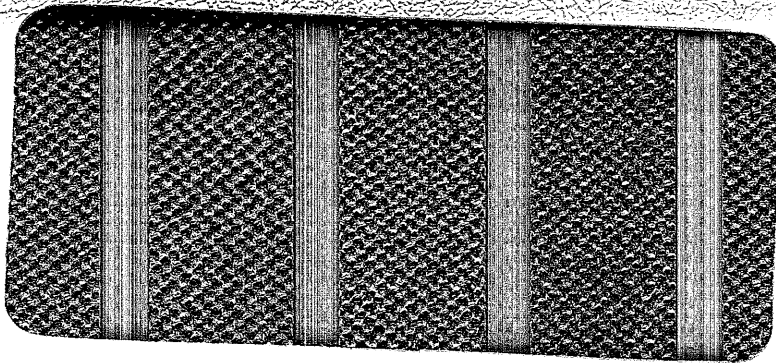




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Vol. 2

ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

WELL COMPLETION REPORT

WRASSE-1

INTERPRETATIVE DATA

VOLUME 2 27 MAR 1987

PETROLEUM DIVISION

**GIPPSLAND BASIN
VICTORIA**

ESSO AUSTRALIA LIMITED

Compiled by: M.FITTALL

MARCH 1987

WRASSE-1

WELL COMPLETION REPORT

VOLUME 2

(Interpretative Data)

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INTRODUCTION

The primary objective of Wrasse-1 was to test the hydrocarbon potential of an interpreted lowstand fan complex located within the Turrum Formation. The stratigraphic trapping mechanism required reservoir facies, contained within the interpreted lowstand fan, to pinch out up-dip between interpreted highstand shale facies. This objective was tested.

The secondary objective of the well was to obtain stratigraphic information about the Turrum Formation which can be used for on-going exploration of the eastern Gippsland channel region. This objective was fulfilled.

The Wrasse prospect is located approximately beneath the oil pipeline linking the Halibut and Marlin Platforms. For safety reasons, the "Southern Cross" was located away from the pipeline and Wrasse-1 was drilled as a deviated well. The average deviation angle was 25°.

PREVIOUS DRILLING HISTORY

Wrasse-1 was the first well drilled in the Gippsland Basin to test the play concept of a lowstand fan complex within the Turrum Formation. The Turrum Formation has been penetrated by several wells : Marlin-4 (9.5km north of Wrasse-1), Turrum-1 (13.9km NNW of Wrasse-1), Turrum-2 (9.2km NNW of Wrasse-1) and Teraglin-1 (8.6km SE of Wrasse-1).

GEOLOGICAL AND GEOPHYSICAL DISCUSSION

Stratigraphy (Figure 1; Appendices 1 & 2; Enclosure 1)

Wrasse-1 penetrated 2489.2m of limestones and calcareous sediments of the Seaspray Group (Gippsland Limestone and Lakes Entrance Formation), which are of Early Oligocene to Recent age. Several lithological sub-units have been identified in the Lakes Entrance Formation on the basis of palaeontological evidence and wireline logs. These include an Early Miocene (foraminiferal zone G) recrystallised limestone, which is disconformably underlain by an Early Oligocene (foraminiferal zones J_2 - I_2 ?) calcareous unit.

The above sequence is underlain by an 18m thick marl containing quartz grains and glauconite, which is of Late Eocene/Early Oligocene age (foraminiferal zone K). It is interpreted to represent a period of slow deposition in a deep water marine environment. This unnamed unit has been recorded in some other Gippsland Basin wells.

The unnamed unit is disconformably underlain by the Turrum Formation, which is a Late Eocene channel-fill sequence infilling the Marlin Channel. In Wrasse-1 it is of Lower N. asperus age, and is 129.1m thick; approximately one half of the predicted thickness. The Turrum Formation can be subdivided into four lithological subunits:

"Gurnard Greensand" - The upper 12.5m of the Turrum Formation consists of sandy very glauconitic siltstone containing rare planktonic foraminifera and fish teeth. This unit represents a period of condensed deep marine sedimentation.

UNIT A - The underlying 91.5m of the Turrum Formation consists of siltstones and very fine grained sandstones, becoming more sandy towards the base. This sequence contains glauconite throughout and rare carbonaceous material. The siltstones are poorly sorted, sandy, argillaceous and slightly calcareous. Core 2 cut in this unit is massive and poorly sorted, with no obvious depositional bedding, and of a mixed composition possibly caused by bioturbation. Unit A is interpreted to represent very fine grained sediments with occasional shelfal input (sand grains, carbonaceous material and glauconite), deposited in an offshore environment of high water depth.

UNIT B - The underlying 35m of the Turrum Formation consists of interbedded quartzose sandstones and siltstones. The siltstones are argillaceous and sandy. The sandstones are fine to coarse grained, poorly sorted, and often heavily dolomite cemented. The base of this unit is marked by a sharp erosional base. Unit B is interpreted to represent coarse grained sediments, more proximal than Unit A, deposited in an offshore environment of moderate water depth.

UNIT C

- The basal 9.5m of the Turrum Formation consists of a massive silty shale. The presence of this unit in the base of the Marlin Channel is problematical. This shale may be an earlier channel-fill sediment which has been preserved. Alternatively, the shale may be part of the "coarse clastics" sequence, although the available (poor) palynological data suggests not.

The Turrum Formation in Wrasse-1 has been deposited following a relatively large drop in eustatic sea-level which led to the formation of the Marlin Channel. Units B and A are interpreted to be channel-fill sediments deposited during a transgression which occurred with the following rapid rise in relative sea-level; Unit B representing the coarser sediments deposited in moderate water depth, and Unit A representing the finer grained sediments deposited in increasing water depth due to increasing transgression, culminating in the condensed sedimentation of the "Gurnard Greensand" at the top of the Turrum Formation.

The Latrobe Group "coarse clastics" sequence in Wrasse-1 is of Lower to Upper L. balmei age and consists of interbedded sandstone, siltstones, shales and minor coals. The sandstones are occasionally silty and commonly dolomite cemented. The "coarse clastics" sequence is interpreted to have been deposited in a fluvial to coastal plain environment.

Structure (Table 1, Enclosures 1 & 2)

The Lakes Entrance Formation was penetrated 107.3m low to prediction. However, the boundary between the Gippsland Limestone and Lakes Entrance Formation is difficult to pick on seismic sections and electric logs.

The top of the Turrum Formation was penetrated 170.2m low to prediction. The pre-drill seismic marker picked as the top of the Turrum Formation is shown by Wrasse-1 to correspond to the top of a recrystallised unit in the base of the Lakes Entrance Formation. The top of this unit was penetrated only 4.5m high to the predicted top of the Turrum Formation.

TABLE 1 PROGNOSIS (KB = 21m)

<u>PRE-DRILL</u>		<u>POST-DRILL</u>		
<u>Formation</u>	<u>Depth (mSS)</u>	<u>Formation</u>	<u>Depth (mSSTVD)</u>	<u>Depth (mMDKB)</u>
SEASPRAY GROUP		SEASPRAY GROUP		
Gippsland Limestone	68	Gippsland Limestone	65.0	86.0
Lakes Entrance Formation	1880	Lakes Entrance Formation	1987.3	2103.5
LATROBE GROUP				
Top of Turrum Formation	2384	Top of recrystallised unit	2379.5	2540.0
Top of sand-prone facies	2549	LATROBE GROUP		
Top of "coarse clastics"	2658	Top of Turrum Formation	2554.2	2730.0
		Top of sand-prone (Unit B)	2641.5	2824.5
		Top of "coarse clastics"	2683.3	2868.5
TOTAL DEPTH	2790	TOTAL DEPTH	2790.3	2984.0

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The pre-drill seismic marker picked as the top of sand-prone unit is shown to correspond to the top of the Turrum Formation in Wrasse-1, which was penetrated 5.2m low to the predicted top of the sand-prone unit.

Due to the misinterpretation of the pre-drill seismic markers, the top of the sand-prone section of the Turrum Formation (Unit B in Wrasse-1) is thought to lack closure. Therefore, Wrasse-1 did not test a valid structural trap at the reservoir level of the primary objective.

The top of Latrobe Group "coarse clastics" was penetrated 25.3m low to prediction. The Top of "coarse clastics" Structure Map shows the configuration of the base of the Marlin Channel, and the underlying Latrobe Group structuring. This map shows a small amount of closure to the north of Wrasse-1. However, Wrasse-1 drilled outside of this closure and therefore did not test a valid top of "coarse clastics" trap.

Post-drill interpretation of seismic data in the vicinity of Wrasse-1 shows the pre-drill lowstand fan interpretation is now invalid. The pre-drill mounded configuration of a lowstand fan is shown to be based on seismic events in the base of the Lakes Entrance Formation. Consequently the Turrum Formation is much thinner than originally prognosed, and does not show a mounded configuration typical of a submarine fan. The Turrum Formation is now interpreted as transgressive channel-fill sediments deposited in the Marlin Channel during a rise in eustatic sea-level.

Seal

The Seaspray Group provides regional top-seal to the Latrobe Group at the Wrasse-1 location. The silty and slightly sandy lithology of Unit A of the Turrum Formation is not considered to provide an effective seal to the Unit B reservoir section. Other wells in the Gippsland Basin (i.e. Flathead-1, Kipper-1) contain similar sediments of the same age which do not top-seal hydrocarbons, but are also non-net reservoirs. The Unit C shale would provide an effective seal to the "coarse clastics" section if it is laterally widespread.

Hydrocarbons and Reservoir (Appendices 3 & 4)

No indications of hydrocarbons were recorded during the drilling of Wrasse-1. Log analysis and geochemical analysis confirm this observation.

Unit B, the potential reservoir section of the Turrum Formation, is of poor reservoir quality. The net:gross of this unit is only 26% due to the silty nature of the sequence, and the presence of dolomite cement. Average porosities of the non-cemented sands range from 12% to 16%.

The "coarse clastics" sequence of Wrasse-1 is of moderate reservoir quality. The net:gross of this section is 51%, which has also been reduced by the presence of dolomite cement. Average porosities of the non-cemented sands range from 12% to 17%.

Geochemical analysis of cuttings indicates the Turrum Formation sediments have marginal to good gas plus oil source potential and the Latrobe Group Shales have good hydrocarbon source potential. However, the entire section penetrated by Wrasse-1 is rated as immature for the generation of hydrocarbons. Therefore no hydrocarbons have been generated in situ within the Turrum Formation, or from the upper part of the Latrobe Group.

The lack of hydrocarbons in the Turrum Formation at Wrasse-1 can be simply explained by the interpreted lack of seal provided by the silty Unit A section. The proposed stratigraphic trapping mechanism formed by the up-dip pinch-out of reservoir facies between seal facies is then not formed. However if Unit A is interpreted to provide an effective seal to the Unit B reservoir, the lack of hydrocarbons could be due to the base seal (Unit C shale) thinning out up-dip, thus allowing any migrating hydrocarbons to leak into the "coarse clastics" section. Alternatively, if the base seal is present up-dip, the lack of hydrocarbons in the Turrum Formation at Wrasse-1 would be attributed to a lack of a suitable migration pathway into the Turrum Formation reservoir for hydrocarbons generated from deeper in the mature Latrobe Group.

No hydrocarbons were encountered in the "coarse clastics" section at Wrasse-1 because the well did not drill a valid trap, as was anticipated pre-drill.

WRASSE - 1 STRATIGRAPHIC TABLE

AGE (M.A.)	EPOCH	SERIES	FORMATION HORIZON	PALYNOLOGICAL ZONATION SPORE-POLLEN	PLANKTONIC FORAMINIFERAL ZONATION	DRILL DEPTH (metres)	SUBSEA DEPTH (m TVD)	THICKNESS (metres)		
SEA FLOOR										
5	PLEIST.		SEASPRAY GROUP	GIPPSLAND LIMESTONE		A1/A2	86.0	65.0	1922.3	
	PLIO.					A3				
LATE		A4								
		B1								
		B2								
10	MIOCENE			LAKES ENTRANCE FORMATION	<i>T. bellus</i>	C	2103.5	1987.3		566.9
						D1/D2				
15	MID			?		E/F	2730.0	2554.2		129.1
	EARLY					G				
20	OLIGOCENE			?		H1	2730.0	2554.2		107.0 +
			H2							
25	LATE		?	<i>P. tuberculatus</i>	I	2730.0	2554.2	107.0 +		
					J1					
30	EARLY		?		J2	2730.0	2554.2	107.0 +		
					K					
35	LATE		LATROBE GROUP	Upper <i>N. asperus</i>		2730.0	2554.2	107.0 +		
									LATE	Mid <i>N. asperus</i>
40	MIDDLE		TURRUM FORMATION	<i>Lower N. asperus</i>	2730.0	2554.2	107.0 +			
								EARLY	P. <i>asperopolus</i>	
45	EARLY		"COARSE CLASTICS"	Upper <i>M. diversus</i>	2868.5	2683.3	107.0 +			
				LATE				Mid <i>M. diversus</i>		
50	LATE		Upper <i>L. balmei</i>			2984.0	2790.3	107.0 +		
				EARLY					Lower <i>L. balmei</i>	
55	LATE		<i>T. longus</i>			2984.0	2790.3	107.0 +		
				EARLY					<i>T. lilliei</i>	
60	LATE		<i>T. longus</i>			2984.0	2790.3	107.0 +		
				EARLY					<i>T. lilliei</i>	
65	LATE		<i>T. longus</i>			2984.0	2790.3	107.0 +		
				EARLY					<i>T. lilliei</i>	
70	LATE		<i>T. longus</i>			2984.0	2790.3	107.0 +		
				EARLY					<i>T. lilliei</i>	

APPENDIX I

FORAMINIFERAL ANALYSIS, WRASSE-1,
GIPPSLAND BASIN

by

J.P. REXILIUS

Esso Australia Ltd.
Palaeontological Report, 1984/15

May, 1984

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INTERPRETATIVE DATA

INTRODUCTION

TABLE 1: BIOSTRATIGRAPHIC SUMMARY, WRASSE-1

GEOLOGICAL COMMENTS

DISCUSSION OF ZONES

REFERENCES

FORAMINIFERAL DATA SHEET

TABLE 2 : INTERPRETATIVE DATA, WRASSE-1

INTRODUCTION

Sixty five sidewall core samples and five samples of core (four from core 1 and one from core 2) were examined for their foraminiferal content in Wrasse-1 from 1930.0m to 2822.0m (deviated KB depths). A summary of the biostratigraphic breakdown of the stratigraphic units in the well is given in Table 1. Tables 2 and 3 provide a summary (Basic and Interpretative) of the palaeontological analysis in Wrasse-1. All depths quoted are deviated KB depths.

TABLE 1: BIOSTRATIGRAPHIC SUMMARY, WRASSE-1

AGE	UNIT	ZONE	DEPTH (mKB dev.)
Mid Miocene	Lakes	D2/D1	1930.0 - 2120.5
Early Miocene	Entrance	E2	2157.0
Early Miocene	Formation	F	2170.0 - 2203.0
Early Miocene		F/G	2236.0 - 2272.0
----- log break at 2299m (mid Miocene Marker) -----			
Early Miocene	Lakes		
Early Miocene	Entrance	F/G	2332.0-2440.0
Early Miocene	Formation	G	2455.0-2537.0
----- log break at 2540m (mid Early Miocene disconformity) -----			
Early Miocene	Lakes Entrance Formation (recrystallized limestone)	G	2548.0 - 2680.0
----- log break at 2680.5m (basal Early Miocene or mid Oligocene disconformity) -----			
Early Oligocene	Lakes Entrance	?I2	2690.0 - 2699.0
Early Oligocene	Formation	J2	2703.0 - 2711.0
----- log break at 2713.0m -----			
Late Eocene	Un-named marl	K	2715.0 - 2729.0
----- lithological break at 2730m -----			
* Late Eocene	"Gurnard Greensand"	Lower <u>N. asperus</u>	2733.0 - 2742.85
----- log break at 2742.5m -----			
* Late Eocene	Turrum Formation (Unit A)	Lower <u>N. asperus</u>	2743.9 - 2822.0
----- log break at 2824m -----			
*Late Eocene	Turrum Formation (Unit B)	Lower <u>N. asperus</u>	2826.0 - 2848.0
----- log break at 2859m -----			
*Late Eocene	Turrum Formation (Unit C)	Lower <u>N. asperus</u>	2865.0
----- log break at 2868.5m (basal Late Eocene disconformity) -----			
#	Latrobe Group (coarse clastics)		

*Age based on palynological analysis
of Hannah et al. (1984)
Not studied

GEOLOGICAL COMMENTS

The Turrum Formation (2730 - 2668.5m) can be sub-divided into the following four distinct units in Wrasse-1: "Gurnard Greensand" (2730-2742.5m), Unit A (2742.5 - 2824m), Unit B (2824 - 2859m) and Unit C (2859 - 2868.5m). Unit C consists of a dark carbonaceous shale which is Lower N. asperus in age (Hannah et al., 1984). Unit B consists of interbeds of shale, siltstone and sandstone. Palynological evidence indicates that the unit is Lower N. asperus in age (Hannah et al., 1984). Neither Units C or B were examined for foraminifera. Unit A comprises a shale with quartz and glauconite floaters. This lithology was noted in all sidewall cores and core samples processed for foraminiferal analysis between 2742.85m and 2808.0m. With the exception of the core sample at 2742.85m, all these samples were barren of foraminifera. The core sample at 2742.85m contains rare specimens of Globigerina angiporoides. Unit A has been age-dated as Lower N. asperus by Hannah et al. (1984). Most of Unit A appears to have been deposited very rapidly. The unit appears to represent a debris flow with quartz and glauconite floaters in a shale groundmass. It is quite possible that the glauconite has been derived from greensand facies being deposited contemporaneously or previously on the margin or near the source of the channel. If the glauconite has been sourced from shelfal greensands then Unit A would be expected to have accumulated in a submarine channel (? canyon head) of greater than 200 metres bathymetry.

Unit A is conformably or disconformably overlain by greensand of Late Eocene age ("Gurnard Greensand"). The unit contains very rare planktonic foraminifera which are Zone K or older in age, and has been age-dated as Lower N. asperus by Hannah et al., 1984. The "Gurnard Greensand" in Wrasse-1 contains common glauconite and anomalously high amounts of fish teeth remains. The unit represents a condensed sequence deposited in relatively deepwater.

The "Gurnard Greensand" is disconformably overlain by an un-named glauconitic marl of Late Eocene/Early Oligocene (Zone K) age. A log break separating the two units has been put at 2730m. The unit contains a few to 20% pelletal glauconite and fish teeth remains were noted in all samples examined. Deep water benthonic foraminifera (of bathyal aspect) were noted in the sidewall core sample at 2723.0m. Benthonic foraminiferal evidence indicates that deposition of the marl probably occurred in an upper bathyal environment.

The un-named marl is conformably or disconformably overlain by Early Oligocene calcareous shales of the Lakes Entrance Formation. The units are separated by a gamma log break at 2713m. The un-named marl and "Gurnard Greensand" sequence in Wrasse-1 have a distinctively higher relative gamma log expression than units above and below it. This is attributed to the glauconite content in this sequence. The Lakes Entrance Formation in Wrasse-1 lacks glauconite.

There is a disconformity within the Lakes Entrance Formation at 2680.5m. This disconformity represents either the basal Early Miocene or mid Oligocene event documented by Vail et al. (1977). Undifferentiated Early Oligocene calcareous shales of the Lakes Entrance Formation are disconformably overlain by an Early Miocene recrystallized unit of the Lakes Entrance Formation. The hiatus between the units spans Zones H1-H1. The recrystallized limestone unit persists up to 2540m and has a higher sonic and bulk density log signature than the units above and below it. Planktonic foraminiferal assemblages in the interval are very poorly preserved.

There is another probable disconformity within the Lakes Entrance Formation at 2540m. The log break at 2540m marks the top of the recrystallized limestone unit of the Lakes Entrance Formation. The disconformity occurs within Zone G. This disconformity represents a well defined seismic horizon in Wrasse-1. This seismic horizon probably equates with the mid Early Miocene disconformity documented by Vail et al. (1977).

The Mid Miocene Seismic Marker probably equates with the sonic log break at 2299m. The log break occurs within Zones F or G. Evidence from elsewhere in the Gippsland Basin (Rexilius, 1983) supports a Zone F (latest Early Miocene) assignment for the Mid Miocene Marker. The entry of the Zone F defining species Globigerinoides sicanus in the Gippsland Basin appears to be patchy (Rexilius, 1983). In Wrasse-1, for example, specimens of primitive Globigerinoides sicanus (= G. trilobus/G. sicanus transition) occur earlier (at 2440.0m) than more abundant advanced specimens at 2203.0m (see section dealing with Discussion of Zones).

DISCUSSION OF ZONES

The Tertiary biostratigraphy in Wrasse-1 is based on the Gippsland Basin planktonic foraminiferal zonal scheme of Taylor (in prep.).

Indeterminate Interval: 2754.0-2822.0m

The interval is barren of foraminifera but has been assigned to the Middle N. asperus palynological Zone by Hannah et al. (1984).

Zone K: 2715.0-2729.0m

The interval contains a typical Zone K planktonic foraminiferal assemblage comprising Globigerina angiporoides, G. linaperta, G. brevis and Globorotalia gemma.

Zone J2: 2703.0-2711.0m

The association of Globigerina angiporoides, G. brevis and Globorotalia gemma without Globigerina linaperta in the interval is indicative of a Zone J2 assemblage. Preservation of the Zone J2 assemblages in Wrasse-1 is very poor.

?Zone I2: 2690.0 - 2699.0m

The interval contains Globorotalia opima associated with indeterminate globigerinids. Preservation of the planktonic foraminiferal assemblages in the interval is very poor. A Zone I2 assignment for the interval is based on the presence of Globorotalia opima without Globigerina angiporoides (which ranges no higher than Zone J2) or Globoquadrina dehiscens s.l. (which makes its first appearance at the base of Zone I1). The absence of Globigerina angiporoides and Globoquadrina dehiscens s.l. is considered significant because both species are resistant to dissolution and are usually detectable in very poorly preserved material. Despite this however, a Zone I2 assignment for the interval must be considered speculative. The use of absence of taxa in poorly preserved material for age determination must be treated with a low degree of confidence.

Zone G: 2445.0-2680.0m

The uphole entry of Globigerinoides trilobus at 2680.0m defines the base of the zone. The interval contains very poorly preserved, recrystallized planktonic foraminiferal assemblages.

Zones F or G: 2236.0-2440.0m

Transitional specimens between Globigerinoides trilobus and G. sicanus make their first uphole entry at 2440.0m, and were also noted at 2344.0m. Other samples in the interval (2236.0, 2258.0, 2272.0, 2332.0, 2351.0, 2367.9 and 2425.0m) contain no evidence of Globigerinoides sicanus. The tight sampling of the Early Miocene section in Wrasse-1 may have exposed problems with the use of Globigerinoides sicanus as a defining event. The species represents an excellent defining event elsewhere (e.g. tropics and New Zealand) but appears to make a patchy first appearance in the Gippsland Basin (Rexilius, 1983). The Mid Miocene Seismic Marker has been shown to occur within Zone F in the

Gippsland Basin (Rexilius, 1983). Since the Mid Miocene Marker event appears to be represented by a major sonic break at 2299m, it is likely that most, if not all of the interval 2236.0-2440.0m is 'Zone F equivalent' even though the zone defining species is absent or very rare.

Zone F: 2170.0-2203.0m

The first common uphole appearance of advanced Globigerinoides sicanus occurs at 2203.0m.

Zone E2: 2139.0-2157.0m

The uphole entry of Praeorbulina glomerosa at 2157.0m defines the base of Zone E2 in the well.

Zones D2/D1: 1930.0-2120.5m

The association of Orbulina universa with Globorotalia miozea miozea and G. praescitula in the interval is indicative of a Zone D2/D1 assignment. The absence of Globorotalia peripheroacuta precluded a more refined sub-division.

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MICROPALAEONTOLOGICAL DATA SHEET

BASIN: Gippsland
 WELL NAME: Wrasse-1

ELEVATION: KB: +21.0m GL: -65.0m
 TOTAL DEPTH: 2984.0m KB deviated

AGE	FORAM. ZONULES	HIGHEST DATA					LOWEST DATA				
		Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
PLEIS- TOCENE	A ₁										
	A ₂										
PLIO- CENE	A ₃										
	A ₄										
MIOCENE	LATE	B ₁									
		B ₂									
		C									
	MIDDLE	D ₁	1930.0	1							
		D ₂						2120.5	1		
		E ₁									
		E ₂	2157.0	0				2157.0	0		
	EARLY	F	2170.0	0				2203.0	1		
		G	2455.0	1				2680.0	1		
		H ₁									
OLIGOCENE	LATE	H ₂									
		I ₁									
		I ₂	2690.0	2				2699.0	2		
	EARLY	J ₁									
		J ₂	2703.0	1				2711.0	1		
EOC- ENE	K	2715.0	1				2729.0	1			
	Pre-K										

COMMENTS: The absence of Zone E1 is probably the result of gap in sampling.
 Samples 2236.0 - 2440.0m inclusive are assignable to either Zone G
 or F.
 Samples 2733.0 - 2742.85 inclusive are Zone K or older.

CONFIDENCE RATING:

- 0: SWC or Core - Complete assemblage (very high confidence).
- 1: SWC or Core - Almost complete assemblage (high confidence).
- 2: SWC or Core - Close to zonule change but able to interpret (low confidence).
- 3: Cuttings - Complete assemblage (low confidence).
- 4: Cuttings - Incomplete assemblage, next to uninterpretable or SWC with depth suspicion (very low confidence).

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: J.P. Rexilius DATE: 10.2.84
 DATA REVISED BY: J.P. Rexilius DATE: 5.3.85

TABLE 2
SUMMARY OF PALAEOLOGICAL ANALYSIS, WRASSE-1, GIPPSLAND BASIN
INTERPRETATIVE DATA

NATURE OF SAMPLE	DEPTH (mKB)	PLANKTONIC FORAMINIFERAL YIELD	PRESERVATION	PLANKTONIC FORAMINIFERAL DIVERSITY	ZONE	AGE	COMMENTS
SWC 44	2822.0	Barren	-	-	-	-	
SWC 45	2817.0	Barren	-	-	-	-	
SWC 47	2808.0	Barren	-	-	-	-	
SWC 48	2802.0	Barren	-	-	-	-	
SWC 49	2798.0	Barren	-	-	-	-	
SWC 50	2794.0	Barren	-	-	-	-	
SWC 51	2790.0	Barren	-	-	-	-	
SWC 52	2784.0	Barren	-	-	-	-	Fish teeth
SWC 53	2778.0	Barren	-	-	-	-	
SWC 54	2773.0	Barren	-	-	-	-	
SWC 55	2769.0	Barren	-	-	-	-	
SWC 56	2764.0	Barren	-	-	-	-	
SWC 57	2759.0	Barren	-	-	-	-	
SWC 58	2754.0	Barren	-	-	-	-	
Core 2	2742.85	Very low	Poor	Very low	K or older	-	
SWC 59	2737.0	Low	Very poor	Very low	K or older	-	Fish teeth
SWC 60	2733.0	Very low	Very poor	Very low	K or older	-	
SWC 61	2729.0	Moderate	Very poor	Low	K	latest Late Eocene	Fish teeth
SWC 62	2723.0	Low/Moderate	Poor	Low	K	latest Late Eocene	Fish teeth, deep-water benthonic forams
SWC 63	2719.0	Low/Moderate	Poor	Low	K	latest Late Eocene	Fish teeth

TABLE 2 continued

NATURE OF SAMPLE	DEPTH (mKB)	PLANKTONIC FORAMINIFERAL YIELD	PRESERVATION	PLANKTONIC FORAMINIFERAL DIVERSITY	ZONE	AGE	COMMENTS
SWC 64	2715.0	Moderate	Very poor	Moderate/Low	K	latest Late Eocene	Fish teeth
SWC 65	2711.0	Low	Very poor	Very low	J2	Early Oligocene	Echinoid spines
SWC 66	2707.0	Moderate	Poor	Very low	J2	Early Oligocene	
SWC 67	2703.0	Very low	Very poor	Very low	J2	Early Oligocene	Echinoid spines
SWC 68	2699.0	Moderate	Very poor	Very low	?I2	latest Early Oligocene	Fish teeth
SWC 69	2690.0	Low	Very poor	Very low	?I2	latest Early Oligocene	
SWC 70	2680.0	High	Moderate	Moderate/Low	G	Early Miocene	<u>Fish teeth</u>
SWC 71	2662.0	Moderate	Very poor	Very low	G	Early Miocene	
SWC 72	2644.0	Moderately low	Very poor	Very low	G	Early Miocene	
SWC 73	2626.0	High	Very poor	Very low	Indeterminate	-	
SWC 74	2608.0	Moderate	Very poor	Very low	G	Early Miocene	Interval consists of
Core 1	2594.2	Moderate	Very poor	Very low	Indeterminate	-	recrystallized
Core 1	2593.25	High	Very poor	Low	G	Early Miocene	limestone.
Core 1	2592.75	Low	Very poor	Very Low	Indeterminate	-	Planktonic foram
Core 1	2589.9	Moderately low	Very poor	Very low	G	Early Miocene	assemblages
SWC 75	2584.0	Moderate	Very poor	Very low	Indeterminate	-	very poorly preserved.
SWC 76	2566.0	Moderate	Very poor	Low	G	Early Miocene	
SWC 77	2548.0	High	Very poor	Moderate	G	Early Miocene	
SWC 78	2537.0	Very low	Very poor	Very low	G	Early Miocene	

TABLE 2 continued

NATURE OF SAMPLE	DEPTH (mKB)	PLANKTONIC FORAMINIFERAL YIELD	PRESERVATION	PLANKTONIC FORAMINIFERAL DIVERSITY	ZONE	AGE	COMMENTS
SWC 79	2522.0	Moderate	Poor	Moderate	G	Early Miocene	Fish teeth
SWC 80	2508.0	Low	Poor	Low	G	Early Miocene	
SWC 81	2492.0	Moderate	Very poor	Moderate	G	Early Miocene	
SWC 1	2465.0	High	Moderate	Moderate	G	Early Miocene	
SWC 2	2455.0	Moderate	Moderate	Moderate/high	G	Early Miocene	
SWC 3	2440.0	Moderate	Moderate	Moderate	F/G	Early Miocene	
SWC 4	2425.0	Low	Poor	Moderate/Low	F/G	Early Miocene	
SWC 6	2367.9	Moderate/Low	Moderate	Moderate	F/G	Early Miocene	
SWC 7	2351.0	Moderate	Moderate	Moderate	F/G	Early Miocene	
SWC 8	2344.0	Low	Moderate	Moderate	F/G	Early Miocene	
SWC 9	2332.0	Moderate	Moderate/Poor	Moderate	F/G	Early Miocene	
SWC 10	2272.0	Moderate/High	Moderate	Moderate	F/G	Early Miocene	
SWC 11	2258.0	Moderate	Moderate/Poor	Low	F/G	Early Miocene	
SWC 13	2236.0	Moderate	Moderate/Poor	Moderate	F/G	Early Miocene	
SWC 14	2203.0	Low	Moderate	Low	F	Early Miocene	
SWC 15	2180.0	Low	Moderate	Moderate	F	Early Miocene	
SWC 16	2170.0	Moderate/High	Moderate	Moderate/High	F	Early Miocene	
SWC 17	2157.0	Moderate	Moderate	Moderate	E2	Middle Miocene	
SWC 18	2139.0	Moderate/Low	Poor	Moderate	E2	Middle Miocene	
SWC 19	2120.5	Moderate/Low	Moderate	Moderate	D	Middle Miocene	
SWC 20	2100.0	High	Good	Moderate	D2/D1	Middle Miocene	
SWC 21	2085.0	Moderate/High	Moderate	Moderate	D2/D1	Middle Miocene	
SWC 22	2065.0	High	Moderate	Moderate/Low	D2/D1	Middle Miocene	

TABLE 2 continued

NATURE OF SAMPLE	DEPTH (mKB)	PLANKTONIC FORAMINIFERAL YIELD	PRESERVATION	PLANKTONIC FORAMINIFERAL DIVERSITY	ZONE	AGE	COMMENTS
SWC 23	2045.0	High	Moderate	Moderate	D2/D1	Middle Miocene	Rare sponge spicules
SWC 24	2020.0	Moderate	Moderate	Moderate/High	D2/D1	Middle Miocene	
SWC 25	2010.0	Low	Poor	Moderate/Low	D2/D1	Middle Miocene	Echinoid spines
SWC 26	2000.0	Low	Poor	Moderate/Low	D2/D1	Middle Miocene	
SWC 27	1990.0	Moderate/Low	Moderate/Poor	Moderate/Low	D2/D1	Middle Miocene	
SWC 28	1980.0	Moderate/High	Moderate/Poor	Moderate/High	D2/D1	Middle Miocene	Echinoid spines
SWC 29	1950.0	High	Moderate	Moderate	D2/D1	Middle Miocene	Sponge spicules, echinoid spines
SWC 30	1930.0	Low	Poor	Moderate	D2/D1	Middle Miocene	

BASIC DATA

TABLE 3: FORAMINIFERAL DATA, WRASSE-1

RANGE CHART: TERTIARY PLANKTONIC FORAMINIFERA

TABLE 3
SUMMARY OF PALAEOLOGICAL ANALYSIS, WRASSE-1, GIPPSLAND BASIN
INTERPRETATIVE DATA

NATURE OF SAMPLE	DEPTH (mKB)	PLANKTONIC FORAMINIFERAL YIELD	PRESERVATION	PLANKTONIC FORAMINIFERAL DIVERSITY
SWC 44	2822.0	Barren	-	-
SWC 45	2817.0	Barren	-	-
SWC 47	2808.0	Barren	-	-
SWC 48	2802.0	Barren	-	-
SWC 49	2798.0	Barren	-	-
SWC 50	2794.0	Barren	-	-
SWC 51	2790.0	Barren	-	-
SWC 52	2784.0	Barren	-	-
SWC 53	2778.0	Barren	-	-
SWC 54	2773.0	Barren	-	-
SWC 55	2769.0	Barren	-	-
SWC 56	2764.0	Barren	-	-
SWC 57	2759.0	Barren	-	-
SWC 58	2754.0	Barren	-	-
Core 2	2742.85	Very low	Poor	Very low
SWC 59	2737.0	Low	Very poor	Very low
SWC 60	2733.0	Very low	Very poor	Very low
SWC 61	2729.0	Moderate	Very poor	Low
SWC 62	2723.0	Low/Moderate	Poor	Low
SWC 63	2719.0	Low/Moderate	Poor	Low
SWC 64	2715.0	Moderate	Very poor	Moderate/Low
SWC 65	2711.0	Low	Very poor	Very low
SWC 66	2707.0	Moderate	Poor	Very low
SWC 67	2703.0	Very low	Very poor	Very low
SWC 68	2699.0	Moderate	Very poor	Very low
SWC 69	2690.0	Low	Very poor	Very low
SWC 70	2680.0	High	Moderate	Moderate/Low
SWC 71	2662.0	Moderate	Very poor	Very low
SWC 72	2644.0	Moderately low	Very poor	Very low
SWC 73	2626.0	High	Very poor	Very low
SWC 74	2608.0	Moderate	Very poor	Very low
Core 1	2594.2	Moderate	Very poor	Very low
Core 1	2593.25	High	Very poor	Low
Core 1	2592.75	Low	Very poor	Very Low
Core 1	2589.9	Moderately low	Very poor	Very low

TABLE 3 continued

NATURE OF SAMPLE	DEPTH (mKB)	PLANKTONIC FORAMINIFERAL YIELD	PRESERVATION	PLANKTONIC FORAMINIFERAL DIVERSITY
SWC 75	2584.0	Moderate	Very poor	Very low
SWC 76	2566.0	Moderate	Very poor	Low
SWC 77	2548.0	High	Very poor	Moderate
SWC 78	2537.0	Very low	Very poor	Very low
SWC 79	2522.0	Moderate	Poor	Moderate
SWC 80	2508.0	Low	Poor	Low
SWC 81	2492.0	Moderate	Very poor	Moderate
SWC 1	2465.0	High	Moderate	Moderate
SWC 2	2455.0	Moderate	Moderate	Moderate/high
SWC 3	2440.0	Moderate	Moderate	Moderate
SWC 4	2425.0	Low	Poor	Moderate/Low
SWC 6	2367.9	Moderate/Low	Moderate	Moderate
SWC 7	2351.0	Moderate	Moderate	Moderate
SWC 8	2344.0	Low	Moderate	Moderate
SWC 9	2332.0	Moderate	Moderate/Poor	Moderate
SWC 10	2272.0	Moderate/High	Moderate	Moderate
SWC 11	2258.0	Moderate	Moderate/Poor	Low
SWC 13	2236.0	Moderate	Moderate/Poor	Moderate
SWC 14	2203.0	Low	Moderate	Low
SWC 15	2180.0	Low	Moderate	Moderate
SWC 16	2170.0	Moderate/High	Moderate	Moderate/High
SWC 17	2157.0	Moderate	Moderate	Moderate
SWC 18	2139.0	Moderate/Low	Poor	Moderate
SWC 19	2120.5	Moderate/Low	Moderate	Moderate
SWC 20	2100.0	High	Good	Moderate
SWC 21	2085.0	Moderate/High	Moderate	Moderate
SWC 22	2065.0	High	Moderate	Moderate/Low
SWC 23	2045.0	High	Moderate	Moderate
SWC 24	2020.0	Moderate	Moderate	Moderate/High
SWC 25	2010.0	Low	Poor	Moderate/Low
SWC 26	2000.0	Low	Poor	Moderate/Low
SWC 27	1990.0	Moderate/Low	Moderate/Poor	Moderate/Low
SWC 28	1980.0	Moderate/High	Moderate/Poor	Moderate/High
SWC 29	1950.0	High	Moderate	Moderate
SWC 30	1930.0	Low	Poor	Moderate

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APPENDIX 2

PALYNOLOGICAL ANALYSIS, WRASSE-1
GIPPSLAND BASIN

by

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PART I

INTRODUCTION
GEOLOGICAL COMMENTS
BIOSTRATIGRAPHY
DATA SHEET
DATA SUMMARY
RANGE CHART

INTRODUCTION

Wrasse-1 intersected Latrobe Group sediments ranging in age from Lower L. balmei to (?) Middle N. asperus. A significant unconformity occurs at the base of the channel fill sediments where the Lower N. asperus Zone overlies the Upper L. balmei Zone.

Exact details of the situation at the boundary between the Turrum Formation/Lakes Entrance Formations boundary are difficult to sort out owing to the poor dating over this interval.

In total 48 samples from both sidewall and conventional cores were prepared and examined. Preservation was in general, poor and yield low.

GEOLOGICAL COMMENTS

1. GEOLOGICAL SUMMARY

AGE	UNIT *	ZONE	DEPTH (m)
Early Miocene	Lakes Entrance Fm.	<u>P. tuberculatus</u>	2588.67-2711.0
-----log break at approx. 2713m -----			
latest Eocene- earliest Oligocene	Un-named carbonate	No older than Middle <u>N. asperus</u>	2723.0
-----log break at approx. 2730m -----			
Middle Eocene	Turrum Fm. (Unit A)	Lower <u>N. asperus</u>	2733-2822
-----log break at 2824m -----			
Middle Eocene	Turrum Fm. (Unit B)	<u>N. asperus</u>	2826-2848
-----log break at 2859m -----			
Middle Eocene	Turrum Fm. (Unit C)	Lower <u>N. asperus</u>	2860-2865
-----log break at 2868.5m -----			
Paleocene	Latrobe Group	Upper <u>L. balmei</u>	2901
Paleocene		Lower <u>L. balmei</u>	2936.5-2977

* Units and boundaries after Rexilius (1984)

2. TOP OF LATROBE GROUP

Because of poor preservation and low yields age dating of samples over this boundary is difficult. Little can be added to the discussion presented by Rexilius (1984) other than to say that the palynological dates obtained are consistent with the foraminiferal determinations.

3. TURRUM FORMATION

For reasons outlined in the biostratigraphy section the Turrum Formation sediments are assigned to the Lower Nothofagidites asperus Zone albeit with a low degree of confidence.

BIOSTRATIGRAPHY

1. Lower Lygistepollenites balmei Zone (2977.0m to 2936.5m)

The presence of Lygistepollenites balmei in conjunction with species such as Nothofagidites endurus, Australopollis obscurus, Latrobosporites ohaiensis is indicative of a Lower Lygistepollenites balmei Zone age for these sediments.

The presence of the dinoflagellate Eisenackia crassitubulata in sidewall core 32 at 2967.5m and the subsequent assignment of this sample to the Eisenackia crassitubulata Zone is consistent with the Lower Lygistepollenites balmei Zone age for this interval.

2. Upper Lygistepollenites balmei Zone (2901.0m)

A single sample (sidewall core 36) is provisionally assigned to this zone on the basis of Lygistepollenites balmei, Integricorpus antipodus and Ischyosporites irregularis.

Sidewall core 35 at 2918.0m can only be assigned a generalized Lygistepollenites balmei Zone age, making the precise placement of the Upper/Lower Lygistepollenites balmei Zone boundary impossible.

3. Lower Nothofagidites asperus Zone (2865.0m to 2733.0m)

The channel fill sediments encountered in Wrasse-1 are provisionally assigned to the Lower Nothofagidites asperus Zone. This determination is largely based on the consistent appearance of the dinoflagellate Areosphaeridium

diktyoplokus. Reworking of Paleocene material including Lygistepollenites balmei and Australopollis obscurus is relatively common.

The Wilsonidinium echinosuturatum dinoflagellate Zone was recognised on the presence of the nominate species in sidewall core 56 at 2764.0m.

General abundance and diversity of dinoflagellates was high across this interval, with Vozzhenikovia extensa being found throughout. This species has been previously considered to be a reliable indicator of a Middle Nothofagidites asperus Zone age. It now seems likely that the range of Vozzhenikovia extensa extends down into the Lower Nothofagidites asperus Zone.

4. Middle Nothofagidites asperus Zone (2723.0m)

Sidewall core 62 at 2723.0m has been dated as no older than Middle Nothofagidites asperus Zone because of the presence of Proteacidites rectomarginus.

5. Proteacidites tuberculatus Zone (2707.0m to 2588.07m)

Sidewall cores from this interval can be assigned to the Proteacidites tuberculatus Zone with a high degree of confidence based on the presence of Cyatheacidites annulatus.

Unfortunately the precise position of the boundary between the Middle Nothofagidites asperus and the Proteacidites tuberculatus Zones is again impossible to pick. This is because samples between 2729.0m (sidewall core 61) and 2711.0m (sidewall core 68?) have only generalized zonal assignments or indeterminate ages.

TABLE 1 : SUMMARY OF PALYNOLOGICAL ANALYSIS WRASSE-1

INTERPRETATIVE DATA

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY		LITHOLOGY	ZONE	AGE	CONFIDENCE RATING	COMMENTS
			SPORE	POLLEN					
31	2977.0	Good	Poor		Sl.st.	Lower <u>L. balmel</u>	Paleocene	2	<u>L. balmel</u> , <u>N. endurus</u> , <u>G. retiflorta</u> , <u>P. golzowense</u>
32	2967.5	Mod.	Poor		Sl.st.	Lower <u>L. balmel</u> (f. <u>crassitubulata</u>)	Paleocene	2	<u>L. balmel</u> , <u>G. edwardsii</u> , <u>T. gillii</u> , <u>E. crassitubulata</u>
33	2952.0	Meager	Poor		Sl.st.	<u>L. balmel</u>	Paleocene	1	<u>L. balmel</u> , <u>L. amplus</u>
34	2936.5	Poor	Poor		Sl.st.	Lower <u>L. balmel</u>	Paleocene	1	<u>L. balmel</u> , <u>A. obscurus</u> , <u>S. reglum</u>
35	2918.0	Poor	Poor		Sl.st.	<u>L. balmel</u>	Paleocene	2	<u>L. balmel</u> , <u>L. ohalensis</u>
36	2901.0	V. Poor	Fair		Sl.st.	Upper <u>L. balmel</u>	Paleocene	1	<u>L. balmel</u> , <u>A. obscurus</u> , <u>I. antipodus</u>
37	2865.0	Poor	Poor		Clyst.	Lower <u>N. asperus</u>	Late Eocene	2	<u>P. confragosus</u> ; <u>P. pachypolus</u> ; <u>A. diktyopokus</u>
38	2866.0	Poor	Fair		Clyst.	Mid. <u>N. asperus</u>	Middle Eocene	2	<u>V. extensa</u> ; <u>A. diktyopokus</u>
39	2848.0	Poor	Fair		Sl.st.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>N. falcatus</u>
40	2838.0	Poor	Poor		Ss.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>D. phosphorifica</u> , <u>N. falcatus</u>
41	2837.0	Good	Poor		Ss.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>N. falcatus</u> , <u>A. diktyopokus</u>
42	2844.0	Poor	Poor		Ss.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>N. falcatus</u> , <u>F. crater</u>
43	2826.0	Mod.	Fair		Sl.st.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>V. extensa</u> , <u>P. leightonii</u> , <u>N. falcatus</u> , <u>A. diktyopokus</u>
44	2822.0	Poor	Poor		Ss.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>V. extensa</u> , <u>N. falcatus</u> , <u>A. diktyopokus</u>

TABLE I : SUMMARY OF PALYNOLOGICAL ANALYSIS WRASSE-I

INTERPRETATIVE DATA

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY		LITHOLOGY	ZONE	AGE	CONFIDENCE RATING	COMMENTS
			SPORE	POLLEN					
45	2817.0	Poor	Poor		Ss.	INDETERMINATE			
46	2812.0	Poor	Poor		Ss.	INDETERMINATE			
47	2808.0	Mod.	Fair		Sl.st.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>V. extensa</u> , <u>N. falcatus</u> , <u>P. leightoni</u> , <u>A. diktyoplokos</u>
48	2802.0	V. poor	Poor		Ss.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>N. falcatus</u>
49	2798.0	Poor	V. poor		Sl.st.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>N. falcatus</u>
50	2794.0	V. Poor	Sl.st.		Sl.st.	INDETERMINATE			
51	2790.0	Fair	Fair		Sl.st.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>V. extensa</u> , <u>N. falcatus</u>
52	2785.0	Fair	poor		Sl.st.	<u>N. asperus</u>	Middle Eocene	2	<u>N. falcatus</u>
53	2778.0	Good	Fair		Sl.st.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>V. extensa</u> , <u>N. falcatus</u>
54	2773.0	Negligible	V. poor		Sl.st.	INDETERMINATE			
55	2769.0	Poor	Poor		Sl.st.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>V. extensa</u> , <u>N. falcatus</u>
56	2764.0	Moderate	Good		Sl.st.	Lower <u>N. asperus</u> <u>(W. echinosuturatum)</u>	Middle Eocene	1	<u>N. falcatus</u> , <u>W. echinosuturatum</u> reworked <u>A. obscurus</u> , <u>L. balmei</u>
57	2759.0	Low	Poor		Sl.st.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>T. simatus</u> , <u>S. punctatus</u>
58	2754.0	High	Good		Sl.st.	Lower <u>N. asperus</u>	Middle Eocene	2	<u>N. falcatus</u>

TABLE I : SUMMARY OF PALYNOLOGICAL ANALYSIS WRASSE-I

INTERPRETATIVE DATA

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY		ZONE	AGE	CONFIDENCE RATING	COMMENTS
			SPORE POLLEN	LITHOLOGY				
Core 2	2751.3	Mod.	Poor		Lower <u>N. asperus</u>	Middle Eocene	2	<u>V. extensa</u> , reworked <u>A. diktyoplokus</u>
Core 2	2743.9	Low	Poor		Lower <u>N. asperus</u>	Middle Eocene	2	<u>P. cf Incurvatus</u> , <u>V. extensa</u>
59	2737.0	Low	Poor	Sl.st.	<u>N. asperus</u>		-	
60	2733.0	High	Fair	Clyst.	Lower <u>N. asperus</u>	Late Eocene	2	<u>T. falcatus</u>
61	2729.0	Low	V. poor	Clyst.	INDETERMINATE			
62	2723.0	Low	V. Poor	Clyst.	No older than Mid. <u>N. asperus</u>	Oligocene- Late Eocene	-	<u>P. rectomarginis</u>
63	2719.0	Mod.	Poor	Clyst.	No older than Lower <u>N. asperus</u>	-	-	<u>N. falcatus</u>
64	2715.0	Low	Poor	Clyst.	No older than Lower <u>N. asperus</u>	-	-	<u>N. falcatus</u>
65	2711.0	V. Low	V. poor	Clyst.	INDETERMINATE			
66	2707.0	Mod.	Poor	Clyst.	<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>
67	2703.0	Mod.	Poor	Clyst.	<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>
68	2699.0	Good	Poor	Clyst.	<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>
69	2690.0	Mod.	Fair	Clyst.	INDETERMINATE			
70	2686.0	Low	Poor	Clyst.	<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>
71	2662.0	Low	Poor	Clyst.	<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>
73	2626.0	Low	Poor	Clyst	<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>

TABLE 1 : SUMMARY OF PALYNOLOGICAL ANALYSIS WRASSE-1

INTERPRETATIVE DATA

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY		LITHOLOGY	ZONE	AGE	CONF IDENCE	COMMENTS
			SPORE	POLLEN				RATING	
Core I	2596.75	Mod.	Fair			<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>
Core I	2597.3	Good	Poor			<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>
Core I	2591.15	Low	Fair			<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>
Core I	2588.67	Low	Poor			<u>P. tuberculatus</u>	Oligocene	0	<u>C. annulatus</u>

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TABLE 2
ANOMALOUS AND UNUSAL OCCURRENCES OF SPORE-POLLEN TAXA IN WRASSE-1

SAMPLE NO.	DEPTH (m)	ZONE	TAXON	COMMENTS
Core 1	2592.15	<u>P. tuberculatus</u> (0)	<u>Cingulatisporites ozotus</u>	Rare ms sp. (A.D.P.)
SWC 68	2699.0	<u>P. tuberculatus</u> (0)	<u>Proteacidites incurvatus</u>	Not prev. recorded above lowermost Upper N. asperus Zone
SWC 60	2733.0	Lower <u>N. asperus</u> (2)	<u>Cyperaceae</u>	Modern taxon
SWC 60	2733.0	Lower <u>N. asperus</u> (2)	<u>Gothanipollis bassensis</u>	Uncommon sp.
Core 2	2751.3	Lower <u>N. asperus</u> (2)	<u>Vozzhenikovia cf. extensa</u>	Associated with <u>A. diktyoplokus</u> Ditto 2764.0m, 2890.0m, 2826.0m, 2860.0m
SWC 56	2764.0	Lower <u>N. asperus</u> (1)	<u>Wetziella echinosuturatum</u>	Very rare zone dinoflagellate indicator species
SWC 49	2798.0	Lower <u>N. asperus</u> (2)	<u>Deflandrea truncata</u>	V. rare sp. (reworked)
SWC 41	2837.0	(Lower <u>N. asperus</u>)	<u>Wetziella glabrum</u>	V. rare sp.
SWC 37	2865.0	(Lower <u>N. asperus</u>)	<u>Proteacidites confragosus</u>	V. rare sp.
SWC 36	2901.0	Upper <u>L. balmei</u> (2)	<u>Integricorpus antipodus</u>	Uncommon sp.
SWC 34	2936.5	Lower <u>L. balmei</u> (2)	<u>Stereisporites regium</u>	Uncommon above Cretaceous

PART TWO

BASIC DATA
SUMMARY TABLE
RANGE CHART

TABLE 3 : BASIC DATA SUMMARY : WRASSE-1

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY		1 of 2 LITHOLOGY
			SPORE	POLLEN	
31	2977.0	Good	Poor		Sl.st.
32	2967.5	Mod.	Poor		Sl.st.
33	2952.0	Meager	Poor		Sl.st.
34	2936.5	Poor	Poor		Sl.st.
35	2918.0	Poor	Poor		Sl.st.
36	2901.0	V. Poor	Fair		Sl.st.
37	2865.0	Poor	Poor		Clyst.
38	2866.0	Poor	Fair		Clyst.
39	2848.0	Poor	Fair		Slst.
40	2838.0	Poor	Poor		Ss.
41	2837.0	Good	Poor		Ss.
42	2844.0	Poor	Poor		Ss.
43	2826.0	Mod.	Fair		Sl.st.
44	2822.0	Poor	Poor		Ss.
45	2817.0	Poor	Poor		Ss.
46	2812.0	Poor	Poor		Ss.
47	2808.0	Mod.	Pair		Sl.st.
48	2802.0	V. poor	Poor		Ss.
49	2798.0	Poor	V. poor		Sl.st.
50	2794.0	V. Poor	Sl.st.		INDETERMINATE
51	2790.0	Fair	Fair		Sl.st.
52	2785.0	Fair	poor		Sl.st.
53	2778.0	Good	Fair		Sl.st.
54	2773.0	Negligible	V. poor		Sl.st.
55	2769.0	Poor	Poor		Sl.st.
56	2764.0	Moderate	Good		Sl.st.
57	2759.0	Low	Poor		Sl.st.
58	2754.0	High	Good		Sl.st.
Core 2	2751.3	Mod.	Poor		
Core 2	2743.9	Low	Poor		
59	2737.0	Low	Poor		Sl.st.
60	2733.0	High	Fair		Clyst.
61	2729.0	Low	V. poor		Clyst.
62	2723.0	Low	V. Poor		Clyst.
63	2719.0	Mod.	Poor		Clyst.

1098L

TABLE 3 : BASIC DATA SUMMARY : WRASSE-1

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY		2 of 2
			SPORE	POLLEN	LITHOLOGY
64	2715.0	Low	Poor		Clyst.
65	2711.0	V. Low	V. poor		Clyst.
66	2707.0	Mod.	Poor		Clyst.
67	2703.0	Mod.	Poor		Clyst.
68	2699.0	Good	Poor		Clyst.
69	2690.0	Mod.	Fair		Clyst.
70	2686.0	Low	Poor		Clyst.
71	2662.0	Low	Poor		Clyst.
73	2626.0	Low	Poor		Clyst
Core 1	2596.75	Mod.	Fair		
Core 1	2597.3	Good	Poor		
Core 1	2591.15	Low	Fair		
Core 1	2588.67	Low	Poor		
1098L					

NATURE OF SAMPLE	DEPTH (mKB)	PLANKTONIC FORAMINIFERAL YIELD	PRESERVATION	PLANKTONIC FORAMINIFERAL DIVERSITY
SWC 10	2272.0	Moderate/High	Moderate	Moderate
SWC 11	2258.0	Moderate	Moderate/Poor	Low
SWC 13	2236.0	Moderate	Moderate/Poor	Moderate
SWC 14	2203.0	Low	Moderate	Low
SWC 15	2180.0	Low	Moderate	Moderate
SWC 16	2170.0	Moderate/High	Moderate	Moderate/High
SWC 17	2157.0	Moderate	Moderate	Moderate
SWC 18	2139.0	Moderate/Low	Poor	Moderate
SWC 19	2120.5	Moderate/Low	Moderate	Moderate
SWC 20	2100.0	High	Good	Moderate
SWC 21	2085.0	Moderate/High	Moderate	Moderate
SWC 22	2065.0	High	Moderate	Moderate/Low
SWC 23	2045.0	High	Moderate	Moderate
SWC 24	2020.0	Moderate	Moderate	Moderate/High
SWC 25	2010.0	Low	Poor	Moderate/Low
SWC 26	2000.0	Low	Poor	Moderate/Low
SWC 27	1990.0	Moderate/Low	Moderate/Poor	Moderate/Low
SWC 28	1980.0	Moderate/High	Moderate/Poor	Moderate/High
SWC 29	1950.0	High	Moderate	Moderate
SWC 30	1930.0	Low	Poor	Moderate

0862L

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

B A S I N : GIPPSLAND

ELEVATION: KB: 210m GL: -65.0m

WELL NAME: WRASSE-1

TOTAL DEPTH: 2984.0m KB deviated

A G E	PALYNOLOGICAL ZONES	H I G H E S T D A T A					L O W E S T D A T A				
		Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
NEOGENE	<i>T. pleistocenicus</i>										
	<i>M. lipsis</i>										
	<i>C. bifurcatus</i>										
	<i>T. bellus</i>										
PALEOGENE	<i>P. tuberculatus</i>	2588.67	0				2711.0	0			
	Upper <i>N. asperus</i>										
	Mid <i>N. asperus</i>										
	Lower <i>N. asperus</i>	2733.0	2				2865.0	3			
	<i>P. asperopolus</i>										
	Upper <i>M. diversus</i>										
	Mid <i>M. diversus</i>										
	Lower <i>M. diversus</i>										
	Upper <i>L. balmei</i>	2901.0	1				2901.0	1			
	Lower <i>L. balmei</i>	2936.5	1				2977.0	2	2952.0	1	
LATE CRETACEOUS	<i>T. longus</i>										
	<i>T. lilliei</i>										
	<i>N. senectus</i>										
	U. <i>T. pachyexinus</i>										
	L. <i>T. pachyexinus</i>										
	<i>C. triplex</i>										
	<i>A. distocarinatus</i>										
EARLY CRET.	<i>C. paradoxus</i>										
	<i>C. striatus</i>										
	<i>F. asymmetricus</i>										
	<i>F. wonthaggiensis</i>										
	<i>C. australiensis</i>										
PRE-CRETACEOUS											

COMMENTS: The *E. crassitabulata* zone has been recorded in SWC 32 at 2967.5m. The *W. echinosuturatum* zone has been recorded in SWC 56 at 2764.0m.

- 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. HANNAH DATE: 5 December 1984

DATA REVISED BY: _____ DATE: _____

SAMPLE TYPE OR NO. *	DEPTH																										
	1930.0	1950.0	1980.0	1990.0	2000.0	2010.0	2020.0	2045.0	2065.0	2085.0	2100.0	2120.5	2139.0	2157.0	2170.0	2180.0	2203.0	2236.0	2258.0	2272.0	2332.0	2344.0	2351.0	2367.9	2425.0	2440.0	
<i>Orbulina universa</i>	S	S																									
<i>Globorotalia sp. cf. G.</i>																											
<i>conomiozea</i>																											
<i>Globorotalia miozea miozea</i>	S	S						S	S	S			S		S		S		S		S						
<i>Globorotalia miozea conoidea</i>																											
<i>Globigerina bulloides</i>																											
<i>Indeterminate globigerinids</i>																											
<i>Globorotalia praescitula</i>																											
<i>Globigerinoides sicanus</i>																											
<i>Globigerinoides trilobus</i>																											
<i>Globigerina woodi</i>																											
<i>Globoquadrina dehiscens s.s.</i>																											
<i>Globorotalia praemenardii</i>																											
<i>Praeorbulina glomerosa</i>																											
<i>Globigerina praebulloides</i>																											
<i>Globoquadrina advena</i>																											
<i>Globorotalia continuosa</i>																											
<i>Globigerina woodi connecta</i>																											
<i>Globigerinoides sicanus/</i> <i>trilobus transition</i>																											
<i>Globorotalia bella</i>																											
<i>Globorotalia zealandica</i>																											
<i>Catapsydrax dissimilis</i>																											
<i>Globigerina sp. aff.</i>																											
<i>G. binaiensis</i>																											
<i>Globorotalia obesa</i>																											
<i>Indeterminate planktonics</i>																											
<i>Globorotalia opima</i>																											
<i>Globorotalia brevis</i>																											
<i>Globorotalia gemma</i>																											
<i>Globigerina angiporoides</i>																											
<i>Globigerina linaperta</i>																											
<i>Globoquadrina dehiscens s.l.</i>																											
<i>Globigerina euapertura</i>																											
<i>Chiloguembelina cubensis</i>																											

* S=SIDEWALL CORE
T=CUTTINGS J=JUNK BASKET

--- Rare
— Few
■ Common
C Contamination

PALAEO.CHART-2
DWG.1107/OP/287

FOSSIL TYPE: PLANKTONIC FORAMINIFERA

Well Name Wrasse-1 Basin Gippsland Sheet No. 2 of 3

SAMPLE TYPE OR NO. *	DEPTH																									
	S	S	S	S	S	S	S	S	S	S	S	C	C	C	S	S	S	S	S	S						
FOSSIL NAMES	2455.0	2465.0	2492.0	2508.0	2522.0	2537.0	2548.0	2566.0	2584.0	2589.9	2592.75	2593.25	2594.2	2608.0	2626.0	2644.0	2662.0	2680.0	2690.0	2699.0	2703.0	2707.0	2711.0	2715.0	2719.0	2723.0
<i>Orbulina universa</i>																										
<i>Globorotalia sp. cf. G. conomiozea</i>																										
<i>Globorotalia miozea miozea</i>																										
<i>Globorotalia miozea conoidea</i>																										
<i>Globigerina bulloides</i>																										
Indeterminate globigerinids	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<i>Globorotalia praescitula</i>																										
<i>Globigerinoides sicanus</i>																										
<i>Globigerinoides trilobus</i>																										
<i>Globigerina woodi</i>		■																								
<i>Globoquadrina dehiscens s.s.</i>																										
<i>Globorotalia praemenardii</i>																										
<i>Praeorbulina glomerosa</i>																										
<i>Globigerina praebulloides</i>		■																								
<i>Globoquadrina advena</i>																										
<i>Globorotalia continuosa</i>																										
<i>Globigerina woodi connecta</i>																										
<i>Globigerinoides sicanus/ trilobus transition</i>																										
<i>Globorotalia bella</i>																										
<i>Globorotalia zealandica</i>																										
<i>Catapsydrax dissimilis</i>																										
<i>Globigerina sp. aff.</i>																										
<i>G. binaiensis</i>																										
<i>Globorotalia obesa</i>																										
Indeterminate planktonics																										
<i>Globorotalia opima</i>																										
<i>Globorotalia brevis</i>																										
<i>Globorotalia gemma</i>																										
<i>Globigerina angiporoides</i>																										
<i>Globigerina linaperta</i>																										
<i>Globoquadrina dehiscens s.l.</i>																										
<i>Globigerina euapertura</i>																										
<i>Chiloquembelina cubensis</i>																										

* S=SIDEWALL CORE T=CUTTINGS J=JUNK BASKET
 --- Rare — Few ■ Abundant
 — Common C Contamination

APPENDIX 3

APPENDIX 3

WRASSE #1
QUANTITATIVE LOG INTERPRETATION

Interval: 2800 - 2980m KB

Analyst : T.M. Frankham

Date : January, 1984

WRASSE #1 QUANTITATIVE LOG INTERPRETATION

The WRASSE #1 wireline logs have been analysed over the interval 2800m to 2980m KB (T.D.) for shale volume, effective porosity and effective water saturation. Analysis was carried out using a reiterative technique which incorporates hydrocarbon correction to the porosity logs, density-neutron crossplot porosities, a Dual Water saturation relationship, and convergence on a preselected grain density window by shale volume adjustment.

LOG DATA

Logs Used

LLD, GR, RHOB (LDT), NPHI (CNL), CALIPER.

The gamma ray and neutron porosity logs were corrected for environmental and borehole effects.

Coals and carbonaceous shales were edited for an output of:

$$\text{VSH} = 0, \text{PHIE} = 0, \text{and Swe} = 1.$$

Log Quality

Log quality appears to be satisfactory, with the exception of the PEF measurement which failed whilst logging.

OTHER DATA

Mud log data and sidewall core examination show no indication of hydrocarbon in the drilled intervals.

ANALYSIS METHODOLOGY

Salinity

An initial estimate of a formation water salinity of 35,000 ppm NaCl eq was made, based on log response and basin experience.

Use of this salinity resulted in the calculation of effective water saturations in the vicinity of 100% for all sands in the analyzed interval. In view of the lack of hydrocarbon shows encountered in WRASSE #1, 35000 ppm NaCl eq thus seems a reasonable estimate of apparent water salinity.

Shale Volume

An initial estimate of VSH was calculated from the GR assuming a linear response between shale and clean sand:

$$\text{VSH} = \frac{\text{GR}_{\text{log}} - \text{GR}_{\text{min}}}{\text{GR}_{\text{max}} - \text{GR}_{\text{min}}}$$

Total Porosities

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

$$h = 2.71 - \text{RHOB} + \text{PHIN} (\text{RHOF} - 2.71)$$

if h is greater than 0, then

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

if h is less than 0, then

$$\text{apparent matrix density, } \text{RHOMa} = 2.71 - 0.64h \quad - 3$$

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

where RHOB = environ. corrected bulk density in gms/cc
 PHIN = environ. corrected neutron porosity in limestone porosity units.
 RHOF = fluid density (1.0 gms.cc)

Bound Water Resistivities (Rwb) and Saturation of Bound Water (Swb)

Rwb and Swb were calculated using the following relationships:

$$\text{Rwb} = \frac{\text{RSH} * \text{PHITSH}^m}{a}$$

where PHITSH = total porosity in shale from density-neutron crossplots.
 RSH = Rt in shales.

$$\text{Swb} = \frac{\text{VSH} * \text{PHITSH}^m}{\text{PHIT}}$$

Water Saturations

Water saturations were determined from the Dual Water model using the following relationships:

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

and

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

where SwT = total saturation in the uninvaded formation
 SxoT = total saturation in the invaded zone
 Rmf = resistivity of mud filtrate
 n = saturation exponent

Grain Density

Grain density was calculated by first correcting density and neutron logs for shale using the following relationships:

$$\text{RHOBc} = \frac{\text{RHOBHC} - \text{VSH} * \text{RHOBSh}}{1 - \text{VSH}}$$

$$\text{PHINc} = \frac{\text{PHINHC} - \text{VSH} * \text{PHINSh}}{1 - \text{VSH}}$$

The shale corrected density and neutron values were then used in the density-neutron crossplot algorithms (1, 2 and 3, above) to derive apparent grain density.

(ie. RHOGa = RHOMa calculated from RHOBc and PHINc).

The calculated grain density was then compared to the upper and low limits of the grain densities and if it fell within the limits, effective porosity (PHIE) and effective saturation (Swe) were calculated as follows:

$$\text{PHIE} = \text{PHIT} - \text{VSH} * \text{PHITSH}$$

$$S_{we} = 1 - \frac{PHIT}{PHIE} (1 - S_{wT})$$

If the calculated grain density fell outside the limits, VSH was adjusted in small increments or decrements and PHIT, SwT, SxoT and RHOG were then recalculated.

In all zones with VSH greater than 60%, Swe, was set to 1 and PHIE set to 0.

Analysis Parameters

a	1
m	2
n	2
Grain Density - lower bound	2.64 gm/cc
Grain Density - upper bound	2.68 gm/cc
Apparent Shale Density	2.60 gm/cc
Apparent Shale Neutron Porosity	.21
Apparent Shale Resistivity	10 ohm.m
Apparent Salinity (NaCl eq)	35,000 ppm

The cuttings log described dolomitic cement in many of the sands, hence the wide grain density window used for the analysis.

RESULTS AND CONCLUSIONS

Results are presented as follows:

- a) A summary of the major sands is presented in Table #1.
- b) A listing of log derived values at 0.25m intervals is attached.
- c) A two track depth plot showing effective porosity calculated water saturation, and shale volume, is enclosed.

The quantitative evaluation confirms the conclusion from mudlog data and sidewall core description that no hydrocarbons were encountered in WRASSE #1.

Assuming a net to gross cutoff of 10% effective porosity, 71m of net sand was encountered between 2800m and 2990m (TD). The net sand has an average calculated effective porosity of 15.8% (standard deviation = 2.6%).

SUMMARY OF RESULTSTABLE 1

Depth Interval (m KB)	Gross Interval (m)	*Net Interval (m)	Calculated Porosity Net Interval Average (Std. Dev.)	Calculated Water Saturation (*Net Interval)	Comments
2827.0-2832.0	5.0	3.25	.16(.03)	1.08	Water
2835.5-2838.5	3.0	1.00	.15(.02)	1.04	Water
2841.5-2847.0	5.5	1.00	.12(.01)	1.03	Water
2849.0-2851.5	2.5	1.00	.14(.01)	1.04	Water
2854.0-2858.5	4.5	2.75	.16(.03)	1.02	Water
2868.5-2899.0	30.5	25.50	.17(.02)	1.04	Water
2902.0-2906.0	4.0	1.25	.14(.03)	0.92	Water
2907.5-2915.0	7.5	6.25	.14(.02)	0.96	Water
2917.0-2918.0	1.0	0.50	.12(.02)	0.91	Water
2919.0-2929.0	10.0	9.75	.17(.03)	1.02	Water
2930.0-2935.5	5.5	4.75	.15(.02)	0.98	Water
2938.0-2942.0	4.0	4.00	.17(.02)	0.83	Water
2956.0-2966.0	10.0	4.25	.14(.02)	0.95	Water
2969.0-2973.0	4.0	3.00	.12(.01)	1.04	Water

* Net to gross cut off taken at 10% effective porosity.

14901/49

PE601246

This is an enclosure indicator page.
The enclosure PE601246 is enclosed within the
container PE902514 at this location in this
document.

The enclosure PE601246 has the following characteristics:

ITEM_BARCODE = PE601246
CONTAINER_BARCODE = PE902514
NAME = Quantitative Log Analysis
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = WELL_LOG
DESCRIPTION = Quantitative Log Analysis
REMARKS =
DATE_CREATED = 26/01/84
DATE_RECEIVED = 18/04/84
W_NO = W836
WELL_NAME = Wrasse-1
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 4

GEOCHEMICAL REPORT

WRASSE-1 WELL, GIPPSLAND BASIN

VICTORIA

by

J.K. EMMETT

Sample handling and analysis by:

- D.M. Hill)
- J. Maccoll) Esso Australia Ltd.
- D.M. Ford)
- Exxon Production Research Company
- Geochem Laboratories

Esso Australia Ltd
Geochemical Report

May 1984

0852L

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1. C₄₋₇ Gasoline-Range Hydrocarbon Detailed Data Sheets
2. Detailed Vitrinite Reflectance and Exinite Fluorescence Data
- by A.C. Cook

WRASSE-1

INTRODUCTION:

A variety of geochemical analyses were performed on wet canned cuttings, sidewall core and conventional core samples collected during drilling of the Wrasse-1 Well. Canned cuttings composited over 15-metre intervals were collected from 224m (KB) down to total depth T.D.) at 2984m (KB). Light hydrocarbon (C₁₋₄) headspace gases were determined on alternate 15-metre intervals from 1735m (KB) down to T.D. Succeeding alternate 15-metre intervals were analysed for C₄₋₇ gasoline range hydrocarbons between 1720m (KB) and 2965m (KB). Samples were then hand-picked for more detailed analyses such as total organic carbon (T.O.C.), Rock-Eval pyrolysis, kerogen isolation and elemental analysis, and C₁₅₊ liquid and gas chromatography. Vitrinite reflectance measurements were performed by Professor A.C. Cook of Wollongong.

(Note: As Wrasse-1 was a deviated well, all depths mentioned are in fact measured depth KB i.e. MDKB)

DISCUSSION OF RESULTS:

The detailed headspace C₁₋₄ cuttings gas data are presented in Table 1. This data is more conveniently represented in log form in Figures 1(a) and 1(b) for easier interpretation. Total cuttings gas values are generally lean within the Gippsland Limestone, Lakes Entrance and Turrum Formations, with the exception of a moderately rich interval between 2125-2290m (KB) in the upper portion of the Lakes Entrance Formation (Fig. 1(a)). The Latrobe Group section penetrated on the other hand, has rich cuttings gas values although methane predominates (fig. 1(b)). This indicates that at its present level of maturation (rated as immature as will be discussed later)

the Latrobe Group sediments have good potential to be a gas source. Wet (C_{2-4}) gas hydrocarbons are relatively abundant between about 2425m (KB) and 2860m (KB) and perhaps upto about 2305m (KB), indicating the presence of more oil-prone organic matter in this interval which includes the lower half of the marine Lakes Entrance Formation and all of the Turrum Formation of the Latrobe Group. Unfortunately total organic carbon values are poor in the Lakes Entrance Formation (average T.O.C. = 0.45%, Table 2) indicating little or no hydrocarbon source potential for this unit. T.O.C. values are more respectable in the Turrum Formation (average T.O.C. = 1.04%) and even better in the underlying non-marine undifferentiated Latrobe Group sediments (average T.O.C. = 1.54%). The organic matter contained in the Turrum Formation in the vicinity of Wrasse-1 is most likely composed of a mixture of allochthonous reworked terrestrial organic debris and autochthonous marine organisms, the latter of which are generally oil-prone. If this type of Turrum Formation deposit can be located elsewhere in the basin at a significant maturation level, it would be classed as a marginal-good gas plus oil source. Similarly, the non-marine Latrobe Group sediments could be expected to behave as a good hydrocarbon source.

The detailed C_{4-7} , gasoline-range hydrocarbon data sheets are given in Appendix-1. Again, for easier interpretation, pertinent values and parameters have been plotted in figures 2(a) and 2(b). With the exception of a coaly interval at 2950-2965m (KB) which contains abundant C_{4-7} hydrocarbons, the total gasoline range hydrocarbon profile is fairly uniform at a moderately rich level for the whole section analysed, which tends only to confirm the previous hydrocarbon source potential assessments for the various units.

Vitrinite reflectance (\bar{R}_V max) data (table 3 and figure 3) indicate that the entire penetrated section is presently immature for significant hydrocarbon generation. Detailed vitrinite reflectance and exinite fluorescence data are given in Appendix 2 - Report by A.C. Cook.

The results of Rock-Eval pyrolysis analyses of samples with T.O.C. values of 0.5% or more, are listed in Table 4. Figure 4 is a plot of Hydrogen Index (HI) versus Tmax ($^{\circ}$ C) on which fields delineating the basic kerogen types (ie Type I, II or III) and their degree of maturation (indicated by equivalent vitrinite reflectance curves) are also shown. This plot primarily confirms that organic matter in all the units intersected is immature, and indicates that deeper parts of the Turrum Formation may have good hydrocarbon source potential.

Elemental analyses of selected kerogen concentrates isolated from conventional and sidewall core samples are listed in Table 5. Approximate Hydrocarbon: Carbon (H/C), Oxygen : Carbon (O/C), and Nitrogen : Carbon (N/C) atomic ratios are given in Table 5. These ratios are labelled "approximate" since the Oxygen % is calculated by difference and the naturally occurring organic sulphur % (which may be upto a few %) was not determined. Figure 5 is a modified Van Krevelen Plot of atomic H/C ratio versus atomic O/C ratio. Comparison of Figure 5 with Figure 6, a similar plot showing the principal products of kerogen evolution indicates that modal type III kerogen (ie. woody - herbaceous - coaly particulate organic matters types) predominates in the Turrum Formation and the remaining undifferentiated Latrobe Group sediments, as is also evident from the Rock-Eval pyrolysis results (Fig. 4). The elemental atomic ratios also verify an immature section.

C₁₅₊ liquid chromatography results from selected canned cuttings are listed in Table 7. Total extract values for all samples are poor and insufficient material was isolated for more detailed separation to be performed. C₁₅₊ saturate chromatograms (figures 7-10) were obtained however. Figure 7, from the Gippsland Limestone, and Figures 8 and 9, from the Lakes Entrance Formation are fairly similar in appearance and represent immature, predominantly marine derived organic matter. In figure 10, from the Turrum Formation, a stronger odd/even carbon preference in the high molecular weight (n-C₂₃ to n-C₃₅) n-alkanes indicates the presence of a significant amount of terrestrial organic material most probably deposited or reworked in a marine environment.

CONCLUSIONS:

1. The entire section penetrated in Wrasse-1 is presently immature for significant hydrocarbon generation.
2. The Turrum Formation sediments are rated as having marginal-good gas plus oil source potential.
3. The remaining undifferentiated Latrobe Group sediments have good hydrocarbon source potential.

C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - WEAUSE 1

GAS CONCENTRATION (VOLUME GAS PER BILLION VOLUMES CUTTINGS)

GAS COMPOSITION (PERCENT)

SAMPLE NO.	DEPTH	GAS CONCENTRATION (VOLUME GAS PER BILLION VOLUMES CUTTINGS)					WET C2-C4	TOTAL C1-C4	WET/TOTAL PERCENT	GAS COMPOSITION (PERCENT)					WET GAS				
		NETHANE C1	ETHANE C2	PROPANE C3	IBUTANE IC4	NBUTANE C4				N	E	P	IS	NB	F	P	IB	NB	
72783 V	1750.00	475	16	24	17	13	70	545	12.84	87.	3.	4.	3.	2.	23.	34.	24.	19.	
72783 Y	1760.00	497	33	57	35	21	146	643	22.71	77.	5.	9.	5.	3.	23.	39.	24.	14.	
72783 Z	1810.00	277	11	31	17	10	69	346	19.94	80.	3.	9.	5.	3.	17.	35.	24.	14.	
72784 A	1840.00	328	16	30	35	14	95	423	22.46	78.	4.	7.	8.	3.	16.	45.	25.	14.	
72784 B	1870.00	619	13	26	26	16	81	700	11.57	98.	2.	4.	4.	2.	16.	32.	32.	20.	
72784 C	1900.00	358	21	32	23	10	86	454	18.94	81.	5.	7.	5.	2.	24.	37.	27.	12.	
72784 D	1930.00	535	40	62	26	16	144	679	21.21	79.	6.	9.	4.	2.	28.	43.	18.	11.	
72784 E	1960.00	861	49	97	70	30	246	1127	21.83	78.	4.	9.	6.	3.	20.	39.	28.	12.	
72784 F	1990.00	115	12	11	14	5	42	157	26.75	73.	8.	7.	9.	3.	29.	26.	33.	12.	
72784 G	2020.00	438	19	37	22	12	90	528	17.05	83.	4.	7.	4.	2.	21.	41.	24.	13.	
72784 H	2050.00	319	13	20	15	8	56	366	15.30	85.	4.	5.	4.	2.	23.	36.	27.	14.	
72784 I	2080.00	1063	33	44	63	19	159	1242	12.80	87.	3.	4.	5.	2.	21.	28.	40.	12.	
72784 J	2110.00	151	9	11	11	5	36	197	18.27	82.	5.	6.	6.	3.	25.	31.	31.	14.	
72784 K	2140.00	2827	84	115	120	39	356	3135	11.24	89.	3.	4.	4.	1.	23.	32.	34.	11.	
72784 L	2170.00	1115	58	51	60	20	189	1394	14.49	86.	4.	4.	5.	2.	31.	27.	32.	11.	
72784 M	2200.00	2349	64	91	91	23	269	2618	10.26	90.	2.	3.	3.	1.	24.	34.	34.	9.	
72784 N	2230.00	835	42	44	35	11	132	967	13.65	86.	4.	5.	4.	1.	32.	33.	27.	8.	
72784 O	2260.00	651	26	27	15	5	73	704	10.37	90.	4.	4.	2.	1.	36.	37.	21.	7.	
72784 P	2290.00	2393	88	102	81	23	294	2687	10.94	89.	3.	4.	3.	1.	30.	35.	28.	8.	
72784 Q	2320.00	148	41	21	69	20	151	299	50.50	49.	14.	7.	23.	7.	27.	14.	46.	13.	
72784 R	2350.00	164	16	22	57	13	108	272	39.71	60.	6.	8.	21.	5.	15.	20.	53.	12.	
72784 S	2380.00	113	5	20	23	7	55	168	32.74	67.	3.	12.	14.	4.	19.	36.	42.	13.	
72784 T	2410.00	477	20	60	103	25	203	685	39.36	70.	3.	19.	15.	4.	10.	29.	50.	12.	
72784 U	2440.00	103	75	95	143	37	356	453	77.26	23.	17.	21.	32.	3.	21.	27.	41.	11.	
72784 V	2470.00	17	0	0	20	2	22	39	56.41	44.	10.	51.	5.	5.	20.	0.	91.	9.	
72784 W	2500.00	26	5	15	41	19	80	106	75.47	25.	5.	14.	39.	13.	6.	19.	51.	24.	
72784 X	2530.00	0	0	0	0	0	0	0	0.00	0.	0.	0.	0.	0.	0.	0.	0.	0.	
72784 Y	2560.00	84	7	21	44	13	85	169	50.39	50.	4.	12.	26.	8.	8.	25.	52.	15.	
72784 Z	2590.00	93	47	16	86	19	168	261	64.37	36.	18.	6.	33.	7.	28.	10.	51.	11.	
72786 A	2620.00	98	51	12	91	21	175	273	64.16	36.	19.	4.	33.	8.	29.	7.	52.	12.	
72786 B	2650.00	87	49	19	112	35	215	302	71.14	29.	16.	6.	37.	12.	23.	9.	52.	16.	
72786 C	2680.00	164	52	19	203	79	353	457	77.24	23.	11.	4.	44.	17.	15.	5.	58.	22.	
72786 D	2710.00	129	115	119	62	33	329	452	71.83	28.	25.	26.	14.	7.	35.	36.	19.	10.	
72786 E	2740.00	36	41	19	86	23	169	265	75.11	25.	18.	6.	38.	10.	24.	11.	51.	14.	
72786 F	2770.00	294	53	135	235	26	489	783	62.45	38.	7.	17.	30.	3.	11.	28.	48.	13.	
72786 G	2800.00	8	8	33	23	12	76	114	66.67	33.	7.	29.	20.	11.	11.	43.	30.	16.	
72786 H	2830.00	60	17	51	17	14	101	161	62.73	37.	11.	32.	11.	10.	17.	50.	17.	16.	
72786 I	2860.00	362	187	246	83	68	584	866	65.91	34.	21.	28.	19.	8.	32.	42.	14.	12.	
72786 J	2890.00	1796	550	426	166	107	1249	3039	41.10	59.	18.	14.	5.	4.	44.	34.	13.	9.	
72786 K	2920.00	5172.5	6830	1839	276	215	8360	6606.5	17.91	86.	10.	3.	0.	0.	72.	22.	3.	3.	
72786 L	2950.00	6164	1742	834	269	133	2978	1116.2	26.66	73.	16.	7.	2.	1.	58.	22.	9.	4.	
72786 M	2980.00	455	102	105	61	42	316	745	41.61	58.	14.	14.	8.	6.	33.	34.	20.	14.	

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Table 2

PAGE 1

TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WKASSE 1

SAMPLE NO. *****	DEPTH *****	AGE ***	FORMATION *****	AN *****	TOC% *****	AN *****	TOC% *****	AN *****	T/C03 *****	DESCRIPTION *****
72783 U	1735.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.36			40%MED.GY SH,60% LIMEST.
72783 W	1765.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.46			30%MED GY SHALE,70% LST.
72783 Y	1795.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.43			LT BRN-GY LIMESTONE
72784 A	1825.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.42	2	.43	LT BRN-GY MUDDY LST.
72784 C	1855.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.35			LT BRN-GY LST,TRACE SH.
72784 E	1885.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.42			40%MED GY SHALE,60%LST.
72784 G	1915.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.47			70%MED GY SHALE,30%LST.
72784 I	1945.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.49			80%MED GY SHALE,20%LST
72764 C	1950.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	1	.64	1	50.76	LT-M GY SLTY CLYST
72784 K	1975.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.54			MED GY SHALE,TRACE LST
72764 A	1990.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	1	.64	1	49.29	M GY SLTST
72784 M	2005.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.54			MED GY SHALE,TRACE LST
72763 Y	2010.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	1	.61	1	42.69	M GY CLYST
72784 U	2035.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.48			MED GY SHALE,TRACE LST
72763 V	2065.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	1	.63	1	49.23	LT GY SLTST
72784 Q	2065.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.56			MED GY SHALE,TRACE LST
72784 S	2095.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	2	.50			40%MED DK GY SH,60%LST
72763 T	2100.00	MID-LATE	MIOCENE	GIPPSLAND	LIMESTONE	1	.25	1	59.67	LT GY SLTST

====> DEPTH : .00 TO 2103.50 METRES. <=== I ===> AVERAGE TOC : .49 % EXCLUDING VALUES GREATER THAN 10.00 % <===

72784 U	2125.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.49			MED GREY SHALE
72784 W	2155.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.47			MED GREY SHALE
72763 Q	2157.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.49	1	35.16	LT GY CLYST
72763 O	2180.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.46	1	27.92	M GY CLYST
72784 Y	2185.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.46			MED DK GREY SHALE
72763 N	2203.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.68	1	34.11	M-DK GY CLYST
72785 A	2215.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.49	2	.51	70%MED GY SH,30%DOLOMITE
72763 M	2236.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.46	1	30.36	M GRY CLYST
72785 C	2245.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.48			MED GREY SHALE
72763 K	2258.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.39	1	47.01	LT-M GRY CLYST
72763 J	2272.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.29	1	57.82	LT GRY CLYST
72785 E	2275.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.58			MED GY-MED DK GY SHALE
72785 G	2305.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.51			MED GY-MED DK GY SHALE
72785 I	2335.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.55			MED GREY SHALE
72763 H	2344.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.55	1	25.58	M GRY CLYST
72763 G	2351.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.42	1	33.57	M GRY CLYST
72785 K	2365.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.48			MED GREY SHALE
72763 F	2367.90	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.42	1	23.12	M-DK GRY CLYST
72785 M	2395.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.50			MED GREY SHALE
72763 D	2425.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.46	1	27.13	M GRY CLYST
72785 O	2425.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.44			MED DARK GREY SHALE
72785 Q	2455.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	2	.42	2	.49	MED DARK GREY SHALE
72763 R	2455.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.18	1	44.53	LT GRY CLYST
72763 A	2465.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	1	.34	1	41.57	M GRY CLYST

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Table 2 cont.

PAGE 2

TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO. *****	DEPTH *****	AGE ***	FORMATION *****	AN *****	TOC% *****	AN *****	TOC% *****	AN *****	T/CO3 *****	DESCRIPTION *****
72785 S	2485.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	2	.26				MED DK GY SH, TRACE DOL.
72766 B	2508.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	1	.37		1	.41	M GY CLYST
72785 U	2515.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	2	.37				70% MED DK GY SH.
72765 Z	2537.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	1	.61		1	21.86	M GY CLYST
72758 W	2545.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	2	.40				60% SHALE, 40% CEMENT
72765 Y	2548.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	1	.43		1	35.64	LT GY CLYST
72765 X	2566.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	1	.28		1	46.87	LT GY CLYST
72785 Y	2575.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	2	.37				30% MED GY SH, 70% DOLOMITE
72765 W	2584.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	1	.33		1	43.32	LT GY CLYST
72786 A	2605.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	2	.41				MED GREY SHALE
72765 V	2608.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	1	.35		1	50.19	LT GY CLYST
72786 C	2635.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	2	.37				30% MED GY SH, 70% LIMEST.
72786 E	2665.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	2	.41				20% MED GY SHALE, 80% LST.
72765 R	2680.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	1	.63		1	32.65	M GY CLYST
72786 G	2695.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	2	.46				40% MED GY SHALE, 60% LST.
72765 O	2703.00	EARLY-MID	MIOCENE	LAKES ENTRANCE	1	1.05		1	27.49	M GY CLYST
====>	DEPTH : 2103.50 TO 2722.50 METRES.	<=== I ===>		AVERAGE TOC :		.45 % EXCLUDING VALUES GREATER THAN 10.00 %	<===			
72786 I	2725.00	EARLY OLIG-MID	EOC.	LAKES ENTRANCE/TURRUM	2	.50				80% MED DK GY SH, 20% LST.
====>	DEPTH : 2722.50 TO 2725.00 METRES.	<=== I ===>		AVERAGE TOC :		.50 % EXCLUDING VALUES GREATER THAN 10.00 %	<===			
72765 I	2729.00	EARLY OLIG-MID	EOC.	TURRUM	1	.37		1	28.46	M-DK GY SLTST, GLAUC.
72765 H	2733.00	EARLY OLIG-MID	EOC.	TURRUM	1	1.22		1	11.37	DK GY SLTST
72786 K	2755.00	EARLY OLIG-MID	EOC.	TURRUM	2	.58	2	.65		MED DK GY-DK GY SH, GLAUC
72765 D	2764.00	EARLY OLIG-MID	EOC.	TURRUM	1	1.21		1	4.42	GN/BRN SLTST
72764 Z	2784.00	EARLY OLIG-MID	EOC.	TURRUM	1	.14		1	14.13	DK GN/GY SLTST
72786 H	2785.00	EARLY OLIG-MID	EOC.	TURRUM	2	.50				MED DK GY-DK GY SH, GLAUC
72786 O	2815.00	EARLY OLIG-MID	EOC.	TURRUM	2	.42				QTZ SAND, TRACES OF SHALE
72764 U	2828.00	EARLY OLIG-MID	EOC.	TURRUM	1	.57		1	17.74	DK GN/GY SLTST
72786 N	2845.00	EARLY OLIG-MID	EOC.	TURRUM	2	.56				MEDIUM GREY SHALE
72764 L	2860.00	EARLY OLIG-MID	EOC.	TURRUM	1	2.85		1	4.44	DK BRN/GY SLTST
72764 K	2865.00	EARLY OLIG-MID	EOC.	TURRUM	1	3.40		1	3.06	DK BRN/GRY SLTST
====>	DEPTH : 2725.00 TO 2868.50 METRES.	<=== I ===>		AVERAGE TOC :		1.04 % EXCLUDING VALUES GREATER THAN 10.00 %	<===			
72764 J	2901.00	LATE PALEOCENE		LATROBE GROUP	1	3.90		1	7.48	DK GY ARG SLTST
72786 U	2905.00	LATE PALEOCENE		LATROBE GROUP	2	.87				70% MED GY SH, 30% QTZ SAND
72786 W	2935.00	LATE PALEOCENE		LATROBE GROUP	2	.77				MED GY SH, TRACE OF QTZ
72764 G	2952.00	LATE PALEOCENE		LATROBE GROUP	1	.27		1	6.42	LT GY ARG SLTST

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Table 2 cont

PAGE 3

TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO. *****	DEPTH *****	AGE ***	FORMATION *****	AN *****	TOC% *****	AN *****	TOC% *****	AN *****	T/C03 *****	DESCRIPTION *****
72786 Y	2965.00	LATE PALEOCENE	LATROBE GROUP	2	42.47					BLACK COAL
72764 E	2977.00	LATE PALEOCENE	LATROBE GROUP	1	1.87			1	13.42	DK GN-GY SLTST
===> DEPTH : 2868.50 TO 2977.00 METRES. <=== I ===>				AVERAGE TOC : 1.54 % EXCLUDING VALUES GREATER THAN 10.00 % <===						

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Table 3

PAGE

VITRINITE REFLECTANCE REPORT

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	HAX.	RO	FLUOR.	COLOUR	NO.	CNTS.	MACERAL TYPE
72763 A	2465.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	5	.40	YEL-OR	7		V, E, I, RARE, DOM RARE
72765 Z	2537.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	5	.49	YEL-DULL OR	7		I>V>E, DOM RARE
72765 P	2699.00	EARLY-MID	MIOCENE	LAKES	ENTRANCE	5	.49	YEL-DULL OR	6		V>I>E, DOM RARE
72764 E	2977.00	LATE	PALEOCENE	LATROBE	GROUP	5	.57	YEL-OR	25		V>I>E, DOM ABUNDANT

ROCK EVAL ANALYSES

BASIN - GIPPSLAND
WELL - WRASSE 1

REPORT A - SULPHUR & PYROLYZABLE CARBON

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	TMAX	S1	S2	S3	PI	S2/S3	PC	COMMENTS
72764 C	1950.0	SWC	MID-LATE MIOCENE	405.	.10	.53	.25	.15	2.09	.05	
72764 A	1990.0	SWC	MID-LATE MIOCENE	411.	.08	.52	.20	.14	2.56	.05	
72763 Y	2010.0	SWC	MID-LATE MIOCENE	412.	.11	.46	.27	.19	1.70	.05	
72763 V	2065.0	SWC	MID-LATE MIOCENE	405.	.08	.20	.22	.30	.90	.02	
72763 N	2203.0	SWC	EARLY-MID MIOCENE	410.	.10	.45	.27	.18	1.65	.05	
72763 H	2344.0	SWC	EARLY-MID MIOCENE	415.	.08	.37	.26	.18	1.43	.04	
72765 Z	2537.0	SWC	EARLY-MID MIOCENE	410.	.07	.20	.10	.25	1.91	.02	
72765 R	2680.0	SWC	EARLY-MID MIOCENE	414.	.17	.40	.07	.30	5.63	.05	
72765 O	2703.0	SWC	EARLY-MID MIOCENE	422.	.13	.59	.28	.18	2.13	.06	
72765 H	2733.0	SWC	EARLY OLIG-MID EOC.	423.	.05	.12	.26	.29	.46	.01	
72765 D	2764.0	SWC	EARLY OLIG-MID EOC.	353.	.02	.01	.34	.67	.03	.00	
72764 Q	2828.0	SWC	EARLY OLIG-MID EOC.	422.	.02	.05	.15	.29	.31	.01	
72764 L	2860.0	SWC	EARLY OLIG-MID EOC.	426.	.36	4.03	.29	.08	13.93	.36	
72764 K	2865.0	SWC	EARLY OLIG-MID EOC.	425.	.46	5.90	.28	.07	21.11	.53	
72764 J	2901.0	SWC	LATE PALEOCENE	421.	.16	.33	.32	.33	1.03	.04	
72764 E	2977.0	SWC	LATE PALEOCENE	427.	.30	1.20	.65	.20	1.85	.12	

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

ROCK EVAL ANALYSES

REPORT B - TOTAL CARBON, H/O INDICES

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO.	DEPTH	SAMPLE TYPE	FORMATION	TC	HI	OI	HI/OI	COMMENTS
72764 C	1950.0	SWC	GIPPSLAND LIMESTONE	.64	82.	39.	2.09	
72764 A	1990.0	SWC	GIPPSLAND LIMESTONE	.64	82.	32.	2.56	
72763 Y	2010.0	SWC	GIPPSLAND LIMESTONE	.61	75.	44.	1.70	
72763 V	2065.0	SWC	GIPPSLAND LIMESTONE	.63	31.	35.	.90	
72763 N	2203.0	SWC	LAKES ENTRANCE	.68	66.	40.	1.65	
72763 H	2344.0	SWC	LAKES ENTRANCE	.55	68.	48.	1.43	
72765 Z	2537.0	SWC	LAKES ENTRANCE	.61	33.	17.	1.91	
72765 R	2680.0	SWC	LAKES ENTRANCE	.63	64.	11.	5.63	
72765 O	2703.0	SWC	LAKES ENTRANCE	1.05	56.	26.	2.13	
72765 H	2733.0	SWC	TURRUM	1.22	10.	21.	.46	
72765 D	2764.0	SWC	TURRUM	1.21	1.	28.	.03	
72764 Q	2828.0	SWC	TURRUM	.57	8.	27.	.31	
72764 L	2860.0	SWC	TURRUM	2.85	141.	10.	13.93	
72764 K	2865.0	SWC	TURRUM	3.40	174.	8.	21.11	
72764 J	2901.0	SWC	LATROBE GROUP	3.90	8.	8.	1.03	
72764 E	2977.0	SWC	LATROBE GROUP	1.87	64.	35.	1.85	

T.O.C. = Total organic carbon, wt. %
S1 = Free hydrocarbons, mg HC/g of rock
S2 = Residual hydrocarbon potential
(mg HC/g of rock)
S3 = CO₂ produced from kerogen pyrolysis
(mg CO₂/g of rock)
PC* = 0.083 (S₁ + S₂)

Hydrogen
Index = mg HC/g organic carbon
Oxygen
Index = mg CO₂/g organic carbon
PI = S1/S1+S2
Tmax = Temperature Index, degrees C.

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

17/05/84

ESSO AUSTRALIA LTD.

Table 5

PAGE 1

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN = GIPPSLAND
WELL = WRASSE 1

SAMPLE NO.	DEPTH	SAMPLE TYPE	ELEMENTAL % (ASH FREE)					COMMENTS
			H%	C%	H%	S%	O%	
72765 J	2723.00	SWC	2.43	76.30	5.82	.00	15.45	HIGH ASH
72766 D	2751.30	CORE	2.50	69.70	4.13	.00	23.67	
72764 H	2848.00	SWC	1.71	74.40	5.51	.00	18.38	
72764 L	2860.00	SWC	1.00	63.24	4.73	.00	31.03	
72764 K	2865.00	SWC	1.22	67.81	5.22	.00	25.75	
72764 E	2977.00	SWC	1.29	72.94	5.04	.00	20.72	

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PAGE 1

Table 6

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	FORMATION	ATOMIC RATIOS			COMMENTS	
					H/C	O/C	N/C		
72765 J	2723.00	SWC	EARLY OLIG-MID	EOC.	TURRUM	.92	.15	.03	HIGH ASH
72766 D	2751.30	CORE	EARLY OLIG-MID	EOC.	TURRUM	.71	.25	.03	
72764 M	2848.00	SWC	EARLY OLIG-MID	EOC.	TURRUM	.89	.19	.02	
72764 L	2860.00	SWC	EARLY OLIG-MID	EOC.	TURRUM	.90	.37	.01	
72764 K	2865.00	SWC	EARLY OLIG-MID	EOC.	TURRUM	.92	.28	.02	
72764 E	2977.00	SWC	LATE PALEOCENE		LATROBE GROUP	.83	.21	.02	

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Table 7

PAGE 1

C15+ EXTRACT ANALYSES

BASIN - GIPPSLAND
WELL - WRASSE 1

REPORT A - EXTRACT DATA (PPM)

SAMPLE NO.	DEPTH	TYPE	AN	AGE	TOTAL EXTRACT	*--- HYDROCARBONS ---*			*--- NON-HYDROCARBONS ---*					
						SATS.	AROMS.	TOTAL H/CARBS	ASPH.	ELUTED NSO	NON-ELT NSO	TOTAL NSO	SULPHUR	TOTAL NON/HCS
72784 A	1825.00	CTS	2	MID-LATE MIOCENE	249.	0.	0.	0.	183.	0.	0.	0.	0.	183.
72785 A	2215.00	CTS	2	EARLY-MID MIOCENE	261.	0.	0.	0.	185.	0.	0.	0.	0.	185.
72785 Q	2455.00	CTS	2	EARLY-MID MIOCENE	404.	0.	0.	0.	320.	0.	0.	0.	0.	320.
72786 K	2755.00	CTS	2	EARLY OLIG-MID EOC.	329.	0.	0.	0.	238.	0.	0.	0.	0.	238.

C15+ EXTRACT ANALYSES

BASIN - GIPPSLAND
WELL - WRASSE 1

REPORT B - EXTRACTS % OF TOTAL

SAMPLE NO.	DEPTH	FORMATION	*HYDROCARBONS*		*-- NON-HYDROCARBONS --*			SAT/AR	HC/NHC	COMMENTS
			SAT. %	AROM. %	NSO. %	ASPH. %	SULPH. %			
72784 A	1825.00	GIPPSLAND LIMESTONE	.0	.0	.0	73.5	.0 *	.0 *	.0 *	IMMATURE, MARINE+TERREST.
72785 A	2215.00	LAKES ENTRANCE	.0	.0	.0	70.9	.0 *	.0 *	.0 *	IMMATURE, MARINE+TERREST.
72785 Q	2455.00	LAKES ENTRANCE	.0	.0	.0	79.2	.0 *	.0 *	.0 *	IMMATURE, MARINE+TERREST.
72786 K	2755.00	TURRUM	.0	.0	.0	72.3	.0 *	.0 *	.0 *	IMMATURE, MARINE+TERREST.

C₁₋₄ CUTTINGS GAS LOG

WRASSE 1

GIPPSLAND BASIN

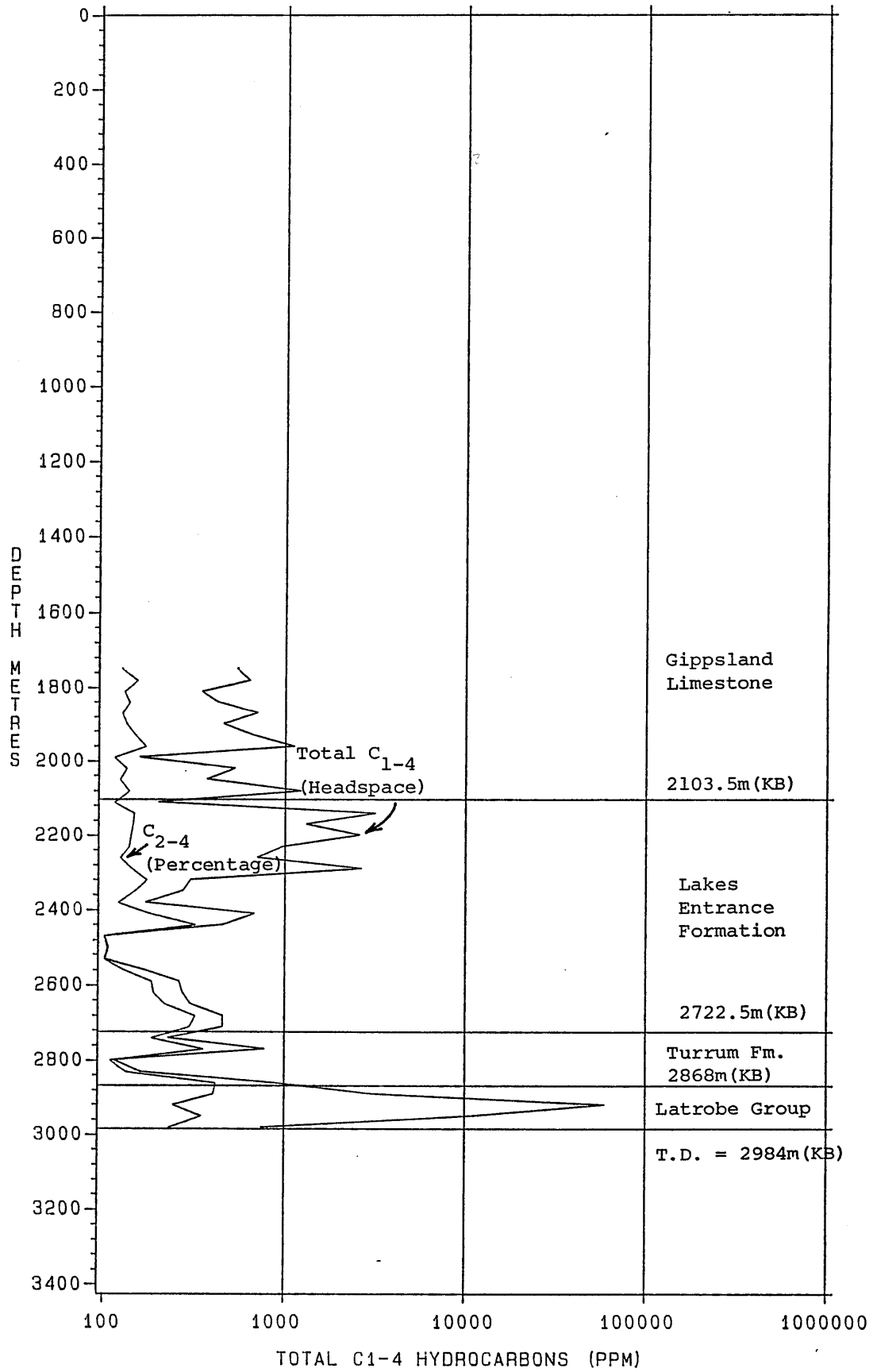
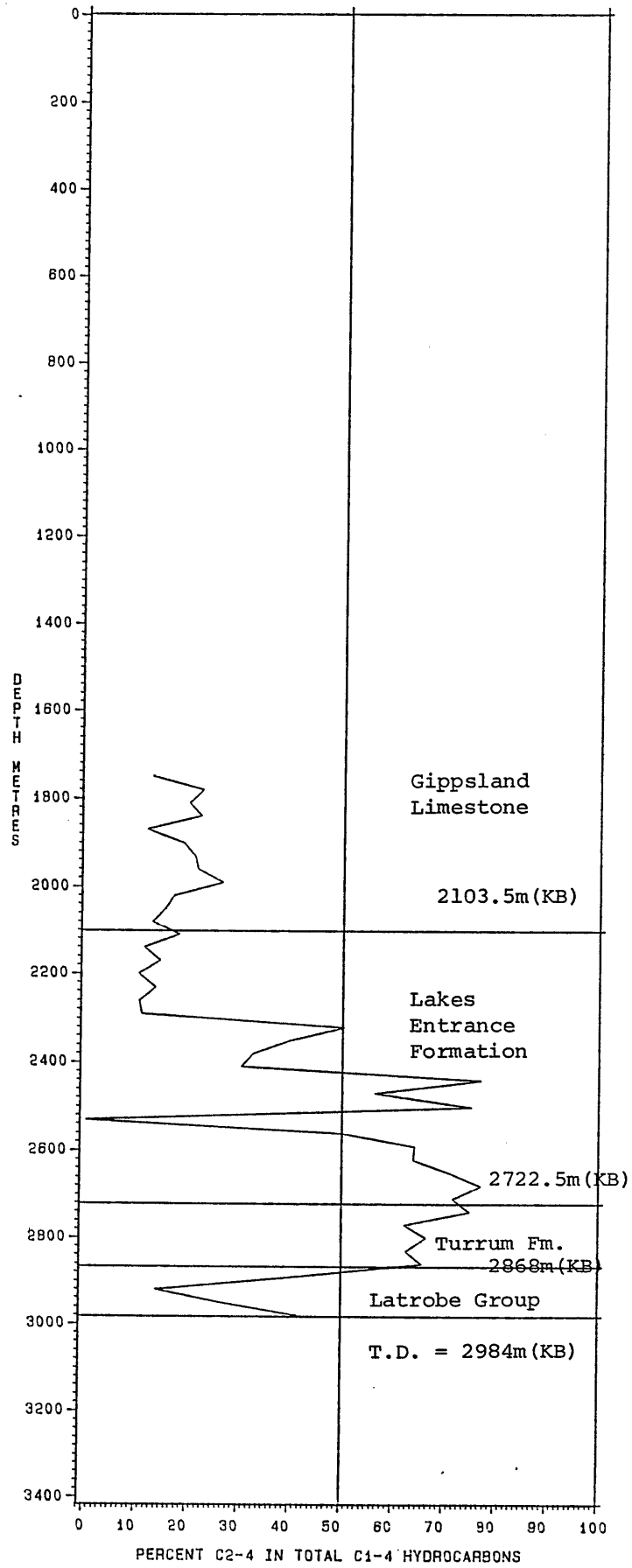


Figure 1(b)

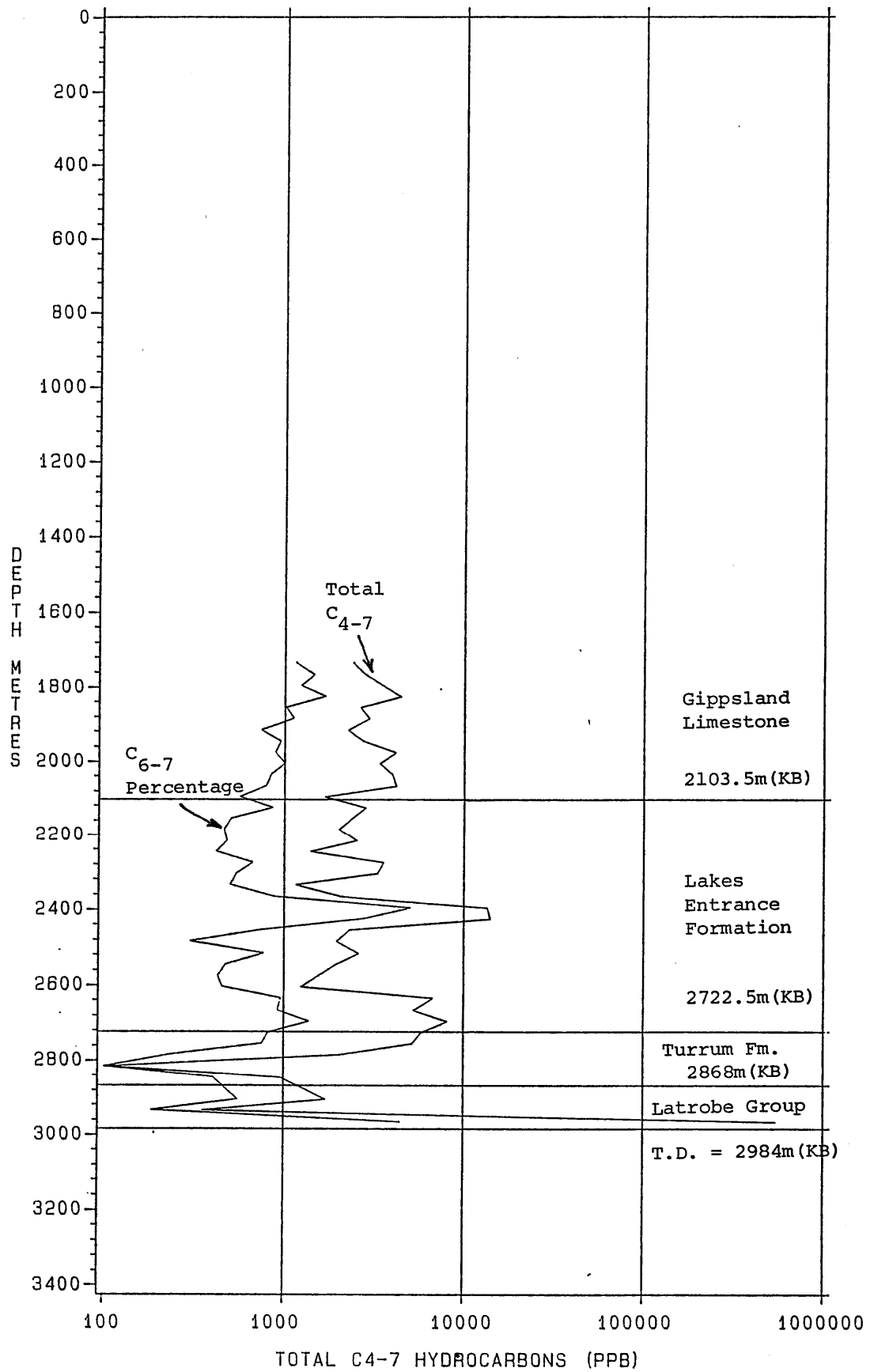
GIPPSLAND GAS LOG
WRASSE 1
GIPPSLAND BASIN



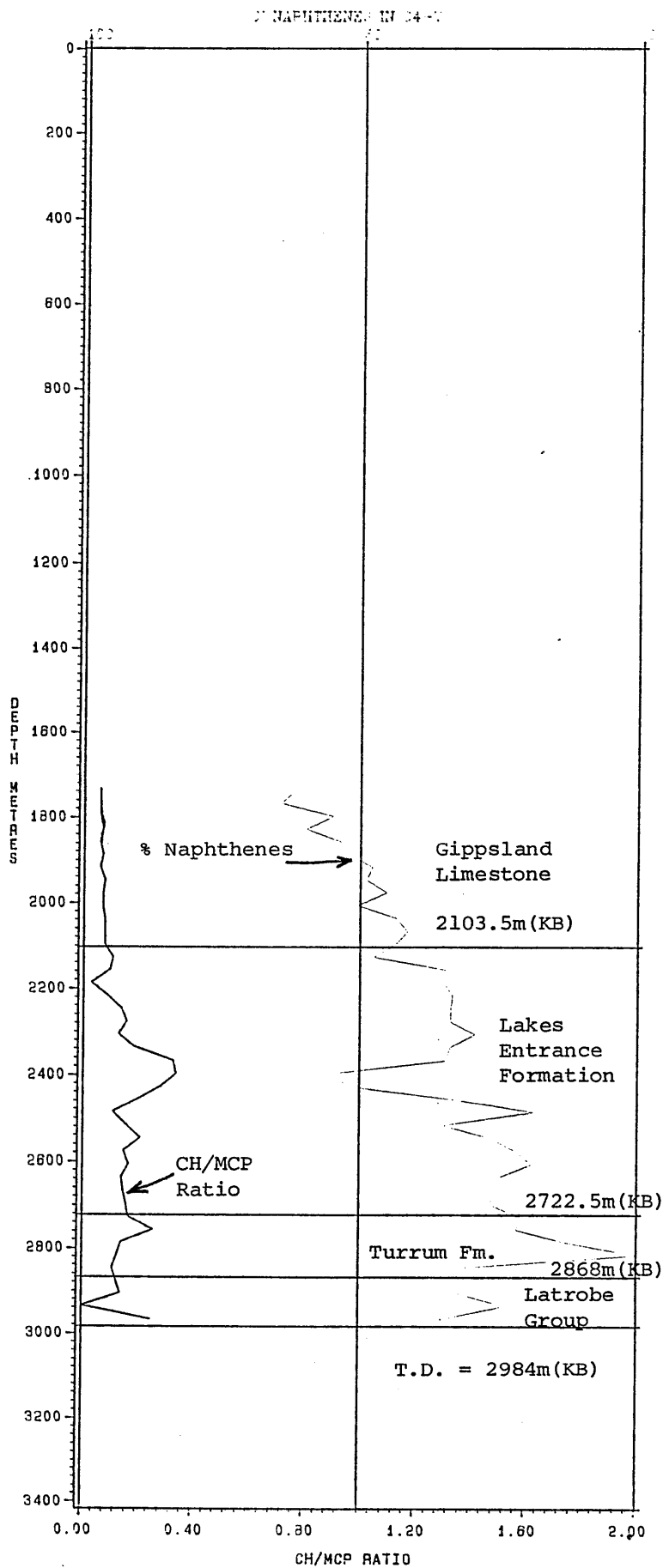
C₄₋₇ HYDROCARBON LOG

WRASSE 1

GIPPSLAND BASIN



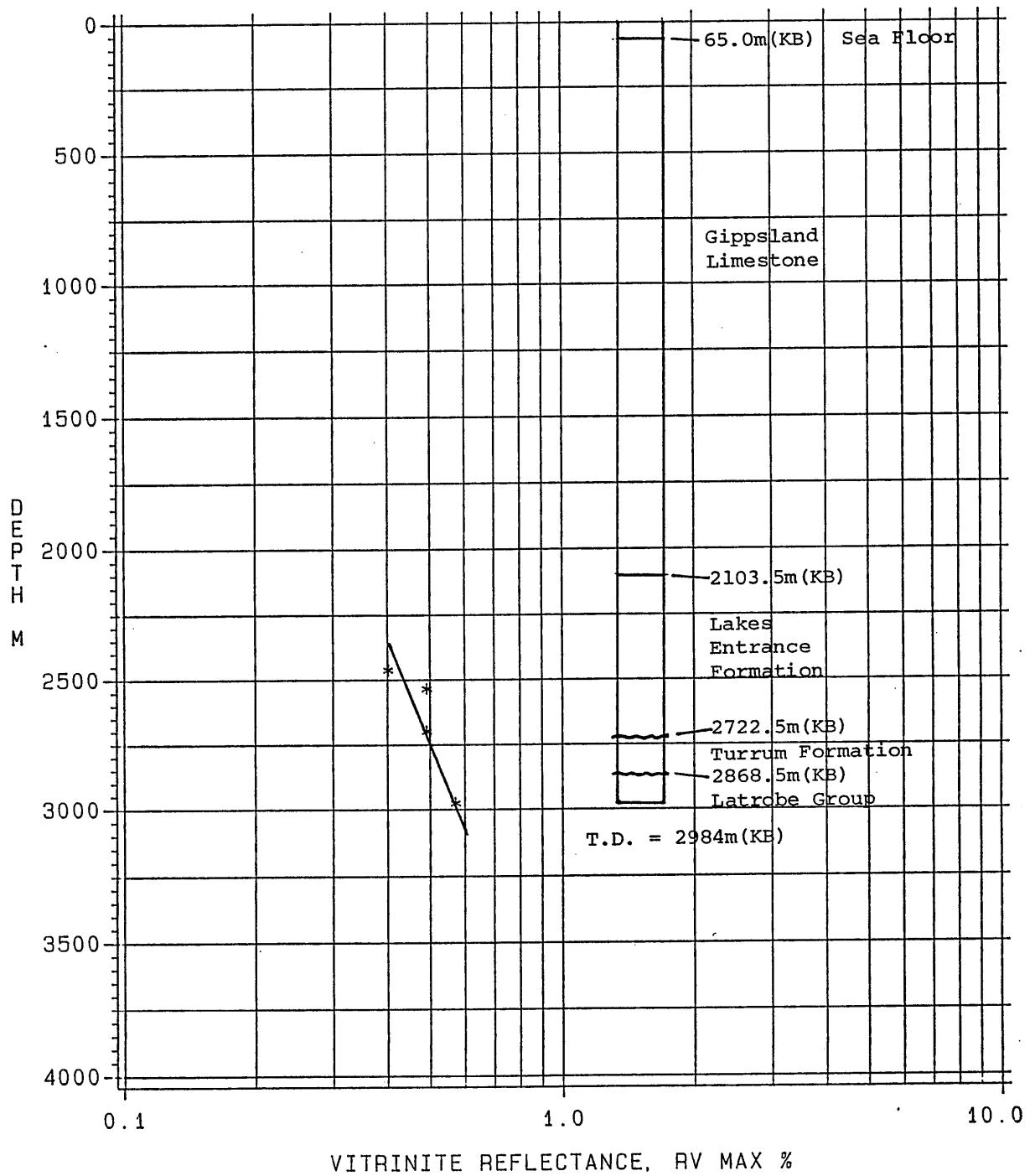
C₁₋₇ HYDROCARBON LOG
WRASSE 1
GIPPSLAND BASIN



VITRINITE REFLECTANCE vs. DEPTH

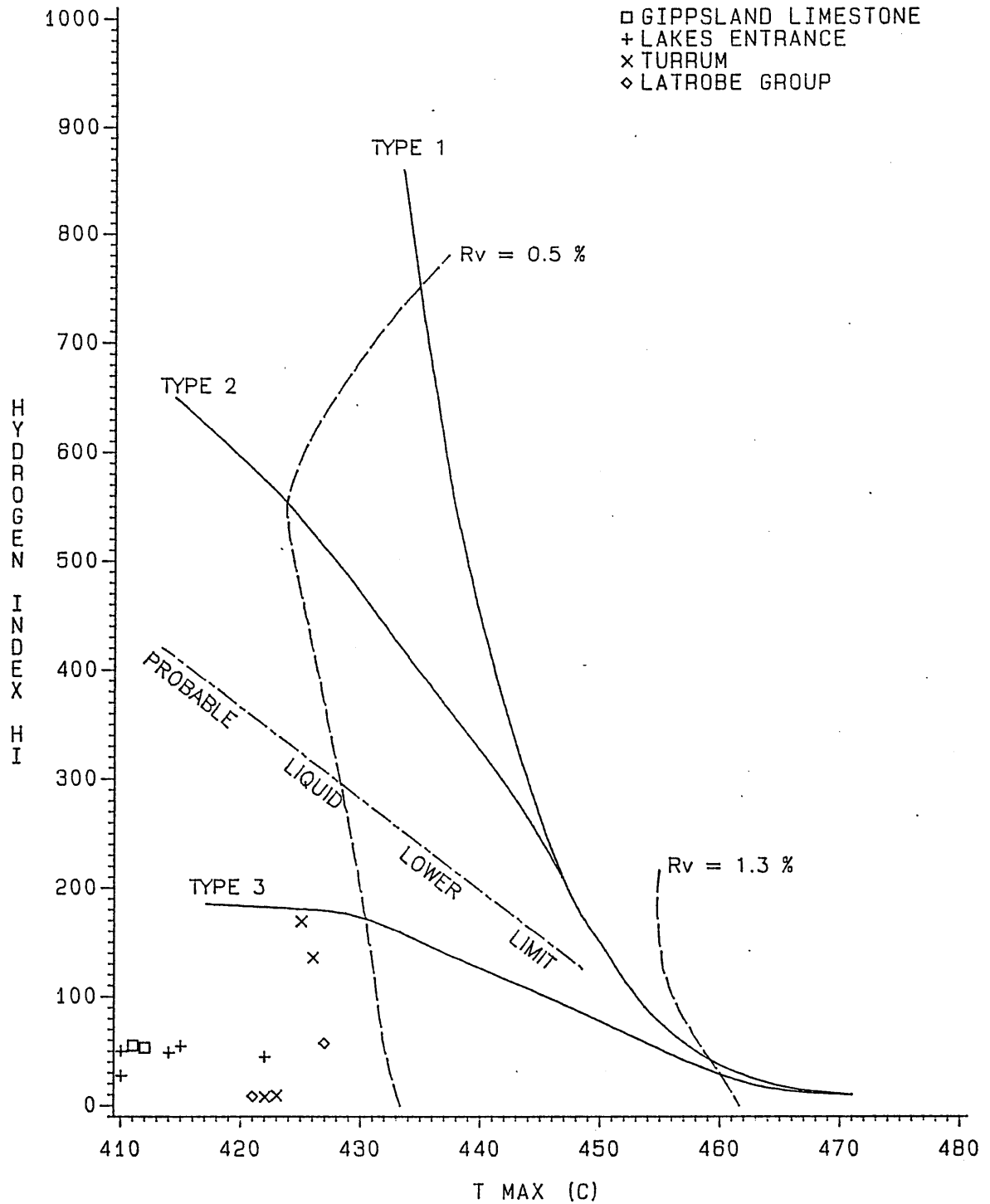
WRASSE 1

GIPPSLAND BASIN

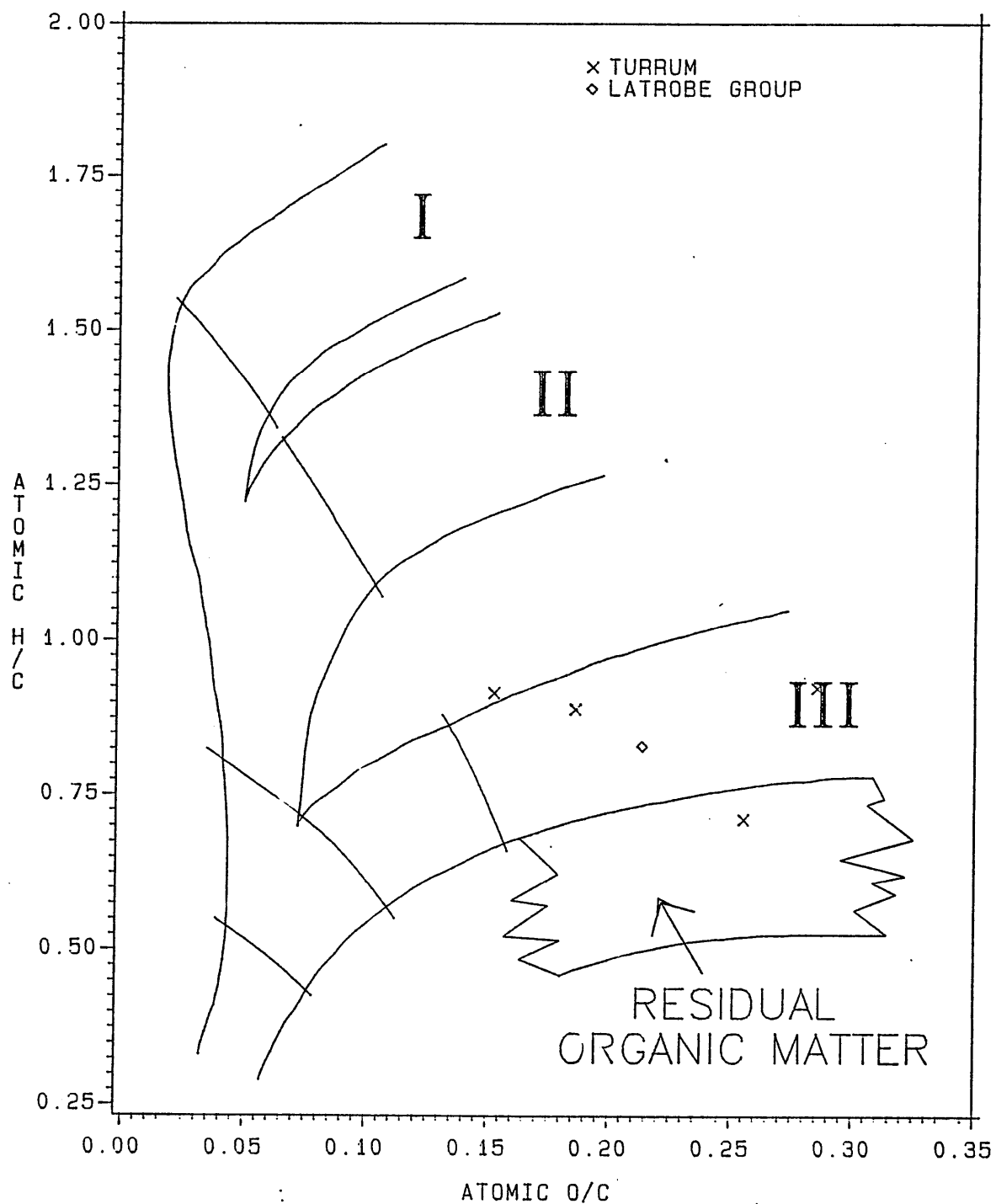


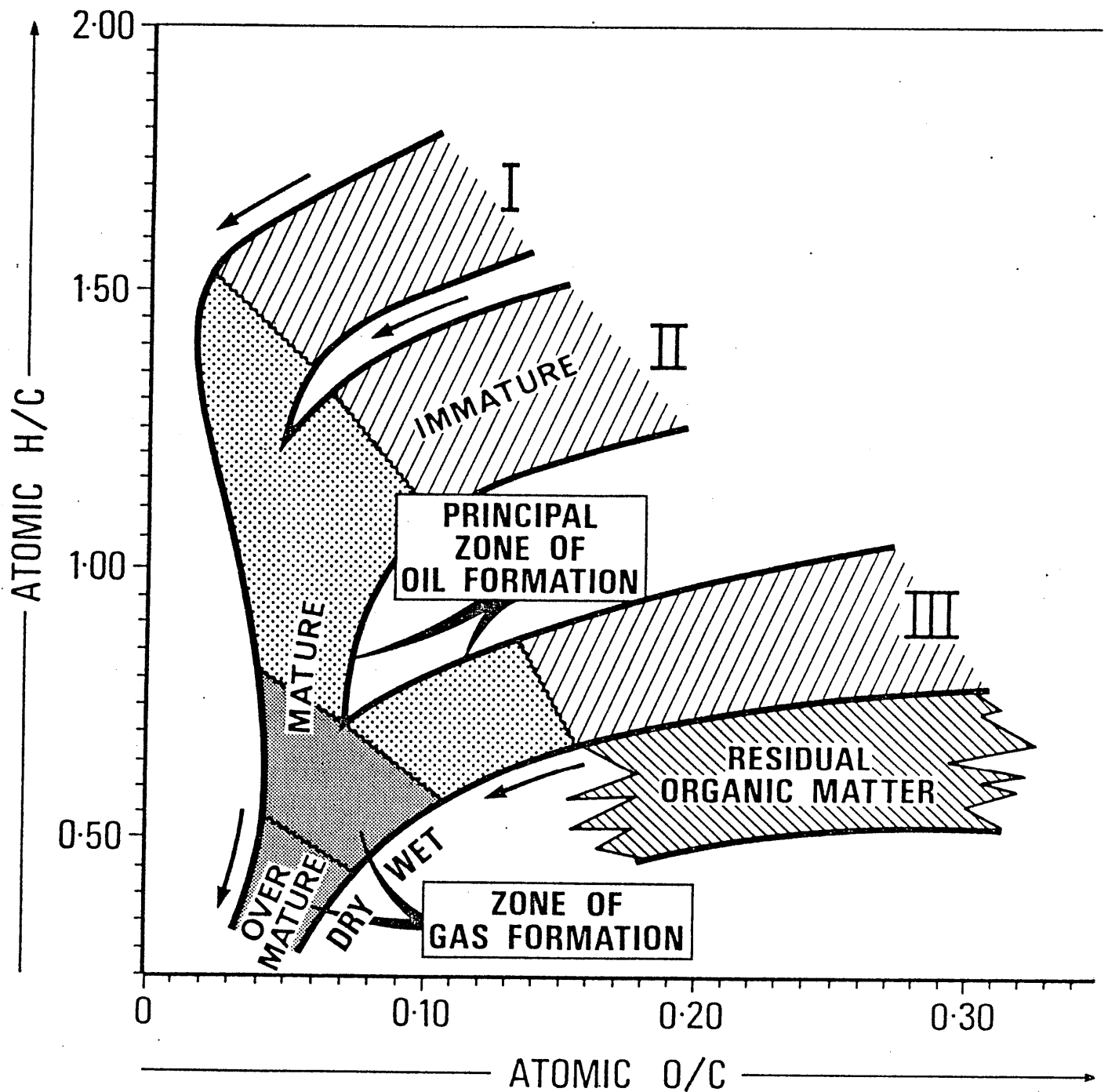
ROCKEVAL MATURATION PLOT

TEMPERATURE OF HYDROGEN INDEX
WRASSE 1
GIPPSLAND BASIN






KEROGEN TYPE WRASSE 1 GIPPSLAND BASIN





PRINCIPAL PRODUCTS OF KEROGEN EVOLUTION

-  CO₂, H₂O
-  OIL
-  GAS

 RESIDUAL ORGANIC MATTER
(NO POTENTIAL FOR OIL OR GAS)

C₁₅₊ Paraffin-Naphthene Hydrocarbon

GeoChem Sample No. E592-001

Exxon Identification No. 72784-A

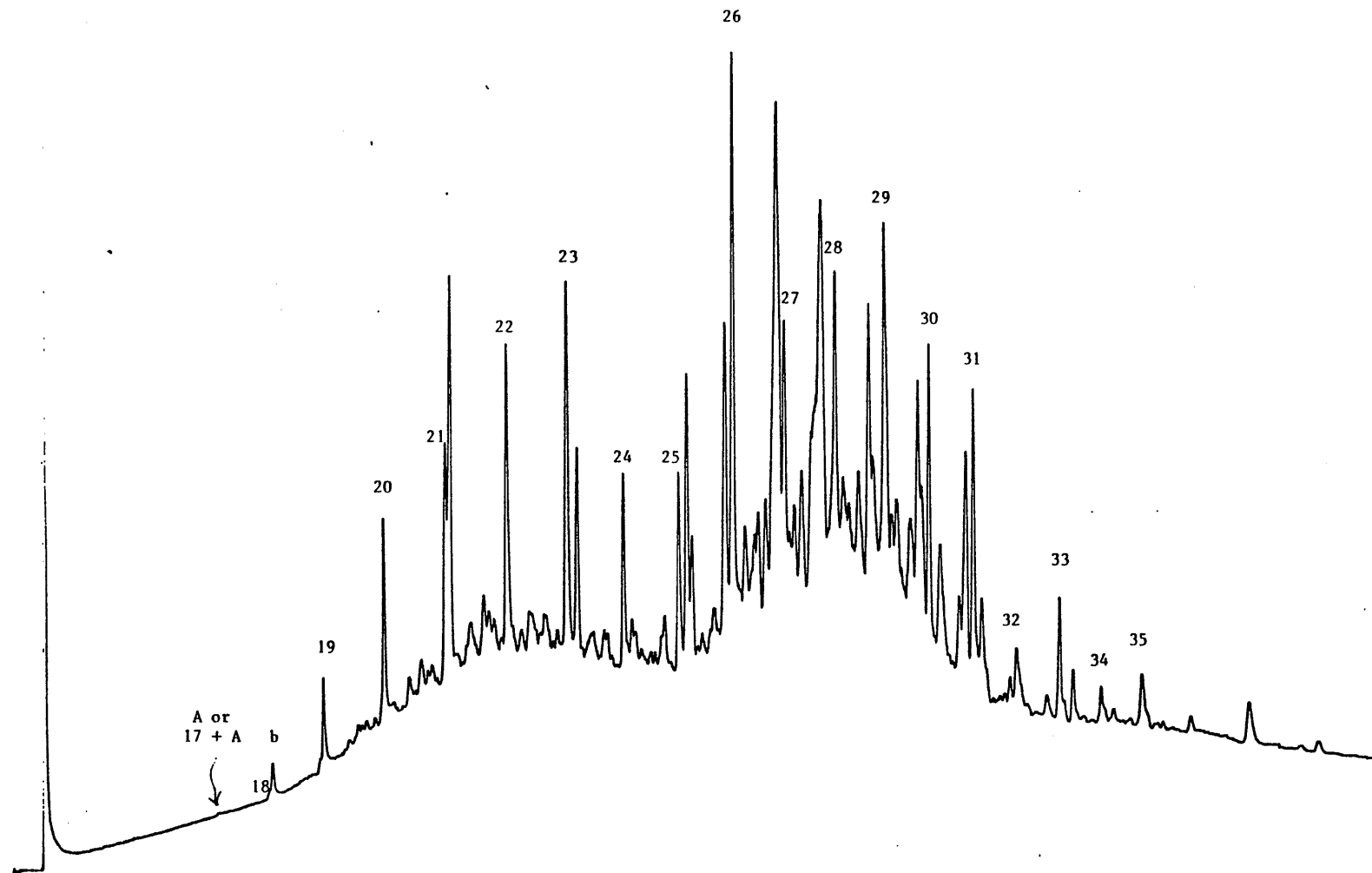


Figure 7 : Wrasse-1, Cuttings Extract, 1818-1825m(KB), Gippsland Limestone

C₁₅₊ Paraffin-Naphthene Hydrocarbon

GeoChem Sample No. E592-002

Exxon Identification No. 72785-A

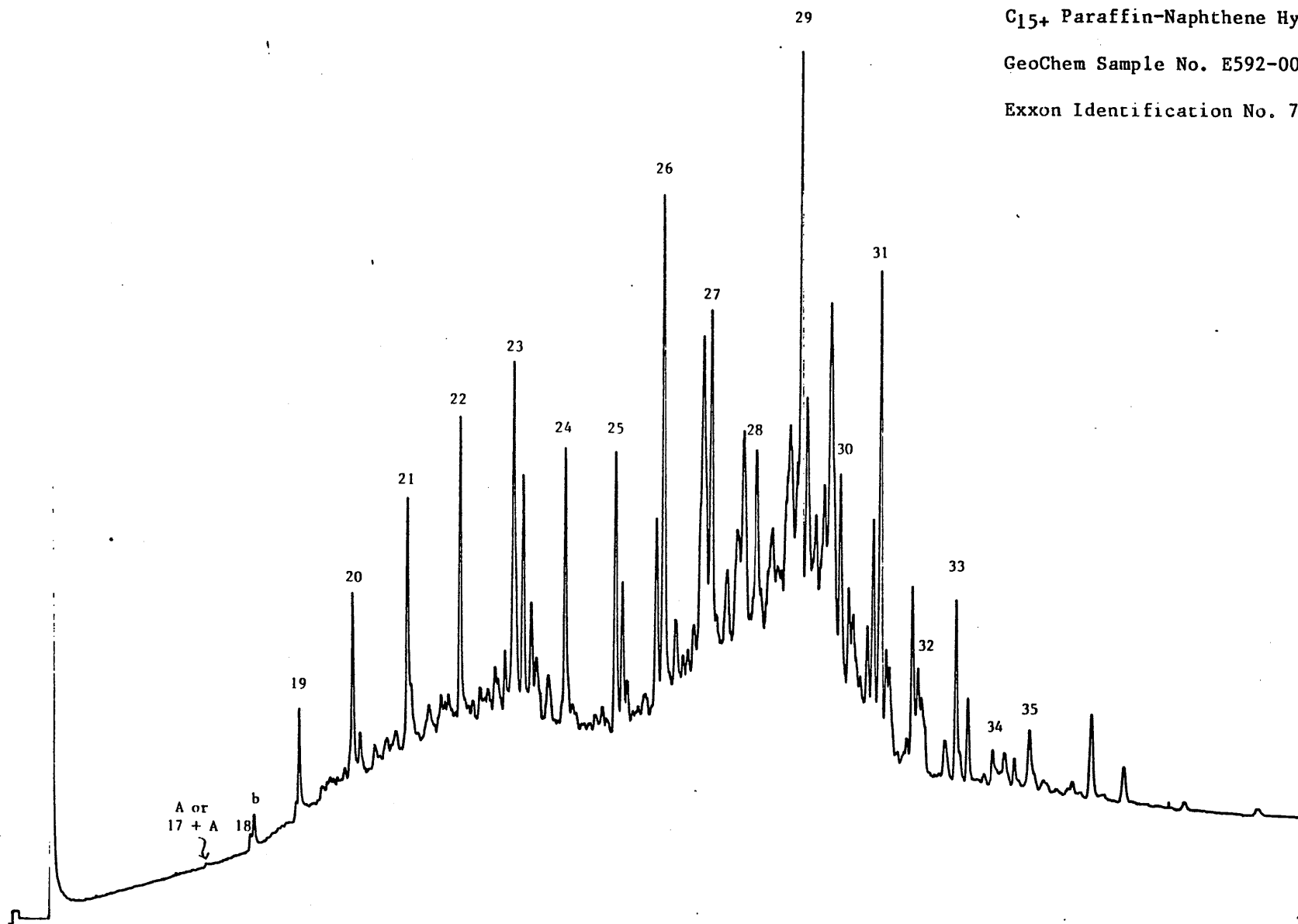


Figure 8 : Wrasse-1, Cuttings Extract, 2200-2215m(KB), Lakes Entrance Formation

C₁₅₊ Paraffin-Naphthene Hydrocarbon

GeoChem Sample No. E592-003

Exxon Identification No. 72785-Q

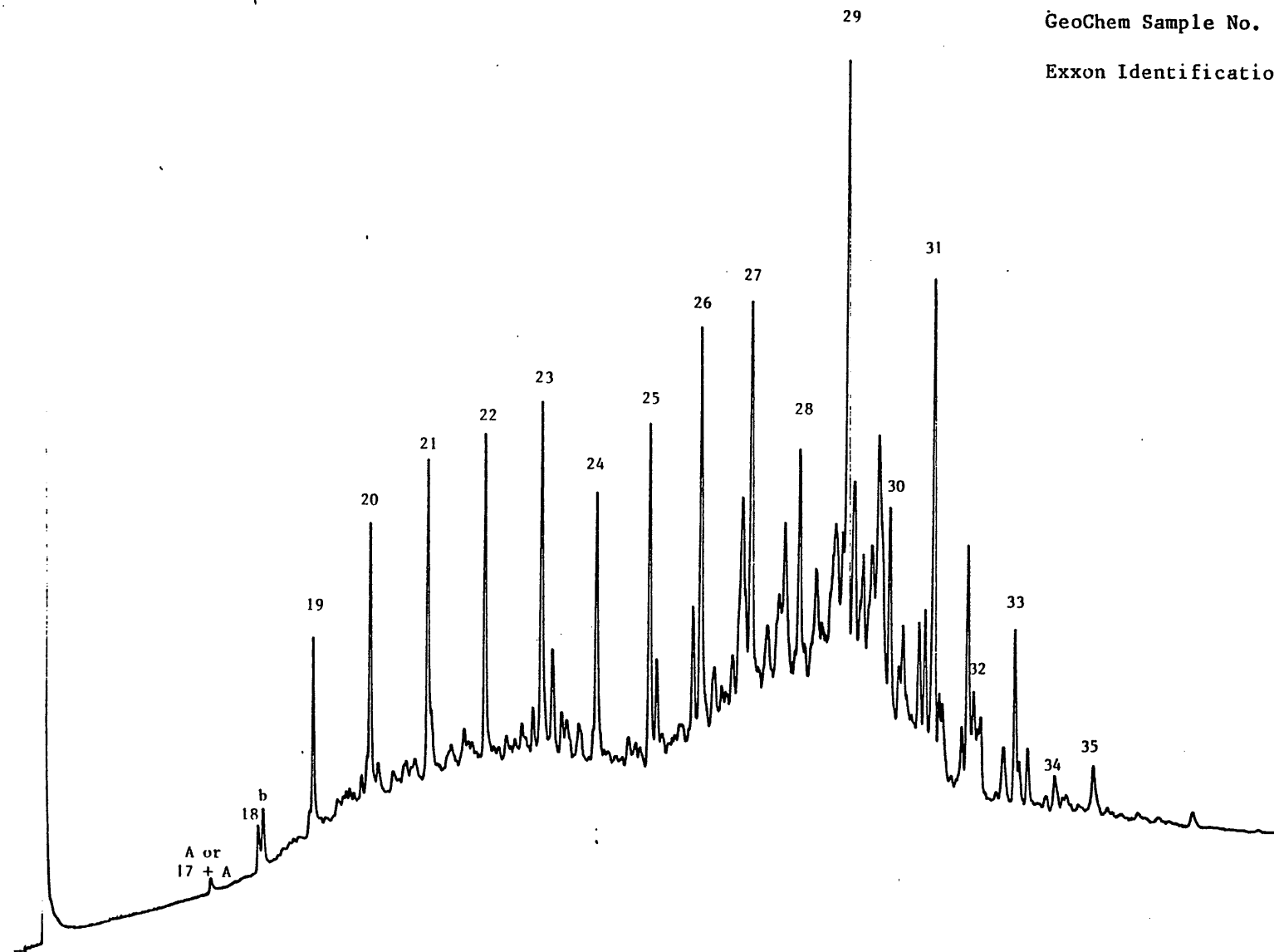
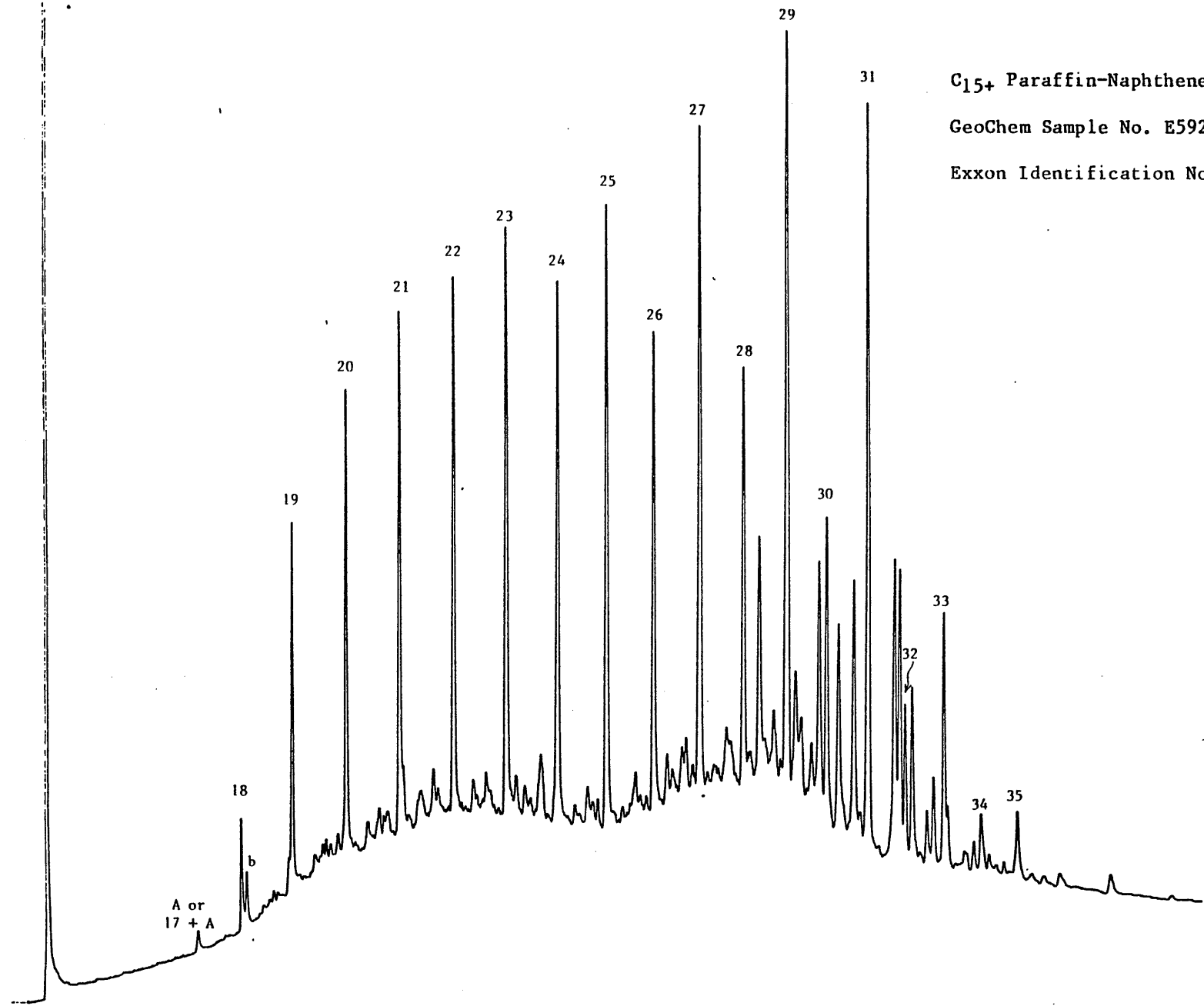


Figure 9 : Wrasse-1, Cuttings Extract, 2440-2455m(KB), Lakes Entrance Formation



C₁₅₊ Paraffin-Naphthene Hydrocarbon

GeoChem Sample No. E592-004

Exxon Identification No. 72786-R

Figure 10: Wrasse-1, Cuttings Extract, 2740-2755m(KB), Turrum Formation

APPENDIX-1

DETAILED C₄₋₇ DATA SHEETS

13 MAR 84

72785E WRASSE-1 2275'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	121.0	3.39
ETHANE	0.0		1T2-DMCP	122.8	3.45
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	67.1	1.88	224-TMP	0.0	0.00
NBUTANE	62.6	1.76	NHEPTANE	215.3	6.04
IPENTANE	767.3	21.53	1C2-DMCP	28.0	0.78
NPENTANE	159.7	4.48	MCH	436.1	12.24
22-DMB	6.3	0.18			
CPENTANE	17.3	0.48			
23-DMB	75.6	2.12			
2-MP	322.9	9.06			
3-MP	186.7	5.24			
NHEXANE	164.8	4.62			
MCP	296.2	8.31			
22-DMP	0.0	0.00			
24-DMP	21.5	0.60			
223-TMB	4.2	0.12			
CHEXANE	47.8	1.34			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	101.5	2.85			
23-DMP	93.8	2.63			
3-MHEX	112.4	3.15			
1C3-DMCP	133.2	3.74			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3564.		C1/C2	0.83
GASOLINE	3564.		A /D2	3.38
NAPHTHENES	1202.	33.74	C1/D2	5.21
C6-7	1899.	53.27	CH/MCP	0.16
			PENT/IPENT,	0.21

	PPB	NORM PERCENT
MCP	296.2	38.0
CH	47.8	6.1
MCH	436.1	55.9
TOTAL	780.1	100.0

PARAFFIN INDEX 1 0.567
 PARAFFIN INDEX 2 15.558

13 MAR 84

72783U WRASSE-1 1735'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	98.0	4.06
ETHANE	0.0		1T2-DMCP	153.4	6.35
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	18.2	0.75	224-TMP	0.0	0.00
NBUTANE	22.4	0.93	NHEPTANE	95.7	3.96
IPENTANE	172.6	7.15	1C2-DMCP	168.4	6.97
NPENTANE	81.2	3.36	MCH	492.3	20.39
22-DMB	0.0	0.00			
CPENTANE	16.3	0.67			
23-DMB	14.3	0.59			
2-MP	132.7	5.50			
3-MP	97.1	4.02			
NHEXANE	86.6	3.59			
MCP	405.4	16.79			
22-DMP	0.0	0.00			
24-DMP	2.7	0.11			
223-TMB	1.7	0.07			
CHEXANE	25.3	1.05			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	47.1	1.95			
23-DMP ,	33.4	1.38			
3-MHEX ,	113.9	4.72			
1C3-DMCP	136.0	5.63			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2415.		C1/C2	0.59
GASOLINE	2415.		A /D2	1.60
NAPHTHENES	1495.	61.92	C1/D2	4.96
C6-7	1860.	77.03	CH/MCP	0.06
			PENT/IPENT,	0.47

	PPB	NORM PERCENT
MCP	405.4	43.9
CH	25.3	2.7
MCH	492.3	53.3
TOTAL	923.0	100.0

PARAFFIN INDEX 1 0.416
 PARAFFIN INDEX 2 8.007

13 MAR 84

72783W WRASSE-1 1765'

	TOTAL PPB	NORM. PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	121.8	4.28
ETHANE	0.0		1T2-DMCP	187.3	6.58
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	13.2	0.46	224-TMP	0.0	0.00
NBUTANE	14.7	0.52	NHEPTANE	122.0	4.29
IPENTANE	160.8	5.65	1C2-DMCP	223.2	7.85
NPENTANE	77.1	2.71	MCH	639.2	22.47
22-DMB	1.4	0.05			
CPENTANE	16.1	0.57			
23-DMB	16.4	0.58			
2-MP	149.9	5.27			
3-MP	111.7	3.93			
NHEXANE	102.5	3.60			
MCP	449.5	15.80			
22-DMP	0.0	0.00			
24-DMP	4.4	0.15			
223-TMB	1.7	0.06			
CHEXANE	28.5	1.00			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	64.1	2.25			
23-DMP ,	43.8	1.54			
3-MHEX ,	124.2	4.36			
1C3-DMCP	171.4	6.02			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2845.		C1/C2	0.63
GASOLINE	2845.		A /D2	1.81
NAPHTHENES	1837.	64.56	C1/D2	5.89
C6-7	2284.	80.26	CH/MCP	0.06
			PENT/IPENT,	0.48

	PPB	NORM PERCENT
MCP	449.5	40.2
CH	28.5	2.6
MCH	639.2	57.2
TOTAL	1117.2	100.0

PARAFFIN INDEX 1	0.392
PARAFFIN INDEX 2	8.120

13 MAR 84

72783Y WRASSE-1 1795'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	144.4	4.07
ETHANE	0.0		1T2-DMCP	201.5	5.68
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	61.7	1.74	224-TMP	0.0	0.00
NBUTANE	8.8	0.25	NHEPTANE	122.9	3.46
IPENTANE	369.7	10.41	1C2-DMCP	209.8	5.91
NPENTANE	152.4	4.29	MCH	675.0	19.02
22-DMB	4.3	0.12			
CPENTANE	19.1	0.54			
23-DMB	29.3	0.83			
2-MP	240.0	6.76			
3-MP	167.1	4.71			
NHEXANE	127.0	3.58			
MCP	477.3	13.45			
22-DMP	0.0	0.00			
24-DMP	6.3	0.18			
223-TMB	2.7	0.07			
CHEXANE	30.6	0.86			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	83.1	2.34			
23-DMP ,	56.2	1.58			
3-MHEX ,	163.9	4.62			
1C3-DMCP	196.2	5.53			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3549.		C1/C2	0.64
GASOLINE	3549.		A /D2	1.52
NAPHTHENES	1954.	55.05	C1/D2	4.81
C6-7	2497.	70.35	CH/MCP	0.06
			PENT/IPENT,	0.41

	PPB	NORM PERCENT
MCP	477.3	40.3
CH	30.6	2.6
MCH	675.0	57.1
TOTAL	1182.9	100.0

PARAFFIN INDEX 1	0.456
PARAFFIN INDEX 2	7.342

13 MAR 84

72784A WRASSE-1 1825.

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	190.4	4.31
ETHANE	0.0		1T2-DMCP	273.5	6.19
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	36.7	0.83	224-TMP	0.0	0.00
NBUTANE	71.7	1.62	NHEPTANE	170.9	3.87
IPENTANE	382.1	8.65	1C2-DMCP	325.2	7.36
NPENTANE	150.7	3.41	MCH	971.9	22.01
22-DMB	4.3	0.10			
CPENTANE	20.4	0.46			
23-DMB	27.5	0.62			
2-MP	236.4	5.35			
3-MP	183.3	4.15			
NHEXANE	141.4	3.20			
MCP	571.1	12.93			
22-DMP	0.0	0.00			
24-DMP	6.8	0.15			
223-TMB	4.1	0.09			
CHEXANE	37.8	0.86			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	111.0	2.51			
23-DMP ,	64.2	1.45			
3-MHEX ,	179.2	4.06			
1C3-DMCP	255.1	5.78			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	4416.		C1/C2	0.69
GASOLINE	4416.		A /D2	1.74
NAPHTHENES	2645.	59.91	C1/D2	6.25
C6-7	3303.	74.79	CH/MCP	0.07
			PENT/IPENT,	0.39

	PPB	NORM PERCENT
MCP	571.1	36.1
CH	37.8	2.4
MCH	971.9	61.5
TOTAL	1580.8	100.0

PARAFFIN INDEX 1 0.404
 PARAFFIN INDEX 2 7.583

13 MAR 84

72784C WRASSE-1 1855'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	113.2	4.28
ETHANE	0.0		1T2-DMCP	144.8	5.47
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	4.9	0.18	224-TMP	0.0	0.00
NBUTANE	30.2	1.14	NHEPTANE	98.3	3.72
IPENTANE	271.5	10.26	1C2-DMCP	132.4	5.00
NPENTANE	91.3	3.45	MCH	429.9	16.24
22-DMB	1.4	0.05			
CPENTANE	11.5	0.43			
23-DMB	22.3	0.84			
2-MP	186.0	7.03			
3-MP	151.5	5.72			
NHEXANE	102.6	3.88			
MCP	407.2	15.38			
22-DMP	0.0	0.00			
24-DMP	6.9	0.26			
223-TMB	2.7	0.10			
CHEXANE	25.0	0.94			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	74.5	2.81			
23-DMP ,	45.8	1.73			
3-MHEX ,	142.3	5.38			
1C3-DMCP	150.7	5.69			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2647.		C1/C2	0.56
GASOLINE	2647.		A /D2	1.41
NAPHTHENES	1415.	53.45	C1/D2	3.72
C6-7	1876.	70.89	CH/MCP	0.06
			PENT/IPENT,	0.34

	PPB	NORM PERCENT
MCP	407.2	47.2
CH	25.0	2.9
MCH	429.9	49.9
TOTAL	862.1	100.0

PARAFFIN INDEX 1 0.531
PARAFFIN INDEX 2 8.032

13 MAR 84

72784E WRASSE-1 1885'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	128.0	4.31
ETHANE	0.0		1T2-DMCP	163.9	5.52
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	16.9	0.57	224-TMP	0.0	0.00
NBUTANE	38.3	1.29	NHEPTANE	128.3	4.32
IPENTANE	287.0	9.67	1C2-DMCP	144.7	4.88
NPENTANE	92.4	3.11	MCH	512.5	17.27
22-DMB	2.9	0.10			
CPENTANE	13.8	0.47			
23-DMB	28.3	0.95			
2-MP	210.0	7.08			
3-MP	152.8	5.15			
NHEXANE	112.9	3.80			
MCP	394.5	13.30			
22-DMP	0.0	0.00			
24-DMP	9.3	0.32			
223-TMB	3.4	0.12			
CHEXANE	26.5	0.89			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	93.6	3.15			
23-DMP ,	57.8	1.95			
3-MHEX ,	183.8	6.19			
1C3-DMCP	165.7	5.58			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2967.		C1/C2	0.63
GASOLINE	2967.		A /D2	1.31
NAPHTHENES	1550.	52.23	C1/D2	3.44
C6-7	2125.	71.61	CH/MCP	0.07
			PENT/IPENT,	0.32

	PPB	NORM PERCENT
MCP	394.5	42.3
CH	26.5	2.8
MCH	512.5	54.9
TOTAL	933.5	100.0

PARAFFIN INDEX 1 0.606
 PARAFFIN INDEX 2 8.787

13 MAR 84

72784G WRASSE-1 1915'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	87.1	3.90
ETHANE	0.0		1T2-DMCP	110.0	4.93
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	9.9	0.44	224-TMP	0.0	0.00
NBUTANE	37.8	1.70	NHEPTANE	92.9	4.16
IPENTANE	282.4	12.66	1C2-DMCP	57.2	2.56
NPENTANE	84.2	3.77	MCH	330.8	14.82
22-DMB	3.0	0.13			
CPENTANE	11.9	0.53			
23-DMB	25.6	1.15			
2-MP	199.9	8.96			
3-MP	135.6	6.08			
NHEXANE	97.6	4.37			
MCP	324.8	14.56			
22-DMP	0.0	0.00			
24-DMP	8.3	0.37			
223-TMB	3.1	0.14			
CHEXANE	19.8	0.89			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	52.7	2.36			
23-DMP	46.2	2.07			
3-MHEX	83.6	3.75			
1C3-DMCP	127.2	5.70			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2231.		C1/C2	0.57
GASOLINE	2231.		A /D2	2.28
NAPHTHENES	1069.	47.89	C1/D2	4.82
C6-7	1441.	64.59	CH/MCP	0.06
			PENT/IPENT,	0.30

	PPB	NORM PERCENT
MCP	324.8	48.1
CH	19.8	2.9
MCH	330.8	49.0
TOTAL	675.4	100.0

PARAFFIN INDEX 1 0.420
PARAFFIN INDEX 2 9.773

13 MAR 84

727841 WRASSE-1 1945'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	110.2	3.99
ETHANE	0.0		1T2-DMCP	131.2	4.75
PROFANE	0.0		3-EPENT	0.0	0.00
IBUTANE	19.7	0.71	224-TMP	0.0	0.00
NBUTANE	36.9	1.34	NHEPTANE	128.1	4.63
IPENTANE	335.8	12.15	1C2-DMCP	94.3	3.41
NPENTANE	89.1	3.22	MCH	481.5	17.42
22-DMB	4.4	0.16			
CPENTANE	12.8	0.46			
23-DMB	32.5	1.17			
2-MP	209.4	7.58			
3-MP	144.1	5.21			
NHEXANE	96.6	3.50			
MCP	362.4	13.11			
22-DMP	0.0	0.00			
24-DMP	11.6	0.42			
223-TMB	4.0	0.15			
CHEXANE	29.6	1.07			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	85.4	3.09			
23-DMP ,	58.7	2.13			
3-MHEX ,	151.9	5.50			
1C3-DMCP	133.5	4.83			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2764.		C1/C2	0.72
GASOLINE	2764.		A /D2	1.48
NAPHTHENES	1355.	49.05	C1/D2	3.93
C6-7	1879.	67.99	CH/MCP	0.08
			PENT/IPENT,	0.27

	PPB	NORM PERCENT
MCP	362.4	41.5
CH	29.6	3.4
MCH	481.5	55.1
TOTAL	873.5	100.0

PARAFFIN INDEX 1 0.633
 PARAFFIN INDEX 2 9.774

13 MAR 84

72784K WRASSE-1 1975'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	145.8	3.49
ETHANE	0.0		1T2-DMCP	191.7	4.59
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	64.1	1.53	224-TMP	0.0	0.00
NBUTANE	86.5	2.07	NHEPTANE	121.4	2.91
IPENTANE	760.8	18.22	1C2-DMCP	150.9	3.62
NPENTANE	189.8	4.55	MCH	557.5	13.36
22-DMB	8.6	0.21			
CPENTANE	24.1	0.58			
23-DMB	49.9	1.19			
2-MP	307.3	7.36			
3-MP	239.0	5.73			
NHEXANE	136.5	3.27			
MCP	589.4	14.12			
22-DMP	0.0	0.00			
24-DMP	10.3	0.25			
223-TMB	6.5	0.15			
CHEXANE	42.5	1.02			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	91.1	2.18			
23-DMP ,	66.3	1.59			
3-MHEX ,	146.6	3.51			
1C3-DMCP	188.3	4.51			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	4175.		C1/C2	0.55
GASOLINE	4175.		A /D2	1.76
NAPHTHENES	1890.	45.28	C1/D2	4.71
C6-7	2445.	58.56	CH/MCP	0.07
			PENT/IPENT,	0.25

	PPB	NORM PERCENT
MCP	589.4	49.6
CH	42.5	3.6
MCH	557.5	46.9
TOTAL	1189.4	100.0

PARAFFIN INDEX 1	0.452
PARAFFIN INDEX 2	7.825

13 MAR 84

72784M WRASSE-1 2005'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	143.2	4.25
ETHANE	0.0		1T2-DMCP	183.3	5.44
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	27.0	0.80	224-TMP	0.0	0.00
NBUTANE	45.0	1.34	NHEPTANE	119.5	3.55
IPENTANE	446.4	13.25	1C2-DMCP	143.8	4.27
NPENTANE	113.5	3.37	MCH	518.5	15.39
22-DMB	5.4	0.16			
CPENTANE	17.7	0.53			
23-DMB	40.8	1.21			
2-MP	246.5	7.31			
3-MP	214.7	6.37			
NHEXANE	104.4	3.10			
MCP	483.0	14.33			
22-DMP	0.0	0.00			
24-DMP	11.8	0.35			
223-TMB	3.2	0.09			
CHEXANE	33.4	0.99			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	79.6	2.36			
23-DMP	70.1	2.08			
3-MHEX	137.6	4.08			
1C3-DMCP	181.0	5.37			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3369.		C1/C2	0.56
GASOLINE	3369.		A /D2	1.63
NAPHTHENES	1704.	50.57	C1/D2	4.59
C6-7	2212.	65.66	CH/MCP	0.07
			PENT/IPENT,	0.25

	PPB	NORM PERCENT
MCP	483.0	46.7
CH	33.4	3.2
MCH	518.5	50.1
TOTAL	1034.9	100.0

PARAFFIN INDEX 1 0.428
 PARAFFIN INDEX 2 8.154

13 MAR 84

727840 WRASSE-1 2035'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	144.9	3.62
ETHANE	0.0		1T2-DMCP	174.9	4.37
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	79.2	1.98	224-TMP	0.0	0.00
NBUTANE	107.2	2.68	NHEPTANE	124.0	3.10
IPENTANE	713.1	17.84	1C2-DMCP	137.8	3.45
NPENTANE	184.0	4.60	MCH	489.1	12.24
22-DMB	7.8	0.19			
CPENTANE	22.6	0.56			
23-DMB	49.9	1.25			
2-MP	285.4	7.14			
3-MP	237.1	5.93			
NHEXANE	143.1	3.58			
MCP	553.2	13.84			
22-DMP	0.0	0.00			
24-DMP	10.2	0.25			
223-TMB	5.5	0.14			
CHEXANE	41.6	1.04			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	86.3	2.16			
23-DMP ,	69.0	1.73			
3-MHEX ,	154.9	3.87			
1C3-DMCP	176.6	4.42			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3997.		C1/C2	0.52
GASOLINE	3997.		A /D2	1.72
NAPHTHENES	1741.	43.54	C1/D2	3.98
C6-7	2311.	57.82	CH/MCP	0.08
			PENT/IPENT,	0.26

	PPB	NORM PERCENT
MCP	553.2	51.0
CH	41.6	3.8
MCH	489.1	45.1
TOTAL	1083.9	100.0

PARAFFIN INDEX 1 0.486
PARAFFIN INDEX 2 8.483

13 MAR 84

727840 WRASSE-1 2065'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	135.0	3.20
ETHANE	0.0		1T2-DMCP	159.9	3.79
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	78.8	1.87	224-TMP	0.0	0.00
NBUTANE	104.0	2.46	NHEPTANE	142.5	3.37
IPENTANE	858.1	20.32	1C2-DMCP	113.9	2.70
NPENTANE	203.1	4.81	MCH	527.1	12.48
22-DMB	10.2	0.24			
CPENTANE	27.4	0.65			
23-DMB	56.3	1.33			
2-MP	320.9	7.60			
3-MP	230.7	5.46			
NHEXANE	148.1	3.51			
MCP	575.6	13.63			
22-DMP	0.0	0.00			
24-DMP	10.0	0.24			
223-TMB	8.0	0.19			
CHEXANE	48.1	1.14			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	90.2	2.14			
23-DMP	67.7	1.60			
3-MHEX	143.9	3.41			
1C3-DMCP	163.7	3.88			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS
ALL COMP	4223.		C1/C2 0.58
GASOLINE	4223.		A /D2 2.02
NAPHTHENES	1751.	41.45	C1/D2 4.62
C6-7	2334.	55.26	CH/MCP 0.08
			PENT/IPENT, 0.24

	PPB	NORM PERCENT
MCP	575.6	50.0
CH	48.1	4.2
MCH	527.1	45.8
TOTAL	1150.8	100.0

PARAFFIN INDEX 1	0.510
PARAFFIN INDEX 2	9.641

13 MAR 84

727848 WRASSE-1 2095'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	85.8	5.14
ETHANE	0.0		1T2-DMCP	55.3	3.31
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	9.1	0.55	224-TMP	0.0	0.00
NBUTANE	45.5	2.73	NHEPTANE	76.5	4.59
IPENTANE	226.2	13.56	1C2-DMCP	35.7	2.14
NPENTANE	67.6	4.05	MCH	218.8	13.12
22-DMB	2.9	0.17			
CPENTANE	10.1	0.61			
23-DMB	25.7	1.54			
2-MP	142.9	8.57			
3-MP	113.5	6.81			
NHEXANE	80.6	4.83			
MCP	222.5	13.34			
22-DMP	0.0	0.00			
24-DMP	9.1	0.55			
223-TMB	1.7	0.10			
CHEXANE	18.0	1.08			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	39.8	2.39			
23-DMP	37.3	2.24			
3-MHEX	58.6	3.51			
1C3-DMCP	84.6	5.07			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1668.		C1/C2	0.57
GASOLINE	1668.		A /D2	2.68
NAPHTHENES	731.	43.82	C1/D2	4.72
C6-7	1024.	61.42	CH/MCP	0.08
			FENT/IPENT,	0.30

	FPB	NORM PERCENT
MCP	222.5	48.4
CH	18.0	3.9
MCH	218.8	47.6
TOTAL	459.3	100.0

PARAFFIN INDEX 1 0.436
PARAFFIN INDEX 2 11.343

13 MAR 84

72784U WRASSE-1 2125'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	113.5	3.98
ETHANE	0.0		1T2-DMCP	132.8	4.66
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	29.5	1.03	224-TMP	0.0	0.00
NBUTANE	46.1	1.61	NHEPTANE	148.1	5.19
IPENTANE	409.1	14.35	1C2-DMCP	102.9	3.61
NPENTANE	110.1	3.86	MCH	460.3	16.14
22-DMB	2.1	0.07			
CPENTANE	15.0	0.53			
23-DMB	38.1	1.34			
2-MP	199.7	7.00			
3-MP	168.0	5.89			
NHEXANE	113.7	3.99			
MCP	342.2	12.00			
22-DMP	0.0	0.00			
24-DMP	10.2	0.36			
223-TMB	3.0	0.10			
CHEXANE	36.3	1.27			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	73.5	2.58			
23-DMP ,	61.1	2.14			
3-MHEX ,	83.4	2.92			
1C3-DMCP	153.2	5.37			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS
ALL COMP	2852.		C1/C2 0.67
GASOLINE	2852.		A /D2 3.14
NAPHTHENES	1356.	47.56	C1/D2 6.84
C6-7	1834.	64.32	CH/MCP 0.11
			PENT/IPENT, 0.27

	PPB	NORM PERCENT
MCP	342.2	40.8
CH	36.3	4.3
MCH	460.3	54.9
TOTAL	838.8	100.0

PARAFFIN INDEX 1	0.393
PARAFFIN INDEX 2	11.735

13 MAR 84

72784W WRASSE-1 2155'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	98.5	4.15
ETHANE	0.0		1T2-DMCP	58.9	2.48
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	63.7	2.68	224-TMP	0.0	0.00
NBUTANE	48.3	2.03	NHEPTANE	96.4	4.06
IPENTANE	512.8	21.59	1C2-DMCP	34.6	1.46
NPENTANE	111.7	4.70	MCH	275.7	11.60
22-DMB	4.0	0.17			
CPENTANE	9.3	0.39			
23-DMB	42.2	1.78			
2-MP	209.5	8.82			
3-MP	162.4	6.84			
NHEXANE	93.9	3.95			
MCP	229.8	9.67			
22-DMP	0.0	0.00			
24-DMP	13.5	0.57			
223-TMB	2.3	0.10			
CHEXANE	22.9	0.96			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	67.3	2.83			
23-DMP	53.8	2.26			
3-MHEX	70.0	2.95			
1C3-DMCP	94.3	3.97			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2376.		C1/C2	0.71
GASOLINE	2376.		A /D2	2.72
NAPHTHENES	824.	34.68	C1/D2	5.23
C6-7	1212.	51.01	CH/MCP	0.10
			PENT/IPENT,	0.22

	PPB	NORM PERCENT
MCP	229.8	43.5
CH	22.9	4.3
MCH	275.7	52.2
TOTAL	528.4	100.0

PARAFFIN INDEX 1 0.545
 PARAFFIN INDEX 2 11.511

13 MAR 84

72784Y WRASSE-1 2185'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	66.7	3.31
ETHANE	0.0		1T2-DMCP	66.6	3.31
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	49.2	2.45	224-TMP	0.0	0.00
NBUTANE	44.2	2.20	NHEPTANE	89.2	4.43
IPENTANE	451.4	22.43	1C2-DMCP	26.2	1.30
NPENTANE	89.0	4.42	MCH	242.1	12.02
22-DMB	3.8	0.19			
CPENTANE	8.1	0.40			
23-DMB	36.1	1.79			
2-MP	174.8	8.68			
3-MP	132.8	6.60			
NHEXANE	79.4	3.95			
MCP	189.1	9.39			
22-DMP	0.0	0.00			
24-DMP	9.1	0.45			
223-TMB	2.7	0.13			
CHEXANE	6.6	0.33			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	49.6	2.47			
23-DMP	44.9	2.23			
3-MHEX	55.0	2.73			
1C3-DMCP	96.2	4.78			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2013.		C1/C2	0.67
GASOLINE	2013.		A /D2	3.06
NAPHTHENES	702.	34.85	C1/D2	5.42
C6-7	1024.	50.84	CH/MCP	0.03
			PENT/IPENT,	0.20

	PPB	NORM PERCENT
MCP	189.1	43.2
CH	6.6	1.5
MCH	242.1	55.3
TOTAL	437.8	100.0

PARAFFIN INDEX 1 0.456
 PARAFFIN INDEX 2 12.444

13 MAR 84

72785A WRASSE-1 2215'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	74.8	2.95
ETHANE	0.0		1T2-DMCP	86.0	3.39
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	71.3	2.81	224-TMP	0.0	0.00
NBUTANE	71.1	2.80	NHEPTANE	91.2	3.59
IPENTANE	616.7	24.29	1C2-DMCP	33.4	1.31
NPENTANE	129.0	5.08	MCH	256.7	10.11
22-DMB	5.0	0.20			
CPENTANE	10.8	0.43			
23-DMB	42.5	1.67			
2-MP	212.5	8.37			
3-MP	146.8	5.78			
NHEXANE	101.4	3.99			
MCP	269.7	10.62			
22-DMP	0.0	0.00			
24-DMP	11.0	0.43			
223-TMB	2.1	0.08			
CHEXANE	24.3	0.96			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	56.1	2.21			
23-DMP	47.0	1.85			
3-MHEX	89.9	3.54			
1C3-DMCP	89.5	3.52			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2539.		C1/C2	0.61
GASOLINE	2539.		A /D2	2.14
NAPHTHENES	845.	33.29	C1/D2	3.75
C6-7	1233.	48.57	CH/MCP	0.09
			PENT/IPENT,	0.21

	PPB	NORM PERCENT
MCP	269.7	49.0
CH	24.3	4.4
MCH	256.7	46.6
TOTAL	550.7	100.0

PARAFFIN INDEX 1 0.584
PARAFFIN INDEX 2 11.184

13 MAR 84

72785C WRASSE-1 2245'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	61.9	4.43
ETHANE	0.0		1T2-DMCP	31.8	2.28
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	22.4	1.61	224-TMP	0.0	0.00
NBUTANE	25.1	1.80	NHEPTANE	86.0	6.16
IPENTANE	281.4	20.17	1C2-DMCP	11.6	0.83
NPENTANE	68.2	4.89	MCH	171.8	12.31
22-DMB	3.4	0.25			
CPENTANE	4.9	0.35			
23-DMB	26.2	1.88			
2-MP	127.1	9.11			
3-MP	79.3	5.69			
NHEXANE	69.5	4.98			
MCP	119.8	8.58			
22-DMP	0.0	0.00			
24-DMP	8.9	0.64			
223-TMB	0.0	0.00			
CHEXANE	16.9	1.21			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	46.5	3.33			
23-DMP	38.4	2.75			
3-MHEX	43.0	3.08			
1C3-DMCP	51.1	3.67			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1395.		C1/C2	0.85
GASOLINE	1395.		A /D2	3.61
NAPHTHENES	470.	33.67	C1/D2	5.47
C6-7	757.	54.26	CH/MCP	0.14
			PENT/IPENT,	0.24

	PPB	NORM PERCENT
MCP	119.8	38.8
CH	16.9	5.5
MCH	171.8	55.7
TOTAL	308.5	100.0

PARAFFIN INDEX 1 0.618
 PARAFFIN INDEX 2 15.702

13 MAR 84

72785G WRASSE-1 2305'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	103.5	3.14
ETHANE	0.0		1T2-DMCP	101.2	3.07
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	53.2	1.61	224-TMP	0.0	0.00
NBUTANE	68.9	2.09	NHEPTANE	163.2	4.95
IPENTANE	789.4	23.92	1C2-DMCP	20.6	0.62
NPENTANE	169.0	5.12	MCH	282.0	8.54
22-DMB	6.5	0.20			
CPENTANE	16.6	0.50			
23-DMB	76.4	2.31			
2-MP	329.5	9.98			
3-MP	191.8	5.81			
NHEXANE	159.6	4.84			
MCP	291.6	8.84			
22-DMP	0.0	0.00			
24-DMP	21.7	0.66			
223-TMB	3.3	0.10			
CHEXANE	37.7	1.14			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	90.1	2.73			
23-DMP	86.1	2.61			
3-MHEX	122.7	3.72			
1C3-DMCP	115.9	3.51			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3301.		C1/C2	0.65
GASOLINE	3301.		A /D2	2.63
NAPHTHENES	969.	29.36	C1/D2	3.34
C6-7	1599.	48.45	CH/MCP	0.13
			PENT/IPENT,	0.21

	PPB	NORM PERCENT
MCP	291.6	47.7
CH	37.7	6.2
MCH	282.0	46.1
TOTAL	611.3	100.0

PARAFFIN INDEX 1 0.664
 PARAFFIN INDEX 2 14.807

13 MAR 84

727851 WRASSE-1 2335'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	54.6	4.76
ETHANE	0.0		1T2-DMCP	26.5	2.31
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMP	0.0	0.00
NBUTANE	12.7	1.11	NHEPTANE	127.7	11.13
IPENTANE	118.1	10.30	1C2-DMCP	7.0	0.61
NPENTANE	59.4	5.18	MCH	154.9	13.51
22-DMB	0.0	0.00			
CPENTANE	4.1	0.36			
23-DMB	20.2	1.76			
2-MP	111.9	9.75			
3-MP	63.5	5.54			
NHEXANE	81.8	7.13			
MCP	82.5	7.20			
22-DMP	0.0	0.00			
24-DMP	9.6	0.83			
223-TMB	0.0	0.00			
CHEXANE	15.7	1.37			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	66.1	5.77			
23-DMP	38.2	3.33			
3-MHEX	50.0	4.36			
1C3-DMCP	42.3	3.69			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1147.		C1/C2	1.11
GASOLINE	1147.		A /D2	4.19
NAPHTHENES	388.	33.80	C1/D2	4.73
C6-7	757.	66.00	CH/MCP	0.19
			PENT/IPENT,	0.50

	PPB	NORM PERCENT
MCP	82.5	32.6
CH	15.7	6.2
MCH	154.9	61.2
TOTAL	253.1	100.0

PARAFFIN INDEX 1 0.941
 PARAFFIN INDEX 2 22.164

13 MAR 84

72785K WRASSE-1 2365'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	73.0	3.42
ETHANE	0.0		1T2-DMCP	56.4	2.65
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMP	0.0	0.00
NBUTANE	0.0	0.00	NHEPTANE	230.4	10.81
IPENTANE	87.4	4.10	1C2-DMCP	9.6	0.45
NPENTANE	106.1	4.98	MCH	309.7	14.53
22-DMB	0.0	0.00			
CPENTANE	9.4	0.44			
23-DMB	36.5	1.71			
2-MP	226.0	10.60			
3-MP	140.8	6.60			
NHEXANE	167.9	7.88			
MCP	177.4	8.32			
22-DMP	0.0	0.00			
24-DMP	18.5	0.87			
223-TMB	0.0	0.00			
CHEXANE	58.9	2.76			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	167.9	7.88			
23-DMP	75.2	3.53			
3-MHEX	129.7	6.09			
1C3-DMCP	50.8	2.38			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2131.		C1/C2	1.46
GASOLINE	2131.		A /D2	3.07
NAPHTHENES	745.	34.96	C1/D2	4.14
C6-7	1525.	71.56	CH/MCP	0.33
			PENT/IPENT,	1.21

	PPB	NORM PERCENT
MCP	177.4	32.5
CH	58.9	10.8
MCH	309.7	56.7
TOTAL	546.0	100.0

PARAFFIN INDEX 1 1.652
 PARAFFIN INDEX 2 19.999

13 MAR 84

72785M WRASSE-1 2395'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	690.7	5.12
ETHANE	0.0		1T2-DMCP	577.1	4.28
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMP	0.0	0.00
NBUTANE	0.0	0.00	NHEPTANE	957.7	7.10
IPENTANE	120.4	0.89	1C2-DMCP	276.7	2.05
NPENTANE	81.3	0.60	MCH	2581.4	19.14
22-DMB	13.2	0.10			
CPENTANE	17.5	0.13			
23-DMB	203.6	1.51			
2-MP	1394.7	10.34			
3-MP	854.6	6.34			
NHEXANE	763.6	5.66			
MCP	2111.6	15.66			
22-DMP	0.0	0.00			
24-DMP	62.1	0.46			
223-TMB	6.2	0.05			
CHEXANE	714.7	5.30			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	623.2	4.62			
23-DMP	352.4	2.61			
3-MHEX	574.8	4.26			
1C3-DMCP	508.8	3.77			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	13486.		C1/C2	0.94
GASOLINE	13486.		A /D2	2.99
NAPHTHENES	7479.	55.45	C1/D2	6.82
C6-7	10801.	80.09	CH/MCP	0.34
			PENT/IPENT,	0.68

	PPB	NORM PERCENT
MCP	2111.6	39.0
CH	714.7	13.2
MCH	2581.4	47.7
TOTAL	5407.7	100.0

PARAFFIN INDEX 1 0.674
 PARAFFIN INDEX 2 12.633

13 MAR 84

727850 WRASSE-1 2425'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	631.3	4.51
ETHANE	0.0		1T2-DMCP	563.1	4.02
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	53.8	0.38	224-TMP	0.0	0.00
NBUTANE	243.4	1.74	NHEPTANE	662.8	4.73
IPENTANE	1268.4	9.05	1C2-DMCP	249.6	1.78
NPENTANE	817.9	5.84	MCH	2220.5	15.85
22-DMB	9.3	0.07			
CPENTANE	271.9	1.94			
23-DMB	174.5	1.25			
2-MP	1091.0	7.79			
3-MP	682.5	4.87			
NHEXANE	609.7	4.35			
MCP	2205.1	15.74			
22-DMP	0.0	0.00			
24-DMP	29.3	0.21			
223-TMB	4.3	0.03			
CHEXANE	627.2	4.48			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	445.8	3.18			
23-DMP ,	264.6	1.89			
3-MHEX ,	410.6	2.93			
1C3-DMCP	474.2	3.38			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	14011.		C1/C2	0.80
GASOLINE	14011.		A /D2	3.10
NAPHTHENES	7243.	51.69	C1/D2	8.02
C6-7	9398.	67.08	CH/MCP	0.28
			PENT/IPENT,	0.64

	PPB	NORM PERCENT
MCP	2205.1	43.6
CH	627.2	12.4
MCH	2220.5	43.9
TOTAL	5052.8	100.0

PARAFFIN INDEX 1 0.513
 PARAFFIN INDEX 2 10.520

13 MAR 84

727850 WRASSE-1 2455'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	88.8	3.87
ETHANE	0.0		1T2-DMCP	57.0	2.49
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	25.6	1.12	224-TMP	0.0	0.00
NBUTANE	35.7	1.56	NHEPTANE	272.7	11.90
IPENTANE	259.0	11.30	1C2-DMCP	14.6	0.64
NPENTANE	153.2	6.69	MCH	309.4	13.50
22-DMB	3.1	0.14			
CPENTANE	8.4	0.36			
23-DMB	34.3	1.50			
2-MP	193.5	8.44			
3-MP	111.3	4.86			
NHEXANE	154.2	6.73			
MCP	170.3	7.43			
22-DMP	0.0	0.00			
24-DMP	15.9	0.69			
223-TMB	0.0	0.00			
CHEXANE	33.4	1.46			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	107.5	4.69			
23-DMP ,	64.9	2.83			
3-MHEX ,	98.3	4.29			
1C3-DMCP	80.4	3.51			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2292.		C1/C2	1.10
GASOLINE	2292.		A /D2	4.34
NAPHTHENES	762.	33.26	C1/D2	4.58
C6-7	1467.	64.04	CH/MCP	0.20
			PENT/IPENT,	0.59

	PPB	NORM PERCENT
MCP	170.3	33.2
CH	33.4	6.5
MCH	309.4	60.3
TOTAL	513.1	100.0

PARAFFIN INDEX 1 0.910
PARAFFIN INDEX 2 24.512

13 MAR 84

727858 WRASSE-1 2485'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	51.5	2.65
ETHANE	0.0		1T2-DMCP	22.6	1.16
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	29.6	1.52	224-TMP	0.0	0.00
NBUTANE	36.4	1.87	NHEPTANE	70.5	3.63
IPENTANE	569.8	29.29	1C2-DMCP	0.0	0.00
NPENTANE	128.7	6.62	MCH	68.3	3.51
22-DMB	3.3	0.17			
CPENTANE	9.2	0.47			
23-DMB	55.5	2.85			
2-MP	252.5	12.98			
3-MP	139.5	7.17			
NHEXANE	126.7	6.51			
MCP	151.4	7.78			
22-DMP	0.0	0.00			
24-DMP	14.4	0.74			
223-TMB	0.0	0.00			
CHEXANE	16.9	0.87			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	70.8	3.64			
23-DMP	38.3	1.97			
3-MHEX	46.4	2.39			
1C3-DMCP	42.9	2.20			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS
ALL COMP	1945.		C1/C2 0.58
GASOLINE	1945.		A /D2 4.25
NAPHTHENES	363.	18.65	C1/D2 3.36
C6-7	721.	37.06	CH/MCP 0.11
			PENT/IPENT, 0.23

	PPB	NORM PERCENT
MCP	151.4	64.0
CH	16.9	7.2
MCH	68.3	28.9
TOTAL	236.6	100.0

PARAFFIN INDEX 1 1.003
 PARAFFIN INDEX 2 16.471

13 MAR 84

72785U WRASSE-1 2515'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	94.9	3.62
ETHANE	0.0		1T2-DMCP	111.3	4.25
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	8.0	0.30	224-TMP	0.0	0.00
NBUTANE	27.2	1.04	NHEPTANE	164.6	6.28
IPENTANE	301.6	11.51	1C2-DMCP	14.7	0.56
NPENTANE	92.9	3.55	MCH	325.8	12.44
22-DMB	2.2	0.08			
CPENTANE	3.5	0.13			
23-DMB	47.7	1.82			
2-MP	272.5	10.40			
3-MP	222.8	8.50			
NHEXANE	171.3	6.54			
NCP	232.5	8.87			
22-DMP	0.0	0.00			
24-DMP	17.0	0.65			
223-TMB	1.5	0.06			
CHEXANE	37.1	1.42			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	136.3	5.20			
23-DMP	76.1	2.90			
3-MHEX	161.8	6.18			
1C3-DMCP	96.4	3.68			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2620.		C1/C2	0.91
GASOLINE	2620.		A /D2	2.08
NAPHTHENES	916.	34.97	C1/D2	3.09
C6-7	1641.	62.65	CH/MCP	0.16
			PENT/IPENT,	0.31

	PPB	NORM PERCENT
MCP	232.5	39.0
CH	37.1	6.2
MCH	325.8	54.7
TOTAL	595.4	100.0

PARAFFIN INDEX 1 0.985
 PARAFFIN INDEX 2 13.670

13 MAR 84

72785W WRASSE-1 2545'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	54.6	2.83
ETHANE	0.0		1T2-DMCP	35.0	1.81
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	56.6	2.93	224-TMP	0.0	0.00
NBUTANE	54.4	2.82	NHEPTANE	148.8	7.70
IPENTANE	357.5	18.51	1C2-DMCP	6.8	0.35
NPENTANE	109.2	5.65	MCH	231.3	11.98
22-DMB	0.0	0.00			
CPENTANE	3.4	0.18			
23-DMB	33.5	1.73			
2-MP	173.3	8.97			
3-MP	128.6	6.66			
NHEXANE	115.7	5.99			
MCP	110.8	5.74			
22-DMP	0.0	0.00			
24-DMP	11.9	0.61			
223-TMB	0.0	0.00			
CHEXANE	23.3	1.20			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	103.1	5.33			
23-DMP	46.8	2.42			
3-MHEX	82.7	4.28			
1C3-DMCP	44.5	2.31			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1932.		C1/C2	1.42
GASOLINE	1932.		A /D2	3.20
NAPHTHENES	510.	26.39	C1/D2	4.33
C6-7	1015.	52.55	CH/MCP	0.21
			PENT/IPENT,	0.31

	PPB	NORM PERCENT
MCP	110.8	30.3
CH	23.3	6.4
MCH	231.3	63.3
TOTAL	365.4	100.0

PARAFFIN INDEX 1 1.385
 PARAFFIN INDEX 2 19.323

13 MAR 84

72785Y WRASSE-1 2575'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	38.0	2.47
ETHANE	0.0		1T2-DMCP	24.2	1.57
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	39.3	2.55	224-TMP	0.0	0.00
NBUTANE	29.8	1.93	NHEPTANE	124.6	8.09
IPENTANE	263.3	17.09	1C2-DMCP	0.0	0.00
NPENTANE	70.5	4.58	MCH	156.4	10.15
22-DMB	0.0	0.00			
CPENTANE	0.0	0.00			
23-DMB	30.6	1.98			
2-MP	167.4	10.86			
3-MP	119.0	7.73			
NHEXANE	103.9	6.74			
MCP	75.9	4.93			
22-DMP	0.0	0.00			
24-DMP	15.1	0.98			
223-TMB	0.0	0.00			
CHEXANE	11.5	0.74			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	112.6	7.31			
23-DMP	47.0	3.05			
3-MHEX	81.0	5.26			
1C3-DMCP	30.5	1.98			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1540.		C1/C2	1.66
GASOLINE	1540.		A /D2	2.82
NAPHTHENES	337.	21.85	C1/D2	3.46
C6-7	821.	53.27	CH/MCP	0.15
			PENT/IPENT,	0.27

	PPB	NORM PERCENT
MCP	75.9	31.1
CH	11.5	4.7
MCH	156.4	64.2
TOTAL	243.8	100.0

PARAFFIN INDEX 1	2.088
PARAFFIN INDEX 2	19.907

13 MAR 84

72786A WRASSE-1 2605'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	19.2	1.55
ETHANE	0.0		1T2-DMCP	21.1	1.70
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	13.6	1.10	224-TMP	0.0	0.00
NBUTANE	19.2	1.55	NHEPTANE	94.6	7.65
IPENTANE	115.7	9.36	1C2-DMCP	0.0	0.00
NPENTANE	37.0	2.99	MCH	84.9	6.86
22-DMB	1.1	0.09			
CPENTANE	0.8	0.06			
23-DMB	28.4	2.30			
2-MP	163.5	13.21			
3-MP	109.7	8.87			
NHEXANE	173.1	13.99			
MCP	71.3	5.76			
22-DMP	0.0	0.00			
24-DMP	16.8	1.36			
223-TMB	0.0	0.00			
CHEXANE	11.8	0.95			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	106.1	8.58			
23-DMP ,	46.7	3.78			
3-MHEX ,	76.6	6.19			
1C3-DMCP	26.0	2.10			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1237.		C1/C2	1.47
GASOLINE	1237.		A /D2	3.49
NAPHTHENES	235.	18.99	C1/D2	2.65
C6-7	748.	60.47	CH/MCP	0.17
			PENT/IPENT,	0.32

	PPB	NORM PERCENT
MCP	71.3	42.4
CH	11.8	7.0
MCH	84.9	50.5
TOTAL	168.0	100.0

PARAFFIN INDEX 1 2.757
 PARAFFIN INDEX 2 19.428

13 MAR 84

72786C WRASSE-1 2635'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	238.2	3.51
ETHANE	0.0		1T2-DMCP	163.3	2.41
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	83.6	1.23	224-TMP	0.0	0.00
NBUTANE	71.0	1.05	NHEPTANE	468.9	6.91
IPENTANE	1097.2	16.16	1C2-DMCP	25.5	0.38
NPENTANE	325.5	4.80	MCH	576.8	8.50
22-DMB	2.0	0.03			
CPENTANE	10.2	0.15			
23-DMB	105.3	1.55			
2-NP	795.3	11.72			
3-MP	646.5	9.53			
NHEXANE	470.6	6.93			
MCP	426.4	6.28			
22-DMP	0.0	0.00			
24-DMP	39.1	0.58			
223-TMB	2.8	0.04			
CHEXANE	59.1	0.87			
33-DMP ,	1.1	0.02			
11-DMCP	0.0	0.00			
2-MHEX ,	453.3	6.68			
23-DMP ,	156.4	2.30			
3-MHEX ,	377.3	5.56			
1C3-DMCP	192.4	2.84			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	6788.		C1/C2	1.04
GASOLINE	6788.		A /D2	2.49
NAPHTHENES	1692.	24.93	C1/D2	2.89
C6-7	3651.	53.79	CH/MCP	0.14
			PENT/IPENT,	0.30

	PPB	NORM PERCENT
MCP	426.4	40.1
CH	59.1	5.6
MCH	576.8	54.3
TOTAL	1062.3	100.0

PARAFFIN INDEX 1 1.398
PARAFFIN INDEX 2 17.452

13 MAR 84

72786E WRASSE-1 2665'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	184.1	3.51
ETHANE	0.0		1T2-DMCP	118.7	2.26
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	57.3	1.09	224-TMP	0.0	0.00
NBUTANE	57.6	1.10	NHEPTANE	399.2	7.60
IPENTANE	781.7	14.88	1C2-DMCP	20.7	0.39
NPENTANE	213.9	4.07	MCH	533.1	10.15
22-DMB	4.1	0.08			
CPENTANE	6.8	0.13			
23-DMB	98.5	1.88			
2-MP	641.0	12.21			
3-MP	441.6	8.41			
NHEXANE	329.4	6.27			
MCP	285.8	5.44			
22-DMP	0.0	0.00			
24-DMP	41.0	0.78			
223-TMB	2.1	0.04			
CHEXANE	42.9	0.82			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	403.9	7.69			
23-DMP ,	148.4	2.82			
3-MHEX ,	300.1	5.71			
1C3-DMCP	139.8	2.66			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	5252.		C1/C2	1.31
GASOLINE	5252.		A /D2	2.43
NAPHTHENES	1332.	25.36	C1/D2	3.27
C6-7	2949.	56.16	CH/MCP	0.15
			PENT/IPENT,	0.27

	PPB	NORM PERCENT
MCP	285.8	33.2
CH	42.9	5.0
MCH	533.1	61.9
TOTAL	861.8	100.0

PARAFFIN INDEX 1 1.591
PARAFFIN INDEX 2 17.586

13 MAR 84

72786G WRASSE-1 2695'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	302.4	3.71
ETHANE	0.0		1T2-DMCP	200.5	2.46
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	14.7	0.18	224-TMP	0.0	0.00
NBUTANE	57.5	0.70	NHEPTANE	663.1	8.12
IPENTANE	974.9	11.94	1C2-DMCP	32.8	0.40
NPENTANE	347.5	4.26	MCH	804.3	9.86
22-DMB	4.9	0.06			
CPENTANE	13.9	0.17			
23-DMB	129.5	1.59			
2-MP	1004.0	12.30			
3-MP	733.4	8.99			
NHEXANE	616.3	7.55			
MCP	504.6	6.18			
22-DMP	0.0	0.00			
24-DMP	59.3	0.73			
223-TMB	3.5	0.04			
CHEXANE	82.5	1.01			
33-DMP	0.9	0.01			
11-DMCP	0.0	0.00			
2-MHEX	653.5	8.01			
23-DMP	215.0	2.63			
3-MHEX	512.0	6.27			
1C3-DMCP	230.4	2.82			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	8161.		C1/C2	1.21
GASOLINE	8161.		A /D2	2.50
NAPHTHENES	2171.	26.61	C1/D2	3.01
C6-7	4881.	59.81	CH/MCP	0.16
			PENT/IPENT,	0.36

	FPB	NORM PERCENT
MCP	504.6	36.3
CH	82.5	5.9
MCH	804.3	57.8
TOTAL	1391.4	100.0

PARAFFIN INDEX 1 1.590
PARAFFIN INDEX 2 18.095

13 MAR 84

72786I WRASSE-1 2725'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	146.2	2.52
ETHANE	0.0		1T2-DMCP	107.2	1.85
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMP	0.0	0.00
NBUTANE	74.6	1.29	NHEPTANE	435.6	7.50
IPENTANE	998.1	17.20	1C2-DMCP	15.7	0.27
NPENTANE	333.3	5.74	MCH	413.7	7.13
22-DMB	4.7	0.08			
CPENTANE	15.6	0.27			
23-DMB	119.9	2.07			
2-MP	790.0	13.61			
3-MP	459.4	7.92			
NHEXANE	457.2	7.88			
MCP	346.7	5.97			
22-DMP	0.0	0.00			
24-DMP	46.7	0.81			
223-TMB	3.1	0.05			
CHEXANE	60.4	1.04			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	414.4	7.14			
23-DMP	154.7	2.67			
3-MHEX	288.0	4.96			
1C3-DMCP	118.3	2.04			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	5804.		C1/C2	1.21
GASOLINE	5804.		A /D2	3.10
NAPHTHENES	1224.	21.09	C1/D2	3.09
C6-7	3008.	51.83	CH/MCP	0.17
			FENT/IPENT,	0.33

	PPB	NORM PERCENT
MCP	346.7	42.2
CH	60.4	7.4
MCH	413.7	50.4
TOTAL	820.8	100.0

PARAFFIN INDEX 1 1.890
PARAFFIN INDEX 2 20.368

13 MAR 84

72786K WRASSE-1 2755'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	82.5	1.60
ETHANE	0.0		1T2-DMCP	131.6	2.56
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	61.4	1.19	224-TMP	0.0	0.00
NBUTANE	63.2	1.23	NHEPTANE	398.7	7.74
IPENTANE	874.0	16.97	1C2-DMCP	13.5	0.26
NPENTANE	353.7	6.87	MCH	393.7	7.64
22-DMB	6.5	0.13			
CPENTANE	18.2	0.35			
23-DMB	104.3	2.02			
2-MP	659.1	12.80			
3-MP	366.5	7.12			
NHEXANE	420.6	8.17			
MCP	322.2	6.26			
22-DMP	0.0	0.00			
24-DMP	38.6	0.75			
223-TMB	2.8	0.05			
CHEXANE	82.4	1.60			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	291.6	5.66			
23-DMP ,	129.7	2.52			
3-MHEX ,	256.7	4.99			
1C3-DMCP	78.1	1.52			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	5150.		C1/C2	1.22
GASOLINE	5150.		A /D2	3.19
NAPHTHENES	1122.	21.79	C1/D2	2.99
C6-7	2643.	51.32	CH/MCP	0.26
			PENT/IPENT,	0.40

	PPB	NORM PERCENT
MCP	322.2	40.4
CH	82.4	10.3
MCH	393.7	49.3
TOTAL	798.3	100.0

PARAFFIN INDEX 1 1.876
 PARAFFIN INDEX 2 21.609

13 MAR 84

72786M WRASSE-1 2785'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	16.0	0.78
ETHANE	0.0		1T2-DMCP	21.1	1.03
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	17.9	0.87	224-TMP	0.0	0.00
NBUTANE	27.2	1.33	NHEPTANE	69.2	3.38
IPENTANE	552.0	26.91	1C2-DMCP	0.0	0.00
NPENTANE	183.6	8.95	MCH	40.5	1.97
22-DMB	2.4	0.12			
CPENTANE	6.4	0.31			
23-DMB	66.2	3.23			
2-MP	398.5	19.42			
3-MP	226.8	11.06			
NHEXANE	21.7	1.06			
MCP	136.0	6.63			
22-DMP	0.0	0.00			
24-DMP	19.7	0.96			
223-TMB	0.0	0.00			
CHEXANE	18.6	0.91			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	101.6	4.95			
23-DMP	40.9	1.99			
3-MHEX	64.9	3.16			
1C3-DMCP	20.4	0.99			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2051.		C1/C2	0.83
GASOLINE	2051.		A /D2	1.40
NAPHTHENES	259.	12.62	C1/D2	2.48
C6-7	570.	27.81	CH/MCP	0.14
			PENT/IPENT,	0.33

	PPB	NORM PERCENT
MCP	136.0	69.7
CH	18.6	9.5
MCH	40.5	20.8
TOTAL	195.1	100.0

PARAFFIN INDEX 1 2.902
 PARAFFIN INDEX 2 17.612

13 MAR 84

727860 WRASSE-1 2815'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	0.0	0.00
ETHANE	0.0		1T2-DMCP	0.0	0.00
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMP	0.0	0.00
NBUTANE	0.0	0.00	NHEPTANE	0.0	0.00
IPENTANE	0.0	0.00	1C2-DMCP	0.0	0.00
NPENTANE	0.0	0.00	MCH	0.0	0.00
22-DMB	0.0	0.00			
CPENTANE	0.0	0.00			
23-DMB	0.0	0.00			
2-MP	0.0	0.00			
3-MP	0.0	0.00			
NHEXANE	0.0	0.00			
MCP	0.0	0.00			
22-DMP	0.0	0.00			
24-DMP	0.0	0.00			
223-TMB	0.0	0.00			
CHEXANE	0.0	0.00			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	0.0	0.00			
23-DMP ,	0.0	0.00			
3-MHEX ,	0.0	0.00			
1C3-DMCP	0.0	0.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS
ALL COMP	0.		C1/C2 999.99
GASOLINE	0.		A /D2 999.99
NAPHTHENES	0.	0.00	C1/D2 999.99
C6-7	0.	0.00	CH/MCP 999.99
			PENT/IPENT, 999.99

	PPB	NORM PERCENT
MCP	0.0	0.0
CH	0.0	0.0
MCH	0.0	0.0
TOTAL	0.0	0.0

PARAFFIN INDEX 1	0.000
PARAFFIN INDEX 2	0.000

13 MAR 84

727860 WRASSE-1 2845'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	43.4	4.49
ETHANE	0.0		1T2-DMCP	24.5	2.53
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMP	0.0	0.00
NBUTANE	11.7	1.21	NHEPTANE	92.5	9.56
IPENTANE	124.9	12.91	1C2-DMCP	4.1	0.42
NPENTANE	38.1	3.94	MCH	117.0	12.10
22-DMB	0.0	0.00			
CPENTANE	0.0	0.00			
23-DMB	19.2	1.98			
2-MP	108.7	11.23			
3-MP	63.5	6.56			
NHEXANE	66.5	6.87			
MCP	75.0	7.75			
22-DMP	0.0	0.00			
24-DMP	9.9	1.02			
223-TMB	0.0	0.00			
CHEXANE	8.5	0.88			
33-DMP	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX	46.7	4.82			
23-DMP	33.2	3.43			
3-MHEX	42.4	4.38			
1C3-DMCP	37.8	3.91			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	967.		C1/C2	0.93
GASOLINE	967.		A /D2	3.75
NAPHTHENES	310.	32.08	C1/D2	4.06
C6-7	601.	62.18	CH/MCP	0.11
			PENT/IPENT,	0.30

	PPB	NORM PERCENT
MCP	75.0	37.4
CH	8.5	4.2
MCH	117.0	58.4
TOTAL	200.5	100.0

PARAFFIN INDEX 1 0.843
PARAFFIN INDEX 2 20.738

13 MAR 84

72786U WRASSE-1 2905'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	74.1	4.31
ETHANE	0.0		1T2-DMCP	40.3	2.34
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMF	0.0	0.00
NBUTANE	0.0	0.00	NHEPTANE	139.2	8.10
IPENTANE	179.7	10.46	1C2-DMCP	7.7	0.45
NPENTANE	105.5	6.14	MCH	199.0	11.58
22-DMB	2.6	0.15			
CPENTANE	5.9	0.34			
23-DMB	47.4	2.76			
2-MP	225.5	13.12			
3-MP	114.2	6.64			
NHEXANE	128.4	7.47			
MCP	144.9	8.43			
22-DMP	0.0	0.00			
24-DMP	18.5	1.08			
223-TMB	0.8	0.05			
CHEXANE	20.4	1.19			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	87.6	5.10			
23-DMP ,	56.8	3.30			
3-MHEX ,	58.7	3.42			
1C3-DMCP	61.5	3.58			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1719.		C1/C2	0.93
GASOLINE	1719.		A /D2	4.56
NAPHTHENES	554.	32.22	C1/D2	5.23
C6-7	1038.	60.39	CH/MCP	0.14
			PENT/IPENT,	0.59

	PPB	NORM PERCENT
MCP	144.9	39.8
CH	20.4	5.6
MCH	199.0	54.6
TOTAL	364.3	100.0

PARAFFIN INDEX 1 0.832
PARAFFIN INDEX 2 18.875

13 MAR 84

72786W WRASSE-1 2935'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	5.7	1.62
ETHANE	0.0		1T2-DMCP	7.7	2.19
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMP	0.0	0.00
NBUTANE	0.0	0.00	NHEPTANE	27.1	7.73
IPENTANE	68.3	19.46	1C2-DMCP	0.0	0.00
NPENTANE	26.4	7.51	MCH	34.1	9.72
22-DMB	0.0	0.00			
CPENTANE	0.0	0.00			
23-DMB	9.7	2.77			
2-MP	48.6	13.83			
3-MP	29.8	8.49			
NHEXANE	31.9	9.09			
MCP	26.4	7.53			
22-DMP	0.0	0.00			
24-DMP	9.3	2.66			
223-TMB	0.0	0.00			
CHEXANE	0.0	0.00			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	9.3	2.66			
23-DMP ,	7.1	2.04			
3-MHEX ,	0.0	0.00			
1C3-DMCP	9.4	2.68			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS
ALL COMP	351.		C1/C2 0.88
GASOLINE	351.		A /D2 999.99
NAPHTHENES	83.	23.75	C1/D2 999.99
C6-7	168.	47.93	CH/MCP 0.00
			PENT/IPENT, 0.39

	PPB	NORM PERCENT
MCP	26.4	43.7
CH	0.0	0.0
MCH	34.1	56.3
TOTAL	60.5	100.0

PARAFFIN INDEX 1 0.410
 PARAFFIN INDEX 2 26.991

13 MAR 84

72786Y WRASSE-1 2965'

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	9533.7	1.75
ETHANE	0.0		1T2-DMCP	16212.3	2.98
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	27663.1	5.08	224-TMP	0.0	0.00
NBUTANE	59819.0	10.99	NHEPTANE	15831.7	2.91
IPENTANE	86509.0	15.89	1C2-DMCP	4718.1	0.87
NPENTANE	47290.5	8.69	MCH	51570.5	9.47
22-DMB	205.5	0.04			
CPENTANE	13548.7	2.49			
23-DMB	5555.3	1.02			
2-MP	43222.1	7.94			
3-MP	20074.9	3.69			
NHEXANE	22997.9	4.22			
MCP	68801.3	12.64			
22-DMP	0.0	0.00			
24-DMP	289.4	0.05			
223-TMB	42.0	0.01			
CHEXANE	16874.7	3.10			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	7845.6	1.44			
23-DMP ,	6143.2	1.13			
3-MHEX ,	8370.3	1.54			
1C3-DMCP	11385.7	2.09			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	544504.		C1/C2	0.69
GASOLINE	544504.		A /D2	4.64
NAPHTHENES	192645.	35.38	C1/D2	9.11
C6-7	240616.	44.19	CH/MCP	0.25
			PENT/IPENT,	0.55

	PPB	NORM PERCENT
MCP	68801.3	50.1
CH	16874.7	12.3
MCH	51570.5	37.6
TOTAL	137246.5	100.0

PARAFFIN INDEX 1 0.437
PARAFFIN INDEX 2 11.012

APPENDIX-2

Detailed Vitrinite Reflectance and Exinite Fluorescence

by

A.C. Cook

KK No.	Esso No.	Depth m	\bar{R}_V max %	Range R_V max %	N	Exinite fluorescence (Remarks)
MIOCENE						
LAKE ENTRANCE FORMATION						
19548	72763 -A	2465 SWC	0.40	0.31-0.47	7	Rare phytoplankton, yellow to orange. (Calcareous claystone and siltstone. D.o.m. rare. All three maceral groups rare. Abundant foraminiferal tests. Pyrite abundant.)
19549	72765 -Z	2537 SWC	0.49	0.36-0.60	7	Rare phytoplankton, yellow to orange, rare sporinite, dull orange. (Calcareous claystone and siltstone. D.o.m. rare to sparse, I>V>E. All three maceral groups rare. Abundant foraminiferal tests. Dull fluorescing sporinite is probably reworked material. Sparse pyrite.)
19550	72765 -P	2699 SWC	0.49	0.45-0.54	6	Rare phytoplankton, yellow to orange, rare sporinite, dull orange. (Claystone, partly calcareous. D.o.m. rare to sparse, V>I>E. All three maceral groups rare. Abundant foraminiferal tests. Sparse to common pyrite.)
EOCENE - LATE CRETACEOUS						
LATROBE GROUP						
19551	72764 -E	2977 SWC	0.57	0.44-0.69	25	Sparse sporinite and lptodetrinite, yellow to orange, rare to sparse sporinite, yellow to orange. (Siltstone with minor sandstone. D.o.m. abundant, V>I>E. Vitrinite and Inertinite common, exinite sparse to common. Common to abundant pyrite.)

ENCLOSURES

ENCLOSURES

PE902515

This is an enclosure indicator page.
The enclosure PE902515 is enclosed within the
container PE902514 at this location in this
document.

The enclosure PE902515 has the following characteristics:

ITEM_BARCODE = PE902515
CONTAINER_BARCODE = PE902514
NAME = Geological Cross Section
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = CROSS_SECTION
DESCRIPTION = Geological Cross Section (enclosure from
WCR) for Wrasse-1
REMARKS =
DATE_CREATED = 28/02/87
DATE_RECEIVED = 27/03/87
W_NO = W836
WELL_NAME = Wrasse-1
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902516

This is an enclosure indicator page.
The enclosure PE902516 is enclosed within the
container PE902514 at this location in this
document.

The enclosure PE902516 has the following characteristics:

ITEM_BARCODE = PE902516
CONTAINER_BARCODE = PE902514
 NAME = Top of Coarse Clastics Structure Map
 BASIN = GIPPSLAND
 PERMIT =
 TYPE = SEISMIC
 SUBTYPE = HRZN_CNTR_MAP
DESCRIPTION = Top of Coarse Clastics Structure Map
 (enclosure from WCR vol.2) for Wrasse-1
REMARKS =
DATE_CREATED = 1/11/85
DATE_RECEIVED = 27/03/87
 W_NO = W836
 WELL_NAME = Wrasse-1
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE601248

This is an enclosure indicator page.
The enclosure PE601248 is enclosed within the
container PE902514 at this location in this
document.

The enclosure PE601248 has the following characteristics:

- ITEM_BARCODE = PE601248
- CONTAINER_BARCODE = PE902514
- NAME = Well Completion log
- BASIN = GIPPSLAND
- PERMIT =
- TYPE = WELL
- SUBTYPE = COMPLETION_LOG
- DESCRIPTION = Well Completion log (enclosure from WCR
vol.2) for Wrasse-1
- REMARKS =
- DATE_CREATED = 27/10/83
- DATE_RECEIVED = 27/03/87
- W_NO = W836
- WELL_NAME = Wrasse-1
- CONTRACTOR = ESSO
- CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)