



PETROFINA EXPLORATION AUSTRALIA S. A.

PETROLEUM DIVISION

11 OCT 1989



ANGLER - 1

FINAL WELL REPORT

903236 002



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PETROLEUM DIVISION

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ANGLER - 1

FINAL WELL REPORT

Prepared by: Bruno de Vinck

September 1989

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1. GENERAL DATA

WELL SUMMARY

Well:	Angler-1	Proposed Coordinates UTM:
Country:	Australia	X = 625,422E
Area:	Bass Strait	Y = 5,719,970N
Licence:	Vic/P20	Actual Coordinates UTM:
Class:	Exploration	X = 625,413.9E
Status:	P & A	Y = 5,719,971.8N
Water Depth:	276m	Seismic Line: GF88A-96
KB (AMSL):	27m	CDP: 680

Operator: Petrofina Exploration Australia S.A. (30%)
Partners: Japex Gippsland Ltd (30%)
 Overseas Petroleum and Investment Corporation (30%)
 Bridge Oil Ltd (10%)
Contractor: Zapata Offshore Company
Rig: Zapata Arctic - Rig 36

Rig on Location: 20 March 1989
Rig on Contract: 23 March 1989 - 2100 hours
Well Spudded In: 24 March 1989
Well Reached TD: 13 May 1989
Well P & A: 21 May 1989
Rig Moved Out: 26 May 1989

Open Hole			Casing		
Diameter	From	To	Diameter	From	To
36"	303m	363m	30"	300m	358m
26"	363m	613m	20"	300m	604m
17-1/2"	613m	1165m	13-3/8"	301m	1151.5m
12-1/4"	1165m	2918m	9-5/8"	301m	2888.5m
8-1/2"	2918m	4330m	-	-	-

Objectives:

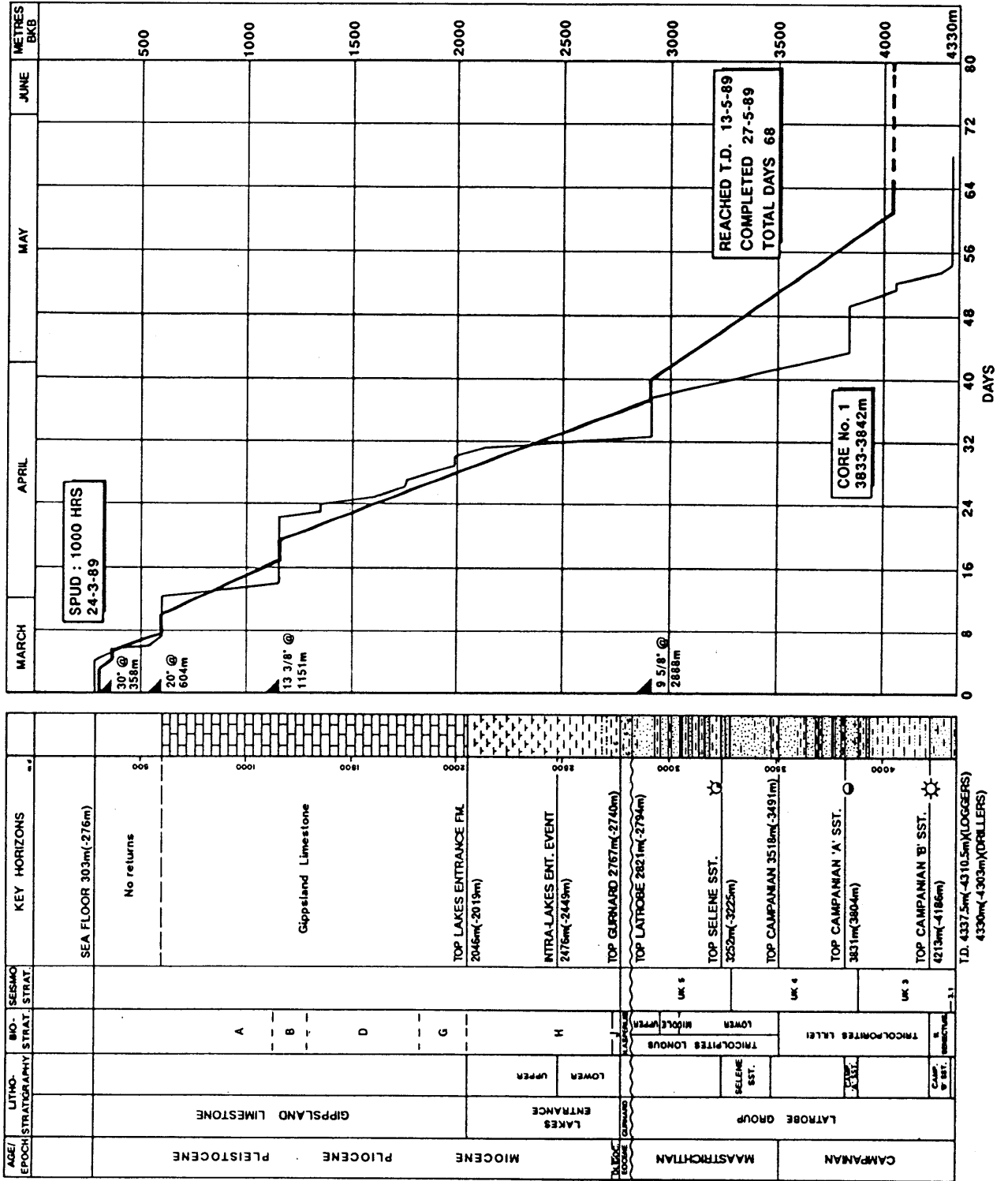
Deltaic and lower coastal plain Selene Sandstone in a fault controlled structural closure.

Well Results:

Plugged and Abandoned.
 No-Commercial Gas Discovery.

Non

ANGLER-1 STRATIGRAPHY AND DRILLING TIME DEPTH CURVE



INTERPRETATIVE

DISCUSSION & RECOMMENDATIONS

INTRODUCTION

Angler-1 was drilled as a vertical exploration well in Permit Vic/P20 in Bass Strait using the Zapata Arctic rig. The rig arrived on location on 20 March 1989 after a 22 day rig move from the Timor Sea via Port Moresby in Papua New Guinea. Due to the earlier than expected arrival of the rig and because of mechanical problems with the Omega 806, anchor handling was started with only the Omega 802 and the Lady Gay which, with only 4000 HP, proved to be inadequate for anchor handling. Omega 806 commenced work on 22 March in the morning and anchoring was completed with rig on contract on 23 March at 2100 hours.

36" SECTION

After making up the 5 joints of 30" casing and landing it in the Permanent Guide Base, the well was spudded in using a 26" bit (Reed Y11) and 36" hole opener (Smith). The 36" hole was drilled from 303mkb to 363mkb in 8 hours. The following drilling parameters were used - WOB = 0-3klb and RPM = 35. Flow rate was increased from 250gpm at the mud line to 520gpm. The nozzle arrangement used was 3 x 8 and 4 x 11 for the 26" bit and 3 x 9 for the 36" hole opener. The average ROP over the section was 7.5m/hr.

The mud was seawater with 30bbl hi-vis pill pumped on each connection to clean the hole. Upon reaching casing point the hole was displaced to high viscosity mud before pulling out of hole for casing.

Five joints of Vetco 30" conductor pipe with ST-2 connections were run and cemented with 190bbl slurry using Class "G" cement and 1% CaCl₂ (BWOC). After waiting on cement a top up job was performed with 36bbl slurry to fill 4.5m of annular volume.

26" SECTION

After cleaning out the conductor pipe and drilling out the shoe with a 26" bit, a 8-1/2" pilot hole was drilled as a precaution in case a shallow gas zone was encountered in this interval as there was possible indications on seismic. The 8-1/2" pilot hole was drilled to 585m using a Reed HP11J with open jets and seawater with 30bbl hi-vis pill every third connection to clean the hole. No indications of gas were encountered while drilling the pilot hole. Drilling parameters for the pilot hole were WOB = 0-2klb, RPM = 120 and Flow Rate = 500gpm.

The hole was then opened using a 12-1/4" Reed HP11J bit with 3 x 12 jets combined with 26" hole opener (Smith) with 3 x 9 jets. The same combination was used to deepen the well to casing point at 613mkb. Drilling parameters were WOB = 0-10klb, RPM = 60-85 and Flow Rate = 550gpm. Totco surveys were run on a regular basis during both the pilot hole and 26" hole opening to ensure the 26" was not deviating from the pilot hole.

Whilst opening the hole, seawater was used and 50bbl hi-vis pills were pumped every third connection. At casing point the hole was filled with 500bbl of 1.20gr/cc hi-vis mud before pulling out of hole.

After pulling out of hole the Regan Slope Indication of the PGB was indicating 1-1/2° (instead of 3/4° when landing the PGB). The 30" cam-actuated running tool was engaged into the 30" housing and an attempt was made to circulate using the charge pump, no returns were observed outside the 30" casing. After

pulling 100,000lb over the string weight and no movement could be observed with the ROV, operations were resumed.

The 20" casing with Vetco RL-4S connectors was run to 604m without problem and cemented with 513bbl slurry using Class "G" cement and calculated to give 100% excess in open hole. The cement job was performed using an inside string and cement returns were observed at the mud line using ROV.

Prior to running the BOPs they were tested on surface which indicated problems with the shear ram's sealing area. They had to be flown to shore for repair. At the same time STI connector on the kill side had to be realigned. After 49 hours downtime and a successful surface test to full working pressure the BOPs were run and re-tested on bottom.

17-1/2" SECTION

After drilling out the shoe and performing a FIT to 1.40gr/cc EMW, the 17-1/2" hole was drilled to 1165m in 29.5 hours and using only 1 bit, a Hughes CX3A fitted with 4x14 nozzles. This represented a significant improvement over previous wells drilled by Philipps in the area where 2 bits were generally required for the same section.

The drilling rate was controlled at an average of 3 singles per hour throughout the entire section using the following parameters, WOB = 0-15klb and RPM = 95. Although hydraulic optimization was not important in terms of ROP, the flow rate was maintained between 800 and 890gpm in order to effectively clean the hole.

Drilling started using the seawater but the system was allowed to mud up by closing the circuit and pumping 30bbl hi-vis pill every third connection. In addition, lime was added to flocculate the mud and a viscosity of 30-32 seconds was reached. The desander and desilter were run continuously and because of fine sand particles causing blinding, the bottom screens were fitted with 1 x 40/120 mesh and 2 x 40/80 mesh. At casing point a 50bbl hi-vis pill was spotted on bottom. However, because of a 9m difference between the Schlumberger and driller's depth, a wipter trip was performed but no fill was found.

A Teleco MWD was run to take deviation surveys every 100m at the top of the section then every 150m at the end. The only problem with the MWD occurred when pulling out of hole because of galled threads between the Teleco MWD and Smith NMDC which made it necessary to cut the connection.

The 13-3/8" casing - N80, 68ppf, was run to 1151.5m in 8-3/4 hours using a Weatherford casing crew. It was then cemented using 442bbl of lead slurry (1.50gr/cc) and 102bbl of tail slurry (1.90gr/cc) calculated to give 60% excess in open hole. After testing the BOPs the stack and riser were flushed with returns being cement contaminated mud.

12-1/4" SECTION

Drilling Parameters:

After drilling out the shoe and performing a FIT to 1.80gr/cc EMW a leak was noted in the choke line above the flex joint. The shear rams were closed and the LMRP was pulled for repair. After re-running, the kill line STI connector failed to test resulting in setting a RTTS packer with storm valve prior to

pulling the BOP stack. Alignment of the kill STI was corrected again and the BOP was re-run and tested successfully. These incidents resulted in downtime as follows: 30-3/4 hours repair rate and 68-1/4 hours zero rate.

The 12-1/4" section then took a total of 11 days to reach casing point at 2918m. Firstly a 8-1/4" Drilex Positive Displacement Motor (PDM) was used in conjunction with a PDC bit (Hughes B9M+) with the intention to drill the entire Lakes Entrance as fast and as economically as possible. Upon reviewing data from Philipps' previous wells in the area, two main concerns had been found:

- The Lakes Entrance appeared to be time sensitive and had a tendency to become unstable after a few days.
- The numerous drill string twist off experienced at various RPM (60-140) were caused by excessive vibrations, probably due to the cutting action of the tricone bits used at the time.

The combination used in Angler-1 was designed because of its obvious advantages:

- High ROP due to the PDC bit in the "soft" Lakes Entrance and the use of a PDM meant the hole would be open for a minimum of time.
- Different cutting action of the PDC (drag type bit) over the tricone to reduce vibrations.
- Reduced drill string fatigue due to the use of a PDM.
- Only one bit required with high ROP and no tripping to improve the economics of this section.

Unfortunately after drilling only 17-1/2 hours and 182m the PDM body twisted off. After fishing the PDM and PDC, a new Drilex PDM was picked up and tested on surface. During that operation the pin connection on the stabiliser sheared and resulted in the back up PDM falling to the bottom of the hole. Two attempts were necessary this time to recover the fish. It has to be noted that the Drilex motor and stabiliser were both supplied by the same service company. Metallurgical analysis showed the failures to be due to fatigue and excessive torque used to make up tool in the shop. All equipment supplied by that contractor was subsequently removed from the rig and replaced.

While waiting for a new mud motor and MWD tool to arrive onboard, a Reed HP43A was run to drill to 1740m in 27 hours. A second attempt was then made using the Hughes B9M+ PDC bit in conjunction with a Navidrill mud motor. However when on bottom it was impossible to make any progress and the BHA was pulled. It was believed that the dump valve of the motor was jammed open preventing any rotation of the bit.

Subsequently a Reed HP43A was run to drill on rotary to 1992m. The bit was pulled after 250m in 43.7 hours, and replaced by a Reed HP13J which drilled to 2097m prior to being pulled out of hole to run the combination PDC-PDM at the beginning of the Lakes Entrance formation. This time the PDC drilled to casing point (total of 821m) in 33 hours for an average ROP of 25m/hr with constant ROP being in the 40-50m/hr range.

When operational, the combination between the PDC bit and mud motor proved to be a total success: the entire Lakes Entrance marl was drilled in 1-1/2 days. It is unfortunate that because of mud motor failures a total of 2-1/2 days direct downtime was experienced to which tripping time to change tricones can be added for a total of 4-1/2 days.

Mud:

Down to 1350m the mud system consisted of seawater and hi-vis pill pumped every 8 singles. The returns were dumped because of fear of contamination while drilling the marls of the Lakes Entrance which would have resulted in bit balling. At 1350m the mud system was closed and allowed to mud up to a seawater/native gel system. At 1984m the mud was changed to a seawater/gel/polymer.

One detrimental effect of the use of seawater to drill the top part of the section was that, combined with the high flow rate required for the PDM, the flow around drill collars became turbulent and induced massive hole erosion creating washover as indicated by caliper. Following is summary of mud system by interval for this section:

Interval (m)	System	Flow Rate (gpm)	Caliper Diam. (in)
1170-1350	Seawater	800	20-23
1350-1984	Seawater/Native	550-650	15-17
1984-2918	Seawater/gel/polymer	700-775	13-14

This clearly shows that even despite the use of high flow rate while drilling with the motor at 1984-2918, the seawater/gel/polymer system helped in drilling a gauged hole.

Casing:

The first Schlumberger log was unable to pass 2330m which made a wiper trip necessary. The 9-5/8" casing was run in 2888.5m. While circulating before cementing, the hole packed-off with intermittent total losses. After regaining circulation, the casing was cemented using a lead and a tail slurry. Approximately 115bbls were lost during the entire cementation.

8-1/2" SECTION**Drilling Parameters:**

The 8-1/2" section was drilled to 4330m in 18 days. A Reed HP11J was used to drill the plugs and float equipment for the 9-5/8" casing because no PDC drillable plugs were available at the time. The bit was pulled after 67m of new formation had been drilled and was graded 7-3-1/8". An Eastman Christensen PDC bit was run (R437) which drilled from 2985 to 3507m (522m) in 57.5 hours with an ROP of 9.1m/hr. Drilling parameters were WOB = 15-40klb, RPM = 80-120 and GPM = 450-500. The bit was pulled when ROP dropped after drilling a massive stringer of siltstone grading to claystone. It was 100% worn with no cutting structure left and ringed.

A Reed HP51A was then run in the hole to drill to 3833m where it was pulled to core. It drilled 326m in 46-1/2 hours with a ROP of 7m/hr with the following parameters, WOB = 30-40klb, RPM = 75-95 and GPM = 450. It was graded 5-4-1/8".

A first attempt was made to run the core barrel which could not pass below 3788m (45m off bottom). The core barrel was believed to be a more rigid

assembly than the drilling assembly (pendulum with a roller reamer 60' above the bit) and was hanging on ledges. The core barrel was pulled and a cleaning assembly with one roller reamer and two stabilisers at 30' spaceout was run in the hole. Reaming was necessary from 3255 to 3717m with tight hole conditions making necessary to jar on every connection. The bit was pulled and found 1/16", roller-reamer 1/4" and stabiliser 1/16" undergauge. A new reaming assembly, not as stiff, with a near bit stabiliser and a stabiliser at 60' was run to clean the hole to 3833m with high torque and having to jar free on occasions. Core #1 was cut using a DBS 30' core barrel and CT303S corehead in 8 hours with a recovery of 99%.

Another PDC, Hughes B35M, was run and drilled to 4079m with a ROP of 6.4m/hr. The bit was pulled after ROP dropped significantly while drilling a hard string and graded 40% wear. Following, an Eastman Christensen R435S was used to drill to 4234m with a ROP of 8.4m/hr. Again the PDC was pulled after ROP dropped to nil while drilling a hard stringer. The bit was graded 60% wear and presented a ring with damaged and missing cutters. Most of the wear took place at crown of the cone where only half of each cutter remained presenting a big flat wear. To finish the hole, a Reed HP53A was run which drilled the remaining 96m at a ROP of 4m/hr.

Two major concerns were found while drilling this section. Firstly high torque was experienced constantly below 3000m. An attempt was made to reduce torque by mixing XCD polymer and Torq-Trim without any apparent reduction. A possible explanation are the coal beds that were drilled between 3015 and 3325m. It is believed that the coal was "moving in" the well and stabilisers were hanging on these seams. This is indicated by the amount of big lumps of coal recovered in the cuttings even below 3325m. Drilling with a roller reamer and an undergauge stabiliser may reduce the torque. Another solution, of course, being to drill with a motor.

Secondly, all tricone bits used in this section were pulled undergauge by 1/16" or 1/8" giving an indication of the abrasiveness of the formation drilled.

Mud:

Drilling of this section started with a mud weight of 1.10gr/cc but solids build up raised it to 1.12-1.13gr/cc. The desilter/mud cleaner was used at all times for controlling the solids with the centrifuge being run intermittently. The desander was not used because of the excessive mud discharge. Below 3000m only 60x100 mesh screens were available for the shakers with the finer screens having all been used at this stage. This resulted in an increase of mud weight to 1.15gr/cc at TD.

The API filtrate was maintained below 5cc/30min using treatments of Dextrid and Pac-R to the coring point. Below, because of a shortage of Dextrid, Pac-R became the primary agent for filtration control. However, because of its undesirable affect on rheology, treatments were minimised allowing the filtrate to increase to 6.5cc/30min.

While drilling, chemical treatments (caustic soda and lime) were necessary to maintain pH in the 9-9.5 range due to contamination by CO₂ present in formation gas. During logging operations, a wiper trip was made and the pH was found to have dropped to 6.5. Despite treatment with 0.03-0.04ppb Baracide, this low pH allowed bacterial degradation of the polymer.

ABANDONMENT

During logging operations a CBL/VDL was run to confirm the presence of cement in the 13-3/8" x 9-5/8" annulus. Consequently it was decided to set two cement plugs in the open hole across each hydrocarbon-bearing sands. Another plug was set across the 9-5/8" shoe. Since the top of that plug was found to be below the DITR requirements of a minimum of 30m cement inside the casing, a second plug was set on top, then the plug was pressure tested with 1000psi.

The last plug was set near the surface but again the top was found lower than the maximum DITR distance from the mud line which required to set another 27m plug on top before pulling the BOPs.

Two blasts were necessary to sever the 4 casing strings and retrieve the PGB/wellhead package from the seabed. Because of poor quality of equipment and running procedures it took the contractor five attempts and different cable arrangements for a total of 13-1/4 hours to detonate the first explosive. While detonating the charge, 100,000lb overpull were applied. After the explosion, 300,000lb overpull was unsuccessful in recovering the wellhead. A second charge was made up and detonated with 150,000lb overpull.

The centre of the charge was located, 1-1.5m below the first 30" ST-2 connector. Two blasts were necessary but the connector was bevelled. It is therefore recommended for the next blasting operation to bring the top of the charge level with the connector, with the centre being then 0.5m below the connector. This combined with a slightly bigger charge (30kg instead of 20kg) should help spring the connector open to recover the wellhead with only one blasting.

Because of bad weather it took 5 days to pull anchors and start moving to the next well location at Anemone-1. The rig departed the Angler-1 location at 2330 hours on 26 May 1989.

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2. PROGRAMMES

GEOLOGICAL WELL PROGNOSIS

1. INTRODUCTION

It is proposed to drill an exploration well in VIC/P20 on the Angler Prospect at Line GF88A-96 CDP 680. The primary objective of the well will be the Maastrichtian aged Selene Sandstone, with a prognosed top at 3427 RKB. Additional secondary objectives are other Lower Maastrichtian and Campanian Sandstones between 3077m and 4027m, the proposed well TD. The well will satisfy the first part of a four well drilling commitment, due to be completed before 22 July 1990.

TABLE 1

GENERAL DATA SUMMARY

Well Name:	Angler-1
Country:	Australia
Basin:	Gippsland
Licence:	VIC/P20
Seismic Line:	GF88A-96 CDP 680
UTM:	625,422 E 5,719,970 S
Geographic:	Lat: 38°39'35.3" S Long: 148°26'29.4" E
Water Depth:	274m
Operator:	Petrofina Exploration Australia 30%
Partners:	OPIC 30% JGL 30% Bridge 10%
Primary Objective:	Selene Sandstone 3427m RKB
Trap:	Fault controlled structural closure
TD Depth:	4027m

2. REGIONAL SETTING

The Angler Prospect lies within the central part of the northwest trending Gippsland Basin. The Gippsland Basin as a whole developed in three distinct phases separated by periods of structuring marked by regional unconformities. The first phase started with Late Jurassic/Early Cretaceous rifting and volcanism, giving deposition of the Strzelecki Group. This was followed by Late Cretaceous to Middle Eocene rifting related to dextral dilational shear on the Bass Fracture Zone and opening of the Tasman Sea. This structural phase gave rise to deposition of the prospective Latrobe Group which comprises up to 2500m of shallow marine and continental shales, coals and sandstones. The last phase of basin development involved deposition of the Late Eocene to Recent Seaspray Group formed during a widespread thermal sag phase. This comprises the Lakes Entrance claystones and marls overlain by the Gippsland Limestones. The Seaspray Group forms an effective seal for underlying Top Latrobe accumulations.

3. OBJECTIVES

The potential reservoirs at Angler comprise intra-Latrobe sandstones of deltaic and lower coastal plain origin. The primary objective is the Selene Sandstone proved nearby at Selene-1 and Hapuku-1, where it comprises a 100m+ coarsening upwards deltaic and lower coastal plain sequence.

Secondary objectives include other Lower Maastrichtian deltaic and lower coastal plain point bar sandstones, together with as yet unproved deltaic sandstones in the Upper Campanian. Depth/porosity trends established from detailed log analysis of all the previous VIC/P20 wells show that if favourable deltaic facies are present, then reasonable average porosities of around 17% can be expected to a TD of 4000m.

4. HYDROCARBON SOURCE

The predicted source interval is the Campanian coaly, lower coastal plain sequence. Geochemical analysis of previous VIC/P20 wells shows an abundance of oil-prone algal and coaly kerogen which was formed in a lower coastal plain marshy (paludal) environment. The source material is present both within the abundant thick coal seams and also within interbedded coaly shales. The predicted hydrocarbon type is oil, however some chance of gas exists depending on the unknown source characteristics of the Lower Campanian sequence. This sequence has not previously been drilled, but if thick, organically rich and over mature, it could be a gas source. The surrounding fields are however all light oil (46° to 51° API) with no gas caps.

5. SEAL

Coastal plain and marine shales form the potential seal lithologies for the primary and secondary objectives. For the Selene Sandstone a 200m thick coaly shale sequence forms a good top seal. Some thin porous and permeable sandstone interbeds do however occur, and these will be a risk for seal across the Angler bounding faults to the north.

6. STRUCTURE

The structural interpretation is based on the results of a 3-D seismic survey acquired during 1988. A depth map is shown on Figure 1, and a seismic line on Figure 2. The Angler Prospect comprises a tilted fault block bounded to the north by a normal fault and to the south by dip closure. The spill point is on the northern boundary fault at 3490m and closure to the east is sensitive to depth conversion.

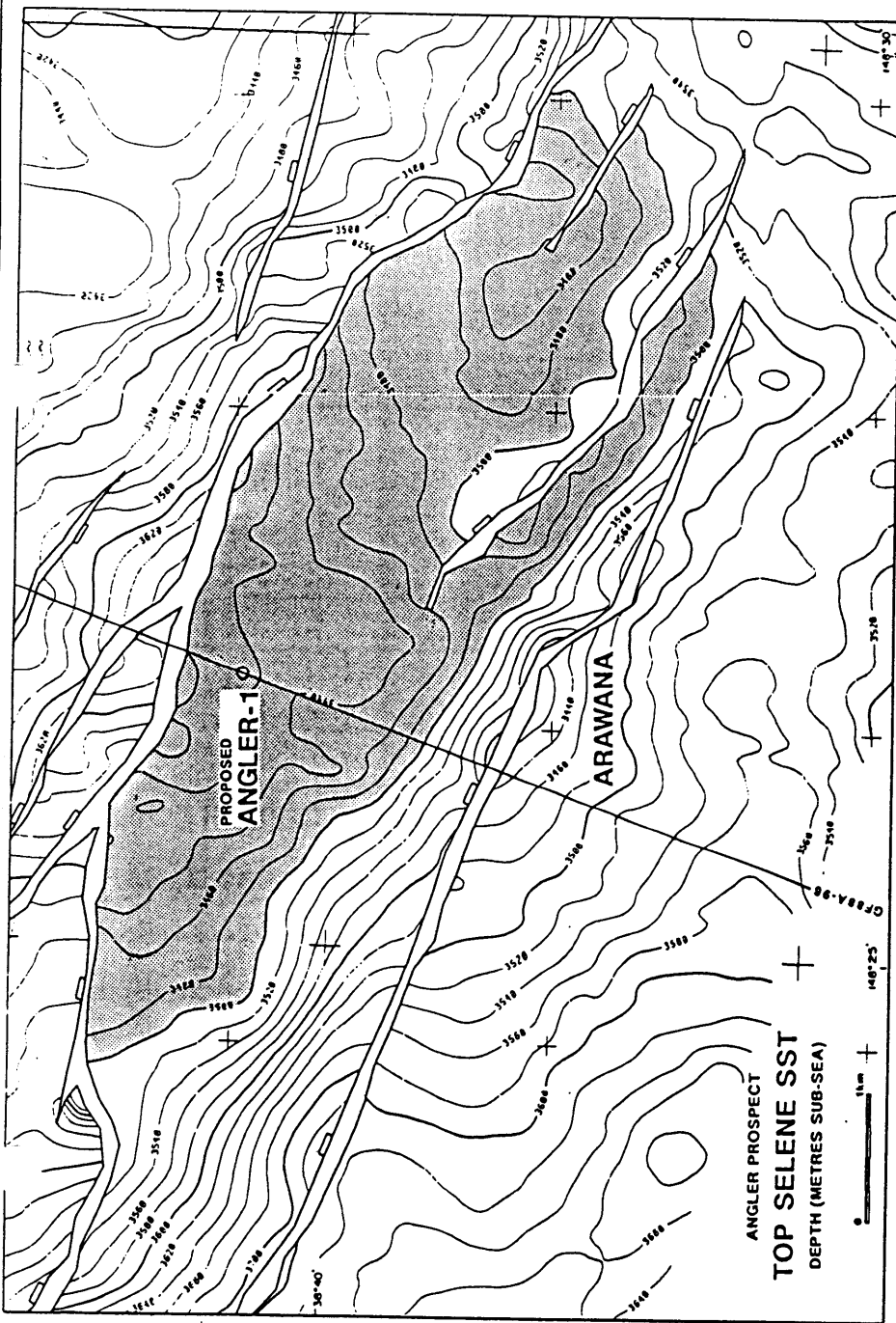
Figure 1

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STRATIGRAPHY	PROPOSED HORIZON DEPTH (RKB)	PREDICTED LITHOLOGY	ACTUAL DEPTH (RKB)
CAMPANIAN	SEA FLOOR 301m		
MAASTRICHTIAN			
LATROBE			
GROUP			
LAKES ENTRANCE			
MIOCENE - PLIOCENE			

TOP LAKES ENTRANCE 2193m
 TOP DUNDAS FM 2881m
 TOP MAASTRICHTIAN 2987m
 TOP SELENE SST 3427m
 TO 4027m
 TO 4000m
 TO 4000m
 TO 4000m

PRIMARY OBJECTIVE
 SECONDARY OBJECTIVE



LOCATION : LINE GF88A-96 CDP 680
 UTM 625,422 E
 5,719,970 N
 LAT. 38° 39' 35.3" S
 LON. 148° 26' 29.4" E


PETROFINA EXPLORATION AUST. (S.A.)
VIC/P20
ANGLER PROSPECT

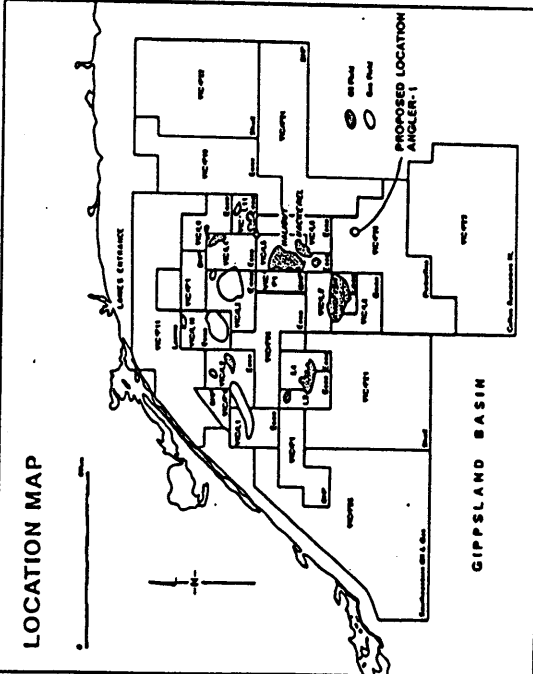
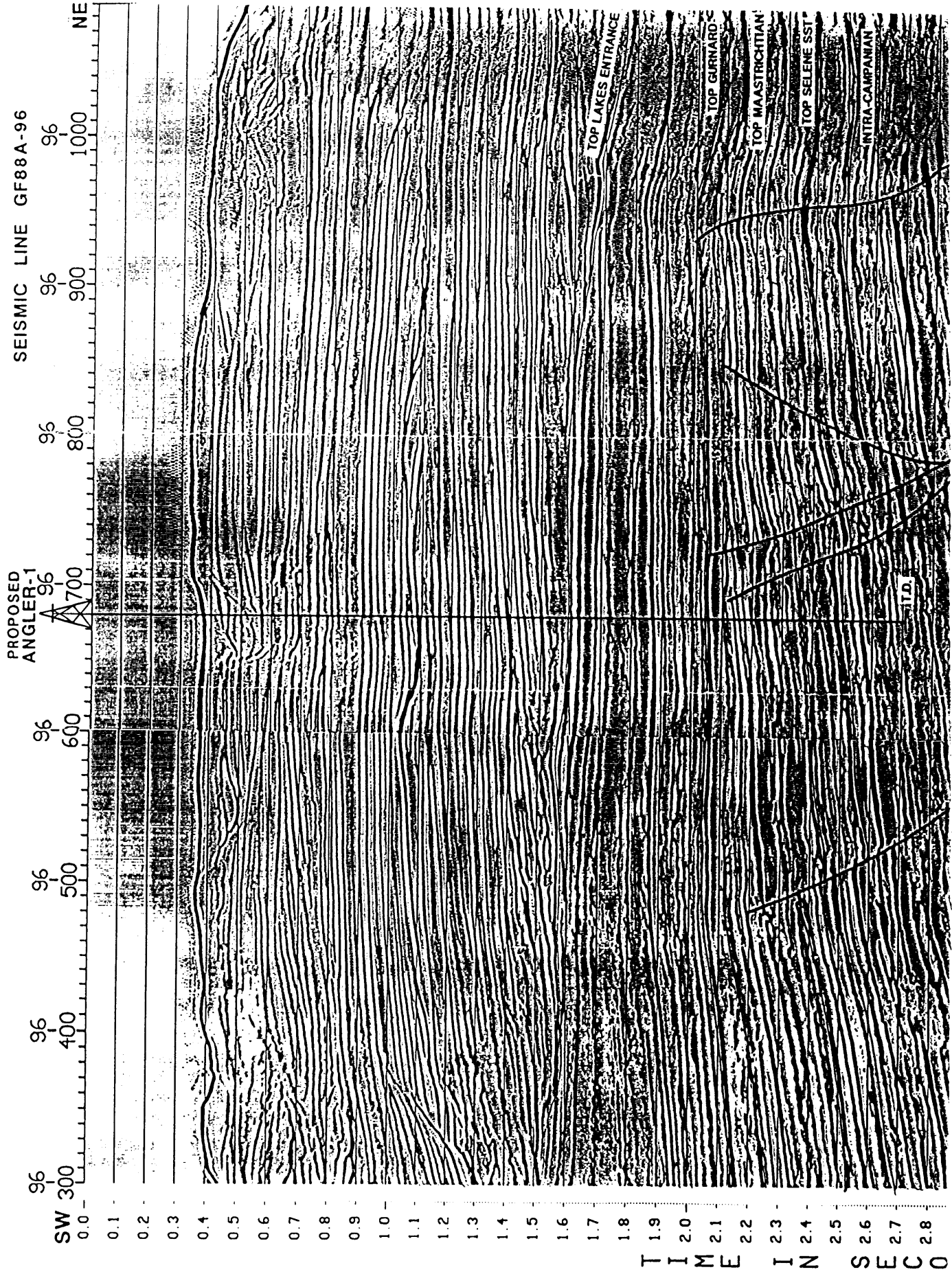


Figure 2



DRILLING PROGRAMME

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12. Geological Prognosis
13. Coring and Sampling
14. Wireline Logging Programme
15. Mud-Logging
16. Well Testing Guidelines
17. Data Distribution
18. Addresses

DRILLING PROGRAMME APPROVED BY:

Technical Manager

lh
R.A. BORDIER 17.03.89

Exploration Manager

R. Shewley

General Manager

lh

1 WELL OBJECTIVES

Well Angler 1 is located on a normal fault trap, with dip closure to the south and fault closure to the north. The primary objective of the well will be the Maastrichtian Selene Sandstone, with a prognosed top at 3400m subsea. Additional secondary objectives are other Lower Maastrichtian and Campanian sandstones between 3050m and 4000m subsea, the proposed well T.D.

The predicted hydrocarbon type is oil, however some chance of gas exists depending on the source characteristics of the Lower Campanian. This sequence has not previously been drilled in the vicinity of Vic/P-20 but if thick, organically rich and over-mature, it could be a gas source. The surrounding fields are however all light oil (46° to 51° API) with no gas cap.

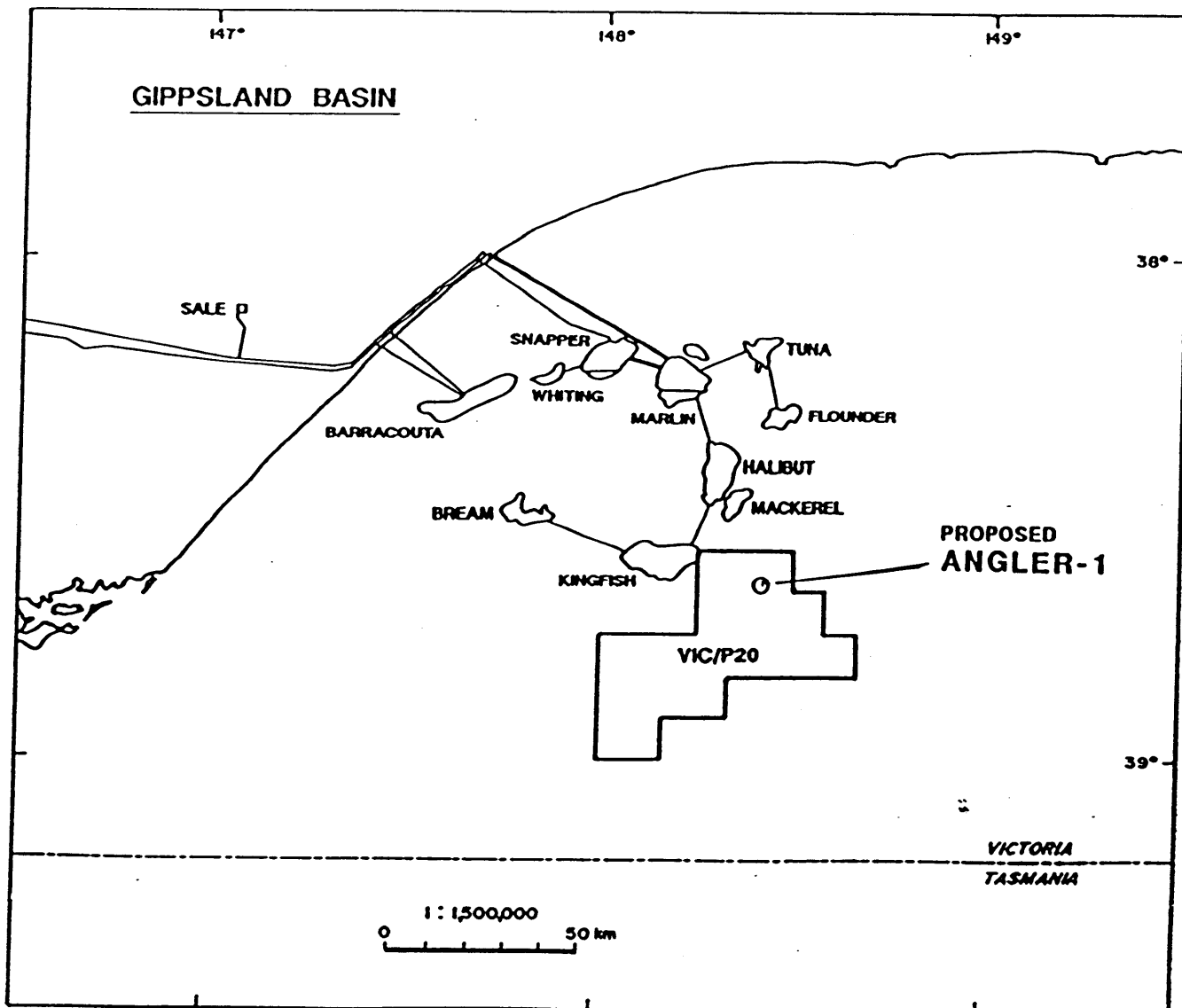
LICENCEES

Petrofina Exploration Australia S.A.	30%
Japex Gippsland Limited	30%
Overseas Petroleum and Investment Corporation	30%
Bridge Oil Limited	10%

2 LOCATION

903236 024

WELL NAME	: ANGLER-1	LAT./LONG.	: 38° 39' 35.3" S 148° 26' 29.4" E
WELL CLASS	: EXPLORATION	UTM	: 625,422 E 5,719,970 N
AREA	: BASS STRAIT	SEISMIC LINE	: GF88A-96
LICENCE No	: VIC/P20	CDP	: 680
DRILLING UNIT	: ZAPATA ARCTIC	K.B. ELEVATION	: 27m
RIG TYPE	: SEMI SUBMERSIBLE	WATER DEPTH	: 274m
RIG HEADING	: 315°	TOTAL DEPTH & FORMATION	: 4027m LATROBE
DRILLING CONTRACTOR	: ZAPATA OFFSHORE COMPANY		



3 WELL SUMMARY

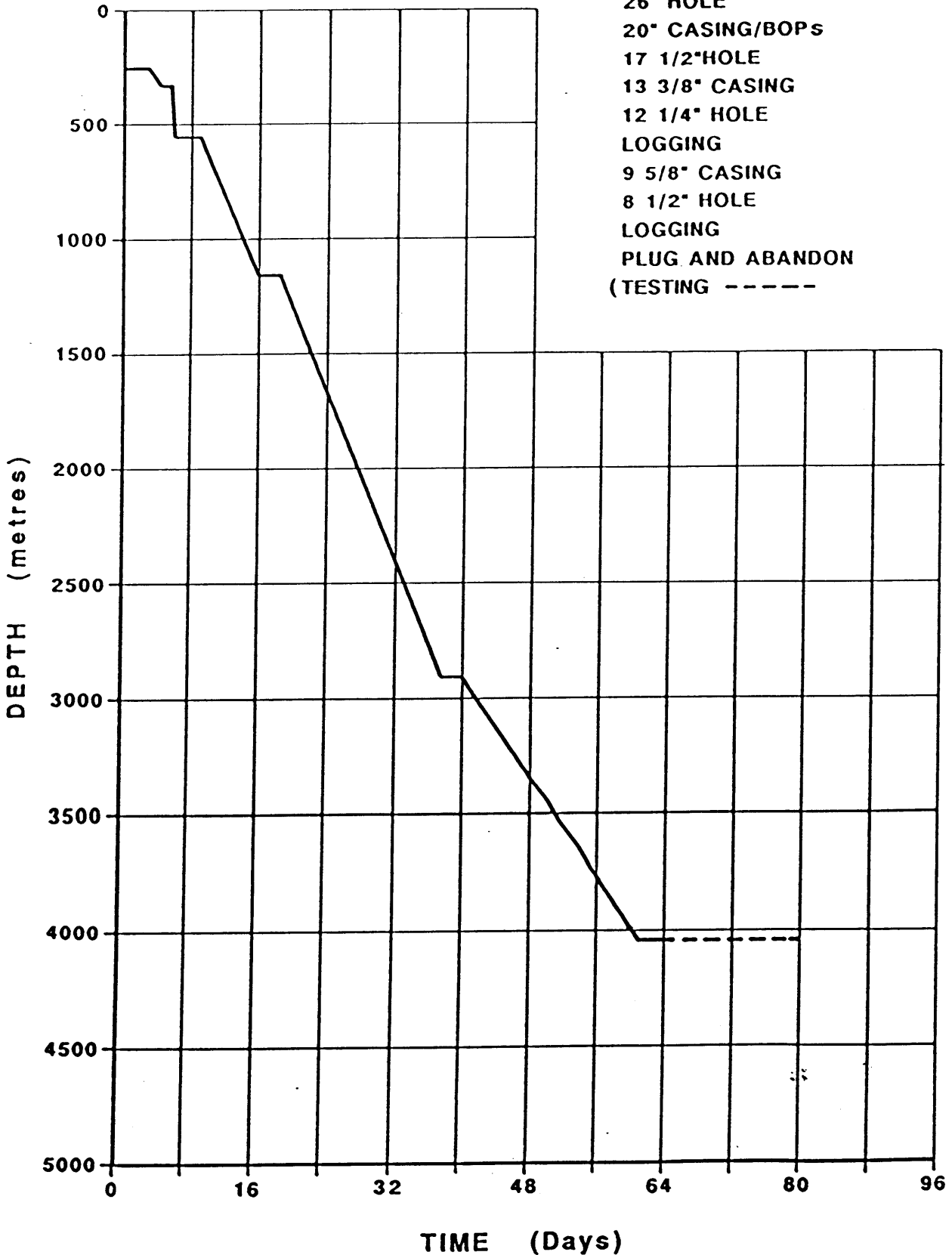
DEPTH RKB (m)	STRATIGRAPHY	PREDICTED LITHOLOGY	CORES	HOLE SIZE	CASING SPECIFICATION	PRESSURE CONTROL	MUD SYSTEM	DIRECTIONAL SURVEY	LOGGING	DRILLING HAZARDS
500		CAUCARENITE light grey, soft sticky, fossiliferous, marly matrix		36"	30" @ 362m 1" / 1.2" U.T. VETCO ST-2	N/A	Seawater with high vis pills	Totco every 20-30m		
1000		CAUCARENITE light-medium grey, soft to moderately hard, carbonaceous and glauconitic in part.		26"	20" @ 584m 94ppf x-56 VETCO RL-4c	Diverter (2000 psi) Annular (5000 psi)	Seawater with high vis pills possible polymer additions	Magnetic Single Shot or MWD every 70 - 80m	DIL/LSS/GR	Possible shallow gas
1500		MRL light-medium grey, soft, sticky, grading to marly calcarenite		17 1/2"	13 3/8" @ 1150m 68ppf N80 Buttress	2 x Double Rams (15000 psi)				
2000		CAUCARENITE medium grey, soft to moderately hard, blocky, fossiliferous		12 1/4"		Diverter (2000 psi) Annular (5000 psi) Annular (10000 psi) 2 x Double Rams (15000 psi)	Seawater/Cel displaced to Seawater/Cel/ Polymer prior to Lakes Entrance	Magnetic Single Shot every 70 - 80m or MWD	DIL/LSS/GR/CAL (GST) LDT/CNL/GR (CBL/VOL/OCL/GR)	Possible vibrational problems
2500		CAUCARENITE medium grey, moderately hard, blocky, fossiliferous, marl matrix in part						Gyro Multishot in 9 5/8" casing if Magnetic Single Shots used.		Possible reactive shale/tight hole on trips
3000		MRL brown to light grey, soft, sticky, unconsolidated grading to CLAYSTONE light, grey to cream, soft, sticky, silty in part			Top Liner @ 2750m 9 5/8" @ 2915m 47ppf N80 Buttress					
3500		SHALE light grey-grey, firm-moderately hard, subfissile, silty, calcareous, carbonaceous in part, grades to CLAYSTONE								
4000		SILTSTONE grey-green, firm glauconitic SANDSTONE translucent, loose, medium to coarse grained, calcareous, feldspathic, good porosity SHALE light grey, soft-firm, silty SANDSTONE grey-colourless, medium grained, calcareous, fair-good porosity SHALE dark brown, firm-hard, silty, carbonaceous COAL black, vitreous, hard SANDSTONE grey-colourless, loose-firm, medium to coarse grained, moderately well sorted, carbonaceous, silty in part, good porosity. SHALE dark brown, firm-hard, silty, coaly COAL black, vitreous, hard SANDSTONE grey-colourless, moderately firm, medium grained, moderately sorted, moderate porosity.		8 1/2"	7" Liner @ 4027m 29ppf N80 Buttress	Diverter (2000 psi) Annular (5000 psi) Annular (10000 psi) 2 x Double Rams (15000 psi)	Seawater/Cel/ Polymer (9.0 - 10.0ppg)	Magnetic Single Shot every 70 - 80m to top target, every 150m thereafter or MWD SHOT Survey TD to 9 5/8" shoe or if testing Gyro Multishot in 7" casing	DIL/LSS/GR LDT/CNL/NGT/CAL SIDT/GR CST LIT/MSFL/GR (RFT) VSP (CBL/VOL/OCL/GR) (CBL/CST/OCL/GR)	
4500										

MIOCENE - PLOCENE
Eocene
MAASTRICHTIAN
GURNARD
LAKES ENTRANCE
LATROBE GROUP
SELENE SST.

4 DRILLING/TIME CURVE ANGLER-1

TIME BREAKDOWN

ACTIVITY	DAYS
LOCATE / ANCHORS	3
36" HOLE/30" CASING	2
26" HOLE	1
20" CASING/BOPs	3
17 1/2" HOLE	7
13 3/8" CASING	2
12 1/4" HOLE	19
LOGGING	1
9 5/8" CASING	2
8 1/2" HOLE	20
LOGGING	2
PLUG AND ABANDON	3
(TESTING - - - - -)	15



5 DRILLING PROCEDURES

1. Position Rig over well location and land temporary guide base
2. Dependent upon whether, make up 30" casing. Land in permanent guide base, hang off.
3. Drill 36" hole with seawater and high viscosity slugs.
4. Run 30" casing, ensuring low pressure wellhead housing lands 2m above mudline.
5. Cement 30" casing to mudline, using inside string.
6. Drill 17 1/2" pilot hole to 600m RKB, with seawater and high viscosity slugs.
7. Open hole to 26" with 17 1/2" bit and 26" hole opener, using seawater and high viscosity slugs.
8. Run 20" casing high pressure housing.
9. Cement 20" casing to mudline.
10. Nipple up BOP stack, tensioners, slip joint and diverter package.
11. Test BOP's, 20" casing and function test Diverter.
12. Drill out 20" shoe and drill 17 1/2" hole to 1150m with seawater and high viscosity slugs initially, allowing system to "mud up" by retaining all viscous slugs in system, some dilution later in the section may be necessary.
13. Run open hole electric wireline logs.
14. Run and cement 13 3/8" casing. Cement to mudline, set Pack-off.
15. Test BOP's and casing.
16. Drill out float collar and shoe plus 3m new formation.
17. Test formation to 1.7 SG equivalent or leak off if less.
18. Drill 12 1/4" hole to 2920m. Initially using mud from previous section, displacing to Seawater/Gel/Polymer prior to entering Lakes Entrance formation.
19. Run open hole electric wireline logs.
20. Run 9 5/8" casing and cement to minimum 450m above 13 3/8" shoe. Set Pack-off.
21. Test BOP's and 9 5/8" casing.
22. Run Gyro Multishot from 9 5/8" Float Collar to surface (not necessary if MWD has been used).
23. Drill 9 5/8" shoe and 3m of new formation.
24. Test formation to 1.7 SG equivalent or leak-off if less.
25. Drill 8 1/2" hole to T.D. with Seawater/Gel/Polymer mud system. Take regular surveys to check verticality.
26. Run open hole electric wireline logs.
27. Should hydrocarbons be discovered a 7" liner will be set at T.D. A detailed programme for setting the liner and testing will be issued at that time.
28. A programme for abandonment or suspension of the well will be issued as appropriate.

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6 MUD PROGRAMME

WEIGHT	VISCOSITY	PV/YP	GELS	FLUID LOSS	SOLIDS	PH	SALINITY
HOLE SIZE: 36"/26"			INTERVAL: 301-584		MUD TYPE: Seawater W/Pills		
1.0SG	100 + Sec/qt	20-25/ 40-50	-	-	-	10.5-11.5	22000

NOTES/TREATMENT:

This section will be drilled with seawater. High viscosity pills will be pumped on connections and a fresh water viscous pill weighted to 1.15 SG will be left in the hole prior to running both the 30" and 20" casing strings. The viscous pills will be of a Pre-hydrated Flocculated Bentonite type. The API Bentonite concentration will be in the range of 27.5 - 30.0 ppb.

HOLE SIZE: 17.5			INTERVAL: 584-1150		MUD TYPE: S.W/Gel/Native		
1.0-1.1SG	40+	-/12+	-	-	-	8.5-9.5	22000

NOTES/TREATMENT:

This section will be drilled with Seawater. High viscosity pills will be pumped and retained in returns allowing the system to build to a Seawater/Gel/Native system. The lack of fluid loss control should facilitate higher ROP's and the Gel/Native additions satisfactorily clean the hole. Dilution may be necessary to maintain viscosity at around 40. Problems of bit balling in Gippsland marls will be treated with detergent additions.

HOLE SIZE: 12.25			INTERVAL: 1150-2915		MUD TYPE: SW/Gel/Polymer		
1.1-1.25	40-50	-/12-15	3/12	8-10cc	min	9.5-10.0	17-20000

NOTES/TREATMENT:

The cement and shoe will be drilled out with the mud from the previous section, dependant upon condition of this mud drilling will continue to approximately 2000m. The mud system must be displaced to a Seawater/Gel/Polymer system prior to entering Lakes Entrance formation. Fluid loss will be controlled in order to maintain Polymer content. The fluid rheology will be adjusted by polymer addition or dilution. Weight will be increased to 1.20-1.25 in Lakes Entrance.

HOLE SIZE: 8.5			INTERVAL: 2915-4027		MUD TYPE: SW/Gel/Polymer		
1.05-1.20	40-45	-/12-15	3/12	less than 5cc	min	9.0-10.0	17-20000

NOTES/TREATMENT: The 8.5 section will be drilled with the Seawater/Gel/Polymer mud from the previous section. Solids will be kept to a minimum, possibly with use of a centrifuge, and fluid loss reduced to less than 5cc with additions of polymer.

Note: As a contingency stocks of KCL or Polyacrylamide may be stocked on the rig in case of reactive shale problems. Should addition of either be necessary solids content in the mud must be reduced to lowest possible level with use of a centrifuge prior to addition of either contingency chemical. This will reduce the magnitude of the viscosity hump created by flocculation of solids on exposure to KCL or Polyacrylamide.

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7 CASING PROGRAMME

INTERVAL m	WEIGHT ppf	GRADE	JOINT TYPE	BURST (Safety Factor)	COLLAPSE (Safety Factor)	TENSION (Safety Factor)
HOLE SIZE 36" DEPTH 325m		CASING SIZE 30"		PREVIOUS SHOE DEPTH -		
301-312	460	B	ST-2	-	-	-
312-362	310	B	ST-2	-	-	-
HOLE SIZE 26" DEPTH 545m		CASING SIZE 20"		PREVIOUS SHOE DEPTH 325m		
301-584	94	X-56	RL-4S	2210psi (1.49)	520psi (1.48)	1,080,000lbs (12.41)
HOLE SIZE 17 1/2" DEPTH 1150m		CASING SIZE 13 3/8"		PREVIOUS SHOE DEPTH 545m		
301-1150	68	N80	Buttress	5020psi (1.26)	2270psi (3.01)	1,556,000lbs (7.79)
HOLE SIZE 12 1/4" DEPTH 2900m		CASING SIZE 9 5/8"		PREVIOUS SHOE DEPTH 1150m		
301-2915	47	N80	Buttress	6870psi (1.33)	4750psi (1.06)	1,086,000lbs (2.67)
HOLE SIZE 8 1/2" DEPTH 4023m		CASING SIZE 7"		PREVIOUS SHOE DEPTH 2900m		
2750-4027	29	N80	Buttress	8160psi (1.47)	7020 psi (1.16)	676,000lbs (1.89)

DESIGN ASSUMPTIONS:

- Collapse:**
- 20" Annulus full of 1.92 SG cement, pipe full of seawater
 - 13 3/8" Annulus filled with 152 m, 1.92 SG cement, remainder with 1.57 SG cement, pipe full of seawater
 - 9 5/8" Annulus filled with 1.32 SG mud, pipe 100% evacuated to gas
 - 7" Annulus filled with 1.32 SG mud to 9 5/8" shoe, 1:20 SG mud to T.D., pipe 100% evacuated to gas
- Burst:**
- 20" Pipe full of gas from 1.15 SG BHP, annulus full of mud
 - 13 3/8" Pipe full of gas from 1.26 SG BHP, annulus full of mud (BHP at 9 5/8" shoe)
 - 9 5/8" Pipe full of gas from 1.20 SG BHP, annulus full of mud (BHP at T.D.)
 - 7" Pipe full of gas from 1.20 SG BHP, annulus full of completion fluid (BHP at T.D.)
- Tension:** All strings, zero buoyancy factor

Petrofina Expl. Aust. S.A.**VIC/P20****8 CEMENT PROGRAMMES****CASING SIZE:** 30"**SLURRY DESCRIPTION** Approx 52 MT Class 'G' cement, 3% CaCl₂ BWOC +

5.0 gals/SK Seawater + Defoamer as required

DESIRED TOP Mud Line	EXCESS 200% max	(determine actual volume by observation at Wellhead)		
SLURRY VOL. m ³	40			
SLURRY YIELD m ³ /T	0.76			
SLURRY DENSITY-S.G.	1.90			
THICKENING TIME-HRS MIN.	as per lab test			
COMPRESSIVE STRENGTH-PSI/24 HRS	± 1500			

RUNNING AND CEMENTING INSTRUCTIONS**SHOE, COLLARS(S) AND JOINT STRENGTHENING** 30" Float Shoe Butt Welded to pipe**MECHANICAL AIDS**

None

FLUSH, DISPLACEMENT RATE, PLUGS, RECIPROICATION, etc
50bbbls Seawater Spacer**PRESSURE TESTING AND LANDING** 30" Housing to be set 2m above seabed. Check level indicator before and after cementing. After backing out running tool, jet inside of housing.**CASING SIZE:** 20"**SLURRY DESCRIPTION** Approx 107MT Class 'G' Cement + 2% CaCl₂ BWOC + 5.0

gals/SK Seawater + Defoamer as required

DESIRED TOP Mud Line	EXCESS 100%			
SLURRY VOL. m ³	81			
SLURRY YIELD m ³ /T	0.76			
SLURRY DENSITY-S.G.	1.90			
THICKENING TIME-HRS MIN.	as per lab test			
COMPRESSIVE STRENGTH-PSI/24 HRS	± 1500			

RUNNING AND CEMENTING INSTRUCTIONS**SHOE, COLLARS(S) AND JOINT STRENGTHENING** Float Collar and Shoe butt welded into 1st joint of casing. Thread lock 1st coupling above Float Collar.**MECHANICAL AIDS** One centraliser inside 30" shoe, one 2m above 20" shoe and one across first coupling.**FLUSH, DISPLACEMENT RATE, PLUGS, RECIPROICATION, etc**
50bbbls seawater spacer**PRESSURE TESTING AND LANDING** Land in 30" housing, check for engagement

Petrofina Expl. Aust. S.A.**VIC/P20****8 CEMENT PROGRAMMES****CASING SIZE:** 13 3/8**SLURRY DESCRIPTION** Approx 84MT Class 'G' Cement, Lead Slurry;

63MT Class 'G' + liquid extender + Seawater + Dispersant + De-Foamer. Tail

Slurry: 21MT Class 'G' + Seawater + Dispersant

DESIRED TOP	Mud Line	EXCESS		60% in open hole	
SLURRY VOL. m ³		74	16		
SLURRY YIELD m ³ /T		1.17	0.76		
SLURRY DENSITY-S.G.		1.60	1.90		
THICKENING TIME-HRS MIN.		as per lab tests	as per lab tests		
COMPRESSIVE STRENGTH-PSI/24 HRS		+450	+1800		

RUNNING AND CEMENTING INSTRUCTIONS

SHOE, COLLARS(S) AND JOINT STRENGTHENING Float Shoe and Float Collar to be ljt apart. Threadlock all connections up to and including 1st coupling above Float Collar

MECHANICAL AIDS

Centralisers to be run on 1st 5jts + 2 inside 20" casing

FLUSH, DISPLACEMENT RATE, PLUGS, RECIPROCATION, etc

50bbls seawater plus 50bbls chemical spacer

PRESSURE TESTING AND LANDING

Bump plug and pressure test to 2000 psi

CASING SIZE: 9 5/8"**SLURRY DESCRIPTION** Approx 72 MT Class 'G' Cement. Lead Slurry; 54MT Class 'G'

+ Seawater + liquid extender + Dispersant + Retarder + De-Foamer, Tail Slurry;

21MT Class 'G' + Dispersant + De-Foamer

DESIRED TOP	700m	EXCESS		40% in open hole	
SLURRY VOL. m ³		70	16		
SLURRY YIELD m ³ /T		1.31	0.76		
SLURRY DENSITY-S.G.		1.50	1.90		
THICKENING TIME-HRS MIN.		as per lab tests	as per lab tests		
COMPRESSIVE STRENGTH-PSI/24 HRS		+300	+2000		

RUNNING AND CEMENTING INSTRUCTIONS

SHOE, COLLARS(S) AND JOINT STRENGTHENING Float Shoe and Float Collar to be ljt apart. Threadlock all connections up to and including 1st coupling above Float Collar.

MECHANICAL AIDS

Centralisers to be run on 1st 10jts + 2 inside 13 3/8" casing

FLUSH, DISPLACEMENT RATE, PLUGS, RECIPROCATION, etc

50bbls seawater plus 50bbls chemical spacer

PRESSURE TESTING AND LANDING

Bump plug and pressure test to 3000 psi

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8 CEMENT PROGRAMMES

CASING SIZE: 7" LINER PROGRAMME WILL BE ISSUED AS REQUIRED

SLURRY DESCRIPTION Anticipate - 20MT Class 'G' Cement + Dispersant +

Retarder + De-Foamer

DESIRED TOP	Top of Liner @ 2750m	EXCESS			As per caliper log or 25% OH whichever greater
SLURRY VOL. m ³					
SLURRY YIELD m ³ /T					
SLURRY DENSITY-S.G.					
THICKENING TIME-HRS MIN.					
COMPRESSIVE STRENGTH-PSI/24 HRS					

RUNNING AND CEMENTING INSTRUCTIONS

SHOE, COLLARS(S) AND JOINT STRENGTHENING

MECHANICAL AIDS

FLUSH, DISPLACEMENT RATE, PLUGS, RECIPROCATION, etc

PRESSURE TESTING AND LANDING

CASING SIZE:

SLURRY DESCRIPTION

DESIRED TOP	EXCESS			
SLURRY VOL. m ³				
SLURRY YIELD m ³ /T				
SLURRY DENSITY-S.G.				
THICKENING TIME-HRS MIN.				
COMPRESSIVE STRENGTH-PSI/24 HRS				

RUNNING AND CEMENTING INSTRUCTIONS

SHOE, COLLARS(S) AND JOINT STRENGTHENING

MECHANICAL AIDS

FLUSH, DISPLACEMENT RATE, PLUGS, RECIPROCATION, etc

PRESSURE TESTING AND LANDING

9 WELLHEAD PROGRAMME

Wellhead and BOP Programme

Wellhead to consist of an 18 3/4" 10,000 psi H2S Service Vetco SG-5 system. One complete "back-up" set of equipment to be on location, inclusive of emergency pack-off. Wellhead system to be for 30", 20", 13 3/8", 9 5/8" casing design with possibility of tying back 7" or hanging tubing.

Blowout Preventor Stack will consist of:-

Main Stack:	* one 18 3/4" 10m Hydril GX annular
	* two 18 3/4" 15m Hydril dual extended rams
	* one 18 3/4" 15m Vetco H4 connector
	* six 3 1/16" 15m Cameron failsafe type 'F' Kill-Choke valves
Upper Assembly:	* one 21 1/4" 5m Oil States flex joint
	* one 21 1/4" 5m N.L. Shaffer annular
	* one 18 3/4" 10m C/W Collet connector

The Diverter will have 2,000 psi W.P. capability with remote control.
The Choke manifold will be 15m W.P. and have two 20m Swaco ultra chokes, and two 15m adjustable manual chokes.

TESTING

Surface:	Test for Lower, Middle, Upper and Shear Rams, Inner and Outer Kill valves, and Inner and Outer, Upper and Lower Choke valves.
	High Pressure 15000 psi 10 mins
	Low Pressure 250 psi 10 mins
	Test for Lower annular preventer
	High Pressure 7000 psi 10 mins
	Low Pressure 250 psi 10 mins
	Test for Upper annular preventer
	High Pressure 3500 psi 10 mins
	Low Pressure 250 psi 10 mins
	Test for Choke Kill manifold
	High Pressure 15000 psi 10 mins
	Low Pressure 250 psi 10 mins
	Test for Cement manifold
	High Pressure 10000 psi 10 mins
	Low Pressure 250 psi 10 mins
	Test for Standpipe manifold
	High Pressure 5000 psi 10 mins
	Low Pressure 250 psi 10 mins
	Test for Kelly Cocks
	High Pressure 15000 psi 10 mins
	Low Pressure 250 psi 10 mins

Subsea:	When testing equipment subsea the high pressure tests are to be:
	10000 psi for all equipment tested to 15000 psi on surface
	5000 psi for all equipment tested to 7000 psi on surface
	2500 psi for all equipment tested to 3500 psi on surface

The BOP's will be tested once a week and each time casing has been run. Results will be recorded on the IADC report.

10 DEPARTURE LIMITS

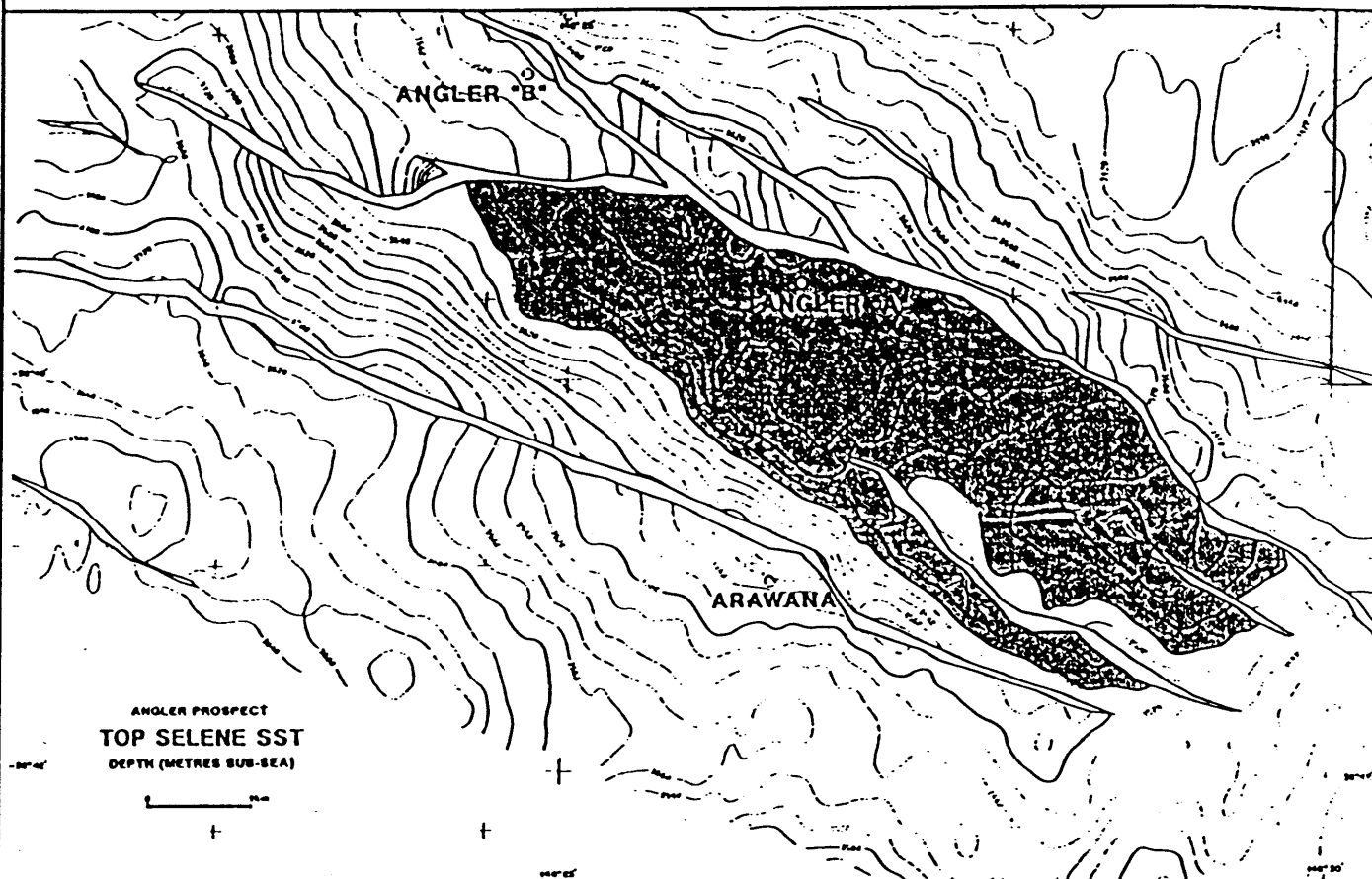
1. The surface position of the borehole is to be located within a radius of 20m of the given well location
Latitude 38°39'35.3"S
Longitude 148°26'29.4"E
2. The well is to be drilled using standard exploration drilling practices to keep within the normal constraints of a vertical well.

Surveying

- 36" interval - Totco surveys to be taken every 20-30m
26" interval - Totco surveys to be taken every 80-90m
17 1/2" interval - Totco, Magnetic Single Shots or MWD surveys to be taken every 70-80m
12 1/4" interval - Magnetic Single Shot or MWD surveys to be taken every 80-90m
Gyro multishot to be taken in 9 5/8" casing if MWD not utilised
8 1/2" interval - Magnetic Single Shot or MWD surveys to be taken every 80-90m to top target, every 150m thereafter.
Gyro multishot to be taken in 7" Liner if testing to be done.

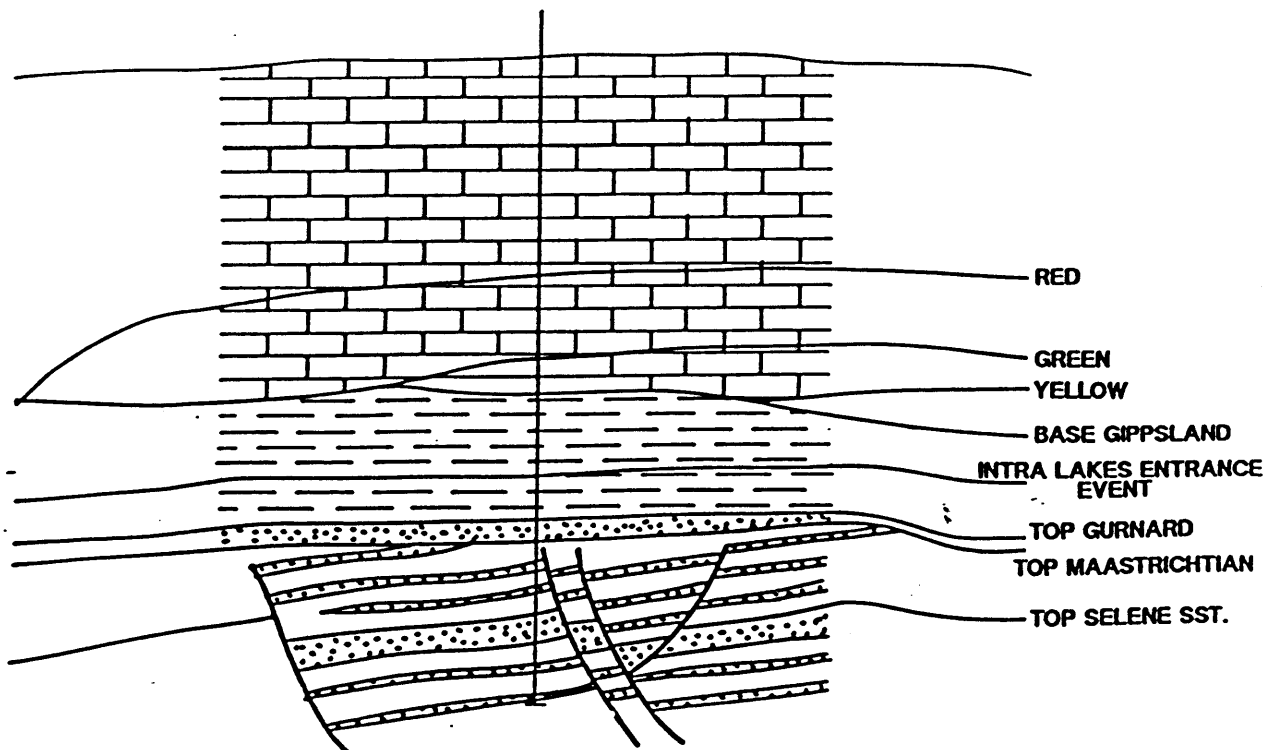
Totco or Single Shot surveys to be taken every round trip or as above, whichever is less. More frequent surveys to be run if necessary.

11 LOCATION SCHEMATIC



GEOLOGICAL CROSS-SECTION

IN LINE DIP SECTION



Petrofina Expl. Aust. S.A.**VIC/P20****12a GEOLOGICAL PROGNOSIS**
Definitions**PROSPECT DESCRIPTION**

Normal fault trap. Dip closure to the south and fault closure to the north.

OBJECTIVE HORIZONS

Maastrichtian and Campanian sandstone reservoirs

Primary objective: Selene Sandstone 3400m (ss)

SUCCESSION DERIVATIONS

Depths have been calculated for seismic markers at CDP 680 on line GF88A-96 using velocity formulae from nearby wells.

TOTAL DEPTH

Well is planned to TD within the Campanian at 4027m RKB (4000m SS), approximately 600m below the top Selene Sandstone.

GEOPRESSURES/DRILLING HAZARDS

- A. Possible shallow gas from approximately 550m within the Gippsland limestone
- B. Hard calcarenite at the base of the Gippsland limestone caused serious vibrations within the drill string, leading to washouts and twist-offs in both Selene 1 and Hermes 1.
- C. Although no overpressure is expected, high connection gas values were recorded within the Selene sandstone at Selene-1, 4km north of Angler-4.

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**12b GEOLOGICAL PROGNOSIS
Geophysical Data**

SYSTEM	FORMATION	DEPTH (m) RKB (SS)	THICKNESS (m)	TWT (secs)	MEAN INTERVAL VELOCITY (m/s)	SEISMIC MARKER	NOTES
		27 (0)				MSL	
			274			SEAFLOOR	
		301 (274)		370			
TERTIARY	GIPPSLAND LIMESTONE		1894		3079		CALCARENITE
							CALCARENITE AND MARL
							HARD CALCARENITE
	LAKES ENTRANCE	2195 (2168)	686	1572	2940	TOP LAKES ENTRANCE	MARL
	GURNARD	2881 (2854)	106	2040	3642	TOP GURNARD	SANDSTONE
MAASTRICHTIAN	LATROBE GROUP	2987 (2960)	440	2112	3194	TOP MAASTRICHTIAN	SHALE SANDSTONE AND COAL
		3427 (3400)		2368		TOP SELENE	SANDSTONE (PRIMARY OBJECTIVE)
			600	3692			SHALE SANDSTONE AND COAL
MPANIAN							

13 GEOLOGICAL CORING/SAMPLING PROGRAMME

CORING

Primary Objective: At least one core will be cut at the top of the Selene Sandstone

Secondary Objectives: Coring is dependant on shows and subject to operational conditions

SIDEWALL CORES

Sidewall cores will be shot mainly in shales for palaeontological, palynological and geochemical control. Further cores may be taken at the discretion of the wellsite geologist for lithological control in reservoir zones.

CUTTING SAMPLES

Two sets of unwashed samples and eight sets of washed and dried samples will be collected at the following intervals:

584 2600m : 10m interval
2600m - TD : 5m interval

One unwashed canned sample will be collected for geochemistry aggregated over 30m intervals.

Sampling rate can be varied at the discretion of the wellsite geologist.

A canned sample of mud from the flow line will be taken prior to cutting any core.

DISTRIBUTION

<u>Washed & Dried Cuttings</u>		<u>Unwashed Cuttings</u>		<u>Canned Cuttings</u>	
Rig	1	Pexaus	2	Geochem Contractor	1
Pexaus	2				
Partners	3				
DITR/BMR	2				

14 WIRELINE LOGGING PROGRAMME

HOLE SIZE	APPROXIMATE INTERVAL	LOGS
17 1/2	584-1150	DIL/LSS/GR/CAL
12 1/4	1150-2915	DIL/LSS/GR (CST) LDT/CNL/GR (CBL/VDL/CCL/GR)
8 1/2	2915-4027	DIL/LSS/GR LDT/CNL/NGT/CAL SHDT/GR CST VSP DLT/MSFL/GR (RFT) (CBL/VDL/CCL/GR) (CBL/CET/CCL/GR)

Notes:

1. Brackets denote to be run should hydrocarbons be encountered or as required at discretion of wellsite geologist
2. First Gamma Ray to be continued to seabed
3. All logs to be recorded on 1:200 and 1:500 metric scales and digitally on magnetic tape
4. All changes to the above programme will be subject to approval from Technical AND Exploration Departments, Melbourne

15 MUD LOGGING**MUD-LOGGING**

The following lists outline the basic functions to be executed by the Mud-Logging Unit:-

Monitoring

Lag Time	H ₂ S
Depth	CO ₂
Lag Depth	Hours on Bit
ROP	Bit RPM
Total Gas	Hook Load
Normalised Total Gas	W.O.B.
Cl-C5	Torque
Pump Strokes	Pump Pressure
PVT	Mud Flow in/out
All Pits Individually	Mud Resistivity in/out
Trip Tank	Mud Temp In/Out
	U.V. Light

Computed

Hydraulics and Pressure Losses in the System
 Swab and Surge Pressures
 Advanced 'd' Exponent Analysis (corrected)
 Bit Cost/foot
 Pore Pressure Analysis
 Fracture Gradient Analysis
 Over-burden Gradient
 Kick Kill Calculations

16 DST GENERAL GUIDELINES

1. TEST OBJECTIVES

The objectives of any test in this well are to:

- 1.1 Determine the type and mobility of any reservoir fluids.
- 1.2 Determine basic productivity characteristics.
- 1.3 Measure pressure/temperature effects over time, checking for any apparent depletion effects.
- 1.4 Obtain PVT samples.

2. RESERVOIR DATA

The primary target of the well is the Maastrichtian and Campanian aged Selene Sandstones of the Latrobe Formation. The prognosed top is 3400m subsea. Additional secondary objectives are other Lower Maastrichtian and Campanian Sandstones between 3050m and 4000m subsea.

Est. BHP at 3400m subsea:	4983 PSI
Est. BHT at 3400m subsea:	220°F
Likely reservoir fluid:	Oil
Reservoir type:	Sandstone

3. TESTING PHILOSOPHY

The well contains several zones of interest that are potentially hydrocarbon bearing and may require testing. The actual test intervals will be determined from wireline logs at a later date.

Testing will be carried out using cased hole testing techniques. Assuming 9 5/8" casing is set at the programmed shoe depth, testing will be conducted in a 7" liner using a Schlumberger full bore PCT test system.

Should logs indicate the test interval to be potentially a high producer, the MUST tool will be utilised to give real time pressure/temperature values at surface throughout the test.

Cycling of test tool functions is conducted using annulus or tubing pressure. Setting and freeing the packer is the only time string movement is required throughout the test.

16a DST GENERAL GUIDELINES

4. PERFORATING

The well will be perforated under-balanced hence tubing conveyed perforating guns will be run at the base of the test string. The firing of the guns will be initiated by an increase in annular pressure. It is desirable to recover the guns to confirm that they have fired correctly.

No overpressuring is expected, so prior to perforating, the test string contents will be displaced with diesel to obtain the desired under-balanced conditions upon perforating.

5. TEST EQUIPMENT

All downhole, sub-surface and surface equipment, to be supplied by Schlumberger, will be suitable for H₂S service and will be required to be rated to 10,000 PSI where used for high pressure flow. Should wet gas be encountered, a heater to prevent hydrate formation will be available. All equipment will be pressure and function tested prior to its despatch to the rig and again upon its arrival on the rig.

6. PRESSURE/TEMPERATURE GAUGES

Surface readout of the downhole pressure and temperature data will be provided by the MUST tool. The MUST actuator/pressure gauge assembly will be run on Schlumberger's electric wireline. A 10,000 PSI TPT electronic gauge will be used to transmit the data.

The primary downhole recording gauges will be two 10,000 PSI SSDP gauges. In addition to the two SSDP gauges, 3 mechanical Amerada recorders will be run in an externally mounted gauge carrier.

7. SAMPLING

Samples will be taken at surface but should bottomhole sampling be desired, the equipment necessary will be supplied by Schlumberger and run on their monoconductor cable.

ABANDONMENT PROGRAMME

PETROFINA AUSTRALIA EXPLORATION S.A.

Technical Programme No. 003/1989
4 May 1989

ANGLER - 1

ABANDONMENT PROGRAMME

WELL NAME: ANGLER

LOCATION: Offshore Bass Strait - Vic P/20 Permit
Co-ordinates: Latitude $38^{\circ}39'35.4''$ S
Longitude $148^{\circ}26'29.1$ E

RIG: Zapata Arctic Semisubmersible
KBE = 27m

WATER DEPTH: 276m

FORMATION: Latrobe Group Sandstones

TYPE OF JOB: Cement Plug, Abandonment and Well Recovery

1. Well Summary

Please refer to well diagram and geological summary.

2. Objective

Abandon Angler-1 and recover wellhead accordingly with Submerged Lands Act schedule recommendation.

ANGLER - 1 : PROPOSED ABANDONMENT PROGRAM

1. Run 8-1/2" hole Schlumberger logs as per Drilling Programme. Run CBL/CCL to confirm top of cement in 9-5/8" x 13-3/8" annulus, log down to 1200m.
2. RIH with 150m 2-7/8" tubing on 5" drill pipe to 40/50m below any hydrocarbon-bearing sand and pump balanced 100m cement plug:
 - 10 bbl sea water
 - 28 bbl slurry (1.90 S.G.)
 - 1 bbl sea water + displacement

NOTE: Cement additives as per Halliburton recommendation.

3. POOH 6 stands and reverse circulate.
4. Repeat steps 2 and 3 as required.
5. WOC then run back in and tag highest cement plug.
6. Pull to 2950m (+ 60m below 9-5/8" casing shoe) and pump balanced cement plug (100m):
 - 10 bbl sea water
 - 25 bbl slurry (1.90 S.G.)
 - 1 bbl sea water + displacement

NOTE: Cement additives as per Halliburton recommendation.

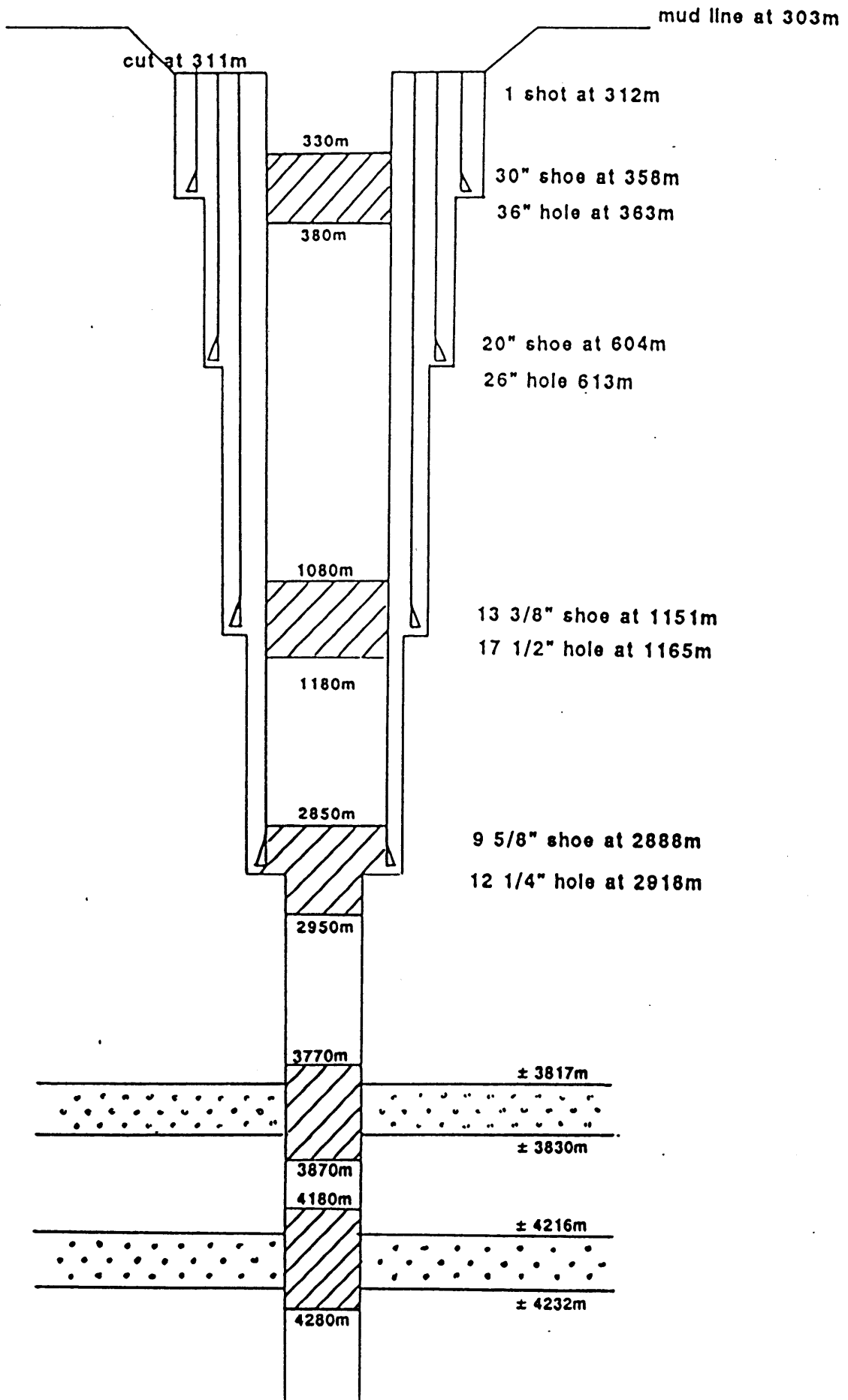
7. POOH 6 stands and reverse circulate.
8. WOC then run back in and tag cement.
9. Pull out 2 stands and pressure test to 1000 psi.
10. Displace mud with corrosion inhibited mud.
- A. If Cement in 9-5/8" x 13-3/8" Annulus
- A1 Pull to 380m and pump balanced cement plug (50m):
 - 10 bbl sea water
 - 12 bbl slurry (1.90 S.G.)
 - 1 bbl sea water + displacement
- A2 Pull 80m and reverse circulate. WOC then run back in and tag cement.
- A3 Pull BOP stack.
- A4 RIH with wellhead retrieving tool (with plugs removed) and shot cannister spaced out so that shot depth is 1m below first 30" connection, i.e. 311.5m. Engage retrieving tool and remove ROV and/or subsea camera.
- A5 Make up detonator in primer charge (observe radio silence and stop welding). Run primer body on firing cable into shot cannister.

- 2 -

- A6 Apply 25,000lb pull and fire explosives.
- A7 Pull wellhead and go down with ROV to inspect seabed within 70m of the abandoned well. Fill in Certificate of Seabed Clearance.
- B. If no cement in 13-3/8" x 9-5/8" Annulus
- B1 RIH with Schlumberger 4" casing gun and perforate 1150-1140m - 4 SPF - 90 degree phasing. Correlation log : CBL/CCL Run No. 1.
- B2 RIH with 150m open-ended tubing on drill pipe to 1180m. Set balanced cement plug (100m):
- 10 bbl sea water
 - 24 bbl slurry (1.90 S.G.)
 - 1 bbl sea water
- B3 POOH 6 stands. Close pipe rams and squeeze cement in annulus. Maximum surface pressure during squeeze = 1000 psi.
- B4 POOH.
- B5 Rig up Schlumberger and perforate 1 shot @ 312m (below 1st connector on 30" casing) with 4" casing gun, observe the well and POOH with Schlumberger.
- B6 Resume with point A.1 to A.7

ANGLER 1

ABANDONMENT PROGRAMME



903236 049

3. DRILLING UNIT

903236 050

DESCRIPTION OF DRILLING UNIT - ZAPATA ARCTIC, INCLUDING
PRESSURE CONTROL EQUIPMENT

EXHIBIT "C"

DESCRIPTION OF MOBILE DRILLING UNIT

ZAPATA ARCTIC
ZAPATA SS-4000

DRILLING UNIT, DRILLING EQUIPMENT,
MATERIALS, SUPPLIES AND SERVICES

PART I

DRILLING UNIT TO BE FURNISHED BY CONTRACTORA. FLOATING DRILLING VESSEL

1. Type Zapata SS-4000 Class Semi-submersible. Self propelled twin-hulled seabarge catamaran with six stabilizing columns and elevated water tight working platform.

2. Major Dimensions

(a) Length lower hulls:	380.6'
(b) Overall width:	236.2'
(c) Each lower hull width:	44.3'
(d) Separation between lower hulls:	147.6'
(e) Lower hull depth:	26.2'
(f) Number of stabilizing columns:	6
(g) Height of stabilizing columns:	95.8'
(h) Diameter of stabilizing columns:	4 @ 32.8'
	2 @ 28.9'
(i) Height to low steel:	122.0'
(j) Height to upper deck at center line:	137.1'
(k) Depth of upper hull at center line:	15.1'
(l) Upper deck width:	203.4'
(m) Upper deck length:	257.2'
(n) Diameter of struts and braces:	6.1' to 8.8'
(o) Drilling draft:	77.0'
(p) Drilling displacement:	36,340 short tons
(q) Drilling draft wave clearance:	45.0'
(r) Drilling draft clearance wave:	75.0'
(s) Severe storm draft (drilling survival):	61.0'
(t) Severe storm displacement:	33,610 short tons
(u) Severe storm wave clearance:	61.0'
(v) Severe storm clearance wave:	119.0'
(w) Severe storm displacement:	33,100 short tons

3. Variable Load and Storage Capacities

Variable Load Capacities:

Drilling mode:	4,470 short tons
Transit mode:	3,165 short tons
Drilling survival:	3,640 short tons

The variable deck load is that semi-permanent weight that the Drilling Unit can transport and store in either the transit or operating conditions. The variable deck load consists of bulk tanks, sack stores, tubulars, supplies, riser, BOP, liquid mud, vertical tensions of riser tensioners, guideline tensioners and hookload; the drilling and the associated equipment not originally installed on the rig. The variable deck load does not include liquids in lower hull, mooring weight in transit or mooring tension while drilling.

Storage Capacities:

Upper Hull Capacities:

Bulk Mud and Cement w/P-tanks at 1,800 Cu. ft. and 3 pre-cementing tanks at 1,000 Cu. ft.:	17,400 Cu. ft.
Sack Materials (gross):	4,000 sacks
Liquid Mud in 4 tanks	2,688 bbls.
Slug tank:	58 bbls.
Liquid mud in 4 process tanks:	272 bbls.
Pipe rack:	Forward: 3,766 sq. ft. Aft: 4,734.4 sq. ft. Total: 8,500.4 sq. ft.
Riser rack:	3,766 sq. ft.
Potable water:	1,230 bbls.

Lower Hull Capacities:

Fuel Oil:	15,069 bbls.
Drill Water:	12,510 bbls.

4. Propulsion System

Two 10' diameter propellers with Kort nozzles (one each hull), each driven by four (4) 850 hp electric motors. Total propulsion power: 6,800 hp

5. Propulsion Characteristics

Transit draft:	24.3'
Lower hull depth:	26.2'
Lower hull freeboard:	2.0'
Displacement:	22,744 short tons

Approximate propulsion speed data: Trial speed on calm and deep open sea under Beaufort Scale of 3 or less on the draft 7.4 meters: avg. 10 kts.

6. Minimum Operating Water Depth 150'7. Maximum Severe Environment Operating Water Depth 2,000'8. Classification and Certification

American Bureau of Shipping (ABS) column stabilized drilling unit, Maltese Cross A-1, Circle M, Maltese Cross AMS, for unrestricted ocean service.

Ice Class IC strengtning for pontoons, propulsion and steering gear

9. Country of Registration U.S.A.B. VESSEL MOORING SYSTEM

The Zapata SS-4000 mooring system is a twelve-point system consisting of the following:

Anchors:	12 - 44,000 lb. Stevfix
Chain:	12 - 2,250' lengths 2-3/4" stud link ABS-certified anchor chain
Mooring Wire Lines:	12 - (5,500') 3" wire rope
Buoys:	12 - Pendant line buoys, steel construction with separate compartments
Winch-Windlass:	4 - Skaggit Model ETW-300/44 double drum, double wildcat mooring winch/anchor windlass, powered by 710 hp D.C. motor with band brake, dynamic brake, level wind footage and tension indicators. 4 - Skaggit Model ETW-300/44 single drum, single wildcat mooring winch/anchor windlass, powered by 710 hp D.C. motor with band brake, dynamic brake, level wind footage and tension indicators.
Controls:	Control station at each corner of drilling unit with windlasses

Fairleads: 12 - column mounted, UCWF3/44 wire rope chain fairleaders (2-3/4" chain, 3" wire)

Pendant Lines & Reels: 12 - 2,200' pendant lines w/4 power-driven, double drum storage reels

C. HELIPORT

Octagonal shape, 89'10" across, each side 35' long, designed to ABS and U.K. rules for Sikorsky S-61 and Boeing Chinook helicopters, with NewMar helicopter refueling system and Billy Pugh helicopter safety net.

D. LIVING QUARTERS

100-man capacity on two decks with galley, mess, company representative's office, contractor representative's office, maintenance office, recreation rooms, change rooms, hospital, wheel house, radio room and barge control center.

E. COMMUNICATIONS EQUIPMENT

1. Radio Telegraph Station

1 - Marine Telegraphy Console including main and reserve transmitters and receiver, auto alarm, auto keyer, chronometer, etc., meeting SOLAS requirements.

2. Emergency Radios

1 - ITT MacKay 403A lifeboat transceiver complete with antennas

1 - EPIRB ACR incorporated RLB12 (or equal)

4 - MRT55C RCA VHF FM emergency communication radios in lifeboats

3. Automatic Direction Finder (ADF)

Simrad/Taiyo model TDC 328HATS with antennas

4. VHF/FM Radio Telephones

2 - Sailor RT 144AC, complete with dual watch for bridge unit and remotes for Toolpusher and Ballast Controller (1 - radio room; 1 bridge)

5. Maritime Radiotelephone Station

R.F. Harris SSB, 125W w/1000W linear amplifier, antenna coupler and antenna

6. Backup Maritime Radiotelephone Station (SSB)

Marconi CHI505, SSB with automatic antenna coupler and with distress tone generator and battery power

7. Aeromobile Equipment

King KY196 with speaker and microphone (covering all 720 aircraft channels)

SS-1000 southern Avionics Radio Beacon 100W helicopter homing beacon with PC1000 antenna coupler, MR7 automatic monitor/alarm receiver, and heli-pad antenna

8. VHF/FM Walkie Talkies

6 - VHF FM portable radios, intrinsically safe, standard type, complete with battery charger(s), case(s) and accessories

9. Radio Telex (error correcting)

Phillips model STB750 channelized ARQ system complete with teletype and selective call

10. Radar

1 - JRC model JMA860, 60KW true motion, 10CM band wave length with antenna

1 - JRC model JMA8507, 50KW relative motion, 3CM band wave length with antenna

11. LORAN "C"

Navidyne ESZ7000

12. Satellite Navigation

Transtar Satellite Navigator/Omega Navigator

13. Gyroscopes

2 - Sperry Marine MK 37D gyro with switchover

14. Autopilots

Sperry Marine dual autopilot

15. Depth Sounder

Furuno F851S complete with depth alarm and recorder, with ED202 digital depth indicator

16. T.V. Monitoring System

Cameras to monitor pump rooms, propulsion rooms, drill floor, and cellar deck with monitors in ballast control room, company representative's office and toolpusher's office

17. Satellite Communications System

JRC model JUE35A Inmarsat terminal for transmitting voice and fax via satellite. Facsimile unit JRC model JAX-820

F. FIRE FIGHTING AND SAFETY EQUIPMENT

- 4 - Whittaker enclosed survival capsules, 50-man capacity each; winterized
- 4 - 25-man ocean equipped inflatable life rafts, USCG approved
- 125 - life jackets
- 9 - life buoys with lines, lights and/or smoke signals
- 63 - portable fire extinguishers
- 12 - semi-portable fire extinguishers
- 1 - fixed CO2 system for paint locker
- 3 - fixed Halon systems for engine/generator rooms, boiler room, and emergency generator room
- 3-berth hospital with complete medicine chest and examination facilities
- 1 - 150 gal. foam fire extinguishing system for heliport
- 1 - water deluge system for drill floor and production test areas
- 1 - dry chemical unit, 2,500 lb. capacity for heliport
- 1 - sprinkler system for quarters
- 110 - survival suits

ALL EQUIPMENT WILL SATISFY SOLAS REQUIREMENTS

G. VESSEL POSITION INDICATOR

- 1 - Honeywell RS902 digital acoustic vessel position indicator system with riser angle sensor and dual hydrophones
- 3 - Regan Bullseye with mounting brackets to attach to BOP stack and riser

H. POWER SYSTEM

1. Engines and Alternators

4 - EMD 16E8 diesel engines, rated ABS continuous, 1950 bhp at 900 RPM, each skid mounted unit includes 1 EMD model A20, AC alternator, ABS rated and certified for 1,400KW, 2,000 KVA, for SCR system application

2. SCR System

Ross-Hill power system with 6 SCR modules, 2 auxiliary control and reversing sub modules, 1 dynamic braking section, 1 mud pump console, 2 propulsion consoles, 4 winch control and alternator control systems

3. Emergency Generator Unit

Caterpillar Model D399TA turbocharged diesel electric set with 860KW, marine AC generator

I. AIR COMPRESSORS

3 - Quincy model QSI490 w/125 hp motors, each rated 494 CFM at 125 Psi with air dryer

2 - Bulk air compressors, Quincy model D75AS with 100 hp motor rated at 956 total SCFM at Psig with air dryers

1 - emergency air compressor, Quincy model D350 with Lister ST2A diesel engine rated at 34.5 SCFM at 200 Psig

2 - high pressure air compressors - Price booster type with 75 hp motor rated at 125 SCFM each at 2,500 Psig, with air dryer

J. WATER DISTILLATION UNIT

2 - Koomey model W-10 reverse osmosis watermakers, 3,500 gal./day each

K. SEWAGE TREATMENT PLANT

1 - Omnipure model 12M812-27 (3,600 gal./day)

L. VESSEL PUMPS

3 - seawater service pumps with 150 hp motors; 340 short tons/hr.
 2 - drill water pumps with 120 hp motors, 120 short tons/hr.
 2 - drill water pumps with 30 hp motors; 27 short tons/hr.
 4 - ballast water pumps with 100 hp motors; 600 short tons/hr.
 2 - ballast stripping pumps with 15 hp motors; 55 short tons/hr.

- 2 - fire and bilge pumps with 120 hp motors; 130 short tons/hr.
- 2 - potable water pumps with 10 hp motors
- 4 - fuel transfer pumps with 10 hp motors
- 2 - bilge pumps with 60 hp motors; 130 short tons/hr.

M. CRANES

- 2 - National model OS-435 with 120' boom rated at 60 short tons at 30' radius
 - 1 - National model OS-215 with 120' boom rated at 43 short tons at 30' radius
- All cranes fitted with Markload X1-B load, radius capacity system

N. WELDING MACHINES

- 2 - 400 amp rectifier type DC welders

O. STEAM GENERATOR SYSTEM

Howell complete steam generating system skid mounted, capable of furnishing 20 million BTU/hr. using #2 fuel oil and fresh water makeup with:

- 14 - fixed heaters
- 8 - portable heaters
- 2 - stand on, fixed heaters rated for 700,000 BTU/hr. indoor duty or 1,200,000 BTU/hr. outdoor duty
- 5 - de-icing units

P. TRASH COMPACTOR

- 1 - ITS trash compactor, Scavenger electric model

Q. POLLUTION CONTROL SYSTEM

- 2 - column collecting tanks, 115 bbl. capacity each
- 2 - oily water transfer pumps with 2 hp motors, 11 short tons/hr.
- 1 - oily water separator rated at 5.5 short tons/hour

R. SUPPLY VESSEL MOORING

Samson "Bird's Nest" type mooring system with 12" circular nylon surge lines

S. PRODUCTION TEST FACILITIES

Port and starboard piping runs (including utilities) for Company-supplied PT package

EXHIBIT "C"

DESCRIPTION OF MOBILE DRILLING UNIT

ZAPATA ARCTIC
ZAPATA SS-4000DRILLING UNIT, DRILLING EQUIPMENT,
MATERIALS, SUPPLIES AND SERVICESPART II
DRILLING EQUIPMENT TO BE FURNISHED BY CONTRACTORA. DRILLING MACHINERY1. Drawworks

3000 hp Continental Emsco C-3 type II electric drawworks with sand reel capacity of 23,100' of 9/16" wire line, Dretech model 15050 eddy current brake, GBH spinning cathead with air controls, GBH breakout cathead, Koomey Crown Block saver

Drawworks powered w/three ESE79 DC electric motors rated 710 hp continuous, 920 hp intermittent

2. Derrick

Branham Ind. dynamic bolted derrick, 1,300,000 lb. hook load capacity, 160' x 40' x 40' with 20,000' of 5" drill pipe racking capacity

3. Substructure

40' x 40' height from main deck to drill floor, 28', 600,000 lb. set back capacity, 1,300,000 lb. rotary table support capacity

4. Mud Pumps

2 - Continental Emsco triplex single acting piston slush pumps, each powered with ESE79DC electric motors rated at 710 hp continuous, 920 hp intermittent

2 - 6 x 8R, 100 hp 1750 RPM Mission Magnum I charging pumps, PD55 pulsation dampeners on suctions; dressed with 6-1/2" pump liners

5. Mud Mixing Pumps

3 - Mission Magnum I centrifugal pumps, 6 x 8R w/100 hp 1750 RPM electric motor

6. Crown Block
1 - 750 ton with 11 60" diameter sheaves for 1-1/2" line
7. Traveling Block
1 - 750 capacity with 8 60" sheaves for 1-1/2" line
8. Hook
1 - BJ 5750 Dynaplex, 750 ton capacity
9. Swivel
1 - Continental Emsco LB650, 650 ton capacity
10. Rotary Hoses
2 - 3-1/2" x 75', 5,000 PSI WP, 10,000 PSI test
11. Drilling Line
1 - 1-1/2", 6 x 19 IWRC XIPS
12. Ton Mile Intergrator
1 - Totco Ton Mile recorder system for installation on drawworks .
13. Rotary Table and Drive Unit
Continental Emsco 49-1/2" rotary table with 2-speed transmission, driven by 1 ESE-79DC electric motor rated 710 hp continuous, 920 hp intermittent
14. Kelly Spinner
1 - International A6C heavy duty power sub., left and right rotation with 6-5/8" API reg. left hand pin box sub
15. Standpipe Manifold
1 - Demco dual standpipe manifold, 5", 5,000 Psi WP, 7,500 Psi test
16. Mud Saver
1 - Okeh mud saver bucket
17. Master and Kelly Bushings
1 - Varco type MPCH hinged combination pin drive unit consisting of:
Varco type MPCH hinged master casing bushing complete for use in 49-1/2" rotary table with split extended API bowls: 1 set API No. 1,

1 set API No. 2, 2 sets API No. 3; lifting sling and bit breaker adapter.

1 - Varco type 27 HDP roller kelly bushing

18. Elevator Links

1 set - Byron Jackson 4-3/4" x 144", 750 ton capacity
1 set - Byron Jackson 2-3/4" x 132", 350 ton capacity
1 set - Byron Jackson 3-1/2" x 144", 500 ton capacity

19. Choke Manifold

3-1/16", 15,000 Psi WP with 2 20,000 Psi Swaco ultra chokes and 2 Cameron 15,000 Psi adjustable manual chokes

20. Mud Gas Separator and Possum Belly Trip Tank

Swaco mud gas separator unitized with possum belly tank, 50 bbl. capacity

21. Rathole

1 - rathole assembly for Range-3 kelly

22. Mousehole

1 - mousehole assembly for Range-2 pipe

23. Drop-In Valves

2 - Hydril #12 drop-in back pressure valves with seating subs for 4-1/2" and 5" X-hole connections

24. Float Valve

1 - Gray inside BOP 6-1/2" o.d. with 4-1/2" i.f. connections

25. Circulating Test Sub

3 - 5" X-hole tool joint to Weco 1502 union

26. Wire Line Wiper

1 - BJ or equal for 9/16" sandline

27. Wire Line Measuring Unit

1 - Mathey surveyor B2 power driven measuring reel assembly with 25,000' 0.092" diameter measuring line

28. Air Hoists

- 9 - Joy AF-112 (3-rig floor; 4-cellar deck; 2-end of dragways)
- 6 - Joy JHA-100 on cellar deck for guideline and podline tensioners
- 2 - Joy AF-112 air hoists for retrieving towing bridles
- 1 - Joy AW-80 for monkey board

29. Drilling Functions Recorder

Totco 6-pen drilling recorder unit located on drill floor

30. Electronic Mud System

Totco E5 electronic mud totalizer mud system for 4 pits and 1 trip tank

31. Survey Equipment

Totco No. 6 double recorded 0-8⁰, 0-16⁰, 0-7⁰ (Hotwell), and 0-14⁰ (Hotwell), double chart with sinker bar retrieving assembly

B. DRILL STRING1. Drill Pipe

10,800' 5" o.d., 19.5 lb./ft., Grade E, R-2, drill pipe with 6-3/8" o.d. x 3-3/4" i.d. flash weld tool joints with 5" x-hole connections, 18⁰ taper on boxes with plastic internal coating and fine particle hardbanding on box end only

8,000' 5" o.d., 19.5 lb./ft., Grade G-105, R-2, drill pipe with 6-1/2" o.d. x 3-1/2" i.d. flash weld tool joints with x-hole connections, 18⁰ taper on boxes, non-hardfaced with internal plastic coating

66 jts. Drilco "Heavy-Wate" 5" o.d. drill pipe w/6-1/2" o.d. x 3-1/8" i.d. flash weld tool joints

2. Pup Joints

2 - 7' pup joints, Grade G-105 5" x-hole box and pin, 6-1/2" o.d. 18⁰ shoulder, 3-1/4" i.d.

2 - 10' pup joints, Grade G-105 x-hole box and pin, 6-1/2" o.d., 18⁰ shoulder, 3-1/4" i.d.

2 - 15' pup joints, Grade G-105 5" x-hole box and pin, 6-1/2" o.d., 18⁰ shoulder, 3-1/4" i.d.

3. Subs

Necessary crossover subs for use with Contractor's drill string

4. Drill Collars

6 - 9-1/2" o.d. x 3" i.d. x 31' drill collars w/ 7-5/8" API regular box up and pin down, zip grooved (Drilco), spiral cut

40 jts. 8" o.d. x 2-13/16" i.d. x 31' drill collars w/6-5/8" API regular box up and pin down, spiral cut, zip grooved (Drilco)

45 - 6-1/2" o.d. x 2-1/4" i.d. x 31' drill collars w/4-1/2" API x-hole box up and pin down, spiral cut, zip grooved (Drilco)

5. Kelly

2 - 5-1/4" hexagon kellys x 54' overall, 51' working space, 3" bore, 7-3/4" o.d. top upset with 6-3/8" o.d. lower upset with 5" "extra hole" pin down, pressed steel thread protectors (Drilco)

6. Kelly Valves

2 - OMSCO 6-5/8" upper Kelly valve complete with wrench, 6-5/8" API reg. left hand box and pin connections, 15,000 Psi test (H2S trim)

2 - OMSCO lower kelly valves, 7-1/2" o.d. 3" i.d., complete with wrench, x-hole box and pin connections, 15,000 Psi test (H2S trim)

7. Bumper Subs

2 - 8" Baash-Ross 6-SI

2 - 6-1/2" Baash-Ross 6-SI

C. DRILL STRING HANDLING TOOLS

2 - Byron Jackson GG 5" air operated drill pipe elevator

1 - Byron Jackson MGG 3-1/2" 250-ton manual drill pipe elevator

1 set - drill pipe and casing tongs, Byron Jackson Type F with lug jaws, 2-7/8" through 5-3/4"

1 set - rotary tongs, Byron Jackson Type SDD complete with lug jaws 4" through 15"

1 - Byron Jackson GG350-ton manual elevator for 5" drill pipe

1 set - rotary tongs, Byron Jackson Type DB complete with lug jaws for 3-1/2" through 14-3/8"

- 1 set - rotary tongs, Byron Jackson Type B with extended heads for 13-3/8" through 24" casing
- 1 set - maritime hydraulics pneumatic power slips remotely operated for 5" o.d. drill pipe
- 2 - Varco 5" type SDXL rotary slip complete with 5" inserts for 5" o.d. drill pipe
- 1 - Varco 3-1/2" type SDML rotary slip complete with inserts for 3-1/2"
- 2 - Varco type DCS-L multi-segment drill collar slips complete with circular buttons for 8" collars
- 2 - Varco type DCS-L multi-segment drill collar slips complete with circular buttons for 9-1/2" drill collars
- 2 - Varco type DCS-R multi-segment drill collar slips complete with circular buttons for 5-1/2" - 7" drill collars
- 3 - Varco type MPR multi-segment safety clamp complete with case and wrench for range 6-1/2" - 10-1/2" o.d.
- 2 - Byron Jackson, type TA-150 center latch elevators (1 ea.) for handling 6-1/2" and 8" o.d. zip groove drill collars
- 1 - Byron Jackson type SLX-150 side door elevators for handling 9-1/2" o.d. zip grooved drill collars
- 1 - Byron Jackson type TA-150 air operated elevator for 6-1/2" o.d. zip grooved drill collars
- 8 - 1' subs for 6" drill collars
- 6 - lift subs for 8" drill collars
- 3 - lift subs for 9-1/2" drill collars
- 1 - Byron Jackson type TA-150 air operated elevator for 8" o.d. zip groove drill collars
- 1 - Byron Jackson type TA-75 air operated elevator for 9-1/2" o.d. zip groove drill collars
- 1 each - bit breaker for the following sizes: 24"-26"; 17-1/2"; 8-1/2"; and 12-1/4"
- 1 - dolly drill collar adapter with 1-3/4" x 36" links (80 ton)
- 1 - drill pipe spinner: Klampon or similar
- Drilco Type I EZY Torque hydraulic cathead

D. CASING TOOLS

- 3 - Byron Jackson 500-ton 20" air/manual operated elevator/spiders for 13-5/8" through 20" casing
- 3 - Byron Jackson 1000-ton 14" air/manual operated elevator/spiders for 5-1/2" through 13-3/8" casing
- 1 - Lamb model 16,000 power casing tongs for sizes 5-1/2", 7", 9-5/8" and 13-3/8" o.d. casing
- 1 - Lamb model 20,000 power casing tong with jaw sets for 20" and 13-3/8" casing
- 1 - type CB split bushing for 30" casing
- 1 - type CB split bushing for 20" casing
- 1 - Varco CMSXL casing slip for 30" casing
- 1 - Varco type CMSXL multi-segment casing slip complete with circular buttons for 20" o.d. casing
- 1 - insert bowl No. 1 (split) for use in type MPCH bushing to handle 13-3/8" and 11-3/4" o.d. casing
- 1 - Varco type CMSXL multi-segment casing slip complete with circular buttons for 13-3/8" o.d. casing
- 1 - insert bowl No. 2 (split) for use in type MPCH bushing to handle 10-3/4" and 9-5/8" o.d. casing
- 1 - Varco 7" type CMSXL multi-segment casing slip complete with 7" inserts for 7" o.d. casing
- 1 - Varco CMSXL multi-segment casing slip complete with circular buttons for 9-5/8" o.d. casing
- 1 each - Byron Jackson type "SJ" single joint elevator for the following casing sizes: 20"; 13-3/8"; 9-5/8" and 7"
- 2 - Byron Jackson swivel suspension assemblies
- 1 each - Byron Jackson type SLX-150 side door casing elevators for the following casing sizes: 20"; 13-3/8", 9-5/8" and 7"

E. FISHING TOOLS

- 1 - Bowen 11-1/4" o.d. series 150 releasing and circulating overshot complete with parts to engage and pack off 9-1/2" o.d. and 8" o.d. drill collars with 6-5/8" API regular box connections
- 1 - Bowen 8-1/8" o.d. series 150 releasing and circulating overshot complete with parts to engage and pack off 6-1/2" o.d. drill collars and 5" o.d. drill pipe, with 5" x-hole box connection
- 1 - Bowen 5-5/8" o.d. series 150 releasing and circulating overshot complete with parts to engage and pack off 4-3/4" o.d. drill collars and 3-1/2" o.d. drill pipe with 3-1/2" i.f. connection
- 1 - Bowen rotary taper tap complete with wickers tapered from 2-1/4" o.d. to 4-3/4" o.d. with 5" x-hole box connection
- 1 - 4-3/4" o.d. Bowen rotary taper tap with wickers tapered from 2-1/2" o.d. to 1" o.d. to catch 1-1/4" i.d. through 2-1/4" i.d. with 3-1/2" i.f. box connection
- 1 - 4-3/4" o.d. Bowen type "Z" oil jar with 3-1/2" i.f. connections
- 1 - 4-3/4" o.d. x 20" stroke Bowen fishing bumper sub with 3-1/2" i.f. connections
- 1 - 6-1/2" o.d. Bowen type "Z" oil jar with 5" x-hole connections
- 1 - 8" o.d. Bowen type "Z" oil jar with 6-5/8" API regular connections
- 1 - Bowen junk sub for 7-1/2" to 8-1/2" hole with 4-1/2" API regular connections
- 1 - Bowen junk sub for 11-1/2" to 13" hole with 6-5/8" API regular connections
- 1 - Bowen junk sub for 5-1/8" to 5-7/8" hole with 3-1/2" API regular connections
- 1 - 8-1/4" Bowen flat bottomed junk mill with 4-1/2" API regular pin connections
- 1 - 11" o.d. standard reverse circulation Bowen junk basket No. 2690, complete with magnet insert and 6-5/8" API regular box connections
- 1 - 7-7/8" o.d. standard reverse circulation Bowen junk basket No. 2567, complete with magnet insert and 5" X hole box connection
- 1 - 8" o.d. Bowen safety joint No. 7925 3-1/2" bore, with 6-5/8" API regular tool joint box up pin down

1 - 6-3/4" o.d. Bowen safety joint No. 8280 3-3/4" bore, with 5" x-hole tool joint box up and pin down

1 - 4-3/4" o.d. Bowen safety joint No. 7870 2-11/16" bore, with 3-1/2" i.f. connections

1 - 12" Bowen flat bottomed junk mill with 6-5/8" API regular pin connection

1 - 11-1/2" Impression Block with 6-5/8" API regular pin connection

1 - 8" Impression Block with 4-1/2" API regular pin connection

1 - 5" o.d. Bowen K and G fishing magnet for operation in 5-7/8" hole with 2-7/8" API regular connection

Washpipe and Accessories:

600' 43.5 lb/ft., R-2, N-80 washpipe w/9-5/8" x-line connections complete with lift plugs and rotary shoes

600' 29.7 lb/ft., R-2, N-80 washpipe w/7-5/8" TSWP connections complete with lift plugs and rotary shoes

F. MUD AND CEMENT SYSTEMS

1. Mud System

- 4 - pressure tanks, 1800 cu. ft. USCG coded for 65 Psi
- 4 - high and low level indicators, 1 for each storage tank
- 4 - remote weight indicators (K-M weighing system)
- 2 - surge tanks, 160 cu. ft. 8' diameter

2. Cement System

- 4 - pressure tanks, 1800 cu. ft. USCG coded for 65 Psi
- 4 - high and low level indicators, 1 for each storage tank
- 4 - remote weight indicators (K-M weighing system)
- 3 - precementing tanks, 1000 cu. ft., 13' diameter, USCG coded for 65 Psi with remote weight indicator (K-M weighing system and high and low level indicators)
- 3 - remote weight indicators (K-M weighing system)

3. Shale Shaker

- 1 - Thule 120' triple shale shaker including 3 200 VSM hydraulic units

4. Degasser

- 1 - Swaco vacuum type with 6 x 8 R pump driven by 100 hp explosion proof motor

5. Desander

1 - Swaco 312 w/ 3 x 12" cones with 6 x 8 R pump driven by 100 hp explosion proof motor, 1500 GPM capacity

6. Desilter/Mud Cleaner

1 - Swaco 8T4 desilter w/ 16 x 4" cones w/ 5 x 8 R pump driven by 100 hp explosion proof motor, 1200 GPM capacity mounted over a Thule VSM-200 hydraulically driven variable speed screen unit

7. Centrifuge

1 - Swaco 414 centrifuge with CLN mono feed pump, variable speed, maximum feed rate of 100 GPM

8. Mud Mixer and Agitators

4 - "Lightnin" model 76-Q-25 heavy duty mud agitators, each powered with a 25 hp electric motor

4 - "Lightnin" model 71-Q-5 heavy duty mud agitators, each powered by a 5 hp electric motor

1 - "Lightnin" model 71-Q-3 heavy duty mud agitator, powered by a 3 hp electric motor

9. Cementing Unit

1 - Halliburton unit with Twin HT400 pumps, diesel driven

1 - electric motor driven hydraulic pump unit

Unit includes:

Hopper and screen, water hose, by-pass hose, sack cutter table, cement vat with screen and tool and utility box

1 - Halliburton recirculating mixer with 80 cu. ft. surge tank

G. SUBSEA CONTROL SYSTEM

Koomey closed loop control system with 2 2,500' capacity hose reels, each complete with 2,250' of hose, master control panel, hydraulic control panel, electric remote control panel, test panel, complete retrievable subsea control pods, electrically driven pumps (3 x 40 hp) and 1,176 gallon 3,000 Psi WP surface accumulator unit

H. RISER TENSIONING SYSTEM

8 - Western Gear riser tensioners, 80,000 lbs. each, 1-3/4" wire line (50' travel), 9 air pressure vessels plus 3 standby vessels and control panel

1 - Totco ton cycle indicator

I. GUIDE LINE AND POD LINE TENSIONING SYSTEM

6 each - Western Gear guide line tensioners, 16,000 lbs. each, 4 for guide lines, 2 for BOP pod lines

J. SUBSEA EQUIPMENT

1. 18-3/4", 15,000 Psi BOP Stack

2 - Vetco H-4 heavy duty 18-3/4" 15,000 Psi WP wellhead connector with studded hub

1 - Hydril 18-3/4", 15,000 Psi WP extended dual ram blowout preventer H2S trimmed. Studded top connection with CS-18 ring groove. Fitted with 4 3-1/16" CIW hubbed outlets with BX-154 stainless steel lined ring grooves. Flanged bottom connection with CX-18 ring groove. Dressed with shear rams and 5" pipe rams

1 - Hydril 18-3/4", 15,000 Psi WP extended dual ram blowout preventer H2S trimmed. Studded top connection with CX-18 ring groove. Flanged bottom connection CX-18 ring groove. Fitted with 4 3-1/16" CIW hubbed outlets with BX-154 stainless steel lined ring grooves. Dressed with 2 sets 5" pipe rams, and can also be dressed with 1 set 3-1/2" - 5" variable rams or 1 set of 3-1/2" pipe rams

1 - Hydril 18-3/4", 10,000 Psi annular preventer. H2S trimmed with 18-3/4" x 10,000 Psi studded top and BX-164 ring groove. 18-3/4" x 15,000 Psi flanged bottom with CS-18 ring groove

3 - Cameron type "F" gate valves, 3-1/16" 15,000 lb. WP with "DF" actuator, 90° block target, clamp hub ends, stainless steel lined ring grooves, stainless steel bonnet groove, super trim

3 - Cameron type "F" gate valves, 3-1/8" bore with "DF" actuator, 3-1/8", 15,000 WP CIW clamp hub ends, stainless steel lined ring grooves, super trim

1 - guide frame for 18-3/4", 15,000 lb. WP BOP stack with 4 posts on 6' radius, with sleeve for attaching Regan connector. Interfaces for Normar carrier

1 - receiver plate assembly with hangoff beams, and preps for control pods

2. 18-3/4", 15,000 Psi Lower Riser Package

1 - collet connector, hydraulic 18-3/4", 10,000 lb. WP with CIW clamp hub top, with BX-164 ring groove, "AX" gasket bottom and manual override with stainless steel lined ring grooves, with secondary release

1 - N.L. Shaffer 21-1/4", 5,000 Psi WP annular BOP. 18-3/4" x 10,000 Psi WP clamp hub on bottom and 21-1/4" x 5,000 Psi WP studded top with stainless steel lined ring grooves, super trim

2 - Oil States flex joint type with 21-1/4" x 5,000 Psi WP flanged bottom x 21" FD-8 pin top with 3" 15,000 Psi WP, BX-154 clamp hub choke and kill line elbows and super trim with stainless steel lined ring grooves and 2 elbows for rigid conduit line

1 - stab plate fixed to fit 18-3/4" 10,000 Psi WP collet connector with 3" 15,000 Psi WP choke and kill line collet connectors

2 - Copper State BOP flex hose 3" i.d. 15,000 Psi WP with CIW #6 clamp hub one end and API flange other end, stainless steel lined BX-154 ring grooves, super trim approximately 20'

3. 21" Riser System (Regan)

40 - riser, 21" x 1/2" wall X-65 pipe "FD-8" riser connection ends pin up x box down w/3" i.d. 15,000 Psi WP choke and kill lines w/2 x 2-5/16" i.d., 3,000 Psi WP hydraulic supply line for control system. 50', super trim

36 sets - syntatic foam buoyancy material for 21" riser; 2,000' pressure. Buoyance of approximately 96% riser steel weight in water (Emerson & Cumming)

2 - 20' riser pup joint; as above

1 - 10' riser pup joint; as above

1 - 15' riser pup joint; as above

2 - telescoping joint "FD-8" pin up x box down with 45' stroke, 21" x 21" wall X-65 pipe w/3" i.d., 15,000 Psi WP choke and kill lines and 2 x 2-15/16" i.d. 3,000 Psi hydraulic supply line.

4. Accessories

2 - choke/kill hoses, 3" i.d., 15,000 Psi WP w/clamp hubs each end; super trim; 55'

2 - BOP hydraulic supply hose, 2" i.d., 3,000 Psi with WECO connections, 55'

1 - Vetco H4 test stump for 18-3/4", 15,000 Psi BOP stack

1 - Collet test stump, 18-3/4" x 15,000 Psi for lower marine riser package

1 set - running and handling tools for 21" riser

1 - riser running spider, hydraulic operated to fit 49-1/2" rotary

Vetco tools for SG-5 wellhead system:

1 - packoff retrieving, reinstallation tool w/4-1/2" i.f. box

1 - 9-5/8" full bore casing direct drive running tool

1 - multi-purpose 18-3/4" SG-5 plug type test tool for isolating seal assembly and testing all BOP components in one run

1 - wellhead housing casing hanger universal plug type test tool

1 - 18-3/4" wear bushing and seat protector running and retrieving tool

1 - running tool, temporary guide base

1 - 30" housing running tool

1 - 18-3/4" wellhead housing running tool

1 - 18-3/4" SG-5 type T casing hanger and universal direct drive running tool

1 - utility guide frame (Reynolds)

1 - Cameron 18-3/4" weight set test tool

5. Diverter System (Regan)

1 - support housing type KFDS, nominal 24" with 14" flowline and 4" fillup line connections

1 - diverter assembly type KFDS, nominal 24" with 10" insert to pack off on drill pipe. Includes 30° included angle ball joint with 21" type FD-8 box down

1 - diverter handling tool type HT-2 with 5" x-hole connection box up

1 - hydraulic riser support ring type SDL-2 with padeyes for 8 riser tensioner lines

1 - Koomey test pump model S30RX with chart recorder for high pressure testing of BOP and related equipment

1 - Koomey test pump model S20RX with chart recorder for high pressure testing of riser and choke manifold

6. Subsea TV System

1 - hydro subsea TV model W-1215 with: 1 monitor, rig floor; 1 monitor, toolpusher's office, with air winch model HA155B

K. SPECIAL EQUIPMENT

1. Forklift

1 - diesel forklift, 4000 lb. capacity

2. Emergency Towing Bridle

2 x 3", 110' lengths 6 x 37 galvanized IPS, IWRC wire rope w/2 x 3" x 38.5' lengths of ORQ chain

3. Hose Reel

1 - hose reel assembly for running 30" pin connector, 2,250' of 6 x 3/16" i.d. hoses

4. Motion Compensator System

N.L. Shaffer model 18/600, 18' stroke capacity, 600,000 lb. compensating; 1,500,000 lb. locked; 1,000,000 lbs. fully extended

5. Automated Pipe Racking

Byron Jackson 3-arm electro hydraulic vertical racking system consisting of:

1 - upper horizontal hydraulic power arm and carriage assembly with shear pivot head

1 - middle horizontal hydraulic power arm and carriage assembly with heavy duty stand lift cylinder for lifting 1 stand of 9-1/2" drill collars

1 - lower horizontal hydraulic power arm and carriage assembly

1 - hydraulic power unit for pipe handling system (Hydradyne hydraulic)

1 - remotely operated pneumatic racking board for 224 stands of 5" drill pipe and 14 stands of 9" drill collars

1 - enclosed and heated derrickman console for operation of upper racking area and finger boards

1 - enclosed and heated assistant drillers console for operation of lower and intermediate racking arms

6. BOP Handling Equipment

1 - Normar rail-mounted BOP handling dolly designed to move and test BOPs as one unit (200 metric ton capacity)

2 - overhead BOP handling cranes (50 short ton capacity each)

7. 30" Hydraulic Latch (Vetco)

1 - Vetco hydraulic latch complete with 2-arm guide frame and storage skid with interface to spare oil states 2-1/4" flex joint

8. Emergency Escape Line

1 - derrick escape device, M&R Rig Company model No. 9

9. Cement Standpipe

1 - 15,000 Psi cement standpipe with hose 10,000 Psi maximum WP

10. Hydraulic Roughneck

1 - with tilt for mousehole connection, type MH 1168, Maritime hydraulics

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SITE SURVEY

342NL/P12

REPORT ON SITE SURVEY
AT "ANGLER 1" LOCATION
BASS STRAIT

Prepared for: PETROFINA EXPLORATION AUST. S.A.
LEVEL 2
476 ST KILDA ROAD
MELBOURNE VIC 3000

Prepared by: ASSOCIATED SURVEYS INTERNATIONAL PTY. LTD.
18 PROWSE STREET
WEST PERTH WA 6005

Date: JANUARY, 1989

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APPENDICES

APPENDIX "A"	SYLEDIS CALIBRATION RESULTS
APPENDIX "B"	STATION SUMMARIES
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1.0 INTRODUCTION

Associated Surveys International Pty. Ltd. was contracted by Petrofina Exploration Aust. S.A. to carry out two site surveys at "Archer A" and "Angler 1" locations in Bass Strait, in order to determine the seabed topography and the sub-bottom geology over these locations.

These field operations were carried out between December 3rd and December 21st 1988 on board the Survey Vessel "M.T. Wongara".

This report details operations and results over the "Angler 1" site only, with those at "Archer A" site being contained in a separate report.

2.0 SCOPE OF WORK

The site survey was carried out over a location defined in the following terms:

An area of 2000 metres square, centred on Latitude $38^{\circ}39'29''.6S$, Longitude $148^{\circ}26'32''E$ (Easting 625486m, Northing 5720146m).

The grid consisted of 11 lines at 100 metre spacing in a North-South direction, with an additional line run at 50 metres either side of the centre line and five lines at 500 metre spacing run in an East-West direction. While the vessel was on site, as a result of a second, alternative location (Easting 625422, Northing 5719970m) being selected, a decision was made by Petrofina to extend the North-South lines by a further 200 metres to the South.

3.0 SUMMARY AND CONCLUSIONS

3.1 Summary

Upon completion of the "Archer A" site survey, the Survey Vessel "M.T. Wongara" arrived at the "Angler 1" location at 0245 hours on December 14th 1988 and, after deploying all survey equipment, commenced the site survey at 0315 hours. At 0915 hours, a fault developed with the side scan sonar winch which meant that the 700 metres of cable deployed at the time had to be recovered on the vessel's capstan. From 1730 hours to 1800 hours, bottom sampling was attempted, using both the drop core and grab sampler. Although the samplers appeared to be functioning correctly, no samples were obtained, probably due to the nature of the sea-bed itself or to the surge caused by the sea and swell. At 1800 hours with the winch having been repaired, it was decided to re-deploy the side scan sonar and boomer in order to continue running survey lines. Due to a deterioration in the weather, no useable records were acquired and the vessel steamed in the area awaiting an improvement in the weather. At 0720 hours on December 15th, 1988 with the weather slowly worsening, the Petrofina Representative, Mr D. Bouveret, gave instructions to return to the vessel's home Port of Eden N.S.W.

The vessel remained in Eden from 0715 hours on December 16th until 1445 on December 17th, 1988 when, with an improvement in the weather, it was again decided to attempt further survey work.

Upon arrival at the site at 0400 hours on December 18th, the equipment was deployed and the survey re-commenced. All survey lines were satisfactorily completed at 1340 hours on December 19th, 1988. A further attempt was made at bottom sampling, and the vessel, at the instruction of the Petrofina Representative, commenced steaming towards Eden at 2030 hours on December 19th, 1988. The vessel arrived in Eden at 0945 hours on December 20th, and demobilisation of all equipment and personnel continued until 1615 hours the following day.

3.2

Conclusions

The seabed at "Angler 1" site is extremely uneven with depths ranging from 216 metres in the North West corner of the area to 317 metres in the South East corner. The depth at the original location is approximately 265 metres, with the depth at the alternative site being approximately 276 metres.

4.0 PERSONNEL AND EQUIPMENT**4.1** Personnel

The following personnel were utilised on this contract:

M. Gale	Senior Hydrographic Surveyor/Party Chief
A. Terrill	Geophysicist
M. Strawhorn	Electronics Technician (to 16/12/88)
N. Smith	Electronics Technician (from 16/12/88)
B. Hassett	Hydrographic Surveyor
J. Vigurs	Geophysicist/Processor

4.2 Equipment

The following equipment was utilised on this contract:

Syledis Positioning System
QUBIT TRAC IVB Navigation Computer and Data Logger
Elac LAZ721 Echo Sounder
EG&G SMS960 Seafloor Mapping System/Side Scan Sonar
EG&G Model 272 Safe-T-Link Side Scan Towfish
EG&G Boomer Sub-bottom Profiling System
Grab Sampler
Drop Corer

5.0 SURVEY METHODS AND PROCEDURES

5.1 Navigation Positioning and Calibration

5.1.1 Navigation Positioning

The Electronic Positioning System was the Sercel Syledis microwave system. Three shore stations, set up on points of known co-ordinates ashore, were used for ranging to give vessel position.

A QUBIT TRAC IVB system, based on the HP9930 computer was used for navigation control. The system reads the Syledis ranges via a QUBIT 2781 intelligent interface, and by the method of Least Squares adjustment, converts these ranges into a position on the AMG co-ordinate system. This allows real time logging on magnetic disc and paper printer and position to be displayed on a VDU screen.

The facility of a Rainbow 8 card in the interface meant that the vessel could be coned along a pre-determined survey line by using a screen graphics display showing the required line and a cursor representing the vessel position. This remote monitor was mounted beside the helm.

5.1.2 Calibration

The Syledis was calibrated over a baseline of known length at Seaspray in Victoria. The length of this baseline was 3605.3 metres. The remote beacons, each colour coded with its own cable and antenna, were set up at the Western end of the baseline, and the mobile units, again colour coded with cables and antennae, were set up at the Eastern end. A series of twenty range readings was observed from each mobile/remote combination, and delay values established for later inclusion in the TRAC IVB software.

5.2 Echo Sounder

The sounder used on the project was an Elac LAZ721 echo sounder with transducer mounted on a bracket over the Port side of the vessel. A 50 KHz transducer was used for this survey. The depth trace printed on paper was annotated by "fix" marks with details of time, date, run number and fix number. An Actif digitiser was interfaced to the sounder to produce digital depth data.

5.2.1 Sounder Calibration

Calibration of the sounder was carried out at commencement and again at completion of sounding. A calibrated bar check was lowered to fixed distances below the sea surface. The scale of the sounder and the digitiser were set to zero and compensated for velocity of sound on both the sounder and the digitiser. Depths were checked at 4 metres and then at 2 metre increments down to the maximum survey depth.

5.3 Side Scan Sonar

This survey technique involves the transmission of high frequency bursts of acoustic energy in progressive sweeps across the seabed, and the detection of the reflected signals. The relative intensities of the reflected signals correlate to variations in seafloor topography and to changes in texture and composition of seabed materials. By processing and printing signals from successive sweeps across an advancing paper chart, it is possible to create a facsimile two dimensional record of the seabed features.

For this survey an EG&G SMS960 Seafloor Mapping system was used incorporating an EG&G SMS recorder and EG&G model 272T 100 KHz towfish.

The towfish, which carries two transducers to acoustically sweep the seabed on either side of the vessel's track, was towed astern. The length of the tow cable was adjusted in order to maintain, if possible, a towfish height above seabed of 8 to 10 metres.

The SMS960 recorder processes the reflected signals detected by the transducers, and prints the facsimile records. The recorder corrects for slant range and vessel speed to produce true-to-scale records of seafloor features.

Vessel speed was manually input during this survey using information supplied by the navigation computer via the video display.

The SMS960 recorder was interfaced to the navigation system in order that records could be automatically annotated with navigation "fix" information noting fix number, time, date, line number and operating parameters.

For this survey, the system was operated to record data from 100 metres range either side of the vessel track, and the corrected records were produced at 1:1000 scale.

5.4

Sub-bottom profiling

The sub-bottom profiling technique involves use of a surface towed seismic source to produce seismic energy (compressional sound waves). This energy is directed downwards to the seabed to obtain reflections from sub-seabed geological or geotechnical interfaces between materials with different densities and within which the velocity of sound differs.

The technique is best suited to survey environments which have horizontal or low angled geotechnical interfaces such as sedimentary layers to reflect the signal vertically.

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The seismic signals reflected from the seabed and below are detected by a surface towed hydrophone streamer and converted to electric signals.

These signals are processed and printed on successive sweeps of a dry paper facsimile recorder to produce a continuous seismic profile of the seabed sub-bottom. Typically, such profiles show horizontal or sub-horizontal traces called "reflectors" which are facsimiles of the reflecting interfaces, or sedimentary layers, in two dimensions along the line of the profile.

The geometry of each reflector on the seismic profile reproduces the geometry of the corresponding reflecting horizon, and reflector intensity varies as follows:

- Moderate to strong reflectors correspond to marked contrast in material density and seismic velocity. The strongest of these reflectors should indicate significant interface between material types such as the water/sediment interface between loose sediment and dense sediment or rock.

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- Weak to moderate reflectors correspond to much less significant contrasts which could represent quite subtle changes in material texture and density.
- Reflectors so weak as to be untraceable suggest very insignificant material variations.
- "Clean" records indicate negligible reflections and thus indicate uniform, sub-bottom materials.

Lateral changes in material types, or steeply sloping horizons scatter the seismic signal, thereby producing irregular or chaotic reflectors on the seismic profiles. Inhomogeneities such as cemented zones in otherwise uncemented sediments, or weak zones in otherwise hard rock, likewise cause seismic scattering.

Seismic profile interpretation is often hindered by the presence of multiples. The most significant of these occurs when the seabed is re-reflected from the sea surface to the seabed and back. The multiple is printed on the profile at double the displacement on the time scale of the original seabed reflector. When profiling is carried out in shallow water, the seabed multiple overprints and can mask the true sub-bottom reflectors.

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The sub-bottom profiling system on this survey used a boomer sound source.

This source comprises a flat boomer plate attached to a surface towed catamaran. The discharge of a high energy electric current through a flat coil within this plate causes a metallic disc to pulse and to transmit a short duration burst of seismic energy downward into the seabed.

The high energy electric current was supplied to the boomer by a capacitor discharge type energy source. This unit was operated at maximum power of 175 joules.

A Benthos 12 element single channel hydrophone streamer was used for this survey.

With the boomer source towed 20 metres astern of the vessel's Port quarter, the streamer was towed 20 metres astern of the Starboard quarter from an outrigger pole to keep it away from the vessel's wake.

The seismic energy detected by the hydrophone streamer was processed as follows prior to recording:

- Filtered, between 500 Hz Lo-cut and 1500 Hz Hi-cut by a Band Pass Filter incorporated in the receiver unit. This process removes unwanted noise from the data.
- Time varied gain amplified, to enhance deeper data, using a TVG Amplifier incorporated in the receiver.

The processed signals were printed to produce facsimile seismic profile records using an EPC 1600 9" dry paper recorder. This was operated at a sweep speed which presents 80 milliseconds of record (approximately equivalent to 65 metres in depth scale) across 9 inches of paper.

The EPC recorder incorporates an extremely accurate internal clock and is used to supply the time break or trigger to the boomer energy source. This was "fired" at 0.25 second intervals.

The EPC recorder was interfaced to the navigation computer so that fix marks could be automatically printed on the records. The fix numbers and other information on time and date, line number and operating parameters were manually anotated on the paper records.

5.5

Base Station Data

The survey was carried out using the following co-ordinates for the base stations. The co-ordinates are based on AGD66 on the Australian Map Grid Zone 55, Central Meridian 147°E.

- i) Kingfish B (Offset)
Easting 603367.7
Northing 5727056.1
Antenna Height 28.8m (AHD)

- ii) Snapper (Offset)
Easting 589696.8
Northing 5771950.9
Antenna Height 32.6m (AHD)

- iii) Flounder (Offset)
Easting 625723.3
Northing 5758491.2
Antenna Height 33.6m (AHD)

6.0 SURVEY RESULTS

6.1 Bathymetry

The bathymetric data has been reduced to Chart Datum at Rabbit Island (Port No. 6016 in the Australian National Tide Tables) by applying height and time differences to the Devonport (Mersey River) tides.

Checks on the soundings at line intersections reveal an accuracy of soundings of +/- 1 metre.

The survey revealed a very irregular sea floor with depths ranging from 216 metres to 317 metres. The only relatively flat, even area lies around and to the South West of the alternative site where, over an area measuring approximately 500 metres by 1000 metres, the depth varies between 275 and 280 metres.

6.2 Seabed Features

Sonar records show a uniform seafloor of moderate reflectivity indicative of sand. Both grab samples and drop cores were attempted at the first location given but were unsuccessful probably due to the general water depth and sea state. However, a small sample was obtained which consisted mainly of fragments of shell, coral and worn casts. This is unlikely to be representative of the seafloor but may indicate bottom current action reworking coarser debris and depositing it on the seabed. A small area to the Northwest of location shows slightly higher reflectivity and is thought to consist mainly of shell debris reworked into banks having a North/South orientation.

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The only other seabed features noted from sonar records are indicated on the chart as fowl. They do not appear to have any height associated with them but have a North/South orientation and are about ten metres in length.

There do not appear to be any obstructions from sonar records which may affect the location of a semi-submersible platform.

6.3

Shallow Geology

Boomer records are generally of good quality with penetration on one horizon occasionally down to about 150 metres. However, there are few persistent good reflectors and the reflector which has been mapped, although good in some areas, tends to be intermittent in nature and can be difficult to trace across the areas of acoustic masking.

Reflectors in the overlying sediments tend to be very faint and laterally impersistent. Where apparent, they are represented by a series of well bedded sub-horizontal layers which are frequently channelled out by subsequent erosion surfaces. The impersistent nature of the reflectors together with the large scale channelling episodes suggest a deltaic environment of deposition, and sediments are likely to consist mainly of sands and silts with minor gravel and clay horizons.

- 17 -

The present day seafloor appears to be controlled largely by the topography of previous erosion surfaces. This is fairly well demonstrated by a gently undulating surface present to the West of the site, which in turn appears to follow the topography of the underlying mapped horizon.

The mapped reflector gives a strong return, particularly in the central region, but becomes very weak and is not apparent in the other areas outlined on the chart as areas of masking. In general the horizon appears as a large channel with its virtually horizontal base in the centre of the site. However, its form is complicated by what appear to be faults or fault zones usually present within areas of acoustic masking which may be caused in these areas by a lithological change in sediments (Fig. 1). The faults generally have a West North West/East South East orientation and the fault closest to location is approximately 300 metres to the South west. Faulting in the South West of the area has resulted in a small harst in the mapped horizon (Fig. 1). To the North East of location the horizon becomes weak and disappears, reappearing at a higher level in the sediments about 200 metres to the North East. Steeply dipping channel sides are thought to be present within the intervening masked area.

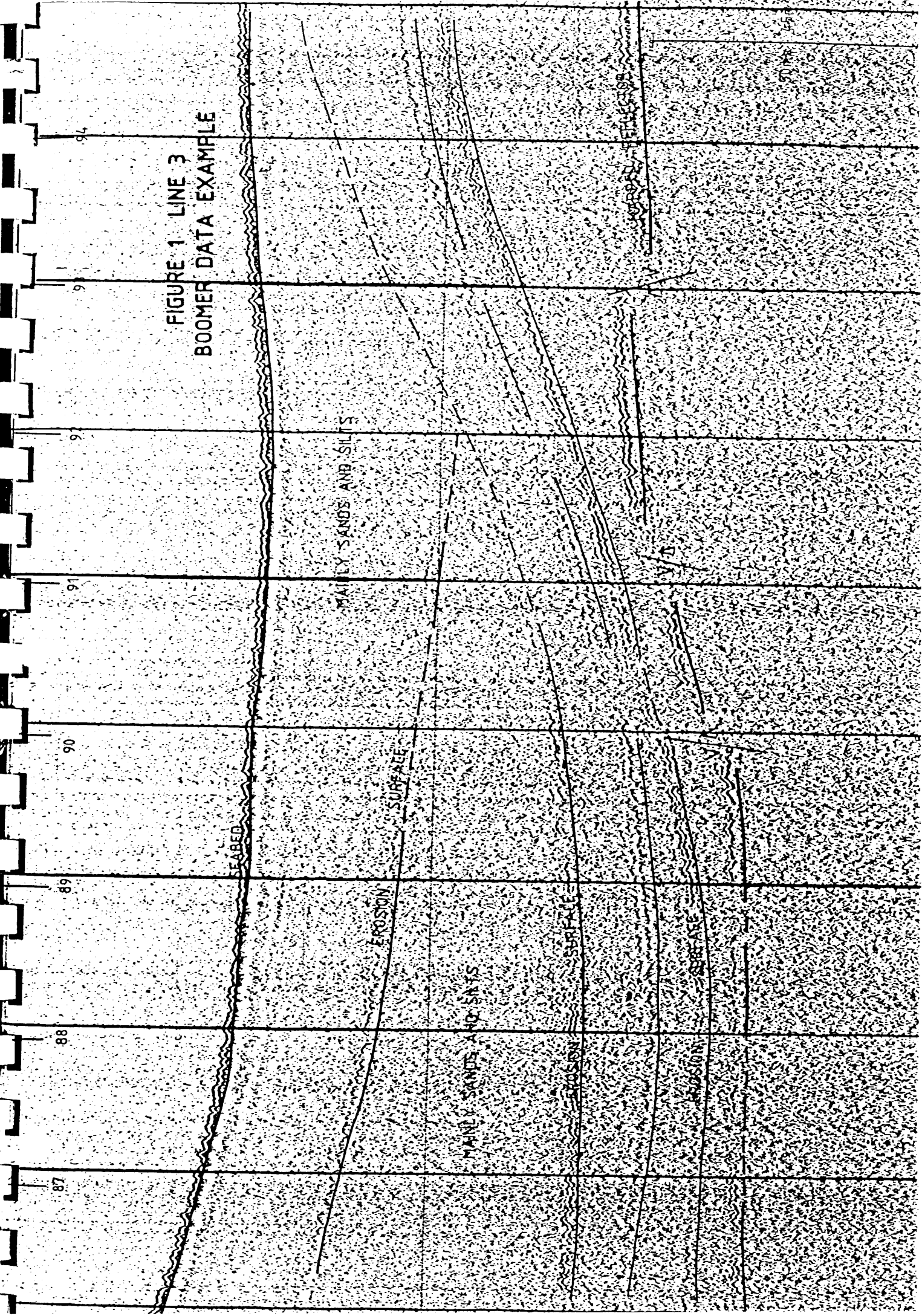
Much of the area is covered by masking but it is difficult to say what may be causing this. It may be due to material within the overlying sediments causing attenuation of the signal, but frequently the overlying sediments also appear to be structureless. Or it may just reflect a lithological variation in sediments throughout the area.

- 18 -

There does not appear to be the evidence from these records that one would normally associate with shallow gas. Shallow gas can often be detected as an acoustically absorbent layer below which layering in the immediate underlying sediments is completely masked and velocity pull down of the reflectors can be seen. Whilst on occasion up to 150 metres of penetration can be seen from one particular reflector, good persistent structure across the site is not apparent from these records. In the absence of this sort of evidence, it is difficult to make any assessment on the presence of shallow gas.

With this proviso however, there do not appear to be any hazards from boomer records which may affect the installation of a semi-submersible platform. The mapped horizon is approximately 86 metres below the seabed at location.

FIGURE 1 LINE 3
BOOMER DATA EXAMPLE



RIG POSITIONING

WP4125NT/9

PETROFINA EXPLORATION AUST. S.A.
REPORT ON THE POSITIONING OF
THE SEMI-SUBMERSIBLE RIG
'ZAPATA ARCTIC'
AT ANGLER-1 SITE

Prepared for:

PETROFINA EXPLORATION AUST S.A.
LEVEL 2
476 ST. KILDA ROAD
MELBOURNE VIC 3000

Prepared by:

ASSOCIATED SURVEYS INTERNATIONAL PTY. LTD.
18 PROWSE STREET
WEST PERTH W.A. 6005

DATE:

MARCH 1989

1.0 INTRODUCTION

Associated Surveys International Pty. Ltd. (ASI) was contracted by Petrofina Exploration Aust. S.A. to position the semi-submersible drilling rig "Zapata Arctic" on location at Angler-1 Site using a Syledis Radio Positioning System and Minitrac Navigation, with the final rig position being confirmed with a G.P.S. Satellite Positioning system.

These field operations were carried out between March 15th and March 26th 1989.

2.0 SUMMARY OF FINAL LOCATION RESULTS

Mast Position	E	625376.8
	N	5719959.8

Offset Position	E	625413.9
(Drill stem)	N	5719971.8

Heading	289° True
---------	-----------

Latitude	38°39'35.4"S
----------	--------------

Longitude	148°26'29.1"E
-----------	---------------

A translocated G.P.S. Position obtained on the morning of 24th March confirmed the above position.

The Minitrac Printout for the final position is contained in Appendix B.

APPENDIX B

FINAL POSITION PRINTOUT

```
=====
MINITRAC OFFLINE MANUAL CALC
=====
```

SYSTEM SET UP

```
-----
ID   EASTINGS  NORTHINGS  HEIGHT
-----
 2   471691.90  5752663.50  619.70
 3   589696.77  5771950.90  32.60
 4   624244.30  5774176.40  22.00
```

HEIGHT OF TRANSMITTER 47.4

PROPOG CONSTANT 1

```
MINI TRAC
*****
```

```
STN 2  E: 471691.9 N: 5752663.5
STN 3  E: 589696.8 N: 5771950.9
STN 4  E: 624244.3 N: 5774176.4
```

DEFINED OFFSETS

X: 23.5 Y: -31.2

WAY POINT ANGLER SET:-

E: 625422.0 N: 5719970.0

FIX: 1

=====

```
Master Posn:    625376.8 East
                5719959.8 North
                1.7 Rmse
Offset Posn:    625413.9 East
                5719971.8 North
                289.0 Gyro
```

Offset to Waypoint: ANGLER

Brs: 102.9 Dist: 8.3

```
Range      C-0s
-----
157190.3    1.2
63075.0     -2.2
54238.2     1.5
```


SUMMARY OF ACTIVITIES

DATE	REPORT NO.	DEPTH m	MUD WEIGHT (S.G.)	ACTIVITY
20.03.89	1	-	-	Moving to location. Anchor No. 6 on bottom
21.03.89	2	-	-	Anchor No. 12 on bottom. Waiting on weather
22.03.89	3	-	-	Anchor Nos 7,1,5,11 on bottom
23.03.89	4	-	-	Anchor Nos 8,3,9,10,4 on bottom. Repositioned Anchor No. 6. Ballasted rig. Rig on contract at 2100 hrs. Made up 30" conductor
24.03.89	5	363	1.03	Landed 30" conductor in PGB. Hung off in moonpool. RIH with 26" bit and 36" hole opener. Tagged mudline at 303m RKB. Drilled 36" hole to 363m. Spotted hi-vis mud. RIH with 30" conductor and PGB
25.03.89	6	408	1.03	Cemented 30" conductor with 270bb1 1.90 S.G. slurry. WOC. Performed top up cement job. RIH with 26" bit and tagged cement at 351m. Drilled shoe and 26" hole to 365m. POOH. RIH with 8-1/2" bit and drilled pilot hole to 408m taking Totco survey
26.03.89	7	578	1.03	Drilled 8-1/2" pilot hole to 585m. Made up 18-3/4" housing on running tool. RIH with 12-1/4" bit and 26" hole opener. Opened hole to 578m taking Totco surveys
27.03.89	8	613	1.04	Opened hole to 585m and drilled 26" hole to 613m. Observed slope indicator on PGB = 1-1/2°. RIH and engaged 30" cam-actuated running tool. Circulated: no returns outside 30". Pulled 100,000lb = no movement. POOH with 30" running tool. Ran 20" casing and 18-3/4" housing on 5" HWDP
28.03.89	9	613	1.04	Latched 18-3/4" housing in 30" housing Cemented 20" casing with 513bb1 1.90 S.G. slurry. POOH with 18-3/4" housing running tool. BOP failed to test. Shear ram body in Sale for repair

29.03.89	10	613	1.04	Installed shear rams. Repaired STI connectors
30.03.89	11	613	1.04	Tested BOP. Ran BOP and riser
31.03.89	12	613	1.04	Ran BOP and riser. Landed BOP. Nippled up choke, kill and conduit lines. Tested BOP and surface equipment
01.04.89	13	781	1.07	RIH with 17-1/2" bit and MWD. Tagged cement at 573m. Drilled shoe and formation to 640m. Performed FIT to 1.40 S.G. EMW. Drilled 17-1/2" hole to 789m
02.04.89	14	1165	1.17	Drilled 17-1/2" hole to 1165m. POOH
03.04.89	15	1165	1.17	POOH. Schlumberger logged DLT/GR and MSFL/CAL. Made wiper trip. Ran 13-3/8" casing
04.04.89	16	1165	1.17	Landed casing in wellhead. Cemented with 360bbl lead slurry (1.58 S.G.) and 100 bbl tail (1.90 S.G.). Set packoff and pressure tested to 1500 psi. Tested BOP. Ran wear bushing
05.04.89	17	1170	1.17	RIH with 12-1/4" bit. Tagged cement at 1117m. Drilled shoe and formation to 1170m. Performed FIT to 1.80 S.G. EMW. POOH. Closed shear ram and pulled lower marine riser package to repair choke line leak.
06.04.89	18	1170	1.17	Continued to pull LMRP. Repaired choke line and STI connector. Ran LMRP and riser.
07.04.89	19	1170	1.17	Landed LMRP on BOP. Pressure tested choke line. Leak at kill line STI connector. Set RTTS packer and storm valve at 336m. Pulled BOP and riser.
08.04.89	20	1170	1.17	Repaired kill line STI connector. Tested STI connectors to 15,000 psi. Tested BOP. Ran BOP and riser.
09.04.89	21	1170	1.17	Landed and tested BOP. Ran wear bushing. Pulled RTTS packer and storm valve.
10.04.89	22	1341	1.02	Made BHA with 12-1/4" PDC bit and Drilex PDM. Drilled 12-1/4" hole with seawater to 1341m. Pumped hi-vis pill every 8 singles.

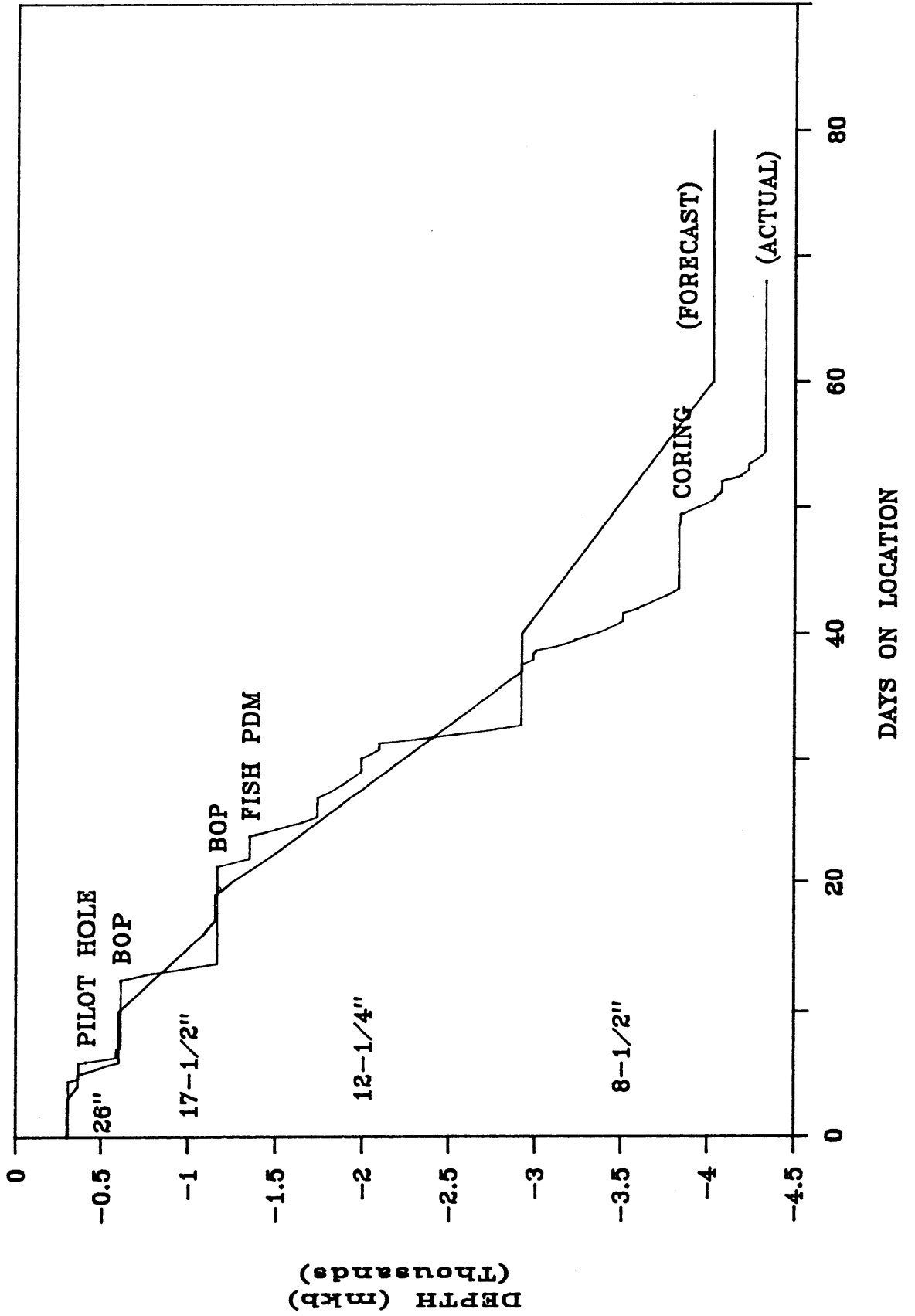
11.04.89	23	1352	1.0	Drilled to 1352m. Lost 1200 psi pump pressure. POOH. Drilex body had twisted off. Top of fish at 1345.5m. RIH with overshot. Engaged fish and POOH. Made up new BHA with back up Drilex PDM. Stabiliser parted and PDM fell to bottom.
12.04.89	24	1386	1.04	RIH with overshot. Attempted to engage fish at 1344m. POOH without fish. RIH with 11-1/4" overshot. Engaged fish. POOH. Made up 12-1/4" bit and MWD. Tested MWD inoperative. Laid out MWD and RIH. Drilled 12-1/4" hole to 1386m.
13.04.89	25	1740	1.09	Drilled 12-1/4" hole to 1653m taking Totco surveys.
14.04.89	26	1740	1.09	Drilled to 1740m. POOH. RIH with 12-1/4" PDC, Navidrill PDM and MWD.
15.04.89	27	1756	1.11	RIH picking up new 5" drill pipe. Attempted to drill - no progress, no downhole torque. POOH. RIH with 12-1/4" bit. Drilled to 1756m.
16.04.89	28	1889	1.11	Drilled 12-1/4" hole to 1889m.
17.04.89	29	1992	1.08	Drilled 12-1/4" hole to 1992m. Displaced hole to seawater/gel/polymer system.
18.04.89	30	1992	1.08	POOH to change bit. Tested BOP. RIH.
19.04.89	31	2097	1.09	Drilled 12-1/4" hole to 2097m. POOH to change bit/BHA.
20.04.89	32	2535	1.15	RIH with PDC/PDM. Drilled 12-1/4" hole to 2535m.
21.04.89	33	2918	1.15	Drilled 12-1/4" hole to 2918m. POOH.
22.04.89	34	2918	1.20	POOH. Attempted to log - unable to pass 2330m. RIH for wiper trip. POOH.
23.04.89	35	2918	1.20	Ran Schlumberger logs. Ran 9-5/8" casing.
24.04.89	36	2918	1.20	Ran 9-5/8" casing. Landed hanger. Circulated - hole packing off. Cemented casing with 681bbl lead (1.53 SG) and 102 bbl (1.90 SG). Energized pack off. POOH with running tool.

25.04.89	37	2918	1.20	Tested BOP and surface equipment. RIH with 8-1/2" bit.
26.04.89	38	2985	1.11	RIH. Tagged cement at 2822m. Drilled shoe and formation to 2923m. Performed FIT to 1.60 SG EMW. Drilled 8-1/2" hole to 2985m. POOH to change bit.
27.04.89	39	3119	1.12	POOH. RIH with PDC. Drilled 8-1/2" hole to 2998m. Bit stuck. Jarred free. Pulled to shoe. RIH and drilled 8-1/2" hole to 3119m.
28.04.89	40	3354	1.12	Drilled 8-1/2" hole to 3227m. Pulled 10 stands wiper trip. Drilled 8-1/2" hole to 3354m.
29.04.89	41	3507	1.12	Drilled 8-1/2" hole to 3507m.
30.04.89	42	3590	1.12	POOH and changed bit. RIH. Drilled 8-1/2" hole to 3590m.
01.05.89	43	3754	1.12	Drilled 8-1/2" hole to 3754m.
02.05.89	44	3833	1.13	Drilled 8-1/2" hole to 3833m. POOH. RIH with core barrel.
03.05.89	45	3833	1.12	RIH with core barrel. Stuck at 3763m. Worked free and washed down to 3788m. POOH. Tested BOP. RIH with bit.
04.05.89	46	3833	1.13	RIH. Reamed to 3645m.
05.05.89	47	3833	1.13	Reamed to 3717m - had to jar every single. POOH. Changed bit and BHA. RIH.
06.05.89	48	3833	1.13	Reamed to 3833m. POOH.
07.05.89	49	3842	1.13	POOH. RIH with 30ft core barrel. Cut core #1 to 3842m. POOH.
08.05.89	50	3944	1.13	POOH and recovered core #1. RIH with PDC and MWD. Reamed to 3842m. Drilled 8-1/2" hole to 3944m.
09.05.89	51	4058	1.14	Drilled 8-1/2" hole to 4039m. Made wiper trip to 3775m. Drilled 8-1/2" hole to 4058m.
10.05.89	52	4079	1.14	Drilled 8-1/2" hole to 4079. POOH. Tested BOP. RIH with PDC.

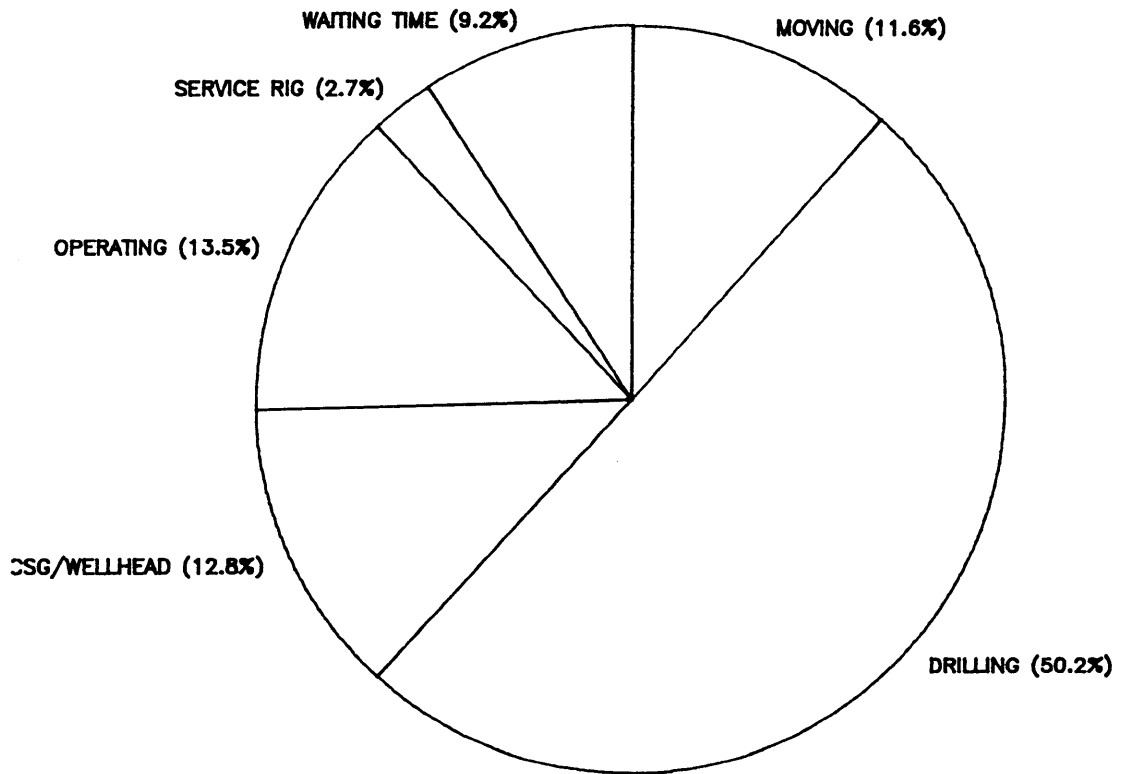
11.05.89	53	4234	1.14	RIH. Drilled 8-1/2" hole to 4191m. Made 10 stands wiper trip. Drilled 8-1/2" hole to 4234m. ROP dropped to zero. POOH.
12.05.89	54	4302	1.15	POOH. Changed bit. RIH. Drilled 8-1/2" hole to 4302m.
13.05.89	55	4330	1.15	Drilled 8-1/2" hole to 4330m (TD). Made wiper trip to shoe. POOH.
14.05.89	56	4330	1.14	POOH. Ran Schlumberger logs.
15.05.89	57	4330	1.14	Ran RFT. RIH for wiper trip.
16.05.89	58	4330	1.15	RIH to 4330m. POOH. Ran Schlumberger logs.
17.05.89	59	4330	1.15	Ran Schlumberger logs.
18.05.89	60	PBTD 3785	1.15	Ran Schlumberger logs. RIH with open-ended DP to 4280m. Set plug No. 1 4280-4180m. Pulled to 3870m. Set plug No. 2 3870-3785m.
19.05.89	61	PBTD 354	1.16	Pulled to shoe. WOC. RIH and tagged cement at 3785m. Pulled to 2950m. Set plug No. 3 2950-2881m. Laid down drill pipe. RIH and tagged cement at 2881m. Set plug No. 4 2881-2731m. Conditioned mud with biocide. Pulled and laid down drill to 430m. Tested plug No. 4 with 1000 psi. Set plug No. 5 430-354m.
20.05.89	62	PBTD 327	-	POOH. Laid down drill pipe. Tagged cement at 354m. Set plug No. 6 354-327m. POOH and laid down drill pipe. POOH with BOP and riser. RIH and tagged cement at 327m. POOH. RIH with explosives on running tool.
21.05.89	63	PBTD 327	-	Engaged wellhead running tool. RIH with detonator on cable - unable to detonate - RIH with detonator and electric cable. Detonated explosives. Pulled with 300,000lb overpull - no movement. POOH with running tool. Made up and RIH with new explosive charge. RIH with detonator. Detonated explosives. POOH with wellhead and PGB. Commenced to de-ballast rig.
22.05.89	64	-	-	Deballasted rig. Pulled anchors 4,11,5.

23.05.89	65	-	-	Waited on weather.
24.05.89	66	-	-	Pulled anchor 3.
25.05.89	67	-	-	Pulled anchors 1,2,7,8.
26.05.89	68	-	-	Pulled anchors 6,9,10,12. Moved rig to Anemone-1 location. Final Report.

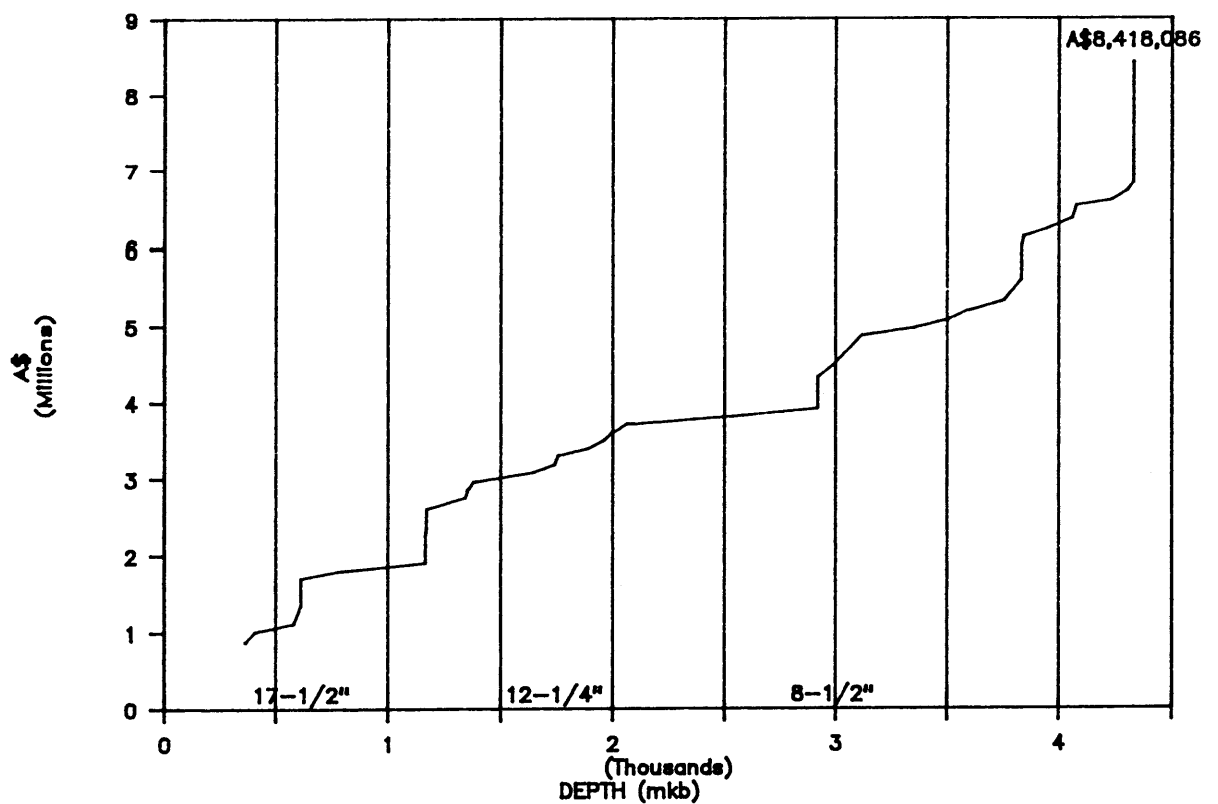
ANGLER - 1



TIME BREAKDOWN



ESTIMATED COST



EXPLANATION OF TIME BREAKDOWN

1. MOVING

- Moving and Anchoring

2. DRILLING

- Drilling
- Reaming
- Coring
- Circulating and Conditioning Mud
- Tripping
- Picking Up and Laying Down string

3. CASING AND WELLHEAD

- Run Casing
- Cement
- Wait on Cement
- Run BOP
- Test BOP
- Drill out Cement

4. OPERATING

- Deviation Survey
- Electrical Logging
- DST
- Squeeze Cement
- Fishing
- Directional Work
- Leak Off Test
- ROV Operations
- Safety Drill
- Plug and Abandon

5. WAITING

- Weather
- Daylight
- Equipment/Operator
- Contractor
- Miscellaneous

6. SERVICE RIG

- Lubricate Rig
- Repair Rig
- Slip and Cut Line

CONTRACTOR SUMMARY

SERVICE	CONTRACTOR	ONBOARD	LEFT RIG	REMARK
DRILLING	Zapata	20.03.89	26.05.89	
MUD ENGINEERING	Baroid	19.03.89	26.05.89	
MUD LOGGING	Geoservices	20.03.89	26.05.89	
MWD	Teleco	29.03.89	14.05.89	
ELECTRICAL LOGGING	Schlumberger	30.03.89	26.05.89	*
CASING CREW	Weatherford	02.04.89	26.05.89	*
CEMENTING	Halliburton	19.03.89	26.05.89	
LINER HANGER	TIW	14.05.89	18.05.89	
TESTING	Schlumberger	-	-	
CORING	DBS	26.04.89	14.05.89	
WELLHEAD	Vetco	21.03.89	04.04.89	
WELLHEAD RETRIEVING	Techmaster	19.05.89	22.05.89	
	Tri-State	21.05.89	22.05.89	
MUD MOTOR	Drilex/Austoil	03.04.89	13.04.89	
	Eastman Christensen	14.04.89		
ROV	Subsea	20.03.89	26.05.89	
HELICOPTERS	Bristow	19.03.89	26.05.89	
SUPPLY BOATS	A.O.S.	19.03.89	26.05.89	
POSITIONNING	Associated Surveys	19.03.89	24.03.89	

* Not permanently onboard

903236 113

BIT RECORD

BIT NR	DIAM MAKE	TYPE	SER No	NOZZLES	OUT FOOTAGE	HOURS	ROP	WOB	RPM	GPM	PRESS	DEVI	SG	M	VIS	COND	LITHOLOGY	REMARK
	in				ft	mm	m/hr	Klb			PSI	deg	gr/cc					
1	26 REED 36 SMITH	Y11 HO	E26271	4x11.4x8 3x9	363	60	5.50 10.9	0-5	30-90	900	2100	1	1.03		120	SAND (SPUD)		
2	8-1/2 REED	HP11J	BT5810	OPEN	585	222	9.25 24.0	0-3	120	480	600		1.05		90	2.1.I SAND/CLAY	pilot hole	
3	12-1/4 REED 26 SMITH	HP11J HO	EB1740	3x12 3x8	613	11.25		0-10	60-85	1050	1600	0.3	1.05		120	2.1.I SAND/CLAY	opened hole + drilled	
4	17-1/2 HTC	CR3A	614PC	4x14	1165	552	27.50 20.1	5-25	110-125	830-1000	3200-3400	0.1	1.07		28	2.2.I CALCARENITE		
3RR	12-1/4 REED	HP11J	EB1740	3x12	1170	5	0.75 6.7	5-25	50-80	590	1900	0.1	1.17		37	2.3.I		
5	12-1/4 HTC	B9H+	122CAA5089	5x13.1x12	1351	181	17.50 10.3	5-15	200-250	800	3000	0.3	1.03		28	15% I CALCARENITE	PDC+PDH: motor twist off	
6	12-1/4 REED	HP43A	J60045	14.13.13	1740	389	33.25 11.7	20-40	50-70	640	2700-3000	0.5	1.08		30	1.1.I CALCARENITE	pulled to run pdm	
5RR	12-1/4 HTC	B9H+	122CAA5089	5x16.1x12	1742	2	0.50 4.0	15-20	200-250	800	3010	0.5	1.11		29	15% I CALCARENITE	PDC+PDH: motor failure	
7	12-1/4 REED	HP43A	J60197	13.14.14	1992	250	50.50 5.0	30-50	45-70	500-650	2800-3500	0.3	1.08		38	2.3.1/8 CALCARENITE	broken teeth	
8	12-1/4 REED	HP13GJ	EB1743	13.14.14	2097	105	15.75 6.7	40-50	120	700	3400	0.1	1.09		40	3.2.I CALCAREN/WARL	pulled to run pdm	
5RR	12-1/4 HTC	B9H+	122CAA5089	5x16.1x12	2918	821	52.00 15.8	25-30	340	775	3100-3300	3.6	1.15		50	50% I WARL/CLYST/SST	PDC+PDH	
2RR	8-1/2 REED	HP11J	BT5810	3x13	2985	67	10.75 6.2	25-40	90-120	450	2500	3.6	1.11		36	7.3.1/8		
9	8-1/2 EC	R437	1490122	4x12	3507	522	57.50 9.1	10-40	80-120	450-500	3000-3300	1.1	1.12		44	100% SST/SLST/COAL	ringed	
10	8-1/2 REED	HP51AJ	BT7225	3x13	3833	326	46.50 7.0	30-40	75-95	450	3000	0.7	1.13		46	5.4.1/8 SLST/SHALB		
11	8-1/2 DBS	CT303	7880968	CORE HEAD											44			
12	8-1/2 REED	S31GJ	BT1861	3x13			31.25	5-25	70-100	310	1200		1.12		46	1.3.1/16	unable to pass 3788 m	
13	8-1/2 REED	S31GJ	BT1854	3x13			18.75	5-25	100	350	1800		1.13		46		reamed to 3717 m	
11RR	8-1/2 DBS	CT303	7880968	CORE	3842	9	8.00 1.1	5-20	90	290	1340		1.13		51	60%	reamed to 3833 m	
14	8-1/2 HTC	B35M	084BJB118	3x12	4079	237	37.25 6.4	15-30	90-100	375	2400	2.1	1.14		51	40% I SST/SLST	ringed	
15	8-1/2 EC	R435S	1490141	4x12	4234	155	18.50 8.4	15-30	75-90	375	2000	3.2	1.14		56	50% I SLST/SST		
16	8-1/2 REED	HP53AJ	BT5645	11.14.B	4330	96	23.75 4.0	30-40	65-80	350-360	2860-2950	3.1	1.14		53	3.3.1/8 SLST/SST		

BHA REPORT

=====

B. H. A. NU R	Date	Description	Length (meters)	Hours	REMARKS
1	24/03/89	BIT 1, 36 H.O., B SUB, 2*9-1/2 DC, X/O, 10*8" DC, X/O 15 HWDP	138.4	5.50	DRILL 36" HOLE
2	25/03/89	BIT 1RR, B SUB, 2*9-1/2 DC, X/O, 10*8" DC, X/O, 15 HWDP	136.0	9.25	DRILL OUT 30" C.P.
3	25/03/89	BIT 2, B SUB, 6*6-1/2" DC, X/O, 18 HWDP	224.0	0.50	DRILL 8-1/2" PILOT HOLE
4	26/03/89	BIT 3, X/O, 26" H.O., B SUB, 2*9-1/2" DC, X/O, 10*8" DC, X/O, 15 HWDP	259.8	11.25	OPEN & DRILL 26" HOLE
5	31/03/89	BIT 4, B SUB, 2*9-1/2" DC, STAB, X/O, MWD, 8-1/4" NMDC, STAB, 6*8" DC, JAR, 2*8" DC, X/O, 15 HWDP	269.7	27.50	DRILL 17-1/2" HOLE
6	03/04/89	BIT 4RR, B SUB, 2*9-1/2" DC, STAB, X/O, 6*8" DC, JAR, 2*8" DC, X/O, 15 HWDP	249.8	0.0	WIPER TRIP
7	05/04/89	BIT 3RR, JUNK SUB, BIT SUB, 6*8" DC, JAR, 2*8" DC, 15 HWDP	138.4	0.75	DRILL OUT 13-3/8" CASING
8	10/04/89	BIT 5, PDM, STAB, X/O, MWD, STAB, 10*8" DC, JAR, 2*8" DC, 15 HWDP	284.9	15.5	DRILL 12-1/2" HOLE (PDC)
9	11/04/89	11-1/4" OVERSHOT, X/O, 8" DC, FISH JAR, 4*8" DC, JAR INT, 4*8" DC, X/O, 5*5" HWDP	138.4	0.0	FISH PDM
10	12/04/89	BIT 6RR, X/O, SHOCK SUB, NBSTAB, 1*8" DC, STAB, 13*8" DC, 2*8" DC, X/O, 18 HWDP	339.6	33.25	DRILL 12-1/4" HOLE
11	14/04/89	BIT 5RR, PDM, SHOCK SUB, STAB, X/O, MWD, STAB, 10*8" DC, JAR, 2*8" DC, X/O, 15 HWDP	289.5	1.75	DRILL 12-1/4" HOLE (PDC)
12	15/04/89	BIT 7RR, SHOCK SUB, STAB, X/O, MWD, STAB, 13*8" DC, JAR, 2*8" DC, X/O, 15 HWDP	311.5	50.5	DRILL 12-1/4" HOLE
13	18/04/89	BIT 8, JUNK SUB, STAB, SHOCK SUB, STAB, 8" DC, STAB, 12*8" DC, X/O, 15 HWDP	302.6	15.75	DRILL 12-1/4" HOLE
14	20/04/89	BIT 5RR2, PDM, SHOCK SUB, STAB, X/O, MWD, STAB, 8" NMDC, 9*8" DC, JAR, 2*8" DC, X/O, 15 HWDP	289.0	52.0	DRILL 12-1/4" HOLE
15	22/04/89	BIT 8RR, RR, 2*8" DC, STAB, 7*8" DC, JAR, 2*8" DC, X/O, 15 HWDP	258.0	0.0	WIPER TRIP
16	25/04/89	BIT 2RR, JUNK SUB, X/O, MWD, NMDC, X/O, STAB, SHOCK SUB, X/O, 15*6-1/2" DC, X/O, JAR, X/O, 2*6-1/2" DC, X/O, 9 HWDP	282.5	10.75	DRILL OUT 9-5/8" CASING
17	27/04/89	BIT 9, X/O, MWD, NMDC, X/O, STAB, SHOCK SUB, X/O, 12*6-1/2" DC, X/O, JAR, X/O, 2*6-1/2" DC, X/O, 9 HWDP	254.1	10.8	DRILL 8-1/2" HOLE (PDC)
18	30/04/89	BIT 10, X/O, MWD, NMDC, X/O, RR, SHOCK SUB, X/O, 15*6-1/2" DC, X/O, JAR, X/O, 2*6-1/2" DC, X/O, 9 HWDP	282.6	46.5	DRILL 8-1/2" HOLE
19	02/05/89	CORE HEAD 11, CORE BARREL 60', X/O, 12*6-1/2" DC, X/O, JAR, X/O, 2*6-1/2" DC, X/O, 15 HWDP	274.3	0.0	ATTEMPT TO CORE
20	03/05/89	BIT 12, JUNK SUB, RR, X/O, 1*6-1/2" DC, STAB, 1*6-1/2" DC,	259.7	0.0	REAMING

BHA REPORT

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P. No. NUMBER	Date	Description	Length (meters)	Hours	REMARKS
		STAB, 10*6-1/2" DC, X/O, 1 HWDP, JAR, 13 HWDP			
21	05/05/89	BIT 13, JUNK SUB, STAB, X/O, 2*6-1/2" DC, STAB, 10*6-1/2" DC, X/O, 1 HWDP, JAR, 13 HWDP	257.3	0.0	REAMING
22	07/05/89	CORE HEAD, 11RR, CORE BARREL 30', X/O, 12*6-1/2" DC, X/O, 1 HWDP, JAR, 13 HWDP	264.3	8.0	CUT CORE #1
23	08/05/89	BIT 14, X/O, MWD, NMDC, X/O, RR, X/O, 1*6-1/2" DC, STAB, 12*6-1/2" DC, X/O, 1 HWDP, JAR, 13 HWDP	288.2	37.25	DRILL 8-1/2" HOLE (PDC)
24	10/05/89	BIT 15, X/O, MWD, NMDC, X/O, RR, X/O, 1*6-1/2" DC, STAB, 12*6-1/2" DC, X/O, 1 HWDP, JAR, 13 HWDP	288.2	18.5	DRILL 8-1/2" HOLE (PDC)
25	12/05/89	BIT 16, X/O, MWD, NMDC, X/O, RR, X/O, 6-1/2" DC, STAB, 15*6-1/2" DC, X/O, HWDP, JAR, 13 HWDP	316.0	23.75	DRILL 8-1/2" HOLE
26	15/05/89	BIT 16RR, X/O, 2*6-1/2" DC, STAB, 9*6-1/2" DC, X/O, HWDP, JAR, 13 HWDP	256.7	0.0	WIPER TRIP



CORING LOG

903236 117

SHEET NO: 1

DATE: 7.5.89

CORED		INTERVAL	PENETRATION RATE MINUTES PER M/FT.													OPERATING CONDITIONS											
NO. M.	NO. X		1	2	3	4	5	6	7	8	9	10	20	30	40	50	60	70	80	90	WOB	RPM	GPM	PSI	TORQUE	FORMATION	
1	1	3833 mt. START.																									
1	2																										
	3	3834																			15	60	300	1200	200 AMP		
	4																										
2	5																				15	85	300	1200			
	6	3835																									
	7																										
3	8																				20	85	300	1200	300 AMP		
	9	3836																									
	10																										
4	11																				20	85	250	900	400 AMP		
	12	3837																									
	13																										
5	14																				17	90	250	900			
	15	3838																									
	16																										
6	17																				17	90	250	900	200 AMP		
	18	3839																									
	19																										
7	20																				18	90	235	800			
	21	3840																									
	22																										
8	23																				18	90	235	800	200 AMP		
	24	3841																									
	25																										
9	26																				18	90	235	900	200 AMP		
	27	3842																									
	28																										
10	29	CORE RECOVERED 99%																									
	30																										
	31																										
11	32																										
	33																										
	34																										
12	35	WELL ANGLER #1																									
	36	CORE #1, 9 MT. FIBERGLASS INNER TUBE.																									
	37	CORE BIT CT. 303. 8 1/2" X 4" #7880969																									
13	38	CORE/BTL 6 1/2" X 4" X 30'. STAIN/SIZE 8.15/32.																									
	39																										
14	41																										
	42																										
	43																										
15	44	WEAR ON BIT. 60% WORN																									
	45																										
	46																										
16	47																										
	48																										
	49																										
17	50																										
	51																										
	52																										
18	53																										
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	55																										
19	56																										
	57																										
	58																										
20	59																										
	60																										
	61																										
21	62	PARTS USED																									
	63	1 PILOT TYPE SPIN																									
22	64																										
	65	1 SPRING CATCHER																									
	66																										
	67																										
23	68	30' FIBERGLASS INNER TUBE.																									
	69																										
	70																										
24	71																										
	72																										
	73																										
25	74																										
	75																										
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26	77																										
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	85																										
29	86																										
	87																										
	88																										

RECEIVED
 10 MAY 1989
 15 05 15

903236 118

ANGLER #1			TELECO					
Depth	Drift	Bearing##	Vrtcl Depth	Coordinates		Departure	DL o/100m	No
				N / W	S / E			
304.7	0.00	0.0 ##	304.7	0.0 N	0.0 W	0.00	0.00	1
610.1	0.30	25.9 ##	610.1	0.8 N	0.2 E	0.80	0.10	2
638.6	0.50	79.0 ##	638.6	0.9 N	0.3 E	0.96	1.40	3
668.3	0.20	107.4 ##	668.3	0.9 N	0.5 E	1.03	1.13	4
698.4	0.30	45.5 ##	698.4	0.9 N	0.6 E	1.12	0.90	5
722.3	0.20	63.1 ##	722.3	1.0 N	0.7 E	1.22	0.52	6
768.6	0.30	148.6 ##	768.6	0.9 N	0.9 E	1.31	0.75	7
824.8	0.30	168.6 ##	824.8	0.7 N	1.0 E	1.22	0.19	8
868.0	0.30	32.3 ##	868.0	0.6 N	1.3 E	1.40	1.29	9
916.1	0.10	238.6 ##	916.1	0.7 N	1.1 E	1.35	0.82	10
961.2	0.30	93.4 ##	961.2	0.6 N	1.2 E	1.31	0.86	11
1009.0	0.10	317.0 ##	1009.0	0.7 N	1.2 E	1.44	0.79	12
1064.6	0.20	98.3 ##	1064.6	0.9 N	1.3 E	1.57	0.51	13
1099.6	0.20	165.8 ##	1099.6	0.8 N	1.4 E	1.60	0.63	14
1136.3	0.10	132.0 ##	1136.3	0.7 N	1.5 E	1.61	0.35	15
1185.5	0.30	47.0 ##	1185.5	0.7 N	1.6 E	1.77	0.63	16
1213.4	0.30	57.1 ##	1213.4	0.8 N	1.7 E	1.91	0.19	17
1241.9	0.40	44.1 ##	1241.9	0.9 N	1.9 E	2.08	0.44	18
1270.4	0.50	45.9 ##	1270.4	1.1 N	2.0 E	2.29	0.34	19
1298.0	0.30	44.5 ##	1298.0	1.2 N	2.2 E	2.48	0.72	20
1502.6	0.60	50.8 ##	1502.6	2.3 N	3.4 E	4.05	0.15	21
1712.5	0.50	45.9 ##	1712.5	3.6 N	4.9 E	6.06	0.05	22
1743.4	0.50	43.1 ##	1743.4	3.8 N	5.1 E	6.32	0.00	23
1787.6	0.40	33.6 ##	1787.6	4.1 N	5.3 E	6.66	0.28	24
1825.5	0.50	35.0 ##	1825.5	4.3 N	5.4 E	6.94	0.26	25
1873.5	0.30	43.4 ##	1873.5	4.6 N	5.6 E	7.27	0.43	26
2071.1	0.10	190.0 ##	2071.1	4.3 N	6.3 E	7.58	0.20	27
2101.7	0.30	212.5 ##	2101.7	4.2 N	6.2 E	7.49	0.69	28
2138.1	0.40	196.0 ##	2138.1	4.0 N	6.1 E	7.31	0.38	29
2193.5	0.50	227.3 ##	2193.5	3.6 N	5.9 E	6.92	0.47	30
2268.4	0.70	226.2 ##	2268.4	3.1 N	5.3 E	6.15	0.27	31
2325.2	0.80	243.5 ##	2325.2	2.6 N	4.7 E	5.41	0.43	32
2371.6	0.90	257.2 ##	2371.6	2.4 N	4.1 E	4.73	0.49	33
2427.4	1.00	236.4 ##	2427.3	2.0 N	3.2 E	3.82	0.64	34
2484.8	1.00	244.5 ##	2484.7	1.5 N	2.4 E	2.82	0.24	35
2543.7	1.10	267.7 ##	2543.6	1.3 N	1.3 E	1.83	0.73	36
2605.7	1.70	265.6 ##	2605.6	1.2 N	0.2 W	1.21	0.97	37
2641.0	1.70	269.1 ##	2640.9	1.1 N	1.3 W	1.70	0.29	38
2660.6	1.90	273.4 ##	2660.5	1.2 N	1.9 W	2.20	1.23	39
2680.0	1.80	274.1 ##	2679.9	1.2 N	2.5 W	2.77	0.53	40
2709.3	2.20	281.8 ##	2709.2	1.3 N	3.5 W	3.75	1.64	41
2718.3	2.30	283.9 ##	2718.1	1.4 N	3.8 W	4.10	1.42	42
2746.0	2.30	283.9 ##	2745.8	1.7 N	4.9 W	5.21	0.00	43
2776.1	2.50	268.4 ##	2775.9	1.8 N	6.2 W	6.44	2.25	44
2801.8	2.50	278.3 ##	2801.6	1.9 N	7.3 W	7.54	1.67	45
2830.9	3.00	290.9 ##	2830.6	2.2 N	8.7 W	8.94	2.68	46
2857.6	3.30	294.1 ##	2857.3	2.8 N	10.0 W	10.39	1.30	47
2896.0	3.60	284.3 ##	2895.6	3.6 N	12.2 W	12.70	1.72	48
2920.6	4.30	280.0 ##	2920.2	3.9 N	13.8 W	14.39	3.09	49

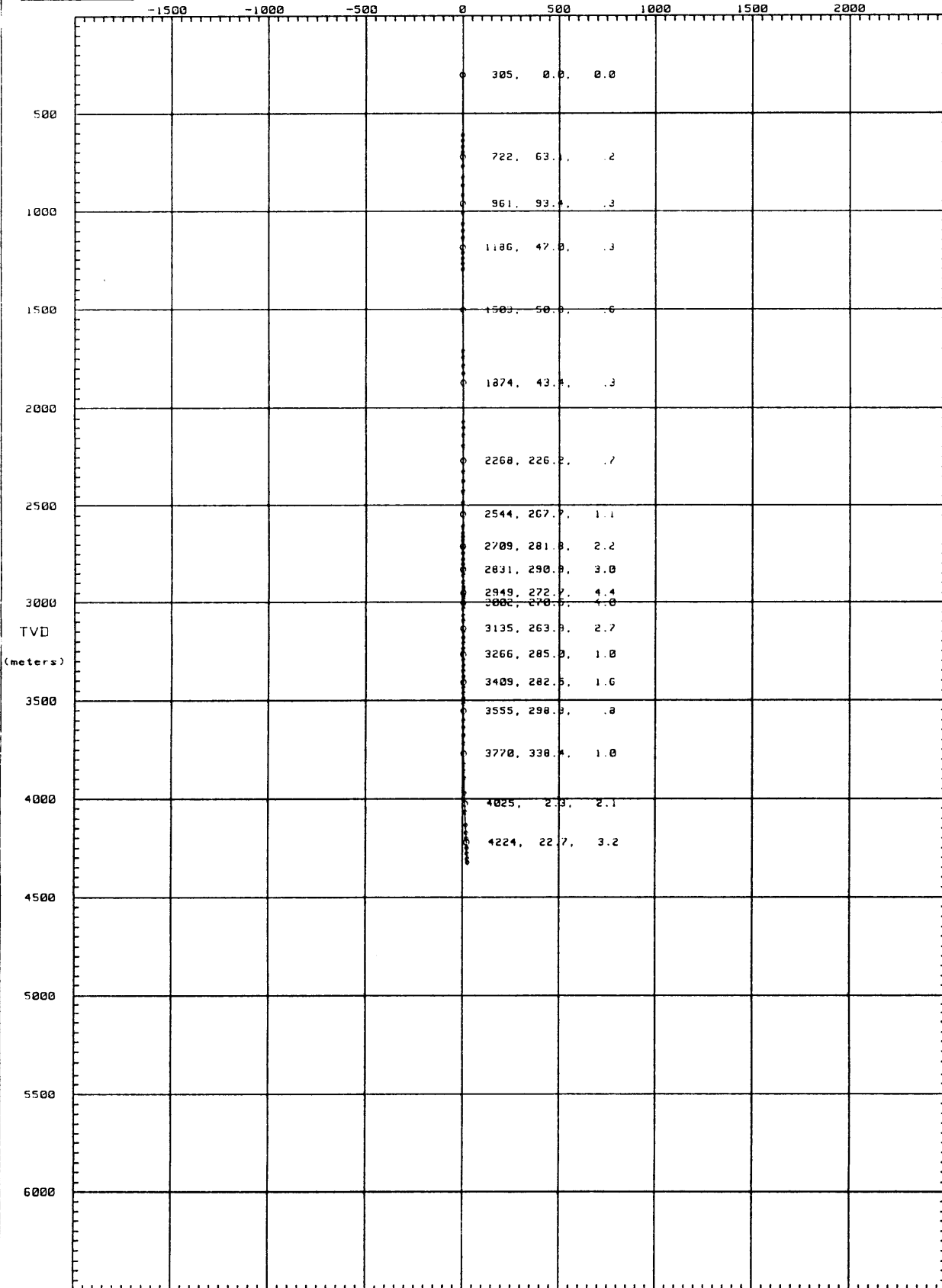
ANGLER #1				TELECO		Departure	DL o/100m	No
Depth	Drift	Bearing##	Vrtcl Depth	Coordinates N / W	S / E			
2927.8	4.60	274.1 ##	2927.4	4.0 N	14.4 W	14.94	7.59	50
2949.1	4.40	272.7 ##	2948.6	4.1 N	16.1 W	16.58	1.07	51
2958.3	4.20	272.7 ##	2957.8	4.1 N	16.8 W	17.26	2.17	52
2976.4	4.30	275.1 ##	2975.8	4.2 N	18.1 W	18.58	1.12	53
2984.4	4.30	274.4 ##	2983.8	4.3 N	18.7 W	19.17	0.70	54
3002.0	4.00	270.5 ##	3001.3	4.3 N	20.0 W	20.43	2.34	55
3011.4	3.90	272.3 ##	3010.7	4.3 N	20.6 W	21.06	1.68	56
3030.6	3.50	270.9 ##	3029.9	4.4 N	21.9 W	22.28	2.14	57
3067.1	3.30	271.6 ##	3066.3	4.4 N	24.0 W	24.42	0.56	58
3095.8	2.60	271.2 ##	3095.0	4.4 N	25.5 W	25.88	2.44	59
3134.0	2.70	263.9 ##	3133.1	4.4 N	27.3 W	27.60	0.92	60
3152.6	1.80	261.8 ##	3151.7	4.3 N	28.0 W	28.31	4.86	61
3183.1	1.00	269.1 ##	3182.2	4.2 N	28.7 W	29.03	2.68	62
3209.6	1.50	267.7 ##	3208.7	4.2 N	29.3 W	29.60	1.89	63
3238.2	1.10	278.3 ##	3237.3	4.2 N	29.9 W	30.25	1.62	64
3266.5	1.00	285.0 ##	3265.6	4.3 N	30.5 W	30.77	0.55	65
3295.3	0.90	282.5 ##	3294.4	4.5 N	30.9 W	31.24	0.37	66
3323.7	1.20	284.3 ##	3322.8	4.6 N	31.4 W	31.76	1.06	67
3350.9	1.40	280.0 ##	3350.0	4.7 N	32.0 W	32.38	0.82	68
3380.4	1.40	287.8 ##	3379.5	4.9 N	32.7 W	33.09	0.65	69
3409.1	1.60	282.5 ##	3408.2	5.1 N	33.5 W	33.84	0.85	70
3435.6	1.70	276.2 ##	3434.6	5.2 N	34.2 W	34.60	0.78	71
3464.4	1.30	273.0 ##	3463.4	5.3 N	35.0 W	35.35	1.42	72
3491.8	1.10	274.4 ##	3490.8	5.3 N	35.5 W	35.93	0.73	73
3515.5	0.90	285.7 ##	3514.5	5.4 N	35.9 W	36.34	1.18	74
3554.8	0.80	298.3 ##	3553.8	5.6 N	36.5 W	36.91	0.54	75
3600.7	1.10	311.3 ##	3599.7	6.0 N	37.1 W	37.59	0.80	76
3638.9	0.70	334.2 ##	3637.9	6.5 N	37.5 W	38.03	1.39	77
3677.9	0.80	318.4 ##	3676.9	6.9 N	37.8 W	38.38	0.59	78
3720.4	0.80	323.3 ##	3719.4	7.4 N	38.1 W	38.84	0.17	79
3770.5	1.00	338.4 ##	3769.5	8.1 N	38.5 W	39.35	0.62	80
3826.0	1.50	334.9 ##	3825.0	9.2 N	39.0 W	40.06	0.91	81
3860.6	1.60	329.3 ##	3859.6	10.0 N	39.4 W	40.68	0.52	82
3897.5	1.70	339.1 ##	3896.5	11.0 N	39.9 W	41.37	0.81	83
3974.7	1.90	358.8 ##	3973.6	13.4 N	40.4 W	42.51	0.84	84
4024.9	2.10	2.3 ##	4023.8	15.1 N	40.3 W	43.07	0.47	85
4069.0	2.10	3.7 ##	4067.9	16.7 N	40.3 W	43.59	0.10	86
4135.6	2.80	17.8 ##	4134.4	19.5 N	39.7 W	44.26	1.38	87
4178.7	3.30	23.7 ##	4177.4	21.7 N	38.9 W	44.53	1.37	88
4204.3	3.40	27.3 ##	4203.0	23.0 N	38.3 W	44.65	0.91	89
4223.6	3.20	22.7 ##	4222.3	24.0 N	37.8 W	44.78	1.71	90
4252.0	3.10	29.7 ##	4250.6	25.4 N	37.1 W	44.98	1.40	91
4281.3	3.10	25.9 ##	4279.9	26.8 N	36.4 W	45.19	0.70	92
4308.1	2.80	27.3 ##	4306.6	28.1 N	35.8 W	45.44	1.16	93
4330.0	2.80	27.3 ##	4328.5	29.0 N	35.3 W	45.65	0.00	94



VERTICAL SECTION

Horizontal Distance (meters)

Date: 13 May 1989



Company: PETROFINA EXPLORATION AUST

Slot North: 0(meters)

Well: ANGLER # 1

Slot East: 0(meters)

Scale: 1 Square = 500(meters)

Proposal Origin North: 0(meters)

Proposal Azimuth: (Degrees)

Proposal Origin East: 0(meters)

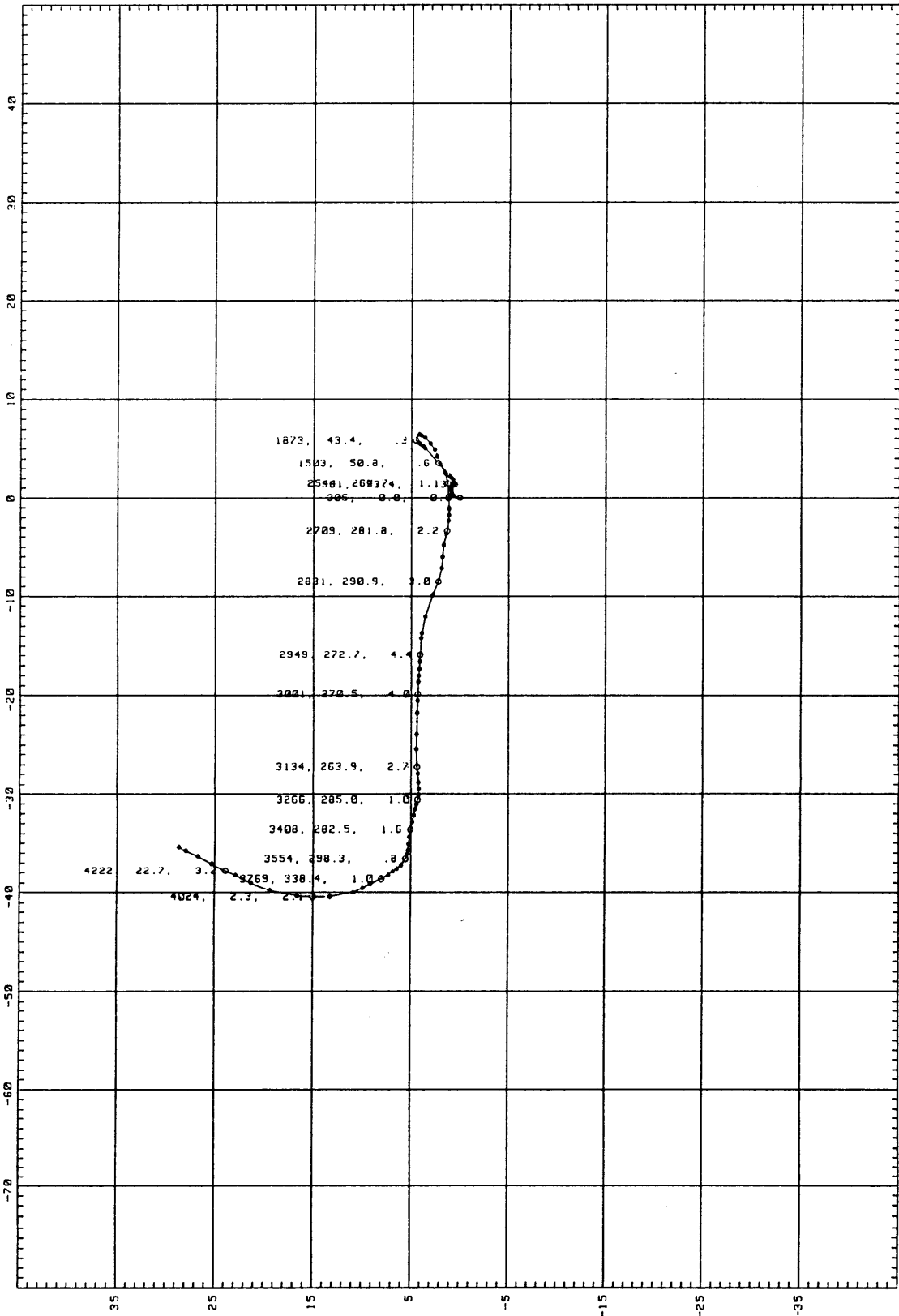
Labeled Surveys: M.Depth Azimuth Inclination

V.S. Calc. Method: Overall

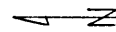
Date: 13 May 1989

East (meters)

PLAN VIEW



North (meters)

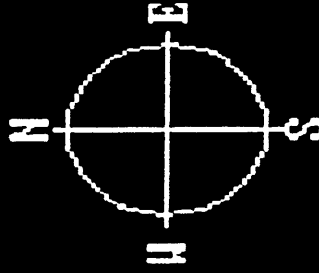


Company: PETROFINA EXPLORATION AUST.
 Well: ANGLER # 1
 Scale: 1 Square = 10(meters)
 Labeled Surveys: TVD Azimuth Inclination
 Slot North: Ø(meters)
 Slot East: Ø(meters)
 Proposal Origin North: Ø(meters)
 Proposal Origin East: Ø(meters)
 Proposal Azimuth: (Degrees)

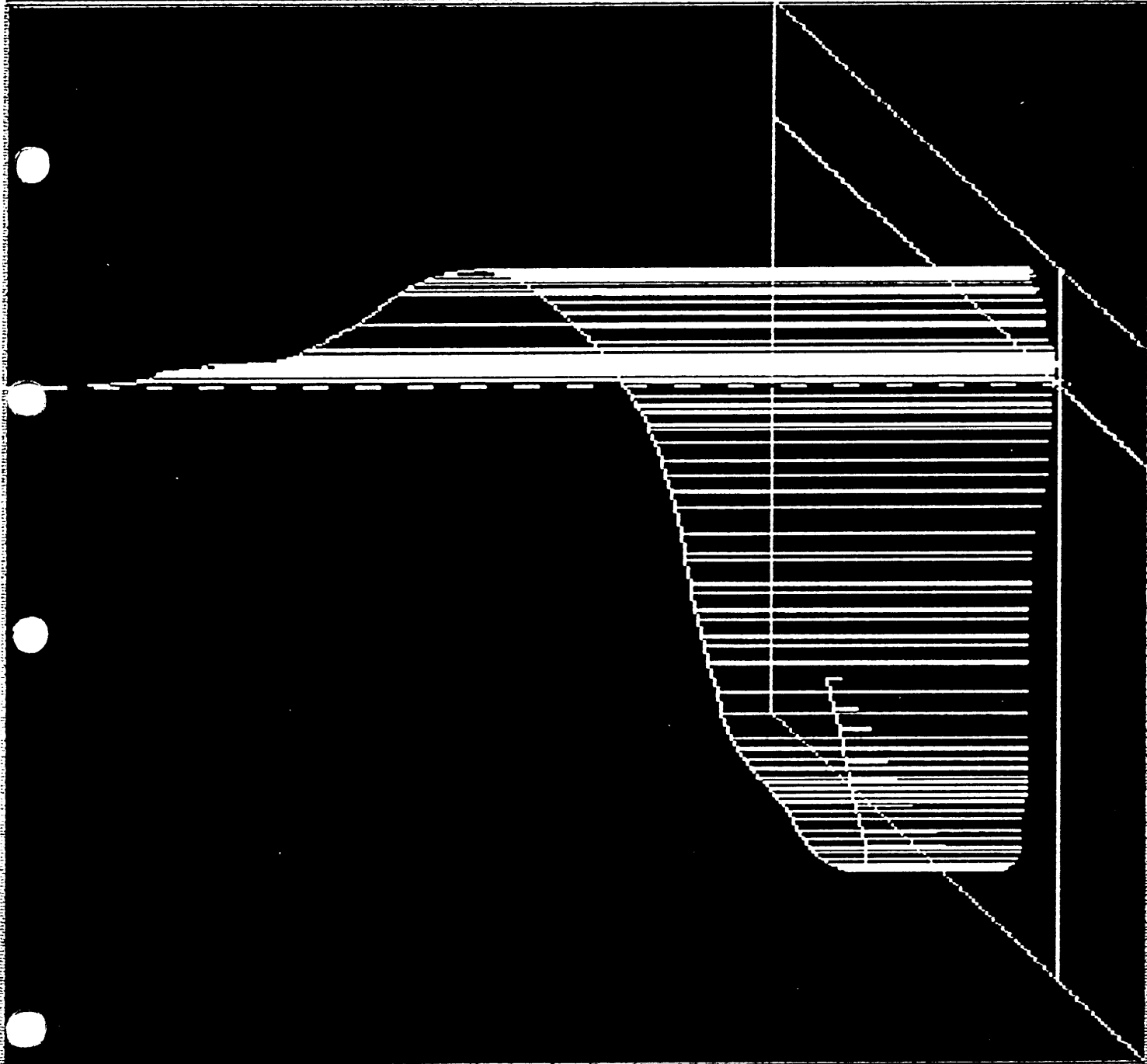
ANGLER #1
TELECO

3-DIMENSIONAL

West 35.2
North 29.8
Depth 4328.5



Geoservices





Baroid Australia Pty. Ltd./NL INDUSTRIES INC.

DRILLING FLUID PROPERTY RECAP

903236 125

COMPANY PETROFINA EXPLORATION AUSTRALIA SA

WELL

ANGLER #1

DATE	DEPTH	HOLE	TEMP	WEIGHT	VIS	PV	VP	GELS	WATER	CAKE	PH	FI	MI	CI	Ca	mg/l	CL	mg/l	SAND	SOLIDS	WATER	OIL	MBC	PPB	REMARKS	TREATMENT	FORMATION	
1989	m	SIZE	°C	S.G.	SEC			10	LOSS	mm									%	%	%	%						
19.3																									ARRIVE O/B ZAPATA ARCTIC ON TOW			
20.3																									RIG ON LOCATION, SETTING ANCHORS			
21.3																									"	"	"	
22.3																									"	"	"	
23.3																									"	"	"	
24.3	363	36"		1.03	100+																				SPUD WELL			
25.3	407	8 1/2"		1.03	75+																				8 1/2" PILOT FOR 26" INTERVAL			
26.3	580	26"		1.04	120+																				OPEN HOLE TO 26"			
27.3	613	26"		1.04	79																				1.20 SG IN HOLE FOR CSG RUN			
28.3	613	20"	CSG	1.04	79																				REPAIR BOP			
29.3	613	20"	CSG	1.04	79																				REPAIR BOP			
30.3	613	20"	CSG	1.04	79																				REPAIR BOP. RUN RISER			
31.3	613	20"	CSG	1.04	79																				RUN RISER. TEST BOP			
1.4	792	17 1/2"	18	1.07	28	1	4	1	1	N/C	9.5	.15	.2	21000	1960	-	2	97	0	5.0					DRILL 20" SHOE. LOT. DRLG 17 1/2" CALCARENITE			
2.4	1165	17 1/2"	23	1.17	31	6	7	8	8	62	4	9.0	.1	.2	18500	1080	TR	8	91	0	15.0				CONTROL VIS W/SW & GEL CALCARENITE			
3.4	1165	17 1/2"	-	1.17	32	7	9	8	10	N/C	4	9.0	.1	.2	18500	1080	TR	8	91	0	15.0				RAN LOGS. WIPER TRIP			
4.4	1165	"	-	1.17	40	7	30	18	20	80	5	10.5	.25	.33	16000	880	.2	8	91	0	15.0				SET 1 1/2" CSG. MUD AFFECTED BY CEMENT			
5.4	1170	12 1/2"	20	1.17	37	7	24	10	16	90	6	12.3	1.0	1.23	16500	840	TR	7	92	0	16.0				DRILL CMT & SHOE. PULL RISER AND BOP			
6.4	1170	"	-	1.17	37	7	24	10	16	90	6	12.3	1.0	1.23	16500	840	TR	7	92	0	16.0				REPAIR BOP, RERUN			
7.4	1170	"	-	1.17	37	7	24	10	16	90	6	12.3	1.0	1.23	16500	840	TR	7	92	0	16.0				BOP - NO TEST. PULL BOP			
8.4	1170	"	-	1.17	39	7	25	14	16	100	6	12.2	.79	.94	16500	780	TR	7	92	0	16.0				REPAIR BOP. SURFACE TEST. RERUN BOP			
9.4	1170	"	-	1.17	39	7	25	14	16	100	6	12.2	.79	.94	16500	780	TR	7	92	0	16.0				TEST BOP. MAKE UP BHA			
10.4	1341	"	-	1.02	28										21500	2520									MAKE UP BHA. DRILL MARL			
11.4	1352	"	-	1.02	28										21500	2520										DRILL. MUD MOTOR TWISTED OFF. RECOVERED MUD MOTOR. LOST 2ND FISH IN HOLE		
12.4	1380	"	17.9	1.04	29	1	2	1	1	N/C	9.1	.06	.11	21000	1320	TR	.75	98	0	2.0						RECOVER FISH. DRILL		



Baroid Australia Pty. Ltd./NL INDUSTRIES INC.

DRILLING FLUID PROPERTY RECAP

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COMPANY PETROFINA EXPLORATION AUSTRALIA SA

WELL ANGLER #1

DATE 1989	DEPTH m	MOLE SIZE	TEMP °C	WEIGHT S.G.	VIS SEC	FV	YP	GELS 10 16 DEC	WATER LOSS mm	CAKE mm	BH	PI	MI	CI mg/l	CA mg/l	SAND	SOLIDS	WATER	OIL	MBC PPB	REMARKS TREATMENT FORMATION
13.4	1641	12½"	18.7	1.08	30	1	4	0	1	N/C	9.6	.1	.18	20000	1520	TR	1.75	97	0	5.0	DRILL
14.4	1740	"	-	1.09	29	2	3	0	1	N/C	9.0	.04	.09	20000	1640	TR	1.75	97	0	6.0	DRILL TO 1740 M. TRIP
15.4	1756	"	20.4	1.11	29	2	3	0	1	N/C	9.3	.06	.12	20000	1360	TR	3.2	96	0	6.0	TRIP. DRILL
16.4	1889	"	20.2	1.11	29	2	3	0	1	N/C	9.3	.07	.16	20000	1160	TR	4.2	95	0	6.0	DRILL
17.4	1956	"	21.6	1.12	29	2	3	0	1	N/C	9.4	.06	.13	19500	1080	TR	4.2	97	0	6.0	DRILL TO 1984 M. DISPLACE TO SW/GEL/POLYMER
18.4	1993	"	-	1.08	38	10	8	1	1	5.4	10.0	.07	.16	17000	560	TR	3.3	96	0	9.0	TRIP. TEST BOP
19.4	2062	"	28.4	1.09	40	10	8	1	2	5.6	9.6	.07	.19	16500	600	TR	3.3	96	0	10.0	DRILL TO 2097 M. TRIP
20.4	2534	"	29.1	1.15	46	15	15	2	10	6.0	9.5	.10	.28	15500	580	.25	6.4	93	0	15.0	DRILL
21.4	2918	"	35.3	1.15	50	13	16	6	31	7.0	9.3	.07	.24	16500	520	.1	7.4	92	0	21.0	DRILL TO 2918. M. POOH
22.4	2918	"	28.1	1.20	51	15	15	7	27	8.3	9.3	.06	.65	16500	520	.25	9.4	90	0	22.0	ATTEMPT LOGS. WIPER TRIP, RAISE WT. POOH
23.4	2918	"	-	1.20	51	15	15	7	27	8.3	9.3	.06	.65	16500	520	.25	9.4	90	0	22.0	LOG. RUN 9 5/8" CSG.
24.4	2918	"	25	1.20	49	16	13	9	24	9.4	7.4	.02	1.0	17000	240	.50	9.4	90	0	22.5	CMT 9 5/8"
25.4	2918	"	24	1.20	41	14	10	11	27	8.6	7.8	.02	1.0	17000	240	.50	9.4	90	0	22.5	BOP TEST. MIX NEW MUD
26.4	2985	8½"	23	1.11	36	8	8	1	5	6.4	10.0	.1	.8	18000	520	.50	4.3	95	0	14.0	DRILL CMT. RUN FIT. DRILL AHEAD. TRIP
27.4	3118	"	24	1.12	43	13	15	3	5	4.8	9.7	.06	.9	18500	140	.60	6.3	93	0	10.0	DRILL AHEAD. SST/CLST
28.4	3355	"	29	1.12	43	14	13	3	5	4.9	10.3	.12	.9	18500	60	.25	5.3	94	0	10.0	DRILL AHEAD. SST
29.4	3508	"	30	1.12	45	17	15	3	8	4.8	10.9	.23	.9	19000	280	TR	5.2	94	0	10.0	DRILL AHEAD. SST/CLYST
30.4	3590	"	30	1.12	44	15	15	3	4	5.0	10.0	.1	.8	19000	360	TR	5.2	94	0	10.0	POOH. RIH. DRILL AHEAD. SST/CLYST
1.5	3756	"	30	1.12	45	16	15	3	6	5.0	10.3	.15	.7	19000	280	TR	4.2	95	0	8.5	DRILL AHEAD. SST/CLYST
2.5	3832	"	31	1.13	46	17	17	3	9	5.1	10.6	.17	.8	19000	240	TR	5.2	94	0	9.0	DRILL TO 3832'. POOH FOR CORE BBL. SST
3.5	3832	"	20	1.12	44	15	12	3	5	5.4	10.5	.19	.9	19000	240	TR	5.2	94	0	8.5	BOP TEST
4.5	3832	"	31	1.13	46	15	16	3	10	5.6	11.0	.29	.9	19000	160	TR	5.2	94	-	8.0	REAMING. RAISE YP W/PAC-R. SST/SH
5.5	3832	"	26	1.13	47	18	17	4	10	5.4	10.6	.19	.9	19000	160	TR	5.2	94	-	8.0	REAMING. SST/SH
6.5	3833	"	28	1.13	46	16	15	3	9	4.8	10.7	.29	.7	19000	360	TR	5.2	94	-	8.5	REAMING. ADD LIME. SST/SH



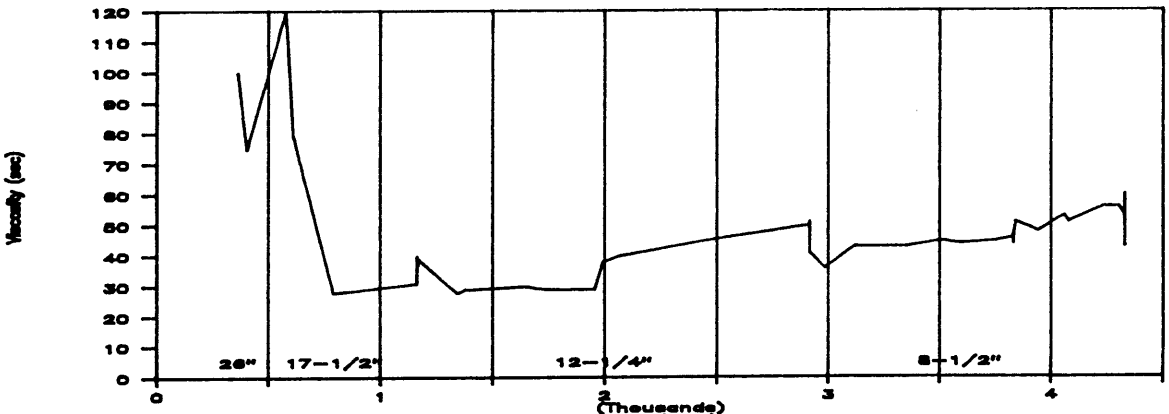
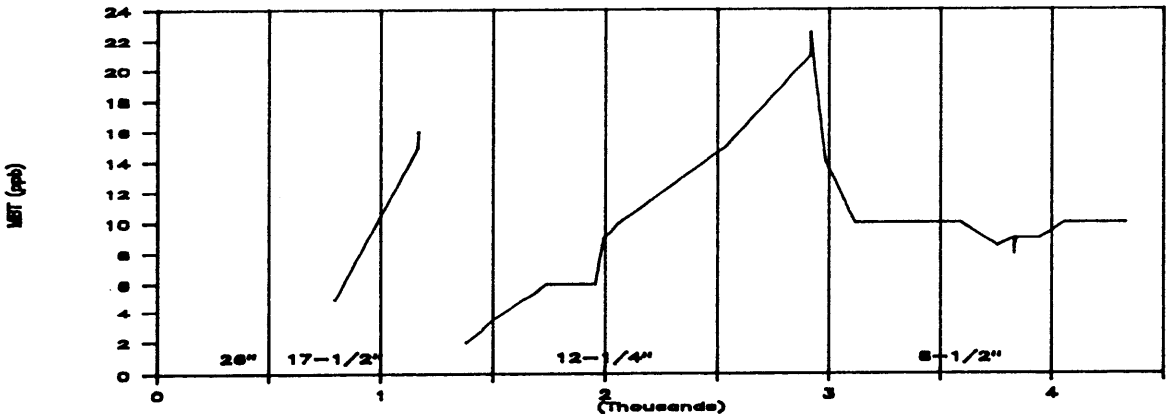
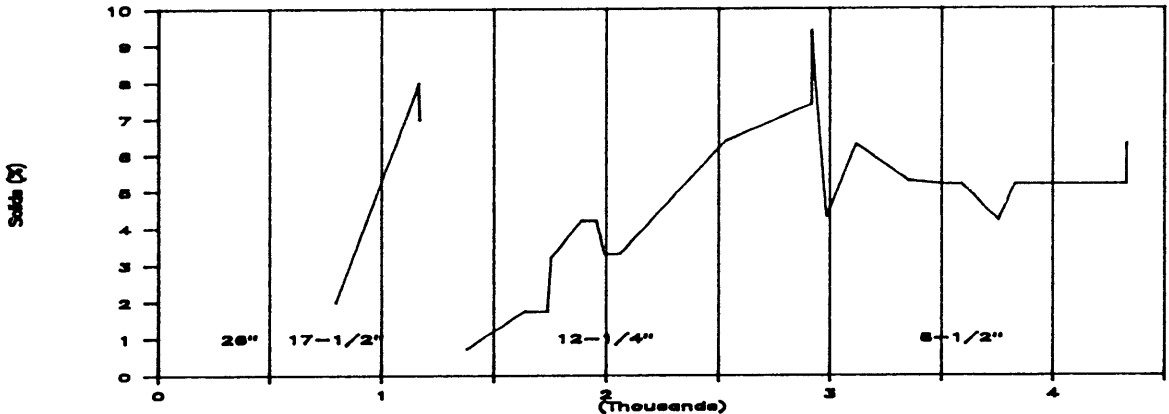
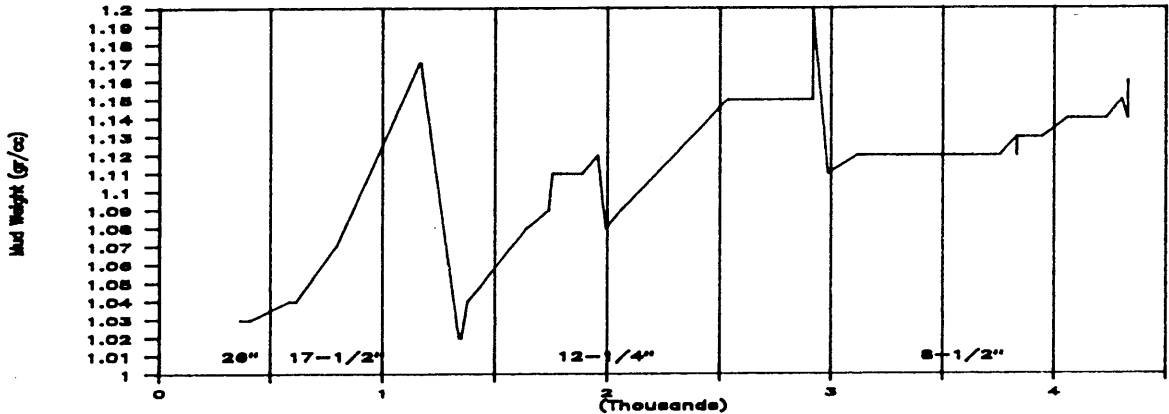
Baroid Australia Pty. Ltd./NL INDUSTRIES INC.

DRILLING FLUID PROPERTY RECAP

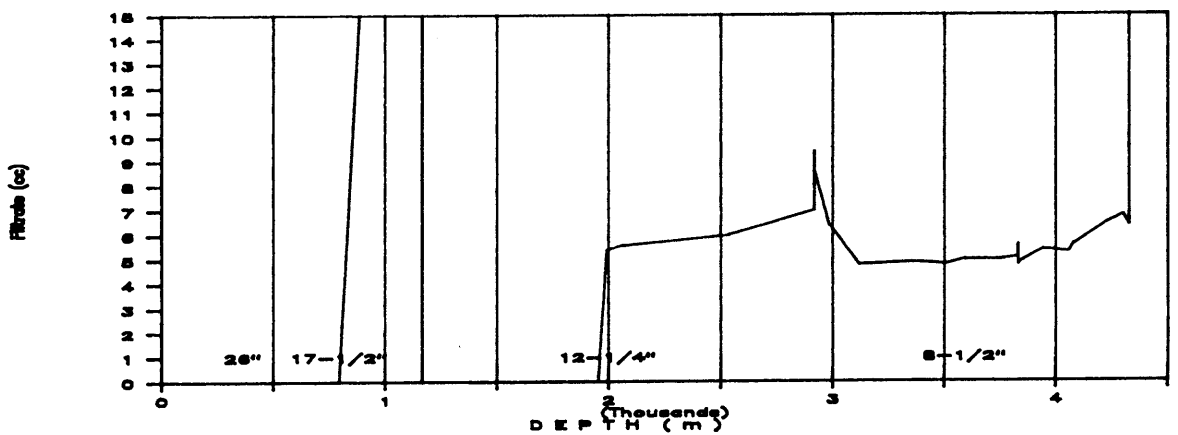
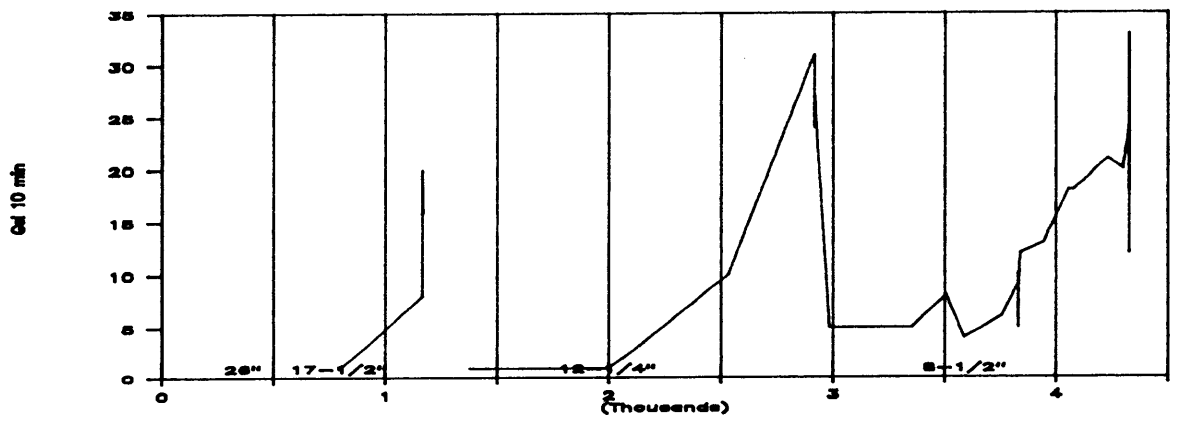
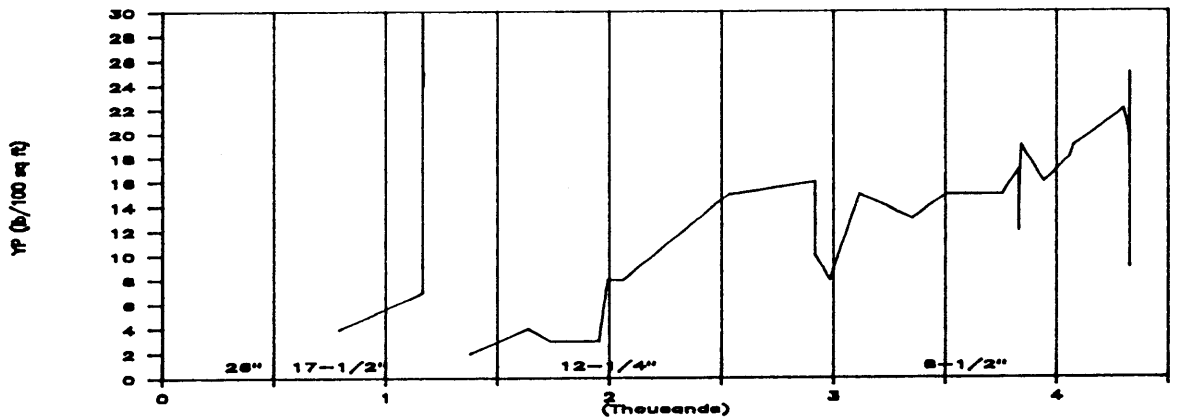
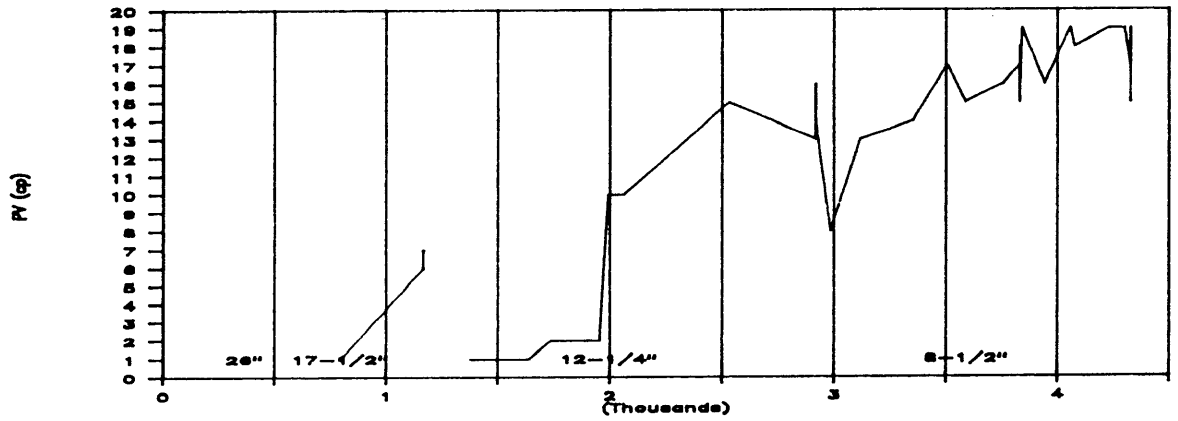
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COMPANY		PETROFINA EXPLORATION AUSTRALIA SA										WELL		ANGLER #1									
DATE	DEPTH m	MOLE SIZE	TEMP °C	WEIGHT S.G.	VIS SEC	PV	VP	GELS 10 SEC	WATER LOSS API	CAKE mm	pH	FI	MI	CI mg/l	CU mg/l	SAND	SOLIDS	WATER	OIL	MSG PPB	REMARKS	TREATMENT	FORMATION
7.5	3842	8 1/2"	23	1.13	51	19	19	3	12	4.9	11.0	.45	1.05	19000	480	TR	5.2	94	-	9.0	CORING. ADD LIME.	SST/SH	
8.5	3944	"	31	1.13	48	16	16	4	13	5.4	9.9	.25	.83	19000	480	TR	5.2	94	-	9.0	DRLG. ADD PREMIX.	SST/SH	
9.5	4058	"	33	1.14	53	19	18	6	18	5.3	9.5	.18	.42	19000	420	TR	5.2	94	-	10.0	DRILLING. SILTST		
10.5	4079	"	-	1.14	51	18	19	5	18	5.6	9.4	.18	.4	19000	420	TR	5.2	94	-	10.0	TRIP. BOP TEST.	SILTST	
11.5	4234	"	39	1.14+	56	19	21	7	21	6.5	10.1	.26	.38	19000	440	TR	5.2	94	-	10.0	DRILL. POOH.	SILTST/SST	
12.5	4302	"	38	1.15	56	19	22	6	20	6.8	9.6	.17	.32	19000	440	TR	5.2	94	-	10.0	RIH. DRILL.	SILTST/SST	
13.5	4330	"	36	1.14	53	17	20	7	24	6.4	9.9	.18	.35	19000	380	TR	5.2	94	-	10.0	DRILL TO TD. WIPER TRIP.	POOH	SILTST/SST
14.5	4330	"	-	1.14	53	17	20	7	24	6.4	9.9	.18	.35	19000	380	TR	5.2	94	-	10.0	LOGGING		
15.5	4330	"	-	1.14	53	17	20	7	24	6.4	9.9	.18	.35	19000	380	TR	5.2	94	-	10.0	LOGGING		
16.5	4330	"	-	1.15	51	18	19	4	18	9.5	6.5	.0	.5	19000	1000	TR	5.2	94	-	10.0	WIPER TRIP, CIRC & COND		
																					CONTINUED LOGGING		
17.5	4330	"	-	1.15	60	19	25	15	33	14.2	11.0	.12	.37	19000	320	TR	5.2	94	-	10.0	LOGGING		
18.5	4330	"	-	1.15	43	15	9	2	12	30	12.2	.46	.64	17500	1240	TR	6.3	93	-	10.0	LOGGING. SET CEMENT PLUGS		
19.5	4330	"	-	1.16	43	15	9	2	12	30	12.2	.46	.64	17500	1240	TR	6.3	93	-	10.0	SET CEMENT PLUGS. TREAT MUD W/- BIOCID		

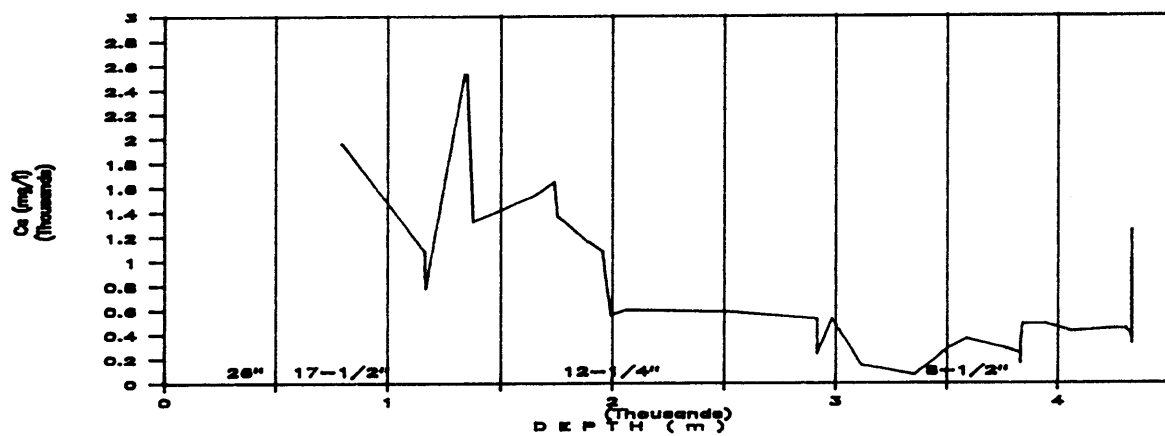
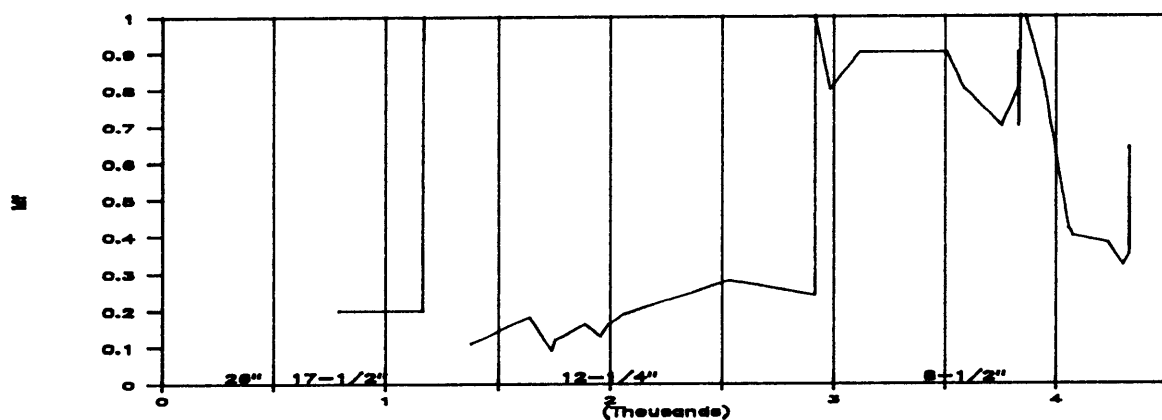
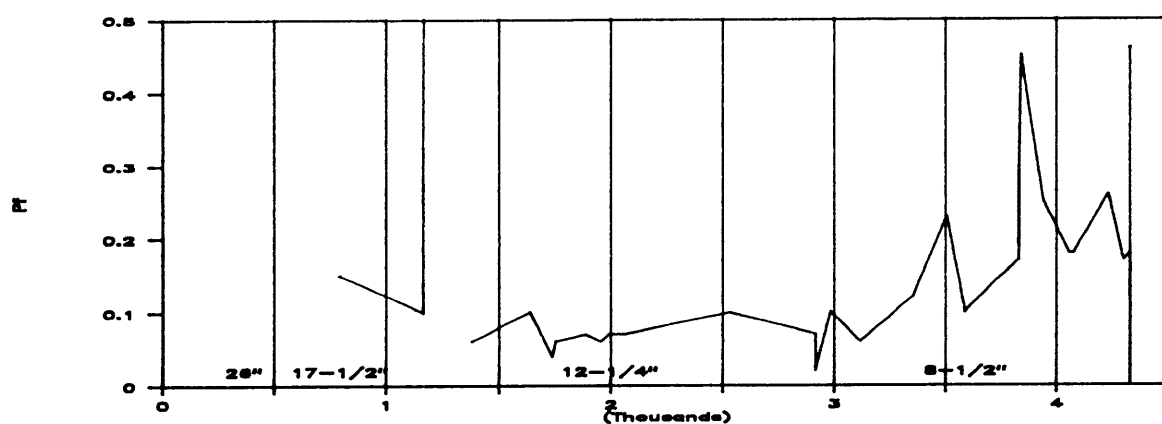
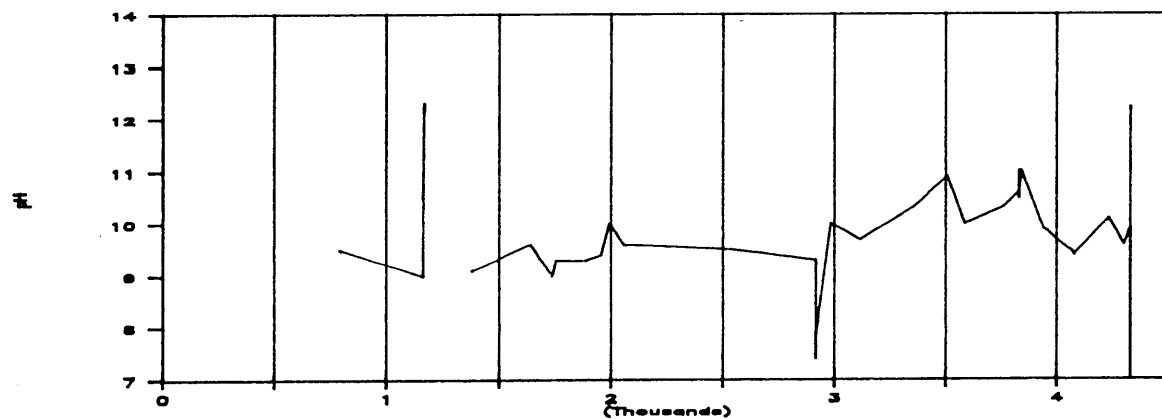
ANGLER - 1



ANGLER - 1



ANGLER - 1



MATERIAL RECAP

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MATERIAL	UNIT	36"		26"		17-1/2"		12-1/4"		8-1/2"		TOTAL
		USED	PPB	USED	PPB	USED	PPB	USED	PPB	USED	PPB	
AQUAGEL	Tonne	11	26.80	8	11.30	19	16.07	4.3	2.81	1.2	0.68	43.5
BARITE	Tonne			54	165.4	3	2.54	64.3	42.01	35.2	20.04	156.5
CAUSTIC SODA	25 kg	14	0.85	21	0.53	28	0.59	114	0.76	173	2.46	350
LIME	25 kg	16	0.98	36	0.91	17	0.36			39	0.55	108
DEXTRID	50 lb							151	2.24	369	4.76	520
PAC-R	50 lb							70	1.04	100	1.29	170
Q-BROXIN	50 lb							36	0.53	3	0.04	39
SODA ASH	25 kg							18	0.29	14	0.20	32
SODIUM BICARB	25 kg							15	0.25	8	0.11	23
XCD POLYMER	25 kg							10	0.16	20	0.28	30
BARADEFOAM	208 L					1						1
BARAFILM 415	208 L							1		4		5
BARASCAV 777	208 L							2		3		5
CONDET	208 L							1		1		2
BARACIDE	30 kg									2	0.03	2
TORQ TRIM	208 L									3		3
	A\$	\$4,204		\$16,915		\$8,713		\$37,248		\$47,857		\$114,936
COST/METER	A\$	\$70.07		\$67.66		\$15.78		\$21.25		\$33.89		\$28.54
COST/DAY	A\$	\$4,204		\$5,638		\$4,356		\$3,386		\$2,659		\$3,284
METER	M	60		250		552		1753		1412		4027
DRILLING DAY		1		3		2		11		18		35

30"



PETROFINA EXPLORATION AUSTRALIA S.A.

CASING AND CEMENTING REPORT



WELL Angler-1 FIELD Exploration CASING SIZE 30" SET AT 358 m
 DRILLERS TD 363 m LAST CASING SIZE _____ SET AT _____ m

JOINTS RECEIVED <u>10</u> OF <u>30"</u> WEIGHT <u>1.0</u> W.T. GRADE <u>B</u> LENGTH _____ m
AMOUNT USED <u>4</u> JTS LENGTH <u>47.27</u> m No. JTS FAIL RABBIT _____ No. JTS DAMAGED _____ (including Shoe & Float Jts but not Hanger Pup) TOTAL REJECTED _____ TOTAL BACKLOADED <u>6</u>
JOINTS RECEIVED _____ OF _____ WEIGHT _____ LB/FT GRADE _____ LENGTH _____ m
AMOUNT USED _____ JTS LENGTH _____ m No. JTS FAIL RABBIT _____ No. JTS DAMAGED _____ TOTAL REJECTED _____ TOTAL BACKLOADED _____

CASING DATA

No. OF PIECES	SIZE-WT-GRADE-TYPE THREAD	MAKE UP LENGTH	SETTING DEPTH
1	30" - 1.0" W.T. - B - ST2 (Shoe)	12.01	358.0
3	30" - 1.0" W.T. - B - ST2	35.26	346.0
1	30" - 1.5" W.T. - B - ST2	10.44	310.7
	(LP Housing with Extension)		
	TOP OF <u>30"</u> Housing TO RKB		300.3

CEMENTING DATA

SLURRY	CALCULATED TOP	CEMENT (SACKS & CLASS)	ADDITIVES (GAL/BBL)					MIX WEIGHT S.G.	YIELD FT ³ /SK
			CaCl ₂						
1	SURF	1260 G	1%	(BWOC)			1.90		

No. OF PLUGS USED _____ OPEN HOLE EXCESS _____ CIRC. VOL _____ BBL CIRC TIME _____ MINS
 MIXING CEMENT _____ MINS DISPLACE TIME _____ MINS DISPLACE VOL 19 BBLS RETURNS? Yes
 DISPLACE PUMP PRESS _____ PSI PLUG BUMP PRESS _____ PSI VOL LOST _____ BBLS FLOAT HOLD? Yes
 SPACERS _____
 CENTRALISERS USED: _____ SPACING _____

REMARKS: TOC found 4.5m down in Annulus. Perform top up job with 300 sxs of Class 'G' at 1.90 S.G. Displaced with 10 Bbls.

CEMENT COMPANY Halliburton DRILLING SUPERVISOR A. Paterson
 CEMENTER P. Unwin DRILLING ENGINEER B. de Vinck DATE 25.3.89
C. Jaspers

' CASING LIST ¶ Page no: 1 *

* Company : PETROFINA EXPL. AUSTRALIA

* Location : VIC P20 Shoe @: 358.7 mtr
 * Well : ANGLER - 1 Casing OD: 76.200 cm 30"
 * Rig : ZAPATA ARCTIC - RIG 36 Casing ID: 68.580 cm
 * Cas wght: 145.45 kg/mtr

 * Hook wght: 49.90 ton Mud wght: 1.05 kg/ltr

* No:	* Jnt.Lngth*	* Cas.Lngth*	* Dpth fr.RT*	* Hook Load*	* Displ.Vol.*	* Designation
*	* mtr	* mtr	* mtr	* ton	* mtr3	*
*	* 0.00 *	* 0.00 *	* 358.71 *	* 49.90 *	* 0.00 *	*SHOE DEPTH
* 1 *	* 12.01 *	* 12.01 *	* 346.70 *	* 50.55 *	* 1.04 *	*1-SHOE JOINT
* 2 *	* 11.75 *	* 23.76 *	* 334.95 *	* 51.19 *	* 2.06 *	*1
* 3 *	* 11.76 *	* 35.52 *	* 323.19 *	* 51.83 *	* 3.08 *	*2
* 4 *	* 11.75 *	* 47.27 *	* 311.44 *	* 52.47 *	* 4.10 *	*3
* *	* 10.44 *	* 57.71 *	* 301.00 *	* 52.77 *	* 4.13 *	*HOUSING JOINT

20"

 * CASING LIST ¶ Page no: 1 *
 * *****

* Company : PETROFINA EXPL. AUSTRALIA
 * Location : VIC P20 Shoe @: 603.9 mtr
 * Well : ANGLER - 1 Casing OD: 50.800 cm 20"
 * Rig : ZAPATA ARCTIC RIG 36 Casing ID: 47.720 cm
 * Cas wght: 139.90 kg/mtr

 * Hook wght: 49.90 ton Mud wght: 1.05 kg/ltr
 * *****

* No:	* Jnt.Lngth*	* Cas.Lngth*	* Dpth fr.RT*	* Hook Load*	* Displ.Vol.*	* Designation
*	* mtr	* mtr	* mtr	* ton	* mtr3	*
*	0.00	0.00	603.88	49.90	0.00	*SHOE DEPTH
* 1	12.91	12.91	590.97	51.38	0.31	* 1-SHOE JOINT
* 2	11.87	24.78	579.10	52.74	0.59	* 23
* 3	11.88	36.66	567.22	54.11	0.87	* 22
* 4	11.88	48.54	555.34	55.47	1.16	* 21
* 5	11.87	60.41	543.47	56.83	1.44	* 20
* 6	11.87	72.28	531.60	58.20	1.72	* 19
* 7	11.88	84.16	519.72	59.56	2.01	* 18
* 8	11.88	96.04	507.84	60.93	2.29	* 17
* 9	11.86	107.90	495.98	62.29	2.57	* 16
* 10	11.86	119.76	484.12	63.65	2.86	* 15
* 11	11.87	131.63	472.25	65.01	3.14	* 14
* 12	11.87	143.50	460.38	66.38	3.42	* 13
* 13	11.87	155.37	448.51	67.74	3.70	* 12
* 14	11.88	167.25	436.63	69.11	3.99	* 11
* 15	11.88	179.13	424.75	70.47	4.27	* 10
* 16	11.86	190.99	412.89	71.83	4.55	* 9
* 17	11.88	202.87	401.01	73.20	4.84	* 8
* 18	11.87	214.74	389.14	74.56	5.12	* 7
* 19	11.88	226.62	377.26	75.93	5.40	* 6
* 20	11.88	238.50	365.38	77.29	5.69	* 5
* 21	11.86	250.36	353.52	78.65	5.97	* 4
* 22	11.87	262.23	341.65	80.02	6.25	* 3
* 23	11.88	274.11	329.77	81.38	6.54	* 2
* 24	11.88	285.99	317.89	82.75	6.82	* 1
* 25	11.71	297.70	306.18	84.09	7.10	* 1-X/O JOINT
* *	5.68	303.38	300.50	84.25	7.12	*HOUSING JOINT

13-3/8"



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PETROFINA EXPLORATION AUSTRALIA S.A.

CASING AND CEMENTING REPORT



WELL Angler-1 FIELD Exploration CASING SIZE 13-3/8" SET AT 1151.5 m
 DRILLERS TD 1165 m LAST CASING SIZE 20" SET AT 604 m

JOINTS RECEIVED <u>90</u> OF <u>13-3/8"</u> WEIGHT <u>68</u> LB/FT GRADE <u>N80</u> LENGTH <u>823.7</u> m
AMOUNT USED <u>71</u> JTS LENGTH <u>823.7</u> m No. JTS FAIL RABBIT _____ No. JTS DAMAGED _____ (including Shoe & Float Jts but not Hanger Pup) TOTAL REJECTED _____ TOTAL BACKLOADED <u>19</u>
JOINTS RECEIVED _____ OF _____ WEIGHT _____ LB/FT GRADE _____ LENGTH _____ m
AMOUNT USED _____ JTS LENGTH _____ m No. JTS FAIL RABBIT _____ No. JTS DAMAGED _____ TOTAL REJECTED _____ TOTAL BACKLOADED _____

CASING DATA

No. OF PIECES	SIZE-WT-GRADE-TYPE THREAD	MAKE UP LENGTH	SETTING DEPTH
1	13-3/8" - 68# N80 - BUTT (Shoe)	11.74	1151.5
1	13-3/8" - 68# N80 - BUTT (Float)	12.12	1139.73
71	13-3/8" - 68# N80 - BUTT	823.7	1116.03
1	13-3/8" - 68# Hanger Pup Joint	2.88	847.59
TOP OF <u>Casing Hanger</u> TO RKB			301

CEMENTING DATA

SLURRY	CALCULATED TOP	CEMENT (SACKS & CLASS)	ADDITIVES (GAL/BBL)					MIX WEIGHT S.G.	YIELD FT ³ /SK
			Econolite						
Lead	SURF	1170 G	0.43					12.5	2.16
Tail		500 G						15.8	1.15

No. OF PLUGS USED 2 OPEN HOLE EXCESS 60 CIRC. VOL _____ BBL CIRC TIME 30 MINS
 MIXING CEMENT 72 MINS DISPLACE TIME _____ MINS DISPLACE VOL 420 BBLS RETURNS? Full
 DISPLACE PUMP PRESS 800 PSI PLUG BUMP PRESS 2300 PSI VOL LOST _____ BBLS FLOAT HOLD? Yes
 SPACERS _____

CENTRALISERS USED: 10 SPACING 8 on first casing joints; 1 at 14m below 20" casing shoe;
1 at 9m inside 20" casing shoe joint

REMARKS: _____

CEMENT COMPANY Halliburton DRILLING SUPERVISOR A. Paterson
 CEMENTER P. Unrin DRILLING ENGINEER S. Marinoff DATE 4.4.89

 * CASING LIST # Page no: 1 *

* Company : PETROFINA EXPL.AUSTRALIA Shoe @: 1151.5 mtr
 * Location : VIC P20 Casing OD: 33.972 cm 13 3/8"
 * Well : ANGLER - 1 Casing ID: 31.534 cm
 * Rig : ZAPATA ARCTIC - RIG 36 Cas wght: 101.20 kg/mtr

 * Hook wght: 49.90 ton Mud wght: 1.14 kg/ltr

No:	Jnt.Lngth*	Cas.Lngth*	Dpth fr.RT*	Hook Load*	Displ.Vol.*	Designation
*	mtr	mtr	mtr	ton	mtr3	*
*	0.00	0.00	1151.47	49.90	0.00	*SHOE DEPTH
* 1	11.74	11.74	1139.73	50.92	0.15	*1-SHOE JOINT D
* 2	12.12	23.86	1127.61	51.97	0.30	*1-FLOAT JOINT B
* 3	11.58	35.44	1116.03	52.97	0.44	*90.
* 4	11.59	47.03	1104.44	53.98	0.59	*89
* 5	11.84	58.87	1092.60	55.01	0.74	*88
* 6	11.94	70.81	1080.66	56.05	0.89	*87
* 7	11.97	82.78	1068.69	57.09	1.04	*86
* 8	11.81	94.59	1056.88	58.11	1.19	*85
* 9	11.69	106.28	1045.19	59.13	1.33	*84
* 10	11.95	118.23	1033.24	60.17	1.48	*83
* 11	11.14	129.37	1022.10	61.14	1.62	*82
* 12	11.90	141.27	1010.20	62.17	1.77	*81
* 13	11.11	152.38	999.09	63.14	1.91	*80
* 14	11.98	164.36	987.11	64.18	2.06	*79
* 15	11.82	176.18	975.29	65.20	2.21	*78
* 16	11.94	188.12	963.35	66.24	2.36	*77
* 17	11.68	199.80	951.67	67.26	2.51	*76
* 18	11.83	211.63	939.84	68.28	2.66	*75
* 19	11.48	223.11	928.36	69.28	2.80	*74
* 20	11.97	235.08	916.39	70.32	2.95	*73
* 21	11.72	246.80	904.67	71.34	3.10	*72
* 22	11.36	258.16	893.31	72.33	3.24	*71
* 23	11.87	270.03	881.44	73.36	3.39	*70
* 24	11.22	281.25	870.22	74.33	3.53	*69
* 25	11.12	292.37	859.10	75.30	3.67	*68
* 26	11.93	304.30	847.17	76.34	3.82	*67
* 27	11.30	315.60	835.87	77.32	3.96	*66
* 28	11.69	327.29	824.18	78.34	4.11	*63
* 29	11.41	338.70	812.77	79.33	4.25	*62
* 30	11.14	349.84	801.63	80.29	4.39	*61
* 31	11.77	361.61	789.86	81.32	4.54	*60
* 32	11.63	373.24	778.23	82.33	4.68	*59
* 33	11.69	384.93	766.54	83.34	4.83	*58
* 34	11.28	396.21	755.26	84.32	4.97	*57
* 35	11.23	407.44	744.03	85.30	5.11	*56
* 36	11.58	419.02	732.45	86.31	5.26	*55
* 37	11.03	430.05	721.42	87.26	5.40	*54
* 38	11.82	441.87	709.60	88.29	5.55	*53
* 39	11.75	453.62	697.85	89.31	5.69	*52
* 40	11.96	465.58	685.89	90.35	5.84	*51
* 41	11.60	477.18	674.29	91.36	5.99	*50
* 42	11.54	488.72	662.75	92.36	6.13	*49
* 43	11.28	500.00	651.47	93.34	6.28	*48
* 44	10.79	510.79	640.68	94.28	6.41	*46
* 45	11.69	522.48	628.99	95.30	6.56	*45

 * CASING LIST ¶ Page no: 2 *

* Company : PETROFINA EXPL.AUSTRALIA Shoe @: 1151.5 mtr
 * Location : VIC P20 Casing OD: 33.972 cm
 * Well : ANGLER - 1 Casing ID: 31.534 cm
 * Rig : ZAPATA ARCTIC - RIG 36 Cas wght: 101.20 kg/mtr

 * Hook wght: 49.90 ton Mud wght: 1.14 kg/ltr

* No: *	* Jnt.Lngth* * mtr	* Cas.Lngth* * mtr	* Dpth fr.RT* * mtr	* Hook Load* * ton	* Displ.Vol.* * mtr3	* Designation
* 46 *	10.71	533.19	618.28	96.23	6.69	*43
* 47 *	11.68	544.87	606.60	97.24	6.84	*42
* 48 *	11.90	556.77	594.70	98.28	6.99	*41
* 49 *	11.83	568.60	582.87	99.30	7.14	*40
* 50 *	11.98	580.58	570.89	100.34	7.29	*39
* 51 *	11.48	592.06	559.41	101.34	7.43	*38
* 52 *	11.70	603.76	547.71	102.36	7.58	*36
* 53 *	11.66	615.42	536.05	103.37	7.72	*35
* 54 *	11.68	627.10	524.37	104.39	7.87	*34
* 55 *	11.72	638.82	512.65	105.41	8.02	*33
* 56 *	11.07	649.89	501.58	106.37	8.16	*32
* 57 *	11.71	661.60	489.87	107.39	8.30	*30
* 58 *	11.74	673.34	478.13	108.41	8.45	*29
* 59 *	11.89	685.23	466.24	109.44	8.60	*28
* 60 *	11.78	697.01	454.46	110.46	8.75	*27
* 61 *	11.72	708.73	442.74	111.48	8.90	*26
* 62 *	11.27	720.00	431.47	112.46	9.04	*25
* 63 *	11.97	731.97	419.50	113.50	9.19	*23
* 64 *	11.98	743.95	407.52	114.54	9.34	*22
* 65 *	11.70	755.65	395.82	115.56	9.48	*21
* 66 *	11.91	767.56	383.91	116.59	9.63	*20
* 67 *	11.38	778.94	372.53	117.58	9.78	*17
* 68 *	11.31	790.25	361.22	118.56	9.92	*14
* 69 *	11.55	801.80	349.67	119.57	10.06	*10
* 70 *	11.39	813.19	338.28	120.56	10.21	*9
* 71 *	11.19	824.38	327.09	121.53	10.35	*8
* 72 *	11.68	836.06	315.41	122.54	10.49	*6
* 73 *	11.53	847.59	303.88	123.55	10.64	*1
* * *	2.88	850.47	301.00	123.63	10.65	*CASING HANGER

9-5/8"

 * CASING LIST # Page no: 1 *

 * Company : PETROFINA EXPL. AUSTRALIA
 * Location : VIC P20 Shoe @: 2888.4 mtr
 * Well : ANGLER - 1 Casing OD: 24.447 cm 9 5/8"
 * Rig : ZAPATA ARCTIC - RIG 36 Casing ID: 22.650 cm
 * Cas wght: 69.95 kg/mtr

 * Hook wght: 49.90 ton Mud wght: 1.15 kg/ltr

 * No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.* Designation
 * * mtr * mtr * mtr * ton * mtr3 *

 * * 0.00 * 0.00 * 2888.41 * 49.90 * 0.00 *SHOE DEPTH
 * 1 * 11.81 * 11.81 * 2876.60 * 50.63 * 0.08 *1-SHOE JOINT C
 * 2 * 11.83 * 23.64 * 2864.77 * 51.37 * 0.16 *251
 * 3 * 12.15 * 35.79 * 2852.62 * 52.12 * 0.24 *1-FLOAT JOINT A
 * 4 * 11.97 * 47.76 * 2840.65 * 52.87 * 0.32 *250
 * 5 * 11.82 * 59.58 * 2828.83 * 53.61 * 0.40 *249
 * 6 * 11.87 * 71.45 * 2816.96 * 54.35 * 0.48 *248
 * 7 * 11.74 * 83.19 * 2805.22 * 55.08 * 0.55 *247
 * 8 * 11.70 * 94.89 * 2793.52 * 55.81 * 0.63 *246
 * 9 * 11.84 * 106.73 * 2781.68 * 56.54 * 0.71 *245
 * 10 * 11.85 * 118.58 * 2769.83 * 57.28 * 0.79 *244
 * 11 * 11.78 * 130.36 * 2758.05 * 58.02 * 0.87 *243
 * 12 * 11.75 * 142.11 * 2746.30 * 58.75 * 0.95 *242
 * 13 * 11.92 * 154.03 * 2734.38 * 59.49 * 1.02 *241
 * 14 * 11.82 * 165.85 * 2722.56 * 60.23 * 1.10 *240
 * 15 * 12.04 * 177.89 * 2710.52 * 60.98 * 1.18 *239
 * 16 * 11.90 * 189.79 * 2698.62 * 61.72 * 1.26 *238
 * 17 * 11.90 * 201.69 * 2686.72 * 62.46 * 1.34 *237
 * 18 * 11.87 * 213.56 * 2674.85 * 63.20 * 1.42 *236
 * 19 * 11.84 * 225.40 * 2663.01 * 63.94 * 1.50 *235
 * 20 * 12.09 * 237.49 * 2650.92 * 64.69 * 1.58 *234
 * 21 * 11.85 * 249.34 * 2639.07 * 65.43 * 1.66 *233
 * 22 * 12.09 * 261.43 * 2626.98 * 66.18 * 1.74 *232
 * 23 * 11.83 * 273.26 * 2615.15 * 66.92 * 1.82 *231
 * 24 * 11.91 * 285.17 * 2603.24 * 67.66 * 1.90 *230
 * 25 * 11.99 * 297.16 * 2591.25 * 68.41 * 1.98 *229
 * 26 * 11.72 * 308.88 * 2579.53 * 69.14 * 2.05 *228
 * 27 * 11.90 * 320.78 * 2567.63 * 69.88 * 2.13 *227
 * 28 * 11.85 * 332.63 * 2555.78 * 70.62 * 2.21 *226
 * 29 * 11.80 * 344.43 * 2543.98 * 71.35 * 2.29 *225
 * 30 * 11.91 * 356.34 * 2532.07 * 72.10 * 2.37 *224
 * 31 * 11.79 * 368.13 * 2520.28 * 72.83 * 2.45 *223
 * 32 * 11.82 * 379.95 * 2508.46 * 73.57 * 2.53 *222
 * 33 * 11.87 * 391.82 * 2496.59 * 74.31 * 2.61 *221
 * 34 * 11.84 * 403.66 * 2484.75 * 75.04 * 2.69 *220
 * 35 * 11.89 * 415.55 * 2472.86 * 75.78 * 2.76 *219
 * 36 * 11.73 * 427.28 * 2461.13 * 76.51 * 2.84 *218
 * 37 * 11.78 * 439.06 * 2449.35 * 77.25 * 2.92 *217
 * 38 * 11.87 * 450.93 * 2437.48 * 77.99 * 3.00 *216
 * 39 * 11.71 * 462.64 * 2425.77 * 78.72 * 3.08 *215
 * 40 * 11.82 * 474.46 * 2413.95 * 79.45 * 3.16 *214
 * 41 * 11.74 * 486.20 * 2402.21 * 80.19 * 3.23 *213
 * 42 * 11.77 * 497.97 * 2390.44 * 80.92 * 3.31 *212
 * 43 * 11.72 * 509.69 * 2378.72 * 81.65 * 3.39 *211
 * 44 * 11.79 * 521.48 * 2366.93 * 82.38 * 3.47 *210
 * 45 * 11.74 * 533.22 * 2355.19 * 83.11 * 3.55 *209

 * CASING LIST I Page no: 2 *

Company : PETROFINA EXPL. AUSTRALIA

Shoe @: 2888.4 mtr
 Location : VIC P20 Casing OD: 24.447 cm
 Well : ANGLER - 1 Casing ID: 22.650 cm
 Rig : ZAPATA ARCTIC - RIG 36 Cas wght: 69.95 kg/mtr

 * Hook wght: 49.90 ton Mud wght: 1.15 kg/ltr

* No:	* Jnt.Lngth*	* Cas.Lngth*	* Dpth fr.RT*	* Hook Load*	* Displ.Vol.*	* Designation
*	* mtr *	* mtr *	* mtr *	* ton *	* mtr3 *	*
* 46 *	11.76 *	544.98 *	2343.43 *	83.85 *	3.63 *	*208
* 47 *	11.70 *	556.68 *	2331.73 *	84.58 *	3.70 *	*207
* 48 *	11.81 *	568.49 *	2319.92 *	85.31 *	3.78 *	*206
* 49 *	11.76 *	580.25 *	2308.16 *	86.04 *	3.86 *	*205
* 50 *	11.95 *	592.20 *	2296.21 *	86.79 *	3.94 *	*204
* 51 *	11.81 *	604.01 *	2284.40 *	87.52 *	4.02 *	*203
* 52 *	11.73 *	615.74 *	2272.67 *	88.26 *	4.10 *	*202
* 53 *	11.83 *	627.57 *	2260.84 *	88.99 *	4.17 *	*201
* 54 *	11.81 *	639.38 *	2249.03 *	89.73 *	4.25 *	*200
* 55 *	11.89 *	651.27 *	2237.14 *	90.47 *	4.33 *	*199
* 56 *	11.89 *	663.16 *	2225.25 *	91.21 *	4.41 *	*198
* 57 *	11.85 *	675.01 *	2213.40 *	91.95 *	4.49 *	*197
* 58 *	11.84 *	686.85 *	2201.56 *	92.69 *	4.57 *	*196
* 59 *	11.85 *	698.70 *	2189.71 *	93.42 *	4.65 *	*195
* 60 *	11.75 *	710.45 *	2177.96 *	94.16 *	4.73 *	*194
* 61 *	11.94 *	722.39 *	2166.02 *	94.90 *	4.81 *	*193
* 62 *	11.93 *	734.32 *	2154.09 *	95.64 *	4.88 *	*192
* 63 *	11.80 *	746.12 *	2142.29 *	96.38 *	4.96 *	*191
* 64 *	11.85 *	757.97 *	2130.44 *	97.12 *	5.04 *	*190
* 65 *	11.86 *	769.83 *	2118.58 *	97.86 *	5.12 *	*189
* 66 *	11.89 *	781.72 *	2106.69 *	98.60 *	5.20 *	*188
* 67 *	11.92 *	793.64 *	2094.77 *	99.34 *	5.28 *	*187
* 68 *	11.79 *	805.43 *	2082.98 *	100.07 *	5.36 *	*186
* 69 *	11.79 *	817.22 *	2071.19 *	100.81 *	5.44 *	*185
* 70 *	11.88 *	829.10 *	2059.31 *	101.55 *	5.51 *	*184
* 71 *	12.00 *	841.10 *	2047.31 *	102.30 *	5.59 *	*183
* 72 *	11.84 *	852.94 *	2035.47 *	103.03 *	5.67 *	*182
* 73 *	11.94 *	864.88 *	2023.53 *	103.78 *	5.75 *	*181
* 74 *	11.94 *	876.82 *	2011.59 *	104.52 *	5.83 *	*180
* 75 *	11.76 *	888.58 *	1999.83 *	105.25 *	5.91 *	*179
* 76 *	11.84 *	900.42 *	1987.99 *	105.99 *	5.99 *	*178
* 77 *	11.83 *	912.25 *	1976.16 *	106.73 *	6.07 *	*177
* 78 *	11.85 *	924.10 *	1964.31 *	107.47 *	6.15 *	*176
* 79 *	11.95 *	936.05 *	1952.36 *	108.21 *	6.23 *	*175
* 80 *	11.79 *	947.84 *	1940.57 *	108.95 *	6.30 *	*174
* 81 *	11.88 *	959.72 *	1928.69 *	109.69 *	6.38 *	*173
* 82 *	11.89 *	971.61 *	1916.80 *	110.43 *	6.46 *	*172
* 83 *	11.89 *	983.50 *	1904.91 *	111.17 *	6.54 *	*171
* 84 *	11.75 *	995.25 *	1893.16 *	111.90 *	6.62 *	*170
* 85 *	11.73 *	1006.98 *	1881.43 *	112.63 *	6.70 *	*169
* 86 *	11.85 *	1018.83 *	1869.58 *	113.37 *	6.78 *	*168
* 87 *	11.74 *	1030.57 *	1857.84 *	114.10 *	6.85 *	*167
* 88 *	11.82 *	1042.39 *	1846.02 *	114.84 *	6.93 *	*166
* 89 *	12.07 *	1054.46 *	1833.95 *	115.59 *	7.01 *	*165
* 90 *	11.84 *	1066.30 *	1822.11 *	116.33 *	7.09 *	*164
* 91 *	11.91 *	1078.21 *	1810.20 *	117.07 *	7.17 *	*163

* CASING LIST # Page no: 3 *

Company : PETROFINA EXPL. AUSTRALIA

* Location : VIC P20 Shoe @: 2888.4 mtr
 * Well : ANGLER - 1 Casing OD: 24.447 cm
 * Rig : ZAPATA ARCTIC - RIG 36 Casing ID: 22.650 cm
 * Cas wght: 69.95 kg/mtr

* Hook wght: 49.90 ton Mud wght: 1.15 kg/ltr

* No:	* Jnt.Lngth*	* Cas.Lngth*	* Dpth fr.RT*	* Hook Load*	* Displ.Vol.*	* Designation
*	* mtr *	* mtr *	* mtr *	* ton *	* mtr3 *	*

* 92 *	11.82 *	1090.03 *	1798.38 *	117.80 *	7.25 *	*162
* 93 *	11.93 *	1101.96 *	1786.45 *	118.55 *	7.33 *	*161
* 94 *	11.80 *	1113.76 *	1774.65 *	119.28 *	7.41 *	*160
* 95 *	11.87 *	1125.63 *	1762.78 *	120.02 *	7.49 *	*159
* 96 *	11.82 *	1137.45 *	1750.96 *	120.76 *	7.57 *	*158
* 97 *	11.87 *	1149.32 *	1739.09 *	121.50 *	7.64 *	*157
* 98 *	11.83 *	1161.15 *	1727.26 *	122.23 *	7.72 *	*156
* 99 *	12.08 *	1173.23 *	1715.18 *	122.99 *	7.80 *	*155
* 100 *	11.84 *	1185.07 *	1703.34 *	123.72 *	7.88 *	*154
* 101 *	11.81 *	1196.88 *	1691.53 *	124.46 *	7.96 *	*153
* 102 *	11.88 *	1208.76 *	1679.65 *	125.20 *	8.04 *	*152
* 103 *	11.87 *	1220.63 *	1667.78 *	125.94 *	8.12 *	*151
* 104 *	11.83 *	1232.46 *	1655.95 *	126.68 *	8.20 *	*150
* 105 *	11.81 *	1244.27 *	1644.14 *	127.41 *	8.28 *	*149
* 106 *	11.89 *	1256.16 *	1632.25 *	128.15 *	8.36 *	*148
* 107 *	11.93 *	1268.09 *	1620.32 *	128.90 *	8.43 *	*147
* 108 *	11.87 *	1279.96 *	1608.45 *	129.64 *	8.51 *	*146
* 109 *	11.77 *	1291.73 *	1596.68 *	130.37 *	8.59 *	*145
* 110 *	11.84 *	1303.57 *	1584.84 *	131.11 *	8.67 *	*144
* 111 *	11.67 *	1315.24 *	1573.17 *	131.83 *	8.75 *	*143
* 112 *	11.77 *	1327.01 *	1561.40 *	132.57 *	8.83 *	*142
* 113 *	11.83 *	1338.84 *	1549.57 *	133.30 *	8.91 *	*141
* 114 *	11.83 *	1350.67 *	1537.74 *	134.04 *	8.98 *	*140
* 115 *	11.97 *	1362.64 *	1525.77 *	134.79 *	9.06 *	*139
* 116 *	12.05 *	1374.69 *	1513.72 *	135.54 *	9.14 *	*138
* 117 *	11.82 *	1386.51 *	1501.90 *	136.27 *	9.22 *	*137
* 118 *	11.91 *	1398.42 *	1489.99 *	137.02 *	9.30 *	*136
* 119 *	11.81 *	1410.23 *	1478.18 *	137.75 *	9.38 *	*135
* 120 *	11.84 *	1422.07 *	1466.34 *	138.49 *	9.46 *	*134
* 121 *	11.80 *	1433.87 *	1454.54 *	139.22 *	9.54 *	*133
* 122 *	12.05 *	1445.92 *	1442.49 *	139.98 *	9.62 *	*132
* 123 *	11.95 *	1457.87 *	1430.54 *	140.72 *	9.70 *	*131
* 124 *	11.85 *	1469.72 *	1418.69 *	141.46 *	9.78 *	*130
* 125 *	11.81 *	1481.53 *	1406.88 *	142.19 *	9.85 *	*129
* 126 *	11.85 *	1493.38 *	1395.03 *	142.93 *	9.93 *	*128
* 127 *	11.87 *	1505.25 *	1383.16 *	143.67 *	10.01 *	*127
* 128 *	11.89 *	1517.14 *	1371.27 *	144.41 *	10.09 *	*126
* 129 *	11.81 *	1528.95 *	1359.46 *	145.15 *	10.17 *	*125
* 130 *	11.88 *	1540.83 *	1347.58 *	145.89 *	10.25 *	*124
* 31 *	11.90 *	1552.73 *	1335.68 *	146.63 *	10.33 *	*123
* 132 *	11.91 *	1564.64 *	1323.77 *	147.37 *	10.41 *	*122
* 133 *	11.88 *	1576.52 *	1311.89 *	148.11 *	10.49 *	*121
* 134 *	11.79 *	1588.31 *	1300.10 *	148.85 *	10.56 *	*120
* 135 *	11.84 *	1600.15 *	1288.26 *	149.58 *	10.64 *	*119
* 136 *	11.90 *	1612.05 *	1276.36 *	150.33 *	10.72 *	*118
* 137 *	11.93 *	1623.98 *	1264.43 *	151.07 *	10.80 *	*117

 * CASING LIST # Page no: 4 *

* Company : PETROFINA EXPL. AUSTRALIA

* Location : VIC P20 Shoe @: 2888.4 mtr
 * Well : ANGLER - 1 Casing OD: 24.447 cm
 * Rig : ZAPATA ARCTIC - RIG 36 Casing ID: 22.650 cm
 * Cas wght: 69.95 kg/mtr

 * Hook wght: 49.90 ton Mud wght: 1.15 kg/ltr

* No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.* Designation
 * * mtr * mtr * mtr * ton * mtr3 *

No	Jnt.Lngth	Cas.Lngth	Dpth fr.RT	Hook Load	Displ.Vol	Designation
*	mtr	mtr	mtr	ton	mtr3	*
138	11.82	1635.80	1252.61	151.81	10.88	*116
139	11.71	1647.51	1240.90	152.53	10.96	*115
140	11.79	1659.30	1229.11	153.27	11.04	*114
141	11.50	1670.80	1217.61	153.99	11.11	*113
142	11.97	1682.77	1205.64	154.73	11.19	*112
143	11.79	1694.56	1193.85	155.47	11.27	*111
144	11.86	1706.42	1181.99	156.20	11.35	*110
145	12.10	1718.52	1169.89	156.96	11.43	*109
146	12.05	1730.57	1157.84	157.71	11.51	*108
147	11.76	1742.33	1146.08	158.44	11.59	*107
148	11.82	1754.15	1134.26	159.18	11.67	*106
149	11.87	1766.02	1122.39	159.92	11.75	*105
150	11.81	1777.83	1110.58	160.65	11.83	*104
51	11.86	1789.69	1098.72	161.39	11.90	*103
152	11.85	1801.54	1086.87	162.13	11.98	*102
153	11.83	1813.37	1075.04	162.87	12.06	*101
154	11.85	1825.22	1063.19	163.61	12.14	*100
155	11.84	1837.06	1051.35	164.34	12.22	*99
156	11.84	1848.90	1039.51	165.08	12.30	*98
157	11.87	1860.77	1027.64	165.82	12.38	*97
158	11.88	1872.65	1015.76	166.56	12.46	*96
159	11.90	1884.55	1003.86	167.30	12.54	*95
160	11.89	1896.44	991.97	168.04	12.61	*94
161	11.84	1908.28	980.13	168.78	12.69	*93
162	12.03	1920.31	968.10	169.53	12.77	*92
163	11.81	1932.12	956.29	170.27	12.85	*91
164	11.84	1943.96	944.45	171.00	12.93	*90
165	11.86	1955.82	932.59	171.74	13.01	*89
166	11.88	1967.70	920.71	172.48	13.09	*88
167	12.07	1979.77	908.64	173.23	13.17	*87
168	11.73	1991.50	896.91	173.97	13.25	*86
169	11.88	2003.38	885.03	174.71	13.33	*85
170	11.84	2015.22	873.19	175.44	13.40	*84
171	11.86	2027.08	861.33	176.18	13.48	*83
172	11.83	2038.91	849.50	176.92	13.56	*82
173	11.88	2050.79	837.62	177.66	13.64	*81
174	11.90	2062.69	825.72	178.40	13.72	*80
175	11.93	2074.62	813.79	179.14	13.80	*79
76	11.98	2086.60	801.81	179.89	13.88	*78
177	11.92	2098.52	789.89	180.63	13.96	*77
178	11.86	2110.38	778.03	181.37	14.04	*76
179	11.71	2122.09	766.32	182.10	14.12	*75
180	11.80	2133.89	754.52	182.84	14.19	*74
181	11.83	2145.72	742.69	183.57	14.27	*73
182	11.81	2157.53	730.88	184.31	14.35	*72
183	11.81	2169.34	719.07	185.04	14.43	*71

* *****
 * CASING LIST ¶ Page no: 5 *
 * *****

* Company : PETROFINA EXPL. AUSTRALIA
 * Location : VIC P20 Shoe @: 2888.4 mtr
 * Well : ANGLER - 1 Casing OD: 24.447 cm
 * Rig : ZAPATA ARCTIC - RIG 36 Casing ID: 22.650 cm
 * Cas wght: 69.95 kg/mtr

 * Hook wght: 49.90 ton Mud wght: 1.15 kg/ltr
 * *****

* No: *	* Jnt.Lngth* * mtr *	* Cas.Lngth* * mtr *	* Dpth fr.RT* * mtr *	* Hook Load* * ton *	* Displ.Vol.* * mtr3 *	* Designation
* 184 *	11.85	2181.19	707.22	185.78	14.51	*70
* 185 *	11.83	2193.02	695.39	186.52	14.59	*69
* 186 *	11.82	2204.84	683.57	187.26	14.67	*68
* 187 *	11.96	2216.80	671.61	188.00	14.75	*67
* 188 *	11.82	2228.62	659.79	188.74	14.82	*66
* 189 *	11.91	2240.53	647.88	189.48	14.90	*65
* 190 *	11.83	2252.36	636.05	190.22	14.98	*64
* 191 *	11.96	2264.32	624.09	190.96	15.06	*63
* 192 *	11.83	2276.15	612.26	191.70	15.14	*62
* 193 *	11.72	2287.87	600.54	192.43	15.22	*61
* 194 *	11.83	2299.70	588.71	193.17	15.30	*60
* 195 *	11.79	2311.49	576.92	193.90	15.38	*59
* 196 *	11.86	2323.35	565.06	194.64	15.45	*58
* 197 *	11.89	2335.24	553.17	195.38	15.53	*57
* 198 *	12.09	2347.33	541.08	196.13	15.61	*56
* 199 *	11.81	2359.14	529.27	196.87	15.69	*55
* 200 *	11.87	2371.01	517.40	197.61	15.77	*54
* 201 *	11.82	2382.83	505.58	198.34	15.85	*53
* 202 *	11.84	2394.67	493.74	199.08	15.93	*52
* 203 *	11.88	2406.55	481.86	199.82	16.01	*51
* 204 *	11.85	2418.40	470.01	200.56	16.09	*50
* 205 *	11.91	2430.31	458.10	201.30	16.17	*49
* 206 *	11.84	2442.15	446.26	202.04	16.24	*48
* 207 *	11.79	2453.94	434.47	202.78	16.32	*47
* 208 *	11.89	2465.83	422.58	203.52	16.40	*46
* 209 *	11.84	2477.67	410.74	204.25	16.48	*45
* 210 *	11.79	2489.46	398.95	204.99	16.56	*44
* 211 *	11.96	2501.42	386.99	205.73	16.64	*43
* 212 *	11.87	2513.29	375.12	206.47	16.72	*42
* 213 *	11.85	2525.14	363.27	207.21	16.80	*41
* 214 *	11.83	2536.97	351.44	207.95	16.88	*40
* 215 *	12.10	2549.07	339.34	208.70	16.96	*39
* 216 *	11.91	2560.98	327.43	209.44	17.03	*38
* 217 *	11.86	2572.84	315.57	210.18	17.11	*37
* 218 *	11.77	2584.61	303.80	210.92	17.19	*363
* * *	2.80	2587.41	301.00	210.99	17.20	*CASING HANGER

FORMATION FRACTURE PRSSURE

=====

	DEPTH (mkb)	EMW (gr/cc)	PRESSURE (psi)	FRAC GRAD (psi/ft)	REMARK
20" CASING SHOE	604	1.4	1204	0.81	NO LEAK OFF
13-3/8" CASING SHOE	1151.5	1.8	2952	0.91	NO LEAK OFF
9-5/8" CASING SHOE	2888.5	1.6	6581	0.73	NO LEAK OFF

PETROFINA EXPLORATION AUSTRALIA S.A. **CORE LOG** ENCLOSURE 1
 WELL: ANGLER - 1 LOCATION: VIC/P20 GEOLOGIST: J-M QUESTIAUX
 CORE No.: 1 INTERVAL CORED: 3833.2 - 3848.1 (LOGGER) RECOVERY : 99%

RATE OF PENETRATION (m/hr)	DEPTH (DRILLER)	SEDIMENTARY STRUCTURES	GRAIN SIZE	DEPOSITIONAL ENVIRONMENT	POROSITY	STAIN	BLEEDING	FLUORESCENCE	COLOUR	CUT	DESCRIPTION
	3833	PSP Massive sandstone									<p>SANDSTONE : Medium to light brownish grey, pebbly with fine to medium grained matrix. Poorly sorted, well cemented, very hard, very poor porosity.</p> <p>i) Pebbles : Quartz, and feldspar, occasionally lithic, well rounded. good grain to grain contact, no overgrowth.</p> <p>ii) Matrix : Well cemented with calcite and silica, angular to subrounded. Abundant biotite, minor carbonaceous fragments, common brown oil staining.</p> <p>SANDSTONE : Medium grey to medium brownish grey, very coarse to pebbly, poorly sorted, subrounded, friable, slightly calcareous, slightly argillaceous. Abundant biotite, minor muscovite, traces carbonaceous fragments, good visual porosity. No shows.</p> <p>SANDSTONE : As above</p> <p>SANDSTONE : Light grey, light brownish grey, coarse to fine, moderately sorted, subangular, friable to moderately hard, very slightly calcareous, slightly argillaceous, traces biotite, good to moderate visual porosity. No shows.</p>
	3834	No visible structures			VERY POOR		NONE		BRIGHT YELLOW		
	3835	PSP									
	3836	Pebble lag along subhorizontal bedding planes									
	3837	Slump X - bedding		STREAM MOUTH BAR							
	3838	Sub-horizontal bedding									
	3839	Slump / dewatering structures Sharp contact			GOOD - MODERATE						
	3840	Burrows									
	3841	X - bedding Upward coarsening cycle. X-bedded base									
	3841.9	Burrows & bioturbation									

END OF CORE

LEGEND

= CALCAREOUS

= BIOTURBATION

= CROSS BEDDING

PSP = PRESSURE SOLUTION PARTING

= PEBBLE LAG

SCALE : 1 : 40

INTERPRETATIVE

RFT DATA

RFT DATA

=====

15/5/89

DEPTH	FORMATION	HYDROSTATIC	REMARKS
mkb	PRESSURE psia	PRESSURE psia	
3125.0	4442.49	5178.75	
3142.0	4466.61	5207.22	
3157.5	4488.92	5233.11	
3171.5	4509.84	5257.23	
3182.0	4529.20	5275.60	
3193.0	4544.59	5293.20	
3197.0	4550.27	5300.16	
3205.5	4564.57	5315.01	
3208.5	4568.54	5319.95	
3222.5	4590.21	5343.15	
3231.0		5357.40	SUPERCHARGED
3236.0	4613.55	5365.95	
3248.5	4629.36	5386.90	
3256.0	4639.41	5399.44	
3262.0	4648.05	5409.72	
3278.0	4670.61	5436.41	
3292.0	4689.57	5458.40	
3305.0	4708.38	5480.22	
3453.0	4920.93	5727.80	
3538.0	5040.81	5866.10	
3667.0	5227.20	6080.90	
3756.0	5352.36	6226.70	
3807.0	5424.12	6308.70	
3814.0	5434.95	6321.70	
3825.0			TIGHT
3825.5			TIGHT
3831.0			TIGHT
3836.0			SEAL FAILURE
3845.0	5482.55	6374.00	
3867.0	5513.34	6410.50	
4214.0			TIGHT
4214.5			SEAL FAILURE
4216.0	6347.68	6972.80	
4220.0	6349.77	6981.20	
4222.0	6349.92	6984.20	
4226.0	6350.77	6995.00	
4230.0	6352.64	7002.19	
4234.2			TIGHT
4235.0			SUPERCHARGED
4243.0			TIGHT
4246.3	6366.10	7021.10	
4251.0	6373.00	7041.00	
4254.2	6377.60	7046.60	
4257.0			TIGHT
4269.0	6397.90	7072.00	

45 STATIONS WITH 34 GOOD TESTS

SEGREGATED SAMPLE AT 4226 mkb : 92.4 cuft GAS

AND 600 cc OF CONDENSATE

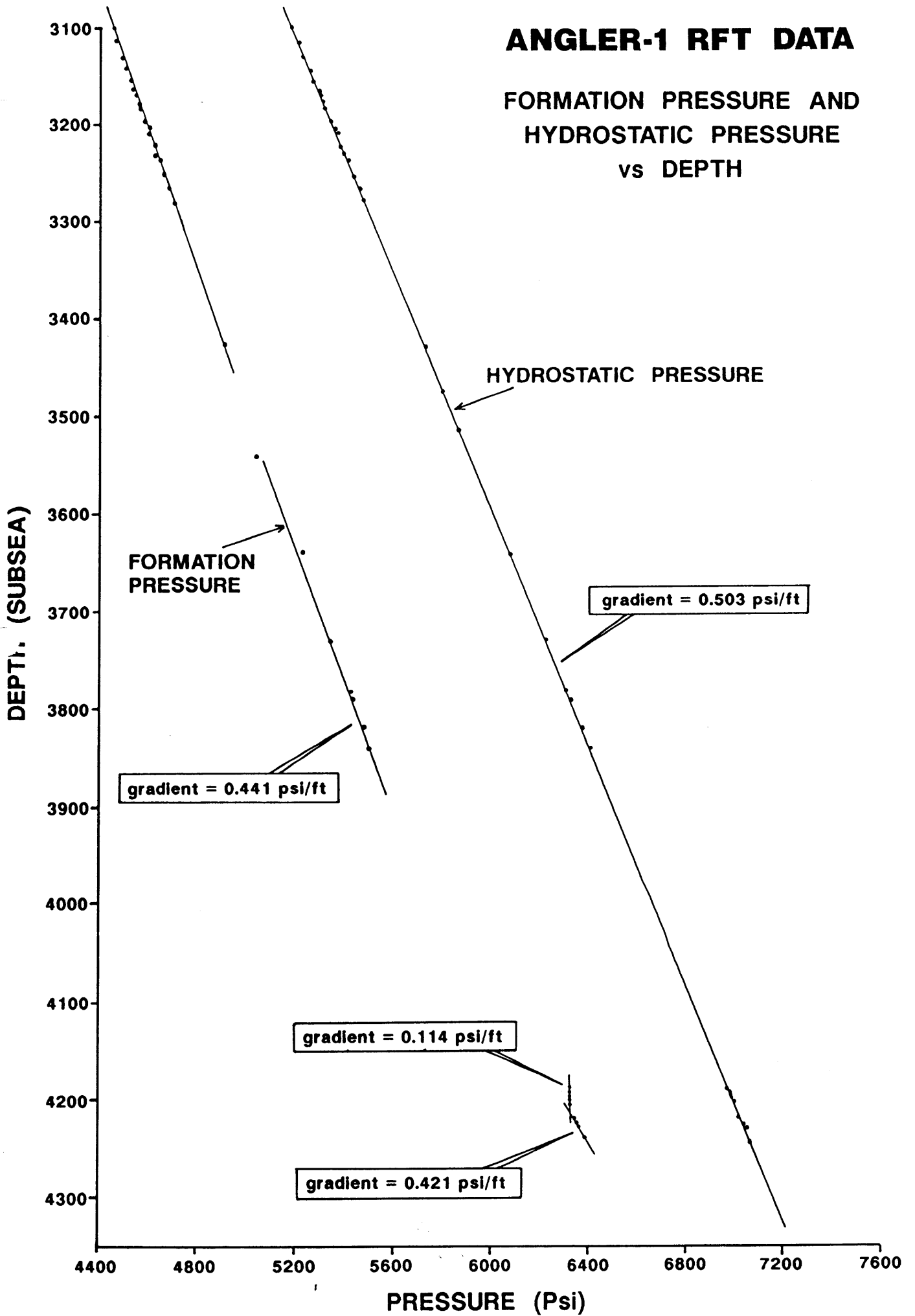
GAS COMPOSITION : C1 = 88.24%, C2 = 5%,

C3 = 1.63%, iC4 = 0.11%, nC4 = 0.13%,

CO2 = 3%, H2S = 0%

ANGLER-1 RFT DATA

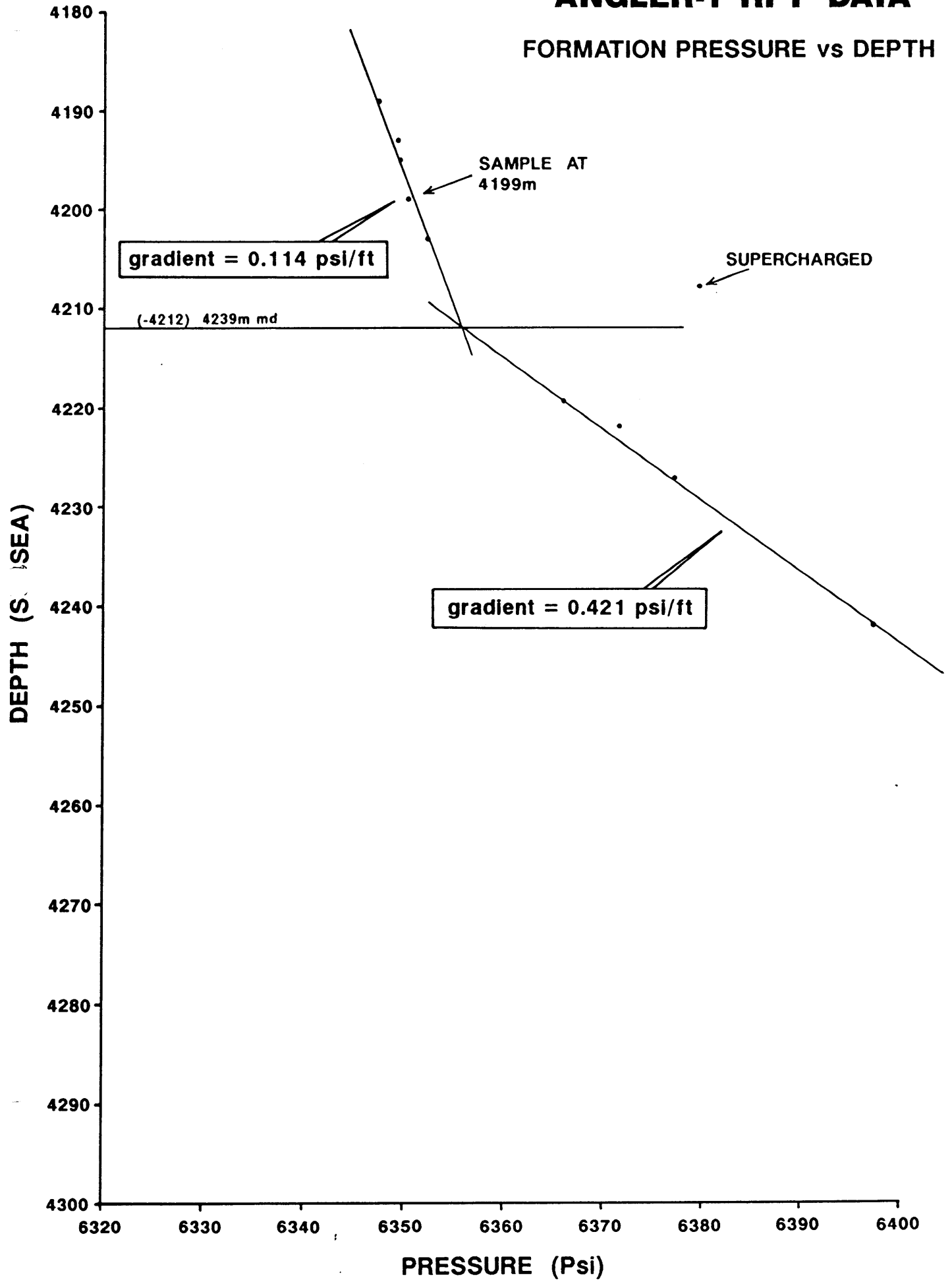
FORMATION PRESSURE AND HYDROSTATIC PRESSURE vs DEPTH



ZONE III

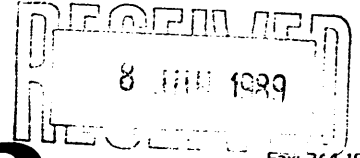
ANGLER-1 RFT DATA

FORMATION PRESSURE vs DEPTH



RESERVOIR FLUID DATA

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47 Woodforde Road, Magill,
South Australia, 5072
Box 410,
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PETROLAB

Adelaide, June 5, 1989 Reservoir Fluid and Core Services, Laboratory Consulting and Analysis

P. O. Box 410
Magill
S. A. 5072

Petrofina Exploration Australia S. A.
Level 2
476 St. Kilda Road
Melbourne
Victoria, 3004

Subject: Reservoir Fluid Study
Well : Angler # 1
File : P - 89021

Attention: Mr. Mark Tringham

Dear Sirs,

Petrolab received a bottom hole sample from the subject well in Schlumberger's R F T chamber # R F S - AD 1182 on May 25 1989 and was instructed to transfer the sample into high pressure laboratory storage cylinders.

After this transfer of which the results were facsimiled to Petrofina Australia and which has been summarised on page # 1, we continued with a compositional analysis, by flashing the high pressure gas condensate sample from the working pressure of 7000 psig and room temperature to atmospheric conditions while measuring the quantities of the flashed stock tank products.

The composition of both, stock tank gas and stock tank liquid, were then determined by means of chromatography and by mathematically recombining these products the composition of the bottom hole sample was obtained. On page # 2 this analysis has been reported.

A known volume of the reservoir fluid sample was then charged to a visual P V T cell and thermally expanded to the reservoir temperature of 235 deg F. During a constant mass study at this temperature, a dew point pressure of 5545 psig was observed. Other data obtained during this Pressure - Volume relations experiment including relative volume versus pressure, gas compressibility, specific volume and gas expansion above the dew point and the distribution of retrograde liquid versus pressure below it, can be found on pages 3 and 4. The remainder of this report contains graphical presentations of the data.

We thank Petrofina Exploration Australia S. A. for the opportunity to be of service. Please do not hesitate in contacting us should you require any further information or if we can assist you in any other way.

Yours sincerely,

Jan G. Bon

INTERPRETATIVE

INTERPRETATIVE**P E T R O L A B**

Company: Petrofina Exploration Australia S. A.
Well : Angler # 1

Page: 1 of 10
File: P 89021

SUMMARY OF RESULTS**TRANSFER :**

R F T Chamber # RFS - AD 1182 received May 25 1989 and transferred into Petrolab cylinders # 53, 48 and 32.

Opening pressure @ 17 deg C: 2690 psig

Injected 100 cc's Hg in chamber to stir up hydrocarbons.

Compressed to 7000 psig with 1050 cc's of water behind piston.

Transferred three times 650 cc's into Petrolab cylinders at above 7000 psig.

Flashed remainder of sample to atmosphere recovering back the Hg Hg and an additional 25 cc's of condensate and some 220 cc's of mud/filtrate/formation? water mixture.

CONSTANT MASS :**SATURATED VAPOUR:**

Reservoir Temperature (deg F)	:	235
Dew Point Pressure (psig)	:	5545
Gas Formation Volume Factor (Bg)	:	0.00373
Gas Expansion Factor (E)	:	267.79
Gas Deviation Factor (Z)	:	1.057
Specific Volume (cft/lb)	:	0.06301
Density (gm/cc)	:	0.2542
Molecular Weight	:	22.59
Gas Gravity (Air = 1.000)	:	0.782
Gross Heating Value (BTU/ft3)	:	1298

Total Plant Products in Dew Point Fluid (GPMM)

Ethane	:	1788
Propane	:	668
Butanes	:	351
Pentanes Plus	:	1758

P E T R O L A B

Company: Petrofina Exploration Australia S.A.
 well : Angler # 1

Page: 2 of 10
 File: P 89021

COMPOSITIONAL ANALYSIS OF RECOMBINED RESERVOIR FLUID

Transferred from R F T chamber # RFS - AD 1182.

Component	Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide H2S	0.00	0.00	0.00
Carbon Dioxide CO2	0.04	2.70	2.65
Nitrogen N2	0.00	0.19	0.19
Methane C1	0.52	85.09	83.59
Ethane C2	0.26	6.82	6.70
Propane C3	0.36	2.47	2.43
Iso-Butane iC4	0.15	0.40	0.40
N-Butane nC4	0.39	0.71	0.70
Iso-Pentane iC5	0.35	0.23	0.23
N-Pentane nC5	0.41	0.21	0.21
Hexanes C6	2.20	0.31	0.34
Heptanes C7	10.62	0.48	0.66
Octanes C8	13.07	0.23	0.46
Nonanes C9	17.53	0.11	0.42
Decanes C10	10.43	0.03	0.21
Undecanes C11	6.84	0.01	0.13
Dodecanes Plus C12+	36.83	0.01	0.68
<hr/>			
TOTAL	100.00	100.00	100.00
<hr/>			
<u>ratios</u>			
Molar Ratio :	0.0177	0.9823	1.0000
Mass Ratio :	0.1241	0.8759	1.0000
Gas Liquid Ratio :	1.0000	bb1 @ SC 37126 SCF	--
<hr/>			
<u>Stream Properties</u>			
Molecular Weight :	158.0	20.15	22.59
Density obs. (gm/cc) :	0.7968 @60F	--	--
Gravity (AIR = 1.000) :	45.9 API @60F	0.698	0.782
GHV (BTU/scf) :	--	1167.0	--
<hr/>			
<u>Hexanes Plus Properties</u>			
Mol % :	97.52	1.18	2.90
Molecular Weight :	160.8	97.9	135.1
Density (gm/cc @ 60 F):	0.7998	0.6863	0.7633
Gravity (API @ 60 F):	45.2	74.5	53.7
<hr/>			
<u>Heptanes Plus Properties</u>			
Mol % :	95.32	0.87	2.56
Molecular Weight :	162.6	102.9	141.8
Density (gm/cc @ 60 F):	0.8014	0.6928	0.7721
Gravity (API @ 60 F):	44.9	72.5	51.6
<hr/>			
<u>Decanes Plus Properties</u>			
Mol % :	54.10	0.05	1.02
Molecular Weight :	202.5	109.8	195.9
Density (gm/cc @ 60 F):	0.8257	0.7015	0.8218
Gravity (API @ 60 F):	39.7	70.0	40.5
<hr/>			
<u>Undecanes Plus Properties</u>			
Mol % :	43.67	0.02	0.81
Molecular Weight :	218.9	147.0	213.0
Density (gm/cc @ 60 F):	0.8332	0.7400	0.8314
Gravity (API @ 60 F):	38.2	59.5	38.5
<hr/>			
<u>Dodecanes Plus Properties</u>			
Mol % :	36.83	0.01	0.68
Molecular Weight :	232.2	161.0	225.5
Density (gm/cc @ 60 F):	0.8387	0.7521	0.8377
Gravity (API @ 60 F):	37.1	56.5	37.3

INTERPRETATIVE

P E T R O L A B

Company: Petrofina Exploration Australia
Well : Angler # 1

Page: 3 of 10
File: P 89021

CONSTANT MASS STUDY @ 235 deg F

Pressure (psig)	Relative Volume (V/Vsat) (1)	Formation Volume Factor (Bg) (2)	Gas Expansion Factor (E) (3)	Deviation Factor (Z)	Specific Volume (CFT/LB)
7500	0.8700	0.00325	307.79	1.243	0.05482
7215	0.8840	0.00330	302.94	1.215	0.05570
7050	0.8942	0.00334	299.48	1.201	0.05634
6685	0.9162	0.00342	292.28	1.167	0.05773
6336	0.9409	0.00351	284.62	1.136	0.05929
6080	0.9536	0.00356	280.81	1.105	0.06009
5810	0.9762	0.00365	274.33	1.081	0.06151
5545 *	1.0000	0.00373	267.79	1.057	0.06301

* Dew Point Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at saturation pressure.

(2) Cubic feet of gas at indicated pressure and temperature per cubic foot at 14.696 psia and 60 deg.F.

(3) Cubic feet of gas at 14.696 psia and 60 deg.F per cubic foot at indicated pressure and temperature.

P E T R O L A B

Company: Petrofina Exploration Australia
 Well : Angler # 1

Page: 4 of 10
 File: P 89021

CONSTANT MASS STUDY @ 235 deg F

Pressure (psig)	Relative Volume (V/Vsat) (1)	Retrograde Liquid Deposit (Bbl/MMSCF) (Volume%) (2) (3)	
5545 *	1.0000	0.00	0.00
5215	1.0384	6.99	1.36
4955	1.0649	11.20	2.18
4520	1.1254	16.23	3.16
4050	1.2151	19.98	3.89
3510	1.3639	22.29	4.34
3000	1.5577	24.09	4.69
2820	1.6480	25.01	4.87
2510	1.8391	27.58	5.37
2245	2.0570	31.44	6.12
1820	2.5963	--	--

* Dew Point Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at saturation pressure.

(2) Barrels of liquid at indicated pressure and temperature per MMSCF of original reservoir fluid.

(3) Percent of reservoir hydrocarbon pore space at dew point.

INTERPRETATIVE

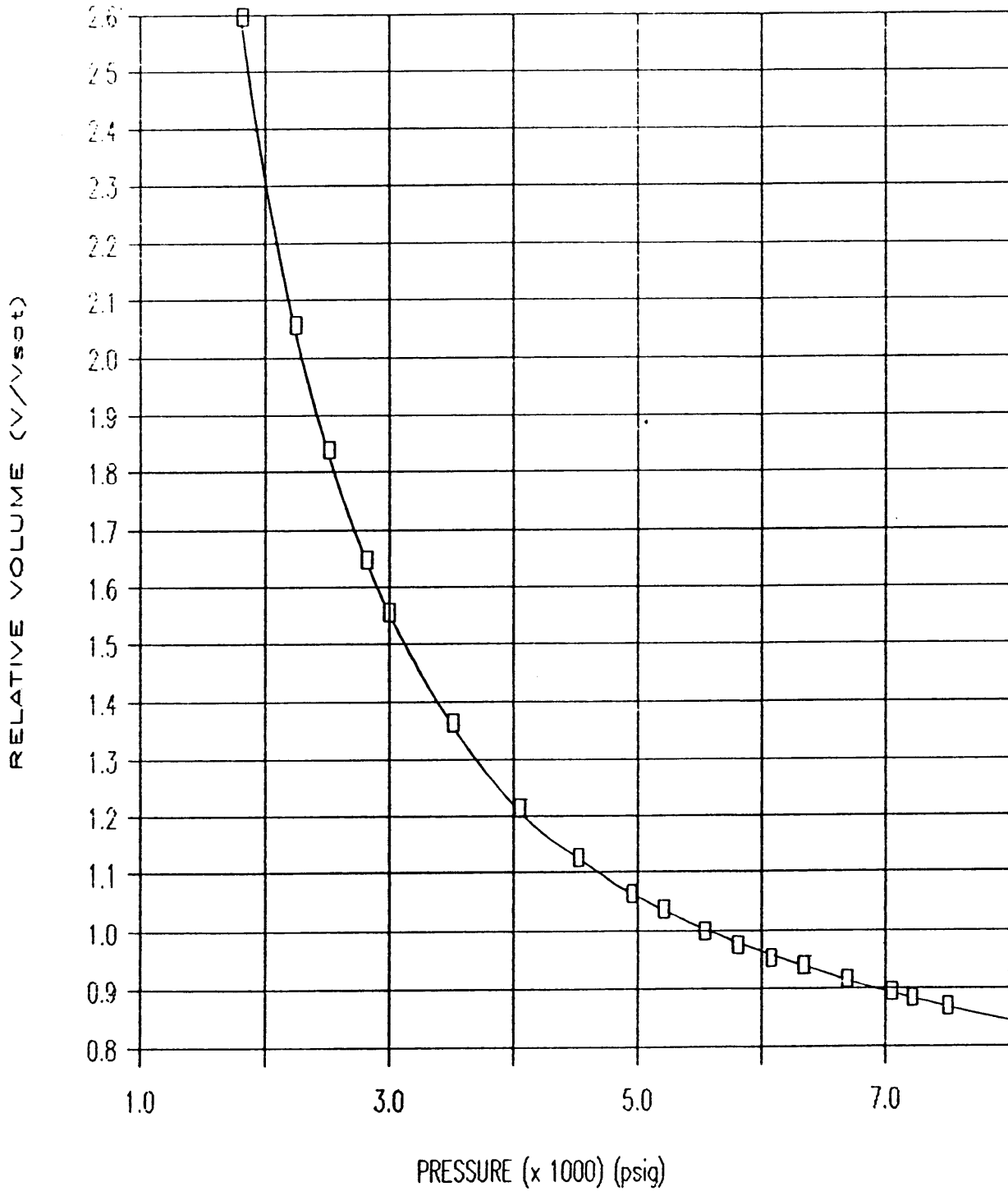
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P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Angler # 1

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File: P 89021

RELATIVE VOLUME

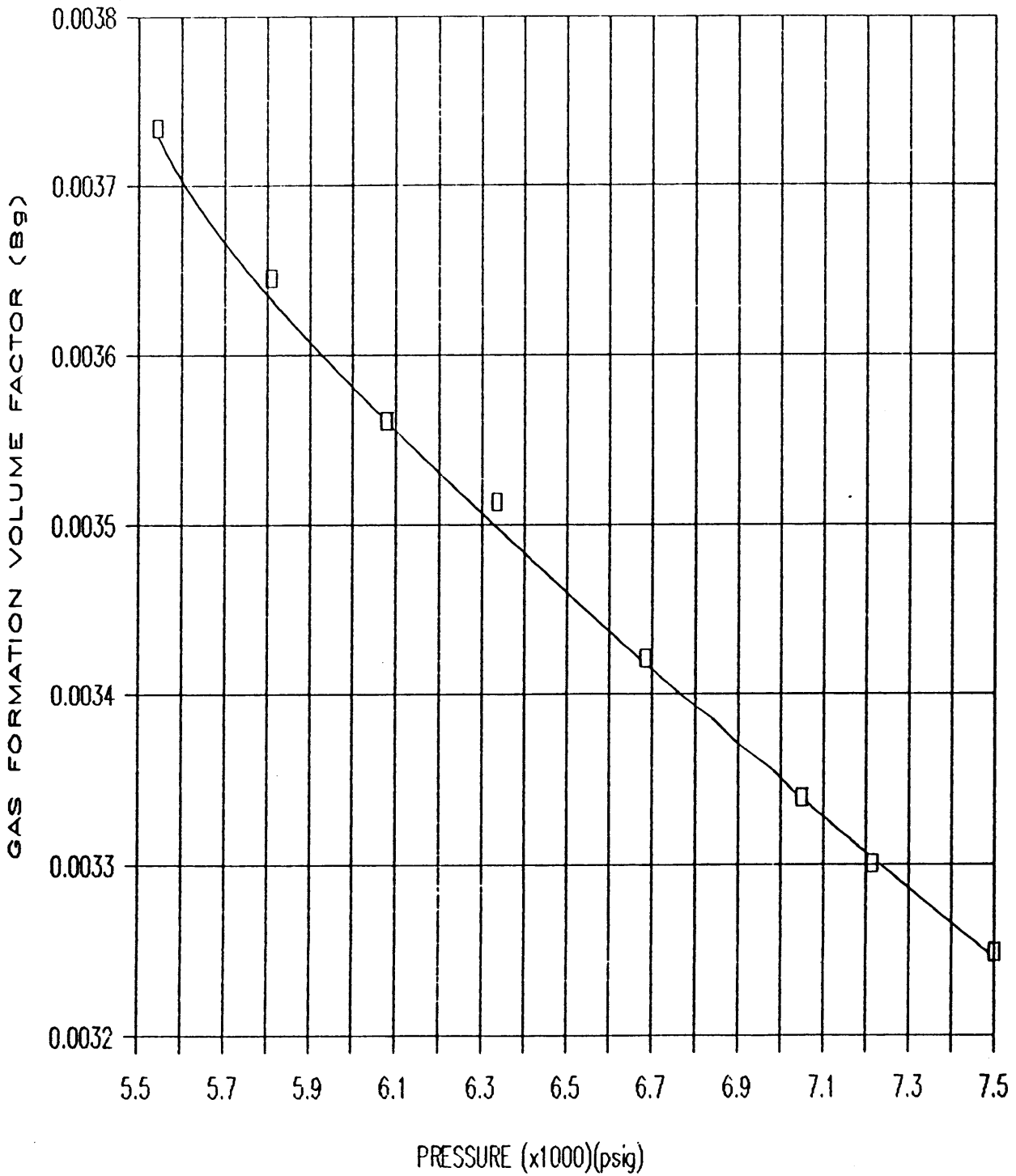


P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Angler # 1

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File: P 89021

GAS FORMATION VOLUME FACTOR



INTERPRETATIVE

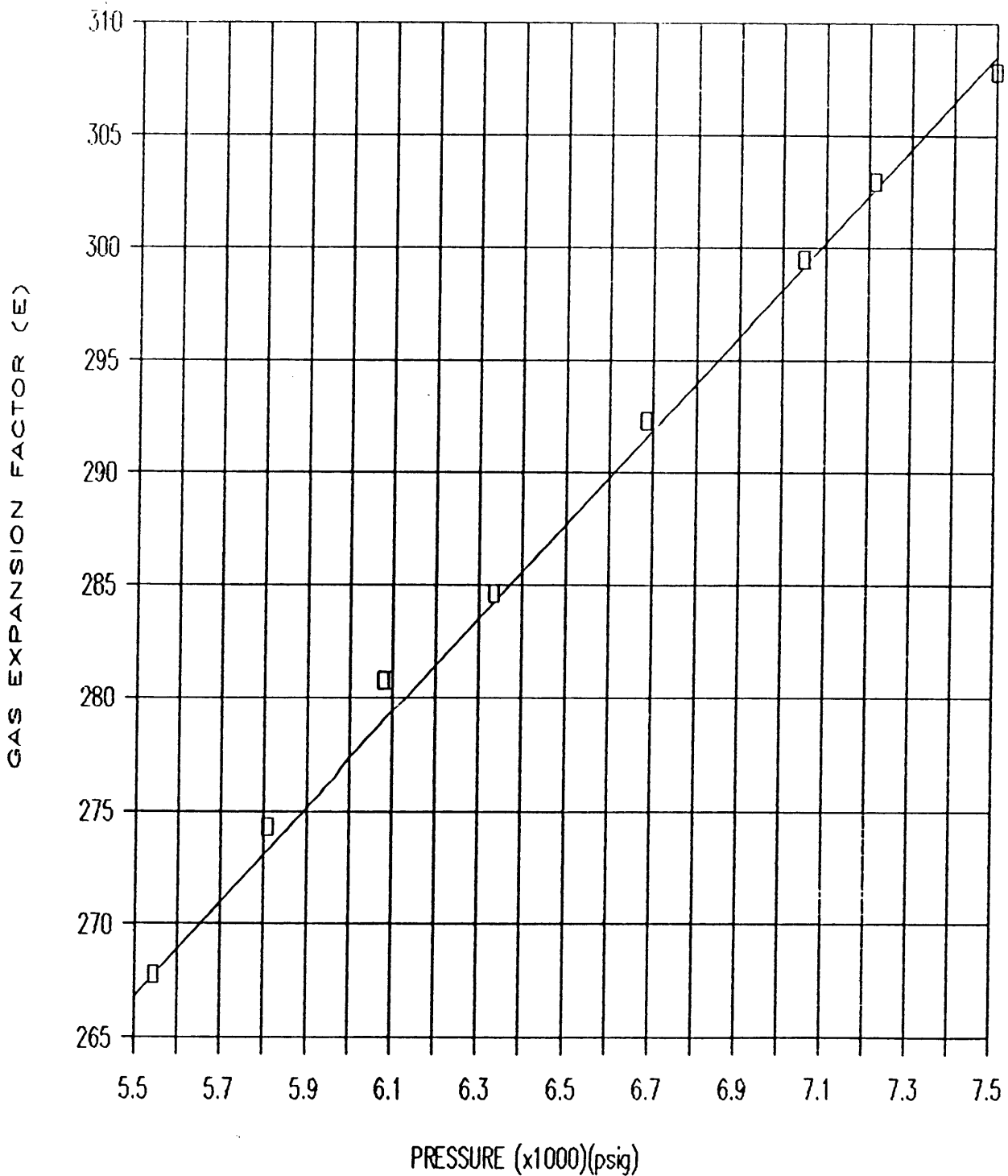
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P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Angler # 1

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GAS EXPANSION FACTOR

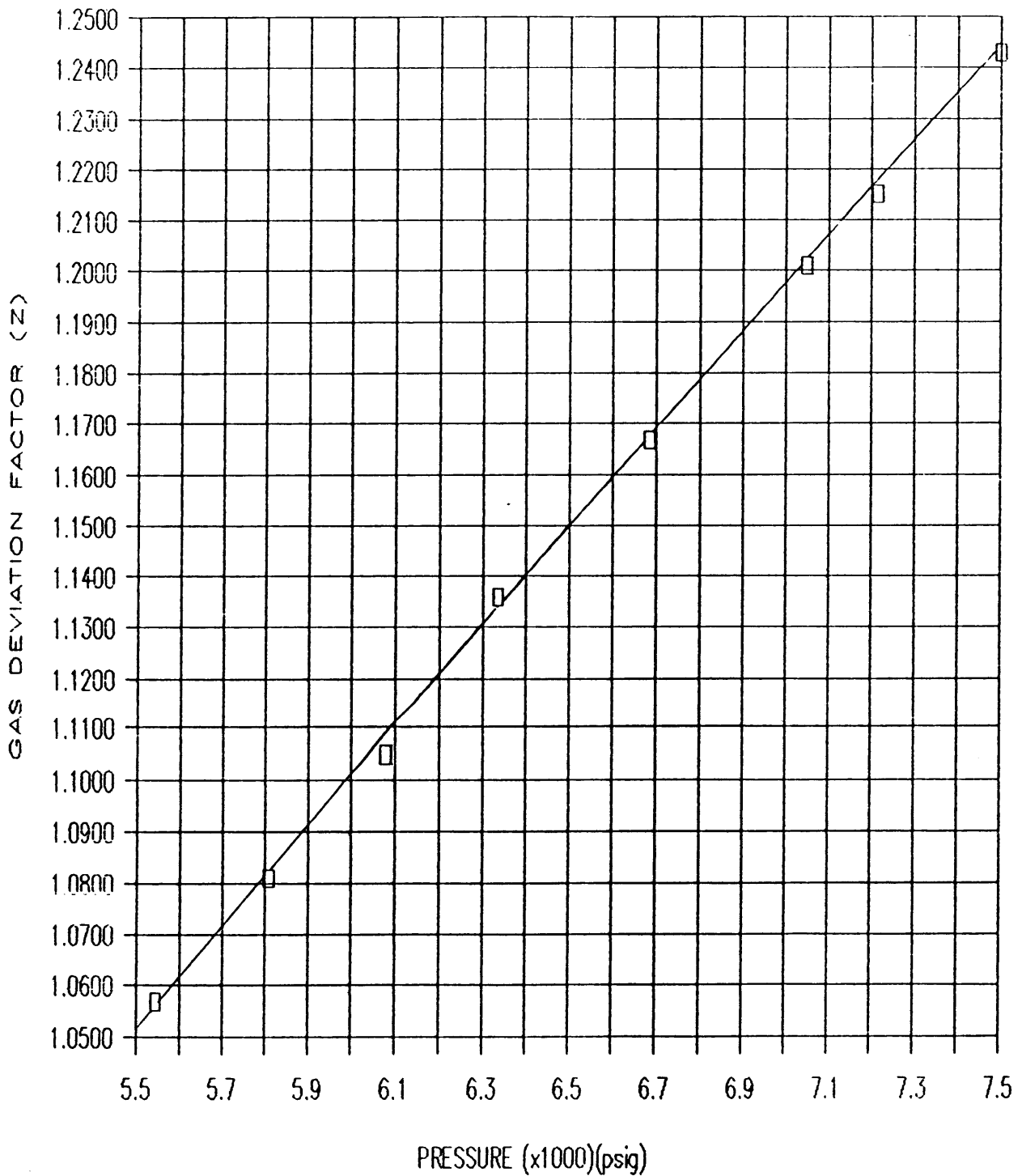


P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Angler # 1

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GAS DEVIATION FACTOR

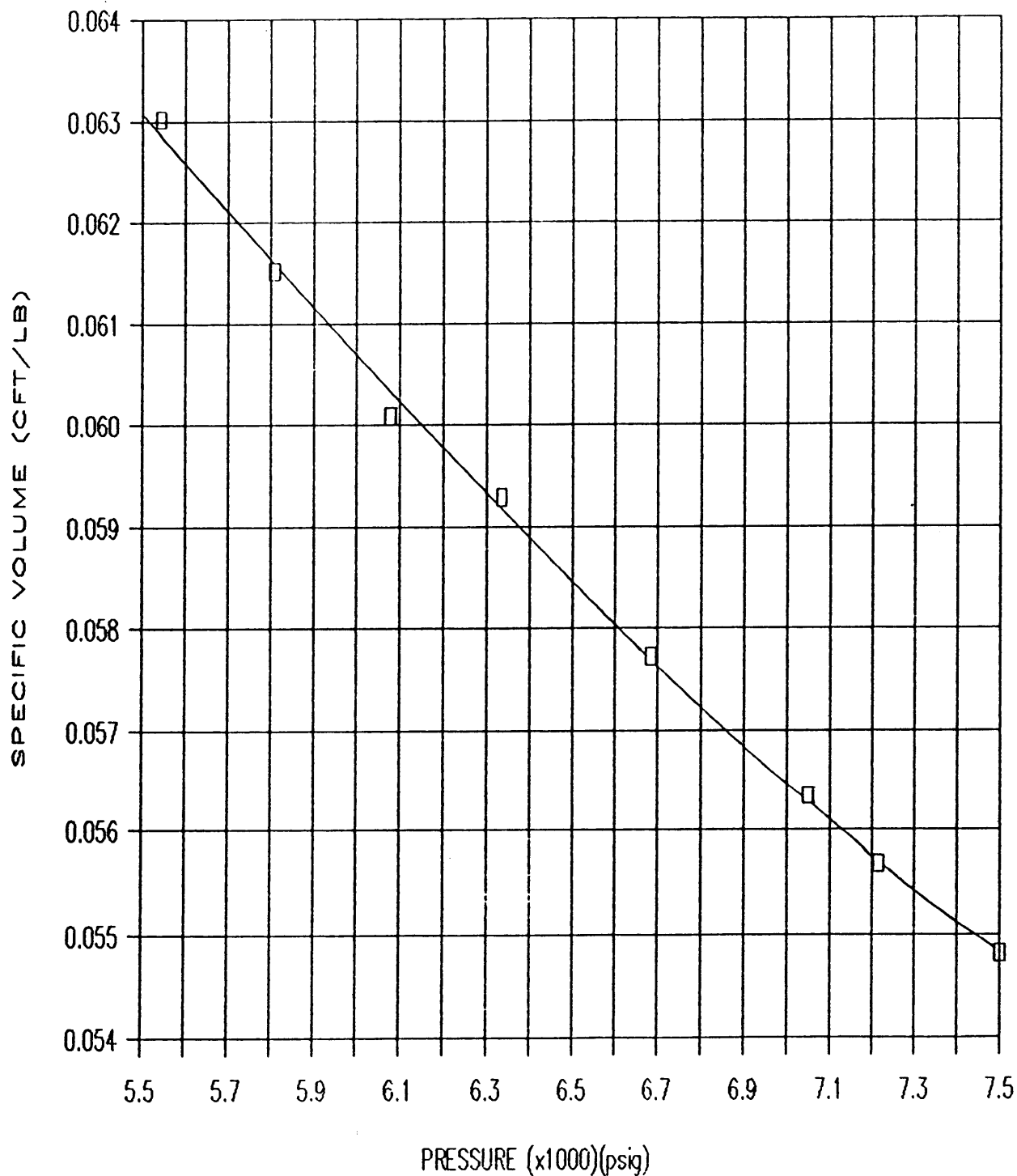


P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Angler # 1

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RESERVOIR FLUID SPECIFIC VOLUME

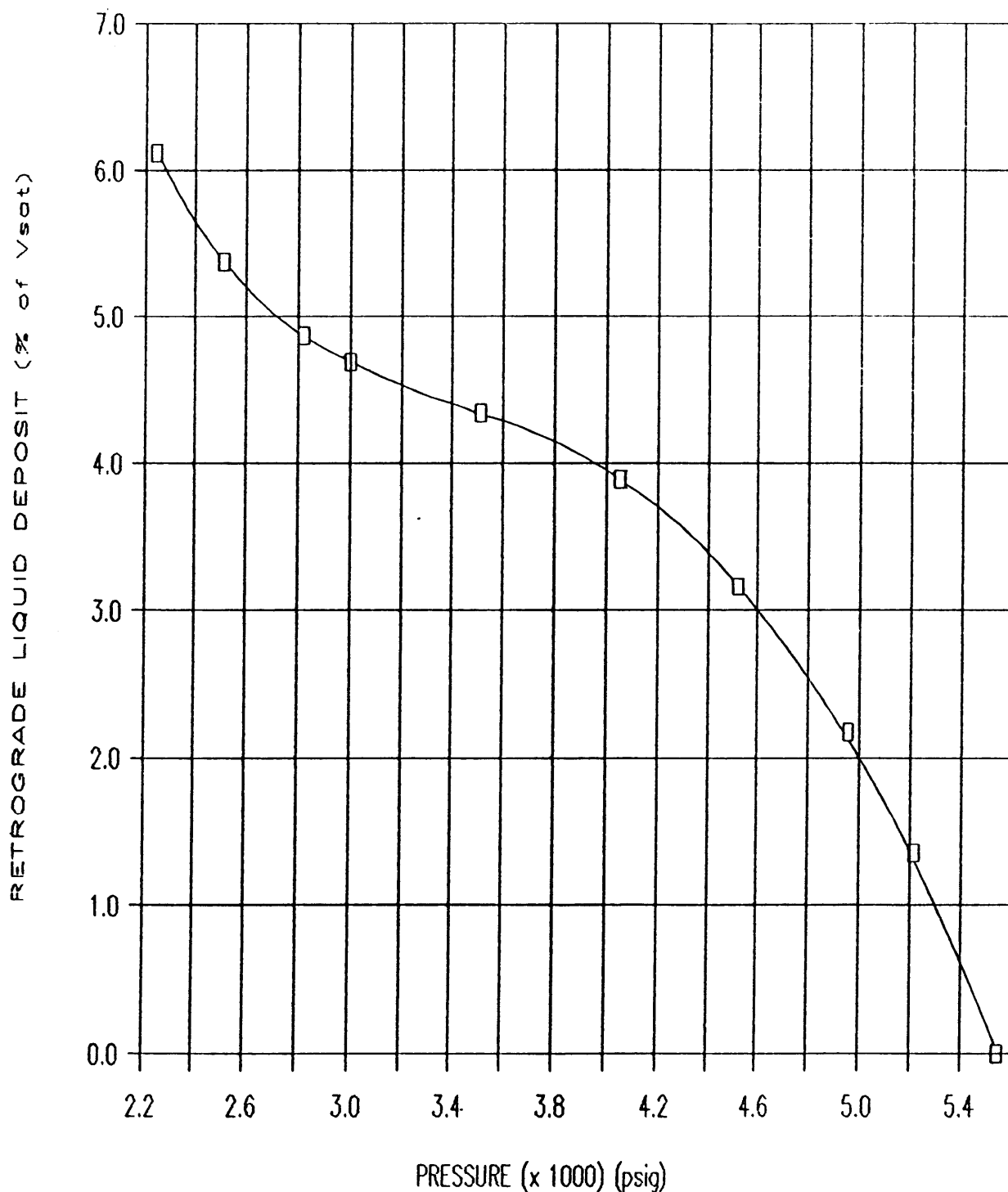


P E T R O L A B

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RETROGRADE CONDENSATION



903236 169

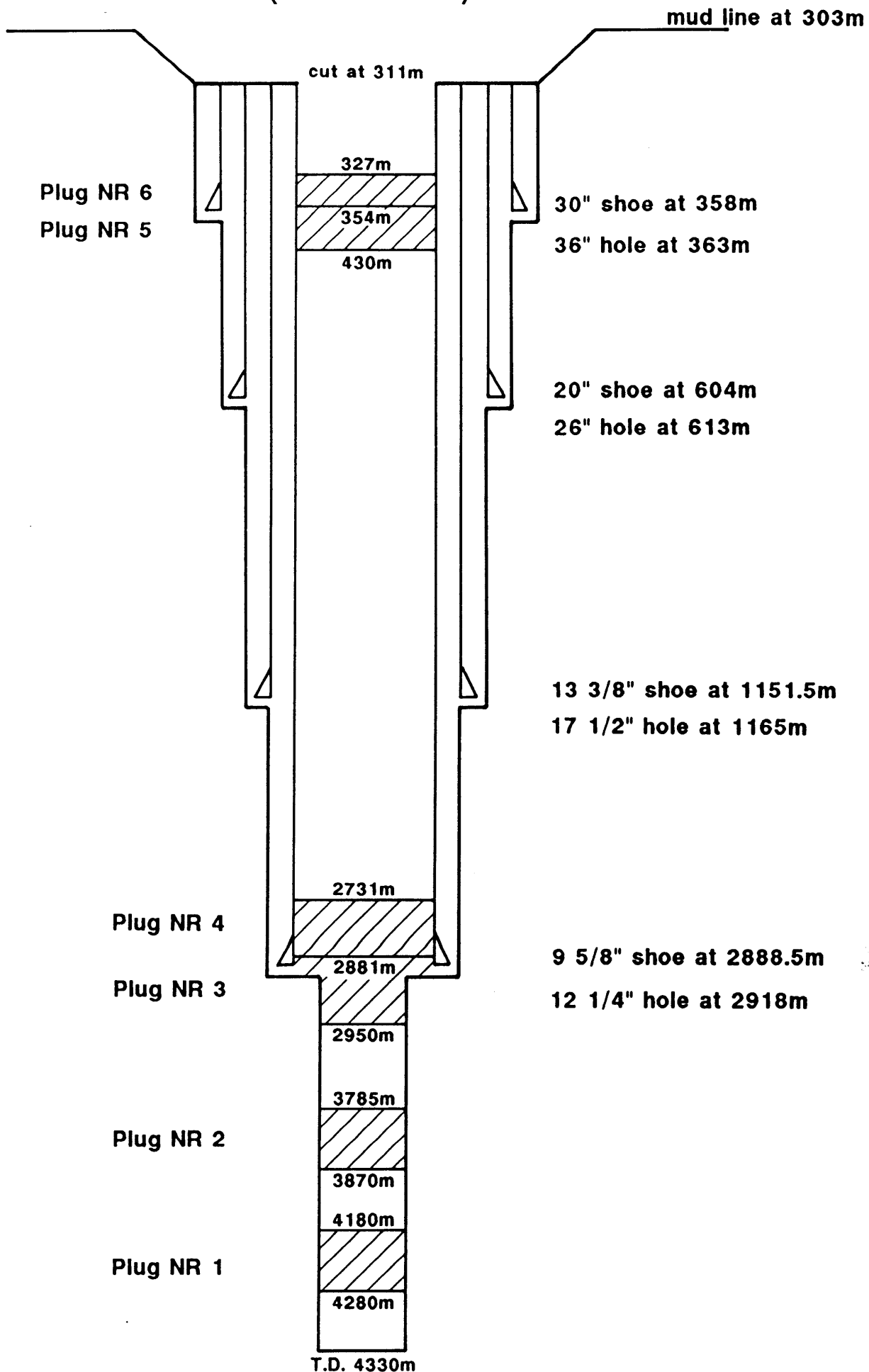
11. ABANDONMENT

ANGLER - 1

903236 170

ABANDONMENT DIAGRAM

(DEPTH RKB)



SEABED CLEARANCE



Petrofina Exploration Australia S.A.

Incorporated in Belgium with Limited Liability
Registered in New South Wales

Level 2
478 St Kilda Road
Melbourne Vic. 3004

Telephone: (03) 267 7999
Telex: 154767 PEXAUS
Telefax: (03) 267 7778

CERTIFICATE OF SEABED CLEARANCE

OPERATOR: ..PETROFINA EXPL AUSTRALIA S.A.
 RIG: ..ZAPATA ARCTIC.....
 FIELD: ..VIC P/20... ANGLER 1.....
 LOCATION: ..BASS STRAIT.....
 ..AUSTRALIA.....
 DATE: ..22 May 1989.....

THIS IS TO CERTIFY THAT:

A. ALL STRINGS OF CASING HAVE BEEN CUT AT A DEPTH OF 33... FEET BELOW THE SEA BED AND THAT ALL STRUCTURES ABOVE THIS POINT HAVE BEEN RECOVERED WITH THE CASING.

SIGNED *[Signature]*
O. I. M. ..T.B. MILLER, Sr.
M.A.C.T.A.
COMPANY ..ZAPATA..ARCTIC

B. THE SEABED WITHIN 70 METRES OF THE ABANDONED WELL HAS BEEN SURVEYED VISUALLY AND NO DEBRIS WHICH COULD POSSIBLY CAUSE DAMAGE TO FISHERMEN'S NETS WAS FOUND.

SIGNED ..N. Houghton.....
R.O.V. SUPT/DIVING SUPV.
COMPANY ..Subsea International

C. THE WELLHEAD EQUIPMENT AND DEBRIS REMOVED FROM THE WELL SITE WILL BE RETURNED TO PETROFINA WAREHOUSE FACILITIES, PORT WELSHPOOL.

SIGNED *[Signature]*
PETROFINA DRILLING SUPERVISOR

CLIENT PETROFINA EXP. AUST. S.A. CONTRACT NO. 1419

RIG ZAPATA ARCTIC

LOCATION ANGLER #1 TIMOR DATE 21/05/89

COORDINATES _____

METHOD OF SURVEY SCORPIO R.O.V. USING UNDERWATER SONAR

TYPE OF EQUIPMENT USED AMATEK Z60A SONAR CONTRACTOR SUB SEA INTERNATIONAL

RANGE OF COVERAGE _____ NO. OF SCANS 4 x 3 SCANS

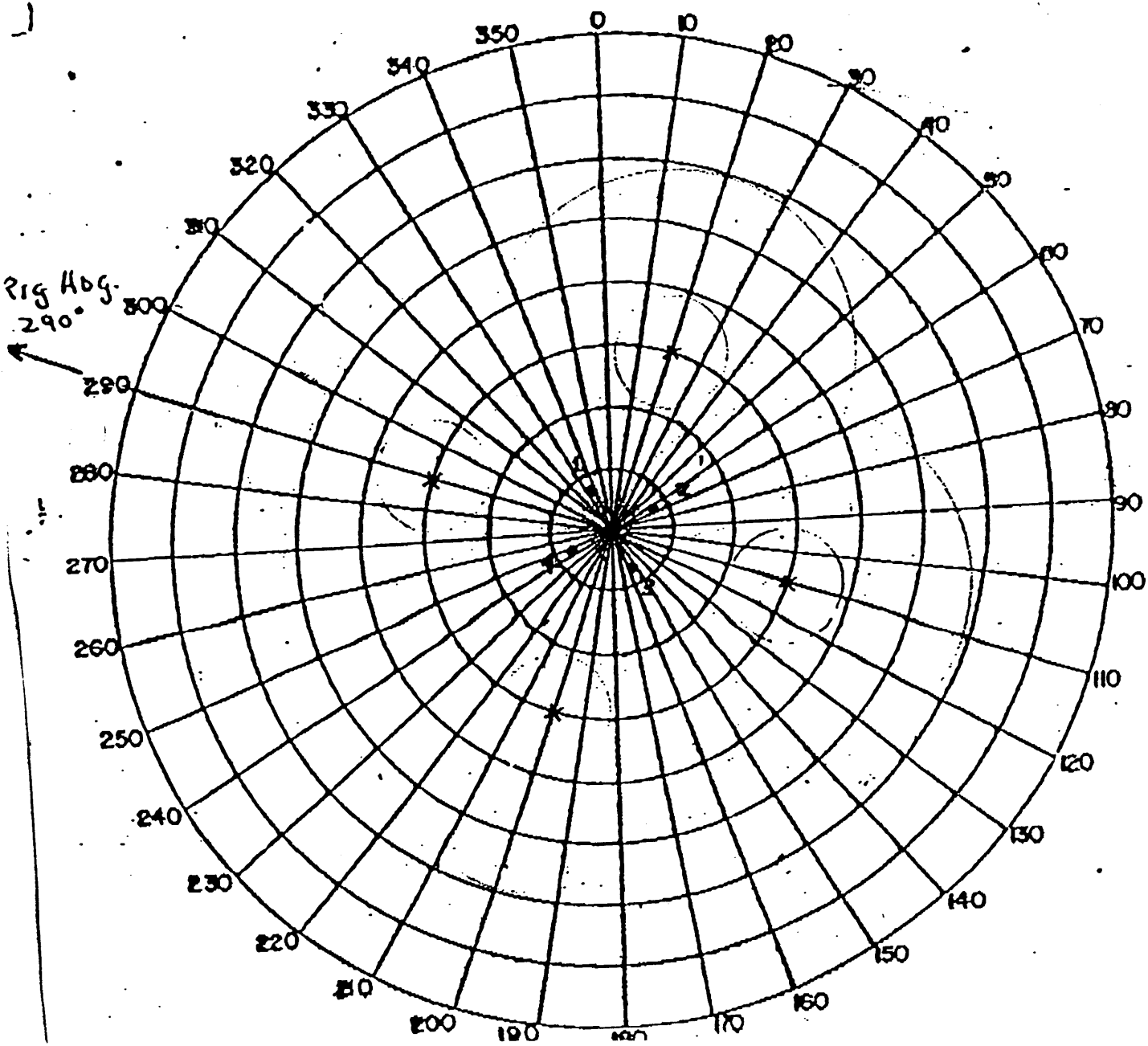
RIG HEADING (INDICATE ON DIAGRAM) 290°

POSITIONS OF RIG RELATIVE TO WELL DURING SCANS OVER WELL

HEIGHT ABOVE SEABED 1 FOOT HEIGHT OF SCANNING UNIT DURING SCAN 5 FEET

NATURE OF SEABED SOFT SAND / SILT TYPE OF WELLHEAD _____

TYPE OF RECORDS SONAR SCAN SHEETS



	POSITION (DIST & BRG)	APPX DIMENSIONS (M)	DESCRIPTION	Was it ID'd?	Re-covered
1	<i>No significant debris found.</i>				
2					
3					
4					
5					
6					
7					
8					
9					
10					

(continue on sep. sheet)

METHODS OF IDENTIFICATION		REASONS FOR NOT REMOVING REMAINING DEBRIS:	
A	SONAR SCAN	D	RIG RECORDS
9	DIVING INSPECTION		
2	ROV		

SIGNATORIES

1	NAME <u><i>A. Newsham</i></u>	2	NAME <u><i>N. Hopton</i></u>
	POSITION <u><i>Drilling Supervisor</i></u>		POSITION <u><i>OPERATIONS CONTROLLER</i></u>
	COMPANY <u><i>Petrofina</i></u>		COMPANY <u><i>SUBSEA INTERNATIONAL</i></u>

M. Miller
Master

TEAM NOTES

Survey should extend to at least 70m from the wellhead.
The first signatory should be the person responsible for the rig, either the OIM or clients rep. The second signatory should be the person supervising the seabed survey, the sonar operator, the diving superintendent etc.

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12. WELL COST

A/C No	N A M E	APPROVED AFE	ESTIMATED EXPENDITURES	Difference EXPEN-AFE	Differenc %/AFE
6436	GEOLOGY				
64361	ELECTRICAL LOGGING	603,750	606,156	2,406	0%
64362	GEOLOGICAL MUD LOGGING	162,500	124,965	(37,535)	-23%
64303	CORING EQUIPM, PACKING, DESPATCH	20,000	353	(19,647)	-98%
64304	SPECIAL CORE & CUTTINGS ANALYS	0	9,353	9,353	NA
64305	GEOCHEMISTRY	15,000	5,635	(9,365)	-62%
64306	V S P (ref 64301)	0	0	0	NA
64307	PALEONTOLOGY	8,000	2,410	(4,590)	-57%
64320	SUPERVISORS OPERATOR	0	8,012	8,012	NA
64321	SUPERVISORS CONTRACTED	32,500	13,490	(19,010)	-58%
	S.T.	841,750	771,375	(70,375)	-8%
6440	PRODUCTION-TESTING				
				0	NA
64401	SURFACE & DST EQUIPM - RENTALS	149,500	7,331.00	(142,169)	-95%
64402	SURFACE & DST EQUIPM - OPERATIO	34,500	0.00	(34,500)	-100%
64403	TEST BARGE	0	0.00	0	NA
64404	WIRELINE SERVICES	0	0.00	0	NA
64405	OIL & GAS ANALYSIS	0	0.00	0	NA
64406	COMPLETION TIE-BACK EQUIPMENT	0	0.00	0	NA
64418	PERSONNEL (CONTRACTORS)	0	0.00	0	NA
64420	SUPERVISORS OPERATOR	0	0.00	0	NA
64421	SUPERVISORS CONTRACTED	0	1,536.79	1,537	NA
	S.T.	184,000	8,867.79	(175,132.21)	-95%
6450	LOGISTICS				
64501	LOCAL AIR TRANSPORT	260,000	418,744	158,744	61% ++++++
64502	SUPPLY BOATS	1,495,000	1,274,553	(220,447)	-15%
64503	WEATHER SERVICES	6,500	20,508	14,008	216% ++++++
64504	TELECOMMUNICATIONS	97,500	44,656	(52,844)	-54%
64505	RENTALS LIFTING/MOVING EQUIPM.	130,000	148,161	18,161	14% ++
64506	SEA TRANSPORT (LONG DISTANCE)	0	0	0	NA
64507	STEVEDORING	37,500	0	(37,500)	-100%
64508	CAR RENTALS	16,250	1,063	(15,187)	-93%
64509	PILOT & HARBOR FEES	13,000	357	(12,643)	-97%
64511	PRIMARY OPERAT. BASE RENTALS	0	6,500	6,500	NA
64512	SECONDARY OPERAT. BASE RENTALS	0	816	816	NA
64513	HOTEL-HOUSING AT PRIMERY BASE	11,700	0	(11,700)	-100%
64514	STANDBY BOATS (ref 64502)	0	0	0	NA
64515	INSURANCES (STORAGE, TRANSPORT)	66,000	6,012	(59,988)	-91%
64516	CONSUMABLES BASE	0	17,154	17,154	NA
64517	MEDICAL, EMERGENCY SERVICES	0	400	400	NA
64519	LOCAL PERSONNEL (ref 64505)	0	0	0	NA
64520	SUPERVISORS OPERATOR	13,000	21,177	8,177	63% ++++++
64521	SUPERVISORS CONTRACTED	29,900	0	(29,900)	-100%
	S.T.	2,176,350	1,960,102	(216,248)	-10%
	TOTAL AU.\$	9,408,282	8,721,017	(687,265)	-7%
	+10% Contingency (Included in AFE)	10,349,110 (*)	8,721,017 (**)	(1,628,093)	-16%

(*) Excluded: Well Control Insurances

(**) Amount cash called A\$8,600,00

ANGLER # 1
DETAIL OF DRILLING EXPENSES

A/C No	NAME	APPROVED AFE	ESTIMATED EXPENDITURES	Difference EXPEN-AFE	Difference %/AFE
6410	DRILLING CONTRACTS				
64101	MOB/DEMOB RIG	150,938	166,287	15,349	10% ++
64102	RIG CONTRACT	3,166,118	3,023,256	(142,862)	-5%
64103	CEMENTING CONTRACT	148,638	57,766	(90,872)	-61%
64104	DIRECTIONAL DRILLING	207,000	284,250	77,250	37% ++++++
64105	LOCATION SURVEY/PREPAR.	160,000	153,159	(6,841)	-4%
64106	DIVING & UNDERWATER T.V. CONTRAC	260,000	245,558	(14,442)	-5%
64107	CATERING SERVICES	13,000	28,664	15,664	20% ++++++
64108	CASING RUNNING (ref 64109)	0	0	0	NA NA
64109	RENTALS EQUIPMENT	279,530	236,385	(43,145)	-15%
64110	MUD ENGINEERING SERVICES	29,250	53,932	24,682	84% ++++++
64111	CORING SERVICES (ref 64109)	0	0	0	NA NA
64112	WELLHEAD RECOVERY (ref 64109)	0	0	0	NA NA
64113	TURBODRILLING (ref 64109)	0	0	0	NA NA
64120	SUPERVISORS OPERATOR	0	151,893	151,893	NA NA
64121	SUPERVISORS CONTRACTED	56,063	33,688	(22,375)	-40%
	S.T.	4,470,507	4,434,837	(35,670)	-1%
20	CONSUMABLES				
64201	SURFACE WELLHEADS	0	0	0	NA NA
64202	SUBSEA WELLHEADS & GUIDE SYSTEM	155,250	128,315	(26,935)	-17%
64203	SURFACE Xmas TREE	0	0	0	NA NA
64204	SUBSEA Xmas TREE	0	0	0	NA NA
64205	CASING & LINERS	626,175	493,584	(132,591)	-21%
64206	CASING ACCESSORIES (ref 64206)	0	0	0	NA NA
64207	TUBING	0	0	0	NA NA
64208	DOWNHOLE PRODUCTION EQUIPMENT	0	0	0	NA NA
64209	DRILLING BITS, STABIL. & ACCES	103,500	210,799	107,299	104% ++++++
64210	CORING BITS, CORE HEADS, PARTS	28,750	27,683	(1,067)	-4%
64211	MUD PRODUCTS	162,500	115,528	(46,972)	-29%
64212	COMPLETION FLUIDS	0	0	0	NA NA
64213	STIMULATION PRODUCTS	0	0	0	NA NA
64214	CEMENT & ADDITIVES	120,000	146,584	26,584	22% +++++
64215	TIE-BACK EQUIPMENT	0	0	0	NA NA
64216	TELECOM EQPT, STATIONARY	13,000	8,223	(4,777)	-37%
64217	FUEL	455,000	400,000	(55,000)	-12%
64218	LUBRICANTS	32,500	15,120	(17,380)	-53%
64219	WATER SUPPLY	6,500	0	(6,500)	-100%
64220	SUPERVISORS OPERATOR	0	0	0	NA NA
64221	SUPERVISORS CONTRACTED	32,500	0	(32,500)	-100%
	S.T.	1,735,675	1,545,836	(189,839)	-11%