W782
WIRRAH-1
WCR VOL. 2

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

WELL COMPLETION REPORT

WIRRAH-1

INTERPRETIVE DATA

VOLUME II

GIPPSLAND BASIN

VICTORIA

ESSO AUSTRALIA LIMITED

Compiled by: J. ROCHE

JUNE, 1984

WIRRAH-1

WELL COMPLETION REPORT

VOLUME II

WIRRAH-1

WELL COMPLETION REPORT

VOLUME II

(Interpretative Data)

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INTRODUCTION

Wirrah-1 was drilled to assess the hydrocarbon potential of a fault controlled anticlinal feature located approximately midway between the Snapper and Seahorse structures. Wirrah-1 had a proposed T.D. of -2300m but was extended to -3005m due to the intersection of 8 hydrocarbon zones within the Latrobe from -1467m to -2645m. Hydrocarbon shows below these zones from -2777m to -2885m were additionally encountered. The well was terminated at -3005m due to lack of porosity and increasing abnormal pressure.

PREVIOUS DRILLING HISTORY

No previous wells have been drilled on the Wirrah Prospect. The nearest wells are Seahorse-1 which lies 12.5km west and Snapper-3 15km to the east, both of which encountered oil at the Top of the Latrobe and intra-Latrobe.

GEOLOGICAL ANALYSIS

Structure

Post-drill mapping of Wirrah is consistent with the pre-drill interpretation. The feature is a fault controlled anticline measuring approximately 2.5km by 3km.

The maximum height of closure on the Top of the Latrobe Group is approximately 36m. The amount of closure generally increases with depth, and the P. asperopolus seismic is interpreted as having closure of 50 metres. At the level of the Lower M. diversus seismic marker, closure has increased to approximately 110 metres. Normal down to the south faults cut this level.

Stratigraphy

Stratigraphic Summary

AGE	UNIT/HORIZON	DEPTH (m) PREDICTED KB	DRILLED KB	DRILLED SS	THICKNESS
Pleistocene/Middle Miocene	Gippsland Limestone	71	70	49	1221
Early Miocene to Late Oligocene	Lakes Entrance Formation	1321	1291	1270	174
	LATROBE GROUP				
Late Eocene	Gurnard Formation	1506	1465	1444	23
	"coarse clastics"		1488	1467	1538+
Late Cretaceous	TOTAL DEPTH	2321	3026	3005	

The stratigraphy encountered in Wirrah-1 was generally as predicted, however, there were some unexpected lithologies penetrated in the deeper sections of the well.

The Gippsland Limestone and Lakes Entrance Formation of the marine Seaspray Group, penetrated limestone and calcareous siltstone/marl lithologies as predicted. A major unconformity representing at least 9 million years or most of the Oligocene separates the Lakes Entrance Formation from the Latrobe Group Gurnard Formation. This represents the only period of non-deposition/erosion seen in Wirrah-1.

Palaeontological age determinations (Appendix 1 & 2) suggest that the Lakes Entrance Formation may rest disconformably on the Gurnard Formation, with the added possibility that a condensed sequence of Early Oligocene Lakes Entrance Formation, including the Upper *N. asperus* may occur.

A 23 metre section of nearshore shallow marine sediments is represented by the Gurnard Formation. In Wirrah-1 it consists of glauconitic rich siltstone and abundant pyrite, and is interpreted to be Middle N. asperus in age. The Middle N. asperus section is interpreted to have a uniform thickness over Wirrah.

The reservoir "coarse clastics" is interpreted to be a prograding shoreface surface, which culminates in a coarse grained and clean blocky sand body, producing high quality reservoir sands of a beach environment. The absence of dinoflagellates in this section, does not preclude the possibility of the sand being nearshore marine. Log character indicates a coarsening upward sequence from -1489m to -1582m, suggestive of a marginal marine nearshore marine environment, and is underlain by a series of aggradational sands. Cores No. 1 (-1467.2 to -1479.6m) and Core No. 2 (-1479.6m to -1592.4m) both exhibit ophiomorphic burrows with no associated sedimentary structure, which maybe indicative of a lower shoreface to estuary environment. Core No. 3 (-1492.4m to -1595.m) is a massive structureless sandstone sequence with no trace fossils, and is probably coastal plan to fluvial in environment.

From below the Lower N. asperus reservoir unit to the Upper M. diversus seismic marker, typical Latrobe fluvial sediments occur. These are represented by a series of stacked thick sandstone units, interbedded with shales and coals. From the Upper M. diversus Seismic Marker to the top of the Upper L. balmei zone, the shales become progressively thicker and frequent. The shales are interbedded with fluvial sands and coals. The Upper and Lower L. balmei section consists of interbedded fluvial sands, shales and a few thin coals. The sediments in the upper part of the T. longus zone consists of relatively thick shales (up to 25 metres) interbedded with fluvial sands and minor coals.

Wirrah-1 penetrated a 40 metre thick dolerite sill within the T. longus zone. The occurrence of a volcanic sill between -2624m and -2664m is reflected by a relatively high total alteration index of 3.0, and the complete lack of total organic matter within the zone. Electric log response is very diagnostic of a typical volcanic - washout interval, increase in sonic, marked decrease in gamma-ray and resistivity. There is accompanying decrease in porosity immediately above the intrusive, as shown by a marked increase in sonic velocity and density. This may be the result of mild contact metamorphism due to the intrusive. Petrographic analysis by Amdel states that the lithology may represent either a basalt or dolerite.

It may be the result of a relatively fast cooled extrusive igneous rock, representing a product of late-stage magmatic reaction in a cooling lava. A second interpreted igneous interval occurs between -2187m to -2205m. Amdel interprets this zone as an altered basalt that has been mineralised with carbonate and a rich quantity of sulphide (producing pyrite), in which the invasion of hydrothermal fluids was presumably derived from late-stage volcanic emanations.

Below the deeper dolerite intrusive, Wirrah-1 penetrated a section of sediments not seen previously along the northern margin of the Gippsland Basin. They consist of a pebbly quartz sandstone grading to conglomerate. The conglomerate is (T. longus - T. lilliei age) composed of sandstone, siltstone, basalt, chert, and dolomitic siltstone clasts in a sandstone matrix with silicious dolomitic cements. At present, it is thought that these sediments may be alluvial fans shedding off the Strzelecki Terrace at the basin margin faults. One such fault is located approximately 2km north of Wirrah-1. Beneath the conglomerate section, Wirrah-1 penetrated interbedded tight siltstone and sandstone of interpreted T. lilliei age. Wirrah-1 reached total depth of -3005m in these sediments.

HYDROCARBONS

Wirrah-1 penetrated a total of eight hydrocarbon zones. Of the eight zones encountered at Wirrah, six have the potential to contain significant oil and/or gas-in-place. At the top of Latrobe Group (N-1 Zone), the structure is interpreted to be full to spill point with gas and an associated thin oil leg with a GOC @ -1510m and OWC @ -1512.5m.

Within the Lower N. asperus, two thin oil sands each having a net thickness of 1.75m and 5.25m were penetrated. The top zone designated N-2 (-1553m to -1554.75m) has an inferred oil-water contact from pressure data of -1569m. The lower N-3 Zone (-1561.25m to -1575m) has a clear oil-water contact at -1575m. RFT samples taken at -1554m and -1563m, both recovered oil. Gross column thickness from the Wirrah crest to the base of the contacts are 25 metres and 31 metres for each respective zone.

In the L. balmei, two main hydrocarbon zones were encountered. These two zones, designated L-3 Zone and L-4 Zone, occur at -2170m to -2187m and -2214m to -2224m respectively. Both were seen to contain oil and gas and are inferred from RFT pressure data to have columns down to 40 metres below the low proved oil. L-4 has a GOC @ -2224m. Further hydrocarbon shows were encountered from -2549m to T.D. Only the interval between -2549m and -2628.5m (designated T-1 Zone) is assessed to contain significant oil-in-place in this lower section with an interpreted OWC at -2628.5m.

A production test over the interval -2603m to -2612.5m flowed oil at the rate of 610 STBO/D with 35% water cut or 330 STBW/D, interpreted to be formation water. A subsequent production test over the deeper intervals -2670m to -2681m and -2704m to -2726m, failed to flow any formation fluid. Effective porosities at these depths are estimated at 5%.

GEOPHYSICAL ANALYSIS

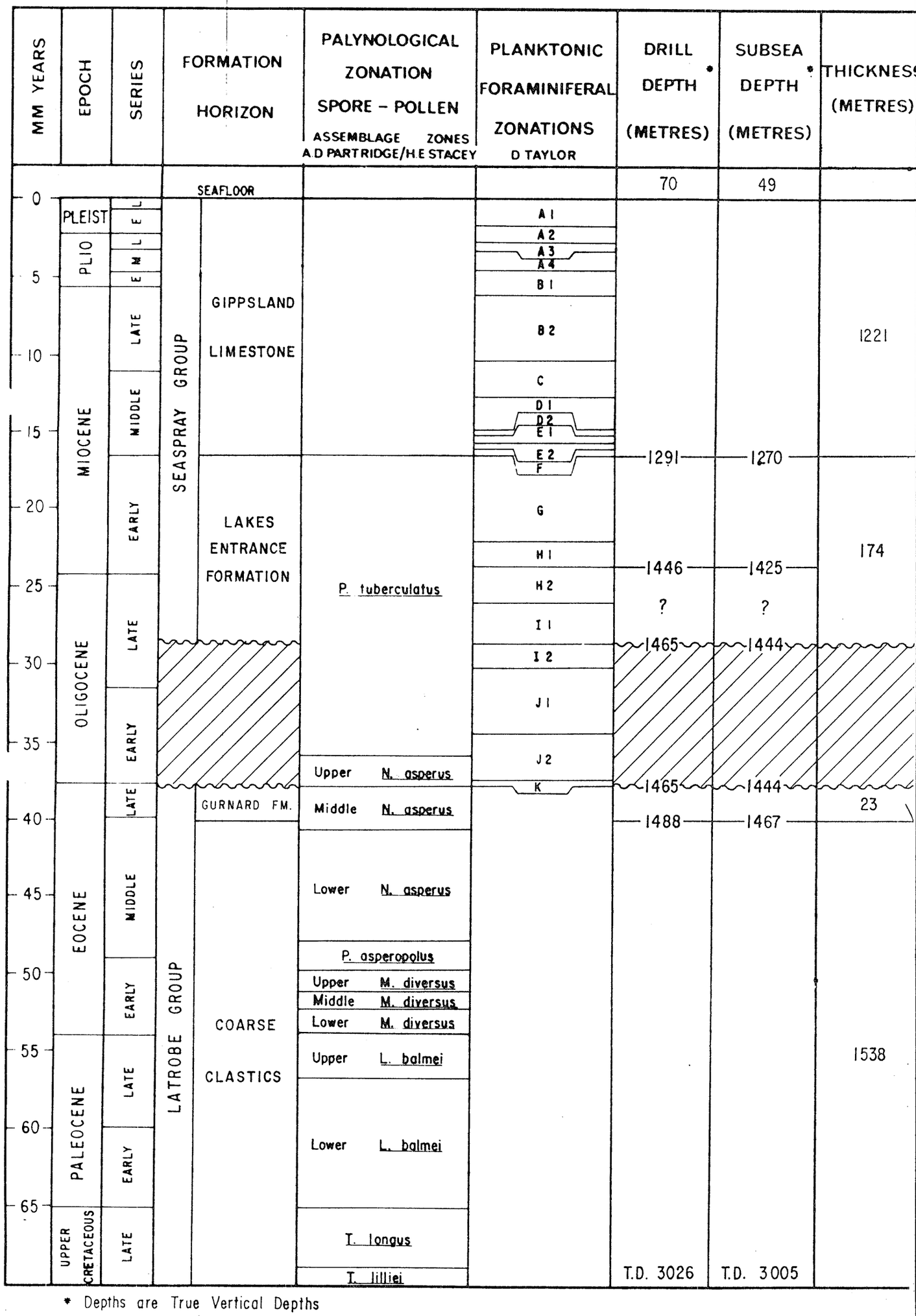
Mapping over Wirrah was based on a 1km-square grid of G81A and migrated G80A lines, and three additional G82B lines. Data quality is good down to and including the M. diversus zone.

The top of the Latrobe Group was penetrated at -1444m in Wirrah-1, 41 metres high to prediction. Post-drill remapping of the top of Latrobe was carried out using the existing two-way time and velocity fields, but using modified values of seismic lag and conversion factor obtained from the synthetic seismogram (Appendix 7). The lag value used to tie the well was 39 ms (updated from 25 ms), and conversion factor 93.7% (updated from 95.3%). Remapping has not changed the general shape of the structure at top of Latrobe (Enclosure 1).

Palaeontological analysis of the Wirrah-1 samples suggests that the top of the coal intersected at -1819m, mapped as the Lower M. diversus seismic marker, is actually Middle M. diversus in age. This horizon came in 16 metres low to prediction, an error of 0.9% in depth. Remapping was carried out by isopaching down from the top of Latrobe using a revised interval velocity of 3180 m s^{-1}, calculated from the Wirrah-1 velocity survey. Again, the general shape and features of the structure have not been affected (Enclosure 2).

FIGURES

WIRRAH-1
STRATIGRAPHIC TABLE



* Depths are True Vertical Depths

APPENDIX 1

APPENDIX 1

MICROPALAEONTOLOGICAL ANALYSIS

APPENDIX
FORAMINIFERAL ANALYSIS, WIRRAH-1
GIPPSLAND BASIN

by

J. P. Rexilius

Esso Australia Ltd.,
Palaeontology Report 1983/9
0333L

January 28, 1983.

INTERPRETIVE DATA

INTRODUCTION

Twenty three (23) sidewall core and four (4) cuttings samples were processed for foraminiferal analysis in Wirrah-1, from 848 to 1482m. Only the planktonic foraminifera have been scrutinized. Adequate planktonic foraminiferal faunas occur in most samples of Gippsland Limestone (exception: SWC's 124-126) and Lakes Entrance Formation (exception : SWC 115). With the exception of SWC 112 at 1476m, all samples of Gurnard Formation examined lacked foraminifera. SWC 112 contained rare, very poorly preserved, indeterminate planktonic foraminifera.

Tables 1 and 2 provide a summary (Basic and Interpretive) of the palaeontological analysis in Wirrah-1. A summary of the biostratigraphic breakdown of the stratigraphic units in Wirrah-1 is given below.

SUMMARY

AGE	UNIT	ZONE	DEPTH(m)
Recent/Mid Miocene	?	(not sampled)	(seafloor to 848)
Mid Miocene		C	848 - 868
Mid Miocene	Gippsland	D-1/D-2	902 -1208.1
Early Miocene	Limestone	F	1242-1275.9
log break at 1291m			
Early Miocene		G	1305-1384
Early Miocene	Lakes	Indeterminate	1412
Early Miocene	Entrance	H-I	1446-1455
Late Oligocene	Formation	H-2 to I-1	1455-1465
log break at 1465m			
-	Gurnard Formation	Indeterminate (not sampled)	1465-1482 (1488)
log break at 1488.5m			
-	Latrobe Group (Coarse clastics)	(not sampled)	(1490-TD)

GEOLOGICAL COMMENTS

Sonic log character indicates that the base and top of the Gurnard Formation is at 1490 and 1465m respectively. The uppermost sample of Gurnard Formation in Wirrah-1 (SWC 113 at 1472m) is Mid/Late Eocene in age and assignable to the Middle N. asperus palynological Zone (Macphail, 1983). The age of the basal part of the Lakes Entrance Formation is Late Oligocene and assignable to Zones H-2 to I-1 (see section on Discussion of Zones). It is probable that the Lakes Entrance Formation rests disconformably on the Gurnard Formation at the Wirrah-1 location. The possibility that a condensed sequence of Early Oligocene Lakes Entrance Formation is present in the well cannot be dismissed because cuttings samples for the interval 1460-1465m were not available for inspection. Planktonic foraminiferal assemblages assignable to Zones J-1/J-2 (Early Oligocene) were not detected in cuttings samples of Gurnard Formation (heavily caved with Lakes Entrance Formation) below 1465m.

On the basis of log character, the boundary between the Gippsland Limestone and the Lakes Entrance Formation is placed at 1291m. The Gippsland Limestone conformably overlies the Lakes Entrance Formation and the boundary between the two units occurs during Zone F or Zone G time.

DISCUSSION OF ZONES

The Tertiary biostratigraphy in Wirrah-1 is based on the Gippsland Basin planktonic foraminiferal zonal scheme of Taylor (in prep.). Studies by Jenkins (1960, 1971), Blow (1969, 1979), Postuma (1971), Stainforth et al (1975) and Hornibrook (1982) have also been consulted.

INDETERMINATE INTERVAL: 1465-1482m

Sidewall core samples of Gurnard Formation in Wirrah-1 between 1472 and 1482m cannot be age dated using planktonic foraminifera. With the exception of SWC 112 at 1476m, all samples were barren of foraminifera. Sidewall core 112 contains very poorly preserved indeterminate planktonic foraminifera. Palynological evidence indicates that the interval is Mid/Late Eocene in age and assignable to the Middle N. asperus Zone (Macphail, 1983). Cuttings between

1465 and 1475m contain planktonic foraminifera no older than Zone I-1. These assemblages are considered to be downhole contaminants from the Lakes Entrance Formation above 1465m.

ZONES H-2 to I-1 : 1455-1465.

The presence of Globigerina tripartita and the absence of Globigerina angiporoides in cuttings between 1455 and 1460m indicates that this interval is assignable to Zones H-2 to I-1. Cuttings between 1460 and 1465m (basal 5m of the Lakes Entrance Formation) were not available for inspection. However cuttings below the Lakes Entrance Formation (1465-1470m) contain planktonic foraminifera no older than Zone I-1. It is therefore concluded that the interval 1455 to 1465m is assignable to Zones H-2 to I-1.

ZONE H-1 : 1446-1455m.

SWC 114 at 1446m contains Globigerina woodi connecta without Globigerinoides trilobus and can be assigned to Zone H-1. Cuttings between 1450 and 1455m lack Globigerina tripartita and are also considered to be Zone H-1 in age.

INDETERMINATE INTERVAL : 1412m.

SWC 115 at 1412m contains an impoverished planktonic foraminiferal assemblage which is not age diagnostic. On the basis of superposition the sample is assignable to Zones H-1 or G.

ZONE G : 1305-1384m

The appearance uphole of Globigerinoides trilobus at 1305m defines the base of Zone G in Wirrah-1. The top of the zone is defined by the evolutionary appearance of Globigerinoides bisphericus from G. trilobus at 1275.9m.

ZONE F : 1242 - 1275.9m

A typical Zone F planktonic foraminiferal assemblage comprising Globigerinoides bisphericus without the Praeorbulina - Orbulina plexus occurs within the interval 1242-1275.9m.

ZONES D-1 to D-2 : 902 - 1208.1m

The appearance of Orbulina universa at 1208.1m defines the base of Zone D-2 in Wirrah-1. The extinction of Globorotalia praescitula at 902m defines the top of Zone D-1.

ZONE C : 848-868m.

The association of Globorotalia miotumida miotumida and Globorotalia mayeri in samples at 848 and 868m indicates that the interval is assignable to Zone C.

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STAINFORTH, R.M., LAMB, J.L., LUTERBACHER, H., BEARD, J.H. and JEFFORDS, R.M., 1975. Cenozoic planktonic foraminiferal zonation and characteristics of index forms. Univ. Kansas Palaeont. Contrib. Art. 62, p.425.

TAYLOR, D.J. (in prep). Observed Gippsland biostratigraphic sequences of planktonic foraminiferal assemblages.

MICROPALEONTOLOGICAL DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: 21.0m GL: -50.0m

WELL NAME: WIRRAH-1 TOTAL DEPTH: 3026m

AGE		FORAM. ZONULES	HIGHEST DATA					LOWEST DATA				
			Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
PLEISTOCENE		A_1										
		A_2										
PLIOCENE		A_3										
		A_4										
		B_1										
MIOCENE	LATE	B_2										
		C	848	1				868	1			
	MIDDLE	D_1	902	2								
		D_2						1208.1	0			
		E_1										
		E_2										
	EARLY	F	1242	0				1275.9	0			
		G	1305	0				1384	0			
		H_1	1446	1				1455	4			
OLIGOCENE	LATE	H_2	1455	4								
		I_1						1460	4			
		I_2										
	EARLY	J_1										
		J_2										
EOCENE		K										
		Pre-K										

COMMENTS: Samples below 1446m are ditch cuttings and their zonal assignment is considered to be tentative. The absence of Zones E-1/E-2 is probably due to a sampling gap.

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: 11 November, 1982

DATA REVISED BY: J.P. Rexilius DATE: 27 January, 1983

TABLE 1

SUMMARY OF PALAEONTOLOGICAL ANALYSIS - WIRRAH-1, GIPPSLAND BASIN

INTERPRETATIVE DATA

NATURE OF SAMPLE	DEPTH (M)	MICROFOSSIL YIELD	PRESERVATION	DIVERSITY	ZONE	AGE	COMMENTS
SWC 132	848	Moderate	Moderate-Poor	Moderate	C	Mid Miocene	
SWC 131	868	High	Moderate	Moderate	C	Mid Miocene	
SWC 130	902	High	Moderate	Low	D-1/D-2	Mid Miocene	Sponge
SWC 129	936	High	Moderate	Low	D-1/D-2	Mid Miocene	spicules
SWC 128	970	Moderate	Moderate-Poor	Low	D-1/D-2	Mid Miocene	rare
SWC 127	1005	Moderate	Moderate-Poor	Low	D-1/D-2	Mid Miocene	to
SWC 126	1038	Moderate	Poor	Very low	Indeterminate	-	common.
SWC 125	1072	Moderate	Poor	Very low	Indeterminate	-	Bryozoa rare - only
SWC 124	1106	Very low	Very Poor	Very low	Indeterminate	-	present at 902
SWC 123	1141	Moderate	Moderate-Poor	Moderate	D-1/D-2	Mid Miocene	and 1141m.
SWC 122	1171	Moderate	Moderate	Moderate	D-1/D-2	Mid Miocene	
SWC 121	1208.1	Moderate	Moderate	Moderate	D-1/D-2	Mid Miocene	
SWC 120	1242	Moderate	Poor	Moderate	F	Early Miocene	
SWC 119	1275.9	High	Good	High	F	Early Miocene	
SWC 118	1305	Moderate	Poor	Moderate	G	Early Miocene	

TABLE 1

SUMMARY OF PALAEONTOLOGICAL ANALYSIS - WIRRAH-1, GIPPSLAND BASIN

INTERPRETATIVE DATA

NATURE OF SAMPLE	DEPTH (M)	MICROFOSSIL YIELD	PRESERVATION	DIVERSITY	ZONE	AGE	COMMENTS
SWC 117	1344	High	Good	High	G	Early Miocene	Bryozoa fragments.
SWC 116	1384	High	Good	High	G	Early Miocene	
SWC 115	1412	Moderate-Low	Poor	Very low	Indeterminate	-	
SWC 114	1446	High	Moderate	Moderate-High	H-1	Early Miocene	
CTS	1450-55	High	Moderate-Good	Moderate-High	H-1	Early Miocene	
CTS	1455-60	High	Moderate-Good	Moderate-High	H-2 to I-1	Late Oligocene	Downhole
CTS	1465-70	-	-	-	-	-	contamination
CTS	1470-75	-	-	-	-	-	severe
SWC 113	1472	Barren	-	-	-	-	
SWC 112	1476	Very low	Very poor	Very low	Indeterminate	-	
SWC 102	1479	Barren	-	-	-	-	Rare fish teeth
SWC 101	1482	Barren	-	-	-	-	

BASIC DATA

TABLE - 2 : FORAMINIFERAL DATA, WIRRAH-1.

RANGE CHART : TERTIARY PLANKTONIC FORAMINIFERA.

TABLE 2

BASIC DATA - WIRRAH-1.

NATURE OF SAMPLE	DEPTH (M)	MICROFOSSIL YIELD	PRESERVATION	DIVERSITY	COMMENTS
SWC 132	848	Moderate	Moderate-Poor	Moderate	
SWC 131	868	High	Moderate	Moderate	
SWC 130	902	High	Moderate	Low	
SWC 129	936	High	Moderate	Low	
SWC 128	970	Moderate	Moderate-Poor	Low	Sponge spicules rare to common Bryozoa rare - only present at 902 and 1141m.
SWC 127	1005	Moderate	Moderate-Poor	Low	
SWC 126	1038	Moderate	Poor	Very low	
SWC 125	1072	Moderate	Poor	Very low	
SWC 124	1106	Very low	Very Poor	Very low	
SWC 123	1141	Moderate	Moderate-Poor	Moderate	
SWC 122	1171	Moderate	Moderate	Moderate	
SWC 121	1208.1	Moderate	Moderate	Moderate	
SWC 120	1242	Moderate	Poor	Moderate	
SWC 119	1275.9	High	Good	High	
SWC 118	1305	Moderate	Poor	Moderate	
SWC 117	1344	High	Good	High	Bryozoa fragme
SWC 116	1384	High	Good	High	
SWC 115	1412	Moderate-Low	Poor	Very low	
SWC 114	1446	High	Moderate	Moderate-High	
CTS	1450-55	High	Moderate-Good	Moderate-High	
CTS	1455-60	High	Moderate-Good	Moderate-High	Downhole contamination severe
CTS	1465-70	-	-	-	
CTS	1470-75	-	-	-	
SWC 113	1472	Barren	-	-	
SWC 112	1476	Very low	Very poor	Very low	
SWC 102	1479	Barren	-	-	Rare fish teeth
SWC 101	1482	Barren	-	-	

FOSSIL TYPE: PLANKTONIC FORAMINIFERA

Well Name WIRRAH-1 Basin GIPPSLAND Sheet No. 1 of 1

SAMPLE TYPE OR NO. *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	T	T	T	T	S	S	S
FOSSIL NAMES \ DEPTHS	848	868	902	936	970	1005	1038	1072	1106	1141	1172	1208.1	1242	1272	1305	1344	1384	1412	1446	1450-54	1455-64	1465-74	1470-71	1472	1476	1479&82
Globorotalia mayeri	---	---																								
Globorotalia miotumida	---	---																								
Indeterminate globigerinids	—	—	--	—	--	—	—	▬	---																	
Orbulina universa	—	▬	—	—	—	—	—	---		---	—									C	C	C				
Globigerincides bisphericus	---											------	—	—						C		C				
Globigerinoides trilobus	---					---				---		------			---	—	▬			C	C	C				
Globigerina woodi	------	----	—								----	------	—	▬	—	▬	▬	---	▬							
Globorotalia scitula		---																								
Globorotalia menardii		---								---																
Globigerina bulloides		---	---								—			---												
Globorotalia miozea conoidea			—		---			---		---	---															
Globorotalia praescitula			—	▬	▬	--				—	▬	—	—	▬	—	▬	—			—	C	C	C			
Globoquadrina dehiscens s.s.					---					---			------	------	------	------	----			—						
Globorotalia praemenardii						---						---	—	—												
Globoquadrina advena													---	---	---	------				—	—	C				
Globigerina praebulloides													---	---	---	▬	---						C			
Globorotalia continuosa														—	---	—		---	---	---	---					
Globorotalia miozea miozea																—										
Globorotalia bella															---	—		---			C	C	C			
Globigerina obesa															---	—	---									
Globigerina ouachitaensis																		—								
Globigerina woodi connecta																		—	---		C	C				
Globigerina euapertura																		---					C			
Globoquadrina dehiscens s.l.																			---							
Globigerina tripartita																					---		C			
Globorotalia zealandica																						---				
Praeorbulina glomerosa																							C			
Globorotalia opima																							C			
Indeterminate planktonics																								---		

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

--- Rare
—— Few
▬ Common
▬ Abundant

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

APPENDIX 2

APPENDIX 2

PALYNOLOGICAL ANALYSIS

APPENDIX

PALYNOLOGICAL ANALYSIS, WIRRAH-1

GIPPSLAND BASIN

by

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INTRODUCTION

Seventy nine (79) sidewall core and eight (8) conventional core samples were processed and examined for spore-pollen and dinoflagellates. Recovery and preservation were usually poor to very poor. Despite very detailed examination, confident age-determinations could only be provided for relatively few samples below 1929.0m (see Summary Table).

Palynological zones and lithological facies divisions from the base of the Lakes Entrance Formation to the total depth of the well are given below. The occurrences of the more stratigraphically important species are tabulated in the accompanying range chart.

SUMMARY

UNIT/FACIES	ZONE	DEPTH (metres)
Lakes Entrance Formation	*P. tuberculatus*	1412.0
Gurnard Formation	Middle *N. asperus*	1472.0-1488.0
Latrobe Group Coarse Clastics	Middle *N. asperus*	1491.0
	Lower *N. asperus*	1499.9-1604.0
	P. asperopolus	1627.0-1771.0
	Upper *M. diversus*	1811.0-1817.0
	Middle *M. diversus*	1840.0
	Lower *M. diversus*	1896.9-1929.0
	Upper *L. balmei*	2006.5-2198.5
	Lower *L. balmei*	2232.0-2363.0
	T. longus	2383.0-2752.5
	T. lilliei	2820.0-3028.5
		3031 TD

GEOLOGICAL COMMENTS

1. The Wirrah-1 well contains a continuous sequence of zones from the Late Cretaceous T. lilliei Zone up to at least the Middle/Late Eocene Middle N. asperus Zone.

2. The base of the Lakes Entrance Formation, picked log and lithological characteristics as occurring at 1465m (Rexilius 1983), occurs in an interval with poor sample control. The data are inadequate to say whether (i) a major unconformity or period of non-deposition covering all or part of the Oligocene occurs between the top of the Gurnard Formation and the base of the Lakes Entrance Formation or (ii) whether a condensed sequence including the Upper N. asperus and (Oligocene) J/I foraminiferal Zones occurs between 1446m (H-1, Early Miocene) and 1482m (probable Middle N. asperus Zone). It is noted that sediments of Upper N. asperus and J-2/H^2 Zone age occur in the 24 metre interval separating the H-1 and Middle N. asperus Zone sediments in the Seahorse-1 well. (Stacy & Partridge 1979).

3. The Gurnard Formation, picked on log and lithological characteristics as extending from 1465m to 1488.5m (Rexilius 1983) is wholly Middle N. asperus Zone in age. The abundance of dinoflagellates decrease within the Gurnard Formation and the sidewall core sample immediately below the greensands (SWC 99, 1491m) lacks dinoflagellates. The highest coal, at 1502m, is Lower N. asperus Zone in age.

4. As would be expected from the shoreward location of the well, no marine transgressions are recorded below the Middle N. asperus Zone. The only sample below this zone to contain significant numbers of dinoflagellates (1771.0m) includes the Lower N. asperus Zone marker species Areosphaeridium diktyoplokus. This strongly suggests the whole assemblage has been caved.

5. The "Upper M. diversus Seismic Marker" occurs between samples dated as Middle and Lower M. diversus Zone in age. Otherwise the age/depth relationships of the pre-Eocene strata correspond well with those predicted by seismic stratigraphy.

6. A feature of the Wirrah-1 well is the thickness of P. asperopolus Zone sediments (144 metres) relative to strata of the same age in Seahorse-1 (51 metres) and Snapper-3 (42 metres). Total depths of L. balmei Zone sediments are approximately the same in all three wells.

7. The occurrence of a volcanic sill between approximately 2655 to 2667 metres is reflected by a high T.A.I. (2.8-3.0) for palynomorphs in sidewall core 23 (2615.5m).

8. The well bottomed in T. lilliei Zone sediments.

DISCUSSION OF ZONES

The zone boundaries have been established using the criteria of Stover & Evans (1973), Stover & Partridge (1973), Partridge (1976) and subsequent unpublished observations. The well contains a higher number of occurrences of species outside of their known or characteristic age-range than is usual for the Gippsland Basin.

Tricolporites lilliei Zone: 3028.5 to 2820.0m

The zone is distinguished by the occurrences of Gambierina rudata and Tricolporites lilliei, and the absence of definite indicators of the Tricolporites longus zone. Gambierina rudata occurs in the basal sample at 3028.5m and Tricolporites lilliei some 30m higher, at 3010.0m. Because of extremely poor recovery throughout the section, it is not possible to ascertain whether the abundance of Nothofagidites spp. is significantly higher than Gambierina (see Stover & Evans, 1973). Of interest are the occurrence of Lygistepollanites balmei at 3010.0m and Tricolpites waiparensis at 2994.5m. The latter species has not been previously recorded below the T.longus Zone except in Hapuku-1.

Tricolpites longus Zone: 2752.5 to 2382.0m

Most of the samples from this section contained diverse assemblages, dominated by gymnosperms of which Podosporites spp. and Phyllocladus mawsonii were the most abundant, Gambierina rudata, and Proteacidites species of which one or more of P. otwayensis, P. reticuloconcavus, P. cliniei and P. wahooensis were usually present. These Proteacidites spp. are characteristic of the zone and their occurrence along with Tetradopollis securus and Tricolpites waiparensis at 2752.5m defines the base of the zone in this well. The first appearance of the zone indicator species Tricolpites longus is at 2715.3m. The lowest occurence of Stereisporites (Tripunctisporis) punctatus which also first appears in this zone at 2615.5m.

The first appearance of Proteacidites gemmatus and Tetracolporites verrucosus is higher again, at 2576.0m and 2567.7m respectively. These taxa extend into the Lower L. balmei Zone and may be useful in subdividing the T. longus Zone at a later date. The top of the zone is picked at 2383.0m, based on the highest occurrence of Tricolpites longus and Proteacidites cliniei. This sample may be close to the Late Cretaceous/Paleocene boundary since Australopollis obscurus, which is typically common only in the L. balmei Zone, is frequent.

Lower Lygistepollenites balmei Zone 2363.0 to 2232.0m.

The section is unusual in that it lacks the general L. balmei Zone indicators, e.g. Polycolpites longstonii and frequent to abundant Australopollis obscurus. Sidewall cores are assigned to the zone on the basis of Tetracolporites verrucosus, often but not always in association with the nominate species. The base of the zone at 2363.0m is defined by the first occurrence of T. verrucosus in a species-poor assemblage which lacks the distinctively large named (and unnamed) Proteacidites species characteristic of the T. longus Zone.

The top of the zone is picked at 2232.0m, based on the highest occurrence of Tetracolporites verrucosus in an assemblage lacking Verrucosisporites kopukensis. There is some uncertainity about the position of the Upper/Lower L. balmei Zone boundary since T. verrucosus occurs at 2164.0m in an otherwise good Upper L. balmei Zone assemblage and V. kopukuensis occurs within the Lower L. balmei Zone at 2306.0m. No previous examples of an overlap in the range of the two species are known and the preferred explanation in that reworking/caving has occurred.

Upper Lygistepollanites balmei Zone 2198.5 to 2006.5m.

The zone is distinguished by the constant presence of Verrucosisporites kopukuensis in association with frequent to abundant Lygistepollenites balmei. The top of the zone is defined by the highest occurrence of L. balmei at 2006.5m. This sample contains caved Nothofagidites spp. and the Paleocene/Late Cretaceous species Gambierina tenuis. The highest occurrence of Polycolpites langstoni, which is restricted to the L. balmei Zone is at 2025.2m. This sample contains Matonisporites ornamentalis, a species which was believed to range no lower than the (Middle Eocene) Lower N. asperus Zone but which now appears to also be characteristic of Paleocene sediments.

The interval from 1975.0m to 1652.6m (Lower M. diversus to P. asperopolus Zone) comprised mostly barren sediments. Nevertheless the spore-pollen assemblages that were recovered were sufficiently diverse to enable confident age determinations.

Lower M. diversus Zone 1929.0 to 1896.9m

Lower M. diversus Zone assembleges are recorded in two sidewall core samples. The lower, at 1929.0m, contains the first occurence of the nominate species and Anacolosidites acutullus, a species which is mostly confined to the Middle M. diversus Zone and younger sediments, but which may occur very rarely in Lower M. diversus Zone sediments (A.D. Partridge pers. comm.). The higher sample, at 1896.9m, contains Cyathidites gigantis a species which ranges no higher than the Lower M. diversus Zone, and Crassiretitriletes vanraadshoovenii, a species which first appears in this zone.

Middle M. diversus Zone 1840.0m

The Middle M. diversus Zone is represented by one sample only. The age-determination is based on the occurrence of Proteacidites leightonii, P. tuberculiformis, T. ambiguus and Cupanieidites orthoteichus, species which all first appear in this zone. The sample lacks Malvacipollis diversus and species which first appear in the Upper M. diversus Zone, e.g. Myrtceidites tenuis.

Upper M. diversus Zone 1817.0 to 1811.0m

As with the Lower M. diversus Zone, the Upper M. diversus Zone is represented by two samples only. The age-determinations are confirmed by the occurrence of common to abundant Malvacipollis diversus, Myrtceidites tenuis and, at 1811.0m, Proteacidites pachypolus.

Proteacidites asperopolus Zone 1771.0 to 1627.0m

Samples within this interval are dominated by Haloragacidites harrisii and Proteacidites spp. including P. pachypolus and P. biornatus. The base of the zone is defined by the first occurrence of Proteacidites asperopolus, a species which first appears in this zone, and Spinizonocolpites prominatus, a species which is last recorded in sediments of this age. The sample is unusual in that it also contained the rare species Myrtaceoipollenites australis. This taxon is not known to range above the lower part of the Upper M. diversus Zone. Tricolporites leuros which rarely appears below the Lower N. asperus Zone in Gippsland wells is first recorded at 1652.6m. The top of the zone is picked at 1627.0m, based on the occurrence of Spinizonocolpites prominatus, Proteacidites tuberculiformis and Myrtaceidites tenuis in an assemblage containing frequent Proteacidites pachypolus and lacking common to abundant Nothofagidites. Again the assemblage is an unusual one, containing: Helcisporites astrus, Proteacidites xestoformis and Polypodiaceoisporites varus which have not been recorded in Lower N. asperus Zone; Intra-triporopollenites notabilis, Tricolporites moultonii which range marginally into the Lower N. asperus Zone; Proteacidites reticulatus which is extremely rare below the upper part of the Lower N. asperus Zone as well as rare taxa such as Proteacidites scitulus, Tricolpites reticulatus (Stover & Evans) and Gleicheniidites magnus (Stough).

Lower Nothofagidites asperus Zone 1604.0 to 1499.9m,

The base of the zone is defined by the increase in Nothofagidites spp. from 11% at 1627.0m to 28% 1604.0m The occurrence of Tricolpites simatus shows this sample is no older than Lower N. asperus Zone in age. Proteacidites

asperopolus and Tricolporites moultonii at 1590.0m show this sample is no younger than Lower N. asperus Zone in age. Milfordia hypolaenoides, Tricolporites leuros and the extremely rare species Tricolpites arcilineatus occur at 1543.0m. A number of core samples, e.g. 1586.13m, 1578.70m and 1506.2m contained Proteacidites tuberculiformis, a species hitherto recorded as last appearing in the P. asperopolus Zone. The top of the zone is picked at 1499.9m, based on the occurrence of Proteacidites plemmelus and Tricolporites leuros in an assemblage lacking indicator species of the Middle N. asperus Zone. Proteacidites pachypolus, P. recavus and Polycolpites esobalteus at 1499.92m show this sample is no younger than early Middle N. asperus Zone in age but a Lower N. asperus Zone age cannot be demonstrated with confidence.

Middle Nothofagidites asperus Zone 1491.0 to 1472.0m

The base of the zone is picked on the first occurrence of the zone species Triorites magnificus at 1491.0m but the possibility exists that the interval between 1543.0m to 1499.9m is also Middle N. asperus Zone in age. Samples from 1488.0 to 1476.0m contain dinoflagellate species characteristic of the Middle N. asperus Zone, e.g. Corrudinium corrugatum, C. incompositum, Vozzhenikova extensa and Hystrichokolpoma rigaude. The highest occurrence of Triorites magnificus is at 1478.0m. Proteacidites leightonii, a species which ranges no higher than the Middle N. asperus Zone occurs at 1476.0m. The sidewall core at 1472.0m contains Proteacidites rectomarginis which appears as a rare species in the Middle N. asperus Zone, Foveotriletes crater which first appears at the top of this zone in the Bass Basin but rarely before the P. tuberculatus Zone in the Gippsland Basin, and the rare P. tuberculatus Zone species Verrucatosporites attinatus. The sample has been provisionally assigned to the Middle N. asperus Zone because of its lithological similarity to the underlying greensands, but its position immediately below the base of the Lakes Entrance Formation (Rexilius 1983) makes reworking/bioturbation during Upper N. asperus and Early P. tuberculatus Zone times (early Oligocene-Miocene) a strong possibility. The sample at 1446.0m contains an indeterminate Nothofagidites spore-pollen assemblages and early Miocene foraminifera (Rexilius ibid).

P. tuberculatus Zone 1412.0 to 1384.0m

The regular occurrence of Cyatheacidites annulatus confirms a P. tuberculatus Zone age for this glauconite-free calcareous interval.

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SUMMARY OF PALYNOLOGICAL ANALYSIS, WIRRAH-1, GIPPSLAND BASIN
INTERPRETATIVE CHART

SAMPLE	DEPTH (metres)	YIELD	DIVERSITY	LITHOLOGY	ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 116	1384.0	Fair	low	Calcilut.	P. tuberculatus	Early Miocene	0	C. annulatus
SWC 115	1412.0	Poor	Low	Calcilut.	P. tuberculatus	Early Miocene	0	C. annulatus
SWC 114	1446.0	Poor	Low	Calcisit	Indeterminate	Early Miocene (forams)	-	H. rigaude
SWC 113	1472.0	Fair	High	Sist.,glau.	Middle N. asperus	Late Eocene	2	P. rectomarginis, F. crater, V. attinatus
SWC 112	1476.0	Good	High	Sist.,glau.	Middle N. asperus	Late Eocene	2	P. leightonii, Q. psilatispora, V. rigaude
SWC 102	1478.0	Poor	Low	Sist.,glau.	Middle N. asperus	Late Eocene	0	T. magnificus, C. incompositum
SWC 101	1482.0	Good	Moderate	Sist.,glau.	Middle N. asperus	Late Eocene	0	T. magnificus, R. trophus, V. extensa, C. incompositum
SWC 100	1488.0	Poor	Low	Ss., glau.	Middle N. asperus	Late Eocene	1	C. incompositum
SWC 99	1491.0	Poor	Low	Ss.	Middle N. asperus	Late Eocene	0	T. magnificus
Core 1	1499.9	Fair	High		Lower N. asperus	Middle Eocene	2	No younger than Middle N. asperus
Core 1	1499.92	Good	High		Lower N. asperus	Middle Eocene	2	P. esobalteus, T. scabratus, P. recavus
Core 2	1506.2	Fair	Moderate		N. asperus	Middle Eocene	-	P. tuberculiformis
Core 3	1526.72	Poor	Low		Inderterminate	-	-	Reworked A. obscurus
SWC 98	1543.0	Fair	High	Ss.	Lower N. asperus	Middle Eocene	1	T. arcilineatus
Core 4	1578.70	Good	High		Lower N. asperus	Middle Eocene	1	P. asperopolus, D. delicatus, T. simatus
Core 5	1586.13	Good	High		Lower N. asperus	Middle Eocene	1	P. asperopolus, P. esobalteus
SWC 96	1590.0	Fair	Moderate	Ss., carb.	Lower N. asperus	Middle Eocene	1	abundant P. asperopolus and P. kopiensis
SWC 111	1604.0	Poor	Low		Lower N. asperus	Middle Eocene	1	T. simatus, Nothofagidites (28%)
SWC 92	1627.0	Fair	High	Ss., carb.	P. asperopolus	Middle Eocene	0	M. tenuis, frequent P. pachypolus, S. prominatus, P. varus, H. astrus
SWC 91	1652.8	Fair	High	Ss., carb.	P. asperopolus	Middle Eocene	1	P. recavus, T. leuros, N. falcatus
SWC 90	1671.0	Nil	-	Ss.	-	-	-	
SWC 89	1678.0	Nil	-	Ss.	-	-	-	
SWC 88	1685.5	Nil	-		-	-	-	
SWC 87	1702.2	Good	High	Slt., carb.	P. asperopolus	Early/Middle Eocene	1	P. asperopolus, P. pachypolus

SAMPLE	DEPTH (metres)	YIELD	DIVERSITY	LITHOLOGY	ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 86	1726.0	Good	Low	Sltst.	P. asperopolus	Early/Middle Eocene	2	Spore-dominated assemblage including, Crassiretitriletes vanraadshoovenii T. incisus
SWC 85	1751.0	Nil	-	Clyst.	-	-	-	
SWC 84	1771.0	Fair	High	Mudst.,	P. asperopolus		0	P. asperopolus, S. prominatus
SWC 83	1811.0	Good	Moderate	Slst.,	Upper M. diversus	Early Eocene	0	M. tenuis, P. pachypolus, abundant M. diversus
SWC 82	1817.0	Fair	Moderate	Slst.,	Upper M. diversus	Early Eocene	1	P. varus, M. tenuis
SWC 81	1840.0	Poor	Low	Ss.	Middle M. diversus	Early Eocene	1	P. varus, M. Tenuis, P. leightonii, T. ambiguus
SWC 80	1855.0	Nil	-	Clyst.	-	-	-	
SWC 79	1896.0	Good	Moderate	Clyst.	Lower M. diversus	Early Eocene	0	C. gigantis, C. vanraadshoovenii, C. orthoteichus
SWC 78	1912.0	Nil	-	Clyst.	-	-	-	
SWC 76	1929.0	Fair	Moderate	Slst.	Lower M. diversus	Early Eocene	2	A. acutullus, abundant M. diversus
SWC 75	1950.0	Nil	-	Sltst.	-	-	-	
SWC 76	1975.0	Nil	-	Sltst.	-	-	-	
SWC 73	2006.5	Poor	Moderate	Ss.	Upper L. balmei	Paleocene	2	L. balmei
SWC 72	2025.2	Good	High	Sh.	Upper L. balmei	Paleocene	1	L. balmei, M. ornamentalis, P. annularis, V. kopukuensis
SWC 69	2030.0	Nil	-	-	-	-	-	
SWC 68	2030.7	Nil	-	Ss.	-	-	-	
Core 6	2046.0	Negligible			Indeterminate		-	Caved P. asperopolus
SWC 66	2048.0	Poor	Moderate	Slst.	Upper L. balmei	-	2	L. balmei, P. incurvatus
Core 6	2061.12	Good	Moderate		Upper L. balmei	Paleocene	1	L. balmei, V. kopukuensis
SWC 65	2072.0	Good	Moderate	Slst.	Upper L. balmei	Paleocene	1	L. balmei, V. kopukuensis
SWC 63	2106.9	Good	Low	Slst.	Upper L. balmei	Paleocene	1	L. balmei, V. kopukuensis
SWC 61	2164.0	Good	High	Slst.	Upper L. balmei	Paleocene	2	V. kopukuensis, T. verrucosus
SWC 60	2186.5	Fair	Low	Sh.	L. balmei		-	L. balmei
SWC 59	2198.5	Good	Moderate	Sh.	Upper L. balmei	Paleocene	1	V. kopukuensis

SAMPLE	DEPTH (metres)	YIELD	DIVERSITY	LITHOLOGY	ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 53	2232.0	Poor	Low	Sh.	Lower *L. balmei*	Paleocene	1	*T. verrucosus*, *T. sectilis*
SWC 52	2255.0	Nil	-	Slst.	-		-	
SWC 50	2306.0	Fair	Moderate	Slst.	Lower *L. balmei*	Paleocene	2	*P. gemmatus*, *T. multistrixus*, *L. amplus*, *V. kopukuensis*
SWC 49	2320.0	Poor	Low	Sh.	Indeterminate	-	-	*S. (Tripunctisporis) punctatus*
SWC 48	2339.5	Poor	Low	Sh.	Lower *L. balmei*	Paleocene	2	*T. verrucosus*, *S. punctatus*
SWC 47	2363.0	Good	High	Slst.	Lower *L. balmei*	Paleocene	2	*L. balmei*, *T. verrucosus*
SWC 45	2383.0	Good	High	Sh.	*T. longus*	Late Cretaceous	0	*T. longus*, abundant *T. verrucosus* and *A. obscurus*, *P. gemmatus*
SWC 43	2409.0	Poor	Moderate	Sh.	*T. longus*	Late Cretaceous	0	*T. longus*, *P. otwayensis*, *P. wahooensis* *S. (Tripunctisporis) punctatus*
SWC 40	2435.0	Good	Very high	Sh.	*T. longus*	Late Cretaceous	0	as above plus *P. gemmatus*, *P. reticuloconcavus*, *T. waiparensis*, *L. illiei*, *G. wahooensis* and abundant *G. rudata*
SWC 36	2479.5	Nil	-	Slst.	-	-	-	
SWC 34	2525.2	Poor	Low	Slst.	Indeterminate	-	-	*G. rudata*
SWC 33	2543.5	Poor	Moderate	Sh.	Indeterminate	-	-	*C. eyrensis*
SWC 31	2567.7	Fair	Moderate	Slst., coaly	*T. longus*	Late Cretaceous	-	*T. verrucosus*; *S. regium*, *P. clinei*
SWC 30	2569.0	Fair	Low	Slst.	*T. longus*	Late Cretaceous	2	*T. renmarkensis*, *T. sectilis*, *S. regium*
SWC 29	2576.0	Fair	Low	Ss.	*T. longus*	Late Cretaceous	2	*P. gemmatus*
SWC 23	2615.5	Fair	Moderate	Slst.	*T. longus*	Late Cretaceous	1	*S. (Tripunctisporis) puncatatus*, *T. longus*, TAI = 2.8 to 3.0
SWC 15	2655.0	Nil	-	Volcanics	-	-	-	
SWC 9	2705.0	Fair	Low	Slst.	*T. longus*	Late Cretaceous	2	*P. otwayensis*, *S. regium*, *T. lilliei*
SWC 8	2715.3	Poor	Low	Slst.	*T. longus*	Late Cretaceous	0	*T. longus*, *T. renmarkensis*
SWC 6	2752.5	Poor	Moderate	Slst., carb.	*T. longus*	Late Cretaceous	0	*P. otwayensis*, *P. reticuloconcavus*, *T. waiparensis*, *T. securus*
SWC 2	2788.0	Nil	-	Slst.	-	-	-	
SWC 183	2798.5	Nil	-	Slst., carb.	-	-	-	
SWC 1	2800.0	Poor	Low	Slst.	Indeterminate	-	-	Eocene and Palocene spore-pollen only
SWC 181	2805.0	Nil	-	-	-	-	-	

SAMPLE	DEPTH (metres)	YIELD	DIVERSITY	LITHOLOGY	ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 178	2820.0	Poor	Low	Slst.	T. lilliei	Late Cretaceous	2	T. lilliei
SWC 172	2865.0	Poor	Modetate	Slst.	T. lilliei	Late Cretaceous	2	T. lilliei, T. renmarkensis
SWC 171	2866.5	Nil	-	-	-	-	-	
SWC 166	2917.5	Nil	-	-	-	-	-	
SWC 163	2940.0	Nil	-	-	-	-	-	
SWC 194	2994.5	Poor	Low	Ss.	T. lilliei	Late Cretaceous	2	G. rudata, T. waiparensis, N. senectus
SWC 192	3000.0	Poor	Low	Ss.	T. lilliei	Late Cretaceous	2	G. rudata
SWC 163	2004.5	Nil	-	Ss., silty.	-	-	-	
SWC 188	3008.5	Good	Moderate	Slst.	T. lilliei	Late Cretaceous	1	T. lilliei, G. rudata
SWC 143	3010.0	Fair	Moderate	Ss.	T. lilliei	Late Cretaceous	1	T. lilliei, G. rudata
SWC 140	3016.5	Nil	-	Ss.	-	-	-	
SWC 186	3020.0	Nil	-	Ss.	-	-	-	
SWC 137	3021.5	Poor	Low	Ss.	T. lilliei	Late Cretaceous	2	G. rudata
SWC 185	3024.0	Nil	-	Ss.	-	-	-	
SWC 184	3028.5	Poor	Low	Ss.	T. lilliei	Late Cretaceous	2	G. rudata, G. edwardsii
								T.D. 3031m

PALYNOLOGY DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: 21m GL: -50m

WELL NAME: WIRRAH-1 TOTAL DEPTH:

AGE	PALYNOLOGICAL ZONES	HIGHEST DATA					LOWEST DATA				
		Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
NEOGENE	*T. pleistocenicus*										
	M. lipsis										
	C. bifurcatus										
	T. bellus										
	P. tuberculatus	1384.0	0				1412.0	0			
PALEOGENE	Upper *N. asperus*										
	Mid *N. asperus*	1472.0	2	1478.0	0		1491.0	0			
	Lower *N. asperus*	1499.9	2	1578.7	1		1604.0	1			
	P. asperopolus	1627.0	0				1771.0	0			
	Upper *M. diversus*	1811.0	0				1817.0	1			
	Mid *M. diversus*	1840.0	1				1840.0	1			
	Lower *M. diversus*	1896.9	0				1929.0	2	1896.9	0	
	Upper *L. balmei*	2006.5	2	2025.2	1		2198.5	1			
	Lower *L. balmei*	2232.0	1				2363.0	2	2232.0	0	
LATE CRETACEOUS	*T. longus*	2383.0	0				2752.5	1			
	T. lilliei	2820.0	2	3008.5	1		3028.5	2	3010.0	1	
	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:

CONFIDENCE RATING:
- 0: SWC or Core, Excellent Confidence, assemblage with zone species of spores, pollen and microplankton.
- 1: SWC or Core, Good Confidence, assemblage with zone species of spores and pollen or microplankton.
- 2: SWC or Core, Poor Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.
- 3: Cuttings, Fair Confidence, assemblage with zone species of either spores and pollen or microplankton, or both.
- 4: Cuttings, No Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

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

DATA RECORDED BY: M.K. MACPHAIL DATE: 27 JANUARY 1983

DATA REVISED BY: DATE:

BASIC DATA

Table 2 - Palynological Data

Range Chart - Dinoflagellates

Range Chart - Spore-pollen

SUMMARY OF PALYNOLOGICAL ANALYSIS, WIRRAH-1, GIPPSLAND BASIN

BASIC DATA

SAMPLE	DEPTH (metres)	YIELD	DIVERSITY	LITHOLOGY
SWC 116	1384.0	Fair	low	Calcilut.
SWC 115	1412.0	Poor	Low	Calcilut.
SWC 114	1446.0	Poor	Low	Calcislt
SWC 113	1472.0	Fair	High	Slst.,glau.
SWC 112	1476.0	Good	High	Slst.,glau.
SWC 102	1478.0	Poor	Low	Slst.,glau.
SWC 101	1482.0	Good	Moderate	Slst.,glau.
SWC 100	1488.0	Poor	Low	Ss., glau.
SWC 99	1491.0	Poor	Low	Ss.
Core 1	1499.9	Fair	High	
Core 1	1499.92	Good	High	
Core 2	1506.2	Fair	Moderate	
Core 3	1526.72	Poor	Low	
SWC 98	1543.0	Fair	High	Ss.
Core 4	1578.70	Good	High	
Core 5	1586.13	Good	High	
SWC 96	1590.0	Fair	Moderate	Ss., carb.
SWC 111	1604.0	Poor	Low	
SWC 92	1627.0	Fair	High	Ss., carb.
SWC 91	1652.8	Fair	High	Ss., carb.
SWC 90	1671.0	Nil	-	Ss.
SWC 89	1678.0	Nil	-	Ss.
SWC 88	1685.5	Nil	-	
SWC 87	1702.2	Good	High	Slt., carb.
SWC 86	1726.0	Good	Low	Sltst.
SWC 85	1751.0	Nil	-	Clyst.
SWC 84	1771.0	Fair	High	Mudst.,
SWC 83	1811.0	Good	Moderate	Slst.,
SWC 82	1817.0	Fair	Moderate	Slst.,
SWC 81	1840.0	Poor	Low	Ss.
SWC 80	1855.0	Nil	-	Clyst.
SWC 79	1896.0	Good	Moderate	Clyst.
SWC 78	1912.0	Nil	-	Clyst.
SWC 76	1929.0	Fair	Moderate	Slst.
SWC 75	1950.0	Nil	-	Sltst.

SUMMARY OF PALYNOLOGICAL ANALYSIS, WIRRAH-1, GIPPSLAND BASIN

BASIC DATA

SAMPLE	DEPTH (metres)	YIELD	DIVERSITY	LITHOLOGY
SWC 76	1975.0	Nil	-	Sltst.
SWC 73	2006.5	Poor	Moderate	Ss.
SWC 72	2025.2	Good	High	Sh.
SWC 69	2030.0	Nil	-	-
SWC 68	2030.7	Nil	-	Ss.
Core 6	2046.0	Negligible		
SWC 66	2048.0	Poor	Moderate	Slst.
Core 6	2061.12	Good	Moderate	
SWC 65	2072.0	Good	Moderate	Slst.
SWC 63	2106.9	Good	Low	Slst.
SWC 61	2164.0	Good	High	Slst.
SWC 60	2186.5	Fair	Low	Sh.
SWC 59	2198.5	Good	Moderate	Sh.
SWC 53	2232.0	Poor	Low	Sh.
SWC 52	2255.0	Nil	-	Slst.
SWC 50	2306.0	Fair	Moderate	Slst.
SWC 49	2320.0	Poor	Low	Sh.
SWC 48	2339.5	Poor	Low	Sh.
SWC 47	2363.0	Good	High	Slst.
SWC 45	2383.0	Good	High	Sh.
SWC 43	2409.0	Poor	Moderate	Sh.
SWC 40	2435.0	Good	Very high	Sh.
SWC 36	2479.5	Nil	-	Slst.
SWC 34	2525.2	Poor	Low	Slst.
SWC 33	2543.5	Poor	Moderate	Sh.
SWC 31	2567.7	Fair	Moderate	Slst., coal
SWC 30	2569.0	Fair	Low	Slst.
SWC 29	2576.0	Fair	Low	Ss.
SWC 23	2615.5	Fair	Moderate	Slst.
SWC 15	2655.0	Nil	-	Volcanics
SWC 9	2705.0	Fair	Low	Slst.
SWC 8	2715.3	Poor	Low	Slst.
SWC 6	2752.5	Poor	Moderate	Slst., carb
SWC 2	2788.0	Nil	-	Slst.
SWC 183	2798.5	Nil	-	Slst., carb

SUMMARY OF PALYNOLOGICAL ANALYSIS, WIRRAH-1, GIPPSLAND BASIN

BASIC DATA

SAMPLE	DEPTH (metres)	YIELD	DIVERSITY	LITHOLOGY
SWC 1	2800.0	Poor	Low	Slst.
SWC 181	2805.0	Nil	-	-
SWC 178	2820.0	Poor	Low	Slst.
SWC 172	2865.0	Poor	Modetate	Slst.
SWC 171	2866.5	Nil	-	-
SWC 166	2917.5	Nil	-	-
SWC 163	2940.0	Nil	-	-
SWC 194	2994.5	Poor	Low	Ss.
SWC 192	3000.0	Poor	Low	Ss.
SWC 163	2004.5	Nil	-	Ss., slty.
SWC 188	3008.5	Good	Moderate	Slst.
SWC 143	3010.0	Fair	Moderate	Ss.
SWC 140	3016.5	Nil	-	Ss.
SWC 186	3020.0	Nil	-	Ss.
SWC 137	3021.5	Poor	Low	Ss.
SWC 185	3024.0	Nil	-	Ss.
SWC 184	3028.5	Poor	Low	Ss.

APPENDIX 3

APPENDIX 3

QUANTITATIVE LOG ANALYSIS

WIRRAH-1
QUANTITATIVE LOG ANALYSIS

Interval: 1489-3030m KB

Analyst : W.J. Mudge

Date : September, 1983

WIRRAH - 1 QUANTITATIVE LOG ANALYSIS

Wirrah-1 wireline logs have been analysed for effective porosity and water saturation over the interval 1489-3030m KB. Analysis was carried out using a reiterative technique which incorporates hydrocarbon correction to the porosity logs, density-neutron crossplot porosities, a Dual Water saturation relationship, and convergence on a preselected grain density window by shale volume adjustment.

Logs Used and Log Quality

LLD, LLS, MSFL, GR, Caliper, RHOB (LDT), PHIN (CNL).

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

The corrected resisitivity logs were then used to derive Rt and invasion diameter.

Coals and carbonaceous shales were edited for an output of:

VSH = 0, PHIE = 0, and Swe = 1.

Log quality is good over the interval 1489-2680m KB. Below 2680m KB the borehole is badly washed out. Sonic porosities were determined and used in preference to Density-Neutron derived porosities over the interval 2680-3035m KB.

Analysis Parameters

Apparent shale density and shale neutron porosity values were derived from crossplots of the density and neutron logs. Shale resistivities were read directly from the logs.

The apparent connate water salinities used and the method by which they were obtained will be discussed later in the text.

Table 1 summarises the analysis parameters.

Shale Volume

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

$$VSH = \frac{GRlog - GRmin}{GRmax - GRmin} \qquad - 1$$

Total Porosities

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

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

if h is greater than 0, then

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

if h is less than 0, then

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

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

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)

Below 2680m KB the Wyllie equation was used to determine porosity assuming a Delta T matrix of 182 us/m and Delta T fluid of 620 us/m. This was then corrected for VSH derived from the gamma ray.

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

Rwb and Swb were calculated using the following relationships:

$$\text{Rwb} = \frac{\text{RSH} * \text{PHITSH}^m}{a} \quad - 6$$

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

$$\text{Swb} = \frac{\text{VSH} * \text{PHITSH}^m}{\text{PHIT}} \quad - 7$$

Free Water Resistivities (Rw) and Salinities

Apparent free water resistivities and salinities were calculated using the following relationships:

$$\text{Rw} = \frac{\text{Rt} * \text{PHIT}^m}{a} \quad - 8$$

where a = 1, m = 2, and PHIT = total porosity determined from density-neutron logs using equations 2 and 3.

$$\text{Salinity (ppm)} = \left[\frac{300,000}{\text{Rw}(\text{Ti} + 7) - 1}\right]^{1.05} \quad - 9$$

where Ti = formation temperature in ^{o}F.

It should be emphasised that the calculated salinities are apparent salinities. It is not absolutely essential that true free water salinities be used in water saturation calculations for the following reasons:

(a) in order to obtain true free water salinities appropriate a and m values must be known or obtained and this data is generally not available.

(b) the calculated water saturation values using the apparent salinities are virtually similar to those obtained using true salinities as long as the appropriate a, m and n are used in the calculations.

The sands in the interval 1489 - 1895m have been subjected to fresh water flushing making precise determination of apparent free water salinities difficult. The apparent salinities in the water bearing sands are very variable. They not only vary from sand to sand but also within individual sand intervals. An attempt was made to "normalise" the variable salinities within the sand intervals by using the following relationship:

$$\text{Rw} = \frac{\text{Ro} * \text{PHIT}^m * \text{Rwb}\ (\text{Swb} - 1)}{\text{Ro} * \text{PHIT}^m * (\text{Swb} - \text{Rwb})} \quad -10$$

where Ro = Rt in water bearing sands

and salinities were calculated using equation 9. The salinities were then averaged for each sand. As for the hydrocarbon bearing zones within the interval the apparent free water salinities (or connate water salinities) were taken to be the salinities of the sands, below the limit of fresh water flushing. The adjacent fresh water aquifer salinities were not used in the saturation calculations for the following reasons:

(i) water saturations obtained using fresh water salinities tended to be high and inconsistent with hydrocarbon recoveries.

(ii) SP deflections opposite hydrocarbon bearing sands suggest that the free water salinities are higher than the aquifer salinities and probably closer to mud filtrate salinities.

(iii) Hydrocarbon bearing sands calculate to be water bearing if adjacent fresh water aquifer salinities are used.

Free water salinities are summarised in Table 2.

Water Saturations

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

$$\frac{1}{Rt} = SwT^{n} * \left(\frac{PHIT^{m}}{aRw}\right) + SwT^{(n-1)}\left[\frac{Swb * PHIT^{m}}{a}\left(\frac{1}{Rwb} - \frac{1}{Rw}\right)\right] \qquad -11$$

and

$$\frac{1}{Rxo} = SwT^{n} * \left(\frac{PHIT^{m}}{aRw}\right) + SwT^{(n-1)}\left[\frac{Swb * PHIT^{m}}{a}\left(\frac{1}{Rwb} - \frac{1}{Rmf}\right)\right] \qquad -12$$

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

Hydrocarbon Corrections

Hydrocarbon corrections to the environmentally corrected density and neutron logs were made using the following relationships:

$$RHOBHC = RHOB + 1.07\ PHIT\ (1-SxoT)\ [(1.11-0.15P)\ RHOF - 1.15\ RHOH] \qquad -13$$

$$PHINHC = PHIN + 1.3\ PHIT\ (1-SxoT)\left[\frac{RHOF\ (1-P) - 1.5\ RHOH + 0.2}{RHOF\ (1-P)}\right] \qquad -14$$

where RHOBHC = hydrocarbon corrected RHOB
PHINHC = hydrocarbon corrected PHIN
RHOH = hydrocarbon density (0.25 gms/cc for gas, 0.7 gms/cc for oil)
P = mud filtrate salinity in parts per unity

Grain Density

Grain density (RHOG) was calculated from the hydrocarbon corrected density and neutron logs using the following relationships:

$$RHOBC = \frac{RHOBHC - VSH * RHOBSH}{1 - VSH} \qquad -15$$

$$PHINC = \frac{PHINHC - VSH * PHINSH}{1 - VSH} \qquad -16$$

and equations 2, 3 and 4 are then used to compute RHOG.

where RHOBSH = environ. corrected bulk density of shale
PHINSH = environ. corrected neutron porosity of shale

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:

$$PHIE = PHIT - VSH * PHITSH \quad -17$$

$$Swe = 1 - \frac{PHIT}{PHIE}(1-SwT) \quad -18$$

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.

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

The results of the analysis are summarised in Table 3.

Comments

1. Below the limit of fresh water flushing (approximately 1895m KB) water bearing sands with an apparent salinity of 22000 ppm are present. The salinity remains constant until 2270m KB. An apparent connate water salinity of 22000 ppm was chosen for all hydrocarbon zones within the interval 1489-2270m KB.

2. Water bearing sands between 2270-2505m KB have an apparent salinity of 12000 ppm.

3. Water bearing sands with an apparent connate water salinity of 9000 ppm are present over the interval 2547-2563m KB. This salinity was chosen for hydrocarbon bearing sands over the interval 2573-2643m KB.

4. Below 2680m KB calculated porosities are less than 10%. A production test was carried out over the interval 2725-2747m KB the results of which was "non productive, no effective permability". A further test was carried out over the interval 2691-2702m KB. Results from this indicated that the formation had "low permability" and was "water/filtrate productive".

   From sidewall cores and conventional cores the only interval with significant hydrocarbon shows below 2680m KB is from 2798-2806m KB. However resistivities do not indicate the presence of hydrocarbons. If salinities derived from adjacent aquifers are used the interval calculates out to be water bearing.

   Calculated porosities, core analysis porosities and permeabilities, production test data and RFT results all indicate the interval from 2680-3040m KB to be tight and non productive and effectively 100% water wet.

5. A gas-oil contact is present at 1531m. Oil-water contacts are present at 1533.50m, 1672m and 2639.50m.

6. Porosities increase below 2985m KB due to the onset of "overpressure".

7. Figures 1 and 2 present a comparison of calculated porosities and core analysis porosities.

   Core No. 6 porosities were measured with an overburden pressure of 32,400 KPa. The core was moved up 0.70m to bring it on depth with logs.

   Core No. 7 porosities were not measured at overburden conditions. Ambient porosities were multiplied by 0.9 in an attempt to correct to overburden conditions.

13481/1

ANALYSIS PARAMETERS

TABLE 1

	1488-1700m KB	1700-1895m KB	1895-2385m KB	2385-2515m KB	2515-2650m KB	2650-3035m KB
a	1	1	1	1	1	1
m	2	2	2	2	2	2
n	2	2	2	2	2	2
Bulk density of shale (gm/cc)	2.570	2.570	2.630	2.630	2.670	2.670
Neutron Porosity of Shale	0.360	0.360	0.330	0.330	0.300	0.300
RSH (ohmm)	30.000	25.000	9.000	22.000	22.000	40.000
Rmf (ohmm) @ 17^{o}C	0.276	0.276	0.276	0.276	0.276	0.276
Grain density - lower limit (gm/cc)	2.650	2.650	2.650	2.650	2.650	2.650
Grain density - upper limit (gm/cc)	2.670	2.670	2.670	2.670	2.670	2.670
GR Maximum api units	135.000	135.000	135.000	135.000	135.000	135.000
GR Minimum api units	15.000	15.000	15.000	15.000	15.000	15.000
Invaded zone fluid density (gm/cc)	1.000	1.000	1.000	1.000	1.000	1.000

TABLE 2

Depth Interval (mKB)	Apparent Free Water Salinity (ppm)
1451.00 - 1533.50	22000 *
1533.50 - 1568.00	2000
1568.00 - 1596.00	22000 *
1596.00 - 1616.00	900
1616.00 - 1631.00	2000
1631.00 - 1652.00	2500
1652.00 - 1672.00	22000 *
1672.05 - 1698.00	1000
1698.00 - 1750.00	2000
1750.00 - 1770.00	1100
1770.00 - 1814.00	1000
1814.00 - 1845.00	1600
1845.00 - 1890.00	1100
1890.00 - 1970.00	18000
1970.00 - 2270.00	22000
2270.00 - 2482.00	12000
2482.00 - 2680.00	9000
2680.00 - 3034.00	6000

* Calculated from below the limit of fresh water flushing.
All salinities are apparent salinities.

SUMMARY OF RESULTS TABLE 3

(i) Hydrocarbon Bearing Sands

Depth Interval (m KB)	Gross Thickness (m)	Net Porous Thickness (m)	Porosity Range	*Porosity Average	Swe Range	*SWE Average	Hydrocarbon Type
1488.25 - 1531.00	42.75	39.75	.118-.325	.245	.022-.766	.114	Gas
1531.25 - 1533.50	2.25	2.25	.193-.295	.247	.134-.262	.194	Oil
1574.00 - 1575.75	1.75	1.75	.142-.287	.261	.051-.157	.097	Oil
1582.25 - 1585.50	3.25	3.00	.130-.168	.150	.161-.334	.264	Oil
1594.50 - 1596.00	2.00	2.00	.160-.288	.267	.053-.277	.093	Oil
1670.75 - 1672.00	1.25	1.25	.200-.221	.209	.134-.186	.159	Oil
2029.25 - 2035.25	6.00	6.00	.137-.247	.182	.261-.733	.414	Oil
2044.75 - 2047.25	2.50	2.00	.115-.185	.148	.589-.728	.644	Oil
2192.25 - 2196.75	4.50	1.75	.106-.193	.149	.123-.469	.273	Gas
2202.75 - 2207.75	5.00	5.00	.116-.211	.188	.086-.401	.157	Oil
2233.00 - 2245.00	12.00	5.75	.102-.234	.167	.053-.173	.104	Gas
2245.25 - 2249.75	4.50	4.50	.139-.243	.193	.052-.604	.174	Oil
2573.75 - 2576.50	2.75	2.75	.103-.213	.143	.478-.929	.636	Oil
2582.50 - 2585.25	2.75	2.50	.105-.164	.137	.284-.633	.452	Oil
2591.50 - 2639.50	48.00	38.50	.100-.169	.134	.279-.852	.605	Oil

* Refers to net sand with porosities greater than 10%.

(ii) Water Bearing Sands

Depth Interval (m KB)	Gross Thickness (m)	Net Porous Thickness (m)	Porosity Range	Porosity Average
1533.75 - 1566.75	33.00	30.50	.116-.300	.248
1596.25 - 1625.25	29.00	23.75	.100-.317	.249
1632.75 - 1650.50	17.75	15.75	.106-.323	.246
1672.25 - 1684.75	12.50	12.50	.195-.305	.243
1703.00 - 1744.25	41.25	32.75	.109-.332	.244
1752.00 - 1769.00	17.00	16.00	.104-.299	.220
1772.75 - 1810.00	37.25	27.75	.119-.280	.227
1818.25 - 1839.25	21.00	21.00	.144-.303	.255
1862.25 - 1879.50	17.25	17.25	.126-.284	.230
1905.25 - 1907.75	2.50	2.50	.146-.261	.222
1921.00 - 1926.50	5.50	5.50	.196-.285	.246
1930.50 - 1948.25	17.75	16.00	.124-.280	.224
1951.75 - 1964.50	12.75	10.25	.113-.284	.228
1978.25 - 1988.50	10.25	10.25	.158-.258	.222
1996.50 - 2029.00	32.50	27.25	.111-.259	.199
2048.00 - 2054.00	6.00	5.50	.134-.230	.185
2082.75 - 2179.50	96.75	67.75	.103-.284	.203
2274.00 - 2284.75	10.75	3.00	.102-.219	.153
2295.75 - 2303.00	7.25	6.25	.101-.238	.176
2313.25 - 2319.25	6.00	2.75	.106-.202	.162
2323.50 - 2336.00	12.50	3.50	.101-.257	.144
2363.50 - 2381.00	17.50	4.50	.102-.207	.137
2400.00 - 2406.75	6.75	4.25	.104-.156	.136
2411.75 - 2415.25	3.50	1.75	.102-.127	.112
2430.25 - 2433.50	3.25	1.00	.108-.145	.121
2439.00 - 2446.75	7.75	3.25	.104-.166	.133
2454.25 - 2463.50	9.25	3.00	.100-.171	.129
2485.75 - 2502.75	17.00	3.75	.103-.235	.143
2511.75 - 2520.25	8.50	3.75	.107-.189	.138
2546.75 - 2562.75	16.00	16.00	.108-.193	.149
2680.25 - 2753.50+	65.25	-	.006-.087	.049
2753.50 - 2864.75+	111.25	-	.000-.088	.054
2864.75 - 2915.00+	50.25	-	.000-.068	.034
2915.75 - 2966.50+	50.75	-	.001-.079	.038
2982.75 - 3035.25+	52.50	-	.003-.191	.082

+ No net sand is present in these intervals so gross porosities and porosity ranges have been quoted.

CORE No. 6

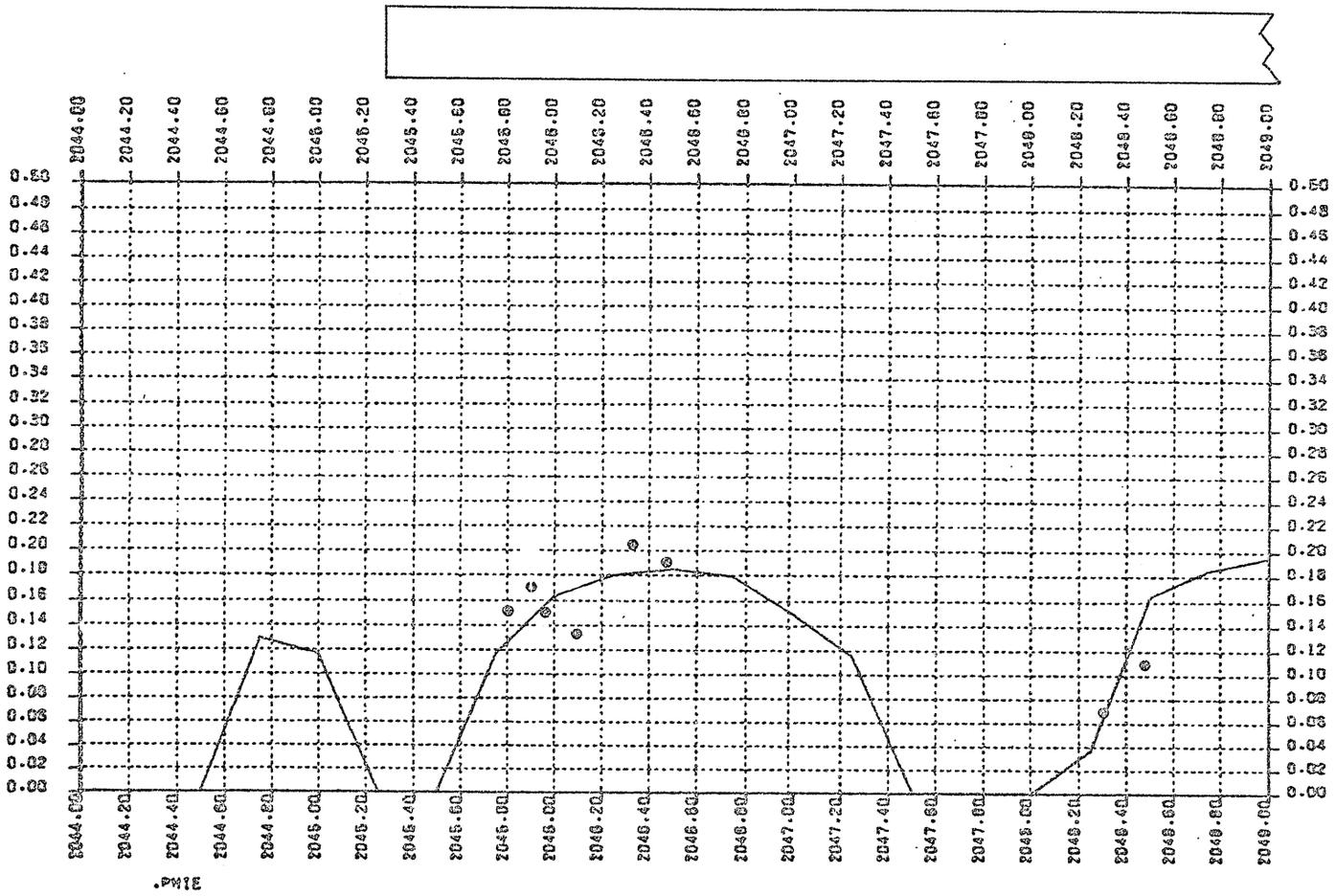


Figure 1

CORE No. 7

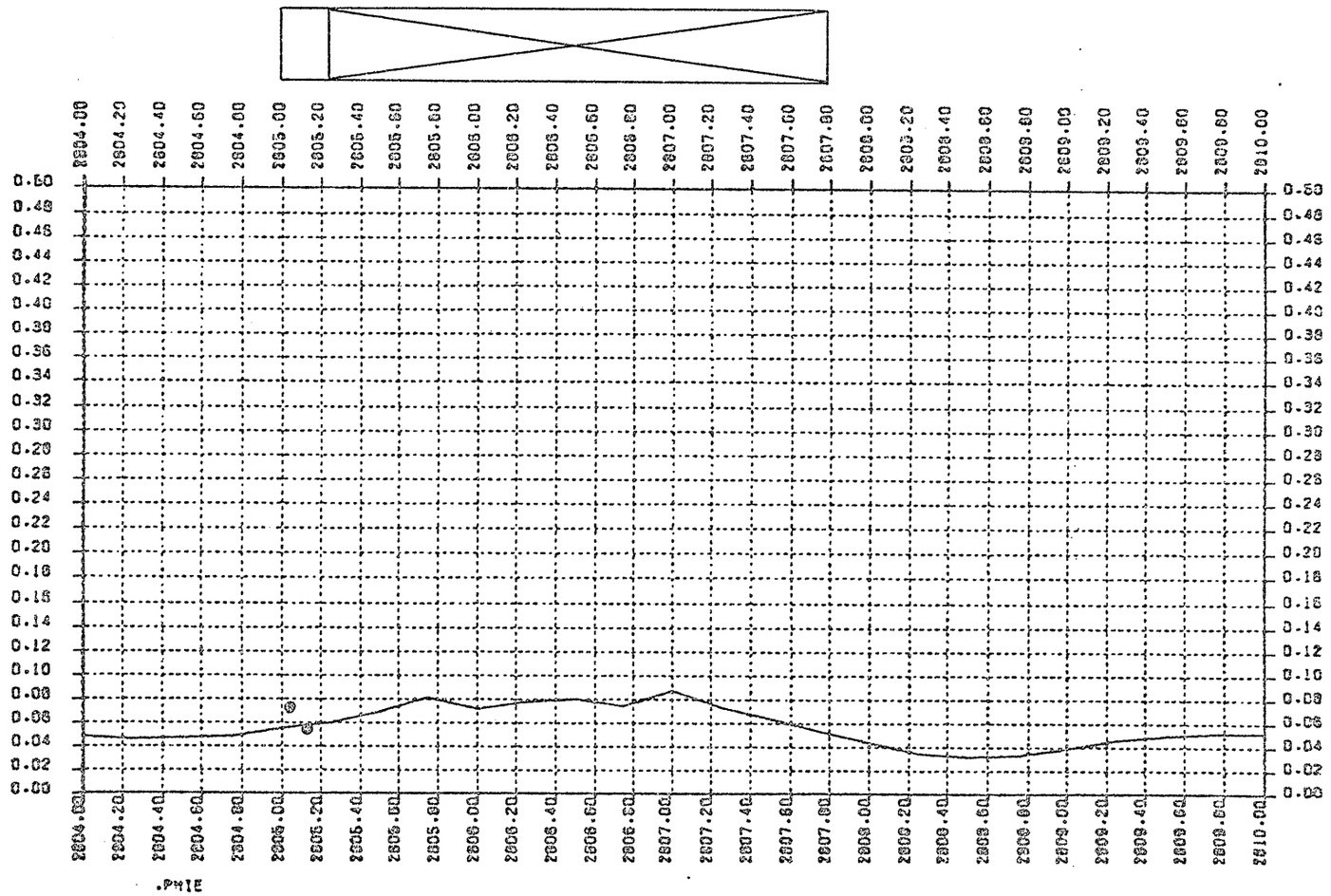


Figure 2

APPENDIX 4

APPENDIX 4

WIRELINE TEST REPORT

WIRRAH-1 RFT TESTS

SUMMARY

A series of RFT tests were run in the Wirrah-1 exploration well in September and October 1982. The tests were broken into four programs;

(i) Suite 2, 26/ 9/82 1491m-1757m KB;

(ii) Suite 3, 5/10/82 1926m-2032m KB;

(iii) Suite 4, 16/10/82 2301-2789m KB; and

(iv) Suite 5, 19/11/82 2973.7- 3014.5m KB

No RFT tests were conducted during the Suite 1 logging programme.

The aim of these tests was to investigate oil and gas shows indicated on the mudlogs or by log interpretation and to provide an estimate of the size of any hydrocarbon columns found.

Table 1 summarises the hydrocarbon accumulations which were confirmed as a result of these tests. The results can be summarized as follows:

(i) a 39m net sand gas accumulation at the top of the Latrobe with a thin underlying oil column;

(ii) two thin oil sands in the 1570 to 1600m interval with different oil-water contacts;

(iii) two thin oil sands in the 2030 to 2045m interval with different oil-water contacts;

(iv) an 11m net sand in the 2191m-2208m interval, with an estimated oil column of 36m and an overlying gas cap; and

(v) a 9.5m net sand in the 2235m-2250m interval, with an estimated oil column of 40m and an overlying gas cap.

Problems with low permeability and washed out hole limited the ability to sample and to interpret pressure data below 2500m. The test however, did confirm that the intervals below 2960m are abnormally pressured.

RESULTS AND DISCUSSION

The results of tests are documented in the attachments as follows:

(i) Table 1 - Hydrocarbon Accumulations Confirmed by RFT.

(ii) Figures; 1 Wirrah-1 RFT Overview
2 Wirrah-1, Suite 1
3 Wirrah-1, Suite 2
4 Wirrah-1, Suite 3

1. Suite 2

Suite 2 investigated the interval between 1491 and 1757m KB. In the 9 RFT runs made, 42 of the 58 pre-test attempts were successful and 8 sample runs were completed.

The main results, which are illustrated in Figure 2, were:

(a) A 42m gross gas column at the Top of Latrobe with a thin oil column was identified. The 39m net gas sand extends from the GOC at 1531m to the Top of Latrobe at 1489m KB. The oil column extends from the OWC at 1533m to the GOC at 1531m KB. These depths were obtained from log interpretation because pressure measurements are not sufficiently accurate to resolve the two oil column contacts. However, the pressure data confirms the log interpretation.

RFT 9 and RFT 7 sampled gas and oil respectively from the Top of Latrobe accumulation. Samples of both oil and gas were preserved.

(b) The water gradient established immediately below the thin oil accumulation is 1.39 psi/m which indicates relatively fresh water and is consistent with the high resistivity indicated on logs. The pressures measured in the water sands indicate a drawdown of 62 psi from the estimated initial aquifer pressure.

(c) Two oil sands were found in the 1570 to 1600m interval. The top sand extends from an estimated OWC at 1584m to 1574m and has 2.0m net sand. The OWC estimate was obtained by assuming an oil gradient of 1 psi/m and a water gradient obtained from pressure data in the 1600m to 1690m KB interval. This pressure data yielded a fresh water gradient of 1.39 psi/m. The top of the sand, 1574m, is based on log interpretation. The pressure test at 1570.5m appears to lie on the oil gradient. However, log interpretation indicates this is in a very shaley interval and the pressure may represent the effects of supercharging. RFT 3 sampled oil at 1575m and the 1 gallon chamber was preserved.

The second oil sand was sampled with RFT 2 at 1595m and RFT 5 at 1583.5 and 1584m KB. RFT 2 sampled oil in good quality rock with high, indicated permeability. RFT 5 recovered oil and filtrate in very tight rock. This oil sand extends from the OWC at 1596m to 1582m KB. The net sand in this interval is 5.5m, but 3.5m of this is of poor quality. These depths are based on log correlation. RFT pressure data supports this interpretation with an OWC in the 1595 to 1596m range.

(d) RFT sample runs at 1605m (RFT 8), 1613m (RFT 4) and 1678m (RFT 6) yielded interpreted formation water samples.

(e) As shown in Figure 1, there is a discontinuity in the water gradient around 1700m. The sands below this depth are drawn down more than those above.

2. Suite 3

Suite 3 investigated the interval 1926m - 2032m KB. In the 8 RFT runs made, 30 of the 53 pretest attempts were successful and 6 samples were taken. The main results, which are shown in Figure 3, were:

(a) Two oil sands in the 2030m to 2045m interval were confirmed. The upper sand extends from the estimated OWC at 2044m to 2030m and has 1.0m of net sand. The lower sand extends from an estimated OWC at 2054m to 2045.5m KB and has 6.0m of net sand. The two OWC's were determined using an oil gradient of 1.0 psi/m and a water gradient established from pressure data in the 2050 to 2200m interval.

Oil samples were taken at 2032m KB with RFT 13 and 2046m KB with RFT 15. Horner analysis of build-up pressures in these two sands indicates permeability-thickness of approximately 200 md-feet.

(b) A sand with an estimated 36m oil column and a gas cap was confirmed at 2200m. Log interpretation indicates the top of the observed gas column at 2191m, with a GOC at 2203m KB. RFT pressure data indicates a GOC of 2205m KB which is compatible with log interpretation. Net sand over the oil and gas interval is 11.0m.

The determination of OWC depends heavily on the oil gradient assumed as a pressure gradient in the oil sand could not be measured. The estimated OWC of 2239m KB is based on an oil gradient of 1.0 psi/m. To illustrate the effect of the oil density assumption, if the gradient is in fact 0.9 psi/m, the OWC would be at 2233m KB, reducing the oil column from 36 to 30m.

RFT 17 sampled gas at 2195.3m KB and RFT 12 sampled oil at 2205m KB. A Horner analysis of build-up pressures for RFT 12 indicates a high permeability.

(c) A sand with a 40m estimated oil column and a gas cap was confirmed at 2250m. Log interpretation indicates the top of the observed gas column is 2235m and the GOC at 2245.5m KB. As with the accumulation at 2200m, the OWC was determined by extrapolating a pressure measurement in the oil sand to the water gradient line at a slope of 1.0 psi/m. If the oil density corresponds to a slope of 0.9 psi/m, the OWC would be 2281m KB, reducing the oil column from 40m to 32.5m.

RFT 11 sampled oil at 2249m KB. Build-up analysis indicates a high permeability.

(d) A line drawn through the Program 2 water pressure tests yields a water gradient of 1.47 psi/m. This water gradient is somewhat high for Bass Strait aquifers and corresponds to a NaCl concentration of approximately 100,000 ppm. It is possible that different sands in this interval have minor differences in the drawdown due to Gippsland production and the pressure profile might be better represented by a series of water gradient lines separated by minor discontinuities across sands. A water gradient interpretation of this type would have little bearing on the conclusions of this report. Log analysis indicates a change in water salinity at approximately 1900m KB (Refer to Figure 1).

3. Suite 4

Suite 4, which investigated the interval 2301m KB to 2789m KB, was affected by problems with low permeability formations and washed-out hole . Of the 61 pretests attempted, only 15 were successful. Seal problems were also experienced in 2 of the five sampling runs. As a consequence, it was not possible to fulfill all the objectives of this RFT suite.

To summarize the results;

(a) The pressures gradient in the water sand in the 1495 to 1510m KB region (approximate depths) was approximately 15 psi lower than the water gradient above. Log interpretation also indicates lower salinity in this sand than in the sands above. The pressure tests below this depth were significantly above the water gradient established in this water sand. The sands below this point are of low permeability (estimated at 20 md) and part of the reason for the higher pressures may be due to supercharging. However, sampling runs suggest supercharging may not be the only reason. For example, the first pretest at 2633m KB indicated a pressure of 3790.1 psia. A build-up analysis of this sample indicated a Horner pressure of 3785 psia. The pretest pressure for the second sample at this seat (RFT 23) was 3784.5 psia and the build-up analysis indicated a Horner pressure of 3784 psia. It therefore appears that a pressure of 3784-3785 psia is a reliable estimate of formation pressure.

It should be noted that pretest 20/18, at depth 2624.5m, indicated a pressure of 3767.6 psia. This test is in the same sand as the tests at 2633m KB and shows a water gradient in this sand. This suggests that water may be acting as the continuous phase in this interval.

(b) Two samples taken at 2633m KB (RFTs 18 & 23) recovered water and oil scum. The low pH and low nitrate concentration in the water suggests the sample contained formation water. (The subsequent production test of the interval 2624m-2633.5m flowed oil with a 35% water cut). The sample at 2604.5m (RFT 21) recovered water and a small amount of oil scum. The high nitrates in the 6 gallon chamber (180 ppm) suggest it recovered filtrate, whilst the lower nitrates in the $2^{3}/4$ gallon chamber (50 ppm) suggest the possibility of formation water. The results of these tests are regarded as inconclusive.

The sampling at 2461.5m KB (RFT's 22 & 24) had seal problems during sampling. However both tests had some indication of oil.

4. Suite 5

Suite 5 was run after Production Test No. 1 to investigate the interval encountered while drilling below the casing shoe at 2788m KB to the wells T.D. at 3026m KB. To enable the tool to get close to bottom hole without risking sticking problems, the tool was shortened by running a 1 gallon chamber in place of a 2 3/4" chamber and not running the HP pressure gauge.

The hole was badly washed out, particularly in those intervals which had shown indications of abnormal pressures. The hole condition plus very tight rock made testing difficult with the result that of the 10 pretest attempts, only one was successful. This pretest, at 2973.8m KB, yielded a pressure of 5360 psig which is well above normal pressure and corresponds to a mud weight of 10.6 ppg. Samples were taken at this depth, yielding only filtrate.

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 1 DATE: 26/9/82 OBSERVERS: L. Finlayson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
1/1	1757	1736	PT	HP SCH	Y N	A G	2951.5	9.77	2481.1 2464	8.31 8.35	2951.3	9.77	Valid
1/2	1740	1719	PT	HP SCH	Y N	A G	2921.8	9.76	2457.2 2438	8.31 8.34	2922.0	9.76	Valid
1/3	1717	1696	PT	HP SCH	Y N	A G	2883.1	9.76	2425.1 2406	8.31 8.34	2883.3	9.76	Valid
1/4	1710	1689.0	PT	HP SCH	Y N	A G	2871.8	9.76	2415.6 2397	8.32 8.35	2872.1	9.77	Valid
1/5	1689.5	1668.5	PT	HP SCH	Y N	A G	2837.8	9.77	2390.5 2371	8.33 8.36	2838.0	9.77	Valid
1/6	1683	1662	PT	HP SCH	Y N	A G	2827.1	9.77	2379.4 2360	8.32 8.35	2827.5	9.77	Valid
1/7	1678	1657	PT	HP SCH	Y N	A G	2819.2	9.77	2372.5 2353	8.32 8.35	2819.5	9.77	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 1 DATE: 26/9/82 OBSERVERS: L. Finlayson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
1/8	1671	1650	PT	HP SCH	Y N	A G	2807.9	9.77	2363.6 2344	8.33 8.36	2808.1	9.77	Valid
1/9	1650	1629	PT	HP SCH	Y N	A G	2773.3	9.77			2772.2	9.77	Tight
1/10	1649.5	1628.5	PT	HP SCH	Y N	A G	2772.3	9.77	2333.8 2314	8.33 8.36	2772.3	9.77	Valid
1/11	1635	1614	PT	HP SCH	Y N	A G	2751.6	9.78	2317.3 2291	8.35 8.35	2748.8	9.77	Valid
1/12	1624.5	1603.5	PT	HP SCH	Y N	A G	2730.8	9.77	2297.0 2278	8.33 8.36	2731.0	9.77	Valid
1/13	1619	1598	PT	HP SCH	Y N	A G	2722.0	9.77	2289.6 2271	8.33 8.36	2721.9	9.77	Valid
1/14	1610	1589	PT	HP SCH	Y N	A G	2707.3	9.78	2277.3 2258	8.33 8.36	2707.2	9.78	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 1 DATE: 26/9/82 OBSERVERS: L. Finlayson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psia	IHP ppg	FM. PRESS psia	FM. PRESS ppg	FHP psia	FHP ppg	TEST RESULT
1/15	1605	1584	PT	HP SCH	Y N	A G	2698.6	9.78	2270.1 2251	8.33 8.36	2698.8	9.78	Valid
1/16	1599	1578	PT	HP SCH	Y N	A G	2688.7	9.78			2688.7	9.78	Seal failure
1/17	1598	1577	PT	HP SCH	Y N	A G	2687.9	9.78	2260.9 2241	8.34 8.36	2687.9	9.78	Valid
1/18	1595	1574	PT	HP SCH	Y N	A G	2690.2	9.81	2264.2 2237	8.36 8.36	2690.2	9.81	Valid
1/19	1583.5	1562.5	PT	HP SCH	Y N	A G	2663.4	9.78	2247.4 2227	8.36 8.38	2663.4	9.78	Valid
1/20	1575	1554	PT	HP SCH	Y N	A G	2649.5	9.78	2232.0 2212	8.35 8.37	2649.3	9.78	Valid
1/21	1565	1544	PT	HP SCH	Y N	A G	2632.1	9.78	2212.5 2192	8.33 8.35	2632.0	9.78	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 1 DATE: 26/9/82 OBSERVERS: L. Finlayson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
1/22	1550	1529	PT	HP SCH	Y N	A G	2613.4	9.80	2191.1 2172	8.33 8.36	2607.1	9.78	Valid
1/23	1535	1514	PT	HP SCH	Y N	A G	2582.8	9.78	2170.6 2152	8.34 8.36	2582.2	9.78	Valid
1/24	1530	1509	PT	HP SCH	Y N	A G	2574.0	9.78	2165.2 2148	8.34 8.37	2573.9	9.78	Valid
1/25	1509	1488	PT	HP SCH	Y N	A G	2539.9	9.79	2162.5 2144	8.45 8.48	2539.1	9.78	Valid
1/26	1491	1470	PT	HP SCH	Y N	A G	2509.6	9.79	2158.5 2139	8.45	2509.1	9.78	Valid
1/27	1574	1553	PT	HP SCH	Y N	A G	2654.6	9.81			2654.3	9.80	Seal failure
1/28	1574	1553	PT	HP SCH	Y N	A G	2648.5	9.78	2232.2 2212	8.36 8.38	2648.5	9.78	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 1-3 DATE: 27/9/82 OBSERVERS: L. Finlayson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
1/29	1585	1564	PT	HP SCH	Y N	A G	2664.7	9.77			2663.1	9.77	Tight
1/30	1585.5	1564.5	PT	HP SCH	Y N	A G	2665.7	9.77			2663.1	9.77	Tight
1/31	1594.0	1573.0	PT	HP SCH	Y N	A G	2679.5	9.77	2255.5 2236	8.34 8.36	2679.8	9.77	Valid
2/32	1576	1555	PT	HP SCH	Y N	A G	2649.4	9.77			2649.3	9.77	Seal failure
2/33	1574	1553	PT	HP SCH	Y N	A G	2646.1	9.77	2230.8 2215	8.35 8.39	2646.3	9.77	Valid
2/34	1595	1574	SPT	HP SCH	Y N	A G	2681.1	9.77	2256.3 2237	8.33 8.36	2681.0	9.77	Valid
2/35	1592	1571	PT	HP SCH	Y N	A G	2675.7	9.77	2255.0 2238	8.35 8.38	2675.5	9.77	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 3-4 DATE: 27/9/82 OBSERVERS: L. Finlayson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
3/36	1571	1550	PT	HP SCH	Y N	A G	2640.3	9.77			2640.5	9.77	Tight
3/37	1570.5	1549.5	PT	HP SCH	Y N	A G	2639.8	9.77	2228.2 2210	8.36 8.39	2639.4	9.77	Valid
3/38	1575	1554	SPT	HP SCH	Y N	A G	2647.5	9.77			2647.6	9.77	Seal failure
3/39	1575	1554	SPT	HP SCH	Y N	A G	2647.2	9.77	2231.1 2215	8.35 8.38	2647.0	9.77	Valid
4/40	1638	1617	PT	HP SCH	Y N	A G	2753.0	9.77			2753.0	9.77	Seal failure
4/41	1638.5	1617.5	PT	HP SCH	Y N	A G	2753.5	9.77			2754.2	9.77	Tight
4/42	1633	1612	PT	HP SCH	Y N	A G	2743.9	9.77			2743.7	9.77	Tight

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 4-5 DATE: 27/9/82 OBSERVERS: L. Finlayson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FM. PRESS psi	FM. PRESS ppg	FHP psi	FHP ppg	TEST RESULT
4/43	1634	1613	PT	HP SCH	Y N	A G	2746.0	9.77	2312.8 2302	8.34 8.40	2746.0	9.77	Valid
4/44	1613	1592	SPT	HP SCH	Y N	A G	2711.1	9.77			2711.1	9.77	Seal failure
4/45	1613	1592	SPT	HP SCH	Y N	A G	2711.1	9.77	2280.9 2266	8.33 8.37	2710.5	9.77	Valid
5/46	1583.5	1562.5	SPT	HP SCH	Y N	A G	2662.2	9.77			2662.2	9.77	Seal failure
5/47	1583.5	1562.5	SPT	HP SCH	Y N	A G	2662.2	9.77	2246.0 2229	8.36 8.39	2662.2	9.77	Valid
5/48	1584	1563	SPT	HP SCH	Y N	A G	2662.3	9.77			2662.4	9.77	Tight
5/49	1584	1563	SPT	HP SCH	Y N	A G	2660.6	9.77			2660.5	9.77	Tight

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 5-8 DATE: 27/9/82 OBSERVERS: L. Finlayson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
5/50	1584	1563	SPT	HP SCH	Y N	A G	2662.2	9.77	2245.7 2233	8.35 8.40	2662.3	9.77	Valid
5/51	1583.5	1562.5	SPT	HP SCH	Y N	A G	2661.7	9.77	2242 2232	8.34 8.40	2661.9	9.77	Valid
6/52	1678	1657	SPT	HP SCH	Y N	A G	2817.8	9.76			2817.8	9.76	Seal failure
6/53	1678	1657	SPT	HP SCH	Y N	A G	2816.5	9.76	2372.2 2359	8.32 8.37	2816.5	9.76	Valid
7/54	1532	1511	SPT	HP SCH	Y N	A G	2275.6	9.77	2166.0 2149	8.33 8.37	2575.6	9.77	Valid
8/55	1641	1620	PT	HP SCH	Y N	A G	2758.2	9.77	2322.8 2305	8.34 8.37	2757.8	9.77	Valid
8/56	1605	1584	SPT	HP SCH	Y N	A G	2696.8	9.77			2696.8	9.77	Seal failure

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 8-10 DATE: 27/9, 5/10/82 OBSERVERS: L. Finlayson/A. Lindsay

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FM. PRESS psi	FM. PRESS ppg	FHP psi	FHP ppg	TEST RESULT
8/57	1605	1584	SPT	HP SCH	Y N	A G	2696.9	9.77	2269.4 2256	8.33 8.38	2696.7	9.77	Valid
9/58	1529.5	1508.5	SPT	HP SCH	Y N	A G	2571.5	9.77	2166.0 2153	8.35 8.40	2570.9	9.77	Valid
10/59	2302	2281	PT	HP SCH	Y N	A G	3910.0	9.88	3280.4 3265	8.36 8.42	3907.8	9.87	Valid
10/60	2279	2258	PT	HP SCH	Y N	A G	3869.4	9.87			3868.5	9.87	Tight
10/61	2280	2259	PT	HP SCH	Y N	A G	3869.4	9.87	3252.4 3234	8.37 8.42	3869.5	9.87	Valid
10/62	2264	2243	PT	HP SCH	Y N	A G	3849.9	9.89			3841.5	9.86	Tight
10/63	2262	2241	PT	HP SCH	Y N	A G	3843.2	9.88			3843.2	9.88	Seal failure

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 10 DATE: 5/10/82 OBSERVERS: A. Lindsay

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
10/64	2261	2240	PT	HP SCH	Y N	A G	3842.7	9.88			3842.9	9.88	Tight
10/65	2258.5	2237.5	PT	HP SCH	Y N	A G	3830.8	9.86	3356.4 3334	8.72 8.77	3830.9	9.86	Supercharged?
10/66	2258.5	2237.5	PT	HP SCH	Y N	A G	3830.8	9.86	3356.0 3333	8.72 8.76	3830.4	9.86	Supercharged?
10/67	2249	2228	PT	HP SCH	Y N	A G	3821.4	9.88	3226.0 3200	8.42 8.45	3820.1	9.88	Valid
10/68	2244	2223	PT	HP SCH	Y N	A G	3806.2	9.86	3215.5 3195	8.41 8.45	3804.1	9.86	Valid
10/69	2237	2216	PT	HP SCH	Y N	A G	3800.8	9.88	3220.4 3192	8.45 8.47	3799.1	9.87	Valid
10/70	2239	2218	PT	HP SCH	Y N	A G	3797.0	9.86	3214.5 3192	8.43 8.47	3796.3	9.86	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 10 DATE: 5/10/82 OBSERVERS: A. Lindsay

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FM. PRESS psi	FM. PRESS ppg	FHP psi	FHP ppg	TEST RESULT
10/71	2236	2215	PT	HP	Y	A	3792.7	9.86	3214.7	8.44	3797.5	9.87	Valid
				SCH	N	G			3191	8.47			
10/72	2219	2198	PT	HP	Y	A	3762.4	9.86			3761.0	9.85	Tight
				SCH	N	G							
10/73	2205	2184	PT	HP	Y	A	3737.1	9.85	3151.9	8.39	3736.9	9.85	Valid
				SCH	N	G			3131	8.43			
10/74	2196	2175	PT	HP	Y	A	3722.3	9.85	3150.6	8.42	3721.8	9.85	Valid
				SCH	N	G			3130	8.47			
10/75	2167	2146	PT	HP	Y	A	3681.9	9.88	3082.8	8.35	3681.2	9.88	Valid
				SCH	N	G			3056	8.38			
10/76	2155	2134	PT	HP	Y	A	3658.2	9.87	3062.3	8.34	3656.8	9.87	Valid
				SCH	N	G			3040	8.38			
10/77	2113	2092	PT	HP	Y	A	3592.4	9.88	3007.7	8.36	3592.0	9.88	Valid
				SCH	N	G			2981	8.38			

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 10 DATE: 5/10/82 OBSERVERS: A. Lindsay

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FM. PRESS psi	FM. PRESS ppg	FHP psi	FHP ppg	TEST RESULT
10/78	2086	2065	PT	HP SCH	Y N	A G	3540.0	9.87	2961.1 2942	8.34 8.38	3539.0	9.86	Valid
10/79	2053.5	2032.5	PT	HP SCH	Y N	A G	3486.4	9.87	2914.6 2894	8.34 8.38	3486.0	9.87	Valid
10/80	2047	2026	PT	HP SCH	Y N	A G	3476.1	9.87			3475.7	9.87	Seal failure
10/81	2046.2	2025.2	PT	HP SCH	Y N	A G	3474.9	9.87	2905.7 2885	8.34 8.38	3474.9	9.87	Valid
10/82	2034.5	2013.1	PT	HP SCH	Y N	A G	3455.6	9.88	2889.4 2869	8.34 8.38	3455.5	9.87	Valid
10/83	2027.5	2006.5	PT	HP SCH	Y N	A G	3445.9	9.88	2878.8 2858	8.34 8.38	3445.8	9.88	Valid
10/84	2005	1984	PT	HP SCH	Y N	A G	3409.6	9.89			3409.8	9.89	Tight

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 10-13 DATE: 5/10/82 OBSERVERS: A. Lindsay

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FM. PRESS psi	FM. PRESS ppg	FHP psi	FHP ppg	TEST RESULT
10/85	2004	1983	PT	HP SCH	Y N	A G	3409.3	9.89	2847.3 2825	8.35 8.38	3409.3	9.89	Valid
10/86	1926	1905	PT	HP SCH	Y N	A G	3279.2	9.90	2728.5 2710	8.33 8.37	3278.9	9.90	Valid
11/87	2247	2226	PT	HP SCH	Y N	A G	3812.8	9.87			3812.8	9.87	Seal failure
11/88	2249	2228	SPT	HP SCH	Y N	A G	3816.2	9.87	3221.0 3204	8.41 8.46	3813.5	9.86	Valid
12/89	2205	2184	SPT	HP SCH	Y N	A G	3737.4	9.85			3735.1	9.85	Seal failure
12/90	2205	2184	SPT	HP SCH	Y N	A G	3737.6	9.85	3153.4 3134	8.39 8.44	3735.0	9.85	Valid
13/91	2034.5	2013.5	SPT	HP SCH	Y N	A G	3456.9	9.88			3456.8	9.88	Seal failure

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 13-14 DATE: 5/10-6/10/82 OBSERVERS: A. Lindsay

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FM. PRESS psi	FM. PRESS ppg	FHP psi	FHP ppg	TEST RESULT
13/92	2034.5	2013.5	SPT	HP SCH	Y N	A G	3456.9	9.88			3456.3	9.88	Seal failure
13/93	2034.5	2013.5	SPT	HP SCH	Y N	A G	3456.9	9.88			3456.3	9.88	Seal failure
13/94	2034	2013	SPT	HP SCH	Y N	A G	3455.5	9.88			3455.2	9.88	Seal failure
13/95	2031.5	2010.5	SPT	HP SCH	Y N	A G	3450.5	9.87			3450.8	9.88	Seal failure
13/96	2032	2011	SPT	HP SCH	Y N	A G	3450.2	9.87			3448.5	9.87	Seal failure
13/97	2032	2011	SPT	HP SCH	Y N	A G	3450.0	9.87	2887.5 2868	8.35 8.39	3449.0	9.87	Valid
14/98	2280	2259	SPT	HP SCH	Y N	A G	3850.2	9.82			3847.9	9.81	Seal failure

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 14-17 DATE: 6/10-7/10/82 OBSERVERS: A. Lindsay

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
14/99	2280	2259	SPT	HP SCH	Y N	A G	3850.0	9.82			3849.0	9.81	Seal failure
14/100	2280	2259	SPT	HP SCH	Y N	A G	3850.0	9.82	3254.4 3240	8.38 8.44	3848.0	9.81	Valid
15/101	2046	2025	SPT	HP SCH	Y N	A G	3466.6	9.85			3465.8	9.85	Seal failure
15/102	2046	2025	SPT	HP SCH	Y N	A G	3467.0	9.85	2906.8 2890	8.35 8.40	3466.0	9.85	Valid
17/103	2258.6	2237.6	SPT	HP SCH	Y N	A G	3816.3	9.82	3388.4 3371	8.80 8.86	3815.4	9.82	Valid
17/104	2261.6	2240.6	SPT	HP SCH	Y N	A G	3819.6	9.82			3819.5	9.82	Seal failure
17/105	2261.6	2240.6	SPT	HP SCH	Y N	A G	3819.3	9.82			3813.5	9.80	Seal failure

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 17-18 DATE: 7/10, 16/10/82 OBSERVERS: A. Lindsay/N. Davidson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
17/106	2259.8	2238.8	SPT	HP	Y	A	3818.7	9.82	3289.0	8.54	3817.9	9.82	Valid
				SCH	N	G			3261	8.57			
17/107	2259.8	2238.8	SPT	HP	Y	A	3817.9	9.82	3277.0	8.51	3813.5	9.81	Valid
				SCH	N	G			3261	8.57			
17/108	2196	2175	SPT	HP	Y	A	3706.7	9.81			3707.5	9.82	Seal failure
				SCH	N	G							
17/109	2196.2	2175.2	SPT	HP	Y	A	3708.2	9.82			3708.4	9.82	Seal failure
				SCH	N	G							
17/110	2196.2	2175.2	SPT	HP	Y	A	3708.2	9.82			3708.4	9.82	Seal failure
				SCH	N	G							
17/111	2195.3	2174.3	SPT	HP	Y	A	3711.2	9.83	3152.6	8.43	3701.6	9.80	Valid
				SCH	N	G			3125	8.45			
18/112	2548	2527	PT	HP	Y	A	4243.9	9.68	3626.0	8.34	4243.3	9.68	Valid
				SCH	N	G			3624	8.44			

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 18-19 DATE: 16/10/82 OBSERVERS: N. Davidson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
18/113	2584.5	2563.5	PT	HP SCH	Y N	A G	4303.9	9.68			4303.8	9.68	Seal failure
18/114	2584.5	2563.5	PT	HP SCH	Y N	A G	4303.9	9.68			4303.8	9.68	Seal failure
18/115	2604.5	2583.5	PT	HP SCH	Y N	A G	4338.2	9.68			4337.7	9.68	Seal failure
18/116	2633	2612	SPT	HP SCH	Y N	A G	4383.6	9.68			4383.2	9.68	Seal failure
18/117	2633	2612	SPT	HP SCH	Y N	A G	4383.6	9.68	3790.1 3785	8.42 8.52	4383.2	9.68	Valid
19/118	2781	2760	PT	HP SCH	Y N	A G	4629.4	9.68			4628.6	9.68	Seal failure
19/119	2781	2760	PT	HP SCH	Y N	A G	4628.6	9.68			4628.7	9.68	Seal failure

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 19 DATE: 16/10/82 OBSERVERS: N. Davidson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
19/120	2786	2765	PT	HP SCH	Y N	A G	4642.3	9.69			4641.7	9.69	Seal failure
19/121	2786	2765	PT	HP SCH	Y N	A G	4641.7	9.69			4640.1	9.68	Seal failure
19/122	2787	2766	PT	HP SCH	Y N	A G	4640.5	9.68			4640.2	9.68	Seal failure
19/123	2766	2745	PT	HP SCH	Y N	A G	4602.2	9.67			4602.5	9.67	Seal failure
19/124	2756	2735	PT	HP SCH	Y N	A G	4587.9	9.68			4587.6	9.68	Seal failure
19/125	2749	2728	PT	HP SCH	Y N	A G	4567.7	9.66			4567.7	9.66	Seal failure
19/126	2693	2672	PT	HP SCH	Y N	A G	4476.8	9.67	3902.0 3895	8.49 8.57	4479.3	9.67	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 19-20 DATE: 16-17/10/82 OBSERVERS: N. Davidson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
19/127	2604.5	2583.5	PT	HP SCH	Y N	A G	4430.1	9.89	3721.2 3720	8.37 8.47	4431.3	9.89	Valid
19/128	2583	2562	PT	HP SCH	Y N	A G	4295.4	9.67			4295.0	9.67	Tight
19/129	2583.5	2562.5	PT	HP SCH	Y N	A G	4296	9.67			4296	9.67	Tight
20/130	2786	2765	PT	HP SCH	Y N	A G	4666	9.74			4666	9.74	Seal failure
20/131	2786	2765	PT	HP SCH	Y N	A G	4666	9.74			4665	9.74	Seal failure
20/132	2789	2768	PT	HP SCH	Y N	A G	4674	9.74			4674	9.74	Seal failure
20/133	2789	2768	PT	HP SCH	Y N	A G	4674	9.74			4674	9.74	Tight

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 20 DATE: 17/10/82 OBSERVERS: N. Davidson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
20/134	2781	2760	PT	HP SCH	Y N	A G	4656	9.73			4656	9.73	Seal failure
20/135	2781	2760	PT	HP SCH	Y N	A G	4656	9.73			4656	9.73	Seal failure
20/136	2781.5	2760.5	PT	HP SCH	Y N	A G	4658	9.74			4658	9.74	Seal failure
20/137	2760.8	2739.8	PT	HP SCH	Y N	A G	4623	9.74			4623	9.74	Tight
20/138	2618	2597	PT	HP SCH	Y N	A G	4388	9.74			4388	9.74	Tight
20/139	2621	2600	PT	HP SCH	Y N	A G	4392	9.74			4392	9.74	Seal failure
20/140	2621	2600	PT	HP SCH	Y N	A G	4392	9.74			4392	9.74	Seal failure

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 20 DATE: 17/10/82 OBSERVERS: A. Lindsay

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
20/141	2627	2606.	PT	HP SCH	Y N	A G	4402	9.74			4402	9.74	Tight
20/142	2576	2555	PT	HP SCH	Y N	A G	4312	9.73	3715.0 3714	8.45 8.55	4312	9.73	Valid
20/143	2576	2555	PT	HP SCH	Y N	A G	4311	9.73	3717.0 3174	8.46 7.31	4312	9.73	Valid
20/144	2557	2436	PT	HP SCH	Y N	A G	4281	9.73	3637.6 3637	8.34 8.78	4280	9.73	Valid
20/145	2583.5	2562.5	PT	HP SCH	Y N	A G	4325.6	9.73			4324	9.73	Tight
20/146	2583	2562	PT	HP SCH	Y N	A G	4324	9.73			4324	9.73	Tight
20/147	2624.5	2603.5	PT	HP SCH	Y N	A G	4395	9.74	3767.6 3762	8.41 8.50	4392	9.73	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 20 DATE: 17/10/82 OBSERVERS: N. Davidson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
20/148	2516.5	2495.5	PT	HP SCH	Y N	A G	4212	9.73			4212	9.73	Seal failure
20/149	2516.5	2495.5	PT	HP SCH	Y N	A G	4212	9.73			4212	9.73	Tight
20/150	2478	2457	PT	HP SCH	Y N	A G	4149	9.73	3556.0 3552	8.41 8.50	4149	9.73	Valid
20/151	2461.5	2440.5	PT	HP SCH	Y N	A G	4122	9.74	3523.2 3518	8.39 8.48	4122	9.74	Valid
20/152	2446	2425	PT	HP SCH	Y N	A G	4096	9.74	3494.6 3493	8.38 8.47	4096	9.74	Valid
20/153	2501.5	2480.5	PT	HP SCH	Y N	A G	4190	9.74			4188	9.73	Tight
20/154	2433	2412	PT	HP SCH	Y N	A G	4075	9.74			4075	9.74	Tight

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 20-21 DATE: 17-18/10/82 OBSERVERS: N. Davidson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
20/155	2402.5	2381.5	PT	HP SCH	Y N	A G	4022	9.73	3425.4 3424	8.36 8.46	4021	9.73	Valid
20/156	2314	2293	PT	HP SCH	Y N	A G	3875	9.74	3298.9 3296	8.36 8.46	3878	9.74	Valid
20/157	2302	2281	PT	HP SCH	Y N	A G	3860	9.75			3860	9.75	Seal failure
20/158	2302	2281	PT	HP SCH	Y N	A G	3860	9.75			3860	9.75	Seal failure
20/159	2302	2281	PT	HP SCH	Y N	A G	3860	9.75			3860	9.75	Seal failure
20/160	2301	2280	PT	HP SCH	Y N	A G	3858	9.75	3281.5 3277	8.37 8.45	3858	9.75	Valid
21/161	2604.5	2583.5	SPT	HP SCH	Y N	A G	4358	9.73	3724.4	8.38	4358	9.73	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 21-23 DATE: 18/10/82 OBSERVERS: N. Davidson

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
21/162	2604.5	2583.5	SPT	HP SCH	Y N	A G	4358	9.73	3723.1 3721	8.38 8.47	4360	9.73	Valid
22/163	2461.5	2440.5	SPT	HP SCH	Y N	A G	4124	9.74	3514.6 3512	8.37 8.46	4124	9.74	Valid
22/164	2461	2440	SPT	HP SCH	Y N	A G	4129	9.75	3511.2 3514	8.34 8.35	4128	9.75	Valid
22/165	2461	2440	SPT	HP SCH	Y N	A G	4128	9.75			4128	9.75	Seal failure
22/166	2461	2440	SPT	HP SCH	Y N	A G	4128	9.75			4127	9.75	Seal failure
23/167	2633	2612	SPT	HP SCH	Y N	A G	4407	9.73			4407	9.73	Seal failure
23/168	2633	2612	SPT	HP SCH	Y N	A G	4408	9.73	3784.5 3789	8.42 8.53	4410	9.74	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH - 1

SERVICE COMPANY: Schlumberger RUN NO: 24-25 DATE: 18/10, 19/11/82 OBSERVERS: N. Davidson/D. Moreton

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
24/169	2461.5	2440.5	SPT	HP SCH	Y N	A G	4121	9.73	3513.4 3512	8.37 8.46	4121	9.73	Valid
24/170	2461.5	2440.5	SPT	HP SCH	Y N	A G	4124	9.74			4124	9.74	Seal failure
24/171	2461.5	2440.5	SPT	HP SCH	Y N	A G	4124	9.74			4124	9.74	Seal failure
24/172	2461	2440	SPT	HP SCH	Y N	A G	4124	9.74	3512.9 3505	8.37 8.45	4123	9.74	Valid
25/173	3013.5	2992.5	SPT	HP SCH	Y N	A G	5768	11.13			5768	11.13	Tight
25/174	3013.4	2992.4	SPT	HP SCH	Y N	A G	5743	11.08			5743	11.08	Seal failure
25/175	3013.6	2992.6	SPT	HP SCH	Y N	A G	5692	10.98			5692	10.98	Tight

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - WIRRAH 1

SERVICE COMPANY: Schlumberger RUN NO: 25 DATE: 19/11/82 OBSERVERS: D. Moreton

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
25/176	3014.5	2993.5	SPT	HP SCH	Y N	A G	5648	10.89			5648	10.89	Seal failure
25/177	3001.5	2980.5	SPT	HP SCH	Y N	A G	5658	10.96			5658	10.96	Tight
25/178	3001.4	2980.4	SPT	HP SCH	Y N	A G	5611	10.87			5611	10.87	Seal failure
25/179	3001.4	2980.4	SPT	HP SCH	Y N	A G	5623	10.89			5623	10.89	Seal failure
25/180	3005.5	2984.5	SPT	HP SCH	Y N	A G	5628	10.89			5628	10.89	Seal failure
25/181	2973.7	2952.7	SPT	HP SCH	Y N	A G	5622	10.99			5622	10.99	Tight
25/182	2973.8	2952.8	SPT	HP SCH	Y N	A G	5602	10.95	5360	10.55	5651	11.05	Valid

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

02241

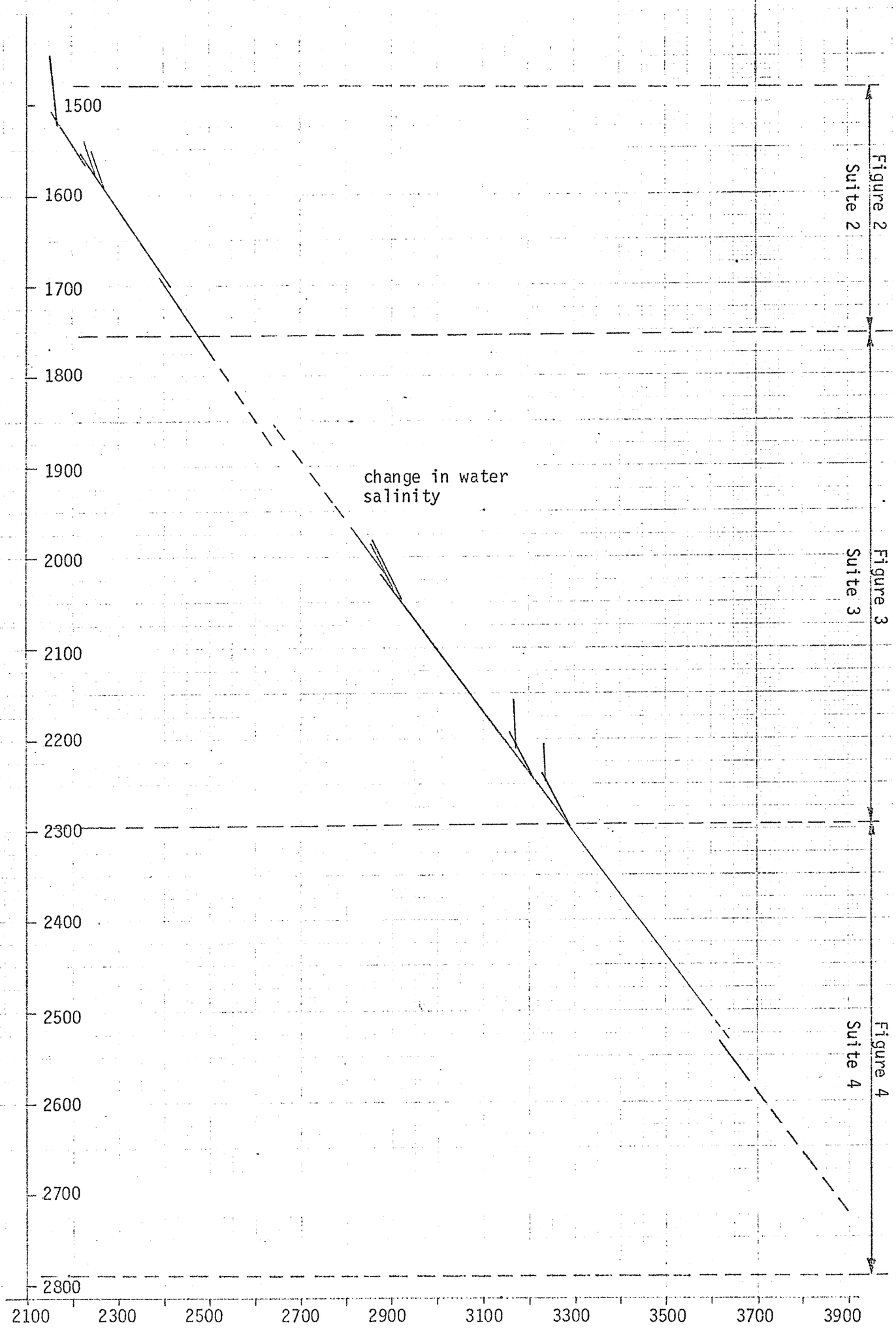


FIGURE 1

WIRRAH-1 RFT RESULTS - OVERVIEW

FIGURE - 2

WIRRAH 1 RFT RESULTS

SUITE 2

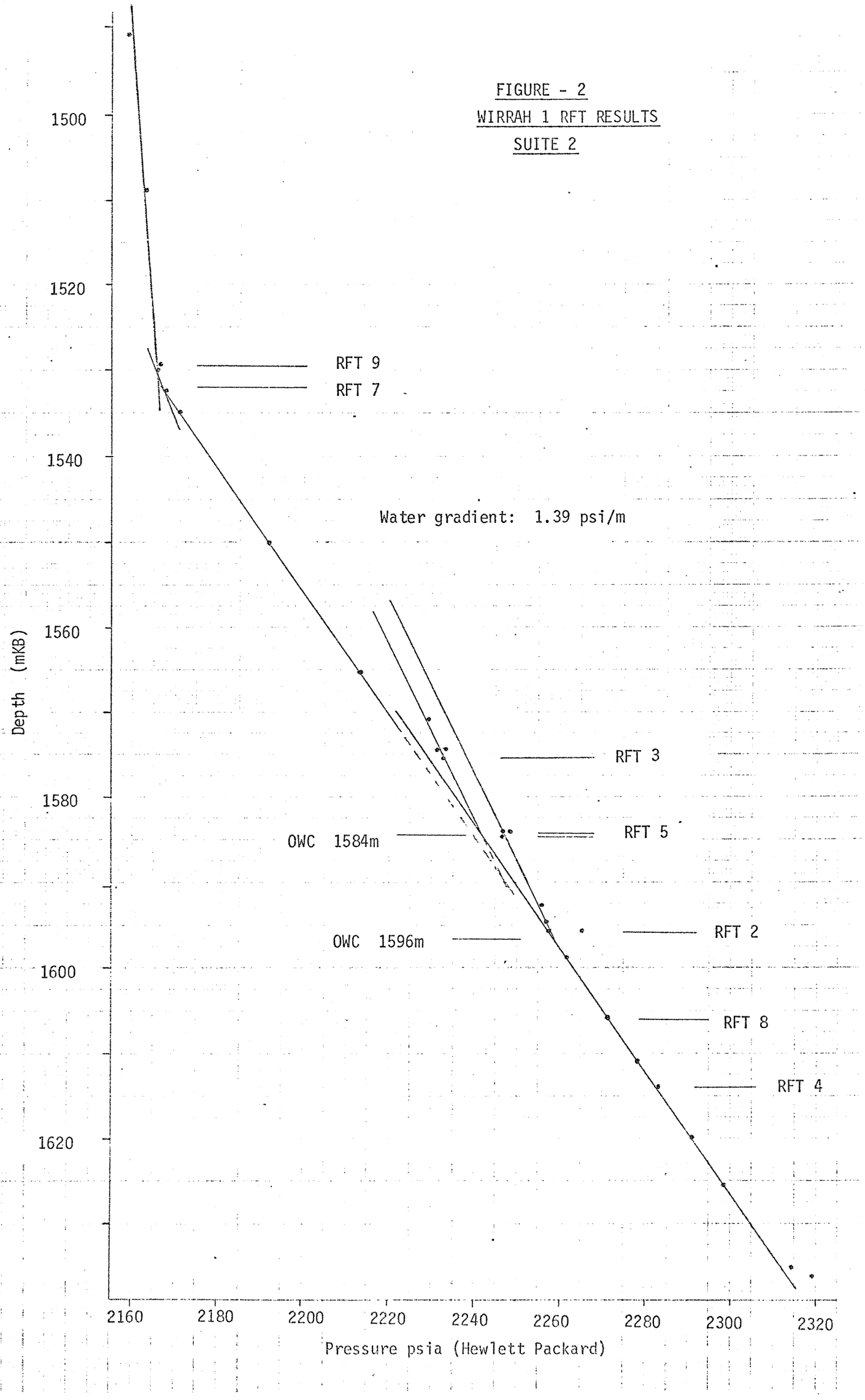
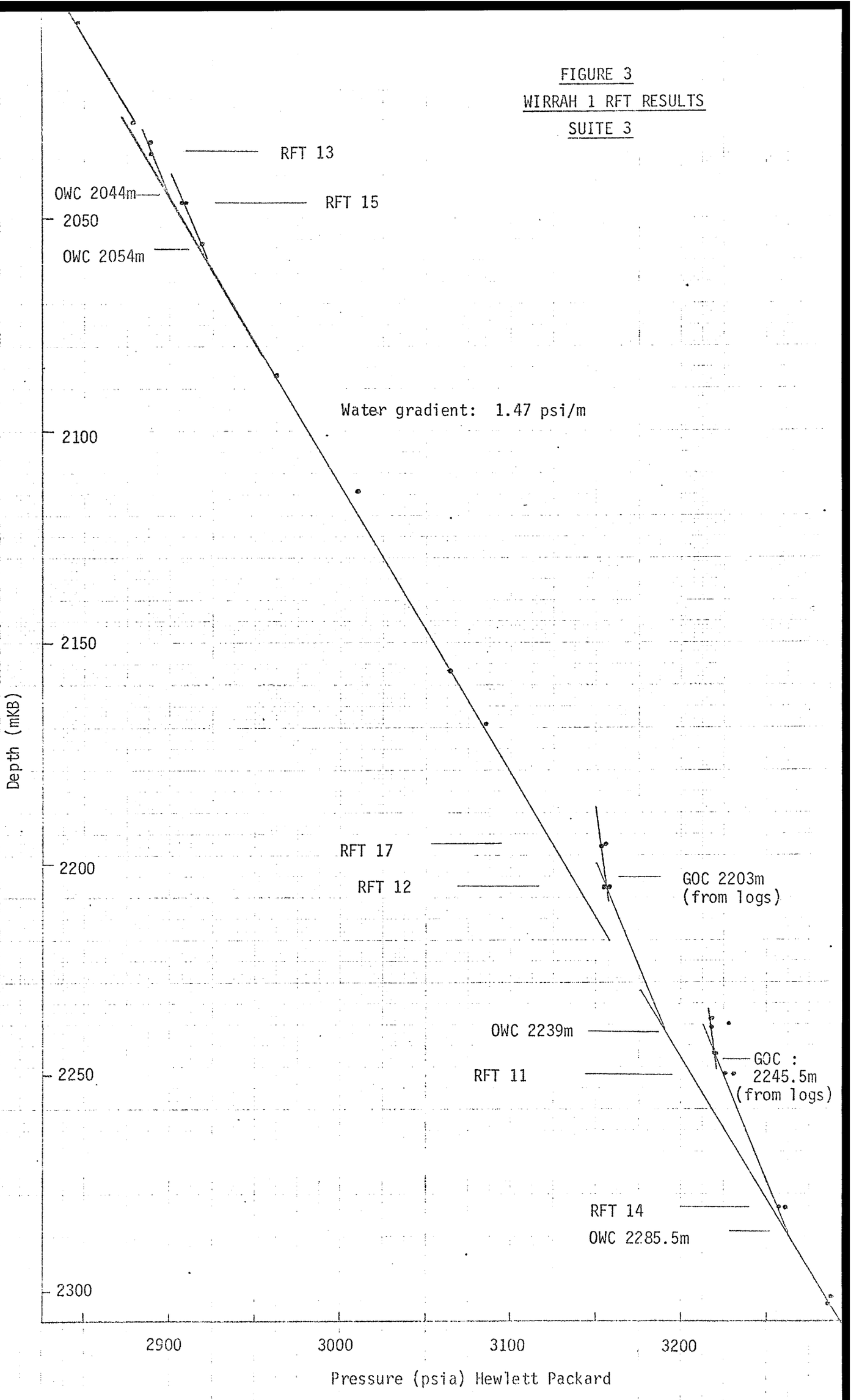


FIGURE 3

WIRRAH 1 RFT RESULTS

SUITE 3



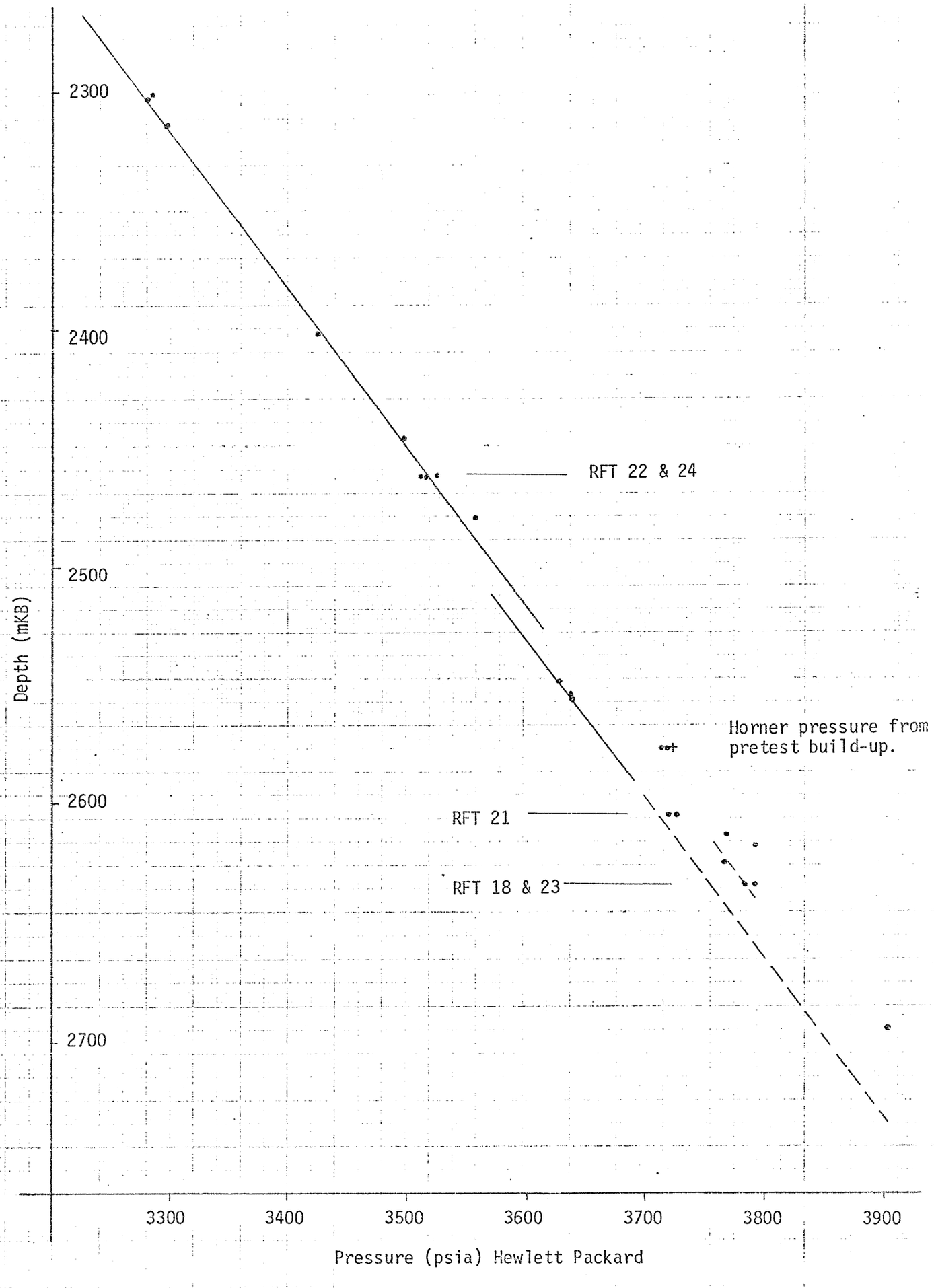


FIGURE 4

WIRRAH 1 RFT RESULTS

SUITE 4

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: L. Finlayson DATE: 27-9-82 RUN NO: 2

SEAT NO.	34			34	
DEPTH	1595.0	m		1595.0	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES					
Tool Set	04-41-00	hrs			
Pretest Open	04-41-00	hrs			
Time Open	3-30	min			
Chamber Open	04-44-00	hrs		04-52-30	hrs
Chamber Full	04-51-00	hrs		04-56-00	hrs
Fill Time	7-00	min		3-00	min
Start Build up	04-51-00	hrs		04-56-00	hrs
Finish Build up	04-52-00	hrs		04-57-00	hrs
Build Up Time	1-00	min		1-00	min
Seal Chamber	05-52-00	hrs		04-56-00	hrs
Tool Retract				04-59-00	hrs
Total Time	11-00	min		17-00	min
B. SAMPLE PRESSURES	psia			psia	
IHP	2681				
ISIP	2256.4			2256.2	
Initial Flowing Press.	2225.2			2247	
Final Flowing Press.	2256			2256	
Sampling Press. Range	31			9	
FSIP	2256.2			2256.2	
FHP	Did not retract probe			2681	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	1595	m		1595	m
Max.Rec. Temp.	65	°C		65	°C
Time Circ. Stopped	26/09/82 @ 05.15	hrs		26/09/82 @ 05.15	hrs
Time since Circ.	24	hrs		24	hrs
Form. Temp.(Horner)	23.5	°C		23.5	°C
D. SAMPLE RECOVERY					
Surface Pressure	600	psia			psia
Amt Gas	37.7 cft/1068	lit.			lit.
Amt Oil	22.50	lit.			lit.
Amt Water		lit.			lit.
Amt Others		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	522,960	ppm			ppm
C2	45,056	ppm			ppm
C3	15,232	ppm			ppm
IC4/nC4	5,084	ppm			ppm
C5	4,365	ppm			ppm
C6+	1,134	ppm			ppm
CO2/H2S	tr/40	ppm			ppm
Oil Properties	34°API @ 16°C				
Colour	Golden-brown				
Fluorescence	Bright blue white to yellow				
GOR cf/bbl	266				
Water Properties					
Resistivity		°C			°C
NaCl Equivalent		ppm			ppm
Cl-titrated		ppm			ppm
pH/Nitrates		ppm			ppm
Est. Water Type					
Mud Properties					
Resistivity					
NaCl Equivalent		ppm			ppm
Cl-titrated		ppm			ppm
pH/Nitrates		ppm			ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	15-137	°C		15-137	°C
Mud Weight	9.8	ppg		9.8	ppg
Calc.Hydrostatic	2666	psig		2666	psig
RFT Chokesize	0.030	"		0.020	"
REMARKS:	Very gaseous - frothy when heated - dark brown light oil			Chamber No. 1117 preserved	

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: L. Finlayson DATE: 27-9-82 RUN NO: 3

SEAT NO.	39		39	
DEPTH	1575.0	m	1575.0	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES				
Tool Set	09-40-00	hrs		
Pretest Open	09-40-00	hrs		
Time Open	2-00	min		
Chamber Open	09-42-00	hrs	09-52-00	hrs
Chamber Full	09-51-00	hrs	09-57-00	hrs
Fill Time	9-00	min	5-00	min
Start Build up	09-51-00	hrs	09-57-00	hrs
Finish Build up	09-52-00	hrs	09-58-00	hrs
Build Up Time	1-00	min	1-00	min
Seal Chamber	09-51-00	hrs	09-57-00	hrs
Tool Retract		min	09-58-00	hrs
Total Time	11-00	min	6-00	min
B. SAMPLE PRESSURES	psia		psia	
IHP	2647			
ISIP	2231.1		2230.8	
Initial Flowing Press.	1633		2173	
Final Flowing Press.	2230		2230	
Sampling Press. Range	597		57	
FSIP	2230.8		2230.8	
FHP	Did not retract probe		2647	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	1592	m	1592	m
Max.Rec. Temp.	66	°C	66	°C
Time Circ. Stopped	26/09/82 @ 05.15	hrs	26/09/82 @ 05.15	hrs
Time since Circ.	28	hrs	28	hrs
Form. Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	1300	psig		psig
Amt Gas	50.8 cft/1416	lit.		lit.
Amt Oil	23.00	lit.		lit.
Amt Water		lit.		lit.
Amt Others		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition				
C1	752,025	ppm		ppm
C2	55,869	ppm		ppm
C3	20,608	ppm		ppm
iC4/nC4	4,345	ppm		ppm
C5	1,146	ppm		ppm
C6+	325	ppm		ppm
CO2/H2S	0.5%/50	ppm		ppm
Oil Properties	34°API @ °C			
Colour	Golden-brown			
Fluorescence	Bright blue white to yellow			
GOR cf/bbl	351			
Water Properties				
Resistivity		°C		°C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
pH/Nitrates		ppm		ppm
Est. Water Type				
Mud Properties				
Resistivity				
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
pH/Nitrates		ppm		ppm
Calibration				
Calibration Press.	0-4000	psig	0-4000	psig
Calibration Temp.	15-137	°C	15-137	°C
Mud Weight	9.8	ppg	9.8	ppg
Calc.Hydrostatic	2633	psig	2633	psig
RFT Chokesize	0.030	"	0.020	"

REMARKS: Frothy oil, settles out to dark brown waxy oil. No. 1118 Chamber preserved

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: L. Finlayson DATE: 27-9-82 RUN NO: 4

SEAT NO.	45		45	
DEPTH	1613.0	m	1613.0	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES				
Tool Set	14-08-00	hrs		
Pretest Open	14-09-00	hrs		
Time Open	1-00	min		
Chamber Open	14-11-00	hrs	14-20-30	hrs
Chamber Full	14-18-30	hrs	14-24-00	hrs
Fill Time	7-30	min	4-30	min
Start Build up	14-18-30	hrs	14-24-00	hrs
Finish Build up	14-20-00	hrs	14-25-00	hrs
Build Up Time	1-30	min	1-00	min
Seal Chamber	14-20-00	hrs	14-25-00	hrs
Tool Retract		min	14-27-00	hrs
Total Time	12-00	min	19-00	min
B. SAMPLE PRESSURES	psia		psia	
IHP	2711			
ISIP	2280.9		2281.0	
Initial Flowing Press.	1867		1991	
Final Flowing Press.	2281		1982	
Sampling Press. Range	414		9	
FSIP	2281.0		2280.8	
FHP			2711	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	1638	m	1638	m
Max.Rec. Temp.	71	°C	71	°C
Time Circ. Stopped	26/09/82 @ 05.15	hrs	26/09/82 @ 05.15	hrs
Time since Circ.	33	hrs	33	hrs
Form. Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	100	psig		psig
Amt Gas		lit.		lit.
Amt Oil	Scum	lit.		lit.
Amt Water	22.20	lit.	9.00	lit.
Amt Others		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm		ppm
C3		ppm		ppm
iC4/nC4		ppm		ppm
C5		ppm		ppm
C6+		ppm		ppm
CO2/H2S		ppm		ppm
Oil Properties	°API @ °C			
Colour				
Fluorescence				
GOR cf/bbl				
Water Properties				
Resistivity	1.09 @ 20	°C	1.75 @ 20	°C
NaCl Equivalent	6000	ppm	3500	ppm
Cl-titrated	4200	ppm	4000	ppm
pH/Nitrates	40	ppm	40	ppm
Ca	80		60	
Mud Properties				
Resistivity	0.33 @ 21°C		0.33 @ 21°C	
NaCl Equivalent	22000	ppm	22000	ppm
Cl-titrated	16500	ppm	16500	ppm
pH/Nitrates		ppm		ppm
Calibration				
Calibration Press.	0-4000	psig	0-4000	psig
Calibration Temp.	15-137	°C	15-137	°C
Mud Weight	9.8	ppg	9.8	ppg
Calc.Hydrostatic	2697	psig	2697	psig
RFT Chokesize	0.030	"	0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: L. Finlayson DATE: 27-9-82 RUN NO: 5

SEAT NO.	47, 50 & 51			51	
DEPTH	1583.5 & 1584.0	m		1583.5	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES					
Tool Set	17-40-00	hrs			
Pretest Open	17-44-00	hrs			
Time Open	4-00	min			
Chamber Open	17-47-00	hrs		19-05-00	hrs
Chamber Full	18-47-00	hrs		19-35-00	hrs
Fill Time	60-00	min		30-00	min
Start Build up	18-47-00	hrs		19-35-00	hrs
Finish Build up		hrs		19-40-00	hrs
Build Up Time		min		5-00	min
Seal Chamber	18-47-00	hrs		19-35-00	hrs
Tool Retract	18-50-00	hrs		19-40-00	hrs
Total Time	10-00	min		35-00	min
B. SAMPLE PRESSURES	psia			psia	
IHP	2662			2662	
ISIP	2245.7			2242.6	
Initial Flowing Press.	51			484	
Final Flowing Press.	2065			245	
Sampling Press. Range	2014			397	
FSIP	Not stabilized			Not stabilized	
FHP	2262			2662	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	1602	m		1602	m
Max.Rec. Temp.	70	°C		70	°C
Time Circ. Stopped	26/09/82 @ 05.15	hrs		26/09/82 @ 05.15	hrs
Time since Circ.	36.5	hrs		36.5	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure	800	psig		100	psig
Amt Gas	4.9 cft/ 139	lit.		0.3 cft/8.5	lit.
Amt Oil	6.00	lit.		Scum	lit.
Amt Water	14.00	lit.		6.50	lit.
Amt Others		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	199,065	ppm		586,137	ppm
C2	108,503	ppm		180,838	ppm
C3	86,142	ppm		134,676	ppm
IC4/nC4	26,977	ppm		44,771	ppm
C5	5,728	ppm		13,094	ppm
C6+	835	ppm		1,740	ppm
CO2/H2S	0.5%/20	ppm		1.1%/60	ppm
Oil Properties	41°API @ 27.7	°C		37°API @ 27.7	°C
Colour	Golden-brown			Golden brown	
Fluorescence	Bright blue white			Bright blue white	
GOR cf/bbl	130			Insufficient yield	
Water Properties					
Resistivity	0.32 @ 21	°C		0.30 @ 21	°C
NaCl Equivalent	22000	ppm		23000	ppm
Cl-titrated	14000	ppm		14000	ppm
pH/Nitrates	40000	ppm		186	ppm
Est. Water Type					
Mud Properties					
Resistivity	0.33 @ 21	°C		0.33 @ 21	°C
NaCl Equivalent	22000	ppm		22000	ppm
Cl-titrated	16500	ppm		16500	ppm
pH/Nitrates		ppm			ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	15-137	°C		15-137	°C
Mud Weight	9.8	ppg		9.8	ppg
Calc.Hydrostatic	2481	psig		2481	psig
RFT Chokesize	0.030	"		0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: L. Finlayson DATE: 27-9-82 RUN NO: 6

SEAT NO.	53		53	
DEPTH	1678.0	m	1678.0	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES				
Tool Set	23-15-00	hrs		
Pretest Open	23-17-00	hrs		
Time Open	2-00	min		
Chamber Open	23-19-30	hrs	23-30-00	hrs
Chamber Full	23-27-00	hrs	23-33-30	hrs
Fill Time	8-00	min	3-30	min
Start Build up	23-27-30	hrs	23-33-30	hrs
Finish Build up	23-24-00	hrs	23-35-00	hrs
Build Up Time	1-30	min	1-30	min
Seal Chamber	23-29-00	hrs	23-35-00	hrs
Tool Retract		hrs	23-35-30	hrs
Total Time	14-00	min	25-30	min
B. SAMPLE PRESSURES	psia		psia	
IHP	2817			
ISIP	2372.2		2372.2	
Initial Flowing Press.	113		1785	
Final Flowing Press.	2372		2372	
Sampling Press. Range	2259		487	
FSIP	2372.2		2372.2	
FHP	Did not retract probe		2817	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	1716	m	1716	m
Max.Rec. Temp.	77	°C	77	°C
Time Circ. Stopped	26/09/82 @ 05.15	hrs	26/09/82 @ 05.15	hrs
Time since Circ.	42	hrs	42	hrs
Form. Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	400	psig	350	psig
Amt Gas	1.1 cft/31	lit.	0.5 cft/14	lit.
Amt Oil	Scum	lit.		lit.
Amt Water	21.00	lit.	9.00	lit.
Amt Others		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition				
C1	265,421	ppm	331,776	ppm
C2	32,440	ppm	8,110	ppm
C3	14,336	ppm	3,584	ppm
IC4/nC4	3,924	ppm	1,402	ppm
C5	982	ppm	928	ppm
C6+	186	ppm	557	ppm
CO2/H2S	0.5%/60	ppm	1.5%/60	ppm
Oil Properties				
Colour				
Fluorescence				
GOR cf/bbl				
Water Properties				
Resistivity	0.88 @ 15	°C	1.7 @ 15	°C
NaCl Equivalent	8000	ppm	4000	ppm
Cl-titrated	5000	ppm	4500	ppm
pH/Nitrates	75	ppm	75	ppm
Est. Water Type				
Mud Properties				
Resistivity	0.33 @ 21	°C	0.33 @ 21	°C
NaCl Equivalent	22000	ppm	22000	ppm
Cl-titrated	16500	ppm	16500	ppm
pH/Nitrates		ppm		ppm
Calibration				
Calibration Press.	0-4000	psig	0-4000	psig
Calibration Temp.	15-137	°C	15-137	°C
Mud Weight	9.8	ppg	9.8	ppg
Calc.Hydrostatic	2805	psig	2805	psig
RFT Chokesize	0.030	"	0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: L. Finlayson DATE: 28-9-82 RUN NO: 7

SEAT NO.	54		54	
DEPTH	1532.0	m	1532.0	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES				
Tool Set	03-27-30	hrs		
Pretest Open	03-37-00	hrs		
Time Open	3-00	min		
Chamber Open	03-40-00	hrs	03-51-00	hrs
Chamber Full	03-47-00	hrs	03-54-00	hrs
Fill Time	7-00	min	3-00	min
Start Build up	03-47-00	hrs	03-54-00	hrs
Finish Build up	03-50-00	hrs	03-55-30	hrs
Build Up Time	3-00	min	1-00	min
Seal Chamber	03-50-00	hrs	03-55-30	hrs
Tool Retract		hrs	03-57-00	hrs
Total Time	22-30	min	6-00	min
B. SAMPLE PRESSURES	psia		psia	
IHP	2576.6			
ISIP	2166.0		2165.2	
Initial Flowing Press.	924		2133	
Final Flowing Press.	2105		2165	
Sampling Press. Range	1181		32	
FSIP	2165.2		2165.2	
FHP	Did not retract probe		2576	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	1532	m	1532	m
Max.Rec. Temp.	69	°C	69	°C
Time Circ. Stopped	26/09/82 @ 05.15	hrs	26/09/82 @ 05.15	hrs
Time since Circ.	46	hrs	46	hrs
Form. Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	1350	psig		psig
Amt Gas	60.7 cft/1719	lit.		lit.
Amt Oil	20.00	lit.		lit.
Amt Water		lit.		lit.
Amt Others		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition				
C1	309,657	ppm		ppm
C2	14,500	ppm		ppm
C3	5,376	ppm		ppm
IC4/nC4	1,686	ppm		ppm
C5	600	ppm		ppm
C6+	278	ppm		ppm
CO2/H2S	0.5%/80	ppm		ppm
Oil Properties	34°API @ 16	°C		
Colour	Brown-gold			
Fluorescence	Bright blue-white			
GOR cf/bbl	483			
Water Properties				
Resistivity		°C		°C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
pH/Nitrates		ppm		ppm
Est. Water Type				
Mud Properties				
Resistivity		°C		°C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
pH/Nitrates		ppm		ppm
Calibration				
Calibration Press.	0-4000	psig	0-4000	psig
Calibration Temp.	15-137	°C	15-137	°C
Mud Weight	9.8	ppg	9.8	ppg
Calc.Hydrostatic	2561	psig	2561	psig
RFT Chokesize	0.030	"	0.030	"
REMARKS:			Chamber preserved	

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: L. Finlayson DATE: 28-9-82 RUN NO: 8

SEAT NO.	57			57	
DEPTH	1605.0	m		1605.0	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES					
Tool Set	08-08-00	hrs			
Pretest Open	08-09-00	hrs			
Time Open	1-00	min			
Chamber Open	08-11-00	hrs		08-20-00	hrs
Chamber Full	08-17-30	hrs		08-23-30	hrs
Fill Time	6-30	min		3-30	min
Start Build up	08-17-30	hrs		08-23-00	hrs
Finish Build up	08-19-00	hrs		08-25-00	hrs
Build Up Time	1-30	min		1-30	min
Seal Chamber	08-19-00	hrs		08-25-00	hrs
Tool Retract		hrs		08-26-00	hrs
Total Time	12-00	min		18-00	min
B. SAMPLE PRESSURES	psia			psia	
IHP	2697				
ISIP	2269.3			2269.4	
Initial Flowing Press.	854			2171	
Final Flowing Press.	2269			2269	
Sampling Press. Range	1415			97	
FSIP	2269.4			2269.3	
FHP	Did not retract probe			2697	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	1641	m		1641	m
Max.Rec. Temp.	72	°C		72	°C
Time Circ. Stopped	26/09/82 @ 05.15	hrs		26/09/82 @ 05.15	hrs
Time since Circ.	51	hrs		51	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure		psig			psig
Amt Gas	0.05 cft/ 1.4	lit.			lit.
Amt Oil	scum	lit.			lit.
Amt Water	22.00	lit.		9.00	lit.
Amt Others		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1		ppm			ppm
C2		ppm			ppm
C3		ppm			ppm
iC4/nC4		ppm			ppm
C5		ppm			ppm
C6+		ppm			ppm
CO2/H2S		ppm			ppm
Oil Properties	°API @	°C			
Colour					
Fluorescence					
GOR cf/bbl					
Water Properties					
Resistivity	0.95 @ 20	°C		1.65 @ 17	°C
NaCl Equivalent	6500	ppm		4000	ppm
Cl-titrated	5500	ppm		3000	ppm
pH/Nitrates	110	ppm		66	ppm
Est. Water Type					
Mud Properties					
Resistivity	0.33 @ 21	°C		0.33 @ 21	°C
NaCl Equivalent	22000	ppm		22000	ppm
Cl-titrated	16500	ppm		10500	ppm
pH/Nitrates		ppm			ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	15-137	°C		15-137	°C
Mud Weight	9.8	ppg		9.8	ppg
Calc.Hydrostatic	2683	psig		2683	psig
RFT Chokesize	0.030	"		0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: L. Finlayson DATE: 28-9-82 RUN NO: 9

SEAT NO.	58		58	
DEPTH	1529.5	m	1529.0	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES				
Tool Set	11-47-00	hrs		
Pretest Open	11-51-30	hrs		
Time Open	2-00	min		
Chamber Open	11-53-30	hrs	12-02-00	hrs
Chamber Full	12-00-30	hrs	12-02-01	hrs
Fill Time	7-00	min	0-01	min
Start Build up	12-00-30	hrs	12-02-01	hrs
Finish Build up	12-01-30	hrs	12-02-01	hrs
Build Up Time	2-00	min		min
Seal Chamber	12-01-30	hrs	12-09-30	hrs
Tool Retract		hrs	12-22-30	hrs
Total Time	14-30	min	20-30	min
B. SAMPLE PRESSURES	psia		psia	
IHP	2571			
ISIP	2166.0		2165.5	
Initial Flowing Press.	2158		2164	
Final Flowing Press.	2165		2165	
Sampling Press. Range	7		1	
FSIP	2165.5		2165.3	
FHP			2571	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	1602	m	1602	m
Max.Rec. Temp.	69	^{o}C	69	^{o}C
Time Circ. Stopped	26/09/82 @ 05.15	hrs	26/09/82 @ 05.15	hrs
Time since Circ.	54.5	hrs	54.5	hrs
Form. Temp.(Horner)		^{o}C		^{o}C
D. SAMPLE RECOVERY				
Surface Pressure	1500	psig		psig
Amt Gas	119.30 cft/3378	lit.		lit.
Amt Oil		lit.		lit.
Amt Water	0.43	lit.		lit.
Amt Others/Condensate	0.10	lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition	Condensate/Emulsion			
C1	331,776	ppm		ppm
C2	36,045	ppm		ppm
C3	22,400	ppm		ppm
IC4/nC4	5,606	ppm		ppm
C5	680	ppm		ppm
C6+	120	ppm		ppm
CO2/H2S	0.6%/30	ppm		ppm
Oil Properties	55^{o}API @ 16	^{o}C		
Colour				
Fluorescence				
GOR bbl Cond/Million cf gas	5.2			
Water Properties				
Resistivity	1.5 @ 18	^{o}C	@	^{o}C
NaCl Equivalent	4500	ppm		ppm
Cl-titrated	5500	ppm		ppm
pH/Nitrates	88	ppm		ppm
Est. Water Type				
Mud Properties				
Resistivity	0.35 @ 13	^{o}C	0.35 @ 13	^{o}C
NaCl Equivalent	22000	ppm	22000	ppm
Cl-titrated	16500	ppm	16500	ppm
pH/Nitrates		ppm		ppm
Calibration				
Calibration Press.	0-4000	psig	0-4000	psig
Calibration Temp.	15-137	^{o}C	15-137	^{o}C
Mud Weight	9.8	ppg	9.8	ppg
Calc.Hydrostatic	2557	psig	2557	psig
RFT Chokesize	0.030	"	0.020	"

REMARKS: Chamber preserved

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: A. Lindsay DATE: 6-10-82 RUN NO: 11

SEAT NO.	88			88	
DEPTH	2249.0	m		2249.0	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (3.8		lit.)
A. RECORDING TIMES					
Tool Set	23-21-10	hrs			
Pretest Open	23-21-30	hrs			
Time Open	0-20	min			
Chamber Open	23-24-30	hrs		23-34-30	hrs
Chamber Full	23-30-20	hrs		23-36-50	hrs
Fill Time	5-50	min		2-20	min
Start Build up	23-30-20	hrs		23-36-50	hrs
Finish Build up	23-32-20	hrs		23-37-30	hrs
Build Up Time	2-00	min		0-40	min
Seal Chamber	23-33-00	hrs		23-38-30	hrs
Tool Retract	Did not retract			23-39-00	hrs
Total Time	10-50	min		4-30	min
B. SAMPLE PRESSURES	psia			psia	
IHP	3816				
ISIP	3221.0			3219.9	
Initial Flowing Press.	3186			3208	
Final Flowing Press.	3220			3220	
Sampling Press. Range	47			13	
FSIP	3219.9			3219.7	
FHP	Did not retract probe			3814	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	2252	m		2252	m
Max.Rec. Temp.	89	^{o}C		89	^{o}C
Time Circ. Stopped	5/10/82 @ 09.00	hrs		5/10/82 @ 09.00	hrs
Time since Circ.	14-20	hrs		14-30	hrs
Form. Temp.(Horner)		^{o}C			^{o}C
D. SAMPLE RECOVERY			Preserved for analysis		
Surface Pressure	1600	psig			psig
Amt Gas	60.1 cft/1702	lit.			lit.
Amt Oil	18.00	lit.			lit.
Amt Water	Trace	lit.			lit.
Amt Others/Condensate		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	849,668	ppm			ppm
C2	51,718	ppm			ppm
C3	13,629	ppm			ppm
IC4/nC4	3,864	ppm			ppm
C5	477	ppm			ppm
C6+		ppm			ppm
CO2/H2S	37.6%/15.6	ppm			ppm
Oil Properties	37.6^{o}API @ 16	^{o}C			
Colour	Light brown when solid, dark brown when molten				
Fluorescence	Milky white				
GOR (cf/bbl)/Melting point	531/27.5^{o}C				
Water Properties					
Resistivity		^{o}C	@		^{o}C
NaCl Equivalent		ppm			ppm
Cl-titrated		ppm			ppm
pH/Nitrates		ppm			ppm
Est. Water Type					
Mud Properties					
Resistivity	0.32 ohm-m @ 220 ppm	NO_3	0.32 ohm-m @ 14.4		^{o}C
NaCl Equivalent	19500	ppm		19500	ppm
Cl-titrated	12500	ppm		12500	ppm
pH/Nitrates		ppm			ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	18-137	^{o}C		18-137	^{o}C
Mud Weight	9.8	ppg		9.8	ppg
Calc.Hydrostatic	3760	psig		3760	psig
RFT Chokesize	0.030	"		0.020	"

REMARKS: Chamber No. 1121 preserved.

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: P.J. Henderson DATE: 6-10-82 RUN NO: 12

SEAT NO.	90			90	
DEPTH	2205.0	m		2205.0	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES					
Tool Set	04-01-40	hrs			
Pretest Open	04-02-00	hrs			
Time Open	3-00	min			
Chamber Open	04-05-00	hrs		04-15-40	hrs
Chamber Full	04-10-20	hrs		04-17-50	hrs
Fill Time	5-20	min		2-10	min
Start Build up	04-10-20	hrs		04-17-50	hrs
Finish Build up	04-14-30	hrs		04-20-10	hrs
Build Up Time	4-10	min		2-20	min
Seal Chamber	04-14-40	hrs		04-20-40	hrs
Tool Retract	Not retracted			04-21-00	hrs
Total Time	13-00	min		5-20	min
B. SAMPLE PRESSURES	psia			psia	
IHP	3737				
ISIP	3153.4			3153.0	
Initial Flowing Press.	3044			3115	
Final Flowing Press.	3034			3113	
Sampling Press. Range	10			2	
FSIP	3153.0			3153.0	
FHP	Did not retract probe			3735	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	2224	m		2224	m
Max.Rec. Temp.	88	°C		88	°C
Time Circ. Stopped	5/10/82 @ 09.00	hrs		5/10/82 @ 09.00	hrs
Time since Circ.	19	hrs		19	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure	1550	psig			psig
Amt Gas	51.0 cft/1444	lit.			lit.
Amt Oil	13.00	lit.			lit.
Amt Water	3.00	lit.			lit.
Amt Others/Condensate		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	863,364	ppm			ppm
C2	66,084	ppm			ppm
C3	19,080	ppm			ppm
IC4/nC4	4,401	ppm			ppm
C5	1,074	ppm			ppm
C6+	205	ppm			ppm
CO2/H2S	10%/Nil	ppm			ppm
Oil Properties	36.9°API @ 16	°C			
Colour	Yellow brown when solid,dark brown when liquid				
Fluorescence	Milky white				
GOR (cf/bbl)/Melting point	624/27.5°C				
Water Properties					
Resistivity	0.37 @ 26	°C		@	°C
NaCl Equivalent	15500	ppm			ppm
Cl-titrated	9000	ppm			ppm
pH/Nitrates	120	ppm			ppm
Est. Water Type	Mud & filtrate SG 8.9 ppg				
Mud Properties					
Resistivity	0.41 ohm-m @ 17.3	°C		0.41 ohm-m @ 17.3	°C
NaCl Equivalent	19500	ppm		19500	ppm
Cl-titrated	12500	ppm		12500	ppm
pH/Nitrates		ppm			ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	18-137	°C		18-137	°C
Mud Weight	9.8	ppg		9.8	ppg
Calc.Hydrostatic	3688	psig		3688	psig
RFT Chokesize	0.030	"		0.020	"

REMARKS: Chamber No. 1114 preserved.

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: P.J. Henderson DATE: 6-10-82 RUN NO: 13

SEAT NO.	97			97	
DEPTH	2032.0	m		2032.0	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES					
Tool Set	08-38-40	hrs			
Pretest Open	08-39-00	hrs			
Time Open	5-00	min			
Chamber Open	08-44-20	hrs		09-01-25	hrs
Chamber Full	08-51-20	hrs		09-03-50	hrs
Fill Time	7-00	min		2-25	min
Start Build up	08-51-20	hrs		09-05-50	hrs
Finish Build up	09-00-45	hrs		09-95-50	hrs
Build Up Time	9-25	min		5-00	min
Seal Chamber	09-00-50	hrs		09-06-00	hrs
Tool Retract	Did not retract			09-06-00	hrs
Total Time	22-10	min		4-35	min
B. SAMPLE PRESSURES	psia			psia	
IHP	3450				
ISIP	2887.5			2286.1	
Initial Flowing Press.	2333			2531	
Final Flowing Press.	1877			2455	
Sampling Press. Range	358			76	
FSIP	2886.1			2886.9	
FHP				3449	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	2032	m		2032	m
Max.Rec. Temp.	89	^{o}C		89	^{o}C
Time Circ. Stopped	5/10/82 @ 09.00	hrs		5/10/82 @ 09.00	hrs
Time since Circ.	23.5	hrs		23.5	hrs
Form. Temp.(Horner)		^{o}C			^{o}C
D. SAMPLE RECOVERY					
Surface Pressure	1200	psia			psia
Amt Gas	27.2 cft/ 770	lit.			lit.
Amt Oil	6.50	lit.			lit.
Amt Water	11.00	lit.			lit.
Amt Others/Condensate		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition			Sample preserved		
C1	779,210	ppm			ppm
C2	45,870	ppm			ppm
C3	12,210	ppm			ppm
IC4/nC4	2,570	ppm			ppm
C5	390	ppm			ppm
C6+		ppm			ppm
CO2/H2S	5%/Nil	ppm			ppm
Oil Properties	37.0^{o}API @ 16	^{o}C			
Colour	Yellow brown to black brown				
Fluorescence	Blue white				
GOR (cf/bbl)/Melting point	665/27.5^{o}C pH 7.7				
Water Properties					
Resistivity	0.38 @ 32.5	^{o}C		@	^{o}C
NaCl Equivalent	13000	ppm			ppm
Cl-titrated	9000	ppm			ppm
pH/Nitrates	120/180	ppm			ppm
Est. Water Type					
Mud Properties	220	ppm NO_3			
Resistivity	0.41 ohm-m @ 17.3	^{o}C		0.41 ohm-m @ 17.3	^{o}C
NaCl Equivalent	19500	ppm		19500	ppm
Cl-titrated	12500	ppm		12500	ppm
pH/Nitrates		ppm			ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	18-137	^{o}C		18-137	^{o}C
Mud Weight	9.8	ppg		9.8	ppg
Calc.Hydrostatic	3397	psig		3397	psig
RFT Chokesize	0.030	"		0.020	"

REMARKS: Sample preserved

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: A. Lindsay | DATE: 6-10-82 | RUN NO: 14

SEAT NO.	100			100	
DEPTH	2280.0	m		2280.0	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES					
Tool Set	14-30-00	hrs			
Pretest Open	14-30-00	hrs			
Time Open	3-00	min			
Chamber Open	14-33-00	hrs		14-52-00	hrs
Chamber Full	14-39-00	hrs		14-54-00	hrs
Fill Time	6-00	min		2-00	min
Start Build up	14-39-00	hrs		14-54-00	hrs
Finish Build up	14-50-00	hrs		15-05-00	hrs
Build Up Time	11-00	min		11-00	min
Seal Chamber	14-51-00	hrs		15-05-00	hrs
Tool Retract	Did not retract probe			15-06-00	hrs
Total Time	21-00	min		14-00	min
B. SAMPLE PRESSURES	psia			psia	
IHP	3850				
ISIP	3254.4			Not stabilized	
Initial Flowing Press.	2764			3131	
Final Flowing Press.	2684			3116	
Sampling Press. Range	80			15	
FSIP	Not stabilized			Not stabilized	
FHP	Did not retract probe			3848	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	2284	m		2284	m
Max.Rec. Temp.	100	°C		100	°C
Time Circ. Stopped	5/10/82 @ 09.00	hrs		5/10/82 @ 09.00	hrs
Time since Circ.	30	hrs		30	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure	375	psig		375	psig
Amt Gas	2.9 cft/ 82	lit.		0.3 cft/ 8.5	lit.
Amt Oil		lit.			lit.
Amt Water	20.50	lit.		3.25	lit.
Amt Others/Condensate		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	246,675	ppm		280,936	ppm
C2	43,673	ppm		13,648	ppm
C3	15,264	ppm		3,066	ppm
IC4/nC4	3,434	ppm		537	ppm
C5	700	ppm		159	ppm
C6+	48	ppm		102	ppm
CO2/H2S	12%/Nil	ppm		NA/NA	ppm
Oil Properties	°API @	°C			
Colour					
Fluorescence					
GOR (cf/bbl)					
Water Properties					
Resistivity	0.36 ohm-m @ 18	°C		0.38 ohm-m @ 18	°C
NaCl Equivalent	20000	ppm		18000	ppm
Cl-titrated	10200	ppm		9200	ppm
pH/Nitrates	6.6/ 40	ppm		6.6/ 40	ppm
Est. Water Type					
Mud Properties					
Resistivity	0.41 ohm-m @ 17	°C		0.41 ohm-m @ 17	°C
NaCl Equivalent	19500	ppm		19500	ppm
Cl-titrated	12500	ppm		12500	ppm
pH/Nitrates	10.5/220	ppm		10.5/220	ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	18-137	°C		18-137	°C
Mud Weight	9.8	ppg		9.8	ppg
Calc.Hydrostatic	3812	psig		3812	psig
RFT Chokesize	0.030	"		0.020	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: A. Lindsay DATE: 6-10-82 RUN NO: 15

SEAT NO.	102		102	
DEPTH	2046.0	m	2046.0	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES				
Tool Set	19-35-00	hrs		
Pretest Open	19-35-00	hrs		
Time Open	4-30	min		
Chamber Open	19-39-30	hrs	19-56-58	hrs
Chamber Full	19-46-06	hrs	20-00-40	hrs
Fill Time	6-36	min	3-42	min
Start Build up	19-46-06	hrs	20-00-40	hrs
Finish Build up	19-55-30	hrs	20-08-55	hrs
Build Up Time	11-24	min	8-15	min
Seal Chamber	19-56-20	hrs	20-08-55	hrs
Tool Retract	Did not retract probe		20-14-50	hrs
Total Time	21-20	min	17-52	min
B. SAMPLE PRESSURES	psia		psia	
IHP	3468			
ISIP	2906.8		2901.5	
Initial Flowing Press.	2540		2100	
Final Flowing Press.	1800		1930	
Sampling Press. Range	740		170	
FSIP	2901.5		2901.5	
FHP	Did not retract probe		3466	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	2065	m	2065	m
Max.Rec. Temp.	92	°C	92	°C
Time Circ. Stopped	5/10/82 @ 09.00	hrs	5/10/82 @ 09.00	hrs
Time since Circ.	34.5	hrs	34.5	hrs
Form. Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	500	psig	700	psig
Amt Gas	5.4 cft/ 153	lit.	8.6 cft/244	lit.
Amt Oil	2.75	lit.	4.75	lit.
Amt Water	17.25	lit.	2.75	lit.
Amt Others/Condensate		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition				
C1	382,771	ppm	328,090	ppm
C2	20,644	ppm	27,525	ppm
C3	6,543	ppm	13,087	ppm
IC4/nC4	2,744	ppm	4,460	ppm
C5	270	ppm	716	ppm
C6+	27	ppm	627	ppm
CO2/H2S	4%/Nil	ppm	3%/Nil	ppm
Oil Properties	37.1°API @ 16	°C	38.6°API @ 16 °C	
Colour - Yellow brown in solid phase and very dark brown in liquid phase				
Fluorescence	milky white		milky white	
GOR (cf/bbl)/Melting point	312/25°C		288/26°C	
Water Properties				
Resistivity	0.36 ohm-m @ 29	°C	0.34 ohm-m @ 29	°C
NaCl Equivalent	16000	ppm	17000	ppm
Cl-titrated	9100	ppm	11000	ppm
pH/Nitrates	7.7/ 90	ppm	7.7/ 55	ppm
Est. Water Type				
Mud Properties				
Resistivity	0.41 ohm-m @ 17.3	°C	0.41 ohm-m @ 17.3	°C
NaCl Equivalent	19500	ppm	19500	ppm
Cl-titrated	12500	ppm	12500	ppm
pH/Nitrates	10.5/220	ppm	10.5/220	ppm
Calibration				
Calibration Press.	0-4000	psig	0-4000	psig
Calibration Temp.	18-137	°C	18-137	°C
Mud Weight	9.8	ppg	9.8	ppg
Calc.Hydrostatic	3409	psig	3409	psig
RFT Chokesize	0.030	"	0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: A. Lindsay DATE: 7-10-82 RUN NO: 17

SEAT NO.	111			111	
DEPTH	2195.3	m		2195.3	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES					
Tool Set	14-26-00	hrs			
Pretest Open	14-26-00	hrs			
Time Open	6-00	min			
Chamber Open	14-32-00	hrs		15-01-00	hrs
Chamber Full	14-42-00	hrs		15-05-00	hrs
Fill Time	10-00	min		4-00	min
Start Build up		hrs		15-05-00	hrs
Finish Build up		hrs			hrs
Build Up Time		min			min
Seal Chamber	14-59-00	hrs		15-12-00	hrs
Tool Retract	Did not retract probe			15-17-00	hrs
Total Time	33-00	min		16-00	min
B. SAMPLE PRESSURES	psia			psia	
IHP	3711				
ISIP	3152.6			Did not stabilize	
Initial Flowing Press.	76			1100	
Final Flowing Press.	2092			2130	
Sampling Press. Range	2016			1130	
FSIP	Did not stabilize			Did not stabilize	
FHP	Did not retract probe			3701	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	2264	m		2264	m
Max.Rec. Temp.	75	°C		75	°C
Time Circ. Stopped	7/10/82 @ 07.30	hrs		7/10/82 @ 07.30	hrs
Time since Circ.	7	hrs		7	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure	1380	psig		1400	psig
Amt Gas	89 cft/2520	lit.		44.1 cft/1249	lit.
Amt Condensate	0.10	lit.		0.06	lit.
Amt Water	2.00	lit.		0.17	lit.
Amt Others		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	382,771	ppm			ppm
C2	30,966	ppm			ppm
C3	11,996	ppm			ppm
iC4/nC4	4,460	ppm			ppm
C5	1,751	ppm			ppm
C6+	655	ppm			ppm
CO2/H2S	5%/Nil	ppm			ppm
Oil Properties	47 °API @ 16	°C		47 °API @ 16 °C	
Colour	Dark brown			Dark brown	
Fluorescence	Milky white			Milky white	
Liquid Yield	7 bbl/Mill scf			8 bbl/Mill scf	
Water Properties					
Resistivity	0.42 ohm-m @ 16	°C		0.42 ohm-m @ 16	°C
NaCl Equivalent	17000	ppm		17000	ppm
Cl-titrated	10500	ppm		9000	ppm
pH/Nitrates	7.7/110	ppm		7.7/ 60	ppm
Est. Water Type					
Mud Properties					
Resistivity	0.41 ohm-m @ 17	°C		0.41 ohm-m @ 17	°C
NaCl Equivalent	19500	ppm		19500	ppm
Cl-titrated	12500	ppm		12500	ppm
pH/Nitrates	10.5/170	ppm		10.5/170	ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	18-137	°C		18-137	°C
Mud Weight	9.8	ppg		9.8	ppg
Calc.Hydrostatic	3670	psig		3670	psig
RFT Chokesize	0.030	"		0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: N. Davidson DATE: 16-10-82 RUN NO: 18

SEAT NO.	117			117	
DEPTH	2633.0	m		2633.0	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES					
Tool Set	14-07-00	hrs			
Pretest Open	14-07-00	hrs			
Time Open	4-00	min			
Chamber Open	14-11-00	hrs		14-28-00	hrs
Chamber Full	14-19-00	hrs		14-31-00	hrs
Fill Time	8-00	min		3-00	min
Start Build up	14-19-00	hrs		14-31-00	hrs
Finish Build up		hrs			hrs
Build Up Time		min			min
Seal Chamber	14-28-00	hrs		14-37-00	hrs
Tool Retract	Did not retract probe			14-37-00	hrs
Total Time	21-00	min		9-00	min
B. SAMPLE PRESSURES	psia			psia	
IHP	4383				
ISIP	3790.1				
Initial Flowing Press.	176			2690	
Final Flowing Press.	1160			2616	
Sampling Press. Range	984			74	
FSIP	Not stabilized			Not stabilized	
FHP	Did not retract probe			4380	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	2633	m		2633	m
Max.Rec. Temp.	102	°C		102	°C
Time Circ. Stopped	15/10/82 @ 07.00	hrs		15/10/82 @ 07.00	hrs
Time since Circ.	31	hrs		31	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure	480	psig		310	psig
Amt Gas	2.9 cft/ 82	lit.		0.5 cft/ 14	lit.
Amt Oil	Trace waxy scum			trace film (contamination?)	
Amt Water	19.60	lit.		3.40	lit.
Amt Others		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	66,125	ppm		325,380	ppm
C2	5,425	ppm		49,290	ppm
C3	2,579	ppm		26,780	ppm
IC4/nC4	595	ppm		8,480	ppm
C5	173	ppm		2,490	ppm
C6+	74	ppm		620	ppm
CO2/H2S	3%/trace	ppm		5%/trace	ppm
Oil Properties	32 °API @ 16	°C		°API @	°C
Colour	Straw yellow				
Fluorescence	Bright yellow gold				
GOR cf/bbl/Melting Point	NA/28°C				
Water Properties					
Resistivity	0.25 ohm-m @ 27.5	°C		0.30 ohm-m @ 20.5	°C
NaCl Equivalent	24000	ppm		24000	ppm
Cl-titrated	16000	ppm		14000	ppm
pH/Nitrates	6.4/ 20	ppm		6.4/ 10	ppm
Est. Water Type					
Mud Properties					
Resistivity	0.20 ohm-m @ 17	°C		0.20 ohm-m @ 17	°C
NaCl Equivalent	39000	ppm		39000	ppm
Cl-titrated	20000	ppm		20000	ppm
pH/Nitrates	10.5/220	ppm		10.5/220	ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	18-137	°C		18-137	°C
Mud Weight	9.8	ppg		9.8	ppg
Calc.Hydrostatic	4402	psig		4402	psig
RFT Chokesize	0.030	"		0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: N. Davidson DATE: 18-10-82 RUN NO: 21

SEAT NO.	162		162	
DEPTH	2604.5	m	2604.5	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES				
Tool Set	02-24-00	hrs		
Pretest Open	02-25-00	hrs		
Time Open	3-00	min		
Chamber Open	02-28-00	hrs	02-41-00	hrs
Chamber Full	02-32-00	hrs	02-44-00	hrs
Fill Time	4-00	min	3-00	min
Start Build up	02-32-00	hrs	02-44-00	hrs
Finish Build up	02-39-00	hrs	02-48-00	hrs
Build Up Time	7-00	min	4-00	min
Seal Chamber	02-39-00	hrs	02-48-00	hrs
Tool Retract	Did not retract probe		02-50-00	hrs
Total Time	15-00	min	9-00	min
B. SAMPLE PRESSURES	psia		psia	
IHP	4358			
ISIP	3723.1		Did not stabilize	
Initial Flowing Press.	2930		3130	
Final Flowing Press.	2820		3040	
Sampling Press. Range	110		90	
FSIP	Did not stabilize		Did not stabilize	
FHP	Did not retract probe		4360	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	2605	m	2605	m
Max.Rec. Temp.	94	°C	94	°C
Time Circ. Stopped	17/10/82 @ 12.00	hrs	17/10/82 @ 12.00	hrs
Time since Circ.	14	hrs	14	hrs
Form. Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	200	psig	320	psig
Amt Gas	0.5 cft/ 14	lit.	0.5 cft/ 14	lit.
Amt Oil	Trace oil scum	lit.	Trace oil scum	lit.
Amt Water	20.50	lit.	9.00	lit.
Amt Others		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition				
C1	157,624	ppm	180,142	ppm
C2	12,235	ppm	17,797	ppm
C3	3,920	ppm	4,126	ppm
IC4/nC4	872	ppm	810	ppm
C5	170	ppm	96	ppm
C6+	19	ppm	19	ppm
CO2/H2S		ppm		ppm
Oil Properties	°API @	°C	°API @	°C
Colour	Brown grey		Brown grey	
Fluorescence	Bright yellow		Bright yellow	
GOR cf/bbl				
Water Properties				
Resistivity	0.24 ohm-m @ 27	°C	0.26 ohm-m @ 20	°C
NaCl Equivalent	25000	ppm	25000	ppm
Cl-titrated	16000	ppm	16000	ppm
pH/Nitrates	7.9/180	ppm	6.6/ 50	ppm
Est. Water Type				
Mud Properties				
Resistivity	0.205 ohm-m @ 20	°C	0.205 ohm-m @ 20	°C
NaCl Equivalent	35000	ppm	35000	ppm
Cl-titrated	18500	ppm	18500	ppm
pH/Nitrates	10.3/220	ppm	10.3/220	ppm
Calibration				
Calibration Press.	0-4000	psig	0-4000	psig
Calibration Temp.	18-137	°C	18-137	°C
Mud Weight	9.6	ppg	9.6	ppg
Calc.Hydrostatic	4266	psig	4266	psig
RFT Chokesize	0.030	"	0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: N. Davidson DATE: 18-10-82 RUN NO: 22

SEAT NO.	163		164	
DEPTH	2461.5	m	2461.0	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES				
Tool Set	05-40-00	hrs	06-05-00	hrs
Pretest Open	05-40-00	hrs	06-06-00	hrs
Time Open	5-00	min	4-00	min
Chamber Open	05-45-00	hrs	06-10-00	hrs
Chamber Full	05-57-00	hrs		hrs
Fill Time	12-00	min		min
Start Build up		hrs		hrs
Finish Build up		hrs		hrs
Build Up Time		min		min
Seal Chamber	05-59-00	hrs	06-12-00	hrs
Tool Retract	05-59-00	hrs	06-12-00	hrs
Total Time	19-00	min	7-00	min
B. SAMPLE PRESSURES	psia		psia	
IHP	4124		4129	
ISIP	3514.6		3511.2	
Initial Flowing Press.	130		2160	
Final Flowing Press.	113		Seal	
Sampling Press. Range	17		Failed	
FSIP	Seal failed			
FHP	4128		4124	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	2462	m	2462	m
Max.Rec. Temp.	93	°C	95	°C
Time Circ. Stopped	17/10/82 @ 12.00	hrs	17/10/82 @ 12.00	hrs
Time since Circ.	16	hrs	16	hrs
Form. Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	220	psig	100	psig
Amt Gas	0.17 cft/ 5	lit.		lit.
Amt Oil	trace	lit.	trace	lit.
Amt Water + Mud	20.25	lit.	5.00	lit.
Amt Others		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition				
C1	216,170	ppm		ppm
C2	24,915	ppm		ppm
C3	6,190	ppm		ppm
IC4/nC4	1,120	ppm		ppm
C5	170	ppm		ppm
C6+	19	ppm		ppm
CO2/H2S	0.5%/-	ppm		ppm
Oil Properties	°API @	°C	°API @ °C	
Colour				
Fluorescence	Yellow		Bright yellow	
GOR cf/bbl				
Water Properties				
Resistivity	0.26 ohm-m @ 26	°C	0.25 ohm-m @ 27	°C
NaCl Equivalent	22000	ppm	22000	ppm
Cl-titrated		ppm	17000	ppm
pH/Nitrates		ppm	8.7/220	ppm
Est. Water Type				
Mud Properties				
Resistivity	0.205 ohm-m @ 20	°C	0.205 ohm-m @ 20	°C
NaCl Equivalent	35000	ppm	35000	ppm
Cl-titrated	19000	ppm	19000	ppm
pH/Nitrates	10.3/220	ppm	10.3/220	ppm
Calibration				
Calibration Press.	0-4000	psig	0-4000	psig
Calibration Temp.	18-137	°C	18-137	°C
Mud Weight	9.6	ppg	9.6	ppg
Calc.Hydrostatic	4031	psig	4031	psig
RFT Chokesize	0.030	"	0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: N. Davidson DATE: 18-10-82 RUN NO: 23

SEAT NO.	168		168	
DEPTH	2633.0	m	2633.0	m
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES				
Tool Set	10-38-00	hrs		
Pretest Open	10-38-00	hrs		
Time Open	3-00	min		
Chamber Open	10-41-00	hrs	11-01-00	hrs
Chamber Full	10-47-00	hrs	11-04-00	hrs
Fill Time	6-00	min	3-00	min
Start Build up	10-47-00	hrs	11-04-00	hrs
Finish Build up	10-57-00	hrs	11-10-00	hrs
Build Up Time	10-00	min	6-00	min
Seal Chamber	10-57-00	hrs	11-10-00	hrs
Tool Retract	Did not retract probe		11-11-00	hrs
Total Time	19-00	min	10-00	min
B. SAMPLE PRESSURES	psia		psia	
IHP	4408			
ISIP	3784.5		Not stabilized	
Initial Flowing Press.	1650		2170	
Final Flowing Press.	1730		2080	
Sampling Press. Range	80		90	
FSIP	Not stabilized		Not stabilized	
FHP	Did not retract probe		Not stabilized	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	2637	m	2637	m
Max.Rec. Temp.	101	°C	101	°C
Time Circ. Stopped	17/10/82 @ 12.00	hrs	17/10/82 @ 12.00	hrs
Time since Circ.	22.5	hrs	22.5	hrs
Form. Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	410	psig	400	psig
Amt Gas	2.5 cft/ 71	lit.	1.1 cft/ 31	lit.
Amt Oil	Significant waxy oil scum		Droplets on surface	
Amt Water	20.10	lit.	9.1	lit.
Amt Others		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition				
C1	122,440	ppm	247,695	ppm
C2	9,316	ppm	16,407	ppm
C3	3,804	ppm	6,512	ppm
IC4/nC4	1,071	ppm	2,260	ppm
C5	313	ppm	767	ppm
C6+	97	ppm	290	ppm
CO2/H2S	5%/trace	ppm	10%/Nil	ppm
Oil Properties	°API @	°C	°API @	°C
Colour	Dark reddish brown		Dark reddish brown	
Fluorescence	Yellow		Yellow	
GOR cf/bbl/Melting Point	- /28°C		NA/NA	
Water Properties				
Resistivity	0.30 ohm-m @ 24	°C	0.34 ohm-m @ 22	°C
NaCl Equivalent	20000	ppm	19500	ppm
Cl-titrated	13000	ppm	12000	ppm
pH/Nitrates	6.2/ 50	ppm	6.1/ 90	ppm
Est. Water Type				
Mud Properties				
Resistivity	0.20 ohm-m @ 20	°C	0.20 ohm-m @ 20	°C
NaCl Equivalent	35000	ppm	35000	ppm
Cl-titrated	20000	ppm	20000	ppm
pH/Nitrates	10.3/220	ppm	10.3/220	ppm
Calibration				
Calibration Press.	0-4000	psig	0-4000	psig
Calibration Temp.	18-137	°C	18-137	°C
Mud Weight	9.8	ppg	9.8	ppg
Calc.Hydrostatic	4402	psig	4402	psig
RFT Chokesize	0.030	"	0.030	"

REMARKS:

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: N. Davidson DATE: 18-10-82 RUN NO: 24

SEAT NO.	169		172		
DEPTH	2461.5	m	2461.5 & 2461.0	m	
	CHAMBER 1 (22.7	lit.)	CHAMBER 2 (10.4	lit.)	
A. RECORDING TIMES					
Tool Set	13-57-00	hrs			hrs
Pretest Open	13-58-00	hrs	14-42-00		hrs
Time Open	1-00	min	1-00		min
Chamber Open	14-00-00	hrs	14-43-00		hrs
Chamber Full	14-15-00	hrs			hrs
Fill Time	15-00	min			min
Start Build up	14-15-00	hrs			hrs
Finish Build up	14-26-00	hrs	Seal failed		hrs
Build Up Time	11-00	min			min
Seal Chamber	14-26-00	hrs			hrs
Tool Retract	14-27-00	hrs	14-53-00		hrs
Total Time	30-00	min	11-00		min
B. SAMPLE PRESSURES	psia		psia		
IHP	4121		4124		
ISIP	3513.4		3512.9		
Initial Flowing Press.	146		Seal failed		
Final Flowing Press.	500				
Sampling Press. Range	354				
FSIP	Not stabilized				
FHP	4124				
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	2461	m	2461		m
Max.Rec. Temp.	99	°C	99		°C
Time Circ. Stopped	17/10/82 @ 12.00	hrs	17/10/82 @ 12.00		hrs
Time since Circ.	26	hrs	27		hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure	480	psig	225		psig
Amt Gas	1.4 cft/ 40	lit.	0.3 cft/ 9		lit.
Amt Oil	trace oil scum	lit.	trace		lit.
Amt Water + Mud	19.60	lit.	9.30		lit.
Amt Others		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	60,798	ppm	382,802		ppm
C2	4,672	ppm	30,033		ppm
C3	1,960	ppm	13,928		ppm
IC4/nC4	592	ppm	4,987		ppm
C5	188	ppm	1,487		ppm
C6+	86	ppm	338		ppm
CO2/H2S	4.0%/Nil	ppm	3.0%/Nil		ppm
Oil Properties	°API @	°C	°API @	°C	
Colour	Brown		Brown		
Fluorescence	Blue white		Blue white		
GOR cf/bbl					
Water Properties					
Resistivity	0.24 ohm-m @ 22	°C	0.25 ohm-m @ 22		°C
NaCl Equivalent	28000	ppm	22000		ppm
Cl-titrated	16500	ppm	15000		ppm
pH/Nitrates	6.6/130	ppm	8.3/200		ppm
Est. Water Type					
Mud Properties					
Resistivity	0.20 ohm-m @ 20	°C	0.20 ohm-m @ 20		°C
NaCl Equivalent	35000	ppm	35000		ppm
Cl-titrated	20000	ppm	20000		ppm
pH/Nitrates	10.3/200	ppm	10.3/200		ppm
Calibration					
Calibration Press.	0-4000	psig	0-4000		psig
Calibration Temp.	18-137	°C	18-137		°C
Mud Weight	9.6	ppg	9.6		ppg
Calc.Hydrostatic	4031	psig	4031		psig
RFT Chokesize	0.030	"	0.030		"

REMARKS: Oil sample too small to test

RFT SAMPLE TEST REPORT - WIRRAH - 1

OBSERVER: D. Moreton DATE: 20-11-82 RUN NO: 25

SEAT NO.	182			182	
DEPTH	2973.8	m		2973.8	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES					
Tool Set	00-55-00	hrs			hrs
Pretest Open	01-05-00	hrs			hrs
Time Open	10-00	min			min
Chamber Open	01-05-00	hrs		01-44-00	hrs
Chamber Full		hrs			hrs
Fill Time		min			min
Start Build up		hrs			hrs
Finish Build up		hrs			hrs
Build Up Time		min			min
Seal Chamber	01-44-00	hrs		02-04-00	hrs
Tool Retract	Did not retract probe			02-15-00	hrs
Total Time	49-00	min		31-00	min
B. SAMPLE PRESSURES	psig			psig	
IHP	5604				
ISIP	5360				
Initial Flowing Press.	51			160	
Final Flowing Press.	160			195	
Sampling Press. Range	109			75	
FSIP					
FHP				5651	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	2974	m		2974	m
Max.Rec. Temp.	109	°C		109	°C
Time Circ. Stopped	19/11/82 @ 13.45	hrs		19/11/82 @ 13.45	hrs
Time since Circ.	11	hrs		11	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure		psig			psig
Amt Gas		lit.			lit.
Amt Oil		lit.			lit.
Amt Water	2.00	lit.		0.90	lit.
Amt Others		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1		ppm			ppm
C2		ppm			ppm
C3		ppm			ppm
iC4/nC4		ppm			ppm
C5		ppm			ppm
C6+		ppm			ppm
CO2/H2S		ppm			ppm
Oil Properties	°API @	°C		°API @	°C
Colour					
Fluorescence					
GOR cf/bbl					
Water Properties					
Resistivity	0.37 ohm-m @ 21	°C		0.41 ohm-m @ 20	°C
NaCl Equivalent	17000	ppm		17000	ppm
Cl-titrated	14000	ppm		12000	ppm
pH/Nitrates	- /150	ppm		- /120	ppm
Est. Water Type					
Mud Properties					
Resistivity	0.29 ohm-m @ 19	°C		0.29 ohm-m @ 19	°C
NaCl Equivalent	24500	ppm		24500	ppm
Cl-titrated	12000	ppm		12000	ppm
pH/Nitrates	10.5/220	ppm		10.5/220	ppm
Calibration					
Calibration Press.	0-4000	psig		0-4000	psig
Calibration Temp.	18-137	°C		18-137	°C
Mud Weight	11.2	ppg		11.2	ppg
Calc.Hydrostatic	5682	psig		5682	psig
RFT Chokesize	0.030	"		0.030	"

REMARKS: Ran tool without the HP gauge.

APPENDIX 5

APPENDIX 5

PRODUCTION TEST REPORT

WIRRAH-1

PRODUCTION TEST NO. 1

WIRRAH-1

PRODUCTION TEST NO. 1 REPORT

Interval 2624-2633.5m KB
(2603-2612.5m SS)

WIRRAH-1 PRODUCTION TEST NO. 1

A. SUMMARY

Between October 29 and November 4, 1982, a production test was carried out on the Wirrah-1 exploration well over the interval 2624m-2633.5m KB (2603m-2612.5m ss). This interval lies below the major oil and gas accumulations discovered in Wirrah-1 and has been referred to as Zone 8 in other reports of Wirrah-1 results. Despite operational difficulties associated with the high pour point crude which resulted in the test being extended over six different flow periods, the final flow period continued for 13.5 hours at a stable rate with an average production rate of 610 STB/D (97 st kL/D) of oil and 330 STB/D (52 kl/D) of water. The 37° to 38° API crude had a GOR of 1200 SCF/STB (214 m^3/kL) and a pour point of 87 to 89°F (30.6 to 31.7°C).

The test showed definite signs of pressure depletion in the reservoir. Reservoir pressure declined 72 psi (496 kPa) over the test period in response to the estimated production of 1400 reservoir barrels. This pressure depletion indicates the sand unit tested is effectively isolated from aquifer support and has oil-in-place of only 440 kSTB (69.9 ML).

Phase redistribution effects and the limited size of the sand unit reduced the accuracy of permeabilities derived from pressure build-up analysis. However, permeability to oil is estimated to be in the 5 to 10 md range. This is consistent with the productivity index measured during the test of 0.56 STB/day/psi (.0129 kL/day/kPa) and implies little or no formation damage. The absolute permeability of the formation is estimated to be two to three times the measured permeability to oil.

Table 1 summarizes the test results. Corelab on-site analyses and the pressure gradient surveys taken during the test are included in the Appendix to the report.

B. BACKGROUND AND OBJECTIVES

Resistivity logs in the 2624-2641 mKB interval in Wirrah-1 indicated the likely presence of hydrocarbons with water saturations varying between 46 and 65 percent, (average 50 percent) and porosity varying from 11 to 18 percent (average 14 percent). An RFT survey was conducted in the interval to confirm the log interpretation. RFT pressure tests at two depths within the interval suggested that water was the continuous phase present. Two sample runs at 2633m KB, each with 6 and 2-3/4 gallon chambers, returned filtrate with a small amount of oil scum and were considered inconclusive. The two RFT sampling runs also indicated a relatively low permeability, in the order of 14 md.

In light of the log interpretation and RFT results, Production Test No. 1 was planned to :

(i) confirm the presence of hydrocarbons;

(ii) determine the producing characteristics of the formation;

(iii) determine whether the formation would produce hydrocarbons only (no water); and

(iv) investigate flow boundaries and drive mechanism.

C. TEST DESCRIPTION

Production Test No. 1 tested the interval 2624-2633.5m KB. It was conducted over a period of 6-1/2 days with a number of different flow periods largely due to operational difficulties associated with the high pour point of the Wirrah crude. For discussion purposes, the test has been broken into 6 different flow periods which are shown schematically on Figure 1 and described below.

1. Flow Period No. 1 - Initial Flow Period

The well was perforated at 0623, 29/10/82, with the tubing displaced with diesel giving an expected underbalance of 615 psi. The well was flowed between 0808 and 1010, with 29.8 BBLs of diesel produced into the Otis measurement tanks.

After shutting the well in, an HP pressure gauge was run in hole, taking a gradient survey while going down. The gradient survey gave no indication of produced hydrocarbons.

2. Flow Period No. 2

Flow period No. 2 was the first attempt at the major flow period. The well was opened at 1745 through a 24/64 inch choke and produced until 1942 when strong winds blowing flames directly back into the burner forced production to be shut in. During this period the well was shut-in for six minutes due to the failure of the burner air line. The first indication of hydrocarbons at the surface occurred at 1927 when gas was detected at the choke manifold.

Production during the period is estimated to be 36 BBLS. This estimate is based largely on rates measured during a half hour period when diesel was directed to the Otis measurement tanks.

3. Flow Period No. 3

Flow period No. 3 was the second attempt at a major flow period. Problems associated with separating and burning produced liquid caused production to be shut-in a number of times during this period. For modelling purposes this period has been broken into three sections which are described as follows.

1. The well was reopened at 0357, 30/10/82, when weather conditions permitted. During the shut-in period, gas migration in the wellbore had increased wellhead pressure to 1070 psig. The first indication of oil at the surface occurred at 0427. The well was shut-in between 0536 and 0547 and between 0630 and 0631 when the burner flame went out.

   The well was shut-in at 0730 because the high water cut and high crude pour point prevented efficient burner operation. Using PI information from later flow periods and bottom hole pressure drawdown, flow during this period is estimated to have averaged 960 STB/D (oil and water).

2. The well was reopened at 0756, with flow diverted to the Otis measurement tanks. Flow was diverted to the separator at 0917 and shut-in at 0940 due to separator level control problems associated with the high pour point crude. Flow during this period is estimated to have averaged 750 BBL/D (oil and water).

3. The well was reopened at 1138, with flow directed to the Otis measurement tanks. The amount of gas production from the well forced production to be shut-in at 1225. The test was then suspended until a production heater could be mobilized. The production rate during this period is estimated to have been 840 BBL/D (oil and water).

4. Flow Period No. 4

The well was reopened at 0608, 2/11/82, following the installation of a production heater. The heater, normally designed to burn gas, was fired with propane. The heater's performance with propane fuel was not sufficient to heat the production and when water reached the surface at 0650 liquid handling and burner problems started again. At 0720 the well was shut in. Production during the period is estimated to have averaged 870 BBL/D.

5. Flow Period No. 5

Separator gas was supplied to the heater as fuel rather than propane which substantially improved heater performance. Production started again at 0910 with successful separation and burning operation until 1141 when an attempt to correct a separator level controller caused production to be shut-in. Production in this period is estimated to have averaged 1100 BBL/D (oil and water).

6. Flow Period No. 6

The final flow period commenced at 1600, 2/11/82, and continued until 0530, 3/11/82. Production stabilized by 1800 (refer to Figures 2(a) and 2(b)) with average production in the $13\frac{1}{2}$ hour flow period of 610 STB/D oil and 330 BBL/D water. The GOR was 1200 scf/STB (at separator conditions of 180 psig and 130°F).

D. RESULTS AND INTERPRETATION

1. Reservoir Pressure

A significant pressure drop of 72 psi was measured between the start and finish of the production test. This indicates the sand unit tested behaves as a small bounded reservoir, effectively isolated from the Gippsland aquifer. Figure 1 shows the significant bottom hole pressure data taken throughout the test.

The first pressure data taken from the test interval were taken during Suite 3 of the Wirrah-1 RFT program. Two sampling runs at 2633m KB indicated reservoir pressures of 3785 psia. A pretest at 2624.5m indicated a pressure of 3767.6. This is consistent with the measurements at 2633m assuming water is the continuous phase in the interval. A pressure of 3764 psia at 2618m KB, the HP pressure gauge run depth during the test, is equivalent to a pressure of 3785 psia at 2633m KB, after correcting for a water column between the two depths, and is used as a reference pressure in this report.

Following perforation of the well and running out with the perforating gun, the wellhead pressure was 625 psig. This compares with the calculated underbalance of 615 psi and supports the RFT measurements of initial reservoir pressure.

The first indication of reservoir depletion was observed after the third flow period when pressure built up to only 3732 psia after a nine hour shut-in period. Pressure depletion was confirmed when the bottom hole pressure measured after the final flow period and build-up was 3692 psia, a drop of 72 psi from the initial reservoir pressure.

A number of small bottom hole pressure anomolies were observed during the final build-up period. These anomolies, along with the corresponding wellhead pressure data are shown in Figure 3. There are a number of small bottom hole pressure drops accompanied by corresponding reductions in wellhead pressure. The reasons for these pressure drops has not been positively established, but may be due to brief flow periods associated with very small intermittent gas leakage from the surface. The very small size of the gas leakage would have prevented detection.

Irrespective of the reason for the intermittent flow periods the volume of fluid produced during the flow periods is only in the order of 1 Bbl and has an insignificant effect on the interpretation of the build up data and the conclusion of substantial reservoir pressure depletion. The bottom hole pressure remained essentially static over the last 12 hours of monitoring.

2. Reservoir Volume

The pressure depletion measured during the test indicates the reservoir unit tested is of limited size. In the absence of a mappable horizon at this depth, the reason for the limited size is unclear, but may be due to loss of permeability in the sand, sealing by faults or "pinching" out of the sand. Irrespective of the reason, the estimated oil in place in this reservoir unit is 440k STB. The estimate is based on the following assumptions:

(i) a 72 psi pressure depletion over the test period;

(ii) total production during the test of 1400 reservoir barrels;

(iii) an oil formation volume factor, B_o, of 1.75 RB/STB;

(iv) total compressibility of 1.25×10^{-5}/psi.

(v) water saturation 50 percent; and

(vi) reservoir pressure remained above the crude bubble point in the bulk of the reservoir.

The 1400 reservoir barrel estimate of test production is based on stock tank production converted to reservoir volumes assuming a B_o of 1.75 RB/STB and a constant water cut of 35 percent.

Assumption (vi) is important to the calculation of reservoir volume. If a substantial volume of the oil was saturated at the initial conditions, the higher effective compressibility at the lower final pressure would significantly reduce the estimated size of the reservoir.

Assuming a uniform reservoir thickness of 17m (56 ft), which is equivalent to the sand interval on logs from 2624 to 2641 mKB, the estimate of reservoir volume translates to an average reservoir radius of 590 feet. This is consistent with the depth of investigation of the tests and the build-up behaviour observed which are discussed in following sections.

3. Build-Up Analysis

(a) Permeability

Permeability to oil data has been quoted in this report rather than absolute permeability. In the absence of relative permeability curves it is not possible to obtain an accurate estimate of absolute permeability from the permeability to oil test data. However, absolute permeabilities are estimated to be two to three times the quoted permeability to oil.

The permeability to oil is estimated to be between 5 and 10 md based on RFT sample runs and analysis of pressure build-ups after the different flow periods.

Table 2 summarizes the permeability determinations from the various tests carried out on the 2624 to 2633.5m KB interval. Permeabilities have been quoted for both a sand thickness of 31 ft (the perforated interval), and 56 ft, the entire 2624 - 2641m interval, to reflect the level of uncertainty related to the effective thickness of the sand tested.

The RFT determined permeabilities of 8.1 and 7.4 md are based on an effective sampling thickness of 0.5 ft which is the generally accepted figure. The RFT permeabilities quoted are lower than those quoted in the Wirrah-1 RFT Report because the value of viscosity used in calculating permeability has been reduced from 0.5 cp, used in the RFT report, to 0.24 cp, and they have been converted from absolute permeabilities to permeability to oil estimates.

Figures 4, 5, 6, 7 and 8 show the build-up plots for flow periods 1, 2, 3, 5 and 6 respectively. Many of the plots have limited middle time regions (MTR) because of phase redistribution effects and bounded reservoir behaviour. These effects, combined with the limited production rate data in early flow periods, result in a degree of uncertainty in permeability determination.

Build-up, Flow Period No. 1 - Figure 4

No MTR region was observed with the pressure build-up after the initial flow period due to the time required to get the pressure gauge to bottom hole.

Build-up, Flow Period No. 2 - Figure 5

Figure 5, the build-up plot for Flow Period No. 2, shows a possible MTR region before phase redistribution effects dominate pressure build-up. The low permeability indicated suggests that this is not a true MTR, but simply the transition from the early time region to the region dominated by phase redistribution.

Build-up, Flow Period No. 3 - Figure 6

Flow Period No. 3 was analyzed by breaking it into 3 divisions and using the superposition time function shown on Figure 6. Clearly, the reliability of the analysis depends on reasonable production rate estimates. There appears to be a brief MTR before phase redistribution effects dominate. The slope of the MTR line yields permeabilities of 8.8 and 4.9 for the 31 and 56 ft thickness respectively, which is consistent with permeabilities determined following Flow Period No. 5.

Build-up, Flow Period No. 5 - Figure 7

The build-up following Flow Period No. 5 is considered the most reliable for permeability determination. It has a good MTR which yields permeabilities of 10.9 and 6.1 md for a 31 and 56 ft thickness respectively. There is no indication of redistribution effects dominating the build-up. Furthermore, there is a reasonable estimate of production rate during this period.

Build-up, Flow Period No. 6 - Figure 8

Two possible MTR slopes have been drawn on the build-up plot for flow period No. 6, Figure 8. These slopes yield permeabilities which are significantly higher than those determined in other tests. The slopes are not considered to be valid MTR's because phase redistribution anomalies are apparent in the wellhead pressure for the same period. (Refer to Figure 3).

A McKinley afterflow analysis of Build-up No. 6 yields a permeability of 5.8 md for the 31 ft perforated interval.

(b) Horner Pressures (P^*)

The Horner pressures obtained by extrapolating the middle time region slopes to infinite shut-in are not considered to be estimates of reservoir pressure because of the bounded reservoir effect. Consequently, they are not quoted.

(c) Bounded Reservoir Effect

Build-up behaviour for a bounded reservoir depends on the geometry of the reservoir and the position of the well within the drainage boundary. Assuming a permeability of 10 md, a reservoir area equivalent to a radius of 590 ft, the reservoir/fluid properties in Table 3, and a rectangle reservoir, build-up behaviour will deviate from the Ptd constant rate solution between 3.6 and 9.0 hours, depending on the location of the well relative to its drainage area. It is therefore not surprising that Horner plots after shut-in times of 5 hours did not exhibit MTR regions.

In the absence of structural definition of the reservoir unit, no attempt has been made to apply finite reservoir analysis to determine permeability.

(d) Depth of Investigation

The depth of investigation at the end of the final build-up is estimated to be 1000 ft, significantly greater than the average radius of 590 ft suggested by the material balance calculation. This estimate is based on:

(i) an absolute permeability of 15 md; and

(ii) the formula $r_I = 2\ (t \times 0.00633k/\phi C\mu)^{1/2}$

4. Productivity Index and Skin Factor

(a) Productivity Index

The productivity index measured during the test, was 0.56 Bbl/day/psi. This is based on a reservoir pressure of 3700 psia, a drawdown of 1090 psi to a flowing pressure of 2610 psia, and a production rate of 610 STB/d. The measured PI is consistent with the permeability data determined, as shown below:

$$PI = \frac{0.0078kh}{B \times \mu\ (\ln \frac{re}{rw} - 0.5)}$$

$$= \frac{0.00708 \times 7.5 \times 31}{1.488 \times 0.26 \times (\ln \frac{590}{0.5} - 0.5)} = 0.60 \text{ BBL/day/psi}$$

Note: Refer to Table 3 for source of parameters.

(b) Skin Factor

Using the build-up curve for flow period No. 5 shown in Figure 7, the skin factor for the well is 0.38. This assumes that the slope of the MTR region in Figure 7 applies to a 56 ft. thick interval, and that in the vicinity of the wellbore where the majority of the pressure drop occurs, the effective thickness is 31 ft. The skin factor implies a flow efficiency of 93.4%.

5. Samples and Fluid Properties

Table 1 summarizes the fluid properties measured during the test. The Corelab data which is the basis for the properties is included in the Appendix to this report.

During the test the following samples were taken:

(i) two 600 cc downhole oil samples from 1900 mKB following Flow Period No. 3;

(ii) one 1030 cc sample of oil and one 19 litre (5 gallon) sample of gas from the test separator at approximately 0100, 3/11/82; and

(iii) two 500 cc samples of oil and one 19 litre (5 gallon) sample of gas from the test separator at approximately 0430, 3/11/82.

One of the two downhole samples at 1900 mKB leaked. The other was transferred to a shipping container and a bubble point pressure of 2320 psig at 103°F was recorded.

TABLE 1
WIRRAH-1
PRODUCTION TEST NO. 1
SUMMARY OF TEST RESULTS
Test Interval - 2624 - 2633.5m KB
- (2603 - 2612.5 m SS)

1. Production

(i) Estimated Total Production; 610 stock tank barrels oil
(1070 reservoir barrels oil)
330 barrels water

(ii) Production Rate during final flow period: 610 STB/D oil
330 STB/D water
940 STB/D total

(iii) Water Cut = 35 percent.

2. Fluid Properties

Oil

API	37° - 38°
GOR	1200 Scf/STB
Pour Point	87-89°F

Water (typical)

Resistivity	0.36mΩ@ 84°F
Cl- (by titration)	11-12 kppm
pH	7.0

3. Reservoir Pressures

Initial pressure	=	3785 psia @ 2633 mKB (RFT)
	=	3764 psia @ 2618 mKB
Final pressure	=	3692 psia @ 2618 mKB
Drawdown		72 psi

4. Reservoir Size - 440 kSTB oil in place

- equivalent to an average radius of 590 ft. or an area of 25.0 acres.

5. Permeability

KK_{ro}	=	5 - 10 md
PI	=	0.56 STB/PSI/D
S	=	0.38
Flow efficiency	=	93.4 percent

12071

TABLE 2

SUMMARY OF PERMEABILITY TO OIL DATA

Test	$KK_{ro}h$ md-ft	h ft	KK_{ro} md	Comments
1. RFT samples @ 2633 m KB				
RFT 18	4.0	0.5	8.1	- dependent on effective sampling thickness
RFT 23	3.7	0.5	7.4	
2. Build-up after Flow Period No. 2	52	31	1.7	- Unreliable due to phase redistribution.
		56	0.9	
3. Build-up after Flow Period No. 3	274	31	8.8	- Unreliable - brief MTR, very dependent on rate estimate.
		56	4.9	
4. Build-up after Flow Period No. 5	339	31	10.9	
		56	6.1	
5. Build-up after Flow period No. 6	1129	31	36.4	- Phase redistribution distortion.
		56	20.2	
	653	31	21.1	- Phase redistribution distortion
		56	11.7	
McKinley Analysis		31	5.8	
		56	3.2	

12071

TABLE 3

ROCK AND FLUID PROPERTIES

1	Porosity ϕ	14% (Preliminary)	Log Interpretation - avg. for interval.
2.	Water Saturation	50% (Preliminary)	Log interpretation - avg. for interval.
3.	Compressibility, c	$12.5 \times 10^{-6} psi^{-1}$	Assumes: $C_o = 15 \times 10^{-6} psi^{-1}$ $C_w = 3.0 \times 10^{-6} psi^{-1}$ $C_f = 3.5 \times 10^{-6} psi^{-1}$ $C = C_f + S_w C_w + (1-S_w) C_o$
4.	Viscosity,	$\mu_w = 0.3$ cp $\mu_o = 0.24$ cp	Source: Exxon Well Testing Manual assumptions: GOR = 1200 Scf/STB temperature = 220°F Oil viscosity compares reasonably with the Seahorse (1000 Scf/STB) viscosity of 0.21 cp.
5.	Oil Formation Volume Factor, B_o	1.75	Source: Standing Correlation

Final Pressure gradient survey.

Flow Period No.6
Stable flow of 940 BBL/day achieved.

Flow Period No. 5
Estimated production 115 BBLs - Separator level control problem.

Flow Period No. 4
Estimated production 45 STB.
- Burner and Separator Problems.

Figure 1. Overview of Production Test No. 1

Gradient pressure survey No. 1

Flow Period No. 3
Estimated 190 BBLs produced.
Oil at surface at 0430.
- Burner and separator problems.

Flow Period No. 2
Estimated 36 BBLs produced.
Gas at surface at 1927.
Production shut-in due to weather restriction.

Flow Period No. 1
30 BBLs diesel production.

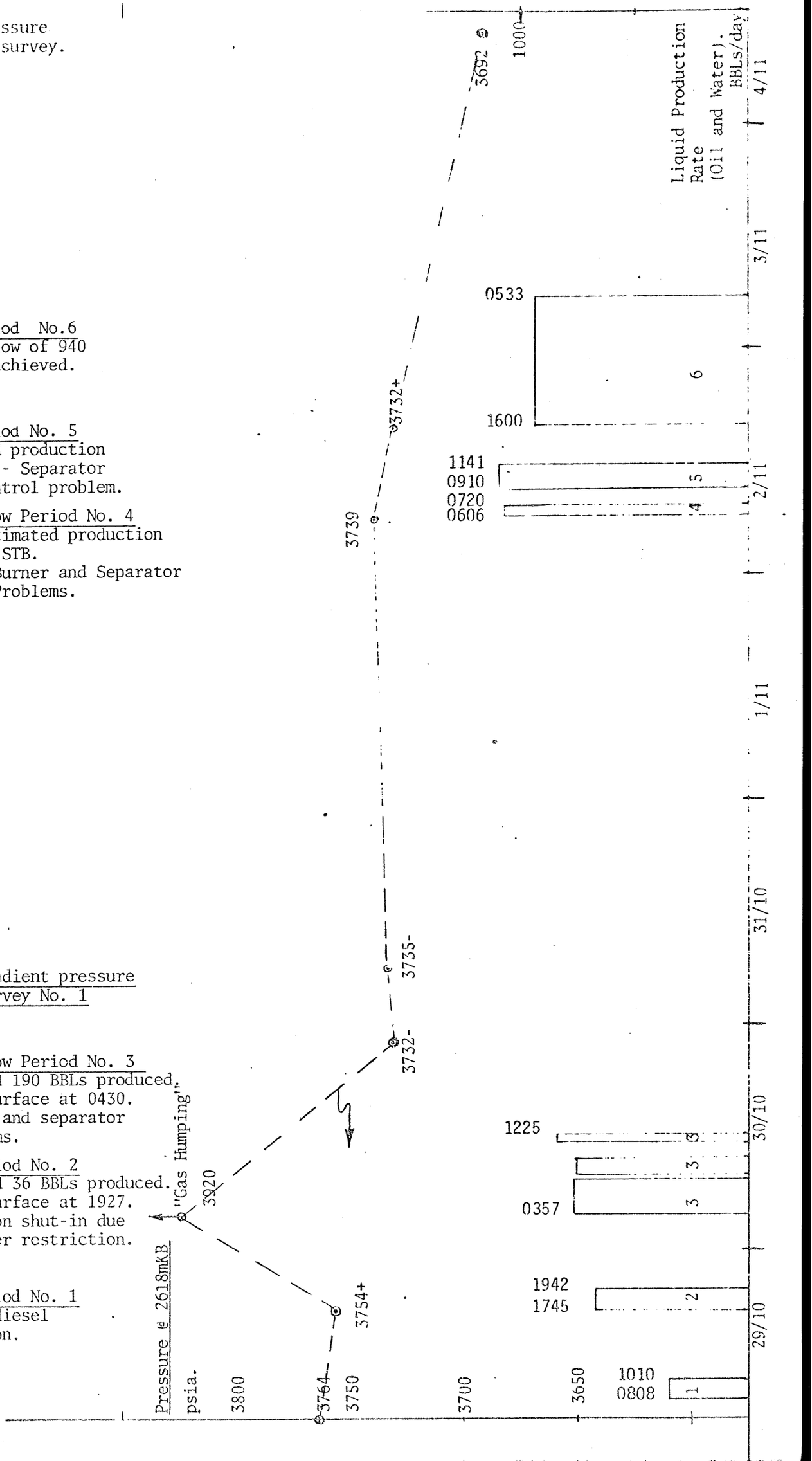


Figure 2(a) Flow Period No. 6. Gas Production Rate and GOR

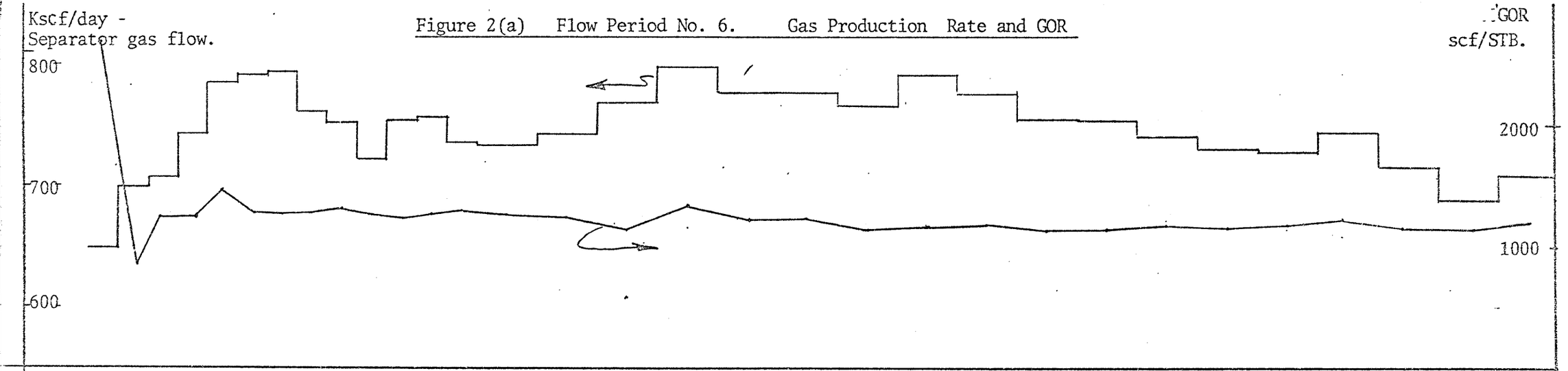


Figure 2(b) Flow Period No. 6. Oil and Water Production Rates.

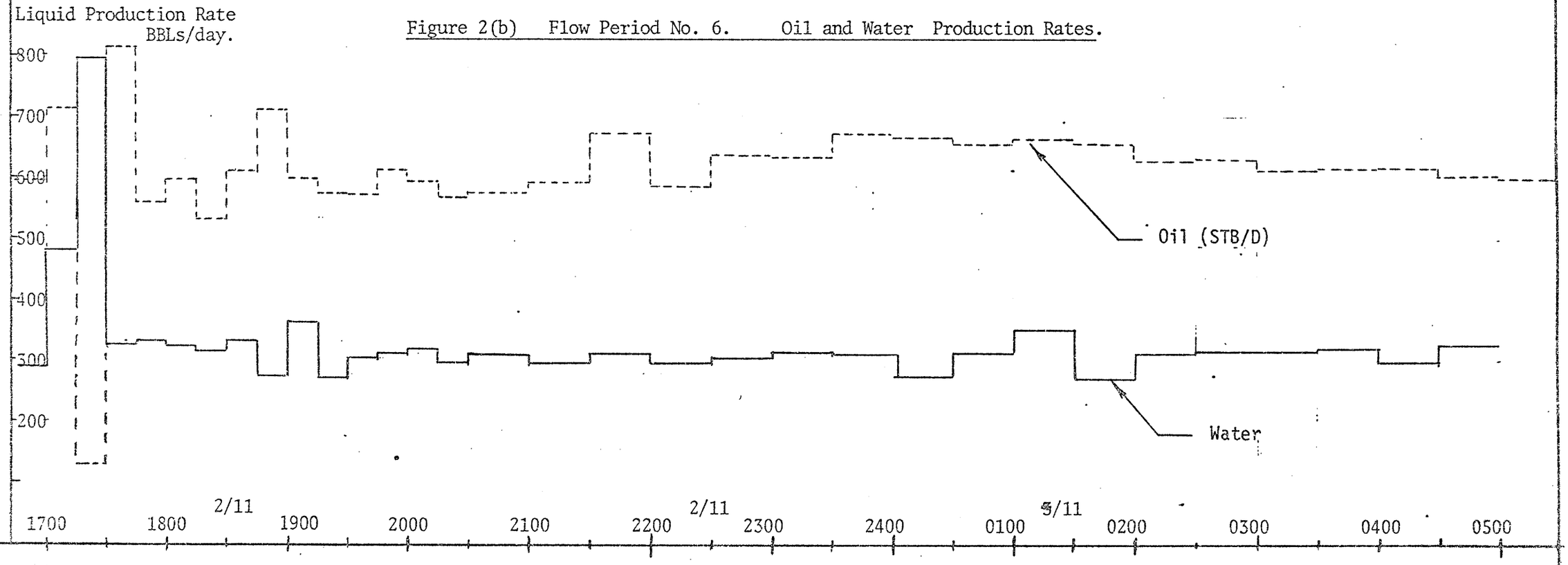


Figure 3 Well Head and Bottom Hole Pressures - Buildup Following Flow Period No. 6.

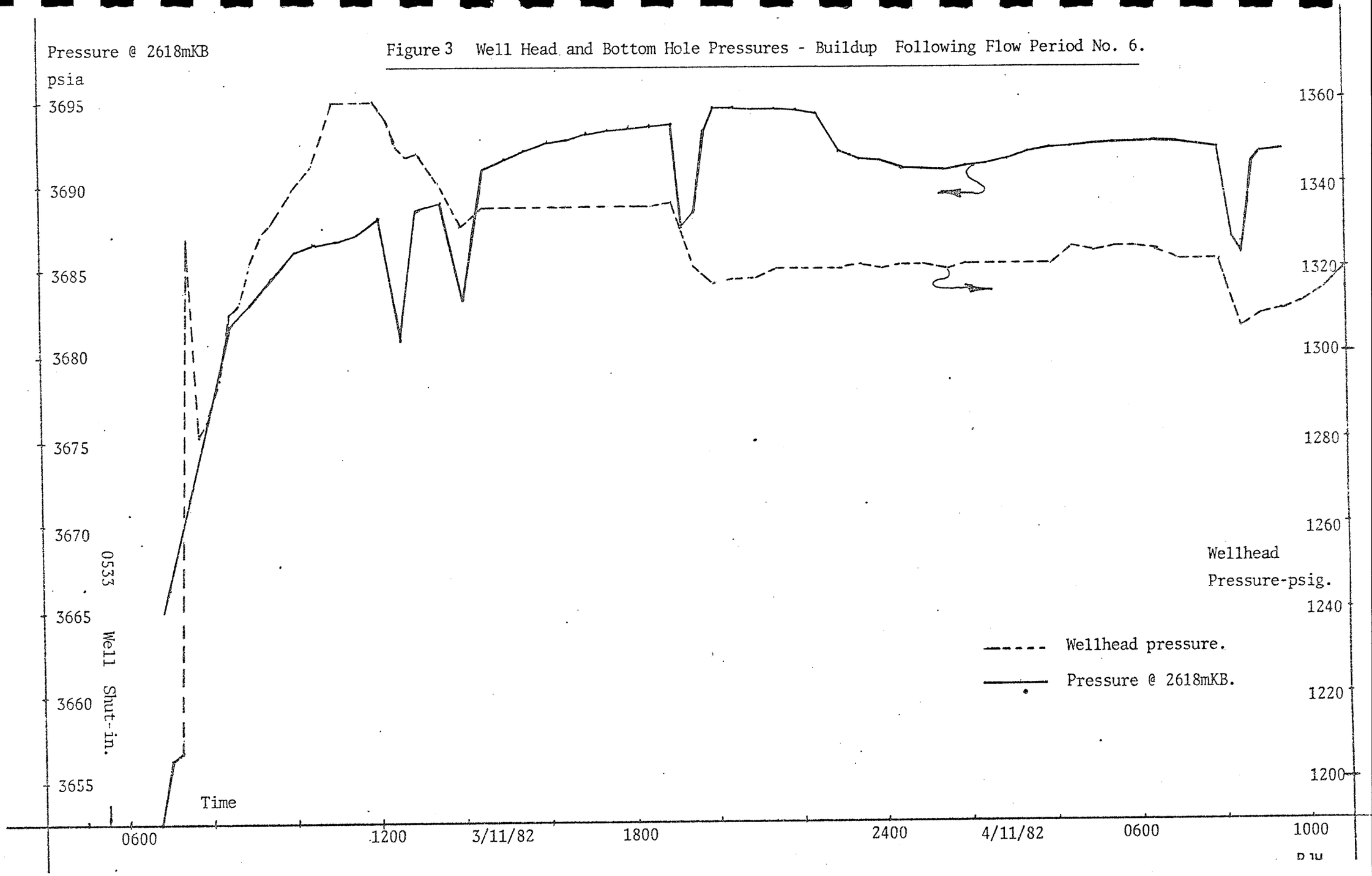


Figure 4 - Horner Plot - Flow Period No. 1

0808 - 1010 hrs, 29/10/82.

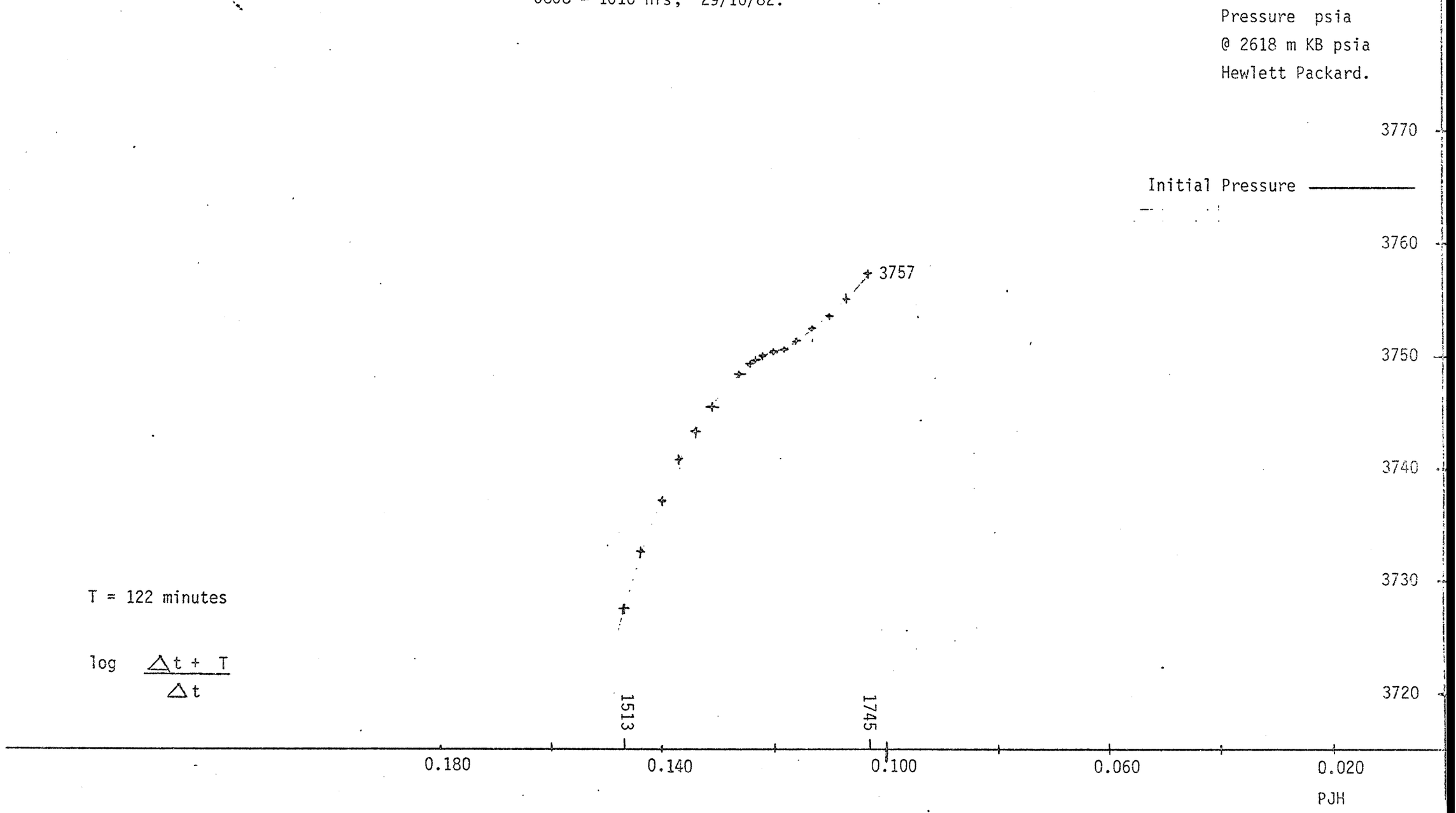


Figure 5 Horner Plot. Flow Period No. 2

1745 - 1942 hrs, 29/10/82

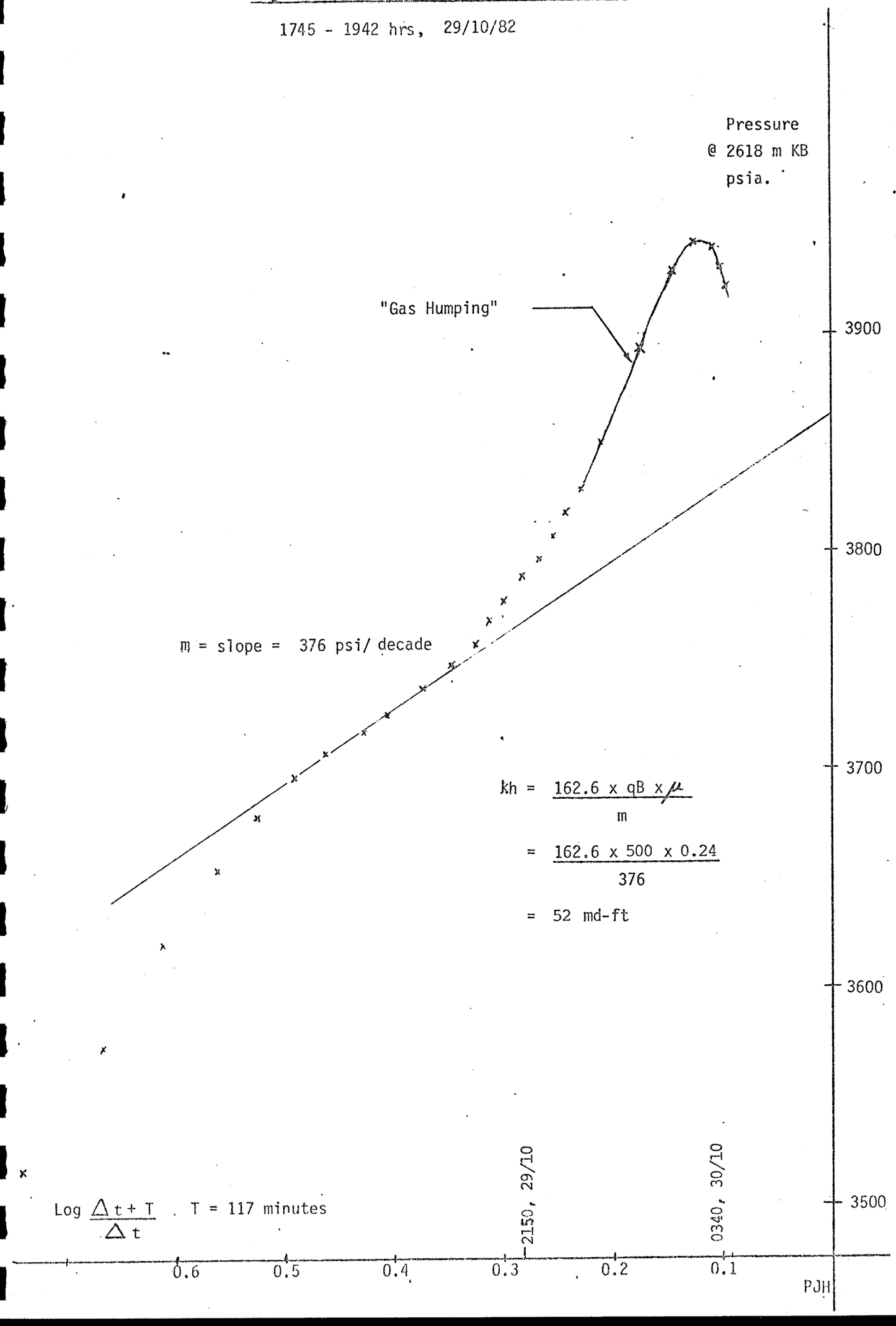


Figure 6 Horner Plot - Flow Period 3

0357 - 1225 hrs, 30/10/82.

$$f(t) = \frac{q_1}{q_3}\left[\log \frac{\Delta t + t_5}{\Delta t + t_5 - t_1}\right] + \frac{q_2}{q_3}\left[\log \frac{\Delta t + t_5 - t_2}{\Delta t + t_5 - t_3}\right] + \log \frac{\Delta t + t_5 - t_4}{\Delta t}$$

$t_1 = 213$ $\quad q_1 = 864$ RB/D

$t_2 = 239$ $\quad q_2 = 849$ RB/D

$t_3 = 348$ $\quad q_3 = 956$ RB/D

$t_4 = 521$

$t_5 = 568$

$$Kh = \frac{q_3 B \times \mu \times 162.6}{m}$$

$$= \frac{956 \times 0.24 \times 162.6}{136}$$

$$= 274 \text{ md - ft}$$

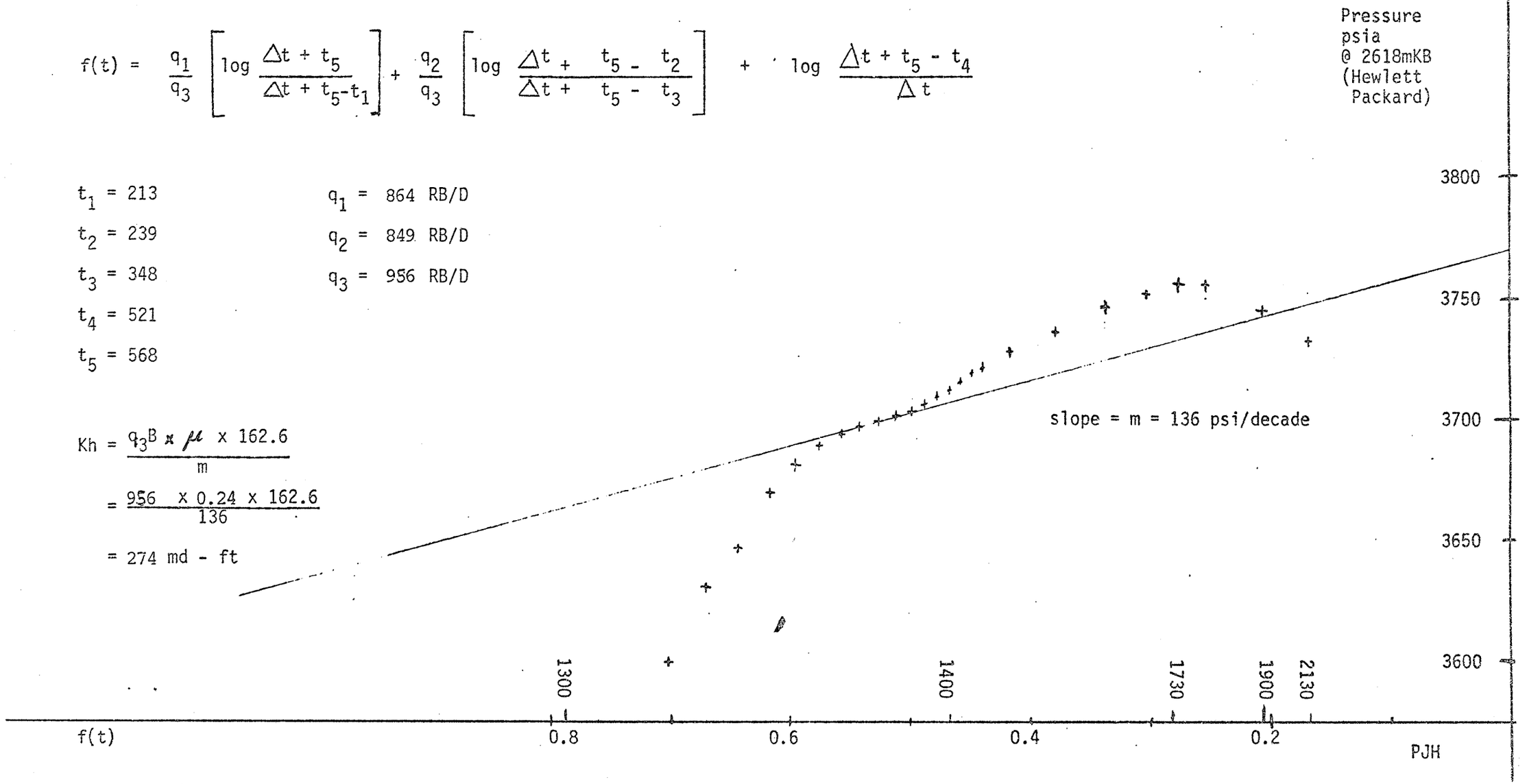


Figure 7 - Horner Plot - Flow Period No. 5

0910 - 1141 hrs, 2/11/82

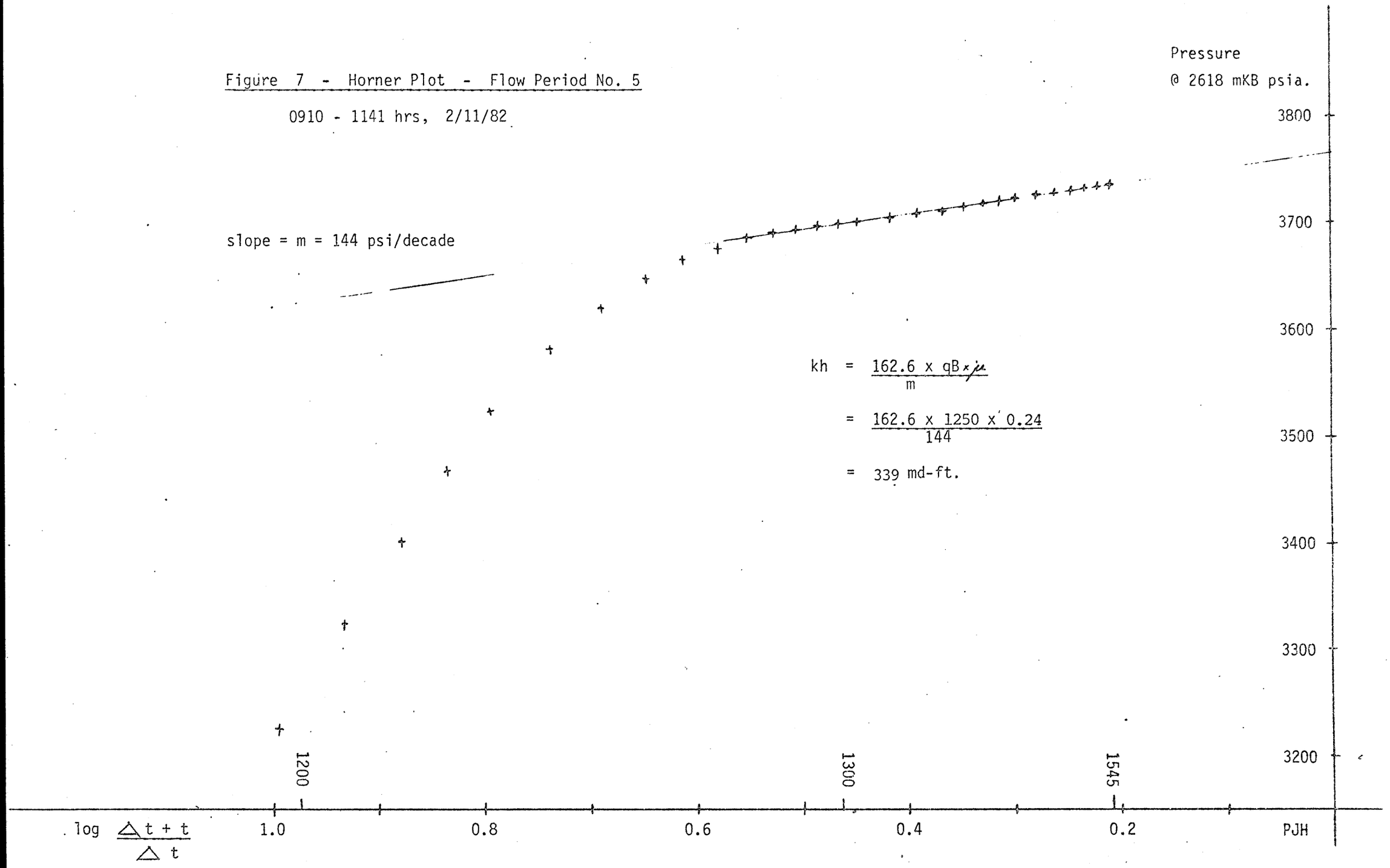
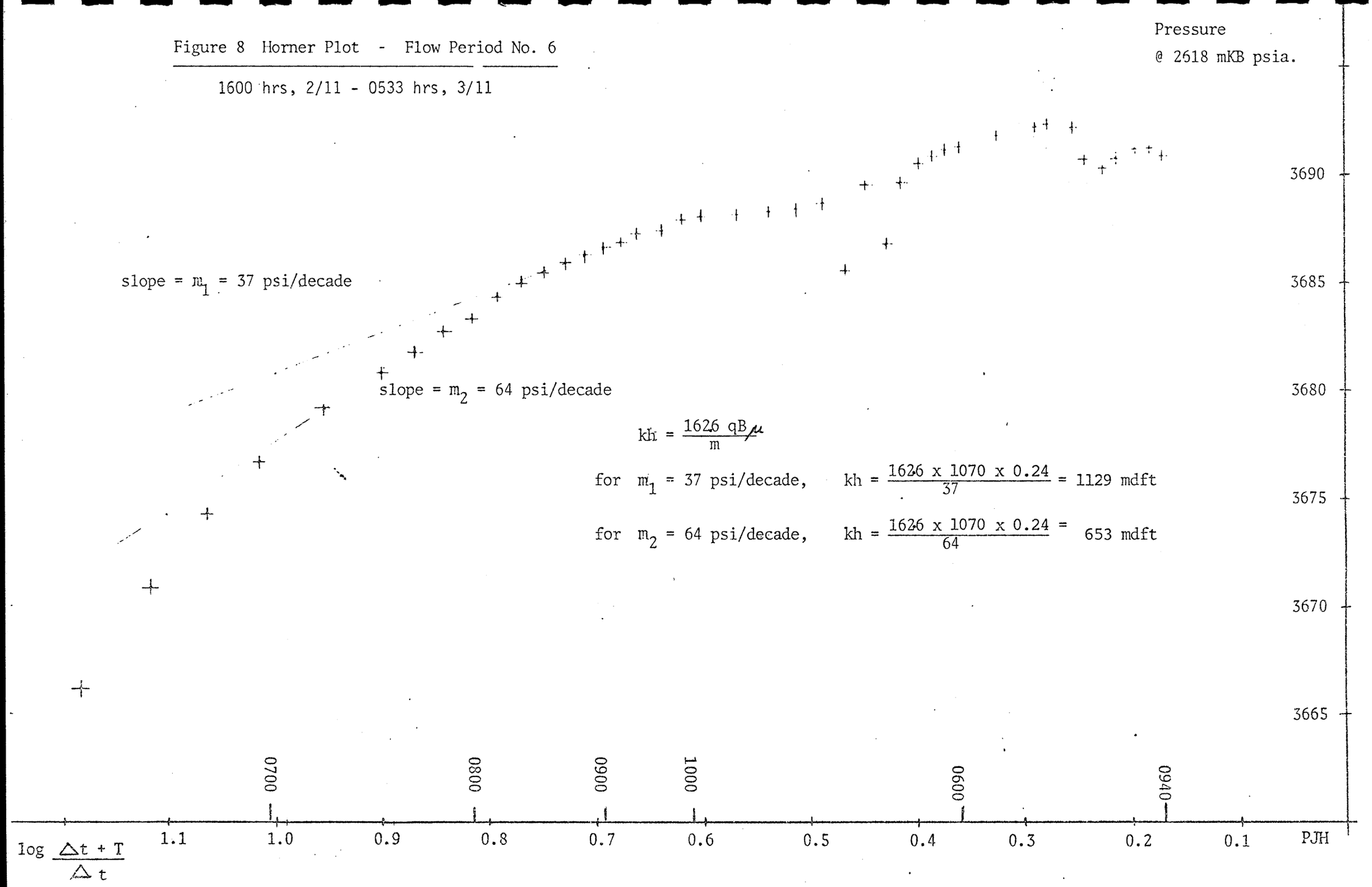


Figure 8 Horner Plot - Flow Period No. 6

1600 hrs, 2/11 - 0533 hrs, 3/11



APPENDIX

1. Corelab Analysis

2. Pressure Gradient Surveys

CORE LAB

PRODUCTION WELL TEST DATA SHEET

COMPANY : Esso Australia Ltd

WELL : Wirrah 1

DATE :

PERFORATIONS : 2624 - 2633.5m

(FM, RKB)

PWT No : 1 (Initial Flow)

TIME	SAMPLING POINT	C1	C2	C3	C4	C5	C6	CO_2	H2S	DATE
Hr:min	GAS SEPARATOR	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	
11:39	Well Opened									
12:00	Choke Manifold	480,050	59,900	43,430	14,160	3,670	500			30/10/82
12:15	Choke Manifold	465,050	74,880	59,155	25,960	6,610	1,244			
12:25	Well Shut In									

PRODUCTION WELL TEST DATA SHEET

Sheet No. 2

COMPANY : Esso Australia Ltd

WELL : Wirrah 1

DATE :

PERFORATIONS : 2624 - 2633.5m

(FM, RKB)

PWT No : 1 (Final Flow)

TIME	SAMPLING POINT	C1	C2	C3	C4	C5	C6	CO_2	H2S	DATE
Hr:min	GAS SEPARATOR	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	
06:06	Well Opened									
06:30	Separator	680,800	61,568	23,340	6,269	1,613	290	15		
07:19	Well Shut In									
09:10	Well Opened									2/11/82
09:33	Separator	693,440	78,807	30,741	7,455	2,000	464	12		
09:55	Separator	668,224	69,956	33,018	9,658	2,645	696	14.5		
10:30	Separator	655,616	88,658	42,696	10,675	2,581	522	15		
11:00	Separator	655,600	66,490	29,030	8,133	2,129	520	14.6		
11:30	Separator	643,008	78,807	36,434	8,641	1,936	290	13.8		
11:41	Well Shut In									
16:00	Well Opened (Separator Bypassed)									
16:42	Commence Flow through Separator									
17:00	Gas Separator	567,360	93,583	54,651	15,250	4,129	725	15.3		
17:30	Gas Separator	605,184	73,882	37,572	9,828	2,452	406	15.0		
18:00	Gas Separator	605,184	73,882	37,572	10,844	2,839	580	15.1		
18:30	Gas Separator	630,400	78,807	39,850	11,522	3,097	696	14.3		
19:00	Gas Separator	643,008	76,344	36,434	9,150	1,936	232	12.4		
20:00	Gas Separator	655,616	83,732	39,850	11,522	2,968	696	14.3		
21:00	Gas Separator	630,400	81,270	39,850	11,183	2,968	580	15.5		
22:00	Gas Separator	655,616	78,807	40,988	10,844	2,839	580	13.8		
23:00	Gas Separator	643,008	81,270	42,127	12,539	3,613	928	14.5		
24:00	Gas Separator	655,616	83,732	43,265	12,200	3,355	696	14.3		2/11/82
01:00	Gas Separator	656,019	83,963	43,609	12,560	2,998	696	14.5		3/11/82
02:00	Gas Separator	552,916	93,486	54,701	15,250	4,129	725	14.8		
03:00	Gas Separator	66,754	7,864	4,096	2,086	1,096	396	14.6		
04:00	Gas Separator	65,495	7,880	3,624	1,084	412	35	14.6		
05:00	Gas Separator	30,228	3,940	2,049	1,354	155	26	16.0		
05:33	Well Shut In									
06:00	Gas Separator	40,968	4,196	3,106	1,896	289	36	15.2		
07:00	Gas Separator	51,260	5,106	4,906	1,960	396	47	14.7		

CORE LAB.

PRODUCTION WELL TEST DATA SHEET

COMPANY : Esso Australia Ltd

WELL : WIRRAH 1

DATE : 30/10/82

PERFORATIONS : 2624 - 2633.5m (FM, RKB)

PWT No : 1 (Initial Flows)

TIME	SAMPLING POINT	SHAKE OUT %			API & TEMP		COLOUR OIL	POUR POINT	WATER RES & TEMP		Cl	NO3	PH	COMMENTS
Hr:min		Oil	H_2O	Slds	-	°F		°F	Ω - m	°F	(k)ppm	ppm		
03:59	Well Opened													
														30/10/82
04:30	Choke Manifold				39.74	60		74						Oil
05:00	Choke Manifold				41.26	60		72						Oil
06:00	Choke Manifold				31.07	60		69						Oil
06:15	Centrifuge Sample								9.2	69	13	20	7	Water
06:45	Manifold				39.14	60		68						Oil
07:00	Centrifuge								9.0	68	13	20	7	Water
07:30	Oil/Manifold H_2O/Centrifuge				40.24	60		66	8.0	68	11	Tr	8	Oil/Water
08:00	Separator								0.84	68	10	0	7	Water
08:30	Separator								0.60	67	13	0	7	Water
09:00	Separator								0.56	71	13	0	7	Water
09:40	Well Shut In													
Bottom Hole Sample from 1900m														
14:00	Schlum Sampler				37.46	60		87						1/11/82
Sample from Otis Tanks														
18:00					35.5	60		85						
Oil API	Check													
06:30	Manifold				36.9	60		87						2/11/82

CORE LAB.

PRODUCTION WELL TEST DATA SHEET

COMPANY : Esso Australia Ltd

WELL : Wirrah 1

DATE : 2/11/82

PERFORATIONS : 2624 - 2633.5m (FM, RKB)

PWT No : 1 (Final Flow)

TIME	SAMPLING POINT	SHAKE OUT %			API & TEMP		COLOUR OIL	POUR POINT	WATER RES & TEMP		C1	NO3	PH	COMMENTS
Hr:min		Oil	H_2O	Slds	-	°F		°F	Ω - m	°F	(k)ppm	ppm		
09:10	Well Opened													
09:45	First Water Up													
10:00	First Water Up								0.40	73	12	0	7	
10:30	First Water Up								0.34	77	12	20	7	
10:42					37.1	60		89.6						Oil from Manifold
11:00	First Water Up								0.38	74	10	20	7	
11:30	First Water Up	55	45	Tr					0.48	74	12	Tr	6.5	
11:41	Well Shut In													
16:00	Well Opened (Separator Bypassed)													
16:42	Commence Flow through Separator													
17:00	Commence Flow through Separator								0.47	71	11	Tr	7	
17:30	Commence Flow through Separator								0.36	92	11	Tr	7	
18:00	Commence Flow through Separator								0.33	85	12	Tr	7	
18:30	Commence Flow through Separator				37.0	60		86	0.34	86	11.5	Tr	7	Oil from Flopetrol Heater
19:00	Commence Flow through Separator								0.36	84	11.5	Tr	7	
20:00	Commence Flow through Separator								0.35	87	12	Tr	7.2	
21:00	Commence Flow through Separator								0.38	80	12	20	7	
	No more fluid samples required													2/11/82
05:33	Well Shut In													3/11/82

WIRRAH - 1

PRESSURE GRADIENT

30th October, 1982

Approx. Time	Depth mKB	Pressure psia	Temperature °F
30/10/82			
2130	2618	3732.6	218.4
2220	2218	3170.0	200.2
2250	2018	2889.0	191.3
2330	1817	2665.9	177.3
2355	1918	2769.5	184.8
31/10/82			
0110	600	1493.7	108.1
0135	700	1508.5	112.3
0155	100	1419	74
not available	1300	2139	142

WIRRAH - 1

FINAL GRADIENT STOP

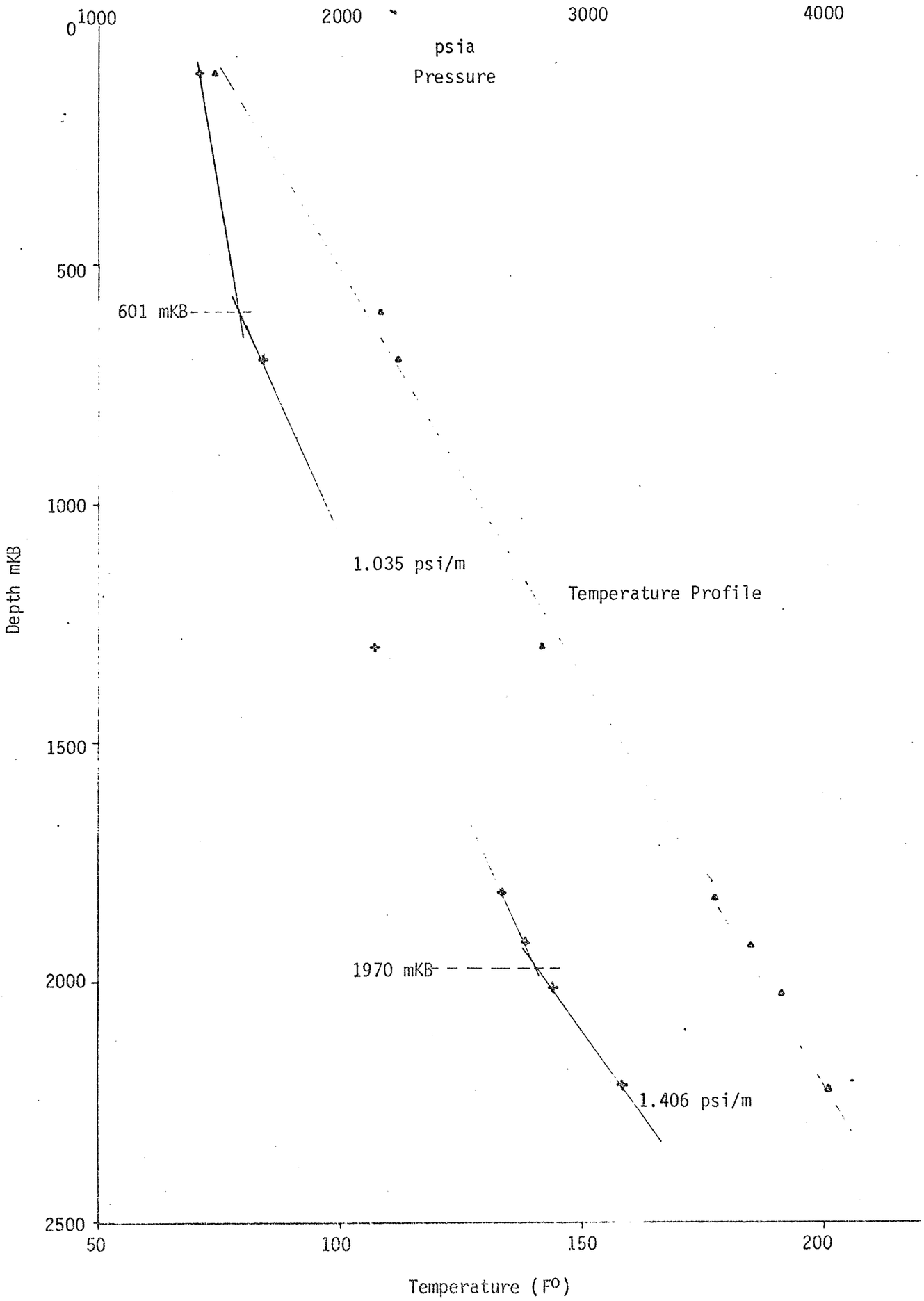
4th November, 1982

Time	Pressure psia	Temperature °F	Remarks		Gradient psi/m
2618m					
0940	3691.8	222.6	End of buildup monitoring		1.381
2418m					
1000	3415.7	213.7	At depth		
1035					1.214
2118m					
1050			At depth		
1135	3051.6	199.7/ 200.2	Temperature fluctuating between 199.7 and 200.2		
1400m					
1210	2322.9	152.0	At depth	1.035	1.015
1240					1.055
700m					
1300	1584.1	111.9	At depth		
1335					
	Surface gas pressure at 0145 = 1317 psig 92°F = 1332 psia				
500m					
1340	1405.3	101.1	At depth		

WIRRAH - 1 30/10/82

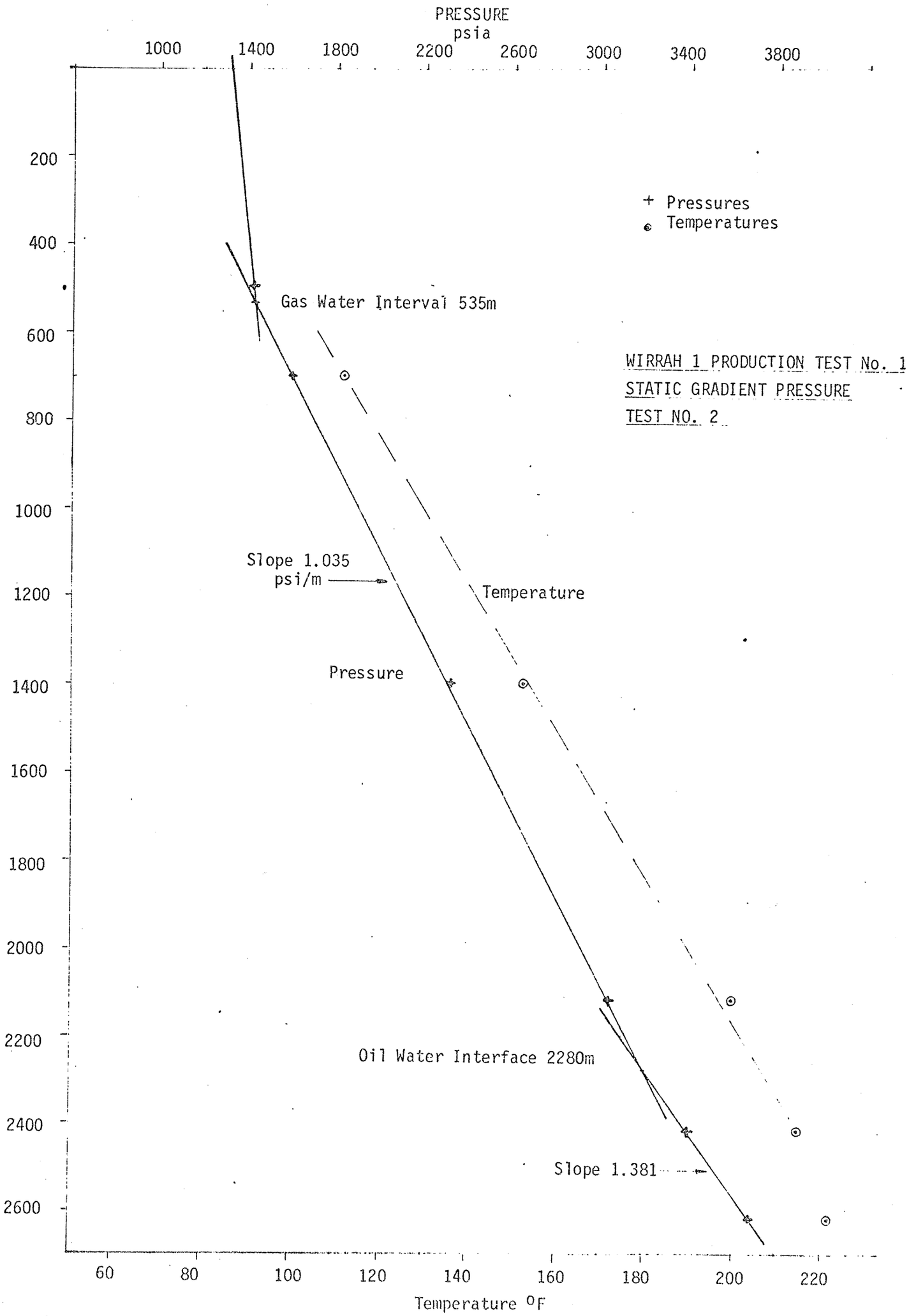
GRADIENT SURVEY No. 1

Following Flow Period Number 3



WIRRAH - 1 PRODUCTION TEST 4/11/82 - AFTER FINAL BUILDUP

Interval 2624 - 2633.5



WIRRAH-1

PRODUCTION TEST NO. 2

WIRRAH NO. 1 WELL

PRODUCTION TEST NO. 2 REPORT

Intervals tested:

2725-2747m KB (2704-2726m ss)

2691-2702m KB (2670-2681m ss)

November 24-28, 1982

TABLE OF CONTENTS

A. SUMMARY

Production Test No. 2 was conducted in Wirrah-1 exploration well over the intervals 2725-2747m and 2691-2702m KB during November 24-28, 1982. The main objectives of the test were:

(1) To determine the productivity and fluid content of the perforated intervals located below the 39m thick volcanic section (2645.5-2684.5m KB).

(2) To obtain reservoir description particularly reservoir heterogeneities and permeability.

(3) To measure the initial formation pressure and temperature using the Hewlett-Packard pressure and temperature probes with surface readout.

The main results of the test were:

(1) The perforated interval 2725-2747m KB, with wireline logs interpreted porosity of 8.5 percent and water saturation varying between 40 to 55 percent, did not flow any fluids into the wellbore despite attempts to initiate flow by swabbing the well.

(2) The perforated interval 2691-2702m KB, with wireline logs interpreted porosity of 11 percent and water saturation varying between 55 to 75 percent, flowed 2.1 kL (13.2 STB) of formation water and filtrate (15,500 ppm chlorides, 80 ppm calcium and trace nitrates) at an average rate of 1.11 kL/D (7 STB/D). No formation water or filtrate was recovered at surface after 14.58 hours of the major flow period. The productivity index was calculated to be 2.5×10^{-4} kL/D/kPa (0.0109 STB/D/psi).

(3) The static bottom hole pressure and temperature at the end of the initial build-up period were measured to be 27,093 kPa (3929.4 psia) at 2685m KB and 105.4°C (221.7°F) at 2684m KB respectively.

(4) Reservoir description analysis for the first 620 minutes of major shut-in period could not be carried out as a result of surface leaks and/or build-up data affected by gauge stabilization and wellbore effects. No evidence of formation heterogeneities were observed in the remaining build-up data obtained after 620 minutes of shut-in. Because the leak was quickly rectified the remaining pressure buildup data is considered valid. Horner plot analysis of the remaining build-up data indicated a permeability (relative to water) of 0.065 md, assuming a net contributing sand thickness of 11m over the perforated interval 2691-2702m KB. A skin factor of -2.9 was calculated from the build-up data, indicating wellbore and/or near wellbore stimulation with a damage ratio of 0.36. The radius of investigation for the major flow period of 14.58 hours was 16.1m (52.9 ft).

Table 1 summarizes the test results.

The main conclusions derived from the test were:

(1) The perforated interval 2725-2747m KB was considered to be non-productive with no effective permeability.

(2) The perforated interval 2691-2702m KB could be classified as a very low permeability, water/filtrate producing zone.

(3) The extremely low productivities obtained demonstrated that further production tests in sands below the volcanic section were not warranted. The low porosity, high water saturation sands tested were typical of all the sands below this volcanic section.

(4) The static bottom hole pressure of 27,093 kPa (3929.4 psia) at 2685m KB was 630 kPa above the original Gippsland aquifer pressure gradient indicating the sands below the volcanic section are not in direct communication with this aquifer system.

B. BACKGROUND

Mudlogs and resistivity logs in the interval from below the 39m thick volcanic section at 2684.5m KB to 3026m KB (final well depth) in Wirrah-1 indicated the possible presence of hydrocarbons with water saturations varying from 40-75 percent and porosity varying from 8.5-11 percent. An earlier RFT pre-test survey conducted in this interval failed to confirm log interpretation. However, the first production test, conducted over the interval 2624-2633.5m KB in sands with higher porosity and permeability located above the volcanic section successfully confirmed the presence of oil. Because anticipated sand porosity and permeability below this volcanic section are worse than the sands above the volcanic section, it was decided to conduct a second production test to confirm the presence of hydrocarbon and to evaluate the productivity of these sands.

C. TEST PROCEDURE

Perforated Interval 2725-2736m KB

This interval was perforated with diesel as the underbalancing fluid in the test string using the Schlumberger $2\frac{1}{8}$ inch enerjet gun at 13 shots per metre (4 shots per foot) with zero phasing. On perforating, the maximum wellhead pressure observed was 68 kPa (10 psig) which was below the expected static shut-in pressure of 3930 kPa (570 psig). The well did not flow when it was opened for flow to the test tank for 11.43 hours.

Perforated Interval 2725-2747m KB

To improve well productivity, an 11m perforation was added immediately below the initial perforated interval of 2725-2736m KB. A total of twenty-five swab runs recovering 1.7 kL (10.9 barrels) of diesel were made. Throughout swabbing, the fluid level in the test-string moved downwards by the equivalent amount of diesel recovered at surface by each preceding swab run indicating negligible or no influx of formation fluids into the wellbore. The lowest fluid level reached prior to terminating swabbing was 350m KB. With no indication of fluid influx during swabbing, it was decided that another add-on interval 2691-2702m KB be perforated.

Perforated Interval 2691-2702m KB

After perforating the additional interval 2691-2702m KB the well was opened for 35 minutes of initial flow, recovering 0.3 kL (1.82 barrels) of diesel at surface. The well was then shut-in for initial build-up and towards the end of this build-up period the Hewlett-Packard (H.P.) gauge with temperature probe and two Amerada pressure gauges were run in tandem to bottom. Pressure data from the H.P. gauge are considered to be accurate and the Amerada gauges provided pressures that were within $\pm$ 103 kPa ($\pm$ 15 psi) relative to the HP pressures. After measuring the initial static bottom pressure [27,093 kPa (3929.4 psia)], the well was opened for 14.58 hours of major flow. This interval produced 2.1 kL (13.2 barrels) of water and filtrate (15,500 ppm chlorides, 80 ppm calcium, trace nitrates) at an average rate of 1.11 kL/d (7 STB/D) for the latter part of the major flow period, through a 1.91 cm (48/64-inch) adjustable choke with zero flowing wellhead pressure. Due to the extremely low productivity [2.5×10^{-4} st kL/D/kPa (0.0109 STB/D/psi)] encountered, only diesel was recovered at the test tank during the major flow period.

Approximately 36 minutes into the major build-up period, diesel was observed to be leaking from the Bowen quick union connection below the Schlumberger wireline BOP affecting both the bottomhole and surface build-up pressure data. As this leak occurred (due to cut "O"-ring) during the early part of the major build-up the bottomhole pressure gauges were pulled, the leak repaired and the gauges re-run to bottom at 2685m KB (H.P. depth). Approximately 8.5 hours after the BHP gauges were re-run, a second minor surface leak, believed to be caused by the Schlumberger grease injector pressure dropping to below the shut-in wellhead pressure, was observed. As can be seen in the attached Figure 1 these surface leaks affected both shut-in bottom hole pressures and surface pressures. About 10.3 hours of major build-up data was either lost or affected by gauge stabilization and wellbore effects. Other minor pressure buildup irregularities were observed during the major buildup period but these were due to the decrease in annulus temperature and the pumping of mud into the annulus. Because of the low compressibilities of diesel, water and mud in the test string, the static bottomhole pressures as well as the shut-in wellhead pressures were sensitive to changes in wellbore conditions such as surface leaks and changes in annulus casing pressure.

At the end of the major build-up period, a six depth (HP probe depth) gradient survey was made. At the completion of this survey, two bottom hole samples (each 600 cc) were taken at 2450m KB in the test-string both recovering water. The fluids in the test string were reverse circulated out to the test tank after attempts to bullhead the fluids in the test string into the perforated intervals failed. The well was then plugged and abandoned.

Detailed summary of the sequence of events, test results, wellhead pressures and bottomhole pressures throughout this test are given in the attached Figure 1.

D. DISCUSSION OF RESULTS

(1) Fluid Contents

The perforated interval 2691-2702m KB produced 2.1 kL (13.2 barrels) of water and filtrate during 14.58 hours of major flow. Because of extremely low productivity encountered, no formation fluid was recovered at surface. However, production of water and filtrate into the test string was confirmed by:

(a) Gradient survey conducted at the end of the build-up period at six depths (H.P. depths) designed to locate fluid contacts in the test string. Results of this survey indicated the test string contained 295m mud, 450m water and filtrate [equivalent to 2.0 kL (12.8 barrels) inside the $3\frac{1}{2}$ inch test string] and 2000m of diesel from 2000m KB to surface

(b) The recovery of a total of 1200 cc water and filtrate bottom hole samples taken at 2450m KB. Chemical analysis on both 600 cc water and filtrate samples measured 15000 to 16000 ppm chlorides, zero to trace nitrates, 80 ppm calcium and a water resistivity of 0.27 and 0.28 ohms at 22.8°C (73°F). The chlorides and nitrates of mud filtrate at the time of drilling and during the production test were 14000 to 19000 ppm and 210 to 220 ppm respectively.

(c) The recovery of about 2.4 kL (15 barrels) of water in the test tank at the end of the test period when the fluids in the test string were reverse circulated out.

(2) Reservoir Description

Disregarding the pressure data that were affected by surface leaks, the Horner build-up analysis indicated a bulk formation permeability-thickness kh (relative to water) of 2.33 md-ft. This relates to a permeability k (relative to water) of 0.065 md assuming a contributing sand thickness equivalent to the perforated sand interval of 11m. This is in general agreement with the permeability of 0.06 md

estimated from pressure drawdown analysis calculations in an infinite acting reservoir using the measured P.I. of 2.5×10^{-4} kL/D/kPa (0.0109 STB/D/psi). The radius of investigation at the end of the major build-up period was 16.1m (52.9 ft), reflecting low reservoir diffusivity due to the extremely low permeability of 0.065 md.

(3) Skin Effect

Total calculated skin factor was -2.9 indicating wellbore and/or near wellbore stimulation which corresponds to a calculated damage ratio of 0.36. The wellbore stimulation probably resulted from perforating the low porosity and low permeability formation with the Schlumberger $2\frac{1}{8}$ inch enerjet perforating gun.

TABLE 1

SUMMARY OF WIRRAH NO. 1 WELL PRODUCTION TEST RESULTS

Test No	Date (1982)	Perforation Interval (m RKB)	Production Fluid Time (-/Hrs)	Choke Size (64th)	Flowing WHP [kPa (gauge)]	Average Prod. Rate (kL/D)	Initial SBHP* [kPa (abs)]	Flowing BHP [kPa (abs)]	Maximum BHT (°C)	Damage Ratio	Productivity Index (ST kL/D/kPa)	Permeability Thickness (md-ft)	Permeability (md)
2	24-28 Nov	2725-2747	-	-	-	-	-	-	-	-	-	-	-
		2691-2702	Water/14.58	48	0	1.11 (7 STB/D)	27,093 (3929.4 psia) @ 2685m	22,643 (3284 psia) @ 2685m	105.40. (221.7°F) @ 2684m	0.36	2.5×10^{-4} (0.0109 STB/D/psi)	2.33	0.065

Notes: (1) All depths relative to KB (KB Southern Cross = 21m)

(2) The damage ratio of 0.36 indicate the wellbore or near wellbore region was stimulated. This corresponds to a skin factor of -2.9.

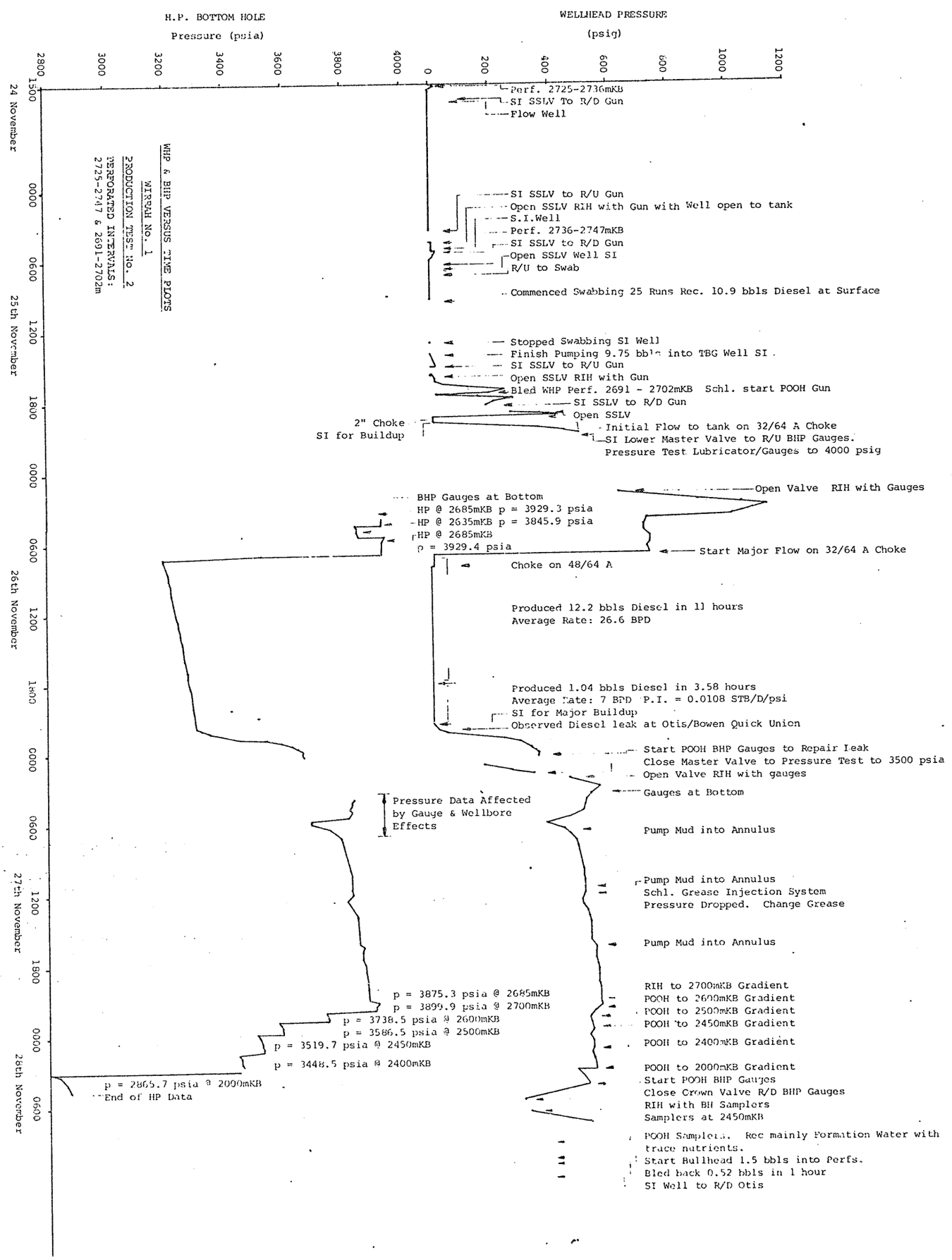

H.P. BOTTOM HOLE
Pressure (psia)
WELLHEAD PRESSURE
(psig)
2800
3000
3200
3400
3600
3800
4000
0
200
400
600
800
1000
1200
WHP & BHP VERSUS TIME PLOTS
WIRRAH No. 1
PRODUCTION TEST No. 2
PERFORATED INTERVALS:
2725-2747 & 2691-2702m
24 November
25th November
26th November
27th November
28th November
TIME
1500
0000
0600
1200
1800
0000
0600
1200
1800
0000
0600
1200
1800
0000
0600
Perf. 2725-2736mKB
SI SSLV To R/D Gun
Flow Well
SI SSLV to R/U Gun
Open SSLV RIH with Gun with Well open to tank
S.I.Well
Perf. 2736-2747mKB
SI SSLV to R/D Gun
Open SSLV Well SI
R/U to Swab
Commenced Swabbing 25 Runs Rec. 10.9 bbls Diesel at Surface
Stopped Swabbing SI Well
Finish Pumping 9.75 bbls into TBG Well SI
SI SSLV to R/U Gun
Open SSLV RIH with Gun
Bled WHP Perf. 2691 - 2702mKB Schl. start POOH Gun
SI SSLV to R/D Gun
Open SSLV
2" Choke
SI for Buildup
Initial Flow to tank on 32/64 A Choke
SI Lower Master Valve to R/U BHP Gauges.
Pressure Test Lubricator/Gauges to 4000 psig
BHP Gauges at Bottom
HP @ 2685mKB p = 3929.3 psia
HP @ 2635mKB p = 3845.9 psia
HP @ 2685mKB
p = 3929.4 psia
Open Valve RIH with Gauges
Start Major Flow on 32/64 A Choke
Choke on 48/64 A
Produced 12.2 bbls Diesel in 11 hours
Average Rate: 26.6 BPD
Produced 1.04 bbls Diesel in 3.58 hours
Average Rate: 7 BPD P.I. = 0.0108 STB/D/psi
SI for Major Buildup
Observed Diesel leak at Otis/Bowen Quick Union
Start POOH BHP Gauges to Repair Leak
Close Master Valve to Pressure Test to 3500 psia
Open Valve RIH with gauges
Gauges at Bottom
Pressure Data Affected
by Gauge & Wellbore
Effects
Pump Mud into Annulus
Pump Mud into Annulus
Schl. Grease Injection System
Pressure Dropped. Change Grease
Pump Mud into Annulus
RIH to 2700mKB Gradient
POOH to 2600mKB Gradient
POOH to 2500mKB Gradient
POOH to 2450mKB Gradient
POOH to 2400mKB Gradient
POOH to 2000mKB Gradient
Start POOH BHP Gauges
Close Crown Valve R/D BHP Gauges
RIH with BH Samplers
Samplers at 2450mKB
POOH Samplers. Rec mainly Formation Water with
trace nutrients.
Start Bullhead 1.5 bbls into Perfs.
Bled back 0.52 bbls in 1 hour
SI Well to R/D Otis
p = 3875.3 psia @ 2685mKB
p = 3899.9 psia @ 2700mKB
p = 3738.5 psia @ 2600mKB
p = 3586.5 psia @ 2500mKB
p = 3519.7 psia @ 2450mKB
p = 3448.5 psia @ 2400mKB
p = 2865.7 psia @ 2000mKB
End of HP Data

Figure 2: Wirrah 1 Test 2: HP Horner Plot Gauge at 2685m mRKB

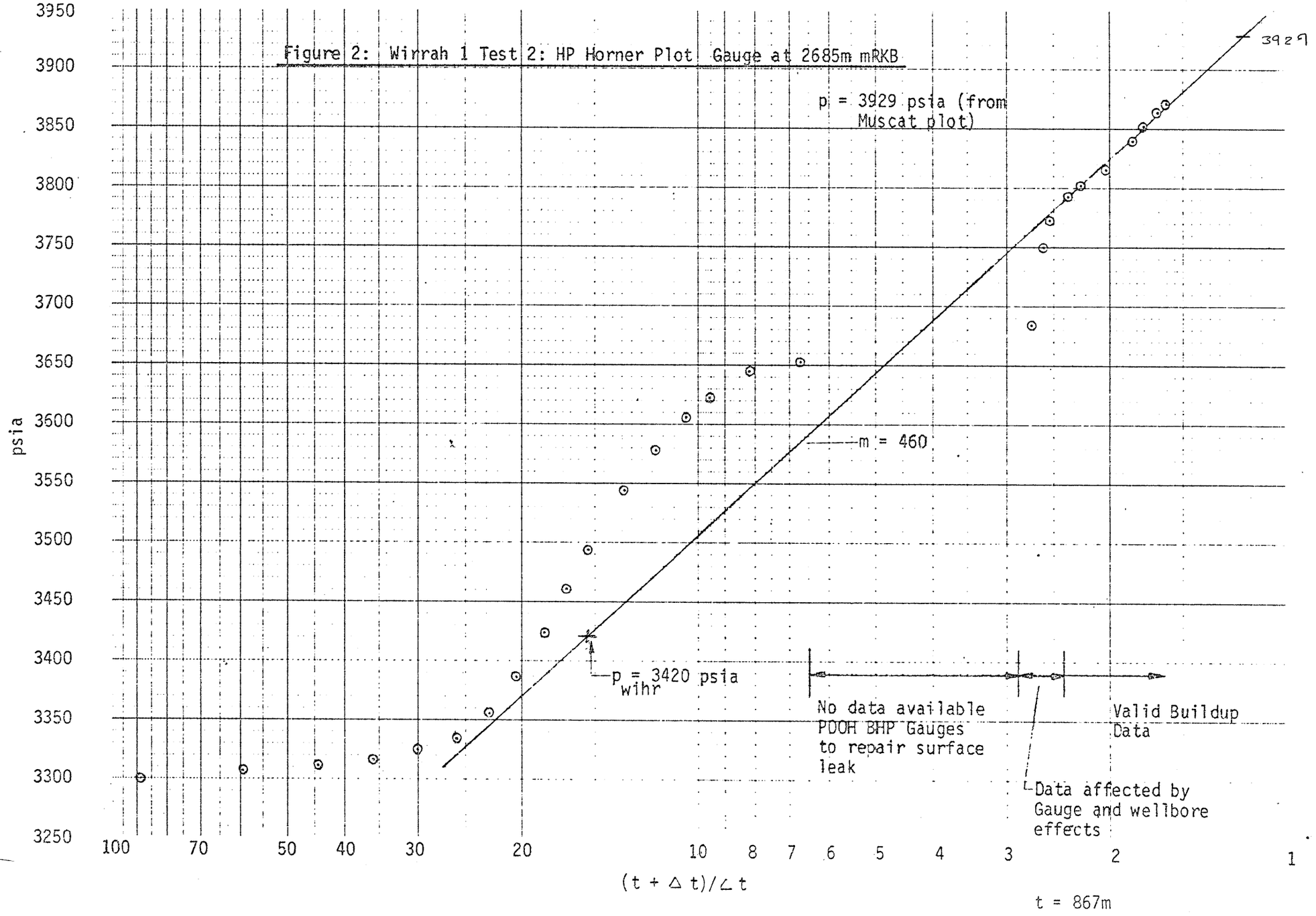
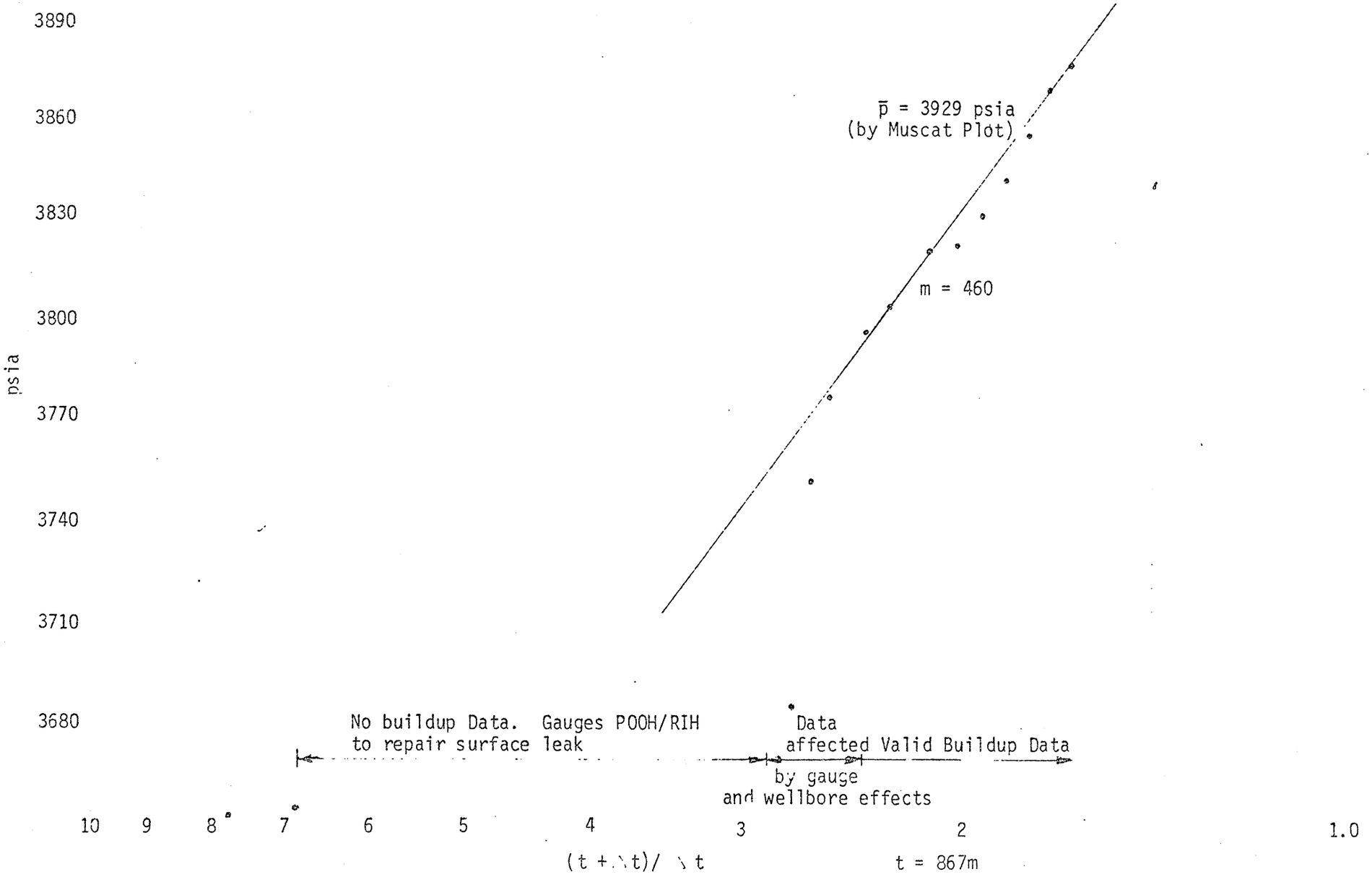


FIGURE 3: WIRRAH No. 1 TEST No. 2 HP HORNER PLOT
GAUGE at 2685 metres RKB



Appendix 6

APPENDIX 6

GEOCHEMICAL REPORT

GEOCHEMICAL REPORT

WIRRAH-1 WELL, GIPPSLAND BASIN, VICTORIA.

by

J.K. Emmett

Sample handling and analyses by

J. Maccoll)

D.M. Hill) Esso Australia Ltd.

D.M. Ford)

Exxon Production Research Company,

Geochem Laboratories.

Esso Australia Ltd.

Geochemical Report.

0656L

November 1983.

CONTENTS

INTRODUCTION

Samples of wet canned cuttings, sidewall cores and conventional core were collected and subjected to various geochemical analyses. Canned cuttings composited over 15-metre intervals were collected from 206 metres (KB) down to Total Depth (T.D.) at 3025 metres (KB). Light hydrocarbon (C_{1-4}) headspace gases were determined for alternate 15-metre intervals from 1295m(KB) down to T.D. Between 1310m(KB) and 2980m(KB), succeeding alternate 15-metre intervals were analysed for C_{4-7} gasoline-range hydrocarbons. Selected 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 ($\bar{R}_v$ max) measurements were performed by Professor A.C. Cook of Wollongong.

Two oil samples (RFT 15 from 2046m(KB) and RFT 17 from 2195.3m(KB)) were analysed for API gravity, % sulphur, Carbon isotopes, whole oil and C_{4-7} gas chromatography, and C_{15+} liquid and gas chromatography. An oil sample from 2624-2633.5m(KB) was analysed by whole oil gas chromatography.

DISCUSSION OF RESULTS.

The detailed headspace C_{1-4} hydrocarbon gas analysis data are listed in Table 1 and for convenience have been plotted in Figure 1. The total C_{1-4} gas content is low down to about 1600m(KB), below which it increases significantly and remains in the moderately rich to rich range down to T.D. (ie. over most of the Latrobe Group penetrated). Two zones in particular ie. 1655-1700m(KB) and 1835-1880m(KB), have very rich values. The amount of wet (C_{2+}) gas components ranges between about 15% and 50% in the Latrobe Group sediments indicating that they have good source potential for both oil and gas.

The detailed C_{4-7} gasoline-range hydrocarbon data sheets are given in Appendix-1 and pertinent information has also been plotted in Figure 2. Values for total C_{4-7} hydrocarbons are quite poor in the Lakes Entrance and Gurnard Formations, but generally range from moderately rich to very rich, with corresponding C_{6-7} percentages consistently over fifty percent in the Latrobe Group sediments. The very rich zones (Figure 2) are generally coaly or rich carbonaceous shales whilst the poor intervals are predominantly sandstone. Several intra-Latrobe Group oil zones or oil shows were also encountered in Wirrah-1, and the presence of oil can obviously affect the C_{4-7} hydrocarbon distribution, making designation of source rock potential

more difficult. Igneous intrusives were also penetrated in Wirrah-1, between 2202-2225m(KB) and 2642-2685m(KB), with zero C_{4-7} hydrocarbons being recorded from canned cuttings spanning the deeper zone (Appendix-1 and Figure 2) where presumably only igneous rock was collected. Taking all of the above into account, the Latrobe Group sediments are considered to have very good hydrocarbon source potential for both oil and gas.

The Latrobe Group sediments are moderately rich in Total Organic Carbon (average T.O.C. = 1.22% - Table 2) which also supports a good rating for their hydrocarbon source potential.

Vitrinite reflectance ($\bar{R}_v$ max) data are presented in Table 3 and have been plotted against depth in Figure 3. As can be seen in Figure 3, the spread of the $\bar{R}_v$ max results makes estimation of the top of organic maturity via a straight line gradient, untenable. It is possible that the maturation profile has been affected by the igneous intrusives. However, it is certain that the whole section penetrated is presently immature for significant hydrocarbon generation. Detailed vitrinite reflectance and exinite fluorescence data are given in Appendix-2 (Report by A.C. Cook).

Elemental analyses of selected kerogen samples isolated from conventional and sidewall cores are listed in Table 4. Approximate Hydrogen (H): Carbon (C), Oxygen (O): Carbon and Nitrogen (N): carbon atomic ratios for these samples are given in Table 5. These ratios are 'approximate' since the oxygen % is calculated by difference and the naturally occurring organic sulphur %, which may be up to a few percent, was not determined. Figure 4 is a modified Van Krevelen Plot of atomic H/C ratio versus atomic O/C ratio. Comparison of Figure 4 with Figure 5, a similar plot showing the principal products of kerogen evolution shows that the Latrobe Group sediments contain predominantly Type III kerogen (containing woody-coaly-herbaceous organic matter types) and in some cases more hydrogen-rich kerogen intermediate between Types II and III. This confirms that the Latrobe Group sediments have very good hydrocarbon source potential for both oil and gas.

Those samples with T.O.C. values over 0.5% were analysed by Rock-Eval pyrolysis and the results are listed in Table 6. In Figure 6, Hydrogen Index has been plotted against T_{max} (^{o}C), and again fields delineating the basic kerogen types and their degree of maturation (indicated by equivalent vitrinite reflectance values) are also shown. Figure 6 similarly indicates that the Latrobe Group sediments have very good hydrocarbon source potential.

The C_{15+} liquid chromatography results from selected canned cuttings are listed in Table 7. Total Extract values vary from moderately rich to very rich, (all samples are from the Latrobe Group) although only the deepest sample at 2965-2980m(KB) contains a significant amount of hydrocarbon material (approximaely 50%). The large amount of non-hydrocarbon (N.S.O. compounds and asphaltenes) in all the samples, indicates that they are still immature. These extracts also contain relatively high amounts of sulphur.

The corresponding C_{15+} saturate gas chromatograms are shown in Figures 7-12 and all are indicative of non-marine/terrestrial organic matter source. Figures 7, 9 and 11 are similar in appearance showing a hydrocarbon distribution which could be described as early mature. These chromatograms show n-alkane maxima between n-C_{21} and n-C_{19}, pristane (peak 'a') : n-C_{17} ratios around one and odd-over-even carbon number preference discernable above n-C_{24}. Figures 8, 10 and 12 are also similar in appearance, but their hydrocarbon distributions differ from those in Figures 7, 9 and 11. In these chromatograms, the n-alkane maximum occurs at n-C_{29} or n-C_{27}, pristane : n-C_{17} ratios are much greater than one, and again obvious odd-over-even carbon number preference occurs above n-C_{22}. This type of hydrocarbon distribution is typically immature. The more mature looking samples may either contain a slightly different type of organic matter or have been stained by oil (several intervals had oil shows as previously mentioned) particularly those samples represented by Figures 7 and 11. The sample represented by Figure 11 (ie. 2650-2665m(KB)) could also have been matured by the effects of the igneous intrusives located within this inteval.

The liquid chromatography and other bulk chemical analyses for two oil samples from Wirrah-1 (ie. RFT 15 from 2046m(KB) and RFT 17 from 2195.3m(KB)) are presented in Table 8. Detailed C_{4-7} analyses for both these oils are given in Tables 9 and 10 respectively, whilst whole oil gas chromatograms are shown in Figures 13 and 14 respectively and C_{15+} saturate fraction gas chromatograms are shown in Figures 15 and 16 respectively. A whole oil chromatogram for an oil sample obtained from 2624-2633.5m(KB) is shown in Figure 17. All the oil samples analysed are fairly similar chemically, although the sample RFT 17 at 2195.3m(KB) contains more gasoline range (C_{4-7}) compounds than the other two oils and this is obvious in the higher API (43.5^{o}) reading and the whole-oil chromatogram (Figure 14). The C_{15+} saturate chromatograms are however, quite similar. These oils could be generally described as waxy, paraffinic-based crudes derived from source rocks containing predominantly non-marine organic matter.

CONCLUSIONS

1. The whole section penetrated in Wirrah-1 is presently immature.

2. The Latrobe Group sediments have good potential to be a source of both oil and gas.

3. Oil encountered at several intra-Latrobe Group intervals in Wirrah-1 is a medium API, waxy, paraffinic-based crude.

Table 1. C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - WIRRAH 1

SAMPLE NO.	DEPTH	GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS) METHANE C1	ETHANE C2	PROPANE C3	IBUTANE IC4	NBUTANE C4	WET C2-C4	TOTAL C1-C4	WET/TOTAL PERCENT	GAS COMPOSITION (PERCENT) TOTAL GAS M	E	P	IB	NB	WET GAS E	P	IB	NB
72551 A	1310.00	877	57	22	5	3	87	964	9.02	91.	6.	2.	1.	0.	66.	25.	6.	3.
72551 C	1340.00	667	47	18	3	2	70	737	9.50	91.	6.	2.	0.	0.	67.	26.	4.	3.
72551 E	1370.00	957	61	31	12	6	110	1067	10.31	90.	6.	3.	1.	1.	55.	28.	11.	5.
72551 G	1400.00	719	66	49	23	9	147	866	16.97	83.	8.	6.	3.	1.	45.	33.	16.	6.
72551 I	1430.00	745	69	50	9	11	139	884	15.72	84.	8.	6.	1.	1.	50.	36.	6.	8.
72551 K	1475.00	1378	382	377	82	145	986	2364	41.71	58.	16.	16.	3.	6.	39.	38.	8.	15.
72551 M	1535.00	694	205	246	57	76	586	1280	45.78	54.	16.	19.	4.	6.	35.	42.	10.	13.
72551 O	1565.00	1184	225	220	49	54	548	1732	31.64	68.	13.	13.	3.	3.	41.	40.	9.	10.
72551 Q	1610.00	21143	6099	3423	545	958	11025	32168	34.27	66.	19.	11.	2.	3.	55.	31.	5.	9.
72551 S	1640.00	19625	3022	1320	247	387	4976	24601	20.23	80.	12.	5.	1.	2.	61.	27.	5.	8.
72551 U	1670.00	162513	20115	4874	459	549	25997	188510	13.79	86.	11.	3.	0.	0.	77.	19.	2.	2.
72551 W	1700.00	113142	15394	5411	767	1102	22674	135816	16.69	83.	11.	4.	1.	1.	68.	24.	3.	5.
72551 Y	1730.00	7589	1544	785	140	183	2652	10241	25.90	74.	15.	8.	1.	2.	58.	30.	5.	7.
72552 A	1760.00	11586	3389	2682	557	811	7439	19025	39.10	61.	18.	14.	3.	4.	46.	36.	7.	11.
72552 C	1790.00	7171	1820	1896	341	565	4622	11793	39.19	61.	15.	16.	3.	5.	39.	41.	7.	12.
72552 E	1820.00	6297	1053	597	126	175	1951	8248	23.65	76.	13.	7.	2.	2.	54.	31.	9.	9.
72552 G	1850.00	97957	14170	3483	397	348	18398	116355	15.81	84.	12.	3.	0.	0.	77.	19.	2.	2.
72552 I	1880.00	171218	17439	3452	295	404	21590	192808	11.20	89.	9.	2.	0.	0.	81.	16.	1.	2.
72552 K	1910.00	45332	5396	1401	195	209	7201	52533	13.71	86.	10.	3.	0.	0.	75.	19.	3.	3.
72552 M	1940.00	59278	8876	2696	304	426	12302	71580	17.19	83.	12.	4.	0.	1.	72.	22.	2.	3.
72552 O	1970.00	23062	2478	718	99	103	3398	26460	12.84	87.	9.	3.	0.	0.	73.	21.	3.	3.
72552 Q	2000.00	8703	1399	470	68	81	2018	10721	18.82	81.	13.	4.	1.	1.	69.	23.	3.	4.
72552 S	2030.00	16909	3525	2321	617	747	7210	24119	29.89	70.	15.	10.	3.	3.	49.	32.	9.	10.
72552 U	2075.00	3102	888	563	114	144	1709	4511	35.52	64.	18.	12.	2.	3.	52.	33.	7.	8.
72552 W	2105.00	13825	3672	2006	297	321	6296	20124	31.29	69.	18.	10.	1.	2.	58.	32.	5.	5.
72552 Y	2135.00	8767	1737	677	104	131	2649	11416	23.20	77.	15.	6.	1.	1.	66.	26.	4.	5.
72553 A	2165.00	12017	1978	606	104	69	2757	14774	18.66	81.	13.	4.	1.	0.	72.	22.	4.	3.
72553 C	2195.00	5562	1615	855	174	233	2877	8439	34.09	66.	19.	10.	2.	3.	56.	30.	6.	8.
72553 E	2225.00	1223	563	408	66	119	1156	2379	48.59	51.	24.	17.	3.	5.	49.	35.	6.	10.
72553 G	2255.00	2553	946	525	82	138	1691	4344	38.93	61.	22.	12.	2.	3.	56.	31.	5.	8.
72553 I	2285.00	1844	478	310	54	88	930	2774	33.53	66.	17.	11.	2.	3.	51.	33.	6.	9.
72553 K	2315.00	1532	434	205	38	48	725	2257	32.12	68.	19.	9.	2.	2.	60.	28.	5.	7.
72553 M	2335.00	3555	801	390	62	100	1353	4908	27.57	72.	16.	8.	1.	2.	59.	29.	5.	7.
72553 O	2380.00	16313	1945	654	62	68	2799	19112	14.65	85.	10.	3.	0.	0.	71.	23.	2.	3.
72553 Q	2395.00	5963	1213	394	40	60	1707	7670	22.26	78.	16.	5.	1.	1.	71.	23.	3.	4.
72553 S	2440.00	4079	771	243	32	34	1080	5159	20.93	79.	15.	5.	1.	1.	71.	22.	3.	4.
72553 U	2470.00	541	272	155	17	28	472	1013	46.59	53.	27.	15.	2.	3.	58.	33.	4.	6.
72553 W	2500.00	19864	2780	739	61	86	3666	23530	15.58	84.	12.	3.	0.	0.	76.	20.	2.	2.
72553 Y	2530.00	23266	3044	913	99	120	4176	27442	15.22	85.	11.	3.	0.	0.	73.	22.	2.	3.
72554 A	2560.00	20477	3216	1239	171	237	4863	25340	19.19	81.	13.	5.	1.	1.	66.	25.	4.	5.
72554 C	2590.00	3306	1132	710	142	193	2177	5483	39.70	60.	21.	13.	3.	4.	52.	33.	7.	9.
72554 E	2620.00	5697	1450	875	197	312	2834	8531	33.22	67.	17.	10.	2.	4.	51.	31.	7.	11.
72554 G	2650.00	3049	538	167	32	26	763	3812	20.02	80.	14.	4.	1.	1.	71.	22.	4.	3.
72554 I	2680.00	2307	640	387	56	76	1159	3466	33.44	67.	18.	11.	2.	2.	55.	33.	5.	7.
72554 K	2710.00	2755	874	305	49	54	1282	4037	31.76	68.	22.	8.	1.	1.	68.	24.	4.	4.
72554 M	2740.00	2276	370	245	47	87	749	3025	24.76	75.	12.	8.	2.	3.	49.	33.	6.	12.
72554 O	2770.00	12325	1418	249	40	38	1745	14070	12.40	88.	10.	2.	0.	0.	81.	14.	2.	2.

Table 1 cont. C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - WIRRAH 1

SAMPLE NO.	DEPTH	GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS) METHANE C1	ETHANE C2	PROPANE C3	IBUTANE IC4	NBUTANE C4	WET C2-C4	TOTAL C1-C4	WET/TOTAL PERCENT	GAS COMPOSITION (PERCENT) TOTAL GAS M	E	P	IB	NB	WET GAS E	P	IB	NB
72554 Q	2800.00	2407	818	244	45	71	1178	3665	32.14	68.	22.	7.	1.	2.	69.	21.	4.	6.
72554 T	2845.00	1551	332	205	33	37	607	2158	28.13	72.	15.	9.	2.	2.	55.	34.	5.	6.
72554 V	2875.00	1540	282	118	24	31	455	1995	22.81	77.	14.	6.	1.	2.	62.	26.	5.	7.
72554 X	2905.00	2633	209	95	19	26	349	2982	11.70	88.	7.	3.	1.	1.	60.	27.	5.	7.
72554 Z	2935.00	4440	209	54	7	9	279	4719	5.91	94.	4.	1.	0.	0.	75.	19.	3.	3.
72588 B	2965.00	14878	1526	603	68	159	2356	17234	13.67	86.	9.	3.	0.	1.	65.	26.	3.	7.
72588 D	2995.00	9029	780	201	22	30	1033	10062	10.27	90.	8.	2.	0.	0.	76.	19.	2.	3.
72588 F	3025.00	4026	509	107	15	27	658	4684	14.05	86.	11.	2.	0.	1.	77.	16.	2.	4.

Table 2. TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WIRRAH 1

SAMPLE NO.	DEPTH	AGE	FORMATION	AM	TOC%	AN	TOC%	AN	TOC%	DESCRIPTION
72551 B	1325.00	EARLY MIOCENE	LAKES ENTRANCE	2	.39					M GRY SLTST MOD CALC
72551 D	1355.00	EARLY MIOCENE	LAKES ENTRANCE	2	.52					M GRY SH V CALC
72551 F	1385.00	EARLY MIOCENE	LAKES ENTRANCE	2	.41					L OL/GRY SLTY SH V CALC
72551 H	1415.00	EARLY MIOCENE	LAKES ENTRANCE	2	.28					L OL/GRY SH V CALC
72551 J	1460.00	LATE OLIGOCENE	LAKES ENTRANCE	2	.35					L GRY LMST
===>	DEPTH : .00 TO 1465.00 METRES. <=== I ===>		AVERAGE TOC :		.39	% EXCLUDING VALUES GREATER THAN	10.00	%	<===	
72551 L	1490.00	EOCENE-LATE CRET.	LATROBE GROUP/GURNARD FM.	2	.28					M-L GRY SLTY SH V CALC
===>	DEPTH : 1489.00 TO 1491.00 METRES. <=== I ===>		AVERAGE TOC :		.28	% EXCLUDING VALUES GREATER THAN	10.00	%	<===	
72551 N	1550.00	EOCENE-LATE CRET.	LATROBE GROUP	2	2.55					V L OL/GRY SH V CALC
72551 P	1580.00	EOCENE-LATE CRET.	LATROBE GROUP	2	47.30					BLK COAL
72545 L	1590.00	EOCENE-LATE CRET.	LATROBE GROUP	1	2.83					OLIVE GREY SHALE
72551 R	1625.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.94					L OL/GRY SH V CALC
72551 T	1655.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.43					L OL/GRY SH V CALC
72551 V	1685.00	EOCENE-LATE CRET.	LATROBE GROUP	2	54.10					GRY/BLK COAL
72546 D	1702.20	EOCENE-LATE CRET.	LATROBE GROUP	1	5.91					MED.DK-GY STLTSTONE
72551 X	1715.00	EOCENE-LATE CRET.	LATROBE GROUP	2	1.99					BR/GRY SH
72546 B	1751.00	EOCENE-LATE CRET.	LATROBE GROUP	1	1.21					LT-GY V.FINE SANDSTONE
72522 B	1775.00	EOCENE-LATE CRET.	LATROBE GROUP	2	1.10					M OL/GRY CLYST
72552 D	1805.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.36					M GRY SLTY SH V CALC
72545 Z	1811.00	EOCENE-LATE CRET.	LATROBE GROUP	1	1.21					MED.DK-GY SD,PYRITIC
72545 W	1855.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.29					GY-BLK SLTST,COAL LAM'S
72552 H	1865.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.35					M GRY SLTY SH MOD CALC
72552 J	1895.00	EOCENE-LATE CRET.	LATROBE GROUP	2	47.90					BLK COAL MINOR SH
72545 V	1896.90	EOCENE-LATE CRET.	LATROBE GROUP	1	.25					LT-GY CLAYST,CARB.FLECKS
72552 L	1925.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.58					M-L GRY SLTY SH V CALC
72545 R	1950.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.13					LT-GY SLTST,PYRITIC
72552 N	1955.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.39					L OL/GRY SLTY SH S CALC
72552 P	1985.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.45					GRN/GRY SH
72552 R	2015.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.59					V L GRY & GRY/BLK SH,SS
72545 O	2025.20	EOCENE-LATE CRET.	LATROBE GROUP	1	3.05					DARK GREY SHALE
72552 T	2045.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.71					M GRY SH MINOR SS
72545 I	2048.00	EOCENE-LATE CRET.	LATROBE GROUP	1	1.63					LT-GY SLST,CARB.LAMIN'S
72552 V	2090.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.61					L OL/GRY SH
72545 F	2106.90	EOCENE-LATE CRET.	LATROBE GROUP	1	2.53					MED.DK-GY SLST,COAL CHAF
72552 X	2120.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.56					L OL/GRY SH V CALC FOSS
72552 Z	2150.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.45					M GRY SLTY SH V CALC
72553 B	2180.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.85					M-L GRY SS S CARB
72553 D	2210.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.46					GRN/GRY SH
72544 X	2232.00	EOCENE-LATE CRET.	LATROBE GROUP	1	2.95					DK-GY SH,PYRITIC,FOSSILS

Table 2 cont. TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - WIRRAH 1

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	TOC%	DESCRIPTION
72553 F	2240.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.13					WH & M-L GRY SS
72544 V	2286.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.55					MED.LT-GY SILTSTONE
72553 J	2300.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.48					M-L GRY SH
72544 T	2320.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.36					MED.LT-GY SLST,ORG.CHAFF
72553 L	2321.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.67					M OL/GRY SH S CALC
72544 R	2363.00	EOCENE-LATE CRET.	LATROBE GROUP	1	4.56					MED.DK-GY SILTSTONE
72553 N	2365.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.31					WH SS COARSE GRAINED
72553 P	2395.00	EOCENE-LATE CRET.	LATROBE GROUP	2	36.10					GRY/BLK COAL
72544 O	2409.00	EOCENE-LATE CRET.	LATROBE GROUP	1	1.06					MEDIUM-GREY SILTSTONE
72553 R	2425.00	EOCENE-LATE CRET.	LATROBE GROUP	2	2.80					M OL/GRY SLTY SH
72544 K	2452.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.28					LT-OL GY SH,COALY
72553 T	2455.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.47					WH & L GRY COARSE SS
72553 V	2485.00	EOCENE-LATE CRET.	LATROBE GROUP	2	1.14					M-DK GRY SLTY SH
72544 G	2525.20	EOCENE-LATE CRET.	LATROBE GROUP	1	.88					MED.DK-GY SLTST,ORG.CHAF
72553 Z	2545.00	EOCENE-LATE CRET.	LATROBE GROUP	2	1.34					OL/GRY SLTY SH
72544 D	2569.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.47					MED.DK-GY SILTSTONE
72554 B	2575.00	EOCENE-LATE CRET.	LATROBE GROUP	2	23.00					BLK COAL
72544 B	2590.60	EOCENE-LATE CRET.	LATROBE GROUP	1	.32					MED.DK-GY SLST,MUD COVER
72554 D	2605.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.35					M GRY SH
72525 X	2615.50	EOCENE-LATE CRET.	LATROBE GROUP	1	.50					MED.DK-GY SILTSTONE
72554 H	2665.00	EOCENE-LATE CRET.	LATROBE GROUP	2	3.20					BLK COALY SH
72525 N	2686.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.74					DK-GY SHALY SLST,PY,COAL
72554 J	2695.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.37					M GRY ANDESITE PYRITE
72525 K	2715.30	EOCENE-LATE CRET.	LATROBE GROUP	1	6.90					DK-GY SLTST,COALY
72554 L	2725.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.05					V/L-M/L GY ANDESITE PYR
72525 I	2752.50	EOCENE-LATE CRET.	LATROBE GROUP	1	1.92					MED.DK-GY SILTSTONE
72554 N	2755.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.09					M-L GRY ANDESITE
72525 E	2800.00	EOCENE-LATE CRET.	LATROBE GROUP	1	1.19					LT-GY+WH.SLST,QUARTZOSE
72554 R	2815.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.10					WH & M GRY CONG SH CLSTS
72554 S	2830.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.09					L GRY SLTST
72568 K	2865.00	EOCENE-LATE CRET.	LATROBE GROUP	1	2.70					DK GY&GY BLK CARB SLTST
72568 J	2866.50	EOCENE-LATE CRET.	LATROBE GROUP	1	1.49					MD DK GY SLTY SH CARB SP
72554 W	2890.00	EOCENE-LATE CRET.	LATROBE GROUP	2	.16					WH & M-L GRY SS
72568 E	2940.60	EOCENE-LATE CRET.	LATROBE GROUP	1	1.39					LT GY SLTST WTZ RUST CDL
72588 C	2980.00	EOCENE-LATE CRET.	LATROBE GROUP	2	1.20					BTX BR/GY SH,SS TR COAL
72568 Z	3008.50	EOCENE-LATE CRET.	LATROBE GROUP	1	1.88					MDDK GY SLTY SH CARB SPS

===> DEPTH : 1491.00 TO 3008.50 METRES. <=== I ===> AVERAGE TOC : 1.22 % EXCLUDING VALUES GREATER THAN 10.00 % <===

Table 3. VITRINITE REFLECTANCE REPORT

BASIN - GIPPSLAND
WELL - WIRRAH 1

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	MAX. RO	FLUOR. COLOUR	NO.CNTS.	MACERAL TYPE
72545 C	2186.00	EOCENE-LATE CRET.	LATROBE GROUP	5	.49	YEL TO OR.	6	I>E>V D.U.M. SPARSE
72544 E	2567.70	EOCENE-LATE CRET.	LATROBE GROUP	5	.57	YEL TO OR.	25	V>E>I D.U.M. ABUNDANT
72525 N	2686.00	EOCENE-LATE CRET.	LATROBE GROUP	5	—	DULL BROWN?	0	BARREN
72525 E	2800.00	EOCENE-LATE CRET.	LATROBE GROUP	5	.44	GRN/YEL-OR.	22	E>V>?I D.O.M. COMMON
72568 P	2820.00	EOCENE-LATE CRET.	LATROBE GROUP	5	.58	YEL-BRN	20	I=V>E,DOM ABUNDANT
72568 Z	3008.50	EOCENE-LATE CRET.	LATROBE GROUP	5	.50	YEL-DULL OR	15	I>V>E,DOM ABUNDANT

Table 4. KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - MIRRAN 1

SAMPLE NO.	DEPTH	SAMPLE TYPE	--- ELEMENTAL % (ASH FREE) ---						COMMENTS
			N%	C%	H%	S%	O%	ASH%	
72564 F	1499.92	CORE	.59	68.54	4.62	.00	26.25	7.49	
72564 G	1506.20	CORE	.61	69.54	5.46	.00	24.39	8.12	
72547 U	1526.72	CORE	1.14	70.06	5.49	.00	23.29	9.07	PYROPROBE ASH
72564 H	1574.76	CORE	.42	72.56	6.31	.00	20.71	14.21	HIGH ASH
72564 I	1586.13	CORE	.70	71.13	5.75	.00	22.42	11.50	
72546 L	1590.00	SWC	1.20	76.80	8.52	.00	13.68	17.67	HIGH ASH(PYROPROBE)
72546 I	1627.00	SWC	1.06	70.55	5.14	.00	22.45	6.27	PYROPROBE ASH
72546 H	1652.00	SWC	1.07	67.43	5.72	.00	25.77	9.60	PYROPROBE ASH
72546 D	1702.20	SWC	2.52	71.26	5.46	.00	20.96	10.07	HIGH ASH(PYROPROBE)
72546 A	1771.00	SWC	2.02	69.53	5.28	.00	22.57	9.47	PYROPROBE ASH
72546 Z	1811.00	SWC	1.66	77.35	5.83	.00	15.17	14.94	HIGH ASH(PYROPROBE)
72545 Y	1817.00	SWC	1.70	75.52	5.71	.00	17.07	6.66	PYROPROBE ASH
72545 X	1890.00	SWC	1.02	73.47	4.81	.00	20.70	9.76	
72545 O	2025.20	SWC	1.08	79.62	5.64	.00	12.67	6.30	PYROPROBE ASH
72545 1	2048.00	SWC	1.14	75.77	5.45	.00	17.63	3.82	
72545 F	2104.90	SWC	1.56	79.24	5.48	.00	13.72	5.82	PYROPROBE ASH
72545 U	2164.00	SWC	1.07	78.50	5.12	.00	15.31	8.29	
72545 B	2190.50	SWC	1.07	82.31	5.00	.00	11.63	6.52	
72544 Y	2252.00	SWC	.94	79.03	5.69	.00	14.33	10.77	HIGH ASH(PYROPROBE)
72544 W	2295.00	SWC	1.07	76.45	3.60	.00	18.88	1.78	
72544 U	2308.00	SWC	1.35	80.82	4.13	.00	13.64	2.48	
72544 S	2334.50	SWC	1.12	80.42	5.77	.00	12.69	6.77	
72544 R	2363.00	SWC	1.76	87.89	5.80	.00	4.55	10.76	HIGH ASH(PYROPROBE)
72544 G	2385.00	SWC	2.28	82.29	6.05	.00	9.38	15.42	HIGH ASH(PYROPROBE)
72544 L	2435.00	SWC	1.56	78.20	4.52	.00	15.93	2.59	
72544 H	2479.50	SWC	2.65	77.41	3.98	.00	15.77	2.72	PYROPROBE ASH
72544 G	2525.20	SWC	1.17	82.46	4.17	.00	12.17	2.50	
72544 F	2543.50	SWC	1.25	79.80	4.21	.00	14.75	2.08	
72544 E	2567.70	SWC	2.57	76.50	5.99	.00	15.14	14.74	HIGH ASH(PYROPROBE)
72544 C	2576.00	SWC	.70	80.35	5.50	.00	33.45	2.19	
72545 L	2701.00	SWC	2.59	86.65	5.76	.00	5.02	4.52	PYROPROBE ASH
72545 K	2715.30	SWC	1.32	82.27	4.61	.00	11.80	.51	
72545 I	2752.50	SWC	1.63	78.65	5.43	.00	14.09	16.02	HIGH ASH(PYROPROBE)
72568 I	2806.50	SWC	.95	74.04	4.92	.00	20.09	3.40	
72568 P	2820.00	SWC	1.15	78.59	4.66	.00	15.62	5.52	
72569 K	2865.00	SWC	1.44	79.11	5.40	.00	14.05	7.75	
72568 J	2866.50	SWC	1.40	76.00	5.10	.00	17.50	4.24	
72569 E	2994.50	SWC	1.76	80.30	6.04	.00	11.89	13.13	HIGH ASH
72569 C	3001.00	SWC	1.15	79.92	6.78	.00	12.15	16.85	HIGH ASH
72562 B	3004.50	SWC	1.47	83.97	5.10	.00	9.45	7.54	
72568 Z	3006.50	SWC	1.25	72.43	5.66	.00	20.66	11.47	HIGH ASH
72568 C	3010.00	SWC	1.45	82.61	5.21	.00	10.73	2.27	
72547 Y	3021.50	SWC	1.29	81.26	5.52	.00	11.93	4.02	

Table 5. KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - WIRRAH 1

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	FORMATION	ATOMIC RATIOS H/C	O/C	N/C	COMMENTS
72568 F	1499.92	CORE	EOCENE-LATE CRET.	LATROBE GROUP	.85	.29	.01	
72569 G	1506.20	CORE	EOCENE-LATE CRET.	LATROBE GROUP	.94	.26	.01	
72567 U	1526.72	CORE	EOCENE-LATE CRET.	LATROBE GROUP	.94	.25	.01	PYROPROBE ASH
72569 P	1575.70	CORE	EOCENE-LATE CRET.	LATROBE GROUP	1.04	.21	.00	HIGH ASH
72569 1	1586.13	CORE	EOCENE-LATE CRET.	LATROBE GROUP	.97	.24	.01	
72546 L	1590.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	1.30	.13	.01	HIGH ASH(PYROPROBE)
72546 I	1627.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.87	.24	.02	PYROPROBE ASH
72545 H	1652.60	SWC	EOCENE-LATE CRET.	LATROBE GROUP	1.02	.29	.01	PYROPROBE ASH
72546 D	1709.20	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.92	.22	.03	HIGH ASH(PYROPROBE)
72546 A	1771.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.91	.24	.03	PYROPROBE ASH
72546 Z	1811.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.90	.15	.02	HIGH ASH(PYROPROBE)
72546 Y	1817.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.91	.17	.02	PYROPROBE ASH
72545 X	1840.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.79	.21	.01	
72545 C	2025.20	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.88	.12	.02	PYROPROBE ASH
72545 I	2040.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.86	.17	.01	
72545 F	2105.90	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.83	.13	.02	PYROPROBE ASH
72545 C	2164.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.78	.15	.01	
72545 X	2193.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.73	.11	.01	
72544 X	2252.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.66	.14	.01	HIGH ASH(PYROPROBE)
72544 W	2295.60	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.57	.19	.01	
72544 U	2306.60	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.62	.13	.01	
72544 S	2339.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.86	.12	.01	
72544 R	2363.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.79	.04	.02	HIGH ASH(PYROPROBE)
72544 Q	2383.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.88	.09	.02	HIGH ASH(PYROPROBE)
72544 L	2455.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.69	.15	.01	
72544 H	2479.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.62	.15	.03	PYROPROBE ASH
72544 G	2525.20	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.61	.11	.01	
72544 F	2543.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.63	.14	.01	
72544 E	2567.70	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.94	.15	.03	HIGH ASH(PYROPROBE)
72544 C	2576.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	1.09	.42	.01	
72525 L	2705.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.80	.04	.02	PYROPROBE ASH
72525 K	2715.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.67	.11	.01	
72525 I	2752.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.83	.13	.02	HIGH ASH(PYROPROBE)
72563 T	2800.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.80	.20	.01	
72563 P	2829.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.71	.15	.01	
72563 K	2865.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.82	.13	.02	
72563 J	2886.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.80	.17	.02	
72564 E	2994.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.90	.11	.02	HIGH ASH
72559 C	3001.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	1.02	.11	.01	HIGH ASH
72560 B	3004.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.73	.08	.02	
72560 Z	3006.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.94	.21	.01	HIGH ASH
72560 C	3010.00	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.76	.10	.02	
72547 Y	3021.50	SWC	EOCENE-LATE CRET.	LATROBE GROUP	.82	.11	.01	

Table 6. ROCK EVAL ANALYSES

BASIN - GIPPSLAND
WELL - WIRRAH 1

REPORT A - SULPHUR & PYROLYZABLE CARBON

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	TMAX	S1	S2	S3	PI	S2/S3	PC	COMMENTS
72545 L	1590.0	SWC	EUCENE-LATE CRET.	423.	4.98	12.01	.27	.29	44.48	1.41	
72546 D	1702.2	SWC	EUCENE-LATE CRET.	417.	3.80	17.51	.43	.18	40.72	1.77	
72546 B	1751.0	SWC	EUCENE-LATE CRET.	390.	.31	.13	.15	.70	.87	.04	
72545 Z	1811.0	SWC	EUCENE-LATE CRET.	420.	.61	1.53	.17	.29	9.00	.18	
72545 U	2025.2	SWC	EUCENE-LATE CRET.	424.	1.41	8.69	.17	.14	51.12	.84	
72545 I	2048.0	SWC	EUCENE-LATE CRET.	427.	1.11	2.68	.14	.29	19.14	.31	
72545 F	2106.9	SWC	EUCENE-LATE CRET.	428.	.85	5.05	.14	.14	36.07	.49	
72544 X	2232.0	SWC	EUCENE-LATE CRET.	426.	1.18	7.26	.16	.14	45.38	.70	
72544 V	2286.0	SWC	EUCENE-LATE CRET.	429.	.32	.71	.11	.31	6.45	.09	
72544 R	2363.0	SWC	EUCENE-LATE CRET.	430.	2.02	8.40	.20	.19	10.42	.86	
72544 O	2409.0	SWC	EUCENE-LATE CRET.	433.	.40	.85	.15	.32	5.67	.10	
72544 G	2525.2	SWC	EUCENE-LATE CRET.	436.	.40	.60	.01	.40	60.00	.08	
72525 X	2615.5	SWC	EUCENE-LATE CRET.	443.	.15	.12	.01	.56	12.00	.02	
72525 N	2686.0	SWC	EUCENE-LATE CRET.	435.	.45	.87	.01	.34	87.00	.11	
72525 K	2715.3	SWC	EUCENE-LATE CRET.	436.	3.28	14.18	.13	.19	109.08	1.45	
72525 I	2752.5	SWC	EUCENE-LATE CRET.	439.	1.07	3.87	.10	.22	38.70	.41	
72525 E	2800.0	SWC	EUCENE-LATE CRET.	431.	.93	2.16	.14	.30	15.43	.26	
72568 K	2865.0	SWC	EUCENE-LATE CRET.	440.	1.65	5.83	.07	.22	83.29	.62	
72568 J	2866.5	SWC	EUCENE-LATE CRET.	438.	.56	1.80	.07	.24	25.71	.20	
72568 E	2940.0	SWC	EUCENE-LATE CRET.	442.	.35	.04	.09	.90	.44	.03	
72568 Z	3008.5	SWC	EUCENE-LATE CRET.	437.	.51	1.59	.11	.24	14.45	.17	

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

Table 6 cont. ROCK EVAL ANALYSES

BASIN - GIPPSLAND REPORT B - TOTAL CARBON,H/O INDICES
WELL - WIRRAH 1

SAMPLE NO.	DEPTH	SAMPLE TYPE	FORMATION	TC	HI	OI	HI/OI	COMMENTS
72545 L	1590.0	SWC	LATROBE GROUP	2.83	424.	9.	47.11	
72546 D	1702.2	SWC	LATROBE GROUP	5.91	296.	7.	42.29	
72546 B	1751.0	SWC	LATROBE GROUP	1.21	10.	12.	.83	
72545 Z	1811.0	SWC	LATROBE GROUP	1.21	126.	14.	9.00	
72545 O	2025.2	SWC	LATROBE GROUP	3.05	284.	5.	56.80	
72545 I	2048.0	SWC	LATROBE GROUP	1.63	164.	8.	20.50	
72545 F	2106.9	SWC	LATROBE GROUP	2.53	199.	5.	39.80	
72544 X	2232.0	SWC	LATROBE GROUP	2.95	246.	5.	49.20	
72544 V	2286.0	SWC	LATROBE GROUP	.55	129.	20.	6.45	
72544 R	2363.0	SWC	LATROBE GROUP	4.56	184.	4.	46.00	
72544 O	2409.0	SWC	LATROBE GROUP	1.08	78.	13.	6.00	
72544 G	2525.2	SWC	LATROBE GROUP	.88	68.	1.	68.00	
72525 X	2615.5	SWC	LATROBE GROUP	.50	24.	2.	12.00	
72525 N	2686.0	SWC	LATROBE GROUP	.74	117.	1.	117.00	
72525 K	2715.3	SWC	LATROBE GROUP	6.90	205.	1.	205.00	
72525 I	2752.5	SWC	LATROBE GROUP	1.92	201.	5.	40.20	
72525 E	2800.0	SWC	LATROBE GROUP	1.19	181.	11.	16.45	
72568 K	2865.0	SWC	LATROBE GROUP	2.70	215.	2.	107.50	
72568 J	2866.5	SWC	LATROBE GROUP	1.49	120.	4.	30.00	
72568 E	2940.0	SWC	LATROBE GROUP	1.39	2.	6.	.33	
72568 Z	3008.5	SWC	LATROBE GROUP	1.88	84.	5.	16.80	

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

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

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

Table 7. C15+ EXTRACT ANALYSES

BASIN - GIPPSLAND
WELL - WIRRAH 1

REPORT A - EXTRACT DATA (PPM)

SAMPLE NO.	DEPTH	TYPE	AM	AGE	TOTAL EXTRACT	*--- HYDROCARBONS ---* SATS.	AROMS.	TOTAL H/CARBS	*--- NON-HYDROCARBONS ---* ASPH.	ELUTED NSO	NON-ELT NSO	TOTAL NSO	SULPHUR	TOTAL NON/HCS
72551 N	1550.00	CTS	C	EOCENE-LATE CRET	276.	11.	31.	42.	161.	36.	10.	48.	25.	234.
72553 B	2180.00	CTS	C	EOCENE-LATE CRET	2299.	145.	610.	755.	848.	324.	266.	590.	106.	1544.
72553 L	2321.00	CTS	C	EOCENE-LATE CRET	756.	36.	117.	153.	427.	94.	28.	122.	54.	603.
72553 R	2425.00	CTS	C	EOCENE-LATE CRET	1426.	108.	322.	430.	655.	207.	59.	266.	75.	996.
72554 A	2665.00	CTS	C	EOCENE-LATE CRET	414.	28.	66.	94.	234.	43.	4.	47.	39.	320.
72556 C	2980.00	CTS	C	EOCENE-LATE CRET	740.	182.	184.	366.	274.	81.	17.	98.	2.	374.

C15+ EXTRACT ANALYSES

BASIN - GIPPSLAND
WELL - WIRRAH 1

REPORT B - EXTRACTS % OF TOTAL

SAMPLE NO.	DEPTH	FORMATION	*HYDROCARBONS* SAT. %	AROM.%	*- NON-HYDROCARBONS -* NSO. %	ASPH.%	SULPH%	* SAT/AR	* HC/NHC	* COMMENTS
72551 N	1550.00	LATROBE GROUP	4.0	11.2	17.4	58.3	9.1	* .4	* .2	*
72553 B	2180.00	LATROBE GROUP	6.3	26.5	25.7	36.9	4.6	* .2	* .5	*
72553 L	2321.00	LATROBE GROUP	4.8	15.5	16.1	56.5	7.1	* .3	* .3	*
72553 R	2425.00	LATROBE GROUP	7.6	22.6	18.7	45.9	5.3	* .3	* .4	*
72554 A	2665.00	LATROBE GROUP	6.6	15.9	11.4	56.5	9.4	* .4	* .3	*
72556 C	2980.00	LATROBE GROUP	24.6	24.9	13.2	37.0	.3	* 1.0	* 1.0	*

TABLE 8

CHEMISTRY OF WIRRAH-1 OILS

SAMPLE NO.	TEST	DEPTH (M)	API° at 60°F	% C_{4-7}	% C_{15+}	% SATS	% AROM	% NSO
72525-A	RFT-15	2046	38.9	3.4	75.7	72.8	12.5	2.0
72525-B	RFT-17	2195.3	43.5	21.7	35.1	73.6	11.6	2.9

SAMPLE NO.	TEST	DEPTH (M)	% NON EL NSO	% S	% ASPH	C_{13}/C_{12} SATS °/oo vs PDB	C_{13}/C_{12} AROM °/oo vs PDB
72525-A	RFT-15	2046	11.6	0.06	1.1	-27.1	-25.2
72525-B	RFT-17	2195.3	10.2	0.04	1.7	-27.0	-25.3

ANALYST - M.M. ERT

TABLE 9.

C4-C7 OIL 03 NOV 82

72525A AUSTRALIA, WIRRAH-1, GIPPSLAND BASIN, 2046 M

	TOTAL PERCENT	NORM PERCENT
METHANE	0.000	
ETHANE	0.000	
PROPANE	0.010	
IBUTANE	0.024	0.71
NBUTANE	0.062	1.82
IPENTANE	0.100	2.92
NPENTANE	0.128	3.74
22-DMB	0.005	0.14
CPENTANE	0.021	0.62
23-DMB	0.019	0.54
2-MP	0.098	2.86
3-MP	0.060	1.74
NHEXANE	0.200	5.83
MCP	0.161	4.70
22-DMP	0.000	0.00
24-DMP	0.015	0.45
223-TMB	0.000	0.00

	TOTAL PERCENT	NORM PERCENT
CHEX	0.224	6.54
33-DMP	0.000	0.00
11-DMCP	0.000	0.00
2-MHEX	0.104	3.04
23-DMP	0.046	1.33
3-MHEX	0.102	2.98
1C3-DMCP	0.047	1.37
1T3-DMCP	0.043	1.25
1T2-DMCP	0.075	2.20
3-EPENT	0.000	0.00
224-TMP	0.000	0.00
NHEPTANE	0.406	11.86
1C2-DMCP	0.011	0.32
MCH	0.782	22.84
ECP	0.037	1.09
BENZENE	0.063	1.85
TOLUENE	0.591	17.26

TOTALS

ALL COMP	3.434
GASOLINE	3.424

SIG COMP RATIOS

C1/C2	3.30
A /D2	5.93
D1/D2	6.41
C1/D2	10.88
PENT/IPENT	1.28
CH/MCP	1.39

PARAFFIN INDEX 1	1.250
PARAFFIN INDEX 2	22.197

INTERPRETER - R.E. METTER

ANALYST - H.M. FRY

TABLE 10.

C4-C7 OIL 03 NOV 82

72525B AUSTRALIA, WIRRAH-1, GIPPSLAND BASIN, 2195.3 M RFT #17

	TOTAL PERCENT	NORM PERCENT		TOTAL PERCENT	NORM PERCENT
METHANE	0.000		CHEX	1.294	5.95
ETHANE	0.000		33-DMP	0.000	0.00
PROPANE	0.013		11-DMCP	0.106	0.49
IBUTANE	0.033	0.15	2-MHEX	0.519	2.39
NBUTANE	0.129	0.59	23-DMP	0.148	0.68
IPENTANE	0.296	1.36	3-MHEX	0.508	2.34
NPENTANE	0.468	2.15	1C3-DMCP	0.254	1.17
22-DMB	0.024	0.11	1T3-DMCP	0.232	1.06
CPENTANE	0.094	0.43	1T2-DMCP	0.404	1.86
23-DMB	0.099	0.45	3-EPENT	0.000	0.00
2-MP	0.504	2.32	224-TMP	0.000	0.00
3-MP	0.322	1.48	NHEPTANE	1.908	8.77
NHEXANE	1.180	5.42	1C2-DMCP	0.061	0.28
MCP	0.885	4.07	MCH	4.394	20.20
22-DMP	0.000	0.00	ECP	0.200	0.92
24-DMP	0.078	0.36	BENZENE	0.981	4.51
223-TMB	0.134	0.62	TOLUENE	6.494	29.86

TOTALS	
ALL COMP	21.762
GASOLINE	21.749

SIG COMP RATIOS	
C1/C2	3.44
A /D2	6.07
D1/D2	14.70
C1/D2	12.42
PENT/IPENT	1.58
CH/MCP	1.46

PARAFFIN INDEX 1	1.155
PARAFFIN INDEX 2	19.532

INTERPRETER - R.E. METTER

PE601323

This is an enclosure indicator page.
The enclosure PE601323 is enclosed within the container PE902626 at this location in this document.

The enclosure PE601323 has the following characteristics:

ITEM_BARCODE	= PE601323
CONTAINER_BARCODE	= PE902626
NAME	= C1-4 Cuttings Gas Log
BASIN	= GIPPSLAND
PERMIT	= VIC/L2
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= C1-4 Cuttings Gas Log (enclosure from WCR vol.2) for Wirrah-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	= 25/07/84
W_NO	= W782
WELL_NAME	= Wirrah-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE601322

This is an enclosure indicator page.
The enclosure PE601322 is enclosed within the container PE902626 at this location in this document.

The enclosure PE601322 has the following characteristics:

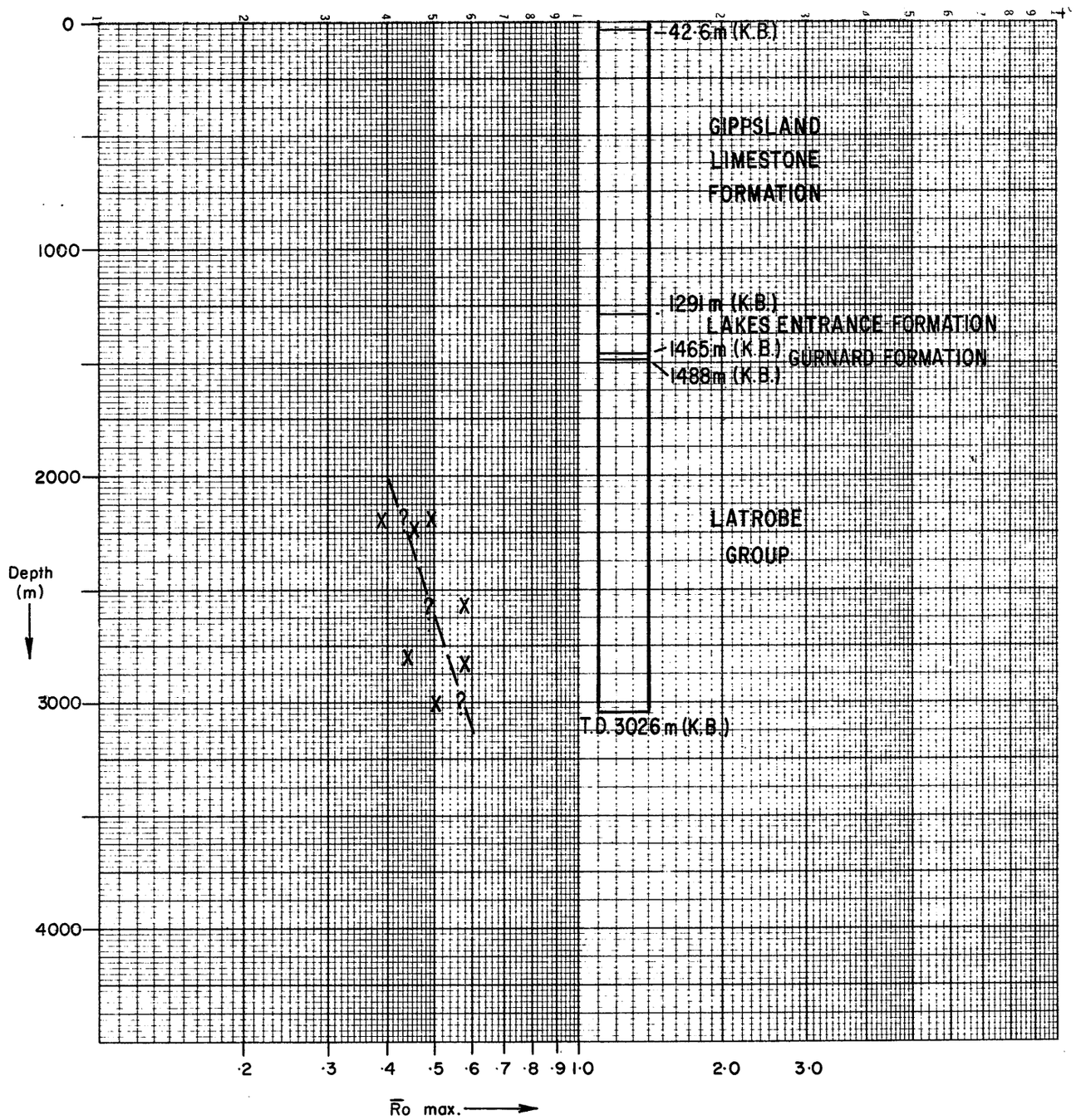
ITEM_BARCODE	= PE601322
CONTAINER_BARCODE	= PE902626
NAME	= Geochemical Log
BASIN	= GIPPSLAND
PERMIT	= VIC/L2
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Geochemical Log, Cuttings C4-7 Analysis (enclosure from WCR vol.2) for Wirrah-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	= 25/07/84
W_NO	= W782
WELL_NAME	= Wirrah-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

WIRRAH-1

FIG. 3

VITRINITE REFLECTANCE vs DEPTH



Base 1107/OP/207

Dwg 2109/OP/11

WIRRAH-1

FIG. 4

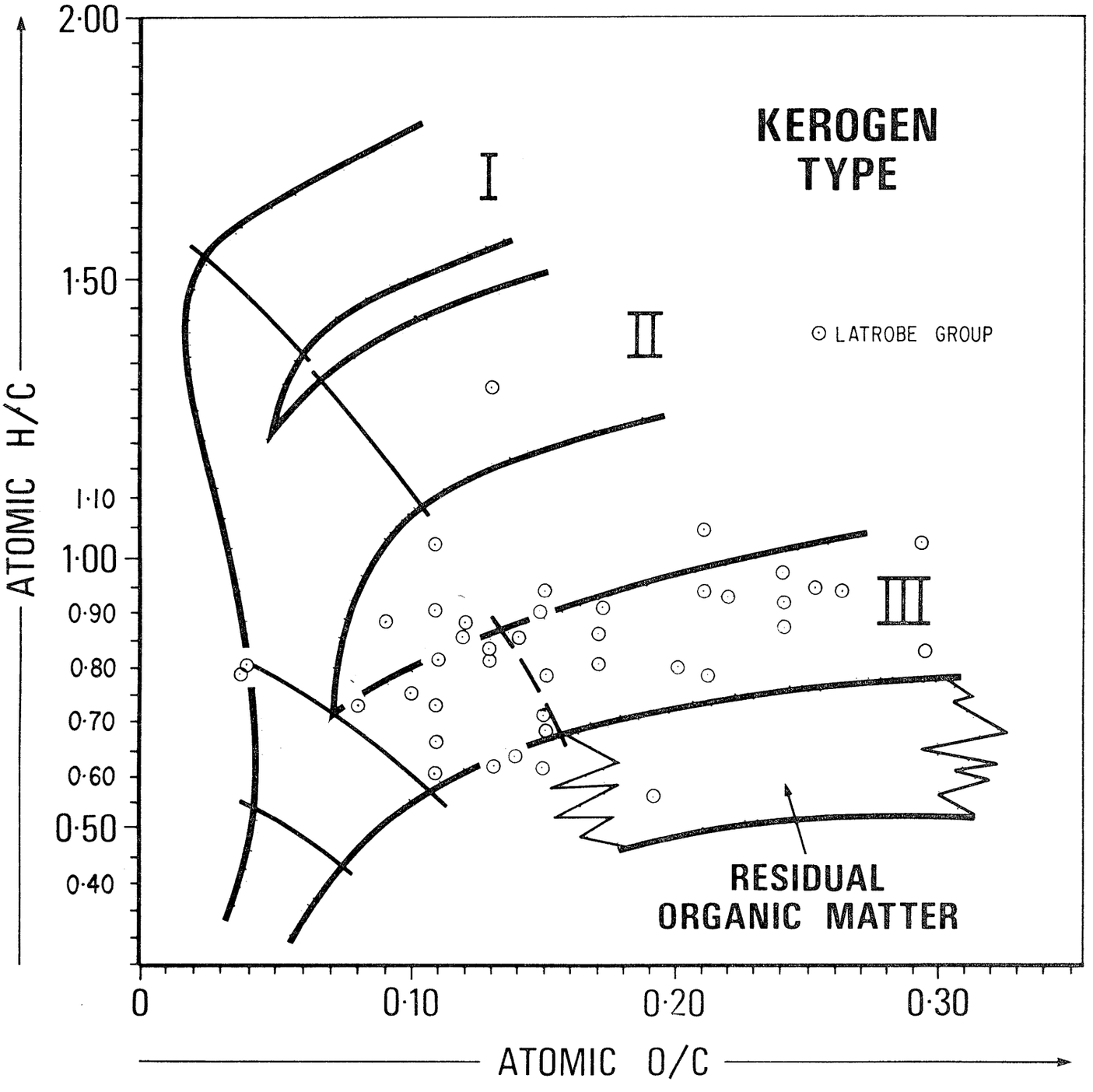
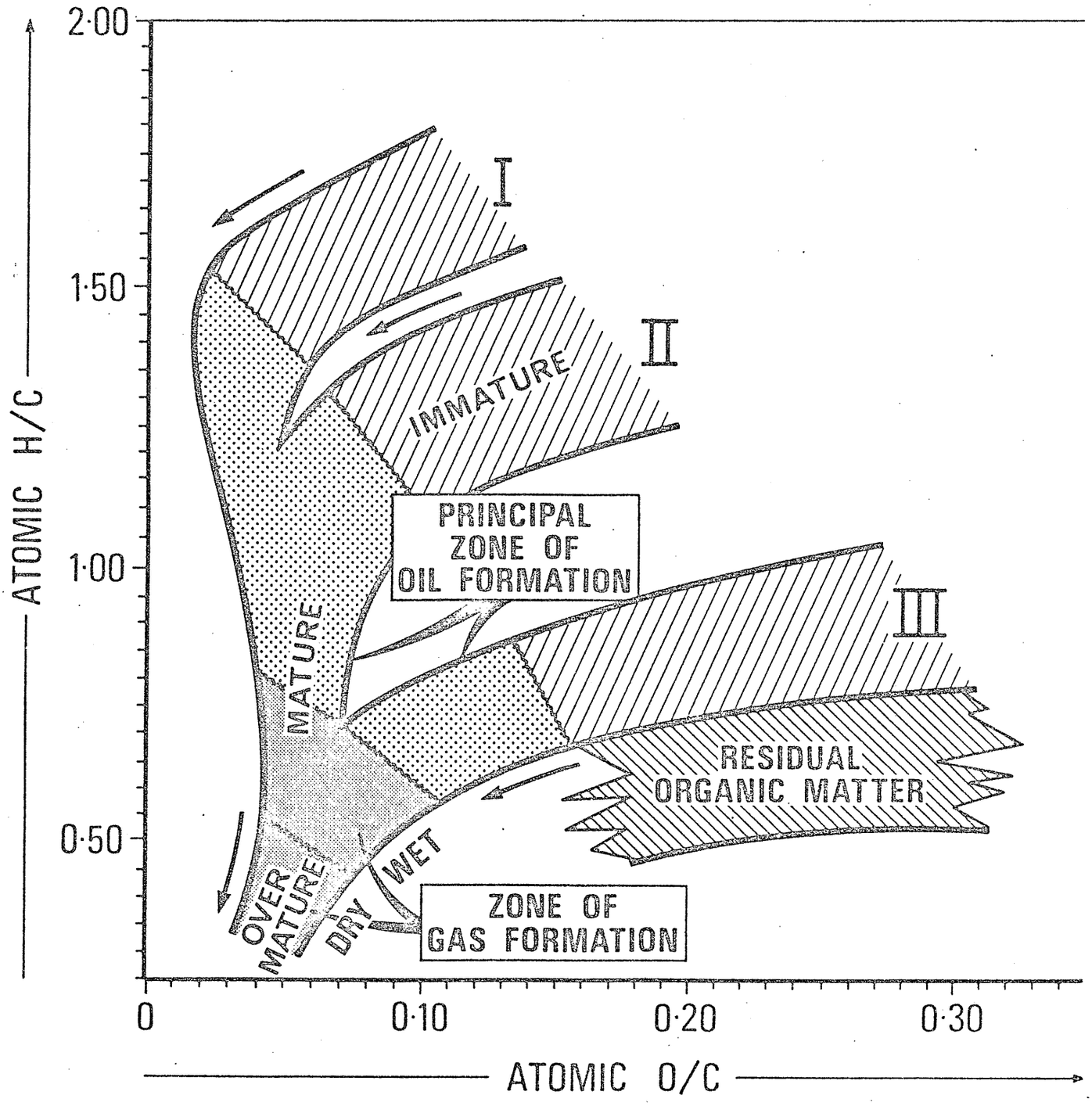


FIGURE 5.



PRINCIPAL PRODUCTS OF KEROGEN EVOLUTION

CO_2, H_2O

OIL

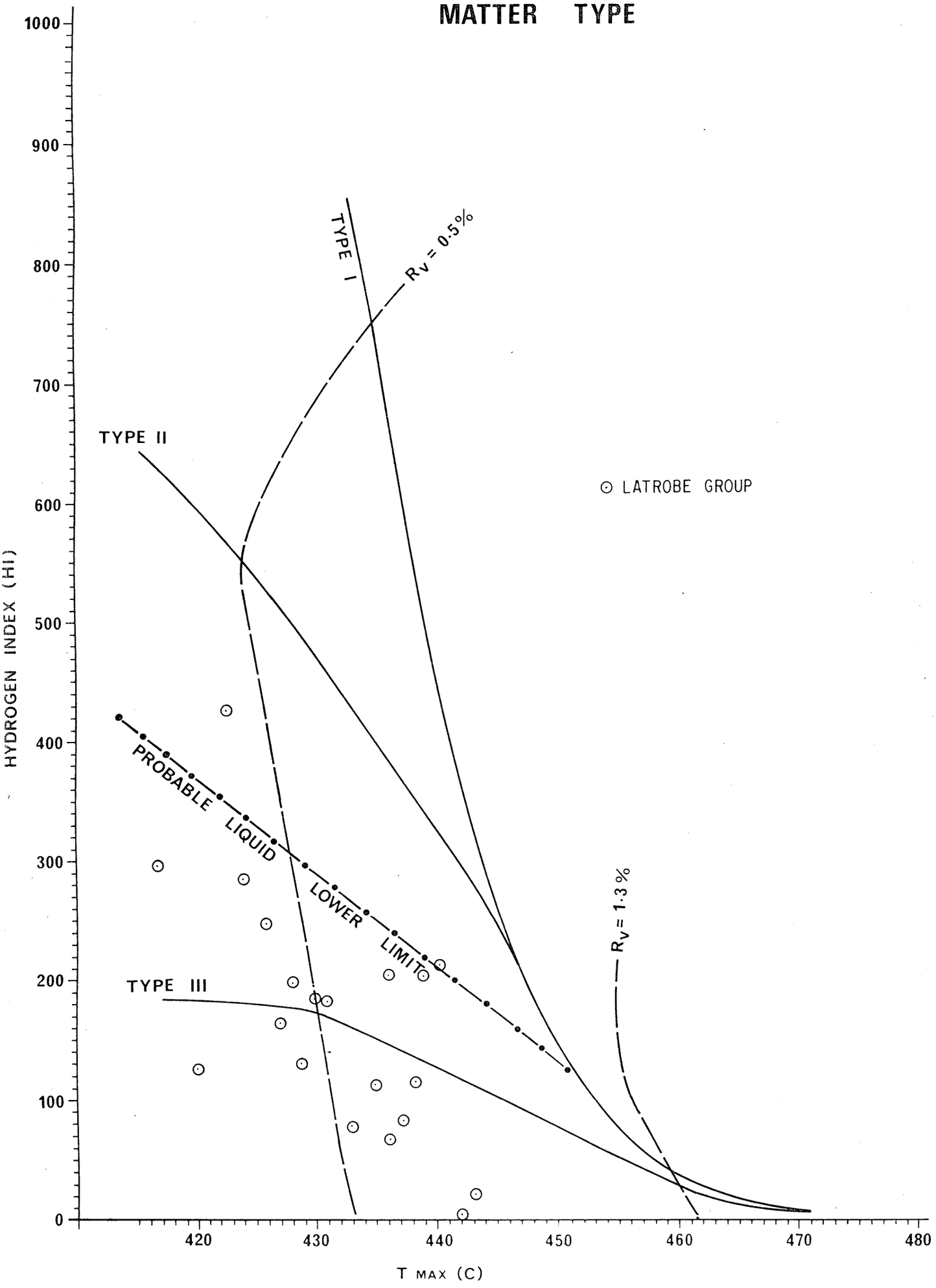
GAS

RESIDUAL ORGANIC MATTER
(NO POTENTIAL FOR OIL OR GAS)

1380/BS/75

FIG. 6

WIRRAH-1
ROCKEVAL MATURATION AND ORGANIC MATTER TYPE



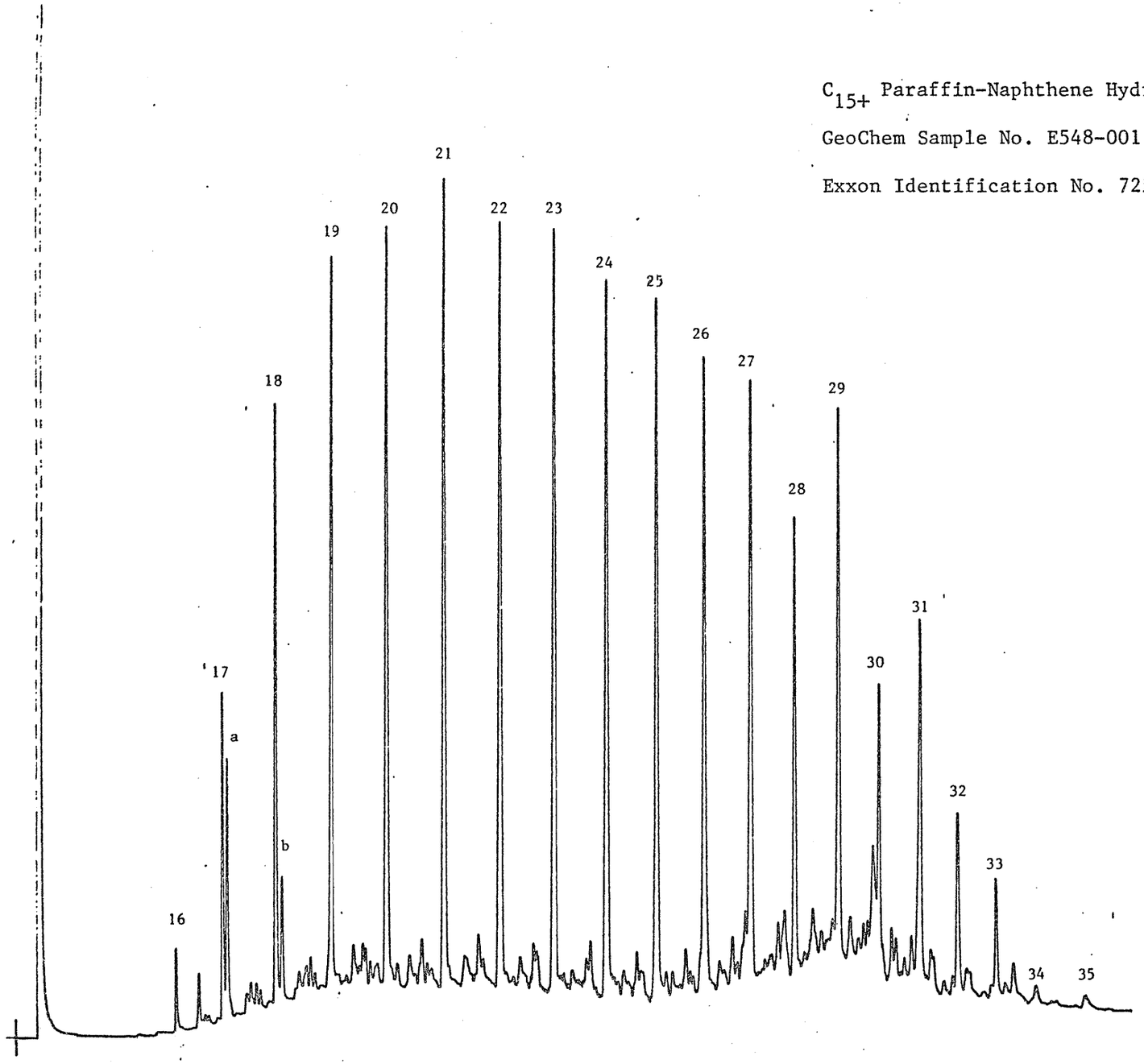


FIGURE 7 : Wirrah-1, Latrobe Group, 1535-1550m(KB).

C_{15+} Paraffin-Naphthene Hydrocarbon

GeoChem Sample No. E548-002

Exxon Identification No. 72553-B

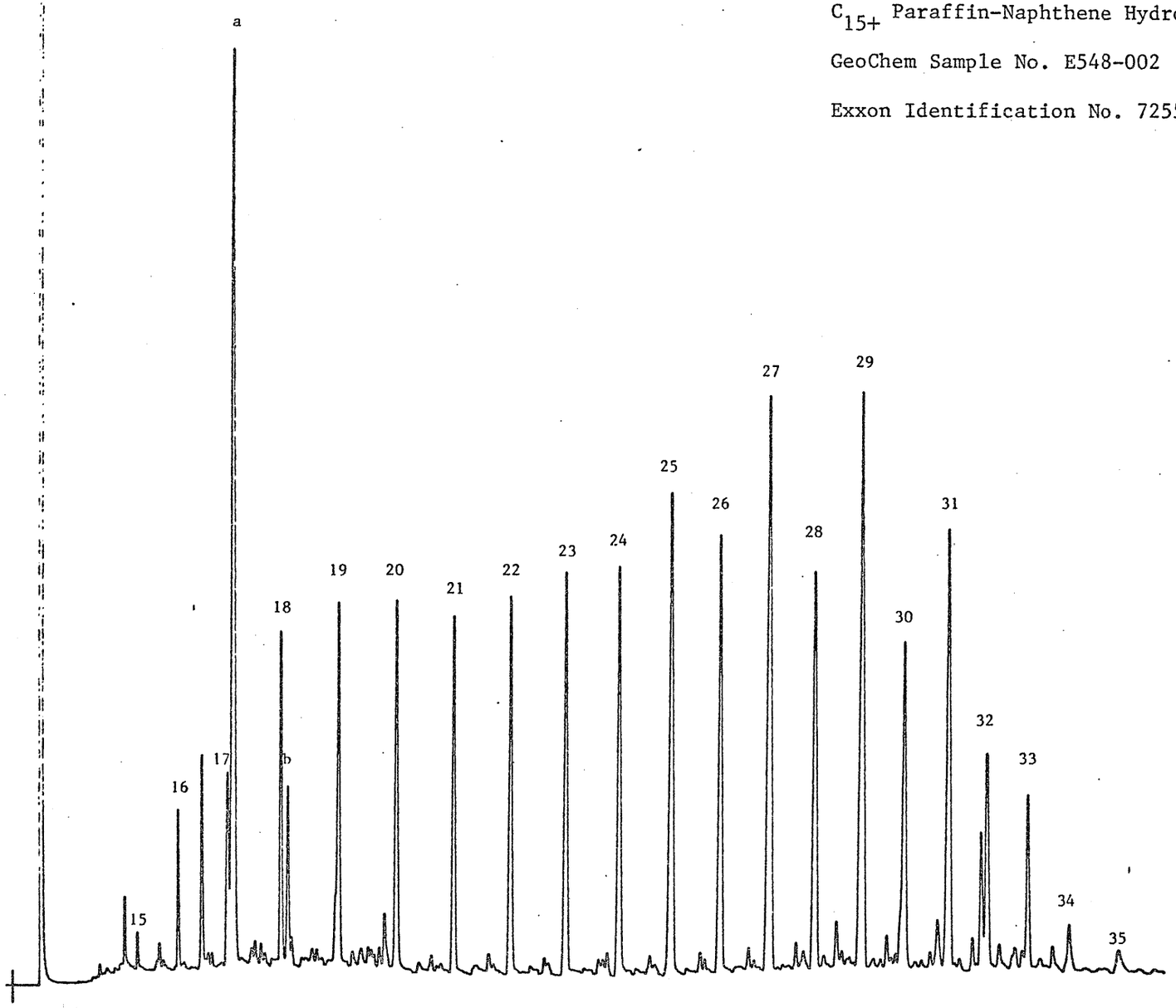


FIGURE 8 : Wirrah-1, Latrobe Group, 2165-2180m(KB).

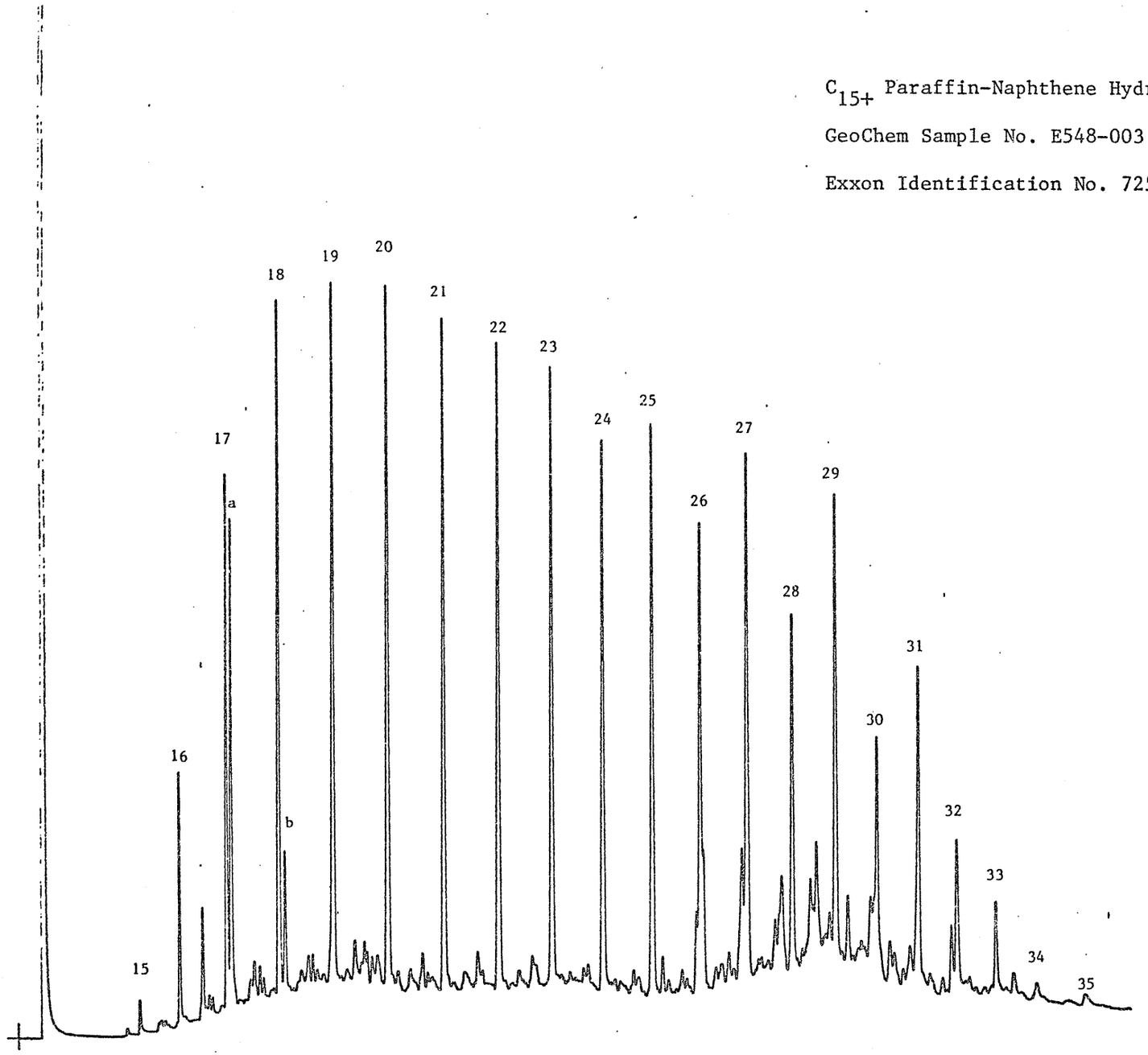


FIGURE 9: Wirrah-1, Latrobe Group, 2315-2321m(KB).

C_{15+} Paraffin-Naphthene Hydrocarbon

GeoChem Sample No. E548-004

Exxon Identification No. 72553-R

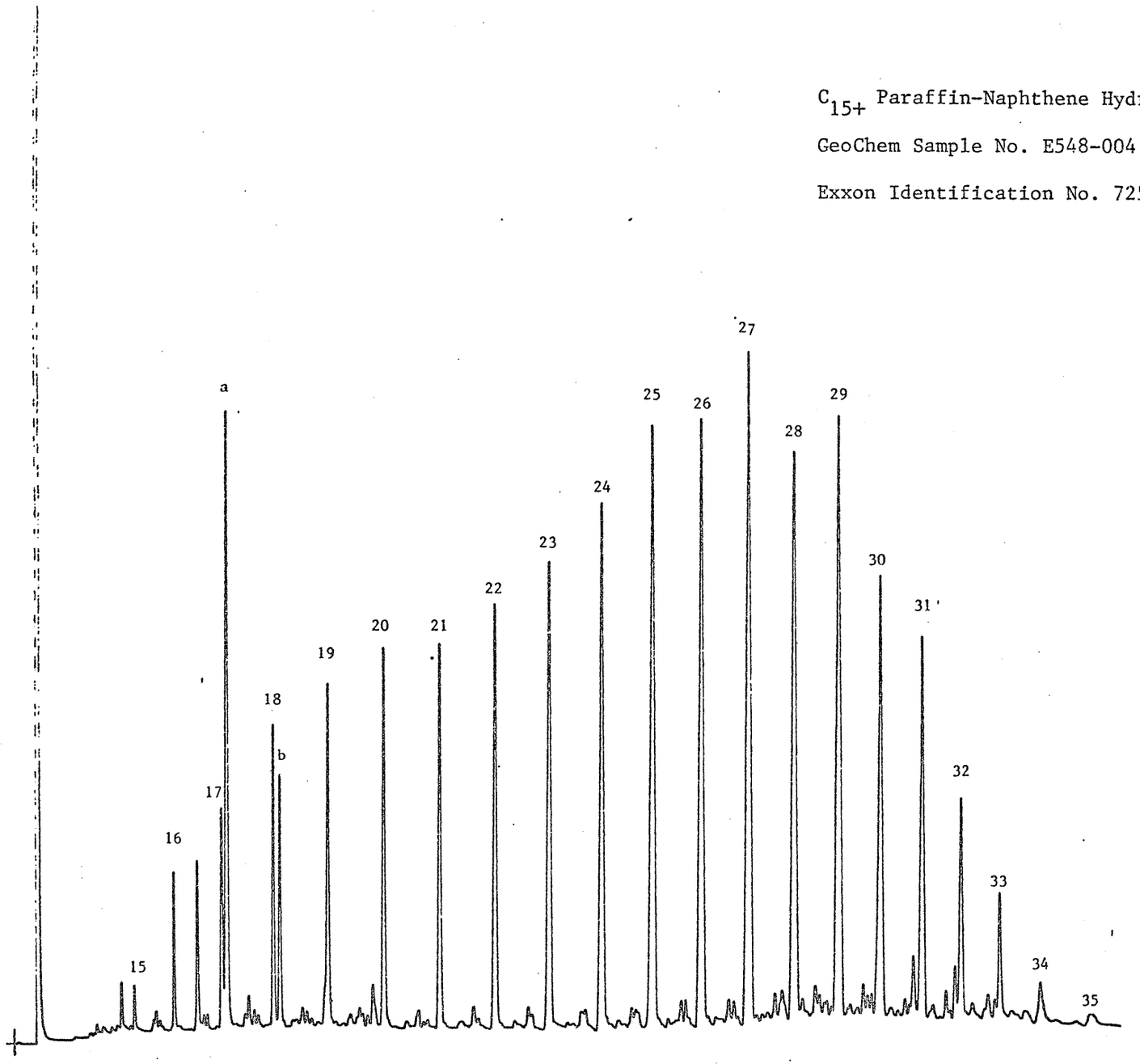


FIGURE 10 : Wirrah-1, Latrobe Group, 2410-2425m(KB).

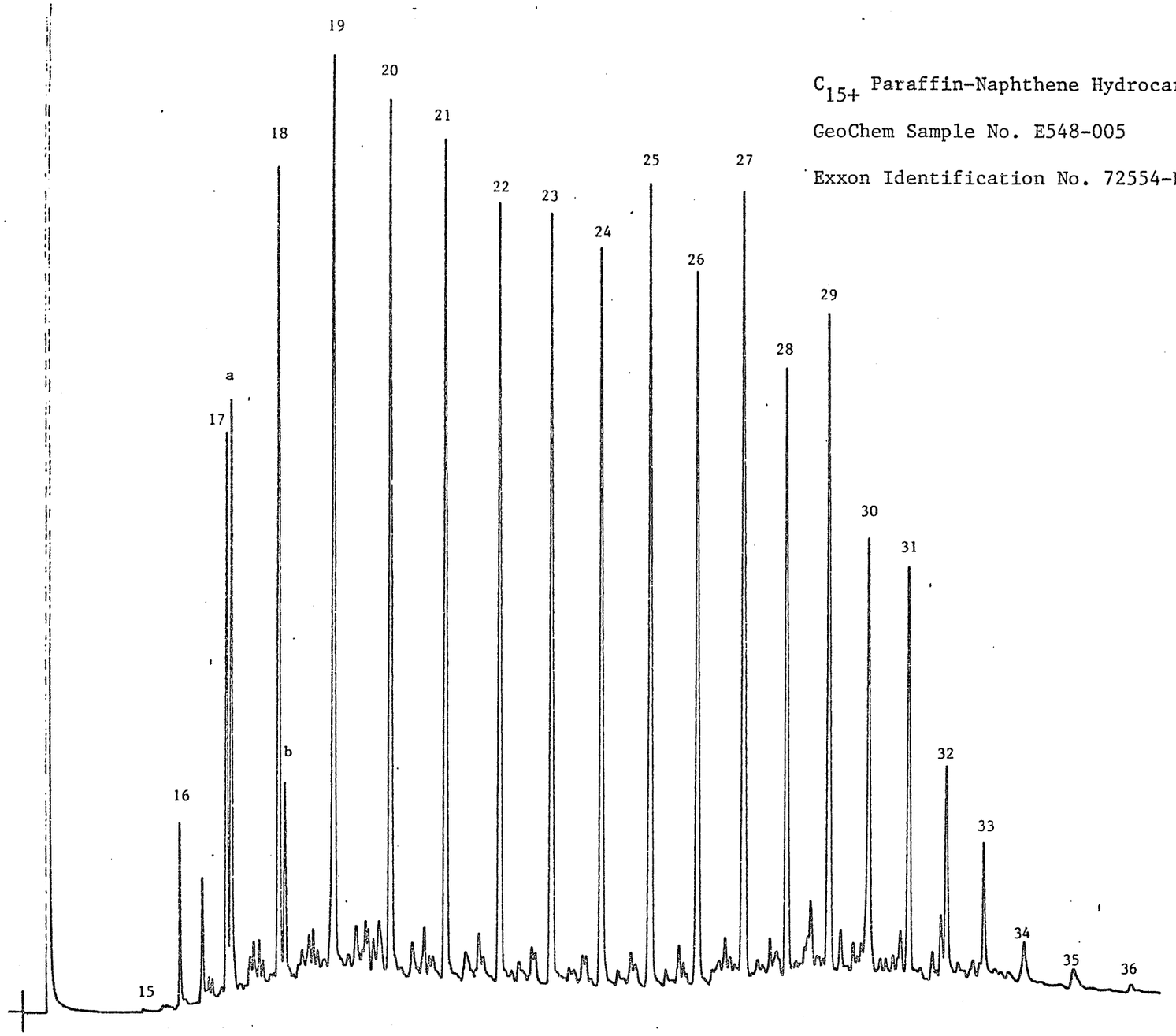


FIGURE 11 : Wirrah-1, Latrobe Group, 2650-2665m(KB).

C_{15+} Paraffin-Naphthene Hydrocarbon

GeoChem Sample No. E548-006

Exxon Identification No. 72588-C

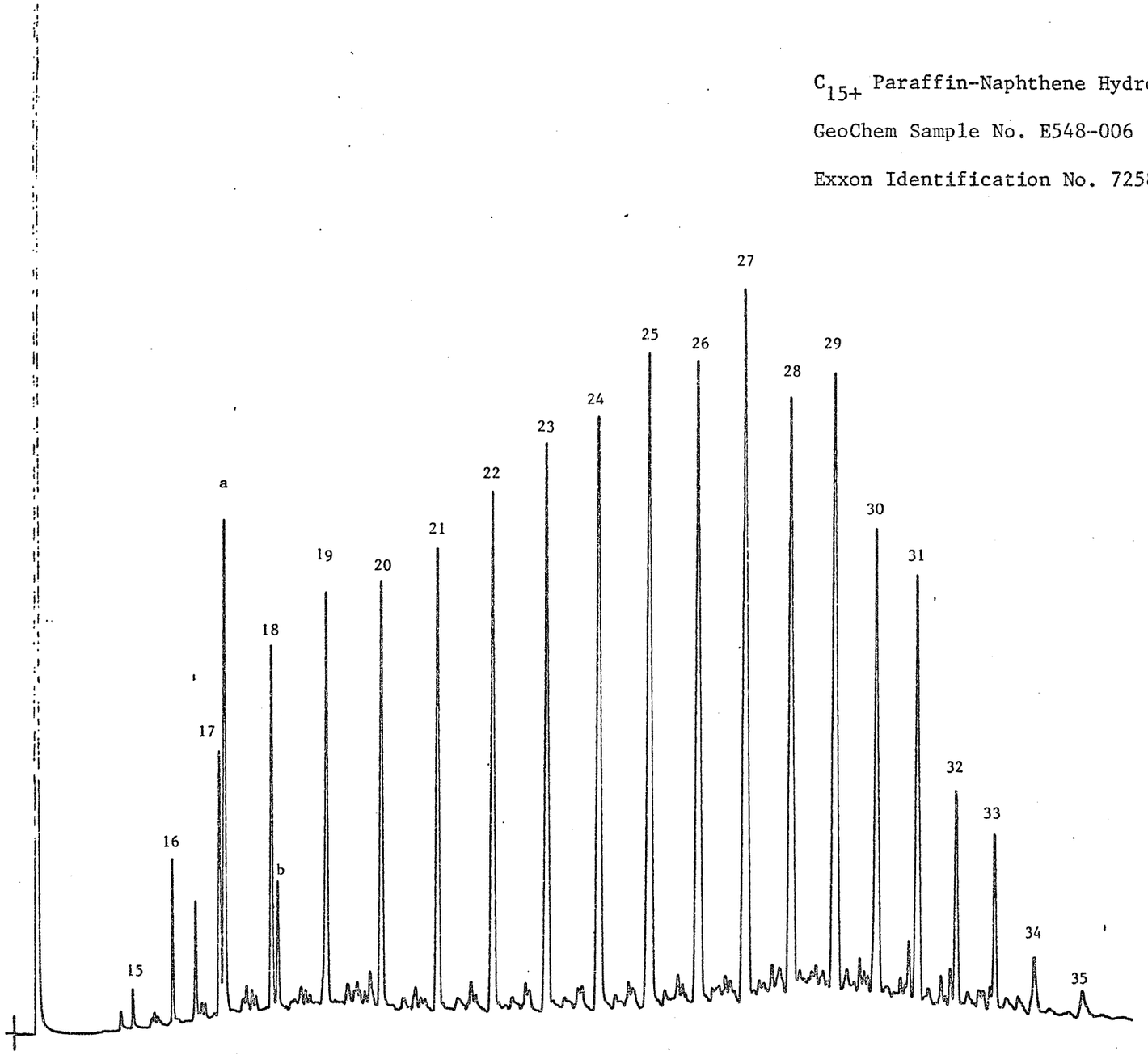


FIGURE 12 : Wirrah-1, Latrobe Group, 2965-2980m(KB).

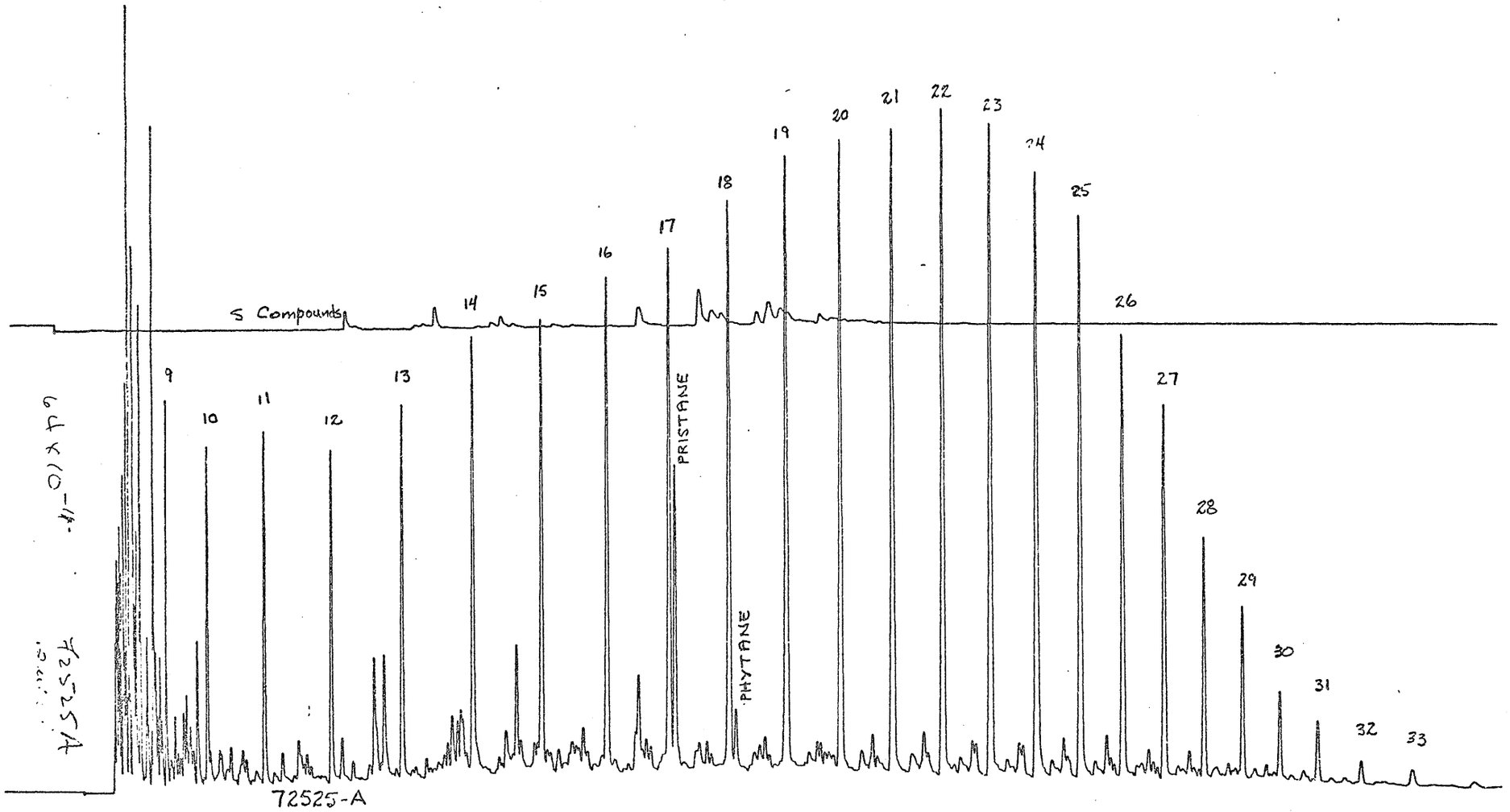


FIGURE 13 : Whole oil chromatogram, Wirrah-1 oil, RFT 15, 2046m(KB).

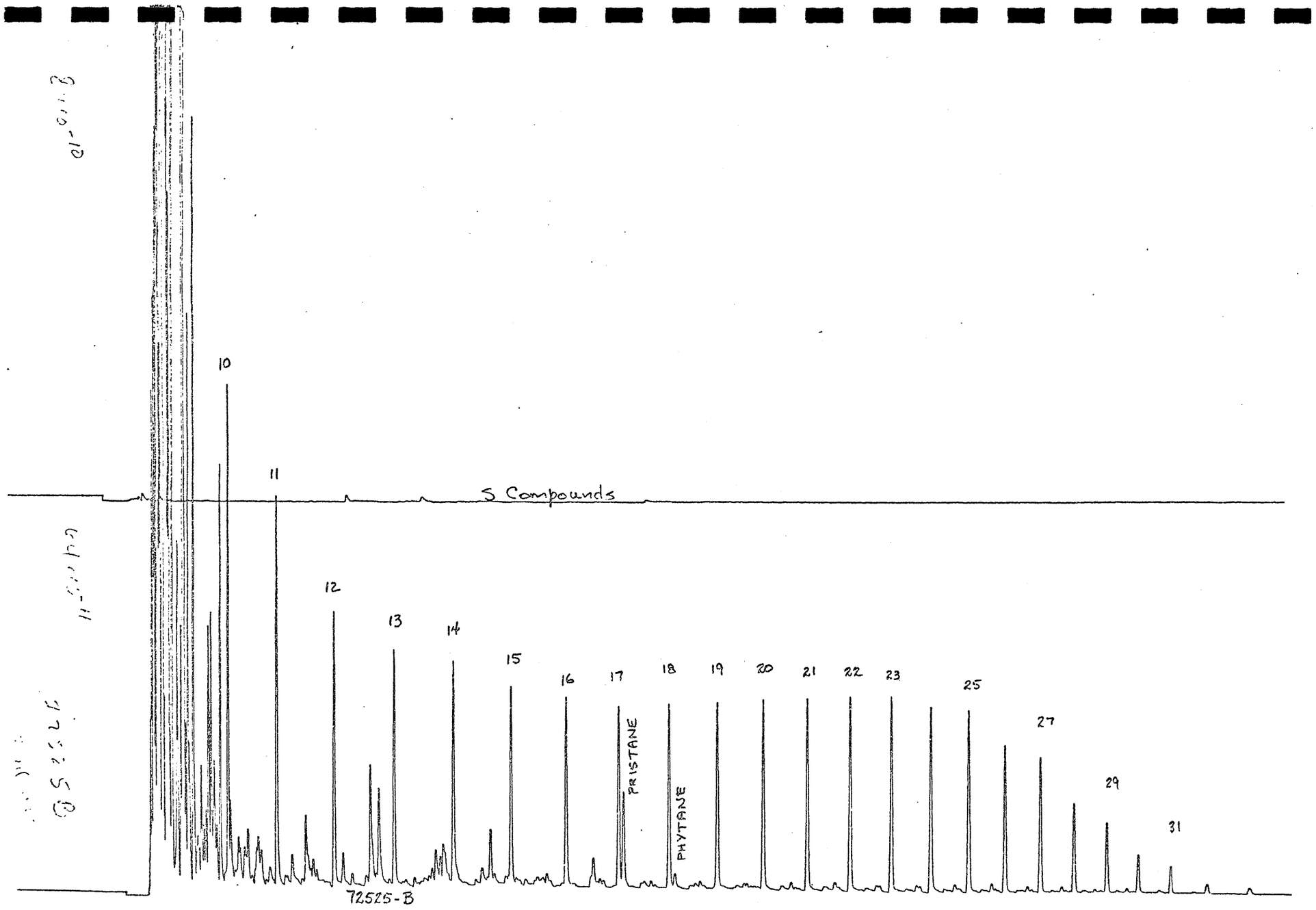


FIGURE 14 : Whole oil chromatogram, Wirrah-1 oil, RFT 17, 2195.3m(KB).

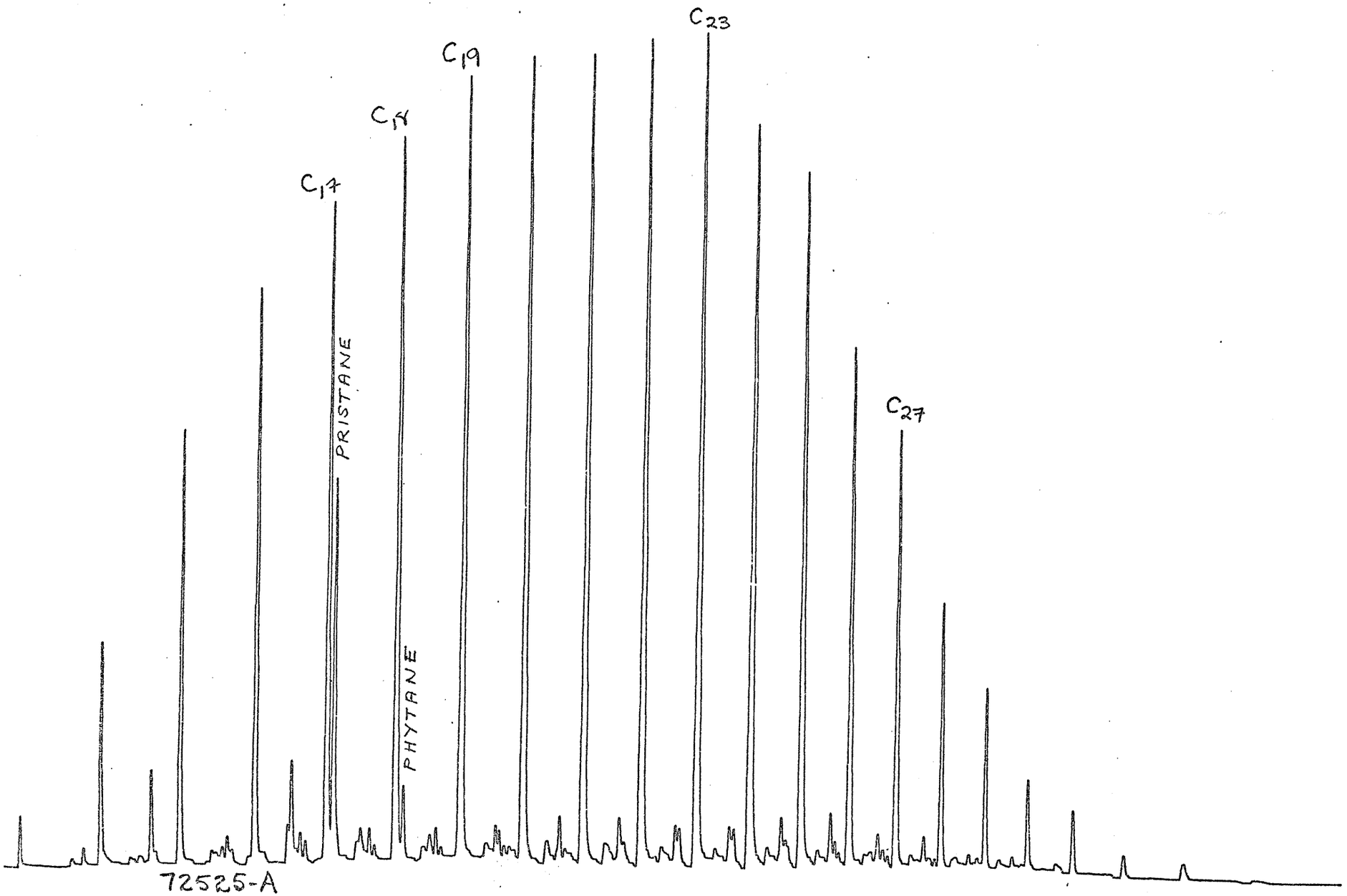


FIGURE 15 : Wirrah-1 oil, DST 15, 2046m(KB), C_{15+} Saturates chromatogram.

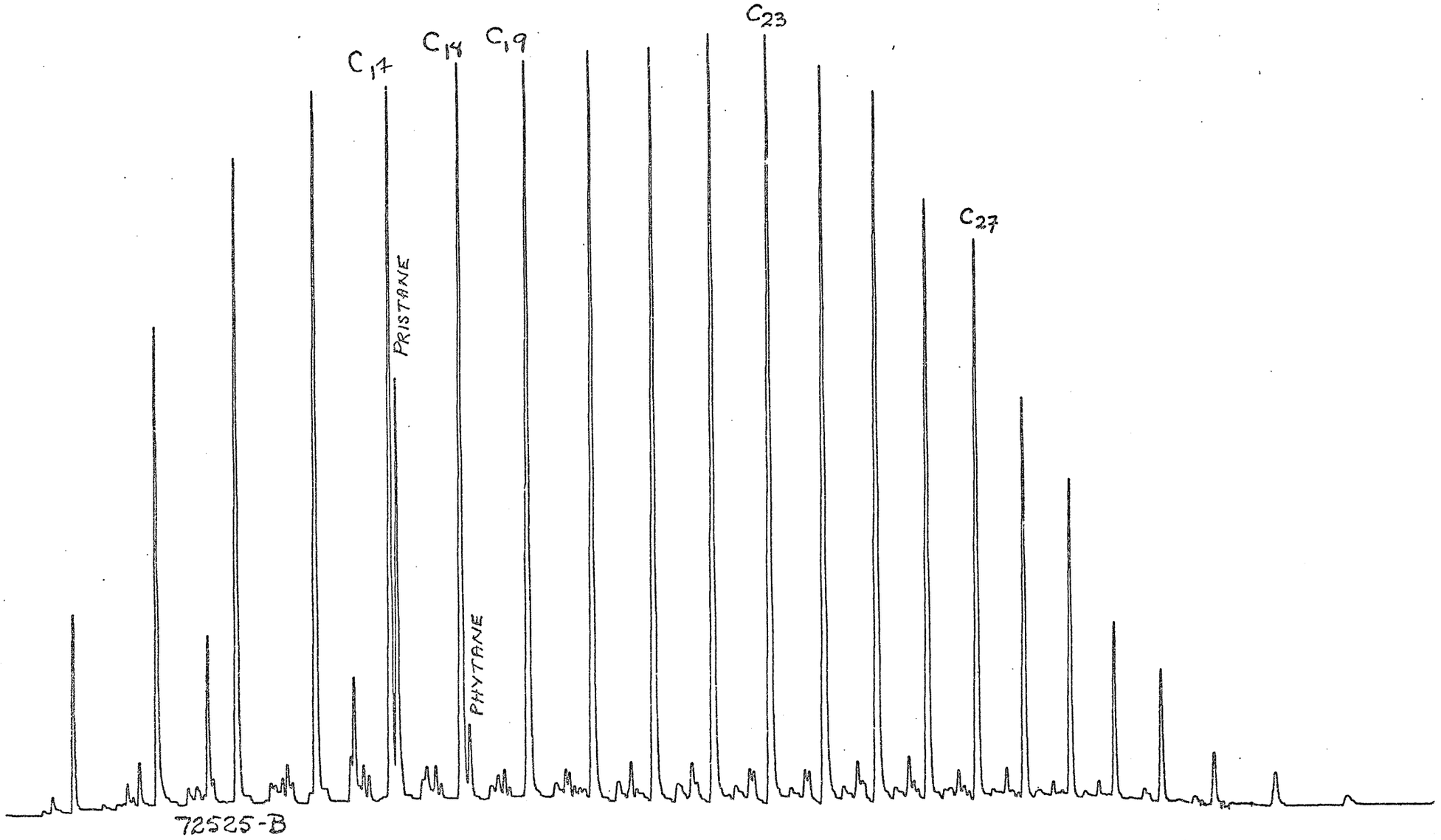


FIGURE 16 : Wirrah-1 oil, RFT 17, 2195.3m(KB), C_{15+} saturates chromatogram.

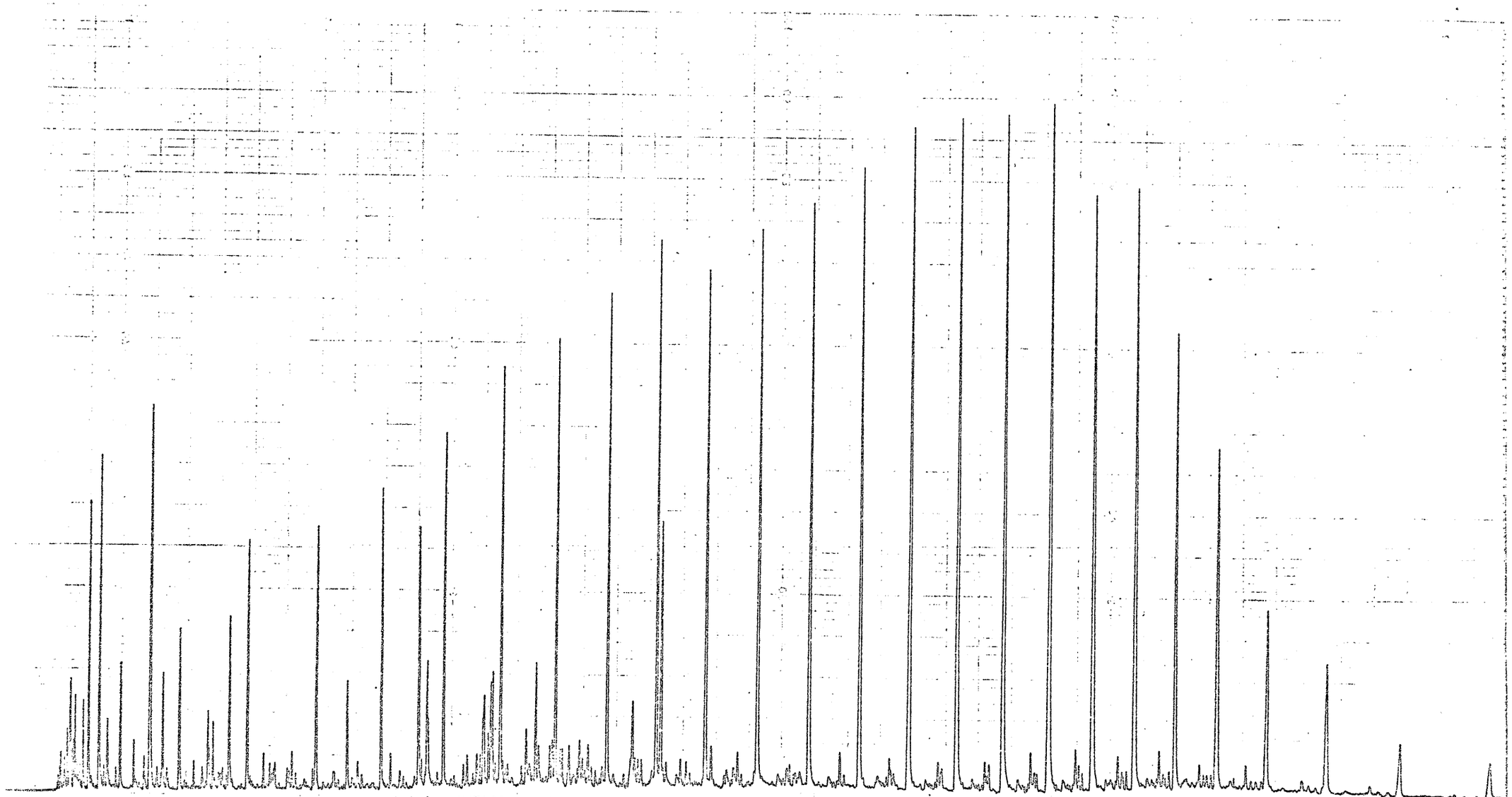


FIGURE 17 : Whole oil gas chromatogram, Wirrah-1 oil, 2624-2633.5m(KB).

APPENDIX-1

C_{4-7} Detailed Data Sheets

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72551B AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1325 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	3.6	1.67
ETHANE	0.0		1T2-DMCP	5.2	2.42
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	9.4	4.41	224-TMP	0.0	0.00
NBUTANE	16.5	7.72	NHEPTANE	18.5	8.68
IPENTANE	40.7	19.06	1C2-DMCP	0.0	0.00
NPENTANE	21.9	10.24	MCH	20.1	9.39
22-DMB	0.5	0.25			
CPENTANE	0.0	0.00			
23-DMB	2.1	1.00			
2-MP	18.6	8.71			
3-MP	7.1	3.34			
NHEXANE	20.5	9.60			
MCP	9.0	4.20			
22-DMP	0.0	0.00			
24-DMP	0.0	0.00			
223-TMB	0.0	0.00			
CHEXANE	2.1	0.96			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	7.5	3.52			
23-DMP ,	2.9	1.35			
3-MHEX ,	7.4	3.49			
1C3-DMCP	0.0	0.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	214.		C1/C2	1.67
GASOLINE	214.		A /D2	5.24
NAPHTHENES	40.	18.63	C1/D2	3.98
C6-7	97.	45.27	CH/MCP	0.23
			PENT/IPENT,	0.54

	PPB	NORM PERCENT
MCP	9.0	28.9
CH	2.1	6.6
MCH	20.1	64.5
TOTAL	31.2	100.0

PARAFFIN INDEX 1	1.713
PARAFFIN INDEX 2	27.536

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72551D AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1355 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	0.0	0.00
ETHANE	0.0		1T2-DMCP	0.0	0.00
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMP	0.0	0.00
NBUTANE	0.0	0.00	NHEPTANE	0.0	0.00
IPENTANE	28.7	32.64	1C2-DMCP	0.0	0.00
NPENTANE	25.9	29.45	MCH	0.0	0.00
22-DMB	0.0	0.00			
CPENTANE	0.0	0.00			
23-DMB	0.2	0.17			
2-MP	9.6	10.88			
3-MP	3.8	4.32			
NHEXANE	12.6	14.34			
MCP	1.1	1.21			
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 ,	6.2	6.99			
23-DMP ,	0.0	0.00			
3-MHEX ,	0.0	0.00			
1C3-DMCP	0.0	0.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	88.		C1/C2	5.79
GASOLINE	88.		A /D2	999.99
NAPHTHENES	1.	1.21	C1/D2	999.99
C6-7	20.	22.54	CH/MCP	0.00
			PENT/IPENT,	0.90

	PPB	NORM PERCENT
MCP	1.1	100.0
CH	0.0	0.0
MCH	0.0	0.0
TOTAL	1.1	100.0

PARAFFIN INDEX 1	0.000
PARAFFIN INDEX 2	0.000

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72551F AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1385 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	0.0	0.00
IPENTANE	62.6	27.21
NPENTANE	34.1	14.83
22-DMB	0.8	0.36
CPENTANE	3.0	1.32
23-DMB	4.2	1.82
2-MP	32.4	14.07
3-MP	11.6	5.05
NHEXANE	23.9	10.40
MCP	15.0	6.54
22-DMP	0.0	0.00
24-DMP	0.0	0.00
223-TMB	0.0	0.00
CHEXANE	0.5	0.20
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	9.5	4.13
23-DMP ,	4.2	1.82
3-MHEX ,	3.0	1.29
1C3-DMCP	5.2	2.25
1T3-DMCP	5.0	2.18
1T2-DMCP	7.1	3.10
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	7.9	3.43
1C2-DMCP	0.0	0.00
MCH	0.0	0.00

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	230.		C1/C2	0.31
GASOLINE	230.		A /D2	10.74
NAPHTHENES	36.	15.59	C1/D2	3.36
C6-7	81.	35.34	CH/MCP	0.03
			PENT/IPENT,	0.54

	PPB	NORM PERCENT
MCP	15.0	97.1
CH	0.5	2.9
MCH	0.0	0.0
TOTAL	15.5	100.0

PARAFFIN INDEX 1	0.719
PARAFFIN INDEX 2	18.652

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72551H AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1415 METERS

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

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

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

PARAFFIN INDEX 1	0.000
PARAFFIN INDEX 2	0.000

11 APR 83

72551J AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1460 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	0.0	0.00
ETHANE	0.0		1T2-DMCP	0.0	0.00
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	0.0	0.00	224-TMP	0.0	0.00
NBUTANE	0.0	0.00	NHEPTANE	15.7	21.46
IPENTANE	4.6	6.25	1C2-DMCP	0.0	0.00
NPENTANE	10.6	14.58	MCH	0.0	0.00
22-DMB	0.0	0.00			
CPENTANE	0.0	0.00			
23-DMB	0.0	0.00			
2-MP	7.8	10.63			
3-MP	4.5	6.15			
NHEXANE	15.1	20.73			
MCP	6.1	8.33			
22-DMP	0.0	0.00			
24-DMP	0.0	0.00			
223-TMB	0.0	0.00			
CHEXANE	4.0	5.52			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	4.6	6.35			
23-DMP ,	0.0	0.00			
3-MHEX ,	0.0	0.00			
1C3-DMCP	0.0	0.00			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	73.		C1/C2	1.42
GASOLINE	73.		A /D2	999.99
NAPHTHENES	10.	13.85	C1/D2	999.99
C6-7	46.	62.40	CH/MCP	0.66
			PENT/IPENT,	2.33

	PPB	NORM PERCENT
MCP	6.1	60.2
CH	4.0	39.8
MCH	0.0	0.0
TOTAL	10.1	100.0

PARAFFIN INDEX 1	0.000
PARAFFIN INDEX 2	64.449

11 APR 83

72551L AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1490 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	0.0	0.00
IPENTANE	23.1	10.84
NPENTANE	41.6	19.50
22-DMB	0.0	0.00
CPENTANE	0.0	0.00
23-DMB	4.5	2.10
2-MP	40.4	18.97
3-MP	19.5	9.16
NHEXANE	75.8	35.54
MCP	8.3	3.89
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
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
ALL COMP	213.	
GASOLINE	213.	
NAPHTHENES	8.	3.89
C6-7	84.	39.43

SIG COMP RATIOS

C1/C2	0.00
A /D2	999.99
C1/D2	999.99
CH/MCP	0.00
PENT/IPENT,	1.80

	PPB	NORM PERCENT
MCP	8.3	100.0
CH	0.0	0.0
MCH	0.0	0.0
TOTAL	8.3	100.0

PARAFFIN INDEX 1	0.000
PARAFFIN INDEX 2	0.000

11 APR 83

72551N AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1550 METERS

	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
ALL COMP	0.	
GASOLINE	0.	
NAPHTHENES	0.	0.00
C6-7	0.	0.00

SIG COMP RATIOS

C1/C2 999.99
A /D2 999.99
C1/D2 999.99
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

11 APR 83

72551P AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1580 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	17179.0	1.17
ETHANE	0.0		1T2-DMCP	33334.4	2.28
PROPANE	2899.4		3-EPENT	0.0	0.00
IBUTANE	3549.2	0.24	224-TMP	0.0	0.00
NBUTANE	28108.6	1.92	NHEPTANE	153602.1	10.49
IPENTANE	28170.2	1.92	1C2-DMCP	0.0	0.00
NPENTANE	45927.6	3.14	MCH	499652.1	34.13
22-DMB	965.2	0.07			
CPENTANE	20752.6	1.42			
23-DMB	0.0	0.00			
2-MP	55719.4	3.81			
3-MP	26108.3	1.78			
NHEXANE	117305.2	8.01			
MCP	129860.4	8.87			
22-DMP	0.0	0.00			
24-DMP	0.0	0.00			
223-TMB	192.3	0.01			
CHEXANE	218389.8	14.92			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	28535.7	1.95			
23-DMP ,	14635.3	1.00			
3-MHEX ,	29041.1	1.98			
1C3-DMCP	12761.9	0.87			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1466688.		C1/C2	3.87
GASOLINE	1463789.		A /D2	9.33
NAPHTHENES	931930.	63.67	C1/D2	25.71
C6-7	1254489.	85.70	CH/MCP	1.68
			PENT/IPENT,	1.63

	PPB	NORM PERCENT
MCP	129860.4	15.3
CH	218389.8	25.8
MCH	499652.1	58.9
TOTAL	847902.1	100.0

PARAFFIN INDEX 1	0.910
PARAFFIN INDEX 2	15.251

11 APR 83

72551R AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1625 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	336.3	
IBUTANE	210.1	4.66
NBUTANE	656.2	14.57
IPENTANE	433.4	9.62
NPENTANE	692.6	15.38
22-DMB	12.2	0.27
CPENTANE	75.8	1.68
23-DMB	45.9	1.02
2-MP	230.6	5.12
3-MP	123.7	2.75
NHEXANE	466.1	10.35
MCP	344.8	7.66
22-DMP	0.0	0.00
24-DMP	5.0	0.11
223-TMB	0.0	0.00
CHEXANE	334.2	7.42
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	61.7	1.37
23-DMP ,	32.0	0.71
3-MHEX ,	55.3	1.23
1C3-DMCP	31.8	0.71
1T3-DMCP	34.0	0.75
1T2-DMCP	56.7	1.26
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	183.0	4.06
1C2-DMCP	0.0	0.00
MCH	418.0	9.28

	TOTALS PPB	NORM PERCENT
ALL COMP	4839.	
GASOLINE	4503.	
NAPHTHENES	1295.	28.76
C6-7	2023.	44.92

SIG COMP RATIOS

C1/C2	1.74
A /D2	11.73
C1/D2	14.71
CH/MCP	0.97
PENT/IPENT,	1.60

	PPB	NORM PERCENT
MCP	344.8	31.4
CH	334.2	30.5
MCH	418.0	38.1
TOTAL	1097.0	100.0

PARAFFIN INDEX 1	0.956
PARAFFIN INDEX 2	15.166

11 APR 83

72551T AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1655 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	8.8	0.82
ETHANE	0.0		1T2-DMCP	17.1	1.58
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	31.4	2.91	224-TMP	0.0	0.00
NBUTANE	94.5	8.75	NHEPTANE	140.8	13.04
IPENTANE	50.8	4.71	1C2-DMCP	0.0	0.00
NPENTANE	97.2	9.00	MCH	215.3	19.94
22-DMB	2.4	0.22			
CPENTANE	5.5	0.51			
23-DMB	7.1	0.65			
2-MP	53.8	4.98			
3-MP	30.2	2.80			
NHEXANE	132.5	12.27			
MCP	46.8	4.33			
22-DMP	0.0	0.00			
24-DMP	4.1	0.38			
223-TMB	0.0	0.00			
CHEXANE	47.8	4.43			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	37.1	3.43			
23-DMP ,	13.7	1.27			
3-MHEX ,	30.8	2.85			
1C3-DMCP	12.2	1.13			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1080.		C1/C2	3.54
GASOLINE	1080.		A /D2	8.88
NAPHTHENES	353.	32.73	C1/D2	9.75
C6-7	707.	65.47	CH/MCP	1.02
			PENT/IPENT,	1.91

	PPB	NORM PERCENT
MCP	46.8	15.1
CH	47.8	15.4
MCH	215.3	69.5
TOTAL	309.9	100.0

PARAFFIN INDEX 1	1.782
PARAFFIN INDEX 2	26.899

11 APR 83

72551V AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1685 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	182599.1	
IBUTANE	30365.5	1.89
NBUTANE	246830.2	15.40
IPENTANE	120372.9	7.51
NPENTANE	156773.7	9.78
22-DMB	1557.5	0.10
CPENTANE	11484.7	0.72
23-DMB	0.0	0.00
2-MP	96813.0	6.04
3-MP	17675.0	1.10
NHEXANE	74565.4	4.65
MCP	70138.0	4.38
22-DMP	0.0	0.00
24-DMP	50253.5	3.13
223-TMB	0.0	0.00
CHEXANE	80377.1	5.01
33-DMP ,	117053.7	7.30
11-DMCP	0.0	0.00
2-MHEX ,	29090.8	1.81
23-DMP ,	0.0	0.00
3-MHEX ,	21909.1	1.37
1C3-DMCP	10061.5	0.63

	TOTAL PPB	NORM PERCENT
1T3-DMCP	21755.8	1.36
1T2-DMCP	3602.1	0.22
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	100913.2	6.30
1C2-DMCP	0.0	0.00
MCH	341471.2	21.30

	TOTALS PPB	NORM PERCENT
ALL COMP	1785661.	
GASOLINE	1603062.	
NAPHTHENES	538890.	33.62
C6-7	921191.	57.46

SIG COMP RATIOS

C1/C2	5.38
A /D2	8.01
C1/D2	25.92
CH/MCP	1.15
PENT/IPENT,	1.30

	PPB	NORM PERCENT
MCP	70138.0	14.3
CH	80377.1	16.3
MCH	341471.2	69.4
TOTAL	491986.3	100.0

PARAFFIN INDEX 1	1.440
PARAFFIN INDEX 2	13.895

11 APR 83

72551X AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1715 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	1650.3	0.99
ETHANE	0.0		1T2-DMCP	3302.5	1.97
PROPANE	2234.6		3-EPENT	0.0	0.00
IBUTANE	2634.6	1.57	224-TMP	0.0	0.00
NBUTANE	11774.8	7.03	NHEPTANE	14005.4	8.37
IPENTANE	11418.7	6.82	1C2-DMCP	304.7	0.18
NPENTANE	16324.5	9.75	MCH	31686.4	18.93
22-DMB	410.5	0.25			
CPENTANE	1794.7	1.07			
23-DMB	0.0	0.00			
2-MP	11226.7	6.71			
3-MP	4674.6	2.79			
NHEXANE	16996.6	10.15			
MCP	11772.5	7.03			
22-DMP	0.0	0.00			
24-DMP	200.7	0.12			
223-TMB	81.9	0.05			
CHEXANE	16691.1	9.97			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	3494.3	2.09			
23-DMP ,	1906.5	1.14			
3-MHEX ,	3414.9	2.04			
1C3-DMCP	1611.3	0.96			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	169612.		C1/C2	2.78
GASOLINE	167378.		A /D2	9.08
NAPHTHENES	68813.	41.11	C1/D2	15.19
C6-7	107119.	64.00	CH/MCP	1.42
			PENT/IPENT,	1.43

	PPB	NORM PERCENT
MCP	11772.5	19.6
CH	16691.1	27.7
MCH	31686.4	52.7
TOTAL	60150.0	100.0

PARAFFIN INDEX 1	1.053
PARAFFIN INDEX 2	18.010

11 APR . 83

72552B AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1775 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	1460.6	
IBUTANE	1813.4	1.76
NBUTANE	7006.8	6.80
IPENTANE	6607.9	6.42
NPENTANE	8882.8	8.63
22-DMB	261.7	0.25
CPENTANE	665.2	0.65
23-DMB	0.0	0.00
2-MP	7504.2	7.29
3-MP	3147.3	3.06
NHEXANE	11279.2	10.95
MCP	5476.3	5.32
22-DMP	0.0	0.00
24-DMP	318.2	0.31
223-TMB	72.5	0.07
CHEXANE	7044.9	6.84
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	2955.9	2.87
23-DMP ,	1504.8	1.46
3-MHEX ,	2899.2	2.82
1C3-DMCP	1000.5	0.97
1T3-DMCP	1149.7	1.12
1T2-DMCP	2272.7	2.21
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	10692.2	10.38
1C2-DMCP	217.7	0.21
MCH	20213.8	19.63

	TOTALS PPB	NORM PERCENT
ALL COMP	104447.	
GASOLINE	102987.	
NAPHTHENES	38041.	36.94
C6-7	67098.	65.15

SIG COMP RATIOS

C1/C2	2.99
A /D2	7.58
C1/D2	10.42
CH/MCP	1.29
PENT/IPENT,	1.34

	PPB	NORM PERCENT
MCP	5476.3	16.7
CH	7044.9	21.5
MCH	20213.8	61.7
TOTAL	32735.0	100.0

PARAFFIN INDEX 1	1.324
PARAFFIN INDEX 2	21.499

11 APR 83

72552D AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1805 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	55.7	1.56
ETHANE	0.0		1T2-DMCP	54.9	1.54
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	59.2	1.66	224-TMP	0.0	0.00
NBUTANE	155.6	4.37	NHEPTANE	392.8	11.03
IPENTANE	194.0	5.44	1C2-DMCP	6.5	0.18
NPENTANE	318.2	8.93	MCH	823.0	23.10
22-DMB	7.1	0.20			
CPENTANE	26.8	0.75			
23-DMB	25.8	0.72			
2-MP	180.7	5.07			
3-MP	97.5	2.74			
NHEXANE	395.2	11.09			
MCP	242.7	6.81			
22-DMP	0.0	0.00			
24-DMP	8.4	0.24			
223-TMB	0.0	0.00			
CHEXANE	252.0	7.07			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	99.5	2.79			
23-DMP ,	38.4	1.08			
3-MHEX ,	86.9	2.44			
1C3-DMCP	42.1	1.18			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3563.		C1/C2	2.92
GASOLINE	3563.		A /D2	9.06
NAPHTHENES	1504.	42.20	C1/D2	13.51
C6-7	2498.	70.12	CH/MCP	1.04
			PENT/IPENT,	1.64

	PPB	NORM PERCENT
MCP	242.7	18.4
CH	252.0	19.1
MCH	823.0	62.5
TOTAL	1317.7	100.0

PARAFFIN INDEX 1	1.221
PARAFFIN INDEX 2	21.288

11 APR 83

72552H AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1865 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	0.0	
IBUTANE	0.0	0.00
NBUTANE	0.0	0.00
IPENTANE	354.7	18.16
NPENTANE	424.8	21.75
22-DMB	7.4	0.38
CPENTANE	35.3	1.81
23-DMB	28.8	1.47
2-MP	151.5	7.76
3-MP	81.9	4.19
NHEXANE	228.0	11.67
MCP	138.8	7.10
22-DMP	0.0	0.00
24-DMP	4.6	0.23
223-TMB	0.0	0.00
CHEXANE	121.3	6.21
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	30.3	1.55
23-DMP ,	21.4	1.09
3-MHEX ,	29.9	1.53
1C3-DMCP	13.3	0.68
1T3-DMCP	11.4	0.58
1T2-DMCP	17.9	0.92
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	99.2	5.08
1C2-DMCP	0.0	0.00
MCH	152.8	7.82

	TOTALS PPB	NORM PERCENT
ALL COMP	1953.	
GASOLINE	1953.	
NAPHTHENES	491.	25.12
C6-7	869.	44.48

SIG COMP RATIOS

C1/C2	1.68
A /D2	10.93
C1/D2	10.16
CH/MCP	0.87
PENT/IPENT,	1.20

	PPB	NORM PERCENT
MCP	138.8	33.6
CH	121.3	29.4
MCH	152.8	37.0
TOTAL	412.9	100.0

PARAFFIN INDEX 1	1.414
PARAFFIN INDEX 2	19.934

11 APR 83

72552J AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1895 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	1125.7	0.63
ETHANE	0.0		1T2-DMCP	1705.7	0.96
PROPANE	20970.8		3-EPENT	0.0	0.00
IBUTANE	12778.6	7.19	224-TMP	0.0	0.00
NBUTANE	44340.2	24.94	NHEPTANE	5052.5	2.84
IPENTANE	20395.7	11.47	1C2-DMCP	176.3	0.10
NPENTANE	23432.0	13.18	MCH	12818.8	7.21
22-DMB	328.3	0.18			
CPENTANE	3622.2	2.04			
23-DMB	1679.6	0.94			
2-MP	8299.5	4.67			
3-MP	3912.8	2.20			
NHEXANE	10377.9	5.84			
MCP	10022.9	5.64			
22-DMP	0.0	0.00			
24-DMP	240.8	0.14			
223-TMB	37.1	0.02			
CHEXANE	12072.1	6.79			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	1195.6	0.67			
23-DMP ,	1450.4	0.82			
3-MHEX ,	1449.2	0.81			
1C3-DMCP	1302.6	0.73			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	198787.		C1/C2	1.82
GASOLINE	177816.		A /D2	10.65
NAPHTHENES	42846.	24.10	C1/D2	18.00
C6-7	59028.	33.20	CH/MCP	1.20
			PENT/IPENT,	1.15

	PPB	NORM PERCENT
MCP	10022.9	28.7
CH	12072.1	34.6
MCH	12818.8	36.7
TOTAL	34913.8	100.0

PARAFFIN INDEX 1	0.640
PARAFFIN INDEX 2	13.236

11 APR 83

72552L AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1925 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	2498.0	
IBUTANE	1307.7	2.62
NBUTANE	5698.1	11.42
IPENTANE	2839.3	5.69
NPENTANE	4383.0	8.78
22-DMB	78.3	0.16
CPENTANE	638.2	1.28
23-DMB	341.8	0.68
2-MP	1989.7	3.99
3-MP	1092.6	2.19
NHEXANE	4065.4	8.15
MCP	3586.7	7.19
22-DMP	0.0	0.00
24-DMP	60.9	0.12
223-TMB	16.1	0.03
CHEXANE	5003.0	10.02
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	822.5	1.65
23-DMP ,	503.7	1.01
3-MHEX ,	849.1	1.70
1C3-DMCP	492.9	0.99
1T3-DMCP	475.7	0.95
1T2-DMCP	960.9	1.93
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	3506.9	7.03
1C2-DMCP	109.7	0.22
MCH	11088.9	22.22

	TOTALS PPB	NORM PERCENT
ALL COMP	52409.	
GASOLINE	49911.	
NAPHTHENES	22356.	44.79
C6-7	31542.	63.20

SIG COMP RATIOS	
C1/C2	3.01
A /D2	8.92
C1/D2	19.92
CH/MCP	1.39
PENT/IPENT,	1.54

	PPB	NORM PERCENT
MCP	3586.7	18.2
CH	5003.0	25.4
MCH	11088.9	56.3
TOTAL	19678.6	100.0

PARAFFIN INDEX 1	0.866
PARAFFIN INDEX 2	14.795

11 APR 83

72552N AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1955 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	287.7	1.15
ETHANE	0.0		1T2-DMCP	567.9	2.27
PROPANE	180.7		3-EPENT	0.0	0.00
IBUTANE	1210.6	4.84	224-TMP	0.0	0.00
NBUTANE	969.8	3.88	NHEPTANE	2195.9	8.78
IPENTANE	899.8	3.60	1C2-DMCP	60.8	0.24
NPENTANE	1564.4	6.26	MCH	6157.8	24.63
22-DMB	34.5	0.14			
CPENTANE	301.0	1.20			
23-DMB	179.8	0.72			
2-MP	1045.5	4.18			
3-MP	593.8	2.38			
NHEXANE	2261.6	9.05			
MCP	2082.3	8.33			
22-DMP	0.0	0.00			
24-DMP	33.9	0.14			
223-TMB	9.3	0.04			
CHEXANE	2889.9	11.56			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	509.4	2.04			
23-DMP ,	305.2	1.22			
3-MHEX ,	527.4	2.11			
1C3-DMCP	312.7	1.25			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	25182.		C1/C2	2.89
GASOLINE	25001.		A /D2	8.45
NAPHTHENES	12660.	50.64	C1/D2	18.12
C6-7	18202.	72.80	CH/MCP	1.39
			PENT/IPENT,	1.74

	PPB	NORM PERCENT
MCP	2082.3	18.7
CH	2889.9	26.0
MCH	6157.8	55.3
TOTAL	11130.0	100.0

PARAFFIN INDEX 1	0.888
PARAFFIN INDEX 2	15.965

11 APR 83

72552P AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 1985 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	11.2	
IBUTANE	3.0	0.11
NBUTANE	15.0	0.55
IPENTANE	29.9	1.09
NPENTANE	89.1	3.25
22-DMB	3.0	0.11
CPENTANE	26.4	0.96
23-DMB	15.7	0.57
2-MP	104.8	3.82
3-MP	69.8	2.54
NHEXANE	261.9	9.55
MCP	270.7	9.87
22-DMP	0.0	0.00
24-DMP	4.2	0.15
223-TMB	0.0	0.00
CHEXANE	315.4	11.50
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	81.3	2.96
23-DMP ,	40.7	1.48
3-MHEX ,	74.9	2.73
1C3-DMCP	48.8	1.78
1T3-DMCP	68.9	2.51
1T2-DMCP	69.5	2.53
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	312.4	11.38
1C2-DMCP	8.5	0.31
MCH	829.9	30.25

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2755.		C1/C2	2.63
GASOLINE	2744.		A /D2	7.67
NAPHTHENES	1638.	59.71	C1/D2	16.39
C6-7	2387.	87.00	CH/MCP	1.17
			PENT/IPENT,	2.97

	PPB	NORM PERCENT
MCP	270.7	19.1
CH	315.4	22.3
MCH	829.9	58.6
TOTAL	1416.0	100.0

PARAFFIN INDEX 1	0.834
PARAFFIN INDEX 2	16.961

11 APR 83

72552R AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2015 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	59.5	1.39
ETHANE	0.0		1T2-DMCP	56.8	1.33
PROPANE	0.0		3-EPENT	0.0	0.00
IBUTANE	130.0	3.04	224-TMP	0.0	0.00
NBUTANE	633.3	14.82	NHEPTANE	255.7	5.98
IPENTANE	422.6	9.89	1C2-DMCP	0.0	0.00
NPENTANE	568.6	13.31	MCH	319.9	7.49
22-DMB	11.0	0.26			
CPENTANE	50.4	1.18			
23-DMB	42.5	0.99			
2-MP	280.0	6.55			
3-MP	155.5	3.64			
NHEXANE	474.9	11.11			
MCP	319.9	7.49			
22-DMP	0.0	0.00			
24-DMP	9.6	0.22			
223-TMB	0.0	0.00			
CHEXANE	220.4	5.16			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	100.2	2.35			
23-DMP ,	39.4	0.92			
3-MHEX ,	80.9	1.89			
1C3-DMCP	41.8	0.98			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS		
ALL COMP	4273.		C1/C2	1.34	
GASOLINE	4273.		A /D2	9.04	
NAPHTHENES	1069.	25.01	C1/D2	7.92	
C6-7	1979.	46.32	CH/MCP	0.69	
			PENT/IPENT,		1.35

	PPB	NORM PERCENT
MCP	319.9	37.2
CH	220.4	25.6
MCH	319.9	37.2
TOTAL	860.2	100.0

PARAFFIN INDEX 1	1.145
PARAFFIN INDEX 2	21.770

11 APR 83

72552T AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2045 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	238.3	1.18
ETHANE	0.0		1T2-DMCP	469.4	2.32
PROPANE	249.5		3-EPENT	0.0	0.00
IBUTANE	1102.9	5.45	224-TMP	0.0	0.00
NBUTANE	850.5	4.20	NHEPTANE	3165.4	15.64
IPENTANE	782.5	3.87	1C2-DMCP	53.0	0.26
NPENTANE	1137.0	5.62	MCH	4843.3	23.93
22-DMB	27.2	0.13			
CPENTANE	142.5	0.70			
23-DMB	117.5	0.58			
2-MP	794.0	3.92			
3-MP	413.4	2.04			
NHEXANE	1527.4	7.55			
MCP	1112.0	5.49			
22-DMP	0.0	0.00			
24-DMP	65.0	0.32			
223-TMB	9.4	0.05			
CHEXANE	1456.1	7.19			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	726.5	3.59			
23-DMP ,	314.9	1.56			
3-MHEX ,	706.8	3.49			
1C3-DMCP	185.9	0.92			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	20490.		C1/C2	3.41
GASOLINE	20241.		A /D2	6.64
NAPHTHENES	8500.	42.00	C1/D2	9.94
C6-7	14873.	73.48	CH/MCP	1.31
			PENT/IPENT,	1.45

	PPB	NORM PERCENT
MCP	1112.0	15.0
CH	1456.1	19.6
MCH	4843.3	65.3
TOTAL	7411.4	100.0

PARAFFIN INDEX 1	1.604
PARAFFIN INDEX 2	26.146

11 APR 83

72552V AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2090 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	327.8	0.91
ETHANE	0.0		1T2-DMCP	615.1	1.71
PROPANE	1537.6		3-EPENT	0.0	0.00
IBUTANE	1215.9	3.38	224-TMP	0.0	0.00
NBUTANE	3614.9	10.05	NHEPTANE	2389.6	6.64
IPENTANE	2361.0	6.56	1C2-DMCP	72.2	0.20
NPENTANE	3338.5	9.28	MCH	7715.4	21.44
22-DMB	71.9	0.20			
CPENTANE	408.7	1.14			
23-DMB	275.3	0.76			
2-MP	1680.4	4.67			
3-MP	889.4	2.47			
NHEXANE	3152.5	8.76			
MCP	2345.1	6.52			
22-DMP	0.0	0.00			
24-DMP	54.2	0.15			
223-TMB	12.0	0.03			
CHEXANE	3479.3	9.67			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	620.2	1.72			
23-DMP ,	386.1	1.07			
3-MHEX ,	631.9	1.76			
1C3-DMCP	328.2	0.91			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	37523.		C1/C2	3.20
GASOLINE	35985.		A /D2	8.77
NAPHTHENES	15292.	42.49	C1/D2	18.70
C6-7	22129.	61.50	CH/MCP	1.48
			PENT/IPENT,	1.41

	PPB	NORM PERCENT
MCP	2345.1	17.3
CH	3479.3	25.7
MCH	7715.4	57.0
TOTAL	13539.8	100.0

PARAFFIN INDEX 1	0.985
PARAFFIN INDEX 2	14.488

11 APR 83

72552X AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2120 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	16.7	
IBUTANE	65.5	5.49
NBUTANE	31.1	2.60
IPENTANE	172.8	14.47
NPENTANE	97.4	8.16
22-DMB	2.1	0.18
CPENTANE	6.5	0.55
23-DMB	9.4	0.79
2-MP	58.3	4.88
3-MP	33.6	2.81
NHEXANE	117.0	9.80
MCP	57.9	4.85
22-DMP	0.0	0.00
24-DMP	3.4	0.29
223-TMB	0.0	0.00
CHEXANE	76.6	6.42
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	28.3	2.37
23-DMP ,	13.9	1.16
3-MHEX ,	31.7	2.65
1C3-DMCP	10.3	0.87
1T3-DMCP	7.8	0.66
1T2-DMCP	16.0	1.34
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	101.5	8.50
1C2-DMCP	0.0	0.00
MCH	252.8	21.17

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1211.		C1/C2	3.89
GASOLINE	1194.		A /D2	6.89
NAPHTHENES	428.	35.84	C1/D2	11.29
C6-7	717.	60.07	CH/MCP	1.32
			PENT/IPENT,	0.56

	PPB	NORM PERCENT
MCP	57.9	15.0
CH	76.6	19.8
MCH	252.8	65.3
TOTAL	387.3	100.0

PARAFFIN INDEX 1	1.757
PARAFFIN INDEX 2	18.840

11 APR 83

72552Z AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2150 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	63.6	
IBUTANE	60.5	1.59
NBUTANE	164.7	4.32
IPENTANE	211.2	5.55
NPENTANE	311.7	8.18
22-DMB	7.6	0.20
CPENTANE	30.6	0.80
23-DMB	33.8	0.89
2-MP	204.4	5.37
3-MP	114.2	3.00
NHEXANE	350.2	9.20
MCP	272.0	7.14
22-DMP	0.0	0.00
24-DMP	9.1	0.24
223-TMB	0.0	0.00
CHEXANE	304.0	7.98
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	118.9	3.12
23-DMP ,	46.6	1.22
3-MHEX ,	105.6	2.77
1C3-DMCP	48.7	1.28
1T3-DMCP	70.4	1.85
1T2-DMCP	63.7	1.67
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	353.4	9.28
1C2-DMCP	6.6	0.17
MCH	920.6	24.17

	TOTALS PPB	NORM PERCENT
ALL COMP	3872.	
GASOLINE	3809.	
NAPHTHENES	1717.	45.07
C6-7	2670.	70.10

SIG COMP RATIOS

C1/C2	2.91
A /D2	6.66
C1/D2	12.72
CH/MCP	1.12
PENT/IPENT,	1.48

	PPB	NORM PERCENT
MCP	272.0	18.2
CH	304.0	20.3
MCH	920.6	61.5
TOTAL	1496.6	100.0

PARAFFIN INDEX 1	1.229
PARAFFIN INDEX 2	17.392

11 APR 83

72553B AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2180 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	37.5	
IBUTANE	100.7	3.51
NBUTANE	75.5	2.63
IPENTANE	248.3	8.64
NPENTANE	210.5	7.33
22-DMB	6.0	0.21
CPENTANE	21.1	0.73
23-DMB	24.5	0.85
2-MP	141.4	4.92
3-MP	81.0	2.82
NHEXANE	259.1	9.02
MCP	201.6	7.02
22-DMP	0.0	0.00
24-DMP	8.7	0.30
223-TMB	0.0	0.00
CHEXANE	220.5	7.68
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	88.4	3.08
23-DMP ,	39.2	1.37
3-MHEX ,	79.2	2.76
1C3-DMCP	33.1	1.15
1T3-DMCP	53.2	1.85
1T2-DMCP	51.4	1.79
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	272.2	9.48
1C2-DMCP	4.2	0.15
MCH	652.8	22.73

	TOTALS PPB	NORM PERCENT
ALL COMP	2910.	
GASOLINE	2872.	
NAPHTHENES	1238.	43.09
C6-7	1964.	68.36

SIG COMP RATIOS

C1/C2	2.80
A /D2	6.71
C1/D2	12.14
CH/MCP	1.09
PENT/IPENT,	0.85

	PPB	NORM PERCENT
MCP	201.6	18.8
CH	220.5	20.5
MCH	652.8	60.7
TOTAL	1074.9	100.0

PARAFFIN INDEX 1	1.218
PARAFFIN INDEX 2	18.271

11 APR 83

725530 AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2210 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	8.6	0.76
ETHANE	0.0		1T2-DMCP	19.8	1.76
PROPANE	19.0		3-EPENT	0.0	0.00
IBUTANE	9.6	0.85	224-TMP	0.0	0.00
NBUTANE	45.4	4.03	NHEPTANE	160.1	14.20
IPENTANE	31.7	2.81	1C2-DMCP	0.0	0.00
NPENTANE	123.1	10.93	MCH	292.6	25.97
22-DMB	0.6	0.05			
CPENTANE	5.0	0.45			
23-DMB	4.6	0.40			
2-MP	45.1	4.00			
3-MP	24.9	2.21			
NHEXANE	137.3	12.18			
MCP	48.9	4.34			
22-DMP	0.0	0.00			
24-DMP	2.4	0.21			
223-TMB	0.0	0.00			
CHEXANE	53.0	4.71			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	48.3	4.28			
23-DMP ,	13.5	1.19			
3-MHEX ,	39.2	3.48			
1C3-DMCP	13.1	1.17			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1146.		C1/C2	4.35
GASOLINE	1127.		A /D2	7.58
NAPHTHENES	441.	39.15	C1/D2	10.04
C6-7	837.	74.26	CH/MCP	1.08
			PENT/IPENT,	3.88

	PPB	NORM PERCENT
MCP	48.9	12.4
CH	53.0	13.4
MCH	292.6	74.2
TOTAL	394.5	100.0

PARAFFIN INDEX 1	2.104
PARAFFIN INDEX 2	24.694

11 APR 83

72553F AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2240 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	61.4	2.29
ETHANE	0.0		1T2-DMCP	57.5	2.15
PROPANE	8.4		3-EPENT	0.0	0.00
IBUTANE	6.5	0.24	224-TMP	0.0	0.00
NBUTANE	29.7	1.11	NHEPTANE	295.3	11.03
IPENTANE	47.3	1.77	1C2-DMCP	5.7	0.21
NPENTANE	167.4	6.26	MCH	826.1	30.87
22-DMB	2.7	0.10			
CPENTANE	16.6	0.62			
23-DMB	17.6	0.66			
2-MP	113.9	4.26			
3-MP	68.2	2.55			
NHEXANE	261.7	9.78			
MCP	196.6	7.35			
22-DMP	0.0	0.00			
24-DMP	7.3	0.27			
223-TMB	0.0	0.00			
CHEXANE	243.0	9.08			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	88.9	3.32			
23-DMP ,	38.6	1.44			
3-MHEX ,	82.2	3.07			
1C3-DMCP	41.5	1.55			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	2684.		C1/C2	3.19
GASOLINE	2676.		A /D2	6.78
NAPHTHENES	1448.	54.13	C1/D2	14.10
C6-7	2206.	82.43	CH/MCP	1.24
			PENT/IPENT,	3.54

	PPB	NORM PERCENT
MCP	196.6	15.5
CH	243.0	19.2
MCH	826.1	65.3
TOTAL	1265.7	100.0

PARAFFIN INDEX 1	1.067
PARAFFIN INDEX 2	17.024

11 APR 83

72553J AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2300 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	73.6	
IBUTANE	89.8	0.48
NBUTANE	362.9	1.95
IPENTANE	640.1	3.44
NPENTANE	1281.8	6.89
22-DMB	29.3	0.16
CPENTANE	133.0	0.71
23-DMB	135.9	0.73
2-MP	914.7	4.92
3-MP	518.0	2.78
NHEXANE	1854.3	9.96
MCP	1248.0	6.71
22-DMP	0.0	0.00
24-DMP	40.7	0.22
223-TMB	10.9	0.06
CHEXANE	1846.6	9.92
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	468.6	2.52
23-DMP ,	297.1	1.60
3-MHEX ,	493.0	2.65
1C3-DMCP	258.8	1.39
1T3-DMCP	258.5	1.39
1T2-DMCP	480.4	2.58
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	1617.2	8.69
1C2-DMCP	41.0	0.22
MCH	5588.0	30.03

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS		
ALL COMP	18682.		C1/C2	3.46	
GASOLINE	18609.		A /D2	7.04	
NAPHTHENES	9854.	52.96	C1/D2	16.03	
C6-7	14503.	77.94	CH/MCP	1.48	
			PENT/IPENT,		2.00

	PPB	NORM PERCENT
MCP	1248.0	14.4
CH	1846.6	21.3
MCH	5588.0	64.4
TOTAL	8682.6	100.0

PARAFFIN INDEX 1	0.964
PARAFFIN INDEX 2	14.301

11 APR 83

72553L AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2321 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	8.5	0.95
ETHANE	0.0		1T2-DMCP	12.0	1.33
PROPANE	25.4		3-EPENT	0.0	0.00
IBUTANE	15.5	1.72	224-TMP	0.0	0.00
NBUTANE	5.6	0.63	NHEPTANE	74.9	8.33
IPENTANE	60.7	6.75	1C2-DMCP	0.0	0.00
NPENTANE	119.3	13.26	MCH	178.1	19.80
22-DMB	0.0	0.00			
CPENTANE	10.6	1.17			
23-DMB	7.9	0.88			
2-MP	55.0	6.11			
3-MP	31.5	3.51			
NHEXANE	105.9	11.77			
MCP	61.3	6.82			
22-DMP	0.0	0.00			
24-DMP	2.7	0.30			
223-TMB	0.0	0.00			
CHEXANE	65.9	7.32			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	37.5	4.16			
23-DMP ,	10.6	1.18			
3-MHEX ,	24.5	2.72			
1C3-DMCP	11.6	1.29			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	925.		C1/C2	3.01
GASOLINE	900.		A /D2	7.39
NAPHTHENES	348.	38.68	C1/D2	11.50
C6-7	594.	65.97	CH/MCP	1.07
			PENT/IPENT,	1.96

	PPB	NORM PERCENT
MCP	61.3	20.1
CH	65.9	21.6
MCH	178.1	58.3
TOTAL	305.3	100.0

PARAFFIN INDEX 1	1.927
PARAFFIN INDEX 2	17.688

11 APR 83

72553N AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2365 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	109.1	
PROPANE	144.8	
IBUTANE	81.0	2.19
NBUTANE	521.0	14.07
IPENTANE	203.9	5.51
NPENTANE	338.5	9.14
22-DMB	4.4	0.12
CPENTANE	34.4	0.93
23-DMB	26.4	0.71
2-MP	155.4	4.20
3-MP	89.3	2.41
NHEXANE	329.6	8.90
MCP	230.4	6.22
22-DMP	0.0	0.00
24-DMP	8.4	0.23
223-TMB	0.0	0.00
CHEXANE	246.6	6.66
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	118.1	3.19
23-DMP ,	33.3	0.90
3-MHEX ,	95.0	2.57
1C3-DMCP	33.7	0.91
1T3-DMCP	42.0	1.13
1T2-DMCP	44.1	1.19
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	461.6	12.46
1C2-DMCP	4.5	0.12
MCH	601.8	16.25

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	3957.		C1/C2	2.73
GASOLINE	3703.		A /D2	8.33
NAPHTHENES	1237.	33.42	C1/D2	10.17
C6-7	2249.	60.73	CH/MCP	1.07
			PENT/IPENT,	1.66

	PPB	NORM PERCENT
MCP	230.4	21.4
CH	246.6	22.9
MCH	601.8	55.8
TOTAL	1078.8	100.0

PARAFFIN INDEX 1	1.778
PARAFFIN INDEX 2	27.539

11 APR 83

72553P AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2395 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	22780.4	
IBUTANE	11558.5	2.46
NBUTANE	32751.7	6.98
IPENTANE	46382.5	9.88
NPENTANE	52352.9	11.15
22-DMB	1216.0	0.26
CPENTANE	7896.2	1.68
23-DMB	5016.2	1.07
2-MP	33413.2	7.12
3-MP	14303.0	3.05
NHEXANE	38323.6	8.16
MCP	42049.3	8.96
22-DMP	0.0	0.00
24-DMP	0.0	0.00
223-TMB	415.9	0.09
CHEXANE	49694.7	10.58
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	5842.3	1.24
23-DMP ,	5707.6	1.22
3-MHEX ,	6343.6	1.35
1C3-DMCP	4724.0	1.01
1T3-DMCP	4654.2	0.99
1T2-DMCP	9083.2	1.93
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	22128.9	4.71
1C2-DMCP	1130.1	0.24
MCH	74555.5	15.88

	TOTALS PPB	NORM PERCENT
ALL COMP	492323.	
GASOLINE	469543.	
NAPHTHENES	193787.	41.27
C6-7	264653.	56.36

SIG COMP RATIOS

C1/C2	2.11
A /D2	9.53
C1/D2	20.51
CH/MCP	1.18
PENT/IPENT,	1.13

	PPB	NORM PERCENT
MCP	42049.3	25.3
CH	49694.7	29.9
MCH	74555.5	44.8
TOTAL	166299.5	100.0

PARAFFIN INDEX 1	0.660
PARAFFIN INDEX 2	12.110

11 APR 93

72553R AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2425 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	244.3	1.15
ETHANE	0.0		1T2-DMCP	472.3	2.23
PROPANE	153.4		3-EPENT	0.0	0.00
IBUTANE	189.5	0.89	224-TMP	0.0	0.00
NBUTANE	1750.7	8.26	NHEPTANE	1857.1	8.76
IPENTANE	1192.4	5.62	1C2-DMCP	36.2	0.17
NPENTANE	2139.6	10.09	MCH	3041.7	14.34
22-DMB	47.9	0.23			
CPENTANE	325.7	1.54			
23-DMB	207.9	0.98			
2-MP	1184.0	5.58			
3-MP	673.8	3.18			
NHEXANE	2064.2	9.73			
MCP	1734.9	8.18			
22-DMP	0.0	0.00			
24-DMP	66.2	0.31			
223-TMB	29.7	0.14			
CHEXANE	2087.7	9.85			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	600.6	2.83			
23-DMP ,	410.3	1.93			
3-MHEX ,	640.5	3.02			
1C3-DMCP	208.3	0.98			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	21359.		C1/C2	2.13
GASOLINE	21206.		A /D2	6.12
NAPHTHENES	8151.	38.44	C1/D2	8.95
C6-7	13494.	63.63	CH/MCP	1.20
			PENT/IPENT,	1.79

	PPB	NORM PERCENT
MCP	1734.9	25.3
CH	2087.7	30.4
MCH	3041.7	44.3
TOTAL	6864.3	100.0

PARAFFIN INDEX 1	1.342
PARAFFIN INDEX 2	19.420

11 APR 83

72553T AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2455 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	95.6	
IBUTANE	66.3	1.29
NBUTANE	766.2	14.95
IPENTANE	294.8	5.75
NPENTANE	471.5	9.20
22-DMB	7.7	0.15
CPENTANE	56.5	1.10
23-DMB	37.8	0.74
2-MP	244.6	4.77
3-MP	139.5	2.72
NHEXANE	472.4	9.22
MCP	341.2	6.66
22-DMP	0.0	0.00
24-DMP	9.7	0.19
223-TMB	3.0	0.06
CHEXANE	385.2	7.52
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	120.2	2.35
23-DMP ,	61.0	1.19
3-MHEX ,	124.8	2.43
1C3-DMCP	49.1	0.96
1T3-DMCP	79.3	1.55
1T2-DMCP	65.2	1.27
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	375.6	7.33
1C2-DMCP	8.8	0.17
MCH	944.8	18.44

	TOTALS PPB	NORM PERCENT
ALL COMP	5221.	
GASOLINE	5125.	
NAPHTHENES	1930.	37.66
C6-7	3040.	59.32

SIG COMP RATIOS	
C1/C2	2.67
A /D2	6.80
C1/D2	11.62
CH/MCP	1.13
PENT/IPENT,	1.60

	PPB	NORM PERCENT
MCP	341.2	20.4
CH	385.2	23.0
MCH	944.8	56.5
TOTAL	1671.2	100.0

PARAFFIN INDEX 1	1.266
PARAFFIN INDEX 2	17.033

11 APR 83

72553N AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2485 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	305.4	
IBUTANE	166.7	2.07
NBUTANE	1371.9	17.06
IPENTANE	501.2	6.23
NPENTANE	783.8	9.75
22-DMB	15.5	0.19
CPENTANE	95.2	1.18
23-DMB	67.0	0.83
2-MP	375.7	4.67
3-MP	214.6	2.67
NHEXANE	612.3	7.62
MCP	525.4	6.53
22-DMP	0.0	0.00
24-DMP	17.8	0.22
223-TMB	6.4	0.08
CHEXANE	577.2	7.18
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	204.0	2.54
23-DMP ,	102.8	1.28
3-MHEX ,	212.0	2.64
1C3-DMCP	73.0	0.91
1T3-DMCP	122.3	1.52
1T2-DMCP	98.7	1.23
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	533.6	6.64
1C2-DMCP	17.0	0.21
MCH	1345.7	16.74

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	8345.		C1/C2	2.54
GASOLINE	8040.		A /D2	5.41
NAPHTHENES	2855.	35.51	C1/D2	10.03
C6-7	4448.	55.33	CH/MCP	1.10
			PENT/IPENT,	1.56

	PPB	NORM PERCENT
MCP	525.4	21.5
CH	577.2	23.6
MCH	1345.7	55.0
TOTAL	2448.3	100.0

PARAFFIN INDEX 1	1.415
PARAFFIN INDEX 2	16.321

11 APR 83

72553Z AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2545 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	69.8	
IBUTANE	74.7	0.72
NBUTANE	666.7	6.40
IPENTANE	635.5	6.10
NPENTANE	855.4	8.21
22-DMB	29.5	0.28
CPENTANE	143.9	1.38
23-DMB	120.7	1.16
2-MP	596.7	5.72
3-MP	341.5	3.28
NHEXANE	848.8	8.14
MCP	967.0	9.28
22-DMP	0.0	0.00
24-DMP	16.0	0.15
223-TMB	11.9	0.11
CHEXANE	1029.9	9.88
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	212.6	2.04
23-DMP ,	164.6	1.58
3-MHEX ,	245.6	2.36
1C3-DMCP	151.2	1.45
1T3-DMCP	153.6	1.47
1T2-DMCP	287.3	2.76
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	572.7	5.49
1C2-DMCP	29.0	0.28
MCH	2269.9	21.77

	TOTALS PPB	NORM PERCENT
ALL COMP	10494.	
GASOLINE	10425.	
NAPHTHENES	5032.	48.27
C6-7	6960.	66.77

SIG COMP RATIOS

C1/C2	2.21
A /D2	5.79
C1/D2	14.30
CH/MCP	1.06
PENT/IPENT,	1.35

	PPB	NORM PERCENT
MCP	967.0	22.7
CH	1029.9	24.1
MCH	2269.9	53.2
TOTAL	4266.8	100.0

PARAFFIN INDEX 1	0.774
PARAFFIN INDEX 2	11.258

11 APR 83

72554B AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2575 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	14332.2	
IBUTANE	9085.7	3.19
NBUTANE	20635.8	7.25
IPENTANE	26617.4	9.35
NPENTANE	27424.2	9.63
22-DMB	1028.3	0.36
CPENTANE	3351.8	1.18
23-DMB	15006.3	5.27
2-MP	11326.8	3.98
3-MP	5505.8	1.93
NHEXANE	24660.2	8.66
MCP	21436.0	7.53
22-DMP	0.0	0.00
24-DMP	577.3	0.20
223-TMB	408.6	0.14
CHEXANE	29882.4	10.49
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	5120.6	1.80
23-DMP ,	5912.3	2.08
3-MHEX ,	5516.6	1.94
1C3-DMCP	1809.2	0.64
1T3-DMCP	2803.4	0.98
1T2-DMCP	4653.5	1.63
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	13126.6	4.61
1C2-DMCP	521.2	0.18
MCH	48364.3	16.98

	TOTALS PPB	NORM PERCENT
ALL COMP	299106.	
GASOLINE	284774.	
NAPHTHENES	112822.	39.62
C6-7	164792.	57.87

SIG COMP RATIOS

C1/C2	2.67
A /D2	6.85
C1/D2	15.11
CH/MCP	1.39
PENT/IPENT,	1.03

	PPB	NORM PERCENT
MCP	21436.0	21.5
CH	29882.4	30.0
MCH	48364.3	48.5
TOTAL	99682.7	100.0

PARAFFIN INDEX 1	1.148
PARAFFIN INDEX 2	11.201

11 APR 83

72554D AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2605 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	12.5	0.67
ETHANE	0.0		1T2-DMCP	19.8	1.05
PROPANE	27.6		3-EPENT	0.0	0.00
IBUTANE	72.7	3.85	224-TMP	0.0	0.00
NBUTANE	99.9	5.30	NHEPTANE	170.2	9.02
IPENTANE	212.6	11.27	1C2-DMCP	0.0	0.00
NPENTANE	243.6	12.92	MCH	101.5	5.38
22-DMB	3.9	0.21			
CPENTANE	21.7	1.15			
23-DMB	21.1	1.12			
2-MP	135.7	7.20			
3-MP	72.0	3.82			
NHEXANE	271.4	14.39			
MCP	143.9	7.63			
22-DMP	0.0	0.00			
24-DMP	8.4	0.45			
223-TMB	0.0	0.00			
CHEXANE	103.7	5.50			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	62.7	3.33			
23-DMP ,	33.7	1.79			
3-MHEX ,	56.0	2.97			
1C3-DMCP	18.5	0.98			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1913.		C1/C2	1.38
GASOLINE	1886.		A /D2	7.88
NAPHTHENES	422.	22.37	C1/D2	4.78
C6-7	1002.	53.17	CH/MCP	0.72
			PENT/IPENT,	1.15

	PPB	NORM PERCENT
MCP	143.9	41.2
CH	103.7	29.7
MCH	101.5	29.1
TOTAL	349.1	100.0

PARAFFIN INDEX 1	2.331
PARAFFIN INDEX 2	29.406

11 APR 83

72554H AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2665 METERS

	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
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

11 APR 83

72554J AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2695 METERS

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

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

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

PARAFFIN INDEX 1	0.000
PARAFFIN INDEX 2	0.000

11 APR 83

72554L AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2725 METERS

	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
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

11 APR 83

72554N AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2755 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	44.6	
IBUTANE	12.8	2.48
NBUTANE	19.5	3.77
IPENTANE	54.6	10.59
NPENTANE	44.3	8.60
22-DMB	0.0	0.00
CPENTANE	4.9	0.96
23-DMB	4.3	0.84
2-MP	25.1	4.87
3-MP	16.8	3.26
NHEXANE	58.8	11.41
MCP	29.2	5.66
22-DMP	0.0	0.00
24-DMP	0.0	0.00
223-TMB	0.0	0.00
CHEXANE	26.5	5.15
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	24.8	4.81
23-DMP ,	5.2	1.02
3-MHEX ,	20.5	3.98
1C3-DMCP	2.9	0.56
1T3-DMCP	0.0	0.00
1T2-DMCP	5.5	1.06
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	82.5	16.00
1C2-DMCP	0.0	0.00
MCH	77.3	15.00

	TOTALS PPB	NORM PERCENT
ALL COMP	560.	
GASOLINE	515.	
NAPHTHENES	146.	28.38
C6-7	333.	64.64

SIG COMP RATIOS

C1/C2	3.43
A /D2	6.89
C1/D2	6.27
CH/MCP	0.91
PENT/IPENT,	0.81

	PPB	NORM PERCENT
MCP	29.2	21.9
CH	26.5	19.9
MCH	77.3	58.1
TOTAL	133.0	100.0

PARAFFIN INDEX 1	5.418
PARAFFIN INDEX 2	33.635

11 APR 83

72554R AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2815 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	13.8	0.80
ETHANE	0.0		1T2-DMCP	24.3	1.41
PROPANE	45.4		3-EPENT	0.0	0.00
IBUTANE	15.2	0.88	224-TMP	0.0	0.00
NBUTANE	204.9	11.90	NHEPTANE	112.8	6.55
IPENTANE	118.0	6.86	1C2-DMCP	0.0	0.00
NPENTANE	138.0	8.02	MCH	316.6	18.39
22-DMB	3.0	0.18			
CPENTANE	31.0	1.80			
23-DMB	15.1	0.88			
2-MP	77.9	4.52			
3-MP	47.6	2.76			
NHEXANE	148.7	8.63			
MCP	168.3	9.77			
22-DMP	0.0	0.00			
24-DMP	3.5	0.20			
223-TMB	0.0	0.00			
CHEXANE	185.8	10.79			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	34.2	1.99			
23-DMP ,	13.1	0.76			
3-MHEX ,	32.9	1.91			
1C3-DMCP	17.1	0.99			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1767.		C1/C2	2.40
GASOLINE	1722.		A /D2	7.94
NAPHTHENES	757.	43.96	C1/D2	16.31
C6-7	1071.	62.20	CH/MCP	1.10
			PENT/IPENT,	1.17

	PPB	NORM PERCENT
MCP	168.3	25.1
CH	185.8	27.7
MCH	316.6	47.2
TOTAL	670.7	100.0

PARAFFIN INDEX 1	1.216
PARAFFIN INDEX 2	15.027

11 APR 83

72554S AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2830 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	20.8	1.22
ETHANE	0.0		1T2-DMCP	43.4	2.55
PROPANE	28.7		3-EPENT	0.0	0.00
IBUTANE	13.2	0.78	224-TMP	0.0	0.00
NBUTANE	32.0	1.88	NHEPTANE	175.6	10.30
IPENTANE	91.0	5.34	1C2-DMCP	0.0	0.00
NPENTANE	67.0	3.93	MCH	476.4	27.95
22-DMB	3.2	0.19			
CPENTANE	18.1	1.06			
23-DMB	11.0	0.65			
2-MP	76.8	4.51			
3-MP	48.4	2.84			
NHEXANE	138.7	8.14			
MCP	138.9	8.15			
22-DMP	0.0	0.00			
24-DMP	4.6	0.27			
223-TMB	0.0	0.00			
CHEXANE	197.4	11.58			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	46.5	2.73			
23-DMP ,	21.7	1.28			
3-MHEX ,	55.3	3.24			
1C3-DMCP	24.5	1.44			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	1733.		C1/C2	3.17
GASOLINE	1705.		A /D2	5.69
NAPHTHENES	919.	53.94	C1/D2	13.04
C6-7	1344.	78.83	CH/MCP	1.42
			PENT/IPENT,	0.74

	PPB	NORM PERCENT
MCP	138.9	17.1
CH	197.4	24.3
MCH	476.4	58.6
TOTAL	812.7	100.0

PARAFFIN INDEX 1	1.147
PARAFFIN INDEX 2	16.544

11 APR 83

72554W AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2890 METERS

	TOTAL PPB	NORM PERCENT
METHANE	0.0	
ETHANE	0.0	
PROPANE	38.1	
IBUTANE	14.4	0.97
NBUTANE	126.1	8.49
IPENTANE	80.6	5.43
NPENTANE	89.5	6.03
22-DMB	0.9	0.06
CPENTANE	34.0	2.29
23-DMB	9.4	0.63
2-MP	58.6	3.95
3-MP	33.8	2.28
NHEXANE	109.8	7.40
MCP	125.1	8.43
22-DMP	0.0	0.00
24-DMP	2.6	0.17
223-TMB	0.0	0.00
CHEXANE	152.4	10.26
33-DMP ,	0.0	0.00
11-DMCP	0.0	0.00
2-MHEX ,	29.0	1.96
23-DMP ,	15.4	1.04
3-MHEX ,	32.5	2.19
1C3-DMCP	18.7	1.26
1T3-DMCP	13.8	0.93
1T2-DMCP	26.8	1.81
3-EPENT	0.0	0.00
224-TMP	0.0	0.00
NHEPTANE	120.2	8.09
1C2-DMCP	0.0	0.00
MCH	391.0	26.34

	TOTALS PPB	NORM PERCENT
ALL COMP	1523.	
GASOLINE	1485.	
NAPHTHENES	762.	51.31
C6-7	1037.	69.88

SIG COMP RATIOS

C1/C2	3.10
A /D2	7.07
C1/D2	17.60
CH/MCP	1.22
PENT/IPENT,	1.11

	PPB	NORM PERCENT
MCP	125.1	18.7
CH	152.4	22.8
MCH	391.0	58.5
TOTAL	668.5	100.0

PARAFFIN INDEX 1	1.038
PARAFFIN INDEX 2	15.023

11 APR 83

72588C AUSTRALIA, GIPPSLAND BASIN, WIRRAH-1, 2980 METERS

	TOTAL PPB	NORM PERCENT		TOTAL PPB	NORM PERCENT
METHANE	0.0		1T3-DMCP	417.9	1.61
ETHANE	0.0		1T2-DMCP	845.7	3.26
PROPANE	248.6		3-EPENT	0.0	0.00
IBUTANE	209.0	0.81	224-TMP	0.0	0.00
NBUTANE	843.6	3.25	NHEPTANE	2579.1	9.94
IPENTANE	966.4	3.73	1C2-DMCP	88.8	0.34
NPENTANE	1495.3	5.76	MCH	6243.8	24.07
22-DMB	51.4	0.20			
CPENTANE	287.2	1.11			
23-DMB	216.1	0.83			
2-MP	1514.5	5.84			
3-MP	742.1	2.86			
NHEXANE	2211.0	8.52			
MCP	2291.4	8.83			
22-DMP	0.0	0.00			
24-DMP	95.4	0.37			
223-TMB	19.4	0.07			
CHEXANE	2207.6	8.51			
33-DMP ,	0.0	0.00			
11-DMCP	0.0	0.00			
2-MHEX ,	836.3	3.22			
23-DMP ,	511.9	1.97			
3-MHEX ,	874.3	3.37			
1C3-DMCP	389.7	1.50			

	TOTALS PPB	NORM PERCENT	SIG COMP RATIOS	
ALL COMP	26187.		C1/C2	2.30
GASOLINE	25938.		A /D2	5.48
NAPHTHENES	12772.	49.24	C1/D2	10.62
C6-7	19612.	75.61	CH/MCP	0.96
			PENT/IPENT,	1.55

	PPB	NORM PERCENT
MCP	2291.4	21.3
CH	2207.6	20.5
MCH	6243.8	58.1
TOTAL	10742.8	100.0

PARAFFIN INDEX 1	1.035
PARAFFIN INDEX 2	17.302

APPENDIX-2

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

25.7.83

WIRRAH No. 1

KK No.	Esso No.	Depth m	$\bar{R}_v$ max %	Range R_v max %	N	Exinite fluorescence (Remarks)
16657	BS/ 72545-C	2186 SWC	0.49	0.38-0.54	6	Rare yellow to orange sporinite and rare orange cutinite. (Siltstone>claystone>sandstone, d.o.m. sparse, I>E>V. Vitrinite rare, inertinite sparse. Pyrite sparse, calcareous foraminifer present. Some of the inertinite has the appearance of oxidised vitrinite.)
17311	72545 -C	2186.5 SWC	0.39	0.36-0.41	3	Sparse sporinite and rare cutinite, orange, rare ?resinite, yellow/orange. (Claystone. D.o.m. sparse, I>E>V. Vitrinite rare, inertinite and exinite sparse. The exinite and the vitrinite may represent contamination. Some of the ?inertinite with a reflectance in the range 1.04% to 1.21% may represent heat altered vitrinite. Rare thucholites, dark orange. Sparse pyrite.)
17312	72545 -B	2198.5 SWC	-			Common liptodetrinite, yellow to orange, common cutinite and sparse sporinite, yellow to orange. (Claystone with sandy lenses. D.o.m. common, E>I. Vitrinite absent, inertinite rare to sparse, exinite common. Rare thucholites, dark orange. Rare interstitial ?dead oil, orange in the interstices of the sandy lenses. Sparse pyrite.)
17313	72544 -X	2230 ?SWC	0.45	0.34-0.53	27	Common liptodetrinite and sporinite and rare cutinite, yellow/orange to orange. (Silty claystone. D.o.m. abundant, V>I>E. Vitrinite and inertinite abundant, exinite common. Common pyrite.)
16658	BS/ 72544-E	2567.7 SWC	0.57	0.43-0.64	25	Abundant sporinite, sparse cutinite and rare resinite, yellow to orange. (Claystone>siltstone, d.o.m. abundant, V>E>I. Vitrinite abundant, inertinite sparse. Sporinite more abundant in association with the claystone. Sparse pyrite.)
16648	BS/ 72525-N	2686.0 SWC	-		-	No fluorescing exinite. (Relatively barren siltstone, sparse ?palynomorphs with very dull brown appearance in fluorescence-mode. These could represent heat-altered sporinite. Mica has similar optical properties but the form is not similar to mica. Rare pyrite.)
16647	BS/ 72525-E	2800 SWC	0.44	0.37-0.49	22	Sporinite common overall but abundant in the claystone, bright greenish yellow to dull orange. (Siltstone>claystone>rare sandstone. D.o.m. common overall but abundant in the claystone, E>V>?I. Vitrinite sparse, ?inertinite rare and consisting of probable fungal sclerotia. Sporinite shows very strong fluorescence and some is very well preserved. Vitrinite present as large phytoclasts, some being present as telocollinite. Pyrite rare.)

25.7.83

WIRRAH No. 1

KK No.	Esso No.	Depth m	$\bar{R}_v$ max %	Range R_v max %	N	Exinite fluorescence (Remarks)
16820	W/ 72568-P	2820 ?SWC	0.58	0.44-0.65	20	Suberinite common, dull orange to brown, common cutinite yellow to brown, sporinite sparse, yellow to orange, ?Tasmanitids rare, yellow, fluorinite rare, yellow. (Sandy siltstone, d.o.m. abundant, I=V>E. Vitrinite and inertinite abundant, exinite common to abundant. Common pyrite.)
16821	W/ 72568-Z	3008.5 SWC	0.50	0.39-0.65	15	Sporinite common, yellow to orange, ?phyto-plankton common, cutinite sparse, orange to dull orange. (Siltstone, d.o.m. abundant, I>V>E. Inertinite abundant, exinite common, vitrinite sparse to common. Abundant pyrite.)

Appendix 7

APPENDIX 7

SYNTHETIC SEISMOGRAM

SYNTHETIC SEISMIC TRACE PARAMETERS

WELL	:	Wirrah-1
T.D.	:	3026 mKB
K.B.	:	21m
WATER DEPTH	:	49m
POLARITY	:	Trough on section represents an increase in acoustic impedance.
PULSE TYPE	:	Zero phase
PEAK FREQUENCY	:	25 Hz
SAMPLE FREQUENCY	:	4 metres
CHECK SHOT CORRECTIONS	:	Linear interpolation used for check shot correction. Reflection coefficients are calculated using original (pre-corrected) sonic log data.

0745L

PE601324

This is an enclosure indicator page.
The enclosure PE601324 is enclosed within the container PE902626 at this location in this document.

The enclosure PE601324 has the following characteristics:

ITEM_BARCODE	= PE601324
CONTAINER_BARCODE	= PE902626
NAME	= Synthetic Seismogram
BASIN	= GIPPSLAND
PERMIT	= VIC/L2
TYPE	= WELL
SUBTYPE	= SYNTH_SEISMOGRAM
DESCRIPTION	= Synthetic Seismogram (enclosure from WCR vol.2) for Wirrah-1
REMARKS	=
DATE_CREATED	= 10/02/84
DATE_RECEIVED	= 25/07/84
W_NO	= W782
WELL_NAME	= Wirrah-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO AUSTRALIA LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907864

This is an enclosure indicator page.
The enclosure PE907864 is enclosed within the container PE902626 at this location in this document.

The enclosure PE907864 has the following characteristics:

ITEM_BARCODE	= PE907864
CONTAINER_BARCODE	= PE902626
NAME	= Synthetic Seismogram
BASIN	= GIPPSLAND
PERMIT	= VIC/L2
TYPE	= WELL
SUBTYPE	= SYNTH_SEISMOGRAM
DESCRIPTION	= Synthetic Seismogram (enclosure from WCR vol.2) for Wirrah-1
REMARKS	= Is a transparency
DATE_CREATED	=
DATE_RECEIVED	=
W_NO	= W782
WELL_NAME	= Wirrah-1
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LTD

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURES

ENCLOSURES

PE902621

This is an enclosure indicator page.
The enclosure PE902621 is enclosed within the container PE902626 at this location in this document.

The enclosure PE902621 has the following characteristics:

ITEM_BARCODE	= PE902621
CONTAINER_BARCODE	= PE902626
NAME	= Structure Map Top of Latrobe Group
BASIN	= GIPPSLAND
PERMIT	= VIC/L2
TYPE	= WELL
SUBTYPE	= HRZN _CNTR_MAP
DESCRIPTION	= Structure Map Top of Latrobe Group (enclosure from WCR vol.2) for Wirrah-1
REMARKS	=
DATE_CREATED	= 28/02/84
DATE_RECEIVED	= 25/07/84
W_NO	= W782
WELL_NAME	= Wirrah-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO EXPLORATION AND PRODUCTION AUSTRALIA LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE902623

This is an enclosure indicator page.
The enclosure PE902623 is enclosed within the container PE902626 at this location in this document.

The enclosure PE902623 has the following characteristics:

ITEM_BARCODE	= PE902623
CONTAINER_BARCODE	= PE902626
NAME	= Geological Cross Section A-A
BASIN	= GIPPSLAND
PERMIT	= VIC/L2
TYPE	= WELL
SUBTYPE	= CROSS_SECTION
DESCRIPTION	= Geological Cross Section A-A (enclosure from WCR vol.2) for Wirrah-1
REMARKS	=
DATE_CREATED	= 28/02/84
DATE_RECEIVED	= 25/07/84
W_NO	= W782
WELL_NAME	= Wirrah-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO EXPLORATION AND PRODUCTION AUSTRALIA LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE902624

This is an enclosure indicator page.
The enclosure PE902624 is enclosed within the container PE902626 at this location in this document.

The enclosure PE902624 has the following characteristics:

ITEM_BARCODE	= PE902624
CONTAINER_BARCODE	= PE902626
NAME	= Structure Map Middle Mdiversus marker
BASIN	= GIPPSLAND
PERMIT	= VIC/L2
TYPE	= WELL
SUBTYPE	= HRZN _CNTR_MAP
DESCRIPTION	= Structure Map Middle Mdiversus marker (enclosure from WCR vol.2) for Wirrah-1
REMARKS	=
DATE_CREATED	= 28/02/84
DATE_RECEIVED	= 25/07/84
W_NO	= W782
WELL_NAME	= Wirrah-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO EXPLORATION AND PRODUCTION AUSTRALIA LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE601325

This is an enclosure indicator page.
The enclosure PE601325 is enclosed within the container PE902626 at this location in this document.

The enclosure PE601325 has the following characteristics:

ITEM_BARCODE	= PE601325
CONTAINER_BARCODE	= PE902626
NAME	= Well Completion Log
BASIN	= GIPPSLAND
PERMIT	= VIC/L2
TYPE	= WELL
SUBTYPE	= COMPLETION_LOG
DESCRIPTION	= Well Completion Log (enclosure from WCR vol.2) for Wirrah-1
REMARKS	=
DATE_CREATED	= 6/12/82
DATE_RECEIVED	= 25/07/84
W_NO	= W782
WELL_NAME	= Wirrah-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)