickness	73.7 md-ft.
Permeability (k)	3.5 md
P.I. measured	0.082 STB/D/psi

3. **Reservoir Properties**

Skin Factor S	+2.5
Flow Efficiency	0.73
Damage Ratio	1.36
Radius of Investigation (to end buildup)	81.8m

4. **Rock and Fluid Properties**

Porosity = 15% average from log analysis

Compressibility C = 10 x 10^{-6}/psi

Viscosity = 0.41 cp**

Oil Formation Volume Factor B_o = 1.65 (Corelab Fluid Analysis)

Bottom Hole Temperature = 242°F

** Oil viscosity assumed from Tuna "R" reservoir which contains similar light waxy crude to Whiting.

BUILDUP ANALYSIS

1. Rate q = 234 (STB/D; MSCF/D)

2. Horner Time: $\frac{\text{Cumulative production}}{\text{Last rate}} = 24 \times \frac{195 \text{ (STB)}}{234 \text{ (STB/D)}}$ = 20 (hr)

3. Fluid and reservoir properties

   Viscosity: μ = 0.41 (cp)

   Compressibility factor (for gas wells): z = ______

   Compressibility: c = 10^{-5} (1/psi)

   Volume factor: B = 1.65 (RB/STB) at pressure of 3750 (psi)

   Thickness: h = 21.3 (ft) (6.5m)

   Perforated thickness: h_p = 23 (ft)

   Porosity: ϕ = 15 (%)

   Wellbore radius: r_w = 0.40 (ft)

   Bottom-hole temperature: T = 242 (°F)

4. Initial pressure: p_i = 3715 (psi)

5. Flowing bottom-hole pressure: p_{wf} = 900 (psi)

6. Wellbore storage: $\alpha = 3.8 \times 10^{-4}$ (RB/psi)

7. End of afterflow: Δt_{af} = 75 (min)

8. Middle time region slope: m = 349 (psi)

9. Extrapolated pressure: p* = 3763 (psi)

10. Ideal buildup pressure at Δt = 1 hr: p_{w1} = 3075 (psi)

11. Permeability-thickness product: $kh = \frac{162.6\, q\mu B}{m}$

$$kh = \frac{162.6\,(234)\,(0.41)\,(1.65)}{(349)} = 73.7 \text{ (md-ft)}$$

12. Permeability: $k = \frac{kh}{h} = \frac{(73.7)}{(21.3)}$ = 3.5 (md)

13. Diffusivity: $\eta = \frac{2.637 \times 10^{-4} k}{\phi \mu c}$

$$= \frac{2.637 \times 10^{-4} (\ 3.5\ )}{(\ 0.15)(\ 0.41)(\ 10^{-5}\ )} = \underline{\ 1500.7\ } \ (ft^2/hr)$$

14. Average permeability: $\bar{k} = \frac{141.2\ q\mu B \ln (r_e/r_w)}{h\ (p^* - p_{wf})}$ $(\ln r_e/r_w \simeq 6.0\text{–}8.0$

$$\bar{k} = \frac{141.2\ (\ 234\ )(\ 0.41\ )(1.65\ )\ \ 7.0}{(21.3\ )((3763\ ) - (\ 900\ ))} = \underline{\ 2.57\ } \ (md)$$

15. Radius of investigation beginning of MTR:

$$R_{ib} = \sqrt{4\eta\Delta t} = \sqrt{4\ (\ 1500.7\ )(\ \ 4.0\ \ )} = \underline{\ 155\ } \ (ft)$$

16. Skin factor: $s = 1.151\left[\frac{p_{w1} - p_{wf}}{m} - \log\left(\frac{k}{\phi\mu c r_w^2}\right) + 3.23\right]$

$$s = 1.151\left[\frac{((3280\ )\ (\ 900\ ))}{(\ 349\ )}\ \log \frac{(\ 3.5\ )}{(0.15)(0.41)(10^{-5})(\ 0.4)^2} + 3.23\right]$$

$s = \underline{\ 2.5\ }$

17. Pressure drop due to skin:

$$\Delta p_s = 0.87\ ms = 0.87\ (\ 349\ )(\ 2.5\ ) = \underline{\ 759\ } \ (psi)$$

18. Flow efficiency: $E = \frac{p^* - p_{wf} - \Delta p_s}{p^* - p_{wf}}$

$$E = \frac{(\ 3763\ ) - (\ 900\ ) - (\ 759\ )}{(\ 3763\ ) - (\ 900\ )} = \underline{\ 0.73\ }$$

19. Damage ratio: $DR = \frac{1}{E} = \frac{1}{(\ 0.73\ )} = \underline{\ 1.36\ }$

20. Productivity index: $J = \frac{q}{p^* - p_{wf}} = \frac{(\ 234\ )}{((\ 3763\ ) - (\ 900\ ))} = \underline{0.082}$ ((B/D)/psi)

21. Closest possible boundary: L_{cb} Not detected (ft)

PRODUCTION TEST SUMMARY

Well Whiting 2 Test 3A Date 26/6/85

Test Data:

1. Interval 2627-2634m KB
2. Produced fluid OIL
3. Cumulative production 195 (STB)
4. Stabilized rate 234 (STB/D, Average final 4 hours)
5. Length of flow period 18.42 (hr)
6. Choke 32 (64ths)
7. Gravity of oil or condensate 40 (°API @ 60°F)
8. GOR or Condensate - Gas Ratio 1500 (SCF/STB)
9. Water cut less than 0.5% (%)
10. Chlorides Samples too small to measure (ppm)
11. H_2S Nil (%, ppm)
12. CO_2 12 (%)
13. Stabilized flowing wellhead pressure 100 (psi)
14. Stabilized flowing wellhead temperature 57 (°F)
15. Wellhead pressure at end of buildup 350 (psi)
16. Initial reservoir pressure 3750 (psi) @ 2630 (m KB)
17. Final flowing pressure 900 (psi) @ 2597 (m KB)
18. Productivity index 0.082 $\frac{STB/D}{psi}$
19. Maximum bottom hole temperature 245 (°F) @ 2597 (m)
20. Samples taken:
21. Remarks: Well slugged oil and gas throughout flow period.

(4055f)

BOTTOM-HOLE PRESSURES

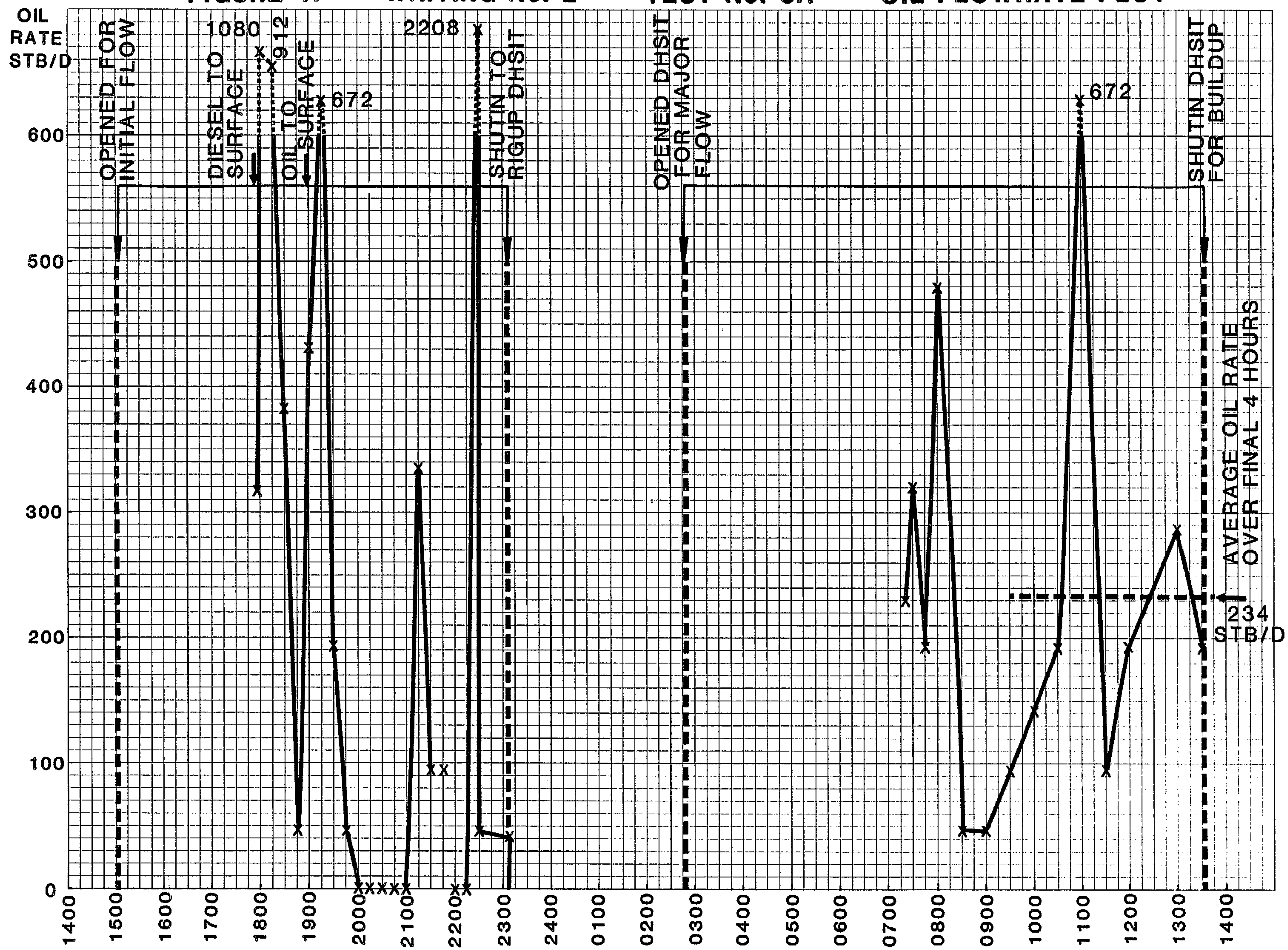
WELL WHITING 2 TEST 3A DATE 26/6/85

HORNER TIME 20.0 hours (1200 mins) FLOWING BHP 900 psi INITIAL BHP 3750 psi (RFT)

HP Sensor at 2595m KB

TIME LOCAL	ΔT	$\frac{T_H+\Delta T}{\Delta T}$	BHP PSIA	REMARKS	TIME LOCAL	ΔT	$\frac{T_H+\Delta T}{\Delta T}$	BHP PSIA	REMARKS
1336	0	0	900	Pwf	0136	720	2.67	3619	
1340	4	301	1426	T = 242 F	0236	780	2.54	3626	
1344	8	157	1944		0336	840	2.43	3633	
1348	12	101	2331		0436	900	2.33	3639	
1352	16	76	2557		0536	960	2.25	3649	
1356	20	61	2688		0636	1020	2.18	3657	
1400	24	51	2776		0736	1080	2.11	3655	
1404	28	43.86	2839		0836	1140	2.05	3652	3655 Pressure dropped
1408	32	38.5	2890		0936	1200	2.0	3654	3657 3psi. Added 3psi
1416	40	31.0	2968		1036	1260	1.95	3657	3660 to plotted points
1426	50	25.0	3041		1136	1320	1.91	3659	3662
1436	60	21.0	3098		1236	1380	1.87	3662	3665
1446	70	18.14	3145		1336	1440	1.83	3665	3668 End of
1456	80	16.0	3184						Buildup
1506	90	14.33	3217						
1516	100	13.0	3245						
1526	110	11.91	3270						
1536	120	11.0	3293		AMERADA SENSOR POINT 3.0m BELOW				
1546	130	10.23	3314		HP SENSOR i.e. at 2598m KB				
1556	140	9.57	3344	T = 243 F					
1606	150	9.0	3363						
1616	160	8.5	3379		FINAL BHP FROM AMERADA				
1626	170	8.06	3392		CHART AFTER BUILDUP = 3647psig				
1636	180	7.67	3406						
1656	200	7.0	3428						
1716	220	6.45	3447						
1736	240	6.0	3463						
1756	260	5.61	3478						
1816	280	5.29	3491						
1836	300	5.0	3503						
1906	330	4.64	3579						
1936	360	4.33	3532						
2006	390	4.08	3544						
2036	420	3.86	3555						
2106	450	3.67	3564	T = 244 F					
2136	480	3.50	3573						
2236	540	3.22	3587						
2336	600	3.00	3599						
2436	660	2.82	3609						

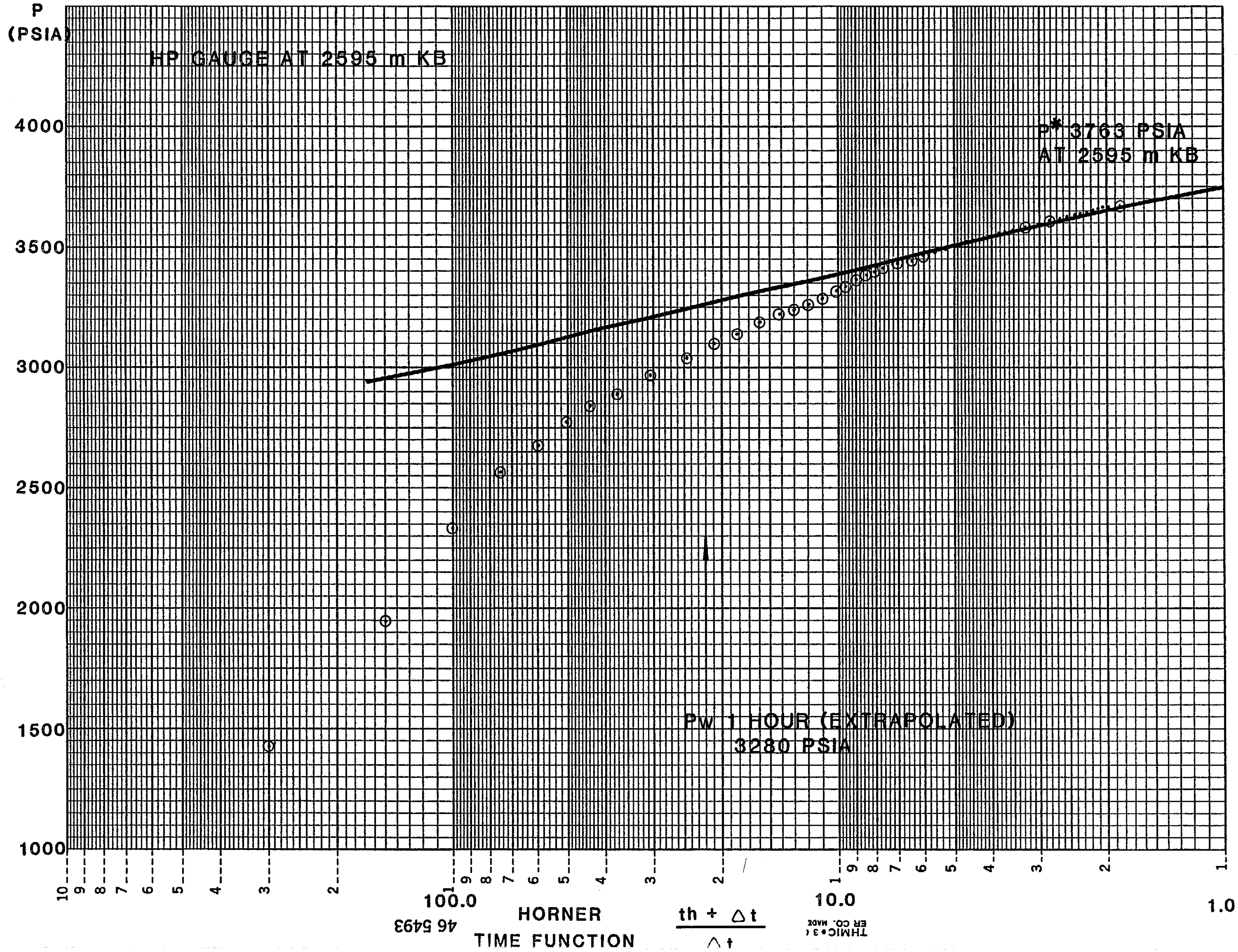
FIGURE 1: WHITING No. 2 TEST No. 3A OIL FLOWRATE PLOT



46 0703

K+E 10 X 10 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

FIGURE 2: WHITING No. 2 TEST No. 3A HP HORNER PLOT



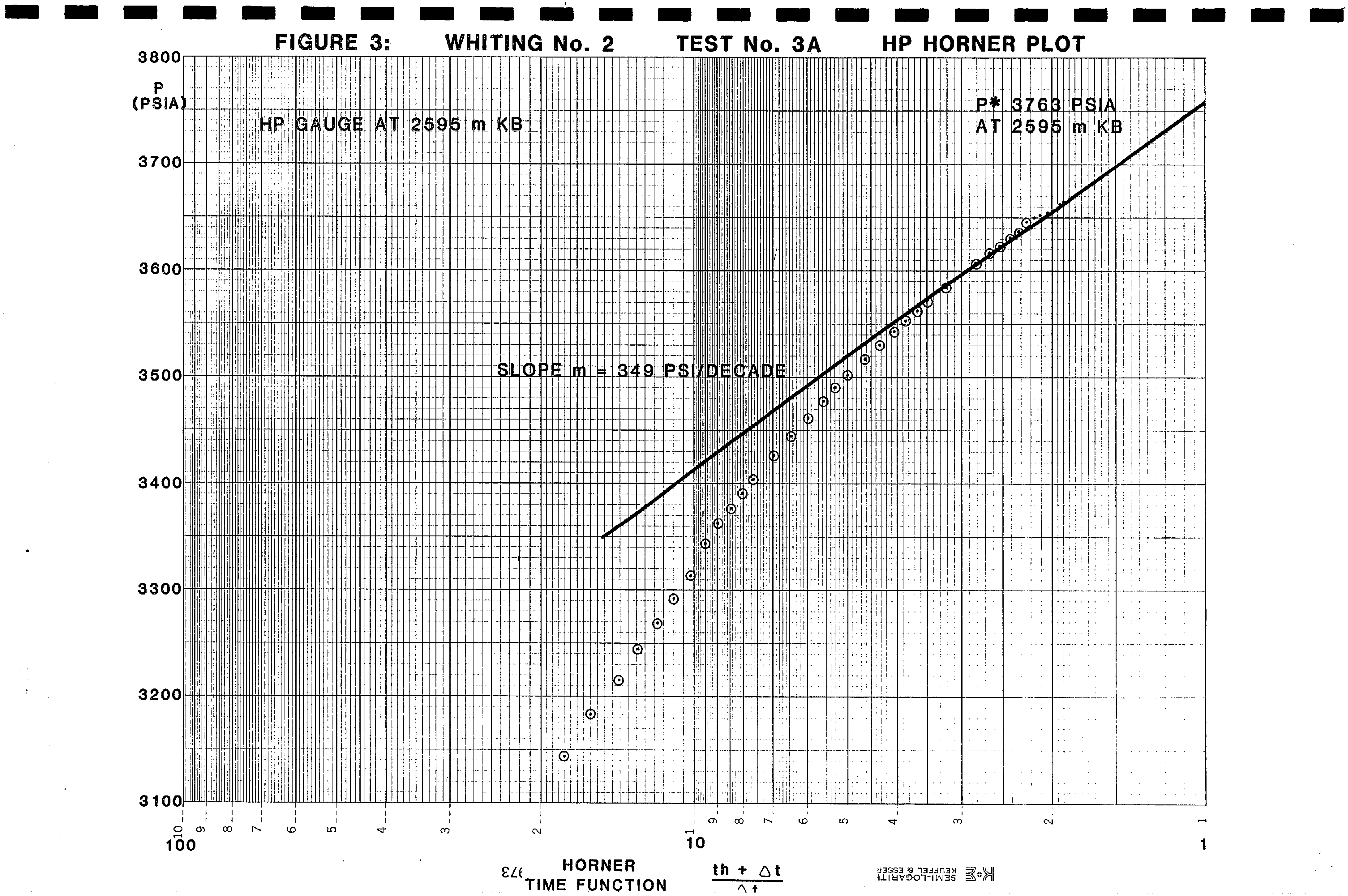


FIGURE 3: WHITING No. 2 TEST No. 3A HP HORNER PLOT
P (PSIA)
HP GAUGE AT 2595 m KB
P* 3763 PSIA AT 2595 m KB
SLOPE m = 349 PSI/DECADE
3800
3700
3600
3500
3400
3300
3200
3100
100
10
1
HORNER TIME FUNCTION
th + Δt / Δt

APPENDIX 6

APPENDIX 6

APPENDIX 6

GEOCHEMICAL REPORT

WHITING-2, GIPPSLAND BASIN

VICTORIA

by

T.R. BOSTWICK

Sample handling and Analyses by:

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- D.M. Ford)
- J. McCardle) ESSO AUSTRALIA LTD.
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Esso Australia Ltd.
Geochemical Report 25/2/86

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1. Detailed C_{4-7} Data Sheets
2. Detailed Vitrinite Reflectance and Exinite Fluorescence Data - Report by A.C. Cook

WHITING 2

INTRODUCTION

Canned cuttings and sidewall cores from the Whiting-2 well, Gippsland Basin, have been analyzed to determine the hydrocarbon source potential of the drilled section. Composite cuttings samples were collected at 15m intervals from 240 mKB to total depth (T.D.) at 3550 mKB. Alternate 15-metre samples were analyzed for headspace cuttings gas (C_{1-4}). Selected sidewall cores were analyzed for total organic carbon (TOC), Rock-Eval pyrolysis yields, kerogen isolation and elemental analysis, and vitrinite reflectance. Selected cuttings samples were analyzed for light gasolines (C_{4-7}) and $C_{15}+$ hydrocarbons. Gas chromatograms of the heavy ($C_{15}+$) saturate fractions were obtained. Three hydrocarbon liquids recovered during production tests were analyzed by whole oil gas chromatography and for their API gravities.

The results of these analyses are recorded in Tables 1 through 8 and displayed in Figures 1 through 15. 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}) yields (Table 1, Figure 1a) indicate that the Gippsland Limestone Fm has poor-fair source potential, the Lakes Entrance fair potential, and the Latrobe Group sediments good source potential.

Total organic carbon measurements (Table 2, Figure 2) confirm the presence of organic-rich shales and siltstones in the Latrobe sediments. The presence of coal and abundant carbonaceous material within these sediments is also documented by the lithologic descriptions (Table 2) and very high TOC yields (in excess of 10%). Interbedded with these organic rich sediments are sediments with both fair and poor source potential.

Rock-Eval pyrolysis yields (Table 3a) confirm the presence of good-excellent source rocks within the Latrobe Group. The best potential is again seen in the coaly/carbonaceous sediments though some non-carbonaceous shales (1466 mKB, 3165 mKB) also gave excellent S_2 yields (10.34 mg/gm, 23.06 mg/gm). Yields indicative of moderate (S_2=2-6 mg.gm) and poor (S_2=0-2 mg/gm) potential were also seen in the Latrobe sediments.

Rock chips of reasonably uniform fine-grained lithologies were picked from the heterogeneous cuttings samples below 2715 mKB and analyzed for their light gasoline (C_{4-7}) contents. Light gasoline yields (Table 5, Figure 5) from these "picked" sediments are moderate to very good which is another indication of the hydrocarbon source potential of these Late Cretaceous and Early Paleocene sediments.

Total extract values for six partially picked Latrobe Group cuttings samples are quite rich (Table 6) and the total $C_{15}+$ hydrocarbon contents vary from very good to excellent (3245-60 mKB). This is added confirmation of the hydrocarbon source potential of the Latrobe Group sediments.

Hydrocarbon Type

The wet gas (C_{2-4}) yields (Table 1, Figure 1b) in excess of thirty (30) percent of the total headspace gas (C_{1-4}) in the Late Eocene-Paleocene sediments between 2025 mKB and 1815 mKB can be interpreted (assuming the gas is indigenous) as indicative of the presence of an oil-prone source facies. The lower yields for the remaining sediments suggest that the organic matter present is most likely gas/condensate-prone

The hydrogen indices (HI) determined from the Rock-Eval pyrolysis yields are recorded in Table 3b and plotted on Figure 3. Some of the Late Eocene-Paleocene (1337.5 mKB, 1985 mKB, 2330 mKB, 3075 mKB, 3075 mKB) and Late Cretaceous (3165 mKB, 3534 mKB) samples with HIs in excess of 300 appear to contain Type I and Type II oil prone kerogen. Most of the remaining Cretaceous samples appear gas-prone, while some of the Late Eocene-Paleocene samples may have condensate potential (HIs greater than 200).

Results of the elemental analysis of isolated kerogen concentrates are given in Table 4a. (The oxygen value is calculated by difference and sulphur which may be up to a few percent was not determined.) Atomic hydrogen: carbon (H/C), atomic nitrogen: carbon (N/C) and atomic oxygen: carbon (O/C) ratios are listed in Table 4b. The Van Krevelen Type plot in Figure 4 of Atomic H/C versus Atomic O/C (approximate) shows that although a predominance of Type III gas prone material is present some Cretaceous and Eocene-Paleocene samples (the organic-rich ones) do contain a mixed Type II and III oil-prone kerogen assemblage.

The relatively good C_{4-7} yields (Table 5) together with the occurrence of full spectrum gasoline-range hydrocarbons below 2715 mKB (Appendix 1) is yet another indication that oil and/or condensate should be the expected hydrocarbons from the Late Cretaceous and Early Paleocene Latrobe sediments.

The C_{15}+ saturate chromatograms of extracts from sediments below 2715 mKB show high pristane contents relative to phytane, odd-over-even carbon preferences, and an abundance of C_{22}+ paraffins alluding to land-derived organic assemblage in the sediments. Thus a waxy paraffinic oil would be the hydrocarbon sourced from these sediments.

On the whole these data all confirm that the organic-rich Latrobe sediments have the potential to generate commercial quantities of oil, condensate, and gas when mature.

Maturity

The vitrinite reflectance data (Table 5) show a consistent increase with depth to 3489 mKB. Deviations from the trend occur between 2548m and 2980.9 mKB and again below 3489 mKB where anomalously high R_v^{max} measurements were recorded. At 2774m and 2801 mKB the vitrinite was described as heat altered (Appendix 2) suggesting perhaps that local heating (due to an igneous sill) may be the cause. Igneous rocks were encountered at the 2810-2891 mKB interval and the vitrinite profile shows a rapid increase as the sill is approached (confirming that it is a sill and not an extrusive) The R_v^{max} of 0.45 at 2960 mKB, well within the influence of the sill remains a mystery but the nearby sample at 2980.9m, has an R_v^{max}= 0.73 which indicates that there is still some effect of the sill at this depth. The exponential increase of R_v^{max} values below 3489 mKB may be due to the presence of another sill below T.D.

The vitrinite profile indicates that the section is immature to 2650 mKB, early mature between 2650 mKB and 3250 mKB, and fully mature from 3250 mKB to T.D. at 3550 mKB. This ignores the sill at 2810-2891 mKB. The presence of the sill should result in increased maturity levels approximately 160 metres above and below (twice the thickness of the sill) resulting in mature and over-mature sediments adjacent to the sill.

The C_{15}+ chromatograms of extracted saturate hydrocarbons show immature characteristics (e.g. odd-over-even preference (C_{23}+), pristane greater than nC_{17}) to 3095-3110 mKB. At 3245-3260 mKB nC_{17} is greater than pristane but a slight odd-over-even preference persists indicating that at this level the sediments are probably early mature. At 3425-3440 mKB the chromatogram appears fully mature. This is consistent with the interpretations from vitrinite reflectance data. Surprisingly, the effects of the intrusion are not apparent in either the chromatography results (Table 6) or the C_{15}+ saturate chromatograms for extracts at 2760 mKB and 2910 mKB.

Hydrocarbons

Whole oil gas chromatograms for the three hydrocarbon liquids recovered during production testing are shown in Figures 13, 14 and 15. The oil at 1278 mKB is a medium gravity oil that is dominated by C_{20-28} paraffins with a slight odd-over-even carbon preference. The depletion of normal paraffins in the C_{4-20} range is mostly likely due to biodegradation. The liquids at 1451 mKB and 1490 mKB are condensates containing abundant gasoline-range hydrocarbons.

Both hydrocarbon types probably originate from terrestrial organic matter with the compositional differences being a function of maturity i.e. the condensates are from a very mature source relative to the oil.Since these mature hydrocarbons were encountered within the immature section, they must have migrated into the section from a more mature source horizon.

CONCLUSIONS

1. The section encountered by the Whiting 2 well is immature to 2650 mKB, early mature between 2650 mKB and 3250 mKB and fully mature from 3250 mKB to T.D. at 3440 mKB. The sill encountered at 2810-2891 mKB has resulted in increased maturity levels (mature to overmature) within its vicinity.

2. The organic-rich sediments encountered within the Latrobe have the potential to generate commercial quantities of oil and gas when mature.

3. The partially biodegraded, medium gravity paraffinic oil encountered at 1278 mKB and two paraffinic condensates at 1451 mKB and 1490 mKB are not indigenous to the section. These hydrocarbons have been sourced from terrestrial organic matter (most likely bacterially altered) at different maturity levels (i.e. the condensates are from a more mature source relative to the oil).

Table 1

C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - WHITING 2

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
77807 F	255.00	1	0	0	0	0	0	1	.00	100.	0.	0.	0.	0.	0.	0.	0.	0.
77807 H	285.00	4	1	0	0	0	1	5	20.00	80.	20.	0.	0.	0.	100.	0.	0.	0.
77807 J	315.00	1	1	0	0	0	1	2	50.00	50.	50.	0.	0.	0.	100.	0.	0.	0.
77807 L	345.00	5	1	1	0	0	2	7	28.57	71.	14.	14.	0.	0.	50.	50.	0.	0.
77807 N	375.00	60	13	5	1	1	20	80	25.00	75.	16.	6.	1.	1.	65.	25.	5.	5.
77807 P	405.00	162	7	3	1	0	11	173	6.36	94.	4.	2.	1.	0.	64.	27.	9.	0.
77807 R	435.00	351	12	4	1	0	17	368	4.62	95.	3.	1.	0.	0.	71.	24.	6.	0.
77807 T	465.00	285	16	3	1	0	20	305	6.56	93.	5.	1.	0.	0.	80.	15.	5.	0.
77807 V	495.00	107	12	4	1	0	17	124	13.71	86.	10.	3.	1.	0.	71.	24.	6.	0.
77807 X	525.00	222	48	6	1	1	56	278	20.14	80.	17.	2.	0.	0.	86.	11.	2.	2.
77807 Z	555.00	264	67	12	3	2	84	348	24.14	76.	19.	3.	1.	1.	80.	14.	4.	2.
77808 B	585.00	300	47	10	2	1	60	360	16.67	83.	13.	3.	1.	0.	78.	17.	3.	2.
77808 D	615.00	199	25	14	3	2	44	243	18.11	82.	10.	6.	1.	1.	57.	32.	7.	5.
77808 F	645.00	87	12	2	1	0	15	102	14.71	85.	12.	2.	1.	0.	80.	13.	7.	0.
77808 H	675.00	43	7	1	0	0	8	51	15.69	84.	14.	2.	0.	0.	88.	13.	0.	0.
77808 J	705.00	246	34	3	2	1	40	286	13.99	86.	12.	1.	1.	0.	85.	7.	5.	2.
77808 L	735.00	784	62	13	6	2	83	867	9.57	90.	7.	1.	1.	0.	75.	16.	7.	2.
77808 N	765.00	1014	55	17	6	2	80	1094	7.31	93.	5.	2.	1.	0.	69.	21.	7.	2.
77808 P	795.00	2081	77	25	9	4	115	2196	5.24	95.	4.	1.	0.	0.	67.	22.	8.	3.
77808 R	825.00	2897	77	30	11	4	122	3019	4.04	96.	3.	1.	0.	0.	63.	25.	9.	3.
77808 U	870.00	2316	86	24	11	5	126	2442	5.16	95.	4.	1.	0.	0.	68.	19.	9.	4.
77808 T	885.00	2199	58	21	11	5	95	2294	4.14	96.	3.	1.	0.	0.	61.	22.	12.	5.
77808 X	915.00	1956	60	21	11	5	97	2053	4.72	95.	3.	1.	1.	0.	62.	22.	11.	5.
77808 Z	945.00	2190	57	22	14	5	98	2288	4.28	96.	2.	1.	1.	0.	58.	22.	14.	5.
77809 B	975.00	3591	90	41	24	9	164	3755	4.37	96.	2.	1.	1.	0.	55.	25.	15.	5.
77809 D	1005.00	2769	76	28	12	3	119	2888	4.12	96.	3.	1.	0.	0.	64.	24.	10.	3.
77809 F	1035.00	3496	105	32	14	5	156	3652	4.27	96.	3.	1.	0.	0.	67.	21.	9.	3.
77809 J	1095.00	1677	43	11	7	2	63	1740	3.62	96.	2.	1.	0.	0.	68.	17.	11.	3.
77809 L	1125.00	3054	52	17	9	3	81	3135	2.58	97.	2.	1.	0.	0.	64.	21.	11.	4.
77809 P	1185.00	5712	39	13	7	3	62	5774	1.07	99.	1.	0.	0.	0.	63.	21.	11.	5.
77809 R	1215.00	2333	148	103	16	16	283	2616	10.82	89.	6.	4.	1.	1.	52.	36.	6.	6.
77809 T	1245.00	1212	127	89	16	17	249	1461	17.04	83.	9.	6.	1.	1.	51.	36.	6.	7.
77809 V	1275.00	3684	340	382	175	191	1088	4772	22.80	77.	7.	8.	4.	4.	31.	35.	16.	18.
77809 X	1305.00	5432	934	53	59	13	1059	6491	16.31	84.	14.	1.	1.	0.	88.	5.	6.	1.
77809 Z	1335.00	11677	3499	200	174	17	3890	15567	24.99	75.	22.	1.	1.	0.	90.	5.	4.	0.
77843 B	1365.00	21333	8791	486	139	21	9437	30770	30.67	69.	29.	2.	0.	0.	93.	5.	1.	0.
77843 D	1395.00	14745	6066	826	53	19	6964	21709	32.08	68.	28.	4.	0.	0.	87.	12.	1.	0.
77843 F	1425.00	10863	3715	633	55	37	4440	15303	29.01	71.	24.	4.	0.	0.	84.	14.	1.	1.
77843 H	1455.00	12380	4872	1088	133	93	6186	18566	33.32	67.	26.	6.	1.	1.	79.	18.	2.	2.
77843 J	1485.00	15485	3109	1725	401	389	5624	21109	26.64	73.	15.	8.	2.	2.	55.	31.	7.	7.
77843 L	1515.00	7206	1652	572	107	99	2430	9636	25.22	75.	17.	6.	1.	1.	68.	24.	4.	4.
77843 N	1545.00	8271	1618	972	201	216	3007	11278	26.66	73.	14.	9.	2.	2.	54.	32.	7.	7.
77843 P	1575.00	4623	1073	728	158	199	2158	6781	31.82	68.	16.	11.	2.	3.	50.	34.	7.	9.
77843 R	1605.00	3956	1519	1457	298	372	3646	7602	47.96	52.	20.	19.	4.	5.	42.	40.	8.	10.
77843 T	1635.00	5250	1673	465	59	63	2260	7510	30.09	70.	22.	6.	1.	1.	74.	21.	3.	3.
77843 V	1665.00	39210	12307	4056	312	330	17005	56215	30.25	70.	22.	7.	1.	1.	72.	24.	2.	2.
77843 X	1695.00	35319	11074	3703	366	421	15564	50883	30.59	69.	22.	7.	1.	1.	71.	24.	2.	3.

C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - WHITING 2

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	TOTAL GAS E	TOTAL GAS P	TOTAL GAS IB	TOTAL GAS NB	WET GAS E	WET GAS P	WET GAS IB	WET GAS NB
77843 Z	1725.00	31356	15105	7125	857	1056	24143	55499	43.50	56.	27.	13.	2.	2.	63.	30.	4.	4.
77844 B	1755.00	47277	22014	10799	1134	1579	35526	82803	42.90	57.	27.	13.	1.	2.	62.	30.	3.	4.
77844 D	1785.00	27203	11164	4403	631	888	17086	44289	38.58	61.	25.	10.	1.	2.	65.	26.	4.	5.
77844 F	1815.00	19612	7960	2301	207	189	10657	30269	35.21	65.	26.	8.	1.	1.	75.	22.	2.	2.
77844 H	1845.00	16110	4534	1356	165	158	6213	22323	27.83	72.	20.	6.	1.	1.	73.	22.	3.	3.
77844 J	1875.00	24262	7426	2278	290	275	10269	34531	29.74	70.	22.	7.	1.	1.	72.	22.	3.	3.
77844 N	1935.00	6198	1091	280	54	26	1451	7649	18.97	81.	14.	4.	1.	0.	75.	19.	4.	2.
77844 P	1965.00	8449	1790	496	97	49	2432	10881	22.35	78.	16.	5.	1.	0.	74.	20.	4.	2.
77844 R	1995.00	21242	3651	938	167	123	4879	26121	18.68	81.	14.	4.	1.	0.	75.	19.	3.	3.
77844 T	2025.00	1015	662	563	150	121	1496	2511	59.58	40.	26.	22.	6.	5.	44.	38.	10.	8.
77844 V	2055.00	30445	9019	2005	246	178	11448	41893	27.33	73.	22.	5.	1.	0.	79.	18.	2.	2.
77844 X	2085.00	10644	2416	929	128	123	3596	14240	25.25	75.	17.	7.	1.	1.	67.	26.	4.	3.
77844 Z	2115.00	12227	2331	580	100	58	3069	15296	20.06	80.	15.	4.	1.	0.	76.	19.	3.	2.
77845 B	2145.00	33439	5506	1806	335	184	7831	41270	18.98	81.	13.	4.	1.	0.	70.	23.	4.	2.
77845 D	2175.00	37947	9120	2413	273	235	12041	49988	24.09	76.	18.	5.	1.	0.	76.	20.	2.	2.
77845 F	2205.00	34831	6994	2021	262	169	9446	44277	21.33	79.	16.	5.	1.	0.	74.	21.	3.	2.
77845 H	2235.00	40106	7991	2796	455	357	11599	51705	22.43	78.	15.	5.	1.	1.	69.	24.	4.	3.
77845 J	2265.00	16337	4935	1570	207	207	6919	23256	29.75	70.	21.	7.	1.	1.	71.	23.	3.	3.
77845 L	2295.00	18096	3958	883	99	70	5010	23106	21.68	78.	17.	4.	0.	0.	79.	18.	2.	1.
77845 N	2325.00	37947	9416	1931	238	205	11790	49737	23.70	76.	19.	4.	0.	0.	80.	16.	2.	2.
77845 P	2355.00	35143	6700	2177	270	334	9481	44624	21.25	79.	15.	5.	1.	1.	71.	23.	3.	4.
77845 R	2385.00	25465	9067	1825	215	147	11254	36719	30.65	69.	25.	5.	1.	0.	81.	16.	2.	1.
77845 T	2415.00	22156	4864	1165	186	72	6287	28443	22.10	78.	17.	4.	1.	0.	77.	19.	3.	1.
77845 V	2445.00	25522	3961	1424	235	129	5749	31271	18.38	82.	13.	5.	1.	0.	69.	25.	4.	2.
77845 X	2475.00	17394	2697	868	133	85	3783	21177	17.86	82.	13.	4.	1.	0.	71.	23.	4.	2.
77845 Z	2505.00	15419	3114	1244	162	141	4661	20080	23.21	77.	16.	6.	1.	1.	67.	27.	3.	3.
77846 B	2535.00	19435	2849	1013	125	114	4101	23536	17.42	83.	12.	4.	1.	0.	69.	25.	3.	3.
77846 D	2565.00	35133	6619	2556	280	291	9746	44879	21.72	78.	15.	6.	1.	1.	68.	26.	3.	3.
77846 F	2595.00	28069	5092	2042	219	340	7693	35762	21.51	78.	14.	6.	1.	1.	66.	27.	3.	4.
77846 H	2625.00	13407	2488	852	89	156	3585	16992	21.10	79.	15.	5.	1.	1.	69.	24.	2.	4.
77846 J	2655.00	22664	4393	1569	85	172	6219	28883	21.53	78.	15.	5.	0.	1.	71.	25.	1.	3.
77846 L	2685.00	17074	2082	562	45	39	2728	19802	13.78	86.	11.	3.	0.	0.	76.	21.	2.	1.
77846 N	2715.00	38222	3526	985	101	62	4674	42896	10.90	89.	8.	2.	0.	0.	75.	21.	2.	1.
77805 B	2745.00	14109	2012	517	92	59	2680	16789	15.96	84.	12.	3.	1.	0.	75.	19.	3.	2.
77805 D	2775.00	40646	3111	988	75	53	4227	44873	9.42	91.	7.	2.	0.	0.	74.	23.	2.	1.
77805 F	2805.00	14772	852	230	13	8	1103	15875	6.95	93.	5.	1.	0.	0.	77.	21.	1.	1.
77805 H	2835.00	4463	234	71	7	4	316	4779	6.61	93.	5.	1.	0.	0.	74.	22.	2.	1.
77805 J	2865.00	10011	411	93	7	5	516	10527	4.90	95.	4.	1.	0.	0.	80.	18.	1.	1.
77805 L	2895.00	13049	597	135	8	6	746	13795	5.41	95.	4.	1.	0.	0.	80.	18.	1.	1.
77805 N	2925.00	8056	1384	478	38	37	1937	9993	19.38	81.	14.	5.	0.	0.	71.	25.	2.	2.
77805 P	2945.00	28468	3074	1254	97	126	4551	33019	13.78	86.	9.	4.	0.	0.	68.	28.	2.	3.
77805 R	2975.00	12135	1865	871	71	103	2910	15045	19.34	81.	12.	6.	0.	1.	64.	30.	2.	4.
77805 T	3005.00	5235	1027	677	65	102	1871	7106	26.33	74.	14.	10.	1.	1.	55.	36.	3.	5.
77805 V	3035.00	11253	1384	578	44	64	2070	13323	15.54	84.	10.	4.	0.	0.	67.	28.	2.	3.
77805 X	3065.00	17399	1912	729	63	96	2800	20199	13.86	86.	9.	4.	0.	0.	68.	26.	2.	3.
77805 Z	3095.00	7581	1054	458	36	42	1590	9171	17.34	83.	11.	5.	0.	0.	66.	29.	2.	3.
77806 B	3125.00	2300	246	78	6	7	337	2637	12.78	87.	9.	3.	0.	0.	73.	23.	2.	2.

C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - WHITING 2

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	TOTAL GAS E	TOTAL GAS P	TOTAL GAS IB	TOTAL GAS NB	WET GAS E	WET GAS P	WET GAS IB	WET GAS NB
77806 D	3155.00	801	66	18	1	1	86	887	9.70	90.	7.	2.	0.	0.	77.	21.	1.	1.
77806 F	3185.00	9251	1285	577	66	94	2022	11273	17.94	82.	11.	5.	1.	1.	64.	29.	3.	5.
77806 H	3215.00	4983	741	297	22	40	1100	6083	18.08	82.	12.	5.	0.	1.	67.	27.	2.	4.
77806 J	3245.00	23287	3847	1254	117	139	5357	28644	18.70	81.	13.	4.	0.	0.	72.	23.	2.	3.
77806 L	3275.00	9732	986	316	31	47	1380	11112	12.42	88.	9.	3.	0.	0.	71.	23.	2.	3.
77806 N	3305.00	3340	589	328	46	92	1055	4395	24.00	76.	13.	7.	1.	2.	56.	31.	4.	9.
77806 P	3335.00	8390	1134	443	47	87	1711	10101	16.94	83.	11.	4.	0.	1.	66.	26.	3.	5.
77806 R	3365.00	5137	1405	641	67	121	2234	7371	30.31	70.	19.	9.	1.	2.	63.	29.	3.	5.
77806 T	3395.00	7077	1052	311	30	61	1454	8531	17.04	83.	12.	4.	0.	1.	72.	21.	2.	4.
77806 V	3425.00	24409	2272	626	53	108	3059	27468	11.14	89.	8.	2.	0.	0.	74.	20.	2.	4.
77806 X	3455.00	7369	1015	379	43	97	1534	8903	17.23	83.	11.	4.	0.	1.	66.	25.	3.	6.
77806 Z	3485.00	4337	529	188	27	54	798	5135	15.54	84.	10.	4.	1.	1.	66.	24.	3.	7.
77807 B	3515.00	64	6	1	0	0	7	71	9.86	90.	8.	1.	0.	0.	86.	14.	0.	0.
77807 D	3545.00	3585	401	94	12	21	528	4113	12.84	87.	10.	2.	0.	1.	76.	18.	2.	4.

TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WHITING 2

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	TOC%	DESCRIPTION
77794 R	1272.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.49					LT-M GY SLTST,QTZ
77794 Q	1275.00	LATE EOCENE-PALEO	LATROBE GROUP	1	1.03					M GY MDST,CARB LAM
77794 L	1302.00	LATE EOCENE-PALEO	LATROBE GROUP	1	2.24					M GY SLTST,COARSE
77794 K	1337.50	LATE EOCENE-PALEO	LATROBE GROUP	1	5.32					LT GY MDST,CARB BANDS
77794 J	1359.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.92					M GY SST,COARSE
77794 H	1397.00	LATE EOCENE-PALEO	LATROBE GROUP	1	59.86					COAL
77794 E	1466.00	LATE EOCENE-PALEO	LATROBE GROUP	1	2.95					LT GY MDST,MICA
77794 B	1530.00	LATE EOCENE-PALEO	LATROBE GROUP	1	3.47					WHT SLTST,DK CARB LAM
77793 Z	1547.50	LATE EOCENE-PALEO	LATROBE GROUP	1	1.96					LT GY MDST
77793 U	1671.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.20					OFF WHT SST,FINE GRAIN
77793 R	1754.00	LATE EOCENE-PALEO	LATROBE GROUP	1	2.93					LT GY MDST,CARB LAMINAE
77793 P	1775.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.09					LT GY CLYST
77793 N	1840.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.48					LT GY CLYST
77793 J	1924.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.58					LT GY SLTST,CARB,QTZ
77793 H	1970.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.52					M GY SH,CARB LAM
77793 G	1985.00	LATE EOCENE-PALEO	LATROBE GROUP	1	38.52					COAL,FOSSILS
77793 F	2000.00	LATE EOCENE-PALEO	LATROBE GROUP	1	1.88					M GY SH
77793 D	2045.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.29					LT GY SH
77793 C	2073.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.52					LT GY MDST
77793 B	2106.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.22					V LT GY SST,DK LAMINAE
77793 A	2125.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.34					LT GY MDST
77792 Z	2144.90	LATE EOCENE-PALEO	LATROBE GROUP	1	.59					M GY MDST
77792 W	2205.00	LATE EOCENE-PALEO	LATROBE GROUP	1	1.86					M-DK GY CLYST,MICA
77792 V	2224.90	LATE EOCENE-PALEO	LATROBE GROUP	1	.72					LT-M GY SLTST
77792 U	2250.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.39					LT GY MDST,CARB FLECKS
77792 T	2285.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.88					M GY-BRN SH,CARB LAM
77792 S	2308.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.98					M GY SLTST,DK CARB LAM
77792 R	2330.00	LATE EOCENE-PALEO	LATROBE GROUP	1	6.52					DK GY SH,CARB LAM
77792 Q	2350.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.26					LT GY SST,FINE GRAIN
77792 P	2370.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.50					LT GY SLTST,CARB LAM
77792 O	2390.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.28					LT GY-BRN SLTST
77792 N	2409.90	LATE EOCENE-PALEO	LATROBE GROUP	1	.31					M-DK GY SH,MICA,QTZ
77792 M	2438.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.29					M GY MDST
77792 L	2465.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.25					M GY-BRN CLYST
77792 K	2485.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.14					M-DK GY SH,CARB
77792 J	2505.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.47					M GY SH
77792 I	2526.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.43					DK GY SH
77792 H	2548.00	LATE EOCENE-PALEO	LATROBE GROUP	1	3.70					V DK GY SH
77792 G	2570.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.46					M GY MDST,CARB LAM
77792 F	2590.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.49					LT-M GY SLTST
77792 E	2608.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.38					M GY CLYST
77792 D	2634.90	LATE EOCENE-PALEO	LATROBE GROUP	1	.63					LT-M GY SH
77792 C	2655.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.76					DK GY MDST,SOME CARB
77792 B	2675.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.36					M GY MDST
77792 A	2694.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.34					M-DK GY MDST
77791 Z	2715.00	LATE EOCENE-PALEO	LATROBE GROUP	1	.68					DK GY SH,LT GY SLTST
77805 A	2730.00	LATE EOCENE-PALEO	LATROBE GROUP	2	.90					M DK GY,LT OL/GY CLYST

TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WHITING 2

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	TOC%	DESCRIPTION
77791 Y	2739.90	LATE EOCENE-PALEO	LATROBE GROUP	1	1.23					M-DK GY SH
77805 C	2760.00	LATE EOCENE-PALEO	LATROBE GROUP	2	.67					GR/GN CLYST
77791 X	2774.00	LATE EOCENE-PALEO	LATROBE GROUP	1	1.07					DK GY SH
77805 E	2790.00	LATE EOCENE-PALEO	LATROBE GROUP	2	16.90					COAL
77805 G	2820.00	LATE EOCENE-PALEO	LATROBE GROUP	2	.49					GY/GN CLYST
77805 I	2850.00	LATE EOCENE-PALEO	LATROBE GROUP	2	.01					VOLC
77805 K	2880.00	LATE EOCENE-PALEO	LATROBE GROUP	2	.12					VOLC
77791 V	2892.90	LATE EOCENE-PALEO	LATROBE GROUP	1	.09					LT GY MDST
77805 M	2910.00	LATE EOCENE-PALEO	LATROBE GROUP	2	1.38					DK GY CLYST;VOL,TCE COAL
77805 O	2930.00	LATE EOCENE-PALEO	LATROBE GROUP	2	1.98					MED.DK.GY.CLYST;TCE COAL
77791 U	2960.00	LATE EOCENE-PALEO	LATROBE GROUP	1	1.29					DK GY SH,WHT SST,SLTST
77805 Q	2960.00	LATE EOCENE-PALEO	LATROBE GROUP	2	2.07					M DK GY CLYST;GR/GY SLTS
77805 S	2990.00	LATE EOCENE-PALEO	LATROBE GROUP	2	2.05					M DK GY CLYST;GY/GN SS
77805 U	3020.00	LATE EOCENE-PALEO	LATROBE GROUP	2	.04					VOLC
77791 S	3025.00	LATE EOCENE-PALEO	LATROBE GROUP	1	2.52					DK GY SH
77791 R	3049.90	LATE EOCENE-PALEO	LATROBE GROUP	1	2.47					DK GY SH
77805 W	3050.00	LATE EOCENE-PALEO	LATROBE GROUP	2	1.11					LT GR SS;CLAYEY LAMINAE
77791 Q	3075.00	LATE EOCENE-PALEO	LATROBE GROUP	1	14.99					V DK GY SH,V CARB
77805 Y	3080.00	LATE EOCENE-PALEO	LATROBE GROUP	2	2.86					DK GY CLYST;M GY SLTST
77806 A	3110.00	LATE EOCENE-PALEO	LATROBE GROUP	2	.84					VOLC;M DK GY SLTST
77791 N	3128.50	LATE CRETACEOUS	LATROBE GROUP	1	3.15					M-DK GY SH,DRILLING MUD
77791 M	3133.50	LATE CRETACEOUS	LATROBE GROUP	1	.27					M GY SH,LT BRN MDST
77806 C	3140.00	LATE CRETACEOUS	LATROBE GROUP	2	24.80					COAL
77791 L	3165.00	LATE CRETACEOUS	LATROBE GROUP	1	7.37					DK GY SH
77806 E	3170.00	LATE CRETACEOUS	LATROBE GROUP	2	1.33					M GY CLYST;LT GR SS;VOLC
77806 G	3200.00	LATE CRETACEOUS	LATROBE GROUP	2	1.08					M DK GY CLYST
77806 I	3230.00	LATE CRETACEOUS	LATROBE GROUP	2	1.93					DK.GY CLYST
77806 K	3260.00	LATE CRETACEOUS	LATROBE GROUP	2	24.95					COAL
77791 G	3262.00	LATE CRETACEOUS	LATROBE GROUP	1	.15					LT GY SST,M GRAIN
77806 M	3290.00	LATE CRETACEOUS	LATROBE GROUP	2	.46					VOLC;PALE YEL/BR SS
77791 E	3300.50	LATE CRETACEOUS	LATROBE GROUP	1	2.82					M DK GY SH
77791 C	3318.00	LATE CRETACEOUS	LATROBE GROUP	1	.12					LT GY SST,M GRAIN
77791 B	3329.80	LATE CRETACEOUS	LATROBE GROUP	1	.65					LT-M GY SH
77791 A	3334.00	LATE CRETACEOUS	LATROBE GROUP	1	.12					LT GY SST,MICA,BIOTITE
77806 Q	3350.00	LATE CRETACEOUS	LATROBE GROUP	2	.81					M DK GY CLYST;QTZ GR
77795 Q	3386.00	LATE CRETACEOUS	LATROBE GROUP	1	1.52					M GY SLTST,SL CARB
77795 L	3434.00	LATE CRETACEOUS	LATROBE GROUP	1	1.07					M GY SLTST,SL CARB
77806 W	3440.00	LATE CRETACEOUS	LATROBE GROUP	2	1.05					M DK GY CLYST + QTZ GR
77795 J	3454.20	LATE CRETACEOUS	LATROBE GROUP	1	.67					LT-M GY SLTST
77795 H	3463.70	LATE CRETACEOUS	LATROBE GROUP	1	1.81					M-DK GY SLTST,CARB
77795 D	3469.00	LATE CRETACEOUS	LATROBE GROUP	1	1.22					DK GY SLTST,SL CARB
77795 C	3492.30	LATE CRETACEOUS	LATROBE GROUP	1	21.35					BLK SLTST,COAL LAM,CARB
77795 A	3515.00	LATE CRETACEOUS	LATROBE GROUP	1	4.83					DK GY SLTST,SL CARB
77807 C	3530.00	LATE CRETACEOUS	LATROBE GROUP	2	.66					M DK GY CLYST + QTZ GR
77794 W	3534.30	LATE CRETACEOUS	LATROBE GROUP	1	6.70					BLK SLTST,V CARB
77794 V	3548.20	LATE CRETACEOUS	LATROBE GROUP	1	35.15					COAL

ROCK EVAL ANALYSES

BASIN - GIPPSLAND
WELL - WHITING 2

REPORT A - SULPHUR & PYROLYZABLE CARBON

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	TMAX	S1	S2	S3	PI	S2/S3	PC	COMMENTS
77794 R	1272.0	SWC	LATE EOCENE-PALEO	401.	.09	.22	.12	.28	1.92	.03	
77794 K	1337.5	SWC	LATE EOCENE-PALEO	404.	2.69	28.71	.58	.09	49.08	2.61	
77794 E	1466.0	SWC	LATE EOCENE-PALEO	415.	.76	10.34	.40	.07	25.66	.92	
77793 Z	1547.5	SWC	LATE EOCENE-PALEO	416.	.63	.46	.34	.58	1.38	.09	
77793 R	1754.0	SWC	LATE EOCENE-PALEO	421.	.99	9.96	.36	.09	28.06	.91	
77793 N	1840.0	SWC	LATE EOCENE-PALEO	417.	.17	1.19	.20	.12	6.03	.11	
77793 J	1924.0	SWC	LATE EOCENE-PALEO	422.	.13	.96	.15	.11	6.61	.09	
77793 G	1985.0	SWC	LATE EOCENE-PALEO	428.	5.78	260.00	3.48	.02	77.12	21.79	
77792 Z	2144.9	SWC	LATE EOCENE-PALEO	424.	.21	1.10	.15	.17	7.30	.11	
77792 W	2205.0	SWC	LATE EOCENE-PALEO	417.	.41	4.14	.20	.09	20.29	.38	
77792 S	2308.0	SWC	LATE EOCENE-PALEO	416.	.37	2.73	.10	.12	28.00	.26	
77792 R	2330.0	SWC	LATE EOCENE-PALEO	419.	2.14	36.50	.36	.06	100.62	3.21	
77792 C	2655.0	SWC	LATE EOCENE-PALEO	479.	.09	.26	.07	.25	3.54	.03	
77791 X	2774.0	SWC	LATE EOCENE-PALEO	488.	.20	.30	.09	.39	3.44	.04	
77791 U	2960.0	SWC	LATE EOCENE-PALEO	425.	.47	3.65	.04	.11	94.00	.34	
77791 Q	3075.0	SWC	LATE EOCENE-PALEO	433.	5.75	50.97	.64	.10	80.08	4.71	
77791 L	3165.0	SWC	LATE CRETACEOUS	447.	2.29	23.06	.21	.09	108.26	2.10	
77791 E	3300.5	SWC	LATE CRETACEOUS	432.	1.82	5.83	.12	.24	49.58	.64	
77795 Q	3386.0	SWC	LATE CRETACEOUS	427.	1.35	1.83	.13	.42	13.57	.26	
77795 J	3454.2	SWC	LATE CRETACEOUS	438.	.21	.20	.00	.51	.20	.03	
77795 H	3463.7	SWC	LATE CRETACEOUS	432.	.75	1.89	.04	.29	50.75	.22	
77795 D	3489.0	SWC	LATE CRETACEOUS	448.	.87	1.02	.00	.46	1.02	.16	
77795 C	3492.3	SWC	LATE CRETACEOUS	460.	5.64	35.60	.98	.14	36.27	3.42	
77795 A	3515.0	SWC	LATE CRETACEOUS	435.	2.73	6.18	.33	.31	18.54	.74	
77794 W	3534.3	SWC	LATE CRETACEOUS	447.	3.17	11.03	.70	.22	15.65	1.18	
77794 V	3548.2	SWC	LATE CRETACEOUS	466.	12.57	51.17	3.30	.20	17.32	5.23	

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

ROCK EVAL ANALYSES

BASIN - GIPPSLAND
WELL - WHITING 2

REPORT B - TOTAL CARBON,H/O INDICES

SAMPLE NO.	DEPTH	SAMPLE TYPE	FORMATION	TC	HI	OI	HI/OI	COMMENTS
77794 R	1272.0	SWC	LATROBE GROUP	.49	46.	24.	1.92	
77794 K	1337.5	SWC	LATROBE GROUP	5.32	540.	11.	49.08	
77794 E	1466.0	SWC	LATROBE GROUP	2.95	351.	14.	25.66	
77793 Z	1547.5	SWC	LATROBE GROUP	1.96	24.	17.	1.38	
77793 R	1754.0	SWC	LATROBE GROUP	2.93	340.	12.	28.06	
77793 N	1840.0	SWC	LATROBE GROUP	.48	247.	41.	6.08	
77793 J	1924.0	SWC	LATROBE GROUP	.58	166.	25.	6.62	
77793 G	1985.0	SWC	LATROBE GROUP	38.52	675.	9.	74.83	
77792 Z	2144.9	SWC	LATROBE GROUP	.59	186.	25.	7.30	
77792 W	2205.0	SWC	LATROBE GROUP	1.86	223.	11.	20.29	
77792 S	2308.0	SWC	LATROBE GROUP	.98	278.	10.	28.00	
77792 R	2330.0	SWC	LATROBE GROUP	6.00	608.	6.	100.62	
77792 C	2655.0	SWC	LATROBE GROUP	.76	35.	10.	3.50	
77791 X	2774.0	SWC	LATROBE GROUP	1.07	28.	8.	3.44	
77791 U	2960.0	SWC	LATROBE GROUP	1.29	283.	3.	94.00	
77791 Q	3075.0	SWC	LATROBE GROUP	14.99	340.	4.	80.08	
77791 L	3165.0	SWC	LATROBE GROUP	7.37	313.	3.	108.26	
77791 E	3300.5	SWC	LATROBE GROUP	2.82	207.	4.	49.58	
77795 Q	3386.0	SWC	LATROBE GROUP	1.52	120.	9.	13.57	
77795 J	3454.2	SWC	LATROBE GROUP	.67	29.	0.	.00	
77795 H	3463.7	SWC	LATROBE GROUP	1.81	104.	2.	50.75	
77795 D	3489.0	SWC	LATROBE GROUP	1.22	83.	0.	.00	
77795 C	3492.3	SWC	LATROBE GROUP	21.35	167.	5.	36.27	
77795 A	3515.0	SWC	LATROBE GROUP	4.83	128.	7.	18.54	
77794 W	3534.3	SWC	LATROBE GROUP	3.70	298.	19.	15.65	
77794 V	3548.2	SWC	LATROBE GROUP	35.15	146.	9.	16.22	

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

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WHITING 2

SAMPLE NO.	DEPTH	SAMPLE TYPE	N%	C%	H%	S%	O%	ASH%	COMMENTS
			--- ELEMENTAL % (ASH FREE) ---						
77794 R	1272.00	SWC	.94	68.54	4.99	.00	25.54	13.55	HIGH ASH
77794 Q	1275.00	SWC	1.17	65.41	5.30	.00	28.11	7.23	
77794 P	1280.00	SWC	.26	58.83	6.90	.00	34.01	23.58	V HIGH ASH
77794 O	1285.00	SWC	.77	62.01	4.67	.00	32.55	12.17	HIGH ASH,V SMALL SAMPLE
77794 L	1302.00	SWC	.56	64.24	4.82	.00	30.38	7.60	
77794 K	1337.50	SWC	.21	63.46	6.28	.00	30.05	.40	
77794 J	1359.00	SWC	.50	62.85	4.86	.00	31.79	8.20	
77794 I	1374.00	SWC	.68	63.13	5.35	.00	30.84	3.77	
77794 G	1421.00	SWC	.67	67.47	5.24	.00	26.62	7.85	
77794 F	1441.00	SWC	.45	67.81	5.38	.00	26.35	.43	
77794 E	1466.00	SWC	.81	72.73	5.79	.00	20.68	7.57	
77794 D	1484.90	SWC	1.01	54.22	5.33	.00	39.44	29.67	V HIGH ASH,SMALL SAMPLE
77794 B	1530.00	SWC	.97	66.62	4.98	.00	27.43	8.00	
77793 Z	1547.50	SWC	.72	70.66	5.82	.00	22.79	5.71	
77793 Y	1568.00	SWC	1.05	69.97	5.17	.00	23.80	4.92	
77793 T	1703.00	SWC	.80	74.65	5.73	.00	18.83	6.96	
77793 R	1754.00	SWC	.79	69.87	5.84	.00	23.50	2.47	
77793 Q	1766.00	SWC	.98	75.95	6.52	.00	16.54	11.09	HIGH ASH
77793 O	1800.00	SWC	.96	74.95	5.44	.00	18.65	9.97	
77793 N	1840.00	SWC	.88	78.35	7.48	.00	13.28	11.53	HIGH ASH
77793 L	1875.00	SWC	1.28	74.20	5.47	.00	19.05	7.23	
77793 J	1924.00	SWC	1.09	68.43	5.61	.00	24.86	5.57	
77793 I	1945.00	SWC	1.03	77.49	4.44	.00	17.03	2.25	
77793 H	1970.00	SWC	1.46	76.13	4.50	.00	17.91	2.80	
77793 F	2000.00	SWC	.81	61.04	5.54	.00	32.61	5.24	
77793 D	2045.00	SWC	1.08	76.83	4.15	.00	17.94	5.13	SMALL SAMPLE
77793 C	2073.00	SWC	1.08	80.62	4.50	.00	13.80	3.54	
77792 Z	2144.90	SWC	1.42	81.73	6.14	.00	10.71	6.08	
77792 X	2185.00	SWC	1.17	76.52	4.91	.00	17.41	2.39	
77792 W	2205.00	SWC	.96	77.84	5.68	.00	15.51	1.29	
77792 V	2224.90	SWC	1.13	78.11	5.84	.00	14.93	12.90	HIGH ASH
77792 U	2250.00	SWC	1.34	80.37	4.95	.00	13.34	4.63	
77792 T	2285.00	SWC	.89	67.14	5.56	.00	26.40	2.73	
77792 S	2308.00	SWC	.79	75.09	6.44	.00	17.68	22.73	V HIGH ASH
77792 R	2330.00	SWC	1.25	81.02	6.51	.00	11.22	3.77	
77792 P	2370.00	SWC	1.30	79.69	5.16	.00	13.85	4.10	
77792 O	2390.00	SWC	.87	81.10	4.37	.00	13.66	3.37	SMALL SAMPLE
77792 N	2409.90	SWC	.98	78.03	5.44	.00	15.54	12.51	HIGH ASH
77792 J	2505.00	SWC	.85	82.76	4.13	.00	12.25	4.93	
77792 I	2526.00	SWC	1.36	83.77	5.04	.00	9.82	6.20	2*ZNBR2,V SMALL SAMPLE
77792 H	2548.00	SWC	.91	77.97	5.48	.00	15.64	4.42	
77792 F	2590.00	SWC	.98	83.46	5.26	.00	10.31	7.91	
77792 C	2655.00	SWC	1.17	86.42	4.68	.00	7.73	1.89	
77792 B	2675.00	SWC	.77	79.45	3.78	.00	16.01	4.67	V SMALL SAMPLE
77791 Y	2739.90	COR	1.20	72.27	5.51	.00	21.02	4.55	

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WHITING 2

SAMPLE NO.	DEPTH	SAMPLE TYPE	N%	C%	H%	S%	O%	ASH%	COMMENTS
			--- ELEMENTAL % (ASH FREE) ---						
77791 X	2774.00	SWC	1.59	86.74	4.88	.00	6.79	4.52	
77791 W	2801.40	SWC	1.46	85.22	3.74	.00	9.58	5.89	
77791 U	2960.00	SWC	1.17	82.20	5.56	.00	11.06	5.99	
77791 T	2980.90	SWC	1.17	83.80	6.45	.00	8.58	11.32	HIGH ASH
77791 R	3049.90	SWC	1.30	87.12	4.92	.00	6.65	5.48	
77791 Q	3075.00	SWC	1.34	86.13	6.68	.00	5.85	3.77	
77791 P	3120.00	SWC	1.22	81.93	4.27	.00	12.58	2.16	
77791 M	3133.50	SWC	1.12	75.99	4.58	.00	18.31	3.70	
77791 L	3165.00	SWC	1.32	85.44	6.36	.00	6.88	3.11	
77791 E	3300.50	SWC	1.11	83.85	6.15	.00	8.90	7.27	
77795 L	3434.00	SWC	1.56	72.01	5.53	.00	20.91	12.59	HIGH ASH
77795 J	3454.20	SWC	1.31	85.95	5.05	.00	7.69	10.82	HIGH ASH
77795 D	3489.00	SWC	1.15	82.33	5.62	.00	10.90	14.53	HIGH ASH
77795 C	3492.30	SWC	1.39	87.86	5.84	.00	4.91	3.72	
77795 A	3515.00	SWC	1.16	81.69	5.10	.00	12.05	5.66	
77794 X	3534.30	SWC	1.33	87.30	5.22	.00	6.15	4.74	

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WHITTING 2

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	FORMATION	ATOMIC RATIOS H/C	ATOMIC RATIOS O/C	ATOMIC RATIOS N/C	COMMENTS
77794 R	1272.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.87	.28	.01	HIGH ASH
77794 Q	1275.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.97	.32	.02	
77794 P	1280.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	1.41	.43	.00	V HIGH ASH
77794 O	1285.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.90	.39	.01	HIGH ASH,V SMALL SAMPLE
77794 L	1302.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.90	.35	.01	
77794 K	1337.50	SWC	LATE EOCENE-PALEO	LATROBE GROUP	1.19	.36	.00	
77794 J	1359.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.93	.38	.01	
77794 I	1374.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	1.02	.37	.01	
77794 G	1421.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.93	.30	.01	
77794 F	1441.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.95	.29	.01	
77794 E	1466.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.96	.21	.01	
77794 D	1484.90	SWC	LATE EOCENE-PALEO	LATROBE GROUP	1.18	.55	.02	V HIGH ASH,SMALL SAMPLE
77794 B	1530.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.90	.31	.01	
77793 Z	1547.50	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.99	.24	.01	
77793 Y	1568.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.89	.26	.01	
77793 T	1703.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.92	.19	.01	
77793 R	1754.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	1.00	.25	.01	
77793 Q	1766.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	1.03	.16	.01	HIGH ASH
77793 O	1800.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.87	.19	.01	
77793 N	1840.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	1.15	.13	.01	HIGH ASH
77793 L	1875.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.88	.19	.01	
77793 J	1924.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.98	.27	.01	
77793 I	1945.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.69	.16	.01	
77793 H	1970.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.71	.18	.02	
77793 F	2000.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	1.09	.40	.01	
77793 D	2045.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.65	.18	.01	SMALL SAMPLE
77793 C	2073.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.67	.13	.01	
77792 Z	2144.90	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.90	.10	.01	
77792 X	2185.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.77	.17	.01	
77792 W	2205.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.88	.15	.01	
77792 V	2224.90	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.90	.14	.01	HIGH ASH
77792 U	2250.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.74	.12	.01	
77792 T	2285.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.99	.29	.01	
77792 S	2308.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	1.03	.18	.01	V HIGH ASH
77792 R	2330.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.96	.10	.01	
77792 P	2370.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.78	.13	.01	
77792 O	2390.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.65	.13	.01	SMALL SAMPLE
77792 N	2409.90	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.84	.15	.01	HIGH ASH
77792 J	2505.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.60	.11	.01	
77792 I	2526.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.72	.09	.01	2*ZNBR2,V SMALL SAMPLE
77792 H	2548.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.84	.15	.01	
77792 F	2590.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.76	.09	.01	
77792 C	2655.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.65	.07	.01	
77792 B	2675.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.57	.15	.01	V SMALL SAMPLE
77791 Y	2739.90	COR	LATE EOCENE-PALEO	LATROBE GROUP	.92	.22	.01	

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WHITING 2

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	FORMATION	ATOMIC RATIOS H/C	O/C	N/C	COMMENTS
77791 X	2774.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.68	.06	.02	
77791 W	2801.40	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.53	.08	.01	
77791 U	2960.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.81	.10	.01	
77791 T	2980.90	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.92	.08	.01	HIGH ASH
77791 R	3049.90	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.68	.06	.01	
77791 Q	3075.00	SWC	LATE EOCENE-PALEO	LATROBE GROUP	.93	.05	.01	
77791 P	3120.00	SWC	LATE CRETACEOUS	LATROBE GROUP	.63	.12	.01	
77791 M	3133.50	SWC	LATE CRETACEOUS	LATROBE GROUP	.72	.18	.01	
77791 L	3165.00	SWC	LATE CRETACEOUS	LATROBE GROUP	.89	.06	.01	
77791 E	3300.50	SWC	LATE CRETACEOUS	LATROBE GROUP	.88	.08	.01	
77795 L	3434.00	SWC	LATE CRETACEOUS	LATROBE GROUP	.92	.22	.02	HIGH ASH
77795 J	3454.20	SWC	LATE CRETACEOUS	LATROBE GROUP	.70	.07	.01	HIGH ASH
77795 D	3489.00	SWC	LATE CRETACEOUS	LATROBE GROUP	.82	.10	.01	HIGH ASH
77795 C	3492.30	SWC	LATE CRETACEOUS	LATROBE GROUP	.80	.04	.01	
77795 A	3515.00	SWC	LATE CRETACEOUS	LATROBE GROUP	.75	.11	.01	
77794 X	3534.30	SWC	LATE CRETACEOUS	LATROBE GROUP	.72	.05	.01	

LIGHT GASOLINES (C4-C7) SUMMARY

BASIN - WHITING 2
WELL - GIPPSLAND

SAMPLE NO.	DEPTH	FORMATION	AGE	TOC%	TOTAL C4-C7 (PPM)	C1/C2	A/D2	C1/D2	CH/MCP	N-PENT/ I-PENT
77805 A	2730.00	LATROBE GROUP	LATE EOCENE-PALEO	0.90	13.51	3.03	5.27	7.85	1.01	1.11
77805 C	2760.00	LATROBE GROUP	LATE EOCENE-PALEO	0.67	1.08	7.26	10.03	11.58	1.35	4.85
77805 E	2790.00	LATROBE GROUP	LATE EOCENE-PALEO	16.90	152.28	2.29	8.01	10.22	1.49	1.59
77805 G	2820.00	LATROBE GROUP	LATE EOCENE-PALEO	0.49	28.65	1.53	5.88	7.89	0.81	1.26
77805 I	2850.00	LATROBE GROUP	LATE EOCENE-PALEO	0.01	0.40	4.45	15.32	19.68	1.07	2.21
77805 K	2880.00	LATROBE GROUP	LATE EOCENE-PALEO	0.12	3.11	1.73	9.14	8.24	0.48	0.78
77805 M	2910.00	LATROBE GROUP	LATE EOCENE-PALEO	1.38	103.91	2.62	12.93	10.08	1.19	1.26
77805 O	2930.00	LATROBE GROUP	LATE EOCENE-PALEO	1.98	3.58	2.92	9.81	14.64	1.25	1.58
77805 Q	2960.00	LATROBE GROUP	LATE EOCENE-PALEO	2.07	19.57	1.45	9.35	6.67	0.81	0.96
77805 S	2990.00	LATROBE GROUP	LATE EOCENE-PALEO	2.05	85.71	1.76	11.80	9.31	1.10	1.36
77805 U	3020.00	LATROBE GROUP	LATE EOCENE-PALEO	0.04	14.11	1.59	10.86	6.54	0.88	1.25
77805 W	3050.00	LATROBE GROUP	LATE EOCENE-PALEO	1.11	34.95	2.64	8.13	8.25	1.43	1.31
77805 Y	3080.00	LATROBE GROUP	LATE EOCENE-PALEO	2.86	25.03	0.97	29.93	12.96	0.86	0.97
77806 A	3110.00	LATROBE GROUP	LATE EOCENE-PALEO	0.84	8.75	3.96	7.77	14.34	1.62	1.14
77806 C	3140.00	LATROBE GROUP	LATE CRETACEOUS	24.80	389.23	2.60	13.17	21.45	1.61	1.67
77806 E	3170.00	LATROBE GROUP	LATE CRETACEOUS	1.33	18.15	2.06	10.20	9.37	1.20	1.19
77806 G	3200.00	LATROBE GROUP	LATE CRETACEOUS	1.08	27.36	3.12	8.90	11.76	1.35	1.18
77806 I	3230.00	LATROBE GROUP	LATE CRETACEOUS	1.93	23.51	2.24	8.32	8.54	1.27	1.84
77806 K	3260.00	LATROBE GROUP	LATE CRETACEOUS	24.95	93.45	3.08	8.44	10.52	1.33	1.37
77806 M	3290.00	LATROBE GROUP	LATE CRETACEOUS	0.46	5.21	3.05	7.74	9.80	1.27	2.03
77806 Q	3350.00	LATROBE GROUP	LATE CRETACEOUS	0.81	64.10	3.12	8.15	10.67	1.33	1.76
77806 W	3440.00	LATROBE GROUP	LATE CRETACEOUS	1.05	67.56	0.52	4.63	4.21	1.59	1.53
77807 C	3530.00	LATROBE GROUP	LATE CRETACEOUS	0.66	7.48	0.92	250.2	56.14	0.86	1.42

C15+ EXTRACT ANALYSES (OILS FLAGGED BY %)

BASIN - GIPPSLAND
WELL - WHITING 2

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

SAMPLE NO.	DEPTH	TYPE	AN	AGE	TOTAL EXTRACT	HYDROCARBONS SATS.	HYDROCARBONS AROMS.	HYDROCARBONS TOTAL H/CARBS	NON-HYDROCARBONS ASPH.	NON-HYDROCARBONS ELUTED NSO	NON-HYDROCARBONS NON-ELT NSO	NON-HYDROCARBONS TOTAL NSO	NON-HYDROCARBONS SULPHUR	NON-HYDROCARBONS TOTAL NON/HCS
77805 C	2760.00	CTCP	2	LATE EOCENE-PALEO	2569.	243.	706.	949.	1096.	328.	144.	472.	52.	1620.
77805 M	2910.00	CTCP	2	LATE EOCENE-PALEO	1666.	276.	472.	748.	602.	181.	76.	257.	59.	918.
77805 W	3050.00	CTCP	2	LATE EOCENE-PALEO	1670.	274.	316.	590.	832.	154.	32.	186.	62.	1080.
77806 A	3110.00	CTCP	2	LATE EOCENE-PALEO	1816.	365.	357.	722.	811.	158.	31.	189.	94.	1094.
77806 K	3260.00	CTCP	2	LATE CRETACEOUS	3300.	474.	775.	1249.	1549.	246.	212.	458.	44.	2051.
77806 W	3440.00	CTCP	2	LATE CRETACEOUS	1670.	378.	354.	732.	602.	152.	147.	299.	37.	938.

C15+ EXTRACT ANALYSES (OILS FLAGGED BY %)

BASIN - GIPPSLAND
WELL - WHITING 2

REPORT B - EXTRACTS % OF TOTAL

SAMPLE NO.	DEPTH	FORMATION	*HYDROCARBONS* SAT. %	AROM. %	*- NON-HYDROCARBONS -* NSO. %	ASPH. %	SULPH%	*	SAT/AR	*	HC/NHC	*	COMMENTS
77805 C	2760.00	LATROBE GROUP	9.5	27.5	18.4	42.7	2.0	*	.3	*	.6	*	
77805 M	2910.00	LATROBE GROUP	16.6	28.3	15.4	36.1	3.5	*	.6	*	.8	*	
77805 W	3050.00	LATROBE GROUP	16.4	18.9	11.1	49.8	3.7	*	.9	*	.5	*	
77806 A	3110.00	LATROBE GROUP	20.1	19.7	10.4	44.7	5.2	*	1.0	*	.7	*	
77806 K	3260.00	LATROBE GROUP	14.4	23.5	13.9	46.9	1.3	*	.6	*	.6	*	
77806 W	3440.00	LATROBE GROUP	22.6	21.2	17.9	36.0	2.2	*	1.1	*	.8	*	

VITRINITE REFLECTANCE REPORT

BASIN - GIPPSLAND
WELL - WHITING 2

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	MAX. RO	FLUOR. COLOUR	NO.CNTS.	MACERAL TYPE
77793 Z	1547.50	LATE EOCENE-PALEO	LATROBE GROUP	5	.44	GRN-YEL-OR	28	E>V,NO I,DOM ABUNDANT
77793 R	1754.00	LATE EOCENE-PALEO	LATROBE GROUP	5	.50	GRN-YEL-OR	31	E>V>I,DOM ABUNDANT
77793 G	1985.00	LATE EOCENE-PALEO	LATROBE GROUP	5	.52	GRN-YEL-OR	26	V>E>>I,SHALY COAL DOM
77792 R	2330.00	LATE EOCENE-PALEO	LATROBE GROUP	5	.62	GRN-YEL-OR	29	E>V>>I,DOM ABUNDANT
77792 H	2548.00	LATE EOCENE-PALEO	LATROBE GROUP	5	.63	YEL-DULL OR	28	V>E>I,DOM ABUNDANT
77791 X	2774.00	LATE EOCENE-PALEO	LATROBE GROUP	5	1.39	YEL	5	V>I>>E,DOM SPARSE
77791 W	2801.40	LATE EOCENE-PALEO	LATROBE GROUP	5	2.06	YEL?	25	V>>I>E,DOM ABUNDANT
77791 U	2960.00	LATE EOCENE-PALEO	LATROBE GROUP	5	.45	GRN YEL-OR	19	I>>V,NO E,DOM SPARSE
77791 T	2980.90	LATE EOCENE-PALEO	LATROBE GROUP	5	.73	YEL YEL-OR	30	V>E>I,DOM ABUNDANT
77791 Q	3075.00	LATE EOCENE-PALEO	LATROBE GROUP	5	.67	YEL-BRN	25	V>E>I,DOM ABUNDANT
77791 M	3133.50	LATE CRETACEOUS	LATROBE GROUP	5	.69	YEL-DULL OR	25	V>E>I,DOM ABUNDANT
77791 L	3165.00	LATE CRETACEOUS	LATROBE GROUP	5	.75	YEL-DULL OR	28	V>E>I,DOM ABUNDANT
77791 E	3300.50	LATE CRETACEOUS	LATROBE GROUP	5	.73	GRN-DULL OR	27	V>E>OR=I,DOM ABUNDANT
77795 Q	3386.00	LATE CRETACEOUS	LATROBE GROUP	5	.77	YEL-DULL OR	22	I>V>E,DOM COMMON
77795 L	3434.00	LATE CRETACEOUS	LATROBE GROUP	5	.82	YEL-DULL OR	24	I>V>?E,DOM SPARSE
77795 J	3454.20	LATE CRETACEOUS	LATROBE GROUP	5	.79	OR-DULL OR	6	I>>V>E,DOM COMMON
77795 H	3463.70	LATE CRETACEOUS	LATROBE GROUP	5	.79	OR-DULL OR	28	I>V>E,DOM COMMON
77795 D	3489.00	LATE CRETACEOUS	LATROBE GROUP	5	.82	OR-DULL OR	10	I>V>E,DOM COMMON
77795 C	3492.30	LATE CRETACEOUS	LATROBE GROUP	5	.99	DULL OR-BRN	30	V>>E>I,DOM ABUNDANT
77795 A	3515.00	LATE CRETACEOUS	LATROBE GROUP	5	.96	DULL OR.	28	I>V>E,DOM ABUNDANT
77794 W	3534.30	LATE CRETACEOUS	LATROBE GROUP	5	1.08	DULL OR-BRN	27	I>V>>E,DOM ABUNDANT
77794 V	3548.20	LATE CRETACEOUS	LATROBE GROUP	5	1.09	DULL OR BRN	28	V>I>E,COAL

OIL - API GRAVITY,POUR POINT & SULPHUR %

BASIN - GIPPSLAND
WELL - WHITING 2

SAMPLE NO.	DEPTH	AGE	FORMATION	API GRAVITY	POUR PT.(OF)	SULPHUR %	COMMENTS
77846 O	1278.00	LATE EOCENE-PALEO	LATROBE GROUP	35.40	.00	.00	RFT-2/2
77846 P	1451.50	LATE EOCENE-PALEO	LATROBE GROUP	53.60	.00	.00	RFT-4,V.HIGH SULPHUR
77846 Q	1490.00	LATE EOCENE-PALEO	LATROBE GROUP	56.90	.00	.00	RFT-2

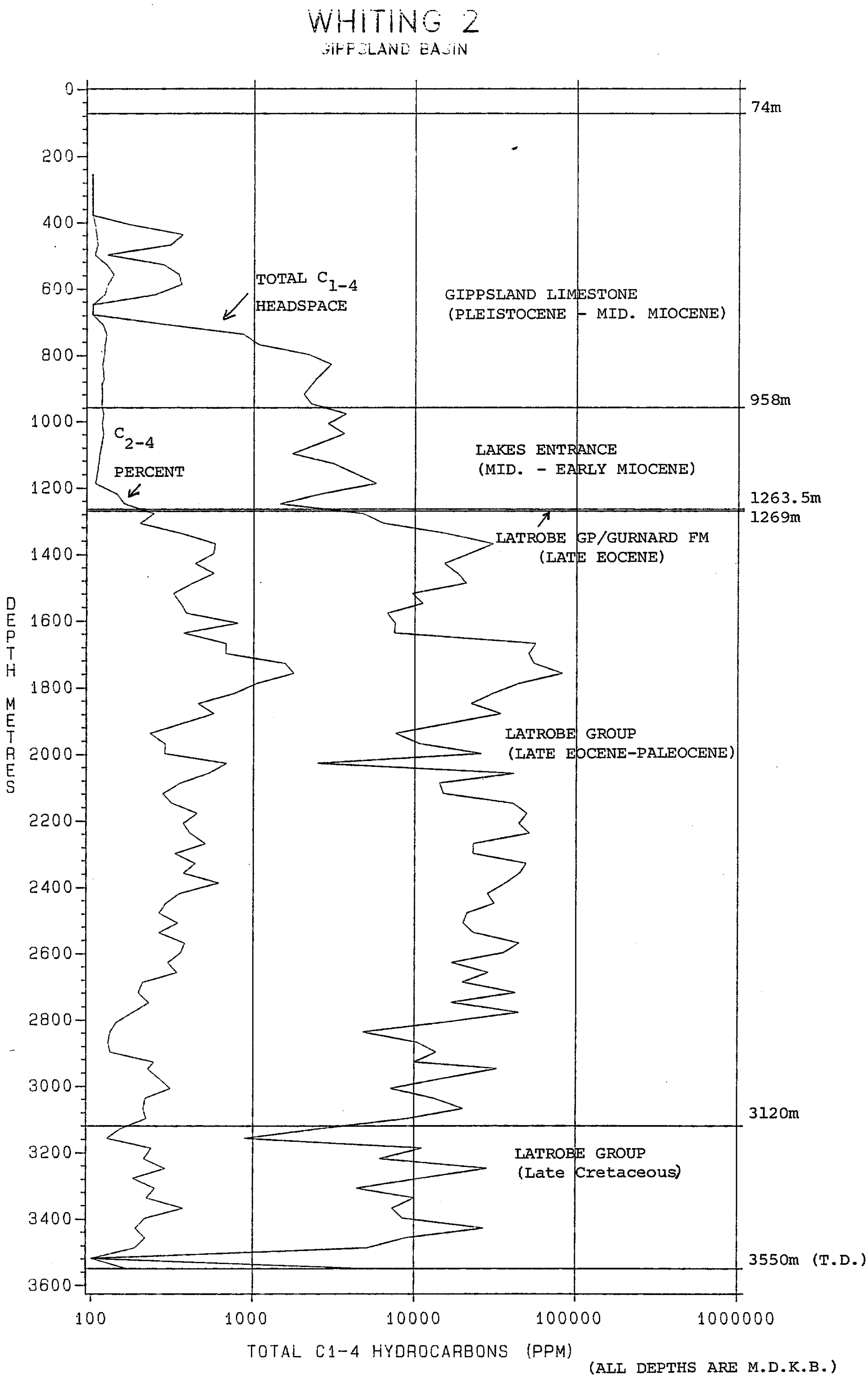

WHITING 2
GIPPSLAND BASIN
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
DEPTH METRES
74m
958m
1263.5m
1269m
3120m
3550m (T.D.)
TOTAL C1-4 HEADSPACE
C2-4 PERCENT
GIPPSLAND LIMESTONE
(PLEISTOCENE - MID. MIOCENE)
LAKES ENTRANCE
(MID. - EARLY MIOCENE)
LATROBE GP/GURNARD FM
(LATE EOCENE)
LATROBE GROUP
(LATE EOCENE-PALEOCENE)
LATROBE GROUP
(Late Cretaceous)
100
1000
10000
100000
1000000
TOTAL C1-4 HYDROCARBONS (PPM)
(ALL DEPTHS ARE M.D.K.B.)

Figure 1b

WHITING 2

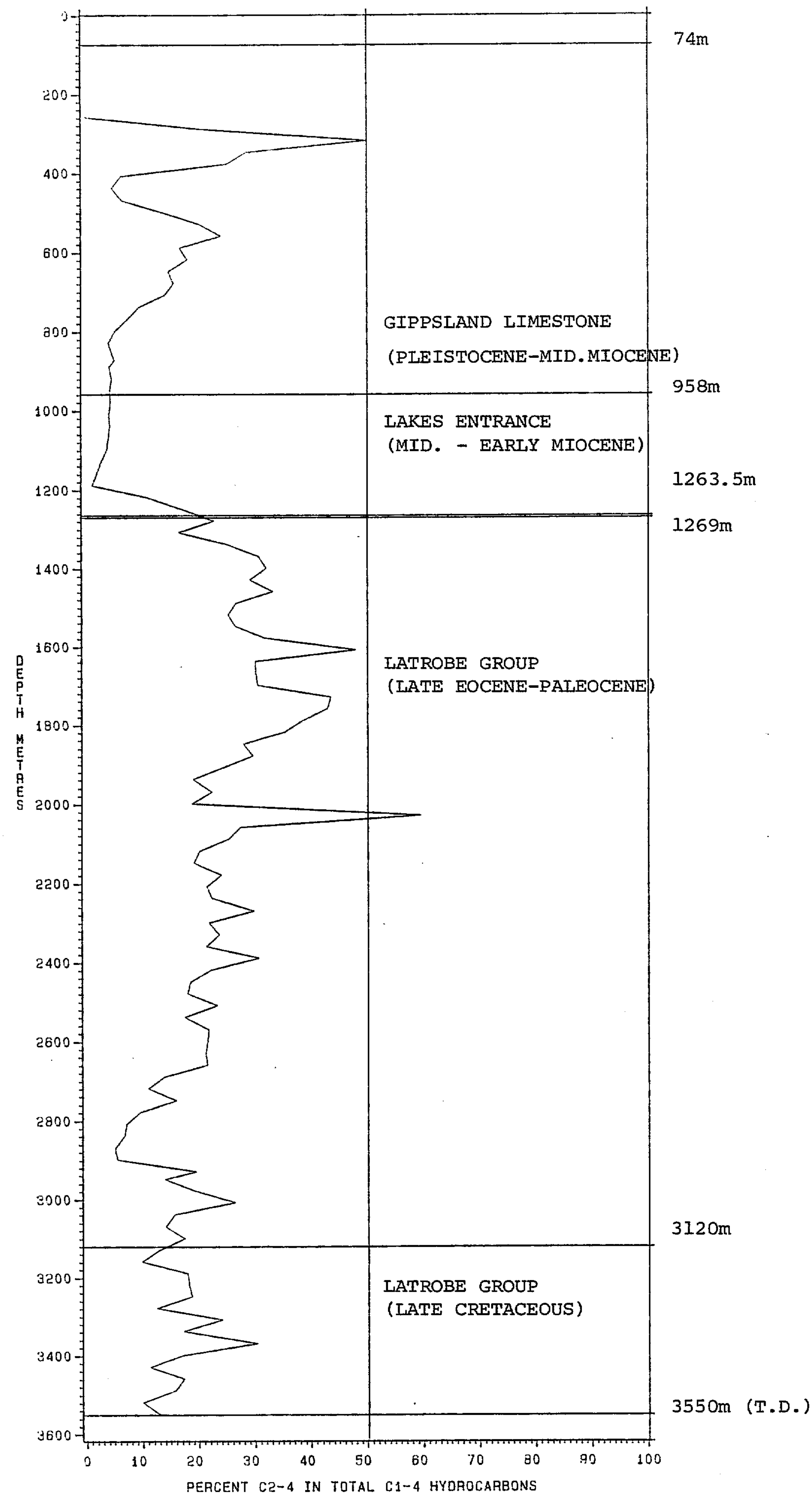
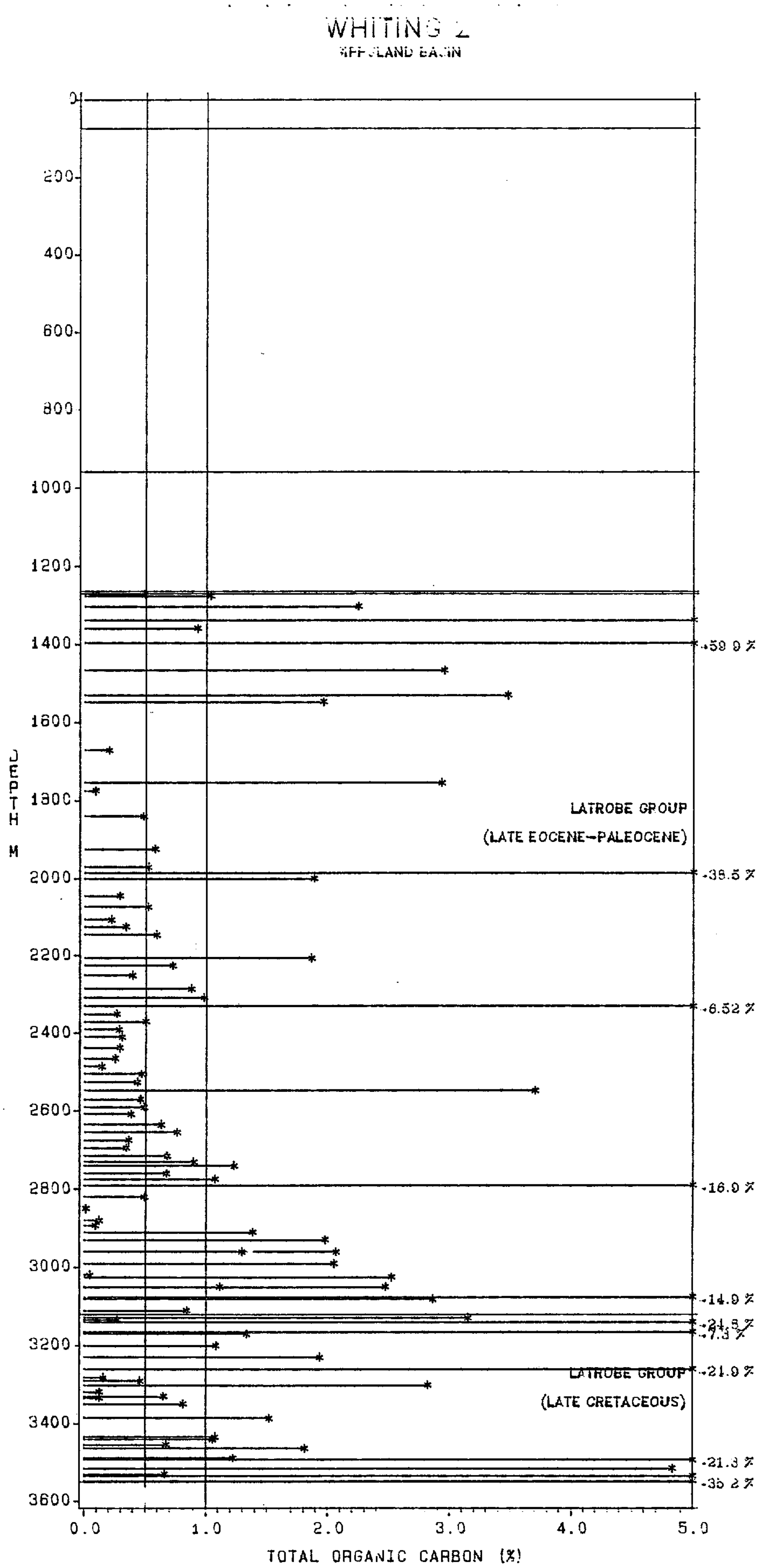


FIGURE 2



WHITING 2
GIPPSLAND BASIN
DEPTH M
TOTAL ORGANIC CARBON (%)
LATROBE GROUP
(LATE EOCENE-PALEOCENE)
LATROBE GROUP
(LATE CRETACEOUS)
59.9 %
38.5 %
6.52 %
16.9 %
14.9 %
21.8 %
7.3 %
21.9 %
21.3 %
35.2 %

Figure 3

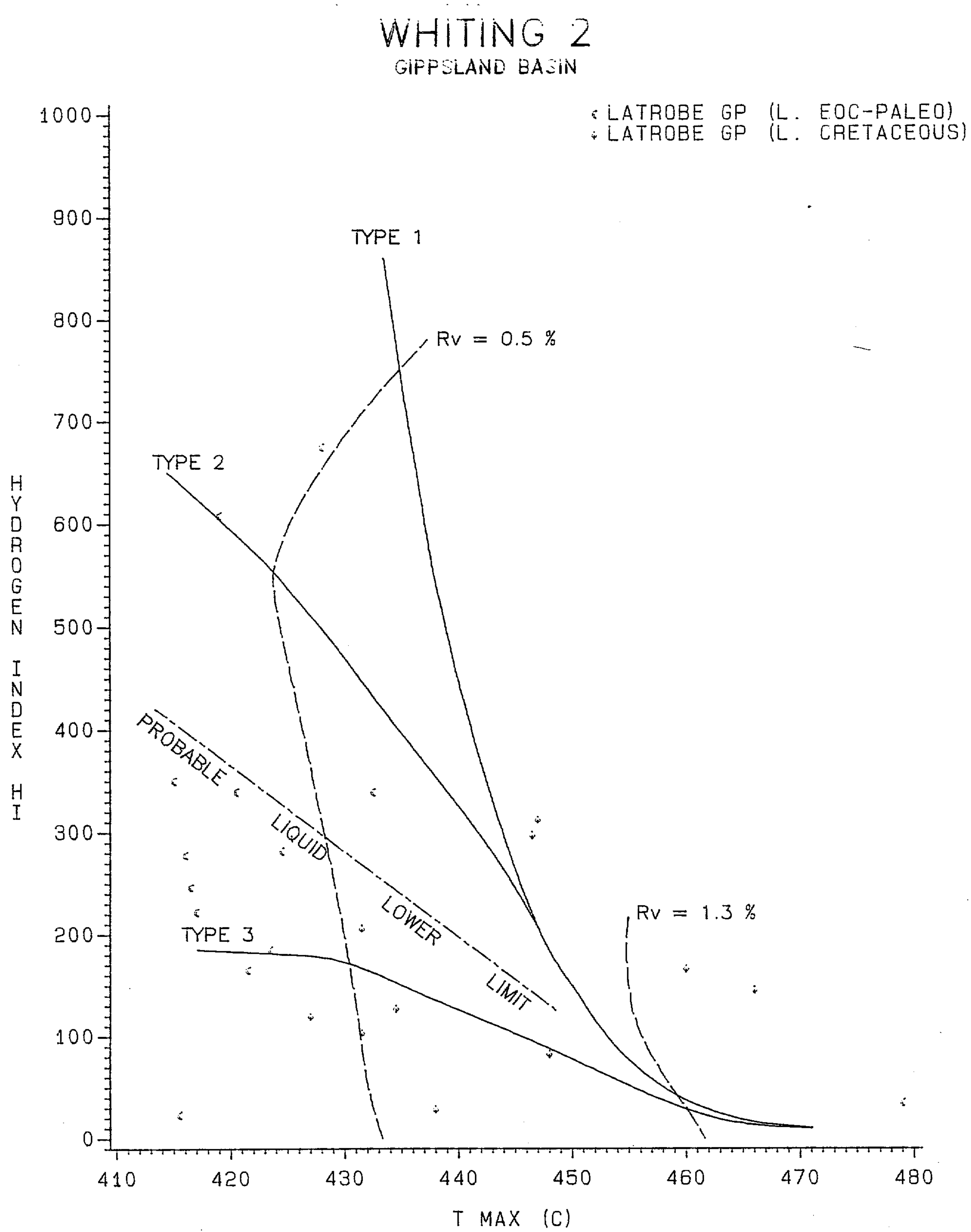
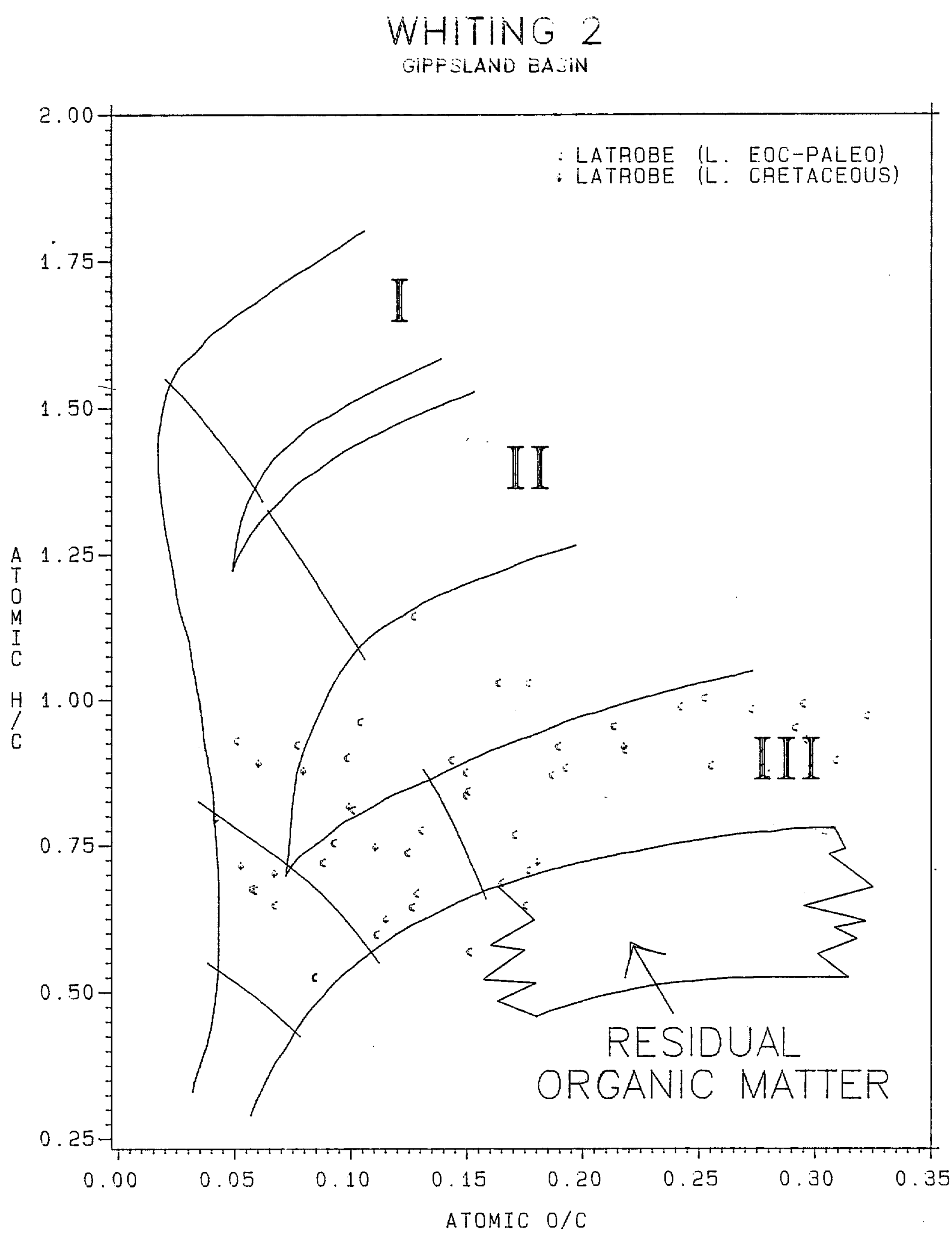
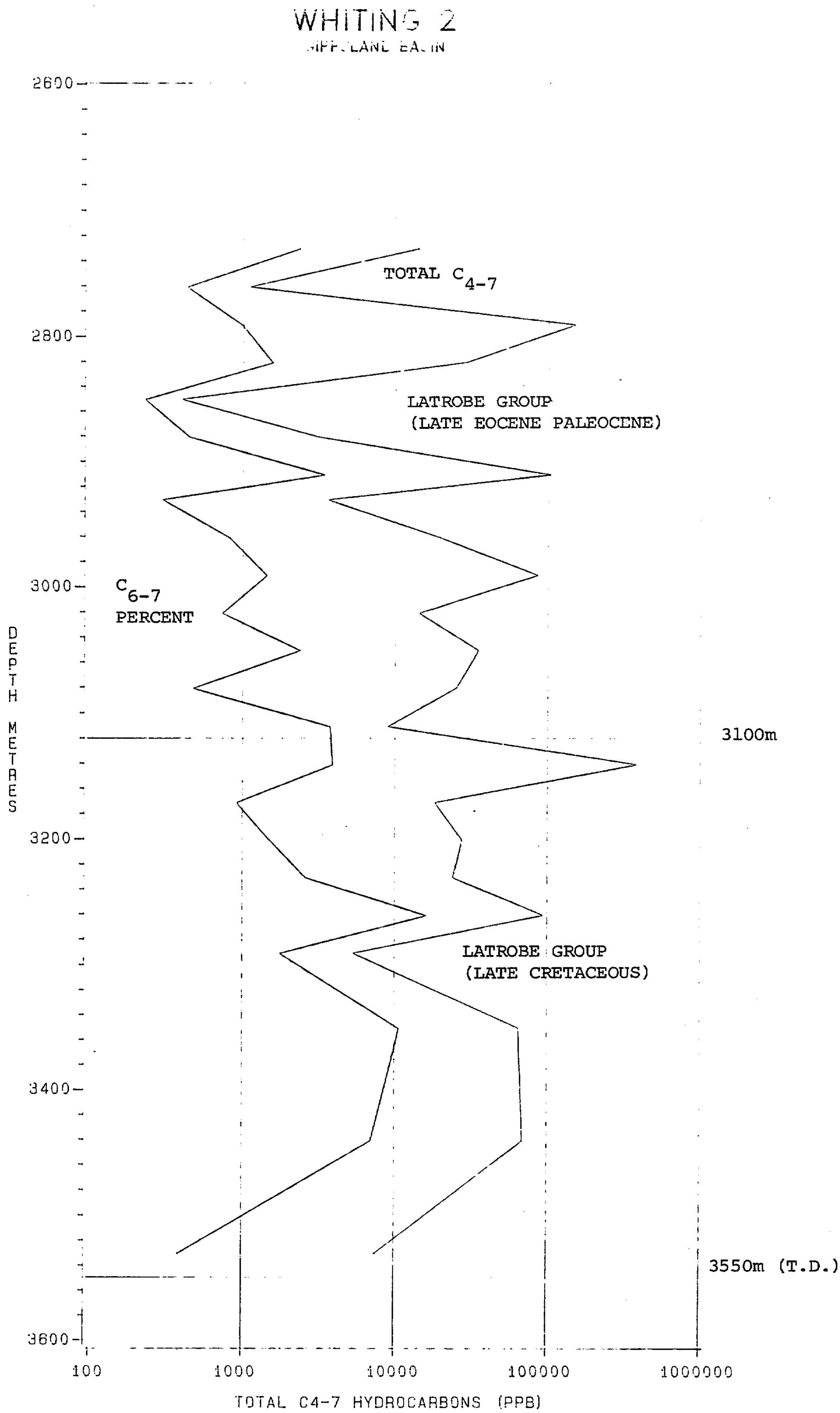

WHITING 2
GIPPSLAND BASIN
LATROBE GP (L. EOC-PALEO)
LATROBE GP (L. CRETACEOUS)
TYPE 1
TYPE 2
TYPE 3
Rv = 0.5 %
Rv = 1.3 %
PROBABLE LIQUID LOWER LIMIT
HYDROGEN INDEX HI
T MAX (C)
0
100
200
300
400
500
600
700
800
900
1000
410
420
430
440
450
460
470
480

Figure 4

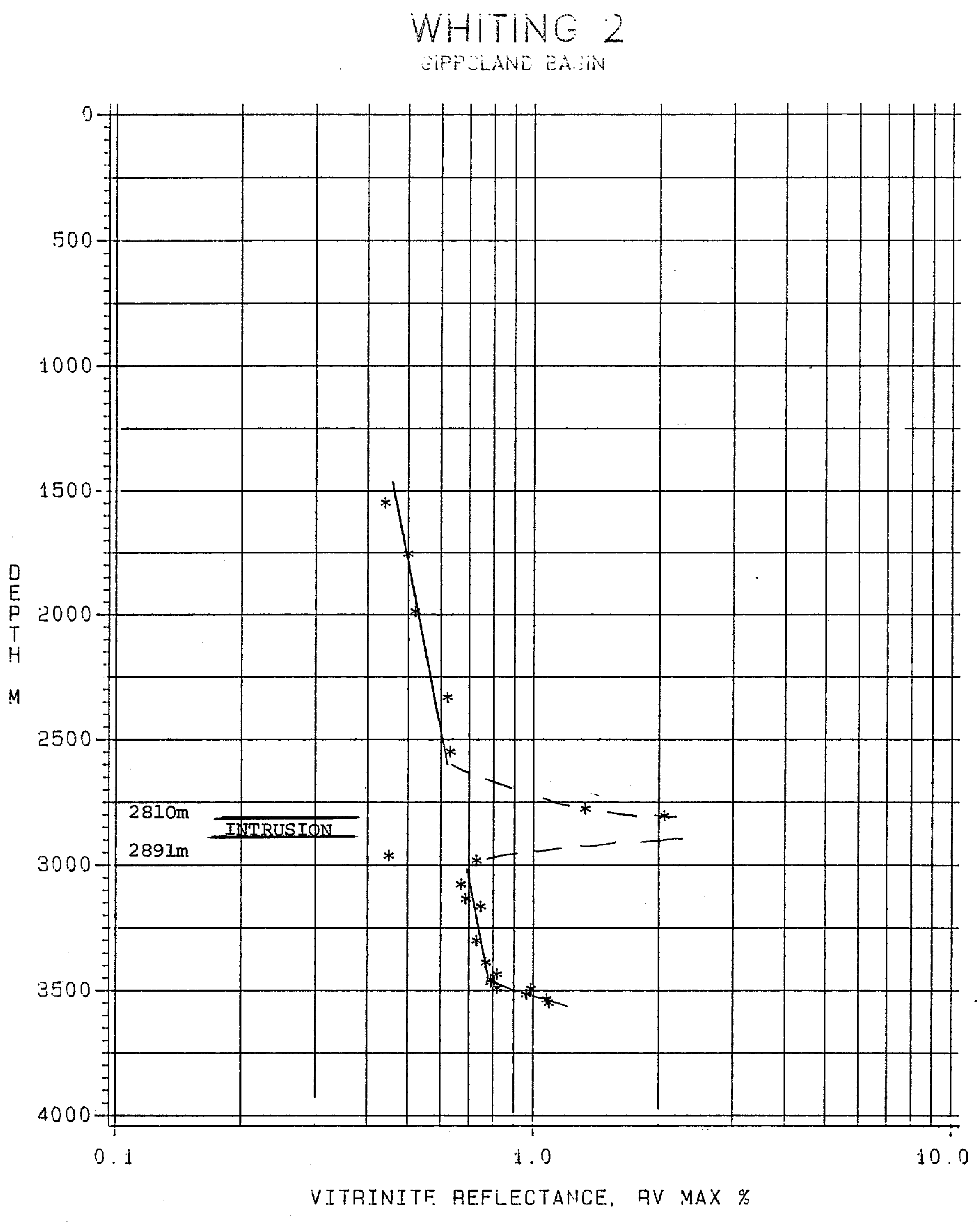


WHITING 2
GIPPSLAND BASIN
LATROBE (L. EOC-PALEO)
LATROBE (L. CRETACEOUS)
I
II
III
RESIDUAL
ORGANIC MATTER
ATOMIC H/C
ATOMIC O/C
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35



(ALL DEPTHS ARE M.D.K.B.)

FIGURE 6



WHITING 2
GIPPSLAND BASIN
0
500
1000
1500
2000
2500
3000
3500
4000
DEPTH M
2810m
INTRUSION
2891m
0.1
1.0
10.0
VITRINITE REFLECTANCE, RV MAX %

Figure 7

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

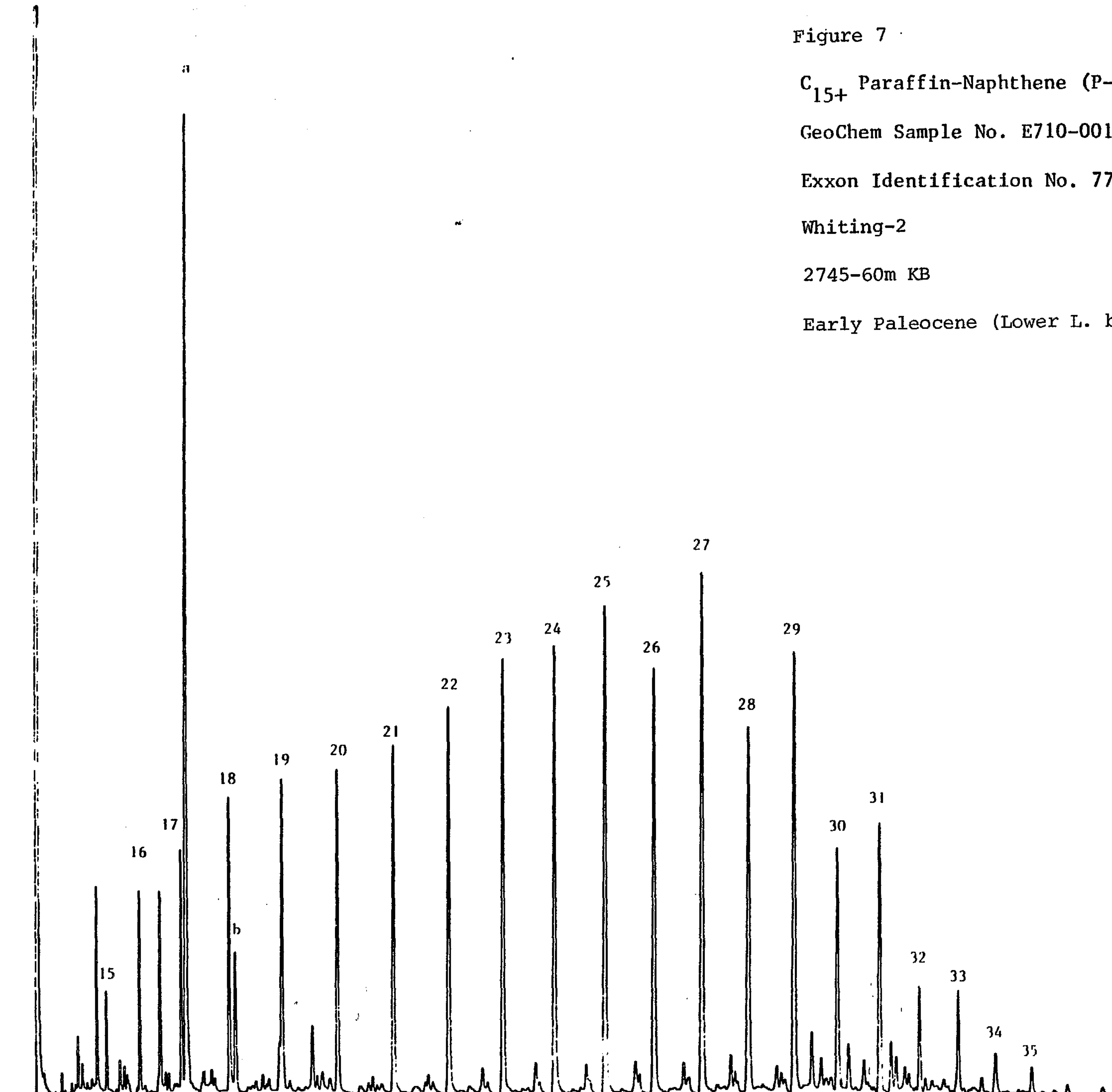
GeoChem Sample No. E710-001

Exxon Identification No. 77805-C

Whiting-2

2745-60m KB

Early Paleocene (Lower L. balmei)



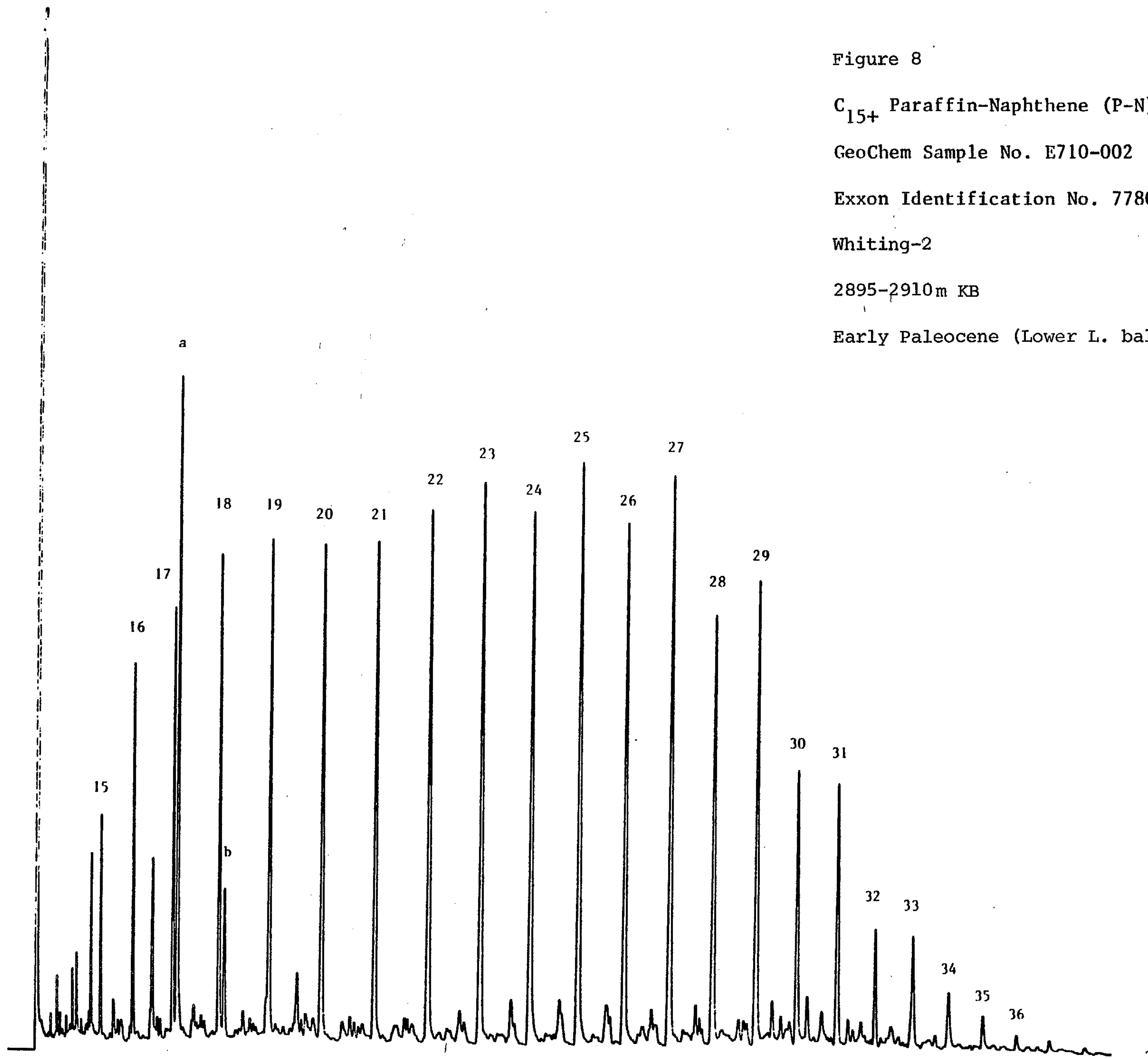


Figure 8

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

GeoChem Sample No. E710-002

Exxon Identification No. 77805-M

Whiting-2

2895-2910m KB

Early Paleocene (Lower L. balmei)

Figure 9

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

GeoChem Sample No. E710-003

Exxon Identification No. 77805-W

Whiting-2

3035-50m KB

Early Paleocene (Lower L.balmei)

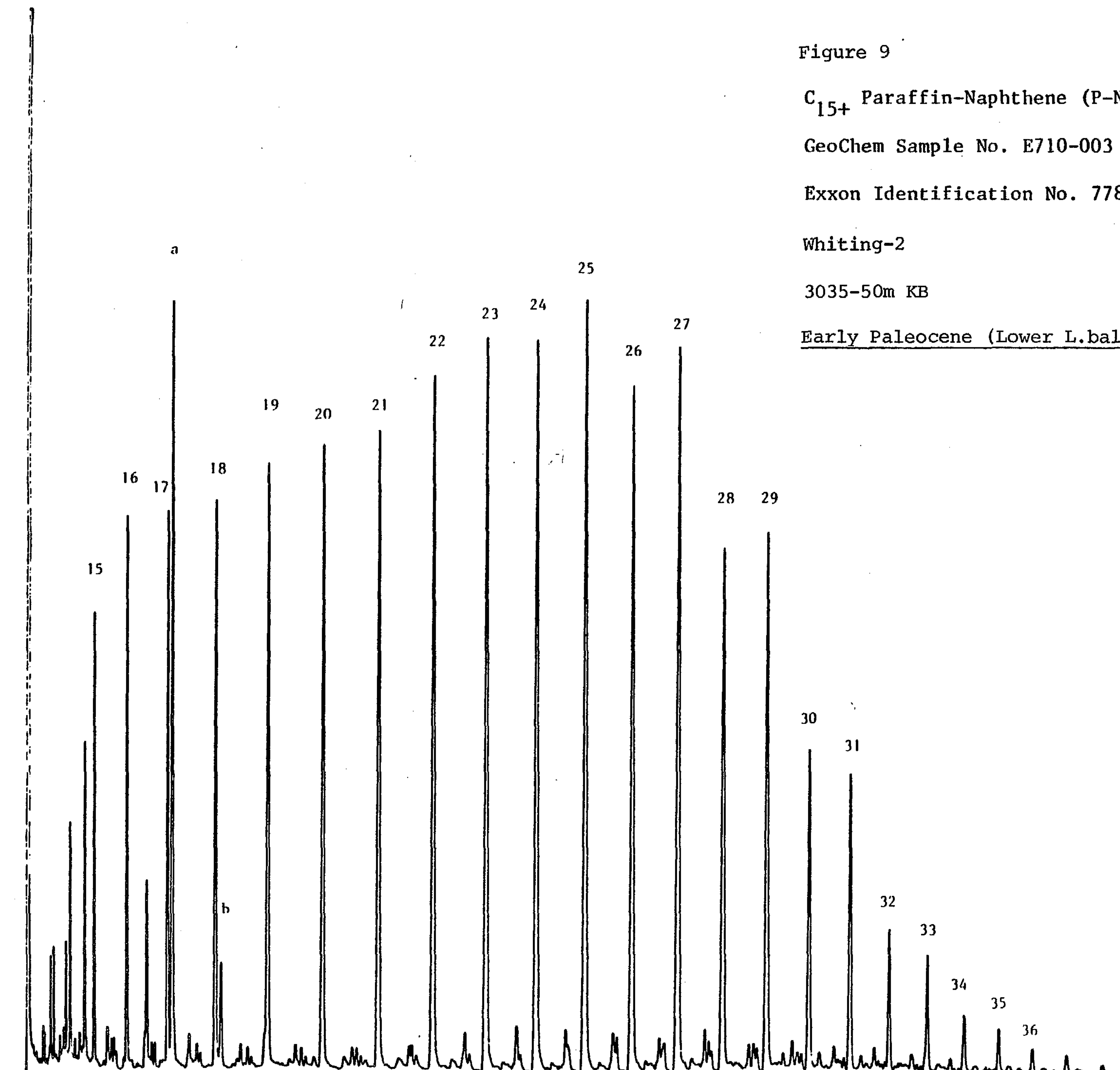


Figure 10

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

GeoChem Sample No. E710-004

Exxon Identification No. 77806-A

Whiting-2

3095-3110m KB

Early Paleocene (Lower L.balmei)

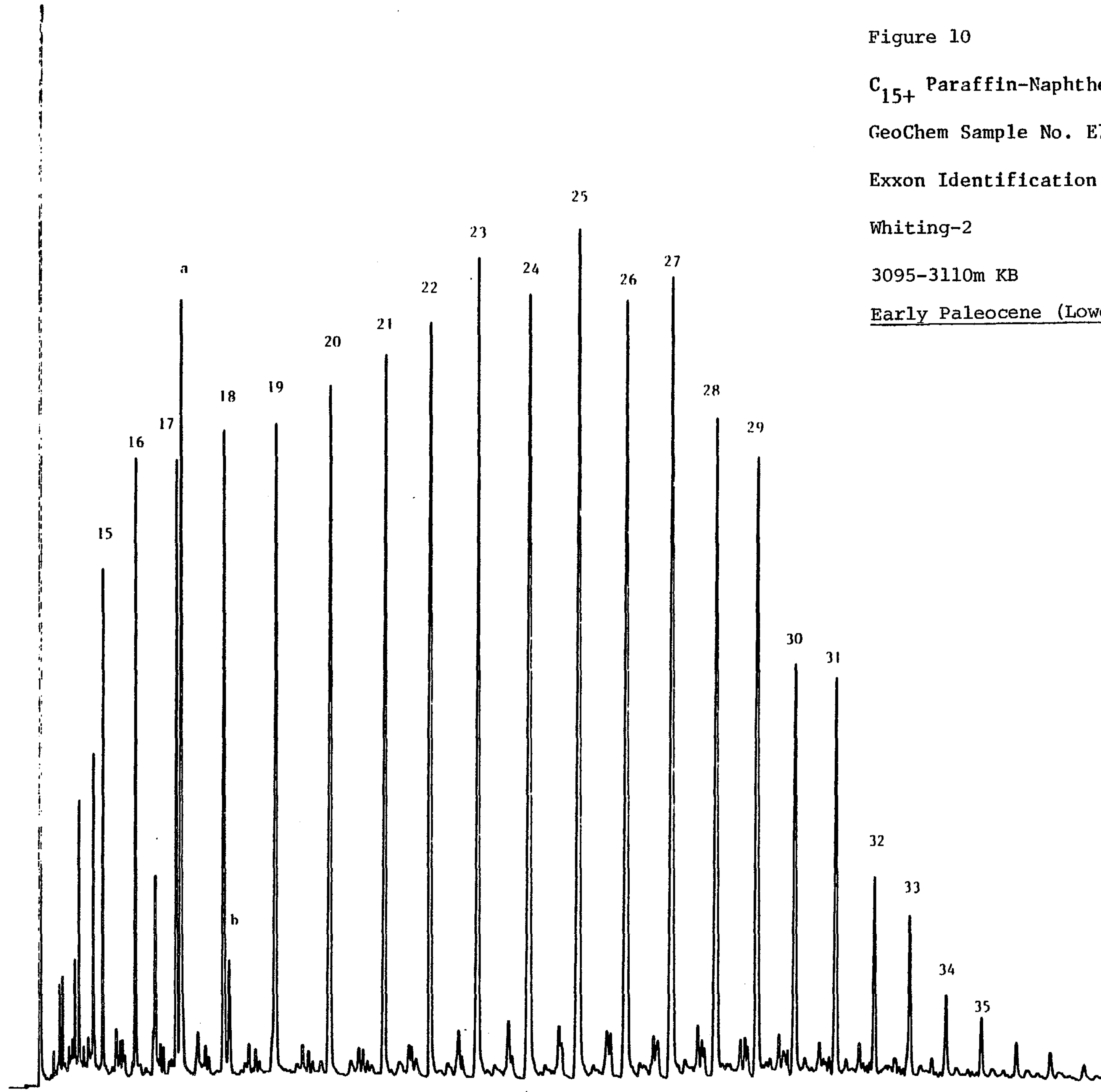


Figure 11

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

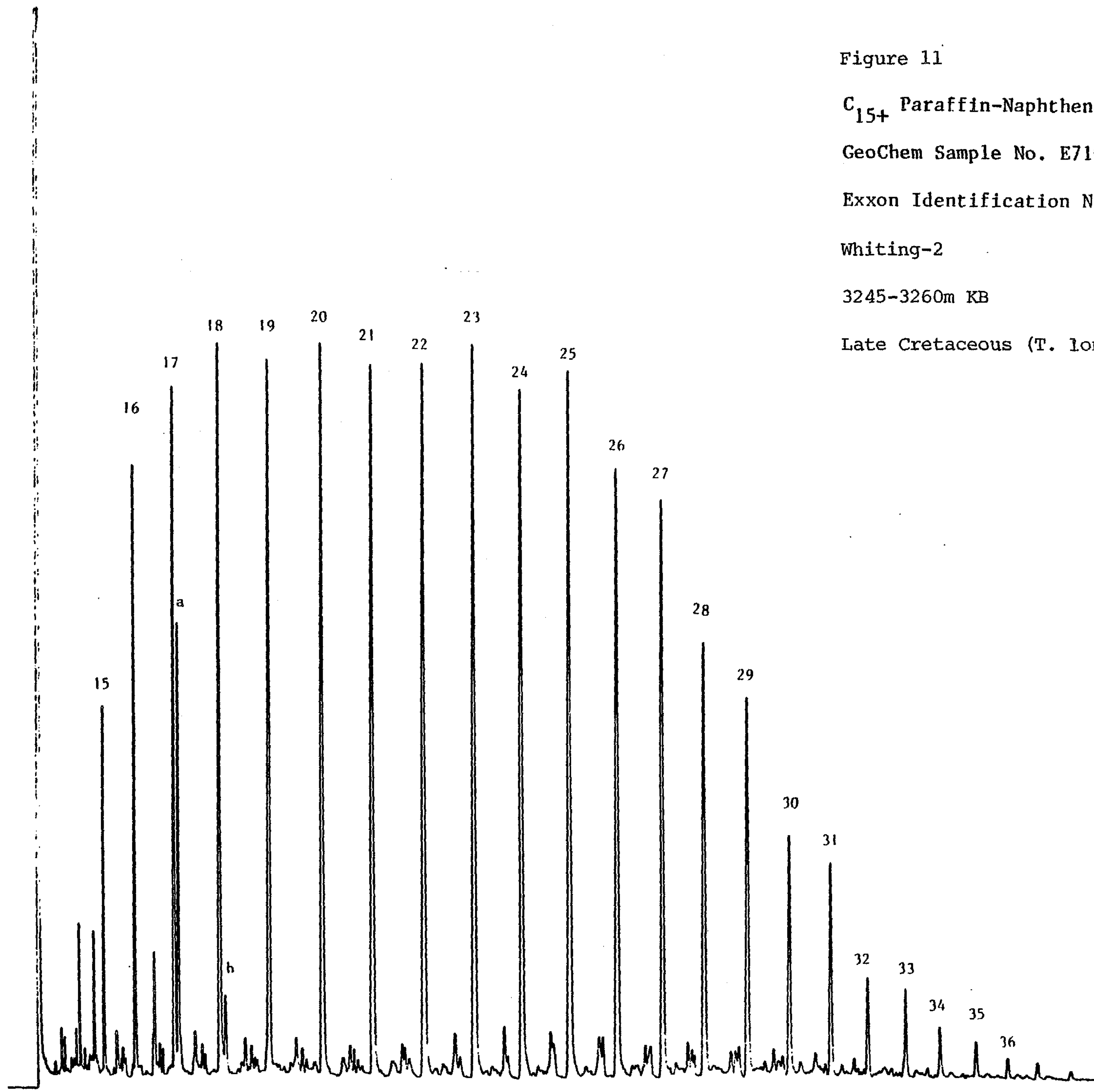
GeoChem Sample No. E710-005

Exxon Identification No. 77806-K

Whiting-2

3245-3260m KB

Late Cretaceous (T. longus)



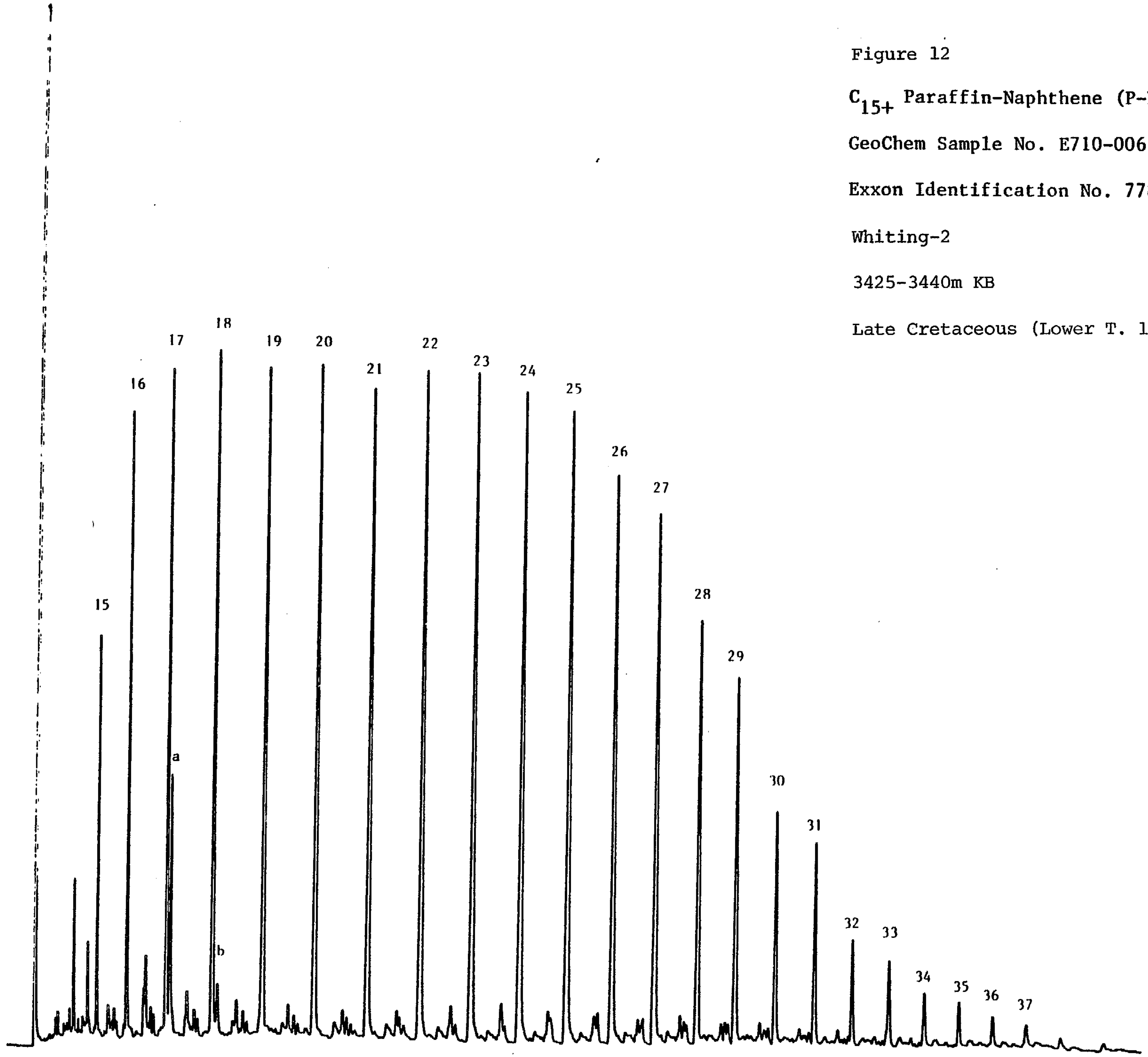


Figure 12

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

GeoChem Sample No. E710-006

Exxon Identification No. 77806-W

Whiting-2

3425-3440m KB

Late Cretaceous (Lower T. longus)

Figure 13

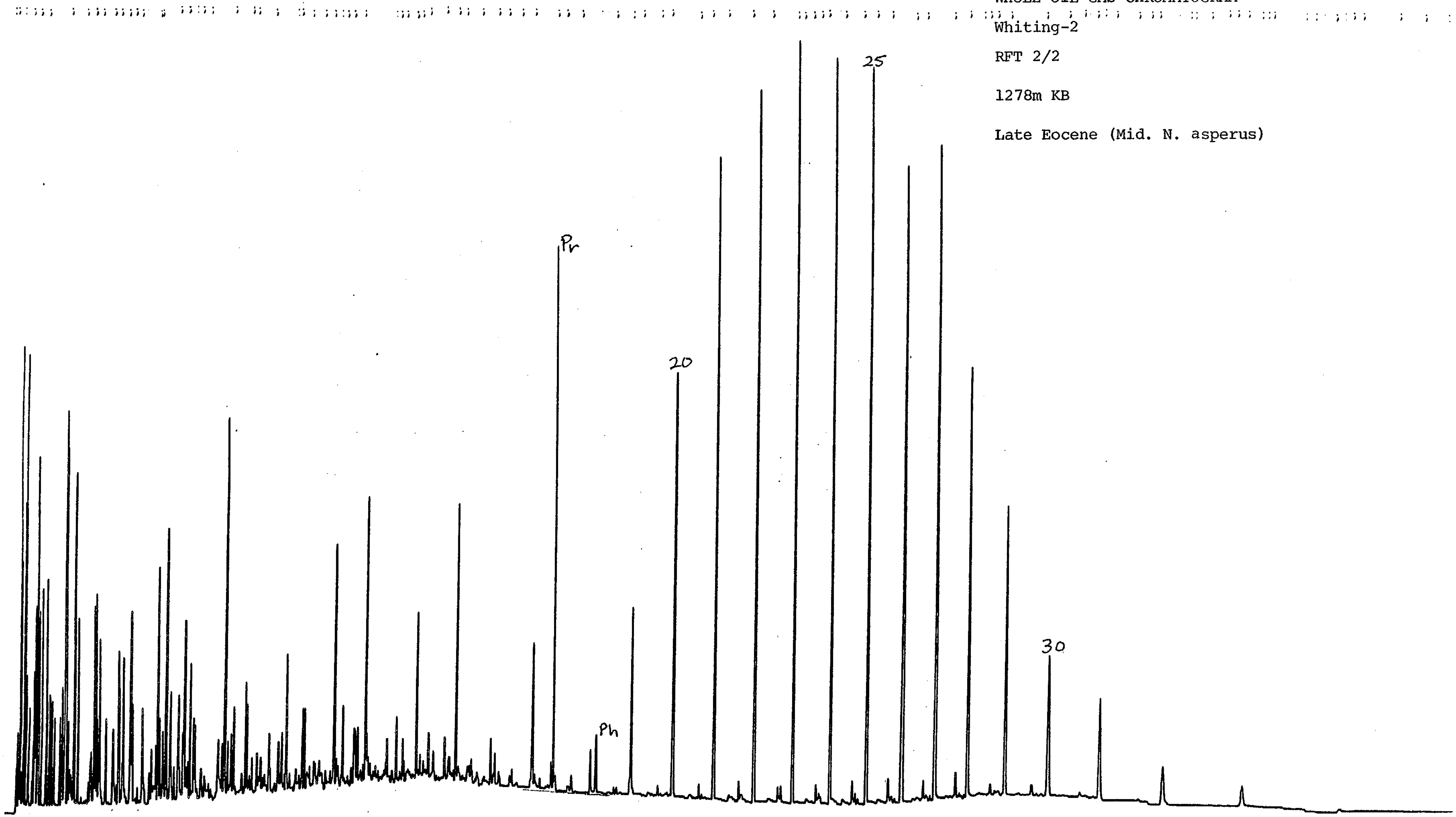
WHOLE OIL GAS CHROMATOGRAM

Whiting-2

RFT 2/2

1278m KB

Late Eocene (Mid. N. asperus)



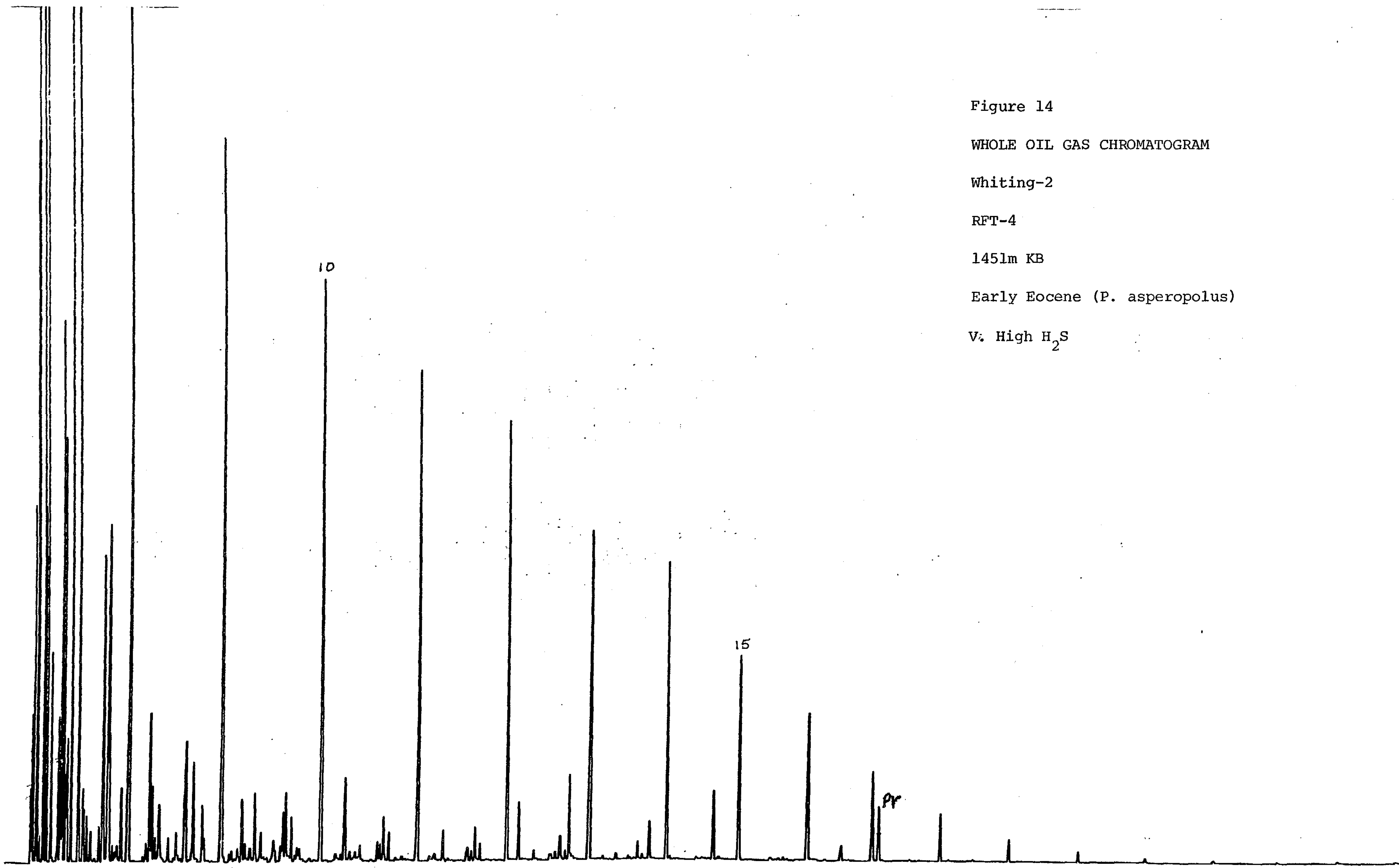


Figure 14

WHOLE OIL GAS CHROMATOGRAM

Whiting-2

RFT-4

1451m KB

Early Eocene (P. asperopolus)

V. High H_2S

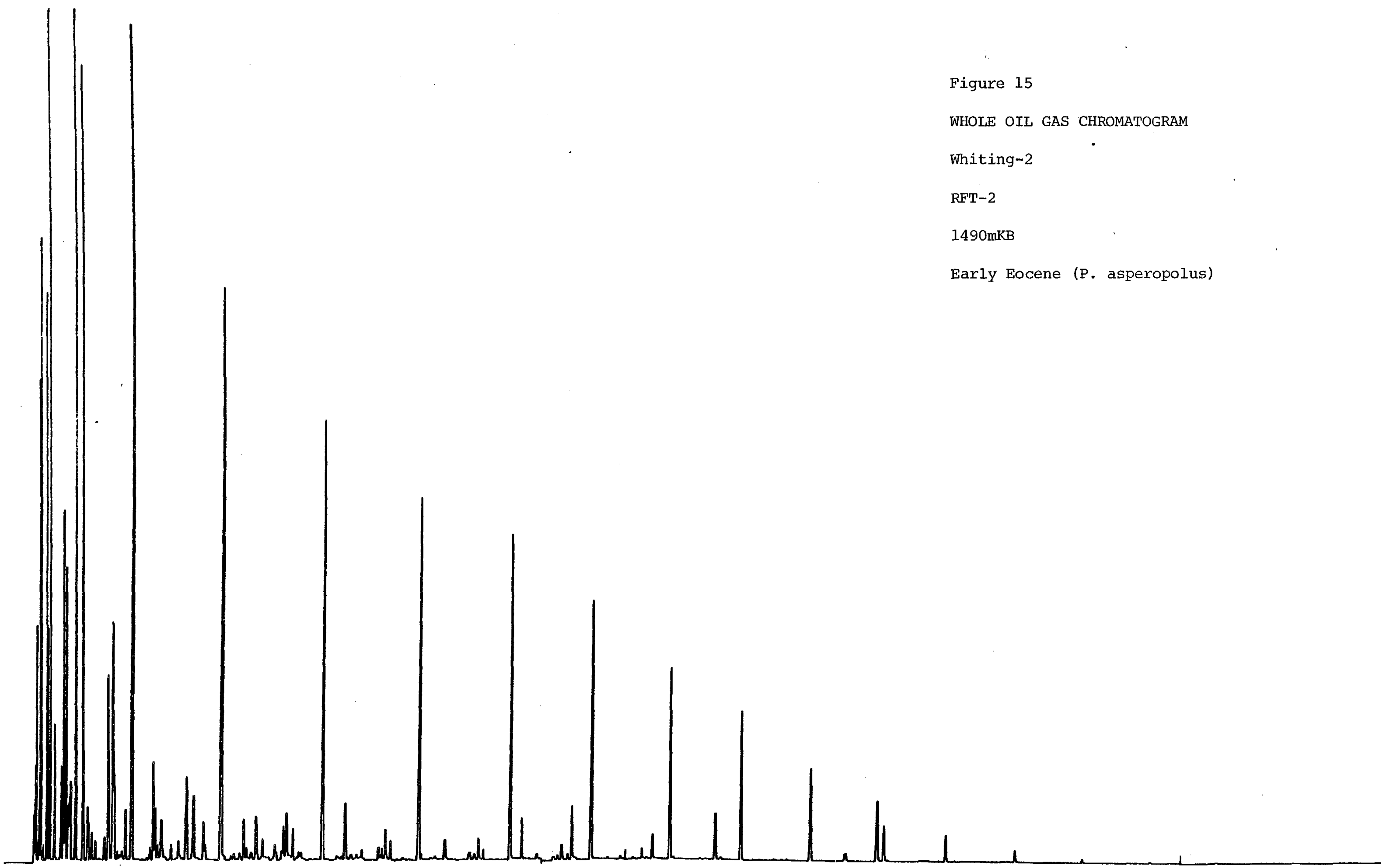


Figure 15

WHOLE OIL GAS CHROMATOGRAM

Whiting-2

RFT-2

1490mKB

Early Eocene (P. asperopolus)

APPENDIX 1

Detailed C_{4-7} Data Sheets

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77805 A DEPTH(M) = 2730.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	121.9	.90
ETHANE	.0		1T2-DMCP	274.8	2.03
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	462.1	3.42	224-TMP	.0	.00
NBUTANE	688.0	5.09	NHEPTANE	1204.0	8.91
IPENTANE	1051.8	7.78	1C2-DMCP	31.5	.23
NPENTANE	1166.8	8.64	MCH	2676.3	19.81
22-DMB	59.1	.44			
CPENTANE	70.7	.52			
23-DMB	121.3	.90			
2-MP	956.2	7.08			
3-MP	450.8	3.34			
NHEXANE	1416.3	10.48			
MCP	744.2	5.51			
22-DMP	.0	.00			
24-DMP	49.7	.37			
223-TMB	6.7	.05			
CHEXANE	750.0	5.55			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	478.2	3.54			
23-DMP	116.6	.86			
3-MHEX	497.2	3.68			
1C3-DMCP	117.2	.87			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	13511.		C1/C2	3.03
GASOLINE	13511.		A /D2	5.27
NAPTHENES	4787.	35.43	C1/D2	7.85
C6-7	8485.	62.80	CH/MCP	1.01
			PENT/IPENT	1.11

	PPB	NORM PERCENT
MCP	744.2	17.8
CH	750.0	18.0
MCH	2676.3	64.2
TOTAL	4170.5	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITTING 2 SAMPLE NO. = 77805 C DEPTH(M) = 2760.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	10.6	.98
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	22.5	2.08	224-TMP	.0	.00
NBUTANE	209.9	19.45	NHEPTANE	163.4	15.14
IPENTANE	23.4	2.17	1C2-DMCP	.0	.00
NPENTANE	113.4	10.51	MCH	253.7	23.51
22-DMB	.0	.00			
CPENTANE	2.1	.19			
23-DMB	.5	.05			
2-MP	28.0	2.59			
3-MP	29.5	2.73			
NHEXANE	103.4	9.58			
MCP	19.5	1.81			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	26.4	2.45			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	27.8	2.58			
23-DMP	6.2	.57			
3-MHEX	26.6	2.46			
1C3-DMCP	12.3	1.14			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1079.		C1/C2	7.26
GASOLINE	1079.		A /D2	10.03
NAPTHENES	325.	30.08	C1/D2	11.58
C6-7	650.	60.22	CH/MCP	1.35
			PENT/IPENT	4.85

	PPB	NORM PERCENT
MCP	19.5	6.5
CH	26.4	8.8
MCH	253.7	84.7
TOTAL	299.6	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77805 E DEPTH(M) = 2790.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	483.2	.32
ETHANE	.0		1T2-DMCP	1254.2	.82
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	6339.6	4.16	224-TMP	.0	.00
NBUTANE	49959.3	32.81	NHEPTANE	2947.1	1.94
IPENTANE	14062.1	9.23	1C2-DMCP	74.6	.05
NPENTANE	22379.9	14.70	MCH	9421.1	6.19
22-DMB	192.0	.13			
CPENTANE	2362.8	1.55			
23-DMB	838.7	.55			
2-MP	6451.3	4.24			
3-MP	2638.9	1.73			
NHEXANE	12667.2	8.32			
MCP	6329.0	4.16			
22-DMP	.0	.00			
24-DMP	124.9	.08			
223-TMB	36.2	.02			
CHEXANE	9458.7	6.21			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	1027.4	.67			
23-DMP	723.5	.48			
3-MHEX	1948.3	1.28			
1C3-DMCP	562.7	.37			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	152282.		C1/C2	2.29
GASOLINE	152282.		A /D2	8.01
NAPTHENES	29946.	19.66	C1/D2	10.22
C6-7	47058.	30.90	CH/MCP	1.49
			PENT/IPENT	1.59

	PPB	NORM PERCENT
MCP	6329.0	25.1
CH	9458.7	37.5
MCH	9421.1	37.4
TOTAL	25208.8	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77805 G DEPTH(M) = 2820.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	285.3	1.00
ETHANE	.0		1T2-DMCP	606.5	2.12
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	286.1	1.00	224-TMP	.0	.00
NBUTANE	2259.5	7.89	NHEPTANE	1164.0	4.06
IPENTANE	3695.4	12.90	1C2-DMCP	61.9	.22
NPENTANE	4658.0	16.26	MCH	3007.6	10.50
22-DMB	91.5	.32			
CPENTANE	465.3	1.62			
23-DMB	246.4	.86			
2-MP	2180.0	7.61			
3-MP	1023.4	3.57			
NHEXANE	2798.6	9.77			
MCP	2232.7	7.79			
22-DMP	.0	.00			
24-DMP	41.3	.14			
223-TMB	4.0	.01			
CHEXANE	1818.5	6.35			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	486.2	1.70			
23-DMP	286.4	1.00			
3-MHEX	673.7	2.35			
1C3-DMCP	281.0	.98			

	TOTALS PPB	NORM PERCENT
ALL COMP	28653.	
GASOLINE	28653.	
NAPTHENES	8759.	30.57
C6-7	13748.	47.98

SIG COMP RATIOS

C1/C2	1.53
A /D2	5.88
C1/D2	7.89
CH/MCP	.81
PENT/IPENT	1.26

	PPB	NORM PERCENT
MCP	2232.7	31.6
CH	1818.5	25.8
MCH	3007.6	42.6
TOTAL	7058.8	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHITING 2 SAMPLE NO. = 77805 I DEPTH(M) = 2850.00

	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	12.5	3.16	224-TMP	.0	.00
NBUTANE	43.0	10.88	NHEPTANE	41.2	10.43
IPENTANE	21.0	5.32	1C2-DMCP	.0	.00
NPENTANE	46.5	11.77	MCH	84.8	21.46
22-DMB	.0	.00			
CPENTANE	5.0	1.27			
23-DMB	.6	.15			
2-MP	17.5	4.43			
3-MP	10.5	2.66			
NHEXANE	49.2	12.45			
MCP	26.1	6.61			
22-DMP	.0	.00			
24-DMP	.0	.00			
223-TMB	.0	.00			
CHEXANE	28.0	7.09			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	3.3	.84			
23-DMP	.0	.00			
3-MHEX	5.9	1.49			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	395.		C1/C2	4.45
GASOLINE	395.		A /D2	15.32
NAPTHENES	144.	36.42	C1/D2	19.68
C6-7	239.	60.36	CH/MCP	1.07
			PENT/IPENT	2.21

	PPB	NORM PERCENT
MCP	26.1	18.8
CH	28.0	20.2
MCH	84.8	61.1
TOTAL	138.9	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHITING 2 SAMPLE NO. = 77805 K DEPTH(M) = 2880.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	32.1	1.03
ETHANE	.0		1T2-DMCP	39.5	1.27
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	44.5	1.43	224-TMP	.0	.00
NBUTANE	410.4	13.20	NHEPTANE	218.6	7.03
IPENTANE	513.9	16.53	1C2-DMCP	.0	.00
NPENTANE	403.0	12.96	MCH	289.7	9.32
22-DMB	.0	.00			
CPENTANE	26.3	.85			
23-DMB	25.5	.82			
2-MP	262.5	8.44			
3-MP	108.7	3.50			
NHEXANE	289.7	9.32			
MCP	164.2	5.28			
22-DMP	.0	.00			
24-DMP	5.2	.17			
223-TMB	.0	.00			
CHEXANE	78.7	2.53			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	89.8	2.89			
23-DMP	21.6	.69			
3-MHEX	55.6	1.79			
1C3-DMCP	29.8	.96			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3109.		C1/C2	1.73
GASOLINE	3109.		A /D2	9.14
NAPTHENES	660.	21.24	C1/D2	8.24
C6-7	1314.	42.28	CH/MCP	.48
			PENT/IPENT	.78

	PPB	NORM PERCENT
MCP	164.2	30.8
CH	78.7	14.8
MCH	289.7	54.4
TOTAL	532.6	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77805 M - DEPTH(M) = 2910.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	599.0	.58
ETHANE	.0		1T2-DMCP	1268.0	1.22
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	333.2	.32	224-TMP	.0	.00
NBUTANE	4037.7	3.89	NHEPTANE	9505.6	9.15
IPENTANE	15014.3	14.45	1C2-DMCP	145.6	.14
NPENTANE	18963.1	18.25	MCH	11088.7	10.67
22-DMB	97.6	.09			
CPENTANE	1212.8	1.17			
23-DMB	762.6	.73			
2-MP	8168.8	7.86			
3-MP	3231.1	3.11			
NHEXANE	14023.1	13.49			
MCP	4453.4	4.29			
22-DMP	.0	.00			
24-DMP	178.4	.17			
223-TMB	20.8	.02			
CHEXANE	5284.7	5.09			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	1975.7	1.90			
23-DMP	1179.1	1.13			
3-MHEX	1620.2	1.75			
1C3-DMCP	550.5	.53			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	103914.		C1/C2	2.62
GASOLINE	103914.		A /D2	12.93
NAPTHENES	24603.	23.68	C1/D2	10.08
C6-7	52093.	50.13	CH/MCP	1.19
			PENT/IPENT	1.26

	PPB	NORM PERCENT
MCP	4453.4	21.4
CH	5284.7	25.4
MCH	11088.7	53.2
TOTAL	20826.8	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77805 0 DEPTH(M) = 2930.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	17.9	.50
ETHANE	.0		1T2-DMCP	33.4	.93
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	296.6	8.28	224-TMP	.0	.00
NBUTANE	1209.6	33.77	NHEPTANE	101.1	2.82
IPENTANE	283.3	7.91	1C2-DMCP	.0	.00
NPENTANE	447.3	12.49	MCH	329.2	9.19
22-DMB	5.8	.16			
CPENTANE	27.7	.77			
23-DMB	19.5	.54			
2-MP	147.1	4.11			
3-MP	67.5	1.88			
NHEXANE	236.5	6.60			
MCP	106.2	2.97			
22-DMP	.0	.00			
24-DMP	4.3	.12			
223-TMB	.0	.00			
CHEXANE	132.8	3.71			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	41.6	1.16			
23-DMP	24.9	.70			
3-MHEX	34.4	.96			
1C3-DMCP	14.7	.41			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3581.		C1/C2	2.92
GASOLINE	3581.		A /D2	9.81
NAPTHENES	662.	18.48	C1/D2	14.64
C6-7	1077.	30.07	CH/MCP	1.25
			PENT/IPENT	1.58

	PPB	NORM PERCENT
MCP	106.2	18.7
CH	132.8	23.4
MCH	329.2	57.9
TOTAL	568.2	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77805 Q . DEPTH(M) = 2960.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	103.4	.53
ETHANE	.0		1T2-DMCP	202.5	1.03
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1088.9	5.56	224-TMP	.0	.00
NBUTANE	1069.1	5.46	NHEPTANE	690.3	3.53
IPENTANE	3139.6	16.04	1C2-DMCP	16.4	.08
NPENTANE	3010.4	15.38	MCH	945.9	4.83
22-DMB	68.2	.35			
CPENTANE	393.1	2.01			
23-DMB	248.5	1.27			
2-MP	2023.5	10.34			
3-MP	927.4	4.74			
NHEXANE	2505.3	12.80			
MCP	1148.8	5.87			
22-DMP	.0	.00			
24-DMP	61.5	.31			
223-TMB	6.5	.03			
CHEXANE	931.2	4.76			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	402.6	2.06			
23-DMP	141.7	.72			
3-MHEX	341.8	1.75			
1C3-DMCP	103.6	.53			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	19570.		C1/C2	1.45
GASOLINE	19570.		A /D2	9.35
NAPTHENES	3845.	19.65	C1/D2	6.67
C6-7	7602.	38.84	CH/MCP	.81
			PENT/IPENT	.96

	PPB	NORM PERCENT
MCP	1148.8	38.0
CH	931.2	30.8
MCH	945.9	31.3
TOTAL	3025.9	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77805 S DEPTH(M) = 2990.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	543.4	.63
ETHANE	.0		1T2-DMCP	1064.8	1.24
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	3025.2	3.53	224-TMP	.0	.00
NBUTANE	13835.7	16.14	NHEPTANE	3759.1	4.39
IPENTANE	10254.7	11.96	1C2-DMCP	120.0	.14
NPENTANE	13962.7	16.29	MCH	5174.5	6.04
22-DMB	189.4	.22			
CPENTANE	926.3	1.08			
23-DMB	725.3	.85			
2-MP	6562.5	7.66			
3-MP	2896.5	3.38			
NHEXANE	10094.4	11.78			
MCP	4071.7	4.75			
22-DMP	.0	.00			
24-DMP	169.1	.20			
223-TMB	16.4	.02			
CHEXANE	4472.4	5.22			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	1282.3	1.50			
23-DMP	993.6	1.16			
3-MHEX	1174.2	1.37			
1C3-DMCP	395.5	.46			

	TOTALS PPB	NORM PERCENT
ALL COMP	85709.	
GASOLINE	85709.	
NAPTHENES	16769.	19.56
C6-7	33331.	38.89

SIG COMP RATIOS	
C1/C2	1.76
A /D2	11.80
C1/D2	9.31
CH/MCP	1.10
PENT/IPENT	1.36

	PPB	NORM PERCENT
MCP	4071.7	29.7
CH	4472.4	32.6
MCH	5174.5	37.7
TOTAL	13718.6	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHITING 2 SAMPLE NO. = 77805 U DEPTH(M) = 3020.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	76.5	.54
ETHANE	.0		1T2-DMCP	142.2	1.01
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	876.2	6.21	224-TMP	.0	.00
NBUTANE	2120.5	15.03	NHEPTANE	714.6	5.07
IPENTANE	1665.3	11.81	1C2-DMCP	9.0	.06
NPENTANE	2089.2	14.81	MCH	602.2	4.27
22-DMB	12.4	.09			
CPENTANE	150.9	1.07			
23-DMB	119.2	.84			
2-MP	1109.1	7.86			
3-MP	485.3	3.44			
NHEXANE	1857.9	13.17			
MCP	653.8	4.63			
22-DMP	.0	.00			
24-DMP	41.0	.29			
223-TMB	1.6	.01			
CHEXANE	576.8	4.09			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	369.2	2.62			
23-DMP	103.1	.73			
3-MHEX	236.8	1.68			
1C3-DMCP	93.9	.67			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	14107.		C1/C2	1.59
GASOLINE	14107.		A /D2	10.86
NAPTHENES	2305.	16.34	C1/D2	6.54
C6-7	5479.	38.84	CH/MCP	.88
			PENT/IPENT	1.25

	PPB	NORM PERCENT
MCP	653.8	35.7
CH	576.8	31.5
MCH	602.2	32.9
TOTAL	1832.8	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHITING 2 SAMPLE NO. = 77805 W DEPTH(M) = 3050.00

	TOTAL PPB	NORM PERCENT
METHANE	.0	
ETHANE	.0	
PROPANE	.0	.00
IBUTANE	885.2	2.53
NBUTANE	3153.2	9.02
IPENTANE	3259.7	9.33
NPENTANE	4286.0	12.26
22-DMB	134.7	.39
CPENTANE	253.2	.72
23-DMB	367.7	1.05
2-MP	2666.4	7.63
3-MP	1384.9	3.96
NHEXANE	4425.9	12.66
MCP	1664.4	4.76
22-DMP	.0	.00
24-DMP	148.0	.42
223-TMB	18.2	.05
CHEXANE	2378.1	6.81
33-DMP	.0	.00
11-DMCP	.0	.00
2-MHEX	902.0	2.58
23-DMP	582.2	1.67
3-MHEX	868.6	2.49
1C3-DMCP	159.8	.46
1T3-DMCP	286.3	.82
1T2-DMCP	545.5	1.56
3-EPENT	.0	.00
224-TMP	.0	.00
NHEPTANE	2634.5	7.54
1C2-DMCP	54.7	.16
MCH	3887.1	11.12

	TOTALS PPB	NORM PERCENT
ALL COMP	34946.	
GASOLINE	34946.	
NAPTHENES	9229.	26.41
C6-7	18555.	53.10

SIG COMP RATIOS	
C1/C2	2.64
A /D2	8.13
C1/D2	8.25
CH/MCP	1.43
PENT/IPENT	1.31

	PPB	NORM PERCENT
MCP	1664.4	21.0
CH	2378.1	30.0
MCH	3887.1	49.0
TOTAL	7929.6	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77805 Y DEPTH(M) = 3080.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	54.5	.22
ETHANE	.0		1T2-DMCP	77.9	.31
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1581.9	6.32	224-TMP	.0	.00
NBUTANE	3365.2	13.45	NHEPTANE	89.8	.36
IPENTANE	4171.8	16.67	1C2-DMCP	.0	.00
NPENTANE	4051.7	16.19	MCH	197.6	.79
22-DMB	124.4	.50			
CPENTANE	768.7	3.07			
23-DMB	285.5	1.14			
2-MP	2357.6	9.42			
3-MP	1301.9	5.20			
NHEXANE	3478.2	13.90			
MCP	1402.3	5.60			
22-DMP	.0	.00			
24-DMP	63.9	.26			
223-TMB	7.1	.03			
CHEXANE	1211.1	4.84			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	136.5	.55			
23-DMP	123.8	.49			
3-MHEX	119.2	.48			
1C3-DMCP	57.7	.23			

	TOTALS PPB	NORM PERCENT
ALL COMP	25028.	
GASOLINE	25028.	
NAPTHENES	3770.	15.06
C6-7	7020.	28.05

SIG COMP RATIOS

C1/C2	.97
A /D2	29.93
C1/D2	12.96
CH/MCP	.86
PENT/IPENT	.97

	PPB	NORM PERCENT
MCP	1402.3	49.9
CH	1211.1	43.1
MCH	197.6	7.0
TOTAL	2811.0	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77806 A DEPTH(M) = 3110.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	101.8	1.16
ETHANE	.0		1T2-DMCP	226.6	2.59
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	87.9	1.00	224-TMP	.0	.00
NBUTANE	205.7	2.35	NHEPTANE	1300.7	14.87
IPENTANE	334.1	3.82	1C2-DMCP	36.6	.42
NPENTANE	379.8	4.34	MCH	2649.4	30.28
22-DMB	10.6	.12			
CPENTANE	54.0	.62			
23-DMB	55.0	.63			
2-MP	381.1	4.36			
3-MP	214.2	2.45			
NHEXANE	698.3	7.98			
MCP	444.0	5.07			
22-DMP	.0	.00			
24-DMP	24.0	.27			
223-TMB	2.6	.03			
CHEXANE	718.5	8.21			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	322.7	3.69			
23-DMP	120.7	1.38			
3-MHEX	257.4	2.94			
1C3-DMCP	123.9	1.42			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	8750.		C1/C2	3.96
GASOLINE	8750.		A /D2	7.77
NAPTHENES	4355.	49.77	C1/D2	14.34
C6-7	7027.	80.31	CH/MCP	1.62
			PENT/IPENT	1.14

	PPB	NORM PERCENT
MCP	444.0	11.6
CH	718.5	18.8
MCH	2649.4	69.5
TOTAL	3811.9	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHITING 2

REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77806 C DEPTH(M) = 3140.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	2280.0	.59
ETHANE	.0		1T2-DMCP	4944.6	1.27
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	61335.0	15.76	224-TMP	.0	.00
NBUTANE	33278.9	8.55	NHEPTANE	17223.1	4.42
IPENTANE	32926.2	8.46	1C2-DMCP	1620.3	.42
NPENTANE	54926.2	14.11	MCH	44789.8	11.51
22-DMB	682.5	.18			
CPENTANE	12140.2	3.12			
23-DMB	974.3	.25			
2-MP	13093.3	3.36			
3-MP	8539.4	2.19			
NHEXANE	32584.2	8.37			
MCP	20354.3	5.23			
22-DMP	.0	.00			
24-DMP	1621.8	.42			
223-TMB	273.6	.07			
CHEXANE	32742.3	8.41			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	3631.3	.93			
23-DMP	3465.6	.89			
3-MHEX	3783.3	.97			
1C3-DMCP	2017.0	.52			

	TOTALS PPB	NORM PERCENT
ALL COMP	389229.	
GASOLINE	389229.	
NAPTHENES	120888.	31.06
C6-7	171331.	44.02

SIG COMP RATIOS

C1/C2	2.60
A /D2	13.17
C1/D2	21.45
CH/MCP	1.61
PENT/IPENT	1.67

	PPB	NORM PERCENT
MCP	20354.3	20.8
CH	32742.3	33.4
MCH	44789.8	45.8
TOTAL	97886.4	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77806 E DEPTH(M) = 3170.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	91.6	.50
ETHANE	.0		1T2-DMCP	181.9	1.00
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1741.2	9.59	224-TMP	.0	.00
NBUTANE	993.6	5.47	NHEPTANE	779.8	4.30
IPENTANE	2456.7	13.54	1C2-DMCP	12.6	.07
NPENTANE	2933.2	16.16	MCH	1197.7	6.60
22-DMB	64.0	.35			
CPENTANE	394.4	2.17			
23-DMB	162.8	.90			
2-MP	1202.2	6.62			
3-MP	677.5	3.73			
NHEXANE	2192.2	12.08			
MCP	932.0	5.14			
22-DMP	.0	.00			
24-DMP	68.5	.38			
223-TMB	5.8	.03			
CHEXANE	1118.2	6.16			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	414.7	2.29			
23-DMP	126.2	.70			
3-MHEX	291.4	1.61			
1C3-DMCP	110.4	.61			

	TOTALS PPB	NORM PERCENT
ALL COMP	18149.	
GASOLINE	18149.	
NAPTHENES	4039.	22.25
C6-7	7523.	41.45

SIG COMP RATIOS

C1/C2	2.06
A /D2	10.20
C1/D2	9.37
CH/MCP	1.20
PENT/IPENT	1.19

	PPB	NORM PERCENT
MCP	932.0	28.7
CH	1118.2	34.4
MCH	1197.7	36.9
TOTAL	3247.9	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND
WELL - WHITING 2

REPORT = UNSPEC. ANALYSIS
SAMPLE NO. = 77806 G DEPTH(M) = 3200.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	172.7	.63
ETHANE	.0		1T2-DMCP	330.8	1.21
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	1434.7	5.24	224-TMP	.0	.00
NBUTANE	4327.5	15.82	NHEPTANE	2032.6	7.43
IPENTANE	2671.1	9.76	1C2-DMCP	69.1	.25
NPENTANE	3158.0	11.54	MCH	3732.6	13.64
22-DMB	49.9	.18			
CPENTANE	515.7	1.89			
23-DMB	175.8	.64			
2-MP	1304.0	4.77			
3-MP	758.9	2.77			
NHEXANE	2403.9	8.79			
MCP	1106.1	4.04			
22-DMP	.0	.00			
24-DMP	77.1	.28			
223-TMB	11.0	.04			
CHEXANE	1495.1	5.47			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	636.4	2.33			
23-DMP	190.2	.70			
3-MHEX	498.5	1.82			
1C3-DMCP	203.5	.74			

	TOTALS PPB	NORM PERCENT
ALL COMP	27355.	
GASOLINE	27355.	
NAPTHENES	7626.	27.88
C6-7	12960.	47.38

SIG COMP RATIOS

C1/C2	3.12
A /D2	8.90
C1/D2	11.76
CH/MCP	1.35
PENT/IPENT	1.18

	PPB	NORM PERCENT
MCP	1106.1	17.5
CH	1495.1	23.6
MCH	3732.6	58.9
TOTAL	6333.8	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77806 I DEPTH(M) = 3230.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	199.8	.85
ETHANE	.0		1T2-DMCP	386.9	1.65
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	21.5	.09	224-TMP	.0	.00
NBUTANE	152.6	.65	NHEPTANE	1870.7	7.96
IPENTANE	2054.7	8.74	1C2-DMCP	36.0	.15
NPENTANE	3775.3	16.06	MCH	2648.8	11.27
22-DMB	88.4	.38			
CPENTANE	541.7	2.30			
23-DMB	222.6	.95			
2-MP	1824.5	7.76			
3-MP	1024.5	4.36			
NHEXANE	3237.8	13.77			
MCP	1522.2	6.48			
22-DMP	.0	.00			
24-DMP	106.5	.45			
223-TMB	9.1	.04			
CHEXANE	1929.3	8.21			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	664.5	2.83			
23-DMP	379.1	1.61			
3-MHEX	614.2	2.61			
1C3-DMCP	196.0	.83			

	TOTALS PPB	NORM PERCENT
ALL COMP	23507.	
GASOLINE	23507.	
NAPTHENES	7461.	31.74
C6-7	13801.	58.71

SIG COMP RATIOS	
C1/C2	2.24
A /D2	8.32
C1/D2	8.54
CH/MCP	1.27
PENT/IPENT	1.84

	PPB	NORM PERCENT
MCP	1522.2	25.0
CH	1929.3	31.6
MCH	2648.8	43.4
TOTAL	6100.3	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77806 K DEPTH(M) = 3260.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	1029.1	1.10
ETHANE	.0		1T2-DMCP	1792.2	1.92
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	30.0	.03	224-TMP	.0	.00
NBUTANE	135.9	.15	NHEPTANE	12040.1	12.88
IPENTANE	5689.0	6.09	1C2-DMCP	376.8	.40
NPENTANE	7796.7	8.34	MCH	19590.5	20.96
22-DMB	140.5	.15			
CPENTANE	1622.5	1.74			
23-DMB	205.3	.22			
2-MP	5685.7	6.08			
3-MP	3484.4	3.73			
NHEXANE	12055.2	12.90			
MCP	5795.3	6.20			
22-DMP	.0	.00			
24-DMP	394.0	.42			
223-TMB	38.9	.04			
CHEXANE	7711.8	8.25			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	2724.4	2.92			
23-DMP	1508.0	1.61			
3-MHEX	2854.7	3.05			
1C3-DMCP	746.3	.80			

	TOTALS PPB	NORM PERCENT
ALL COMP	93449.	
GASOLINE	93449.	
NAPTHENES	38666.	41.38
C6-7	68659.	73.47

SIG COMP RATIOS	
C1/C2	3.08
A /D2	8.44
C1/D2	10.52
CH/MCP	1.33
PENT/IPENT	1.37

	PPB	NORM PERCENT
MCP	5795.3	17.5
CH	7711.8	23.3
MCH	19590.5	59.2
TOTAL	33097.6	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHITING 2 SAMPLE NO. = 77806 M DEPTH(M) = 3290.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	54.3	1.04
ETHANE	.0		1T2-DMCP	113.5	2.18
PROPANE	.0	.00	3-EPENT	.0	.00
IBUTANE	56.8	1.09	224-TMP	.0	.00
NBUTANE	206.3	3.96	NHEPTANE	795.5	15.28
IPENTANE	214.4	4.12	1C2-DMCP	26.8	.51
NPENTANE	435.3	8.36	MCH	1101.5	21.16
22-DMB	7.7	.15			
CPENTANE	54.3	1.04			
23-DMB	46.2	.89			
2-MP	317.7	6.10			
3-MP	141.1	2.71			
NHEXANE	500.3	9.61			
MCP	293.2	5.63			
22-DMP	.0	.00			
24-DMP	17.8	.34			
223-TMB	.0	.00			
CHEXANE	371.2	7.13			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	168.3	3.23			
23-DMP	65.7	1.26			
3-MHEX	167.5	3.22			
1C3-DMCP	50.6	.97			

	TOTALS PPB	NORM PERCENT
ALL COMP	5206.	
GASOLINE	5206.	
NAPTHENES	2065.	39.67
C6-7	3726.	71.58

SIG COMP RATIOS

C1/C2	3.05
A /D2	7.74
C1/D2	9.80
CH/MCP	1.27
PENT/IPENT	2.03

	PPB	NORM PERCENT
MCP	293.2	16.6
CH	371.2	21.0
MCH	1101.5	62.4
TOTAL	1765.9	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77806 D . DEPTH(M) = 3350.00

	TOTAL PPB	NORM PERCENT
METHANE	.0	
ETHANE	.0	
PROPANE	.0	.00
IBUTANE	20.4	.03
NBUTANE	100.5	.16
IPENTANE	3789.7	5.91
NPENTANE	6676.4	10.42
22-DMB	92.7	.14
CPENTANE	1088.3	1.70
23-DMB	411.0	.64
2-MP	3832.8	5.98
3-MP	2290.8	3.57
NHEXANE	7882.2	12.30
MCP	3835.9	5.98
22-DMP	.0	.00
24-DMP	268.7	.42
223-TMB	26.8	.04
CHEXANE	5088.7	7.94
33-DMP	.0	.00
11-DMCP	.0	.00
2-MHEX	1967.6	3.07
23-DMP	1007.2	1.57
3-MHEX	1915.4	2.99
1C3-DMCP	503.4	.79
1T3-DMCP	694.0	1.08
1T2-DMCP	1241.0	1.94
3-EPENT	.0	.00
224-TMP	.0	.00
NHEPTANE	7727.1	12.05
1C2-DMCP	266.5	.42
MCH	13374.3	20.86

	TOTALS PPB	NORM PERCENT
ALL COMP	64101.	
GASOLINE	64101.	
NAPTHENES	26092.	40.70
C6-7	45799.	71.45

SIG COMP RATIOS	
C1/C2	3.12
A /D2	8.15
C1/D2	10.67
CH/MCP	1.33
PENT/IPENT	1.76

	PPB	NORM PERCENT
MCP	3835.9	17.2
CH	5088.7	22.8
MCH	13374.3	60.0
TOTAL	22298.9	100.0

C4-C7 HYDROCARBON ANALYSES

BASIN - GIPPSLAND REPORT = UNSPEC. ANALYSIS
WELL - WHITING 2 SAMPLE NO. = 77806 W DEPTH(M) = 3440.00

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	.0		1T3-DMCP	875.3	1.30
ETHANE	.0		1T2-DMCP	.0	.00
PROPANE	.0	.00	3-EPENT	1533.5	2.27
IBUTANE	166.2	.25	224-TMP	.0	.00
NBUTANE	1719.3	2.55	NHEPTANE	.0	.00
IPENTANE	5371.4	7.95	1C2-DMCP	11300.1	16.73
NPENTANE	8227.4	12.16	MCH	289.9	.43
22-DMB	186.4	.26			
CPENTANE	712.7	1.05			
23-DMB	640.8	.95			
2-MP	4895.2	7.25			
3-MP	2552.3	3.78			
NHEXANE	10711.2	15.86			
MCP	4448.5	6.58			
22-DMP	.0	.00			
24-DMP	273.2	.40			
223-TMB	26.0	.04			
CHEXANE	7071.1	10.47			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	2388.1	3.54			
23-DMP	1155.0	1.71			
3-MHEX	2314.7	3.43			
1C3-DMCP	692.9	1.03			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	67555.		C1/C2	.52
GASOLINE	67555.		A /D2	4.63
NAPTHENES	25390.	37.58	C1/D2	4.21
C6-7	43079.	63.77	CH/MCP	1.59
			PENT/IPENT	1.53

	PPB	NORM PERCENT
MCP	4448.5	37.7
CH	7071.1	59.9
MCH	289.9	2.5
TOTAL	11809.5	100.0

C4-C7 HYDROCARBON ANALYSES

REPORT = UNSPEC. ANALYSIS

BASIN - GIPPSLAND
WELL - WHITING 2 SAMPLE NO. = 77807 C . DEPTH(M) = 3530.00

	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	194.5	2.60	224-TMP	.0	.00
NBUTANE	833.6	11.14	NHEPTANE	11.2	.15
IPENTANE	1060.5	14.18	1C2-DMCP	.0	.00
NPENTANE	1502.4	20.08	MCH	16.3	.22
22-DMB	79.3	1.06			
CPENTANE	77.9	1.04			
23-DMB	111.9	1.50			
2-MP	828.9	11.08			
3-MP	442.1	5.91			
NHEXANE	1565.3	20.92			
MCP	385.1	5.15			
22-DMP	.0	.00			
24-DMP	21.9	.29			
223-TMB	.0	.00			
CHEXANE	332.5	4.44			
33-DMP	.0	.00			
11-DMCP	.0	.00			
2-MHEX	4.9	.07			
23-DMP	6.5	.09			
3-MHEX	6.3	.08			
1C3-DMCP	.0	.00			

	TOTALS PPB	NORM PERCENT
ALL COMP	7481.	
GASOLINE	7481.	
NAPTHENES	812.	10.85
C6-7	2350.	31.41

SIG COMP RATIOS

C1/C2	.92
A /D2	250.24
C1/D2	56.14
CH/MCP	.86
PENT/IPENT	1.42

	PPB	NORM PERCENT
MCP	385.1	52.5
CH	332.5	45.3
MCH	16.3	2.2
TOTAL	733.9	100.0

APPENDIX 2

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

WHITING NO. 2

KK No.	Esso No.	Depth m	$\bar{R}_v$ max %	Range R_v max %	N	Description Including Exinite Fluorescence
x2484	77793 -Z	1547.5 SWC 90	0.44	0.35-0.51	28	Common to abundant liptodetrinite, green to orange, common sporinite, green to orange, sparse cutinite, yellow, sparse resinite, green to orange. (Silty sandstone. Dom abundant, E>V. Exinite abundant, vitrinite common, inertinite absent. Iron oxides sparse. Framboidal pyrite abundant.)
x2485	77793 -R	1754 SWC 81	0.50	0.40-0.59	31	Abundant liptodetrinite, green to orange, common resinite, green to orange, common sporinite, yellow to orange, rare cutinite yellow. (Fine claystone>> coal. Coal common, vitrite. Dom abundant, E>V>I. Exinite abundant, vitrinite common, inertinite rare. ?Oil cut from vitrite. Iron oxides abundant. Pyrite abundant.)
x2486	77793 -G	1985 SWC 70	0.52	0.44-0.61	26	Abundant sporinite, greenish yellow to orange, abundant liptodetrinite, green to orange, common resinite, yellow to orange, sparse cutinite, yellow to dull orange, sparse suberinite, brown. (Shaly coal> coal. Shaly coal dominant, V>E>>I. Clarite. Coal major, V>E. Clarite>>vitrite. Dom absent. Sclerotinite present. Oil haze present and live oil cuts from some vitrinite. Pyrite. common.)
x2487	77792 -R	2330 SWC 55	0.62	0.48-0.69	29	Abundant sporinite, yellow to orange, common cutinite, yellow to dull orange, common resinite, yellow to dull yellow, sparse suberinite, brown, rare fluorinite, greenish yellow, rare exsudatinite, green. (Carbonaceous siltstone>coal>siltstone>shaly coal. Coal major, V>E. Vitrite>clarite. Shaly coal major, V>E. Vitrite>clarite. Dom abundant, E>V>>I. Exinite and vitrinite abundant, inertinite rare. Micrinite is present in vitrinite. Strong live green oil cut from coal and shaly coal. Weak to moderate oil cut from siltstone. Pyrite common.)
x4760	77792 -H	2548 SWC 45	0.63	0.56-0.71	28	Common liptodetrinite, yellow to orange, common cutinite, yellow to dull orange, common sporinite, yellow to orange, sparse resinite, yellow to dull orange, rare suberinite, brown. (Siltstone> sandstone>coal. Coal sparse, vitrite>clarite. Dom abundant, V>E>I. Vitrinite and exinite abundant, inertinite sparse. Pyrite sparse.)
x2488	77791 -X	2774 SWC 35	1.39	1.18-1.64	5	Trace of liptodetrinite, yellow. (Siltstone>>shaly coal. Shaly coal rare, heat altered vitrinite. Dom sparse, V>I>>E. Vitrinite and inertinite sparse, exinite rare probably a contaminant. Sample is naturally heat altered. Carbonate abundant. Pyrite sparse.)

WHITING NO. 2

KK No.	Esso No.	Depth m	$\bar{R}_v$max %	Range $R_v$max %	N	Description including Exinite Fluorescence
x4761	77791 -W	2801 SWC 34 $\bar{R}_I$	2.06 2.49	1.76-?3.02 1.62-3.94	25 7	Rare liptodetrinite, contaminant, yellow. (Siltstone>carbonate>sandstone>?coal. Coal trace, possible contaminant, vitrite, $\bar{R}_v$ 3.02%. Dom abundant, V>>I>E. Vitrinite abundant, inertinite common, exinite contaminant rare. Vitrinite in dom and in coal is thermally altered as indicated by the relatively low bireflectance. Low rank contaminants are present. Moderate mineral matter fluorescence present. Pyrite sparse.)
x2489	77791 -U	2960 SWC 30 $\bar{R}_I$	0.45[1] 0.79[2] 1.36	0.38-0.54 0.72-0.85 0.83-2.57	21 8 5	Common liptodetrinite, rare sporinite and cutinite, yellow to orange, rare resinite (fluorinite), greenish yellow. (Siltstone>coal>sandstone> pyrite. Coal major, V>>E>I. Vitrite>clarite. Dom sparse, I>>V. Inertinite sparse, vitrinite rare, exinite absent. Two populations of vitrinite. The higher rank coal (and dom) shows an orange fluorescence, strong green oil cut and contains rare exinite. The lower rank coal shows a dull brown fluorescence and contains common exinite the lower rank is much less mature texturally than the higher rank coal and appears unlikely to be sourced from 2969m. Carbonate abundant. Pyrite major.)
x4762	77791 -T	2980.9 SWC 29	0.73	0.61-0.85	30	Abundant sporinite, bright yellow to yellow orange, common cutinite, yellow to orange, sparse liptodetrinite, bright yellow to yellow orange, rare resinite/fluorinite, greenish yellow to bright yellow. (Claystone>>sandstone> carbonate>coal. Coal sparse, vitrite>clarite. Dom abundant, V>E>I. Vitrinite and exinite abundant, inertinite sparse. Pyrite sparse.)
x2490	77791 -Q	3075 SWC 25	0.67	0.55-0.80	25	Abundant sporinite, yellow orange to dull orange, common cutinite, orange to brown, sparse suberinite, brown, sparse resinite, yellow. (Siltstone>shaly coal>carbonaceous siltstone>coal>sandstone. Coal abundant, V. Vitrite. Shaly coal major, V>E>I. vitrite>clarite. Dom abundant, V>E>I. Vitrinite abundant, exinite common, inertinite sparse. Strong oil cut from coal and shaly coal. ?Heat alteration structures. Reflectance dropped sharply after standing in oil for five days. Moderate to strong mineral matter fluorescence. Pyrite abundant.)

WHITING NO. 2

KK No.	Esso No.	Depth m	$\bar{R}_v$ max %	Range R_v max %	N	Description Including Exinite Fluorescence
x2491	77791 -M	3133.5 SWC 20	0.69	0.59-0.82	25	Sparse sporinite, cutinite and liptodetrinite, yellow orange to dull orange, rare bituminite, dull orange, rare resinite, yellow. (Siltstone>>carbonaceous siltstone>coal. Coal common, V>>E. Vitrite>clarite. Dom abundant, V>E>I. Vitrinite abundant, exinite sparse, inertinite rare. Vitrinite shows brown fluorescence. Strong diffuse oil cut from vitrinite and green haze over most of sample. Moderate to strong mineral matter fluorescence. Carbonate abundant. Pyrite sparse.)
x2492	77791 -L	3165 SWC 19	0.75	0.59-0.89	28	Common sporinite and cutinite, yellow orange to dull orange, sparse liptodetrinite, yellow orange to dull orange, sparse bituminite, dull orange, rare resinite, yellow, rare ?exsudatinite, green. (Siltstone>carbonaceous siltstone>coal>shaly coal. Coal major, V>>E. Vitrite>>clarite. Shaly coal abundant, V>>E. Vitrite>>clarite. Dom abundant, V>E>I. Vitrinite abundant, exinite common, inertinite rare. Vitrinite shows brown fluorescence. Moderate to strong green oil cut from vitrinite. Moderate to strong mineral matter fluorescence. Carbonate abundant in siltstone and coal. Pyrite rare.)
x2493	77791 -E	3300.5 SWC 6 $\bar{R}_I$	0.73 1.53	0.60-0.87 1.25-1.74	27 3	Sparse cutinite, sporinite and liptodetrinite, orange to dull orange, rare resinite, yellow, rare bituminite, dull orange, rare ?exsudatinite, green. (Siltstone>carbonaceous siltstone>coal. Coal common, V. Vitrite. Dom abundant, V>E>or=I. Vitrinite abundant exinite and inertinite sparse. Vitrinite shows brown to dull orange fluorescence. Moderate to strong mineral matter fluorescence. Carbonate and pyrite common.)
x2494	77795 -Q	3386 SWC 136	0.77	0.61-0.89	22	Rare resinite, yellow, sparse sporinite and liptodetrinite, yellow orange to dull orange. (Sandy siltstone>sandstone. Dom common, I>V>E. Inertinite common, vitrinite and exinite sparse. Inorganic mud additive rare. Oil cut present from vitrinite. Vitrinite shows dull orange to weak brown fluorescence. Moderate to strong mineral matter fluorescence. Carbonate rare. Pyrite sparse.)
x2495	77795 -L	3434 SWC 129	0.82	0.61-0.95	24	Rare ?sporinite, orange to dull orange, rare ?liptodetrinite, yellow orange to dull orange. (Siltstone. Dom sparse, I>V>?E. Inertinite and vitrinite sparse, ?exinite rare. Vitrinite shows weak brown fluorescence. Moderate to strong mineral matter fluorescence. Carbonate rare. Iron oxides common. Pyrite common.)

WHITING NO. 2

KK No.	Esso No.	Depth m	$\bar{R}_v$ max %	Range R_v max %	N	Description Including Exinite Fluorescence
x2496	77795 -J	3454.2 SWC 127	0.79	0.65-0.98	6	Rare sporinite and liptodetrinite, orange to dull orange, rare ?resinite, orange. (Siltstone. Dom common, I>>V>E. Inertinite common, vitrinite and exinite rare. Inorganic mud additive sparse. Carbonate rare. Vitrinite shows weak brown fluorescence. Moderate to strong mineral matter fluorescence. Pyrite sparse.)
		$\bar{R}_I$	1.43	1.19-1.73	6	
x2497	77795 -H	3463.7 SWC 125	0.79	0.67-0.91	28	Rare cutinite, orange, rare sporinite and liptodetrinite, orange to dull orange. (Sandstone> siltstone>shaly coal. Shaly coal common, V>I. Vitrinertite(V)>vitrite>inertite. Dom common, I>V>E. Inertinite common, vitrinite sparse, exinite rare. Vitrinite shows dull orange to weak brown fluorescence. Live green oil cut from vitrinite. Moderate to strong mineral matter fluorescence. Carbonate sparse. Pyrite rare.)
x2498	77795 -D	3489 SWC 121	0.82	0.67-0.89	10	Rare sporinite, orange, rare liptodetrinite orange to dull orange. (Siltstone>>coal. Coal rare, vitrite. Dom common, I>V>E. Inertinite common, vitrinite and exinite rare. Inorganic mud additive rare. Vitrinite shows dull orange to weak brown fluorescence. Moderate to strong mineral matter fluorescence. Pyrite sparse.)
x2499	77795 -C	3492.3 SWC 120	0.99	0.86-1.10	30	Common liptodetrinite, dull orange, sparse suberinite, brown, sparse ?exsudatinite, green. (Shaly coal>carbonaceous siltstone>coal. Coal major, V>>E. Vitrite. Shaly coal dominant, V>>E>I. Vitrite>?clarite. Dom abundant, V>>E>I. Vitrinite abundant, exinite and inertinite sparse. Strong green oil cut from coal, shaly coal and siltstone. Moderate to strong mineral matter fluorescence. Pyrite sparse.)
x2500	77795 -A	3515 SWC 118	0.96	0.78-1.16	28	Rare liptodetrinite, dull orange. (Siltstone>> coal. Coal common, V. Vitrite. Dom abundant, I>V>E. Inertinite abundant, vitrinite common, exinite rare. Vitrinite shows orange to dull orange fluorescence. Strong green oil cut from some siltstone grains. Moderate to strong mineral matter fluorescence. Pyrite abundant.)
		$\bar{R}_I$	1.88	1.43-2.61	4	
x2501	77794 -W	3534.3 SWC 114	1.08	0.97-1.22	27	Rare cutinite, dull orange, rare suberinite, brown. (Siltstone>sandstone>shaly coal>coal> carbonate. Coal abundant, I>V>>E. Inertite> vitrite. Shaly coal major, I>V. Inertite> vitrinertite(I)>vitrite. Dom abundant, I>V>>E. Inertinite abundant, vitrinite common, exinite rare. Vitrinite shows dull brown fluorescence. Weak to moderate green oil cut from coal and shaly coal. Moderate to strong mineral matter fluorescence. Carbonate abundant. Pyrite sparse.)
		$\bar{R}_I$	1.87	1.38-2.57	7	

WHITING NO. 2

KK No.	Esso No.	Depth m	$\bar{R}_v$ max %	Range R_v max %	N	Description Including Exinite Fluorescence
x2502	77794 -V	3548.2 SWC 112	1.09	0.96-1.18	28	Rare cutinite and liptodetrinite, dull orange, rare suberinite, brown, rare exsudatinite, green, sparse sporinite, no fluorescence. (Coal V>I>E. Vitrite>vitrinertite(V)>vitrinertite(I)=inertite. Strong green oil cut from all coal. Moderate to strong mineral matter fluorescence.)
		$\bar{R}_I$	2.29	1.43-3.15	5	

ENCLOSURES

PE902415

This is an enclosure indicator page.
The enclosure PE902415 is enclosed within the container PE902408 at this location in this document.

The enclosure PE902415 has the following characteristics:

ITEM_BARCODE =	PE902415
CONTAINER_BARCODE =	PE902408
NAME =	Structure map
BASIN =	GIPPSLAND
PERMIT =	VIC/L2
TYPE =	WELL
SUBTYPE =	HRZN_CNTR_MAP
DESCRIPTION =	Structure map Top of P250 Reservoir Most likely case (enclosure from WCR vol.2) for Whiting-2
REMARKS =	
DATE_CREATED =	31/10/85
DATE_RECEIVED =	8/09/86
W_NO =	W903
WELL_NAME =	Whiting-2
CONTRACTOR =	
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE902414

This is an enclosure indicator page.
The enclosure PE902414 is enclosed within the container PE902408 at this location in this document.

The enclosure PE902414 has the following characteristics:

ITEM_BARCODE =	PE902414
CONTAINER_BARCODE =	PE902408
NAME =	Structure map
BASIN =	GIPPSLAND
PERMIT =	VIC/L2
TYPE =	WELL
SUBTYPE =	HRZN_CNTR_MAP
DESCRIPTION =	Structure map Top of M100 Reservoir Most likely case (enclosure from WC vol.2) for Whiting-2
REMARKS =	
DATE_CREATED =	31/10/85
DATE_RECEIVED =	8/09/86
W_NO =	W903
WELL_NAME =	Whiting-2
CONTRACTOR =	
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE902410

This is an enclosure indicator page.
The enclosure PE902410 is enclosed within the container PE902408 at this location in this document.

The enclosure PE902410 has the following characteristics:

ITEM_BARCODE =	PE902410
CONTAINER_BARCODE =	PE902408
NAME =	Structure map
BASIN =	GIPPSLAND
PERMIT =	VIC/L2
TYPE =	WELL
SUBTYPE =	HRZN_CNTR_MAP
DESCRIPTION =	Structure map Upper L.balmei Seismic Marker (enclosure from WCR vol.2) for Whiting-2
REMARKS =	
DATE_CREATED =	31/10/85
DATE_RECEIVED =	8/09/86
W_NO =	W903
WELL_NAME =	Whiting-2
CONTRACTOR =	
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE902413

This is an enclosure indicator page.
The enclosure PE902413 is enclosed within the container PE902408 at this location in this document.

The enclosure PE902413 has the following characteristics:

ITEM_BARCODE =	PE902413
CONTAINER_BARCODE =	PE902408
NAME =	Structure map
BASIN =	GIPPSLAND
PERMIT =	VIC/L2
TYPE =	WELL
SUBTYPE =	HRZN_CNTR_MAP
DESCRIPTION =	Structure map Top of L410 Reservoir Most likely case (enclosure from WCR vol.2) for Whiting-2
REMARKS =	
DATE_CREATED =	31/10/85
DATE_RECEIVED =	8/09/86
W_NO =	W903
WELL_NAME =	Whiting-2
CONTRACTOR =	
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE902412

This is an enclosure indicator page.
The enclosure PE902412 is enclosed within the container PE902408 at this location in this document.

The enclosure PE902412 has the following characteristics:

ITEM_BARCODE	=	PE902412
CONTAINER_BARCODE	=	PE902408
NAME	=	Structure map
BASIN	=	GIPPSLAND
PERMIT	=	VIC/L2
TYPE	=	WELL
SUBTYPE	=	HRZN_CNTR_MAP
DESCRIPTION	=	Structure map Top of L460 Reservoir Most likely case (enclosure from WCR vol.2) for Whiting-2
REMARKS	=	
DATE_CREATED	=	31/10/85
DATE_RECEIVED	=	8/09/86
W_NO	=	W903
WELL_NAME	=	Whiting-2
CONTRACTOR	=	
CLIENT_OP_CO	=	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE902411

This is an enclosure indicator page.
The enclosure PE902411 is enclosed within the container PE902408 at this location in this document.

The enclosure PE902411 has the following characteristics:

ITEM_BARCODE =	PE902411
CONTAINER_BARCODE =	PE902408
NAME =	Structure map
BASIN =	GIPPSLAND
PERMIT =	VIC/L2
TYPE =	WELL
SUBTYPE =	HRZN_CNTR_MAP
DESCRIPTION =	Structure map Top of L500 Reservoir most likely case (enclosure from WCR vol.2) for Whiting-2
REMARKS =	
DATE_CREATED =	31/10/85
DATE_RECEIVED =	8/09/86
W_NO =	W903
WELL_NAME =	Whiting-2
CONTRACTOR =	
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE601169

This is an enclosure indicator page.
The enclosure PE601169 is enclosed within the container PE902408 at this location in this document.

The enclosure PE601169 has the following characteristics:

ITEM_BARCODE =	PE601169
CONTAINER_BARCODE =	PE902408
NAME =	Quantitative log analysis
BASIN =	GIPPSLAND
PERMIT =	VIC/L2
TYPE =	WELL
SUBTYPE =	WELL_LOG
DESCRIPTION =	Quantitative log analysis (enclosure from WCR vol.2) for Whiting-2
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	8/09/86
W_NO =	W903
WELL_NAME =	Whiting-2
CONTRACTOR =	
CLIENT_OP_CO =	ESSO AUSTRALIA LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE902409

This is an enclosure indicator page.
The enclosure PE902409 is enclosed within the container PE902408 at this location in this document.

The enclosure PE902409 has the following characteristics:

ITEM_BARCODE =	PE902409
CONTAINER_BARCODE =	PE902408
NAME =	Time Depth Curve
BASIN =	GIPPSLAND
PERMIT =	VIC/L2
TYPE =	WELL
SUBTYPE =	VELOCITY_CHART
DESCRIPTION =	Time Depth Curve (enclosure from WCR vol.2) fro Whiting-2
REMARKS =	
DATE_CREATED =	18/06/85
DATE_RECEIVED =	14/03/86
W_NO =	W903
WELL_NAME =	Whiting-2
CONTRACTOR =	
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE601168

This is an enclosure indicator page.
The enclosure PE601168 is enclosed within the container PE902408 at this location in this document.

The enclosure PE601168 has the following characteristics:

ITEM_BARCODE =	PE601168
CONTAINER_BARCODE =	PE902408
NAME =	Well Completion Log
BASIN =	GIPPSLAND
PERMIT =	VIC/L2
TYPE =	WELL
SUBTYPE =	COMPLETION_LOG
DESCRIPTION =	Well Completion Log (enclosure from WCR vol.2) for Whiting-2
REMARKS =	
DATE_CREATED =	1/07/85
DATE_RECEIVED =	8/09/86
W_NO =	W903
WELL_NAME =	Whiting-2
CONTRACTOR =	
CLIENT_OP_CO =	ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE905523

This is an enclosure indicator page.
The enclosure PE905523 is enclosed within the container PE902408 at this location in this document.

The enclosure PE905523 has the following characteristics:

ITEM_BARCODE = PE905523
CONTAINER_BARCODE = PE902408
NAME = Geological Cross-Section A-A'
BASIN = GIPPSLAND
PERMIT = VIC/L2
TYPE = WELL
SUBTYPE = CROSS_SECTION
DESCRIPTION = Geological Cross-Section A-A' (from WCR vol.2) for Whiting-2
REMARKS =
DATE_CREATED = 31/12/85
DATE_RECEIVED = 8/09/86
W_NO = W903
WELL_NAME = WHITING-2
CONTRACTOR =
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

(Inserted by DNRE - Vic Govt Mines Dept)