W836

WRASSE-1

WCR Vol. 2

ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

WELL COMPLETION REPORT
WRASSE-1
INTERPRETATIVE DATA
VOLUME 2

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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Doc. 2567L/1

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^{o}.

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)

PRE-DRILL		POST-DRILL		
Formation	Depth (mSS)	Formation	Depth (mSSTVD)	Depth (mMDKB)
SEASPRAY GROUP		SEASPRAY GROUP		
Gippsland Limestone	68	Gippsland Linestone	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
		LATROBE GROUP		
Top of sand-prone facies	2549	Top of Turrum Formation	2554.2	2730.0
		Top of sand-prone (Unit B)	2641.5	2824.5
Top of "coarse clastics"	2658	Top of "coarse clastics"	2683.3	2868.5
TOTAL DEPTH	2790	TOTAL DEPTH	2790.3	2984.0

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%.

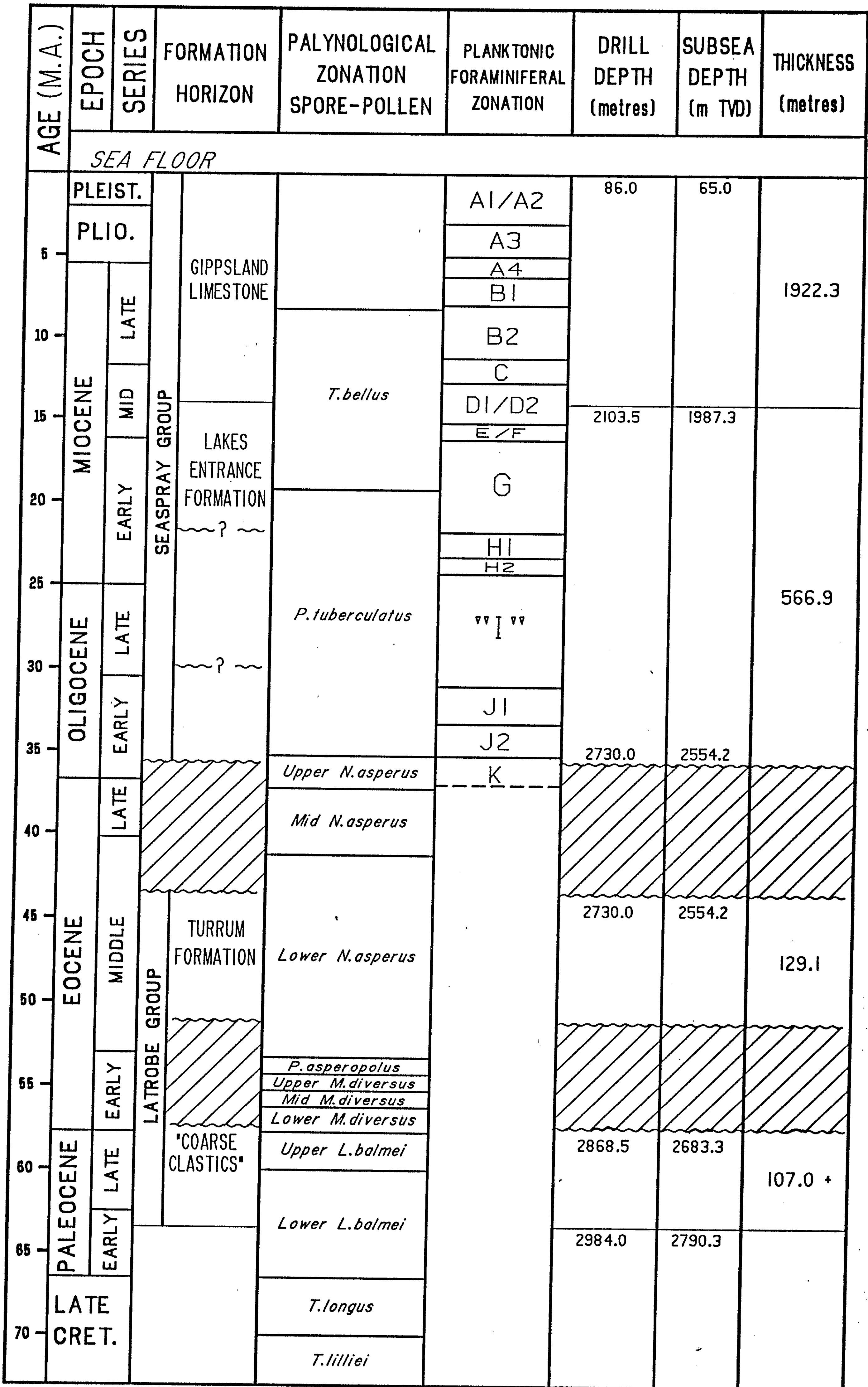
The "coarse clastics" sequence of Wrasse-1 is of moderate reservoir quality. The net:gross of this section is 51%, which has also been reduced by the presence of dolomite cement. Average porosities of the non-cemented sands range from 12% to 17%.

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



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DWG. 2215/OP/2

APPENDIX 1

FORAMINIFERAL ANALYSIS, WRASSE-1,

GIPPSLAND BASIN

by

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Esso Australia Ltd. May, 1984

Palaeontological Report, 1984/15

0862L

INTERPRETATIVE DATA

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 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 N. asperus	2733.0 - 2742.85
log break at 2742.5m			
* Late Eocene	Turrum Formation (Unit A)	Lower N. asperus	2743.9 - 2822.0
log break at 2824m			
*Late Eocene	Turrum Formation (Unit B)	Lower N. asperus	2826.0 - 2848.0
log break at 2859m			
*Late Eocene	Turrum Formation (Unit C)	Lower N. asperus	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

TD 2984m KB dev.

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 carbonacous 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 I1-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 sl. 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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VAIL, P.R., MITCHUM, R.M. & THOMPSON, S., 1977. Global cycles of relative changes of sea level. In: PAYTON, C.E. (Editor), Seismic Stratigraphy - Application to Hydrocarbon Exploration. Am. Assoc. Pet. Geol., Mem., 26: 83-97.

MICROPALEONTOLOGICAL DATA SHEET

BASIN: Gippsland — ELEVATION: KB: +21.0m GL: -65.0m

WELL NAME: Wrasse-1 — TOTAL DEPTH: 2984.0m KB deviated

AGE		FORAM. ZONULES	HIGHEST DATA Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	LOWEST DATA Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
PLEISTOCENE		A_1										
		A_2										
PLIOCENE		A_3										
		A_4										
		B_1										
MIOCENE	LATE	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			
EOCENE		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 PALAEONTOLOGICAL 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	Fish teeth
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 PALAEONTOLOGICAL 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

APPENDIX 2

APPENDIX 2

PALYNOLOGICAL ANALYSIS, WRASSE-1
GIPPSLAND BASIN

by

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Esso Australia Ltd. December 1984
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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.	P. tuberculatus	2588.67-2711.0
	log break at approx. 2713m		
latest Eocene-earliest Oligocene	Un-named carbonate	No older than Middle N. asperus	2723.0
	log break at approx. 2730m		
Middle Eocene	Turrum Fm. (Unit A)	Lower N. asperus	2733-2822
	log break at 2824m		
Middle Eocene	Turrum Fm. (Unit B)	N. asperus	2826-2848
	log break at 2859m		
Middle Eocene	Turrum Fm. (Unit C)	Lower N. asperus	2860-2865
	log break at 2868.5m		
Paleocene	Latrobe Group	Upper L. balmei	2901
Paleocene		Lower L. balmei	2936.5-2977

* Units and boundaries after Rexilius (1984) T.D. 2984

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 consistant 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 albiet 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 crassitabulata in sidewall core 32 at 2967.5m and the subsequent assignment of this sample to the Eisenackia crassitubulata Zone is consistant 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 thoughout. 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 SPORE POLLEN	LITHOLOGY	ZONE	AGE	CONFIDENCE RATING	COMMENTS
31	2977.0	Good	Poor	Sl.st.	Lower L. balmei	Paleocene	2	L. balmei, N. endurus, G. retiintexta, P. golzowense
32	2967.5	Mod.	Poor	Sl.st.	Lower L. balmei (E. crassitabulata)	Paleocene	2	L. balmei, G. edwardsii, T. gillii, E. crassitabulata
33	2952.0	Meager	Poor	Sl.st.	L. balmei	Paleocene	1	L. balmei, L. amplus
34	2936.5	Poor	Poor	Sl.st.	Lower L. balmei	Paleocene	1	L. balmei, A. obscurus, S. regium
35	2918.0	Poor	Poor	Sl.st.	L. balmei	Paleocene	2	L. balmei, L. ohaiensis
36	2901.0	V. Poor	Fair	Sl.st.	Upper L. balmei	Paleocene	1	L. balmei, A. obscurus, I. antipodus
37	2865.0	Poor	Poor	Clyst.	Lower N. asperus	Late Eocene	2	P. confragosus; P. pachypolus; A. diktyoplokus
38	2866.0	Poor	Fair	Clyst.	Mid. N. asperus	Middle Eocene	2	V. extensa; A. diktyoplokus
39	2848.0	Poor	Fair	Slst.	Lower N. asperus	Middle Eocene	2	N. falcatus
40	2838.0	Poor	Poor	Ss.	Lower N. asperus	Middle Eocene	2	D. phosphoritica, N. falcatus
41	2837.0	Good	Poor	Ss.	Lower N. asperus	Middle Eocene	2	N. falcatus, A. diktyoplokus
42	2844.0	Poor	Poor	Ss.	Lower N. asperus	Middle Eocene	2	N. falcatus, F. crater
43	2826.0	Mod.	Fair	Sl.st.	Lower N. asperus	Middle Eocene	2	V. extensa, P. leightonii, N. falcatus, A. diktyoplokus
44	2822.0	Poor	Poor	Ss.	Lower N. asperus	Middle Eocene	2	V. extensa, N. falcatus, A. diktyoplokus

TABLE I : SUMMARY OF PALYNOLOGICAL ANALYSIS WRASSE-1

INTERPRETATIVE DATA

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

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TABLE I : SUMMARY OF PALYNOLOGICAL ANALYSIS WRASSE-1

INTERPRETATIVE DATA

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

TABLE I : SUMMARY OF PALYNOLOGICAL ANALYSIS WRASSE-I

INTERPRETATIVE DATA

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

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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	P. tuberculatus (0)	Cingulatisporites ozotus	Rare ms sp. (A.D.P.)
SWC 68	2699.0	P. tuberculatus (0)	Proteacidites incurvatus	Not prev. recorded above lowermost Upper N. asperus Zone
SWC 60	2733.0	Lower N. asperus (2)	Cyperacese	Modern taxon
SWC 60	2733.0	Lower N. asperus (2)	Gothanipollis bassensis	Uncommon sp.
Core 2	2751.3	Lower N. asperus (2)	Vozzhenikovia cf extensa	Associated with A. diktyoplokus Ditto 2764.0m, 2890.0m, 2826.0m, 2860.0m
SWC 56	2764.0	Lower N. asperus (1)	Wetzeliella echinosuturatum	Very rare zone dinoflagellate indicator species
SWC 49	2798.0	Lower N. asperus (2)	Deflandrea truncata	V. rare sp. (reworked)
SWC 41	2837.0	(Lower N. asperus)	Wetzeliella glabrum	V. rare sp.
SWC 37	2865.0	(Lower N. asperus)	Proteacidites confragosus	V. rare sp.
SWC 36	2901.0	Upper L. balmei (2)	Integricorpus antipodus	Uncommon sp.
SWC 34	2936.5	Lower L. balmei (2)	Stereisporites regium	Uncommon above Cretaceous

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PART TWO

BASIC DATA

SUMMARY TABLE

RANGE CHART

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TABLE 3 : BASIC DATA SUMMARY : WRASSE-1

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY SPORE POLLEN	LITHOLOGY
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.

<u>TABLE 3 : BASIC DATA SUMMARY : WRASSE-1</u>

SAMPLE NO.	DEPTH (m)	YIELD	DIVERSITY 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	

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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

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

AGE	PALYNOLOGICAL ZONES	HIGHEST DATA Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	LOWEST DATA Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
NEOGENE	*T. pleistocenicus*										
	M. lipsis										
	C. bifurcatus										
	T. bellus										
	P. tuberculatus	2588.67	0				2711.0	0			
PALEOGENE	Upper *N. asperus*										
	Mid *N. asperus*										
	Lower *N. asperus*	2733.0	2				2865.0	3			
	P. asperopolus										
	Upper *M. diversus*										
	Mid *M. diversus*										
	Lower *M. diversus*										
	Upper *L. balmei*	2901.0	1				2901.0	1			
	Lower *L. balmei*	2936.5	1				2977.0	2	2952.0	1	
LATE CRETACEOUS	*T. longus*										
	T. lilliei										
	N. senectus										
	U. *T. pachyexinus*										
	L. *T. pachyexinus*										
	C. triplex										
	A. distocarinatus										
EARLY CRET.	*C. paradoxus*										
	C. striatus										
	F. asymmetricus										
	F. wonthaggiensis										
	C. australiensis										
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:
- O: SWC or Core, Excellent Confidence, assemblage with zone species of spores, pollen and microplankton.
- 1: SWC or Core, Good Confidence, assemblage with zone species of spores and pollen or microplankton.
- 2: SWC or Core, Poor Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.
- 3: Cuttings, Fair Confidence, assemblage with zone species of either spores and pollen or microplankton, or both.
- 4: Cuttings, No Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

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

DATA RECORDED BY: M. HANNAH   DATE: 5 December 1984

DATA REVISED BY: DATE:

FOSSIL TYPE : PLANKTONIC FORAMINIFERA

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

SAMPLE TYPE OR NO. *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
FOSSIL NAMES / DEPTHS	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
Orbulina universa	—	Common	Common	—	—	---	---	—	—	—	---															
Globorotalia sp. cf. G.	---																									
conomiozea																										
Globorotalia miozea miozea	—	Common	Common	—	---	—	—	Common	Common	Abundant	Common	—	—	Common	Common	---	---	Common	---	Common	---	—				---
Globorotalia miozea conoidea	---	---	—			---	---			Common			---	---	---											
Globigerina bulloides	---	—	—	—			---	—	—	Common																
Indeterminate globigerinids	—																									
Globorotalia praescitula		—	—	---			---	—	—	—		---	---		—	---		---		---	—	---	---	---	---	---
Globigerinoides sicanus			---								—	---	—	—	—		---									
Globigerinoides trilobus			---	---	---	---	—	—	—	—	—	—	—	Common	Common	---	—	—	Common	—	—		Common	—	—	---
Globigerina woodi			---		---	---	—	—	Common	—	—	—	Common		Common	—	---	---	—	Common	---	—	—	—	—	Common
Globoquadrina dehiscens s.s.					---									---	---	—		—		---	---			---		---
Globorotalia praemenardii									---			---														
Praeorbulina glomerosa											---	---	---													
Globigerina praebulloides														---	---	---			—	—	---	---		—		
Globoquadrina advena																---		---				---				---
Globorotalia continuosa																		---					---			
Globigerina woodi connecta																					---		—		---	
Globigerinoides sicanus/																						---				---
trilobus transition																										
Globorotalia bella																							---	---		
Globorotalia zealandica																							---			
Catapsydrax dissimilis																									---	
Globigerina sp. aff.																										
G. binaiensis																										
Globorotalia obesa																										
Indeterminate planktonics																										
Globorotalia opima																										
Globorotalia brevis																										
Globorotalia gemma																										
Globigerina angiporoides																										
Globigerina linaperta																										
Globoquadrina dehiscens s.l.																										
Globigerina euapertura																										
Chiloguembelina cubensis																										

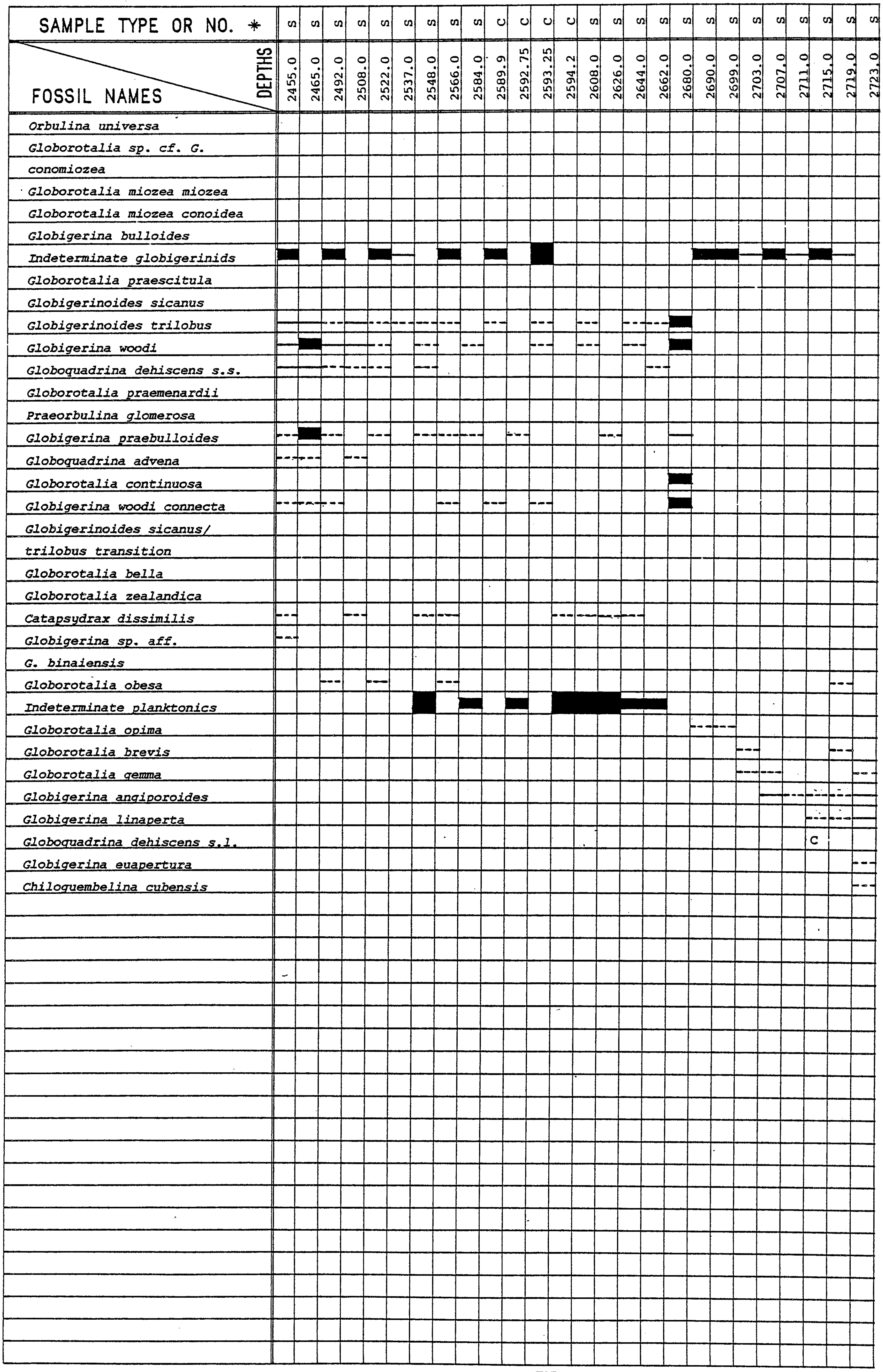
* S=SIDEWALL CORE T=CUTTINGS J=JUNK BASKET

--- Rare
— Few
Common
Abundant
C Contamination

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

FOSSIL TYPE: PLANKTONIC FORAMINIFERA

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



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

--- Rare
— Few
▬ Common
█ Abundant
C Contamination

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

FOSSIL TYPE: PLANKTONIC FORAMINIFERA

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

SAMPLE TYPE OR NO. *	S	S	S	C	S	S	S	S	S	S
FOSSIL NAMES / DEPTHS	2729.0	2733.0	2737.0	2742.85	2754.0	2759.0	2764.0	2769.0	2778.0	2822.0
Orbulina universa										
Globorotalia sp. cf. G. conomiozea										
Globorotalia miozea miozea										
Globorotalia miozea conoidea										
Globigerina bulloides										
Indeterminate globigerinids	Abundant	Rare	Few							
Globorotalia praescitula										
Globigerinoides sicanus										
Globigerinoides trilobus										
Globigerina woodi										
Globoquadrina dehiscens s.s.										
Globorotalia praemenardii										
Praeorbulina glomerosa										
Globigerina praebulloides										
Globoquadrina advena										
Globorotalia continuosa										
Globigerina woodi connecta										
Globigerinoides sicanus/ trilobus transition										
Globorotalia bella										
Globorotalia zealandica										
Catapsydrax dissimilis										
Globigerina sp. aff. G. binaiensis										
Globorotalia obesa										
Indeterminate planktonics			Few							
Globorotalia opima										
Globorotalia brevis										
Globorotalia gemma	Rare									
Globigerina angiporoides	Few			Rare						
Globigerina linaperta	Few	Rare								
Globoquadrina dehiscens s.l.										
Globigerina euapertura										
Chiloguembelina cubensis										

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

--- Rare
— Few
▬ Common
■ Abundant
C Contamination

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

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:

VSH = 0, PHIE = 0, 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:

$$VSH = \frac{GRlog - GRmin}{GRmax - GRmin}$$

Total Porosities

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

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

if h is greater than 0, then

apparent matrix density, RHOMa = 2.71 - h/2 - 2

if h is less than 0, then

apparent matrix density, RHOMa = 2.71 - 0.64h - 3

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

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:

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

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

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

Water Saturations

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

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

and

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

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:

$$RHOBC = \frac{RHOBHC - VSH * RHOBSH}{1 - VSH}$$

$$PHINC = \frac{PHINHC - VSH * PHINSH}{1 - VSH}$$

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:

PHIE = PHIT - VSH * PHITSH

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

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 RESULTS TABLE 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.

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

APPENDIX 4

GEOCHEMICAL REPORT

WRASSE-1 WELL, GIPPSLAND BASIN

VICTORIA

by

J.K. EMMETT

Sample handling and analysis by:

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

Esso Australia Ltd
Geochemical Report

May 1984

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LIST OF FIGURES:

APPENDICES:

1. C_{4-7} Gasoline-Range Hydrocarbon Detailed Data Sheets

2. Detailed Vitrinite Reflectance and Exinite Fluorescence Data

- by A.C. Cook

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 (C_{1-4}) headspace gases were determined on alternate 15-metre intervals from 1735m (KB) down to T.D. Succeeding alternate 15-metre intervals were analysed for C_{4-7} 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 $C_{15}+$ 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 C_{1-4} 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 flourescence 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 (^{o}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 form the Rock-Eval pyrolysis results (Fig. 4). The elemental atomic ratios also verify an immature section.

C_{15+} 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. C_{15+} 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-C_{23} to n-C_{35}) 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.

13/03/84

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Table 1

C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - WRASSE 1

GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS) | GAS COMPOSITION (PERCENT)

SAMPLE NO.	DEPTH	METHANE C1	ETHANE C2	PROPANE C3	IBUTANE IC4	NBUTANE C4	WET C2-C4	TOTAL C1-C4	WET/TOTAL PERCENT	TOTAL GAS M	TOTAL GAS E	TOTAL GAS P	TOTAL GAS IB	TOTAL GAS NB	WET GAS E	WET GAS P	WET GAS IB	WET GAS NB
72783 V	1750.00	475	16	24	17	13	70	545	12.84	87.	3.	4.	3.	2.	23.	34.	24.	19.
72783 X	1780.00	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.	16.	45.	25.	14.
72784 B	1840.00	328	16	30	35	14	95	423	22.46	78.	4.	7.	8.	3.	17.	32.	37.	15.
72784 D	1870.00	619	13	26	26	16	81	700	11.57	88.	2.	4.	4.	2.	16.	32.	32.	20.
72784 F	1900.00	368	21	32	23	10	86	454	18.94	81.	5.	7.	5.	2.	24.	37.	27.	12.
72784 H	1930.00	535	40	62	26	16	144	679	21.21	79.	6.	9.	4.	2.	28.	43.	18.	11.
72784 J	1960.00	881	49	97	70	30	246	1127	21.83	78.	4.	9.	6.	3.	20.	39.	28.	12.
72784 L	1990.00	115	12	11	14	5	42	157	26.75	73.	8.	7.	9.	3.	29.	26.	33.	12.
72784 N	2020.00	438	19	37	22	12	90	528	17.05	83.	4.	7.	4.	2.	21.	41.	24.	13.
72784 P	2050.00	310	13	20	15	8	56	366	15.30	85.	4.	5.	4.	2.	23.	36.	27.	14.
72784 R	2080.00	1083	33	44	63	19	159	1242	12.80	87.	3.	4.	5.	2.	21.	28.	40.	12.
72784 T	2110.00	161	9	11	11	5	36	197	18.27	82.	5.	6.	6.	3.	25.	31.	31.	14.
72784 V	2140.00	2827	84	115	120	39	358	3185	11.24	89.	3.	4.	4.	1.	23.	32.	34.	11.
72784 X	2170.00	1115	58	51	60	20	189	1304	14.49	86.	4.	4.	5.	2.	31.	27.	32.	11.
72784 Z	2200.00	2349	64	91	91	23	269	2618	10.28	90.	2.	3.	3.	1.	24.	34.	34.	9.
72785 B	2230.00	835	42	44	35	11	132	967	13.65	86.	4.	5.	4.	1.	32.	33.	27.	8.
72785 D	2260.00	631	26	27	15	5	73	704	10.37	90.	4.	4.	2.	1.	36.	37.	21.	7.
72785 F	2290.00	2393	88	102	81	23	294	2687	10.94	89.	3.	4.	3.	1.	30.	35.	28.	8.
72785 H	2320.00	148	41	21	69	20	151	299	50.50	49.	14.	7.	23.	7.	27.	14.	46.	13.
72785 J	2350.00	164	16	22	57	13	108	272	39.71	60.	6.	8.	21.	5.	15.	20.	53.	12.
72785 L	2380.00	113	5	20	23	7	55	168	32.74	67.	3.	12.	14.	4.	9.	36.	42.	13.
72785 N	2410.00	477	20	60	103	25	208	685	30.36	70.	3.	9.	15.	4.	10.	29.	50.	12.
72785 P	2440.00	103	75	95	143	37	350	453	77.26	23.	17.	21.	32.	8.	21.	27.	41.	11.
72785 R	2470.00	17	0	0	20	2	22	39	56.41	44.	0.	0.	51.	5.	0.	0.	91.	9.
72785 T	2500.00	26	5	15	41	19	80	106	75.47	25.	5.	14.	39.	18.	6.	19.	51.	24.
72785 V	2530.00	0	0	0	0	0	0	0	.00	0.	0.	0.	0.	0.	0.	0.	0.	0.
72785 X	2560.00	84	7	21	44	13	85	169	50.30	50.	4.	12.	26.	8.	8.	25.	52.	15.
72785 Z	2590.00	93	47	16	86	19	168	261	64.37	36.	18.	6.	33.	7.	28.	10.	51.	11.
72786 B	2620.00	98	51	12	91	21	175	273	64.10	36.	19.	4.	33.	8.	29.	7.	52.	12.
72786 D	2650.00	87	49	19	112	35	215	302	71.19	29.	16.	6.	37.	12.	23.	9.	52.	16.
72786 F	2680.00	104	52	19	203	79	353	457	77.24	23.	11.	4.	44.	17.	15.	5.	58.	22.
72786 H	2710.00	129	115	119	62	33	329	458	71.83	28.	25.	26.	14.	7.	35.	36.	19.	10.
72786 J	2740.00	56	41	19	86	23	169	225	75.11	25.	18.	8.	38.	10.	24.	11.	51.	14.
72786 L	2770.00	294	53	135	235	66	489	783	62.45	38.	7.	17.	30.	8.	11.	28.	48.	13.
72786 N	2800.00	38	8	33	23	12	76	114	66.67	33.	7.	29.	20.	11.	11.	43.	30.	16.
72786 P	2830.00	60	17	51	17	16	101	161	62.73	37.	11.	32.	11.	10.	17.	50.	17.	16.
72786 R	2860.00	302	187	246	83	68	584	886	65.91	34.	21.	28.	9.	8.	32.	42.	14.	12.
72786 T	2890.00	1790	550	426	166	107	1249	3039	41.10	59.	18.	14.	5.	4.	44.	34.	13.	9.
72786 V	2920.00	51725	6030	1839	276	215	8360	60085	13.91	86.	10.	3.	0.	0.	72.	22.	3.	3.
72786 X	2950.00	8184	1742	834	269	133	2978	11162	26.66	73.	16.	7.	2.	1.	58.	28.	9.	4.
72786 Z	2980.00	435	102	105	61	42	310	745	41.61	58.	14.	14.	8.	6.	33.	34.	20.	14.

TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	T/CO3	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 O	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 % <===

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	T/CO3	DESCRIPTION
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 B	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

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 % <===

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	T/CO3	DESCRIPTION
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 % <===

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	T/CO3	DESCRIPTION
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 M	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 Q	2828.00	EARLY OLIG-MID EOC.	TURRUM	1	.57			1	17.74	DK GN/GY SLTST
72786 Q	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 % <===

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	T/CO3	DESCRIPTION
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

TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	T/CO3	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 % <===

Table 3

10/05/84

ESSO AUSTRALIA LTD.

PAGE

VITRINITE REFLECTANCE REPORT

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	MAX. 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

BASIN - GIPPSLAND
WELL - WRASSE 1

REPORT B - TOTAL CARBON,H/O INDICES

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 O	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* = $0.083 (S_1 + S_2)$
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=PYROLYZABLE CARBON TC=TOTAL CARBON HI=HYDROGEN INDEX OI=OXYGEN INDEX

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO.	DEPTH	SAMPLE TYPE	N%	C%	H%	S%	O%	ASH%	COMMENTS
			--- ELEMENTAL % (ASH FREE) ---						
72765 J	2723.00	SWC	2.43	76.30	5.82	.00	15.45	4.70	
72766 D	2751.30	CORE	2.50	69.70	4.13	.00	23.67	16.70	HIGH ASH
72764 M	2848.00	SWC	1.71	74.40	5.51	.00	18.38	8.25	
72764 L	2860.00	SWC	1.00	63.24	4.73	.00	31.03	9.15	
72764 K	2865.00	SWC	1.22	67.81	5.22	.00	25.75	6.12	
72764 E	2977.00	SWC	1.29	72.94	5.04	.00	20.72	7.82	

Table 6

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WRASSE 1

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	FORMATION	ATOMIC RATIOS H/C	ATOMIC RATIOS O/C	ATOMIC RATIOS N/C	COMMENTS
72765 J	2723.00	SWC	EARLY OLIG-MID EOC.	TURRUM	.92	.15	.03	
72766 D	2751.30	CORE	EARLY OLIG-MID EOC.	TURRUM	.71	.25	.03	HIGH ASH
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	

03/05/84

Table 7

ESSO AUSTRALIA LTD.

C15+ EXTRACT ANALYSES

BASIN - GIPPSLAND
WELL - WRASSE 1

REPORT A - EXTRACT DATA (PPM)

SAMPLE NO.	DEPTH	TYPE	AN	AGE	TOTAL EXTRACT	HYDROCARBONS: SATS.	AROMS.	TOTAL H/CARBS	NON-HYDROCARBONS: 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: SAT. %	AROM.%	NON-HYDROCARBONS: NSO. %	ASPH.%	SULPH%	SAT/AR	HC/NHC	COMMENTS
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.

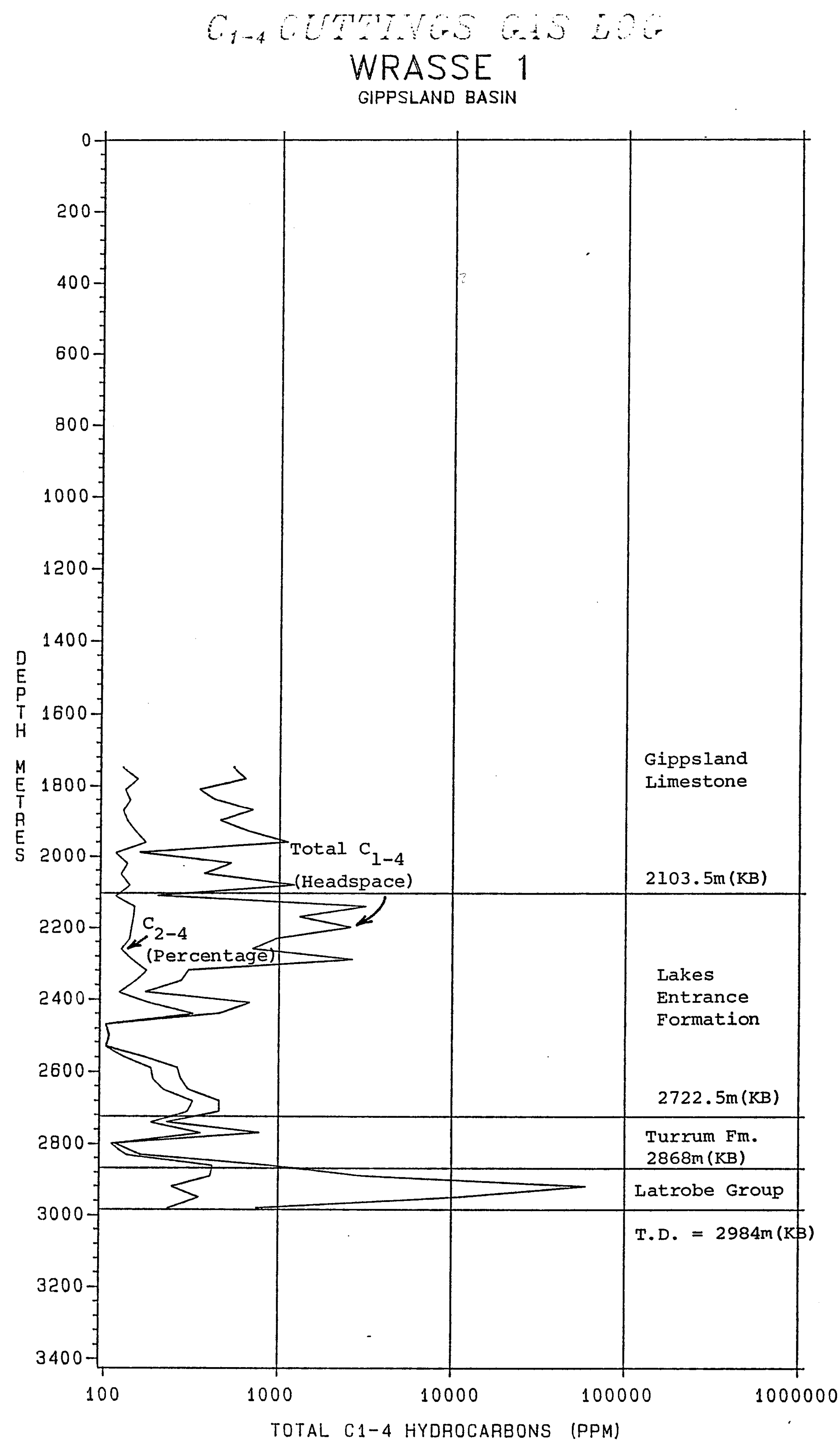
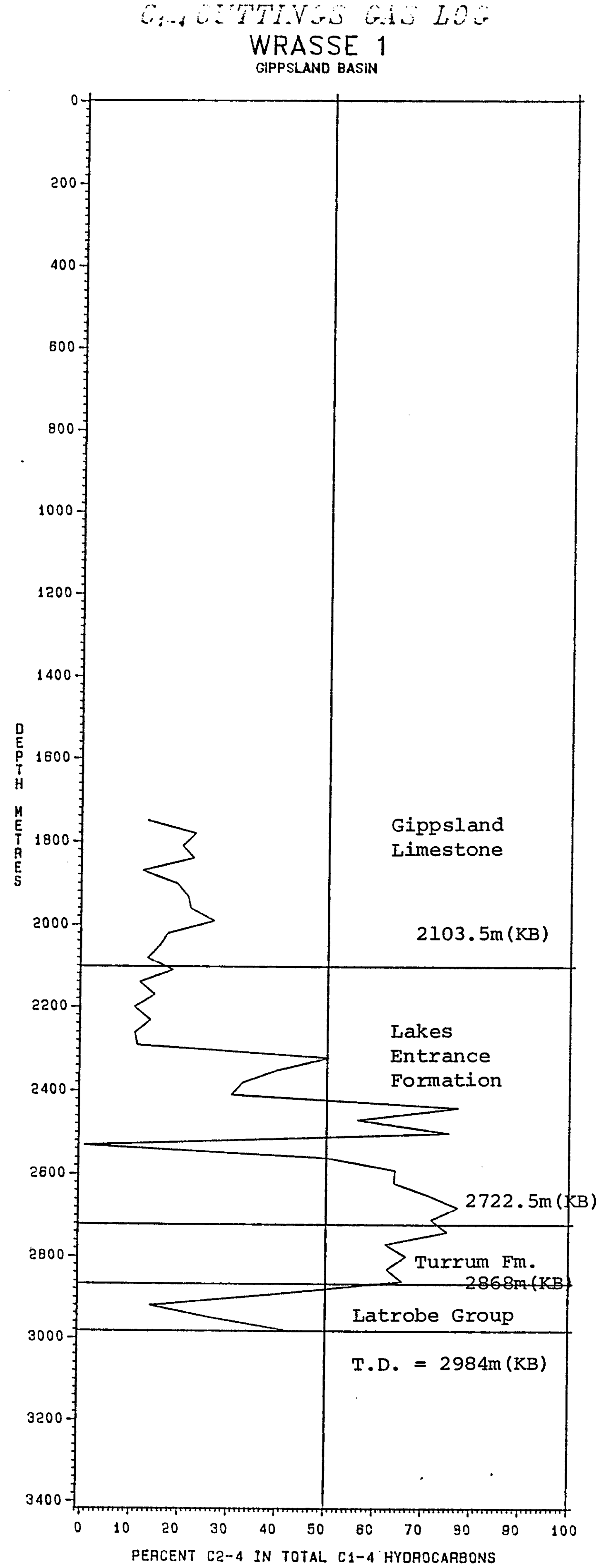

C1-4 CUTTINGS GAS LOG
WRASSE 1
GIPPSLAND BASIN
DEPTH METRES
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
100
1000
10000
100000
1000000
TOTAL C1-4 HYDROCARBONS (PPM)
Total C1-4 (Headspace)
C2-4 (Percentage)
Gippsland Limestone
2103.5m(KB)
Lakes Entrance Formation
2722.5m(KB)
Turrum Fm.
2868m(KB)
Latrobe Group
T.D. = 2984m(KB)

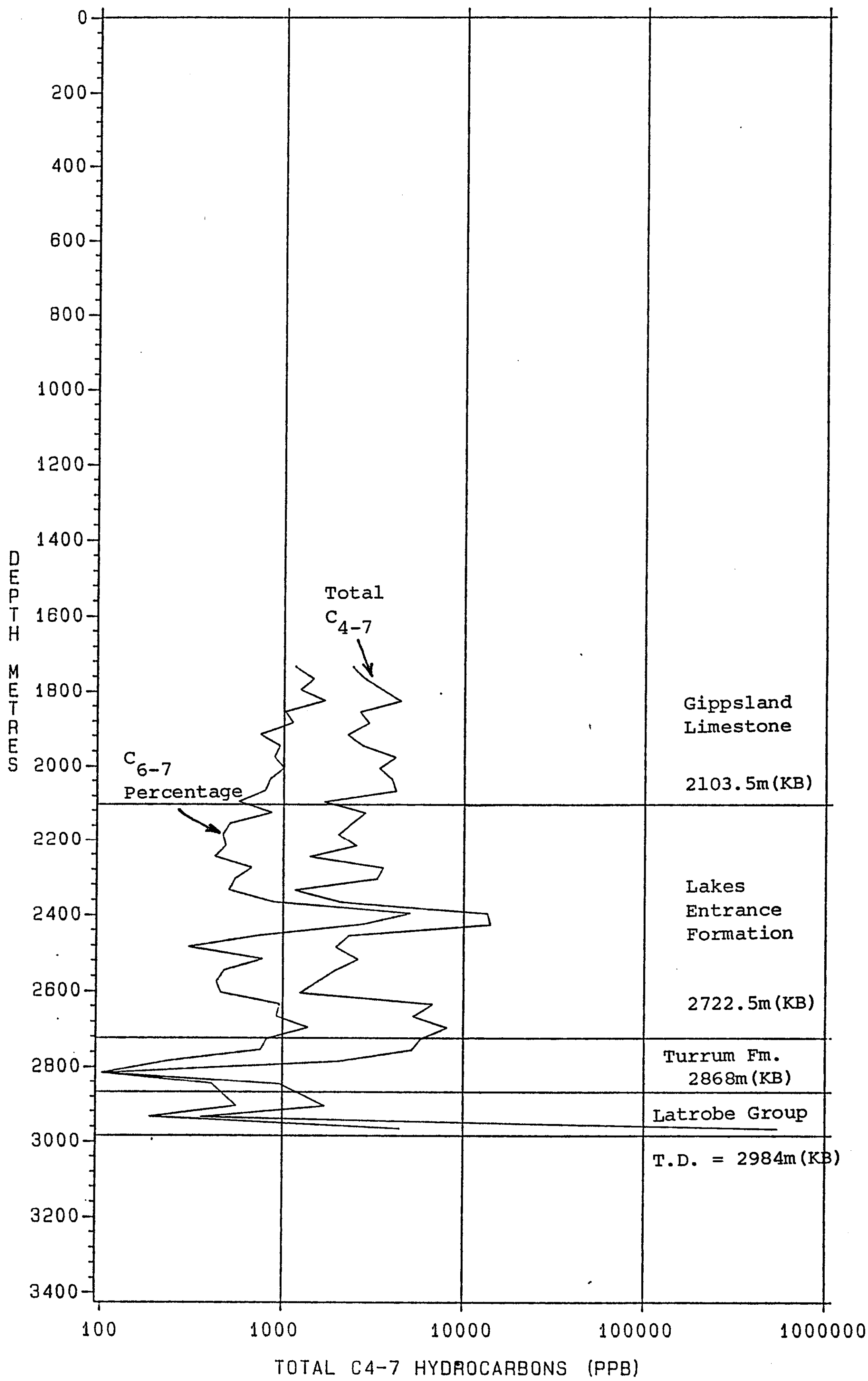
Figure 1(b)

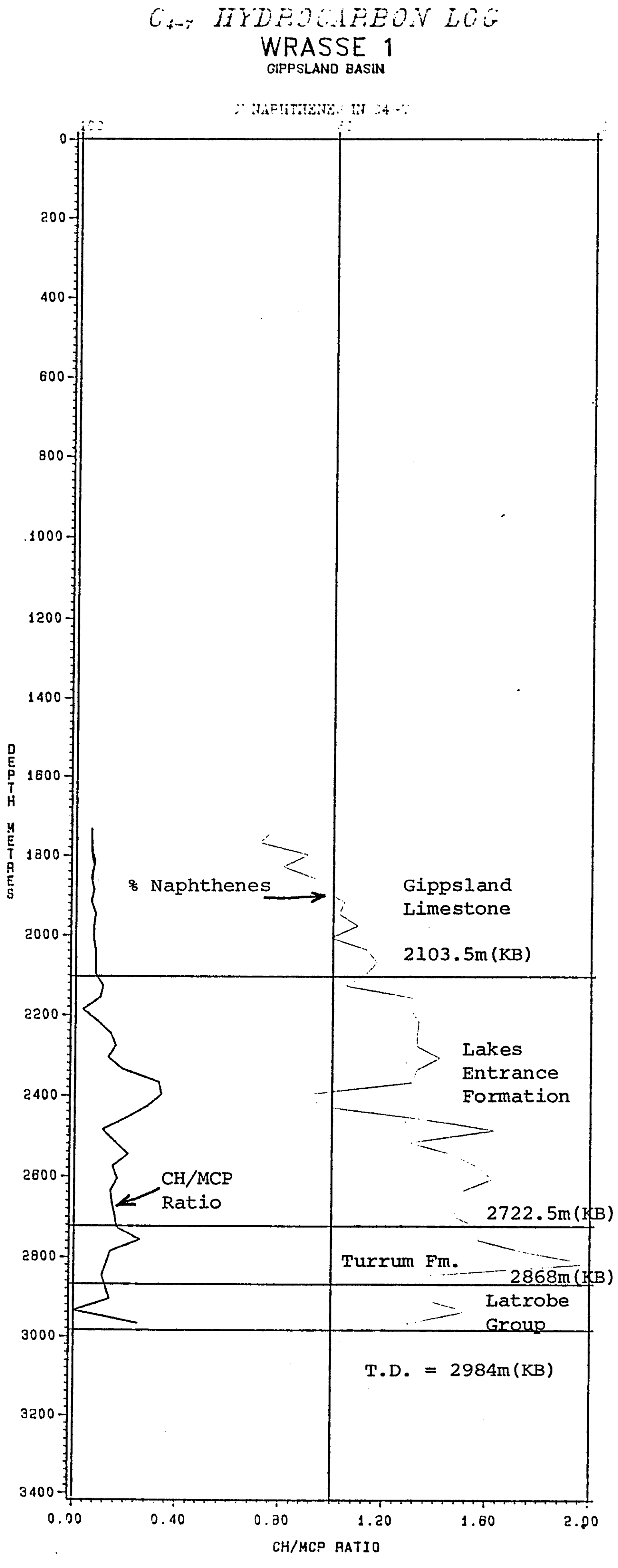

C1-4 CUTTINGS GAS LOG
WRASSE 1
GIPPSLAND BASIN
DEPTH METRES
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
Gippsland Limestone
2103.5m(KB)
Lakes Entrance Formation
2722.5m(KB)
Turrum Fm.
2868m(KB)
Latrobe Group
T.D. = 2984m(KB)
0
10
20
30
40
50
60
70
80
90
100
PERCENT C2-4 IN TOTAL C1-4 HYDROCARBONS

C_{4-7} HYDROCARBON LOG

WRASSE 1

GIPPSLAND BASIN




C4-7 HYDROCARBON LOG
WRASSE 1
GIPPSLAND BASIN
DEPTH METRES
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
% Naphthenes
Gippsland Limestone
2103.5m(KB)
Lakes Entrance Formation
CH/MCP Ratio
2722.5m(KB)
Turrum Fm.
2868m(KB)
Latrobe Group
T.D. = 2984m(KB)
0.00
0.40
0.80
1.20
1.60
2.00
CH/MCP RATIO

VITRINITE REFLECTANCE vs. DEPTH
WRASSE 1
GIPPSLAND BASIN

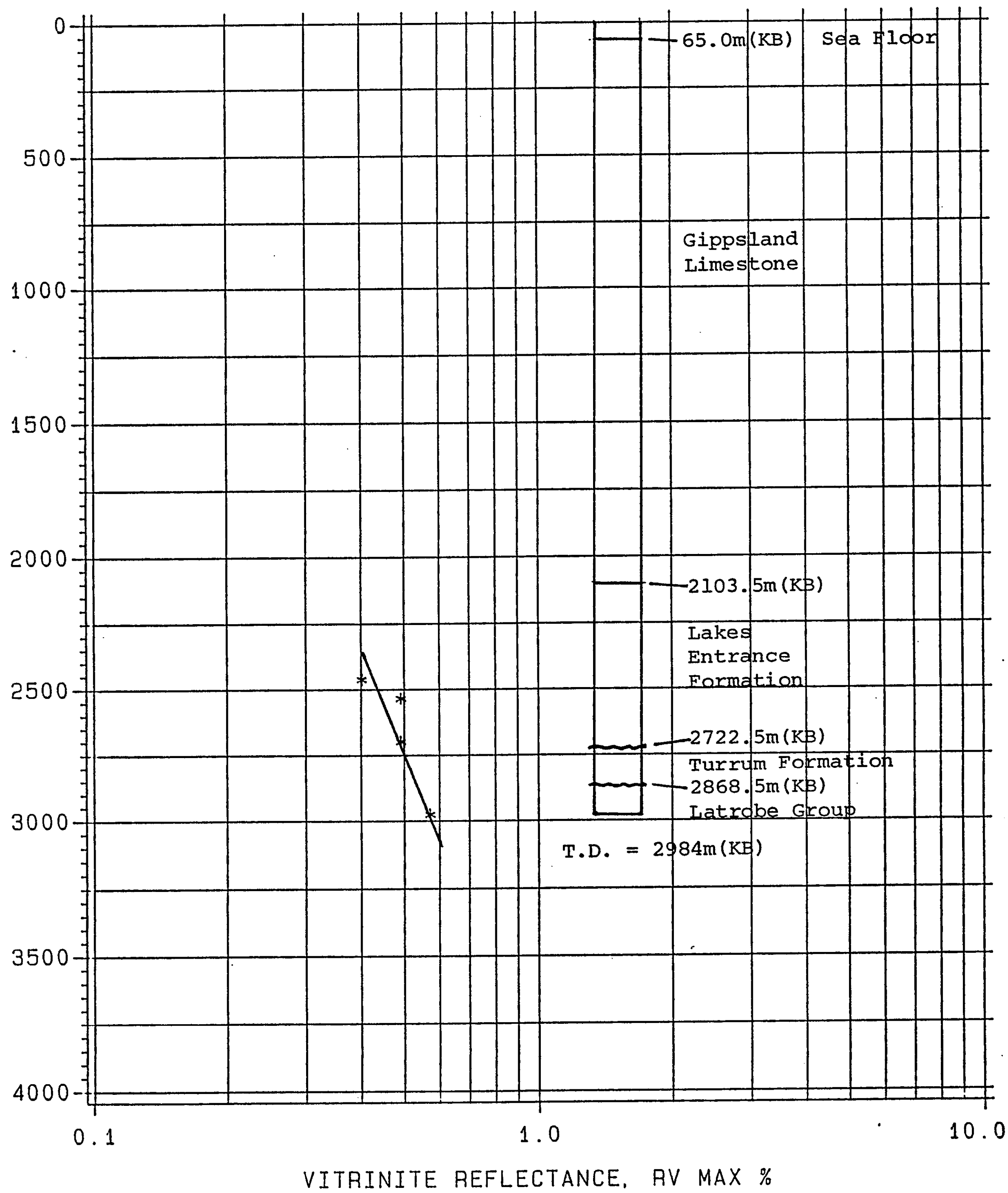
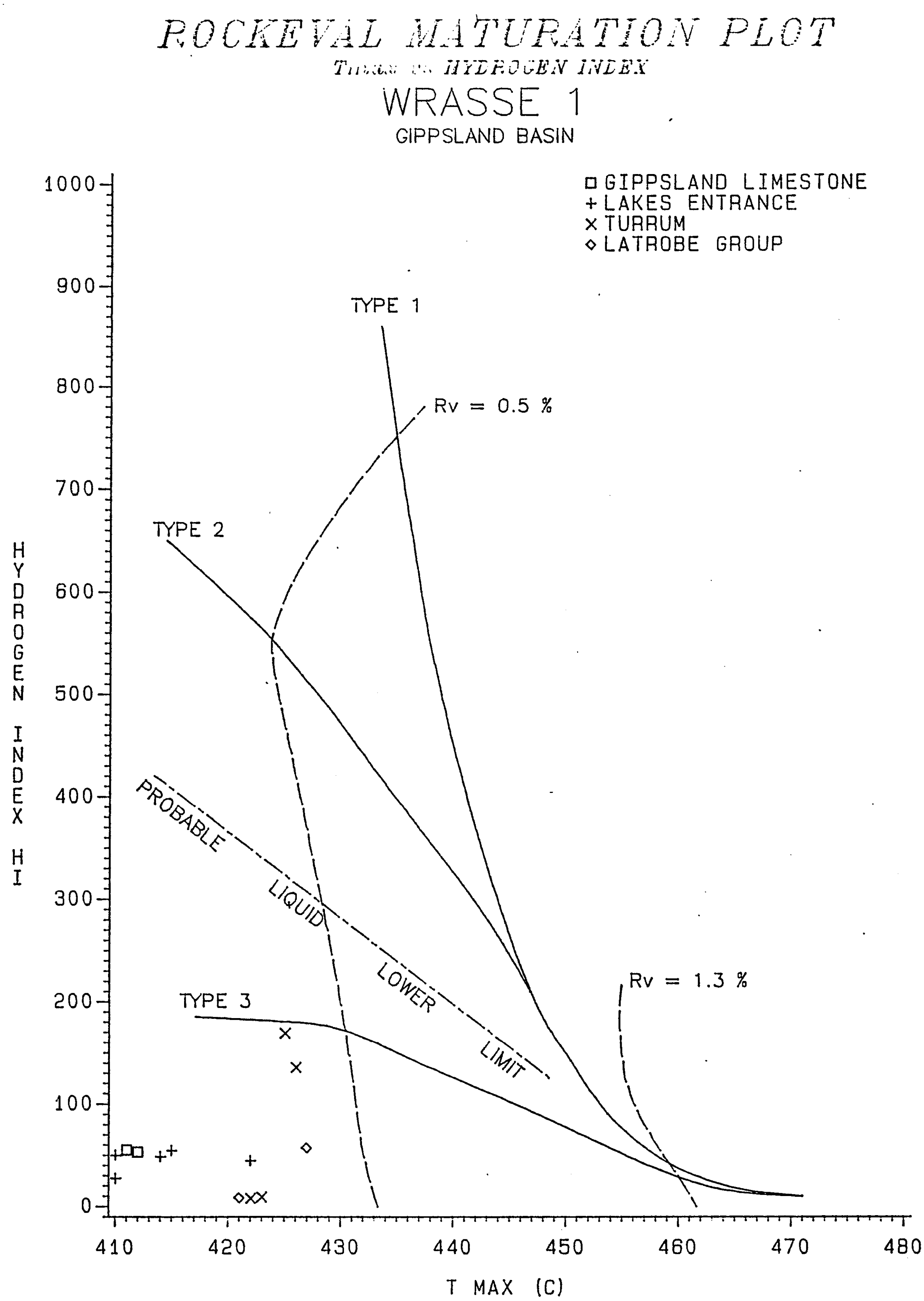
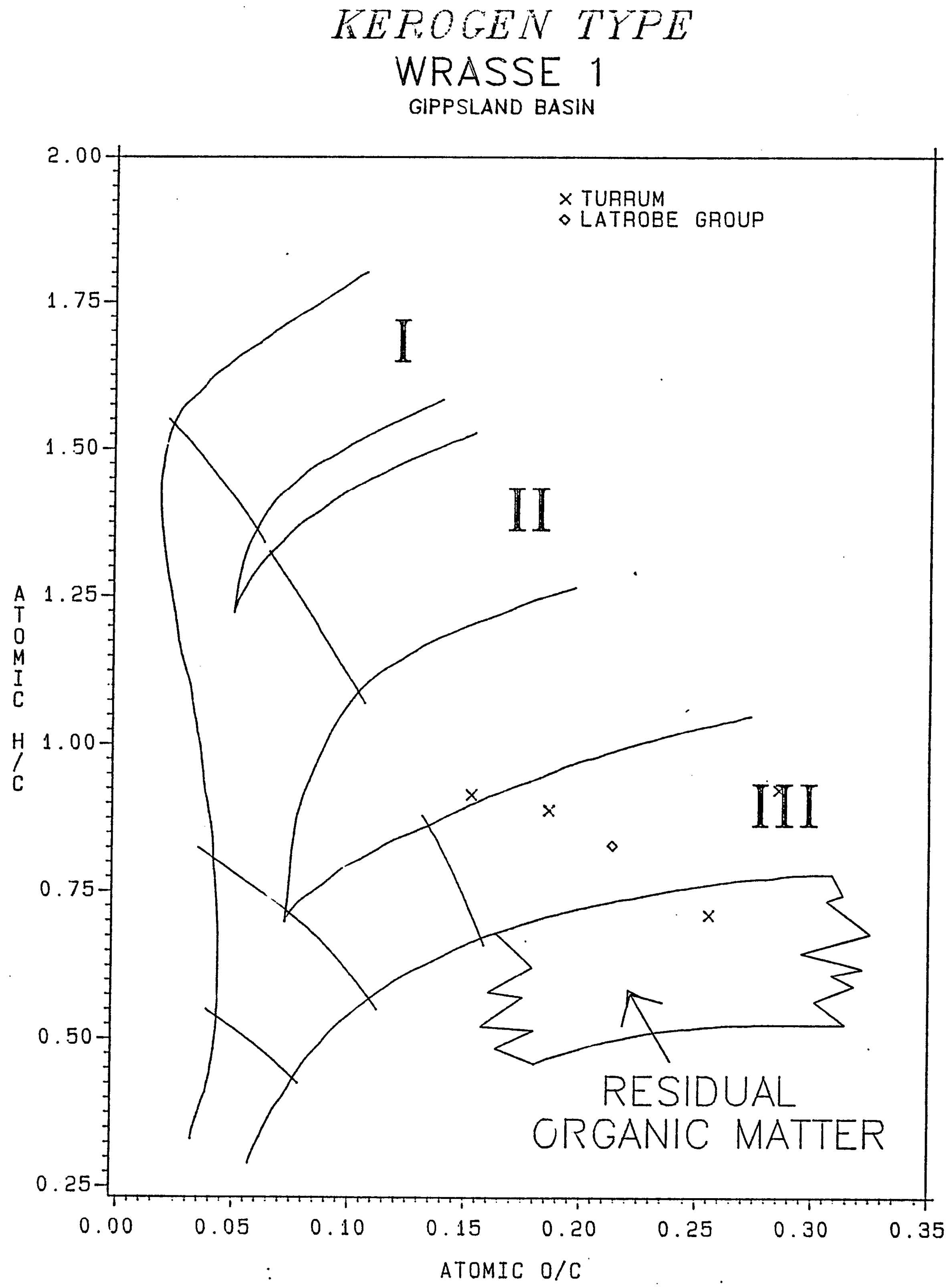
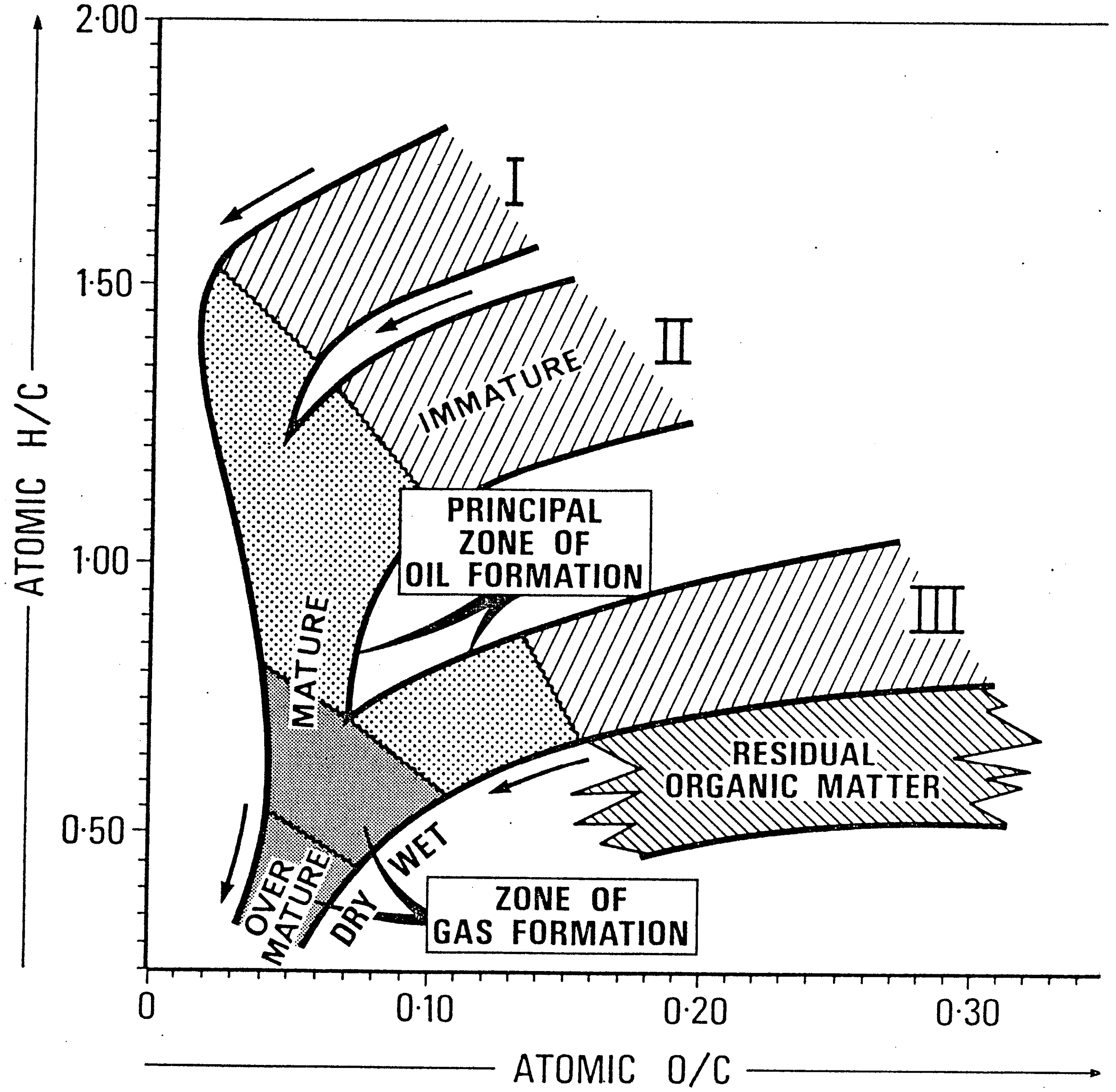


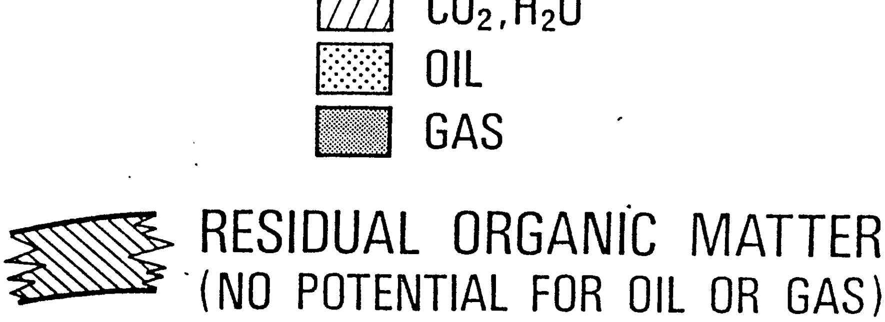
Figure 4


ROCKEVAL MATURATION PLOT
Tmax vs HYDROGEN INDEX
WRASSE 1
GIPPSLAND BASIN
□ GIPPSLAND LIMESTONE
+ LAKES ENTRANCE
× TURRUM
◇ LATROBE GROUP
TYPE 1
TYPE 2
TYPE 3
Rv = 0.5 %
Rv = 1.3 %
PROBABLE LIQUID LOWER LIMIT
HYDROGEN INDEX HI
T MAX (C)
0
100
200
300
400
500
600
700
800
900
1000
410
420
430
440
450
460
470
480


KEROGEN TYPE
WRASSE 1
GIPPSLAND BASIN
× TURRUM
◇ LATROBE GROUP
I
II
III
RESIDUAL
ORGANIC MATTER
ATOMIC H/C
ATOMIC O/C
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35



PRINCIPAL PRODUCTS OF KEROGEN EVOLUTION



1380/BS/75

C_{15+} Paraffin-Naphthene Hydrocarbon

GeoChem Sample No. E592-001

Exxon Identification No. 72784-A

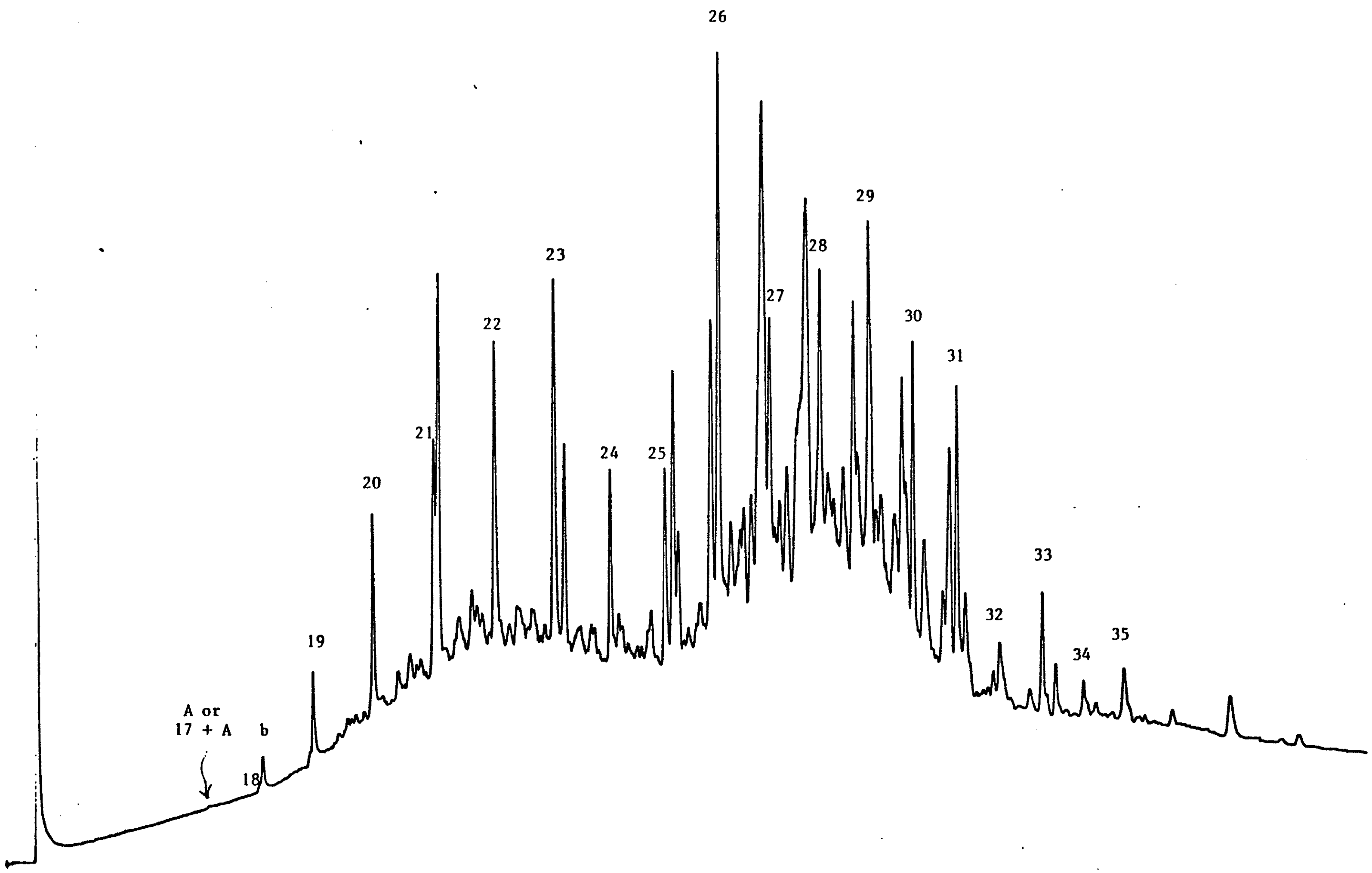
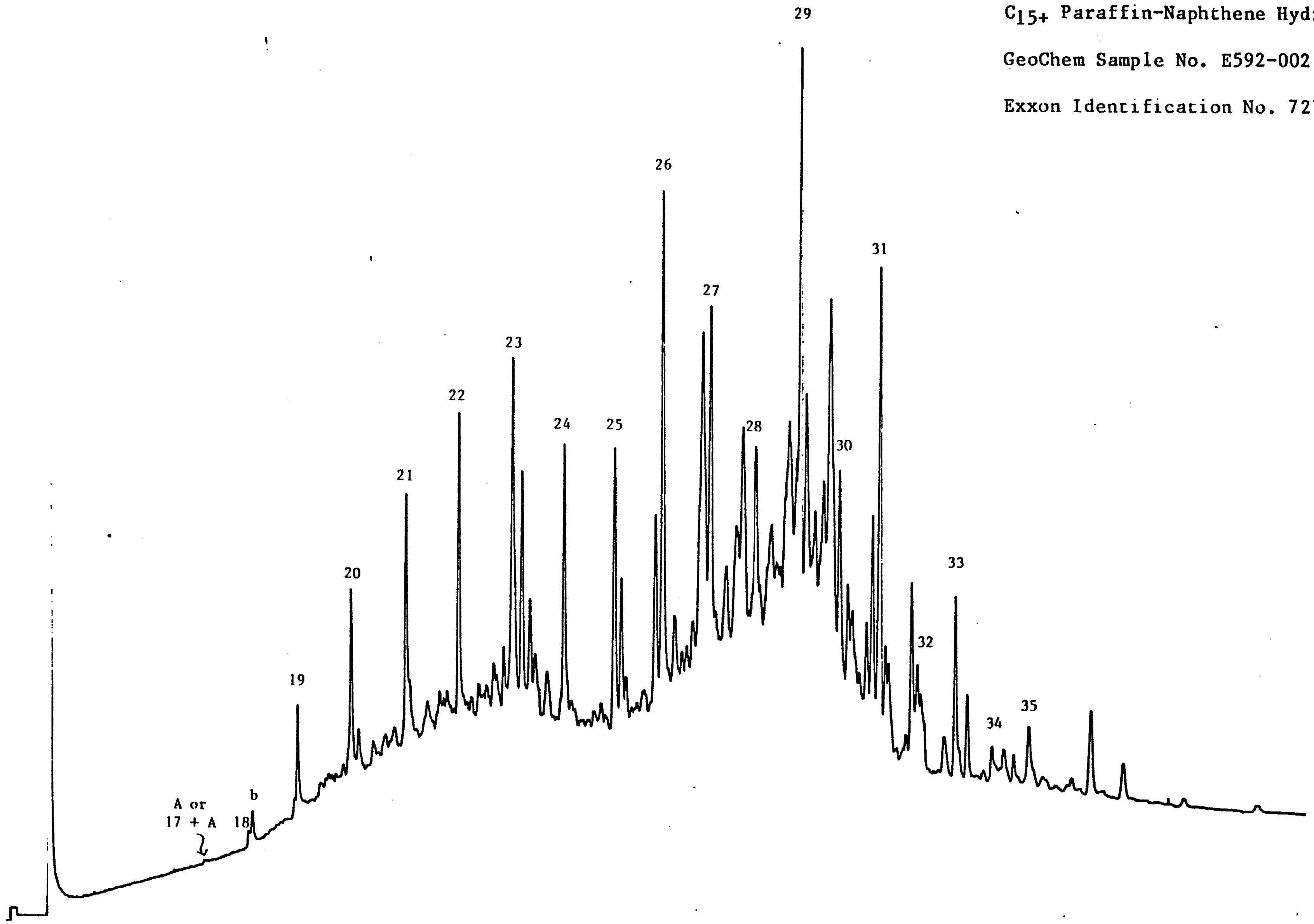


Figure 7 : Wrasse-1, Cuttings Extract, 1818-1825m(KB), Gippsland Limestone



C_{15+} 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

C_{15+} Paraffin-Naphthene Hydrocarbon

GeoChem Sample No. E592-003

Exxon Identification No. 72785-Q

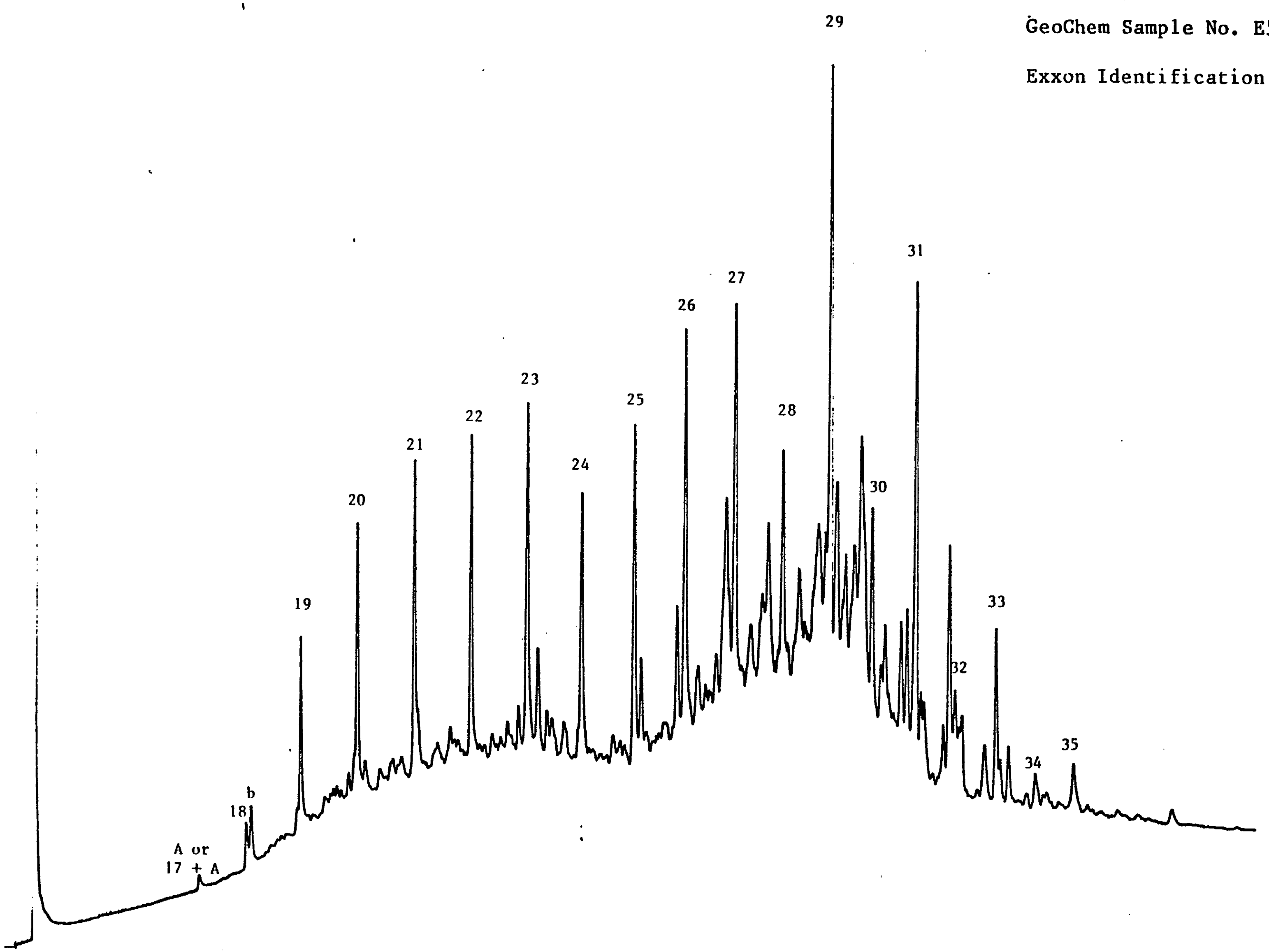


Figure 9 : Wrasse-1, Cuttings Extract, 2440-2455m(KB), Lakes Entrance Formation

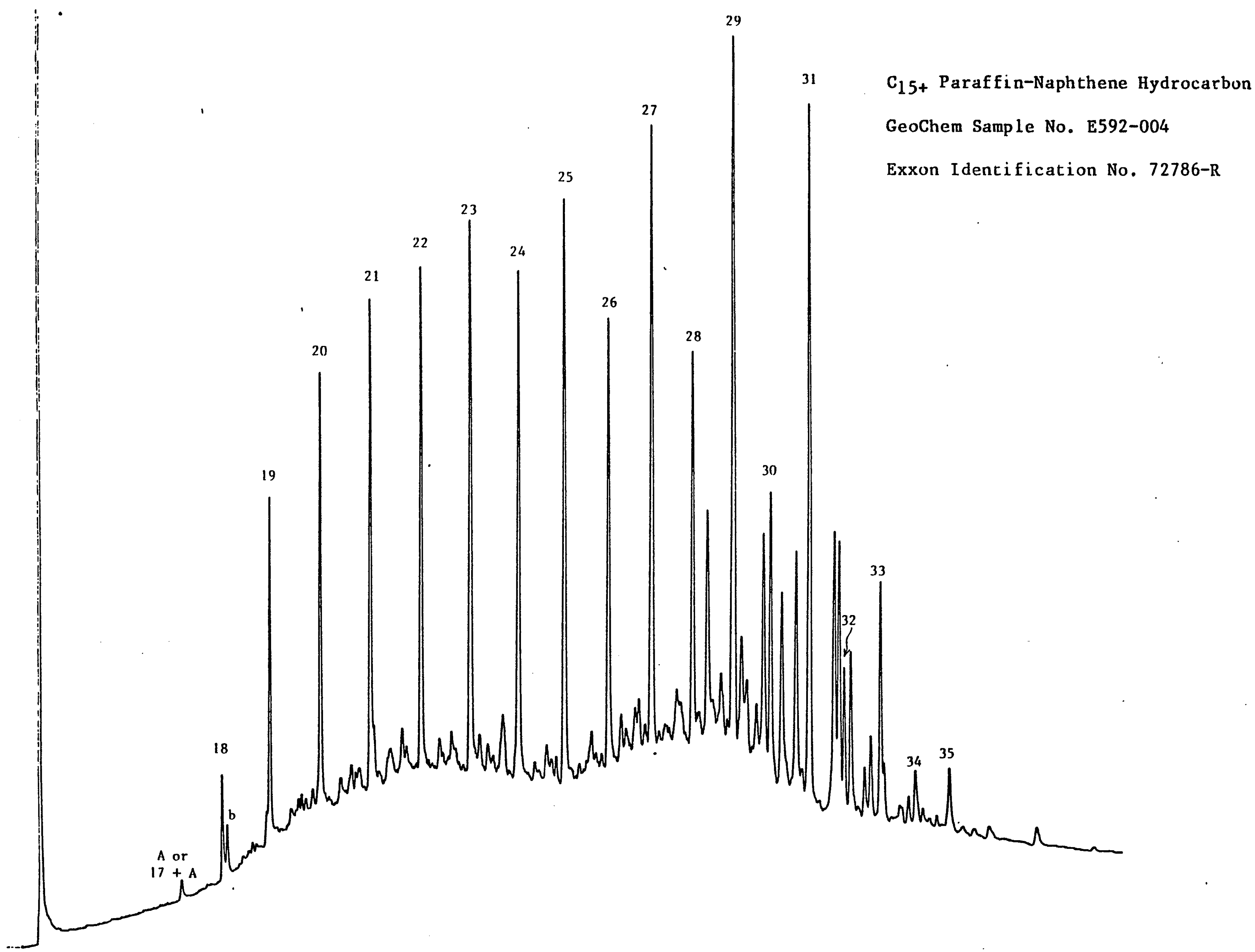


Figure 10: Wrasse-1, Cuttings Extract, 2740-2755m(KB), Turrum Formation

APPENDIX-1

DETAILED C_{4-7} DATA SHEETS

13 MAR 84

72785E WRASSE-1 2275'.

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	67.1	1.88
NBUTANE	62.6	1.76
IPENTANE	767.3	21.53
NPENTANE	159.7	4.48
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	121.0	3.39
1T2-DMCP	122.8	3.45
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	215.3	6.04
1C2-DMCP	28.0	0.78
MCH	436.1	12.24

	TOTALS PPB	NORM PERCENT
ALL COMP	3564.	
GASOLINE	3564.	
NAPHTHENES	1202.	33.74
C6-7	1899.	53.27

SIG COMP RATIOS	
C1/C2	0.83
A /D2	3.38
C1/D2	5.21
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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	13.2	0.46
NBUTANE	14.7	0.52
IPENTANE	160.8	5.65
NPENTANE	77.1	2.71
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	121.8	4.28
1T2-DMCP	187.3	6.58
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	122.0	4.29
1C2-DMCP	223.2	7.85
MCH	639.2	22.47

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	61.7	1.74
NBUTANE	8.8	0.25
IPENTANE	369.7	10.41
NPENTANE	152.4	4.29
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	144.4	4.07
1T2-DMCP	201.5	5.68
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	122.9	3.46
1C2-DMCP	209.8	5.91
MCH	675.0	19.02

	TOTALS PPB	NORM PERCENT
ALL COMP	3549.	
GASOLINE	3549.	
NAPHTHENES	1954.	55.05
C6-7	2497.	70.35

SIG COMP RATIOS	
C1/C2	0.64
A /D2	1.52
C1/D2	4.81
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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	36.7	0.83
NBUTANE	71.7	1.62
IPENTANE	382.1	8.65
NPENTANE	150.7	3.41
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
1T3-DMCP	190.4	4.31
1T2-DMCP	273.5	6.19
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	170.9	3.87
1C2-DMCP	325.2	7.36
MCH	971.9	22.01

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	4.9	0.18
NBUTANE	30.2	1.14
IPENTANE	271.5	10.26
NPENTANE	91.3	3.45
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
1T3-DMCP	113.2	4.28
1T2-DMCP	144.8	5.47
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	98.3	3.72
1C2-DMCP	132.4	5.00
MCH	429.9	16.24

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	16.9	0.57
NBUTANE	38.3	1.29
IPENTANE	287.0	9.67
NPENTANE	92.4	3.11
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	128.0	4.31
1T2-DMCP	163.9	5.52
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	128.3	4.32
1C2-DMCP	144.7	4.88
MCH	512.5	17.27

	TOTALS PPB	NORM PERCENT
ALL COMP	2967.	
GASOLINE	2967.	
NAPHTHENES	1550.	52.23
C6-7	2125.	71.61

SIG COMP RATIOS	
C1/C2	0.63
A /D2	1.31
C1/D2	3.44
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

727840 WRASSE-1 1915'.

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	9.9	0.44
NBUTANE	37.8	1.70
IPENTANE	282.4	12.66
NPENTANE	84.2	3.77
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	87.1	3.90
1T2-DMCP	110.0	4.93
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	92.9	4.16
1C2-DMCP	57.2	2.56
MCH	330.8	14.82

	TOTALS PPB	NORM PERCENT
ALL COMP	2231.	
GASOLINE	2231.	
NAPHTHENES	1069.	47.89
C6-7	1441.	64.59

SIG COMP RATIOS

C1/C2	0.57
A /D2	2.28
C1/D2	4.82
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

72784I 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
PROPANE	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	64.1	1.53
NBUTANE	86.5	2.07
IPENTANE	760.8	18.22
NPENTANE	189.8	4.55
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	145.8	3.49
1T2-DMCP	191.7	4.59
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	121.4	2.91
1C2-DMCP	150.9	3.62
MCH	557.5	13.36

	TOTALS PPB	NORM PERCENT
ALL COMP	4175.	
GASOLINE	4175.	
NAPHTHENES	1890.	45.28
C6-7	2445.	58.56

SIG COMP RATIOS

C1/C2	0.55
A /D2	1.76
C1/D2	4.71
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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	27.0	0.80
NBUTANE	45.0	1.34
IPENTANE	446.4	13.25
NPENTANE	113.5	3.37
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	143.2	4.25
1T2-DMCP	183.3	5.44
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	119.5	3.55
1C2-DMCP	143.8	4.27
MCH	518.5	15.39

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	79.2	1.98
NBUTANE	107.2	2.68
IPENTANE	713.1	17.84
NPENTANE	184.0	4.60
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	144.9	3.62
1T2-DMCP	174.9	4.37
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	124.0	3.10
1C2-DMCP	137.8	3.45
MCH	489.1	12.24

	TOTALS PPB	NORM PERCENT
ALL COMP	3997.	
GASOLINE	3997.	
NAPHTHENES	1741.	43.54
C6-7	2311.	57.82

SIG COMP RATIOS

C1/C2	0.52
A /D2	1.72
C1/D2	3.98
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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	78.8	1.87
NBUTANE	104.0	2.46
IPENTANE	858.1	20.32
NPENTANE	203.1	4.81
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	135.0	3.20
1T2-DMCP	159.9	3.79
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	142.5	3.37
1C2-DMCP	113.9	2.70
MCH	527.1	12.48

	TOTALS PPB	NORM PERCENT
ALL COMP	4223.	
GASOLINE	4223.	
NAPHTHENES	1751.	41.45
C6-7	2334.	55.26

SIG COMP RATIOS

C1/C2	0.58
A /D2	2.02
C1/D2	4.62
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

72784S WRASSE-1 2095'.

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	9.1	0.55
NBUTANE	45.5	2.73
IPENTANE	226.2	13.56
NPENTANE	67.6	4.05
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	85.8	5.14
1T2-DMCP	55.3	3.31
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	76.5	4.59
1C2-DMCP	35.7	2.14
MCH	218.8	13.12

	TOTALS PPB	NORM PERCENT
ALL COMP	1668.	
GASOLINE	1668.	
NAPHTHENES	731.	43.82
C6-7	1024.	61.42

SIG COMP RATIOS

C1/C2	0.57
A /D2	2.68
C1/D2	4.72
CH/MCP	0.08
PENT/IPENT,	0.30

	PPB	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	29.5	1.03
NBUTANE	46.1	1.61
IPENTANE	409.1	14.35
NPENTANE	110.1	3.86
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	113.5	3.98
1T2-DMCP	132.8	4.66
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	148.1	5.19
1C2-DMCP	102.9	3.61
MCH	460.3	16.14

	TOTALS PPB	NORM PERCENT
ALL COMP	2852.	
GASOLINE	2852.	
NAPHTHENES	1356.	47.56
C6-7	1834.	64.32

SIG COMP RATIOS	
C1/C2	0.67
A /D2	3.14
C1/D2	6.84
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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	63.7	2.68
NBUTANE	48.3	2.03
IPENTANE	512.8	21.59
NPENTANE	111.7	4.70
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	98.5	4.15
1T2-DMCP	58.9	2.48
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	96.4	4.06
1C2-DMCP	34.6	1.46
MCH	275.7	11.60

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	49.2	2.45
NBUTANE	44.2	2.20
IPENTANE	451.4	22.43
NPENTANE	89.0	4.42
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	66.7	3.31
1T2-DMCP	66.6	3.31
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	89.2	4.43
1C2-DMCP	26.2	1.30
MCH	242.1	12.02

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	71.3	2.81
NBUTANE	71.1	2.80
IPENTANE	616.7	24.29
NPENTANE	129.0	5.08
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
1T3-DMCP	74.8	2.95
1T2-DMCP	86.0	3.39
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	91.2	3.59
1C2-DMCP	33.4	1.31
MCH	256.7	10.11

	TOTALS PPB	NORM PERCENT
ALL COMP	2539.	
GASOLINE	2539.	
NAPHTHENES	845.	33.29
C6-7	1233.	48.57

SIG COMP RATIOS	
C1/C2	0.61
A /D2	2.14
C1/D2	3.75
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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	22.4	1.61
NBUTANE	25.1	1.80
IPENTANE	281.4	20.17
NPENTANE	68.2	4.89
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
1T3-DMCP	61.9	4.43
1T2-DMCP	31.8	2.28
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	86.0	6.16
1C2-DMCP	11.6	0.83
MCH	171.8	12.31

	TOTALS PPB	NORM PERCENT
ALL COMP	1395.	
GASOLINE	1395.	
NAPHTHENES	470.	33.67
C6-7	757.	54.26

SIG COMP RATIOS

C1/C2	0.85
A /D2	3.61
C1/D2	5.47
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

727856 WRASSE-1 2305'.

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	53.2	1.61
NBUTANE	68.9	2.09
IPENTANE	789.4	23.92
NPENTANE	169.0	5.12
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	103.5	3.14
1T2-DMCP	101.2	3.07
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	163.2	4.95
1C2-DMCP	20.6	0.62
MCH	282.0	8.54

	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

72785I WRASSE-1 2335′.

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	12.7	1.11
IPENTANE	118.1	10.30
NPENTANE	59.4	5.18
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	54.6	4.76
1T2-DMCP	26.5	2.31
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	127.7	11.13
1C2-DMCP	7.0	0.61
MCH	154.9	13.51

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	0.0	0.00
IPENTANE	87.4	4.10
NPENTANE	106.1	4.98
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	73.0	3.42
1T2-DMCP	56.4	2.65
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	230.4	10.81
1C2-DMCP	9.6	0.45
MCH	309.7	14.53

	TOTALS PPB	NORM PERCENT
ALL COMP	2131.	
GASOLINE	2131.	
NAPHTHENES	745.	34.96
C6-7	1525.	71.56

SIG COMP RATIOS	
C1/C2	1.46
A /D2	3.07
C1/D2	4.14
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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	0.0	0.00
IPENTANE	120.4	0.89
NPENTANE	81.3	0.60
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
1T3-DMCP	690.7	5.12
1T2-DMCP	577.1	4.28
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	957.7	7.10
1C2-DMCP	276.7	2.05
MCH	2581.4	19.14

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	53.8	0.38
NBUTANE	243.4	1.74
IPENTANE	1268.4	9.05
NPENTANE	817.9	5.84
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	631.3	4.51
1T2-DMCP	563.1	4.02
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	662.8	4.73
1C2-DMCP	249.6	1.78
MCH	2220.5	15.85

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	25.6	1.12
NBUTANE	35.7	1.56
IPENTANE	259.0	11.30
NPENTANE	153.2	6.69
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
1T3-DMCP	88.8	3.87
1T2-DMCP	57.0	2.49
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	272.7	11.90
1C2-DMCP	14.6	0.64
MCH	309.4	13.50

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	8.0	0.30
NBUTANE	27.2	1.04
IPENTANE	301.6	11.51
NPENTANE	92.9	3.55
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
MCP	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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	94.9	3.62
1T2-DMCP	111.3	4.25
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	164.6	6.28
1C2-DMCP	14.7	0.56
MCH	325.8	12.44

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	56.6	2.93
NBUTANE	54.4	2.82
IPENTANE	357.5	18.51
NPENTANE	109.2	5.65
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
1T3-DMCP	54.6	2.83
1T2-DMCP	35.0	1.81
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	148.8	7.70
1C2-DMCP	6.8	0.35
MCH	231.3	11.98

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	83.6	1.23
NBUTANE	71.0	1.05
IPENTANE	1097.2	16.16
NPENTANE	325.5	4.80
22-DMB	2.0	0.03
CPENTANE	10.2	0.15
23-DMB	105.3	1.55
2-MP	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
1T3-DMCP	238.2	3.51
1T2-DMCP	163.3	2.41
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	468.9	6.91
1C2-DMCP	25.5	0.38
MCH	576.8	8.50

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	57.3	1.09
NBUTANE	57.6	1.10
IPENTANE	781.7	14.88
NPENTANE	213.9	4.07
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	184.1	3.51
1T2-DMCP	118.7	2.26
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	399.2	7.60
1C2-DMCP	20.7	0.39
MCH	533.1	10.15

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	14.7	0.18
NBUTANE	57.5	0.70
IPENTANE	974.9	11.94
NPENTANE	347.5	4.26
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
1T3-DMCP	302.4	3.71
1T2-DMCP	200.5	2.46
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	663.1	8.12
1C2-DMCP	32.8	0.40
MCH	804.3	9.86

	TOTALS PPB	NORM PERCENT
ALL COMP	8161.	
GASOLINE	8161.	
NAPHTHENES	2171.	26.61
C6-7	4881.	59.81

SIG COMP RATIOS

C1/C2	1.21
A /D2	2.50
C1/D2	3.01
CH/MCP	0.16
PENT/IPENT,	0.36

	PPB	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	74.6	1.29
IPENTANE	998.1	17.20
NPENTANE	333.3	5.74
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
1T3-DMCP	146.2	2.52
1T2-DMCP	107.2	1.85
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	435.6	7.50
1C2-DMCP	15.7	0.27
MCH	413.7	7.13

	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
			PENT/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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	61.4	1.19
NBUTANE	63.2	1.23
IPENTANE	874.0	16.97
NPENTANE	353.7	6.87
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	82.5	1.60
1T2-DMCP	131.6	2.56
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	398.7	7.74
1C2-DMCP	13.5	0.26
MCH	393.7	7.64

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	0.0	0.00
IPENTANE	0.0	0.00
NPENTANE	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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	0.0	0.00
1T2-DMCP	0.0	0.00
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	0.0	0.00
1C2-DMCP	0.0	0.00
MCH	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

72786Q WRASSE-1 2845'.

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	11.7	1.21
IPENTANE	124.9	12.91
NPENTANE	38.1	3.94
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	43.4	4.49
1T2-DMCP	24.5	2.53
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	92.5	9.56
1C2-DMCP	4.1	0.42
MCH	117.0	12.10

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	0.0	0.00
IPENTANE	179.7	10.46
NPENTANE	105.5	6.14
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	74.1	4.31
1T2-DMCP	40.3	2.34
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	139.2	8.10
1C2-DMCP	7.7	0.45
MCH	199.0	11.58

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	0.0	0.00
IPENTANE	68.3	19.46
NPENTANE	26.4	7.51
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	5.7	1.62
1T2-DMCP	7.7	2.19
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	27.1	7.73
1C2-DMCP	0.0	0.00
MCH	34.1	9.72

	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
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	27663.1	5.08
NBUTANE	59819.0	10.99
IPENTANE	86509.0	15.89
NPENTANE	47290.5	8.69
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

	TOTAL PPB	NORM PERCENT
1T3-DMCP	9533.7	1.75
1T2-DMCP	16212.3	2.98
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	15831.7	2.91
1C2-DMCP	4718.1	0.87
MCH	51570.5	9.47

	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

WRASSE NO. 1

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 liptodetrinite, 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 (enlosure 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)