Data Repository

AGSO
GEOSCIENCE AUSTRALIA

Well Completion Report Scanned Image File

Well Name	Seal 1
UNO	W7860002
PLSA File Reference	85/1096
Operator	Bridge Oil
Contractor	Atwood Oceanics
Date of Report	February 1986
Confidentiality	

This file contains scanned images of a Well Completion Report submitted under the Petroleum (Submerged Lands) Act of the Australian Government. The data in this file are made available to assist future explorers for petroleum and may be distributed freely.

Please refer any queries to

AGSO – Geoscience Australia
Data Repository
Cnr Jerrabomberra Avenue & Hindmarsh Drive,
Symonston ACT 2609
GPO Box 378, Canberra,
ACT, 2601, Australia

Phone: +61 2 6249 9222
Fax: +61 2 6249 9903
Email: ausgeodata@agso.gov.au
Web Page: www.agso.gov.au

85/1096

SEAL NO. 1

WELL COMPLETION REPORT

Prepared by B.C. Furr of
J.M. BLUMER & ASSOCIATES
for BRIDGE OIL LIMITED

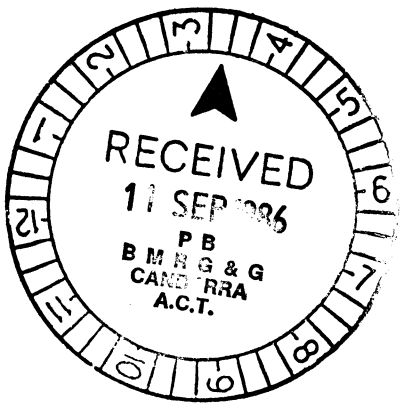


TABLE OF CONTENTS

PART A - GEOLOGY

Section A1 - Well Summary

A1.1 Well History
A1.2 Basic Data Sheets
A1.3 Summarised Well Log

Section A2 - Geological Data

A2.1 Regional Geology
  A2.1.1 Structure
  A2.1.2 Depositional History
  A2.1.3 Stratigraphy
A2.2 Stratigraphy of Seal No. 1
A2.3 Lithological Descriptions
A2.4 Sidewall Core Descriptions
A2.5 Palynology/Biostratigraphy
A2.6 Geochemistry
A2.7 Thermal History

Section A3 - Log Analysis

A3.1 Introduction
A3.2 In-house Analysis

PART B - ENGINEERING

Section B1 -Drilling Data

B1.1 Drilling Diary, Time Breakdown,
  Mud Materials Used
B1.2 Bit Record
B1.3 Deviation Surveys
B1.4 Water Supply
B1.5 Rig Equipment Listing
B1.6 Final Well Location

LIST OF FIGURES

FIG NO.

1. Location Map
2. Summarised Well Log
3. Predicted vs Actual Stratigraphy
4. Corrected Bottom Hole Temperature
5. Depth vs Time
6. Mud Weight vs Depth

APPENDICES

1. Location Surveys Report
2. Geochemistry Report
3. Palynology Report
4. Final Well Summary

LIST OF ENCLOSURES

1. Composite Log
2. Mudlog
3. Wellsite Geologists Lith. Log
4. Seal-1 Stratigraphy
5. Seismic Line
6. Cyberlook
7. Terralog Results Listings (see page 34)

SECTION A1 - WELL SUMMARY

A1.1 Well History

The exploratory well Seal No. 1 was drilled in the north-western portion of the Bass Basin, offshore from northern Tasmania. It was the first well drilled in T-19-P by Bridge Oil Limited since they took over the operatorship from Weaver Oil and Gas in 1985.

Seal No. 1 was drilled on a turnkey basis using Triton Engineering Services. It was spudded on 11th February 1986 using the Atwood Oceanics semi-submersible drilling rig Margie and reached a total depth of 1670m on 19th February 1986, i.e. a total drilling time of 8 days.

The following companies participated in the drilling of the well:

Bridge Oil Limited (Operator)	15.0%
Belco Petroleum Corporation/H.N.G.	22.0%
Champlin International Petroleum Co.	15.5%
Weaver Oil & Gas Corporation (Kaneb)	15.5%
Peko Oil Limited	11.0%
Kimberley Oil & Gas N.L.	10.0%
Cluff Oil (Pacific) Ltd	5.5%
Winton Oil N.L.	5.5%
Total	100.0%

The Seal structure is located on a northeast tilted fault block typical of the Northwest Bass Basin. It lies upthrown on a large paleo-fault which represents the northeast boundary of the central graben depocentre which trends northwest-southeast into T-19-P. Stratigraphic control was provided by the Konkon No.1 well located approximately 20km to the north-east. The Seal structure was originally recognised on 1965 vintage seismic and was later mapped using data from seismic surveys shot in 1981-82 and 1985, as a four-way dip closure at the top of the Eastern View Group.

The well was drilled to test the Oligocene to Paleocene section (Fig. 2). The Paleocene was the primary objective with secondary targets in the Oligocene and Eocene. Although the Seal structure itself is not within the oil window, adjacent areas of the central graben are within it and should be generative. Migration paths are provided by the large faults bounding Seal to the southwest as well as along the southeast plunging Seal trend.

The stratigraphic sequence penetrated in Seal No. 1 showed some differences to that prognosed (Table 1).

No significant hydrocarbon shows were recorded during the drilling of Seal No. 1. Although some traces of very dull yellow fluorescence were seen in cuttings and in a number of sidewall cores, subsequent log analysis did not indicate producible hydrocarbons. No full hole cores were cut, but one gun of sidewall cores was attempted with 86.6% recovery. (See Sidewall Core Descriptions section of this report).

Stratigraphic Unit	Prognosed Top (m Subsea)	Actual Top (m Subsea)	Difference (m)	Actual Thick-ness(m)
Oligocene Sand	762	812.2	+50.2	47.5
Demons Bluff Equiv.	808	859.7	+51.7	118.5
Eastern View Grp.	1067	978.2	-88.8	474.5
Mid Eocene (Up.M.diversus Unconformity)	1280	1280.7	+0.7	-
Miocene? Intrusives	NP	1452.7	-	112.5
Paleocene	1433	1565.2	+132.2	49.0
Basement/ Miocene Intrusives	1494	1614.2	+120.2	>30.5

\+ = Deeper than prognosed.
\- = Shallower than prognosed.

Table 1. Predicted vs Actual Tops of Stratigraphic Units (see Figure 3).

BRIDGE OIL LIMITED

WELL : SEAL NO. 1

LATITUDE: 39° 21' 48.979"S ELEV: 25.3m AMSL K.B.: 64.6m G.L. W.D.

LONGITUDE: 144°52' 52.700"E T.D.: 1670.0m LOGGER 1670m DRILLER

SEISMIC S.P. BB-85-72 SP140 PROGRAMMED T.D.: 1610

TARGET: EASTERN VIEW GROUP

STATUS : PLUGGED AND ABANDONED SPUDDED 11/2/86 RIG. RELEASED 21/2/86

COMPLETION DETAILS: P & A PLUG #1, 692m to 592m. PLUG #2, 230m to 125m

RIG TYPE: SEMI SUBMERSIBLE RIG CONTACTOR: ATWOOD OCEANICS/TRITON

MUD LOGGING: EXLOG ELECRTICAL LOGGING: SCHLUMBERGER

CASING SIZE: 20" shoe depth 232m driller 232.0m logger

SIZE: 13.3/8" shoe depth 642m driller 644.0m logger

SIZE: _____ shoe depth _____ driller _____ logger

FORMATION	AGE	ACTUAL DEPTH K.B.	ACTUAL DEPTH S.S.	PROGNOSED DEPTH K.B.	PROGNOSED DEPTH S.S.	THICKNESS ACTUAL	THICKNESS PROGNOSED
UNDIFFERENTIATED RECENT	RECENT	89.9	64.6	91	66	267.1	
TORQUAY GROUP	OLIG.-RECENT	357.0	331.7	NOT DIFFERENTIATED FROM RECENT		480.5	
OLIGOCENE BAND	OLIG.-EOCENE	837.5	812.2	787	762	47.5	46
DEMON'S BLUFF EQUIVALENT	EOCENE	885.0	859.7	833	808	118.5	259
EASTERN VIEW GROUP	EOCENE	1,003.5	978.2	1,092	1,067	474.5	427
INTRUSIVES	?MIOCENE	1,478.0	1,452.7	NP	NP	112.5	-
EASTERN VIEW GROUP	PALEO-CENE	1,590.5	1,565.2	1,458	1,433	49.0	61
INTRUSIVES/ BASEMENT	?MIOCENE /CRETACEOUS	1,639.5	1,614.2	1,520	1,494	>30.5	>90
		TD1,670.0	1,644.7	PTD1,610	1,584		

BRIDGE OIL LIMITED

WELL: SEAL NO. 1

LOGGING SUITE 1 AND 2			
TYPE LOG	**RUN No.**	**INTERVAL**	**REMARKS**
DIL-LSS-GR-CAL-SP-MSFL	1	232.0m to 654.5m	
DIL-MSFL-LSS-GR-SP-CAL	1	644.0m to 1,669.0m	) LOGS TRANSMITTED FROM SALE TO SYDNEY
LDL-CNL-GR-CAL	2	644.0 to 1,669.0m	)
CST-C	3	865.02 to 1,665.07m	30 SHOTS FIRED 26 SAMPLES RECOVERED

FULL HOLE CORES NO FULL HOLE CORES CUT.
30 S.W.C. SHOT - 26 RECOVERED

FORMATION TESTS NO TEST PERFORMED

TEST No.	INTERVAL	FORMATION	V.O. mins.	S.I. mins	H.P. psi	F.P. psi	S.I. psi	CHOKE ins./psi	RESULTS

BRIDGE OIL LIMITED

SHEET #3

WELL: SEAL NO. 1

LOG ANALYSIS

INTERVAL	FORMATION	POR. Av.	% Av.Sw.	INTERVAL	FORMATION	Av.	Av. Sw.
825 - 900m	OLIGOCENE SANDSTONE	0.325	97.5				
975 - 1030m	EOCENE E.V.C.M.	0.318	92.5				
1030 - 1115m	EOCENE E.V.C.M.	0.288	97.7				
1165 - 1220m	EOCENE E.V.C.M.	0.261	92.2				
1220 - 1255m	EOCENE E.V.C.M.	0.290	92.8				
1305 - 1360m	EOCENE E.V.C.M.	0.287	82.7				
1360 - 1445m	EOCENE E.V.C.M.	0.266	84.2				
1590 - 1600m	PALEOCENE E.V.C.M.	0.248	84.5				

Service Company Analyses Performed

GEOCHEMISTRY REPORT; ANALABS. PALYNOLOGY REPORT; ROGER MORGAN

LOCATION SURVEY REPORT; ONA. FINAL WELL SUMMARY; EXLOG

Summary:

Seal No. 1 tested the prognosed stratigraphy and was a valid structural test. Weak hydrocarbon shows were seen while drilling and in subsequent sidewall cores. Although wireline logs showed minor hydrocarbon saturations in some sandstone reservoirs, no commercial accumulations were indicated. Stratigraphyically there were some differences to prognosis. The top of the Eocene was slightly deeper than expected, the top of the Paleocene was considerably deeper than prognosed and the intrusive igneous rocks were a little more extensive. Source potential of the Eocene sediments was generally good as was that of the small section of Paleocene seen interbedded with the intrusive rocks. The locally elevated geothermal gradient as a consequence of the igneous intrusives has caused the maturity of the Eocene and Paleocene to be unexpectedly high considering their age and depth of burial. Some subsequent in situ limited volume generation of hydrocarbons probably accounts for the weak shows and patchy fluorescence seen in some sidewall cores from Seal No. 1.

Prepared By: _____ **Date:** _____

A2 - GEOLOGICAL DATA

A2.1 Regional Geology

A2.1.1 Structure

The Bass Basin is an elongated offshore basin with its long axis trending generally NW-SE. It covers an area of approximately 65,000 sq.km. and contains sediments which range in age from Late Jurassic/Early Cretaceous to Recent. It is bounded to the south by the north coast of Tasmania and to the north by the south coast of Victoria between Mornington Peninsula and Wilsons Promontory. The King Island High and the King Island/Mornington Peninsula Ridge separate the Bass Basin from the Otway Basin to the west, and Flinders Island and the Bassian Rise separate it from the Gippsland Basin to the east. These flanking basins have a similar age to the Bass Basin, the Gippsland being a prolific oil producing basin.

The Bass Basin is believed to have initially formed in response to a NE-SW tensional stress field associated with the separation of the Antarctic Plate from the Australian Plate during the Late Jurassic. This produced a series of NW-SE trending down to the basin normal faults. During about the mid-Cretaceous a right lateral shear was added to the structural palimpsest when the Tasmanian sub-plate moved to the south-west relative to the Australian plate. This movement caused further normal faulting. The tensional stress field remained orientated NE-SW throughout the Tertiary.

A2.1.2 Depositional History.

Initial downwarping of the basin during the Late Jurassic/ Early Cretaceous is marked by the deposition of fine grained, volcanoclastic sediments probably derived from a magmatic arch which extended along the eastern margin of the Australian Plate at this time.

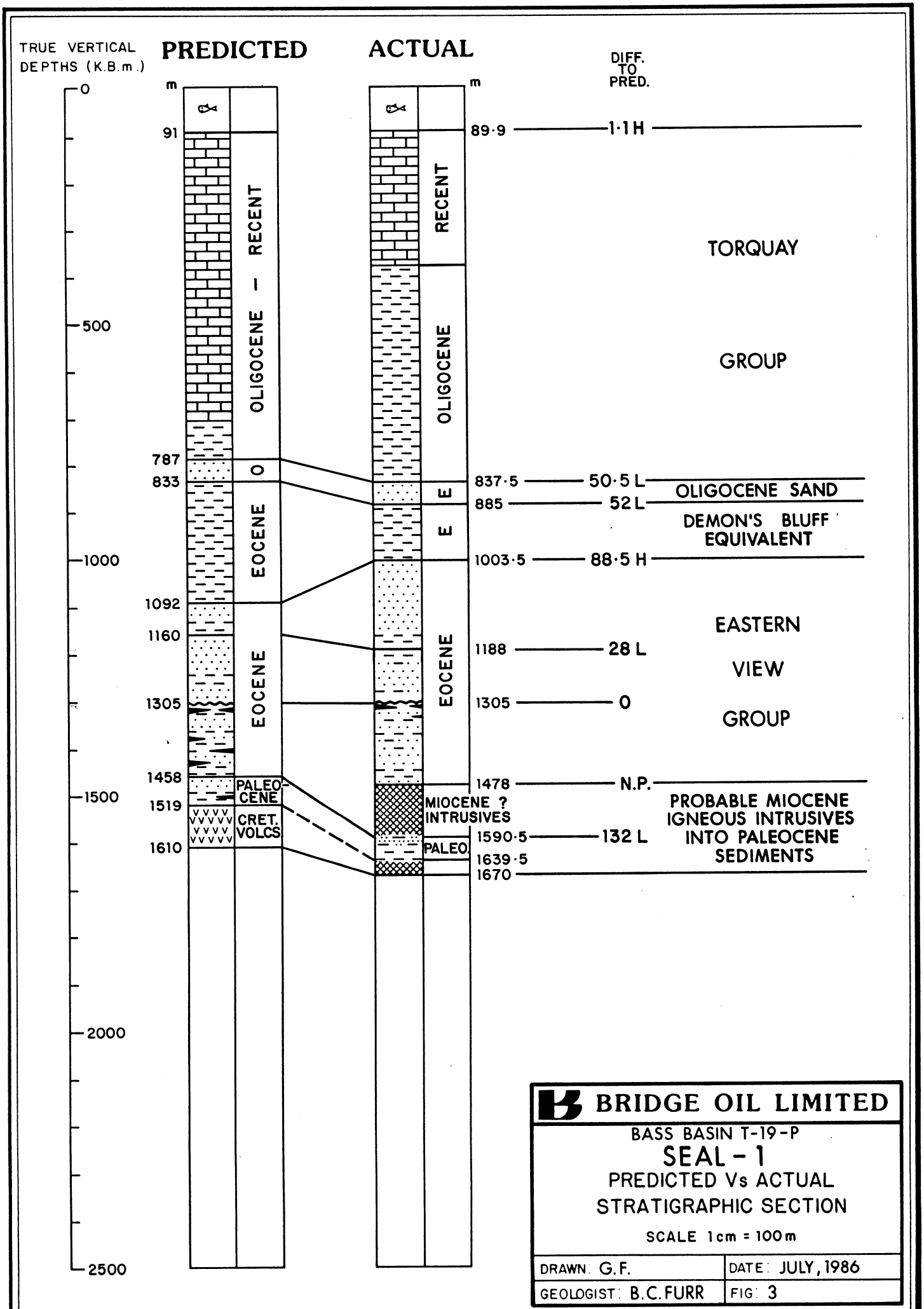
During the early Late Cretaceous, structuring occurred in the southeastern part of the basin. During that time asymmetric rifting and rapid subsidence of half grabens commenced. This led to the rapid erosion of active fault scarps and the deposition of coarse clastic sediments in alluvial fan, fluvial, deltaic, and lacustrine conditions. Tectonic activity lessened somewhat after the Late Cretaceous and slower basin-wide subsidence prevailed. Mainly fluvial, deltaic and lacustrine sediments were deposited during the Paleocene until the Late Eocene when structural readjustments and increased rates of sediment loading resulted in a marine transgression. Early Oligocene coarse sediments were deposited followed by marine mudstones, marls and limestones during the remainder of the Oligocene and Miocene. Marine, mainly carbonate conditions have prevailed until the present.

A2.1.3 Stratigraphy.

Upper Jurassic(?) - Lower Cretaceous. Referred to as the Otway Group these sediments have been intersected only in Durroon No.1 located on the southeastern margin of the basin. In Durroon No.1 the sediments consisted of lithic sandstones and slightly carbonaceous siltstones interbedded with minor conglomerates and thin coals. An altered olivine basalt of uncertain age occurs at the top of this sequence.

Upper Cretaceous to Eocene. This sequence of sediments is known collectively as the Eastern View Group and usually unconformably overlies the Otway Group. In some instances they directly overlie the Palaeozoic basement, such as in Bass No. 3. The Eastern View Group can be traced across the King Island/Mornington Peninsula Ridge from the Torquay Basin to the northwest and reach a maximum thickness, interpreted from seismic, of 7.5km. It consists of a non-marine sequence of sandstones, claystones, siltstones and coals. The lower, pre-Maastrichtian component of this sequence was seen in Durroon No. 1 to be mainly carbonaceous shales overlain by coarse grained sandstones interbedded with thin shales. The Maastrichtian and Paleocene part of the Eastern View Group consist mainly of silty claystones with thin sandstones and rare coals, these typically pass upwards into a coal rich sequence which is generally overlain by a sandier sequence of Mid to Late Eocene age. The Eastern View Group is overlain by a more or less extensive, restricted marine shale, the Demons Bluff Equivalent, heralding the marine transgression of the Late Eocene and Oligocene to Pliocene.

Oligocene - Pliocene. Essentially the Torquay Group plus overlying undifferentiated Recent Sediments, this section consists of marine carbonate sediments, mainly mudstones, marls and calcarenites in the Early Miocene and Oligocene parts, and of bioclastic limestones in the Miocene and younger sediments.



BRIDGE OIL LIMITED

BASS BASIN T-19-P

SEAL - 1

PREDICTED Vs ACTUAL STRATIGRAPHIC SECTION

SCALE 1cm = 100m

DRAWN: G.F.	DATE: JULY, 1986
GEOLOGIST: B.C.FURR	FIG: 3

A2.2 The Stratigraphy of Seal No. 1.

All depths are shown in metres and were measured from the Kelly bushing (mKB) which, in Seal No. 1 was 25.3m above mean sea level.

Undifferentiated Recent; seabed (89.9) to 357.0m; thickness 267.1m.

A 26" hole was drilled to 261.0m and 20" casing set at 232.0m. During the drilling of this section the B.O.P. stack had not been run and the riser was therefore not connected. This resulted in the samples from the seabed to 261.0m not being collected for examination as they were returned to the seabed. Although the 26" hole was not logged it is assumed from regional information that the lithologies are similar to those seen immediately below 261.0m, that is bioclastic limestones.

The first samples seen from Seal No. 1, from a depth of 270.0m, were mainly white, coarse to very coarse grained, bioclastic limestone. It is made up entirely of fragments of shells, corals, bryozoans and foramanifera with some friable accreted grains with a weak calcite cement and occasional coarse quartz sand grains. At 285.0m the bioclastic limestone gives way to a soft and friable, predominantly white, fine grained calcarenite. It is occasionally glauconitic and contains traces of echinoid spines and other fossil fragments as seen in the overlying limestone. The carbonates persist down to 357.0m at which point a more argillaceous lithology becomes dominant.

The electric logs over this section show a monotonous low Gamma Ray curve and a featureless SP curve indicating a massive section with little variation in rock type. This is borne out by the rate of penetration curve and the lithological descriptions.

Oligocene Torquay Group; 357.0m to 837.5m; thickness 480.5m

From 357.0m down to approximately 720.0m the lithologies are predominantly claystones with some calcilutites and occasional siltstones. Fossil fragments and pyrite are present throughout the section, and there are traces of glauconite mainly towards the base of this part of the section. From 720.0m down to 837.5m the sequence is essentially composed of light greenish grey, very soft and dispersive claystones. The Torquay Group in Seal No. 1 also contains light grey to light greenish grey very fine to fine sandstones. They are usually cemented with a calcareous cement and often contain glauconite. Thin beds of calcilutite are also present in this section, they are cream, grey and light green in colour, very soft to soft and occasionally glauconitic.

Oligocene Sand; 837.5m to 885.0m; thickness 47.5m.

The top of the basal Oligocene Sand is evident from the electric logs as a slight decrease in the Gamma Ray and SP curves and a separation of the three resistivity curves.

This massive sandstone is translucent, clear, unconsolidated and medium to occasionally very coarse, it is rounded to sub rounded and moderately well sorted. Although mainly composed of unconsolidated quartz grains it contains some calcareous material and traces of bioclastic material such as coral and shell fragments.

The basal Oligocene Sand was prognosed to be 110.0m thick with its top at 785.0m. It actually came in low by 52.5m at 837.5m and is only 47.5m thick in Seal No. 1.

Eocene Demons Bluff Equivalent; 885.0m to 1003.5m; thickness 118.5m.

The Demons Bluff Equivalent consists of very soft and dispersive, brown carbonaceous claystones, they are occasionally silty and contain heavy traces of pyrite. The claystones are predominant throughout this section however they do grade into siltstones of more or less the same character as the claystones, and occasionally into very fine sandstones. This whole section contains carbonaceous material mainly seen as dark brown specks.

The top of the Demons Bluff Equivalent was prognosed at 833m but actually came in at 885.0m some 52.0m lower than expected. Its expected thickness (259.0m) exceeded that actually seen (118.5m) by 139.5m.

Eocene Eastern View Group; 1003.5m to 1478.0m; thickness 474.5m

In general, the Eastern View Group comprises a sequence of sandstone, claystones and coals with some shales and siltstones. It is intruded by igneous rocks of probably Miocene age.

The top of this section is mainly sandstones however it gives way to a more argillaceous lithology below 1105.0m. The sandstones at the top of the sequence are mainly unconsolidated, translucent, clear, medium to occasionally coarse grained and moderately sorted. There are also fine, moderately sorted, brown, argillaceous sandstones with calcareous cement, occasional lithic and fossil fragments. There are some minor, light greenish grey, glauconitic claystones which are soft to firm and calcareous in this upper part of the Eastern View Group but the lithology is predominantly arenaceous in nature. Below 1105.0m although the sandstones are present in significant amounts the argillaceous fraction becomes dominant. As well as the light greenish grey claystones there are brown and grey varieties all grading in parts to siltstones and very fine sandstones.

At 1143.0m there is a significant change in the dominant lithology. There is mainly a sequence of coarse sands at the top of the section grading into finer sandstones and siltstones, separated by minor claystones. Some minor coals are also present. The sandstones are translucent, medium to very coarse grained and moderately sorted. Due to the unconsolidated nature of the sandstones the porosity is

inferred to be very good. Some dull fluorescence was seen throughout this section but only in trace amounts.

An unconformity at 1286.5m separates the lower M. diversus Zone from the overlying P. asperopolus Zone. The section from 1286.5m down to the top of the igneous rocks at 1470m is predominantly a claystone sequence with some sandstones and siltstones. Coals are still not significant in this section but more abundant than in the overlying section. Some minor shales and dolomites are also present. The claystones are dark brown to greyish brown, predominantly firm, but often soft and dispersive and contain variable ammounts of carbonaceous material and pyrite. Occasionally they become firm and fissile enough to be termed shales. Often very silty the claystones occasionally grade into brown, hard siltstones which are often dolomitic. The sandstones are mainly fine grained, moderately sorted and brown in colour. They have an argillaceous matrix and occasionally a dolomitic cement. There is a continuous gradation between the claystones, siltstones and sandstones throughout this section. The bottom 8m of this interval consist of white to light grey, firm to soft, slightly calcareous siltstones which probably represent an altered zone resting on the intrusive dolerite.

?Miocene Igneous Intrusives; 1478.0m to 1590.5m; thickness 112.5m.

A sharp decrease in the Gamma Ray curve and gradual decrease in the SP curve marks the top of the igneous rocks on the electric logs. The rate of penetration curve shows a very sharp decrease in the drilling rate.

The dolerites are more or less altered, ranging in colour from white, light green and occasionally pink to dark greens and browns, the lighter colours representing the altered rock. They range from the less altered firm to hard, dark green and brown crystals in a lighter groundmass to a more altered soft to firm light green to greenish white clayey groundmass with a soapy lustre, and with rounded, coarse, slightly altered crystals supported in it.

Paleocene Eastern View Group; 1590.5m to 1639.5m; thickness 49.0m

At 1590.5m the dolerite gives way to sediments of paleocene age (L. balmei) for about 49.0m. Very soft and dispersive brown silty claystones dominate this section but less abundant off white, firm and friable, fine to very fine sandstones are also present. There are also minor dark grey, firm to hard, fine to very fine sandstones. Visible porosities in these sandstones are poor although there may be some permeability in the topmost sandstones of this section as evidenced by a development of mudcake seen on the caliper log.

?Miocene Igneous Intrusives; 1639.5m to 1670.0m; thickness 30.5m

The dolerite below the sediments is essentially the same as that above but it contains occasional dark grey patches with white vessicles.

The top of the so called Cretaceous Volcanics was prognosed at 1520.0m and was expected to persist to total depth at 1610.0m. The igneous rocks encountered in Seal No. 1 were coarse grained intrusives and so younger than the Eocene/Paleocene sediments they are intruded into. A tentative Miocene age has been given to these intrusives as their effect can be seen in the thermal maturity of the Eocene as well as the Paleocene sediments. They started at 1478.0m and rather than persisting to total depth there were two bodies of dolerite separated by a short sequence of sediments from 1590.5m to 1639.0m.

A2.3 Lithological Descriptions.

The wellsite geologists strip log was drawn up separately to the mud loggers master log and the descriptions in this section are taken from the strip log. Wireline logs and sidewall core descriptions are also used and the depths have been taken from wireline logs. All depths are in metres below kelly bushing.

270m -360m

BIOCLASTIC LIMESTONE

White, orange, pink, occasionally deep orange, coarse to very coarse, angular to sub-rounded, shell fragments, gastropods, bivalves , corals, bryozoans, some friable accreted grains, forams, calcite grains, trace to 10% clear, coarse, quartz sand grains, strong mineral fluorescence throughout.

MINOR CALCARENITE

White, light grey, off white, soft and friable, fine, sub-rounded to rounded, occasionally angular, calcite cement, occasionally glauconitic, trace echinoid spines, visible porosity poor to good.

360m -835m

CLAYSTONE

Light grey, very soft and dispersive, calcareous to very calcareous, occasionally grading to calcilutite, mostly washing out of sample.

MINOR SILTSTONE

Grey/green, light green, soft, very argillaceous, calcareous.

MINOR CALCARENITE

Cream, grey, light green, soft, very fine to fine, glauconitic, shell and coral fragments in parts, trace quartz and pyrite, occasionally dolomitic.

MINOR SANDSTONE

Light grey, light grey/green, firm to hard, very fine to fine, quartz grains with a calcareous cement, dark green glauconite.

835m -890m

SANDSTONE

Clear, translucent, white, occasionally yellow, unconsolidated, medium to coarse grained, occasionally very coarse, predominantly coarse, rounded to sub-rounded, predominantly rounded, moderately sorted, common fossil fragments in top 5m, inferred porosity excellent.

890m -1010m

CLAYSTONE

Brown, very soft and dispersive, silty to very silty, dark brown carbonaceous flecks, heavy trace pyrite, clays mostly washing out.

AND SILTSTONE

Medium to dark brown, soft to firm, blocky, occasionally sub-fissile, slightly calcareous, carbonaceous, micaceous, grading to a very fine **SANDSTONE** in parts.

TRACE LIMESTONE

Light tan, buff, moderately hard to hard, blocky, dolomitic, with "floating" clear quartz and green glauconite grains.

1010m - 1480m

SANDSTONE

Translucent, clear, white, occasionally orange, unconsolidated, fine to grit, predominantly medium to coarse, occasionally bimodal, sub-angular to rounded, predominantly sub-angular, poorly to well sorted, predominantly moderately sorted, trace to abundant pyrite occasionally seen as cement, inferred porosity excellent.
Finer factions of the above occasionally consolidated with siliceous cement and some dark brown, probably dolomitic, argillaceous matrix, visible porosity good to poor.

also;
Brown, firm, friable, fine, occasionally very fine, angular to sub-angular, well to moderately sorted, lithic fragments, shell fragments, calcite, calcareous, argillaceous matrix, glauconitic, occasional heavy trace pyrite, micaceous in parts, visible porosity poor to nil.

WITH CLAYSTONE

Light green/grey, firm, blocky, occasionally sub-fissile, glauconitic, calcareous to slightly calacareous, occasionally grading to **SILTSTONE.**

MINOR SILTSTONE

White, light grey, soft to firm, blocky, occasionally slightly calcareous.

TRACE COAL

Black, friable, silty, blocky, dull lustre.

TRACE SHALE

Dark greyish brown, occasionally light brown, soft to hard, fissile to blocky, carbonaceous.

1480m -1590m

DOLERITE

White, light green, dark green, dark brown, occasionally pink, hard, coarse to very coarse, crystalline, dark brown crystals have a metallic lustre, and the light green to white crystals show a soapy lustre and cleavage, (feldspars and pyroxenes).

WITH ALTERED DOLERITE

Green, light green, soft to firm, medium to coarse crystals, blocky fracture, often a light green to white argillaceous matrix.

1590m -1639m

SANDSTONE

White, off white, firm, friable, occasionally hard, fine to very fine, subangular, moderately sorted, white argillaceous matrix, visible porosity trace.

also;
Dark grey, firm and friable to hard, fine, sub-angular, poorly sorted, argillaceous matrix, visible porosity trace.

WITH CLAYSTONE

Brown, very soft and dispersive and mostly washing out of sample, occasionally firm enough to be sub-fissile, predominantly amorphous and sticky when unwashed, trace pyrite.

MINOR SILTSTONE

Brown, very hard, blocky fracture, occasionally sub conchoidal, argillaceous, slightly calcareous.

1639m -1670m

DOLERITE

White, light green, dark green, dark brown, occasionally pink, occasionally dark grey, hard, coarse to very coarse, crystalline, dark brown crystals have a metallic lustre, and the light green to white crystals show a soapy lustre and cleavage, (feldspars and pyroxenes), occasional white spherical vessicles ?, also occasionally abundant blue/green grains.

A2.4 Sidewall Core Descriptions.

SWC #1 1665m Rec:1.5cm

ALTERED DOLERITE.
Light green, firm to hard, fractured green crystalline fragments in a white light green argillaceous matrix. Matrix filling fractures.

SWC #2 1640m Rec:2.0cm

ALTERED DOLERITE.
Light green, firm to hard, fractured green crystalline fragments in a white light green argillaceous matrix. Matrix filling fractures.

SWC #3 1630m Rec:1.5cm

CLAYSTONE.
Brown, firm, sub-fissile to fissile, silty in parts, micaceous.

SWC #4 1614m Rec:4.0cm

CLAYSTONE.
Brown, firm, sub-fissile to fissile in parts, silty, trace of mica.

SWC #5 1594.5m Rec:5.0cm

SANDSTONE.
White, soft to firm, hard in parts, fine grained, occasional medium sized grains, angular, moderately sorted, white argillaceous matrix, very soft clays, slightly calcareous and swelling, occasionally well cemented with siliceous cement. Visible porosity is poor. Dull yellow mineral fluorescence.

SWC #6 1591 .5m Rec:0.0cm

NO RECOVERY.
Bullet lost down hole.

SWC #7 1560m Rec:5.5cm

DOLERITE.
Dark green, dark brown, firm, medium to coarse grained, dark brown metallic lustre and green soapy lustre crystals in a light green to white argillaceous matrix. The dolerite appears slightly altered.

SWC #8 1522m Rec:2.5 cm

DOLERITE.
Dark green, dark brown, firm to hard, coarse grained, occasionally medium grained, dark brown metallic lustre and green soapy lustre crystals in a light green to white argillaceous matrix. This sample appears fresher than the one from 1560m.

SWC #9 1480m Rec:3.0c m

DOLERITE.
Dark green, dark brown, firm to hard, predominantly medium grained, occasionally coarse grained, dark brown metallic lustre and green soapy lustre crystals in a light green to white argillaceous matrix.

SWC #10 1466m Rec:5.5cm

CLAYSTONE.
Medium grey, firm to very firm, silty, micaceous, massive, swelling, dispersive clays.

SWC #11 1457m Rec:5.0cm

SANDSTONE.
Medium grey, firm, fine to medium grained, occasionally coarse, sub-angular to angular, moderately sorted, argillaceous matrix, medium grey clays. Poor visible porosity.

SWC #12 1404.5m Rec:5.0cm

SANDSTONE WITH CARBONACEOUS CLAY PARTINGS.
The sandstone is, light brown, friable, fine, angular, moderately sorted, calcareous, fair to good visible porosity, trace pyrite.
The claystone is, dark brown or black, firm, sub-fissile, silty.

SWC #13 1381m Rec:5.0cm

SANDSTONE.
Brown, soft to firm, fine to very fine, angular, moderately sorted, argillaceous matrix, swelling clay often white (kaolinitic?) with mica. Poor visible porosity.

SWC #14 1379.3 Rec:0.0cm

NO RECOVERY.
Bullet shattered.

SWC #15 1374m Rec:0.0cm

NO RECOVERY.
Bullet lost down hole.

SWC #16 1358m Rec:4.0cm

SANDSTONE.
Light brown, soft and friable, fine grained, angular, moderately sorted, trace of argillaceous matrix. Visible porosity good.
No fluorescence, no cut fluorescence, trace of light yellow crush cut fluorescence.

SWC #17 1355m Rec:4.0cm

SANDSTONE.
Light brown, firm to friable, hard in parts, fine grained, angular, moderately sorted, occasionally calcareous cement. Visible porosity poor. Trace spotted dull yellow fluorescence, no cut fluorescence, very slight trace crush cut fluorescence.

SWC #18 1353.8m Rec:4.0cm

Light brown, soft and friable, fine, angular to sub-angular, moderately well sorted, trace argillaceous matrix. Visible porosity fair. Spotted, dull yellow fluorescence, instant, bright light yellow cut fluorescence followed by a slow streaming cut fluorescence, no crush cut, light brown film, light brown residual ring with a dull gold fluorescence.

SWC #19 1340m Rec:4.5cm

LAMINATED SILTSTONES.
Dark brown, firm, laminated with light brown siltstone grading to very fine **SANDSTONE** which is angular and argillaceous. Visible porosity nil.

SWC #20 1325m Rec:5.0cm

LAMINATED CLAYSTONES AND SANDSTONES.
CLAYSTONE; Dark brown, firm, sub-fissile, slightly micaceous, laminated with **SANDSTONE** lenses, off white, firm, fine grained, angular, moderately sorted, argillaceous, calcareous matrix. Visible porosity nil.

SWC #21 1254m Rec:4.5cm

LAMINATED CLAYSTONES AND SANDSTONES.
CLAYSTONE; Dark brown, firm, sub-fissile, slightly micaceous, silty, laminated with **SANDSTONE** lenses, off white, firm, fine grained, angular, moderately sorted, argillaceous, calcareous matrix. Visible porosity nil.

SWC #22 1206.5m Rec:5.9cm

LAMINATED CLAYSTONES AND SANDSTONES.
CLAYSTONE; Dark brown, firm, sub-fissile, slightly micaceous, silty, laminated with **SANDSTONE** lenses, off white, light brown, firm to friable, fine occasionally coarse grained, angular, poorly sorted, argillaceous, calcareous matrix. Visible porosity poor. Trace dull yellow fluorescence, no cut fluorescence, slight trace crush cut fluorescence.

SWC #23 1190m Rec:0.0cm

NO RECOVERY.
Bullet lost down hole.

SWC #24 1165m Rec:6.0cm

CLAYSTONE.
Dark brown, firm, massive, sub-fissile in parts, pyritic, carbonaceous, slightly swelling clays, micaceous.

SWC #25 1145m Rec:5.0cm

CLAYSTONE.
Dark brown, firm, massive, sub-fissile in parts, pyritic, carbonaceous, slightly calcareous, slightly swelling clays, micaceous.

SWC #26 1053.5m Rec:4.0cm

SANDSTONE.
Dark brown/grey, soft and friable, very fine to fine grained, occasionally silty, angular, poorly sorted, argillaceous, occasionally calcareous and swelling matrix, traces of mica and pyrite. Visible porosity poor to nil.

SWC #27 1003m Rec:4.5cm

SILTY CLAYSTONE.
Brown, firm, massive, calcareous in parts, lithic fragments with white and light green grains. Possibly a weathering product from volcanics?

SWC #28 926m Rec: 5.0cm

CLAYSTONE.
Dark brown, firm, massive, silty with pyritised shell fragments and lithic fragments as described in the 1003m sample.

SWC #29 886m Rec:5.0cm

CLAYSTONE.
Light grey/brown, firm to very firm, massive, micaceous, pyritic, very calcareous.

SWC #30 865m Rec:3.0cm

SANDSTONE.
Light brown, green, soft and friable, medium grained, angular to sub-angular, well sorted, with green chloritic? argillaceous matrix. Visible porosity poor.

A2.5 Palynology/Biostratigraphy

Seven unwashed cuttings samples and 12 sidewall cores were forwarded to Roger Morgan for palynological analysis. As can be seen from Figure No. 3 'Predicted vs Actual Stratigraphy' the major difference brought to light by the palynology is the higher than expected top of the Eastern View Group.

The maturity of the sediments looked at in this study suggest that they have been 'cooked', that is they are at a higher thermal maturity than could be expected from their depth of burial and their geological age. This may be explained by the presence of the intrusive igneous rocks towards the TD of the well.

The following is a summary of the palynology and bio-stratigraphy of Seal No. 1. The full report by Roger Morgan is included as Appendix 3 at the back of this Well Completion Report.

A2.6 Geochemistry

A total of ten samples was forwarded to ANALABS, eight (8) sidewall core samples for organic geochemical analysis, and two (2) washed and dried samples which were forwarded to Professor Alan Cook for vitrinite reflectance determinations (see section 2.7 'Thermal History').

Six of the sidewall cores were sampled and submitted to Rock-Eval pyrolysis analysis while four were extracted, two for C12+ saturate gas/liquid and two for C12+ whole extract gas/liquid chromatography. The results from these analyses indicate that the rocks from the tested interval are mature, predominantly gas prone but with significant oil source potential and have probably not contributed hydrocarbons to any traces that may be seen in adjacent sand reservoirs. Their thermal maturity may be the result of being 'cooked' by the nearby intrusives.

The following are the summary pages from the ANALABS report included in this Well Completion Report as Appendix 2.

A2.7 Thermal History

Two washed and air dried samples were sent via ANALABS to Professor Alan Cook for vitrinite reflectance determination and coal maceral identification. The results of the study indicate that the sediments at 1341m and 1374m (the depths of the two samples) are thermally mature. However, organic matter in the samples appears to be contact altered, probably as a result of the intrusion of the igneous rocks seen deeper in the well. The following is a summary of the results of the study.

Depth	Ro(mean)	Range	No. of readings
1341	0.83	0.72 - 0.95	27
1374	0.86	0.72 - 1.29	29

Geothermal Gradient

The geothermal gradient for Seal No. 1 was calculated using only two temperature readings taken from the two runs of the second log suite. The data used to calculate the gradient is summarised below.

Depth (m)	Log	Time since last circ.	Temp (C)	T/(T + dt)
1669	DIL	5.67	68.3	0.870
1669	LDL	9.75	74.4	0.920

The results of the formula;

T/(T + dt)

where;

T = the time since the last circulation.
dt = the circulation time, taken as 51 minutes in both cases

were plotted and the resulting line between them was extrapolated. This gave a corrected bottom hole temperature of 79.5°C (see accompanying graph, Figure 4).

The geothermal gradient, corrected for water depth, was calculated using the formula;

$$G = \frac{ft - sbt}{md - KB - WD}$$

where;

G = geothermal gradient corrected for water depth,
ft = formation temperature,

md = measured depth,
KB = kelly bushing elevation,
WD = water depth,
sbt = sea bottom temperature (this has been taken as 14°C from average values for the Bass Strait in the area of Seal-1).

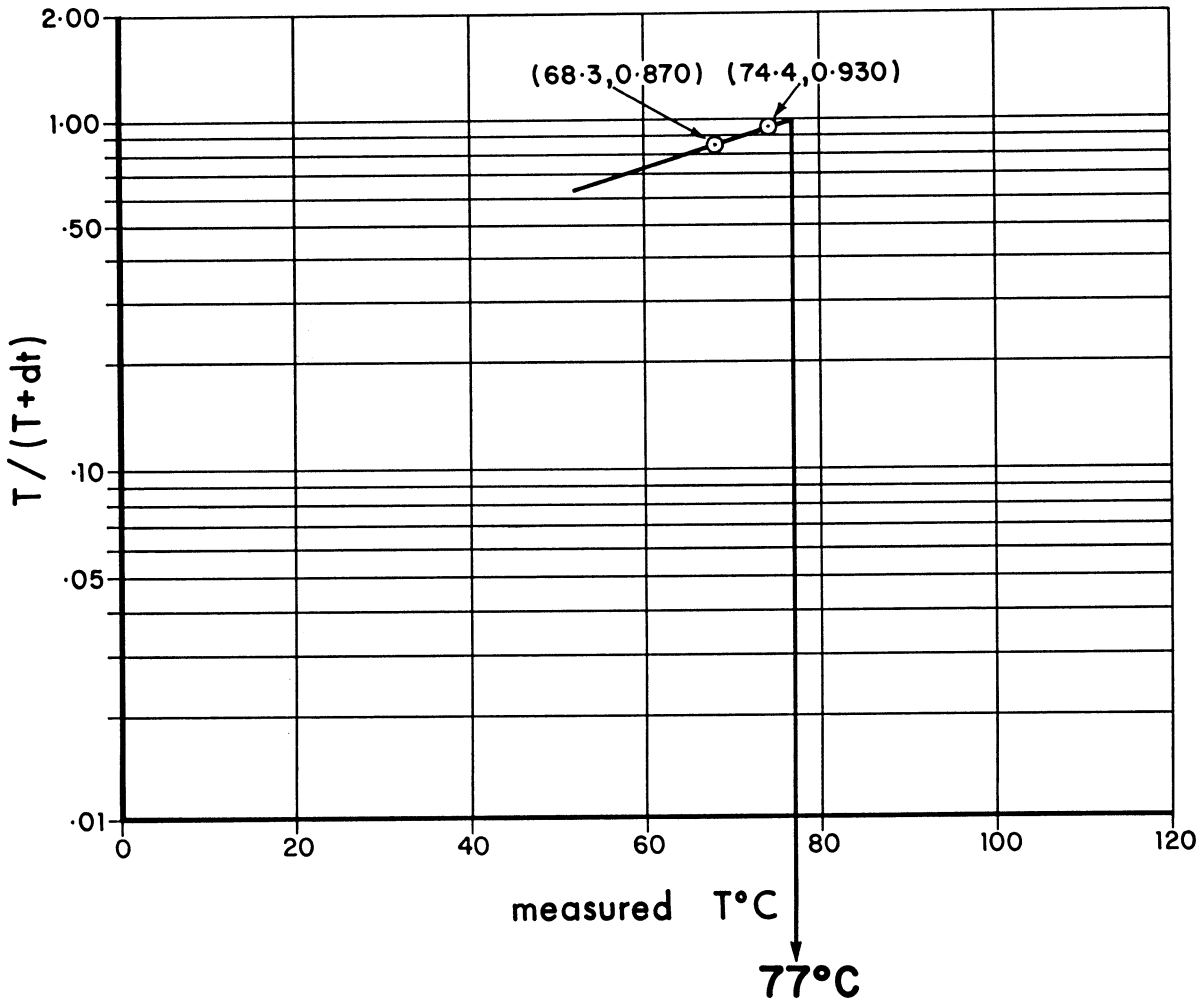
$$G = \frac{79.5 - 14}{1669 - 25 - 62.3} = \underline{41.4^{o}C/kilometre}$$

This compares with the corrected gradient of 46.2°C/km determined in the nearest well, Konkon No. 1.

FIG. 4

SEAL Nº1

CORRECTED BOTTOM HOLE TEMPERATURE



KEY :

ft = formation temperature (°C)
sbt = sea bottom temperature
md = measured depth (metres)
KB = Kelly bushing (metres)
WD = water depth (metres)
G = Geothermal gradient (°C/km)

$$G = \frac{ft - sbt}{(md - KB - WD)}$$

$$G = \frac{77 - 14}{(1670 - 25 - 62{\cdot}3)}$$

G = 0·0414 °C/metre
or **41·4°C/km**

A3-
-LOG ANALYSIS

Summarised Well Log

WELL : SEAL – 1

SCALE 1: 5000

LOCATION: LAT. 39° 21' 48·979" S
LONG. 144° 52' 52·700" E

STRATIGRAPHY AGE	STRATIGRAPHY Fm.	DEPTH DRILLED ft.	DEPTH DRILLED m.	GRAPHIC LOG	CORES	SHOWS	ENVIRONMENTS	CASING	TESTS	ELECTRIC LOGS	REMARKS
RECENT	UNDIFF. RECENT			NO RETURNS				20" at 232m KB		DIL-LSS-GR-Cal.-SP-MSFL	
OLIGOCENE	TORQUAY GROUP		500				MARINE SHELF CARBONATES MARINE	13⅜" at 642m KB			
	OLIG. SAND						MARINE TO MARGINALLY MARINE beach and bar sands				
	DEMON'S BLUFF EQUIVALENT		1000				MARINE silts and clays MARGINAL TO NEARSHORE MARINE				
EOCENE	EASTERN VIEW GROUP						MARGINALLY MARINE beach and bar sands VERY MARGINALLY MARINE TO DELTAIC point bar and overbank deposits NON MARINE FLUVIODELTAIC with minor coal swamps			CST-C LDT-CNL-GR-Cal. DIL-MSFL-LSS-GR-SP-Cal.	CST – C 30 SHOTS FIRED. 26 SAMPLES RECOVERED.
UNCERTAIN	MIOCENE ? DOLERITE INTRUSIVES		1500								
PALEOCENE ?	PALEO SEDIM.						NON MARINE FLUVIATILE OR LACUSTRINE				
UNCERTAIN	MIOCENE ? INTRUSIVES	TD	1670m								
			2000								

BRIDGE OIL LIMITED

Area : BASS BASIN T-19-P

Geologist : B.C. FURR

Drawn : G.F.

Date : JULY, 1986

FIG. 2

8/1096

A3 - LOG ANALYSIS

A3.1 Introduction

Initial Quicklook log analysis was carried out at the rig site using Bridge Oil Ltd's HP41CV calculation system. Transmission of the log data, as was intended, was not possible due to bad telecommunication links so the log tapes were flown into the Schlumberger Sale office for transmission to Sydney via land line.

Some Cyberlook interpretation was carried out at the rig site and a complete Cyberlook was performed at Schlumbergers office in Sydney. Subsequently, a full edit tape of the logs was made and forwarded to Bridge Oil Ltd. Selected zones were analysed in more detail on the in-house HP9000 computer using the Terralog analysis system.

Log Suite 1 was programmed to run in the 17.1/2" open hole below the 20" casing shoe from 244 metres to 640 km KB. It consisted of the following logs:

Run	Programmed	Actual	Interval
1	DIL-LSS-CAL-GR-SP	DIL-LSS-GR-SP-CAL	232.0-654.5m

No time was lost during the first logging suite run. The hole was slightly overgauge over most of this section but with no major washouts. Slightly undergauage hole was encountered between 275.0m and 325m and severely undergauge hole was seen between 508.0m and 518.0m. Some cycle skipping on sonic log is also seen through this 10m interval.

The second log suite was programmed to run in the 12.1/4" open hole from 640.0m T.D. It consisted of the following:

Run	Programmed	Actual	Interval(m)
1	DIL-LSS-CAL-GR-SP-MSFL	DIL-MSFL-LSS-GR-SP-CAL	644.0-1668.5
2	LDT-CNL-GR-CAL-ML	LDT-CNL-GR-CAL	644.0-1669.0
3	CST-GR	GR-CST-C	865.0-1665.0

No significant time was lost during suite 2. Of 30 sidewall cores attempted 26 were recovered, an 86.6% recovery.

A3.2 In-house Analysis

A print of the Cyberlook interpreted log is included here along with a listing of the in-house interpretation performed on a Bridge Oil's HP 9000 using the Terralog analysis programme.

To perform the Terralog analysis, an LIS edit tape was read and the following logs were normalised for borehole effects:

Gamma Ray
Neutron
ILD-ILM
MSFL
SFL

The ILD-ILM logs were also corrected for mud filtrate invasion and the MSFL was corrected for mudcake effects to get R_T and R_{XO}. All calculations were then performed on the environmentally corrected logs.

Water resistivities (Rw) were approximated from SP deflections in clean, wet sands (where no shows occurred and resistivities were low). Rw was also estimated by the Rwa method in sands considered to be wet where porosity is known and Vsh is low. Pickett plots were also used as a guide to Rw ranges.

Shale fractions (VSH) were estimated from the borehole corrected gamma ray and the SP in some cases. Porosities were calculated from several methods. The preferred porosity is the neutron/density shale corrected crossplot porosity (N/D.SC POR) although the Hunt/Raymer shale corrected porosity (H/R.SC POR) usually correlates well and is used where bad hole conditions made the N/D.SC POR unuseable. In the less compacted sediments the H/R. SC POR calculates consistently higher than the N/D. SC POR.

The well was zoned into five intervals on the basis of log character, lithology, Rw changes, shale parameters and formation boundaries. Within these zones, the cleanest, highest resistivity sands were analysed using optimistic parameters. Where these such sands showed no evidence of hydrocarbons, then it was inferred that all other sands of lower resistivity and similar porosities were also water saturated.

The water saturations (Sw) were calculated using the Indonesia equation as shown below. The constants a, m and n were kept as 1.0, 2.0 and 2.0 respectively. All the results were displayed using a Vsh cutoff of 30% to reduce the shale effected errors.

$$Sw = (Vsh^{0.5(2-Vsh)}/(Rsh/Rt)^{0.5} + (Rt/Ro)^{0.5}) - 2/n$$

The five zones and parameters used were:

Interval 1: 825-900m, covering the Oligocene Sand. This was a predominant sand interval with fair to good hole conditions.

Rw from SP was indicated to be 0.096 ohm at 855m and 41.6^{o}C (equiv. NaCl=48,000 ppm).

Rw from Rwa was indicated to be 0.06 to 0.105 ohm with an average of 0.09 ohm.

An Rw of 0.09 ohm at 41.6°C (equiv NaCl=49,000 ppm) was used. Vsh from SP was chosen as the shale indicator for this interval as the GR does not indicate the large amount of clay washing out in the samples and Rsh=1.0 ohm.

Interval 2: 975-1115m, covering the Lower N.asperus to Middle N.asperus zone of the Eocene Eastern View Coal Measures (E.V.C.M.). This interval is predominantly sand with several shale and claystone interbeds. Hole conditions were fair to poor with some large (up to 19" in 12.1/4" hole) washouts.

Rw from SP was indicated to be 0.096 ohm at 1060m and 48.5°C (equiv. NaCl=44,000 ppm).

Rw from Rwa was indicated to be from 0.03 to 0.12 ohm with an average of 0.085 ohm.

An Rw of 0.09 ohm at 48.5°C (equiv. NaCl=41,000 ppm) was used. Vsh from SP was chosen as the shale indicator due to the GR not indicating the large amounts of clay seen washing out of samples and Rsh=0.4 to 1.0 ohm.

The H/R.SC POR was used as the poor hole conditions made the N/D.SC POR mostly unuseable.

Interval 3: 1165-1255m, covering the P.asperopolous zone of the Eocene E.V.C.M.

This interval is an interbedded sandstone/shale zone. Hole conditions were predominantly good with only minor washouts.

Rw from SP was indicated to be 0.076 ohm at 1210m and 53.3°C (equiv. NaCl=53,000 ppm) this is believed to be optimistically high.

Rw from Rwa was indicated to be from 0.04 to 0.13 ohm with an average of 0.09 ohm.

An Rw of 0.09 at 53.3°C (equiv. NaCl=44,000 ppm) was used. Vsh from the GR-BHC was used as a shale indicator and Rsh=2.5 ohm.

Interval 4: 1305-1455m, covering the Middle M. diversus to Upper M. diversus zone of the Eocene E.V.C.M.

This zone has thinly interbedded sandstone/shale/coal in the upper section and thicker interbeds of sandstone/shale in the lower section. Hole conditions were good over the sands and poor over the shalier sections with washouts up to 18".

Rw from SP was indicated to be 0.087 ohm at 1407m and 59.7°C (equiv. NaCl=41,000 ppm).

Rw from Rwa was indicated to be 0.05 to 0.14 ohm with an average 0.09 ohm.

An Rw of 0.095 at 59.7°C (equiv. NaCl=38,000 ppm) was used. Vsh from the GR-BHC was used as a shale indicator with an Rsh=1.5 ohm.

The N/D SC POR was predominantly used although the H/R. SC POR was used where bad hole conditions made the N/D unuseable.

Interval 5: 1590-1600m, covering the Upper L. balmei zone of the Paleocene E.V.C.M.

This zone is a sandstone between the uncertain age intrusives at the base of the well.

> Rw from SP was indicated to be 0.088 ohm at 1595m and 65.9°C (equiv. NaCl=37,000 ppm).

An Rw of 0.095 ohm at 65.9°C (equiv. NaCl=35,000 ppm) was used. Vsh from the GR-BHC was used as a shale indicator with Rsh=2.0 ohm.

Analysis indicates some very minor residual saturations at several levels. The maximum hydrocarbon saturations are in the 20-30% range using fairly optimistic parameters. The results fit well with the nature of the minor shows seen while drilling. As no commercial accumulations were seen, the well was plugged and abandoned.

ENCLOSURE NO. 7

WELL NAME: SEAL #1
LOCATION: T-19P PASS BASIN
DATE: RIG RELEASED 21/2/86
OLIGOCENE SANDSTONE Upper N.asperus Interval,825 - 900m

DEPTH	CALRES	GR-RES	GR-RHOC	VSH-GR	VSH-SP	H/P.SC POR	N/D.SC POR	RT	SW-END
838.750	12.62	38.55	43.69	.12	.24	.32	.41	.82	.29
839.500	12.85	34.14	39.16	.09	.27	.32	.39	.70	.84
839.750	12.89	37.72	43.37	.12	.21	.34	.42	.71	.84
840.000	12.69	44.52	50.64	.18	.15	.34	.44	.69	.89
840.250	12.34	40.52	45.25	.14	.29	.31	.33	.67	.87
840.750	12.25	36.28	40.31	.10	.26	.32	.32	.72	.83
841.000	12.28	37.87	42.15	.12	.17	.34	.41	.73	.85
841.250	12.32	37.07	41.33	.11	.26	.32	.36	.70	.84
841.750	12.22	35.91	39.83	.10	.28	.32	.36	.72	.83
842.000	12.25	40.86	45.39	.14	.22	.32	.38	.73	.85
842.250	12.24	39.75	44.15	.13	.25	.31	.35	.72	.85
842.500	12.21	36.34	40.28	.10	.28	.31	.35	.73	.84
843.000	12.36	39.30	43.91	.13	.24	.32	.38	.77	.89
843.250	12.49	39.69	44.66	.13	.26	.32	.40	.79	.80
843.500	12.89	36.34	41.78	.10	.27	.33	.44	.79	.78
843.750	12.93	34.22	39.42	.09	.19	.34	.43	.78	.81
844.000	13.15	34.91	40.70	.09	.21	.33	.36	.77	.82
844.250	12.69	35.93	40.88	.10	.25	.32	.33	.78	.82
844.500	12.43	37.45	42.01	.11	.24	.31	.35	.75	.84
844.750	12.43	38.49	43.17	.12	.20	.39	.35	.73	.81
845.000	12.57	34.86	39.40	.09	.13	.39	.38	.70	.83
845.250	12.76	33.30	38.02	.08	.10	.39	.41	.69	.79
845.500	13.21	38.60	45.13	.12	.15	.36	.38	.67	.83
845.750	13.23	37.84	44.31	.12	.22	.34	.33	1.07	.70
846.000	13.00	33.62	38.88	.09	.29	.29	.30	.62	.93
846.250	13.00	30.60	35.38	.07	.26	.31	.30	.61	.96
846.500	13.17	29.37	34.28	.06	.15	.33	.35	.60	.94
846.750	13.31	32.19	37.85	.08	.09	.35	.40	.61	.88
847.000	13.11	34.35	39.95	.09	.16	.34	.33	.67	.94
847.250	13.13	29.66	34.53	.06	.22	.21	.24	.73	1.00
847.500	13.35	29.38	34.61	.06	.21	.23	.16	1.23	1.00
847.750	15.09	28.16	36.41	.05	.17	.36	.21	.93	1.00
848.000	15.25	26.70	34.84	.04	.08	.38	.31	1.06	.84
848.250	12.68	28.09	31.93	.05	.17	.36	.28	1.19	.79
848.500	12.64	30.43	34.52	.06	.12	.32	.23	1.19	1.00
848.750	12.69	32.55	37.01	.08	.15	.21	.14	1.15	1.00
849.000	13.93	32.60	39.61	.09	.14	.23	.18	2.16	.85
849.250	14.23	31.44	38.82	.07	.13	.36	.26	1.17	.89
849.500	14.33	31.07	38.57	.07	.19	.39	.29	.92	.85
849.750	14.47	30.29	37.88	.06	.18	.40	.32	.83	.85
850.000	14.03	24.65	30.13	.03	.18	.37	.30	1.04	.79
850.250	13.72	23.92	28.74	.03	.15	.38	.32	1.18	.73
850.500	13.82	24.46	29.56	.03	.11	.38	.34	.60	1.00
850.750	14.64	26.14	32.99	.04	.12	.38	.32	.80	.91
851.000	16.98	25.03	35.82	.04	.14	.34	.31	.58	1.00
851.250	14.15	27.32	33.60	.05	.15	.33	.33	.89	.81
851.500	14.12	27.94	34.30	.05	.08	.35	.35	.88	.82
851.750	13.32	26.51	31.18	.04	.16	.34	.30	.56	1.00
852.000	13.44	28.72	33.99	.05	.22	.33	.28	.54	1.00
852.250	13.06	27.46	31.86	.05	.15	.32	.31	.53	1.00
852.500	13.97	26.36	32.10	.04	.11	.33	.31	.88	.90
852.750	14.29	25.51	31.61	.04	.09	.36	.31	.85	.94
853.000	13.50	25.65	30.47	.04	.16	.36	.26	.47	1.00
853.250	13.40	25.92	30.62	.04	.17	.36	.26	.46	1.00
853.500	14.68	25.69	32.50	.04	.12	.38	.35	.69	.91

Interval 1(825 - 900m) Parameters
Rw 0.09 ohm at 41.6 deg C (4%,000ppm NaCl eqv)
Vsh from SP,Rsh =1.0 ohm
Porosity used - N/D.SCPOR

SW-IND Interval 1 (825 - 900m)

DEPTH	CALRES	GR-RES	GR-RHC	VSH-GR	VSH-SP	H/R,SC P10R	N/D,SC P09	PI	SW-IND
853.750	16.09	26.93	36.73	.05	.16	.37	.39	.48	.95
854.000	13.98	26.18	31.90	.04	.17	.35	.37	.80	.76
854.250	14.00	26.99	32.93	.05	.13	.35	.35	.87	.80
854.500	13.56	27.66	32.95	.05	.12	.35	.35	.51	1.00
854.750	14.44	28.35	35.41	.05	.10	.37	.36	.87	.80
855.000	13.77	27.17	32.75	.05	.17	.37	.35	.50	1.00
855.250	14.58	29.38	36.96	.06	.17	.38	.36	.70	.84
855.500	13.85	29.40	35.58	.06	.12	.37	.32	.54	1.00
855.750	12.67	27.93	31.75	.05	.20	.31	.26	.54	1.00
856.000	12.67	29.30	33.28	.06	.17	.33	.33	.52	1.00
856.250	13.26	26.43	31.00	.04	.12	.36	.36	.54	1.00
856.500	13.76	25.32	30.50	.04	.09	.38	.35	.23	.91
856.750	12.91	28.60	32.91	.05	.09	.37	.33	.48	1.00
857.000	13.08	29.37	34.11	.06	.22	.32	.31	.48	1.00
857.250	13.32	26.50	31.17	.04	.25	.32	.27	.51	1.00
857.500	13.52	29.06	34.56	.06	.15	.34	.31	.53	1.00
857.750	13.61	31.72	37.90	.07	.12	.35	.31	.52	1.00
858.000	13.30	27.92	32.80	.05	.08	.37	.35	.51	1.00
858.250	13.08	25.01	29.04	.04	.07	.37	.40	.52	.96
858.500	12.79	28.13	32.16	.05	.17	.33	.33	.54	1.00
858.750	12.84	27.02	30.98	.05	.14	.31	.29	.59	1.00
859.000	13.48	29.12	34.55	.06	.16	.30	.29	.63	1.00
859.500	13.89	36.01	43.66	.10	.28	.31	.25	1.05	.81
859.750	14.02	31.20	38.10	.07	.26	.31	.25	.96	.87
860.000	14.17	31.45	38.72	.07	.24	.31	.23	.99	.93
860.250	13.95	29.90	36.38	.06	.21	.31	.24	1.12	.88
860.500	14.08	29.27	35.85	.06	.24	.31	.26	1.09	.82
860.750	13.82	30.82	37.24	.07	.24	.32	.26	1.06	.82
861.000	13.31	34.15	40.16	.09	.18	.32	.30	1.12	.76
861.250	13.41	30.66	36.24	.07	.21	.32	.30	.67	.94
861.500	13.23	30.36	35.54	.06	.29	.31	.26	.65	.98
861.750	13.68	30.20	36.21	.06	.24	.31	.27	1.05	.81
862.000	13.23	28.98	33.93	.06	.13	.33	.30	.62	1.00
862.250	12.93	30.93	35.63	.07	.14	.34	.30	.62	1.00
862.500	13.63	31.36	37.51	.07	.16	.33	.30	.66	1.00
862.750	13.26	27.65	32.41	.05	.19	.30	.27	1.01	.86
863.000	12.61	27.23	30.84	.05	.18	.28	.27	.70	1.00
863.250	12.53	30.50	34.39	.07	.13	.31	.33	.71	.93
863.500	12.58	30.32	34.27	.06	.17	.32	.34	.74	.85
863.750	12.42	31.47	35.27	.07	.24	.30	.31	.73	.87
864.000	12.36	33.52	37.45	.08	.20	.31	.31	.68	.92
864.250	12.55	34.43	38.86	.09	.10	.33	.34	.68	.95
864.500	12.81	31.93	36.54	.07	.14	.31	.33	.68	.93
864.750	12.78	29.50	33.70	.06	.25	.29	.29	.71	.91
865.000	12.59	32.99	37.31	.08	.25	.30	.26	.74	.96
865.250	12.81	31.85	36.46	.07	.17	.31	.26	.74	1.00
865.500	12.88	29.93	34.39	.06	.13	.35	.30	.73	1.00
865.750	14.00	28.23	34.45	.05	.15	.34	.30	.98	.83
866.000	13.17	32.33	37.72	.08	.22	.33	.28	.71	.96
866.250	13.58	32.62	38.91	.08	.21	.31	.32	.70	.89
866.500	13.00	32.76	37.88	.08	.15	.33	.34	.72	.87
866.750	12.94	33.41	38.52	.08	.29	.29	.24	.74	.99
867.250	13.00	32.82	37.95	.08	.26	.30	.24	.83	.96
867.500	13.13	32.56	37.90	.08	.21	.31	.25	1.33	.78
867.750	13.27	34.18	40.11	.09	.22	.29	.22	.75	1.00

DEPTH	CALEES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/E.SC POR	N/D.SC POR	PI	SW-IND	Interval 1 (825 - 900m)
868.000	13.80	34.14	41.20	.09	.25	.31	.22	1.23	.84	
868.250	15.31	31.16	40.77	.07	.21	.34	.31	.72	.89	
868.500	14.88	23.67	30.27	.03	.13	.35	.43	.64	.77	
868.750	16.13	21.37	29.21	.02	.12	.34	.51	.51	.74	
869.000	16.86	26.03	37.09	.04	.14	.33	.49	.48	.78	
869.250	15.82	30.36	40.83	.06	.21	.31	.35	.51	.92	
869.500	16.18	37.11	50.88	.11	.25	.31	.33	.51	.92	
869.750	15.78	37.27	50.01	.11	.20	.33	.38	.56	.87	
870.000	16.38	35.25	48.83	.10	.19	.33	.39	.54	.86	
870.250	15.92	41.33	55.87	.15	.20	.33	.41	.55	.82	
870.500	14.29	41.16	51.00	.15	.17	.33	.45	.71	.68	
870.750	12.84	32.76	37.57	.08	.18	.32	.41	.49	.88	
871.000	13.09	24.61	28.61	.03	.24	.30	.35	.46	.98	
871.250	12.60	25.33	28.67	.04	.18	.33	.38	.46	.98	
871.500	12.58	24.92	28.17	.03	.13	.35	.36	.47	1.00	
871.750	12.59	25.30	28.62	.04	.10	.35	.35	.47	1.00	
872.000	12.57	26.89	30.39	.04	.00	.37	.39	.47	1.00	
872.250	12.58	21.18	23.95	.02	.00	.36	.37	.48	1.00	
872.500	12.58	22.72	25.69	.02	.05	.35	.32	.48	1.00	
872.750	12.74	28.81	32.85	.06	.14	.34	.27	.51	1.00	
873.000	12.72	28.18	32.11	.05	.11	.34	.29	.51	1.00	
873.250	12.77	26.44	30.20	.04	.21	.32	.26	.52	1.00	
873.500	13.01	30.01	34.73	.06	.19	.33	.26	.56	1.00	
873.750	12.75	29.85	34.05	.06	.13	.33	.28	.57	1.00	
874.000	12.59	26.00	29.42	.04	.12	.33	.28	.56	1.00	
874.250	12.65	21.67	24.59	.02	.09	.35	.33	.56	1.00	
874.500	13.09	24.55	28.52	.03	.06	.37	.34	.58	1.00	
874.750	13.37	29.18	34.41	.06	.11	.35	.28	.92	.96	
875.000	13.52	29.91	35.57	.06	.17	.31	.24	1.07	.94	
875.250	13.68	29.84	35.78	.06	.17	.31	.25	1.06	.92	
875.500	12.99	30.50	35.24	.07	.12	.33	.33	.65	.98	
875.750	12.85	29.60	33.96	.06	.12	.34	.36	.62	.92	
876.000	13.54	28.43	33.83	.05	.09	.35	.34	.54	1.00	
876.250	12.60	26.41	29.88	.04	.00	.38	.37	.54	1.00	
876.500	12.69	28.21	32.08	.05	.07	.37	.37	.54	1.00	
876.750	12.86	27.17	31.18	.05	.18	.36	.33	.41	1.00	
877.000	13.09	22.92	26.63	.03	.17	.35	.30	.40	1.00	
877.250	13.06	22.62	26.25	.02	.10	.35	.32	.40	1.00	
877.500	12.62	23.48	26.60	.03	.05	.36	.34	.40	1.00	
877.750	12.61	23.97	27.15	.03	.08	.36	.35	.40	1.00	
878.000	12.74	25.45	29.03	.04	.06	.37	.37	.39	1.00	
878.250	12.89	25.48	29.30	.04	.01	.37	.39	.39	1.00	
878.500	12.90	26.38	30.34	.04	.04	.37	.38	.39	1.00	
878.750	12.72	26.58	30.28	.04	.11	.37	.33	.39	1.00	
879.000	13.03	28.78	33.33	.06	.21	.34	.28	.38	1.00	
879.250	13.45	30.88	36.59	.07	.15	.35	.31	.40	1.00	
879.500	13.79	30.52	36.81	.07	.13	.35	.36	.43	1.00	
879.750	15.14	26.00	33.71	.04	.10	.34	.37	.52	1.00	
880.000	15.90	22.96	31.00	.03	.12	.33	.35	.47	1.00	
880.250	12.99	24.21	27.98	.03	.08	.34	.36	.44	1.00	
880.500	12.58	26.91	30.42	.04	.04	.36	.38	.42	1.00	
880.750	12.53	26.83	30.25	.04	.08	.36	.38	.41	1.00	
881.000	12.60	26.53	30.03	.04	.17	.35	.34	.39	1.00	
881.250	12.40	26.76	29.98	.04	.09	.38	.38	.37	1.00	
881.500	12.42	26.63	29.86	.04	.06	.38	.39	.37	1.00	

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
881.750	12.37	26.81	29.98	.04	.08	.38	.36	.38	1.00
882.000	12.44	28.68	32.19	.05	.06	.37	.38	.39	1.00
882.250	12.51	29.04	32.21	.06	.11	.36	.34	.40	1.00
882.500	12.56	26.78	30.26	.04	.14	.34	.33	.43	1.00
882.750	12.33	23.78	26.54	.03	.14	.32	.33	.45	1.00
883.000	12.39	24.12	26.99	.03	.04	.34	.37	.48	1.00
883.250	12.37	24.74	27.65	.03	.00	.35	.39	.48	1.00
883.500	12.28	24.64	27.42	.03	.03	.34	.38	.49	1.00
883.750	12.27	23.98	26.67	.03	.12	.32	.33	.49	1.00
884.000	12.38	23.64	26.45	.03	.14	.32	.31	.49	1.00
884.250	12.61	25.42	28.79	.04	.15	.33	.32	.49	1.00
884.500	12.71	26.45	30.12	.04	.14	.35	.31	.43	1.00
884.750	12.55	31.86	35.98	.07	.16	.33	.29	.45	1.00
885.000	12.77	45.20	51.63	.19	.28	.31	.24	.50	1.00

Interval 1 (825 - 9[illegible]

WELL NAME: SEAL #1
LOCATION: T-19P BASS BASIN
DATE: RIG RELEASED 21/2/86RIG RELEASED 21/2/86
E.V.C.M.,Eocene Upper N.asperus - Lower N.asperus Interval,975 - 1115m

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
1005.000	12.76	29.78	34.00	.21	.25	.30	.22	.84	.85
1005.250	12.89	30.62	35.21	.22	.15	.38	.31	.82	.78
1005.500	13.22	30.69	35.90	.23	.18	.37	.27	.79	.79
1005.750	13.38	29.92	35.31	.22	.28	.37	.20	.72	.76
1006.250	13.62	25.68	30.70	.17	.27	.34	.15	1.11	.66
1006.500	13.68	27.06	32.46	.19	.20	.33	.21	1.19	.69
1006.750	13.72	27.11	32.57	.19	.25	.36	.23	.53	.92
1007.000	13.83	26.63	32.19	.19	.24	.31	.25	.79	.85
1007.250	14.35	28.62	35.58	.22	.23	.30	.26	.77	.89
1007.500	13.87	28.62	34.68	.21	.22	.32	.26	.47	1.00
1007.750	14.05	30.22	36.96	.24	.21	.32	.27	.47	1.00
1008.000	14.13	31.29	38.44	.26	.18	.34	.28	.81	.84
1008.250	14.25	31.78	39.28	.26	.18	.33	.29	.72	.90
1008.500	14.15	31.47	38.69	.26	.24	.32	.29	.79	.83
1008.750	14.15	27.98	34.40	.21	.27	.31	.31	.81	.83
1009.250	14.17	27.74	34.15	.21	.24	.32	.30	.43	1.00
1009.500	14.22	27.17	33.53	.20	.18	.34	.32	.68	.90
1009.750	14.24	23.83	29.45	.16	.15	.35	.32	.66	.93
1010.000	14.69	21.77	27.56	.13	.16	.34	.32	.58	1.00
1010.250	14.41	22.57	28.14	.14	.23	.31	.30	.65	.96
1010.500	14.58	25.37	31.94	.18	.21	.31	.31	.66	.95
1010.750	14.63	28.30	35.71	.23	.17	.33	.30	.61	1.00
1011.000	14.30	29.50	36.57	.23	.14	.33	.29	.77	.91
1011.250	14.33	30.25	37.57	.25	.23	.31	.27	.82	.85
1011.750	14.45	26.89	33.61	.20	.17	.33	.21	.78	.87
1012.000	14.37	25.06	31.19	.18	.13	.34	.21	.86	.86
1012.250	14.61	23.24	29.30	.15	.16	.33	.27	.74	.91
1012.500	14.78	21.98	27.96	.14	.17	.33	.37	.61	1.00
1012.750	14.95	23.15	29.72	.16	.20	.29	.36	.52	1.00
1013.000	14.79	22.47	28.59	.15	.25	.27	.25	.63	1.00
1013.500	14.77	20.12	25.57	.11	.28	.30	.26	.55	1.00
1013.750	14.73	21.76	27.61	.14	.23	.32	.24	.70	.91
1014.000	14.68	24.82	31.40	.18	.20	.33	.26	.71	.90
1014.250	14.65	28.18	35.59	.22	.16	.35	.31	.64	.93
1014.500	14.59	24.79	31.21	.18	.15	.34	.32	.65	.94
1014.750	14.49	22.15	27.74	.14	.17	.34	.29	.68	.92
1015.000	14.55	25.72	32.32	.19	.26	.33	.26	.67	.88
1015.750	14.73	28.22	35.80	.23	.27	.31	.28	.64	.92
1016.000	14.73	25.84	32.78	.19	.24	.32	.28	.66	.92
1016.250	14.69	23.97	30.35	.17	.22	.32	.26	.68	.91
1016.500	14.71	23.37	29.61	.16	.21	.33	.27	.64	.94
1016.750	14.69	24.66	31.22	.18	.23	.32	.26	.69	.91
1017.000	14.67	27.88	35.26	.22	.22	.32	.26	.78	.87
1017.250	14.71	28.98	36.72	.24	.21	.32	.25	.73	.90
1017.500	14.71	29.06	36.82	.24	.27	.30	.24	.67	.92
1018.000	14.63	30.13	38.01	.25	.22	.31	.26	.75	.91
1018.250	14.65	30.02	37.93	.25	.18	.31	.26	.76	.91
1018.500	14.63	29.44	37.16	.24	.27	.30	.23	.70	.90
1018.750	14.63	26.27	33.14	.20	.29	.30	.21	.67	.91
1019.000	14.67	27.96	35.36	.22	.27	.30	.22	.69	.91
1019.250	14.65	31.23	39.44	.27	.24	.30	.23	.73	.90
1019.500	14.51	29.84	37.40	.24	.24	.30	.24	.85	.86
1019.750	14.49	29.10	36.45	.23	.28	.27	.20	.82	.88
1020.000	14.49	28.97	36.28	.23	.25	.28	.17	.79	.91
1020.750	14.80	16.76	21.34	.07	.21	.33	.29	.59	.96

Interval 2 (975 - 1115m) Parameters
Rw 0.09 ohm at 48.5 deg C (41,000ppm NaCl eq)
Vsh from SP,Rsh = 1.0 ohm
Porosity used - H/R.SCPOR

SW-IND Interval 2 (975 - 1110m)

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
1021.000	14.70	18.38	23.28	.09	.21	.33	.28	.62	.95
1021.250	14.56	22.10	27.79	.14	.27	.31	.25	.65	.91
1021.500	14.52	22.06	27.68	.14	.24	.32	.25	.66	.91
1021.750	14.58	20.84	26.23	.12	.17	.34	.26	.68	.93
1022.000	14.66	19.66	24.85	.10	.22	.32	.23	.66	.93
1022.250	14.78	19.86	25.26	.11	.18	.32	.25	.63	.98
1022.500	14.87	18.57	23.74	.09	.23	.31	.25	.60	1.00
1022.750	14.90	19.51	24.98	.11	.23	.31	.24	.62	.98
1023.000	15.06	21.02	27.13	.13	.29	.28	.21	.59	1.00
1023.250	15.19	22.13	28.76	.15	.25	.28	.21	.57	1.00
1023.500	15.30	24.39	31.89	.18	.20	.30	.19	.60	1.00
1023.750	15.43	26.85	35.36	.22	.20	.31	.14	.56	1.00
1024.000	15.52	26.79	35.44	.22	.19	.31	.17	.57	1.00
1024.750	16.46	28.94	40.26	.28	.18	.32	.26	.48	1.00
1025.000	16.24	28.18	38.75	.26	.13	.33	.29	.50	1.00
1025.250	16.15	27.08	37.06	.24	.24	.30	.28	.51	1.00
1025.500	16.05	25.20	34.30	.21	.28	.29	.26	.54	1.00
1027.000	16.42	28.18	39.13	.26	.28	.29	.19	.57	1.00
1028.250	16.41	32.24	44.74	.33	.26	.30	.24	.59	.99
1028.500	16.47	33.27	46.32	.34	.28	.30	.23	.58	.99
1029.500	16.54	38.50	53.81	.43	.29	.30	.24	.52	1.00
1031.250	15.46	34.95	46.10	.34	.29	.30	.23	.64	.92
1032.500	15.64	35.76	47.63	.36	.26	.32	.28	.47	1.00
1033.500	15.36	29.18	38.30	.25	.24	.32	.29	.51	1.00
1033.750	15.28	29.30	38.27	.25	.27	.31	.26	.51	1.00
1035.250	14.76	44.47	56.49	.46	.27	.31	.24	.64	.91
1037.250	15.21	43.66	56.82	.46	.28	.31	.27	.52	1.00
1054.750	13.30	26.14	30.72	.17	.24	.29	.21	.61	1.00
1055.000	13.31	22.25	26.16	.12	.23	.30	.21	.55	.93
1055.250	13.34	18.21	21.44	.07	.29	.29	.19	.48	.93
1055.500	13.27	18.18	21.33	.07	.16	.32	.23	.43	1.00
1055.750	13.12	21.17	24.64	.10	.13	.32	.24	.43	1.00
1056.000	13.13	20.61	24.00	.10	.14	.32	.23	.43	1.00
1056.250	13.09	19.76	22.95	.08	.19	.31	.21	.43	1.00
1056.500	13.06	20.43	23.70	.09	.26	.30	.19	.43	1.00
1056.750	13.02	18.45	21.36	.07	.25	.32	.21	.43	.98
1057.000	13.01	19.08	22.08	.07	.18	.32	.24	.43	1.00
1057.250	12.82	19.51	22.34	.08	.12	.32	.26	.43	1.00
1057.500	12.78	17.42	19.90	.05	.19	.31	.24	.44	1.00
1057.750	12.73	18.92	21.56	.07	.25	.28	.22	.53	.95
1058.000	12.45	19.45	21.84	.07	.19	.27	.20	.64	.98
1058.250	12.42	16.84	18.87	.04	.19	.19	.11	.64	1.00
1058.500	12.61	18.84	21.35	.07	.23	.20	.25	.77	1.00
1058.750	12.71	24.13	27.48	.13	.23	.28	.37	.74	.83
1059.000	12.42	22.83	25.60	.11	.11	.31	.32	.61	1.00
1059.250	12.42	22.88	25.65	.11	.10	.31	.26	.61	1.00
1059.500	12.51	26.72	30.09	.16	.13	.32	.26	.45	1.00
1059.750	12.77	25.03	28.58	.15	.23	.32	.22	.41	1.00
1060.000	12.78	20.41	23.33	.09	.27	.31	.20	.41	.99
1060.250	12.66	17.59	19.98	.05	.20	.33	.22	.41	1.00
1060.500	12.70	17.39	19.79	.05	.21	.32	.22	.41	1.00
1060.750	12.86	17.80	20.42	.06	.14	.33	.24	.41	1.00
1061.000	12.89	17.01	19.56	.05	.19	.32	.23	.41	1.00
1061.250	13.00	18.49	21.38	.07	.23	.32	.22	.41	1.00
1061.500	13.29	20.40	23.96	.09	.19	.32	.25	.38	1.00

Interval 2 (975 - 1115m)

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	PT	SW-IND
1061.750	13.65	20.73	24.82	.10	.19	.31	.28	.40	1.00
1062.000	13.29	20.29	23.84	.09	.22	.30	.28	.41	1.00
1062.250	12.75	18.86	21.52	.07	.16	.30	.26	.41	1.00
1062.500	12.51	17.01	19.16	.04	.17	.30	.25	.41	1.00
1062.750	12.41	17.59	19.71	.05	.16	.30	.24	.41	1.00
1063.000	12.25	18.77	20.86	.06	.09	.30	.25	.43	1.00
1063.250	12.25	16.89	18.77	.04	.11	.29	.24	.43	1.00
1063.500	12.36	14.67	16.40	.01	.18	.28	.21	.43	1.00
1063.750	12.42	14.74	16.52	.01	.14	.28	.23	.43	1.00
1064.000	12.43	17.36	19.48	.04	.16	.28	.22	.43	1.00
1064.250	12.43	16.61	18.63	.04	.23	.25	.20	.43	1.00
1064.500	12.36	15.60	17.44	.02	.16	.24	.22	.47	1.00
1064.750	12.35	16.00	17.87	.03	.22	.24	.19	.47	1.00
1065.000	12.41	16.34	18.31	.03	.24	.24	.17	.58	1.00
1065.250	13.16	17.27	20.14	.05	.14	.24	.17	.96	.93
1065.500	12.58	15.94	18.03	.03	.11	.22	.15	.64	1.00
1065.750	12.60	14.34	16.23	.01	.18	.22	.17	.64	1.00
1066.250	12.89	20.87	24.00	.10	.27	.29	.20	.55	.89
1066.500	12.88	17.14	19.69	.05	.13	.33	.26	.55	.98
1066.750	12.86	17.30	19.85	.05	.07	.35	.28	.55	1.00
1067.000	12.91	16.25	18.70	.04	.08	.35	.27	.55	1.00
1067.250	13.08	16.36	19.00	.04	.15	.34	.24	.55	.94
1067.500	13.43	16.99	20.11	.05	.26	.30	.20	.36	1.00
1067.750	13.35	16.88	19.89	.05	.23	.27	.19	.43	1.00
1068.000	12.84	18.17	20.84	.06	.22	.19	.16	.43	1.00
1068.250	12.71	19.15	21.81	.07	.15	.24	.19	.48	1.00
1068.500	12.64	16.88	19.15	.04	.10	.29	.25	.48	1.00
1068.750	12.76	15.45	17.64	.02	.13	.32	.26	.47	1.00
1069.000	13.45	16.39	19.41	.04	.28	.29	.21	.45	.98
1069.500	13.74	16.95	20.39	.06	.26	.24	.22	.56	1.00
1069.750	13.12	14.23	16.56	.01	.19	.22	.16	.56	1.00
1070.000	13.56	15.38	18.33	.03	.11	.25	.16	.56	1.00
1070.250	13.65	15.18	18.17	.03	.19	.28	.22	1.01	.74
1070.750	13.56	16.27	19.39	.04	.29	.27	.24	.85	.73
1071.000	13.01	16.06	18.58	.03	.20	.21	.19	.61	1.00
1071.250	12.66	15.44	17.54	.02	.16	.17	.08	.69	1.00
1071.500	12.68	13.54	15.39	.00	.19	.10	.06	.76	1.00
1071.750	12.93	14.20	16.35	.01	.21	.18	.13	.76	1.00
1072.500	13.45	16.30	19.31	.04	.16	.24	.18	1.08	.84
1072.750	13.33	16.72	19.68	.05	.15	.21	.15	1.08	.95
1073.000	13.50	16.96	20.14	.05	.24	.24	.16	1.08	.75
1073.250	13.62	16.56	19.79	.05	.22	.30	.22	.47	1.00
1073.500	13.79	16.63	20.06	.05	.28	.30	.22	.41	.99
1074.000	16.26	18.68	25.71	.11	.18	.32	.25	.39	1.00
1074.250	16.93	17.41	24.85	.10	.26	.31	.25	.38	1.00
1074.500	17.45	15.17	22.26	.08	.29	.31	.24	.36	1.00
1074.750	17.54	17.40	25.66	.11	.27	.32	.25	.37	1.00
1075.000	17.71	18.89	28.10	.14	.22	.33	.26	.36	1.00
1075.250	17.68	17.67	26.26	.12	.23	.32	.27	.36	1.00
1076.750	18.20	26.70	40.77	.28	.23	.30	.28	.72	.80
1077.000	17.59	31.39	46.41	.34	.27	.29	.26	.71	.79
1077.500	16.92	25.88	36.91	.24	.25	.30	.26	.58	.87
1079.000	18.27	23.92	36.67	.24	.28	.30	.31	.44	.96
1080.000	16.54	19.95	27.87	.14	.22	.28	.23	.50	1.00
1080.250	16.22	19.60	26.93	.13	.23	.27	.26	.53	1.00

Interval 2 (925 - 1115m)

DEPTH	CALRES	GR-RES	GR-RHO	VSH-GR	VSH-SP	H/R,SC POR	N/D,SC POR	PT	SW-IND
1080.750	13.42	20.13	23.91	.09	.20	.30	.27	.45	1.00
1081.000	13.05	22.15	25.69	.11	.14	.32	.24	.42	1.00
1081.250	12.93	24.54	28.28	.14	.25	.29	.19	.42	1.00
1081.500	12.89	23.29	26.78	.13	.29	.28	.17	.42	1.00
1081.750	12.89	20.51	23.58	.09	.19	.30	.21	.42	1.00
1082.000	12.91	17.33	19.95	.05	.10	.31	.24	.42	1.00
1082.250	13.03	15.71	18.20	.03	.16	.30	.21	.42	1.00
1082.500	13.16	13.80	16.10	.01	.20	.29	.20	.42	1.00
1082.750	13.39	16.13	19.06	.04	.18	.30	.21	.42	1.00
1083.000	13.57	18.16	21.65	.07	.20	.29	.22	.43	1.00
1083.250	13.74	16.06	19.32	.04	.19	.29	.22	.43	1.00
1083.500	13.81	13.73	16.58	.01	.21	.29	.23	.43	1.00
1083.750	13.98	14.39	17.53	.02	.21	.29	.23	.43	1.00
1084.000	14.99	16.68	21.45	.07	.18	.30	.24	.69	.88
1084.250	16.23	17.70	24.33	.10	.22	.29	.25	.45	1.00
1084.500	16.62	19.38	27.19	.13	.21	.30	.29	.45	1.00
1084.750	16.60	17.06	23.91	.09	.20	.29	.28	.45	1.00
1085.000	16.59	14.52	20.35	.05	.23	.29	.27	.45	1.00
1085.250	16.79	15.65	22.17	.07	.24	.29	.25	.45	1.00
1085.500	16.99	15.62	22.35	.08	.22	.29	.26	.44	1.00
1085.750	17.01	14.24	20.41	.06	.20	.29	.26	.43	1.00
1086.000	16.77	16.94	23.97	.09	.29	.27	.22	.45	.99
1086.250	16.26	18.20	25.05	.11	.25	.28	.24	.50	.98
1086.500	16.06	16.09	21.93	.07	.24	.28	.25	.56	.93
1086.750	16.11	15.35	20.96	.06	.25	.28	.22	.52	.96
1087.000	16.01	14.86	20.19	.05	.20	.29	.23	.47	1.00
1087.250	15.35	16.67	21.86	.07	.16	.30	.25	.59	.98
1087.500	15.44	15.93	20.99	.06	.14	.30	.25	.62	.98
1087.750	15.47	13.59	17.95	.03	.24	.28	.22	.58	.92
1088.250	15.57	17.36	23.04	.08	.20	.28	.23	.50	1.00
1088.500	14.93	16.33	20.93	.06	.19	.28	.23	.70	.89
1088.750	14.98	16.30	20.95	.06	.20	.28	.22	.73	.87
1089.000	15.09	15.36	19.86	.05	.20	.28	.24	.66	.91
1089.250	15.15	15.49	20.10	.05	.26	.27	.22	.66	.87
1089.500	15.18	15.24	19.80	.05	.19	.28	.24	.67	.91
1089.750	15.16	16.72	21.69	.07	.20	.28	.26	.67	.92
1090.000	14.64	17.97	22.69	.08	.19	.28	.25	.72	.89
1090.250	14.45	18.70	23.37	.09	.22	.25	.20	.79	.87
1090.500	14.01	21.04	25.68	.11	.17	.18	.19	.94	1.00
1090.750	13.76	21.18	25.51	.11	.16	.11	.14	.94	1.00
1091.000	13.93	20.42	24.82	.10	.28	.11	.08	.60	1.00
1091.250	14.28	17.35	21.48	.07	.23	.23	.18	.96	.82
1091.500	14.62	16.24	20.49	.06	.16	.30	.27	.55	1.00
1091.750	15.59	18.97	25.20	.11	.20	.30	.27	.43	1.00
1092.000	16.64	19.79	27.80	.14	.29	.28	.27	.39	1.00
1092.250	16.88	20.51	29.19	.15	.20	.30	.31	.39	1.00
1092.500	16.81	19.22	27.25	.13	.18	.31	.30	.39	1.00
1093.000	15.29	18.57	24.28	.10	.21	.29	.27	.55	.94
1093.250	14.84	16.14	20.59	.06	.12	.31	.29	.64	.95
1093.500	14.38	15.58	19.40	.04	.15	.31	.25	.38	1.00
1093.750	14.32	15.48	19.21	.04	.17	.30	.24	.38	1.00
1094.000	14.33	14.48	17.97	.03	.23	.29	.22	.75	.80
1094.250	14.38	14.20	17.68	.02	.26	.29	.21	.75	.78
1094.500	14.77	13.44	17.08	.02	.20	.30	.23	.68	.86
1094.750	15.87	13.11	17.68	.02	.14	.31	.26	.46	1.00

Interval 2 (975 - 1115m)

DEPTH	CALRES	GR-RES	GR-RHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
1095.000	16.29	13.94	19.22	.04	.16	.31	.27	.40	1.00
1095.500	15.79	17.09	22.95	.08	.24	.29	.21	.42	1.00
1095.750	15.52	15.79	20.90	.06	.21	.29	.21	.59	.91
1096.000	15.93	17.02	23.02	.08	.21	.29	.22	.42	1.00
1096.250	15.97	17.82	24.16	.10	.22	.29	.23	.41	1.00
1096.500	16.34	19.81	27.40	.13	.19	.30	.25	.41	1.00
1096.750	16.79	16.48	23.34	.09	.23	.29	.24	.40	1.00
1097.000	17.23	16.00	23.20	.09	.23	.30	.29	.39	1.00
1097.250	17.61	15.05	22.28	.08	.20	.30	.32	.39	1.00
1097.500	17.89	13.82	20.76	.06	.22	.29	.31	.39	1.00
1097.750	18.02	17.41	26.33	.12	.28	.27	.30	.39	1.00
1098.000	16.81	19.96	28.30	.14	.20	.29	.30	.39	1.00
1098.250	16.66	17.27	24.28	.10	.20	.30	.27	.39	1.00
1098.500	16.95	14.81	21.16	.06	.22	.29	.26	.37	1.00
1098.750	16.97	18.52	26.48	.12	.28	.27	.28	.35	1.00
1099.000	16.40	20.74	28.77	.15	.23	.28	.36	.37	1.00
1099.250	15.65	23.79	31.69	.18	.15	.31	.32	.45	1.00
1099.500	14.84	25.90	33.05	.20	.20	.30	.21	.71	.84
1099.750	14.50	25.87	32.41	.19	.14	.31	.22	.36	1.00
1100.000	13.82	24.65	29.79	.16	.14	.31	.23	.36	1.00
1100.250	13.59	23.07	27.53	.13	.20	.30	.22	.36	1.00
1100.500	13.67	18.49	22.16	.07	.25	.28	.20	.35	1.00
1100.750	13.71	16.52	19.85	.05	.15	.31	.24	.35	1.00
1101.000	13.73	19.80	23.82	.09	.09	.32	.26	.35	1.00
1101.250	13.73	21.02	25.28	.11	.13	.31	.26	.35	1.00
1101.500	13.64	18.31	21.91	.07	.18	.30	.23	.35	1.00
1101.750	13.62	18.90	22.59	.08	.15	.30	.24	.35	1.00
1102.000	13.70	17.15	20.59	.06	.25	.28	.21	.35	1.00
1102.250	13.92	17.70	21.50	.07	.22	.29	.22	.34	1.00
1102.500	13.82	17.95	21.68	.07	.19	.30	.24	.34	1.00
1102.750	13.75	14.78	17.79	.03	.18	.31	.24	.33	1.00
1103.000	13.69	14.72	17.66	.02	.22	.30	.22	.33	1.00
1103.250	13.58	16.25	19.38	.04	.18	.31	.24	.33	1.00
1103.500	13.10	19.00	22.09	.07	.18	.30	.25	.33	1.00
1103.750	13.01	19.15	22.16	.07	.14	.31	.27	.33	1.00
1104.000	13.23	17.04	19.95	.05	.15	.31	.28	.33	1.00
1104.250	13.57	18.67	22.26	.08	.23	.29	.22	.35	1.00
1104.500	13.87	18.81	22.79	.08	.27	.28	.19	.35	1.00
1104.750	14.24	16.21	20.02	.05	.21	.30	.22	.34	1.00
1105.000	14.60	17.74	22.35	.08	.17	.31	.23	.65	.89
1105.250	15.49	17.49	23.11	.09	.11	.32	.25	.47	1.00
1105.500	17.02	17.38	24.92	.11	.12	.32	.30	.34	1.00
1105.750	18.11	18.69	28.42	.14	.22	.30	.31	.32	1.00
1106.250	19.38	16.89	27.49	.13	.27	.29	.29	.36	1.00
1106.500	19.43	19.79	32.27	.19	.29	.28	.27	.36	1.00
1106.750	19.43	19.94	32.54	.19	.16	.31	.32	.38	1.00
1107.000	19.28	18.10	29.29	.15	.15	.31	.31	.39	1.00
1107.250	19.24	16.75	27.04	.13	.21	.29	.26	.39	1.00
1107.500	19.32	16.82	27.27	.13	.24	.28	.24	.39	1.00
1107.750	19.61	16.20	26.68	.12	.29	.27	.28	.39	1.00
1108.000	20.40	16.81	28.88	.15	.29	.27	.39	.43	1.00
1108.250	20.71	18.82	32.88	.19	.24	.28	.47	.51	.97
1108.500	20.81	23.88	41.93	.29	.18	.30	.43	.37	1.00
1108.750	21.01	32.67	58.01	.47	.26	.29	.34	.58	.87
1109.250	20.66	23.35	40.68	.28	.26	.28	.29	.54	.93

Interval 2 (975 - 1115m)

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
1109.500	19.38	20.57	33.47	.20	.15	.30	.34	.38	1.00
1109.750	19.14	19.44	31.21	.18	.23	.29	.26	.37	1.00
1110.250	18.70	16.38	25.69	.11	.24	.29	.23	.36	1.00
1110.500	18.89	16.21	25.70	.11	.26	.28	.24	.35	1.00
1110.750	19.35	17.19	27.91	.14	.28	.28	.26	.34	1.00
1111.000	19.47	21.52	35.19	.22	.18	.30	.32	.33	1.00
1111.250	18.82	25.61	40.44	.28	.20	.30	.33	.33	1.00
1111.500	18.94	26.49	42.10	.30	.25	.29	.26	.33	1.00
1111.750	18.66	28.99	45.38	.33	.25	.29	.25	.34	1.00
1112.000	18.63	28.80	45.02	.33	.18	.30	.34	.35	1.00
1112.250	19.14	22.52	36.17	.23	.14	.30	.45	.34	1.00
1112.500	19.95	22.07	37.01	.24	.15	.31	.48	.35	1.00
1112.750	19.80	34.14	56.79	.46	.26	.27	.35	.35	1.00
1113.000	19.92	43.23	72.40	.63	.20	.29	.29	.38	1.00
1113.250	19.93	43.93	73.61	.65	.15	.31	.27	.42	1.00
1113.500	19.53	42.46	69.62	.60	.11	.31	.30	.42	1.00
1113.750	19.23	40.55	65.43	.56	.09	.32	.31	.41	1.00
1114.000	19.04	35.96	57.46	.47	.23	.29	.26	.40	1.00
1114.250	19.12	33.40	53.60	.42	.24	.28	.32	.38	1.00
1114.500	19.51	33.38	54.69	.44	.12	.32	.45	.37	1.00
1114.750	19.34	34.32	55.71	.45	.10	.33	.45	.33	1.00
1115.000	17.79	36.37	54.34	.43	.16	.32	.41	.31	1.00

WELL NAME: SEAL #1
LOCATION: T-19P BASS BASIN
DATE: RIG RELEASED 21/2/86
E.V.C.M.,Eocene P.asperopolous 1165 - 1255m

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
1180.500	12.34	39.79	44.41	.24	.41	.21	.18	1.93	.90
1180.750	12.34	36.75	41.02	.21	.40	.20	.19	1.95	.89
1181.000	12.42	39.06	43.79	.23	.39	.23	.16	2.01	.95
1181.250	12.58	35.17	39.76	.19	.38	.26	.17	1.86	1.00
1181.500	12.69	32.61	37.08	.17	.28	.28	.20	1.49	1.00
1181.750	12.52	34.26	38.62	.18	.20	.30	.21	1.33	.99
1182.000	12.47	33.68	37.85	.17	.24	.32	.23	1.80	.81
1182.250	12.41	32.74	36.68	.16	.26	.32	.24	1.69	.83
1182.500	12.39	35.20	39.40	.19	.39	.30	.22	1.21	1.00
1182.750	12.38	44.35	49.63	.29	.39	.29	.18	1.31	1.00
1187.750	12.11	45.28	49.92	.29	.64	.25	.19	2.59	.70
1188.000	12.07	41.69	45.86	.25	.54	.24	.18	2.70	.75
1190.750	12.35	38.35	42.84	.22	.55	.26	.23	2.09	.73
1191.000	12.27	35.93	39.96	.19	.56	.26	.18	2.84	.78
1191.250	12.25	41.70	46.32	.26	.60	.25	.18	2.74	.73
1192.500	12.11	42.61	46.98	.26	.40	.27	.23	1.57	.81
1192.750	12.10	34.42	37.94	.17	.24	.29	.25	1.18	.93
1193.000	12.16	32.54	35.97	.15	.14	.30	.26	1.06	.98
1193.250	12.22	33.84	37.54	.17	.12	.30	.26	.91	1.00
1193.500	12.23	31.28	34.71	.14	.20	.30	.28	.90	1.00
1193.750	12.29	28.73	31.98	.11	.14	.31	.31	.90	.93
1194.000	12.14	29.09	32.13	.12	.10	.31	.31	.84	.97
1194.250	12.08	26.54	29.21	.09	.10	.31	.30	.85	.99
1194.500	12.08	25.76	28.35	.08	.08	.31	.32	.89	.92
1194.750	12.11	27.01	29.79	.09	.10	.31	.33	.83	.93
1195.000	12.09	26.17	28.83	.08	.14	.31	.31	.79	1.00
1195.250	12.09	28.66	31.56	.11	.14	.30	.29	.91	.98
1195.500	12.09	29.25	32.21	.12	.18	.30	.29	.89	.99
1195.750	12.19	28.20	31.22	.11	.20	.30	.30	.94	.95
1196.000	12.16	26.10	28.86	.08	.07	.31	.30	.93	.96
1196.250	12.23	24.35	27.03	.07	.00	.32	.31	.89	.95
1196.500	12.25	24.04	26.70	.06	.04	.32	.32	.79	1.00
1196.750	12.31	25.37	28.26	.08	.06	.32	.31	.73	1.00
1197.000	12.29	25.86	28.79	.08	.08	.31	.31	.76	1.00
1197.250	12.23	24.92	27.66	.07	.10	.32	.31	.42	1.00
1197.500	12.20	23.98	26.57	.06	.13	.32	.31	.43	1.00
1197.750	12.22	25.81	28.63	.08	.13	.31	.30	.83	1.00
1198.000	12.21	35.86	39.76	.19	.13	.29	.25	.80	1.00
1199.000	12.27	39.02	43.40	.23	.42	.24	.21	1.64	.87
1199.250	12.14	33.45	36.94	.16	.45	.25	.24	1.46	.87
1199.500	12.15	30.62	33.83	.13	.40	.29	.30	1.45	.75
1199.750	12.12	30.57	33.74	.13	.44	.31	.33	1.22	.74
1200.000	12.09	35.83	39.47	.19	.40	.30	.30	.96	.88
1202.000	12.42	44.08	49.42	.29	.52	.25	.22	2.07	.72
1209.250	12.46	31.62	35.53	.15	.14	.30	.32	.60	1.00
1209.500	12.27	27.60	30.70	.10	.09	.31	.32	.93	.89
1209.750	12.05	27.62	30.37	.10	.00	.31	.30	.91	.96
1210.000	11.99	27.69	30.34	.10	.05	.31	.29	.91	1.00
1210.250	11.98	27.73	30.36	.10	.22	.30	.27	.91	1.00
1210.500	11.98	31.77	34.79	.14	.17	.29	.25	.86	1.00
1210.750	12.03	30.72	33.72	.13	.21	.28	.26	1.02	1.00
1211.000	12.20	33.32	36.91	.16	.26	.27	.24	1.17	.99
1211.250	12.25	37.21	41.34	.21	.28	.27	.23	1.18	.99
1211.500	12.32	38.79	43.24	.23	.33	.28	.24	1.16	.93
1211.750	12.30	40.90	45.56	.25	.33	.28	.27	1.09	.86

Interval 3 (1165 - 1255m) Parameters
Rw 0.09 ohm at 53.3 deg C (44,000ppm NaCl eq)
Vsh from GR-BHC.Rsh = 2.5 ohm
Porosity used = N/D.SCPOR

Interval 3 (1165 - 1250)

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
1212.000	12.39	33.41	37.39	.17	.34	.30	.30	1.02	.85
1212.250	12.29	31.62	35.21	.15	.32	.30	.29	1.02	.90
1212.500	12.28	35.69	39.71	.19	.40	.30	.27	1.03	.93
1212.750	12.34	38.66	43.16	.23	.64	.29	.26	1.07	.91
1221.500	12.25	42.43	47.14	.27	.32	.29	.27	.98	.89
1221.750	12.31	36.82	41.04	.21	.24	.31	.29	.91	.90
1222.000	12.37	31.02	34.69	.14	.21	.31	.31	.90	.91
1222.250	12.44	27.78	31.18	.11	.31	.32	.30	.93	.93
1222.500	12.59	33.32	37.69	.17	.21	.32	.30	.95	.88
1222.750	12.64	36.03	40.86	.20	.17	.32	.34	.90	.80
1223.000	12.70	32.46	36.94	.16	.14	.33	.34	.83	.85
1223.250	12.71	33.82	38.52	.18	.13	.33	.32	.80	.91
1223.500	12.72	38.29	43.63	.23	.10	.32	.33	.81	.86
1223.750	12.71	34.62	39.42	.19	.04	.32	.35	.84	.81
1224.000	12.65	29.84	33.86	.13	.09	.33	.32	.48	1.00
1224.250	12.42	24.60	27.58	.07	.23	.34	.31	.95	.92
1224.500	12.26	22.09	24.55	.04	.22	.34	.33	.85	.93
1224.750	12.34	24.44	27.28	.07	.20	.34	.34	.77	.93
1225.000	12.31	29.71	33.12	.13	.24	.33	.32	.78	.94
1225.250	12.39	32.09	35.93	.15	.16	.32	.29	.82	.98
1225.500	12.44	30.00	33.67	.13	.17	.32	.28	.85	1.00
1225.750	12.43	28.81	32.33	.12	.33	.31	.28	.78	1.00
1226.000	12.23	33.11	36.75	.16	.42	.29	.26	1.00	.99
1226.250	12.15	39.15	43.26	.23	.43	.26	.23	.83	1.00
1226.500	12.15	42.85	47.34	.27	.52	.26	.23	1.04	.98
1226.750	12.15	43.52	48.08	.28	.63	.27	.21	2.00	.74
1229.000	12.12	38.55	42.52	.22	.31	.25	.22	1.09	1.00
1229.250	12.19	27.49	30.44	.10	.26	.29	.31	1.18	.82
1229.500	12.20	27.66	30.64	.10	.24	.30	.31	.94	.89
1229.750	12.22	29.22	32.42	.12	.25	.30	.30	.73	1.00
1230.000	12.20	28.82	31.93	.11	.27	.30	.29	.84	1.00
1230.250	12.21	27.08	30.02	.10	.16	.31	.31	.45	1.00
1230.500	12.23	26.62	29.54	.09	.14	.31	.32	.44	1.00
1230.750	12.23	26.51	29.43	.09	.25	.31	.30	.43	1.00
1231.000	12.60	26.27	29.72	.09	.28	.31	.31	.41	1.00
1231.250	12.69	25.68	29.21	.09	.26	.32	.32	.76	.98
1231.500	12.76	27.33	31.21	.11	.25	.32	.31	.72	1.00
1231.750	12.58	41.22	46.62	.26	.37	.29	.24	.71	1.00
1237.750	12.31	40.74	45.42	.25	.27	.30	.25	1.34	.82
1238.000	12.23	36.57	40.57	.20	.35	.30	.28	1.12	.84
1238.250	12.28	38.07	42.36	.22	.28	.30	.28	.63	1.00
1238.500	12.38	33.23	37.18	.17	.22	.31	.28	.61	1.00
1238.750	12.53	32.49	36.65	.16	.32	.31	.28	1.06	.89
1239.000	12.86	38.39	44.06	.24	.36	.30	.27	1.09	.85
1245.750	12.16	42.79	47.30	.27	.36	.29	.29	.74	.98
1246.000	12.15	44.92	49.62	.29	.37	.29	.28	.99	.84
1248.250	12.03	32.23	35.39	.15	.28	.27	.27	1.55	.78
1248.500	12.08	26.36	29.02	.09	.29	.29	.29	1.16	.88
1248.750	12.09	25.55	28.14	.08	.31	.28	.26	.98	1.00
1249.000	12.09	25.20	27.76	.07	.29	.29	.25	1.09	1.00
1249.250	12.31	22.71	25.32	.05	.26	.30	.26	1.10	1.00
1249.500	12.61	22.71	25.72	.05	.18	.31	.28	.97	1.00
1249.750	12.74	23.04	26.27	.06	.19	.30	.31	.95	.91
1250.000	12.72	25.71	29.29	.09	.22	.31	.31	1.06	.87
1250.250	12.43	27.29	30.61	.10	.25	.30	.28	.64	1.00

Interval 3 (1165 - 1255m)

DEPTH	CALRES	GR-RES	GR-RHO	VSH-GR	VSH-SP	H/R,SC POR	N/D,SC POR	RT	SW-IND
1250.500	13.04	28.61	33.16	.13	.25	.29	.28	1.18	.86
1250.750	12.91	29.16	33.56	.13	.22	.30	.29	1.19	.84
1251.000	12.42	33.48	37.54	.17	.17	.30	.28	1.02	.92

WELL NAME: SEAL #1
LOCATION: T-19P BASS BASIN
DATE: RIG RELEASED 21/2/86
E.V.C.M.,Eocene Upper M.diversus - Middle M.diversus 1305 - 1445m

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
1311.750	12.17	46.42	51.35	.29	.23	.29	.27	1.06	.82
1312.000	12.20	34.94	38.71	.18	.02	.31	.30	.85	.92
1312.250	12.20	38.41	42.54	.22	.00	.31	.30	1.04	.81
1317.250	12.25	39.46	43.83	.23	.00	.31	.28	1.02	.87
1317.500	12.28	35.85	39.88	.19	.00	.31	.31	.82	.91
1317.750	12.28	46.20	51.40	.29	.04	.30	.29	.85	.87
1324.750	12.24	46.66	51.81	.29	.21	.29	.26	1.03	.86
1332.250	12.06	42.73	46.98	.25	.16	.28	.27	1.62	.70
1332.500	12.13	35.77	39.48	.19	.04	.26	.26	1.52	.78
1332.750	12.25	43.38	48.18	.26	.14	.22	.20	1.18	1.00
1353.500	12.16	45.16	49.92	.27	.16	.31	.30	.99	.79
1353.750	12.04	29.97	32.92	.14	.20	.32	.35	.94	.80
1354.000	12.03	31.13	34.18	.15	.30	.31	.33	.96	.83
1354.250	12.03	33.42	36.69	.17	.13	.30	.30	1.04	.85
1354.500	12.04	39.84	43.75	.23	.04	.29	.27	1.51	.74
1354.750	12.08	43.25	47.61	.26	.06	.28	.25	1.30	.81
1355.000	12.11	40.22	44.34	.23	.15	.29	.26	1.76	.70
1355.250	12.14	43.16	47.66	.26	.32	.28	.26	1.45	.75
1356.000	12.20	42.02	46.55	.25	.23	.21	.18	1.33	1.00
1356.250	12.17	32.76	36.24	.17	.15	.26	.25	1.23	.91
1356.500	12.22	29.41	32.61	.14	.00	.29	.29	1.12	.87
1356.750	12.26	28.55	31.74	.13	.00	.30	.30	1.19	.83
1357.000	12.33	28.31	31.59	.13	.01	.30	.30	1.13	.85
1357.250	12.41	24.56	27.51	.10	.17	.29	.32	1.23	.79
1357.500	12.42	21.92	24.58	.07	.10	.29	.33	1.27	.76
1357.750	12.38	21.48	24.03	.07	.03	.30	.33	1.23	.78
1358.000	12.24	22.72	25.22	.08	.07	.31	.33	1.17	.79
1358.250	12.25	26.22	29.13	.11	.00	.31	.32	1.16	.81
1358.500	12.21	28.94	32.08	.13	.01	.30	.31	1.17	.80
1358.750	12.15	36.55	40.38	.20	.10	.27	.28	1.22	.81
1378.750	12.44	40.37	45.31	.24	.25	.26	.28	1.20	.80
1379.000	12.16	30.86	34.11	.15	.22	.28	.29	1.11	.86
1379.250	12.16	35.90	39.69	.19	.30	.28	.22	1.09	1.00
1379.500	12.16	34.08	37.68	.18	.17	.26	.22	.96	1.00
1379.750	12.22	36.45	40.43	.20	.12	.26	.26	.97	.97
1380.000	12.22	43.67	48.43	.26	.04	.25	.27	1.00	.86
1380.250	12.23	41.48	46.04	.24	.09	.33	.28	1.38	.74
1380.500	12.20	40.22	44.56	.23	.20	.28	.32	1.01	.77
1380.750	12.20	39.19	43.42	.22	.12	.29	.28	1.33	.76
1381.000	12.22	39.09	43.35	.22	.11	.26	.27	1.36	.77
1381.250	12.21	43.14	47.83	.26	.23	.24	.25	1.17	.85
1382.250	12.26	46.69	51.89	.29	.43	.27	.26	1.10	.76
1382.500	12.14	43.25	47.76	.26	.32	.28	.28	1.32	.73
1382.750	12.18	44.72	49.49	.27	.27	.28	.25	1.26	.81
1384.500	12.02	46.97	51.55	.29	.25	.26	.20	1.62	.81
1384.750	11.99	34.21	37.48	.17	.28	.26	.20	1.59	.96
1385.000	11.93	29.64	32.37	.13	.06	.25	.26	1.47	.82
1385.250	11.81	29.46	31.97	.13	.06	.32	.26	1.52	.83
1385.500	11.80	30.31	32.86	.14	.02	.29	.30	1.22	.80
1385.750	11.84	29.12	31.65	.13	.05	.29	.29	1.14	.86
1386.000	11.95	28.26	30.89	.12	.12	.29	.25	1.31	.91
1386.250	12.07	31.20	34.32	.15	.02	.28	.25	.88	1.00
1386.500	12.07	33.59	36.97	.17	.01	.27	.26	1.35	.84
1386.750	12.08	41.25	45.40	.24	.18	.26	.21	1.28	.96
1387.000	12.13	44.35	48.96	.27	.33	.24	.18	1.43	.95

Interval 4 (1305 - 1445m) Parameters
Rw 0.095 at 59.7 deg C (38,000ppm NaCl eq)
Vsh from GR-BHC,Rsh = 1.5 ohm
Porosity used - N/D.SCPOR and H/F.SCPOR

Interval 4 (1305 -1444m)

DEPTH	CALRES	GR-RES	GR-RHOC	VSH-GR	VSH-SP	H/R,SC POR	N/D,SC POR	RT	SW-IND
1387.250	12.13	46.27	51.06	.28	.26	.24	.18	2.29	.76
1387.750	12.09	39.86	43.90	.23	.31	.25	.25	1.44	.80
1388.000	12.09	30.83	33.96	.15	.33	.27	.28	1.42	.78
1388.250	12.12	31.32	34.55	.15	.23	.28	.29	1.20	.83
1388.500	12.15	34.34	37.94	.18	.11	.28	.27	1.24	.83
1388.750	12.13	35.14	38.80	.19	.05	.27	.25	1.34	.84
1389.000	12.08	32.20	35.44	.16	.18	.26	.26	1.25	.88
1389.250	12.08	33.03	36.37	.17	.13	.26	.27	1.26	.84
1389.500	12.05	33.87	37.22	.17	.31	.26	.27	1.35	.82
1389.750	12.00	28.15	30.86	.12	.31	.27	.30	1.27	.80
1390.000	12.00	25.19	27.62	.10	.02	.34	.28	1.30	.87
1390.250	12.00	25.27	27.70	.10	.10	.32	.27	1.37	.88
1390.500	12.01	26.27	28.82	.11	.20	.30	.27	1.37	.87
1390.750	11.98	34.61	37.90	.18	.32	.35	.24	1.66	.81
1392.500	12.08	45.69	50.30	.28	.40	.36	.26	1.30	.78
1392.750	12.07	30.14	33.16	.14	.24	.29	.30	1.28	.78
1393.000	12.53	32.29	36.41	.17	.07	.29	.31	1.17	.78
1393.250	12.54	28.76	32.46	.13	.17	.30	.32	.79	.96
1393.500	12.20	29.91	33.13	.14	.08	.30	.30	1.14	.82
1393.750	12.04	29.93	32.88	.14	.00	.30	.29	1.11	.85
1394.000	12.00	30.48	33.41	.14	.00	.29	.29	1.10	.87
1394.250	12.04	34.70	38.11	.18	.03	.28	.27	1.18	.86
1394.500	12.07	33.28	36.61	.17	.09	.28	.28	1.21	.82
1394.750	12.08	32.36	35.63	.16	.16	.28	.29	1.21	.80
1395.000	12.09	35.96	39.61	.19	.10	.29	.29	1.17	.81
1395.250	12.15	35.74	39.49	.19	.00	.30	.31	1.10	.79
1395.500	12.29	33.97	37.83	.18	.00	.31	.32	1.07	.78
1395.750	12.39	33.68	37.70	.18	.02	.31	.33	1.08	.76
1396.000	12.50	32.11	36.15	.16	.07	.31	.35	.71	.90
1396.250	12.58	30.99	35.04	.16	.19	.29	.35	.99	.76
1396.500	12.19	30.93	34.25	.15	.06	.25	.28	1.09	.89
1396.750	12.07	36.06	39.69	.19	.01	.23	.19	1.56	.97
1397.000	12.05	47.00	51.66	.29	.08	.23	.20	1.28	.92
1398.250	12.25	45.16	50.17	.28	.06	.29	.25	1.41	.77
1398.500	12.29	34.21	38.08	.18	.09	.31	.26	1.47	.80
1398.750	12.24	33.61	37.32	.17	.15	.31	.27	.92	.97
1399.000	12.15	43.42	47.99	.26	.13	.30	.28	.88	.89
1405.500	12.14	43.80	48.37	.26	.24	.29	.25	.82	1.00
1405.750	12.12	45.65	50.37	.28	.22	.29	.26	.77	1.00
1406.000	12.10	44.05	48.54	.26	.17	.29	.25	1.15	.85
1406.250	12.09	39.49	43.50	.22	.19	.29	.24	1.19	.90
1406.500	12.10	45.71	50.37	.28	.23	.26	.23	1.31	.85
1406.750	12.10	38.83	42.78	.22	.19	.26	.27	.85	.97
1407.000	12.10	29.41	32.41	.13	.13	.26	.30	1.37	.77
1407.250	12.14	30.14	33.30	.14	.00	.26	.28	1.31	.82
1407.500	12.16	28.49	31.50	.13	.02	.26	.29	1.31	.80
1407.750	12.17	25.22	27.90	.10	.01	.27	.32	1.27	.76
1408.000	12.20	28.40	31.46	.13	.17	.28	.31	1.16	.81
1408.250	12.23	29.07	32.26	.13	.21	.28	.31	1.03	.84
1408.500	12.25	30.40	33.77	.15	.09	.27	.30	1.07	.85
1408.750	12.25	31.28	34.75	.15	.06	.27	.28	1.14	.87
1409.000	12.25	32.75	36.37	.17	.07	.27	.28	1.19	.83
1409.250	12.24	29.17	32.39	.13	.10	.27	.30	1.17	.81
1409.500	12.18	28.38	31.41	.13	.11	.28	.32	1.14	.79
1409.750	12.15	30.72	33.95	.15	.18	.28	.30	1.12	.82

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
1410.000	12.14	32.69	36.10	.16	.14	.27	.29	1.13	.84
1410.250	12.08	34.60	38.09	.18	.12	.26	.27	1.14	.86
1410.500	12.00	34.69	38.02	.18	.11	.26	.27	1.17	.87
1410.750	11.98	32.63	35.73	.16	.01	.27	.28	1.18	.86
1411.000	11.96	33.30	36.42	.17	.04	.27	.27	1.17	.86
1411.250	11.96	37.39	40.89	.20	.02	.26	.27	1.14	.86
1411.500	11.96	38.70	42.33	.21	.13	.26	.26	1.14	.86
1411.750	11.96	35.65	38.99	.19	.08	.27	.26	1.14	.89
1412.000	11.96	33.93	37.11	.17	.06	.27	.26	1.15	.89
1412.250	12.05	36.59	40.21	.20	.17	.27	.25	1.19	.89
1412.500	12.13	37.75	41.66	.21	.14	.26	.25	1.22	.88
1412.750	12.29	37.26	41.48	.21	.11	.27	.26	1.20	.86
1413.000	12.45	34.13	38.32	.18	.07	.27	.27	1.17	.85
1413.250	12.46	33.63	37.79	.18	.01	.27	.27	1.17	.85
1413.500	12.44	31.50	35.35	.16	.15	.28	.29	1.18	.81
1413.750	12.41	34.30	38.43	.18	.14	.28	.28	1.18	.82
1414.000	12.30	38.76	43.16	.22	.21	.27	.27	1.15	.84
1414.250	12.13	35.85	39.57	.19	.05	.28	.29	1.16	.80
1414.500	12.12	36.05	39.78	.19	.07	.28	.29	1.21	.78
1414.750	12.12	41.62	45.92	.24	.08	.27	.27	1.22	.79
1415.000	12.11	44.77	49.38	.27	.18	.26	.26	1.23	.80
1415.250	12.21	40.15	44.52	.23	.19	.27	.26	1.28	.80
1415.500	12.24	37.00	41.08	.20	.11	.27	.28	1.33	.77
1415.750	12.24	37.60	41.75	.21	.08	.27	.29	1.36	.74
1416.000	12.12	41.41	45.70	.24	.23	.26	.27	1.36	.76
1416.250	12.03	44.47	48.82	.27	.27	.26	.25	1.42	.77
1416.500	12.01	45.52	49.93	.27	.17	.25	.22	1.53	.79
1416.750	12.00	46.82	51.33	.29	.08	.25	.23	1.59	.75
1417.000	12.00	42.68	46.80	.25	.15	.26	.25	1.72	.70
1417.250	11.99	40.62	44.51	.23	.08	.27	.25	1.49	.76
1417.500	11.99	37.22	40.78	.20	.07	.28	.27	1.40	.78
1417.750	12.00	32.85	36.00	.16	.25	.28	.31	1.09	.81
1418.000	12.07	30.42	33.48	.14	.12	.29	.32	1.13	.79
1418.250	12.08	29.56	32.54	.14	.01	.30	.30	1.02	.88
1418.500	12.10	30.07	33.14	.14	.01	.30	.28	.98	.94
1418.750	12.09	32.13	35.39	.16	.12	.29	.27	1.03	.94
1419.000	12.18	35.32	39.10	.19	.08	.29	.27	1.15	.87
1419.250	12.40	35.97	40.29	.20	.03	.29	.26	1.06	.90
1419.500	12.58	35.90	40.58	.20	.21	.29	.27	1.00	.90
1419.750	12.58	35.06	39.65	.19	.14	.29	.30	1.02	.84
1420.000	12.48	34.64	38.97	.19	.06	.29	.32	1.07	.78
1420.250	12.39	31.95	35.77	.16	.06	.30	.32	1.04	.79
1420.500	12.76	32.85	37.52	.18	.05	.30	.32	1.02	.80
1420.750	12.28	37.44	41.65	.21	.02	.29	.30	1.00	.82
1421.000	12.25	41.68	46.30	.25	.12	.28	.24	.96	.97
1426.500	12.72	42.08	47.94	.26	.40	.25	.20	1.77	.81
1426.750	12.68	37.34	42.44	.21	.30	.20	.16	1.60	1.00
1432.250	12.20	46.19	51.17	.28	.14	.28	.24	1.05	.89
1432.500	12.22	47.19	52.34	.29	.19	.27	.25	.96	.91
1439.000	12.13	45.21	49.91	.27	.49	.29	.30	1.15	.74
1439.250	12.16	28.94	32.00	.13	.41	.29	.33	1.26	.72
1439.500	12.17	25.87	28.62	.10	.26	.30	.32	1.34	.73
1439.750	12.22	26.16	29.02	.11	.14	.29	.31	1.28	.76
1440.000	12.23	25.07	27.82	.10	.17	.30	.35	1.25	.72
1440.250	12.29	24.81	27.62	.10	.17	.30	.35	.89	.84

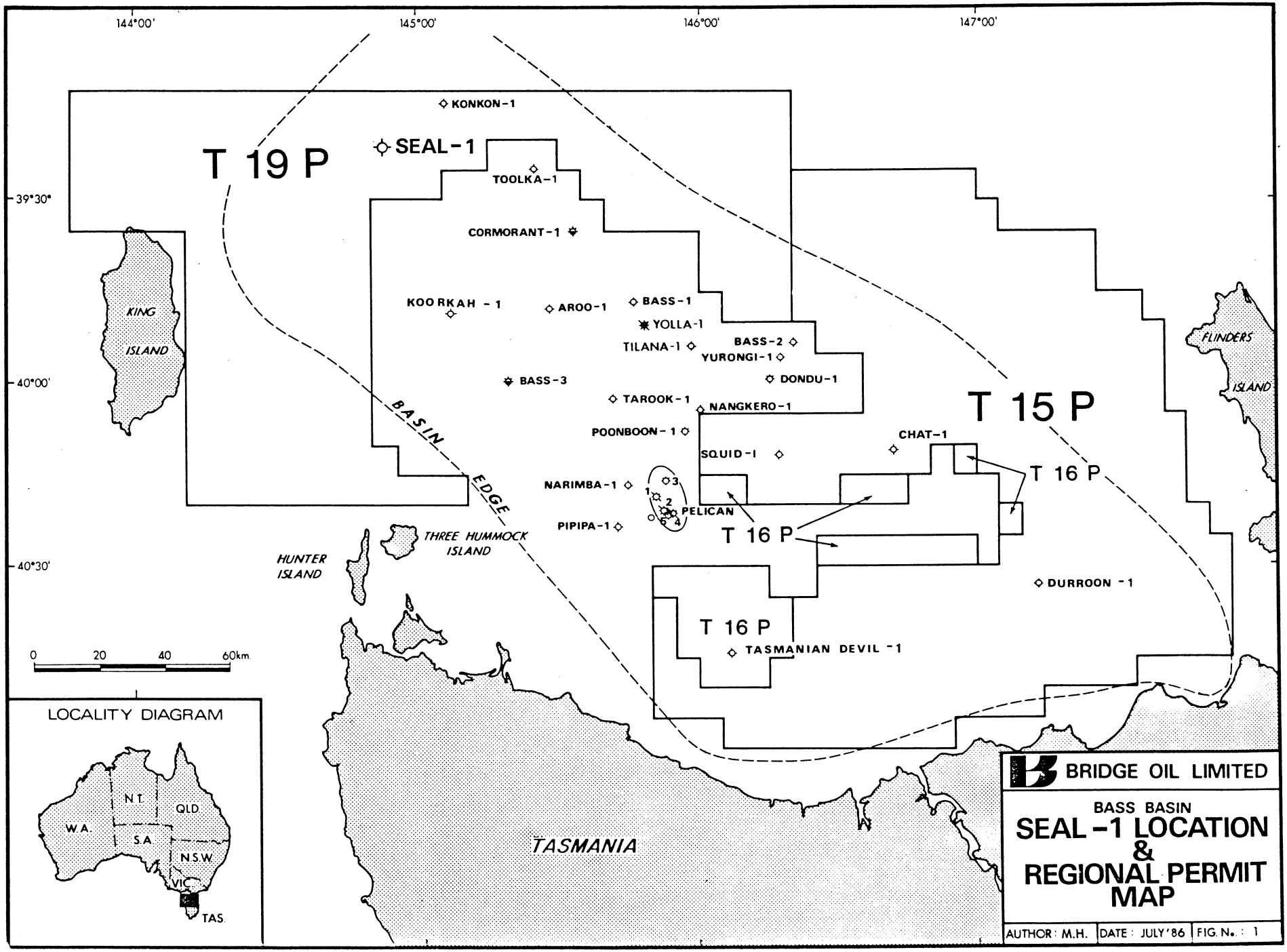
Interval 4 (1305 - 1440')

DEPTH	CALRES	GR-RES	GR-RHC	VSH-GR	VSH-SP	H/R.SC POR	N/D.SC POR	RT	SW-IND
1440.500	12.44	27.27	30.61	.12	.11	.30	.33	.81	.92
1440.750	12.53	32.10	36.21	.16	.11	.29	.34	.80	.86
1441.000	12.37	34.24	38.29	.18	.12	.28	.31	.80	.91
1441.250	12.58	35.00	39.59	.19	.08	.28	.28	.83	.96
1441.500	12.59	35.67	40.35	.20	.20	.27	.27	.94	.94

WELL NAME: SEAL #1
LOCATION: T-19P BASS BASIN
DATE: RIG RELEASED 21/2/86
E.V.C.M.,Paleocene Upper L.balmei 1590 - 1600m

DEPTH	CALRES	GR-RES	GR-BHC	VSH-GR	H/R.SC POR	N/D.SC POR	RT	SW-IND
1593.500	11.91	45.00	49.09	.27	.23	.22	1.81	.79
1593.750	11.83	39.29	42.68	.22	.24	.25	2.11	.69
1594.000	11.83	35.43	38.48	.18	.26	.26	1.97	.70
1594.250	11.84	28.34	30.80	.12	.28	.28	1.80	.73
1594.500	11.84	30.81	33.48	.14	.29	.26	1.65	.79
1594.750	11.85	31.02	33.74	.15	.29	.27	1.65	.77
1595.000	11.86	29.12	31.69	.13	.28	.26	1.48	.84
1595.250	11.86	29.43	32.03	.13	.28	.24	.73	1.00
1595.500	11.87	31.62	34.41	.15	.28	.25	.73	1.00
1595.750	11.90	33.86	36.93	.17	.28	.23	.92	1.00
1596.000	12.09	36.25	39.92	.19	.27	.22	.50	1.00

Interval 5 (1590 - 1600m) Parameters
Rw 0.095 at 65.9 deg C (37,000 ppm NaCl eq)
Vsh from GR-BHC,Rsh = 2.0 ohm
Porosity used - N/D.SCPOR


144°00'
145°00'
146°00'
147°00'
39°30'
40°00'
40°30'
KONKON-1
SEAL-1
T 19 P
TOOLKA-1
CORMORANT-1
KOORKAH - 1
AROO-1
BASS-1
YOLLA-1
TILANA-1
BASS-2
YURONGI-1
BASS-3
DONDU-1
TAROOK-1
NANGKERO-1
POONBOON-1
CHAT-1
SQUID-1
T 15 P
T 16 P
NARIMBA-1
PELICAN
PIPIPA-1
T 16 P
KING ISLAND
FLINDERS ISLAND
BASIN EDGE
THREE HUMMOCK ISLAND
HUNTER ISLAND
DURROON -1
T 16 P
TASMANIAN DEVIL -1
TASMANIA
0 20 40 60km
LOCALITY DIAGRAM
N.T.
QLD.
W.A.
S.A.
N.S.W.
VIC.
TAS.
BRIDGE OIL LIMITED
BASS BASIN
SEAL-1 LOCATION & REGIONAL PERMIT MAP
AUTHOR: M.H.
DATE: JULY '86
FIG. No.: 1

B1 - DRILLING DATA

DEPTH-TIME CURVE

FIG. 5

WELL SECTION	LITHOLOGY FORMATION	LITHOLOGY K.B.(m.)	REMARKS	DEPTH K.B.(m.)
10" 5" 0 5" 10"	RECENT	89·9	Scale 1:10,000	
	OLIGOCENE			
	E	837·5		
	E	885		
	EOCENE	1003·5		
	MIOCENE ? INTRUSIVES	1478		
	PALEO.	1590		
		1639		
		1670		

DAYS FROM SPUD: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

DEPTH K.B.(m.): 200, 400, 600, 800, 1000, 1200, 1400, 1600, 1800, 2000, 2200, 2400

- DRILL 26" HOLE
- PLUG Nº 2 125m to 230m
- 20" CASING SET AT 232·0m
- DRILL 17½" HOLE
- LOGGING
- 13⅜" CASING SET AT 642·0m
- BIT Nº 3
- PLUG Nº 1 592m to 692m
- DRILL 12¼" HOLE
- BIT Nº 4
- BIT Nº 5
- BIT Nº 6
- BIT Nº 7 (Repair compensator hoses.)
- LOGGING
- P & A
- TD 1670 m driller 1670 m logger

DATE: FEBRUARY 11 12 13 14 15 16 17 18 19 20 21 22 23

Well: SEAL-1

K.B.: 25·3m AMSL	Long: 144°52'52·700"E
W.D.: 64·6m	Contractor: ATWOOD OCEANICS
Shot point: 140 Line: PB 85-72	Rig: MARGIE
Lat: 39°21'48·979"S	Type: SEMI SUBMERSIBLE

DRILL STEM TESTS

No.	DETAILS
	NO DRILL STEM TESTS WERE PERFORMED.

CORES

No.	DETAILS
	NO FULL HOLE CORES WERE TAKEN. LOG SUITE Nº 2 RUN 3 30 SWC SHOT 26 RECOVERED

PRELIMINARY LOG ANALYSIS

LOG ANALYSIS INDICATED NO SIGNIFICANT HYDROCARBONS WERE PRESENT IN THE SECTION DRILLED.

BRIDGE OIL LIMITED

BRIDGE OIL LIMITED

DRILLING REPORT SUMMARY
AND MUD RECORD

WELL : SEAL NO. 1 **Page :** 1

Date	Depth 2400	Mud Wt	Mud Vis	Mud WL	Operations Summary
1986					
11-2	261				Seal No. 1 was spudded at 00:00hrs 11-2-86. Drilled 26" hole to 261m spotting 30bbls of high viscosity mud every 3 joints to keep hole clean. POOH to 105m, RIH, bridges at 129m and 226m, ream from 226m to 261m. Rigged up and ran 20" pile joint and casing. Hit bridge at 105m, worked casing through. 20" casing running tool leaking. Land casing on HWDP at 231m.
12-2	261				POOH with wear bushing, RIH with 20" running tool, screwed into wellhead and broke circulation with Halliburton unit and cemented casing with 850 sx of class "G" cement with 10% CaCl. followed by 300sx class "G" neat and displaced with 145 bbls of seawater. Nippled up the B.O.P. and ran it on the riser testing the choke and kill lines every second joint. Leaked on first connection so retrieved B.O.P. changed packing in choke and kill lines and reran B.O.P. Landed B.O.P. and tested with 50,000lbs overpull. Tested 20" casing to 500 psi against shear rams. Ran wear bushing.
13-2	656	8.8	40	n.c.	Made up and ran 17.1/2" BHA, tagged cement at 224m and broke circulation. Tested casing to 500psi with the rig pumps against the Hydril. Drilled cement and shoe to 232m. Washed and reamed to 261m and drilled 17.1/2" hole to 275m. Performed leak off test with Halliburton unit tested to 140psi which is equivalent to 12.5ppg. Drilled to 656m. Deviation surveys at 456m (1/2deg) and 656m (1/4deg). Circulated and conditioned mud. Pulled a wiper trip to the HWDP. RIH, no fill, POOH for Schlumberger. Schlumberger ran DIL-LSS-GR-SP-Cal. from 232m to 656m.
14-2	656	9.3	46	24.2	Rigged down Schlumberger. Rigged to run and ran 13.3/8" casing. Broke circulation with rig pump and circulated casing. Tested cement line leaking valve replaced. Cemented 13.3/8" casing with 225sks class "G" cement with 10% gel followed by 700sks of class "G" cement neat. Displaced using rig pumps, bumped plug with 2000psi and held for 5 minutes. Wash out wellhead and B.O.P. Set seal assembly and tested it and the B.O.P. to 5000 psi. Tested the Hydril to 3500psi.
15-2	1142	9.3	40	7.7	Tagged cement at 618m broke circulation and drilled plugs, float and cement to 623.5m. Tested 13.3/8" casing to 1500 psi with rig pumps. Drilled cement and shoe to 642m. Washed and reamed to 656m. Drilled 12.1/4" hole to 666m. Perform leak off test with Halliburton pump. Tested to 700psi with 9.5ppg mud (equivalent to 15.9ppg). Drilled 12.1/4" hole to 1142m. Deviation surveys at 859m (1/2deg) and 1067m (3/4deg). While drilling the pump pressure dropped by 200psi. Check pumps. Pooh wet for washout.
16-2	1481	9.4	40	5.4	Crack in crossover to HWDP. Changed cross over and continued out of the hole to change the bit. Made up and RIH with bit no. 4 to 1122m. Broke circulation and washed and reamed down to 1142m. Drilled 12.1/4" hole to 1481m. Deviation surveys at 1261m (1deg) and 1481m (1/2deg). POOH to change bit. Intermittent tight hole to 1237m with 125,000 lbs overpull and hole swabbing. Circulated 10mins. RIH to 1467m and circulated bottoms up. Pumped a slug and POOH with minor drag to 1253m.
17-2	1537	9.3	40	5.4	POOH and changed bit. RIH with bit no. 5 to 1460. Broke circulation and washed and reamed to 1481. Drilled 12.1/4" hole to 1537m. POOH to change bit. Tight hole at 1471m to 1237m, worked pipe through. RIH with 12.1/4" bit to shoe and circulate while cutting and slipping the drill line.

BRIDGE OIL LIMITED

DRILLING REPORT SUMMARY
AND MUD RECORD

WELL : SEAL NO. 1 **Page :** 2

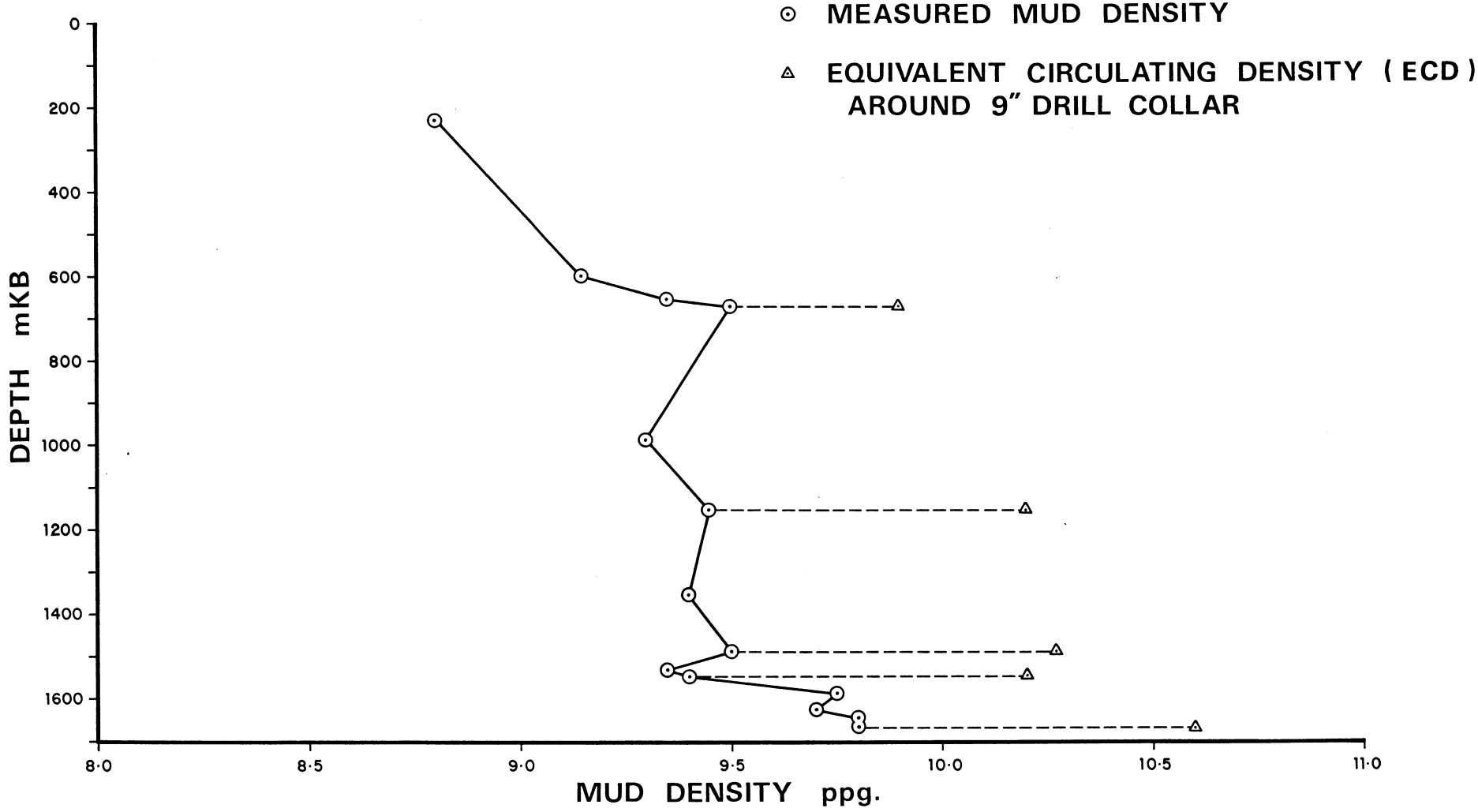
Date	Depth 2400	Mud Wt	Mud Vis	Mud WL	Operations Summary
1986					
18-2	1626	9.7	40	5.0	Continued to RIH to 1510m. Broke circulation and washed and reamed to 1537m. Drilled 12.1/4" hole to 1610m (PTD) and circulated a sample out for the geologist. Drilled 12.1/4" hole to 1626m. POOH to 924m and circulated through chicksans while repairing compensator hoses which were blown by high winds into lower carriage wheels.
19-2	1670	9.8	37	5.1	Disconnected motion compensator, pumped slug and continue to POOH. Made up and RIH bit no. 7 to 13.3/8" shoe and broke circulation. Reparied motion compensator. RIH to 1614m reamed and washed to 1626m. Drilled 12.1/4" hole to 1670m. Deviation survey at 1670 (1.1/4deg).
20-2	1670 (PB 592)				Pumped slug and POOH. Rigged up and ran Schlumberger logs. Schlumberger ran DIL-MSFL-LSS-GR-SP-Cal, from 644m to 1668.5 LDL-CNL-GR-Cal, from 644m to 1669m and CST-GR from 865m to 1665m. RIH with open-ended DP to 692m, circulated and set cement plug no. 1, using 350sx class "G" cement mixed with seawater, with a slurry weight of 16ppg from 692m to 592m. POOH laying down drill pipe.
21-2	1670 (PB 125.)				Recover bore protector. Pressure test Plug No. 1 against shear rams to 1000psi. RIH with OEDP and set Plug No. 2 from 230m to 125m, with 250sx class "G" cement mixed with seawater, with a slurry weight of 16ppg. Rig released 06:00hrs 21-2-86.

Seal No.1 Time Breakdown

ACTIVITY	HOURS	PCT
Drilling	85.50	33.6
Reaming	11.00	4.3
Condition Mud & Circ.	9.50	3.7
Trips	60.50	23.7
Repair Rig	6.00	2.3
Cut Drilling Line	2.00	0.8
Dev. Survey	2.50	1.0
Wireline Logs	15.50	6.2
Run Csg & Cement	34.50	13.5
Nipple up & run B.O.P.	16.50	6.5
Test B.O.P. & Csg	3.50	1.4
Plug Back	1.50	0.6
Run T.G.B.	1.50	0.6
Drill Cement	3.50	1.4
Leak off Tests	1.00	0.4
Total Hours:	**254.50**	**100.0**

FIG. 6

SEAL Nº1
MUD DENSITY vs. DEPTH



Seal No.1 Mud Materials Inventory

MATERIAL	TOTAL USED	
Bulk Barite	155.00	sacks
Bulk Gel	163.00	sacks
Sack Gel	121.00	sacks
Sack Barite	150.00	sacks
Caustic	94.00	drums
Bicarb	45.00	sacks
CC-1b	155.00	sacks
Lime	6.00	sacks
Dextrid	195.00	sacks
Soltex	51.00	sacks
Nitrate	2.00	sacks
Caustic 70kg	1.00	drums
Spersene	65.00	sacks
Desco.	33.00	sacks

B1.2 Seal No 1 Bit Record

NO.	SIZE	MAKE	TYPE	JETS	DEPTH IN	DEPTH OUT	TOTAL METRES	TOTAL HOURS	T:B:G
1	26"	Varel	L3A	22:22:22	91	261	170	7.5	1:1:0
2RR	17.1/2"	HTC	3AJ	16:16:16	261	656	395	7.5	2:7:0
3	12.1/4"	SMITH	SDS	14:14:14	656	1142	486	17.0	7:6:1/4
4	12.1/4"	HTC	J2	14:14:14	1142	1481	339	13.5	7:4:3/16
5	12.1/4"	HTC	JD3	14:14:14	1481	1537	56	13.0	7:6:1/8
6	12.1/4"	HTC	JD8	14:14:14	1537	1626	89	16.0	2:5:3/16
7	12.1/4"	HTC	JD3	14:14:14	1626	1670	44	11.0	7:6:1/8

B1.3 Seal No. 1 - Deviation Surveys

Depth = mKB	Angle degrees	
261	1/4	.25
456	1/2	.5
656	1/4	.25
859	1/2	.5
1067	3/4	.75
1261	1.0	
1481	1/2	.5
1670	1.1/4	1.25

B1.4 Water Supply

Drill water and potable water were transported from Port Welshpool to the rig via workboat. Some potable water was produced on board using a reverse osmosis watermaker distillation unit.

B1.5 Rig Equipment Listing

The following is an inventory for the Atwood Oceanics semi-submersible rig 'Margie'.

MARGIE
DRILLING RIG EQUIPMENT

1) VESSEL DESCRIPTION

A) General

1) The MARGIE is a twin hull, column stablized, semisubmersible, non-self propelled drilling vessel with the capability of conducting safe and efficient drilling operations in 100 to 600 feet of water.

B) Principal Characteristics

1) Year built: 1974

2) Non-self-propelled

3) Minimum tug/tow horsepower required for ocean tow:-

(a) Single ocean tug of minimum 7500 BHP
(b) Tug/Supply vessels of combined minimum 9,000 BHP

4) Average tow speed:-

(a) With 7,500 BHP: 3.6 knots
(b) With 10,000 BHP: 4.2 knots

5) Water depth capability: 600 feet

6) Minimum water depth: 100 feet

7) Country of registry: Panama

8) Gross registered tonnage 6,353 admeasurement tons (100 cu. ft.).

C) Classification

1) The vessel is classed by American Bureau of Shipping as a 'Maltese Cross' A-1M Column Stabilized Drilling Unit.

MARGIE

DRILLING RIG EQUIPMENT

I. VESSEL DESCRIPTION

A. General

1. The MARGIE is a twin hull, column stabilized, semisubmersible, non-self-propelled drilling vessel with the capability of conducting safe and efficient drilling operations in 100 to 600 feet of water.

B. Principal Characteristics

1. Year built: 1974

2. Non-self-propelled

3. Minimum tug/tow horsepower required for ocean tow:-

   a) Single ocean tug of minimum 7,500 BHP

   b) Tug/supply vessels of combined minimum 9,000 BHP

4. Average tow speed:-

   a) With 7,500 BHP: 3.6 knots

   b) With 10,000 BHP: 4.2 knots

5. Water depth capability: 600 feet

6. Minimum water depth: 100 feet

7. Country of registry: Panama

8. Gross registered tonnage 6,353 admeasurement tons (100 cu. ft.)

C. Classification

1. The vessel is classed by American Bureau of Shipping as a "Maltese Cross" A-IM Column Stabilized Drilling Unit.

II. PRINCIPAL DIMENSION

A.	Length	202 ft.
B.	Breadth	182 ft.
C.	Height to Main Deck	110 ft.
D.	Lower Hull (each)	L/202' x W/32' x D/30'
E.	Upper Platform	L/186' x W/150' x D/14'
F.	Stabilizing Columns, Diameter	
	1. Principal	32 ft.
	2. Intermediate	10 ft.
G.	Operating Draft	50 ft.
H.	Air Gap	41 ft.
I.	Displacement at 50'	13,100 ft.
J.	Ocean Towing Draft	29' 3"
K.	Displacement at 28 ft.	10,450 L.T.
L.	Location Move Draft	35 ft.
M.	Displacement at 35 ft.	11,300 L.T.

III. VARIABLE CAPACITIES

A.	Variable Load, Upper Platform	1,603 L.T.
B.	Fuel	9,600 BBLS
C.	Drill Water	9,600 BBLS
D.	Potable Water	700 BBLS
E.	Bulk Tanks	11,200 CU. FT. (7 tanks, 1600 cu.ft. ea.)
F.	Liquid Mud	1,850 BBLS
G.	Sack Storage	2,000 SQ. FT.
H.	Tubulars Stowage	8,500 SQ. FT.
I.	Storerooms	800 SQ. FT.
J.	Lube Oil	7 L.T.

IV. LIVING QUARTERS

A. Airconditioned quarters for 100 men

B. Two (2) galleys and mess room facilities

C. Hospital with four (4) berths

V. HELIPORT

A.	Dimensions	72 ft. diameter
B.	Load Capacity	Capable of supporting an S-61 helicopter

VI. COMMUNICATIONS EQUIPMENT AND METEOROLOGICAL INSTRUMENTS

A. Communications Equipment

1. Single side band radio
2. VHF-FM transceiver
3. Aeronautical VHF-FM transceiver
4. Sound powered telephone
5. PA system
6. Lifeboat radio (portable)

B. Meteorological Instruments

1. Anemometer
2. Barometer
3. Thermometer

VII. POWER SYSTEM

A. Diesel

1. 6625 total HP five (5) Caterpillar D-399 TA, 1325 HP each.

B. Generators

1. Two (2) 1750 EW, 600 volt AC, one (1) 930 KW, 600 volt AC.

C. D.C. Distribution

1. Six (6) GE 1200 AMP SCR Units for D.C. drilling motors and D.C. mooring windlass motors.

D. A.C. Distribution

1. Two (2) 1,000 KVA 600/480 V. transformers with 480 V. distribution boards and motor control centers for ship service.

E. Emergency Generator

1. One (1) 250 KW, 480 volt diesel generator set.

VIII. VESSEL MOORING SYSTEM

A. The mooring system is an eight (8) point chain arrangement comprised of the following equipment:-

1. Four (4) National Model D-506-E double wildcat windlass units, for 2-3/4" stud link anchor chain.

a) Each unit driven by a G.E. Model 752 D.C. motor.

b) Line pull approximately:-

(1) 500,000 lbs at 40 ft. per min.

(2) 120,000 lbs at 90 ft. per min.

(3) 760,000 lbs max. brake cap.

B. Eight (8) mooring lines, each 3,500 ft. of 2-3/4" diameter flashwelded stud link oil rig quality mooring chain with ABS certification.

C. Eight (8) 33,000 lbs. BALDT LWT anchors, modified for enlarged flukes.

D. Eight (8) National 2-3/4" rotating chain fairleaders.

E. Eight (8) sectionalized pendant lines, 2-1/4" diameter wire rope, 6 x 25IPS, IWRC, of required length for 600 ft. water depth.

F. Eight (8) pendant line buoys, each approximately 58" diameter, 10' length.

G. One Martin Decker Dynaline mooring line tensioning and indicating system, with eight (8) channel recorder.

H. Spares

1. Two (2) spare 33,000 lbs. LWT anchors.

2. Pendant wires and sockets as required.

3. Two (2) spare pendant buoys.

I. Emergency release for brake and chain stopper: A system comprising hydraulic units and fitted to each windlass and chain stoppers allowing the vessel to be released and moved off location, located in the toolpusher's office.

IX. ENVIRONMENTAL CONSERVATION EQUIPMENT

X. MISCELLANEOUS VESSEL EQUIPMENT

A. Survival Equipment

1. Lifeboats - two (2) Watercraft 44 man and one (1) Watercraft 23 man self-propelled enclosed lifeboat.

2. Liferafts - six (6) R.F.D. 25 man.

B. Pedestal Mounted Cranes

1. Two (2) Link Belt Model ABS 238 revolving cranes with 100 ft. booms.

2. Typical lift capacity: 42,500 lb. at 60 ft. radius

C. Water Distillation Units

1. Rochem Reverse Osmosis Watermaker to produce 13,000 gallons per day.

D. Vessel System

1. Piping

a) Fire and washdown systems.

b) Bilge and ballast systems.

c) Sanitary system.

d) Portable water system.

e) Drilling water system.

f) Fuel oil system.

g) Engine exhaust systems.

h) Compressed air system.

i) Salt water supply.

j) Sanitary drain.

k) Airconditioning circ. water.

l) Bulk mud and cement storage piping.

m) Brake cooling water.

n) Lube oil system.

o) Two (2) centrifugal fuel oil systems.

p) High and low-pressure mud system.

q) Heliport fixed foam fire system.

r) Fixed CO_2 fire system.

s) Hydraulic systems.

t) Helicopter refueling system.

2. Ventilation in Hull Compartments

a) All machinery force draft ventilation.

b) All mud pit spaces exhaust ventilation.

c) Pump room exhaust ventilation.

d) Cementing and chemical room force draft.

e) Shops force draft.

3. Lighting

a) All mud pit spaces provided with explosion-proof lighting system.

b) All machinery spaces provided with marine-type lighting system.

c) All deck areas provided with marine lighting system.

E. Instrumentation

1. The vessel is equipped with instrumentation required to measure the following:-

a) Wind speed and direction indicator.

b) Vessel roll, pitch and heave.

c) Mooring line tensions.

d) Riser ball joint angle.

e) Hole position indication.

f) Stability/Helm Computer: Compaq Portable 256K with single disc drive 360 KB, single hard disc 10 MB, memory 384 KB.

XI. DERRICK AND SUBSTRUCTURE

A. Derrick and Accessories

1. Continental-Emsco Beam Leg Derrick 157' high, 40' x 40' base, 15' x 15' top, completely bolted with A325 and Anco Lock Nuts, having two (2) 70' high "V" doors, 1,000,000# hook load capacity with 12 lines (1,400,000# gross nominal capacity). Derrick includes legs, lacing, header beams, base plate assembly, ladder, bolts, gin pole.

2. Derrick designed with low temp steel (A572 normalized) in water table beams, racking fingers and intermediate racking fingers.

3. Derrick galvanized or zinc rich primer.

4. Crown platform with flooring and handrails. Galvanized.

5. Gin pole platform with flooring and handrails and ladder. Galvanized.

6. Racking platform, heavy duty, for 15,000' of 5' drill pipe and 10 stands 8" OD drill collars. Platform includes hinged fingers, provisions for locking individual stands in positions, and derrickman's working platform. Galvanized.

7. Traveling block guide system, consisting of guide beams extending from crown to 10' above floor, stabilizing beam bracing to guide beams, Dolly (skate) and material for attachment to travelling block. Galvanized and zinc rich primer.

8. Intermediate platform with hinged fingers for locking each row of drill pipe in position and working platforms. Galvanized.

XII. DRILLING EQUIPMENT

A. Drawworks: National 1320-UE driven by 2-GE 752 DC motors with Dretech Brake Model 9650 and Model 6300 control. Complete with Crown-a-matic.

B. Drill Line: 7500' x 1-3/8", 6 x 19, IPS, IWRC.

C. Sandline: 20,000 x 9/16", 6 x 7 galvanized wire rope.

D. Wireline Unit: Mathey MCL 2-325-00 wireline unit w/20,000 ft. of .092 wire.

E. Mud Pumps and Prime Movers: Two (2) National 12-P-160 triplex, 1600 HP each driven by two (2) GE-752, 700 HP DC motors.

F. Rotary Table: National Model C-375, 37-1/2" independent drive rotary complete with GE 752R drive motor.

G. Master Bushings: Varco "MPCH" hinged pin drive master bushing, P/N 6600, complete with API No. 1, 2 and 3 split insert bowls.

H. Split Bushings: Varco 20" CB split casing bushing for 37-1/2" National rotary.

I. Kelly Bushing: Varco "27 HDP" Kelly bushing for 6" square kelly.

J. Crown Block: National Model 750-5, 550 ton capacity, seven (7) sheaves grooved for 1-3/8" line.

K. Traveling Block: National Model 660-G-500 Block, with six (6) sheaves grooved for 1-3/8" line, 500 ton capacity with B.J. 6500 Dynaplex hook with positioner.

L. Motion Compensator: N.L. Shaffer Model 18/400 with 18 ft. compensation stroke. 400,000 lb. compensation hook capacity of 2,300 psi, over 300 ft. per min. response speed. Locked capacity of 1,000,000 lbs.

M. Swivel: National P-500, capacity 500 ton.

N. Rotary Hose: Two (2) each, installed in derrick, 3-1/2" E.D., 65' wire braid, 7,500 psi test with 4" male thread coupling.

O. Weight Indicator: One (1) Martin Decker AWE 6-20 complete with E-80 sensator for use with 1-3/8" drill line.

P. Pipe Handling System: B.J. Hughes Telescopic Racker Arm.

Q. Spinning Wrench: Varco Model 10, with rollers for 5" O.D. and 3-1/2" O.D.

R. Kelly Spinner: International.

S. "Ezy Torq": Drilco unit with 10 HP motor.

T. Recorder: One (1) Totco drilling recorder. Six (6) pens for penetration, weight, pump pressure, torque (electricity) rotary rpm and pump rated for two (2) pumps alternately.

U. Control Valves:-

1. Inside BOP: Flocon, with 6-1/2" O.D. and 4-1/2" I.F. connections, P/N 700053-H trimmed for hydrogen sulphide.

2. Lower Kelly Valves: Two (2) Hydril P/N 10088.80-1, 7" O.D. x 3-1/4" bore - 7,500 psi test, 5,000 psi working pressure w/4-1/2" I.F. connections Box X pin trimmed for hydrogen sulphide service.

3. Upper Kelly Valves: Two (2) each Omsco 15,000 psi test, 10,000 psi working pressure.

4. Drop-in Back Pressure Valve: One (1) Hydril 3-1/4" I.D. x 6-1/2" O.D. sub with 4-1/2" I.F. tool joints and No. 13 plug.

V. Circulating Head:-

1. One (1) Model 4-SC King Super "C" with 4" P.T. up and 4-1/2" I.F. pin down.

W. Wireline Stripper:-

1. One (1) Model 4-AR King for 9/16" wire.

XIII. DRILL STRING HANDLING TOOLS

A. Tongs, slips, elevators, links for 5" O.D. drill pipe, 9-1/2", 8-1/4" and 6-1/2" O.D. drill collars (including zip lift accessories) as listed below:-

1. Tongs

   a) One (1) set (2) B.J. type "SDD" tongs complete with jaws - range 4-1/2" - 12".

   b) One (1) set (2) Web Wilson "AAX" tongs complete with jaws - range 3-1/2" - 21".

2. Slips

   a) Two (2) Varco "SDX-L" slips for 5" O.D. drill pipe.

   b) One (1) Varco "DCS-R" drill collar slips, range 5-1/2" - 7".

   c) One (1) Varco "DCS-L" drill collar slips, 9-1/2".

   d) One (1) Varco "DCS-L" drill collar slips, range 8" - 8-1/2".

3. Elevators

   a) Two (2) B.J. type "GG" elevators for 5" O.D. drill pipe.

   b) Two (2) B.J. type "SLA-100" elevator for 8-1/4" O.D. zip groove drill collars.

   c) Two (2) B.J. type "SLA-100" elevator for 6-1/2" O.D. zip groove drill collars.

   d) Two (2) B.J. type "SLA-100" elevator for 9-1/2" O.D. zip groove drill collars.

4. Safety Clamps

   a) One (1) Varco "MP-R" safety clamp, range 5-1/2" - 7".

   b) One (1) Varco "MP-R" safety clamp, range 8" - 9-1/4".

   c) One (1) Varco "MP-R" safety clamp, range 9-1/4" - 10-1/2".

5. Links

   a) One (1) set 2-3/4" x 132" B.J. weldless links.

   b) One (1) set 3-1/2" x 144" B.J. weldless links.

6. Zip Life Accessories

   a) One (1) B.J. drill collar adapter with 4-1/2" shank.

   b) One (1) set (2) B.J. 1-3/4" x 36" perfection links.

B. Bit Breakers

1. Bit breakers for bit sizes 26", 17-1/2", 12-1/4", 8-1/2" and 6".

C. Air Tuggers

1. Two (2) K6UL and two (2) K4UL on drill floor: Four (4) Model K4UL around drill well.

XIV. MUD EQUIPMENT

A. Mud Tanks

1. Active and reserve tanks, with 50-barrel slugging pit.

2. Sand trap, approximately 200-barrel capacity.

3. Trip tank, 20-barrel capacity.

B. Mud Mixing Pumps - Two (2) Mission 6 x 8R centrifugal pumps, driven by 75 HP explosion-proof electric motors.

C. Shaleshaker - Brandt dual solids control package consisting of one (1) Model 102, dual separator.

D. Desander - One (1) Demco Model 123 with three (3) 12" cones.

E. Desander Pump - One (1) Mission 6 x 8R centrifugal pump driven by 75 HP explosion-proof electric motor.

F. Desilter - One (1) Demco Model 414-H with twelve (12) 4" cones.

G. Desilter Pump - One (1) Mission 6 x 8R centrifugal pump driven by 75 HP explosion-proof electric motor.

H. Degasser - Wellco Model 5200. Mounted on sand trap.

I. Degasser Pump - One (1) Mission 6 x 8R with 75 HP AC motor.

J. Equalizing line with valves between degasser and desander pits.

K. Mud Gas Separator - Tank 30" diameter x 23' in height.

L. Mud Agitators:-

1. Four (4) lightnin mud mixers, Model 75-Q-5, driven by 20 HP explosion-proof electric motor. Mounted on active and reserve tanks.

2. One (1) Lightnin mud mixer, Model 72-Q-5, 5 HP, mounted on slugging tank.

M. Pit Level Indicator - Martin Decker 4-float with alarm recorder and pit volume totalizer.

N. Mud Testing Facilities - Baroid Model 821 Mud Lab. Basic kit for viscosity, filtration, weight and titration.

O. Flowline from slip joint.

P. Manifolding to cement surge tank to permit mixing barite plug at cementing unit.

Q. Gas Detection - Mines Safety Appliance Model 1-500 with four (4) terminal sensors.

R. Mud Saver Bucket - MG-600 Oteco for 5" DP.

S. Two (2) Demco 0612 Model 612B Mud Hoppers.

T. Bulk transfer system by Automated Valve Specialities. Controlled by panel in sack storage room with air-operated valves.

U. Surge Tanks - One (1) 220 cu. ft. and two (2) 70 cu. ft. and one (1) 160 cu. ft. bulk loading tank.

XV. DRILL STRING

A. Drill Pipe:-

1. 10,000' - 5" O.D. Grade E, 19.5 lb./ft. Range 2 drill pipe with 4-1/2" I.F. x 6-3/8" O.D. 18-degree taper, non-hard banded, tool joints.

2. 5,500' - 5" O.D. Grade G, 19.5 lb./ft. Range 2 drill pipe, with 4-1/2" I.F. x 6-3/8" O.D. 18-degree taper, non-hard banded, tool joints.

3. 3,000' - 3-1/2" O.D., Grade E, drill pipe; with 4-3/4" O.D. tool joints with 3-1/2" I.F. box and pin connections.

4. Twenty-five (25) joints 5" O.D. x 30' length x 48 lb./ft. Drilco Hevi-wate drill pipe.

B. Drill Pipe Pump Joints:-

1. One (1) each 5" drill pipe pup joints 7', 12' and 20' long.

2. Two (2) each 5" grade G105 drill pipe pump joints 5' and 10' long.

C. Drill Collars:-

1. Three (3) 9-1/2" O.D. x 3" I.D. x 31' long collars with 7-5/8" API regular box and pin connectors. Zip grooved for slips and elevators.

2. Twenty-four (24) 8-1/4" O.D. x 2-13/16" I.D. x 31' long collars with 6-5/8" I.F. box and pin connections. Zip grooved for slips and elevators.

3. Thirty (30) 6-1/2" O.D. x 2-13/16" I.D. x 31' long collars with 4-1/2" I.F. box and pin connections. Zip grooved for slips and elevators.

4. Twenty-five (25) 4-3/4" x 2-1/4" I.D. x 31' long drill collars w/3-1/2" I.F. connections with zip groove slip and elevator recess.

D. Kelly: Two (2) 6" square x 54' overall length.

E. Subs and Bit Subs:-

1. Two (2) Drilco type NS Lift Subs for 9-1/2" collars, 9-1/2" O.D. 36" long, 7-5/8" API regular pin down and top end to fit 5" O.D. 18-degree taper elevators.

4. Two (2) Drilco Bit Subs, 9-1/2" O.D. x 3" I.D., 7-5/8" API reg. box x 6-5/8" API reg. box, bored for 5FGR float x 48" long.

5. Two (2) Drilco Bit Subs, 9-1/2" O.D. x 3" I.D. x 48" long 7-5/8" API reg. box up x box down, bottom bored for 5FGR float.

6. Two (2) Bit Sub for 8" O.D. collars, 8" O.D. x 36" long, 6-5/8" API regular box each end with one end bored for Baker 5F6R float valve.

7. Two (2) Bit Sub for 6-1/2" O.D. drill collars, 6-1/2" O.D. x 36" long, 4-1/2" I.F. box up and 4-1/2" API regular box down bored for Baker 4R float valve.

8. Two (2) Bottleneck Crossover sub, 8" O.D. collars to 9-1/2" O.D. collars, 8" x 9-1/2" x 48" long, 6-5/8" API regular box up to 6-5/8" API regular pin down.

9. Two (2) Bottleneck Crossover Sub, 6-1/2" O.D. collars to 8" O.D. collars, 6-1/2" O.D. x 8" O.D. x 48" long, 4-1/2" I.F. box up to 6-5/8" API regular pin down.

10. Two (2) Drilco Crossover Subs (from 8" drill collars to 5" drill pipe) 8" O.D. x 2-13/16" I.D. x 48" long, 6-5/8" I.F. box up x 4-1/2" API pin down, 6-3/8" O.D. fishing neck.

11. Two (2) Bottleneck Crossover Sub, 6-1/2" O.D. collars or pipe to 9-1/2" O.D. drill collars, 6-1/2" O.D. x 9-1/2" O.D. x 48" long, 4-1/2" I.F. box up to 7-5/8" API regular pin down.

12. Three (3) Throwaway Kelly Saver Subs, 6-1/4" O.D. x 12" long, 4-1/2" I.F. box and pin connections.

F. Bumper Subs:-

1. Two (2) Baash Ross, 8-1/4" O.D. 60" long stroke splined bumper subs, with 6-5/8" API regular connections.

2. Two (2) Baash Ross, 6-1/2" O.D. 60" long stroke splined bumper sub, with 4-1/2" I.F. connections.

3. One (1) Bowen fishing bumper sub each for contractor's 8-1/4" and 6-1/2" O.D. drill collar strings.

XVI. BLOWOUT PREVENTERS, SUBSEA EQUIPMENT AND CONTROL EQUIPMENT

A. Diverter System:-

1. Regan KFDS diverter system with two (2) 12" outlets capable of containing 100 psi pressure and equipped with hydraulically operated seals. Diverter lines will be 12" with line blind/air-operated valves to divert well returns to lines that extend to the port and starboard.

   The diverter is controlled by a hydraulic diverter control to supply hydraulic pressure to KFD bag, insert latch and riser support latch, all being controlled from the master control panel.

2. Thirty-inch (30") Cameron hydraulic pin connector with 20-3/4" x 2,000 psi No. 18 clamp hub with extra deep RX-73 ring groove.

B. 18-3/4" 10,000 psi WP blowout preventer stack enclosed in a four (4) post guide frame, arranged as shown in the schematic "Blowout Preventer Arrangement" inserted as "Figure 1" and consisting of the following:-

1. Riser adapter, 20" Vetco, MR4B box up x No. 16 clamp hub down with RX-73 ring groove.

2. Two (2) Vetco 20" nom. single ball flex joint, pressure balanced, 10 degrees maximum deflection, with No. 16 clamp hubs top and bottom, RX-73 stainless steel ring grooves and 18-3/4" I.D. replaceable wear bushings.

3. Riser connector, Cameron, 20-3/4" 2,000 psi collet connector with No. 16 clamp hub top with RX-73 ring groove.

4. Connector Mandrel, 20-3/4", 2,000 psi AX hub top and 18-3/4", 5,000 psi flange bottom, BX-163 ring groove.

5. Hydril, 18-3/4", 5,000 psi type "GL" dual annular blowout preventer trimmed for hydrogen sulphide service. 18-3/4" 5,000 psi 6BX studded top, BX-163 groove, and No. 27 clamp hub bottom BX-164 groove.

6. Cameron triple type "U" ram type 18-3/4", 10,000 psi blowout preventer trimmed for hydrogen sulphide service with No. 27 clamp hubs top and bottom and two (2) 3-1/8" 10,000 psi No. 5 clamp hub outlets below each ram. Upper ram equipped with shear rams and lower two with 5" pipe and 3-1/2" to 7-5/8" variable pipe rams.

7. Cameron single type "U" blowout preventer, 18-3/4" 10,000 psi trimmed for hydrogen sulphide service with No. 27 clamp hubs top and bottom and two (2) 3-1/8" 10,000 psi No. 5 clamp hub outlets, (equipped with 4" pipe rams).

C. BOP Kill and Choke Line System Trimmed for Hydrogen Sulphide Service:-

1. Master Valves: Three (3) McEvoy 10,000 psi WP 3-1/16" valves with fail safe closed operators and 6BX flange connections.

2. Operating Valves: Three (3) McEvoy 10,000 psi WP 3-1/16" valves, with double acting operators and 6BX flange connections.

3. Outlet Location: Choke Line outlet under middle pipe and bottom pipe rams.

   Kill Line outlet below shear rams.

   All other outlets to be non-machine bored and capped with blind flanges with hub clamps and BX-154 ring grooves.

4. BOP Choke and Kill Lines: 10,000 psi WP 3-1/8" spools.

5. Ball Joint Jumper Connections: WECO 3", 10,000 psi WP Chiksan all welded steel hose assembly with style 50-10-50 long sweep Tri-Race Swivel joints or equivalent flex hose.

D. BOP Guidance System:-

1. Four-post and funnel section BOP frame on 6" radius centers complete with reinforcement and guide funnels as required. Funnels and posts slotted for guide wire installations, internally ground and complete with retaining doors. Frame attachment at lower Hydril and lower Cameron connector.

2. Four-funnel upper section BOP frame on 6" radius centers complete with reinforcement as required. Funnels slotted for guide wire installation, internally ground and complete with retaining doors. Frame attachment at upper Cameron connector.

3. Two arm guide frame for remote stabbing of BOP hydraulic pods.

E. Miscellaneous Equipment Items:-

1. Installed in BOP:-

a) Two (2) sets 5" rams complete with long life ram rubbers certified for hydrogen sulphide service.

b) One (1) set shear rams complete, certified for hydrogen sulphide service.

c) One (1) set 3-1/2" - 7-5/8" variable bore rams for CIW 10,000 psi WP 18-3/4" type "U" BOP.

d) Two (2) Hydril dual bag elements.

F. BOP Drillwell Guidance System:-

1. Four (4) Air Tuggers on drillwell deck.

G. BOP Cart System:-

1. One (1) cart skid system to facilitate stowage of BOP in one section and designed to transport BOP over the drillwell.

H. Marine Conductor:-

1. Riser: Vetco 20" O.D. x 0.50" wall, x-52 52,000 psi yield, steel with Vetco MR4B connectors. Integral choke and kill lines, 4" O.D., x-52 or equivalent, 10,000 psi WP, permanently attached to riser joints. Integral choke and kill lines certified for hydrogen sulphide service. Fourteen (14) 50' lengths and one (1) each pup joints or 5', 15', 20' and 30'.

2. Complete set riser handling tools.

3. One (1) spare riser connector.

I. Slip Joint:-

1. One (1) each Vetco 20" slip joint, 45' stroke. Material of slip joint x-52 inner and outer barrel with 4" XX x-52 kill and choke lines certified for hydrogen sulphide service.

Packing gland will be of dual packoff design and be capable of element replacement without cutting inner barrel. Rotating tensioner support ring and provide 6-point suspension.

2. One (1) replacement slip joint with kill and choke lines certified for hydrogen sulphide service.

J. Choke and Kill Hoses Certified for Hydrogen Sulphide Service:-

1. Three (3) each 2-1/2" I.D. x 45' long, 15,000 psi test pressure, 10,000 psi WP, rotary hose. Two (2) hoses installed and one (1) hose will be maintained in inventory as spare equipment.

K. Marine Riser Tensioning System:-

1. Six (6) Rucker Model XL tensioner units, each 60,000 lbs. line load capacity, 30' line travel.

2. Six (6) 42" diameter sheaves for 1-1/2" wire line.

3. Nine (9) 275 gallon air receivers and one (1) 140 gallon air receiver (for supply also to guideline tensioners).

4. Control Panel.

5. Wire line, size 1.1/2".

L. Guideline Tensioning System:-

1. Six (6) Rucker Model RED-6-7.5-A/B-.75 tensioner unit, each 14,000 lbs. line load capacity, 30' line travel.

2. Six (6) 24" diameter sheaves for 3/4" wire line.

3. Compressed air system incorporated in riser tensioning system.

4. Control Panel.

5. Wire line, size 3/4".

M. BOP Control Pod Tensioning System:-

1. Two (2) Rucker - 14,000 lbs. tensioner units.

2. Two (2) 24" diameter sheaves for 3/4" wire lines.

3. Compressed air system incorporated in riser tensioning system.

4. Control Panel incorporated in guideline control panel.

5. Wire line, size 3/4".

N. BOP Accumulator Unit:-

Valcon air-electric powered accumulator unit comprising:-

1. Two (2) air-operated pumps (5.1 gpm. each @ 3,000 psi with 120 psi air pressure).

2. Two (2) electric-driven 20 HP triplex pumps each with 8.85 gpm output at 3,000 psi.

3. 250 gallon fluid reservoir with automatic fluid control, warning whistle, and sight glass.

4. Hydraulic fluid mixing system capable of mixing fluid at rate equivalent to combined output of all pumps.

5. Hydraulic fluid concentrate reservoir of 100 gallons capacity, equipped with sight glass.

6. Low-level alarms for fluids reservoirs.

7. BOP surface accumulator, capacity of 796 gallons consisting of four (4) 100 gallon and thirty-six (36) 11 gallon 3,000 psi WP accumulators.

8. BOP subsea accumulator, capacity of 160 gallons on the BOP stack, consists of four (4) 40 gallon 3,000 psi accumulators.

9. Four (4) 15 gallon accumulator bottles for surge dampening installed on open and closed line of Hydril bag preventers.

10. Hydraulic supply to diverter control system.

O. Blowout Preventer Control Panels:-

1. Remote driller control (explosion-proof) panel located on rig floor adjacent to driller's console. All electric.

2. Remote Control Panel located in toolpusher's console.

3. Master manual control at accumulator unit.

4. Master and remote driller control panels to be graphically illustrated.

P. Hydraulic Control Hose:-

1. Two (2) each Multiflex hoses, 750' long, containing one (1) each 1" power lines, forty-three (43) 3/16" pilot lines.

2. Two (2) each self-powered live hose reels of sufficient capacity to store 750' hose bundle with selected live functions for running BOP stack.

Q. Two (2) Valvcon Retrievable Hydraulic Control Pods.

XVII. CASING TOOLS

A. Casing tools for 20", 13-3/8", 9-5/8" and 7" casing as listed below:-

1. Two (2) B.J. 350 ton elevator/spiders complete with slips for 5", 7", 9-5/8" and 13-3/8" casing.

2. Casing Slips:-

a) One (1) Varco type "CMS-XL" casing slip for 20" casing.

b) One (1) Varco type "CMS-XL" casing slip for 13-3/8" casing.

c) One (1) Varco type "CMS-XL" casing slip for 9-5/8" casing.

d) One (1) Varco type "CMS-XL" casing slip for 7" casing.

3. Side Door Casing Elevators:-

a) Two (2) B.J. type H-200, 200 ton side door casing elevators for 20" casing.

b) Two (2) B.J. type XXX-H 150 ton side door casing elevators for 13-3/8" casing.

c) Two (2) B.J. type XXX-H 150 ton side door casing elevators for 9-5/8" casing.

d) Two (2) B.J. type XX-H 125 ton side door casing elevators for 7" casing.

e) Two (2) B.J. type SX-150 side door elevators, P/N 33632-146 for 18-5/8" casing.

4. Single Joint Casing Elevators:-

a) One (1) Web Wilson type "B" single joint elevator for 20" casing.

b) One (1) B.J. type "J" single joint elevator for 13-3/8" casing.

c) One (1) B.J. type "J" single joint elevator for 9-5/8" casing.

d) One (1) B.J. type "J" single joint elevator for 7" casing.

4. Klamp-on Casing Protectors:-

   a) Three (3) Klamp-on Casing Protectors for 20" casing.

   b) Three (3) Klamp-on Casing Protectors for 13-3/8" casing.

   c) Three (3) Klamp-on Casing Protectors for 9-5/8" casing.

   d) Three (3) Klamp-on Casing Protectors for 7" casing.

B. Casing Tongs:-

1. Lamb, Model, 16,000 hydraulic casing tongs with jaws for 13-3/8", 9-5/8", 7", 5" and 4-1/2" O.D. casing.

2. Lamb, Model LP 326 electric powered hydraulic unit permanently installed.

XVIII. FISHING TOOLS

A. Overshots:-

1. One (1) 11-1/4" O.D. Bowen Series 150, type F.S. overshot with standard lipped guide for operation in 12-1/4" hole. Complete with spiral grapples and packers to catch and pack off 9-1/2" O.D. and 8-1/4" O.D. drill collars.

2. One (1) 15" O.D. oversize guide for above, for operation in 17-1/2" hole.

3. One (1) 8-1/8" O.D. Bowen Series 150, type F.S. overshot with standard lipped guide for operation in 8-1/2" hole. Complete with grapples and packers to catch and pack off 6-1/2" O.D. drill collars, 6-1/2" O.D. drill collars, 6-3/8" O.D. tools joints, and 5" O.D. drill pipe.

4. One (1) 8-1/8" O.D. x 33" long extension sub for above.

5. One (1) 11" O.D. oversize guide for above, for operation in 12-1/4" hole.

6. One (1) 15" O.D. oversize guide for above, for operation in 17-1/2" hole.

B. Junk Catchers:-

1. Junk Basket, Bowen reverse circulating type, 11" O.D. with 11-3/4" O.D. type "A" mill shoe for 12-1/4" hole.

2. Junk Basket, Bowen reverse circulating type, 7-7/8" O.D. with 8-1/4" O.D. type "A" mill shoe for 8-1/2" hole.

C. Jars:-

1. One (1) Jar, Bowen, 8-1/4" O.D. type "Z" with 6-5/8" API regular connections.

2. One (1) Jar, Bowen, 6-1/2" O.D. type "Z" with 4-1/2" I.F. connections.

D. Junk Subs:-

1. One (1) Bowen Junk Sub, with 6-5/8" API regular connections for 12-1/4" hole, 9-5/8" O.D. x 8-17/32" I.D. cup, 3-1/2" bore.

2. One (1) Bowen Junk sub, with 4-1/2" regular connections for 8-1/2" hole, 6-5/8" O.D. x 5-15/16" I.D. cup, 2-1/4" bore.

E. Safety Joints:-

1. One (1) safety joint, Bowen 6-1/8" O.D., 4-1/2" I.F. connections.

2. One (1) safety joint, Bowen 7-3/4" O.D. with 6-5/8" API regular connections.

F. Taper Taps:-

1. One (1) #19494 Bowen 6-1/8" O.D. rotary taper tap. Tapered from 2-1/2" O.D. to 4-3/4" O.D.F. w/4-1/2" I.F. box up.

2. One (1) #4864 Bowen 7-7/8" O.D. removable skirt for above.

3. One (1) #4668 Bowen 10-3/4" O.D. oversize lip guide for above.

4. One (1) #57020 Bowen 11" O.D. removable skirt for above.

G. Fishing Magnets:-

1. One (1) #32370 11" O.D. Bowen K. & G. Magnet complete with flush guide for operation in 12-1/4" hole, w/6-5/8" API regular pin up.

2. One (1) each #32310 8" O.D. Bowen K. & G. Magnet complete with flush guide for operation in 8-1/2" hole w/4-1/2" API regular pin up.

H. Junk Mills:-

1. One (1) each 12" O.D. Bowen with 6-5/8" API regular pin connections dressed with Itcoloy crushed sintered tungsten carbide for use in 12-1/4" hole.

2. One (1) each 8-1/4" O.D. Bowen with 4-1/2" API regular pin connections dressed as above for use in 8-1/2" hole.

I. Spears:-

1. One (1) Bowen releasing spear, Itco type, P/N 17246, complete with packoff #9625 for 9-5/8" casing and grapple assembly #17248 for 13-3/8" casing.

2. One (1) Bowen releasing spear, Itco type, complete for 7" casing, P/N 9266.

J. Subs for matching Contractor's fishing tools with Contractor's drill string.

XIX. A.C. ELECTRICAL LIGHTING

XX. AUXILIARY

A. Two (2) Lincoln 400 amp welding machines.

B. Two (2) air receivers, 100 cu. ft. capacity.

C. One (1) Ingersoll-Rand air-drying automatic unit, refrigeration type.

Capacity	:	100 SCFM
Working Pressure	:	125 PSI
Electric Power	:	440 Volts - 3 Phases 60 Cycles

D. One (1) air compressor unit, diesel driven, with air receiver.

This unit delivers starting air for main diesel engines.

XXI. MISCELLANEOUS

A. All necessary galley and quarters equipment.

B. Underwater TV system - Underwater Survey Inc. consisting of:-

1. Two (2) cameras, Model CM-3.

2. One (1) monitor, Model CMS-3.

3. One (1) TV winch, Model MG 3626 VNS.

4. Two (2) TV cables, 750 ft. each.

5. Pan tilt, Model A50-1B, with control unit.

6. Underwater lamp.

7. TV frame, telescopic.

XXII. AUXILIARY PUMPS AND EQUIPMENT

A. Fuel:-

1. Two (2) 2" Roper, 7-1/2" HP fuel oil transfer pumps in lower pump room.

2. Two (2) 2" Roper, 7-1/2" HP fuel oil service pumps in engine room.

3. One (1) Fram dual-mounted filter/separator.

4. One (1) Delaval Model 65-03 fuel oil purifier.

5. One (1) Roper 1-1/4" waste oil pump.

B. Salt Water Cooling and Ballast Pumps:-

1. Four (4) vertical turbine pumps, 1,500 gpm @ 250' TH, each driven by 125 HP, 1800 rpm motor (located two in lower pump room).

2. Two (2) vertical turbine pumps, 900 gpm @ 250' TH, each driven by 75 HP, 1800 rpm motor (located one in each lower hull pump room).

These pumps supply salt water for all requirements including:-

a) Diesel generators cooling.

b) Airconditioning.

c) Distillation units.

d) Sanitary system.

C. Drillwater Pump:-

1. One (1) vertical turbine, 900 gpm, driven by 75 HP motor, located in starboard lower hull pump room.

Additionally, the 75 HP ballast pump functions as the alternate drillwater pump.

D. Fire Pumps:-

1. Two (2) 2 x 3R Mission 50 HP with AC motor.

E. Potable Water Pressure Set:-

1. One (1) set consisting of 220 gallon tank, two (2) 5 HP pumps and miscellaneous gauges, switches, etc.

F. One (1) Model EP-48 Ellner Ultra Violet Purification Unit.

G. Air Compressors:-

1. Three (3) Ingersoll-Rand Model PA-100, 125 psi air compressors, total 1,200 SCFM. One (1) refrigerated air dryer.

2. Two (2) regulating valves for reduction of 40 psi for bulk air.

3. Two (2) Reavell HP Compressors with 30 CFM @ 3,000 psi. (For motion compensator and riser tensioning system).

4. One (1) refrigerated air dryer.

XXIII. ADDITIONAL EQUIPMENT

A. Choke Manifold (see schematic "Standard Choke Manifold" inserted as "Figure 2" on page C-24).

1. 3-1/16", 10,000 psi WP choke manifold trimmed for hydrogen sulphide service includes two (2) Cameron adjustable chokes, one (1) Cameron positive choke and one (1) remote manual Cameron drilling choke.

   Choke and Kill line piping from moon pool area to manifold, designed to 10,000 psi WP.

   All downstream manifolding from choke manifold will be minimum 5,000 psi WP, 3-1/3" Cameron type F.

   Permanent piping from manifold to test equipment to be 5,000 psi WP.

2. Bow and stern flare lines, 2,500 psi WP.

B. Totco drift indicator, 0-8 degrees and 0-16 degrees.

C. Cementing Unit:-

Halliburton SKD-4 skid unit with recirculating mixer 10,000 psi and 20 BPM.

If service company other than Halliburton is used, equipment rental and maintenance shall be reimbursable by the Company.

D. Fire Fighting and Safety Equipment:-

1. CO_2 System for engine room, mud pits and paint locker.

2. Fire hydrant system.

3. Portable CO_2 fire extinguisher.

4. Portable dry chemical extinguishers.

5. Foam system for helicopter refueling area.

MARGIE

ADDITIONAL EQUIPMENT

I. VESSEL MOORING SYSTEM

A. Two (2) spare 33,000 lbs. LWT anchors.

B. Pendant wires and sockets as required.

C. Two (2) spare pendant buoys.

II. DRILL STRING HANDLING TOOLS

A. Slips:-

1. Two (2) Varco type "DCS-S" drill collar slips, P/N 2573, for 4-3/4" drill collars.

2. Two (2) Varco type "SCX-L" rotary slips, P/N 15515, for 3-1/2" drill pipe.

3. One (1) Varco type "SDS" tubing slips, P/N 19326 for 2-7/8" to 3-1/2" drill pipe.

B. Elevators:-

1. Two (2) Webb Wilson type T-150 center latch elevators, P/N 8536-5182 for 3-1/2" O.D. 18-1/2" taper drill pipe.

2. One (1) B.J. type "YT" center latch elevators, P/N 23105 C/W.

One (1) 3-1/2" slip assembly, P/N 23108-5, and

One (1) 2-7/8" slip assembly, P/N 23108-4 for 3-1/2" and 2-7/8" tubing.

III. DRILL STRING

A. Drill Pipe:-

1. 3,000' - 3-1/2" O.D., Grade E, drill pipe; with 4-3/4" O.D. tool joints with 3-1/2" I.F. box and pin connections.

B. Drill Collars:-

1. Twenty-five (25) 4-3/4" x 2-1/4" I.D. x 31' long drill collars w/3-1/2" I.F. connections with zip groove slip and elevator recess.

C. Subs and Bit Subs:-

1. Two (2) Drilco Bit Subs, 4-3/4" O.D. x 48" long, 3-1/2" I.F. box up x 3-1/2" API reg. box down for 2F3R drill pipe.

2. Two (2) Crossover subs, 36" long, 6-3/8" O.D. top section with 4-1/2" I.F. box connection x 4-3/4" O.D. bottom section with 3-1/2" I.F. pin connection.

3. Two (2) Crossover sub from 4-3/4" drill collar to 6-1/2" drill collar 6-1/2" O.D. x 2-13/16" I.D. x 36" long, 3-1/2" I.F. box up x 4-1/2" I.F. pin down, 4-3/4" O.D. x 18" long fishneck box end.

D. Stabilizers:-

1. Two (2) 25-1/2" O.D. welded blade stabilizer with 7-5/8" reg. connections, pin x box.

2. One (1) 17-1/4" O.D. welded blade stabilizer with 7-5/8" reg. connections, pin x box.

3. Two (2) 8-1/4" O.D. sleeve stabilizers, near bit type with 6-5/8" reg. connections, box x box.

4. Seven (7) 8-1/4" O.D. sleeve stabilizers string type with 6-5/8" reg. connections.

5. Two (2) 6-1/2" O.D. sleeve stabilizers, near bit type with 4-1/2" I.F. connections.

6. Five (5) 6-1/2" O.D. sleeve stabilizers, string type with 4-1/2" I.F. connections.

7. One (1) 17-1/4" O.D. welded blade stabilizer with 6-5/8" API reg. box and pin connections, 8-1/4" O.D. body x 2-3/4" I.D.

E. Holes Openers and Reamers:-

1. One (1) 12-1/4" Drilco roller reamer P/N 201393 with 6-5/8" reg. connections pin x box, 8" O.D. x 2-7/8" I.D.

2. One (1) 8-1/4" Drilco roller reamer P/N 23895 with 4-1/2" I.F. connection pin x box, 6-1/4" O.D. x 2-7/8" I.D.

3. One (1) 36" Smith hole opener - GTA36, 9-1/2" O.D. with 7-5/8" reg. pin up x 7-5/8" reg. box down.

4. One (1) 17-1/2" Security hole opener, 9-1/2" O.D. with 6-5/8" reg. pin up x 6-5/8" reg. box down.

IV. FISHING TOOLS

A. Overshots:-

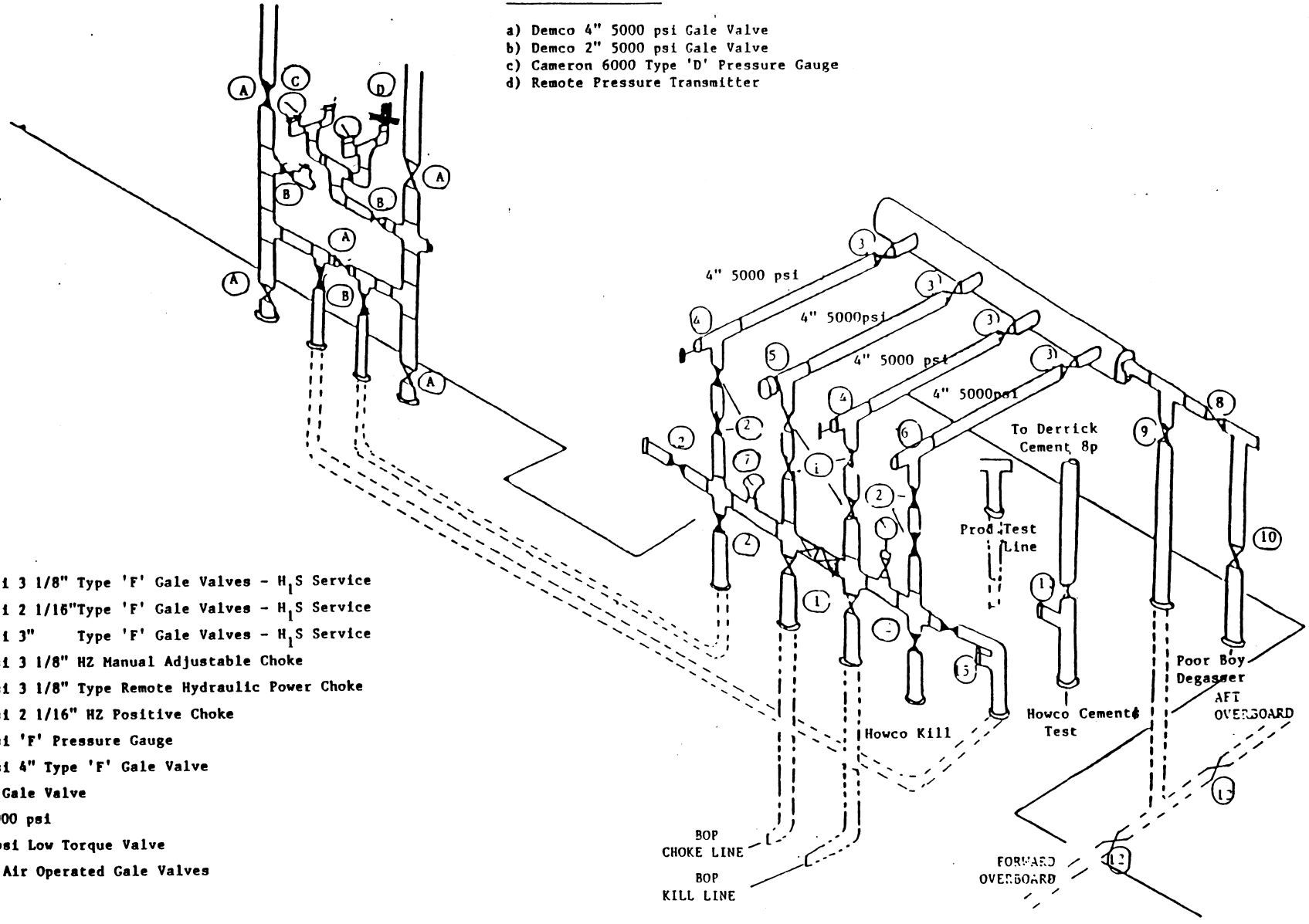
1. One (1) 5-3/4" O.D. Bowen series 150 overshot, P/N 8975 maximum catch 4-3/4", W 3-1/2" full hole box up.

ATWOOD MARGIE

CHOKE & STANDPIPE MANIFOLD

STANDPIPE MANIFOLD

a) Demco 4" 5000 psi Gale Valve
b) Demco 2" 5000 psi Gale Valve
c) Cameron 6000 Type 'D' Pressure Gauge
d) Remote Pressure Transmitter



1. Cameron 10 000 psi 3 1/8" Type 'F' Gale Valves - H_1S Service
2. Cameron 10 000 psi 2 1/16"Type 'F' Gale Valves - H_1S Service
3. Cameron 5 000 psi 3" Type 'F' Gale Valves - H_1S Service
4. Cameron 10 000 psi 3 1/8" HZ Manual Adjustable Choke
5. Cameron 10 000 psi 3 1/8" Type Remote Hydraulic Power Choke
6. Cameron 10 000 psi 2 1/16" HZ Positive Choke
7. Cameron 10 000 psi 'F' Pressure Gauge
8. Cameron 5 000 psi 4" Type 'F' Gale Valve
9. Kitz ansi 600 6" Gale Valve
10. 4" Gate Valve 5 000 psi
11. Howco 2" 10 000 psi Low Torque Valve
12. Kitz Ansi 600 6" Air Operated Gale Valves

Figure 1

"MARGIE" 18 3/4" x 10,000 psi BOP

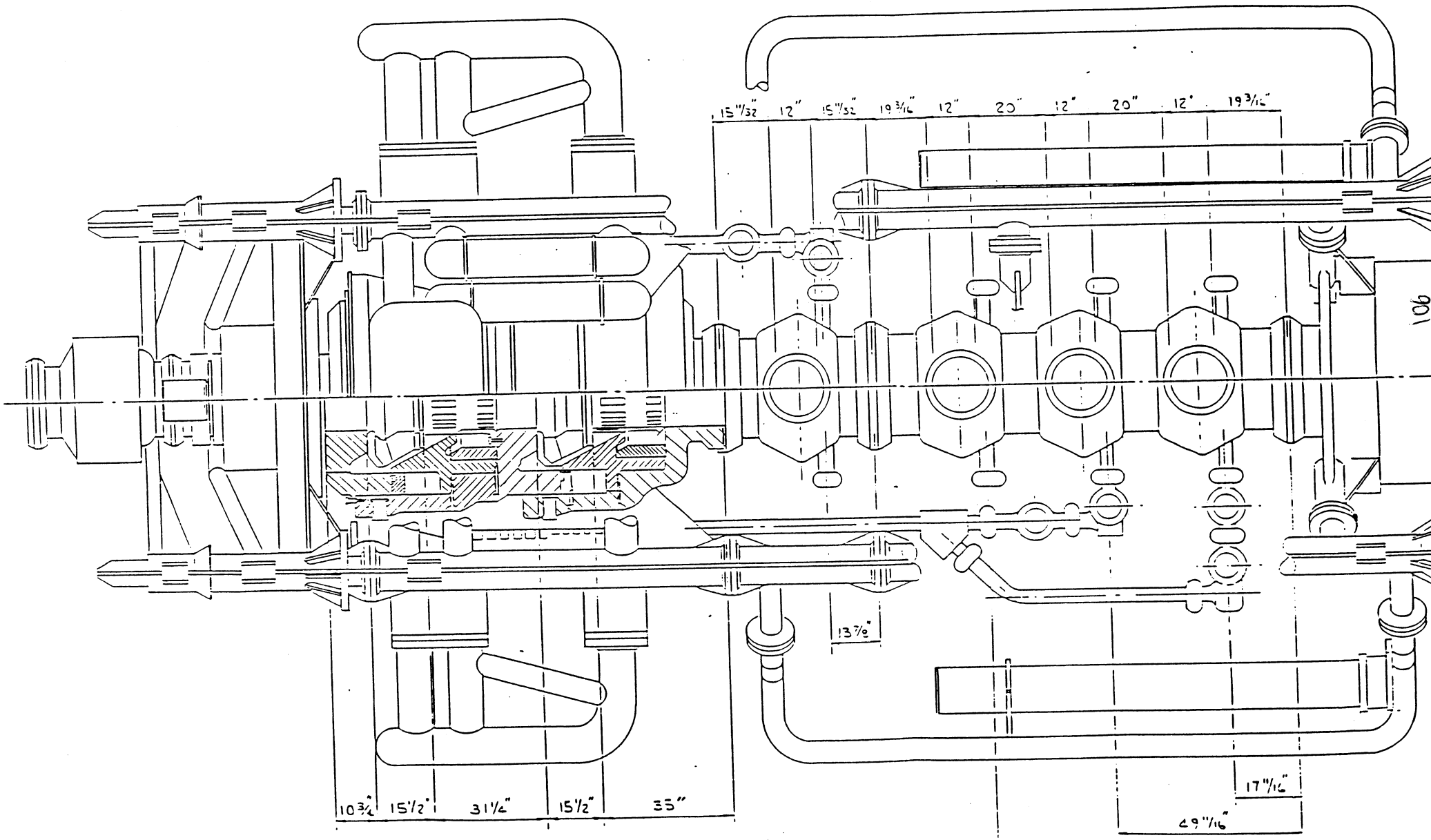
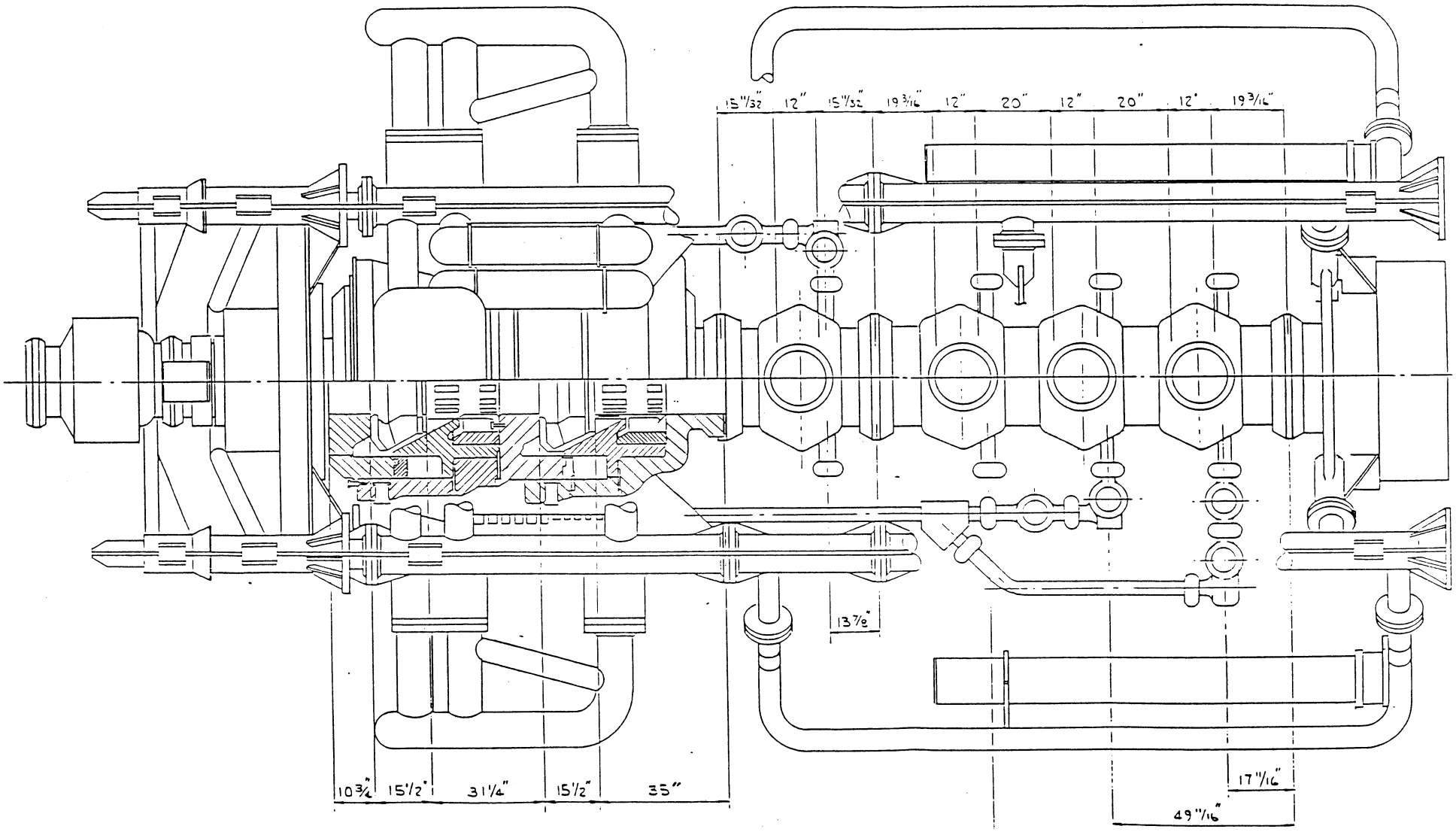


Figure 1

"MARGIE" 18 3/4" x 10,000 psi BOP



B1.6 Final Well Location

A complete copy of the O.N.A. report is included as appendix 1 and a summary is attached here.

WELL SEAL No.1 ——————— AUSTRALIA

LAT. 39° 21' 49".904 S
LONG. 144° 52' 53".045 E

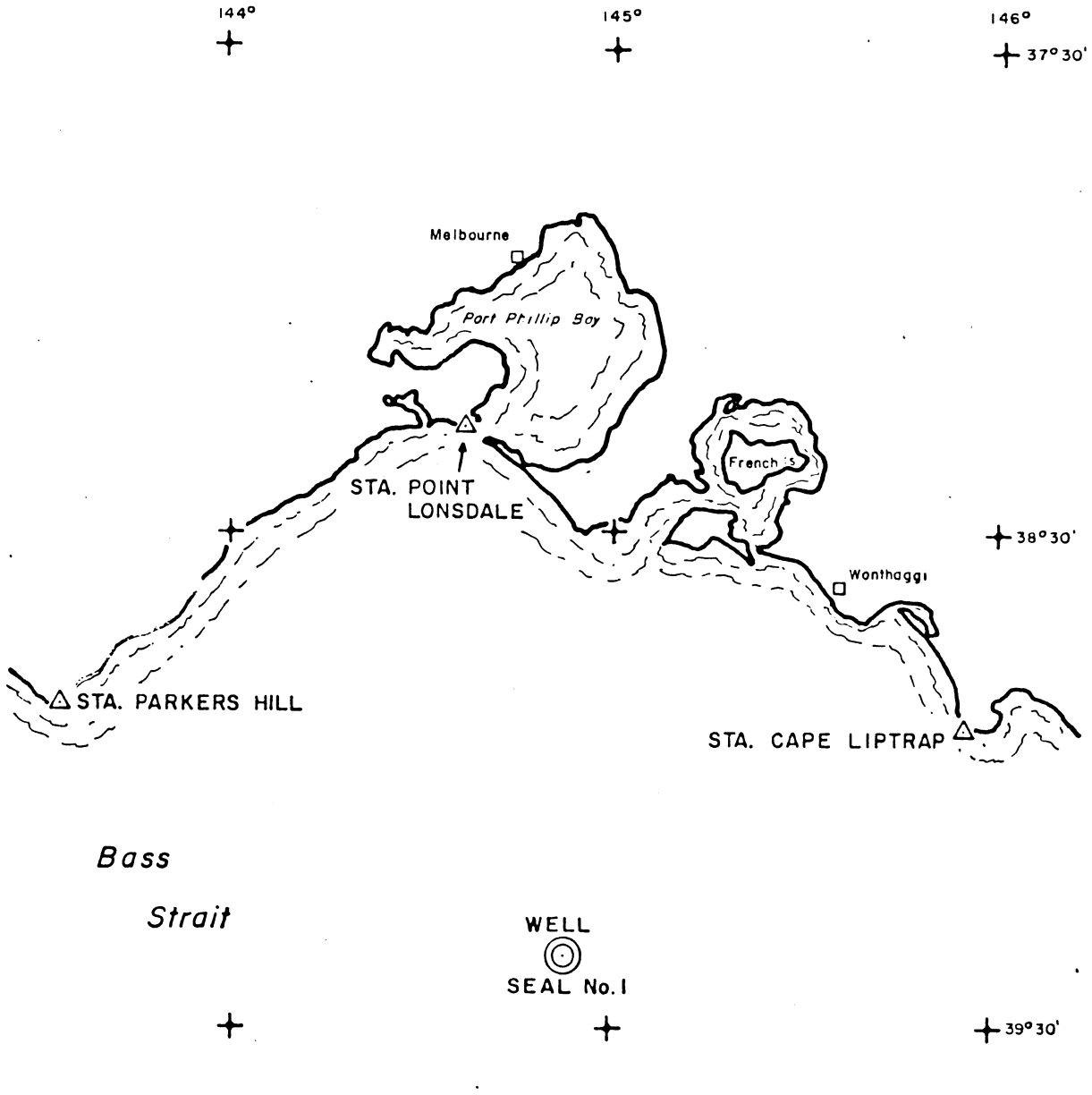
N 5,640,688.052 mtrs.
E 317,481.249 mtrs.

UTM PROJ. ——— AUST. NAT. SPHEROID
ZONE 55, C.M. 147° E ——— A.G.D.

(NAVSTAR G.P.S. DERIVED FINAL COORDINATES)

LAT. 39° 21' 48·979" S
LONG. 144° 52' 52·700" E

N 5,640,716·378 mtrs.
E 317,472·327 mtrs.



2/86/1553

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

FINAL REPORT
OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.
PROJECT 1553

FOR
TRITON INTERNATIONAL LTD.
BRIDGE OIL

TASMANIA, AUSTRALIA
FEBRUARY 1986

WELL LOCATION SEAL #1

ONA
OFFSHORE NAVIGATION,
(AUSTRALIA) PTY. LTD.

FINAL REPORT

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

PROJECT 1553

FOR

TRITON INTERNATIONAL LTD.

BRIDGE OIL

WELL LOCATION SEAL #1

TASMANIA, AUSTRALIA

FEBRUARY 1986

TABLE OF CONTENTS

	Page
Introduction	1
Field Operations Recap	2
General Information	6
Maxiran Calibration	8
Well Location Information	15
Basic Control	18
Personnel	19
Distribution	19
Base Station Descriptions and Plats	20
Well Location SEAL #1 Plat	28
The Maxiran Radiopositioning System	29
The Navstar Global Positioning System	37

APPENDIX A - Daily Operations Logs

I. INTRODUCTION

Offshore Navigation (Australia) Pty. Ltd. (ONA), under contract to Triton International Ltd. (TRITON) provided a Maxiran Radiopositioning System and Tremble Model 4000A GPS receiver to a well location operation conducted off the coast of Tasmania, Australia, in Bass Strait. The survey consisted of positioning the Drilling Vessel (D/V) MARGIE on a location designated as Well Location SEAL #1. This site was located approximately 110 kilometers south-southeast of Point Lonsdale Lighthouse. The survey was conducted for Bridge Oil.

The ONA base of operation for this survey was established at Point Lonsdale on 2 February 1986.

II. FIELD OPERATIONS RECAP

ONA personnel necessary for this survey arrived in Welshpool on 30 January 1986. The ONA mobile electronics and Maxiran base stations had been stored at TRITON's warehouse in Welshpool on 18 January, on completion of the Well Location CHAT #1 survey. The Maxiran mobile equipment was removed from storage and transported to Station Point Lonsdale, and the Maxiran base station equipment was transported to Station Parkers Hill. See "Maxiran Calibration" of this report for details. On completion of the Maxiran system calibration, one complete base station remained installed at Station Parkers Hill, and the remaining two base installations were transported to Stations Point Lonsdale and Cape Liptrap. The three Maxiran base stations were erected and operational by 3 February 1986.

ONA personnel and equipment went on board the M/V BASS TIDE at Welshpool at 1400 hours 2 February 1986, and installation of the mobile Maxiran equipment began. The

II. FIELD OPERATIONS RECAP (continued)

Maxiran mobile antennas had been left installed on board the vessel on completion of the Well Location CHAT #1 survey. The installation was complete, and the vessel departed Welshpool at 1800 hours and anchored at Sealers Cover at 2045 hours 2 February 1986 to await calmer weather.

The M/V BASS TIDE departed Sealers Cove at 0830 hours 3 February 1986 and proceeded to the D/V MARGIE at Well Location CHAT #1 for cargo transfer and anchor handling. The vessel arrived at the rig at 1605 hours 3 February.

The M/V EASTERN TIDE began towing the rig to Well Location SEAL #1 at 2000 hours 12 February 1986. The M/V BASS TIDE departed the Well Location CHAT #1 area at that time and proceeded to Well Location SEAL #1 to set marker buoys. The buoy pattern at Well Location SEAL #1 was set between 1020 and 1900 hours 7 February 1986.

II. FIELD OPERATIONS RECAP (continued)

The D/V MARGIE arrived on location at 2215 hours 7 February 1986 and began anchoring. Due to strong currents and rough weather, the rig was not secured on location until 0900 hours 11 February 1986.

The ONA mobile operator and GPS receiver were transferred from the M/V BASS TIDE to the D/V MARGIE at 0900 hours 11 February 1986. The GPS receiver was operational and parameters loaded at 1000 hours. The ONA mobile operator and GPS receiver were returned to the M/V BASS TIDE at 2025 hours. Transit fixes around the rig was attempted at 2050 hours, but problems due to reflections off the rig and obscured Maxiran stations were encountered. The vessel returned to the north side of the rig at 2130 hours 11 February and recorded final Maxiran readings. The Maxiran system was secured at 2200 hours 11 February 1986 and personnel were instructed to dismantle the base stations.

II. FIELD OPERATIONS RECAP (continued)

The M/V BASS TIDE departed the well site at 2200 hours 11 February 1986 and proceeded to Welshpool, arriving at the Welshpool dock at 0800 hours 12 February. All Maxiran and GPS equipment was removed from the vessel at 1800 hours and loaded onto a truck. The Maxiran base station equipment was packaged and placed on the truck on 13 February. The truck departed Welshpool on 14 February 1986 and proceeded to Perth, W.A.

ONA personnel were released from this survey on 14 February 1986.

III. GENERAL INFORMATION

Maxiran frequency used was:

Mobile Transmitter	441 MHz.
Base Transmitter	429 MHz.

B. Satisfactory radiotelephone communications between the mobile and base installations were maintained on the frequencies of 4637.5 (SSB) kilocycles.

C. Three Maxiran base station installations were provided by ONA for this survey.

D. Three base station sites were occupied during this operation. They were:

STATION CAPE LIPTRAP

STATION PARKERS HILL

STATION POINT LONSDALE

III. GENERAL INFORMATION (continued)

E. The Maxiran field data accumulated during this survey was turned over to Mr. Dave Scott, the TRITON representative, on 12 February 1986. The final Maxiran ranges recorded were transmitted to the ONA office in Perth, W.A. for final computation.

F. The maximum usable range observed during this survey was 120 kilometers. Signal quality was reported as best between 0800 and 1900 hours.

IV. MAXIRAN CALIBRATION

The Maxiran system was calibrated between 1400 and 1630 hours 1 February 1986, prior to the commencement of the Well Location SEAL #1 survey. For this calibration, the Maxiran mobile equipment was installed at Station Point Lonsdale, and the base station equipment was installed at Station Parkers Hill. The computed slope range of 110.784 kilometers between the two markers was used to calibrate the system.

The following pages consist of field reports of the calibration.

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 1 FEB 86

MOBILE STATION			BASE STATION		
LOCATION: POINT LONSDALE			LOCATION: PARKERS HILL		
OPERATOR: BERGSTROM / ROUNDS			OPERATOR: GAIR / PERKINS		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL
MONITOR		* 026	BEACON	NTL-01	064 COI S
INTERROGATOR	NTM-01	= 009	CONTROL BOX		
AMPLIFIER	20 KW		AMPLIFIER	3.5 KW	
AMPLIFIER P/S			AMPLIFIER P/S		
PREAMP			PREAMP		
COAX	TYPE: RG 8 ANDREWS	LENGTH: 82' 71'	COAX	TYPE: RG-8 ANDREWS	LENGT 82' 71'
ANTENNA	TYPE: 2+2 LPL	HEIGHT: 15'	ANTENNA	TYPE: 2+2 LPL	HEIGH 40'

INPUT VOLTAGE	115V	INPUT VOLTAGE	115 V
TX. FREQUENCY	441 MHz	TX. FREQUENCY	429 MHz
RX. FREQUENCY	429 MHz	RX. FREQUENCY	441 MHz
RX. GAIN SETTING	AUTO	RX. GAIN SETTING	AUTO
WEATHER CONDITIONS	FAIR	WEATHER CONDITIONS	FAIR

OBSERVED RANGE IN CALIBRATE: 115.785 KM COMPUTED SLANT RANGE: 110.784 KM

MOBILE ZERO SETTING IS: 5007 KM OBSERVED RANGE IN OPERATE 110.778 KM

TIME: 1400 BEACON ADJUSTED TO READ: 110.784 KM IN OPERAT.

MOBILE STATION		BASE STATION	
OFFSET: (~~YES~~)(NO) DIST	BRG	OFFSET: (~~YES~~)(NO) DIST	BRG
NAME: POINT LONSDALE		NAME: PARKERS HILL	
LAT: 38°17'34.3018"S LONG: 144°36'41.7719"E		LAT: 38°50'52.369"S LONG: 143°33'18.295"E	
X= 291126.88 M Y= 5758977.18		X= 201020.98 Y= 5694447.53	
21.5 M	ELEVATION	84.5 M	
	PROJECTION	AGD/UTM	
	DATUM	AGD	
	C.M.	147°E	

OPERATOR: Mike Bowers OPERATOR: Mi

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
3. Each report will be complete in itself. Do not refer to other reports for information.
4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

OFFSHORE NAVIGATION, INC.

10

MAXIRAN CALIBRATION REPORT

DATE: 1 FEB 86

MOBILE STATION			BASE STATION		
LOCATION: POINT LONSDALE			LOCATION: PARKERS HILL		
OPERATOR: BERGSTROM / ROUNDS			OPERATOR: GAIR / PERKINS		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL
MONITOR		# 026	BEACON	NTL 01	036 COD S
INTERROGATOR	NTM-01	# 009	CONTROL BOX		
AMPLIFIER	20 KW		AMPLIFIER	3.5 KW	
AMPLIFIER P/S			AMPLIFIER P/S		
PREAMP			PREAMP		
COAX	TYPE: RG 8 ANDREWS	LENGTH: 82' 71'	COAX	TYPE: RG 8 ANDREWS	LENGT: 82' 71
ANTENNA	TYPE: 2+2 LPL	HEIGHT: 15'	ANTENNA	TYPE: 2+2 LPL	HEIGH: 40'
INPUT VOLTAGE	115V		INPUT VOLTAGE	115V	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	AUTO		RX. GAIN SETTING	AUTO	
WEATHER CONDITIONS	FAIR		WEATHER CONDITIONS	FAIR	

OBSERVED RANGE IN CALIBRATE: 115.791 KM COMPUTED SLANT RANGE: 110.784 KM

MOBILE ZERO SETTING IS: 5007 KM OBSERVED RANGE IN OPERATE 110.784 KM

TIME: 1430 BEACON NOT ADJUSTED

MOBILE STATION		BASE STATION	
OFFSET: (~~YES~~)(NO) DIST	BRG	OFFSET: (~~YES~~)(NO) DIST	BRG
NAME: POINT LONSDALE		NAME: PARKERS HILL	
LAT: 38°17'34.3018"S	LONG: 144°36'41.7719"E	LAT: 38°50'52.369"S	LONG: 143°33'18.29
X= 291126.88 M	Y= 5758977.18	X= 201020.98	Y= 5694447.53
21.5 M			
	ELEVATION	84 M	
	PROJECTION	UTM	
	DATUM	AGD	
	C.M.	147°E	

OPERATOR: Mike Bourne OPERATOR:

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
3. Each report will be complete in itself. Do not refer to other reports for information.
4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 1 FEB 198

MOBILE STATION			BASE STATION		
LOCATION: POINT LONSDALE			LOCATION: PARKERS HILL		
OPERATOR: BERGSTROM / ROUNDS			OPERATOR: GAIR / PERKINS		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL
MONITOR		* 026	BEACON	NTL 01	067 COR 3
INTERROGATOR		* 009	CONTROL BOX		
AMPLIFIER	20 KW		AMPLIFIER	3.5 KW	
AMPLIFIER P/S			AMPLIFIER P/S		
PREAMP			PREAMP		
COAX	TYPE: RG 8 ANDREWS	LENGTH: 82' 71'	COAX	TYPE: RG 8 ANDREWS	LENGT: 82' 71'
ANTENNA	TYPE: 2+2 LPL	HEIGHT: 15'	ANTENNA	TYPE: 2+2 LPL	HEIGH: 40'
INPUT VOLTAGE	115 V		INPUT VOLTAGE	115 V	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	AUTO		RX. GAIN SETTING	AUTO	
WEATHER CONDITIONS	FAIR		WEATHER CONDITIONS	FAIR	

OBSERVED RANGE IN CALIBRATE: 115.784 KM COMPUTED SLANT RANGE: 110.784 KM

MOBILE ZERO SETTING IS: 5007 KM OBSERVED RANGE IN OPERATE 110780 KM

TIME: 1500 BEACON ADJUSTED TO READ 110.784 KM IN OPERATE

MOBILE STATION		BASE STATION	
OFFSET: (YES)(NO) DIST	BRG	OFFSET: (~~YES~~)(NO) DIST	BRG
NAME: POINT LONSDALE		NAME: PARKERS HILL	
LAT: 38°17'34.3018"S LONG: 144°36'41.7719E		LAT: 38°50'52.369"S LONG: 143°33'18.295"	
X= 291126.88 M Y= 5758977.18 M		X= 201020.98 Y= 5694447.53	
21.5 M	ELEVATION	84 M	
	PROJECTION	UTM	
	DATUM	AGD	
	C.M.	147°E	

OPERATOR: Mike Bergstrom OPERATOR:

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
3. Each report will be complete in itself. Do not refer to other reports for information.
4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 1 FEB 198

MOBILE STATION			BASE STATION		
LOCATION: POINT LONSDALE			LOCATION: PARKERS HILL		
OPERATOR: BERGSTROM / ROUNDS			OPERATOR: GAIR / PERKINS		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL
MONITOR		# 026	BEACON	NTL-01	006 CO 2
INTERROGATOR	NTM-01	# 009	CONTROL BOX		
AMPLIFIER	20KW		AMPLIFIER	3.5 KW	
AMPLIFIER P/S			AMPLIFIER P/S		
PREAMP			PREAMP		
COAX	TYPE: RG8 ANDREWS	LENGTH: 82' 71'	COAX	TYPE: RG8 ANDREWS	LENGT 82' 71'
ANTENNA	TYPE: 2+2 LPL	HEIGHT: 15'	ANTENNA	TYPE: 2+2 LPL	HEIGH 40'
INPUT VOLTAGE	115 V		INPUT VOLTAGE	115 V	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	AUTO		RX. GAIN SETTING	AUTO	
WEATHER CONDITIONS	FAIR		WEATHER CONDITIONS	FAIR	

OBSERVED RANGE IN CALIBRATE: 115.791 KM

MOBILE ZERO SETTING IS: 5007 KM

TIME: 1530

COMPUTED SLANT RANGE: 110.784 KM

OBSERVED RANGE IN OPERATE 110.784 KM

BEACON NOT ADJUSTED

MOBILE STATION		BASE STATION	
OFFSET: (~~YES~~)(NO) DIST	BRG	OFFSET: (~~YES~~)(NO) DIST	BRG
NAME: POINT LONSDALE		NAME: PARKERS HILL	
LAT: 38°17'34.3018"S LONG: 144°36'41.7719"E		LAT: 38°50'52.369"S LONG: 143°33'18.295"	
X= 291126.88 M Y= 5758977.18		X= 201020.98 Y= 5694447.53	
21.5 M	ELEVATION	84 M	
	PROJECTION	UTM	
	DATUM	AGD	
	C.M.	147°E	

OPERATOR: Mike Ben

OPERATOR:

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
3. Each report will be complete in itself. Do not refer to other reports for information.
4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 1 FEB 86

MOBILE STATION			BASE STATION		
LOCATION: POINT LONSDALE			LOCATION: PARKERS HILL		
OPERATOR: BERGSTROM / ROUNOS			OPERATOR: GAIR / PERKINS		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL
MONITOR		* 026	BEACON	NTL-01	010 CO[illegible]2
INTERROGATOR	NTM-01	* 009	CONTROL BOX		
AMPLIFIER	20 KW		AMPLIFIER	3.5 KW	
AMPLIFIER P/S			AMPLIFIER P/S		
PREAMP			PREAMP		
COAX	TYPE: RG 8 ANDREWS	LENGTH: 82', 71'	COAX	TYPE: RG 8 ANDREWS	LENGT: 82', 71'
ANTENNA	TYPE: 2+2 LPL	HEIGHT: 15'	ANTENNA	TYPE: 2+2 LPL	HEIGH: 40'
INPUT VOLTAGE	115 V		INPUT VOLTAGE	115 V	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHZ	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHZ	
RX. GAIN SETTING	AUTO		RX. GAIN SETTING	AUTO	
WEATHER CONDITIONS	FAIR		WEATHER CONDITIONS	FAIR	

OBSERVED RANGE IN CALIBRATE: 115.782 KM COMPUTED SLANT RANGE: 110.784 KM

MOBILE ZERO SETTING IS: 5007 KM OBSERVED RANGE IN OPERATE 110.774 KM

TIME: 1600 BEACON ADJUSTED TO READ 110.784 KM IN OPERA

MOBILE STATION		BASE STATION	
OFFSET: (~~YES~~)(NO) DIST	BRG	OFFSET: (~~YES~~)(NO) DIST	BRG
NAME: POINT LONSDALE		NAME: PARKERS HILL	
LAT: 38°17'34.3018"S LONG: 144°36'41.7719"E		LAT: 38°50'52.369"S LONG: 145°33'18.295	
X= 291126.88 Y= 5758977.18		X= 201020.98 Y= 5694447.53	
21.5M	ELEVATION	84 M	
	PROJECTION	UTM	
	DATUM	AGD	
	C.M.	147°E	

OPERATOR: Mike Bergs OPERATOR:

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
3. Each report will be complete in itself. Do not refer to other reports for information.
4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

MAXIRAN CALIBRATION REPORT

DATE: 1 FEB 86

MOBILE STATION		
LOCATION:	POINT LONSDALE	
OPERATOR:	BERGSTROM / ROUNOS	
UNIT	MODEL	SERIAL No.
MONITOR		* 026
INTERROGATOR	NTM 01	* 009
AMPLIFIER	20 KW	
AMPLIFIER P/S		
PREAMP		
COAX	TYPE: RG 8 ANDREWS	LENGTH: 82' 71'
ANTENNA	TYPE: 2+2 LPL	HEIGHT: 15'
INPUT VOLTAGE	115V	
TX. FREQUENCY	441 MHz	
RX. FREQUENCY	429 MHz	
RX. GAIN SETTING	AUTO	
WEATHER CONDITIONS	FAIR	

BASE STATION		
LOCATION:	PARKERS HILL	
OPERATOR:	GAIR / PERKINS	
UNIT	MODEL	SERIAL
BEACON	NTL-01	075 COD 03
CONTROL BOX		
AMPLIFIER	3.5 KW	
AMPLIFIER P/S		
PREAMP		
COAX	TYPE: RG 8 ANDREWS	LENGT: 82' 71'
ANTENNA	TYPE: 2+2 LPL	HEIGH: 40'
INPUT VOLTAGE	115 V	
TX. FREQUENCY	429 MHz	
RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	AUTO	
WEATHER CONDITIONS	FAIR	

OBSERVED RANGE IN CALIBRATE: 115.789 KM COMPUTED SLANT RANGE: 110.784 KM

MOBILE ZERO SETTING IS: 5007 KM OBSERVED RANGE IN OPERATE 110.782 KM

TIME: 1630 BEACON ADJUSTED TO READ 110.784 KM IN OPERATE

MOBILE STATION

OFFSET: (~~YES~~)(NO) DIST BRG

NAME: POINT LONSDALE

LAT: 38°17'34.3018"S LONG: 144°36'41.7719"E

X= 291126.88 Y= 5758977.18

21.5 M ELEVATION

PROJECTION

DATUM

C.M.

BASE STATION

OFFSET: (~~YES~~)(NO) DIST BRG

NAME: PARKERS HILL

LAT: 38°50'52.369"S LONG: 143°33'18.295"

X= 201020.98 Y= 5694447.53

84 M ELEVATION

UTM PROJECTION

AGD DATUM

147°E C.M.

OPERATOR: Mike Bergstrom OPERATOR:

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
3. Each report will be complete in itself. Do not refer to other reports for information.
4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

V. WELL LOCATION INFORMATION

The following information pertains to the positioning of the D/V MARGIE on Well Location SEAL #1.

Coordinates of the desired location were obtained from TRITON as:

(Line BB-85-72, Shotpoint 140):
Latitude 39°21'49".200 S
Longitude 144°52'51".500 E

The D/V MARGIE was secured on location, and the following final Maxiran ranges were recorded at 2130 hours 11 February 1986, with the Maxiran mobile equipment installed on board the M/V BASS TIDE:

Sta. Parkers Hill to mobile antenna	128.187 kilometers
Sta. Point Lonsdale to mobile ant.	121.080 kilometers
Sta. Cape Liptrap to mobile antenna	109.594 kilometers

At the time these final Maxiran ranges were recorded, the drill stem was 100 meters, at a bearing of 182° True, from the Maxiran mobile antenna.

V. WELL LOCATION INFORMATION (continued)

FINAL COMPUTED COORDINATES - WELL LOCATION SEAL #1
(Drill stem)

Latitude 39°21'49".904 S N = 5,640,688.052 mtrs.
Longitude 144°52'53".045 E E = 317,481.249 mtrs.

RMS of three-way fix = 2.16 meters
Distance from desired location = 42.8 m. @ 120.3° True

The final coordinates of the drill stem were derived by applying the reported offset and bearing to the final Maxiran ranges recorded.

The GPS receiver was installed on board the D/V MARGIE on 11 February 1986, and four-satellite constellation fixes were recorded. At the time that the GPS position was being derived, the drill stem was 31.7 meters, at a bearing of 085° True, from the GPS antenna.

The following GPS antenna coordinates are expressed in the WGS-72 Datum:

Latitude 39°21'43".800 S
Longitude 144°52'55".116 E

V. WELL LOCATION INFORMATION (continued)

The WGS-72 Datum coordinates were converted to Australian Geodetic Datum coordinates using the following datum conversion factors:

Delta x = 125.0 meters
Delta y = 28.0 meters
Delta z = -139.1 meters

Final Australian Geodetic Datum coordinates of SEAL #1 drill stem as derived by GPS are:

Latitude	39°21'48".979 S	N = 5,640,716.378 mtrs.
Longitude	144°52'52".700 E	E = 317,472.327 mtrs.

Distance from desired location = 29.5 m. @ 076.7° True

Australian Geodetic Datum coordinates listed are expressed in the Universal Transverse Mercator Projection, Australian National Spheroid of Reference, Zone 55, Central Meridian 147° East.

VI. BASIC CONTROL

Coordinates of the three Maxiran base stations occupied to control this survey were obtained from Western Geophysical Company of America basic control sheets.

Universal Transverse Mercator Projection
Australian National Spheroid
Zone 55
Central Meridian 147° East
AUSTRALIAN GEODETIC DATUM

STATION CAPE LIPTRAP:

Latitude	38°51'05".426 S	N = 5,699,177.95 mtrs.
Longitude	145°57'54".655 E	E = 410,204.92 mtrs.
Elevation	170 meters	

STATION PARKERS HILL:

Latitude	38°50'52".369 S	N = 5,694,447.48 mtrs.
Longitude	143°33'18".295 E	E = 201,020.97 mtrs.
Elevation	84 meters	

STATION POINT LONSDALE:

Latitude	38°17'34".302 S	N = 5,758,977.18 mtrs.
Longitude	144°36'41".772 E	E = 291,126.88 mtrs.
Elevation	22 meters	

VII. PERSONNEL

NAME	POSITION
Perkins, M.	Party Chief/Base Operator
Bergstrom, K.	Mobile Operator
Gair, M.	Base Operator
Rounds, R.	Base Operator

VIII. DISTRIBUTION

Triton International Ltd.
Post Office Box 13
Welshpool, Victoria
AUSTRALIA

Attention: Mr. L. Lipscombe — Seven copies

Offshore Navigation, Inc.
Post Office Box 23504
Harahan, Louisiana 70183
U.S.A. — Two copies

Offshore Navigation (Australia) Pty. Ltd.
Post Office Box 291
Cloverdale, W.A. 6105
AUSTRALIA — One copy

STATION: CAPE LIPTRAP

LOCATED: Station Cape Liptrap is located on the south coast of Victoria, Australia, on Cape Liptrap. The station site is approximately one-half kilometers from the Cape Liptrap Lighthouse.

ACCESS: From the Tarwin Lower, proceed on the Cape Liptrap/Walkerville Road for 18.6 kilometers to the intersection of the Walkerville Nth and Walkerville South - Cape Liptrap Road. Take the road to the right and proceed 19.7 kilometers to the intersection of the Walkerville South and Cape Liptrap Roads. Take the road to the right. (You will see a government survey tripod on your left at this intersection. This is an old Maxiran station.) Turn right at the intersection onto Cape Liptrap Road and drive for approximately 7.25 kilometers to a track on the right signposted "Vehicles Must Keep to Existing Tracks". Turn right onto this track and drive 0.3 kilometer to a clearing and the station site.

MARKER: The Maxiran tower was erected at RM-2, which is 6.9 meters, at a bearing of 281° Magnetic, from a Government trig station.

ELEVATION: 170 meters

SKETCH: See next page.

Coordinates of this station were obtained from Western Geophysical Company of America basic control sheets.

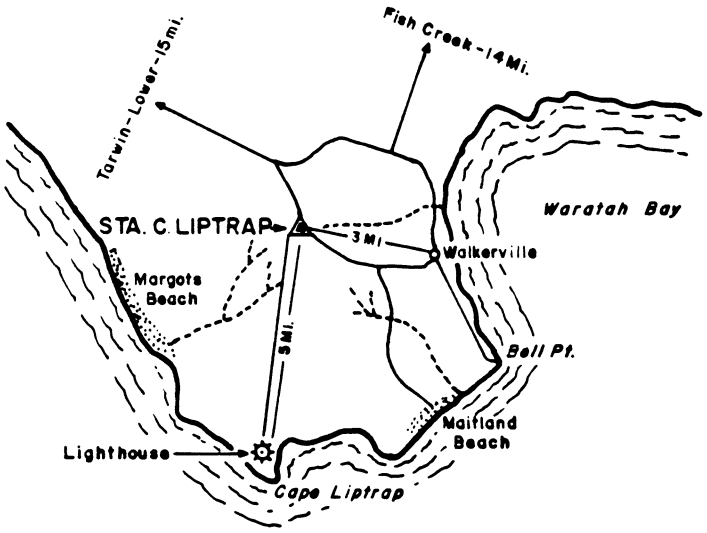
UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 55, C.M. 147° EAST - - A.G.D.

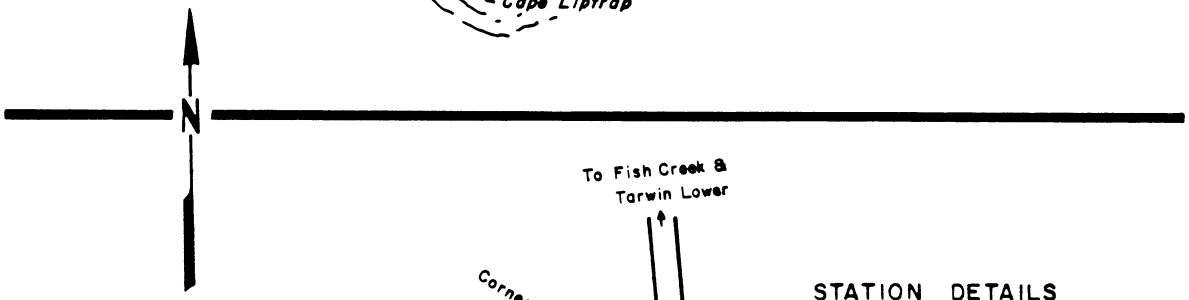
Lat. 38°51'05".426 S N = 5,699,177.95 m.
Long. 145°57'54".655 E E = 410,204.92 m.

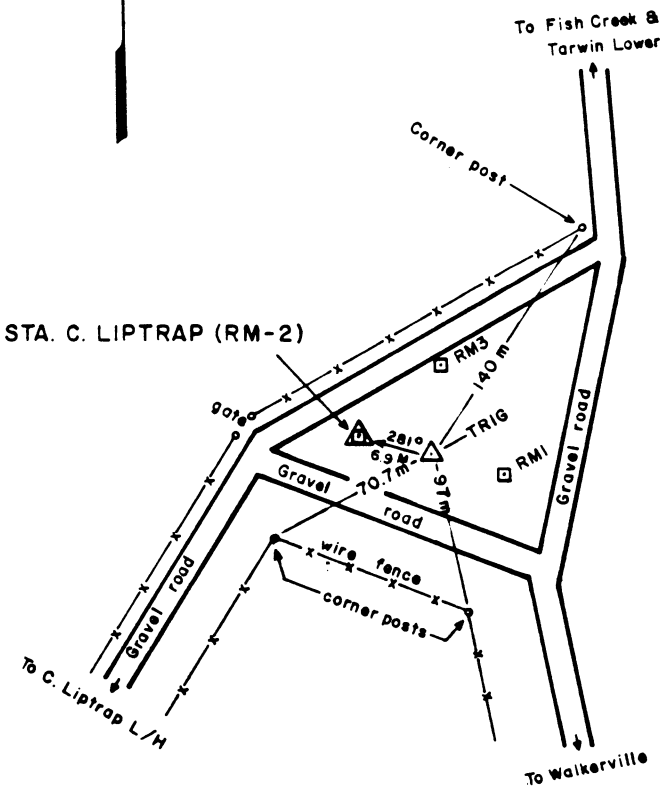
STA. CAPE LIPTRAP — RM-2 — AUSTRALIA

LAT. 38° 51' 05".426 S
LONG. 145° 57' 54".655 E
ELEV. 170 meters

AUST. GEODETIC DATUM







STATION DETAILS

2/86/1553

OFFSHORE NAV... (AUSTRALIA) PTY...

STATION: PARKERS HILL

LOCATED: Station Parkers Hill is located near Apollo Bay, Victoria, Australia.

ACCESS: From Apollo Bay Post Office (00.0 kilometer), drive towards Warnambool along the Great Ocean Road. Veer left at Lavers Hill (13.4 kilometers). Turn left at Cape Otway Road (21.1 kilometers), follow it crossing grid #1 at 27.0 kilometers and passing Bimbi Park turnoff at 28.3 kilometers. Grid #2 is at 28.8 kilometers and another grid at 29.7 kilometers. Make a turn at Blanket Bay Road (30.6 kilometers), and veer right at the "T" junction at 31.4 kilometers.

Twenty yards from the "T" junction, you will find a gate on the left. Pass through the gate and proceed 1,200 meters along the track to the top of the hill (32.7 kilometers) where two steel posts protrude 3 feet above the ground on the left hand side of the track.

MARKER: The station marker is located between the two steel posts. The surface marker consists of a steel plate marked "SURVEY COORDINATION A.C.T. PERMANENT MARK". The trig marker, located under the plate, is stamped 'GEODETIC SURVEY VICTORIA - TRIANGULATION MARK No 76201". A tree is located 11 meters, at a bearing of 70°, from the trig marker.

GENERAL: All food, fuel and water must be carried to the site. Most items of supplies, including fuel, food and cooking gas can be obtained in Apollo Bay.

The station is on private land in natural forest and infested with mosquitos.

The track running alongside the trig marker must be kept clear for vehicle traffic.

STATION: PARKERS HILL (continued)

Care must be taken not to spill any oil or fuel at this site. Also, all rubbish must be removed from the site on completion of an operation.

Clear vista at this site with a 50-foot tower is from 080°, through south, to 240°.

ELEVATION: 84 meters

SKETCH: See next page.

Coordinates of this station were obtained from Western Geophysical Company of America basic control sheets.

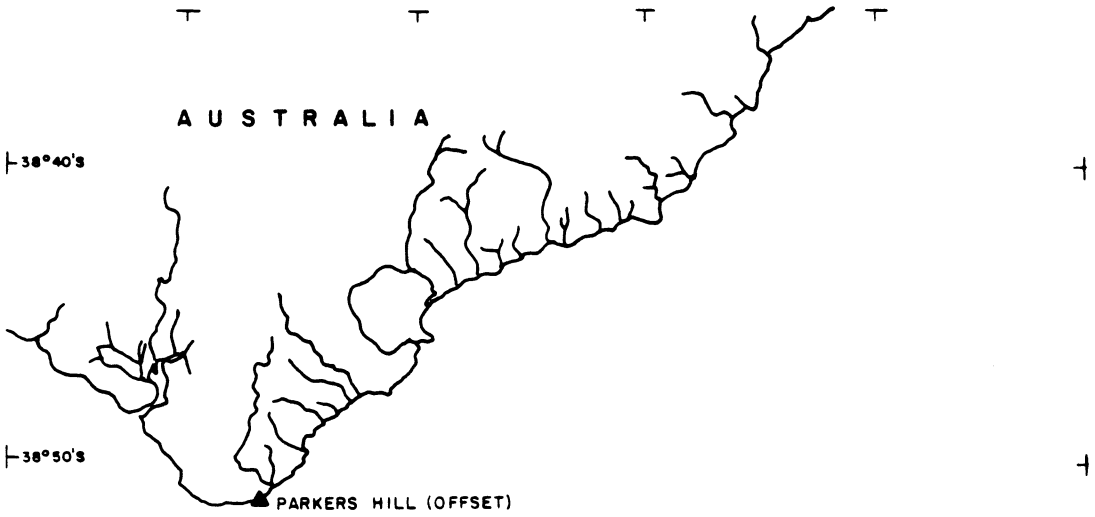
UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 55, C.M. 147° EAST - - A.G.D.

Lat. 38°50'52".369 S N = 5,694,447.48 m.
Long. 143°33'18".295 E E = 201,020.97 m.

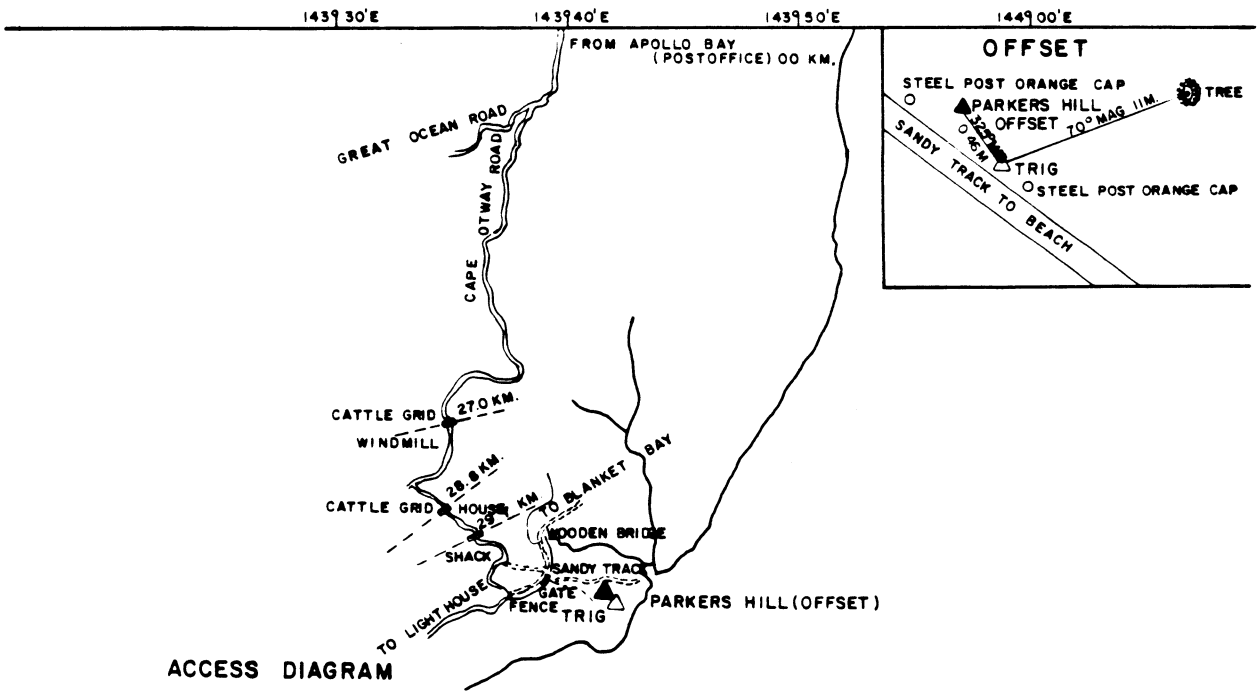
STA. PARKERS HILL——————AUSTRALIA

LAT. 38° 50' 52.369" S.
LONG. 143° 33' 18.295" E.
ELEV. 84 meters

AUST. GEODETIC DATUM



LOCATION MAP



[illegible] 66/ 553

OFFSHORE NA[illegible]
(AUSTRALIA) PTY [illegible]

STATION: POINT LONSDALE

LOCATED: The station is located at Point Lonsdale, in the township of Point Lonsdale, Victoria, Australia.

ACCESS: From Melbourne, drive west to Geelong, a distance of approximately 70 kilometers. From Geelong, follow the Bellarine Highway to the well signposted Point Lonsdale. Turn off on your right hand side and proceed to the very end of the Point Lonsdale Road, which will pass through Point Lonsdale township and terminate at the foot of Point Lonsdale Lighthouse. From the lighthouse, walk up a flight of concrete steps, past the old signal mast which is surrounded by a 1.5-meter high concrete wall, and along a narrow concrete path to an old concrete army observation lookout bunker. The trig marker is located on top of the higher lookout, which has heavy wooden steps leading to the top. The top of the lookout is enclosed with 5-cm pipe hand railings.

The road from Melbourne to the car park immediately below the lighthouse is sealed. A single driveway leads from the car park to the lighthouse. There is a turning area at the lighthouse that is large enough to enable a 10-ton dual axle truck to maneuver.

MARKER: The trig marker is a small circular brass plaque in the center of the concrete roof of the old army observation post on the upper parapet. The marker is inscribed "GEODETIC SURVEY VICTORIA - TRIANGULATION STATION".

GENERAL: The site is on Crown Land. Permission must be obtained from the Ports & Harbours Division, 168 Exhibition Street, Melbourne (phone (03) 669-8666. The lighthouse keeper is Mr. Bill Huggins.

Camping is not permitted on this site, i.e. no cooking, sleeping or bathing. A tent may be

STATION: POINT LONSDALE (continued)

erected on site if it is used as an office for the purpose of housing equipment and providing shelter for personnel on site. Light refreshment may be taken on site.

The Crown requires that all refuse be removed from the site. Since the area is a natural reserve, care must be taken to avoid fuel or oil spillage on any nature.

All food and fuel supplies can be purchased in Point Lonsdale township. Fresh water can be obtained from a tap located on the outside of the lighthouse. There is no electricity at the observation post.

Taxis operate from Point Lonsdale township. Limited bus service is available from Point Lonsdale to Geelong.

During good weather, the site can be calm and hot. However, the site is in a very exposed position. Weather can also be very cold with heavy rain and occasionally hail. Extremely high winds, in excess of 70 knots, can be experienced at this site. Winds from the southwest at 40 knots is fairly common.

ELEVATION: 22 meters

SKETCH: See next page.

Coordinates of this station were obtained from Western Geophysical Company of America basic control sheets.

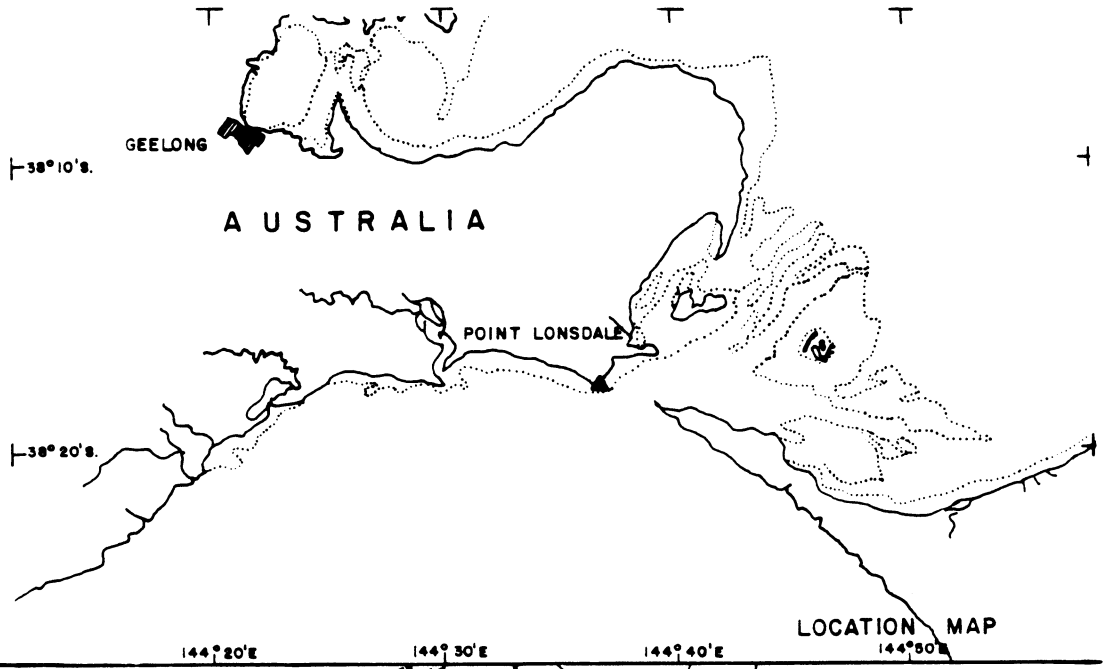
UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 55, C.M. 147° EAST - - A.G.D.

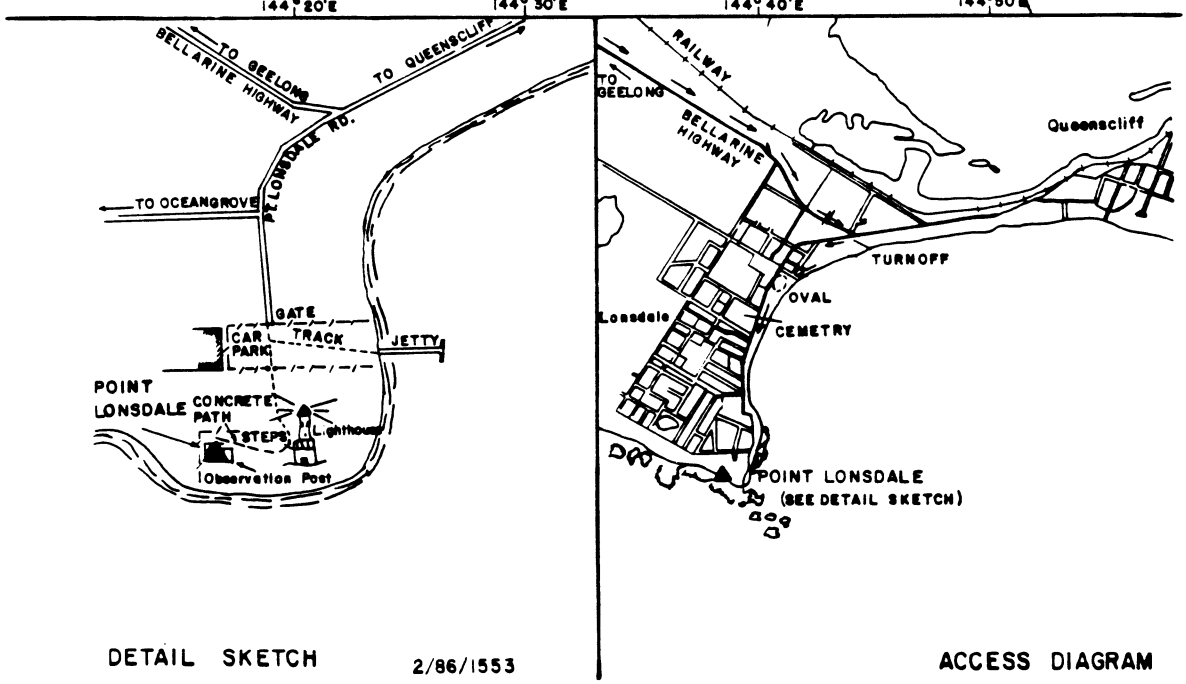
Lat. 38°17'34".302 S N = 5,758,977.18 m.
Long. 144°36'41".772 E E = 291,126.88 m.

STA. POINT LONSDALE —— AUSTRALIA

LAT. 38° 17' 34.302" S.
LONG. 144° 36' 41.772" E.
ELEV. 22 meters

AUST. GEODETIC DATUM





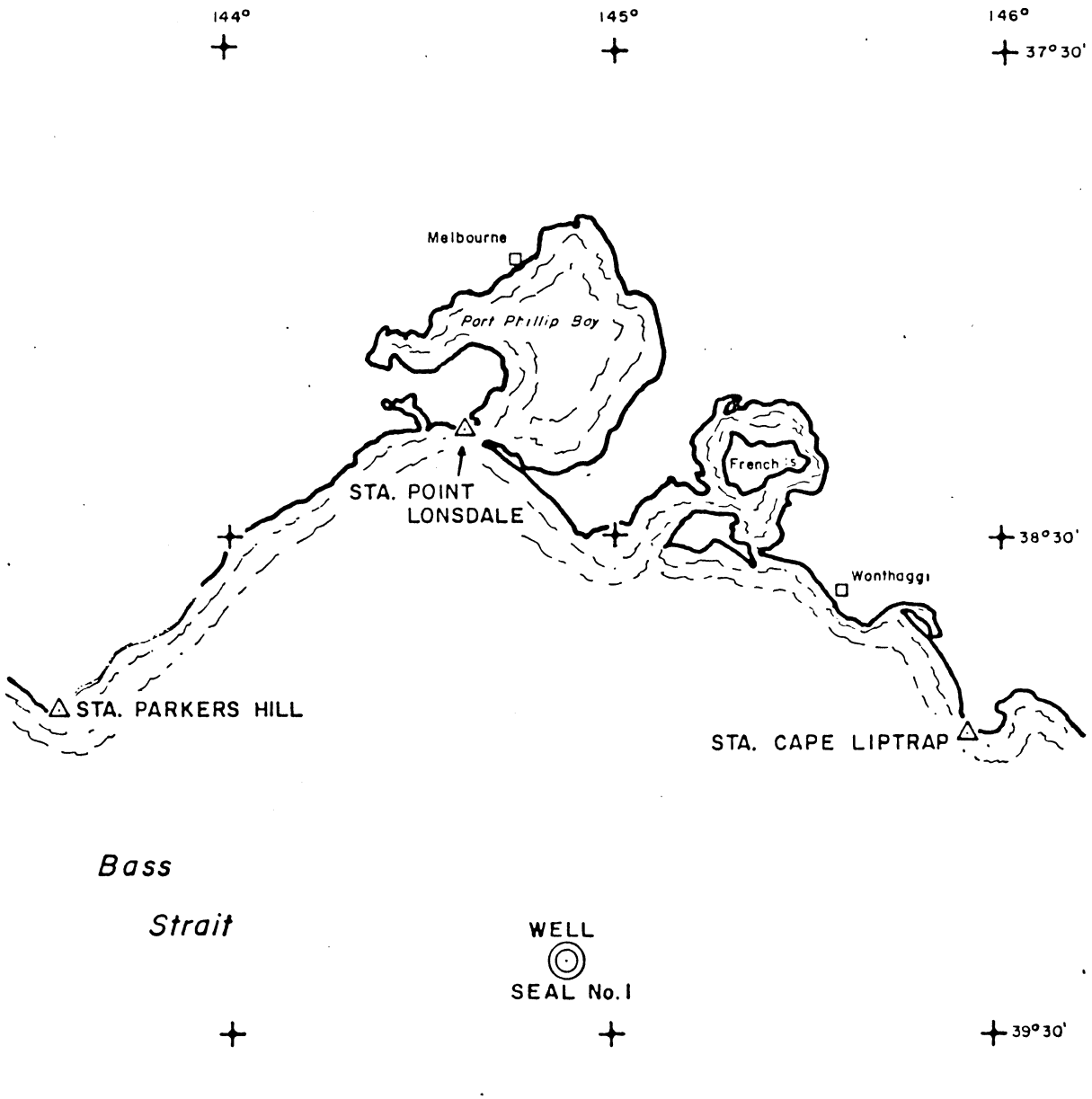
WELL SEAL No.1 ——————— AUSTRALIA

LAT. 39° 21' 49".904 S — N 5,640,688.052 mtrs.
LONG. 144° 52' 53".045 E — E 317,481.249 mtrs.

UTM PROJ. ——— AUST. NAT. SPHEROID
ZONE 55, C.M. 147° E ——— A.G.D.

(NAVSTAR G.P.S. DERIVED FINAL COORDINATES)

LAT. 39° 21' 48·979" S — N 5,640,716·378 mtrs.
LONG. 144° 52' 52·700" E — E 317,472·327 mtrs.



2/86/1553

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

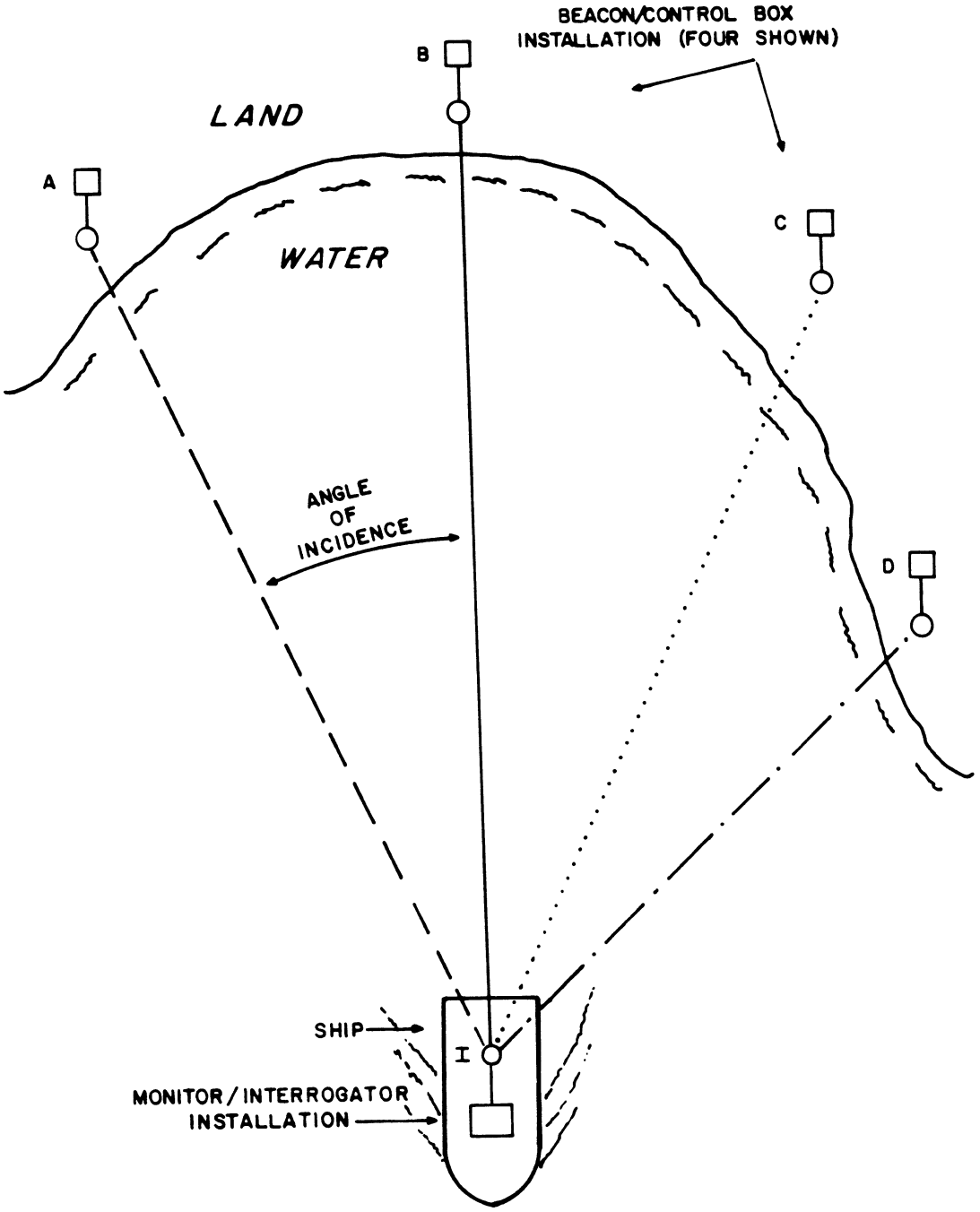
THE MAXIRAN RADIOPOSITIONING SYSTEM

The Maxiran Radiopositioning System is a precision electronic ranging system, capable of both manual and automatic tracking of range. It is especially useful for measuring distances across bodies of water.

The use of the Maxiran requires three or more electronic installations. For the purposes of this discussion, one of these installations is assumed to be aboard a ship (see Figure 1). This installation consists of the Maxiran Monitor and Interrogator. The other installations are located onshore. Each of these installations consist of a Maxiran Beacon and a Control Box. There are two or more of the Beacon Control Box installations situated at appropriate locations onshore.

In operation, the Monitor/Interrogator installation transmits a radio signal (containing a Beacon-Select code which addresses a selected Beacon) which is picked up by all of the Beacon/Control Box installations. Each Beacon decodes the received signal and decides whether the Beacon-Select code transmitted corresponds to that Beacon. If the Beacon-Select code is correct for a

FIGURE-1. TYPICAL MAXIRAN SYSTEM



THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

Beacon, it responds by transmitting a radio signal reply. The Monitor measures the amount of time elapsed between the Interrogator's transmission and the received reply sent by the Beacon. Since, for all practical purposes, radio signals travel at a known speed, the time elapsed between transmission and response is a measure of the distance the radio signal travelled. The elapsed time is converted by the Monitor into distance and then displayed. Knowing the location of the land stations and the current distance from the ship to each of them, the position of the ship can be readily calculated.

For the purposes of this discussion, let us first assume that only two Beacons are being utilized. They are the Beacons marked "A" and "B" in Figure 1. Since the distance from Beacon "A" to the Interrogator (call it distance A1), and the distance from Beacon "B" to the Interrogator (call it distance B1) are now known (these distances are the distances displayed on the Monitor front panel), we can use some geometry to calculate the position of the ship with reference to Beacons "A" and "B".

THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

As illustrated in Figure 2, the distances of A1 and B1 define two intersecting circles, one with a radius of length A1 centered about Beacon "A", the other with radius of length B1 centered about Beacon "B". The two circles intersect at two points (marked I and I' in Figure 2). Obviously, the ship can only be located at one of the points. Since point I' happens to be located on land, we can safely assume that the ship is located at Point I.

There is always some uncertainty associated with the exact measurements of the Beacons. This is illustrated in Figure 3. Figure 3 illustrates an enlarged view of the intersection of the circles shown in Figure 2. If the tolerance of the measurements of Beacon "B" is plus-or-minus 5 meters, then the two solid lines in Figure 3 are 10 meters apart. The tolerance of the measurements of Beacon "A" should be the same as that of Beacon "B", but this is not always the case due to differences in geographical location. Under the above conditions, we only know that the ship is located somewhere in the shaded area of Figure 3.

FIGURE-2. SYSTEM WITH TWO BEACONS

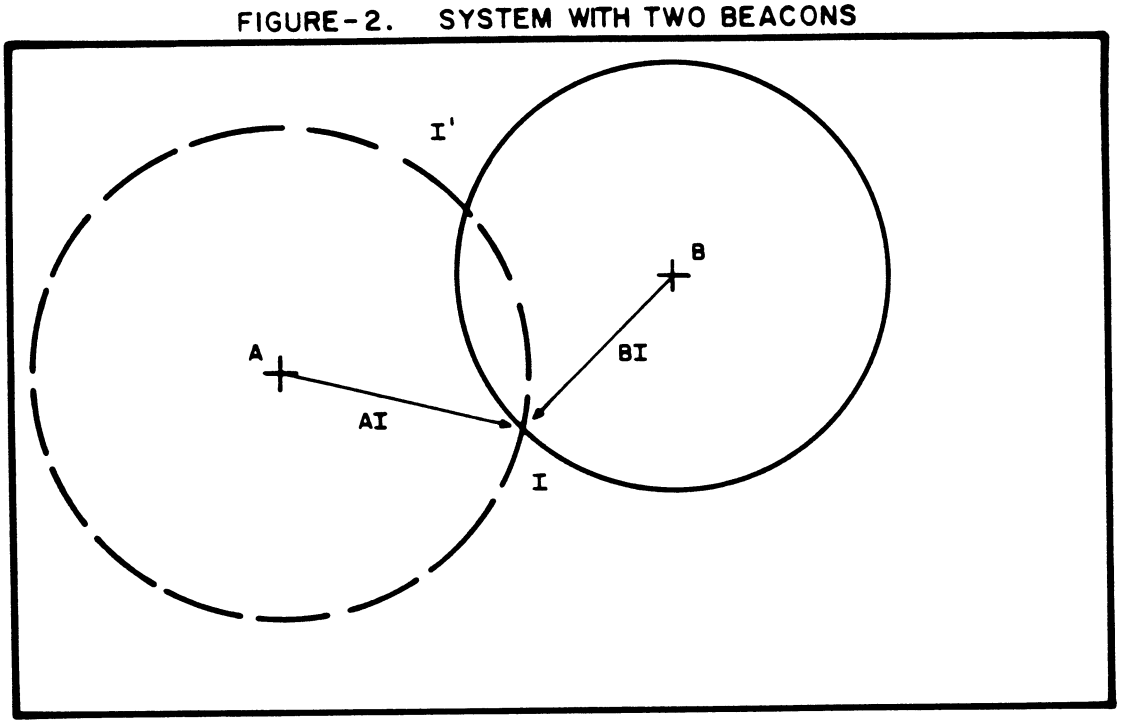
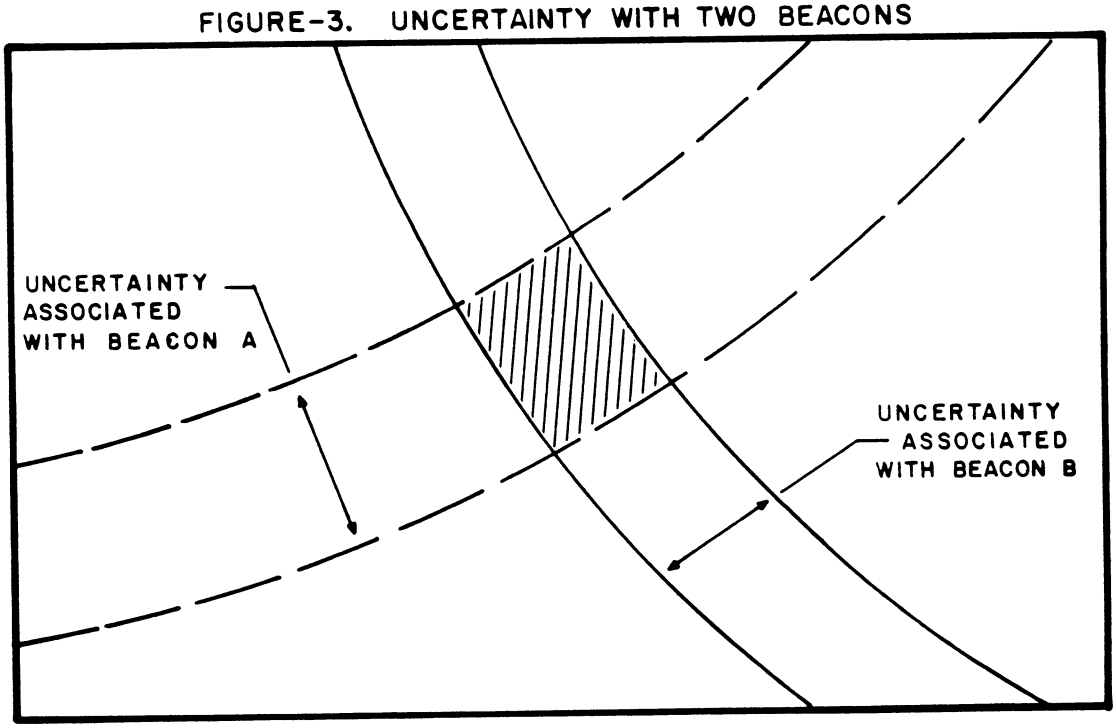


FIGURE-3. UNCERTAINTY WITH TWO BEACONS



THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

For the purposes of the following discussion, it is assumed that there are now three Beacons utilized. Now three circles are defined, instead of the two from the discussion above. The third distance, from Beacon "C" to the Interrogator (call it distance C1), defines a circle of radius length C1 centered about Beacon "C". The new situation is illustrated in Figure 4. Notice that with the three circles, there is only one location where all three circles can intersect. This eliminates the ambiguity associated with using only two Beacons. Now there is no I' to worry about. An additional advantage of using three Beacons is illustrated in Figure 5. Now the area of uncertainty has been reduced even though the tolerance of Beacon "C"'s measurement isn't any better than that of the other Beacons.

As the ship moves along, one or more of the Beacons may become unusable for various reasons; out of range, too small or too great an operating angle, etc. If additional Beacons are situated on shore, they may be interrogated, as desired, to greatly expand the range and usability of the system.

FIGURE-4. SYSTEM WITH THREE BEACONS

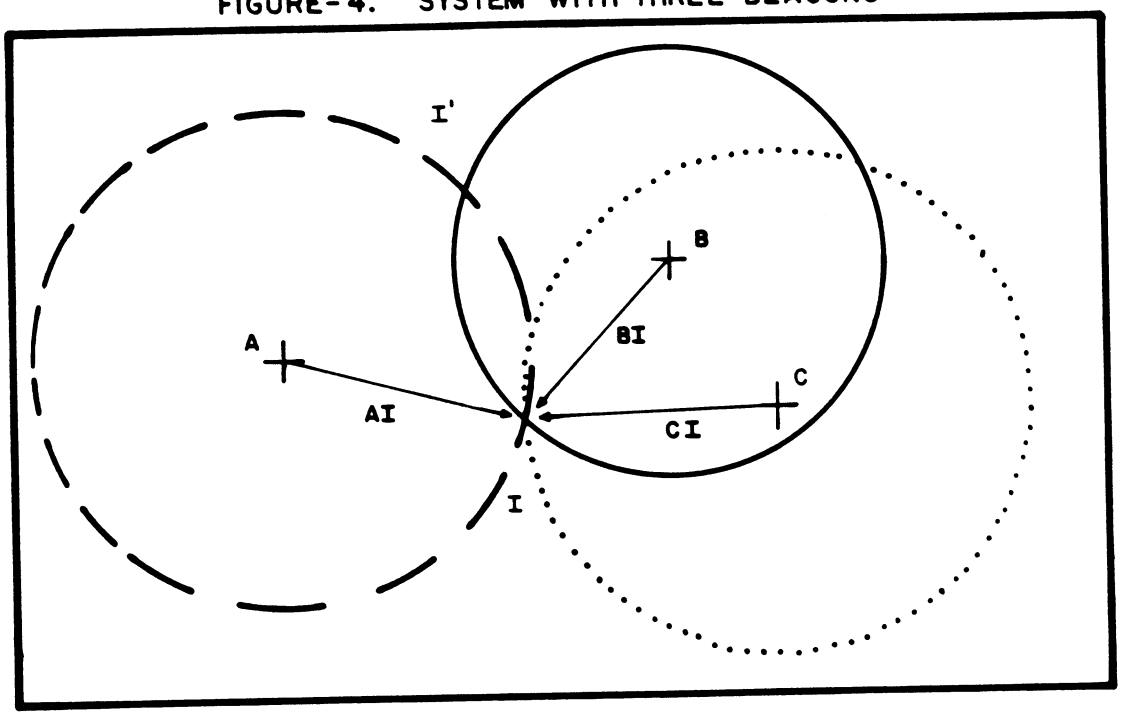
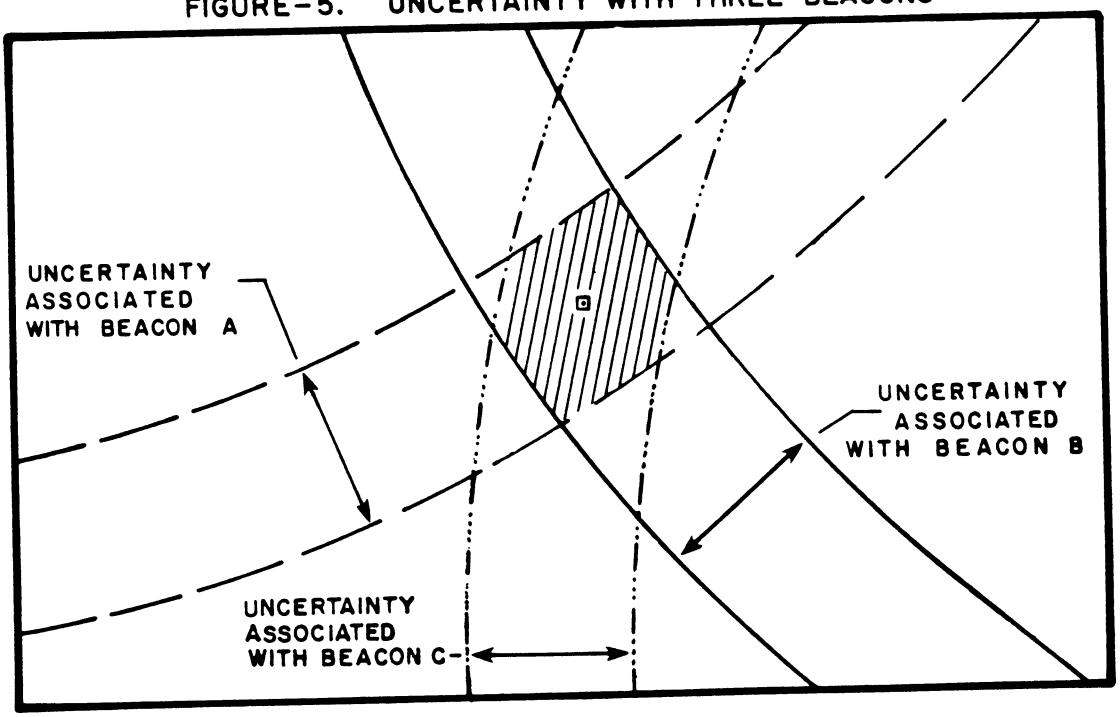


FIGURE-5. UNCERTAINTY WITH THREE BEACONS



THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

As many as three different Beacons may be selected at one time by the proper setting of the Monitor's Beacon-Select switches.

THE NAVSTAR GLOBAL POSITIONING SYSTEM

The Navstar Global Positioning System (GPS) is being developed and deployed by the U.S. Government. The system will beam continuous and precise radio signals to users anywhere on earth, at sea or in space.

Each navstar, an octagonal aluminum structure with wing-like solar array panels, is built to function for at least 7.5 years. Each contains a radio system that broadcasts continually on two frequencies. The heart of the system is a set of atomic clocks so precise that they would gain or lose just one second in 70,000 years. These clocks are the advanced technology which make Navstar's precise accuracy possible.

Ground receivers can be installed in ships, planes, and ground vehicles. Some are light enough to be back packed.

THE NAVSTAR GLOBAL POSITIONING SYSTEM (continued)

The receiver translates satellite signals into navigation information so that the user will know where he is within 30 feet, anywhere in the world, day or night, 24 hours a day.

General system description

The navstar GPS is a space-based radio positioning, navigation and time-transfer system. When fully operational (1988) the system will be composed of 18 satellites in 20,000 Km orbits arranged so that any spot on earth will will always have a minimum of 4 satellites in view. Each satellite transmits on two L-band frequencies, 1575.42 Mhz (L_1) and 1277.6 MHz (L_2). L_1 will carry a precise (P) signal and a clear/acquisition (C/A) signal. L_2 will carry either a P or C/A signal. Superimposed on these signals will be navigation and system data including satellite ephemeris, atmospheric propagation correction data, and satellite clock bias information.

THE NAVSTAR GLOBAL POSITIONING SYSTEM (continued)

Once tracking of the satellite signals begins, delays and offsets become the measurement variables from which position and velocity information is calculated. By measuring the difference between transmission and reception times of the satellite signal and multiplying those values by the speed of light, the apparent range to the satellite may be determined. By measuring the frequency difference between the satellite's clock and the user's clock, the line-of-sight velocity (range rate) between the two may also be determined. Because of the biases in time and frequency of the user's clock, the measured range and range rate contain a bias error and are therefore referred to as pseudorange and pseudorange rate. For this reason, four satellites are required to establish the user's position, velocity and time by removing the residual user equipment clock errors.

It should be noted that if the antenna elevation is known, i.e., antenna mounted on a ships mast, then only three satellites are necessary to obtain a position.

THE NAVSTAR GLOBAL POSITIONING SYSTEM (continued)

Furthermore, if the user has an accurate clock (cesium) available, then only two satellites are necessary for a position.

For improved accuracy in either fixed point or dynamic positioning, two receivers may be used in the differential mode to remove systematic errors.

APPENDIX A

DAILY OPERATIONS LOGS

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	-	# 026	# 009	20 KW	2+2+2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
ROBBS HILL	M. GAIR	5013	#006		3.5KW	2	2+2 LPL
POINT LONSDALE	M. PERKINS	5013	#067		3.5 KW	3	2+2 LPL
CAPE LIPTRAP	R. ROUMES	5013	#064		3.5KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
NOT ALLOWED TO	OPERATE MAXIRAN		AS PER INSTRUCTIONS
FROM TRITON	AS VESSEL	CARRIES	EXPLOSIVES AND
DETONATORS.			
O/T Requested By			Total System - Hours Operation For Client: NIL

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

1400: START MOBILE INSTALLATION ONBOARD M/V BASS TIDE IN WELSHPOOL

1800: SAILED WELSHPOOL, VERY ROUGH WEATHER

2045: ANCHORED AT SEALERS COVE OFF WILSONS PROMONTORY, STANDING BY FOR WEATHER.

2400: ANCHORED, STANDING BY FOR WEATHER

Mobile Operator(s): MIKE BERGSTROM

Party Chief: MIKE PERKINS

Project Number: P-1553 Date: 2 FEB 1986 Vessel: M/V BASS TIDE Client Party Number: SEAL #1

Geophysical Company: - Oil Company: - Radio Frequency:

Country: AUSTRALIA Area/Prospect: BASS STRAIT Stepback: - Shot Point Interval: -

N-57

SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	—	# 026	# 009	20 KW	2×2+2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
PARKERS HILL	M. GAIR	5013	# 006		3.5 KW	2	2+2 LPL
POINT LOWONDE	M. PERKINS	5013	# 067		3.5 KW	3	2+2 LPL
CAPE LIPTRAP	R. ROUNDS	5013	# 064		3.5 KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
NOT ALLOWED TO	OPERATE MAXIRAN		AS PER INSTRUCTIONS FROM
TRITON . VESSEL	CARRIES EXPLOSIVES		AND DETONATORS.

O/T Requested By		Total System - Hours Operation For Client	NIL

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

2000: ANCHORED AT SEALERS COVE, OFF ANSONS PROMONTORY
STANDING BY FOR WEATHER.
0830: ANCHOR UP, UNDERWAY TO RIG MARGIE AT LOCATION CHAT #1
FOR CARGO TRANSFER AND ANCHOR HANDLING
1605: ARRIVING AT LOCATION CHAT #1. WEATHER TO ROUGH FOR
CARGO TRANSFER
2000: TRANSFER EXPLOSIVES AND DETONATORS TO RIG "MARGIE"
TOO ROUGH WEATHER FOR FURTHER CARGO TRANSFER
2400: STANDING BY FOR WEATHER IN VICINITY OF RIG "MARGIE"
AT LOCATION CHAT #1

Mobile Operator(s) MIKE BERGSTROM

Party Chief MIKE PERKINS

Project Number P-1553 Date 3 FEB 1986 Vessel MV BASS TIDE Client Party Number SEAL #1

Geophysical Company — Oil Company — Radio Frequency

Country AUSTRALIA Area/Prospect BASS STRAIT Stepback — Shot Point Interval —

N-57 SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	–	* 026	* 009	20 KW	2×2÷2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
MARGAS HILL	M. GAIR	5013	* 006		3.5 KW	2	2÷2 LPL
POINT LONSDALE	M. PERKINS	5013	* 067		3.5 KW	3	2÷2 LPL
CAPE LIPTRAP	R. ROUNDS	5013	* 064		3.5 KW	5	2÷2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
O/T Requested By			Total System – Hours Operation For Client: NIL

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0700: STANDING BY FOR WEATHER IN VICINITY OF RIG "MARGIS" AT LOCATION CHART #1

0030: TIED UP TO RIG – CARGO TRANSFER

0520: CARGO TRANSFER COMPLETED

0535: ANCHORED OFF RIG, STANDING BY FOR WEATHER

2400: ANCHORED OFF RIG, STANDING BY FOR WEATHER

Mobile Operator(s): MIKE BERGSTROM

Party Chief: MIKE PERKINS

Project Number: P-1553 Date: 4 FEB 1986 Vessel: M/V BASS TIDE Client Party Number: SEAL #1

Geophysical Company: – Oil Company: – Radio Frequency:

Country: AUSTRALIA Area/Prospect: BASS STRAIT Stepback: – Shot Point Interval: –

N-57

SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	-	# 026	# 009	20KW	2×2 +2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
ORGANS HILL	M. GRIR	5013	# 006		3.5KW	2	2+2 LPL
POINT LONSDALE	M. PERKINS	5013	# 067		3.5KW	3	2+2 LPL
CAPE LIPTRAP	R. ROWNDS	5013	# 064		3.5KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
O/T Requested By			Total System - Hours Operation For Client: NIL

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0000: ANCHORED OFF RIG "MARGIE" AT LOCATION CHART #1, STANDING BY FOR WEATHER TO START ANCHORHANDLING.

0600: WEATHER IMPROVES, ANCHOR UP, START ANCHORHANDLING TOGETHER WITH M/V "EASTERN TIDE".

1106: WEATHER NOW TOO ROUGH FOR ANCHORHANDLING, STANDING BY IN VICINITY OF RIG MARGIE AWAITING WEATHER TO IMPROVE

2400: STANDING BY FOR WEATHER.

Mobile Operator(s): MIKE BERGSTROM

Party Chief: MIKE PERKINS

Project Number: P-1553 Date: 5 FEB 1986 Vessel: M/V BASS TIDE Client Party Number: SEAL #1

Physical Company: - Oil Company: - Radio Frequency:

Country: AUSTRALIA Area/Prospect: BASS STRAIT Stepback: Shot Point Interval:

N-57

SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	-	# 026	# 009	20KW	2+2+2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
RYDERS HILL	M. GRAY	5013	# 006		3.5KW	2	2+2 LPL
POINT LONSDALE	M. PERKINS	5013	# 067		3.5KW	3	2+2 LPL
CAPE LIPTRAP	R. ROUNDS	5013	# 064		3.5KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For	
2000	2400	D. SCOTT	GENERAL NAV	
		(CLIENTS REP)		
O/T Requested By			Total System - Hours Operation For Client	4 Hrs.

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0000: STANDING BY FOR WEATHER IN VICINITY OF RIG "MARGIE" AT LOCATION CHART # 1

1400: WEATHER IMPROVES, RESUME ANCHOR HANDLING.

2000: ANCHOR HANDLING COMPLETED, UNDERWAY TO LOCATION SEAL # 1 TO DROP MARKER BUOYS. M/V EASTERN TIDE WILL TOW RIG. MAXIRAN TO OPERATE TOO FAR FOR SIGNALS YET.

2400: UNDERWAY TO LOCATION SEAL # 1

Mobile Operator(s) MIKE BERGSTROM

Party Chief MIKE PERKINS

Project Number P-1553 Date 6 FEB 1986 Vessel M/V BASS TIDE Client Party Number SEAL # 1

Geophysical Company - Oil Company - Radio Frequency -

Country AUSTRALIA Area/Prospect BASS STRAIT Steptack - Shot Point Interval -

N-57

SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	-	#026	#009	20KW	2+2+2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
ARKERS HILL	M. GAIR	5013	#006		3.5KW	2	2+2 LPL
POINT LONSDALE	M. PERKINS	5013	#067		3.5KW	3	2+2 LPL
CAPE LIPTRAP	R. ROUNDS	5013	#064		3.5KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0000	0530	D. SCOTT	RIG POSITIONING
0900	2400	(CLIENTS REP)	

O/T Requested By

Total System - Hours Operation For Client: 20HRS 30MINS

LOST TIME

From	To	Hours Lost	Reason(s)
0530	0900	3HRS 30MINS	20 KW LINEAR FAILURE

Brief Operations Log & Remarks

0000: UNDERWAY TO LOCATION SEAL #1 FROM CHART #1

0430: PROBLEMS WITH 20 KW LINEAR, CHANGED TO SPARE SET BUT STILL INOPERATIVE. FOUND CORK CONNECTOR LOOSE ON INPUT OF LINEAR, SCREWED UP AND REMAINED USABLE

0900: MAXIRAN NOW OPERATIONAL USING LINEAR AND P/S OF DIFFERENT SERIAL NUMBERS

1020: START DROPPING MARKER BUOYS. PROBLEMS WITH STRONG CURRENTS SHIFT BUOYS, INCREASING ANCHOR WEIGHTS.

1900: BUOY PATTERN COMPLETED. ANCHORS # 8, 1, 4 AND S PLUS LOCATION AND LOCATION PORT OFFSET DROPPED ANCHORED AT ANCHOR #5 LOCATION AWAITING RIG.

2215: RIG APPROACHES LOCATION, DROPPED ANCHOR #5 BUT ITS GETTING STUCK DUE TO KNOT IN CHAIN. RIG DRIFTING OFF LOCATION WHILST GETTING #5 ANCHOR CHAIN SORTED OUT

2400: RIG DRIFTED WELL OUTSIDE ANCHOR PATTERN AREA

Mobile Operator(s): MIKE BERGSTROM

Party Chief: MIKE PERKINS

Project Number: P-1552 Date: 7 FEB 1986 Vessel: M/V BASS TIDE Client Party Number: SEAL #1

Geophysical Company: Oil Company: Radio Frequency:

Country: AUSTRALIA Area/Prospect: BASS STRAIT Stepback: - Shot Point Interval: -

N-57

SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	-	# 026	# 009	20 KW	2×2+2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
ARKERS HILL	M. GAIR	5013	# 006		3.5KW	2	2+2 LPL
POINT LONSDALE	M. PERKINS	5013	# 067		3.5KW	3	2+2 LPL
CAPE LIPTRAP	R. ROWNDS	5013	# 064		3.5KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0000	2400	D. SCOTT	RIG POSITIONING
		(CLIENTS REP)	
O/T Requested By			Total System - Hours Operation For Client: 24 HRS

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0000: RIG MARGIE DRIFTED OUTSIDE ANCHOR PATTERN DUE TO PROBLEM WITH #5 ANCHOR CHAIN COMING RIG BACK INTO LOCATION BY FIXING AND ANCHORHANDLING. WEATHER ROUGH AND ANCHOR SLIPS.

2400: CONTINUING ANCHOR HANDLING AND POSITION FIXING

Mobile Operator(s): MIKE BERGSTROM

Party Chief: MIKE PERKINS

Project Number: P-1553 Date: 8 FEB 1986 Vessel: M/V BASS TIDE Client Party Number: SEAL #1

Geophysical Company: - Oil Company: - Radio Frequency:

Country: AUSTRALIA Area/Prospect: BASS STRAIT Stepback: - Shot Point Interval: -

N-57

SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	-	# 026	# 009	20 KW	2×2+2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
FRNERS HILL	M. GAIR	5013	# 006		3.5KW	2	2+2 LPL
POINT LONSDALE	M. PERKINS	5013	# 067		3.5KW	3	2+2 LPL
CAPE LIPTRAP	R. ROWNDS	5013	# 064		3.5KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0000	2400	D. SCOTT	RIG POSITIONING
		(CLIENTS REP)	
O/T Requested By		Total System - Hours Operation For Client	24 Hrs

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0000 - 2400 POSITION FIXING AND ANCHOR HANDLING ON LOCATION SEAL #1 ROUGH WEATHER AND PROBLEMS WITH ANCHORS SLIPPING.

Mobile Operator(s) MIKE BERGSTROM

Party Chief MIKE PERKINS

Project Number P-1553 Date 9 FEB 1986 Vessel M/V BASS TIDE Client Party Number SEAL #1

Physical Company - Oil Company - Radio Frequency

Country AUSTRALIA Area/Prospect BASS STRAIT Stepback - Shot Point Interval -

N-57

SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	-	# 026	# 009	20KW	2×2→2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
PARKERS HILL	M. GAIR	5013	# 006		3.5KW	2	2+2 LPL
POINT LONSDALE	M. PERKINS	5013	# 067		3.5KW	3	2+2 LPL
CAPE LIPTRAP	R. ROUNDS	5013	# 064		3.5KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0000	2400	D. SCOTT	RIG POSITIONING
		(CLIENTS REP)	

O/T Requested By		Total System - Hours Operation For Client	24 HRS

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0000 - 2400 POSITION FIXING AND ANCHORHANDLING IN ROUGH WEATHER. NECESSARY TO PIGGY-BACK #1 ANCHOR. MAXIRAN INDICATES RIG NOW WITHIN 30 M OF PROPOSED LOCATION. CLIENT SATISFIED WITH THAT. TENSIONING UP ANCHORS

Mobile Operator(s) MIKE BERGSTROM

Party Chief MIKE PERKINS

Project Number P-1553 Date 10 FEB 1986 Vessel M/V BASS TIDE Client Party Number SEAL #1

Geophysical Company - Oil Company - Radio Frequency -

Country AUSTRALIA Area/Prospect BASS STRAIT Stepback - Shot Point Interval -

N-57

SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	MAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	-	* 026	* 009	20 KW	2×2+2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
PARKERS HILL	M. GAIR	SOIJ			3.5 KW	2	2+2 LPL
POINT LONSDALE	M. PERKINS	SOIJ			3.5 KW	3	2+2 LPL
CAPE LIPTRAP	R. ROUNDS	SOIJ			3.5 KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0000	0900	D. SCOTT	RIG POSITIONING
2030	2200	(CLIENTS REP)	
O/T Requested By			Total System - Hours Operation For Client: 18 HRS 30 MIN

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0900 - 0600: REST PERIOD. RIG MARGIE TENSIONING UP ANCHORS

0600 - 0900: POSITIONIN FIXING. ANCHORS HOLDING.

0900: ONBOARD RIG "MARGIE" WITH GPS EQUIPMENT

1000: GPS EQUIPMENT SET UP, RUNNING FIXES.

2025: BACK ON M/V BASS TIDE

2050: TRYING TRANSIT FIX AROUND RIG, BUT PROBLEMS DUE TO REFLEKIONS OFF RIG AND OBSCURED MAXIRAN STATIONS

2130: BACKING UP ON PORT SIDE OF RIG, TAKING FINAL MAXIRAN FIX

2200: MAXIRAN BASES AND MOBILE SHUT DOWN, UNDERWAY TO WELSHPOOL

2400: UNDERWAY TO WELSHPOOL.

Mobile Operator(s): MIKE BERGSTROM

Party Chief: MIKE PERKINS

Project Number: D-1553 Date: 11 FEB 1986 Vessel: M/V BASS TIDE Client Party Number: SEAL #1

Geophysical Company: - Oil Company: - Radio Frequency:

Country: AUSTRALIA Area/Prospect: BASS STRAIT Stepback: - Shot Point Interval: -

N-57

SEE INSTRUCTIONS ON REVERSE

MAXIRAN DAILY OPERATIONS LOG

Mobile Station	NAVCOMP	INDICATOR	INTERROGATOR	AMPLIFIER	ANTENNA SYSTEM
	–	* 026	* 009	20KW	2×2+2 LPL

BASE STATIONS

Station Name/No.	Operator	Mob. Delay	Beacon	Control Box	Amplifier	Code	Antenna Type(s)
ROGERS HILL	M. GAIR	5013	* 006		3.5KW	2	2+2 LPL
POINT LONSDALE	M. PERKINS	5013	* 067		3.5KW	3	2+2 LPL
CAPE LIPTRAP	R. ROUNDS	5013	* 064		3.5KW	5	2+2 LPL

OPERATING TIME

Time On	Time Off	Requested By	System Used For
O/T Requested By			Total System - Hours Operation For Client: NIL

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0000: UNDERWAY TO WELSHPOOL

1000: ALONGSIDE WELSPOOL DOCK

1800: ALL EQUIPMENT OFF BOAT AND LOADED ON TRUCK.

Mobile Operator(s): MIKE BERGSTROM

Party Chief: MIKE PERKINS

Project Number: P-1553 Date: 12 FEB 1986 Vessel: M/V BASS TIDE Client Party Number: SEAL * 1

Physical Company: Oil Company: Radio Frequency:

Country: AUSTRALIA Area/Prospect: BASS STRAIT Stepback: – Shot Point Interval: –

N-57

SEE INSTRUCTIONS ON REVERSE

PETROLEUM GEOCHEMISTRY

HYDROCARBON SOURCE ROCK

EVALUATION STUDY

SEAL 1

Prepared for

BRIDGE OIL LIMITED

APRIL, 1986

ANALABS
A Division of Macdonald Hamilton & Co. Pty. Ltd.
52 MURRAY ROAD, WELSHPOOL, W.A. 6106.
Telephone: (09) 458 7999 Telex: ANALAB AA92560

HYDROCARBON SOURCE ROCK

EVALUATION STUDY

SEAL 1

SUMMARY

Organic geochemical analyses performed on cuttings and sidewall cores between 1206.5m and 1630m in the Bridge Oil Ltd., Seal 1 well drilled in T-19-P of the Bass Basin have indicated the following:

- sediments analysed are thermally mature and oil generative. However, greater thermal maturity may have been attained in sediments adjacent to igneous intrusives while lower maturities may occur in intervals removed from the influence of these igneous bodies.

- the shaley intervals analysed are organic rich, contain mixed organic matter and may have generated quantities of hydrocarbon.

- if any reservoir hydrocarbon is present in the sandstone sidewall cores at 1353.8m and 1358m it is in very small quantities and its character is largely masked by indigenous organic matter and contaminants.

- no relationship can be established between hydrocarbons thought to be present in these sandstones and the shaley source rocks at 1325m and 1340m.

STEVE CADMAN
April, 1986.

INTRODUCTION

Organic geochemical analyses have been performed on eight (8) sidewall cores and two (2) cuttings samples between 1206.5m and 1630m in the Seal 1 well drilled in T-19-P of the Bass Basin.

The purpose of this study has been to characterise reservoir hydrocarbon thought to be present in sidewall cores at 1353.8m and 1358m and to determine its relation to the anticipated source shales encountered around these depths.

Analytical

Upon arrival at Analabs the samples were assigned the Analabs job number 43007. Six (6) sidewall cores were submitted to total organic carbon determination and Rock-Eval pyrolysis analysis. A further four (4) were extracted. Two (2) of these gave insufficient extract yields for separation by liquid chromatography and underwent $C_{12}+$ whole extract gas/liquid chromatography. The two (2) richer samples were separated and subjected to $C_{12}+$ saturate gas/liquid chromatography. Two (2) washed and dried cuttings samples were sent to Professor Alan Cook for vitrinite reflectance measurement and coal maceral description.

The results of these analyses may be found in the following figures and tables:

Type of Analysis	Figure	Table
% total organic carbon determination		1
Rock-Eval pyrolysis	2	1
Extraction/liquid chromatography		2
Gas chromatography	3	3
Vitrinite reflectance/coal maceral descriptions	1	4

A description of these analyses may be found in the Theory and Methods section located at the rear of this report.

General Information

Copies of this report have been sent to Mr. C. Furr of Bridge Oil Ltd., in Sydney. Any questions regarding this study may be directed to Steve Cadman, of Analabs, located in Perth, Western Australia.

All data and interpretations contained herein are proprietary to Bridge Oil, and are treated as highly confidential material by all Analabs personnel.

DISCUSSION OF THE RESULTS

A. Thermal Maturity of Sediments

Two (2) vitrinite reflectance measurements at 1341m and 1374m suggest sediments at these depths are thermally mature and oil generative. However, organic matter appears to be contact altered in these two samples (coal maceral descriptions, Table 4), suggesting these sediments have been affected by igneous intrusives. Consequently, more advanced levels of thermal maturity may have been attained adjacent to these igneous bodies while sediments further removed from the influence of these intrusives may have experienced a milder thermal history.

Tmax temperatures in excess of 440°C were recorded in almost all of the sidewall cores submitted to Rock-Eval pyrolysis analysis. This confirms that sediments from the interval analysed are probably mature and oil generative.

B. Hydrocarbon Source Character

The majority of the sidewall cores submitted to total organic carbon determination show moderately good to excellent organic richness (Table 1). Hydrogen indices suggest organic matter is predominantly gas prone; although a minor but significant oil prone component may also be present (particularly around 1340m where a hydrogen index of 240 was recorded).

Volatile hydrocarbon yields (S_1) suggest that quantities of hydrocarbon may have been sourced from the richer intervals analysed between 1206.5m and 1340m. Two (2) samples from these shaley intervals were extracted (SWC 19, SWC 20). $C_{12}+$ saturate gas chromatograms from these sidewall cores show a predominance of high molecular weight n-alkanes, and are thought to be typical of mature terrestrially sourced extracts. Both appear to be rich in aromatic compounds (Table 2), which may reflect either the coaly nature of these sediments or the fact that quantities of saturated hydrocarbons have already been expelled from these source rocks.

C. Reservoir Hydrocarbon-Source Rock Correlation

Two (2) sandstone sidewall cores (SWC 16, SWC 18), were extracted in an endeavour to characterise any reservoir hydrocarbon present. Both gave poor total extract yields which made separation by liquid chromatography impracticable. $C_{12}+$ whole extract chromatograms from these two samples (Figure 3-3, 3-4), indicate that if any reservoir hydrocarbon is present in these sandstones it must be in very minor amounts (reservoir hydrocarbon usually shows an abundance of n-alkanes. These compounds occur in very low concentrations in both samples). In addition, the character of this hydrocarbon is probably masked by small quantities of extractable organic matter derived from indigenous material. Contamination from invading mud filtrate is also a problem, particularly in sidewall core 18 (Figure 3-3).

Consequently, it is difficult to draw inferences concerning the relation between the shaley source rocks at 1325m and 1340m and any hydrocarbon that may be present in the sandstone sidewall cores at 1353.8m and 1358m. On the evidence available it seems unlikely that hydrocarbons generated from the shaley intervals mentioned above have had a significant input into the sandy intervals around 1353.8m and 1358m.

FIGURE : 1
VITRINITE REFLECTANCE AND COAL MACERAL IDENTIFICATION

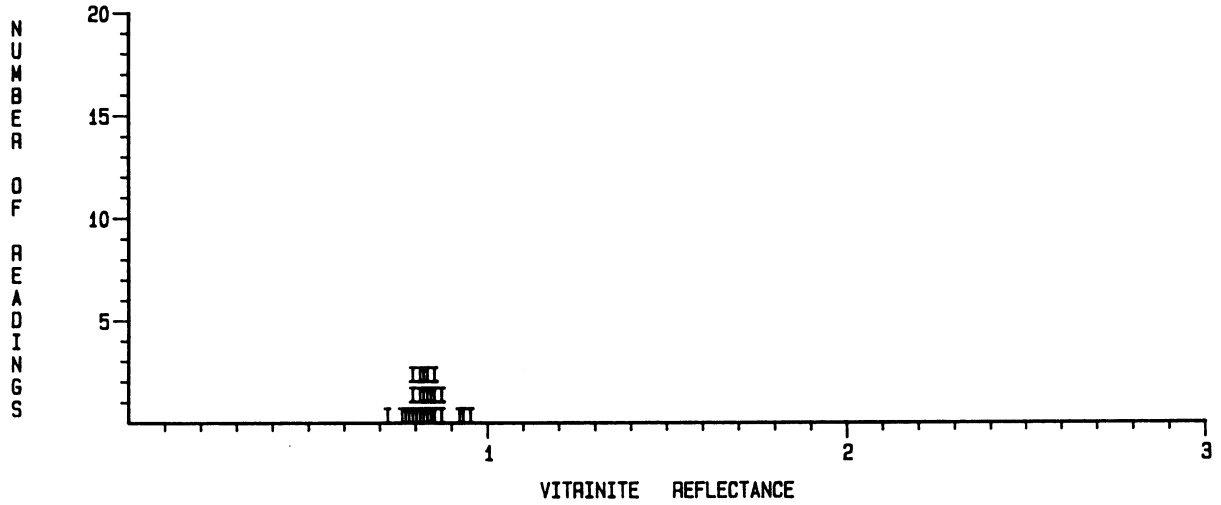
CLIENT NAME : BRIDGE OIL LTD. DATE : APRIL 1986 WELL NAME : SEAL 1

DEPTH OR SAMPLE No : 1341 Metres SAMPLE TYPE : Cuttings

(Total No. of Readings = 27) 0.72 0.76 0.77 0.78 0.79 0.79 0.79 0.80 0.81 0.81 0.81 0.82 0.82 0.82 0.83 0.83 0.8
0.84 0.84 0.85 0.85 0.85 0.87 0.87 0.92 0.93 0.95

VITRINITE REFLECTANCE — MACERAL IDENTIFICATION

POPULATION		No. of	Mean	Min.	Max.	STD.		%	%	%	%
Number	%	Readings	Ro (%)	Ro (%)	Ro (%)	Dev. (%)	Comments	Alginite	Exinite	Vitrinite	Inertinite
1	100	27	0.83	0.72	0.95	0.05	INDIGENOUS (I)	0.00	23.00	71.00	6.00



CLIENT NAME : BRIDGE OIL LTD. DATE : APRIL 1986 WELL NAME : SEAL 1

DEPTH OR SAMPLE No : 1374 Metres SAMPLE TYPE : Cuttings

(Total No. of Readings = 36) 0.72 0.73 0.74 0.75 0.77 0.79 0.79 0.79 0.79 0.80 0.80 0.81 0.81 0.81 0.82 0.83 0.8
0.84 0.86 0.86 0.86 0.87 0.88 0.88 0.88 0.93 1.04 1.28 1.29 1.30 1.36 1.42 1.56 1.6
1.76 2.08

VITRINITE REFLECTANCE — MACERAL IDENTIFICATION

POPULATION		No. of	Mean	Min.	Max.	STD.		%	%	%	%
Number	%	Readings	Ro (%)	Ro (%)	Ro (%)	Dev. (%)	Comments	Alginite	Exinite	Vitrinite	Inertinite
1	80.6	29	0.86	0.72	1.29	0.13	INDIGENOUS (I)	0.00	2.00	28.00	70.00
2	19.4	7	1.59	1.30	2.08	0.27	INERTINITE (N)	No data	No data	No data	No data

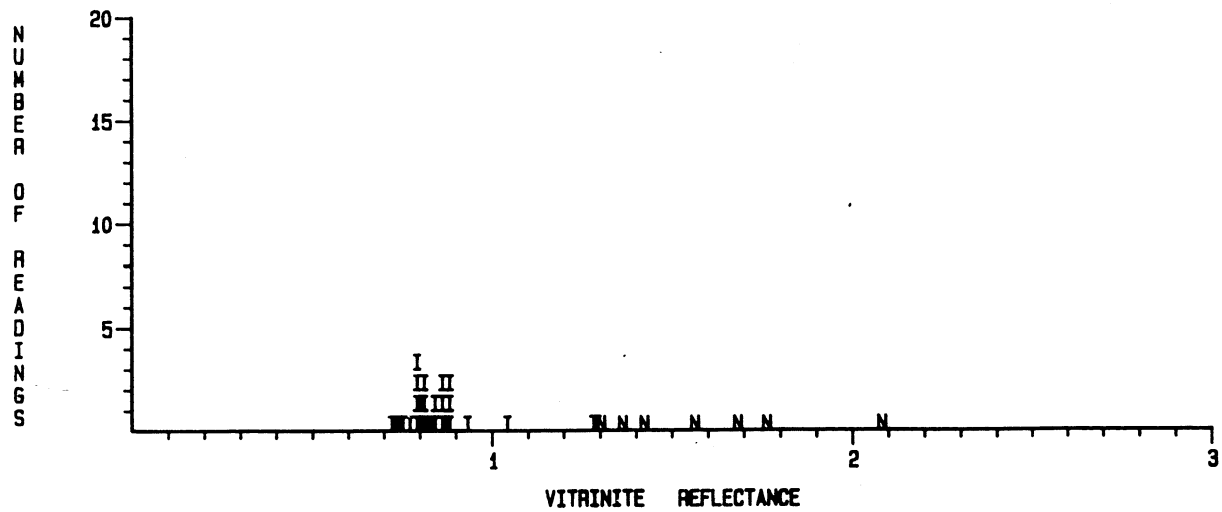


FIGURE 2
SEAL 1
HYDROGEN INDEX vs T_{max}

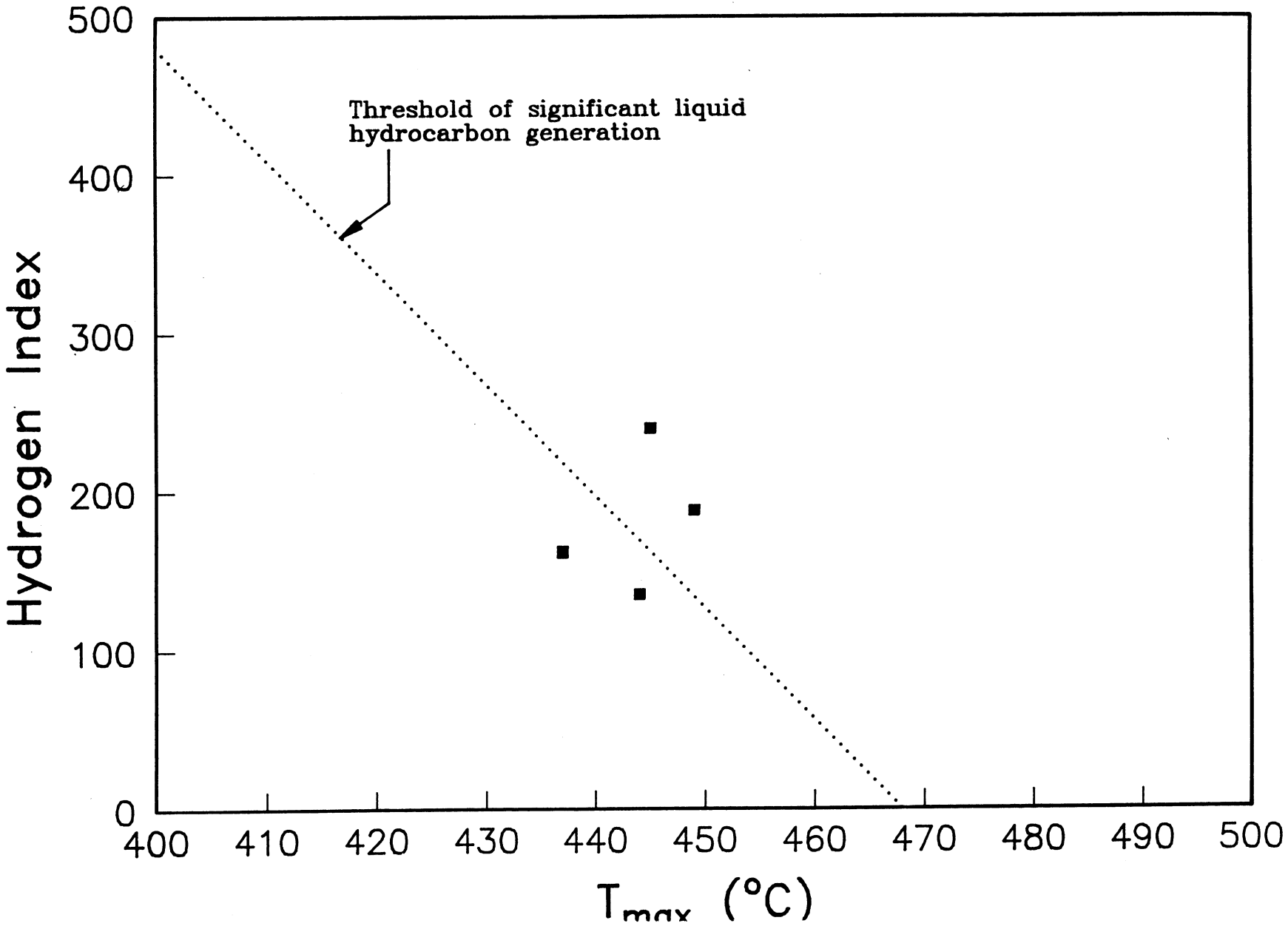


FIGURE 3-1
SEAL 1, SWC 20, 1325m
Saturate Fraction
C_{12}+ GLC

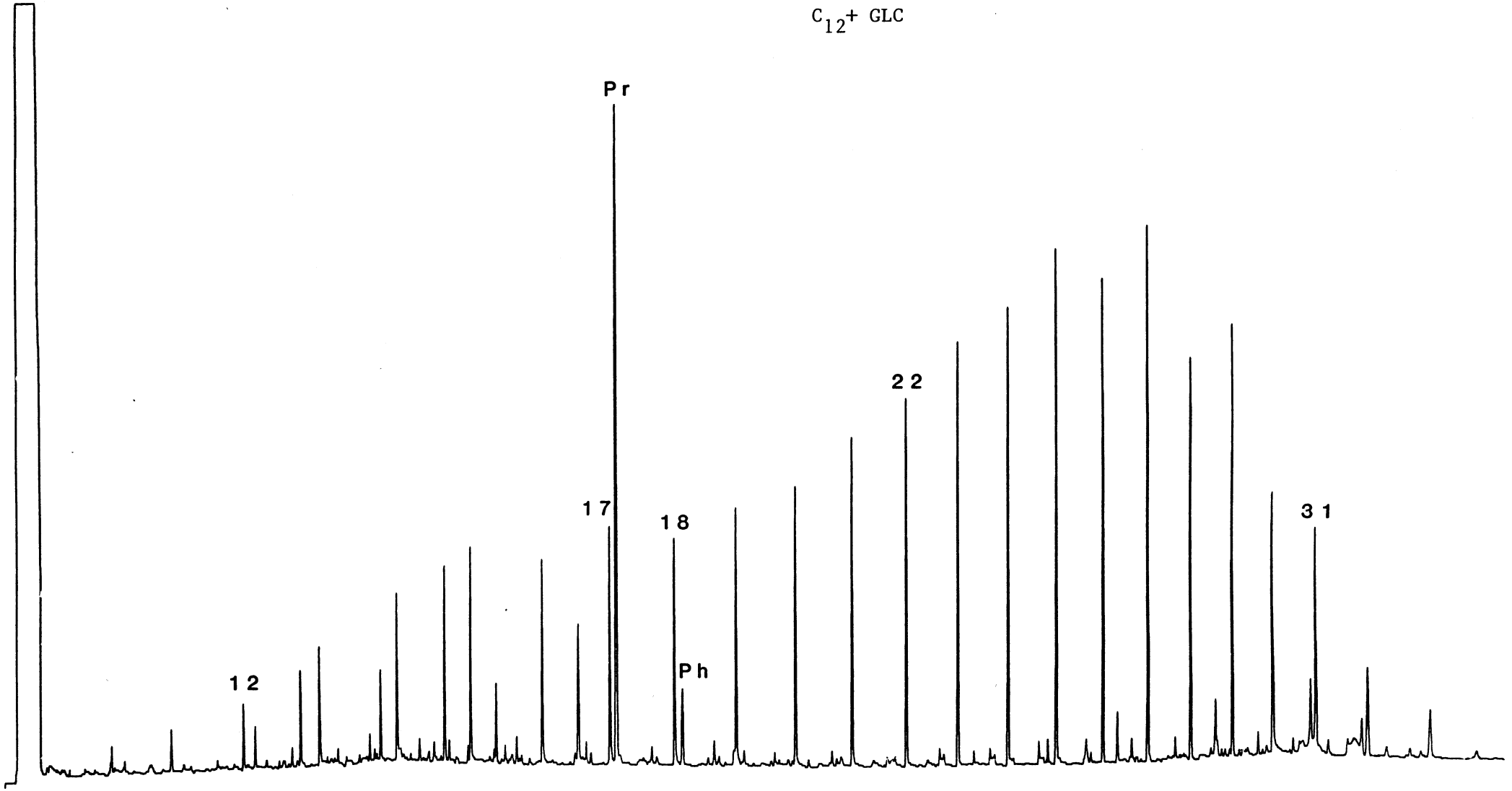


FIGURE 3-2

SEAL 1, SWC 19, 1340m

Saturate Fraction

C_{12}+ GLC

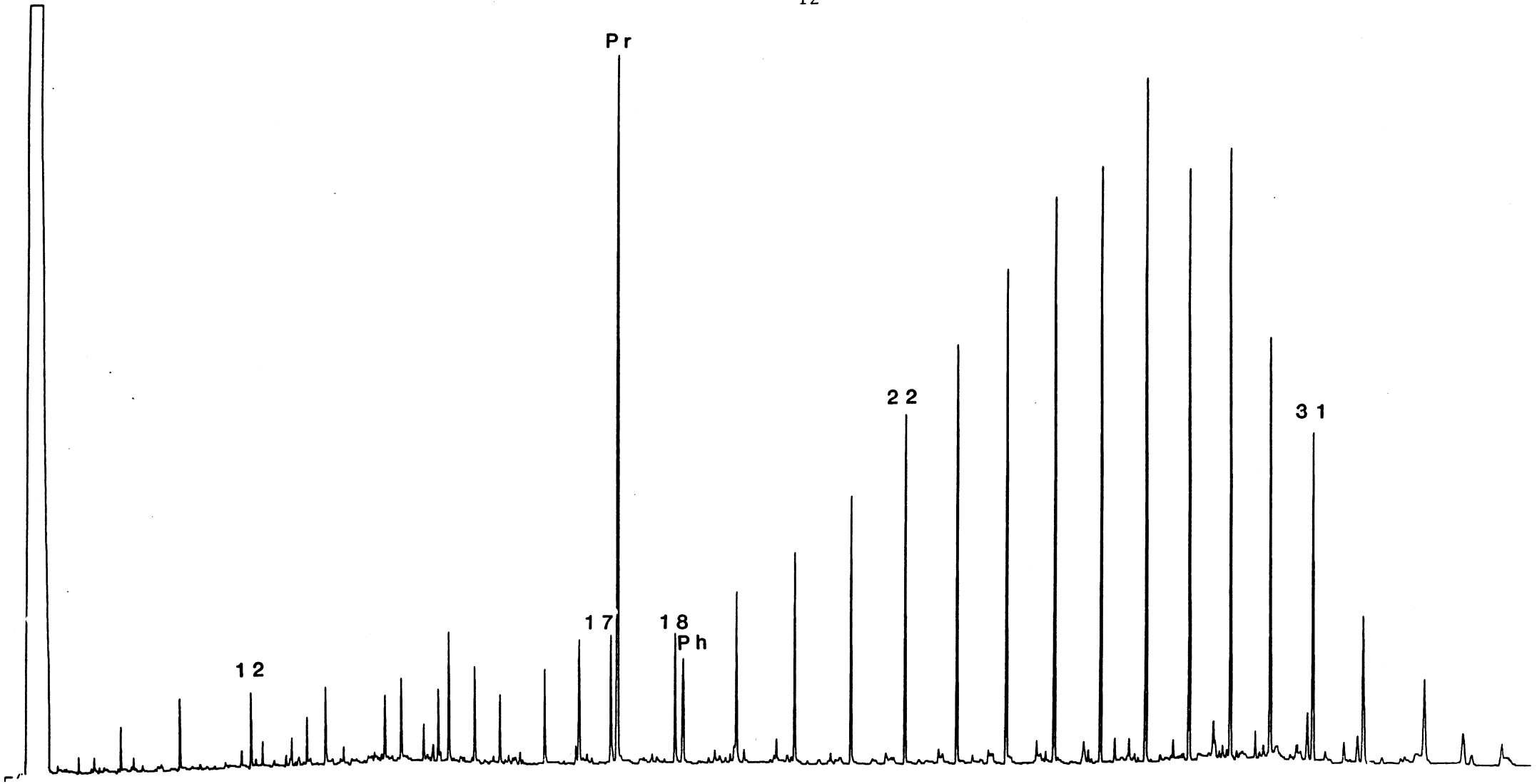


FIGURE 3-3

SEAL 1, SWC 18, 1353.8m

Whole Extract

C_{12}+ GLC

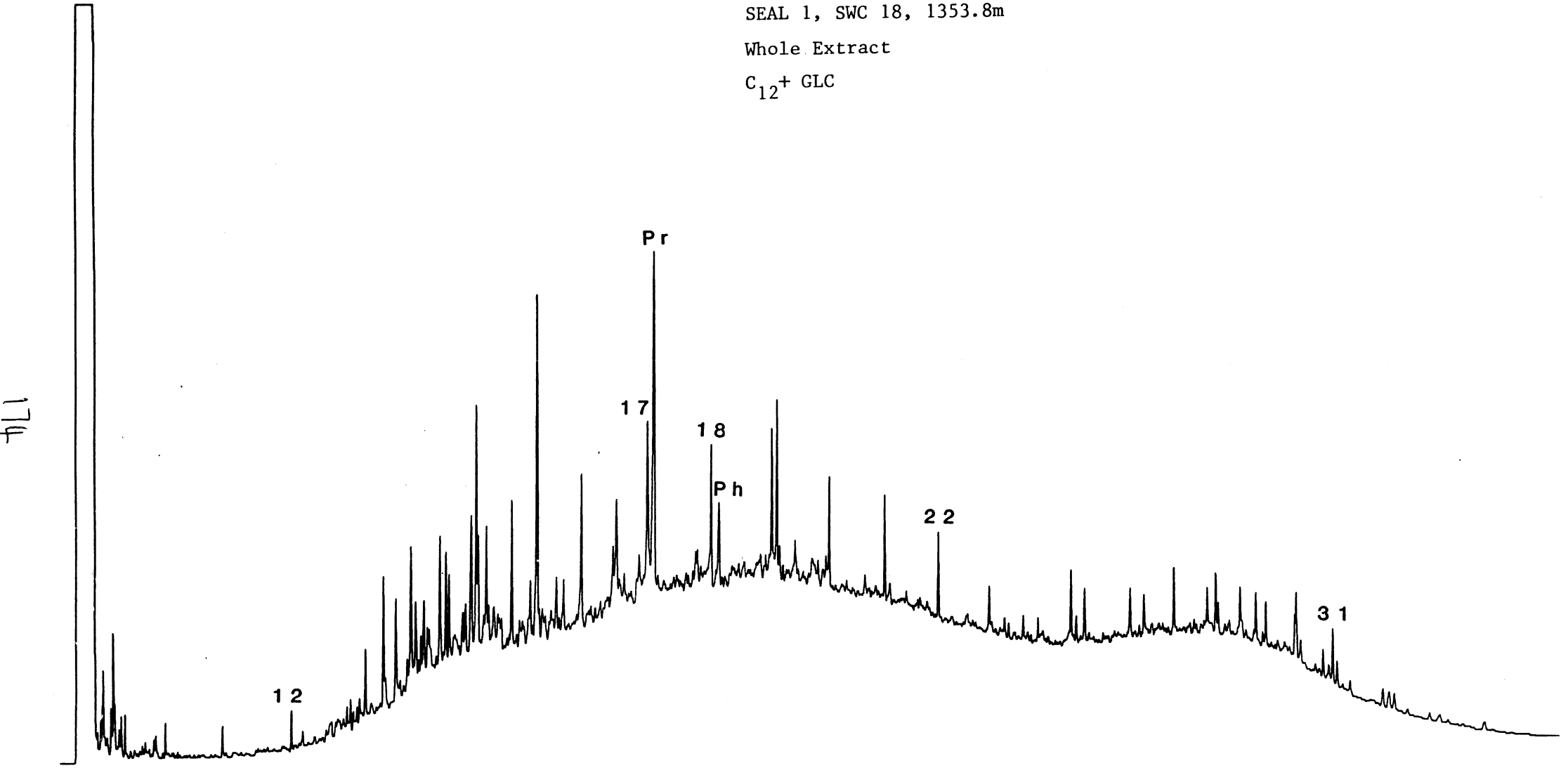


FIGURE 3-4
SEAL 1, SWC 16, 1358m
Whole Extract
C_{12}+ GLC

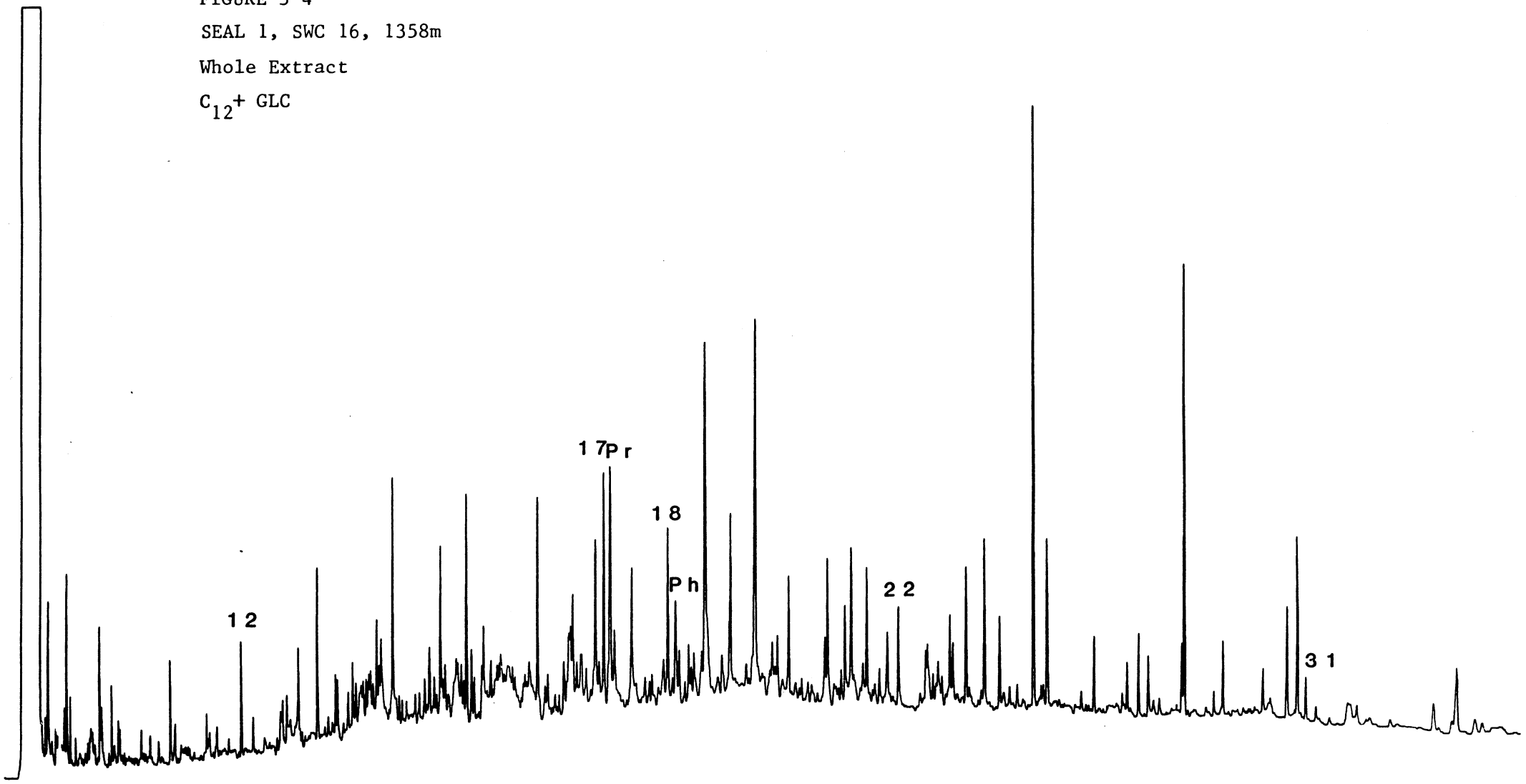


TABLE 1

ROCK-EVAL PYROLYSIS DATA (one run)

WELLNAME = SEAL 1 DATE OF JOB = MARCH 1986

DEPTH(m)	TMAX	S1	S2	S3	S1+S2	S2/S3	PI	PC	TOC	HI	OI
1206.5 swc 22	517	0.43	0.86	1.29	1.29	0.67	0.33	0.11	2.35	36	54
1254.0 swc 21	437	0.70	9.81	1.84	10.51	5.33	0.07	0.87	6.05	162	30
1325.0 swc 20	444	0.32	4.27	1.54	4.59	2.77	0.07	0.38	3.14	135	49
1340.0 swc 19	445	1.79	20.78	0.97	22.57	21.42	0.08	1.87	8.64	240	11
1466.0 swc 10	449	0.04	0.47	0.45	0.51	1.04	0.08	0.04	0.25	188	180
1630.0 swc 3	437	0.16	1.74	0.91	1.90	1.91	0.08	0.16	1.08	161	84

TMAX = Max. temperature S2
S1 = Volatile hydrocarbons (HC)
S2 = HC generating potential
S1+S2 = Potential yield
S3 = Organic carbon dioxide
PI = Production index
PC = Pyrolysable carbon
TOC = Total organic carbon
HI = Hydrogen index
OI = Oxygen Index
nd = no data

TABLE 2

Summary of Extraction and Liquid Chromatography

Wellname: SEAL 1 Date of Job: MARCH 1986

A. Concentrations of Extracted Material

				-------Hydrocarbons--------			-----Nonhydrocarbons-----		
Depth(m)	Weight of Rock Extd. (grams)	Total Extract (ppm)	Loss on Column (ppm)	Saturates (ppm)	Aromatics (ppm)	HC Total (ppm)	NSO's (ppm)	Asphaltenes (ppm)	NonHC Total (ppm)
1325.0 swc 20	40.0	1392.5	112.5	422.5	457.5	880.0	400.0	nd	400.0
1340.0 swc 19	27.0	6148.1	516.4	1746.1	2533.0	4279.1	1352.6	nd	1352.6
1353.8 swc 18	32.4	1080.2	nd	nd	nd	nd	nd	nd	nd
1358.0 swc 16	27.9	64.5	nd	nd	nd	nd	nd	nd	nd

TABLE 2

Summary of Extraction and Liquid Chromatography

Wellname: SEAL 1 Date of Job: MARCH 1986

B. Compositional Data

	-----Hydrocarbons------			-----Nonhydrocarbons------			EOM(mg)	SAT(mg)	SAT	ASPH	HC
Depth(m)	%SAT.	%AROM.	%HC's	%NSO's	%ASPH.	%Non HC's	TOC(g)	TOC(g)	AROM	NSO	Non HC
1325.0 swc 20	33.0	35.7	68.8	31.2	nd	31.2	44.3	13.5	.92	nd	2.2
1340.0 swc 19	31.0	45.0	76.0	24.0	nd	24.0	71.2	20.2	.69	nd	3.2
1353.8 swc 18	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1358.0 swc 16	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

na = not applicable nd = no data

TABLE 3

Summary of Gas Chromatography Data

Wellname: SEAL 1 Date of Job:MARCH 1986

A. Alkane Compositional Data

Depth(m)	Prist./Phyt.	Prist./n-C17	Phyt./n-C18	CPI(1)	CPI(2)	(C21+C22)/(C28+C29)
1325.0 swc 20	7.65	3.69	.50	1.09	1.10	.84
1340.0 swc 19	6.41	6.71	1.16	1.08	1.07	.46
1353.8 swc 18	4.62	2.50	.74	1.16	1.19	1.10
1358.0 swc 16	2.44	1.67	.89	1.69	1.82	1.80

TABLE 3

Summary of Gas Chromatography Data

Wellname: SEAL 1 Date of Job:MARCH 1986

B. n-Alkane Distributions

DEPTH(m)	nC12	nC13	nC14	nC15	nC16	nC17	iC19	nC18	iC20	nC19	nC20	nC21	nC22	nC23	nC24	nC25	nC26	nC27	nC28	nC29	nC30	nC31
1325.0 swc 20	.9	1.6	2.2	2.8	2.7	3.3	12.3	3.2	1.6	3.6	3.8	4.3	4.9	5.6	6.3	7.0	6.3	7.1	5.3	5.6	4.8	4.7
1340.0 swc 19	.8	1.0	1.1	1.2	1.1	1.9	12.6	1.7	2.0	2.1	2.7	3.4	4.3	5.3	6.3	7.5	7.9	9.1	7.9	8.7	6.3	5.4
1353.8 swc 18	1.2	2.7	5.6	5.6	7.1	8.4	21.1	6.2	4.6	5.7	4.0	3.4	2.8	2.0	.9	2.9	3.4	4.3	3.5	2.1	1.5	.9
1358.0 swc 16	2.5	4.1	7.6	5.5	5.8	6.5	10.9	5.0	4.5	5.7	6.8	5.3	3.2	3.7	2.9	7.6	2.2	2.5	2.1	2.6	1.7	1.3

na = not applicable nd = no data

TABLE 4

SEAL NO. 1

K.K. No.	Depth (m)	$\bar{R}_v$max	Range	N	Description Including Exinite Fluorescence
x4914	1341 dc	0.83	0.72-0.95	27	Abundant resinite, orange to dull orange, abundant suberinite, dull orange to brown, sparse sporinite, orange to dull orange. (Siltstone>coal>shaly coal>sandstone> carbonate. Coal major, V>>E>I, clarite>durociarite> vitrite. Shaly coal major, V>E>I, clarite>vitrite> durociarite. Dom abundant, V>E>I. Vitrinite abundant, exinite sparse, inertinite rare. Micrinite common in vitrinite in coal. Weak to moderate oil cut from vitrinite in coal. Vitrinite shows weak brown to brown fluorescence. Iron oxides common in clastics. Mineral matter fluorescence weak to moderate. Organic matter is from the Upper Eastern View Facies and is contact altered suggesting that the igneous rocks are at least in part intrusive. Pyrite abundant.)
x4915	1374 dc	0.86	0.72-1.29	29	Rare sporinite, dull orange. (Siltstone>>sandstone> carbonate>shaly coal. Shaly coal rare, inertite. Dom common, I>V>E. Inertinite and vitrinite common, exinite rare. Multiple vitrinite populations present probably from a zone of contact alteration. Iron oxides abundant. Pyrite abundant.)

PALYNOLOGY OF BRIDGE SEAL-1,

BASS BASIN, AUSTRALIA

BY

ROGER MORGAN

FOR BRIDGE OIL

MAY, 1986.

PALYNOLOGY OF BRIDGE SEAL-1,

BASS BASIN, AUSTRALIA

BY

ROGER MORGAN

CONTENTS PAGE

I	SUMMARY	2
II	INTRODUCTION	3
III	PALYNOSTRATIGRAPHY	4
IV	CONCLUSIONS	11
V	REFERENCES	12

FIGURE 1 MATURITY PROFILE, SEAL-1

APPENDIX I PALYNOMORPH OCCURRENCE DATA
- SPORES AND POLLEN
- DINOFLAGELLATES

I SUMMARY

830m (cutts) : upper N. asperus Zone : Early Oligocene to Late Eocene : offshore marine : immature

886m (cutts)-926m (swc) : N. asperus Zone, subzone indeterminate : marine : immature

1003m (swc)-1053m (swc) : middle N. asperus Zone : Late Eocene to Middle Eocene : marginally marine : immature

1145m (swc)-1206.5m (swc) : lower N. asperus Zone : Middle Eocene : marginally marine : marginally mature at the top, post mature at the base

1218m (cutts)-1302m (cutts) (1254.0m swc) : P. asperopolus Zone : Middle Eocene : very marginally marine : marginally mature

1350m (cutts)-1365m (cutts) : upper M. diversus Zone : Early Eocene : marginally marine : mature to fully mature

1404.5m (swc) : indeterminate - almost barren : observed pollen immature, but may be caved

1464m (cutts) : probably middle M. diversus Zone with heavy N. asperus Zone caving : probably non-marine : probably mature

1466m (swc) : indeterminate : post-mature

1614m (swc and cutts) : upper L. balmei Zone : Paleocene : probably non-marine : fully mature

1630m (swc) : lower L. balmei Zone : Paleocene : non-marine : mature to fully mature

II INTRODUCTION

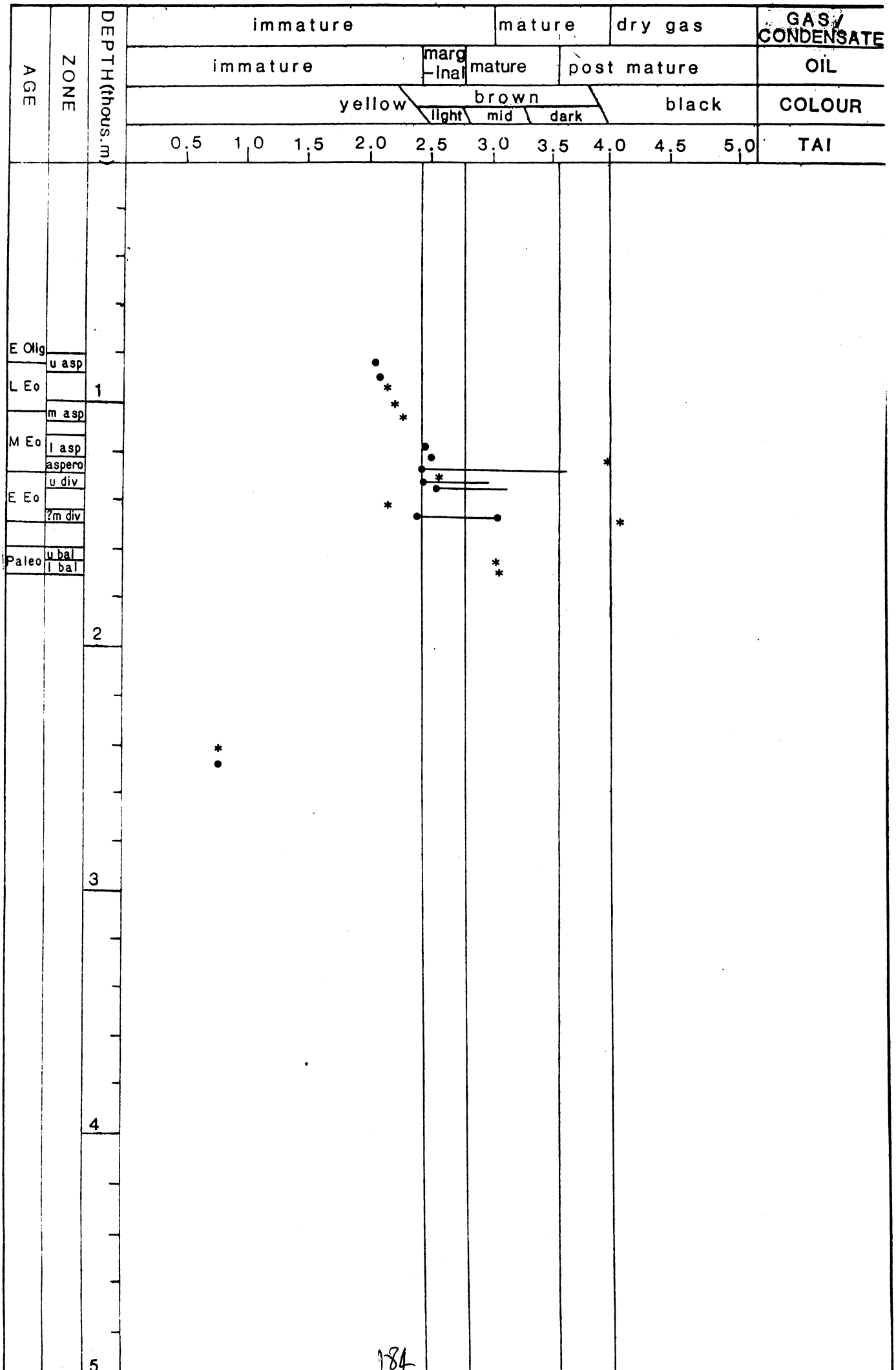
A total of nineteen samples have been studied, comprising twelve sidewall cores and seven cuttings samples. One bottom hole cuttings sample was studied shortly before T.D., to provide age control. Subsequently, the twelve sidewall cores were studied, but yielded poor results with several being almost barren. Finally, six more cuttings samples were submitted, completing the analytical programme.

Palynomorph occurrence data are shown on Appendix I and form the basis for the assignment of the samples to eight spore-pollen units of Early Oligocene to Paleocene age. The zonation is that of Stover and Evans (1973) and Stover and Partridge (1973) set up in the Gippsland Basin, and modified for the Bass Basin by Partridge (1973).

No formal dinoflagellate zonation has been published for the Gippsland or Bass Basins, although Harris (1985) has recently published some dinoflagellate zones for part of the Eocene of the St. Vincent and Otway Basins. Partridge (1976) published a table showing zone names in the Gippsland Basin but charts defining these zones were never published. Neither of these zonations are entirely relevant, but elements of them are discussed herein.

Maturity data was generated in the form of Spore Colour Index, and is plotted on Figure 1 Maturity Profile of Bridge Seal-1. The oil and gas generation windows on Figure 1 follow the general consensus of geochemical literature. The oil window corresponds to spore colours of light-mid brown (2.7) to dark brown (3.6). This would correspond approximately to Vitrinite Reflectances of 0.6% to 1.3%.

FIGURE 1 MATURITY PROFILE, SEAL-1



III PALYNOSTRATIGRAPHY

A. 830m (cutts) : upper N. asperus Zone

Assignment to the upper Nothofagidites asperus Zone is indicated by the absence of younger indicators, the oldest occurrence of Malvacipollis grandis, the youngest occurrence of Schizocolpus marlinensis, and the absence of older indicators.

Dinoflagellates are dominant (75% of palynomorphs) but of only moderate diversity. The presence of moderately common Phthanoperidinium comatum without older indicators is consistent with the upper N. asperus assignment.

Offshore marine environments are indicated by the dominance of dinoflagellates, despite their moderate diversity. Spores and pollen are not rare, but are dominated by Nothofagidites spp.

Yellow spore colours indicate immaturity for hydrocarbons.

B. 886m (cutts)-926m (swc) : N. asperus Zone, subzone uncertain

Very poor fossil yields were obtained from these two samples. The upper one was totally barren, but the lower one had a low diversity assemblage insufficient for confident subzonal assignment. Both samples are assigned to the Nothofagidites asperus Zone due to their stratigraphic position between two confidently assigned samples.

The rare dinoflagellates present indicate a lower N. asperus or younger zonal assignmnet, and a marine environment.

Yellow spore colours indicate immaturity for hyrocarbon

generation.

C. 1003m (swc)-1053m (swc) : middle N. asperus Zone

Assignment to the middle Nothofagidites asperus Zone is indicated at the top by the youngest occurrences of Beaupreadites verrucosus, Liliacidites lanceolatus, Proteacidites reticulatus, common P. pachypolus and the dinoflagellate data. The Zone base is defined by the oldest occurrence of Triorites magnificus and Proteacidites tuberculatus.

Age significant dinoflagellates include Alisocysta ornata at 1003m indicating assignment to the upper part of the middle N. asperus Zone. Other significant forms include Deflandrea phosphoritica, Systematophora placacantha, Areosphaeridium arcatum and Phthanoperidinium comatum, all of which indicate a lower N. asperus Zone assignment or younger.

Environments are marginal marine to nearshore marine (as shown by the rare low diversity dinoflagellates) amongst the common and diverse spores and pollen.

Yellow to yellow/brown spore colours indicate immaturity for hydrocarbon generation.

D. 1145m (swc)-1206.5m (swc) : lower N. asperus Zone

The top of the lower Nothofagidites asperus Zone is defined by the absence of younger indicators seen above, and the zone base is defined by the base of Nothofagidites dominated assemblages. Oldest occurrences supporting the zone base include Gemmatricolporites gestus and Nothofagidites falcatus (1165m swc).

Age significant dinoflagellates include Phthanoperidinium comatum at 1165m, confirming a lower N. asperus or younger assignment.

Environments are marginally marine with only very scarce low diversity dinoflagellates seen amongst the diverse spores and pollen and common cuticle fragments.

Light brown spore colours at 1145 and 1165m indicate marginal maturity for oil generation, but immaturity for gas/condensate generation. Spore colours of very dark brown to black at 1206.5m indicate post maturity for oil, and full maturity for gas/condensate. Some lighter coloured grains in this sample are interpreted as caved through mud contamination.

E. 1218m (cutts)-1302m (cutts) (1254.0m swc) : P. asperopolus Zone

Assignment to the Proteacidites asperopolus Zone is indicated at the top by the top of Haloragacidites harrisii dominated microfloras, supported by the youngest occurrences of Intratriporopollenites notabilis, consistent Proteacidites obesolabrus (1254.0m swc) and Myrtaceidites tenuis (1302m cutts). The zone base is defined by the oldest occurrence of P. asperopolus at 1302m (cutts) which could be slightly caved from its position in sidewall cores at 1354.0m.

Age significant dinoflagellates include Homotriblium tasmaniense which indicates assignment to the upper Malvacipollis diversus or P. asperopolus Zones.

Very marginally marine environments are indicated by the very scarce very low diversity dinoflagellates, dominant and diverse spores and pollen, and abundant leaf fragments.

Spore colours of light brown indicate marginal maturity for oil, and immaturity for gas/condensate. The two cuttings samples in the interval show a wide range of spore colours from yellow/brown to brown/black at 1218m and yellow/brown to mid brown at 1302m. These are interpreted as a mix of caved and in situ specimens.

F. 1350m (cutts)-1365m (cutts) : upper M. diversus Zone

Assignment to the upper Malvacipollis diversus Zone is indicated at the top by the absence of younger indicators, and at the base by the oldest occurrences (in situ) of Proteacidites pachypolus (which is not scarce) and Myrtaceidites tenuis. The zone base may be picked too low, as it is entirely cuttings based.

Age significant dinoflagellates include Homotriblium tasmaniense, supporting the assignmnet, and Areosphaeridium arcuatum, which is presumed caved from the overlying N. asperus Zone.

Environments are marginally marine, as shown by the rare (1-2%) low diversity dinoflagellates amongst the common and diverse spores and pollen and abundant leaf cuticle.

Spore colours are mostly in the range light brown to mid brown at 1350m, indicating early maturity for oil and marginal maturity for gas/condensate. At 1365m however, mid brown to dark brown colours indicate maturity to full maturity for oil, and maturity for gas/condensate.

G. 1404.5m (swc) : indeterminate - almost barren

This sidewall core yielded very few longranging pollen showing yellow spore colours. This is inconsistent with nearby samples

and suggests that the in situ assemblage has been carbonised, and that the observed specimens are from mud contamination into the sidewall core.

H. 1464m (cutts) : probably middle M. diversus Zone

The presumed in situ assemblage includes Beaupreadites verrucosus, Proteacidites ornatus and Triporopollenites ambiguus which would indicate assignment to the middle Malvacipollis diversus Zone, or younger zones. Younger indicators were seen (Kuylisporites waterbolkii, Periporopollenites vesicus, Proteacidites asperopolus and P. pachypolus) but all have yellow to light brown spore colours and are considered to have been caved from the N. asperus Zone above. However, the entire assemblage may be caved into palynologically barren strata.

No presumed in situ dinoflagellates were seen. Those seen include Alisocysta ornata (restricted to the middle N. asperus Zone above) and are considered caved.

Environments are probably non-marine, as none of the observed dinoflagellates is considered to be in situ.

Spore colours show two disinct populations. Mid brown colours are considered in situ and indicate maturity for oil and onset of maturity for gas/condensate. Yellow to light brown spore colours are considered caved and are ignored.

I. 1466m (swc) : indeterminate

This sidewall core is totally barren of recognisable palynomorphs although a few carbonised outlines and a very few fully mature (very dark brown/black) fragments were seen. The assemblage is

thus considered to be post mature with some fully mature mud contamination.

Considering the very high maturity of this sample doubt must be expressed concerning the "in situ" nature of any of the material observed in the overlying cuttings sample (1464m), just 2m above. It may be, however, that the material in that cuttings sample has not caved far.

J. 1614m (swc and cutts) : upper L. balmei Zone

Assignment to the upper Lygistepollenites balmei Zone is indicated by the youngest occurrences of Gambierina rudata and Lygistepollenites balmei, and by the oldest occurrences of Proteacidites incurvatus (swc) and P. grandis (cutts).

No age diagnostic dinoflagellates were seen in the sidewall core. In the cuttings sample, dinoflagellates included Apectodinium homomorphum (indicating an upper L. balmei or younger assignment) and Homotriblium tasmaniense (indicating an upper M. diversus to P. asperopolus assignment). All dinoflagellates were very black however, and so are considered caved by comparison with the mid brown sidewall core material, and consequently ignored.

Environments are probably non-marine, as all the observed dinoflagellates (except the lacustrine Morkallacysta pyramidalis) are considered caved.

The sidewall core material has mid brown spore colours indicating full maturity for oil and early maturity for gas/condensate. The cuttings sample shows a broad range of spore colour and so is ignored in favour of the sidewall core information.

K. 1630m (swc) : lower L. balmei Zone

Assignment to the lower Lygistepollenites balmei Zone is indicated by the presence of G. rudata and L. balmei without younger or older indicators.

No age diagnostic or other dinoflagellates were seen and so non-marine environments are indicated.

Spore colours are mostly mid brown, indicating maturity for oil and early maturity for gas/condensate. About 20% of grains, however, are significantly darker, in the dark brown range suggesting maturity for oil and for gas/condensate. As the sample is a sidewall core, these higher maturity grains have presumably undergone heating (perhaps quite local and contemporaneously), before being reworked and incorporated into the sediment. They do not appear to be significantly older than the lighter coloured assemblage.

IV CONCLUSIONS

A. The sampled section comprises a probably complete Paleocene to Early Oligocene sequence, with minor marine influence in the latest Early Eocene and Middle Eocene, and major marine influence in the Late Eocene and Early Oligocene.

B. A thick undrilled section including the Early and Late Cretaceous may underly the drilled section.

C. Maturity shows an increase to full maturity for oil and early maturity for gas/condenste at the base of the well. Superimposed on this trend are intervals of much higher maturity associated with local heating from igneous activity during, and perhaps since, deposition.

D. Given the potential undrilled section and full maturity at T.D., the area still has considerable untested potential.

V REFERENCES

Harris, W.K. (1985) Middle to Late Eocene Depositional Cycles and Dinoflagellate Zones in Southern Australia Spec. Publ., S. Aust. Dept. Mines and Energy 5 : 133-144

Partridge, A.D. (1973) Revision of the Spore-pollen Zonation in the Bass Basin Esso unpubl. palaeo rept. 1973/74

Partridge, A.D. (1976) The Geological Expression of Eustacy in the Early Tertiary of the Gippsland Basin Aust. Pet. Explor. Assoc. J., 16 : 73-79

Stover, L.E. and Evans, P.R. (1973) Upper Cretaceous - Eocene Spore Pollen Zonation, offshore Gippsland Basin, Australia Spec. Publ. geol. soc. Aust., 4 : 55-72

Stover, L.E. and Partridge, A.D. (1973) Tertiary and Late Cretaceous Spores and Pollen from the Gippsland Basin, South-eastern Australia Proc. R. Soc. Vict., 85 : 237-286

APPENDIX I

Palynomorph Occurrence Data

- Spores and Pollen
- Dinoflagellates

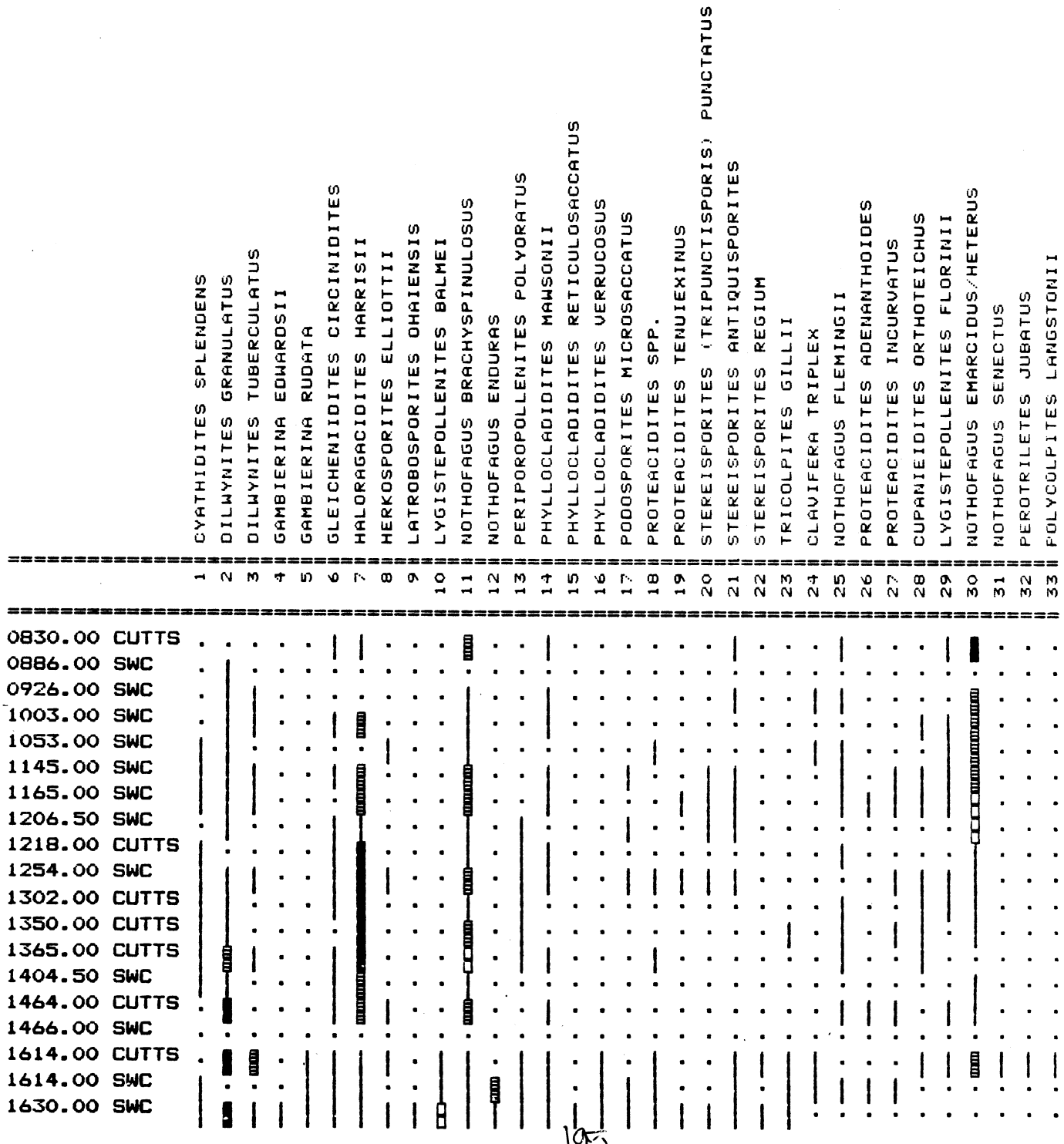
SEAL #1 S/P

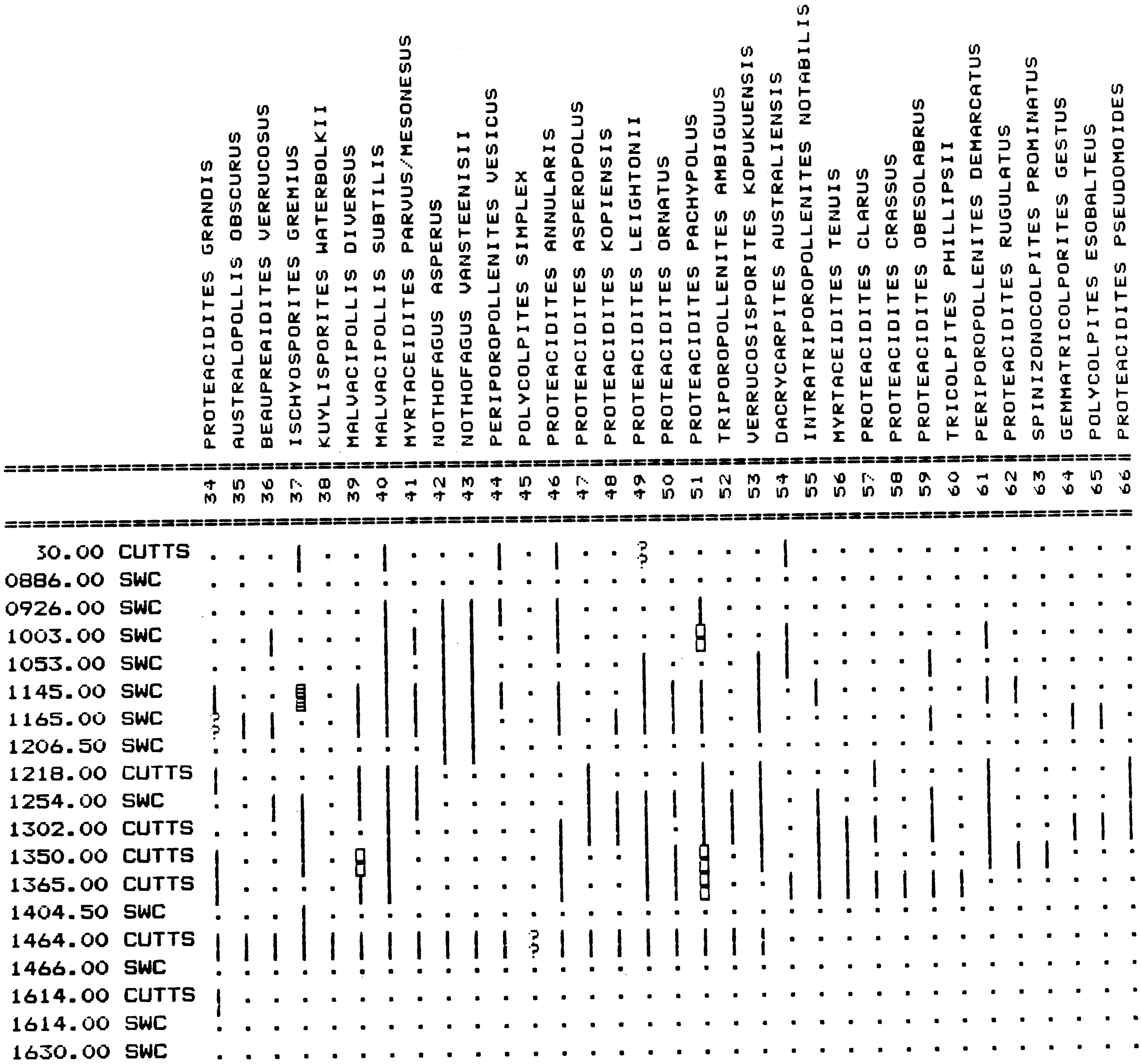
DESCRIPTION:

PALYNOLOGICAL INTERPRETATION FOR BRIDGE OIL BY ROGER MORGAN - MAY 1986.
ALL SAMPLE DEPTHS ARE IN METERS.

CHECKLIST OF GRAPHIC ABUNDANCE BY LOWEST APPEARANCE

= Abundant
= Common
= Few
= Rare
= Very Rare
? = Questionably Present
. = Not Present




34 PROTEACIDITES GRANDIS
35 AUSTRALOPOLLIS OBSCURUS
36 BEAUPREAIDITES VERRUCOSUS
37 ISCHYOSPORITES GREMIUS
38 KUYLISPORITES WATERBOLKII
39 MALVACIPOLLIS DIVERSUS
40 MALVACIPOLLIS SUBTILIS
41 MYRTACEIDITES PARVUS/MESONESUS
42 NOTHOFAGUS ASPERUS
43 NOTHOFAGUS VANSTEENISII
44 PERIPOROPOLLENITES VESICUS
45 POLYCOLPITES SIMPLEX
46 PROTEACIDITES ANNULARIS
47 PROTEACIDITES ASPEROPOLUS
48 PROTEACIDITES KOPIENSIS
49 PROTEACIDITES LEIGHTONII
50 PROTEACIDITES ORNATUS
51 PROTEACIDITES PACHYPOLUS
52 TRIPOROPOLLENITES AMBIGUUS
53 VERRUCOSISPORITES KOPUKUENSIS
54 DACRYCARPITES AUSTRALIENSIS
55 INTRATRIPOROPOLLENITES NOTABILIS
56 MYRTACEIDITES TENUIS
57 PROTEACIDITES CLARUS
58 PROTEACIDITES CRASSUS
59 PROTEACIDITES OBESOLABRUS
60 TRICOLPITES PHILLIPSII
61 PERIPOROPOLLENITES DEMARCATUS
62 PROTEACIDITES RUGULATUS
63 SPINIZONOCOLPITES PROMINATUS
64 GEMMATRICOLPORITES GESTUS
65 POLYCOLPITES ESOBALTEUS
66 PROTEACIDITES PSEUDOMOIDES
30.00 CUTTS
0886.00 SWC
0926.00 SWC
1003.00 SWC
1053.00 SWC
1145.00 SWC
1165.00 SWC
1206.50 SWC
1218.00 CUTTS
1254.00 SWC
1302.00 CUTTS
1350.00 CUTTS
1365.00 CUTTS
1404.50 SWC
1464.00 CUTTS
1466.00 SWC
1614.00 CUTTS
1614.00 SWC
1630.00 SWC

Depth	Sample	67 SANTALUMIDITES CAINOZOICUS	68 SCHIZOCOLPUS MARLINENSIS	69 TRICOLPORITES ESTOUTUS	70 BANKSIEACIDITES ELONGATUS	71 LILIACIDITES LANCEOLATUS	72 CYATHIDITES MINOR	73 CONCOLPITES LEPTOS	74 NOTHOFAGUS FALCATUS	75 PROTEACIDITES SCITUS	76 MYRTACEIDITES VERRUCOSUS	77 PROTEACIDITES RECTOMARGINIS	78 PROTEACIDITES TUBERCULATUS	79 RUGULATISPORITES MALLATUS	80 TRIORITES MAGNIFICUS	81 ERICIPITES SCABRATUS	82 PROTEACIDITES DELICATUS	83 PROTEACIDITES RETICULATUS	84 RICCIA BOXATUS	85 SAPOTACEOIDAEPOLLENITES ROTUNDUS	86 TETRACOLPORITES IXERBOIDES	87 MALVACIPOLLIS GRANDIS
0830.00	CUTTS	.	|	.	.	.	.	.	|	.	.	.	.	.	.	.	.	.	.	.	.	|
0886.00	SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0926.00	SWC	.	.	.	.	.	.	.	|	.	.	.	.	.	.	.	.	.	.	.	.	.
1003.00	SWC	.	.	.	.	|	.	.	|	.	.	|	|	.	.	|	?	|	|	|	|	.
1053.00	SWC	.	.	.	.	.	.	.	|	.	|	|	|	?	|	.	.	.	.	.	.	.
1145.00	SWC	.	.	|	.	.	.	.	|	?	.	.	.	.	.	.	.	.	.	.	.	.
1165.00	SWC	|	.	.	|	.	.	|	|	.	.	.	.	.	.	.	.	.	.	.	.	.
1206.50	SWC	.	.	.	.	.	|	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1218.00	CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1254.00	SWC	.	.	.	|	|	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1302.00	CUTTS	|	|	|	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1350.00	CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1365.00	CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1404.50	SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1464.00	CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1466.00	SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1614.00	CUTTS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1614.00	SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1630.00	SWC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

SPECIES LOCATION INDEX

Index numbers are the columns in which species appear.

INDEX NUMBER	SPECIES
35	AUSTRALOPOLLIS OBSCURUS
70	BANKSIEACIDITES ELONGATUS
36	BEAUPREAIDITES VERRUCOSUS
24	CLAVIFERA TRIPLEX
73	CONCOLPITES LEPTOS
28	CUPANIEIDITES ORTHOTEICHUS
72	CYATHIDITES MINOR
1	CYATHIDITES SPLENDENS
54	DACRYCARPITES AUSTRALIENSIS
2	DILWYNITES GRANULATUS
3	DILWYNITES TUBERCULATUS
81	ERICIPITES SCABRATUS
4	GAMBIERINA EDWARDSII
5	GAMBIERINA RUDATA
64	GEMMATRICOLPORITES GESTUS
6	GLEICHENIIDITES CIRCINIDITES
7	HALORAGACIDITES HARRISII
8	HERKOSPORITES ELLIOTTII
55	INTRATRIPOROPOLLENITES NOTABILIS
37	ISCHYOSPORITES GREMIUS
38	KUYLISPORITES WATERBOLKII
9	LATROBOSPORITES OHAIENSIS
71	LILIACIDITES LANCEOLATUS
10	LYGISTEPOLLENITES BALMEI
29	LYGISTEPOLLENITES FLORINII
39	MALVACIPOLLIS DIVERSUS
87	MALVACIPOLLIS GRANDIS
40	MALVACIPOLLIS SUBTILIS
41	MYRTACEIDITES PARVUS/MESONESUS
56	MYRTACEIDITES TENUIS
76	MYRTACEIDITES VERRUCOSUS
42	NOTHOFAGUS ASPERUS
11	NOTHOFAGUS BRACHYSPINULOSUS
30	NOTHOFAGUS EMARCIDUS/HETERUS
12	NOTHOFAGUS ENDURAS
74	NOTHOFAGUS FALCATUS
25	NOTHOFAGUS FLEMINGII
31	NOTHOFAGUS SENECTUS
43	NOTHOFAGUS VANSTEENISII
61	PERIPOROPOLLENITES DEMARCATUS
13	PERIPOROPOLLENITES POLYORATUS
44	PERIPOROPOLLENITES VESICUS
32	PEROTRILETES JUBATUS
14	PHYLLOCLADIDITES MAWSONII
15	PHYLLOCLADIDITES RETICULOSACCATUS
16	PHYLLOCLADIDITES VERRUCOSUS
17	PODOSPORITES MICROSACCATUS
65	POLYCOLPITES ESOBALTEUS
33	POLYCOLPITES LANGSTONII
45	POLYCOLPITES SIMPLEX
26	PROTEACIDITES ADENANTHOIDES
46	PROTEACIDITES ANNULARIS
47	PROTEACIDITES ASPEROPOLUS
57	PROTEACIDITES CLARUS
58	PROTEACIDITES CRASSUS
82	PROTEACIDITES DELICATUS
34	PROTEACIDITES GRANDIS
27	PROTEACIDITES INCURVATUS
48	PROTEACIDITES KOPIENSIS
49	PROTEACIDITES LEIGHTONII
59	PROTEACIDITES OBESOLABRUS
50	PROTEACIDITES ORNATUS
51	PROTEACIDITES PACHYPOLUS
66	PROTEACIDITES PSEUDOMOIDES
77	PROTEACIDITES RECTOMARGINIS
83	PROTEACIDITES RETICULATUS
62	PROTEACIDITES RUGULATUS
75	PROTEACIDITES SCITUS
18	PROTEACIDITES SPP.
19	PROTEACIDITES TENUIEXINUS
78	PROTEACIDITES TUBERCULATUS
84	RICCIA BOXATUS
79	RUGULATISPORITES MALLATUS
67	SANTALUMIDITES CAINOZOICUS
85	SAPOTACEOIDAEPOLLENITES ROTUNDUS
68	SCHIZOCOLPUS MARLINENSIS
63	SPINIZONOCOLPITES PROMINATUS
20	STEREISPORITES (TRIPUNCTISPORIS) PUNCTATUS
21	STEREISPORITES ANTIQUISPORITES
22	STEREISPORITES REGIUM
86	TETRACOLPORITES IXERBOIDES
23	TRICOLPITES GILLII
60	TRICOLPITES PHILLIPSII
69	TRICOLPORITES ESTOUTUS
80	TRIORITES MAGNIFICUS
52	TRIPOROPOLLENITES AMBIGUUS
53	VERRUCOSISPORITES KOPUKUENSIS

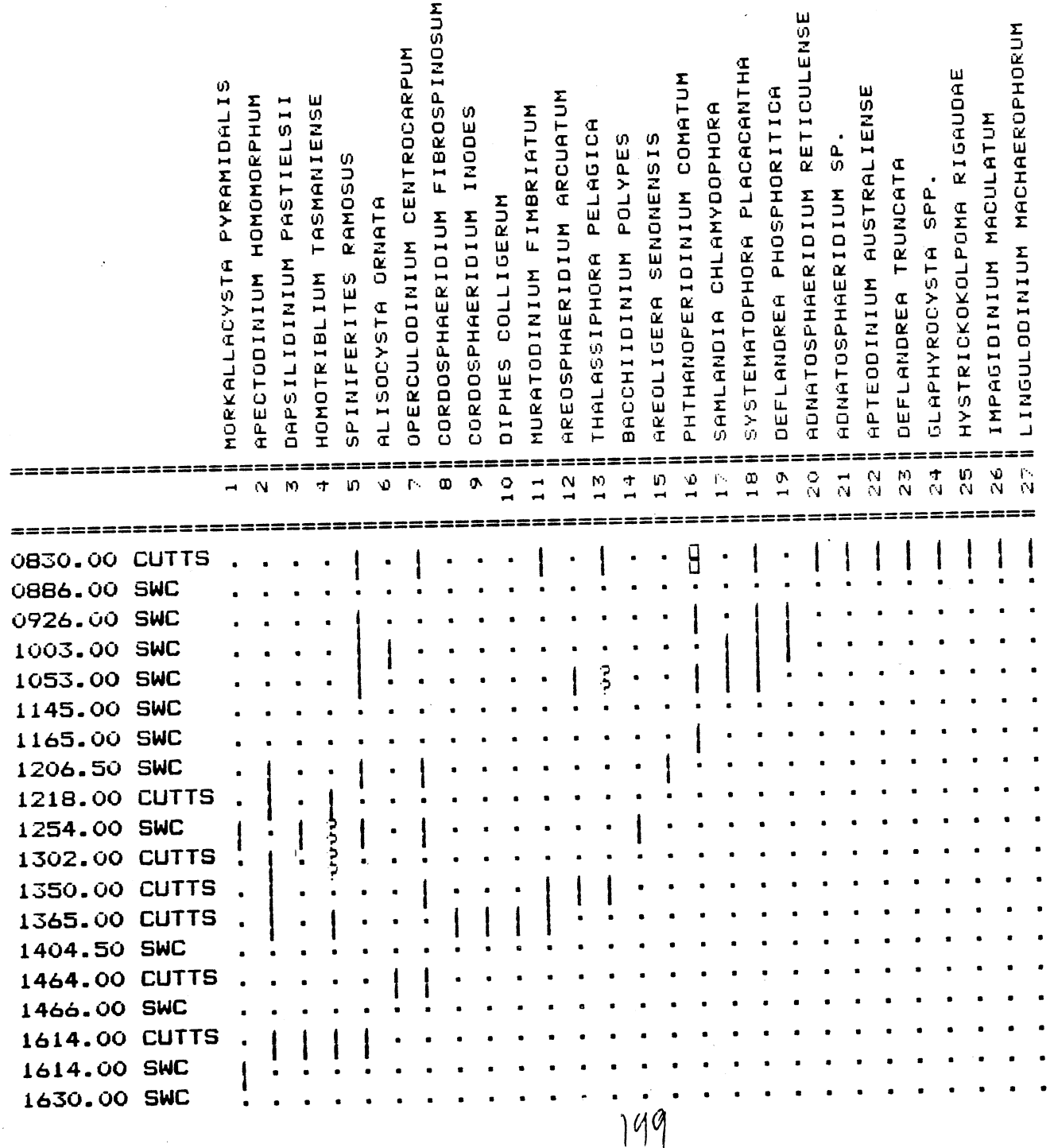
SEAL #1 DINOS

DESCRIPTION:

PALYNOLOGICAL INTERPRETATION FOR BRIDGE OIL BY ROGER MORGAN - MAY 1986.
ALL SAMPLE DEPTHS ARE IN METERS.

CHECKLIST OF GRAPHIC ABUNDANCE BY LOWEST APPEARANCE

= Abundant
= Common
= Few
= Rare
= Very Rare
? = Questionably Present
. = Not Present



SPECIES LOCATION INDEX

Index numbers are the columns in which species appear.

INDEX NUMBER	SPECIES
20	ADNATOSPHAERIDIUM RETICULENSE
21	ADNATOSPHAERIDIUM SP.
6	ALISOCYSTA ORNATA
2	APECTODINIUM HOMOMORPHUM
22	APTEODINIUM AUSTRALIENSE
15	AREOLIGERA SENONENSIS
12	AREOSPHAERIDIUM ARCUATUM
14	BACCHIIDINIUM POLYPES
8	CORDOSPHAERIDIUM FIBROSPINOSUM
9	CORDOSPHAERIDIUM INODES
3	DAPSILIDINIUM PASTIELSII
19	DEFLANDREA PHOSPHORITICA
23	DEFLANDREA TRUNCATA
10	DIPHES COLLIGERUM
24	GLAPHYROCYSTA SPP.
4	HOMOTRIBLIUM TASMANIENSE
25	HYSTRICKOKOLPOMA RIGAUDAE
26	IMPAGIDINIUM MACULATUM
27	LINGULODINIUM MACHAEROPHORUM
1	MORKALLACYSTA PYRAMIDALIS
11	MURATODINIUM FIMBRIATUM
7	OPERCULODINIUM CENTROCARPUM
16	PHTHANOPERIDINIUM COMATUM
17	SAMLANDIA CHLAMYDOPHORA
5	SPINIFERITES RAMOSUS
18	SYSTEMATOPHORA PLACACANTHA
13	THALASSIPHORA PELAGICA

FINAL WELL SUMMARY

BRIDGE OIL LTD

SEAL NO. 1

BASS STRAIT

11 - 20 FEBRUARY 1986

by

EXPLORATION LOGGING OF AUSTRALIA

1. INTRODUCTION

Seal No. 1 was drilled in Bass Strait by Triton International using the semisubmersible "Margie" for Bridge Oil Ltd. Its main objective was to test the Paleocene sands of the Eastern View Group. Secondary objectives were sands of Eocene, Oligocene and Late Cretaceous age.

A standard mud logging service was provided by Exploration Logging from 261 metres to the Total Depth at 1670 metres. In addition an interpretive lithology column was provided throughout the well and calcimetry readings were taken wherever necessary to provide a quantitative measure of the carbonate content of the formations being drilled.

2. SAMPLING

All samples were logged. Lag times were calculated using theoretical hole capacities and pump output and were checked by running carbides.

Washed and air dried samples were caught for Bridge Oil Ltd and its partners and also for the Tasmanian Mines Dept and the BMR. These samples were washed through a 2.36 mm mesh sieve to remove cavings and then through a 180 micron sieve to remove any remaining drilling fluid. Unwashed samples were also caught for Bridge Oil Ltd. All these samples were caught at 10 metre intervals throughout top hole and at three metre intervals when the drill rate slowed sufficiently.

In addition canned geochemical samples were caught throughout the well. These were 50 metre composite initially, and 30 metre composite when sampling was changed to three metre intervals.

Sample quality throughout the well was generally good. The main problem was the claystone's tendency to be washed away during sample preparation.

3. FORMATION EVALUATION LOG

A standard formation evaluation log was made with a depth scale of 1:500. Rate of penetration was recorded in metres/hour using a semi log scale. The ditch gas was recorded in unit with 50 units being equivalent to 1% methane in air. Continuous chromatograph analysis was made from methane to butane with pentane analysis being made whenever its presence was possible. Calcimetry, cuttings gas, natural hydrocarbon fluorescence and cut fluorescence were recorded throughout the well. In addition lithology descriptions and notes on any factors affecting the drilling of the well were made in the remarks column throughout the well.

4. DRILLING RESULTS

a. Introduction: (General)

The only significant drilling problem was tight hole between 1237 and 1480 metres. While pulling out of the hole to change bits at 1481 metres up to 125,000 lbs overpull was experienced through this section. A wiper trip was made and consequently only minor drag was experienced through this section.

Bridges were encountered at 105, 129 and 226 metres while running the 20" casing but were only a minor problem.

Deviation was not a problem and remained at less than one degree throughout the well.

Drill rates ranged from 600 metres per hour in the sandstone at 880 metres to two metres per hour in the dolerite near Total Depth.

b. Cuttings Lithology

From 261 to 835 metres the dominant lithologies were bioclastic limestone and calcarenite initially, becoming dominantly calcareous claystone with minor calcarenite and traces of dolomite.

From 835 to 1480 metres the major lithologies were interbedded sandstones and claystones with minor siltstone and coal and with thin dolomite veins between 900 and 1000 metres.

From 1480 to 1670 metres the dominant lithology was dolerite with minor interbedded sandstone, claystone and siltstone.

c. Hydrocarbon Indications

Only traces of gas were recorded to 450 metres and from there to 1005 metres up to 10 units being wholly methane.

From 1005 to 1480 metres total gas ranged from 3 to 560 units and consisted of methane, ethane and propane with minor iso and normal butane. Minor oil fluorescence occurred at 1374 metres. Maximum total gas was recorded in a coal seam at 1345 metres. Cuttings gas throughout this zone ranged from 0 to 130 units.

From 1480 to Total Depth, total gas decreased from 20 to trace units and consisted dominantly of methane with minor ethane and propane.

No connection gas was recorded throughout the well. The maximum gas recorded was 1200 units after the wiper trip at 1481 metres.

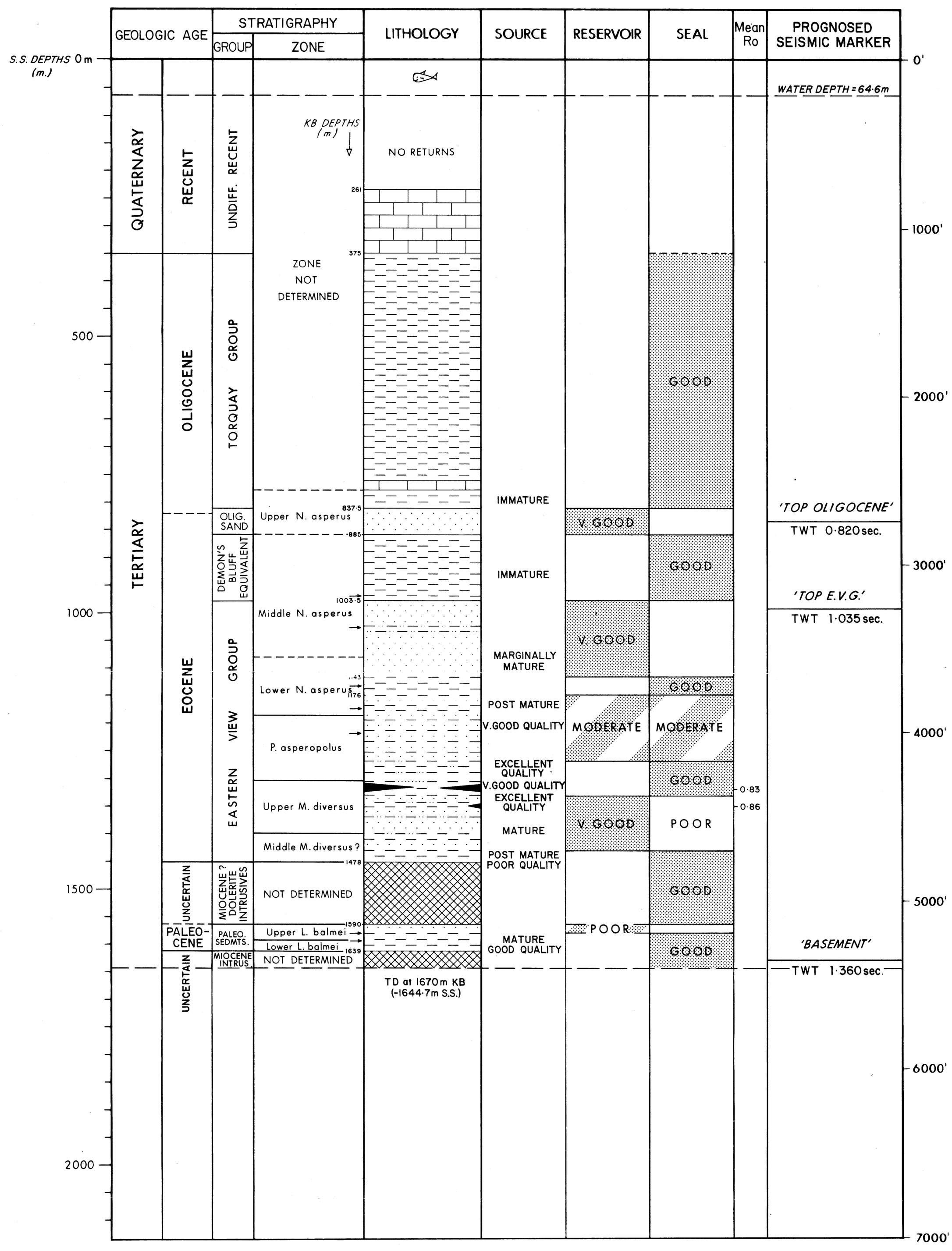
5. EVALUATION

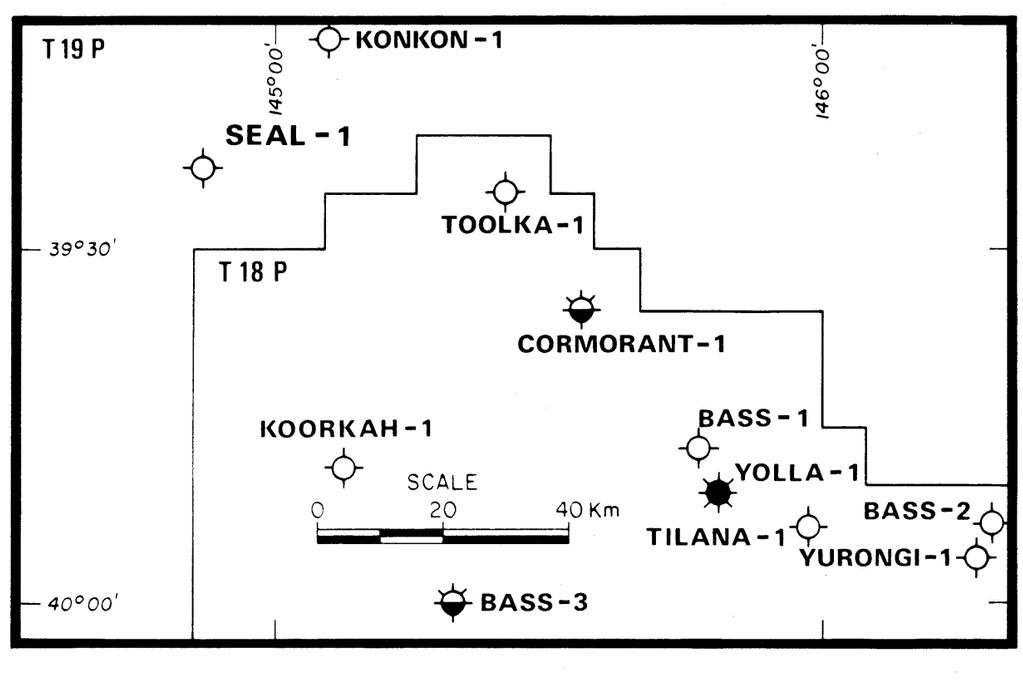
Electric logs were run over the interval 261 to Total Depth, and sidewall cores shot between 656 metres to Total Depth.

Log analysis showed no significant hydrocarbons and the well was plugged and abandoned.

SEAL-1

SPUDDED = 10-2-1986
RIG RELEASED = 22-2-1986
WATER DEPTH = 64·6m.
K.B. = 25·3m.
T.D. = 1670m.
PLUGGED AND ABANDONED
NO SIGNIFICANT SHOWS.





BRIDGE OIL LIMITED

SEAL-1
STRATIGRAPHY

AUTHOR: H.H. / B.C.F.	DATE: MARCH '86	
DRAWN BY: G.F.	SCALE: 1cm. = 50m	ENCLOSURE N°: 4

85/1096

ENCLOSURE N° 5

MIGRATED SECTION

LINE : BB85-72

S.P. 35 TO 350

NORTHEAST

DIRECTION SHOT= 058 DEGREES

120TRACE 6000% DBS STK DAS MIG RMS BPF

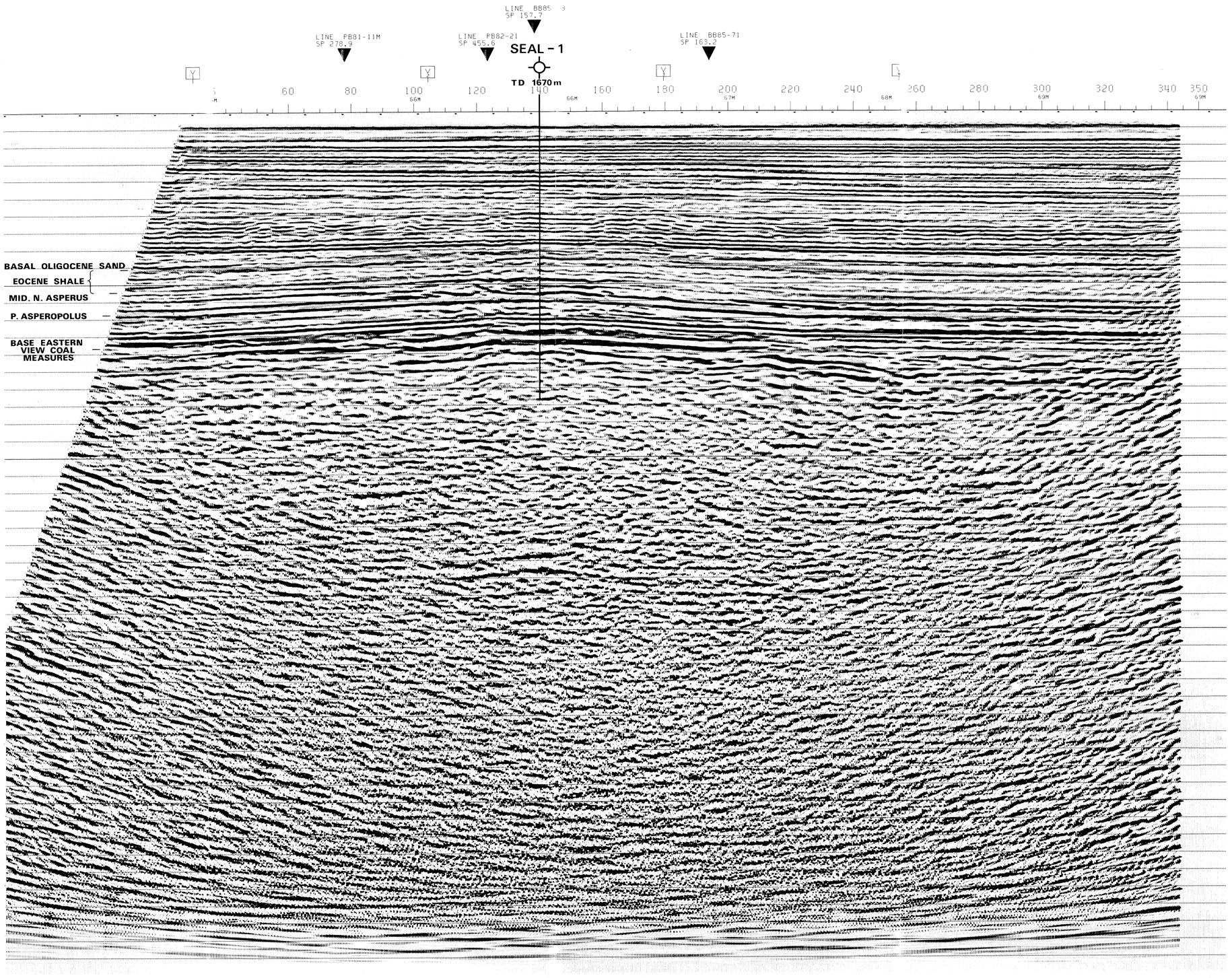
LINE BB85-72
S.P. 35-350

SP 29.		
TIME	RMS VEL	INT
0.00	1450	450
0.10	1500	500
0.31	1710	801
0.48	1760	848
0.65	1920	913
0.77	1960	164
1.08	2130	1503
1.16	2160	530
1.30	2300	1235
1.40	2350	923
1.49	2480	990
1.79	3300	868
1.94	3620	287
2.41	4110	703
5.00	4990	688

SP 104.50		
TIME	RMS VEL	DIX INT
0.00	1450	1450
0.10	1500	1500
0.42	1925	2040
0.67	1940	1965
0.77	1970	2160
0.97	2075	2437
1.14	2140	2478
1.24	2230	3075
1.36	2410	3902
1.60	2980	4661
2.02	3500	5227
2.71	4150	5637
5.00	4890	5642

SP 179.50		
TIME	RMS VEL	DIX INT
0.00	1450	1450
0.10	1470	1470
0.42	1730	1804
0.59	1820	2025
0.75	1950	2368
0.99	2080	2442
1.11	2170	2804
1.24	2250	2843
1.33	2290	2783
1.44	2450	3895
1.53	2750	5703
2.23	3550	4860
3.10	4250	5662
5.00	4980	5983

SP 254.50		
TIME	RMS VEL	DIX INT
0.00	1450	1450
0.10	1490	1490
0.31	1811	1944
0.53	1954	2154
0.80	2059	2076
1.11	213[illegible]	2434
1.30	227[illegible]	2958
1.39	2320	2949
1.51	2480	3879
1.56	2550	4140
1.68	2744	5469
1.75	305[illegible]	5804
1.95	3400	5596
2.05	3620	6574
2.23	3890	6183
2.53	4261	6369
3.25	4[illegible]0	5257
5.00	496[illegible]	5717



BRIDGE OIL LIMITED

AREA : BASS BASIN
T-19-P

WESTERN GEOPHYSICAL
DIVISION OF LITTON INDUSTRIES
SINGAPORE DIGITAL CENTRE

RECORDED APRIL 1985
PROCESSED MAY 1985

RECORDING DATA

BOAT

WESTERN ODISSEY	PART 86
NAVIGATION BY	MAYARAN
MAP LOCATIONS	ANTENNA POSITION

SOURCE

AIR GUN VOLUME	1530 CU/IN
AIR GUN PRESSURE	4600 PSI.
GUN DEPTH	6 M.
S.P. INTERVAL	26.67 M.
POP INTERVAL	26.67 M.
SHOOTING RATE	37.5 POPS/KM.
NO. OF GUNS	19

INSTRUMENTS

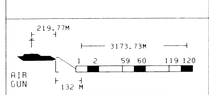
SYSTEM	L.R.S. 16
FORMAT	SEG-D (6250 BPI)
FILTERS	12 HZ, 375 HZ.
FILTER SLOPES	12 / 72 DB/OCT
RECORD LENGTH	6 SECONDS
SAMPLE RATE	1 MS.
POLARITY	COMPRESSION NEGATIVE

CABLE

STREAMER	3200 M.
GROUPS	240
GROUP INTERVAL	13.33 M.
LEAD IN	132 M.
CABLE DEPTH	12 M. AVERAGE

ARRAY FORMED SPECIFICATIONS

TRACES	120
TRACE INTERVAL	26.67 M.
FILTERS	12 HZ, 180 HZ.
FILTER SLOPES	6 / 180 DB/OCT
SAMPLE RATE	2 MS.



SCALES

HORIZONTAL... 2.50 IN/KILOMETER
VERTICAL.... 3.75 IN/SECOND
0 KILOMETER

LEGEND

▼ INTERSECTIONS
W.D. WATER DEPTH
V VELOCITY ANALYSIS

COMMENTS

DATUM PLANE : SEA LEVEL

CORRECTION APPLIED ON FINAL DISPLAY

GUN CORRECTION.....	+ 0004 MS.
CABLE CORRECTION.....	+ 0008 MS.
TOTAL CORRECTION.....	+ 0012 MS.

DISPLAY POLARITY

NEGATIVE NUMBER ON TAPE
REPRESENTED BY A TROUGH

PROCESSING SEQUENCE

SAMPLING INTERVAL 4 MS.

FORMAT CONVERSION
INPUT: 120 CHANNELS SEG D ARRAY-FORMED
OUTPUT: WGC CODE 4 FORMAT (FL. PT.)

SIGNATURE DECONVOLUTION
OPERATOR DESIGNED FROM AVERAGE OF RECORDED NEAR FIELD SIGNATURES.

DECONVOLUTION
TYPE-LEAST SQUARES
MINIMUM PHASE INVERSE FILTER
2 WINDOWS

WINDOW #1 INR OFFSET	300-3000 MS.
WINDOW #1 STOP TIME VEL	2500 MS.
WINDOW #2 INR OFFSET	2500-5000 MS.
WINDOW #2 STOP TIME VEL	5000 MS.
AUTOCORRELATION LENGTH	240 MS.
MINIMUM PREDICTION LAG	12 MS.
OPERATOR LENGTH	232 MS.

COMMON DEPTH POINT SORT

M.A.F.
MULTIPLE ATTENUATION FILTER

VELOCITY ANALYSIS
2 CDPS/ANALYSIS EVERY TWO KILOMETER

N.M.O. STACK
6000% N.M.O. CORRECTION

RESIDUAL VELOCITY WORK
Q.C. OF STACKING VELOCITIES
RESTACK IF NECESSARY

DECONVOLUTION
TYPE-LEAST SQUARES
MINIMUM PHASE INVERSE FILTER
ONE WINDOW

AUTOCORRELATION LENGTH	1950 MS.
MINIMUM PREDICTION LAG	180 MS.
OPERATOR LENGTH	24 MS.
	160 MS.

BANDPASS FILTER 10-90 HZ.

MIGRATION
FINITE DIFFERENCE

RMS GAIN
WINDOW LENGTH 64 MS.- 1024 MS.

FINAL FILTER

	L.C.	M.C.
SLOPE (DB/OCTAVE)	18	36
TIME OF APPLICATION		
0000-5000 MS.	10	90

PLAYBACK

SCALE:	1:15,748
HORIZONTAL	30 TR/IN.
VERTICAL	3.75 IN/SECOND
GEOSPACE GAIN	16 DB.
SAMPLE RATE	4 MS.

LINE LOCATION MAP