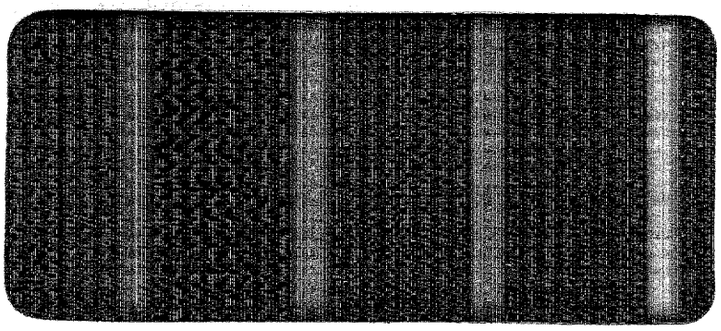
ESSO



WCR VOL 2

SEAHORSE-2

W780

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

WELL COMPLETION REPORT

SEAHORSE-2

INTERPRETIVE DATA

VOLUME II

GIPPSLAND BASIN

VICTORIA

ESSO AUSTRALIA LIMITED

Compiled by: M. FITTALL

MARCH, 1984

SEAHORSE-2

WELL COMPLETION REPORT

VOLUME 2

INTERPRETATIVE DATA

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GEOLOGICAL AND GEOPHYSICAL ANALYSIS

AGE	UNIT/HORIZON	DEPTH (m) PREDICTED KB	ACTUAL KB	ACTUAL SUBSEA	THICKNESS(m)
Pliocene/Miocene	Gippsland Limestone	62	63.6	42.6	1026.9
Miocene/Oligocene	Lakes Entrance Formation	1081	1090.5	1069.5	303.0
Eocene/Paleocene	Latrobe Group Gurnard Fm.	1384	1393.5	1372.5	24.0
	"Coarse Clastics"	1398	1417.5	1396.5	603.5
	Top of first coal	1404	1426.5	1405.5	
	TOTAL DEPTH	2021	2021	2000	

INTRODUCTION

The object of Seahorse-2 was to define the southwestern limit of the Seahorse structure and to establish the extent of thin oil sands encountered in Seahorse-1.

PREVIOUS DRILLING HISTORY

The Seahorse structure has been penetrated by only one other well, Seahorse-1. This well was drilled 1.7km to the NE of Seahorse-2 in September 1978 to a total depth of 2304mKB. It penetrated numerous thin oil sands which were shown to be in three separate zones. A further three potential oil zones were interpreted from log analysis.

GEOLOGICAL ANALYSIS

Structure

At the top of Latrobe Group the Seahorse structure is a small, NE-SW trending anticline bounded to the north by an E-W high angle reverse fault (Enclosure 1). The structure is essentially unfaulted at this level but becomes more complexly faulted deeper within the Latrobe Group.

Stratigraphy

The gross stratigraphy encountered in the Seahorse-2 well, was generally as predicted and did not differ greatly from that found in Seahorse-1.

The field is sealed by the Gurnard Formation and Latrobe Group intraformation shales. The non-net Gurnard Formation is composed of glauconitic mudstones and siltstones which are of Upper to Middle N. asperus age.

The underlying sands, shales and coals of Middle to Lower N. asperus age of the Latrobe Group "coarse clastics" deltaic sequence provide the main reservoirs for the field. Because of the abundance of coal and the proximity of Seahorse-2 to Seahorse-1, this interval can be reasonably correlated between the two wells (Enclosure-6). The detailed stratigraphic correlation reveals that this section is shalier than predicted with many of the reservoir sands penetrated in Seahorse-1 pinching out before reaching Seahorse-2.

Beneath these strata the P. asperopolus and M. diversus zones consist of a sequence of thick channel sands, shales and relatively minor coals. As noted in Appendix-2, there are some problems in age correlations between the two Seahorse wells in the these zones.

The underlying sequence of L. balmei age consist of similar channel sands interbedded with shales and minor coals.

HYDROCARBONS

Seahorse-2 penetrated three oil bearing sands within the Latrobe Group.

The first sand (1416 - 1442.7mKB), is interpreted to correlate with the N1.3 sand in Seahorse-1. No oil-water contact was encountered in Seahorse-2.

The second oil bearing sand was penetrated at 1563-1566mKB. The oil-water contact has been interpreted from log analysis to be at 1566mKB. This sand, the P1.0, is interpreted to be a small stratigraphic trap.

The third oil sand encountered, correlates with the P1.1 sand in Seahorse-1. In Seahorse-2 it was penetrated at a depth of 1603-1603.5mKB. No oil-water contact was encountered.

No hydrocarbons were encountered in the sands that correlate with the N-2 zone in Seahorse-1.

GEOPHYSICAL ANALYSIS

At the well location the depth to the top of the Latrobe Group came in 9.5m low to prediction, an error of 0.7%.

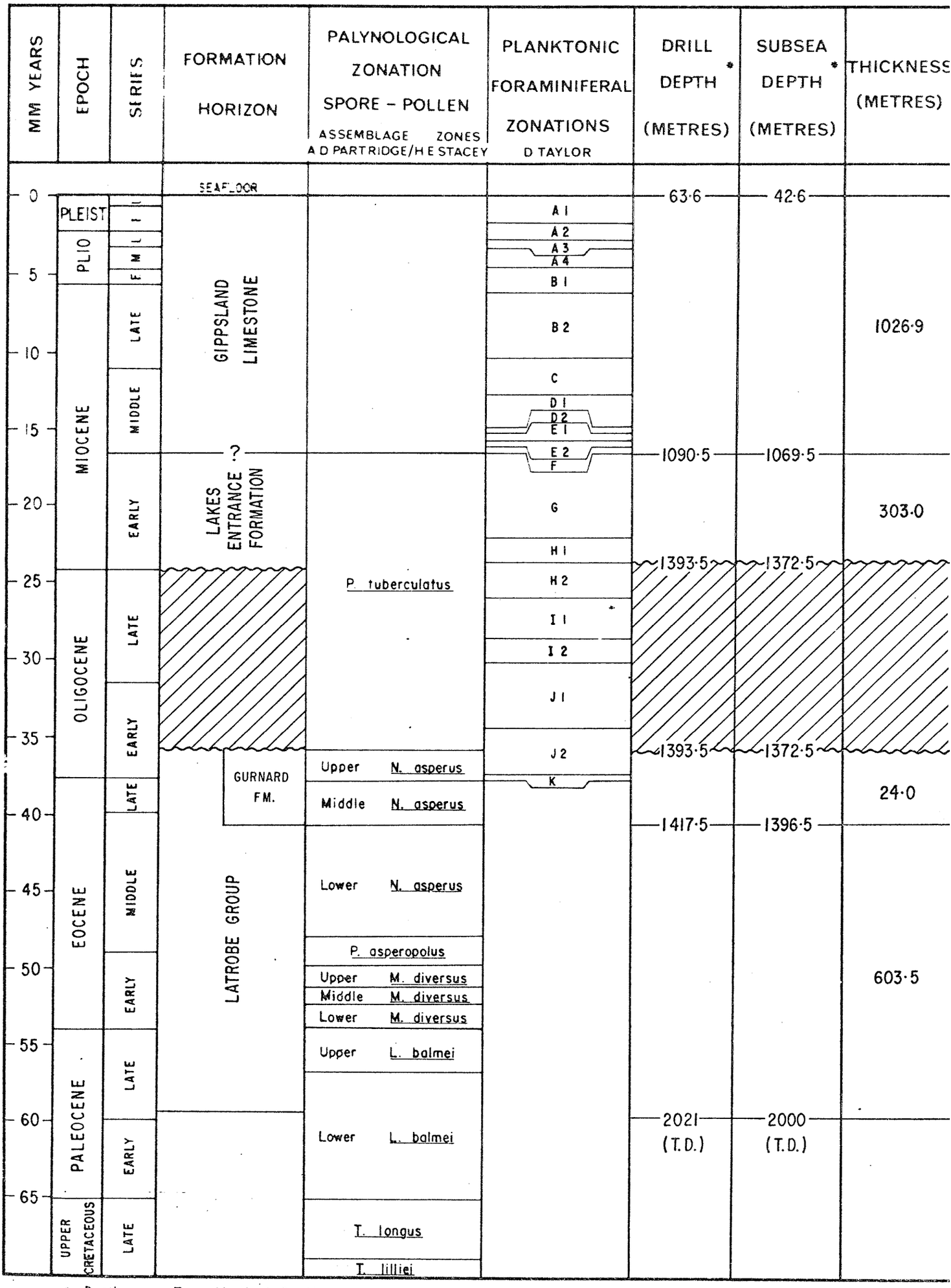
This discrepancy is due to the true average velocity varying by 1% from Seahorse-1 to Seahorse-2 while the normal moveout velocity decreased by 2.9%. Also there is a marked decrease in interval velocity of the Lakes Entrance Formation of 3% from Seahorse-1 to Seahorse-2.

Remapping of the field in the light of Seahorse-2 has resulted in a reduction of the predrill volume of the closure (Enclosure 1), with the maximum height of closure being reduced from 36m to 31m.

FIGURES

SEAHORSE-2

STRATIGRAPHIC TABLE



* Depths are True Vertical Depths

FIG. 1

Base Dwg. 1107/OP/149

Dwg. 2108/OP/

APPENDIX 1

APPENDIX 1

MICROPALAEONTOLOGICAL ANALYSIS

APPENDIX -1
A FORAMINIFERAL ANALYSIS OF SEAHORSE-2, GIPPSLAND BASIN, VICTORIA.

by

M.J. HANNAH.

Esso Australia Ltd.
Palaeontology Report, 1982/40.
0246L

December 1, 1982.

Appendix -1

A foraminiferal Analysis of Seahorse-2, Gippsland Basin, Victoria

by

M J Hannah

PART - 1

INTERPRETIVE DATA

INTRODUCTION

GEOLOGICAL SUMMARY

GEOLOGICAL COMMENTS

BIOSTRATIGRAPHY

SUMMARY TABLE

DATA SHEET

Esso Australia Ltd
Palaeontology Report, 1982/40
0246L

Dec. 1st, 1982

INTRODUCTION

The planktonic foraminiferal content of forty sidewall cores from the Gurnard and Lakes Entrance Formations of Seahorse-2 has been examined (ie. from 1405.0 to 1210.0m). Unfortunately, no sidewall cores were shot above 1210.0m and no cuttings above this level were examined as any results obtained would be marginal compared to the effort required.

The preservation of material in Seahorse-2 is usually good, if a little variable. In contrast, preservation in the greensand is very poor. The fauna throughout the well is of low to moderate diversity with no keeled forms present.

GEOLOGICAL SUMMARY
SEAHORSE-2

AGE	FORMATION	LITHOLOGY*	ZONE	DEPTH in metres
Recent to Middle Miocene	Gippsland Limestone and Lakes Entrance Formation	Section not sampled with sidewall cores		Seafloor - 1210
		Top sidewall core		
			F	1210.0 - 1264.0
Early Miocene	Lakes Entrance Formation	Dominantly Marl with reworking at base		
			G	1269.9 - 1386.8
			H-1	1390.5
		1393.5m		
Early Oligocene to Late Eocene	Gurnard Formation	Pelletal Glauconite occasionally pyritic and micaceous	J/K	1396.0 - 1399.0
		1417.5m		
	Latrobe Group Coarse Clastics			
			Total Depth	2021m

* Lithology based on washed residues.
Boundaries based on log picks.

GEOLOGICAL COMMENTS.

The Gurnard Formation was examined in sidewall cores 62 to 65 (1405.0m to 1396.0m). The unit is deliniated by log breaks at 1393.5m (top of Latrobe Group) and 1426.1m. Lithologically the Gurnard Formation is dominated by pelletal glauconite which is at times both pyritic and micaceous. First foraminifera are found in sidewall core 63 at 1402.0m. These consist of fragments of agglutinated benthonics and a single specimen of an unidentified planktonic. Sidewall core 64 at 1399.0 m contains an agglutinated benthonic assemblage including Bathysiphon and Haplophragmoides together with the very rare planktonic form, Globigerina angiporoides. The final sample from the Gurnard Formation has a limited planktonic fauna (see range chart) which is poorly preserved.

With the transition to the Lakes Entrance Formation at about 1396.5m, the lithology changes to a marl. The coaly fragments and glauconite present in sidewall core 67 at 1390.0m are considered to be reworked from the underlying Latrobe Group. This reworking is confirmed by the presence of Globorotalia postcretacea in the basal six samples of the Lakes Entrance Formation. A similar situation regarding reworking was recorded by Taylor (1974) at Seahorse-1 and Paltech (1981) at West Seahorse-1.

The low diversity of fauna recovered from all the samples examined is indicative of shallow water (minimal layer) conditions. The dearth of keeled forams implies this water mass was one of cool aspect.

BIOSTRATIGRAPHY

GURNARD FORMATION.
Zones J to K, Late Eocene to Early Oligocene.
1399.0m to 1396.0m.

Only two species of planktonic foraminifera (Globigerina angiporoides and Globorotalia postcretacea) were identified in the Gurnard Formation. Together these species provide an age of Zone J and/or Zone K for the unit. The lack of Globigerina linaperta in any sample makes distinguishing Zone J from Zone K impossible.

It should be recognised that the foraminifera from Seahorse-2

provides a minimum age only for the Gurnard Formation. That is, without the presence of such species as Globigerina brevis, and Globigerinatheka index to further refine the age, it is possible that some, if not all of the Gurnard Formation was deposited pre Zone K. However, palynological dating of SWC 63 at 1402.0m, provides an upper N. asperus zone age for that sample (Stacy 1982), indicating that the J/K determination for the unit is correct. This is consistent with evidence from Seahorse-1 (Taylor 1979).

LAKES ENTRANCE FORMATION.
Zone H-1 (Early Miocene) 1390.0m.

A single sample from near the base of the Lakes Entrance Formation is assigned to this zone on the basis of it containing rare Globigerina woodi connecta without Globigerinoides quadrilobatus trilobus. Because planktonic foraminiferal diversity is low and their preservation poor, only a low confidence rating can be applied.

Zone G (Early Miocene) 1386.0 to 1369.9m.

The base of Zone G is marked by the first appearance of Globigerinoides quadrilobatus trilobus in side wall core 68 at 1386.8m. This sample is also the first in the section to yield a reasonable diversity of planktonics. This heightened diversity is maintained throughout the well. Four species dominate the assemblage: Globigerinoides quadrilobatus trilobus, Globigerina praebulloides, Globorotalia mayeri and Globorotalia opima nana.

Reworked specimens of Globorotalia postcretacea are common in the basal six samples of the Lakes Entrance Formtion and a single reworked specimen of Chiloguembelina cubensis was found in sidewall core 72 at 1375.0m.

The assignment of sidewall cores 68, 69 and 92 (at 1386.8m, 1384.0m and 1269.9m respectively)to Zone G is in accord with the P. tuberculatus zone age derived from palynology.

Zone F (Early Miocene) - 1264.0 to 1210.0m.

The addition of Globigerinoides sicanus to the assemblage in sidewall core 93 at 1264.0m marks the base of Zone F. At the base of its range this species is difficult to distinguish from

Globigerinoides quadrilobatus trilobus and the zonal assignment carries a low degree of confidence. Throughout the zone, Globigerinoides sicanus is rare and was not found in SWC 96 at 1246.0m.

Several species make their first appearance during Zone F, including two globorotalids (Globorotalia miozea and Globorotalia fohsi peipheroronda). A similar increase in globorotalid diversity also occurs within Zone F at Seahorse-1.

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PALTECH Pty. Ltd. 1981. Foraminiferal sequence in West Seahorse-1. Paltech Report, 1981/22.

STACY, H.E. 1982 Palynological analysis of Seahorse-2, Gippsland Basin, Esso Australia Ltd., Palaeontology Report, 1982/37.

SEAHORSE-2, SUMMARY TABLE-2.

Interpretive Data.

SIDEWALL CORE NUMBER	DEPTH (M)	MICROFOSSIL		PLANKTON	ZONE (RATING)	AGE
		YIELD	PRESERVATION	DIVERSITY		
102	1210.0	Moderate	Poor	Moderate	F(1)	late Early Miocene
101	1216.0	Moderate	Poor	Moderate	F(2)	late Early Miocene
100	1222.0	High	Good	Moderate	F(2)	late Early Miocene
99	1228.0	High	Moderate	High	F(2)	late Early Miocene
98	1234.0	Moderate	Moderate	Moderate	F(1)	late Early Miocene
97	1240.0	High	Good	High	F(1)	late Early Miocene
96	1246.0	Moderate	Moderate	Moderate	non-diagnostic	late Early Miocene
95	1252.0	High	Moderate	Moderate	F(2)	late Early Miocene
94	1258.0	High	Good	Moderate	F(2)	late Early Miocene
93	1264.0	High	Good	High	F(2)	late Early Miocene
92	1269.9	High	Moderate	Moderate	G(1)	mid Early Miocene
91	1276.0	Moderate	Poor	Poor	G(1)	mid Early Miocene
90	1282.0	High	Good	Low	G(1)	mid Early Miocene
89	1288.0	Moderate	Poor	Low	G(1)	mid Early Miocene
88	1294.0	Moderate	Poor	Low	G(1)	mid Early Miocene
87	1300.0	High	Poor	Low	G(1)	mid Early Miocene
86	1306.0	Moderate	Moderate	Low	G(1)	mid Early Miocene
85	1312.0	High	Good	Low	G(1)	mid Early Miocene
84	1318.0	Moderate	Good	Moderate	G(1)	mid Early Miocene
83	1324	Low	Poor	Low	G(1)	mid Early Miocene
82	1330.0	High	Good	Low	G(1)	mid Early Miocene
81	1336.0	High	Good	Low	G(1)	mid Early Miocene
80	1342.0	High	Good	Moderate	G(1)	mid Early Miocene
79	1348.0	Good	Good	Low	G(1)	mid Early Miocene
78	1354.0	Good	Good	Moderate	G(1)	mid Early Miocene
77	1360.0	Moderate	Poor	Moderate	G(1)	mid Early Miocene
76*	1362.9	High	Good	High	G(1)	mid Early Miocene

SEAHORSE-2, SUMMARY TABLE-2.

Interpretive Data.

SIDEWALL CORE NUMBER	DEPTH (M)	MICROFOSSIL		PLANKTON	ZONE (RATING)	AGE
		YIELD	PRESERVATION	DIVERSITY		
75	1366.0	Moderate	Good	Low	G(1)	mid Early Miocene
74	1369.0	Good	Good	Moderate	G(1)	mid Early Miocene
73	1372.0	Good	Good	Moderate	G(1)	mid Early Miocene
72	1375.0	Good	Good	High	G(1)	mid Early Miocene
71	1378.0	Good	Good	Moderate	G(1)	mid Early Miocene
70*	1381.0	High	Poor	Low	G(1)	mid Early Miocene
69*	1384.0	Good	Good	Low	G(1)	mid Early Miocene
68*	1386.8	Moderate	Poor	Moderate	G(1)	mid Early Miocene
67*	1390.0	Low	Poor	Low	H-1(2)	Early Miocene
65*	1396.0	Low	Poor	Low	J/K(2)	Late Eocene/Early Oligocene
64*	1399.0	Low	Very Poor	Very Low	J/K(2)	Late Eocene/Early Oligocene
63*	1402.0	Very Poor	Very Poor	Low	Indeterminate	-
62	1405.0			Nil	N.F.F.	-

* = Reference slide prepared.

MICROPALEONTOLOGICAL DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: 21m GL: -42.1m

WELL NAME: Seahorse-2 TOTAL DEPTH: 2010m

AGE		FORAM. ZONULES	HIGHEST DATA					LOWEST DATA				
			Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two W Tim
PLEIS-TOCENE		A_1										
		A_2										
PLIO-CENE		A_3										
		A_4										
MIOCENE	LATE	B_1										
		B_2										
		C										
	MIDDLE	D_1										
		D_2										
		E_1										
		E_2										
	EARLY	F	1201.0	1				1264.0	2			
		G	1269.9	1				1386.0	1			
		H_1	1390.0	2				1390.0	2			
OLIGOCENE	LATE	H_2										
		I_1										
		I_2										
	EARLY	J_1	1396.0	2								
		J_2										
EOC-ENE		K						1399.0	2			
		Pre-K										

COMMENTS: The non recognition of zones I and H-2 may be due to either

a) Hiatus in the section or

b) A condensed interval between 1396.0m and 1390.0m which was not successfully samples with sidewall cores.

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: M.J. Hannah DATE: November 1982.

DATA REVISED BY: _____ DATE: _____

PART - 2

BASIC DATA

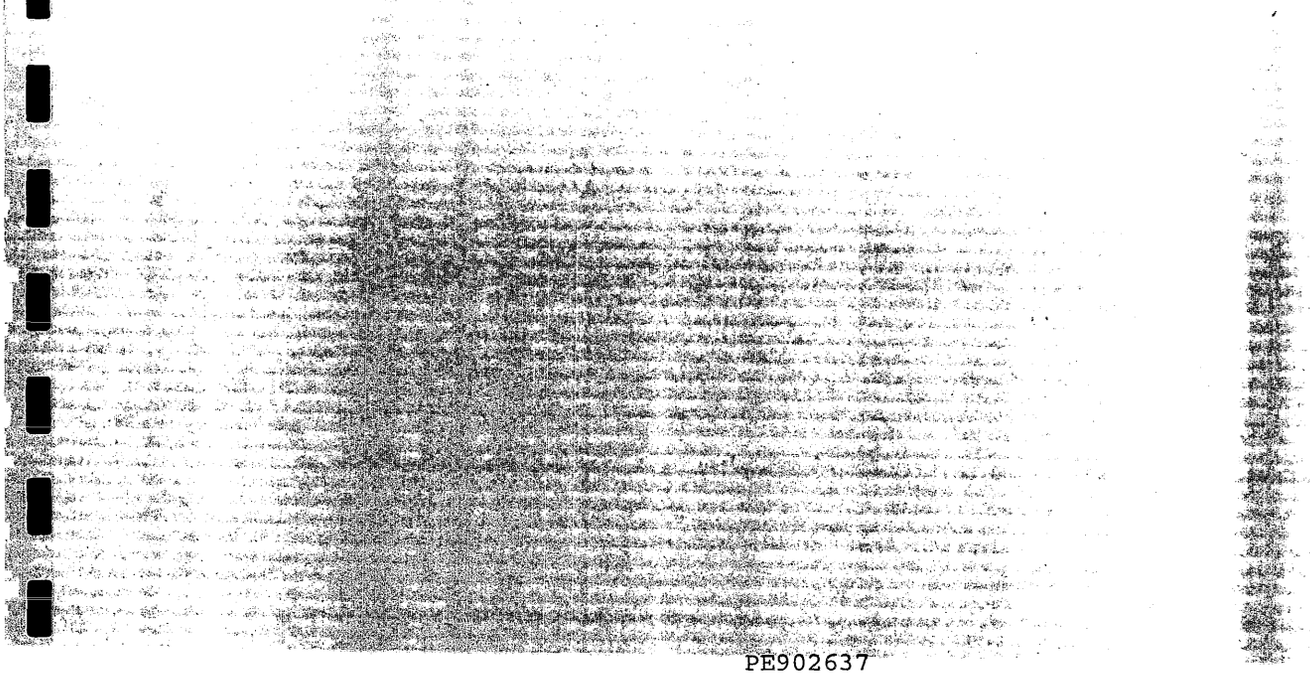
SUMMARY TABLE
RANGE CHART

SEAHORSE-2, Summary Table-2.

Basic Data

SIDEWALL CORE NUMBER	DEPTH (M)	MICROFOSSIL		PLANKTON
		YIELD	PRESERVATION	DIVERSITY
102	1210.0	Moderate	Poor	Moderate
101	1216.0	Moderate	Poor	Moderate
100	1222.0	High	Good	Moderate
99	1228.0	High	Moderate	High
98	1234.0	Moderate	Moderate	Moderate
97	1240.0	High	Good	High
96	1246.0	Moderate	Moderate	Moderate
95	1252.0	High	Moderate	Moderate
94	1258.0	High	Good	Moderate
93	1264.0	High	Good	High
92	1269.9	High	Moderate	Moderate
91	1276.0	Moderate	Poor	Poor
90	1282.0	High	Good	Low
89	1288.0	Moderate	Poor	Low
88	1294.0	Moderate	Poor	Low
87	1300.0	High	Poor	Low
86	1306.0	Moderate	Moderate	Low
85	1312.0	High	Good	Low
84	1318.0	Moderate	Good	Moderate
83	1324	Low	Poor	Low
82	1330.0	High	Good	Low
81	1336.0	High	Good	Low
80	1342.0	High	Good	Moderate
79	1348.0	Good	Good	Low
78	1354.0	Good	Good	Moderate
77	1360.0	Moderate	Poor	Moderate
76*	1362.9	High	Good	High
75	1366.0	Moderate	Good	Low
74	1369.0	Good	Good	Moderate
73	1372.0	Good	Good	Moderate
72	1375.0	Good	Good	High
71	1378.0	Good	Good	Moderate
70*	1381.0	High	Poor	Low
69*	1384.0	Good	Good	Low
68*	1386.8	Moderate	Poor	Moderate
67*	1390.0	Low	Poor	Low
65*	1396.0	Low	Poor	Low
64*	1399.0	Low	Very Poor	Very Low
63*	1402.0	Very Poor	Very Poor	Low
62	1405.0			Nil

* = Reference slide prepared.



PE902637

This is an enclosure indicator page.
The enclosure PE902637 is enclosed within the container PE902638 at this location in this document.

The enclosure PE902637 has the following characteristics:

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CONTAINER_BARCODE	= PE902638
NAME	= Planktonic Foraminifera Range Chart
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Planktonic Foraminifera Range Chart
REMARKS	=
DATE_CREATED	= 7/08/84
DATE_RECEIVED	=
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO-BHP
CLIENT_OP_CO	= ESSO-BHP

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 2

APPENDIX 2

PALYNOLOGICAL ANALYSIS

APPENDIX-2
PALYNOLOGICAL ANALYSIS OF SEAHORSE-2, GIPPSLAND BASIN

by

HOWARD E. STACY

Esso Australia Ltd
Palaeontology Report 1982/37

22 October 1982

0197L

PART 1

INTERPRETATIVE DATA

INTRODUCTION:

Twenty-four (24) sidewall cores from Seahorse-2 were processed and examined for palynomorphs. Fossil recovery from most samples ranged from fair to poor and almost half were so poor that an age assignment could not be made on the basis of the enclosed flora.

Palynological zones and lithologic/facies subdivisions from the base of the Lakes Entrance Formation to the bottom of the well are summarized below. The detailed results of sample analysis are given in Table-1 and the occurrence of individual species is tabulated in the accompanying distribution chart.

SUMMARY

UNIT/FACIES	ZONE	DEPTH (METRES)
LAKES ENTRANCE FORMATION	*P. tuberculatus*	1369.9-1386.8
————1393.5————		
GURNARD FORMATION	Upper *N. asperus*	1402.0
	Middle *N. asperus*	1405.0-1422.0
————1417.5————		
	Lower *N. asperus*	1454.0-1571.0
LATROBE GROUP	*P. asperopolus*	?
(COARSE CLASTICS)	Upper *M. diversus*	1603.0
	Middle *M. diversus*	1643.0-1745.0
	Lower *M. diversus*	?
	Upper *L. balmei*	1791.5-1803.0
	Lower *L. balmei*	2004.0
		T.D. - 2021.0

GEOLOGICAL COMMENTS:

An apparently complete stratigraphic section, from Late Cretaceous (T. longus Zone) to Early Oligocene (P. tuberculatus Zone) was identified in Seahorse-1. A similarly complete section may be present in Seahorse-2, however not all zones could be recognised. This, in part, may be due to the very sandy nature of much of this section, which results in poor recovery of fossils. However, there also appears to be a significant change in thickness of some of the zones between Seahorse-1 and Seahorse-2. The Middle N. asperus Zone appears to be similar in thickness, but the lower N. asperus Zone section is significantly thicker in Seahorse-2. The sample from 1571 metres in Seahorse-2 appears to be Lower N. asperus Zone in age both in composition of the species types and on the ratios of Nothofagidites spp. to H. harrisii. The equivalent sample from Seahorse-1, based on electric log correlation appears to be P. asperopolus Zone in age. Similarly the sample from 1603 metres in Seahorse-2 contains a good Upper M. diversus Zone assemblage while the equivalent sample in Seahorse-1 appears to still be P. asperopolus Zone. Also this only leaves 32 metres, at the most for the P. asperopolus Zone in Seahorse-2. Fifty-one metres of P. asperopolus Zone were recognised in Seahorse-1. Additional samples from both Seahorse-1 and Seahorse-2 need to be studied in order to resolve this problem.

A similar problem is encountered at the boundary of the Eocene/Paleocene. In Seahorse-2, good Middle M. diversus Zone assemblages are found as low as 1745 metres and the highest Upper L. balmei Zone is encountered at 1791 metres, leaving only 46 metres for possible Lower M. diversus Zone sediments. In Seahorse-1 over 51 metres of Lower M. diversus Zone was identified.

DISCUSSION OF ZONES:

Lower Lygistepollenites balmei Zone: 2004 metres.
The bottom sample, from 2004 metres, is the only one that can be identified as Lower L. balmei Zone. In addition to the general L. balmei or older markers, such as Australopollis obscurus, Gambierina edwardsii, Tetracolporites verrucosus and Lygistepollenites balmei, the assemblage also includes Proteacidites gemmatus which normally does not range above the T. longus Zone.

Upper Lygistepollenites balmei Zone: 1791.5 to 1803 metres
These samples contained L. balmei zone markers, such as L. balmei, Australopollis obscurus and Polycolpites langstonii. In addition, the occurrence of Banksieacidites elongatus and Cupanieidites orthoteichus demonstrate that the samples are no older than Upper L. balmei Zone.

Middle Malvacipollis diversus Zone: 1643 to 1745 metres.
The three samples from this section contained a diverse assemblage that included Proteacidites kopiensis P. leightonii, P. nerinensis, P. biornatus and Deflandrea obliquipes. The lack of any specimens of either Myrtaceidites tenuis or Proteacidites pachypolus suggests that these samples are below Upper M. diversus Zone sediments.

Upper Malvacipollis diversus Zone: 1603 metres.
Common Myrtaceidites tenuis, occasional occurrence of Proteacidites pachypolus and P. tuberculiformis, combined with no specimens of P. asperopolus indicates that this sample is from the Upper M. diversus Zone.

Lower Nothofagidites asperus Zone: 1454 to 1571 metres. Occurrence of Proteacidites reflexus, P. recavus, P. stipplatus, rare P. pachypolus and P. asperopolus combined with the sharp increase in the ratio of Nothofagidites spp. to H. harisii indicate that these samples are from the Lower N. asperus Zone.

Middle Nothofagidites asperus Zone: 1405 to 1422 metres. Triorites magnificus in the core from 1422 metres and a Middle N. asperus Zone dinoflagellate flora from 1405 metres, which includes Deflandrea heterophlycta, D. leptodermata, Phthanoperidinium eocenicum and Holoroginella spinata identify these samples as Middle N. asperus Zone.

Upper Nothofagidites asperus Zone: 1402 metres. Common occurrence of Phthanoperidinium coreoides marks this sample as coming from the Upper N. asperus Zone sediments.

Proteacidites tuberculatus Zone: 1269.9 to 1386.8 metres. These samples from the P. tuberculatus Zone contain Cyatheacidites annulatus, and the name species, P. tuberculatus, as well as the dinoflagellate Protoellipsodinium simplex.

TABLE-1
INTERPRETATIVE DATA
SUMMARY OF PALYNOLOGICAL ANALYSIS OF SEAHORSE-2, GIPPSLAND BASIN

SAMPLE	DEPTH (METRES)	DEPTH (FEET)	ZONE	AGE	CONFIDENCE RATING	YIELD	SPORE-POLLEN DIVERSITY	DINOS DIVERSITY	COMMENTS
SWC 92	1269.9	4166.0	P. tuberculatus	Oligo-Miocene	0	Poor	Moderate	Low	
SWC 69	1384.0	4540.5	P. tuberculatus	Oligo-Miocene	0	Fair	Moderate	Moderate	
SWC 68	1386.8	4550.0	P. tuberculatus	Oligo-Miocene	0	Fair	Moderate	Moderate	
SWC 67	1390.0	4560.0	Indeterminate	?	-	Poor	Low	None	
SWC 65	1396.0	4580.0	Indeterminate	?	-	Poor	Low	None	
SWC 63	1402.0	4600.0	Upper N. asperus	Late Eocene	1	Fair	Low	Moderate	
SWC 62	1405.0	4609.5	Middle N. asperus	Late Eocene	1	Fair	Moderate	High	
SWC 61	1406.9	4616.0	Non diagnostic	?	-	Poor	Low	None	
SWC 43	1511.4	4958.5	Non diagnostic	?	-	Barren	-	-	
SWC 59	1413.0	4636.0	Non diagnostic	?	-	Poor	Low	Low	
SWC 57	1422.0	4665.0	Middle N. asperus	Late Eocene	0	Fair	High	Low	
SWC 52	1441.0	4727.5	Indeterminate	?	-	Poor	Low	None	
SWC 50	1444.6	4739.5	Indeterminate	?	-	Poor	Low	None	
SWC 47	1454.0	4770.0	Lower N. asperus	Middle Eocene	1	Fair	High	Low	
SWC 44	1480.9	4858.5	Non diagnostic	?	-	Poor	None	Low	
SWC 42	1523.0	4996.5	Non diagnostic	?	-	Poor	Low	None	
SWC 36	1571.0	5154.0	Lower N. asperus	Middle Eocene	2	Fair	High	None	
SWC 34	1603.0	5259.0	Upper M. diversus	Early Eocene	1	Fair	High	None	
SWC 33	1609.0	5279.0	Indeterminate	?	-	Poor	Low	None	
SWC 29	1643.0	5390.5	Middle M. diversus	Early Eocene	1	Good	High	Moderate	
SWC 24	1695.0	5561.0	Middle M. diversus	Early Eocene	1	Good	High	None	
SWC 17	1745.0	5725.0	Middle M. diversus	Early Eocene	2	Good	High	Low	
SWC 14	1791.5	5877.5	Upper L. balmei	Paleocene	1	Fair	Moderate	None	
SWC 13	1803.0	5915.0	Upper L. balmei	Paleocene	1	Fair	Moderate	None	
SWC 6	1915.0	6283.0	Indeterminate	?	-	Barren	-	-	
SWC 2	2004.0	6575.0	Lower L. balmei	Paleocene	1	Fair	Moderate	None	

PALYNOLOGY DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: 21m GL: - 42.1m

WELL NAME: SEAHORSE-2 TOTAL DEPTH: 2021m

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										
PALEOGENE	*P. tuberculatus*	1269.9	0				1386.8	0			
	Upper *N. asperus*	1402	1				1402	1			
	Mid *N. asperus*	1405	1				1422	0			
	Lower *N. asperus*	1454	1				1571	2			
	P. asperopolus										
	Upper *M. diversus*	1603	1				1603	1			
	Mid *M. diversus*	1643	1				1745	2			
	Lower *M. diversus*										
	Upper *L. balmei*	1791.5	1				1803	1			
	Lower *L. balmei*	2004	1				2004	1			
LATE CRETACEOUS	*T. longus*										
	T. lilliei										
	N. senectus										
	U. *T. pachyexinus*										
	L. *T. pachyexinus*										
	C. triplex										
	A. distocarinatus										
EARLY CRET.	*C. paradoxus*										
	C. striatus										
	F. asymmetricus										
	F. wonthaggiensis										
	C. australiensis										
PRE-CRETACEOUS											

COMMENTS: _____

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: Howard E Stacy DATE: September 17, 1982

DATA REVISED BY: _____ DATE: _____

PART II

BASIC DATA

TABLE 2: BASIC DATA

PALYNOMORPH DISTRIBUTION CHARTS

TABLE 2

BASIC DATA

SEAHORSE-2, GIPPSLAND BASIN

SAMPLE SAMPLE	DEPTH (METRES)	DEPTH (FEET)	YIELD	SPORE-POLLEN DIVERSITY	DINOS DIVERSITY
SWC 92	1269.9	4166.0	Poor	Moderate	Low
SWC 69	1384.0	4540.5	Fair	Moderate	Moderate
SWC 68	1386.8	4550.0	Fair	Moderate	Moderate
SWC 67	1390.0	4560.0	Poor	Low	None
SWC 65	1396.0	4580.0	Poor	Low	None
SWC 63	1402.0	4600.0	Fair	Low	Moderate
SWC 62	1405.0	4609.5	Fair	Moderate	High
SWC 61	1406.9	4616.0	Poor	Low	None
SWC 43	1511.4	4958.5	Barren	-	-
SWC 59	1413.0	4636.0	Poor	Low	Low
SWC 57	1422.0	4665.0	Fair	High	Low
SWC 52	1441.0	4727.5	Poor	Low	None
SWC 50	1444.6	4739.5	Poor	Low	None
SWC 47	1454.0	4770.0	Fair	High	Low
SWC 44	1480.9	4858.5	Poor	None	Low
SWC 42	1523.0	4996.5	Poor	Low	None
SWC 36	1571.0	5154.0	Fair	High	None
SWC 34	1603.0	5259.0	Fair	High	None
SWC 33	1609.0	5279.0	Poor	Low	None
SWC 29	1643.0	5390.5	Good	High	Moderate
SWC 24	1695.0	5561.0	Good	High	None
SWC 17	1745.0	5725.0	Good	High	Low
SWC 14	1791.5	5877.5	Fair	Moderate	None
SWC 13	1803.0	5915.0	Fair	Moderate	None
SWC 6	1915.0	6283.0	Barren	-	-
SWC 2	2004.0	6575.0	Fair	Moderate	None

Well Name SEAHORSE-2 Basin GIPPSLAND Sheet No. 1 of 4

SAMPLE TYPE *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S				
DEPTHS / PALYNOMORPHS	1269.9	1384	1386.8	1390	1396	1402	1405	1406.9	1413	1422	1441	1444.6	1454	1480.9	1511.4	1523	1571	1609	1643	1695	1745	1803	1915	2004					
A. qualumis																														
A. acutullus																														
A. luteoides																														
A. oculatus																														
A. sectus																														
A. triplaxis																														
A. obscurus																														
B. disconformis																														
B. arcuatus																		\												
B. elongatus																														
B. mutabilis																								\						
B. otwayensis																														
B. elegansiformis													\																	
B. trigonalis													\																	
B. verrucosus																														
B. bombaxoides																														
B. emaciatus																														
C. bullatus																														
C. heskermensis																														
C. horrendus																														
C. meleosus																														
C. apiculatus																														
C. leptos																														
C. striatus																														
C. vanraadshoovenii																														
C. orthoteichus/major			\														\		\	\		\								
C. annulatus		\	\																											
C. gigantis																														
C. splendens			\	\		\	\			\							\		\	\	\	\		\						
D. australiensis																														
D. granulatus	\	\	\				\			\										\		\		\						
D. tuberculatus																														
D. delicatus																														
D. semilunatus																														
E. notensis																														
E. crassiexinus						\				\							\		\											
F. balteus																														
F. crater																														
F. lucunosus																														
F. palaequetrus																														
G. edwardsii																						\		\						
G. rudata																								\						
G. divaricatus																														
G. gestus																														
G. catathus																														
G. cranwellae																														
G. wahooensis																														
G. bassensis																														
G. nebulosus													\																	
H. harrisii	\	\	\	\	\	\	\	\	\	\	\	\	\			\	\		\	\	\	\		\						
H. astrus																														
H. elliottii			\										\											\						
I. anguloclavatus				\						\									\	\	\			\						
I. antipodus																														
I. notabilis																			\											
I. gremius							\																							
I. irregularis																														
J. peiratus																														
K. waterbolkii																			\											
L. amplus																														
L. crassus																														
L. ohaiensis																														
L. bainii																														
L. lanceolatus																														
L. balmei																						\		\						
L. florinii																						\		\						
M. diversus																\			\	\	\									
M. duratus																														
M. grandis													\																	
M. perimagnus																														

*C= core; S= sidewall core; T= cuttings.

Well Name SEAHORSE-2 Basin GIPPSLAND Sheet No 2 of 4

SAMPLE TYPE *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
DEPTHS / PALYNOMORPHS	1269.9	1384	1386.8	1390	1396	1402	1405	1406.9	1413	1422	1441	1444.6	1454	1480.9	1511.4	1523	1571	1609	1643	1695	1745	1803	1915	2004
M. subtilis										\														
M. ornamentalis																								
M. hypolaenoides																								
M. homeopunctatus																								
M. parvus/mesonesus			\														\		\			\		
M. tenuis																								
M. verrucosus																								
M. australis																								
N. asperus						\	\			\			\				\							
N. asperoides																								
N. brachyspinulosus	\	\	\	\	\	\	\	\	\		\	\	\			\	\		\	\				
N. deminutus		\																						
N. emarcidus/heterus		\			\	\											\		\	\	\	\		
N. endurus										\			\											
N. falcatus	\	\	\	\	\	\	\	\	\	\		\					\							
N. flemingii	\						\	\		\							\		\	\		\		\
N. goniatus																								
N. senectus																								
N. vansteenisii																								
O. sentosa																								
P. ochesis																								
P. catastus																								
P. demarcatus																			\	\	\			
P. magnus																								
P. polyoratus																								
P. vesicus										\														
P. densus																							\	
P. vellosus																								
P. morganii/jubatus																								
P. mawsonii	\	\				\				\	\						\		\	\		\	\	
P. reticulosaccatus																								
P. verrucosus																								
P. crescentis																								
P. esobalteus																	\		\ cf					
P. langstonii																								
P. reticulatus																								
P. simplex																								
P. varus																								
P. adenanthoides (Prot.)									\			\					\		\	\	\	\		
P. aveolatus																			\					
P. amolosexinus																								
P. angulatus																								
P. annularis			\			\		\	\								\		\	\		\		
P. asperopolus																	\							
P. biornatus																			\					
P. beddoesii													\				\							
P. cleinei																								
P. confragosus																								
P. crassus																			\					
P. delicatus																								
P. gemmatus																							\	
P. grandis																	\		\	\	\			
P. grevillaensis																								
P. incurvatus																			\ cf	\				
P. intricatus																								
P. kopiensis																	\				\			
P. lapis																								
P. latrobensis										\														
P. leightonii																	\		\		\			
P. neriensis																				\				
P. obscurus																								
P. ornatus																			\					
P. otwayensis																								
P. pachypolus																	\							
P. palisadus																								
P. pargus																								
P. plemmelus																								
P. prodigus																								
P. pseudomoides																	\		\	\		\		
P. recavus	\								\				\						\ cf					

* C=core: S=sidewall core: T=cutting

MISC.PALY.DIST.CHART DWG.1107/OP/227

Well Name SEAHORSE-2 Basin GIPPSLAND Sheet No. 3 of 4

SAMPLE TYPE *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S				
DEPTHS / PALYNOMORPHS	1269.9	1384	1386.8	1390	1396	1402	1405	1406.9	1413	1422	1441	1444.6	1454	1480.9	1511.4	1523	1571	1609	1643	1695	1745	1803	1915	2004						
P. rectomarginis																															
P. reflexus							╲						╲				╲														
P. reticulatus																															
P. reticuloconcavus																															
P. reticuloscabratus										╲										╲		╲		╲							
P. rugulatus																															
P. scitus																															
P. stipplatus			╲				╲						╲				╲														
P. tenuiexinus																			╲		╲	╲									
P. truncatus																															
P. tuberculatus	╲																														
P. tuberculiformis																			╲												
P. tuberculotumulatus																															
P. xestoformis (Prot.)																															
Q. brossus																															
R. boxatus																															
R. stellatus																															
R. mallatus							╲										╲		╲	╲		╲		╲							
R. trophus			╲				╲																								
S. cainozoicus																	╲														
S. rotundus																															
S. digitatoides																															
S. marlinensis																															
S. rarus																															
S. meridianus													╲						╲	╲	╲	╲		╲							
S. prominatus																															
S. uvatus																															
S. punctatus	╲	╲	╲			╲	╲																	╲							
S. regium			╲			╲	╲	╲		╲																					
T. multistrixus (CP4)																						╲									
T. textus																															
T. verrucosus																								╲							
T. securus																															
T. confessus (C3)																															
T. gillii																															
T. incisus																			╲												
T. longus																															
T. phillipsii													╲				╲		╲			╲		╲							
T. renmarkensis																															
T. sabulosus																															
T. simatus																															
T. thomasii																															
T. waiparaensis																															
T. adelaidensis (CP3)																															
T. angurium									╲				╲						╲												
T. delicatus																															
T. geraniodes																															
T. leuros													╲																		
T. lilliei																															
T. marginatus																															
T. moultonii																	╲		╲	╲											
T. paenestriatus																				╲											
T. retequetrus																															
T. scabratus																															
T. sphaerica																															
T. magnificus (P3)			╲						╲																						
T. spinosus																															
T. ambiguus																				╲											
T. chnosus																															
T. helosus																				╲											
T. scabratus																															
T. sectilis																															
V. attinatus																															
V. cristatus			╲														╲														
V. kopukuensis																															

*C=core; S=sidewall core; T=cuttings.

Well Name SEAHORSE-2 Basin GIPPSLAND Sheet No 4 of 4

SAMPLE TYPE *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
DEPTHS / PALYNOMORPHS	1269.9	1384	1386.8	1390	1396	1402	1405	1406.9	1413	1422	1441	1444.6	1454	1480.9	1511.4	1523	1571	1609	1643	1695	1745	1803	1915	2004
P. mammilatus	/																							
P. vietus ms.	/	/	/																					
I. maculatum		/	/																					
I. victorianum		/	/																					
L. machaerophorum		/	/				/	/																
O. centrocarpum		/	/			/	/																	
K. cuneatus ms.			/			/																		
P. simplex			/			/																		
A. capricornum						/	/																	
D. heterophlycta						/	/																	
D. phosphoritica						/	/																	
P. coreoides						/	/																	
P. eocenicum						/	/																	
Phthanoperidinium sp.						/	/																	
A. alcicornu						/	/																	
S. ramosus						/	/			/														
A. senonensis							/																	
B. compta							/																	
C. imperfecta ms.							/		/															
H. tubiferum							/																	
R. vitilare							/																	
S. variable							/																	
V. clathroderma							/																	
D. leptodermata							/																	
N. balcombiana							/		/															
S. lanceolatus							/						/											
H. floripes							/																	
Homotryblium sp.							/																	
H. spinata							/																	
S. reticulifera								/	/															
Lejenunia sp.									/															
V. extensa									/															
Spinidinium sp.													/											
D. flounderensis																		/						
D. obliquipes (l.h.)																		/		/				

* C=core: S=sidewall core: T=cutting

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APPENDIX 3

APPENDIX 3

QUANTITATIVE LOG ANALYSIS

SEAHORSE-2

QUANTITATIVE LOG ANALYSIS

Interval: 1400-2005m KB

Analyst : W.J. Mudge

Date : August, 1983.

CONTENTS

SEAHORSE - 2 QUANTITATIVE LOG ANALYSIS

Seahorse-2 wireline logs have been analysed for effective porosity and water saturation over the interval 1400-2005m 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, MSFL, GR, Caliper, RHOB (FDC), PHIN (CNL run with FDC).

Coals and carbonaceous shales were edited for an output of:

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

Log quality is good.

Analysis Parameters

Depth	1400-1600	1600-2005
a	1	1
m	2	2
n	2	2
Apparent Shale Density	2.43 gm/cc	2.57 gm/cc
Apparent Shale Neutron Porosity	0.34	0.32
RSH	10 ohm.m	19 ohm.m
RMF @ 11° C	0.32 ohm.m	0.32 ohm.m
Grain Density window - lower limit	2.65 gm/cc	2.65 gm/cc
Grain Density window - upper limit	2.67 gm/cc	2.67 gm/cc
Invaded zone fluid density	1.00 gm/cc	1.00 gm/cc
Hydrocarbon Density	0.70 gm/cc	0.70 gm/cc
Bottom Hole Temperature	85° C	85° C

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.

Shale Volume

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

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

Total Porosities

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

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

if h is greater than 0, then

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

if h is less than 0, then

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

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

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

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

Rwb and Swb were calculated using the following relationships:

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

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

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

Free Water Resistivities (Rw) and Salinities

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

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

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

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

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.

All the sands in Seahorse-2 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:

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

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 in Seahorse-1 If adjacent fresh water aquifer salinities are used known hydrocarbon bearing sands calculate to be water bearing.

Free water salinities are summarised in Table 1.

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 (0.7 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
PHIN = 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:

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

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

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 2.

Comments

1. An apparent free water salinity of 35,000 ppm was chosen for the hydrocarbon zones. This was derived from below the limit of fresh water flushing in Seahorse-1.

2. Figures 1 & 2 present a comparison between core analysis porosities corrected to overburden conditions and calculated porosities. Core #1 was moved up 0.5m while core #2 was on depth with logs.

11451/77

TABLE 1

Depth Interval	Apparent Fresh Water Salinity (ppm)
1441.50 - 1442.50	35000 *
1450.25 - 1454.50	1200
1463.50 - 1474.25	1350
1501.75 - 1513.50	1400
1525.25 - 1537.25	1550
1544.00 - 1546.00	2600
1551.50 - 1559.75	1550
1563.25 - 1565.75	35000 *
1569.25 - 1570.50	1600
1575.00 - 1599.75	1350
1603.25 - 1603.50	35000 *
1612.25 - 1613.25	3100
1616.50 - 1636.25	1580
1644.75 - 1662.50	1900
1672.50 - 1691.00	1600
1696.75 - 1715.75	1750
1720.00 - 1744.00	2350
1750.00 - 1773.00	1900
1777.75 - 1790.25	1650
1792.00 - 1800.25	2300
1806.00 - 1809.25	3850
1817.25 - 1830.25	3000
1834.75 - 1837.50	3700
1843.25 - 1884.75	2000
1894.50 - 1973.50	4000
1980.00 - 1996.25	4700

* Calculated from below the limit of fresh water flushing in Seahorse-1. All salinities are apparent salinities.

SUMMARY OF RESULTS

TABLE 2

Depth Interval (m KB)	Gross Thickness	Net Porous Thickness	Porosity Range	*Porosity Average	Sw Range	*SW Average	Fluid Content
1441.50 - 1442.50	1.00	0.75	.175-.219	.172	.196-.682	.302	Oil-Shaly
1450.25 - 1454.50	4.25	3.25	.112-.192	.153	+	+	Water
1463.50 - 1474.25	10.75	9.00	.103-.305	.229	+	+	Water
1501.75 - 1513.50	11.75	9.50	.115-.288	.225	+	+	Water
1525.25 - 1537.25	12.00	11.50	.108-.282	.222	+	+	Water
1544.00 - 1546.00	2.00	0.25	.156-.227	.192	+	+	Water
1551.50 - 1559.75	8.25	6.25	.108-.264	.203	+	+	Water
1563.25 - 1565.75	2.50	2.50	.173-.286	.249	.021-.090	.045	Oil
1569.25 - 1570.50	1.25	1.25	.131-.214	.185	+	+	Water
1575.00 - 1599.75	24.75	20.25	.159-.329	.240	+	+	Water
1603.25 - 1603.50	0.25	0.25	.110-.191	.150	.182-.401	.291	Oil-Shaly
1612.25 - 1613.25	1.00	0.75	.118-.180	.151	+	+	Water
1616.50 - 1636.25	19.75	19.75	.104-.313	.237	+	+	Water
1644.75 - 1662.50	17.75	14.00	.116-.272	.212	+	+	Water
1672.50 - 1691.00	18.50	18.25	.103-.270	.229	+	+	Water
1696.75 - 1715.75	19.00	18.25	.194-.297	.245	+	+	Water
1720.00 - 1744.00	24.00	19.50	.111-.284	.228	+	+	Water
1750.00 - 1773.00	23.00	19.50	.122-.286	.206	+	+	Water
1777.75 - 1790.25	12.50	8.50	.119-.287	.223	+	+	Water

Depth Interval (m KB)	Gross Thickness	Net Porous Thickness	Porosity Range	*Porosity Average	Sw Range	*SW Average	Fluid Content
1792.00 - 1800.25	8.25	7.50	.146-.266	.208	+	+	Water
1806.00 - 1809.25	3.25	3.00	.112-.276	.191	+	+	Water
1817.25 - 1830.25	13.00	12.25	.120-.261	.212	+	+	Water
1834.75 - 1837.50	2.75	2.50	.187-.251	.205	+	+	Water
1843.25 - 1884.75	41.50	40.00	.111-.238	.186	+	+	Water
1894.50 - 1973.50	79.00	71.75	.105-.275	.196	+	+	Water
1980.00 - 1996.25	16.25	12.00	.102-.211	.152	+	+	Water

* Refers to zones where porosity is greater than 10%.

\+ Water bearing sands (100% water saturation).

CORE #1 Comparison of Core Porosities (●) and Log Porosities (-).

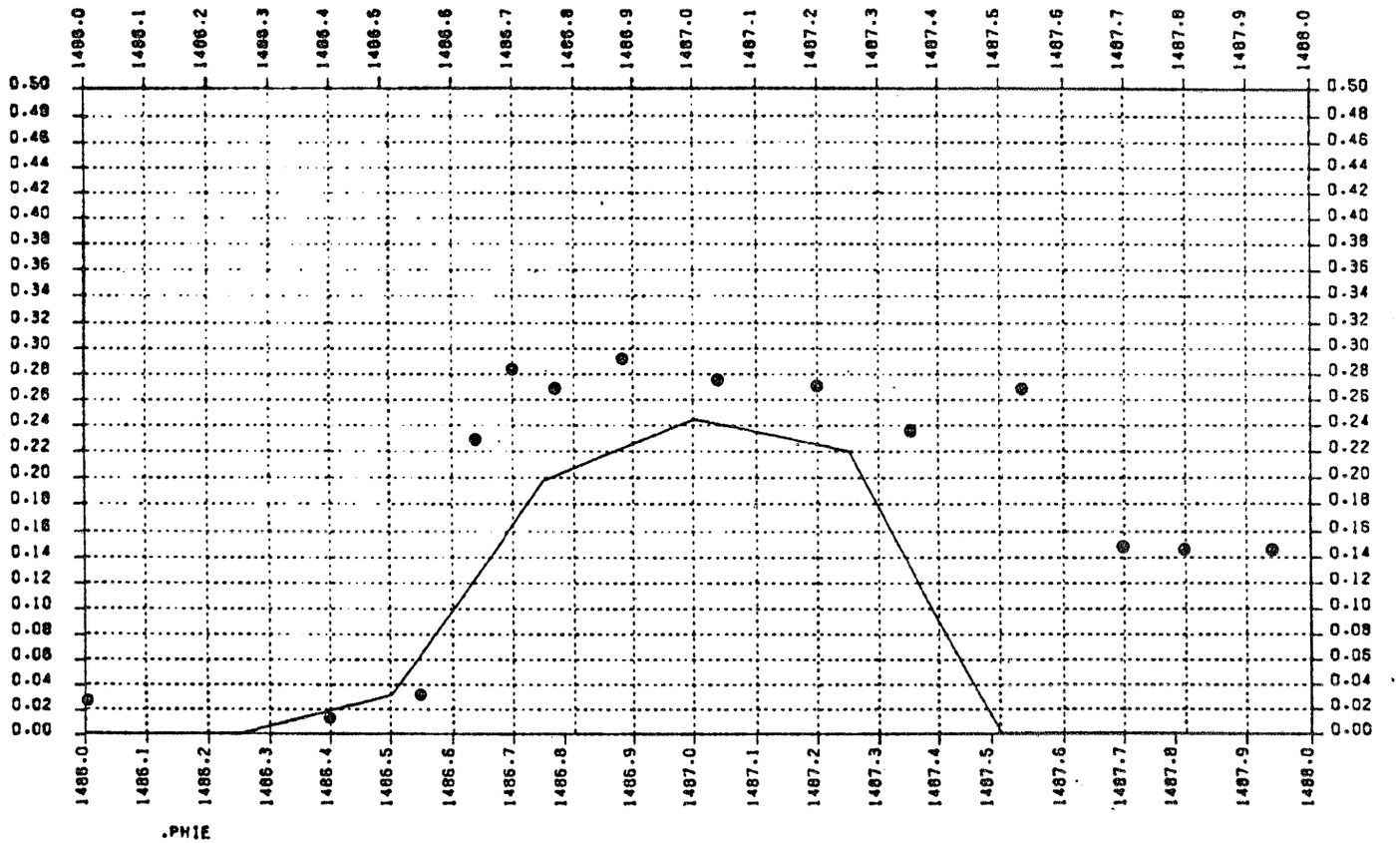


FIGURE 1

CORE #2 Comparison of Core Porosities (●) and Log Porosities (-).

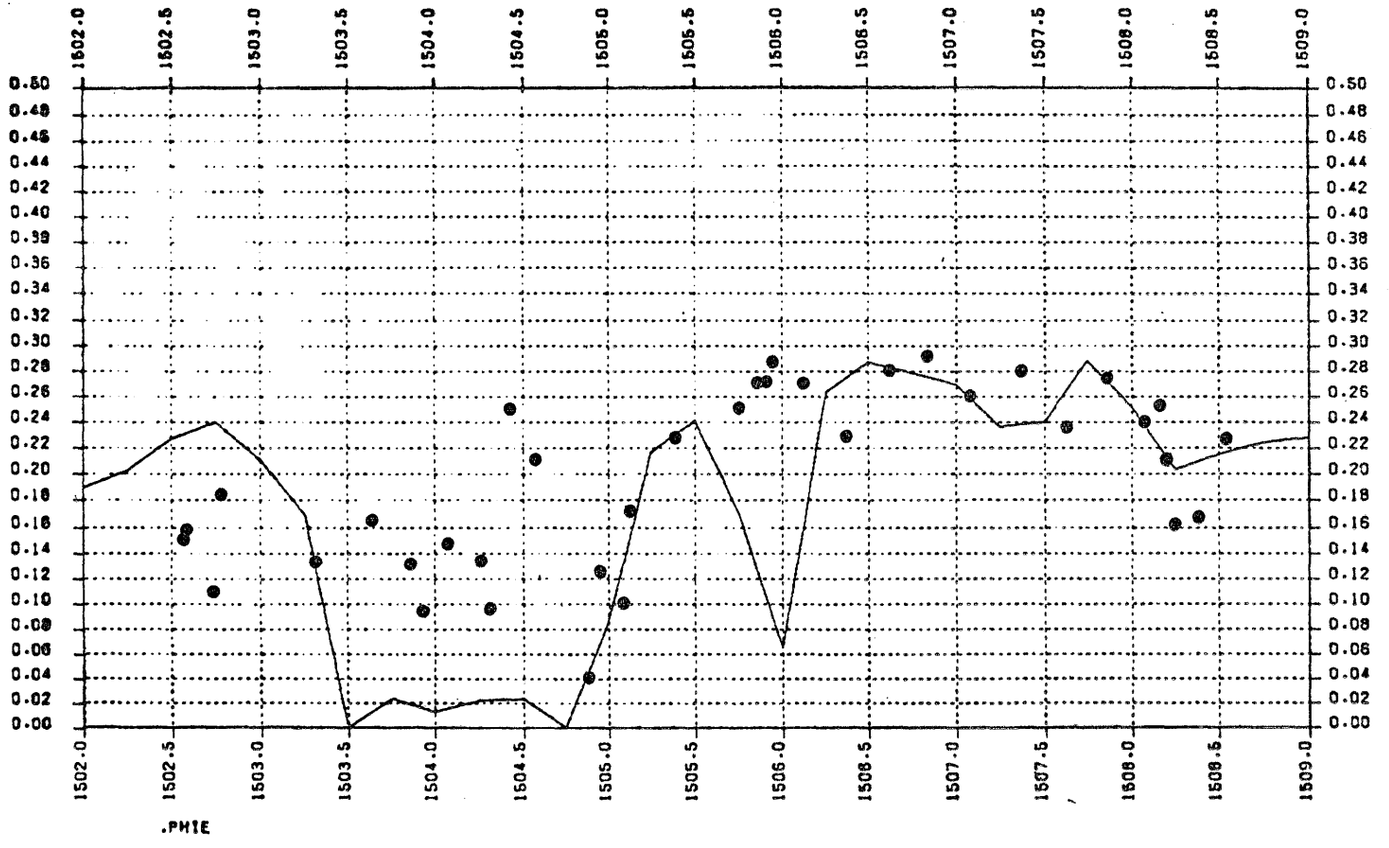
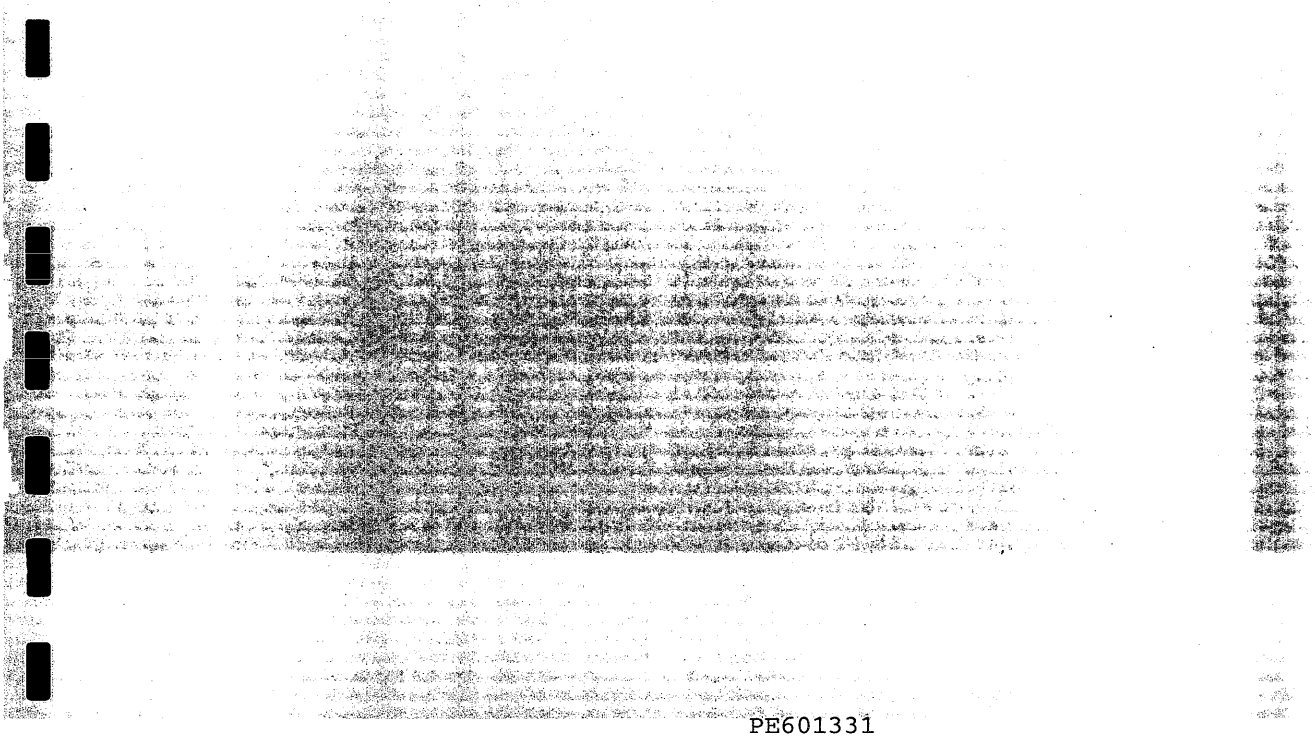


FIGURE 2



PE601331

This is an enclosure indicator page.
The enclosure PE601331 is enclosed within the container PE902638 at this location in this document.

The enclosure PE601331 has the following characteristics:

ITEM_BARCODE	= PE601331
CONTAINER_BARCODE	= PE902638
NAME	= Quantative Log Analysis
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Quantative Log Analysis
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	= 7/09/94
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 4

Appendix 4

RFT Testing Report.

APPENDIX 4

RFT TESTING REPORT

CONTENTS

SUMMARY OF SEAHORSE-2 RFT TESTING

Fourteen RFT runs were made, one for pretests and 13 for samples and incidental pretests. Of 74 pretests 47 were successful . Of 13 sampling runs 10 were successful in obtaining samples. Of 10 successful sampling runs 3 recovered oil, namely at 1442.0, 1564.0, 1603.2 m MDKB. RFT pressure data was badly affected by supercharging in the very silty N-1.3 and N-1.4 sands, but was satisfactory in the other cleaner sands.

SEAHORSE-2 RFT PRESSURES, TEMPERATURES AND SAMPLES

The data indicated at least 4 separate pressure systems in Seahorse-2, showing progressively less drawdown with depth (see Fig. 1). The systems are:-

(1) the N-1 sands

(2) the N-2.1 to N-2.4 sands

(3) the N-2.6, P-1.0, P-1.1 and other sands down to at least 1663m MDKB

(4) the sands below 1673m MDKB.

The drawdowns in these systems owing to production from the Gippsland Basin were found to be 57, 52, 47, 42 psi respectively. The Gippsland aquifer model had predicted a drawdown of 45 psi for the first pressure system.

Pressure System 1 (see Fig. 2)

This system consists of three sands:-

(i) the N-1.3 sand, sampled oil at 1442m MDKB.
(ii) the N-1.4 sand, sampled water at 1451, 1454.2, 1456.5m MDKB.
(iii) the N-1.5 sand, sampled water at 1466.1 m MDKB.

The N-1.3 and N-1.4 sands are very thin and silty and/or clayey (see logs and sidewall cores), permitting supercharging in the invaded zone and consequently the measured RFT (HP gauge) pretest pressures are of very little value in determining contacts or distinguishing between oil and water. The N-1.3 sand was found, by sampling, to be oil bearing. Sampling in the N-1.4 sand recovered water almost as saline as the mud filtrate, and so this sampling was inconclusive.

An OWC at 1451m was inferred by drawing an oil gradient through the build-up pressure after sampling at 1442m, instead of using the pretest pressure. This is consistent with other data, including the range of contact positions inferred from Seahorse-1 pressure data.

The N-1.5 sand was a relatively clean sand and provided good RFT data on a water line. Water was also recovered in a sample from this sand.

Pressure System 2

This system, consisting of the N-2.1 to N-2.4 sands was found from RFT pressures, from 2 RFT samples, and from the lack of shows in the cores, to be water bearing, even though it is above the OWC seen in these sands at Seahorse-1.

Pressure System 3

Two oil bearing sands, separated by various water sands, were found in this pressure system. They are:

(i) the P-1.0 sand, 1563.5 - 1566.8m MDKB
(ii) the P-1.1 sand, 1603.0 - 1603.5m MDKB.

In the P-1.0 sand RFT pressures and samples, and resistivity logs indicate an OWC at 1565.8m MDKB (see Fig. 3). This sand was not seen at Seahorse-1.

In the P-1.1 sand an RFT post sampling pressure (considered more reliable than the pretests) implies an OWC at 1604.5m MDKB, which is 1.0m above the deepest oil seen in this sand at Seahorse-1.

Pressure System 4

This is a system of water bearing sands.

Temperature

A temperature of about 151°F (or 66°C) at the reservoir datum of 1410m subsea was indicated by RFT testing, and this is in agreement with the temperature observed in Seahorse-1.

Conclusion

The best estimates of Seahorse oil water contacts are given in Table 1.

TABLE 1

SUMMARY OF OWC INFORMATION IN SEAHORSE

Sands	Seahorse-1 KB = 25m		Seahorse-2 KB = 21m		Best Estimate of Contact Position
	m MDKB	m TVDSS	m MDKB	m TVDSS	m TVDSS
N-1	1450 (min. OWC) to 1458 (max. OWC) inferred from RFT, FIT pressures	1425 to 1432	1442.5 (LPO) 1450.0 (HPW) inferred from sampling 1451.0 (OWC) inferred from 1 RFT pressure	1421.5 1429.0 1430.0	1425-1429
N-2.6	1521 (min. OWC) to 1522 (max. OWC) seen on logs	1496 to 1497	Water bearing		1496.5
P-1.0	Sand not seen		1565.8 (OWC) inferred from logs, RFT pressures, samples.	1554.8	1544.8
P-1.1	1609.5 (LPO) inferred from sampling, logs	1584.5	1603.5 (LPO) inferred from logs, RFT sample 1604.5 (OWC) inferred from 1 RFT pressure	1582.5 1583.5	1584.5

LPO = low proved oil

OWC = oil water contact

HPW = high proved water

0332L

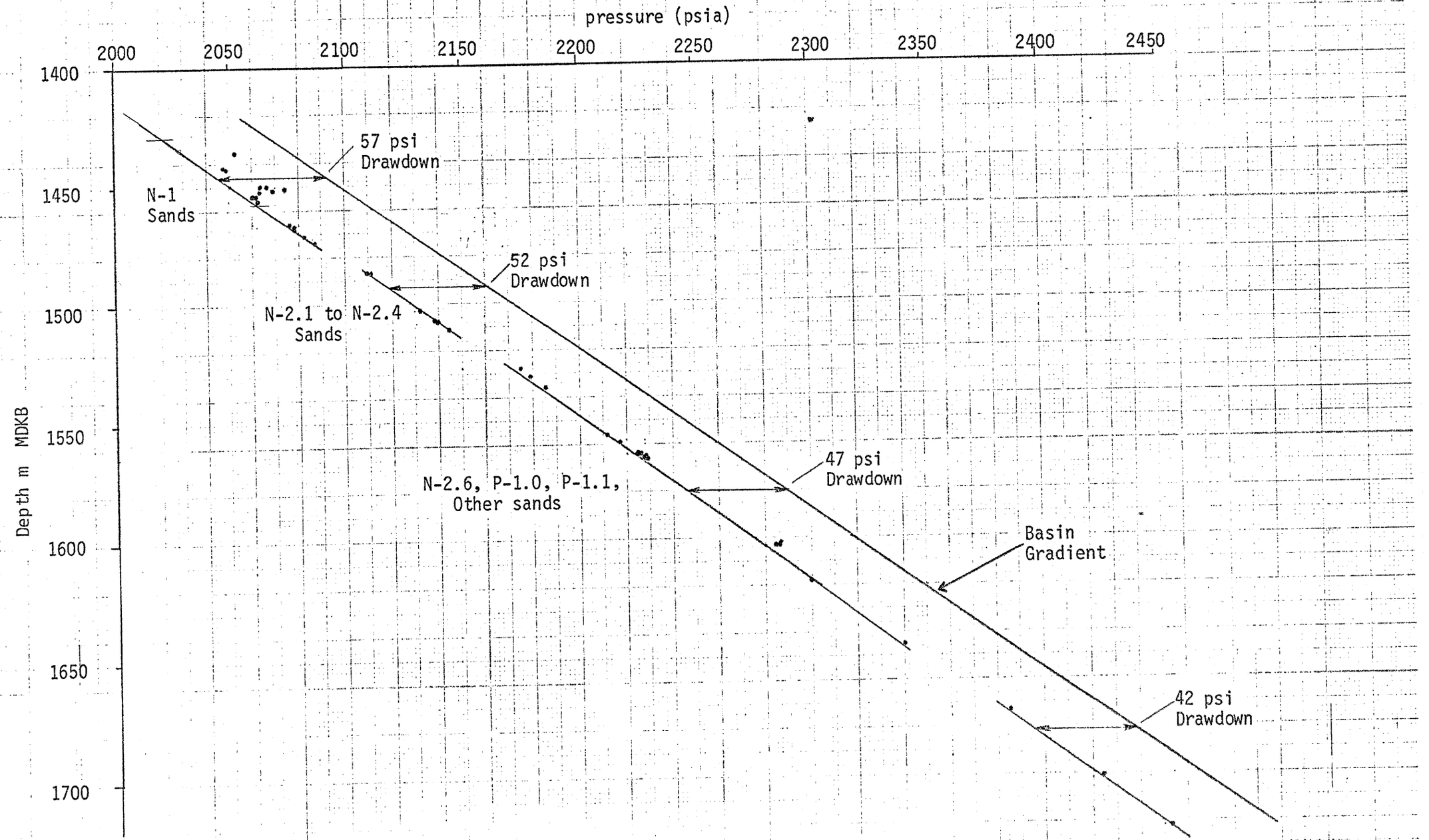


FIGURE 1 SEAHORSE 2 - RFT PRESSURES

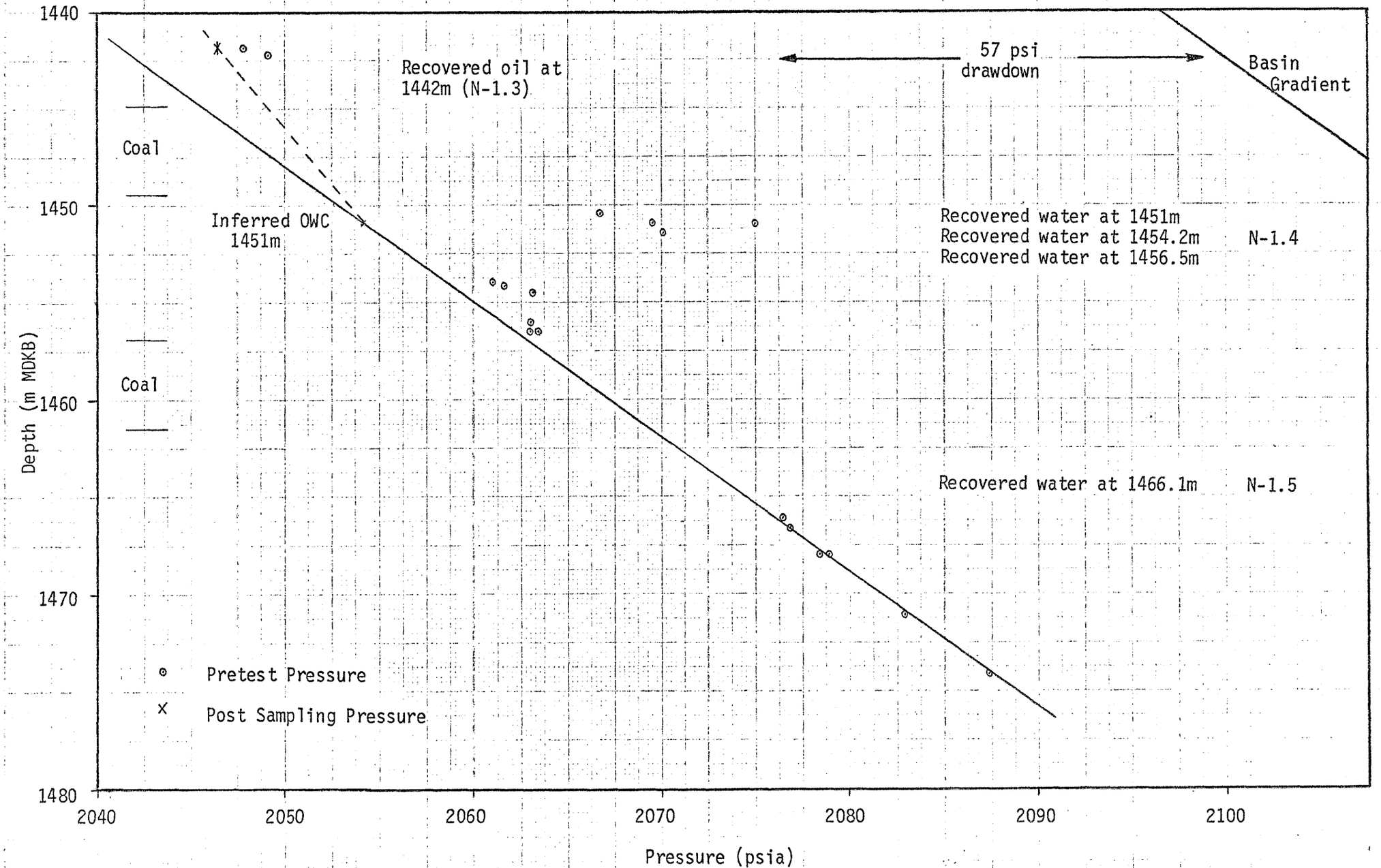


Figure 2: SEAHORSE 2 RFT PRESSURES IN N-1 SANDS

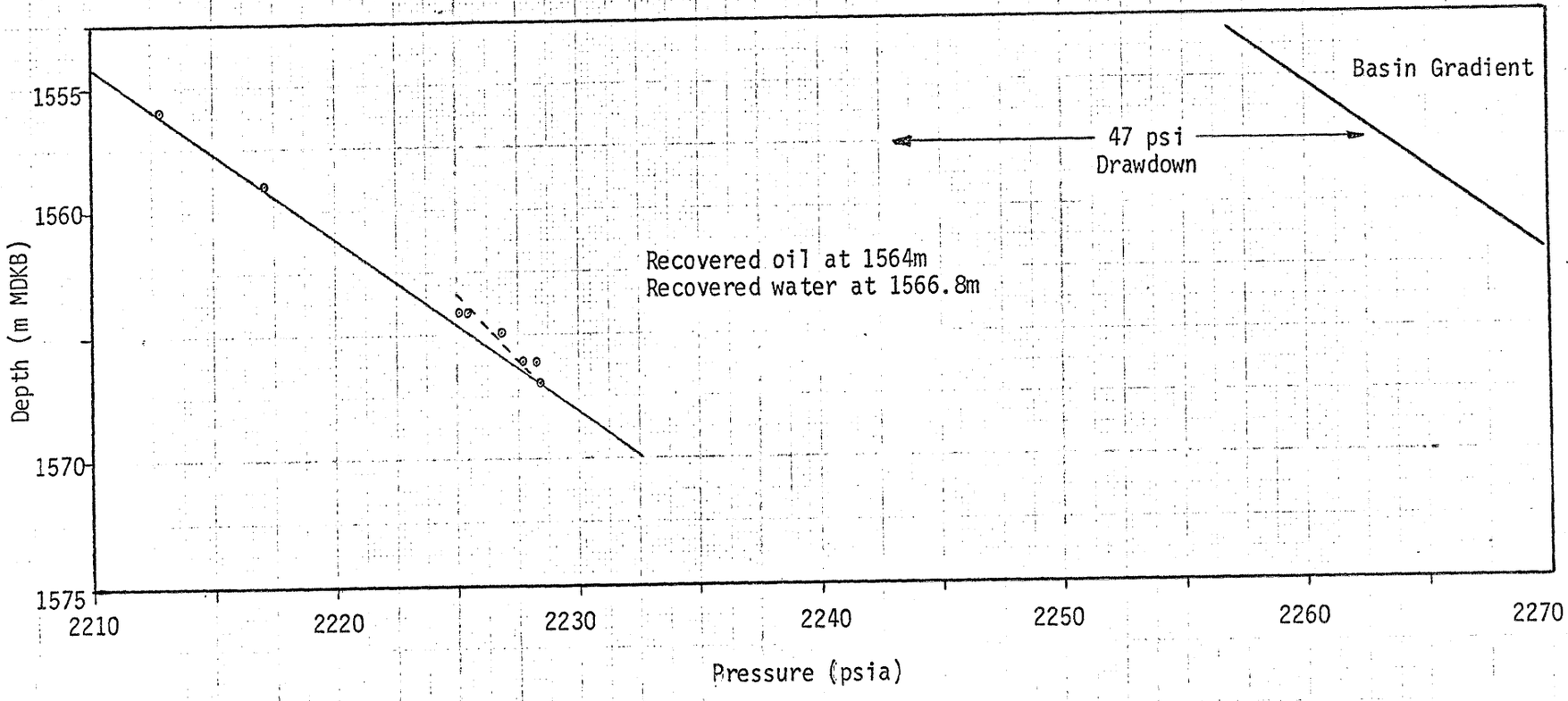


Figure 3: SEAHORSE 2 RFT PRESSURES IN P-1.0 SANDS

RFT PRETEST PRESSURES

SERVICE COMPANY: ..SCHLUMBERGER SUITE 2..RFT RUN. NO: 1.....

WELL : ..SEAHORSE-2.....
DATE : ..22nd July, 1982....
OBSERVERS :..A. LINDSAY/N. WILLIAMS

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
1/1	1436.5	1415.5	PT	HP	Y	A	2494	10.21	2052.5	8.53	2494	10.21	Valid
				SCH	N	G			2051	8.52			
1/2	1442.0	1421.0	PT	HP	Y	A	2502	10.21	2047.9	8.48	2502	10.21	Valid
				SCH	N	G			2047	8.47			
1/3	1444.5	1423.5	PT	HP	Y	A	2505	10.20	No seal		2506	10.20	Invalid
				SCH	N	G							
1/4	1444.3	1423.3	PT	HP	Y	A	2514	10.24	No Seal		2509	10.22	Invalid
				SCH	N	G							
1/5	1444.7	1423.7	PT	HP	Y	A	2506	10.20	No Seal		2506	10.20	Invalid
				SCH	N	G							
1/6	1450.5	1429.5	PT	HP	Y	A	2513	10.19	2066.6	8.50	2515	10.20	Valid
				SCH	N	G			2066	8.50			
1/7	1454.5	1433.5	PT	HP	Y	A	2522	10.20	2063.0	8.47	2521	10.20	Valid
				SCH	N	G			2062	8.46			

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

SUITE 2

SERVICE COMPANY: .SCHLUMBERGER.....RFT RUN. NO: .1.....

WELL : ...SEAHORSE-2.....

DATE : ...22nd.July,.1982....

OBSERVERS :.A.LINDSAY/N.WILLIAMS

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
1/8	1456.5	1435.5	PT	HP	Y	A	2525	10.20	2063.3	8.45	2525	10.20	Valid
				SCH	N	G			2063	8.45			
1/9	1466.5	1445.5	PT	HP	Y	A	2541	10.19	2076.5	8.45	2541	10.19	Valid
				SCH	N	G			2075	8.44			
1/10	1468.0	1447.0	PT	HP	Y	A	2543	10.19	2078.5	8.45	2544	10.19	Valid
				SCH	N	G			2077	8.44			
1/11	1471.0	1450.0	PT	HP	Y	A	2549	10.19	2082.5	8.45	2549	10.19	Valid
				SCH	N	G			2081	8.44			
1/12	1474.0	1453.0	PT	HP	Y	A	2553	10.19	2086.9	8.45	2553	10.19	Valid
				SCH	N	G			2084	8.44			
1/13	1487.0	1466.0	PT	HP	Y	A	2576	10.19	2110.3	8.47	2576	10.19	Valid
				SCH	N	G			2109	8.46			
1/14	1496.5	1475.5	PT	HP	Y	A	2593	10.19	No seal		2593	10.19	Invalid
				SCH	N	G							

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

SUITE 2

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 1

WELL : SEAHORSE-2

DATE : 22nd July, 1982

OBSERVERS : A.LINDSAY/N.WILLIAMS

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
1/15	1503.0	1482.0	PT	HP	Y	A	2603	10.19	2132.4	8.46	2603	10.19	Valid
				SCH	N	G			2131	8.46			
1/16	1507.0	1486.0	PT	HP	Y	A	2609	10.18	2138.1	8.46	2607	10.18	Valid
				SCH	N	G			2137	8.46			
1/17	1511.5	1490.5	PT	HP	Y	A	2615	10.18	2144.6	8.46	2616	10.18	Valid
				SCH	N	G			2142	8.45			
1/18	1528.5	1507.5	PT	HP	Y	A	2646	10.18	2175.6	8.37	1643	10.17	Valid
				SCH	N	G			2172	8.36			
1/19	1531.5	1510.5	PT	HP	Y	A	2651	10.18	No seal		2651	10.18	Invalid
				SCH	N	G							
1.20	1531.0	1510.0	PT	HP	Y	A	2650	10.18	2179.0	8.37	2650	10.18	Valid
				SCH	N	G			2177	8.36			
1/21	1564.0	1543.0	PT	HP	Y	A	2707	10.18	2225.2	8.37	2708	10.19	Valid
				SCH	N	G			2221	8.53			

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

SUITE-2

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 1

WELL : SEAHORSE-2

DATE : 22nd July, 1982

OBSERVERS : A.LINDSAY/N.WILLIAMS

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
1/22	1565.0	1544.0	PT	HP	Y	A	2709	10.18	No seal		2709	10.18	Invalid
				SCH	N	G							
1/23	1565.0	1544.0	PT	HP	Y	A	2709	10.18	No seal		2709	10.18	Invalid
				SCH	N	G							
1/24	1566.0	1545.0	PT	HP	Y	A	2710	10.18	2228.0	8.48	2710	10.18	Valid
				SCH	N	G			2223	8.46			
1/25	1603.0	1582.0	PT	HP	Y	A	2775	10.18	2284.0	8.49	2775	10.18	Valid
				SCH	N	G			2276	8.46			
1/26	1436.0	1415.0	PT	HP	Y	A	2490	10.20	No seal		2488	10.19	Invalid
				SCH	N	G							
1/27	1441.0	1420.0	PT	HP	Y	A	2497	10.19	No seal		2496	10.19	Invalid
				SCH	N	G							
1/28	1450.5	1429.5	PT	HP	Y	A	2513	10.19	2066.6	8.50	2513	10.19	Valid
				SCH	N	G			2060	8.48			

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

SUITE 2

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 1

WELL : SEAHORSE-2

DATE : 22nd July, 1982

OBSERVERS A.LINDSAY/N.WILLIAMS

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
1/29	1451.5	1430.5	PT	HP	Y	A	2514	10.19	2069.9	8.51	2515	10.19	Valid
				SCH	N	G			2062	8.48			
1/30	1618.0	1597.0	PT	HP	Y	A	2802	10.19	2299.7	8.47	2801	10.18	Valid
				SCH	N	G			2298	8.46			
1/31	1645.0	1624.0	PT	HP	Y	A	2848	10.18	2340.9	8.48	2848	10.18	Valid
				SCH	N	G			2344	8.49			
1/32	1673.5	1652.5	PT	HP	Y	A	2898	10.19	2385.7	8.49	2897	10.18	Valid
				SCH	N	G			2382	8.48			
1/33	1701.0	1680.0	PT	HP	Y	A	2945	10.18	2424.2	8.49	2944	10.18	Valid
				SCH	N	G			2420	8.47			
1/34	1721.0	1700.0	PT	HP	Y	A	2978	10.18	No seal		2977	10.18	Invalid
				SCH	N	G							
1/35	1722.0	1701.0	PT	HP	Y	A	2980	10.18	2453.3	8.48	2978	10.17	Valid
				SCH	N	G			2451	8.48			

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

*Note: A pretest was also attempted at 1785.0m. Data was not recorded on the log. This seat was tight and and result was invalid. Seat number was not allocated.

RFT PRETEST PRESSURES

SUITE 2

SERVICE COMPANY: ...SCHLUMBERGER.....RFT RUN. NO: .3,. 4,. & 5.....

WELL : ..SEAHORSE-2.....

DATE : ...23rd July, 1982....

OBSERVERS A.LINDSAY/N.WILLIAMS

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
2/36	1442.0	1421.0	SPT	HP	Y	A	2502	10.21	2047.9	8.48	2497	10.19	Pretest valid, took seg. samples.
				SCH	N	G			2047	8.47			
3/37	1456.0	1435.0	SPT	HP	Y	A	2524	10.20	2062.9	8.46	2521	10.19	Pretest valid, took seg samples.
				SCH	N	G			2061	8.45			
4/38	1456.0	1435.0	SPT	HP	Y	A	2520	10.19	2062.9	8.46	2522	10.19	Pretest valid, no samples taken(tool failure)
				SCH	N	G			2061	8.45			
4/39	1454.5	1433.5	SPT	HP	Y	A	2518	10.18	No seal		2518	10.18	Pretest invalid, no sample taken
				SCH	N	G							
4/40	1454.0	1433.0	SPT	HP	Y	A	2517	10.18	2060.9	8.46	2517	10.18	Pretest valid, no samples taken (tool failure)
				SCH	N	G			2060	8.46			
5/41	1466.5	1445.5	SPT	HP	Y	A	2534	10.16	No seal		2536	10.17	Pretest invalid no samples taken.
				SCH	N	G							
5/42	1466.8	1445.8	SPT	HP	Y	A	2535	10.17	No seal				Pretest invalid no samples taken.
				SCH	N	G							

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

SUITE 2

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 5, 6 & 7

WELL : SEAHORSE-2

DATE : 23/24 & 25 July 1982

OBSERVERS A.LINDSAY/N.WILLIAMS

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
5/43	1467.9	1446.9	SPT	HP	Y	A	2538	10.17	2078.1	8.45	2537	10.17	Pretest valid, no sample taken(tool failure)
				SCH	N	G			2077	8.44			
5/44	1565.0	1544.0	SPT	HP	Y	A	2704	10.16	No seal		2705	10.17	Pretest invalid, sample not attempted.
				SCH	N	G							
5/45	1564.8	1543.8	SPT	HP	Y	A	2705	10.17	No seal		-		Pretest invalid,sample not attempted.
				SCH	N	G							
6/46	1442.4	1421.4	SPT	HP	Y	A	2501	10.20	2049.3	8.48	2502	10.20	Pretest valid, no samples taken (tool failure)
				SCH	N	G			2050	8.48			
6/47	1451.0	1430.0	SPT	HP	Y	A	2517	10.20	2069.3	8.51	2518	10.21	Pretest valid, no samples taken(tool failure)
				SCH	N	G			2069	8.51			
6/48	1456.5	1435.5	SPT	HP	Y	A	2527	10.21	2062.9	8.45	2526	10.20	Pretest valid, took seg samples
				SCH	N	G			2062	8.45			
7/49	1466.5	1445.5	SPT	HP	Y	A	2536	10.17	No seal		2532	10.16	Pretest invalid, sample not attempted.
				SCH	N	G							

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

SUITE 2

SERVICE COMPANY: ..SCHLUMBERGER.....RFT RUN. NO: ..7.&.8.....

WELL : ..SEAHORSE-2.....

DATE : ..25th July, 1982.....

OBSERVERS :A. LINDSAY/N. WILLIAMS

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
7/50	1466.8	1445.8	SPT	HP	Y	A	2537	10.17	Tight		2536	10.17	Pretest invalid, sample not attempted.
				SCH	N	G							
7/51	1467.5	1446.5	SPT	HP	Y	A	2538	10.17	Lost seal		2532	10.15	Pretest invalid, sample not attempted.
				SCH	N	G							
7/52	1467.5	1446.5	SPT	HP	Y	A	2538	10.17	No seal		2538	10.17	Pretest invalid sample not attempted.
				SCH	N	G							
7/53	1467.2	1446.2	SPT	HP	Y	A	2538	10.18	Lost seal		-		Pretest invalid, sample not attempted.
				SCH	N	G							
7/54	1466.1	1445.1	SPT	HP	Y	A	2536	10.18	2076.0	8.45	2536	10.18	Pretest valid, took seg samples.
				SCH	N	G			2074	8.44			
8/55	1536.0	1515.0	PT	HP	Y	A	2645	10.13	2185.6	8.49	2646	10.13	Pretest valid
				SCH	N	G			2183	8.48			
8/56	1556.0	1535.0	PT	HP	Y	A	2679	10.13	2212.8	8.48	2680	10.13	Pretest valid
				SCH	N	G			2210	8.47			

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

SERVICE COMPANY: ..SCHLUMBERGER.....Suite 2 RFT RUN. NO: 8,9 & 10.....

WELL : .Seahorse-2.....

DATE : .25th.July,.1982.....

OBSERVERS :.A..Lindsay/N..Williams

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
8/57	1559.5	1538.5	PT	HP	Y	A	2685	10.13	No seal		2686	10.13	Pretest invalid
				SCH	N	G							
8/58	1559.0	1538.5	PT	HP	Y	A	2685	10.13	2217.0	8.48	2685	10.13	Pretest valid
				SCH	N	G			2214	8.47			
8/59	1564.0	1543.0	SPT	HP	Y	A	2693	10.13	2224.9	8.48	2693	10.12	Pretest valid took seg samples
				SCH	N	G			2222	8.47			
9/60	1603.2	1582.5	SPT	HP	Y	A	2753	10.10	2283.0	8.49	2755	10.11	Pretest valid, took seg samples
				SCH	N	G			2284	8.49			
10/61	1567.0	1546.0	PT	HP	Y	A	2690	10.10	No seal		2706	10.16	Pretest invalid
				SCH	N	G							
10/62	1566.8	1545.8	PT	HP	Y	A	2692	10.11	No seal		-		Pretest invalid
				SCH	N	G							
10/63	1566.8	1545.8	PT	HP	Y	A	2692	10.11	2228.0	8.48	2692	10.11	Pretest valid
				SCH	N	G			2229	8.48			

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

SERVICE COMPANY: ..SCHLUMBERGER.....RFT RUN. NO: Suite 2 .10,.11,.12....

WELL : ....Seahorse-2.....

DATE : .25.&.26.July,.1982...

OBSERVERS :.A..Linday/N..Williams

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
10/64	1566.0	1545.0	PT	HP	Y	A	2691	10.11	2227.0	8.48	2691	10.11	Pretest valid
				SCH	N	G			2230	8.49			
10/65	1454.2	1433.2	SPT	HP	Y	A	2503	10.12	2056.7	8.44	2503	10.12	Pretest valid took seg samples
				SCH	N	G			2060	8.45			
11/66	1496.0	1475.0	PT	HP	Y	A	2566	10.09	Tight		2569	10.10	Pretest invalid
				SCH	N	G							
11/67	1497.0	1476.0	PT	HP	Y	A	2567	10.09	Tight		2569	10.09	Pretest invalid
				SCH	N	G							
11/68	1436.5	1415.5	SPT	HP	Y	A	2467	10.10	Tight		2469	10.11	Pretest invalid, sample not attempted
				SCH	N	G							
11/69	1487.0	1466.0	SPT	HP	Y	A	2552	10.10	2109.8	8.47	2553	10.10	Pretest valid, took segregated samples
				SCH	N	G			2104	8.44			
12/70	1451.0	1430.0	SPT	HP	Y	A	2545	10.32	2074.7	8.53	2540	10.30	Pretest valid, took segregated samples
				SCH	N	G			2077	8.54			

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

Suite 2

SERVICE COMPANY: ..SCHLUMBERGER.....RFT RUN. NO: .....13 & 14...

WELL : SEAHORSE-2

DATE : ....26th July,.1982...

OBSERVERS : A.LINDSAY/N.WILLIAMS

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESSURE psi	FORMATION PRESSURE ppg	FHP psi	FHP ppg	TEST RESULT
13/71	1568.0	1547.0	SPT	HP	Y	A	2730	10.24	No seal		2725	10.22	Prestest invalid sample not attempted
				SCH	N	G							
13/72	1566.8	1545.8	SPT	HP	Y	A	2728	10.24	2228.0	8.48	2728	10.24	Pretest valid, took segregated samples
				SCH	N	G			2227	8.47			
14/73	1508.0	1487.0	SPT	HP	Y	A	2619	10.22	2139.0	8.46	2619	10.22	Pretest valid, took segregated samples.
				SCH	N	G			2136	8.45			

1. Pressure Test = PT
   Sample & Pressure Test = SPT

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

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2 A. LINDSAY

SUITE No. 2

OBSERVER : N. WILLIAMS N. DAVIDSON

DATE : 23rd July, 1982

RUN NO. : 2

	CHAMBER 1 (22.7 lit.)	CHAMBER 2 (10.4 lit.)
SEAT NO.	36	36
DEPTH	1442.0m	1442.0m
A. RECORDING TIMES		
Tool Set	0435 hrs	
Pretest Open	0436-0439 hrs	
Time Open	3 mins	
Chamber Open	0439 hrs	0518 hrs
Chamber Full	0515 hrs	0545 hrs
Fill Time	36 mins	27 mins
Start Build up	0511 hrs	0533 hrs
Finish Build up	0517 hrs	0545 hrs
Build Up time	6 mins	12 mins
Seal Chamber	0517 hrs	0558 hrs
Tool Retract	Did not retract tool	0600 hrs
Total Time	42 mins	42 mins
B. SAMPLE PRESSURES	psia	psia
IHP	2502	
ISIP	2047.8	2405
Initial Flowing Press.	1325	928
Final Flowing Press.	2005	2036
Sampling Press. Range	800	1165
FSIP	2045	2046.6
FHP		2497
Form.Press.(Horner)		
C. TEMPERATURE		
Depth Tool Reached	1450 m	m
Max.Rec.Temp.	61.3 °C	°C
Time Circ. Stopped	22-7-82 @ 1300 hrs.	hrs.
Time since Circ.	13 hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D. SAMPLE RECOVERY		SAMPLE PRESERVED
Surface Pressure	1000 psig	psig
Amt Gas	11 cft 311 lit.	lit.
Amt oil	2.7 lit.	lit.
Amt Water (filtrate+emulsion)	17.4 lit.	lit.
Amt Others	lit.	lit.
E. SAMPLE PROPERTIES		SAMPLE PRESERVED
Gas Composition		
C1	612863 ppm	ppm
C2	48593 ppm	ppm
C3	24562 ppm	ppm
IC4/nC4	4968 ppm	ppm
C5	886 ppm	ppm
C6+	13 ppm	ppm
CO2/H2S	CO_2 1.6%, H_2S 200+ ppm	ppm
Oil Properties	51.1 °API@ 15.5 °C	°API@ °C
Colour	Dark brown	
Fluorescence	White to blue-white	
GOR & pour point	648 and +4° C	
Water Properties		SAMPLE PRESERVED
Resistivity	0.39 ohm m. @ 19 °C	°C
NaCl Equivalent	18500 ppm	ppm
Cl-titrated	14000 ppm	ppm
pH, nitrates	7.0, 45 ppm	ppm
Est.Water Type	Filtrate	
Mud Properties | Nitrates	Nil while drilling, 50/tr at last 2 circulations	
Resistivity	0.48 ohm m. @ 19° C	0.48 ohm m @ 19° C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	14000 ppm	14000 ppm
Calibration | Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2394 psig	2394 psig
RFT Chokesize	0.030 inch 0.75 mm	0.020 inch 0.5 mm
REMARKS pH mud filtrate 10.0		Serial number of oreserved Chamber RFS-AE 1117

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2 A. LINDSAY

SUITE No. 2

OBSERVER : N. WILLIAMS N. DAVIDSON

DATE : 23rd. July. 1982

RUN NO. : 3

	CHAMBER 1 (22.7lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	37	37
DEPTH	1456.0m	1456.0m
A.RECORDING TIMES		
Tool Set	0944 hrs	
Pretest Open	0945-0947 hrs	
Time Open	2 mins	
Chamber Open	0947 hrs	0959 hrs
Chamber Full	0952 hrs	1002 hrs
Fill Time	5 mins	3 mins
Start Build up	0952 hrs	1002 hrs
Finish Build up	0958 hrs	1004 hrs
Build Up time	6 mins	2 mins
Seal Chamber	0958 hrs	1005 hrs
Tool Retract	Did not retract tool	1006 hrs
Total Time	14 mins	7 mins
B.SAMPLE PRESSURES	psia	psia
IHP	2524	
ISIP	2062.9	2062.9
Initial Flowing Press.	2020	1824
Final Flowing Press.	2063	1825
Sampling Press. Range	43	1
FSIP	2062.9	2062.8
FHP		2522
Form.Press.(Horner)		
C.TEMPERATURE		
Depth Tool Reached	1480 m	m
Max.Rec.Temp.	61.5°C	°C
Time Circ. Stopped	1300 hrs.	hrs.
Time since Circ.	21 hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D.SAMPLE RECOVERY		
Surface Pressure	Atmospheric psig	10 psig
Amt Gas	Nil lit.	Nil lit.
Amt oil	Waxy oil scum lit.	Waxy oil scum lit.
Amt Water	1.5 lit.	3.0 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
/H2S	Nil ppm	Nil ppm
Oil Properties	°API@ °C	°API@ °C
Colour	Yellow brown	Yellow brown
Fluorescence	Blue white	Blue white
GOR		
Water Properties		
Resistivity	0.48 ohm m @ 18 °C	0.42 ohm m @ 18 °C
NaCl Equivalent	16000 ppm	18000 ppm
Cl-titrated	12000 ppm	14000 ppm
PH,nitrates	9.4, 10 ppm	8.5, 20 ppm
Est.Water Type	Filtrate	Filtrate
Mud Properties Nitrates	Nil while drilling 50/tr at last 2 circulations	
Resistivity	0.48 ohm m @ 19° C	0.48 ohm m @ 19° C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	14000 ppm	14000 ppm
Calibration Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2401 psi	2401 psi
RFT Chokesize	0.030 inch, 0.75 mm	0.020 inch, 0.5 mm
REMARKS PH mud filtrate 10.0	Tool failed, chamber did not fill properly, test is invalid.	Tool failed, chamber did not fill properly, test is invalid.

WELL : SEAHORSE-2 RFT SAMPLE TEST REPORT

SUITE No. 2

OBSERVER : A. LINDSAY N. WILLIAMS DATE : 23rd July 1982 RUN NO. : 4

	CHAMBER 1 (22.7lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	40	
DEPTH	1454.0m	
A.RECORDING TIMES		
Tool Set	1414 hrs	
Pretest Open	1414 hrs	
Time Open	2 mins	
Chamber Open	1416 hrs	
Chamber Full	Failed, no drawdown	
Fill Time		
Start Build up		
Finish Build up		
Build Up time		
Seal Chamber		
Tool Retract		
Total Time		
B.SAMPLE PRESSURES	psia	
IHP	2517	
ISIP	1060.9	
Initial Flowing Press.		
Final Flowing Press.		
Sampling Press. Range		
FSIP		
FHP		
Form.Press.(Horner)		
C.TEMPERATURE		
Depth Tool Reached	1480 m	m
Max.Rec.Temp.	143.7° F 62.1°C	°C
Time Circ. Stopped	22-7-82 @ 1300 hrs.	hrs.
Time since Circ.	25 hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D.SAMPLE RECOVERY		
Surface Pressure	psig	psig
Amt Gas	lit.	lit.
Amt oil	lit.	lit.
Amt Water	lit.	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		
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
Calibration Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2398	2398
RFT Chokesize	0.030 inch 0.75 mm	0.020 inch 0.5 mm
REMARKS	Tool failed, test invalid	Tool failed, test invalid.

WELL : SEAHORSE-2 A. LINDSAY

RFT SAMPLE TEST REPORT

SUITE No. 2

OBSERVER : N. WILLIAMS DATE : 23rd July, 1982 RUN NO.: 5

	CHAMBER 1 (22.7 lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	45	
DEPTH	1564.8m	
A.RECORDING TIMES		
Tool Set	1808 hrs	
Pretest Open	1808 hrs	
Time Open	1 min	
Chamber Open (attempted)	1809 hrs	
Chamber Full	Chamber not opening	
Fill Time		
Start Build up		
Finish Build up		
Build Up time		
Seal Chamber		
Tool Retract		
Total Time		
B.SAMPLE PRESSURES		
IHP		
ISIP	2226.6 psia	
Initial Flowing Press.		
Final Flowing Press.		
Sampling Press. Range		
FSIP		
FHP		
Form.Press.(Horner)		
C.TEMPERATURE		
Depth Tool Reached	m	m
Max.Rec.Temp.	°C	°C
Time Circ. Stopped	hrs.	hrs.
Time since Circ.	hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D.SAMPLE RECOVERY		
Surface Pressure	psig	psig
Amt Gas	lit.	lit.
Amt oil	lit.	lit.
Amt Water	lit.	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		
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
Calibration Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2580 psi	2580 psi
RFT Chokesize	0.030 inch, 9.75 mm	0.020 inch, 0.5 mm
REMARKS	Too failed, test is invalid.	Did not attempt to fill 1 gallon chamber.

WELL : SEAHORSE-2

RFT SAMPLE TEST REPORT

SUITE No. 2

OBSERVER : A. LINDSAY
N. WILLIAMS

DATE : 25th July, 1982

RUN NO. : 6

	CHAMBER 1 (22.7lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	48	48
DEPTH	1456.5m	1456.5m.
A.RECORDING TIMES		
Tool Set	2148 hrs	
Pretest Open	2148 hrs	
Time Open	6 mins	
Chamber Open	2154 hrs	2206 hrs
Chamber Full	2202 hrs	2210 hrs
Fill Time	8 mins	4 mins
Start Build up	2202 hrs	2210 hrs
Finish Build up	2204 hrs	2211 hrs
Build Up time	2 mins	1 min
Seal Chamber	2204 hrs	2211 hrs
Tool Retract	Did not retract tool	2213 hrs
Total Time	16 mins	9 mins
B.SAMPLE PRESSURES	psia	psia
IHP	2527	
ISIP	2062.9	2062.8
Initial Flowing Press.	1776	1960
Final Flowing Press.	2063	2062.8
Sampling Press. Range	288	3
FSIP	2062.8	2062.6
FHP	Did not retract tool	2526
Form.Press.(Horner)		
C.TEMPERATURE		
Depth Tool Reached	1500 m	m
Max.Rec.Temp.	146.2° F 61.4 °C	°C
Time Circ. Stopped	24-7-82 @ 0400 hrs.	hrs.
Time since Circ.	17-3/4hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D.SAMPLE RECOVERY		
Surface Pressure	350 psig	psig
Amt Gas	0.28 cf. 7.9 lit.	0.03 cf 0.9 lit.
Amt oil	Thin waxy scum lit.	Thin film (contam?) lit.
Amt Water	21.5 lit.	3.5 lit.
Amt Others	lit.	lit.
E.SAMPLE PROPERTIES		
Gas Composition		
C1	73544 ppm	ppm
C2	20324 ppm	ppm
C3	29475 ppm	ppm
IC4/nC4	7065 ppm	ppm
C5	1250 ppm	ppm
C6+	190 ppm	ppm
/H2S	1 ppm	30 ppm
Oil Properties	°API@ °C	°API@ °C
Colour	Yellow brown	Insufficient quantity
Fluorescence	Bright milky white	Very weak blue white
GOR		
Water Properties		
Resistivity	0.38 ohm m @ 19 °C	0.47 ohm m @ 16°C
NaCl Equivalent	18000 ppm	17000 ppm
Cl-titrated	14000 ppm	14000 ppm
PH, nitrates	8.5, 10 ppm	7.5, tr ppm
Est.Water Type	Filtrate	Filtrate/formation fluid
Mud Properties | Nitrates	Nil ppm while drilling, 10/tr at last 2 circulations	
Resistivity	0.48 ohm m @ 19° C	0.48 ohm m @ 19° C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	14000 ppm	14000 ppm
Calibration | Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	9.7 ppg	9.7 ppg
Mud Weight	2402 psi	2402 psi
Calc.Hydrostatic	0.030 inch 0.75 mm	0.020 inch 0.5 mm
RFT Chokesize		
REMARKS		
PH mud filtrate 10.0		

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2 A. Lindsay

OBSERVER : N. Williams DATE : 25th July, 1982 SUITE NO. 2 RUN NO. : 7

	CHAMBER 1 (22.7 lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	54	
DEPTH	1466.1	
A. RECORDING TIMES		
Tool Set	0214 hrs	
Pretest Open	0214 hrs	
Time Open	3 min	
Chamber Open	0217 hrs	0226 hrs
Chamber Full	0224 hrs	0230 hrs
Fill Time	7 min	4 min
Start Build up	0224 hrs	0230 hrs
Finish Build up	0226 hrs	0231 hrs
Build Up time	2 min	1 min
Seal Chamber	0226 hrs	0231 hrs
Tool Retract	Did not retract tool	0233 hrs
Total Time	12 min	7 min
B. SAMPLE PRESSURES	psia	psia
IHP	2536	
ISIP	2076.1	2076.0
Initial Flowing Press.	1994	2055
Final Flowing Press.	2076	2076
Sampling Press. Range	82	21
FSIP	2076.0	2076.0
FHP	Did not retract tool	2536
Form.Press.(Horner)		
C. TEMPERATURE		
Depth Tool Reached	1490 m	m
Max.Rec.Temp.	143.5°F, 61.9 °C	°C
Time Circ. Stopped	24.7.82 @ 0400 hrs.	hrs.
Time since Circ.	22 hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D. SAMPLE RECOVERY		
Surface Pressure	200 psig	100 psig
Amt Gas	0.26 cft 7.4 lit.	0.025 cf lit.
Amt oil	tr. thin film (contamin'n?)	tr.thin film (contamin'n?)
Amt Water	21.25 lit.	3.7 lit.
Amt Others	lit.	lit.
E. SAMPLE PROPERTIES		
Gas Composition		
C1	88646 ppm	Insufficient volume ppm
C2	19054 ppm	for testing ppm
C3	25440 ppm	ppm
IC4/nC4	6210 ppm	ppm
C5	662 ppm	ppm
C6+	NIL ppm	ppm
/H2S	30 ppm	40 ppm
Oil Properties	°API@ °C	°API@ °C
Colour		
Fluorescence	trace blue while	trace blue white
GOR		
Water Properties		
Resistivity	1.45 ohm metres @ 21°C	2.00 ohm metres @ 18°C
NaCl Equivalent	4300 ppm	3300 ppm
Cl-titrated	6500 ppm	1800 ppm
pH, nitrates	7.5, trace ppm	7.0 NIL ppm
Est.Water Type	Filtrate/formation fluid	mainly formation fluid
Mud Properties | nitrates	Nil while drilling, 50/trace at last 2 circulations	
Resistivity	0.48 ohm metres @ 19°C	0.48 ohm metres @ 19°C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	14000 ppm	14000 ppm
Calibration | Date	22.7.82	22.7.82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14 - 142 °C	14 - 142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2418 psi	2418 psi
RFT Chokesize	0.030 inch, 0.75 mm	0.020 indv, 0.5 mm
REMARKS pH mud filtrate 10.0		

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2

OBSERVER : N. WILLIAMS / N. DAVIDSON DATE : 25 July 1982 Suite No. 2 RUN NO. : 8

	CHAMBER 1 (22.7 lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	59	59
DEPTH	1564.0M	1564.0M
A. RECORDING TIMES		
Tool Set	0620 hrs	
Pretest Open	0620 hrs	
Time Open	3 min	
Chamber Open	0623 hrs	0641 hrs
Chamber Full	0634 hrs	0644 hrs
Fill Time	11 min	3 mins
Start Build up	0634 hrs	0644 hrs
Finish Build up	0640 hrs	0646 hrs
Build Up time	6 min	2 mins
Seal Chamber	0640 hrs	0646 hrs
Tool Retract	Did not retract tool	0648 hrs
Total Time	20 min	28 mins
B. SAMPLE PRESSURES	psia	psia
IHP	2693	
ISIP	2224.9	2223
Initial Flowing Press.	1278	1552
Final Flowing Press.	2223	2224
Sampling Press. Range	1523	806
FSIP	2223	2224.6
FHP	Did not retract tool	2693
Form.Press.(Horner)		
C. TEMPERATURE		
Depth Tool Reached	1575 m	m
Max.Rec.Temp.	70 °C	°C
Time Circ. Stopped	24.7.83@ 0330 hrs.	hrs.
Time since Circ.	26½ hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D. SAMPLE RECOVERY		Preserved unopened
Surface Pressure	200 psig	psig
Amt Gas	Nil lit.	lit.
Amt oil	11.8 lit.	lit.
Amt Water	8.75 lit.	lit.
Amt Others	lit.	lit.
E. SAMPLE PROPERTIES		Sample preserved
Gas Composition		
C1	ppm	ppm
C2	ppm	ppm
C3	ppm	ppm
IC4/nC4	ppm	ppm
C5	ppm	ppm
C6+	ppm	ppm
CO2/H2S	40 ppm	ppm
Oil Properties	48.6 °API@ 15.6°C	°API@ °C
Colour	Browny black	
Fluorescence	White to bright yellow	
GOR and Pour Point	Nil and 0° C	
Water Properties		
Resistivity	0.39 ohm.m @ 22 °C	°C
NaCl Equivalent	16000 ppm	ppm
Cl-titrated	9000 ppm	ppm
pH, nitrates	8.5 30 ppm	ppm
Est.Water Type	Filtrate	
Mud Properties / Nitrates	Nil while drilling, 50/tr at last 2 circulations	
Resistivity	0.48 ohm. m @ 19°C	0.48 ohm m @ 19°C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	14000 ppm	14000 ppm
Calibration / Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14- 142 °C	14- 142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2579 psi	2579 psi
RFT Chokesize	0.030 inch, 0.75 mm	0.020 inch, 0.5
REMARKS pH mud filtrate 10.0		

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2

Suite No. 2

OBSERVER : N. Davidson, N. Williams DATE : 25July, 1982 RUN NO. : 9

	CHAMBER 1 (22.7 lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	60	60
DEPTH	1603.2M	1603.2M
A. RECORDING TIMES		
Tool Set	1005 hrs	
Pretest Open	1005 hrs	
Time Open	4 min	
Chamber Open	1009 hrs	1033 hrs
Chamber Full	1022 hrs	1037 hrs
Fill Time	13 min	4 min
Start Build up	1022 hrs	1037 hrs
Finish Build up	1032 hrs	1040 hrs
Build Up time	10 min	3 min
Seal Chamber	1032 hrs	1040 hrs
Tool Retract	Did not retract tool	1042 hrs
Total Time	27 min	9 min
B. SAMPLE PRESSURES	psia	psia
IHP	2753	
ISIP	2283.0	2281.3
Initial Flowing Press.	650	900
Final Flowing Press.	2280	2280
Sampling Press. Range	1875	1481
FSIP	2281.3	2281.3
FHP	Did not retract tool	2755
Form.Press.(Horner)		
C. TEMPERATURE		
Depth Tool Reached	1616 m	m
Max.Rec.Temp.	70 °C	°C
Time Circ. Stopped	24.7.82 @ 0330 hrs.	hrs.
Time since Circ.	30½ hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D. SAMPLE RECOVERY		Preserved unopened
Surface Pressure	200 psig	psig
Amt Gas	0.91 cf, 25.8 lit.	lit.
Amt oil	3.65 lit.	lit.
Amt Water	16.75 lit.	lit.
Amt Others (waxy scum)	0.75 lit.	lit.
E. SAMPLE PROPERTIES		Preserved unopened
Gas Composition		
C1	24624 ppm	ppm
C2	8620 ppm	ppm
C3	4825 ppm	ppm
IC4/nC4	2277 ppm	ppm
C5	879 ppm	ppm
C6+	211 ppm	ppm
CO2/H2S	Nil/Nil ppm	ppm
Oil Properties	52.5 °API@ 15.6 °C	°API@ °C
Colour	Greenish Black	
Fluorescence	Bright yellow white	
GOR and Pour Point	43 and -5.5°C	
Water Properties		
Resistivity	0.39 ohm m. @ 20 °C	°C
NaCl Equivalent	17500 ppm	ppm
Cl-titrated	9000 ppm	ppm
pH/Nitrates	8.0, Nil ppm	ppm
Est.Water Type	Mainly formation water	
Mud Properties | Nitrates	Nil while drilling, 50/trace at last 2 circulations	
Resistivity	0.48 ohm m @ 19°C	0.48 ohm metres @ 19°C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	14000 ppm	14000 ppm
Calibration | Date	22.7.82	22.7.82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2644 psi	2644 psi
RFT Chokesize	0.030 inch, 0.75 mm	0.020 inch, 0.5 mm
REMARKS		
pH mud filtrate 10.0		Serial No. of preserved chamber RFS-AD-1103

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2 Suite No. 2

OBSERVER : A. LINDSAY N. WILLIAMS DATE : 25th July, 1982 RUN NO.: 10

	CHAMBER 1 (22.7lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	65	65
DEPTH	1454.2m	1454.2m
A.RECORDING TIMES		
Tool Set	1501 hrs	
Pretest Open	1501 hrs	
Time Open	3 mins	
Chamber Open	1504 hrs	1520 hrs
Chamber Full	1511 hrs	1523 hrs
Fill Time	7 mins	3 mins
Start Build up	1511 hrs	1523 hrs
Finish Build up	1518 hrs	1526 hrs
Build Up time	7 mins	2 mins
Seal Chamber	1518 hrs	1526 hrs
Tool Retract	Did not retract tool.	1529 hrs
Total Time	17 mins	9 mins
B.SAMPLE PRESSURES	psia	psia
IHP	2503	
ISIP	2061.5	2056.4
Initial Flowing Press.	1714	1960
Final Flowing Press.	2056	2056.1
Sampling Press. Range	354	110
FSIP	2056.4	2056.7
FHP	Did not retract tool	2503
Form.Press.(Horner)		
C.TEMPERATURE		
Depth Tool Reached	1575 m	m
Max.Rec.Temp.	66.2 °C	°C
Time Circ. Stopped	24-7-82 @ 0330 hrs.	hrs.
Time since Circ.	35½ hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D.SAMPLE RECOVERY		
Surface Pressure	150 psig	Nil psig
Amt Gas	0.22 cf 6.2 lit.	Nil lit.
Amt oil	Thin film (contam?) lit.	Thin film (contam?) lit.
Amt Water	21.3 lit.	3.8 lit.
Amt Others	lit.	lit.
E.SAMPLE PROPERTIES		
Gas Composition C1	12859 ppm	ppm
C2	7559 ppm	ppm
C3	5263 ppm	ppm
IC4/nC4	2484 ppm	ppm
C5	760 ppm	ppm
C6+	105 ppm	ppm
/H2S	60 ppm	90 ppm
Oil Properties	°API@ °C	°API@ °C
Colour		
Fluorescence	Weak blue white	Weak blue white
GOR		
Water Properties		
Resistivity	0.39 ohm metres @ 22°C	0.50 ohm metres @ 18°C
NaCl Equivalent	18000 ppm	14000 ppm
Cl-titrated	9500 ppm	8500 ppm
PH,nitrates	7.5, Nil ppm	7.5, Nil ppm
Est.Water Type	Mainly formation water	Mainly formation water
Mud Properties Nitrates	Nil while drilling, 50/trace at last 2 circulations	
Resistivity	0.48 ohm metres @ 19° C	0.48 ohm metres @ 19° C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	14000 ppm	14000 ppm
Calibration Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2398 psi	2398 psi
RFT Chokesize	0.030 inch 0.75 mm	0.020 inch 0.5 mm
REMARKS PH mud filtrate 10.0		

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2

OBSERVER : A. LINDSAY, N. WILLIAMS DATE : 25th July, 1982 SUITE 2 RUN NO.: 11

	CHAMBER 1 (22.7 lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	69	69
DEPTH	1487.0m	1487.0m
A.RECORDING TIMES		
Tool Set	1910 hrs	
Pretest Open	1910 hrs	
Time Open	2 mins	
Chamber Open	1912 hrs	1923 hrs
Chamber Full	1920 hrs	1926 hrs
Fill Time	8 mins	3 mins
Start Build up	1920 hrs	1926 hrs
Finish Build up	1922 hrs	1927 hrs
Build Up time	2 mins	1 min
Seal Chamber	1923 hrs	1928 hrs
Tool Retract	Did not retract tool	1929 hrs
Total Time	13 mins	6 mins
B.SAMPLE PRESSURES	psia	psia
IHP	2552	
ISIP	2109.8	2109.8
Initial Flowing Press.	1680	1984.8
Final Flowing Press.	2109.6	2109.8
Sampling Press. Range	433	127
FSIP	2109.8	2109.8
FHP	Did not retract tool	2553
Form.Press.(Horner)		
C.TEMPERATURE		
Depth Tool Reached	1500 m	m
Max.Rec.Temp.	65 °C	°C
Time Circ. Stopped	24-7-82 @ 0330 hrs.	hrs.
Time since Circ.	39-3/4 hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D.SAMPLE RECOVERY		
Surface Pressure	Nil psig	Nil psig
Amt Gas	Nil lit.	Nil lit.
Amt oil	Thin film + tr scum lit.	Thin film (contam?) lit.
Amt Water	21.3 lit.	3.6 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
/H2S	20 ppm	50 ppm
Oil Properties	°API@ °C	°API@ °C
Colour	Brown scum	
Fluorescence	Blue white	Faint blue white
GOR		
Water Properties		
Resistivity	0.42 ohm metres @ 21°C	0.66 ohm metres @ 17°C
NaCl Equivalent	16000 ppm	11000 ppm
Cl-titrated	11000 ppm	9000 ppm
pH,nitrates	7.5, Nil ppm	7.0, Nil ppm
Est.Water Type	Mainly formation water	Mainly formation water
Mud Properties | Nitrates	Nil while drilling,50/tr during last two circulations	
Resistivity	0.48 ohm metrs @ 19° C	0.48 ohm metres @ 19° C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	14000 ppm	14000 ppm
Calibration | Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2452 psi	2452 psi
RFT Chokesize	0.030 inch, 0.75 mm	0.020 inch, 0.5 mm
REMARKS PH mud filtrate 10.0		

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2

OBSERVER : A. LINDSAY, N. WILLIAMS

DATE : 26th July, 1982

SUITE 2

RUN NO. : 12

	CHAMBER 1 (22.7 lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	70	70
DEPTH	1451.0m	1451.0
A. RECORDING TIMES		
Tool Set	0822 hrs	
Pretest Open	0822 hrs	
Time Open	3 mins	
Chamber Open	0825 hrs	0939 hrs
Chamber Full	0925 hrs	0949 hrs
Fill Time	60 mins	10 mins
Start Build up	0925 hrs	0949 hrs
Finish Build up	0938 hrs	0956 hrs
Build Up time	13 mins	7 mins
Seal Chamber	0938 hrs	0957 hrs
Tool Retract	Did not retract tool	0958 hrs
Total Time	76 mins	19 mins
B. SAMPLE PRESSURES	psia	psia
IHP	2545	
ISIP	2074.7	2038.6
Initial Flowing Press.	56	200
Final Flowing Press.	2034	2038
Sampling Press. Range	1978	1938
FSIP	2038.6	2539
FHP	Did not retract tool	2540
Form.Press.(Horner)		
C. TEMPERATURE		
Depth Tool Reached	1475 m	m
Max.Rec.Temp.	55.9 °C	°C
Time Circ. Stopped	26-7-82 @ 0330 hrs.	hrs.
Time since Circ.	5 hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D. SAMPLE RECOVERY		
Surface Pressure	200 psig	Nil psig
Amt Gas	0.1 cf 2.8 lit.	Nil lit.
Amt oil	Scum lit.	Thin film (contam?) lit.
Amt Water	22.5 lit.	3.75 lit.
Amt Others	lit.	lit.
E. SAMPLE PROPERTIES		
Gas Composition		
C1	45964 ppm	ppm
C2	5444 ppm	ppm
C3	4386 ppm	ppm
IC4/nC4	2208 ppm	ppm
C5	922 ppm	ppm
C6+	211 ppm	ppm
CO_2/H2S	2%/10 ppm	ppm
Oil Properties	°API@ °C	°API@ °C
Colour	Brown	
Fluorescence	Weak blue white	
GOR		
Water Properties		
Resistivity	0.36 ohm metres @ 26 °C	0.37 ohm metres @ 19 °C
NaCl Equivalent	16000 ppm	19000 ppm
Cl-titrated	10000 ppm	12000 ppm
PH, nitrates	7.5, Nil ppm	7.5, Nil ppm
Est.Water Type	Mainly formation water	Mainly formation water
Mud Properties | Nitrates	Nil while drilling, 40ppm during last circulation	
Resistivity	0.40 ohm metres @ 26° C	0.40 ohm metres @ 26° C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	13000 ppm	13000 ppm
Calibration | Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2393 psi	2393 psi
RFT Chokesize	0.030 inch 0.75 mm	0.020 inch 0.5 mm
REMARKS		
PH mud filtrate 10.5		

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2

SUITE No. 2

OBSERVER : A. LINDSAY, N. DAVIDSON DATE : 26th July, 1982 RUN NO.: 13

	CHAMBER 1 (22.7 lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	72	72
DEPTH	1566.8m	1566.8m
A.RECORDING TIMES		
Tool Set	1248 hrs	
Pretest Open	1248 hrs	
Time Open	4 mins	
Chamber Open	1252 hrs	1307 hrs
Chamber Full	1303 hrs	1310 hrs
Fill Time	11 mins	3 mins
Start Build up	1303 hrs	1310 hrs
Finish Build up	1305 hrs	1311 hrs
Build Up time	2 mins	1 min
Seal Chamber	1306 hrs	1312 hrs
Tool Retract	Did not retract tool	1313 hrs
Total Time	18 mins	6 mins
B.SAMPLE PRESSURES	psia	psia
IHP	2728	
ISIP	2228.0	2227.6
Initial Flowing Press.	790	1580
Final Flowing Press.	2228	2228
Sampling Press. Range	1537	1160
FSIP	2227.6	2227.6
FHP	Did not retract tool	2728
Form.Press.(Horner)		
C.TEMPERATURE		
Depth Tool Reached	1575 m	m
Max.Rec.Temp.	145° F 62.8 °C	°C
Time Circ. Stopped	26-7-82 @ 0330 hrs.	hrs.
Time since Circ.	9 hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D.SAMPLE RECOVERY		
Surface Pressure	Nil psig	Nil psig
Amt Gas	Nil lit.	Nil lit.
Amt oil	Nil lit.	Nil lit.
Amt Water	21.0 lit.	3.75 lit.
Amt Others	Oil scum (trace) lit.	Oil film (trace) 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
/H2S	6 ppm	4 ppm
Oil Properties	°API@ °C	°API@ °C
Colour		
Fluorescence	Dull blue white	Dull blue white
GOR		
Water Properties		
Resistivity	0.62 ohm m. @ 24 °C	0.88 ohm m. @ 20°C
NaCl Equivalent	10000 ppm	8000 ppm
Cl-titrated	8000 ppm	7000 ppm
PH,nitrates	7.5, 10 ppm	7.0, Nil ppm
Est.Water Type	Filtrate/formation water	Mainly formation water
Mud Properties Nitrates	Nil while drilling, trace/40 last circulation	
Resistivity	0.40 ohm m. @ 26° C	0.40 ohm m. @ 26° C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	13000 ppm	13000 ppm
Calibration Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2584 psi	2584 psi
RFT Chokesize	0.030 inch 0.75 mm	0.020 inch .5 mm
REMARKS PH mud filtrate 10.5		

RFT SAMPLE TEST REPORT

WELL : SEAHORSE-2 SUITE No. 2

OBSERVER : N. WILLIAMS N. DAVIDSON DATE : 26th July, 1982 RUN NO.: 14

	CHAMBER 1 (22.7 lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	73	73
DEPTH	1508.0m	1508.0m
A.RECORDING TIMES		
Tool Set	1557 hrs	
Pretest Open	1553 hrs	
Time Open	4 mins	
Chamber Open	1601 hrs	1612 hrs
Chamber Full	1609 hrs	1615 hrs
Fill Time	8 mins	3 mins
Start Build up	1609 hrs	1615 hrs
Finish Build up	1611 hrs	1615 hrs
Build Up time	2 mins	20 secs
Seal Chamber	1612 hrs	1615 hrs
Tool Retract	Did not retract tool	1616 hrs
Total Time	15 mins	4 mins
B.SAMPLE PRESSURES	psia	psia
IHP	2619	
ISIP	2139.0	2138.7
Initial Flowing Press.	1890	2090
Final Flowing Press.	2138.7	2138.7
Sampling Press. Range	244	243
FSIP	2138.7	2138.7
FHP	Did not retract tool	2619
Form.Press.(Horner)		
C.TEMPERATURE		
Depth Tool Reached	1525 m	m
Max.Rec.Temp.	150° F 65.6 °C	°C
Time Circ. Stopped	26.7.82 @ 0330 hrs.	hrs.
Time since Circ.	12½ hrs.	hrs.
Form.Temp.(Horner)	°C	°C
D.SAMPLE RECOVERY		
Surface Pressure	Nil psig	Nil psig
Amt Gas	Nil lit.	Nil lit.
Amt oil	Nil lit.	Nil lit.
Amt Water	21.5 lit.	3.7 lit.
Amt Others	Muddy oil scum (tr) lit.	Oil film (tr) 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
/H2S	25 ppm	40 ppm
Oil Properties	°API@ °C	°API@ °C
Colour		
Fluorescence	Dull yellow blue	Very dull green
GOR		
Water Properties		
Resistivity	1.00 ohm m. @ 26 °C	1.56 ohm m. @ 17 °C
NaCl Equivalent	6000 ppm	4800 ppm
Cl-titrated	6000 ppm	5000 ppm
PH,nitrates	7.5, ppm	7.5, Nil ppm
Est.Water Type	Mainly formation water	Mainly formation water
Mud Properties | Nitrates	Nil while drilling, trace/40 last circulation	
Resistivity	0.40 ohm m @ 26° C	0.40 ohm m @ 26° C
NaCl Equivalent	14000 ppm	14000 ppm
Cl- titrated	13000 ppm	13000 ppm
Calibration | Date	22-7-82	22-7-82
Calibration Press.	0-4500 psig	0-4500 psig
Calibration Temp.	14-142 °C	14-142 °C
Hewlett Packard No.	688	688
Mud Weight	9.7 ppg	9.7 ppg
Calc.Hydrostatic	2487 psi	2487 psi
RFT Chokesize	0.030 inch 0.75 mm	0.020 inch 0.5 mm
REMARKS PH mud filtrate 10.5		

APPENDIX 5

APPENDIX 5

GEOCHEMICAL REPORT

GEOCHEMICAL REPORT
SEAHORSE-2 WELL, GIPPSLAND BASIN, VICTORIA.

by

J.K. EMMETT

Esso Australia Ltd.
Geochemical Report

March 1984.

0773L

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INTRODUCTION

A range of geochemical analysis were performed on samples of cuttings, sidewall cores, conventional core and liquid hydrocarbons collected during drilling of Seahorse-2. Wet canned cuttings composited over 15 metre intervals were collected from 200 metres (KB) down to 2030 metres (KB), Total Depth (T.D.). Light hydrocarbon, C_{1-4} headspace cuttings gas analyses were performed on alternate 15-metre intervals from 1005 metres (KB) down to T.D. Samples were then hand-picked for more detailed analyses such as Total Organic Carbon (T.O.C.) and kerogen isolation and elemental analysis. Vitrinite Reflectance ($\bar{R}_o$ max) measurements were performed by Professor A.C. Cook of Wollongong.

Three oil samples (RFT-2/36 from 1442m (KB), RFT-8/59 from 1564m (KB) and RFT-9/60 from 1603.2m (KB)) were analysed for API gravity and by whole oil gas chromatography. The sample from 1442m (KB) was also analysed by C_{15+} liquid and gas chromatography and for carbon isotopes.

DISCUSSION OF RESULTS

The detailed headspace C_{1-4} hydrocarbon gas analysis data are listed in Table 1 and have been plotted in Figure 1. The C_{1-4} gas content is low down to the Top of the Latrobe Group sediments, below which it increases significantly (also coinciding with the main oil reservoir zone) and remains at moderately rich levels down to T.D. The amount of wet gas (C_{2+}) components is generally fairly low over the whole sequence penetrated, but is much more abundant in the Latrobe Group sediments than in the section above. Wet gas concentrations are in the vicinity of 50% or more between 1565-1600m (KB) and at T.D. ie. 2015-2030m (KB). Cuttings gas data indicate that the Latrobe Group sediments have good hydrocarbon source potential.

The Latrobe Group sediments are rich in Total Organic Carbon (average T.O.C. = 2.60% : Table 2) which also supports a good rating for hydrocarbon source potential. T.O.C. values for the Lakes Entrance Formation are generally poor, indicating a correspondingly poor hydrocarbon source potential. Vitrinite reflectance ($\bar{R}_o$ max) data presented in Table 3 indicate that the entire section penetrated is presently immature for significant hydrocarbon generation. Detailed vitrinite reflectance and exinite fluorescence data are given in Appendix 1 - Report by A.C. Cook.

In Table 4, the elemental analyses of selected Kerogen samples isolated from sidewall cores are listed. Approximate Hydrogen: Carbon (H/C), Oxygen: Carbon (O/C) and Nitrogen: Carbon (N/C) atomic ratios for these analyses are given in Table 5. These ratios are "approximate", as the oxygen % is calculated by difference and the naturally occurring sulphur %, which may be up to a few percent, was not determined. Figure 2 is a modified Van Krevelen Plot of atomic H/C ratio versus atomic O/C. Comparison of Figure 2 with Figure 3, which shows the principal products of kerogen evolution indicates that the Latrobe Group sediments contain mainly woody-herbaceous organic matter which is immature.

Figures 4, 5 and 6 are whole gas chromatograms of three Seahorse-2 oil samples (RFT-2/36 from 1442 in (KB), RFT-8/59 from 1564m (KB) and RFT-9/60 from 1603.2m (KB) respectively). A C_{15+} saturate hydrocarbon chromatogram of the RFT-2/36 oil sample is shown in Figure 7. C_{4-7} gasoline range hydrocarbon data for the same sample are listed in Table 6, whilst corresponding C_{15+} liquid chromatography and saturate and aromatic fraction carbon isotope data are given in Table 7.

Figures 4, 5 and 6 are very similar in appearance indicating that the oil in Seahorse-2 is a mature paraffinic based crude composed predominantly of gasoline-range hydrocarbons (Table 7). The three Seahorse-2 oil samples analysed have API gravities of 50.9, 48.6 and 52.5 degrees respectively.

The Seahorse-2 oil has a hydrocarbon distribution very similar to that of the deeper Zone Seahorse-1 oil.

CONCLUSIONS

1. The entire section penetrated in Seahorse-2 is immature.

2. The Latrobe Group sediments are rated as having good hydrocarbon source potential.

3. Oil discovered in Seahorse-2 is a mature, paraffinic based crude.

Table 1. ESSO AUSTRALIA LTD.

C1-C4 HYDROCARBON ANALYSES

REPORT A - HEADSPACE GAS

BASIN - GIPPSLAND
WELL - SEAHORSE 2

SAMPLE NO.	DEPTH	GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS) METHANE C1	ETHANE C2	PROPANE C3	IBUTANE IC4	NBUTANE C4	WET C2-C4	TOTAL C1-C4	WET/TOTAL PERCENT	GAS COMPOSITION (PERCENT) TOTAL GAS M	E	P	IB	NB	WET GAS E	P	IB	NB
72503 C	1020.00	26	4	2	0	0	6	32	18.75	81.	13.	6.	0.	0.	67.	33.	0.	0.
72503 E	1050.00	44	10	8	2	0	20	64	31.25	69.	16.	13.	3.	0.	50.	40.	10.	0.
72503 G	1080.00	90	11	6	0	0	17	107	15.89	84.	10.	6.	0.	0.	65.	35.	0.	0.
72503 I	1110.00	141	10	5	7	0	22	163	13.50	87.	6.	3.	4.	0.	45.	23.	32.	0.
72503 K	1140.00	159	22	10	0	0	32	191	16.75	83.	12.	5.	0.	0.	69.	31.	0.	0.
72503 M	1170.00	187	7	6	2	0	15	202	7.43	93.	3.	3.	1.	0.	47.	40.	13.	0.
72503 O	1200.00	327	17	13	4	0	34	361	9.42	91.	5.	4.	1.	0.	50.	38.	12.	0.
72503 Q	1230.00	301	7	5	0	0	12	313	3.83	96.	2.	2.	0.	0.	58.	42.	0.	0.
72503 S	1260.00	269	11	8	0	0	19	288	6.60	93.	4.	3.	0.	0.	58.	42.	0.	0.
72503 U	1290.00	59	3	1	0	0	4	63	6.35	94.	5.	2.	0.	0.	75.	25.	0.	0.
72503 W	1310.00	526	26	6	0	0	32	558	5.73	94.	5.	1.	0.	0.	81.	19.	0.	0.
72503 Y	1340.00	745	64	18	0	0	82	827	9.92	90.	8.	2.	0.	0.	78.	22.	0.	0.
72504 A	1370.00	0	0	0	0	0	0	0	.00	0.	0.	0.	0.	0.	0.	0.	0.	0.
72504 C	1400.00	1021	139	102	0	0	241	1262	19.10	81.	11.	8.	0.	0.	58.	42.	0.	0.
72504 E	1430.00	77102	23228	10774	1229	1662	36893	113995	32.36	68.	20.	9.	1.	1.	63.	29.	3.	5.
72504 G	1460.00	57766	13001	6030	819	1018	20868	78634	26.54	73.	17.	8.	1.	1.	62.	29.	4.	5.
72504 K	1520.00	41059	7724	2413	197	210	10544	51603	20.43	80.	15.	5.	0.	0.	73.	23.	2.	2.
72504 M	1550.00	3735	840	1052	189	255	2336	6071	38.48	62.	14.	17.	3.	4.	36.	45.	8.	11.
72504 O	1580.00	508	210	184	27	42	463	971	47.68	52.	22.	19.	3.	4.	45.	40.	6.	9.
72504 Q	1610.00	7680	5557	3566	453	697	10273	17953	57.22	43.	31.	20.	3.	4.	54.	35.	4.	7.
72504 S	1640.00	1011	271	261	48	79	659	1670	39.46	61.	16.	16.	3.	5.	41.	40.	7.	12.
72504 U	1670.00	2956	296	361	68	86	811	3769	21.52	78.	8.	10.	2.	2.	36.	45.	8.	11.
72504 W	1700.00	518	170	97	24	22	313	831	37.67	62.	20.	12.	3.	3.	54.	31.	8.	7.
72504 Y	1730.00	891	158	105	32	58	353	1244	28.38	72.	13.	8.	3.	5.	45.	30.	9.	16.
72505 A	1760.00	138	12	15	1	2	30	168	17.86	82.	7.	9.	1.	1.	40.	50.	3.	7.
72505 C	1790.00	6496	1153	544	68	95	1860	8356	22.26	78.	14.	7.	1.	1.	62.	29.	4.	5.
72505 E	1820.00	3516	734	449	59	77	1319	4835	27.28	73.	15.	9.	1.	2.	56.	34.	4.	6.
72505 G	1850.00	3778	641	438	82	106	1267	5045	25.11	75.	13.	9.	2.	2.	51.	35.	6.	8.
72505 I	1880.00	3797	568	261	43	65	937	4734	19.79	80.	12.	6.	1.	1.	61.	28.	5.	7.
72505 K	1910.00	5041	606	326	49	82	1063	6104	17.41	83.	10.	5.	1.	1.	57.	31.	5.	8.
72505 M	1940.00	922	120	151	36	67	374	1296	28.86	71.	9.	12.	3.	5.	32.	40.	10.	18.
72505 O	1970.00	1506	303	295	58	91	747	2253	33.16	67.	13.	13.	3.	4.	41.	39.	8.	12.
72505 Q	2000.00	2353	704	385	40	50	1179	3532	33.38	67.	20.	11.	1.	1.	60.	33.	3.	4.
72505 S	2030.00	5941	2049	1993	351	484	4877	10818	45.08	55.	19.	18.	3.	4.	42.	41.	7.	10.

TOTAL ORGANIC CARBON REPORT

BASIN - GIPPSLAND
WELL - SEAHORSE 2

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	TOC%	AN	TOC%	AN	TOC%	DESCRIPTION
72486 W	1246.00	MIOCENE-OLIGOCENE	LAKES ENTRANCE	1	.39					LT OLIVE GREY CLAYSTONE.
72485 I	1294.00	MIOCENE-OLIGOCENE	LAKES ENTRANCE	1	.48					OLIVE GREY CLAYSTONE .
72486 F	1312.00	MIOCENE-OLIGOCENE	LAKES ENTRANCE	1	.38					MED OLIVE GRY CLYST,PYR.
72485 Y	1334.00	MIOCENE-OLIGOCENE	LAKES ENTRANCE	1	.39					MED OLIVE GRY SILTSTONE.
72485 U	1340.00	MIOCENE-OLIGOCENE	LAKES ENTRANCE	1	.85					BROWN' GRY SLTST,QUARTZ.
===> DEPTH : .00 TO 1395.50 METRES. <=== I ===> AVERAGE TOC : .50 % EXCLUDING VALUES GREATER THAN 10.00 % <===										
72485 E	1415.00	EOCENE-LATE CRETACEO	LATROBE GROUP-GURNARD FM.	1	1.12					BROWN' GREY SLTST,GLAUC.
===> DEPTH : 1395.50 TO 1419.50 METRES. <=== I ===> AVERAGE TOC : 1.12 % EXCLUDING VALUES GREATER THAN 10.00 % <===										
72486 D	1422.00	EOCENE-LATE CRET.	LATROBE GROUP	1	5.60					DARK GREY SILTSTONE .
72485 A	1427.00	EOCENE-LATE CRET.	LATROBE GROUP	1	2.72					LTOLGRY/OLGRY LAM VFSST.
72484 V	1432.00	EOCENE-LATE CRET.	LATROBE GROUP	1	1.50					OLIVE GREY SILTSTONE .
72484 R	1438.90	EOCENE-LATE CRET.	LATROBE GROUP	1	7.05					DARK BROWN SILTSTONE .
72505 Z	1444.27	EOCENE-LATE CRET.	LATROBE GROUP	1	7.27					BLACK SHALE,PYRITE
72484 S	1449.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.37					YELLOW GREY CLAYSTONE.
72484 O	1463.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.88					MED OLIVE GRY CLAYSTONE.
72483 X	1495.00	EOCENE-LATE CRET.	LATROBE GROUP	1	1.01					OLIVE GREY SILTSTONE .
72483 O	1745.90	EOCENE-LATE CRET.	LATROBE GROUP	1	1.71					OLIVE GREY SLTST, MUDDY.
72483 L	1835.00	EOCENE-LATE CRET.	LATROBE GROUP	1	3.37					OLIVE GRY SLST,CARB LAM.
72482 E	1854.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.54					MEDIUM DARK GREY SILTST.
72482 9	1895.00	EOCENE-LATE CRET.	LATROBE GROUP	1	.10					LT GREY PSRTD SANDSTONE.
72482 F	2004.00	EOCENE-LATE CRET.	LATROBE GROUP	1	1.70					DK GRY - BRN SLTY MUDST.
===> DEPTH : 1419.50 TO 2004.00 METRES. <=== I ===> AVERAGE TOC : 2.60 % EXCLUDING VALUES GREATER THAN 10.00 % <===										

Table 3. ESSO AUSTRALIA LTD.

VITRINITE REFLECTANCE REPORT

BASIN - GIPPSLAND
WELL - SEAHORSE 2

SAMPLE NO.	DEPTH	AGE	FORMATION	AN	MAX. RO	FLUOR. COLOUR	NO.CNTS.	MACERAL TYPE
72404 A	1444.60	EOCENE-LATE CRET.	LATROBE GROUP	5	.42	GRN-BRN	20	90%V,10%E
72403 B	1745.90	EOCENE-LATE CRET.	LATROBE GROUP	5	.42	YEL-OR	14	E>V>I,V COMMON
72403 B	2004.00	EOCENE-LATE CRET.	LATROBE GROUP	5	.44	GRN-YEL-OR	20	E>I>V,V SPARSE

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - SEAHORSE 2

SAMPLE NO.	DEPTH	SAMPLE TYPE	--- ELEMENTAL % (ASH FREE) ---						COMMENTS
			N%	C%	H%	S%	O%	ASH%	
72485 L	1396.00	KEROGEN	1.93	56.70	4.01	.00	37.36	12.04	HIGH ASH
72485 I	1405.00	KEROGEN	2.45	47.61	3.64	.00	46.29	12.75	HIGH ASH
72485 H	1406.90	KEROGEN	3.16	50.20	3.34	.00	43.31	10.99	HIGH ASH
72485 D	1422.00	KEROGEN	.65	63.11	4.65	.00	31.38	5.40	
72484 X	1444.60	KEROGEN	.42	69.68	4.88	.00	25.02	.79	
72484 R	1466.90	KEROGEN	.65	60.74	4.67	.00	33.94	7.49	
72484 M	1605.00	KEROGEN	.70	74.62	5.56	.00	19.13	2.49	
72485 X	1695.00	KEROGEN	.66	75.07	5.54	.00	16.53	7.62	
72483 Q	1745.90	KEROGEN	.95	73.29	5.41	.00	20.34	8.52	
72483 N	1791.50	KEROGEN	.65	73.32	5.12	.00	20.92	4.24	
72483 J	1803.00	KEROGEN	.80	73.17	5.29	.00	20.74	6.49	
72483 F	1834.00	KEROGEN	.80	74.59	5.13	.00	19.49	4.70	
72483 C	2004.00	KEROGEN	.80	75.63	5.72	.00	17.66	9.57	

KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - SEAHORSE 2

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	FORMATION	ATOMIC RATIOS H/C	O/C	N/C	COMMENTS
72485 L	1395.00	KEROGEN	MIOCENE-OLIGOCENE	LAKES ENTRANCE	.85	.49	.03	HIGH ASH
72485 I	1405.00	KEROGEN	MIOCENE-OLIGOCENE	LAKES ENTRANCE	.92	.73	.04	HIGH ASH
72485 D	1408.90	KEROGEN	MIOCENE-OLIGOCENE	LAKES ENTRANCE	.80	.65	.05	HIGH ASH
72485 U	1422.00	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.89	.37	.01	
72484 X	1444.50	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.84	.27	.01	
72484 W	1469.90	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.92	.42	.01	
72484 S	1668.00	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.89	.19	.01	
72483 X	1695.00	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.89	.19	.01	
72483 Q	1745.90	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.89	.21	.01	
72483 N	1791.50	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.84	.21	.01	
72483 L	1803.00	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.87	.21	.01	
72483 K	1854.00	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.83	.20	.01	
72483 G	2004.00	KEROGEN	EOCENE-LATE CRET.	LATROBE GROUP	.90	.17	.01	

TABLE 6

C4-C7 OIL 16 JUN 83

76629 AUSTRALIA, SEAHORSE-2, GIPPSLAND BASIN, 1442 METERS

	TOTAL PERCENT	NORM PERCENT		TOTAL PERCENT	NORM PERCENT
METHANE	0.000		CHEX	1.432	5.51
ETHANE	0.000		33-DMP	0.000	0.00
PROPANE	0.131		11-DMCP	0.169	0.65
IBUTANE	0.315	1.21	2-MHEX	0.951	3.66
NBUTANE	0.858	3.30	23-DMP	0.293	1.13
IPENTANE	1.450	5.58	3-MHEX	0.905	3.48
NPENTANE	1.824	7.02	1C3-DMCP	0.462	1.78
22-DMB	0.082	0.32	1T3-DMCP	0.406	1.56
CPENTANE	0.134	0.52	1T2-DMCP	0.704	2.71
23-DMB	0.278	1.07	3-EPENT	0.000	0.00
2-MP	1.461	5.62	224-TMP	0.000	0.00
3-MP	0.820	3.16	NHEPTANE	2.983	11.48
NHEXANE	2.615	10.06	1C2-DMCP	0.084	0.32
MCP	1.496	5.75	MCH	5.788	22.27
22-DMP	0.000	0.00	ECP	0.278	1.07
24-DMP	0.174	0.67	BENZENE	0.029	0.11
223-TMB	0.000	0.00	TOLUENE	0.000	0.00

TOTALS	
ALL COMP	26.125
GASOLINE	25.994

SIG COMP RATIOS	
C1/C2	2.65
A /D2	6.19
D1/D2	0.03
C1/D2	9.22
PENT/IPENT	1.26
CH/MCP	0.96

PARAFFIN INDEX 1	1.181
PARAFFIN INDEX 2	21.168

INTERPRETER - R.E.METTER

TABLE 7

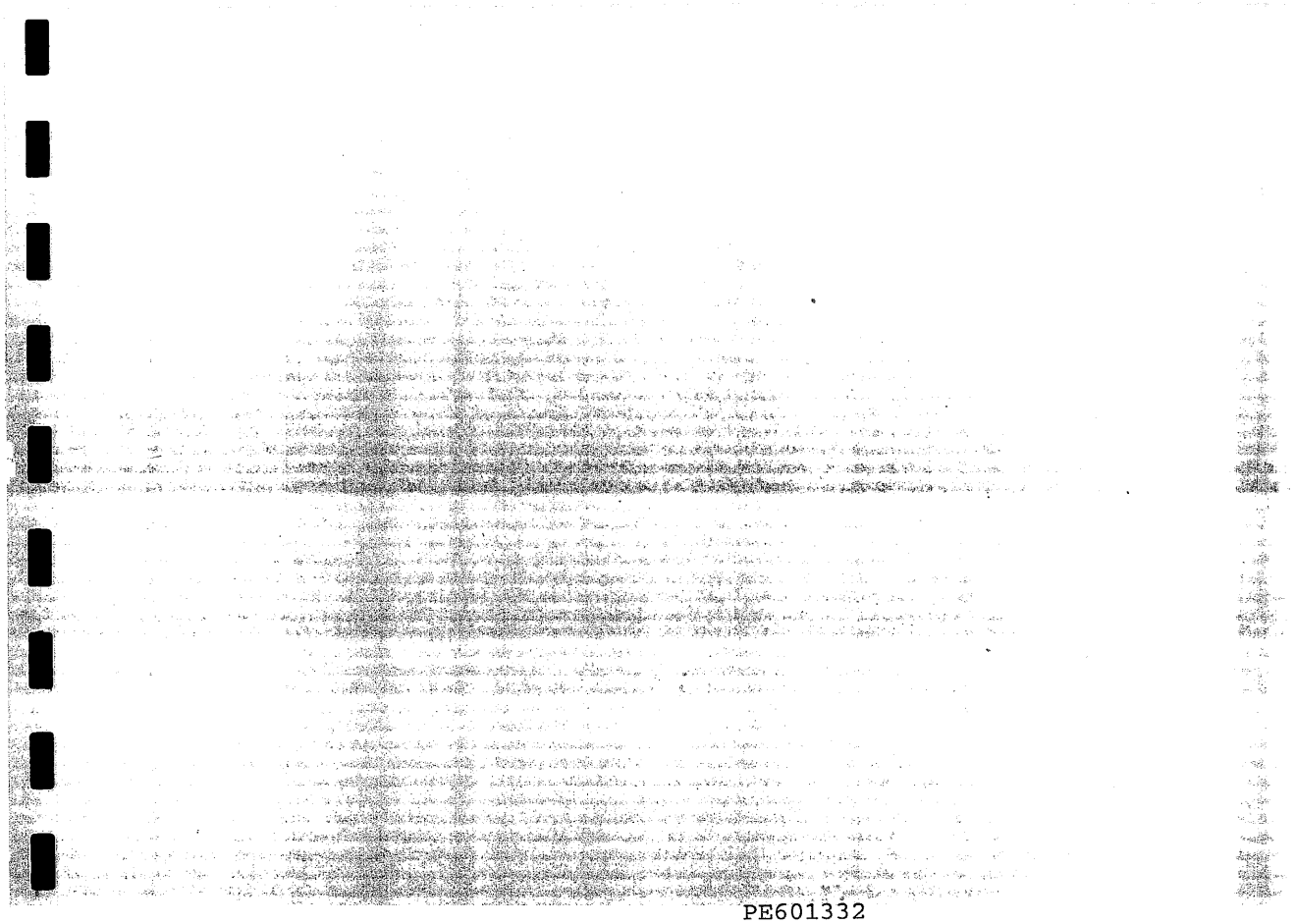
SEAHORSE-2 OIL, RFT 2/36, 1442m (KB)
LIQUID CHROMATOGRAPHY AND CARBON ISOTOPE DATA

CHROMATOGRAPHY SUMMARY - INSOLUBLE AND LOSS FREE BASIS

% Saturates	= 67.0
% Aromatics	= 14.0
% N.S.O.	= 8.1
% Sulphur	= 0.35
% Asphaltenes	= 2.8
% Non-Eluted	= 8.2

CARBON ISOTOPES

Saturates	C^{13}	(Vs. PDB)	= $-26.97^{o}/oo$
Aromatics	C^{13}	(Vs. PDB)	= $-25.77^{o}/oo$



PE601332

This is an enclosure indicator page.
The enclosure PE601332 is enclosed within the container PE902638 at this location in this document.

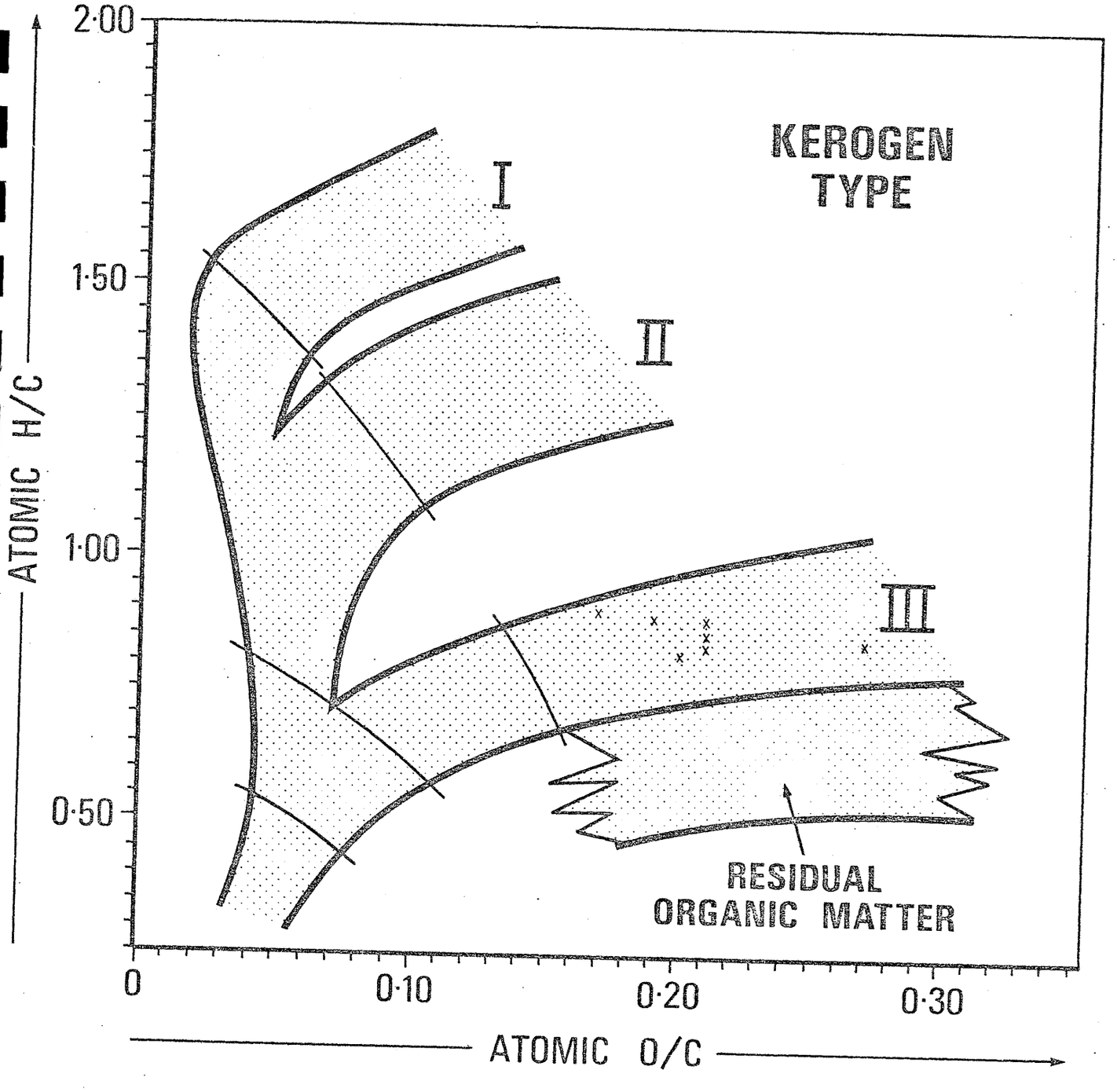
The enclosure PE601332 has the following characteristics:

ITEM_BARCODE	= PE601332
CONTAINER_BARCODE	= PE902638
NAME	= Cuttings Gas Log
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Cuttings Gas Log
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

FIG. 2

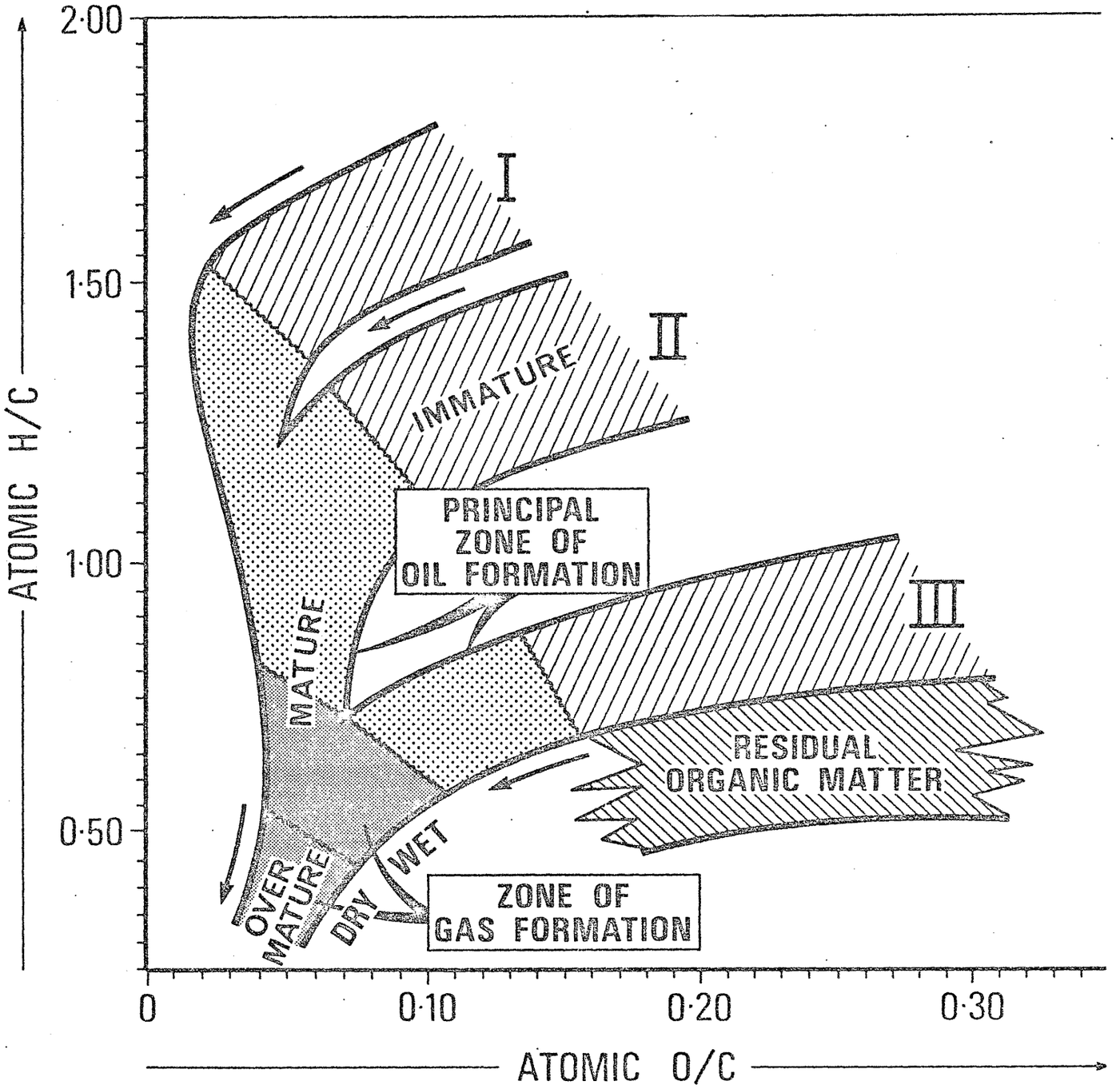
SEAHORSE – 2



x LATROBE GROUP

Dwg 2108/OP/7

Figure 3.



PRINCIPAL PRODUCTS OF KEROGEN EVOLUTION

CO_2, H_2O

OIL

GAS

RESIDUAL ORGANIC MATTER
(NO POTENTIAL FOR OIL OR GAS)

1380/BS/

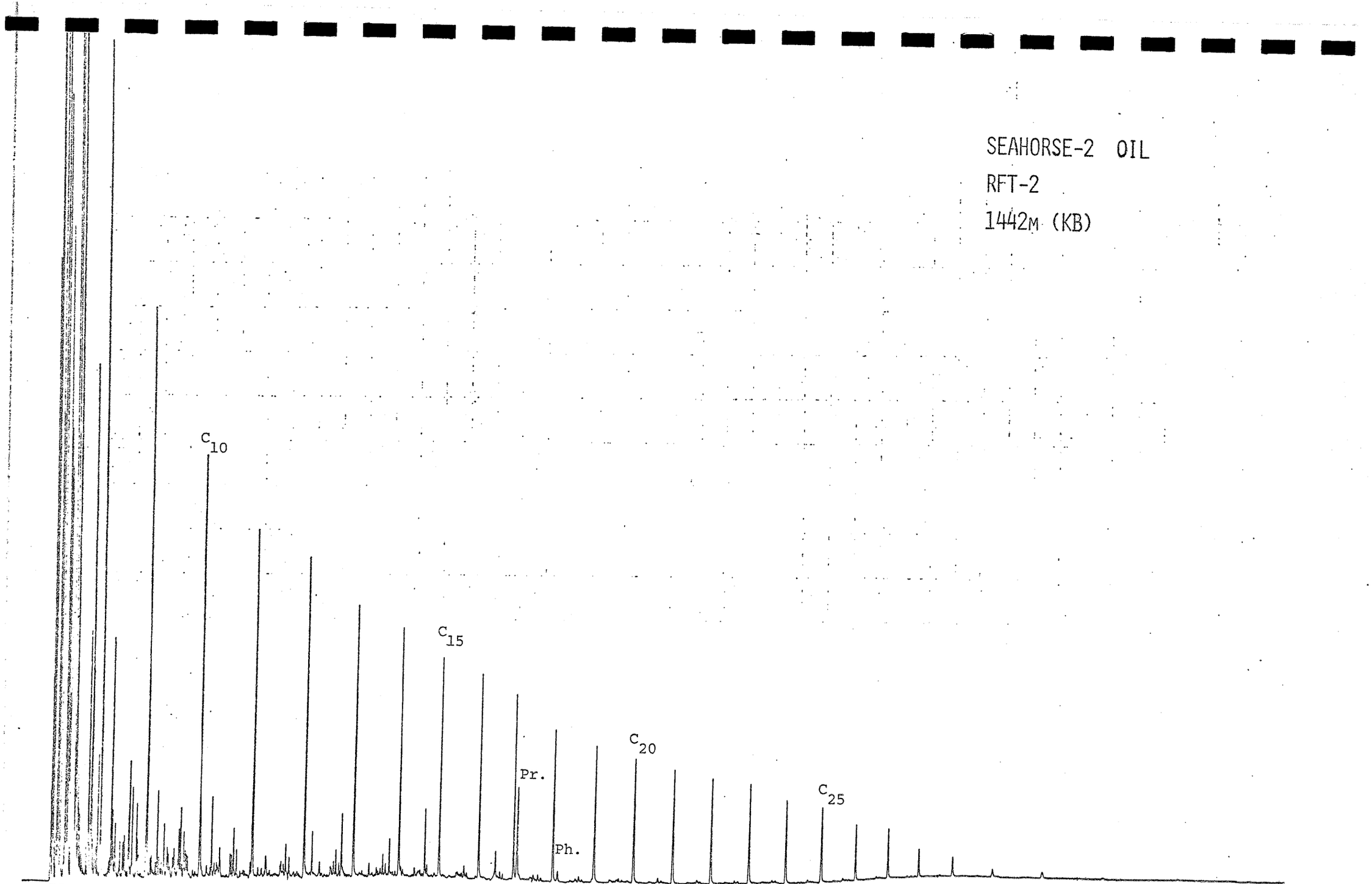


FIGURE 4: Whole oil gas chromatogram Seahorse-2, RFT-2/36, 1442m (KB).

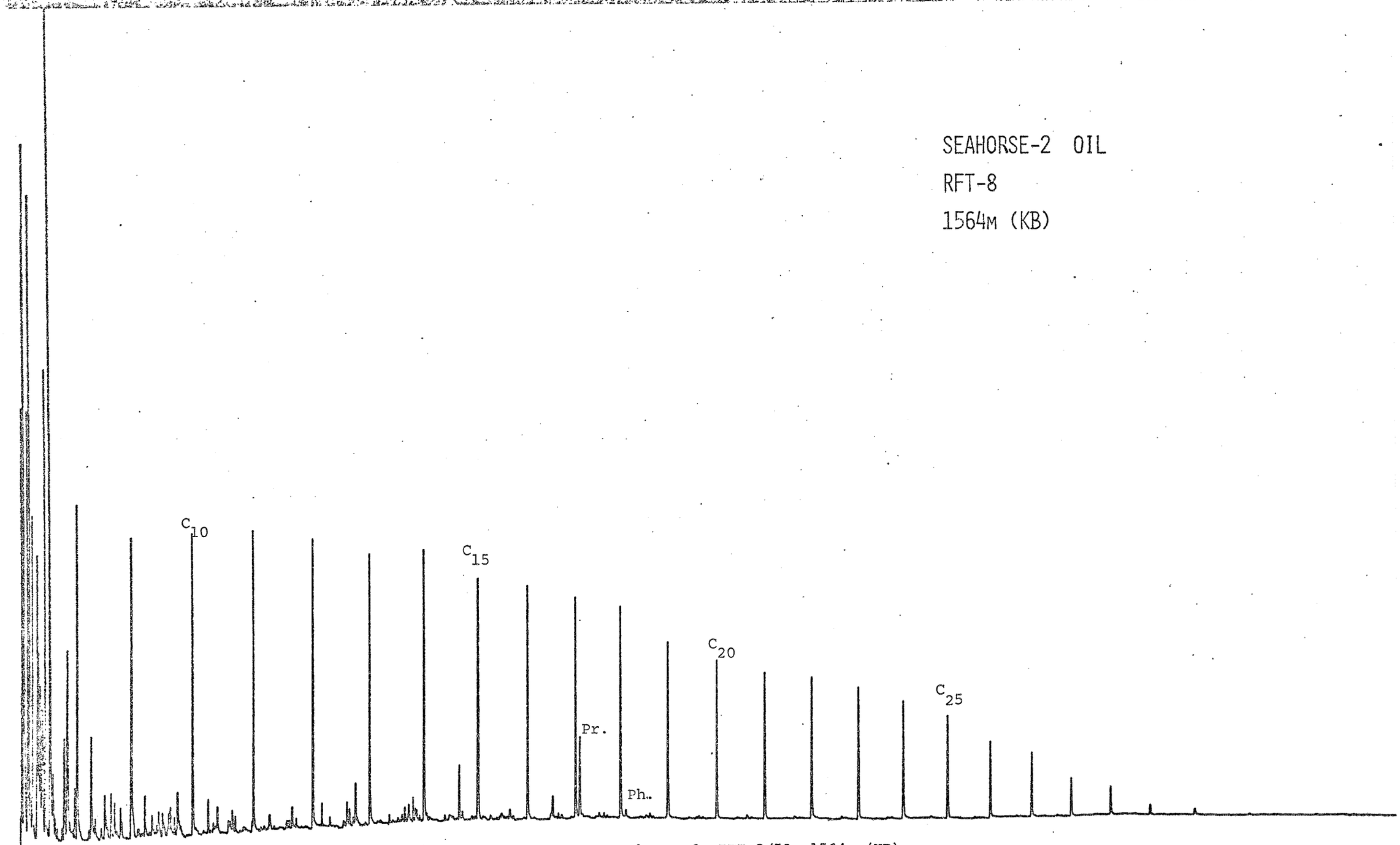


FIGURE 5: Whole oil gas chromatogram, Seahorse-2, RFT-8/59, 1564m (KB).

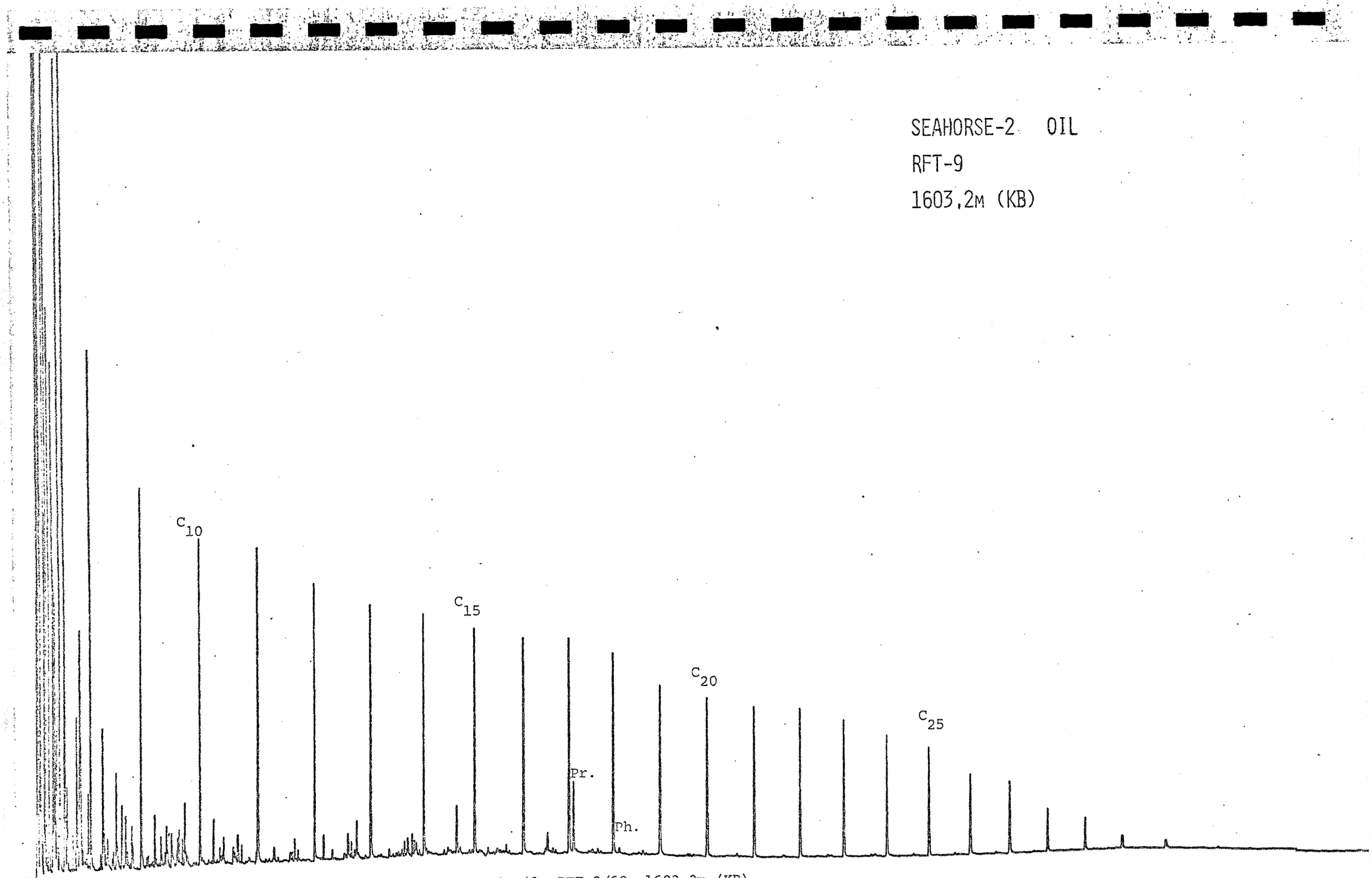


FIGURE 6: Whole oil gas chromatogram, Seahorse-2 oil, RFT-9/60, 1603.2m (KB).

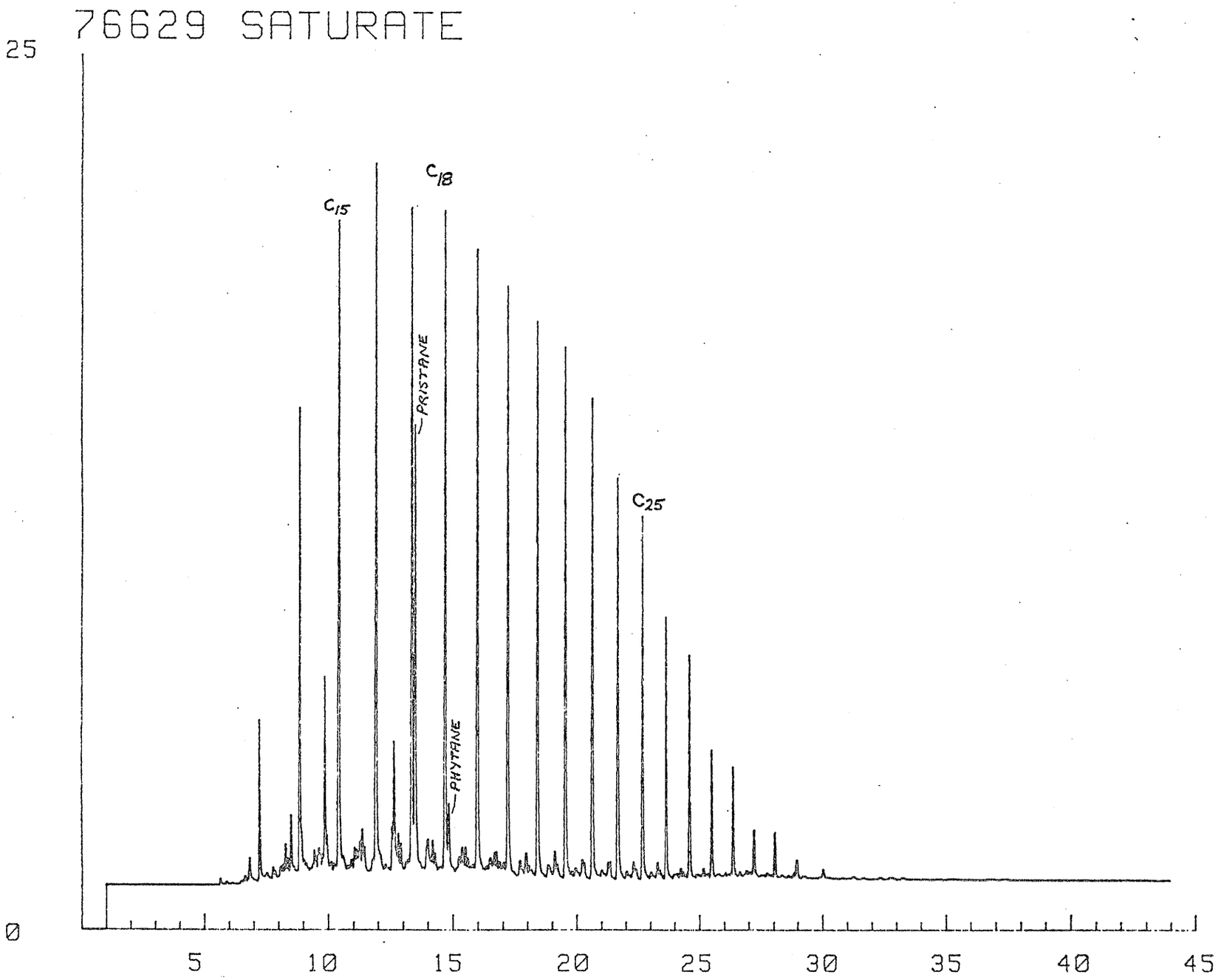


FIGURE 7: C_{15+} saturate hydrocarbon chromatogram, Seahorse-2 Oil, RFT - 2/36, at 1442 m(KB).

APPENDIX 1

SEAHORSE No.2

KK No.	Esso No.	Depth m	$\bar{R}_v$ max %	Range R_v max %	N	Exinite fluorescence (Remarks)
16085	BS/SH1	1444.5 Core	0.42	0.37-0.49	20	Abundant fluorinite/resinite green to brown, common suberinite, brown, sparse sporinite, yellow to orange, rare cutinite orange to dull orange. (Coal, clarite rich, resinite present in densinite and in texto-ulminite. Approx. 90% V, 10% E, trace fungal inertinite. Micrinite abundant.)
16086	BS/SH2	1745.9 Core	0.42	0.34-0.55	14	Common sporinite and common cutinite, yellow to orange. (Coarse to fine siltstone, d.o.m. abundant, E>V>I. Vitrinite common, but most grains very poorly polished due to picking out of the matrix. Inertinite rare, macrinite and semifusinite. Pyrite abundant.)
16087	BS/SH3	2004 Core	0.44	0.38-0.50	20	Abundant ?phytoplankton, greenish yellow to orange, sparse sporinite and rare cutinite, orange. (Mudstone, d.o.m. abundant, E>I>V. Vitrinite sparse, inertinite common, chiefly macrinite and semifusinite. Pyrite sparse.)

APPENDIX 6

APPENDIX 6

SYNTHETIC SEISMIC TRACE

SYNTHETIC SEISMIC TRACE

PARAMETERS

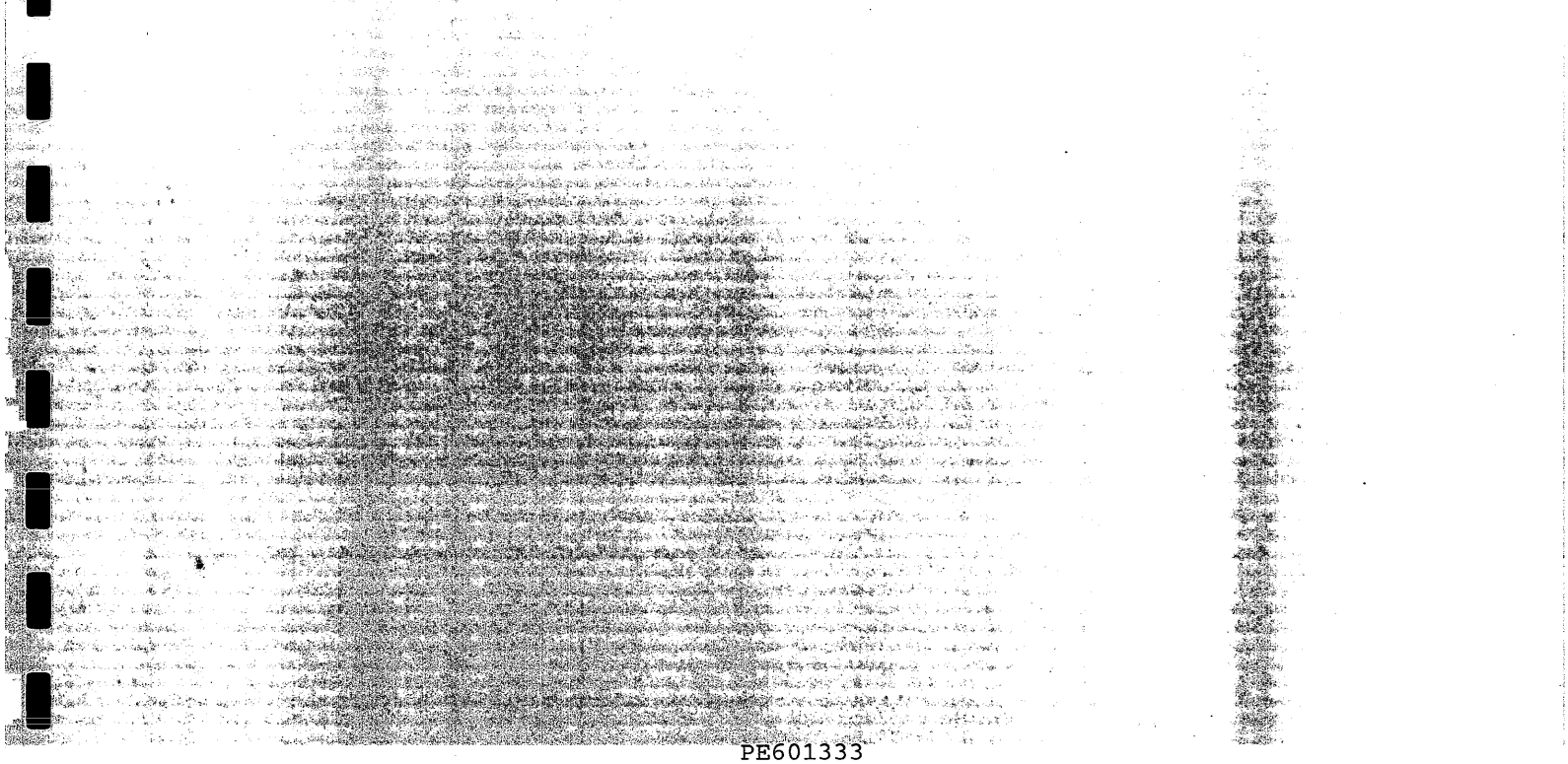
WELL	:	Seahorse-2
T.D.	:	2021mKB
KB	:	21m
WATER DEPTH	:	43.0m
POLARITY	:	Trough represents acoustic impedance increase
PULSE TYPE	:	Zero phase, second derivative, gaussian function
PEAK FREQUENCY	:	25hz
SAMPLE FREQUENCY	:	2 metres
CHECK SHOT CORRECTIONS	:	Yes
COMMENTS	:	A synthetic seismic trace was generated over the depth interval of 200mKB - 2021mKB.

Sonic and Density logs were edited as follows:-

Sonic - values shallower than 200mKB were given Z nil values
- values between 200mKB and 2021mKB were restricted in the range 0 us/m - 600 us/m

Density - values between 200mKB and 800mKB were held constant at 1.8 g/cc.

0794L



PE601333

This is an enclosure indicator page.
The enclosure PE601333 is enclosed within the container PE902638 at this location in this document.

The enclosure PE601333 has the following characteristics:

ITEM_BARCODE	= PE601333
CONTAINER_BARCODE	= PE902638
NAME	= Velocity Check Shot Survey
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Velocity Check Shot Survey
REMARKS	=
DATE_CREATED	= 9/04/84
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE906293

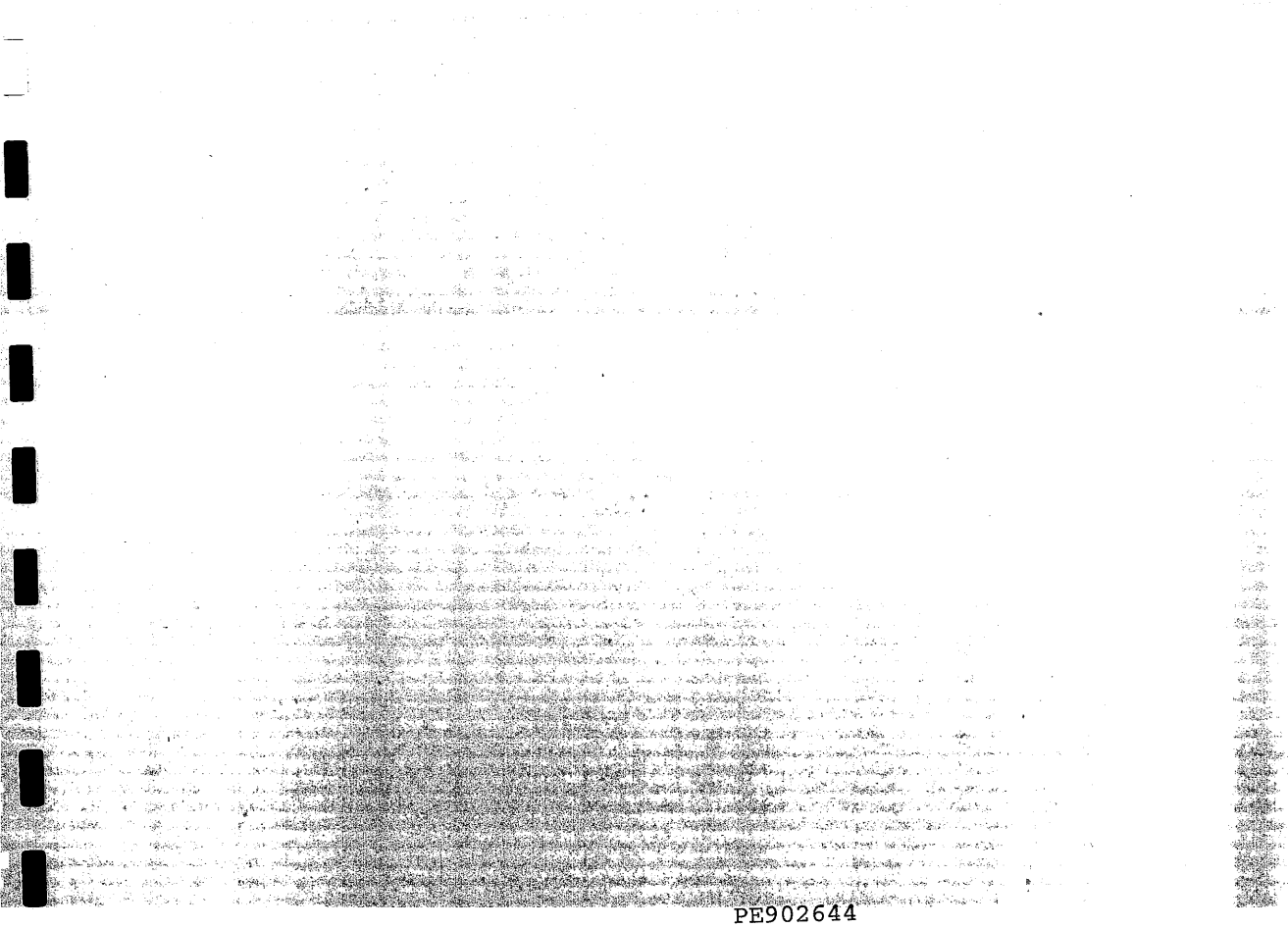
This is an enclosure indicator page.
The enclosure PE906293 is enclosed within the container PE902638 at this location in this document.

The enclosure PE906293 has the following characteristics:

ITEM_BARCODE	= PE906293
CONTAINER_BARCODE	= PE902638
NAME	= Time Overlay
BASIN	= GIPPSLAND
PERMIT	= VIC/P1
TYPE	= WELL
SUBTYPE	= SYNTH_SEISMOGRAPH
DESCRIPTION	= Time Overlay for Synthetic Seismic Trace of Seahorse-2
REMARKS	= Transparent Foolscap Sheet
DATE_CREATED	=
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= SEAHORSE-2
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURES



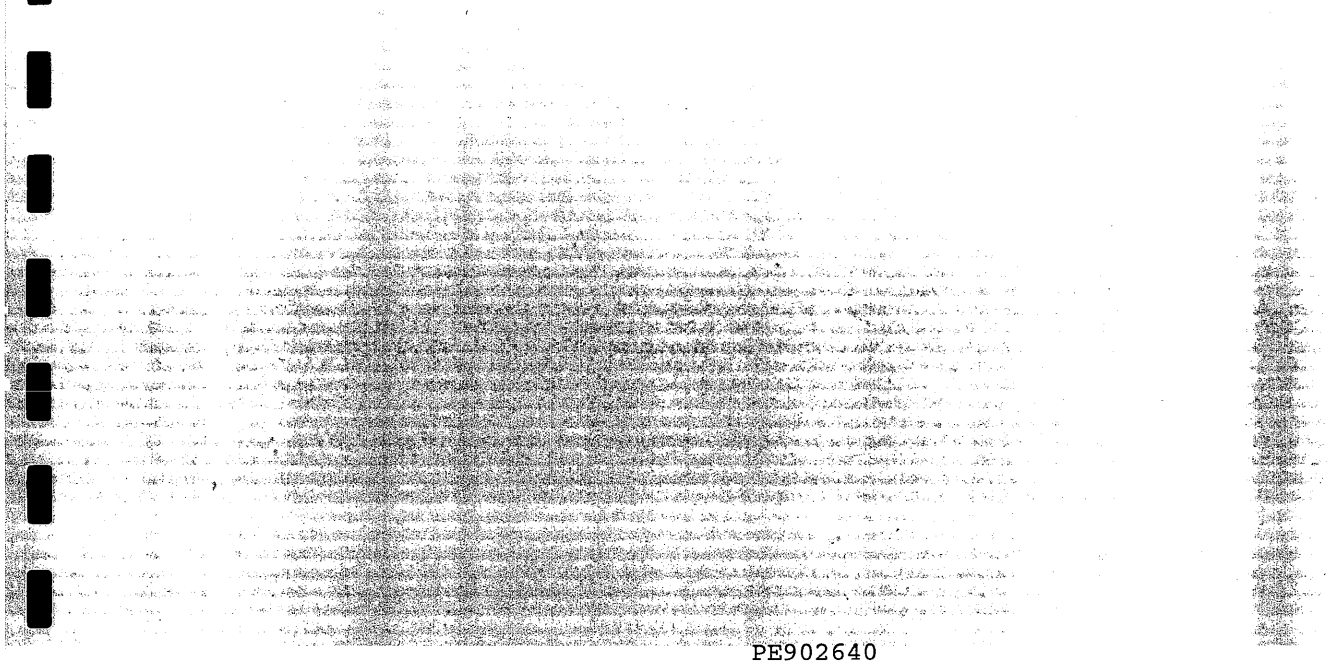
PE902644

This is an enclosure indicator page.
The enclosure PE902644 is enclosed within the container PE902638 at this location in this document.

The enclosure PE902644 has the following characteristics:

ITEM_BARCODE	= PE902644
CONTAINER_BARCODE	= PE902638
NAME	= Structure Map Top of Latrobe Group
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Structure Map Top of Latrobe Group
REMARKS	=
DATE_CREATED	= 1/09/82
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)



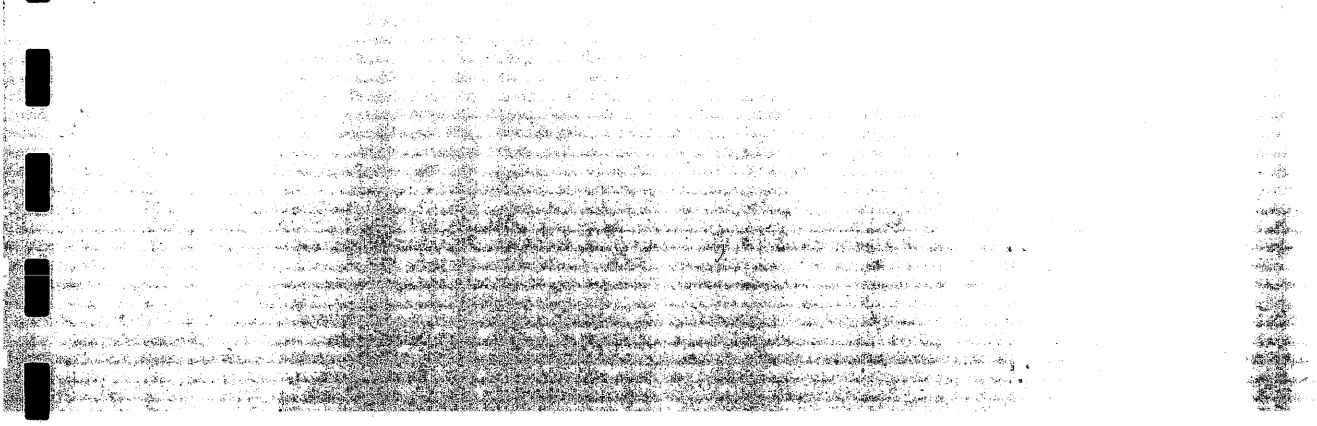
PE902640

This is an enclosure indicator page.
The enclosure PE902640 is enclosed within the container PE902638 at this location in this document.

The enclosure PE902640 has the following characteristics:

ITEM_BARCODE	= PE902640
CONTAINER_BARCODE	= PE902638
NAME	= Structure Map N Asperus Seismic Marker
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Structure Map N Asperus Seismic Marker
REMARKS	=
DATE_CREATED	= 1/09/82
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)



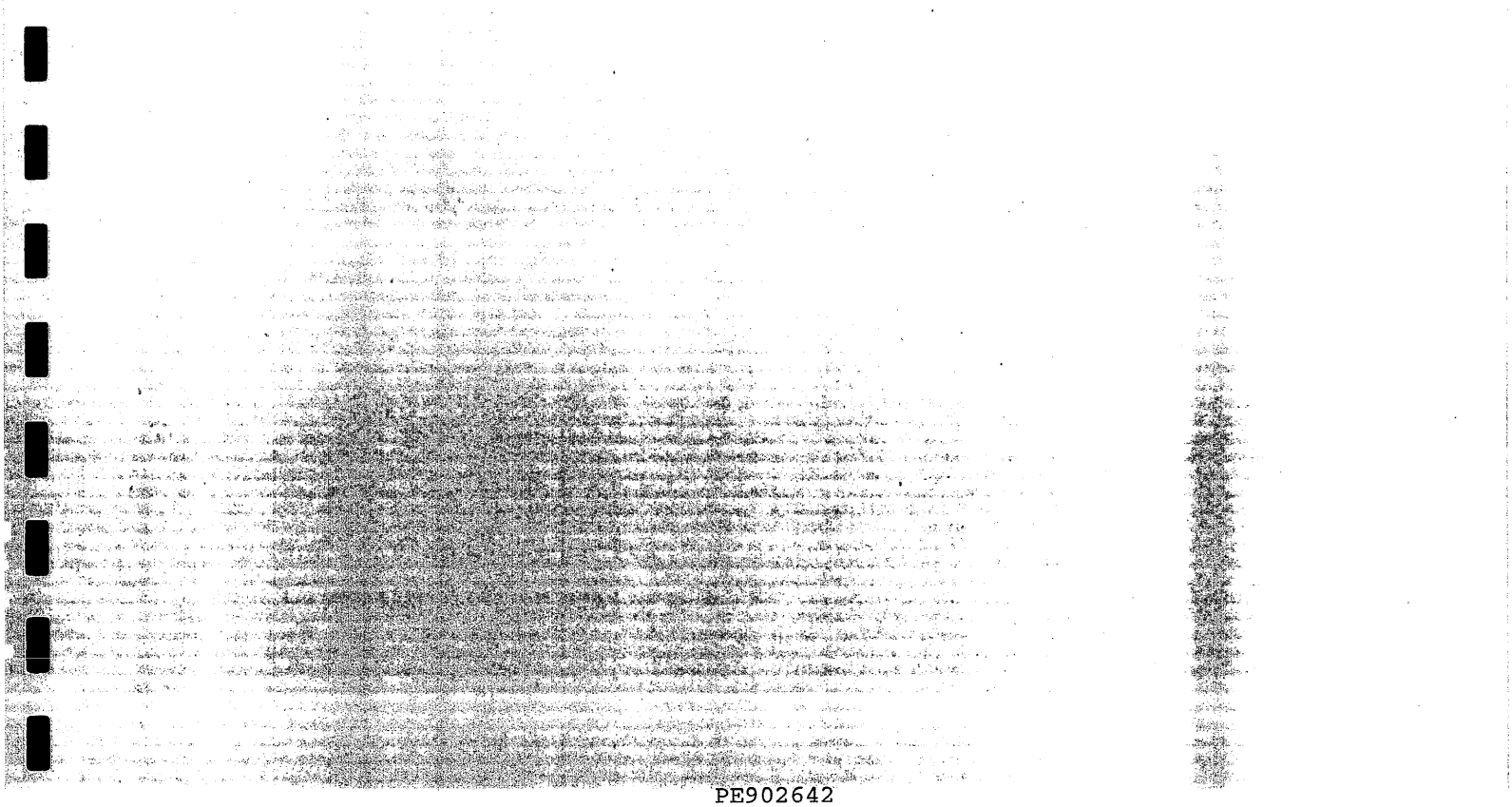
PE902641

This is an enclosure indicator page.
The enclosure PE902641 is enclosed within the container PE902638 at this location in this document.

The enclosure PE902641 has the following characteristics:

ITEM_BARCODE	= PE902641
CONTAINER_BARCODE	= PE902638
NAME	= Structure Map P Asperopolouse Seismic Marker
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Structure Map P Asperopolouse Seismic Marker
REMARKS	=
DATE_CREATED	= 1/09/82
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)



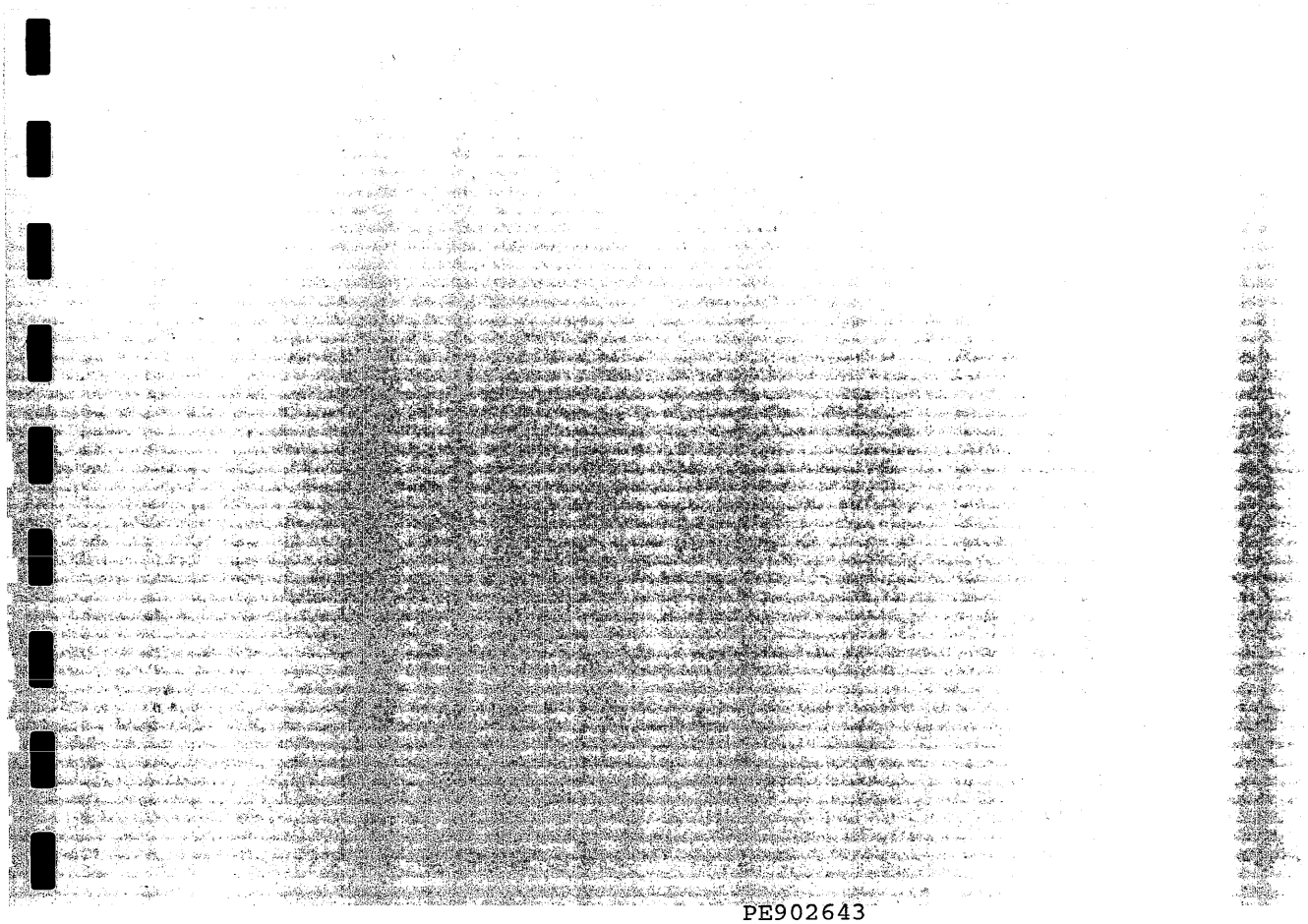
PE902642

This is an enclosure indicator page.
The enclosure PE902642 is enclosed within the container PE902638 at this location in this document.

The enclosure PE902642 has the following characteristics:

ITEM_BARCODE	= PE902642
CONTAINER_BARCODE	= PE902638
NAME	= Structure Map M Diverus Seismic Marker
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Structure Map M Diverus Seismic Marker
REMARKS	=
DATE_CREATED	= 1/09/82
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)



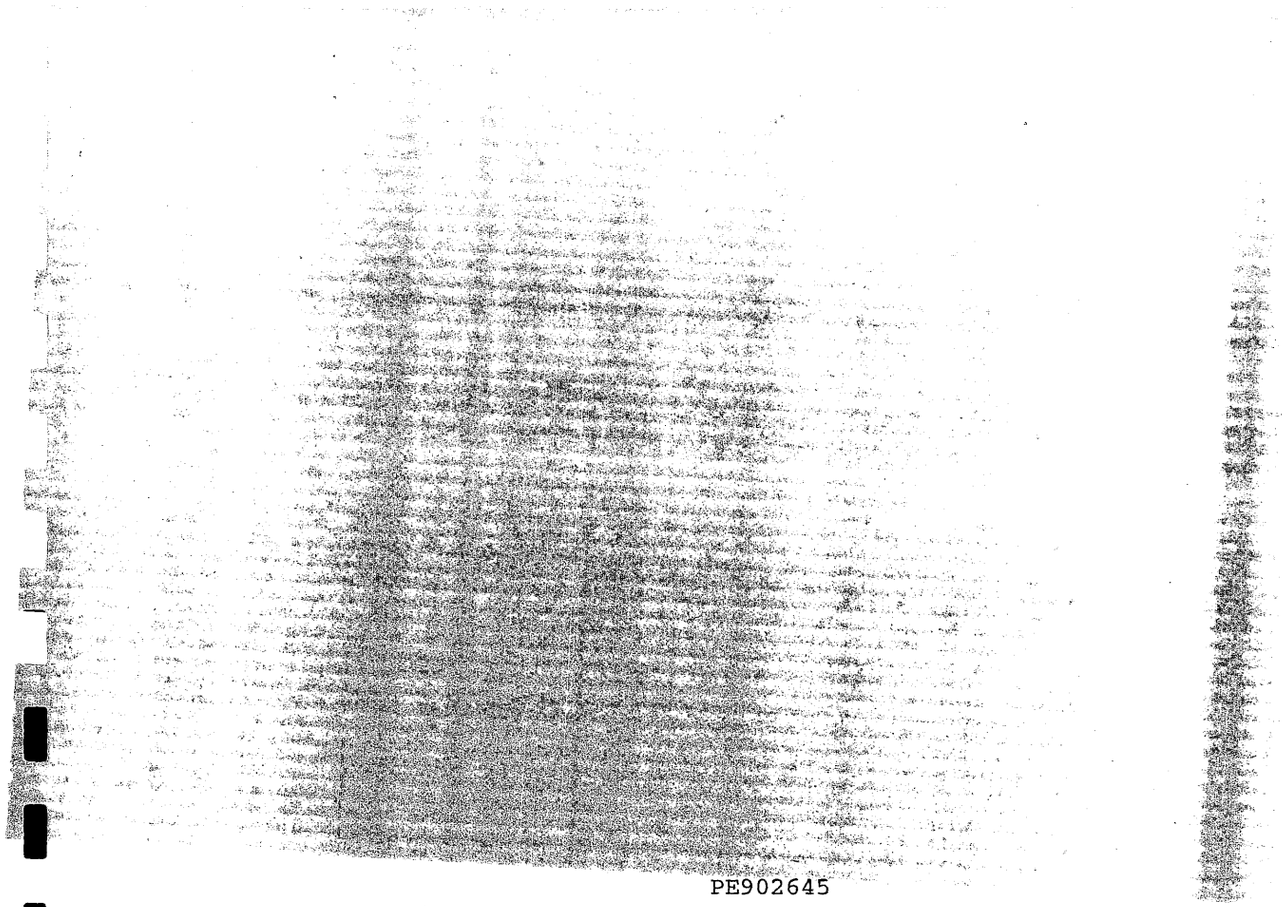
PE902643

This is an enclosure indicator page.
The enclosure PE902643 is enclosed within the container PE902638 at this location in this document.

The enclosure PE902643 has the following characteristics:

ITEM_BARCODE	= PE902643
CONTAINER_BARCODE	= PE902638
NAME	= Cross Section A-A
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= CROSS_SECTION
DESCRIPTION	= Cross Section A-A
REMARKS	=
DATE_CREATED	= 1/11/82
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)



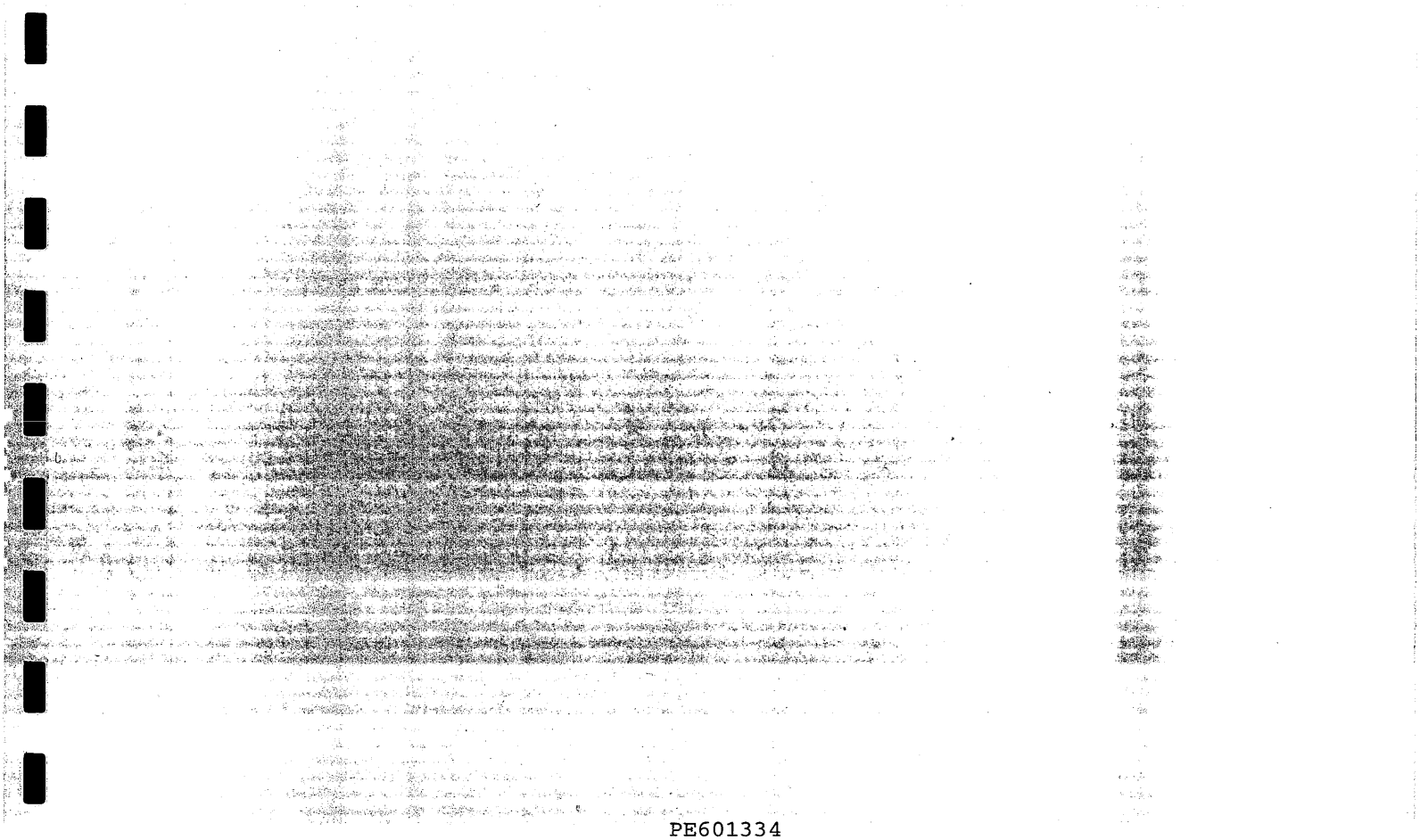
PE902645

This is an enclosure indicator page.
The enclosure PE902645 is enclosed within the container PE902638 at this location in this document.

The enclosure PE902645 has the following characteristics:

ITEM_BARCODE	= PE902645
CONTAINER_BARCODE	= PE902638
NAME	= Stratigraphic Section
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= CROSS_SECTION
DESCRIPTION	= Stratigraphic Section
REMARKS	=
DATE_CREATED	= 1/03/83
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)



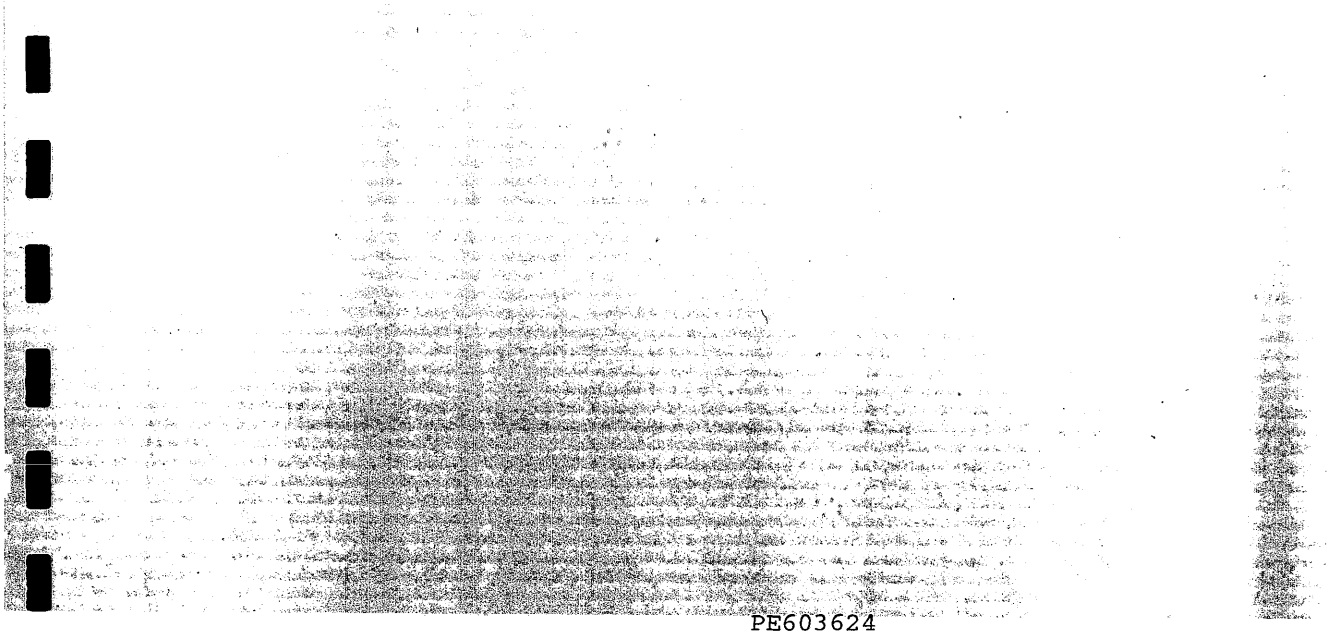
PE601334

This is an enclosure indicator page.
The enclosure PE601334 is enclosed within the container PE902638 at this location in this document.

The enclosure PE601334 has the following characteristics:

ITEM_BARCODE	= PE601334
CONTAINER_BARCODE	= PE902638
NAME	= Well Completion Log
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= COMPLETION_LOG
DESCRIPTION	= Well Completion Log
REMARKS	=
DATE_CREATED	= 31/07/82
DATE_RECEIVED	= 7/08/84
W_NO	= W780
WELL_NAME	= Seahorse-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)



PE603624

This is an enclosure indicator page.
The enclosure PE603624 is enclosed within the container PE902638 at this location in this document.

The enclosure PE603624 has the following characteristics:

ITEM_BARCODE	= PE603624
CONTAINER_BARCODE	= PE902638
NAME	= Mud Log
BASIN	= GIPPSLAND
PERMIT	= VIC/P1
TYPE	= WELL
SUBTYPE	= MUD_LOG
DESCRIPTION	= Mud Log (Grapholog) for Seahorse-2
REMARKS	=
DATE_CREATED	= 20/07/82
DATE_RECEIVED	= 2/02/83
W_NO	= W780
WELL_NAME	= SEAHORSE-2
CONTRACTOR	= CORE LABORATORIES AUSTRALIA LTD
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)