PETROFINA EXPLORATION AUSTRALIA S. A.

PETROLEUM DIVISION

27 NOV 1989

ANEMONE - 1 / 1A

FINAL WELL REPORT

(VOLUME 1)

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TESTING REPORTS

1. GENERAL DATA

WELL SUMMARY

Well: Anemone-1/A
Country: Australia
Area: Bass Strait
Licence: Vic/P20
Class: Exploration
Status: P & A
Water Depth: 231m
KB (AMSL): 27m

Proposed Coordinates UTM:
X = 615,580E
Y = 5,708,499N
Actual Coordinates UTM:
X = 615,565.6E
Y = 5,708,493.7N
Seismic Line: GF88B-100
CDP: 660

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: 27 May 1989
Well Spudded In: 25 May 1989
Anemone-1A Sidetrack Began: 26 July 1989
Well Reached TD: 4 September 1989
Well P & A: 20 October 1989
Rig Off Contract: 22 October 1989 - 1600 hours

Open Hole			**Casing**		
Diameter	**From**	**To**	**Diameter**	**From**	**To**
36"	258m	319m	30"	256m	313.5m
26"	319m	560m	20"	256m	546.5m
17-1/2"	560m	1115m	13-3/8"	256.5m	1105m
12-1/4"	1115m	3076m	9-5/8"	256m	3068m
8-1/2"	3076m	4500m	7"	257m	4492.5
6"	4500m	4775m	5"	4338m	4773m

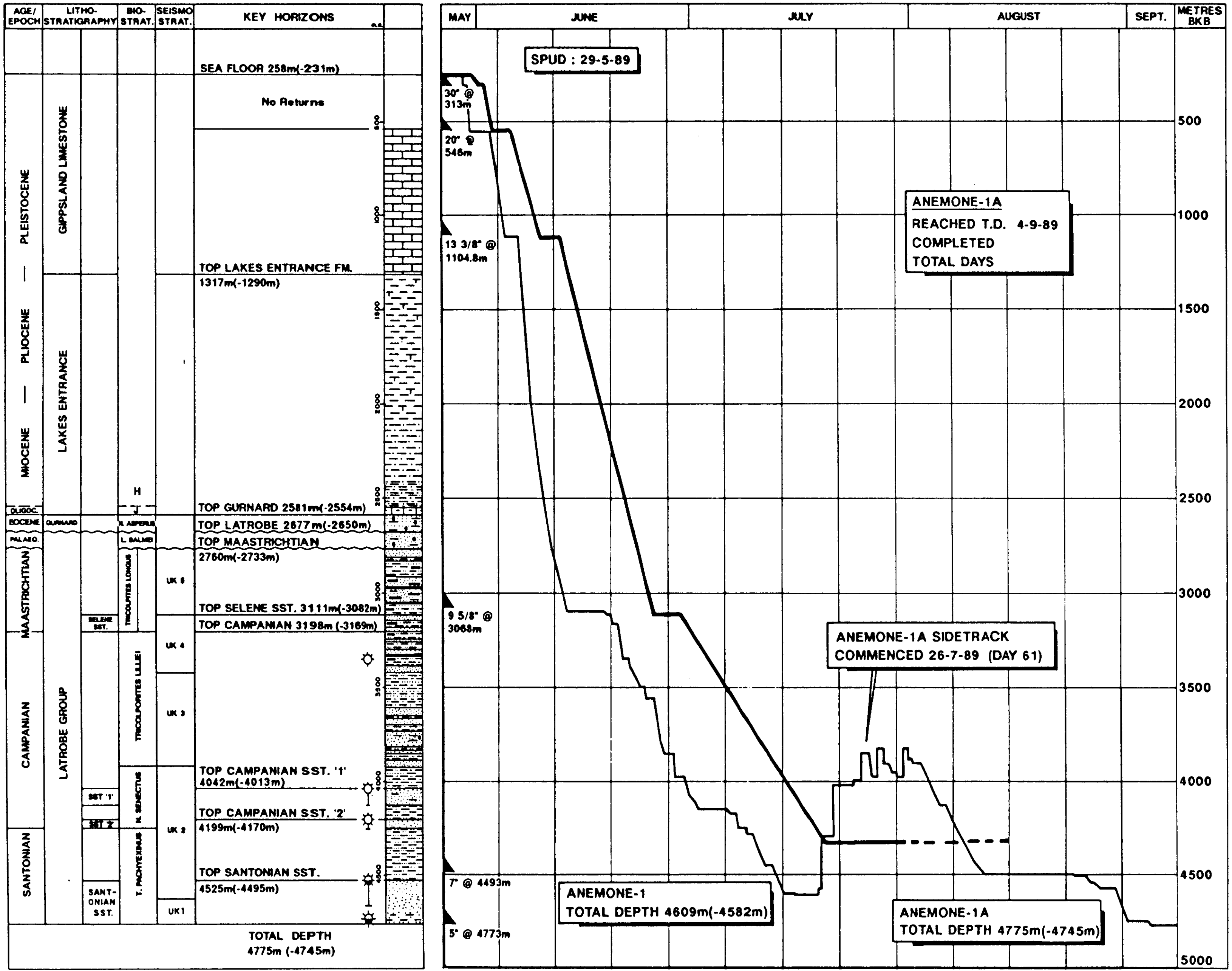
Objectives:

Campanian coastal plain sandstones in a downside fault-dependant closure.

Well Results:

Plugged and Abandoned.
Non-Commercial Gas Discovery.

ANEMONE-1A STRATIGRAPHY AND DRILLING TIME DEPTH CURVE



PETROFINA EXPLORATION AUSTRALIA S.A.

INTERPRETATIVE

DISCUSSION & RECOMMENDATIONS

INTRODUCTION

Anemone-1 was drilled as a vertical exploration well in Permit Vic/P20 in Bass Strait using the Zapata Arctic rig. After being stuck at 4609m a sidetracked well, Anemone-1A was drilled from 3879 to 4775m. A 7" liner was set at 4492.5m before drilling the high pressure Santonian sandstone in 6" diameter. The 7" liner was extended to surface and a 5" liner was run to allow the well to be tested. Two DSTs were performed then the well was plugged and abandoned.

The rig moved on location from Petrofina's Angler-1 well. It took 2-1/2" days to anchor the rig and be ready for spudding.

36" SECTION

The well was spudded in using a 26" bit (Reed Y11 rerun from Angler-1) and 36" hole opener (Smith). The 36" hole was drilled from 258 to 319mkb in 3-1/4 hours using 0-5 klb WOB, 30-90 rpm and 300-900 gpm for an average ROP of 18.8 m/hr. After the first connection, the ROV was required to assist in re-entering the hole.

The mud was seawater with 30 bbl hi-vis pill pumped every 3 connections. At casing point the hole was displaced to hi-vis mud in two stages while pulling out of hole.

Five joints of Vetco 30" conductor pipe with ST-2 connectors and a Vetco 30" low pressure housing with Vetco Permanent Guide Base were run and cemented with 186 bbl slurry using Class 'G' cement and 1% CaCl2 (BWOC). A top up cement job was performed in the annulus.

26" SECTION

The 26" hole was drilled using a 17-1/2" bit (Hughes CX3A) and a 26" hole opener (Smith). It took 9-1/2 hours to drill the 241m of this section using 5-10 klb WOB, 130 rpm and 1,000 gpm.

The section was drilled with seawater and 40 bbl hi-vis pill pumped every 3 connections. At casing point the hole was displaced with hi-vis mud at 1.15 SG.

A Vetco 20" casing with RL-4S connectors and a Vetco 18-3/4" high pressure housing were run and cemented in place using an internal stinger. Cement returns were observed at surface during cementation and it was necessary to jet both the wellhead and the PGB before running the BOP and riser.

17-1/2" SECTION

A Hughes CX3A (re-run from 26" hole) was used to drill this section of 555m in 38.5 hours with an average ROP of 14.4 m/hr. The parameters used were 5-20 klb WOB, 130 rpm and 865 gpm. As in Angler-1, only one bit was required to drill the 17-1/2" hole.

The mud system used was seawater at the beginning of the section but 60 bbl hi-vis pill were pumped approximately every 150m and were retained in the system to allow it to 'mud up' gradually. When the yield point reached 13 lb/100 sq ft, there were enough solids from the Gippsland marls in the system to provide adequate rheology and pills were not required. At 945m circulation was lost, probably due to the hole packing off around the stabiliser. It was necessary to reduce the flow rate to regain circulation. Condet was spotted and the pipe worked for 1/2 hour before drilling could resume normally. Dilution was required in the lower part of the section to keep mud weight below 1.10 gr/cc.

An 8-1/4" Teleco MWD tool was picked up in the BHA but was not tested either on surface or on bottom because Teleco engineers had not arrived onboard. Drilling started with a flowrate at around 880 gpm. At 700m a pressure drop of 200 psi occurred and pressure stopped fluctuating. It is believed that at that depth the MWD stopped functionning, probably due to a flowrate higher than the maximum limit set by Teleco for the tool. When Teleco engineers arrived onboard different flow rates were tried to attempt to regain pulse but without success and single shot surveys were used for this section.

After the Schlumberger logging, the 13-3/8" casing was run and cemented without any problems.

12-1/4" SECTION

The 13-3/8" float equipment and cement were drilled using the combination PDC bit (Hughes B9M+), PDM (Eastman Christensen), shock sub and MWD. After performing a FIT to 1.80 SG equivalent, the Lakes Entrance was drilled using the following parameters: 5-25 lkb WOB, 295-340 rpm (combination PDM and rotary table) and 730-775 gpm. In order not to overload the annulus with cuttings the ROP was controlled to a maximum of three singles per hour by maintaining a low WOB. In addition, a wiper trip was performed every day (or approximately 500m). If the policy to control ROP to three singles per hour in the Lakes Entrance is maintained for our next well, the use of a PDM thus generating high rpm is questionable since WOB was limited throughout the Lakes Entrance. A PDM can only be justified if it is decided to drill faster (4-1/2 singles per hour as in Angler-1) in the soft Lakes Entrance even if connection time is increased to allow cleaning up the annulus in the BHA area. After entering the Gurnard and Latrobe when formation changed from claystone to an alternance of sandstone and siltstone with hard stringers, the average ROP dropped to approximately 10 m/hr and torque increased. The bit was eventually pulled at 2874m and graded 75% to 90% worn.

In order to finish this section another PDC was picked up (Hycalog DS34H) and run without PDM and shock sub. With the previous BHA (2 stabilisers at 30 ft) below 1700m, the hole had gradually built an angle to 6.2° inclination. The two stabilisers were moved up in this BHA (60 ft from bit) in order to drop the angle before casing point. The DS34H drilled 202m of Latrobe formation (alternance of sandstone and siltstone with hard stringers and coal) in 28 hours for an average ROP of 7.2 m/hr. Parameters used were: 5-30 klb WOB, 100-150 rpm, 720-740 gpm. The bit was pulled at 3076m and graded 90% worn.

After the Schlumberger logging, a check trip was run and it was necessary to wash from 3053 to 3076m. While pulling out of hole an overpull of 100 klb was experienced and the hole appeared to be swabbing. With circulation the string could move up and down freely but overpull occurred when circulation was stopped. It was believed that the bit and stabilisers balled up and CONDET was mixed in the mud and viscosity was increased with PAC-R and XCD to improve hole cleaning. Another check trip to TD was performed before pulling out of hole freely.

In order to retrieve the flex joint and wellhead wearbushings, the wellhead and BOP required 3 runs to wash them with a jetting tool.

The 9-5/8" was run with only the last joint being washed down. The caliper was used to calculate the slurry volume and a preflush of 40 bbl Flocheck 21 was pumped before cementing.

The mud system was displaced to a Seawater/Gel/Polymer system at the beginning of the section and mud weight was raised. Drilling the marls in the upper section had little effect on mud properties apart from mud weight. While drilling the claystone, the reactive nature of clays affected the rheological properties (increase in YP and gels). Also the coating of drilled solids by chemicals created a rapid depletion of polymer and caustic soda, thus increasing fluid loss. Below 2700m additions of caustic soda and lime were used to maintain pH between 9.5 and 10.0. This is probably due to the presence of acid gas in the formation (CO2 as in Angler-1 and/or H2S possibly coming from coal beds). Prior to logging the 12-1/4" hole section, the mud was treated to raise the pH to 10.05 and approximately 0.057 ppb of Baracide was added to control bacteria. The mud was not circulated for 36 hours and after logging the pH had dropped to below 8.3 with the mud having a sickly-sweet rotten odour. However, after running the 9-5/8" casing, while circulating, a maximum of 41.5% gas was recorded at bottoms up, the rig's H2S detector recorded over 60 ppm while hand-held detector recorded 5 ppm, and the mud from the hole was black in colour with low pH. Before cementing the mud was treated heavily with lime and caustic soda to raise the pH and neutralise any H2S.

There are two possible explanations for the presence of H2S and the degradation of the mud:

- bacterial degradation even though the polymer are starch and cellulose based and should not degrade to form H2S.
- presence of H2S in the formation as a by-product of a chemical reaction between the mud and the coal.

Fresh and degraded samples were sent to the University of Adelaide and to Baroid's Perth laboratory to determine the cause of H2S degradation. The results indicated that:

- the fresh sample did not show any SRB growth or degradation of properties.
- the fresh sample contaminated with CO2 presented deterioration of properties due to bacterial growth.
- the fresh sample contaminated with H2S showed some degradation of properaties but with no bacterial degradation.
- the sample of degraded mud showed high concentration of SRBs.

From the above results it seems that the mud degradation which occurred on the rig can be attributed to a combination of CO2 and/or H2S contamination. The presence of both gas in the Gippsland Basin has been documented in technical papers and CO2 was encountered during Angler-1. As a conclusion, because of the risks associated with H2S, present either in the formation or as a by-product from the mud degradation, it is recommended that sufficient stocks of lime and sulphide scavenger be kept on the rig with adequate gas detectors for our next well.

It has to be noted that, contrary to Angler-1, in Anemone-1 the entire 12-1/4" section including the marls was drilled with a seawater/gel/polymer system. As seen previously this had little effect on mud properties and therefore cost, but created a good gauged hole throughout the entire section.

Another positive effect on the mud in Anemone-1A was the shale shakers used on the rig (3 x THULE dual shale shakers) which were used at the optimum therefore reducing mud losses. Only 4705 bbl of mud were required for the 12-1/4" section when 7879 bbl had been planned.

8-1/2" SECTION

The 9-5/8" float equipment was drilled with a PDC bit Eastman Christensen R435S. Subsequently the bit drilled only to 3089m for a total distance of 13m in 6-1/2 hours before being pulled because of slow ROP and graded 100% worn. The bit was designed with the cutters mounted on 'studs' and all cutters were lost with the studs broken at their base. This is probably the result of drilling out the float equipment and 12-1/4" rathole where Schlumberger SWC bullets had been lost and probably not entirely recovered inspite of two check trips with junk basket before running the casing.

The next bit was a Reed HP43JK run in conjunction with a junk sub to try to clean the hole from cutters from the previous PDC bit. The bit was pulled after 92m drilled in 17 hours (rop = 5.4 m/hr) and graded 6-2-1/16.

Another PDC bit was then picked up, a DBS TD290, run with a junk sub, MWD, Smith Borox roller reamer and an undergauge stabiliser. This BHA was used to try to reduce drilling torque experienced during Angler-1 and which is believed to be caused by the thin coal beds moving into the well. Unfortunately, as in Angler-1, the rpm had to be reduced because of excessive torque: rpm = 60-90 with 575-625 amps torque and WOB = 0-30 klb. The TD290 was pulled after 190m drilled in 27 hours (rop = 7.0m/hr), the grading was 100% and the bit was replaced by a Reed HP51AJK which drilled 100m in 24 hours. With this bit too the rpm was reduced to 30/70 in order to have acceptable torque - 320-550 amps. A pill of detergent was pumped to assist drilling without improvement and the bit was pulled and graded 4-2-1/8.

Because of the high torque experienced a PDC bit (R437G with extra-gauge protection) was run next in conjunction with a PDM (Eastman Christensen). The following parameters were used - WOB = 0-5 klb, rpm of string = 50, flow rate = 450 gpm which gave a total bit rotation of 200 rpm. The torque remained high with 475 gpm. Unfortunately after only 60m drilled in 6.5 hours, the PDM locked and the bit was pulled out of hole to remove the PDM from the BHA before re-running the same bit. Without the PDM, the rotation had to be decreased to 30 rpm in places in order to have any progress. With higher rpm it appeared that higher torque was preventing the WOB to reach the face of the bit and therefore reducing penetration rate. This bit drilled a total of 380m in 50 hours (rop = 7.6m/hr) but was pulled and graded 100% worn with 1/16 to 1/8 under-gauge.

A new PDM was picked up and tested without success on surface, therefore the following R437G was run on rotary and drilled 130m in 26.5 hours using the same parameters and also with high torque. An attempt was made with a pill of Torq-trim to reduce torque but without success. At 3987m, pump pressure increased while drilling and the bit was pulled and graded 100% worn with the face of the bit completely ringed out.

A Reed HP51AJK was run in the hole following these two PDCs. Before reaching TD it was necessary to wash and ream from 3748m. It drilled with 0-40 klb WOB, 65-85 rpm and 450 gpm and torque was lower in place - 340 amps instead of 550. At 4158m, after 177m drilled in 51-1/2 hours with an rop of 3.4 m/hr average, torque increased dramatically and the bit was pulled with its 3 cones lost. It was due to excessive wear on the shirtail which would eventually damage the grease cap resulting in the loss of grease and eventually a seal failure. Unfortunately because of the very high torque experienced throughout this section while drilling it was not possible to recognise the signs of seal failure and the bit was pulled too late. To clean the hole, two runs were made with a reverse circulated junk basket and three runs with a junk bit (Reed S31G or Hughes JD8) in combination with two junk subs. In addition a Schlumberger electromagnet was run but without success. A total of 12 lb of junk including 45 inserts were recovered before drilling was resumed with another Reed S21GJ for 71m in 22-1/2" hours. All the above bits were pulled undergauge - 1/16 to 1/4 inch.

The following bit was a PDC Longyear DP51AG with extra gauge protection run in conjunction with another Eastman Christensen PDM. This bit drilled only 48m in 12 hours (rop = 4 m/hr) before being pulled because of low rop. The bit was graded 80% worn with even wear. The PDC bit and PDM were laid out and a Reed HP51AJK was run on rotary for 161m in 40-1/2 hours (rop = 3.2 m/hr). Parameters were 30-42 klb WOB, 60-75 rpm, 440-450 gpm with drilling torque being 370-400 amps. The bit was pulled only after 40 hours drilling time because of fear for the gauge and bearing life in view of previous bit used in this well. It was graded 2-3-1/8 and replaced by another Reed HP51AJK. This bit drilled the continuation of the massive siltstone with the same parameters.

At 4525m a drilling break was observed while entering the sandstone. After a flow check, drilling was resumed while increasing the mud weight because of high gas content. At 4605m after mud weight had been raised to 1.28 SG, an increase in flow rate was noticed (1 bbl gained) and the well was shut-in with SIDPP = 0 and SICP = 200 psi. A first attempt was made to kill the well with 1.30 SG but after the circulation the well was shut-in with SIDPP = 450 psi and SICP = 600 psi. The mud weight was increased to 1.43 SG to kill the well. After the BOP and riser had been displaced with kill mud and the well was static, the well was opened and the string was freed with 120,000 lb down and 70,000 lb up. The hole was then circulated with 1.48 SG mud and drilling was resumed to 4609m. After making a connection the string became stuck with the bit at 4595m. Several attempts were made to free the pipe with EZ-spot pills and by reducing the mud weight to 1.42 SG. A Schlumberger free point indicator showed the string to be stuck at 3532m with no improvement after working the pipe with EZ-spot. The string was backed off at 3505.8m using two shots. A fishing assembly (overshot, bumper sub, fishing jar) was run and engaged over the fish but was not able to free the BHA. While circulating the BOP was closed due to high gas in the mud but unfortunately the fishing string became stuck.

In order to seal off the gas zone with a cement plug the BHA was cut at 4573m with a Pengo charge. A first cement plug was set with the top at 4274m (temperature log) but did not succeed in isolating the gas zone. After the string was cut at 4146m with another Pengo charge, a second plug was pumped with the top at 4020m. The string was then cut at 4015m and mud weight was decreased from 1.46 SG to 1.15 SG, an EZ-spot pill was pumped around the stuck point and the fishing assembly came free. A free point indicator showed that the string was free to 4015m and that the Pengo charge had not succeeded in cutting the string. Two other charges were required to cut at 4006m.

The section was drilled with mud from the 12-1/4" hole. The high mud cost is due to the problems encountered while drilling:

- CO2/H2S contamination required treatment and corrosion inhibition.
- Attempted to reduce high drilling torque with Torq-Trim.
- Attempted to improve ROP in soft claystone with CONDET.
- Barite required to increase mud weight and kill well.
- EZ-Spot used when pipe was stuck.

SIDETRACK OPERATIONS - (ANEMONE-1A)

- **TRIP #1**

  A cement plug was pumped on top of the fish from 4006 to 3874m and the sidetracking assembly was picked up = PDC bit (DBS PDS1), Smith PDM (F2000S steerable system with a 3/4° bent housing), 10' short DC, stabiliser, MWD and NMDC. The top of the plug was dressed to 3881m (hard cement). A first attempt was made to sidetrack across the softer sandstone without success. WOB (5-20 klb) and subsequently rop (10 m/hr) were considered too high to achieve a 'good' sidetrack. However the use of a PDC bit did not seem to help in this case because of the high reactive torque generated which would continuously swing the tool face therefore making it impossible to achieve a 'ledge' to get started.

- **TRIP #2**

  A second cement plug was set from 3976 to 3846m. The same assembly was picked up but with a Reed HP13GJ instead of a PDC and the plug was dressed off to 3850m. Although cement seemed harder than expected this second attempt started higher than the first one in a harder sandstone. Tool face was oriented at 60-70° and was quite easily controllable. At first, formation cuttings increased until a first siltstone string at 3861 where the assembly went back into the old hole. The survey did not indicate any angle build up. Drilling continued to 3909m without success. It was believed that the 3/4° bent housing did not create enough lateral force and the sidetracked hole did not deviate enough in the sandstone before encountering hard siltstones.

- **TRIP #3**

  The sidetrack assembly was replaced by the following one - Reed HP13GJ, Smith Delta 500 PDM with 2° bent sub, MWD and NMDC. The bent sub was oriented at 140° tool face and drilling started with a very slow rop but with constant tool face. At 3926m, not deep enough for any meaningful deviation survey, the bit was pulled on indication of possible bearing failure. The bit was graded 6-8-1/2 with excessive erosion on the shirtail of the bit after only 16-1/2 hours drilling.

- **TRIP 4**

The same assembly was run in conjunction with a Reed S21G to continue the previous attempt. The first survey at 3916m showed a slight build up angle from Anemone-1. However at 3926m no significant build up was observed so the attempt was aborted with the bit at 3943m. The bit was pulled and graded 3-4-1/8 after 4-1/2 hours drilling.

The possible reason for the failure of attempts #3 and #4 is that the sidetrack was tried in the very hard and abrasive siltstone indicated by the great wear on the shirtail of the bits. Even with a 2° bent sub, not enough lateral force was generated to penetrate into the formation. The best chance of kick-off appeared to be in the lower softer sandstone (top of 3879m) from a very hard cement plug with a higher bent sub.

- **TRIP 5**

A third plug was set from 3943 to 3843m with a slurry density increased to 2.05 gr/cc. A rotary assembly was used to dress off the plug to the top of the sandstone. The plug was drilled with 25 klb WOB and 80 rpm for an rop of 17 m/hr. It was impossible to wash the plug with 25 klb, 400 gpm and no rotation, so it was therefore considered adequate for sidetrack operations. A Reed HP13GJ was picked up with a Smith Delta 500 PDM and a 2-1/2° bent sub to maximize the change of being kicked off before the end of the sandstone. The bent sub was oriented at 130° and drilling started with formation cuttings increasing with each sample. At 3905m the bit showed indications of bearing failure and was pulled out of hole. Unfortunately this was before any deviation survey could be taken in the new hole. The bit was graded 5-8-1/4 with excessive wear on the shirtail and two loose cones.

- **TRIP #6**

The steerable system was picked up (Smith F2000S with 3/4° bent housing) with a Reed HP51AJK to give the flexibility to orientate the hole as the sidetrack progressed in order to achieve maximum distance from the old hole. Unfortunately it was impossible to orientate the system because of erratic tool face. The bit was pulled after only 4m drilled in 2 hours and was graded 1-4-1/4.

- **TRIP #7**

A Reed HP51AJK was picked up with the Delta 500 PDM and 2-1/2° bent sub. After orientating the bent sub to 120° the sidetrack continued. At 3904m a survey indicated an inclination of 4.1° at 61.5° Azimuth and the sidetrack assembly was pulled to start the drop-off. The bit was graded 2-6-1/4.

- **TRIP #8**

A 110' pendulum assembly with a HP43AJK was run to drop the angle from 5.6° at 3927m to 0.1° at 4107m. The calculated displacement from the old hole was around 8m. The only problem encountered at this stage was magnetic interference from the fish influencing azimuth reading from the MWD.

8-1/2" SECTION

Normal drilling was resumed using a Reed HP43AJK with a 90' pendulum assembly. Due to magnetic interference with the fish, azimuth readings were not always reliable but the sidetracked hole appeared to slightly build angle in the same direction as Anemone-1 (westerly direction). The bit was pulled at 4296m due to excessive torque after a connection. The HP43AJK drilled a total of 178m in 46-1/2 hours (rop = 3.8 m/hr) and was graded 5-8-1/4. It was replaced by a Security S84F which drilled to casing point at 4500m, a total of 204m in 65-1/2 hours (rop = 3.1 m/hr) and was graded 3-4-I.

While logging RFT the cable became stuck after 13 pressure readings. After freeing the cable the log was aborted to run a wiper trip. A tight spot was encountered at 4456m and after picking up the kelly the hole packed off and circulation was lost. The pipe was worked free and the hole was reamed to bottom before resuming logging. While taking RFT readings, the cable became stuck again and required 9000 lb (maximum allowable) to be free. Another wiper trip was run to clean the hole prior to running the 7" liner. In addition a hi-vis pill was spotted on bottom.

The mud weight was maintained at 1.15 gr/cc throughout this interval. As a result of sidetracking operations which required to drill three cement plugs, mud was effected by cement contamination (high pH, reduction of viscosity). Q-mix and polymer dilution mix were added to the system until a formation change to claystone increased the YP and gels. The filtrate was maintained between 5.5 and 6.5 cc/30 min by addition of PAC-R when viscosity was low or Dextrid later when miminum effect on viscosity was required.

The 7" liner was then run and cemented (see attached report).

After cleaning out the liner and drilling the landing collar with a 6" BHA, the top of liner was pressure tested without success. The CBL/VDL was run to check cementation of the liner (see attached report) and then a TIW polished mill was run to clean the tie-back receptacle prior to running with a tie-back packer.

6" SECTION

A Reed HP12 was used to drill the cement, float collar and float shoe in three hours. It then drilled only 3m in 3-1/2 hours before being unable to re-enter the 6" hole after a connection. The bit was used an additional two hours to work on the obstruction and 3-1/2 hours to raise the mud weight to 1.30 gr/cc before being pulled. It was graded 8-2-1/16 and 2 lb of junk were recovered from the junk sub.

Another Reed HP12 was run in the hole to drill to 4508m (only 5m) in seven hours. It was graded 2-2-I and replaced by a Reed HP51A which drilled the siltstone with the following parameters - 25 klb WOP, 75 rpm and 300 gpm for an rop of 2.5 m/hr. At 4533m (6m into the gas bearing sandstone) mud weight was increased to 1.37 gr/cc. At 4585m the well was shut in - SIDPP = 260 psi and SCIP = 270 psi. Mud weight was increased to 1.45 gr/cc to kill the well. A wiper trip was made to the top of 7" liner to monitor for hole swabbing. After runnin back to TD a maximum of 71% gas was recorded at bottoms up and mud weight was increased to 1.48 gr/cc and drilling resumed to 4648m when the bit was pulled and replaced by a PDC (Longyear DP15G). Prior to reaching TD it was necessary to ream from 4575 to 4648m. The bit drilled to 4750m (expected TD) in 23 hours (rop = 4.4 m/hr) with the following parameters - 5-25 klb WOP, 60-80 rpm and 250-300 gpm. In order to safely pull out of hole for logging, mud weight was increased to 1.52 gr/cc.

Before drilling out from the 7" liner, mud weight was raised to 1.30 gr/cc by addition of barite. Cement contamination affected mud properties = high pH, low viscosity and treatment of XCD and Pac-R were necessary to rebuild the YP to prevent barite settling. The YP was maintained at 15 to 18 lb/100 sq ft. API filtrate was kept around 5cc/30min in this section by addition of Baranex, Pac-R and Dextrid.

After a first logging run without problem, DLT/SONIC/MSFL/AMS/GR, the second run (LDT/CNL/MLT/GR/GPT) and RFT could not enter the 6" hole. A wiper trip was done and it was necessary to ream from 4494m to TD in 7-1/2 hours. At TD an additional 25m were drilled to have the final TD at 4775m. A second attempt was made with the LDT/CNL/GR/MLT/GPT/TCC/AMS but the tool became stuck in hole at 4525m. An overshot was stripped over the Schlumberger cable. The fish was engaged and pulled free to the 7" shoe before parting the cable. A new wiper trip was done with reaming from 4500m to 4775m.

The caliper log indicated the hole diameter to be around 18" in the sandstone. This is believed to be due to the flow rate used which created turbulent flow around the BHA and therefore eroded the unconsolidated sand formation. To prevent this problem; in addition to reduction of flow rate if possible, Baroid has proven in laboratory that increase in bentonite and XCD content could help in stabilising sands. It has to be noted that reducing flow rate might not be possible because of the low mud velocity achieved in larger diameters up the hole (9-5/8" and riser - 20" ID).

In view of the testing program a 5" liner was run:

- TIW CLS shoe
- 1 joint with Hydril SFJ-P connections
- TIW HSSR landing collar
- X/over Hydril SFJ-P pin x Atlas Bradford FL-4S box
- 31 joints with Atlas Bradford FL-4S connections
- X/over Atlas Bradford FL-4S pin x Hydril SFJ-P box
- TIW RP-RRP hydraulic rotating hanger

After circulating, the hanger was set by dropping the ball, allowing to gravitate to its seat in the landing collar while pumping slowly for ± 45 min and pressuring up to 1400 psi. Once set, the landing collar was sheared with 2700 psi and circulation regained. The running tool was released and the liner was cemented with the following:

- 20 bbl dual spacer
- 5 bbl water
- 10 bbl Flocheck 21
- 5 bbl water
- 103 slurry at 1.90 gr/cc density using class 'G' cement and 'Gastop'
- 223.51 bbl mud displacement.

While mixing the slurry, the density could not be maintained constant because of the GASTOP additive.

Because of the big diameter of the hole as shown by the caliper (up to 23" in places), the displacement rate was reduced from 5 bpm to 3 bpm once the slurry was in the annulus. This was done in order to allow the cement to fill the entire cavities and reduce the chances of channelling, leaving mud behind. During the job the liner was rotated: 7 rpm at the start and 3 rpm at the end of displacement.

After cleaning out the top of liner with a 6" bit and 7" scraper it was tested successfully to 4000 psi. The 5" liner was then cleaned to the landing collar at 4747m and a CBL/VDL/GR was run which showed good cement bond on the entire 5" liner - low amplitude on CBL and good formation arrival on VDL. Because of the inside diameter of the 5" liner the CCL and centraliser were not not run with the consequence that the tool was expected to be eccentered and therefore record a slightly lower amplitude than it would have if centered. The difference was estimated at 30% giving an average amplitude of 15-20 mV.

Schlumberger ran two other logs - CNL/GR and GST/GR in cased hole.

TESTING

Before running with DST strings and because high pressure gas was expected, it was decided to run a 7" tie-back string with VAM connections (gas tight). After cleaning up the 7" tie-back receptacle with a TIW polished mill, the 7" was run with a dummy running string to calculate the space-out. The 7" was stabbed into the receptacle and tested, then the BOP rams were closed on a white joint of drill pipe. The string was then pulled to change the spaceout and install the casing hanger. Unfortunately after landing the hanger we were unable to test the seals internally but it was possible to test the seals from the annulus. Damaged seals were suspected and the casing was pulled to redress the seal nipple. The 7" tie-back string was then re-run in the hole but with the same result - unable to test the seal internally and good testing from the annulus. It was then evident that the tie-back receptacle (6') was too short and with internal pressure because of compression and ballooning effects, the casing would shorten itself enough to lift the seal nipple out of the receptacle. With external pressure, of course, the problem did not occur. It was decided to pull the string, install a TIW orifice collar and cement the tie-back string. While pulling out of hole the casing hanger hung up in the BOP and it was necessary to work it free but the lock ring was lost and the casing hanger seal area was slightly damaged. The BOPs were unlatched and the wellhead and BOP were inspected with the ROV. The BOP was then functionned and the lock ring felt when No. 4 rams were closed. The BOPs were latched in place and tested to 9000 psi without problem. The 7" string was run and cemented in place. In order to get a good pressure test to 9000 psi, the pack-off had to be torqued up to 19,000 ftlb (instead of 12,000 ftlb normally).

The 7" casing was then cleaned up and DST #1 string was run in the hole. The Weatherford JAM (Joint Analyzed Makeup) and HOLD (Helium Operated Leak Detector) systems were used for each connection. Although this proved to be useful when pressure testing the tubing string (no leak detected), the HOLD system was very timne consuming in its operation, slowing down the running rate from 20 joints/hour to only 10 joints/hour. In addition the internal packer used with the HOLD system had to be redressed 3 times before it became irrepairable and subsequently not used. Note that for DST #2 the HOLD was not used and yet no leaks were detected whilst pressure testing the string so it is doubtful that the system was useful in this case.

The packer was set and the MIDRV was opened in an attempt to spot hi-vis mud on top of the packer. However it was impossible to reverse circulate so hi-vis mud was circulated in the hole to clear the MIDRV port and annulus from debris. The 20 bbl hi-vis pill was then pumped and the MIDRV closed.

The well was perforated using a drop bar on slick line. Refer to Flopetrol/Exal reports for timing and results of test. During the third opening period, whilst starting the heater, it caught on fire due to a diesel leak. The well was shut-in and the fire was extinguished with dry chemicals. The heater was then bypassed until it was checked. While monitoring the pressure build up with the MUST tool during the third shut-in period, the MUST tool stopped functioning and an attempt was made without success to retrieve it. The cable parted at the weak point. Monitoring of the pressure build up continued at the choke manifold.

After taking samples at the separator, the well was closed in at the choke manifold and killing operations started by bullheading a total of 96 bbl mud down the tubing before injection pressure increased (a total of 112 bbl was required to fill the string to the perforations). The well was opened and observed to be static. The PCT was closed and since it was impossible to open the MIDRV to reverse circulate, the SHORT was opened with 2400 psi on the annulus. The packer was unseated and the DST #1 string pulled out of hole.

A cleaning trip was made with 5" and 7" scrapers to condition the mud, then a 5" bridge plug was set on wireline at 4593m and tested to 4000 psi.

The DST #2 string was run in the hole using only the Weatherford JAM system. The string was periodically pressure tested whilst running in the hole. The packer was set and the well was perforated by dropping a bar. Refer to Flopetrol/Exal reports for timing and results of DST #2.

Pressure gauges and sample catcher were run in the hole to establish a pressure gradient and determine the nature of fluid produced. The gradient and samples indicated water and the test was terminated.

The PCT was closed and MIDRV opened to kill the well. The tubing content was reverse circulated but it was then impossible to bullhead any fluid down into the formation. The SHORT was opened and the packer unseated to circulate the well before pulling with DST #2 string.

ABANDONMENT

Two cement plugs were set on top of the bridge plug to fill the entire 5" liner and inside the 7" casing. Top of cement was tagged at 4245m and the plug was pressure tested with 4000 psi. The third plug was set across the 7" tie-back receptacle/orifice collar.

Since the CBL/VDL indicated that there was no cement in the 9-5/8" and 13-3/8" annulus and that the annulus was therefore open to formation, it was decided to cut the 7" and 9-5/8" casings, spot a cement plug and squeeze 5 bbl to fill the annulus. Unfortunately several attempts were made with both 7" and 7"/9-5/8" blades without being conclusive and Schlumberger was used to perforate 1 m with a 4" casing gun. After spotting the 150m plug, 5 bbl was squeezed in hesitation from 1200 to 1500 psi.

In order to be able to connect the housing running tool while blasting to cut the casings and retrieve the wellhead, it was necessary to retrieve the 7" packoff and also the 7" casing hanger. The 7" packoff was in fact sitting across the threads for the running tool. Three attempts were made to back off the packoff with HWDP and 8" DC but on all occasions, the string backed off first. It has to be noted that no left hand string was available for this job and the packoff had been overtorqued (see earlier).

A fourth plug was set from 340m to 278m and Schlumberger perforated at 266m to check that there was no gas accumulation in the annulus below the wellhead before blasting.

For blasting operations refer to separate report attached.

After recovering the wellhead, the hole was re-entered to fill the cavity with cement to the mud line, then all pipes were laid out and de-anchoring began.

The rig was released two days later.

PETROFINA EXPLORATION AUSTRALIA S.A.

Inter-Office Letter

Ref:	008/BdV/IOL	Date:	11 October 1989
To:	Richard Cordiez Luis Remisio		
From:	Bruno de Vinck		
Re:	**Anemone-1A - 7" Liner Running and Cementation**		

After setting a 9-5/8" casing at 3068m (9-5/8"-N80-47ppf-Buttress), the 8-1/2" hole was drilled to 4609m when the drill string became stuck. After backing off the string and setting a cement plug, the well was sidetracked from 3879m to 4500m (Anemone-1A). It was decided to set a 7" liner at that depth to protect the normally pressurized sandstones before raising the mudweight to drill a 6" hole through the high pressure reservoir.

The total liner length was 1545m (shoe at 4492m - TOL at 2948m). The following equipment was used:

- TIW CLS shoe - P110
- 1 joint 7"-P110-29ppf-buttress
- Halliburton float collar - P110
- 1 joint 7"-P110-29ppf-buttress
- TIW HS-SR landing collar - P110
- 18 joints 7"-P110-29ppf-buttress
- 108 joints 7"-N80-29ppf-buttress
- TIW RP-RRP line hanger - N80
- TIW LG6 setting collar - N80

The liner hanger type RP-RRP is hydraulic set and allows rotation and reciprocation before setting the hanger. Once the hanger is set, rotation can be resumed during the cementation. The setting collar includes a RPOB profile for cementation.

A total of 55 slip-on type centralisers were used = 1 per joint on first 10 joints above shoe, 2 per joint across area of high dog-leg (sidetrack) and 1 every 3 joints in other places.

1. Liner Running:

While making up the casing, it was filled every 5 joints from surface. After making up the liner hanger the liner was filled until returns were observed at surface. While running the landing string, the drill pipe was filled every 5 stands and at the 9-5/8" shoe the complete capacity of liner and drill pipe was circulated.

The liner was run without problems to 4483m when it started to take weight. The cementing kelly and manifold were picked up and the liner was washed to bottom.

An attempt was made to rotate the liner, but after a few turns rotation stopped with a maximum of 8000 ft lb torque. Because of the weight hanging on the swivel of the cementing manifold, it was decided to try rotating again only after the hanger was set.

2. Setting Liner Hanger

After dropping the ball and pumping slowly to allow it to seat in the landing collar, 1300psi pressure was applied to set the hanger (liner hanger was supposed to shear at 1200psi). While slacking off, it appeared that hanger was not set. Three more attempts were made with 1500psi, still unsuccessful. Pressure was released and string was picked up with 60,000lb overpull. Pressure was again increased to 1500psi and pipe was slacked off with complete loss of liner weight (125,000lb) and 20,000lb of string weight. At that time, pressure dropped suddenly to zero and circulation was regained. In addition, because of the rapid pressure drop, the pipe movement due to reduction of stretch was enough to shear the setting tool nut which was indicated by free travel of the kelly. A carbide pill was circulated which gave indications that the pressure drop was due to the landing collar shearing out earlier than expected and not because of a leak in the string. Note that landing collar was supposed to shear out at 2000psi but the multiple pressuring up required to set the hanger could have caused the collar to shear earlier because of fatigue. Before releasing the setting tool, an attempt was made to rotate the liner but no rotation was obtained with a maximum torque of 10,000 ft lb.

The string was then picked up to neutral point and the setting string was released with 30 torque free turns to the right. While picking up, the loss of weight was noticed so the pipe was slacked off and 25,000lb was applied on the liner during the cementation.

3. Liner Cementation

Sequence of Events

Time	**Operation**	**Rate (bpm)**	**Pressure (psi)**	**Volume (bbl)**
2116	Pump Water	2-5	200-600	10
2122	Test lines		4000	
2128	Mix Flocheck 21			
2144	Pump Flowcheck 21	5	600	20
2149	Pump Water	2	300	10
2154	Mix Lead Slurry			
2200	Pump Lead Slurry	7	700-300	136
2220	Mix Tail Slurry			
2224	Pump Tail Slurry	5.5	500-400	56
2235	Drop Dart			
2238	Pump Displacement	10-5	500-4500	368
2330	Bump Plug		1800	

- At 2256, after 172bbl of mud had been pumped, the rate was reduced from 10 to 2bpm to allow the dart to latch into and shear the liner wiper plug. No increase of pressure was noted and after 12bbl being pumped, displacement rate was increased back to 10bpm.

- At 2307, after 237bbl of displacement, the well was not longer on vacuum and pumping pressure started to rise as cement was getting higher in the annulus. This corresponds with 61bbl of lead slurry being already displaced in the annulus.

- At 2312, after 283bbl of displacement, pressures started to increase faster to reach a maximum of 4600psi after 298bbl. This corresponded with 122bl of lead slurry being displaced in the annulus. At that stage pressure dropped back rapidly to 2500psi. A possible explanation for this high pressure is that the hole packed off somewhere, however it has to be noted that no losses were experienced during cementation.

- Approximately 20bbl before the end of the displacement the pump rate was gradually reduced to 1bpm with 1000psi pressure. The plug bumped at 368bbl with 1800psi for 4 minutes. Pressure was released at 2334.

4. CBL/VDL

On average from 4475. to 4000m the CBL amplitude had a value of 25mV which could be considered as a poor cement bond. However, when analysing the Transit Time Curve and comparing the VDL to the SONIC (BHC) curve, we can see that this "bad" result can be partly attributed to the Micro-annulus which is present. It is believed that if 1000psi had been applied in the casing while logging, the amplitude would have been reduced to 10-15mV. In addition we can see that the good correspondence between the VDL formation arrivals and the Sonic Curve indicates not only presence of cement but also that a good bond exists between cement and formation.

Between 4205 and 4242m, the increase in transit time indicates an excellent bond between casing and cement. Note that in this case the CBL amplitude becomes meaningless. If the first amplitude is below the minimum for detection, the following peak will be detected so transit time is increased (cycle skipping) and also the amplitude on the CBL curve is the one from the second arrival, not from the first.

Poor cement bond can be found at around 4090 and 4065m with high CBL amplitude, casing arrivals but still good formation arrivals.

The cement top is estimated to be around 3275m and there is no cement in the 7" x 9-5/8" liner lap. Despite the fact that the excess had been increased to 40% in open-hole, around 25 to 30bbl additional slurry were required to have the cement reach the top of liner. Since no losses were experienced during cementation the only explanation is that in the interval between the caliper log and cementation, the circulations created massive washouts (note that 960bbl were circulated in 3 hours just prior to cementation). This is also indicated with the difficulties encountered while logging.

PETROFINA EXPLORATION AUSTRALIA S.A.

Inter-Office Letter

Ref: 009/BdV/IOL **Date:** 6 November 1989

To: Richard Cordiez
Luis Remisio

From: Bruno de Vinck

Re: **Anemone-1A - Wellhead Recovery - Techmaster Performance**

Following the poor performance of Techmaster's personnel and equipment during the wellhead recovery operations at Angler-1, a meeting was organized between Techmaster and Petrofina to discuss improvements to be implemented before blasting would be attempted at Anemone-1A. The recommendations were:

- Replace the Techmaster operator (Ken Minehan) who was present at Angler-1.
- Check and repair Techmaster's monocore sheated cable if possible, to be used in conjunction with a multiple core electrical cable or supply a multiple core sheated steel cable (Schlumberger type).
- Provide proper male-female connectors for all electrical connections.
- Use 30 kg explosives for each blast and bring the top of the charge level with the first 30" connector.

In Anemone-1A a 7" casing tie-back string had been run and the packoff set with 19,000 ftlb torque to get a good pressure test. Despite several attempts it was impossible to back off the packoff and so retrieve part of the 7" casing. The consequences were:

- Cut through 5 strings of casing = 30, 20, 13-3/8, 9-5/8 and 7 inches.
- Use smaller diameter cannisters to fit inside 7" casing.
- Impossible to detonate the charge with the housing running tool connected to the wellhead and exercising an overpull whilst detonating because the packoff is sitting in the wellhead in front of the threads for the running tool.

Since the housing running tool could not be used to retrieve the wellhead and casing strings, and because a 7" casing spear was considered too weak to pull on the entire load plus overpull, only two ways were left to recover the wellhead:

- Use the casing hanger running tool connected on the 7" hanger which meant that the weight of the wellhead and other casing would be hanging on the lock ring of 7" casing hanger (not a problem according to Vetco).
- Use a spare H4 connector rigged up to be hung on HWDP. The problem with this tool being that it would be impossible to pull it through the rotary table and it had to be disconnected from the casings and wellhead to be pulled through the table.

With both tools, the procedure to detonate the charge was the same - the charge was hanging on a cable below the tool, a T-bar was sitting on top of the wellhead so that correct spaceout of the charge was achieved and the retrieving tool (casing hanger running tool or H4 connector) was around 7 to 8m above the wellhead whilst detonating. After the explosion, the rest of the charge and cable were pulled clear and the retrieving tool was connected on the wellhead.

It took 3 blasts to sever all 5 strings of casing and pull the wellhead free. After the first explosion the casing hanger running tool was used and 320 klb overpull (in addition to weight of string and weight of wellhead/casing/cement estimated at 70 klb) without success. After the second explosion (0.5m higher than the first one) it was impossible to connect with the casing hanger running tool and the H4 connector was used with 200 klb overpull without success. The third charge was run but could not enter the wellhead. An inspection with the ROV indicated the presence of junk from the previous blast. The wellhead was jetted and another unsuccessful attempt was made with the casing hanger running tool - impossible to screw into the hanger. Finally the third charge was detonated (1m higher than the second) and the H4 connector pulled the wellhead free with 180 klb overpull.

Following are possible explanations for the need of three blasts:

- Unable to connect retrieving tool and exert an overpull while blasting.
- Shape of the charge - because of 7" casing the charge was narrow in diameter and long, therefore not being as "concentrated" as for 9-5/8" cannister.
- Blasting across the first 30" connector to spring it open, but this connector is around 8m below the mud line and in case of excessive flaring of the casing due to the explosion, the casings were dragged across 8m of hole and cement.

Recommendations if 5 strings of casing are cut:

- Possibility of increasing explosives to 40kg per blast (no problem for the vessel in 230m water depth).
- Attempt severing casing only 5m below the mud line as per the Submerged Lands Act.
- If possible, use the Vetco 4 hangers SG-5 housing to allow the running tool to be connected even if 7" casing cannot be recovered.
- If H4 connector is used the X-over to 5" HWDP should be built to allow circulation if possible. This could help recover the wellhead by pressuring up inside the casings while pulling.

2. PROGRAMMES

GEOLOGICAL WELL PROGNOSIS

ETROFINA EXPLORATION AUSTRALIA S.A.

Geological Well Prognosis

Anemone-1

TABLE 1

GENERAL DATA SUMMARY

Well Name:	Anemone-1	
Country:	Australia	
Basin:	Gippsland	
Licence:	VIC/P20	
Co-ordinates:	Line GF88B-100 CDP 660	
- geographic:	Lat 38°45'52.24" S	
	Long 148°19'49.22" E	
- UTM:	615,580 E	
	5,708,499 N	
Water Depth:	225m	
Operator:	Petrofina Exploration Australia S.A.	30%
Partners:	Overseas Petroleum & Investment Corporation	30%
	Japex Gippsland Limited	30%
	Bridge Oil Limited	10%

OBJECTIVES

Primary:	Intra-Campanian Sandstones of the Latrobe Group
Depth:	3725m subsea
Lithology:	Coastal plain sandstones
Trap:	Downside fault-dependent closure
Secondary:	- Selene Sandstone - Intra-Maastrichtian Sandstones
Anticipated TD:	4200m subsea

1. INTRODUCTION

It is proposed to drill an exploration well in Licence VIC/P20 on the Anemone Prospect on Line GF88B-100 at CDP 660 in 225m of water. The primary objective of the well will be the Intra-Campanian Sandstones of the Latrobe Group with a prognosed top of 3725m subsea. Additional secondary objectives are the Intra-Maastrichtian Selene Sandstones below 3040m subsea.

The location of the proposed well will encounter the primary objective 100m below the mapped crest of the structure and fully evaluate the minimum area of closure of some 10.6 km². It is not proposed to drill the crest of the structure lying in 400m of water.

2. REGIONAL SETTING

The Anemone Prospect is located close to the southern margin of the Gippsland Basin. To the south lie the Omeo Terrace and the main basin boundary faults. In the area of the Anemone Prospect and to the north, the Gippsland Basin appears to reach its maximum development with up to 2500m of the Latrobe Group sequence of shallow marine and continental shales, coals and sandstones. This sequence provides both the source rocks and the reservoir objectives. The Anemone Prospect lies up-dip from the main hydrocarbon generation area identified in the geochemical evaluation of the block.

3. OBJECTIVES

The potential reservoirs at Anemone comprise intra-Latrobe sandstones of coastal plain and deltaic origin. The primary objective is Campanian coastal plain sandstones similar to those proved in the Maastrichtian section at Helios-1, 9 km to the northwest. The predicted thickness at Anemone is 175m. The predicted net/gross ratio is 45%, and the predicted average porosity 17%. The Campanian is considered the primary objective since a substantial throw occurs at this level across the south boundary fault, providing a potential seal. At shallower levels, the throw is reduced and the risk of leakage across the fault is increased.

Secondary objectives include the lower Maastrichtian Selene Sandstone plus other intra-Maastrichtian and intra-Campanian sandstones.

Depth/porosity trends established from detailed log analysis of all the previous VIC/P20 wells show that if favourable facies are present, reasonable average porosities of around 17% can be expected for the primary objective. Porosities would reduce to around 14% at the proposed TD of 4200m.

4. SEAL

Coastal plain and marine shales form the potential seal lithologies for the primary and secondary objectives. In the Campanian, coaly shales form the predicted top seals. The trap is entirely dependant upon the seal along the southern bounding fault. The wrench character of the fault is considered favourable for seal due to a good chance of clay smearing along the fault plane. The anticipated low net/gross value also reduces the risk of leakage across the fault.

The presence of direct hydrocarbon indicators increases confidence in the integrity of the seal. In the northern part of the Gippsland Basin, several oil and gas fields have been found in fault traps reliant on downthrown seals, indicating that the model can be assigned a low risk.

5. HYDROCARBON SOURCE

The predicted source interval is the Campanian coaly, lower coastal plain sequence. Geochemical analysis of previous VIC/P20 well results 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. Cuttings pyrolysis shows average TOC values around 6%, with S2 values around 2.5%.

A detailed maturity profile at Hermes-1, 18.5 km to the north, shows that source rocks are mature for oil generation between 3600m and 4565m (TD). A similar profile is expected at Anemone, with a mature source interbedded with the predicted sandstones near TD. The Campanian source sequence has a regional northeast dip in the Anemone area, and the major oil kitchen for VIC/P20 is interpreted to lie down-dip from the Anemone structure. Modelling work indicates that source rocks would have been mature from late Palaeocene times to the present day. The maturation process is interpreted to have been interrupted during Eocene/Oligocene times when related interruptions in sedimentation occurred. Migration would have taken place up-dip through interbedded sandstones from the kitchen area in the northeast into the Anemone Prospect.

The predicted hydrocarbon type is oil, however there is some chance of gas should the source characteristics of the Lower Campanian sequence be gas prone. This sequence has not previously been drilled, but if thick, organically rich and over-mature, it could be a gas source. The nearest fields are, however, all light oil (46° to 51° API) with no gas caps.

6. STRUCTURE

Anemone Prospect comprises a large fault-dependent closure within the northern, downthrown block of a major northwest-trending, north-hading listric fault. This fault also bounds the Archer 'A' Prospect to the southwest. Within the hanging wall section, a downward increase in relative flexuring, and associated thickening into the fault, suggest that the present Anemone closure may result from compressive, or transpressive, rejuvenation along an older, listric or growth fault, during Latrobe Group deposition. These deformational phases probably also created the Archer 'A' closure as a transpressional feature, southwest of the fault. This structural model implies a good chance of shale smearing along the main bounding fault, and therefore of enhanced sealing potential. The presence of structural closure is further supported by the presence of a flat-spot intersecting the main objective horizon (Intra UK3 event) in a manner that conforms to the depth structure at this horizon. This conformity may be interpreted as a hydrocarbon fluid contact. The presence of DHI's here and within the Archer 'A' structure confirms the ideal location of the structure in relation to the source kitchen situated down-dip to the northeast.

The maximum area of closure mapped at Intra-Campanian level is 35.20 km^2. Water depths over this area range from 150m to 500m.

DRILLING PROGRAMME

CONTENTS

DRILLING PROGRAMME APPROVED BY:

Technical Manager

Exploration Manager

General Manager

1 WELL OBJECTIVES

Well Anemone 1 is located on the western flank of a large fault dependant structure defined by major bounding fault in the south and dip closure to the north. The primary objective is Campanian aged coastal plain and deltaic sandstones. Secondary objectives include additional coastal plain and deltaic sandstones mapped from the Intra Maastrichtian level down to 4300m (TD) in the Campanian.

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^{o} to 51^{o} API) with no gas cap.

<u>LICENCEES</u>

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

2 LOCATION

WELL NAME : ANEMONE-1

WELL CLASS : EXPLORATION

AREA : BASS STRAIT

LICENCE No : VIC/P20

DRILLING UNIT : ZAPATA ARCTIC

RIG TYPE : SEMI SUBMERSIBLE

RIG HEADING : 290°

DRILLING CONTRACTOR : ZAPATA OFFSHORE COMPANY

LAT./LONG. : 38° 45' 53.24"
148° 19' 49.22"

UTM : 615,580E
5,708,499N

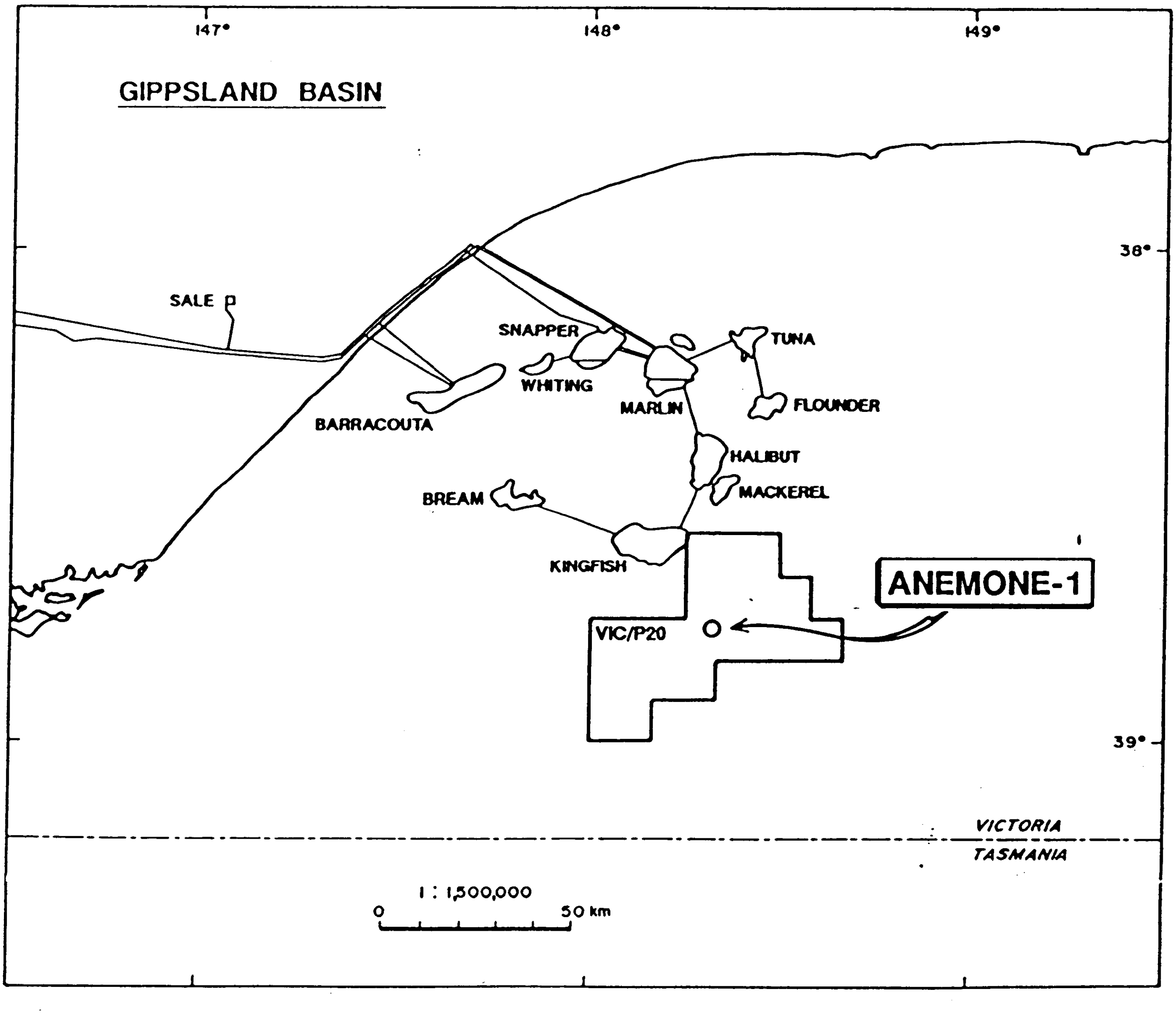
SEISMIC LINE : GF88B-100

CDP : 660

K.B. ELEVATION : 27m

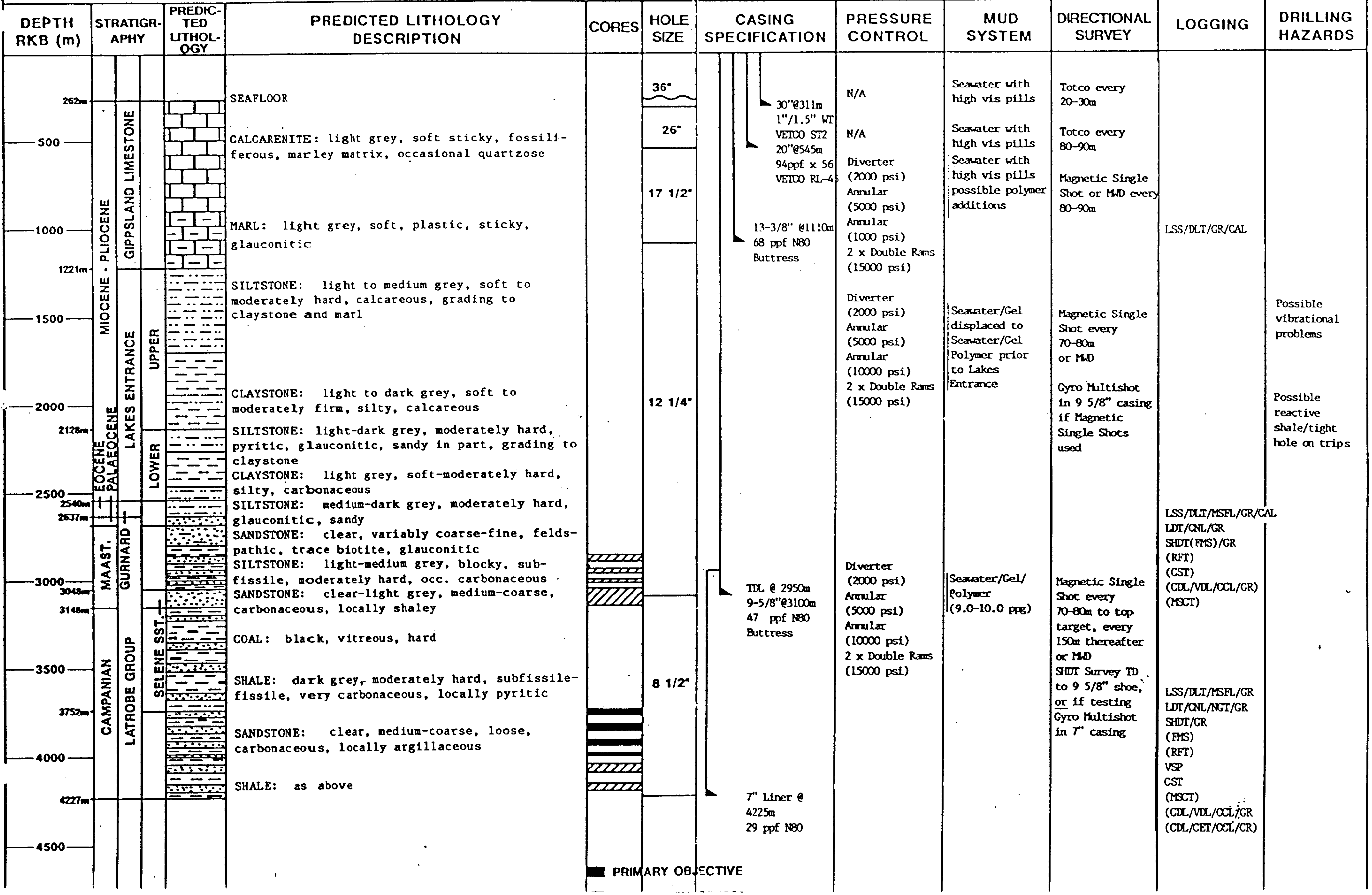
WATER DEPTH : 225m

TOTAL DEPTH & FORMATION : 4227m LATROBE



Petrofin: Expl. Aust. S.A. **VIC/P20**

3 WELL SUMMARY ANEMONE-1



PREDICTED LITHOLOGY DESCRIPTION

SEAFLOOR

CALCARENITE: light grey, soft sticky, fossiliferous, marley matrix, occasional quartzose

MARL: light grey, soft, plastic, sticky, glauconitic

SILTSTONE: light to medium grey, soft to moderately hard, calcareous, grading to claystone and marl

CLAYSTONE: light to dark grey, soft to moderately firm, silty, calcareous

SILTSTONE: light-dark grey, moderately hard, pyritic, glauconitic, sandy in part, grading to claystone

CLAYSTONE: light grey, soft-moderately hard, silty, carbonaceous

SILTSTONE: medium-dark grey, moderately hard, glauconitic, sandy

SANDSTONE: clear, variably coarse-fine, feldspathic, trace biotite, glauconitic

SILTSTONE: light-medium grey, blocky, subfissile, moderately hard, occ. carbonaceous

SANDSTONE: clear-light grey, medium-coarse, carbonaceous, locally shaley

COAL: black, vitreous, hard

SHALE: dark grey, moderately hard, subfissile-fissile, very carbonaceous, locally pyritic

SANDSTONE: clear, medium-coarse, loose, carbonaceous, locally argillaceous

SHALE: as above

CASING SPECIFICATION

30"@311m
1"/1.5" WT
VETCO ST2
20"@545m
94ppf x 56
VETCO RL-4

13-3/8" @1110m
68 ppf N80
Buttress

TOL @ 2950m
9-5/8"@3100m
47 ppf N80
Buttress

7" Liner @
4225m
29 ppf N80

PRESSURE CONTROL

N/A

N/A

Diverter
(2000 psi)
Annular
(5000 psi)
Annular
(1000 psi)
2 x Double Rams
(15000 psi)

Diverter
(2000 psi)
Annular
(5000 psi)
Annular
(10000 psi)
2 x Double Rams
(15000 psi)

Diverter
(2000 psi)
Annular
(5000 psi)
Annular
(10000 psi)
2 x Double Rams
(15000 psi)

MUD SYSTEM

Seawater with
high vis pills

Seawater with
high vis pills
Seawater with
high vis pills
possible polymer
additions

Seawater/Gel
displaced to
Seawater/Gel
Polymer prior
to Lakes
Entrance

Seawater/Gel/
Polymer
(9.0-10.0 ppg)

DIRECTIONAL SURVEY

Totco every
20-30m

Totco every
80-90m

Magnetic Single
Shot or MWD every
80-90m

Magnetic Single
Shot every
70-80m
or MWD

Gyro Multishot
in 9 5/8" casing
if Magnetic
Single Shots
used

Magnetic Single
Shot every
70-80m to top
target, every
150m thereafter
or MWD
SHDT Survey TD
to 9 5/8" shoe,
or if testing
Gyro Multishot
in 7" casing

LOGGING

LSS/DLT/GR/CAL

LSS/DLT/MSFL/GR/CAL
LDT/CNL/GR
SHDT(FMS)/GR
(RFT)
(CST)
(CDL/VDL/CCL/GR)
(MSCT)

LSS/DLT/MSFL/GR
LDT/CNL/NGT/GR
SHDT/GR
(FMS)
(RFT)
VSP
CST
(MSCT)
(CDL/VDL/CCL/GR
(CDL/CET/CCL/CR)

DRILLING HAZARDS

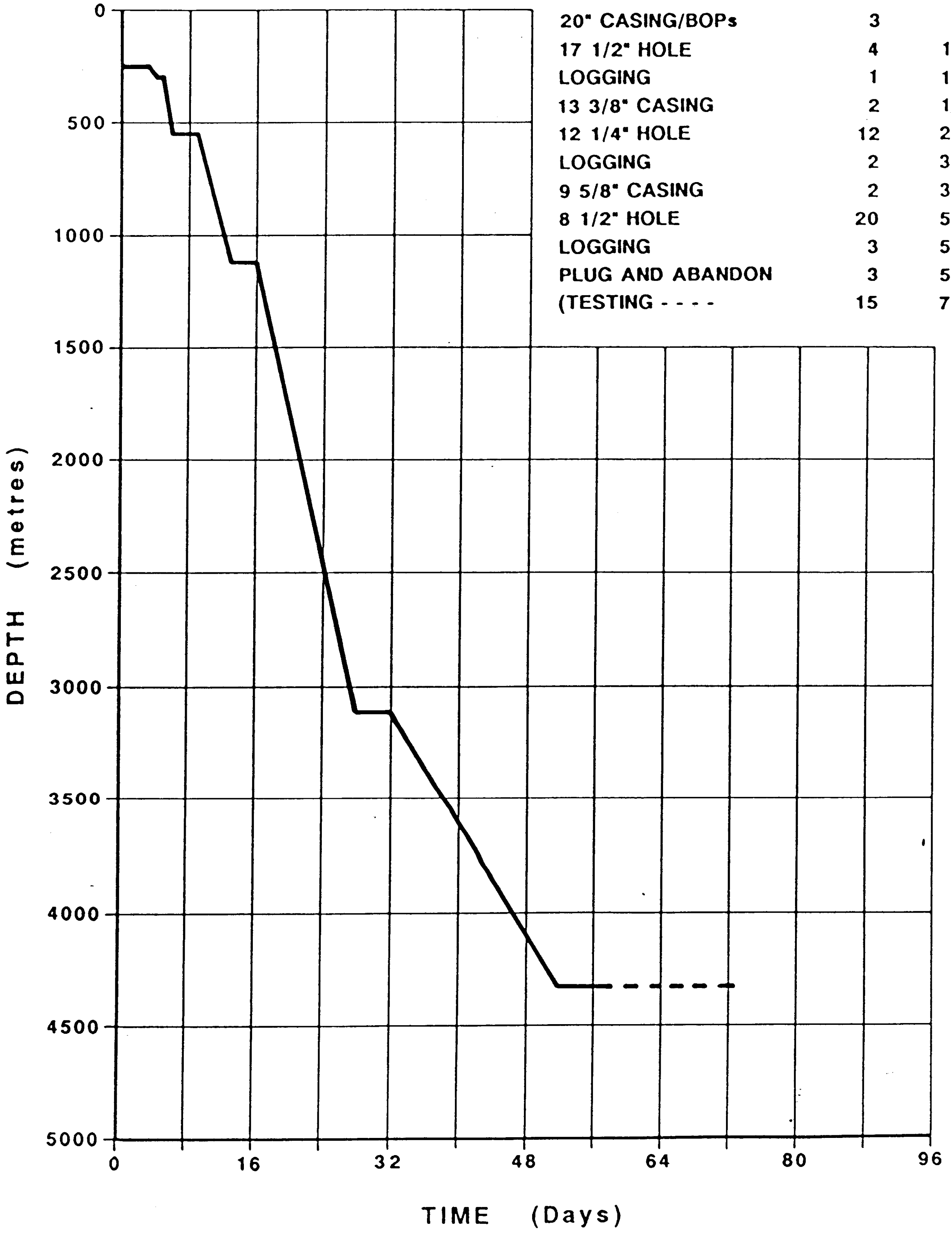
Possible
vibrational
problems

Possible
reactive
shale/tight
hole on trips

4 DRILLING/TIME CURVE ANEMONE-1

TIME BREAKDOWN

ACTIVITY	DAYS	CUMUL.
LOCATE/ANCHORS	3	3
36" HOLE/ 30" CASING	2	5
26" HOLE	1	6
20" CASING/BOPs	3	9
17 1/2" HOLE	4	13
LOGGING	1	14
13 3/8" CASING	2	16
12 1/4" HOLE	12	28
LOGGING	2	30
9 5/8" CASING	2	32
8 1/2" HOLE	20	52
LOGGING	3	55
PLUG AND ABANDON	3	58
(TESTING - - - -	15	73)



5 DRILLING PROCEDURES

1. Position rig over well location.
2. Dependent upon weather, make up 30" casing. Land in permanent guide base, hang off.
3. Drill 36" hole to 320m 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 26" hole to 550m with 17 1/2 bit and 26" hole opener or 26" bit, using seawater and high viscosity slugs.
7. Run 20" casing and high pressure housing.
8. Cement 20" casing to mudline.
9. Nipple up BOP stack, tensioners, slip joint and diverter package.
10. Test BOPs, 20" casing and function test diverter.
11. Drill out 20" shoe and drill 3-5m of new formation. Test formation to 1.43SG equivalent. Drill 17 1/2" hole to 1120m 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.
12. Run open hole electric wireline logs.
13. Run and cement 13 3/8" casing. Cement to mudline using caliper volume with no excess. Set pack-off.
14. Test BOPs and casing.
15. Drill out float collar and shoe plus 3-5m new formation using mud from previous section.
16. Displace to seawater/gel/polymer system and test formation to 1.80 S.G. equivalent or leak off if less.
17. Drill 12 1/4" hole to 3110m using seawater/gel/polymer mud system.
18. Run open hole electric wireline logs.
19. Run 9 5/8" casing and cement to inside the 13-3/8" casing. Set pack-off.
20. Test BOPs and 9 5/8" casing.
21. Run Gyro Multishot from 9 5/8" float collar to surface (not necessary if MWD has been used).
22. Drill 9 5/8" shoe and 3-5m of new formation.
23. Test formation to 1.60SG equivalent or leak-off if less.
24. Drill 8 1/2" hole to TD with seawater/gel/polymer mud system. Take regular surveys to check verticality.
25. Run open hole electric wireline logs.
26. Should hydrocarbons be discovered a 7" liner will be set at TD. A detailed programme for setting the liner and testing will be issued at that time.
27. A programme for abandonment or suspension of the well will be issued as appropriate.

6 MUD PROGRAMME

WEIGHT	VISCOSITY	PV/YP	GELS	FLUID LOSS	SOLIDS	PH	SALINITY

HOLE SIZE: 36"/26" **INTERVAL:** 252-550 **MUD TYPE:** Seawater W/Pills

1.05 SG	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: 17-1/2" **INTERVAL:** 550-1120 **MUD TYPE:** S.W./Gel/Native

1.05 SG	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 seawater/gel/native system. The lack of fluid loss control should facilitate higher ROPs 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: 12-1/4" **INTERVAL:** 1120-3110 **MUD TYPE:** SW/Gel/Polymer

1.1-1.20	35-45	-/15+	3/12	12-15cc	min	9.5-10.0	17-20000

NOTES/TREATMENT:

The cement and shoe will be drilled out with the mud from the previous section. Since top of Lakes Entrance is expected only ± 100m below the shoe, the system will be changed to seawater/gel/polymer prior to perform the LOT. Fluid rheology will be adjusted by polymer addition or dilution. It is anticipated that a mud weight of 1.15 g/cc should be sufficient to drill the Lakes Entrance. In case of high penetration rate, high viscosity pills could be pumped to help clean the hole.

HOLE SIZE: 8-1/2" **INTERVAL:** 3110-4227 **MUD TYPE:** SW/Gel/Polymer

1.05-1.20	40-45	-/12-15	3/12	8-10cc	min	9.0-10.0	17-20000

NOTES/TREATMENT:

The 8.5 section will be drilled with the seawater/gel/polymer from the previous section. Solids will be kept to a minimum, possibly with use of centrifuge, and fluid loss reduced to less than 10cc 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 solid 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.

7 CASING PROGRAMME

INTERVAL m	WEIGHT ppf	GRADE	JOINT TYPE	BURST (Safety Factor)	COLLAPSE (Safety Factor)	TENSION (Safety Factor)
HOLE SIZE 36" **DEPTH** 320m **CASING SIZE** 30" **PREVIOUS SHOE DEPTH** -						
252-262	460	B	ST-2	-	-	-
262-311	310	B	ST-2	-	-	-
HOLE SIZE 26" **DEPTH** 555m **CASING SIZE** 20" **PREVIOUS SHOE DEPTH** 311m						
252-545	94	X-56	RL-4S	2210psi (1.82)	520psi (1.45)	1,090,000lb (11.95)
HOLE SIZE 17-1/2" **DEPTH** 1120m **CASING SIZE** 13-3/8" **PREVIOUS SHOE DEPTH** 545m						
252-1110	68	N80	Buttress	5020psi (1.25)	2270psi (3.13)	1,556,000lb (8.13)
HOLE SIZE 12-1/4" **DEPTH** 3110m **CASING SIZE** 9-5/8" **PREVIOUS SHOE DEPTH** 1110m						
252-3100	47	N80	Buttress	6870psi (1.24)	4750psi (1.11)	1,086,000lb (2.47)
HOLE SIZE 8-1/2" **DEPTH** 4227m **CASING SIZE** 7" **PREVIOUS SHOE DEPTH** 2690m						
2950-5220	29	N80	Buttress	8160psi (1.38)	7020psi (1.20)	676,000lb (1.80)

DESIGN ASSUMPTIONS:

Collapse:	20"	Annulus full of 1.90 SG cement, pipe full of seawater
	13-3/8"	Annulus filled with 150m, 1.90 SG cement, remainder with 1.50 SG cement, pipe full of seawater
	9-5/8"	Annulus filled with 1.20 SG mud, pipe 100% evacuated to gas
	7"	Annulus filled with 1.20 SG mud, pipe 100% evacuated to gas
Burst:	20"	Pipe full of gas from 1.15 SG, annulus full of seawater (BHP @ 13-3/8" shoe)
	13-3/8"	Pipe full of gas from 1.20 SG BHP, annulus full of mud (BHP @ 9-5/8" shoe)
	9-5/8"	Pipe full of gas from 1.20 SG BHP, annulus full of mud (BHP @ TD)
	7"	Pipe full of gas from 1.20 SG BHP, annulus full of completion fluid (BHP @ TD), liner tied back to surface
Tension:		All strings, zero buoyancy factor
	7"	Consider full string of casing

8 CEMENT PROGRAMMES

CASING SIZE: 30"

SLURRY DESCRIPTION Approx 52 MT Class 'G' cement 1% $CaCl_2$ 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	39			
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, RECIPROCATION, etc 50bbls 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 129MT Class 'G' Cement + 5.0 gals/SK Seawater + Defoamer as required

DESIRED TOP Mud Line	EXCESS 100%			
SLURRY VOL. m^3	98			
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, RECIPROCATION, etc 50bbls seawater spacer

PRESSURE TESTING AND LANDING Land in 30" housing, check for engagement

8 CEMENT PROGRAMMES

CASING SIZE: 13-3/8"

SLURRY DESCRIPTION Approximately 82MT Class "G" Cement, Lead Slurry; 61MT Class "G" + liquid extender + Seawater + Defoamer. Tail Slurry: 21MT Class "G" + Seawater

DESIRED TOP	**EXCESS** 60% in open hole or Colifex with no excess			
SLURRY VOL. m^3	70.8	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 1 jt 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 1750psi

CASING SIZE: 9-5/8"

SLURRY DESCRIPTION Approximately 80MT Class "G" Cement. Lead Slurry: 59 MT Class "G" + Freshwater + liquid extender + Dispersant + Retarder + De-Foamer. Tail Slurry: 21MT Class "G" + Dispersant + De-Foamer + Retarder + Freshwater

DESIRED TOP	**EXCESS**			
SLURRY VOL. m^3	77	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 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 1 jt 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 3000psi

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 @ 2950m	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 pso 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 CIW 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 iner an outer, upper and lower choke valves.
High pressure 10,000psi 10mins
Low pressure 250psi 10mins
Test for lower annular preventer
High pressure 5,000psi 10mins
Low pressure 250psi 10mins
Test for upper annular preventer
High pressure 2,500psi 10mins
Low pressure 250psi 10mins
Test for choke kill manifold
High pressure 10,000psi 10mins
Low pressure 250psi 10 mins
Test for cement manifold
High pressure 10,000psi 10mins
Low pressure 250psi 10mins
Test for standpipe manifold
High pressure 5,000psi 10mins
Low pressure 250psi 10mins
Test for Kelly cocks
High pressure 10,000psi 10mins
Low pressure 250psi 10mins

Subsea: When testing equipment subsea the high pressure tests are to be:
- After 20" and 13-3/8" casing = 5000psi for rams and choke/kill valves, 3500psi for lower annular, 2500psi for upper annular.
- After 9-5/8" casing = 7000psi for rams and choke/kill valves, 3500psi for lower annular, 2500psi for upper annular.

The BOPs 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°45'52.24"S
   Longitude: 148°19'49.22"E

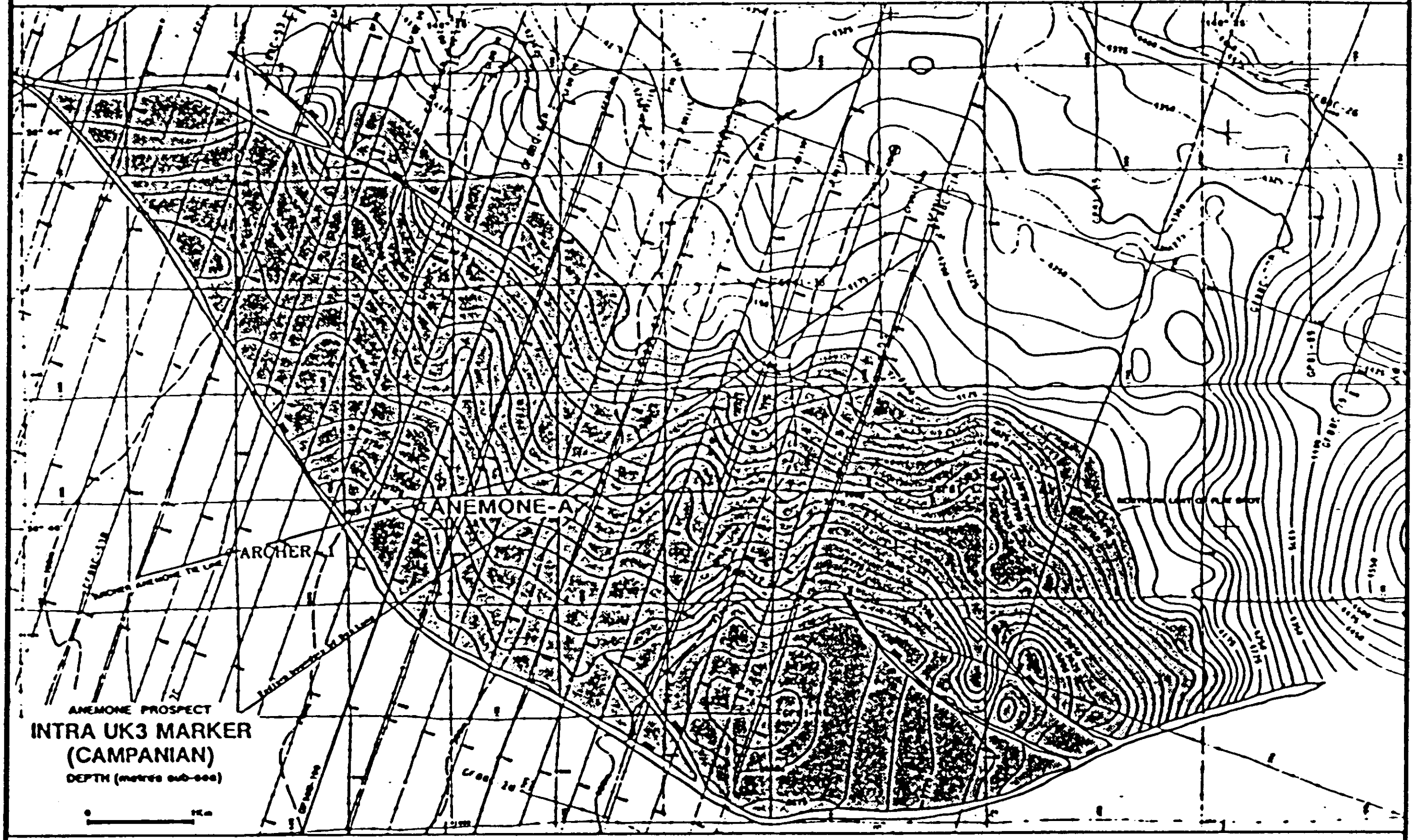
2. The well is to be drilled using standard exploration drilling practices to keep within the normal constraints of a vertical well.

<u>Surveying</u>

36" interval	Totco surveys to be taken every 20-30m
26" interval	Totco surveys to be taken every 80-90m
17 1/2" interval	MWD surveys to be taken every 80-90m
12 1/4" interval	MWD surveys to be taken every 80-90m
8 1/2" interval	MWD surveys to be taken every 80-90m to top target, every 150m thereafter

Totco or Single Shot surveys to be taken every round trip. More frequent surveys to be run if necessary.

11a. LOCATION SCHEMATIC

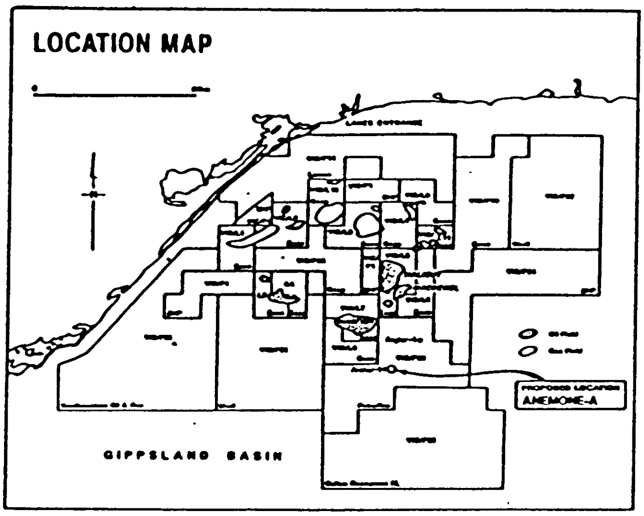


ANEMONE - A LOCATION

LINE GF88B-100 CDP 660

UTM 615580 E
5708499 N

LAT. 38° 45' 52.24" S
LONG. 148° 19' 49.22" E

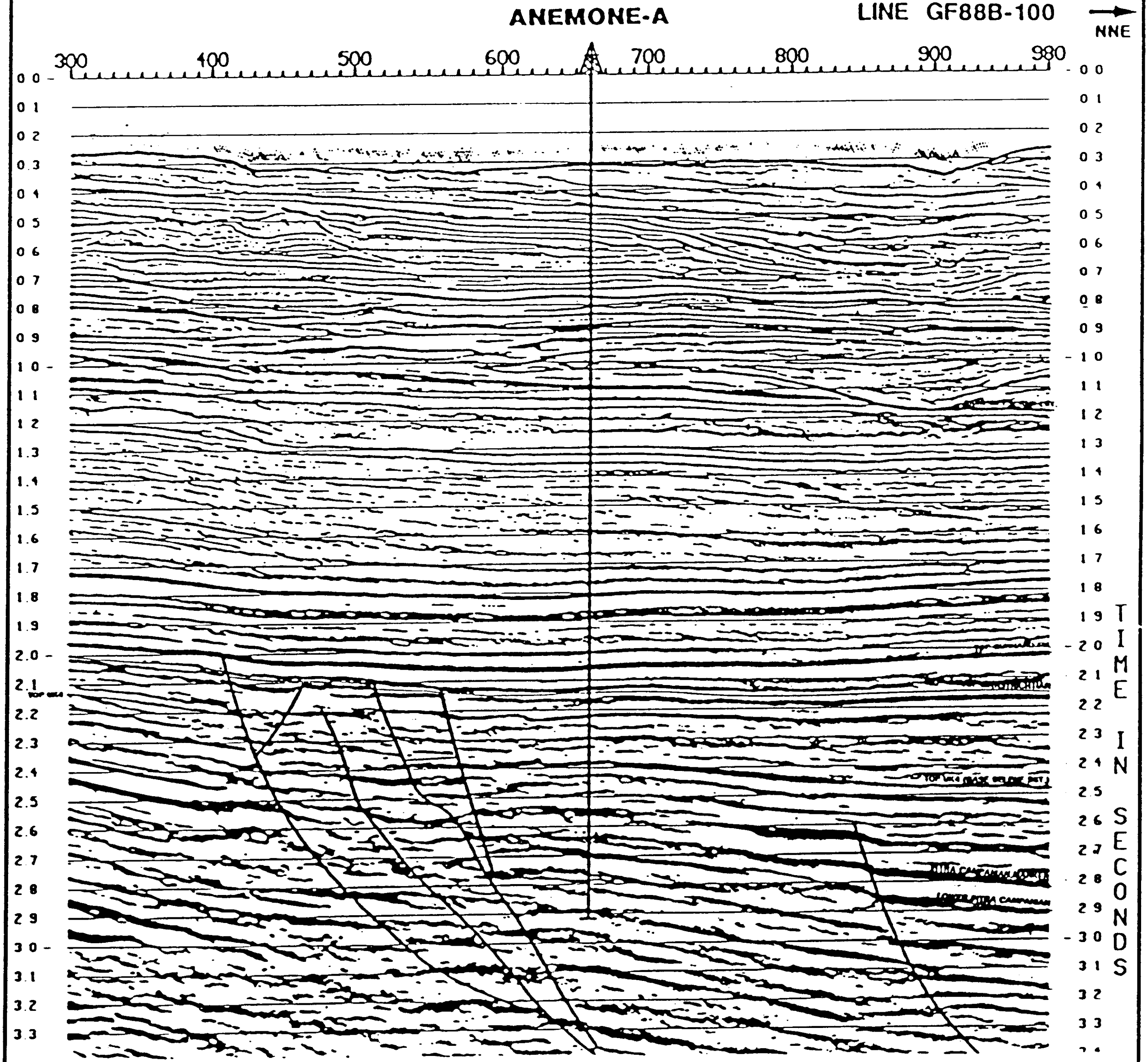


Petrofina Exploration Australia S.A.

GIPPSLAND BASIN VIC/P20

ANEMONE-A
PROSPECT MONTAGE

11b. SEISMIC SECTION



12a GEOLOGICAL PROGNOSIS
Definitions

PROSPECT DESCRIPTION

Downthrown fault dependant structure with a bounding fault in the south and dip closure to the north.

OBJECTIVE HORIZONS

Maastrichtian and Campanian sandstone reservoirs

Primary Objective: Campanian Sandstone 3725m (ss)

SUCCESSION DERIVATIONS

Depths have been calculated for seismic markers at CDP660 on line GF88B-100 using velocity formulae from nearby wells.

TOTAL DEPTH

Well is planned to TD within the Campanian at a maximum depth of 4227m RKB (4200m ss), provided that operational results do not indicate that economic basement has been reached above this depth.

GEOPRESSURES/DRILLING HAZARDS

A. 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.

B. Although no overpressure is expected, high connection gas values were recorded within the Selene sandstone at Selene-1.

Petrofina Expl. Aust. S.A. **VIC/P20**

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)			1500		
	GIPPSLAND LIMESTONE		262(235)	959	313	2342		CALCARENITE MARL
	LAKES ENTRANCE FORMATION		1221(1194)	1319	1132	2855	TOP LAKES ENTRANCE	SILTSTONE CLAYSTONE SILTSTONE CLAYSTONE
	GURNARD FM.		2540(2513)	97	2056	3136	TOP GURNARD	SILTSTONE
	LATROBE GROUP	PALEO.	2637(2610)	41		3136	TOP PALEOCENE	SANDSTONE
		MAAS.	2678(2651)	370	2144	3917	TOP MAASTR.	SILTSTONE SANDSTONE CLAYSTONE
		MAAS.	3048(3021)	100		3917	TOP SELENE	SANDSTONE
		CAMP.	3148(3121)	604	2384	3872	TOP CAMPANIAN	SHALE COAL
		CAMP.	3752(3725)	475	2696	3902	INTRA CAMPANIAN EVENT	SANDSTONE SHALE

13 GEOLOGICAL CORING/SAMPLING PROGRAMME

CORING

Primary Objective:

Coring will be dependant upon shows and subject to operational conditions.

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:

493 - 2300m : 10m intervals
2300m - TD : 5m intervals

Two unwashed canned samples will be collected for geochemistry aggregated over 10m intervals from 2300m - TD.

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

Washed & Dried Cuttings		Unwashed Cuttings		Canned Cuttings	
Rig	1	Pexaus	2	Geochem Contractor	1
Pexaus	2			Labofina Brussels	1
Partners	3				
DITR	1				
BMR	1				

14 WIRELINE LOGGING PROGRAMME

HOLE SIZE	APPROXIMATE INTERVAL (SS)	LOGS
17 1/2"	500 - 1120	LSS/DLT/GR/CAL
12 1/4"	1120 - 3110	LSS/DLT/MSFL/GR/CAL (CST) (CBL/VDL/CCL/GR) (RFT) (MSCT)
	2300 - 2540	LDT/CNL/GR SHDT(FMS)/GR
8 1/2"	3110 - 4227 (T.D.)	LSS/DLT/MSFL/GR LDT/CNL/NGT/GR SHDT/GR (FMS) (RFT) VSP CST (MSCT) (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 Manager, Melbourne.

15 MUD LOGGING

MUD-LOGGING

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

Monitoring

Lag Time
Depth
Lag Depth
ROP
Total Gas
Normalised Total Gas
C1-C5
Pump Strokes
PVT
All Pits Individually
Trip Tank

H_2S
CO_2
Hours on Bit
Bit RPM
Hook Load
W.O.B.
Torque
Pump Pressure
Mud Flow in/out
Mud Temp in/our
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

16a 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 Intra-Campanian Sandstones of the Latrobe Formation. The prognosed top is 3725m subsea. Additional secondary objectives are other Maastrichtian aged Sandstones and Selene Sandstones between 2835m and 4000m subsea.

Est. BHP at 2885m subsea:	4100 psi (normally pressured)
Est. BHT at 2885m subsea:	85°C
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 or of low permeability, 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 required throughout the test.

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 mechanically initiated by a drop bar which can be optionally run on slick line.

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.

16a DST GENERAL GUIDELINES

5. TEST EQUIPMENT

All downhole, sub-surface and surface equipment, to be supplied by Schlumberger, will be suitable for H_2S 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 four 10,000 psi SSDP gauges.

7. SAMPLING

Samples will be taken at surface and bottomhole sampling will be conducted and the equipment necessary, supplied by Schlumberger and run on their wireline cable.

17 DATA DISTRIBUTION

ITEM	COMPILED/ DESPATCHED	PEXAUS	PSA BRUSSELS	PFE S'PORE	JAPEX	OPIC	BRIDGE	DITR/ BMR	COMMENTS
TELEX OR FAX									
Daily Drilling/Geological Report	Rig	1	-	-	-	-	-	-	
Daily Operations Report	Pexaus+	-	1	1	1	1	1	2	+ Petrofina
Weekly Drilling/Geological Report	Pexaus	-	1	1	1	1	1	2	Exp. Aust
Sidewall/Core Description	Rig/Pexaus	-	1	1	1	1	1	2	
Provisional Log Interpretation	Rig/Pexaus	-	1	1	1	1	1	2	
WIRELINE LOGS									
Field Prints	Pexaus	-	-	1	1	1	1	2	
Field Sepias	Rig	1	-	-	-	-	-	-	
Field Fax/Telemetry	Rig	1	-	1*	1*	1*	1*	-	*Only when rapid
Final Prints	Pexaus	-	-	-	1	1	1	2	decisions
Final Sepias	Pexaus	-	-	-	1	1	1	2	required
Edit Tapes	Pexaus	-	-	-	1	1	1	1	
Petrofina Interpretation Print	Pexaus	-	1	1	1	1	1	2	
Petrofina Interpretation Sepia	Pexaus	-	1	-	1	1	1	-	
OTHER LOGS									
Mud Logs (Weekly) Print	Rig/Pexaus	-	-	1	1	1	1	2	
Mud Logs (Weekly) Sepia	Rig	1	-	-	-	-	-	-	
Final Mud Log Print	Pexaus	-	-	-	1	1	1	2	
Final Mug Log Sepia	Pexaus	-	-	-	1	1	1	2	
Petrofina Lithology Print	Rig/Pexaus	-	-	-	1	1	1	2	
Petrofina Lithology Sepia	Rig/Pexaus	-	-	-	1	1	1	2	
Composite Log Print	Pexaus	-	1	1	1	1	1	2	
Composite Log Sepia	Pexaus	-	1	-	1	1	1	2	
FINAL REPORTS									
Geological Completion Report	Pexaus	-	1	1	1	1	1	2	
Drilling Completion Report	Pexaus	-	1	1	1	1	1	2	
CONTRACTOR FINAL REPORTS									
Core Analysis	Pexaus	-	-	-	1	1	1	2	
Biostratigraphy	Pexaus	-	-	-	1	1	1	2	
Velocity Survey	Pexaus	-	-	-	1	1	1	2	
Test Data	Pexaus	-	-	-	1	1	1	2	
Fluid Analysis	Pexaus	-	-	-	1	1	1	2	
Geochemistry	Pexaus	-	1	-	1	1	1	2	
SAMPLES									+One set to be
Washed and Dried	Rig	3+*	-	-	1	1	1	2	kept on rig
Unwashed	Rig	2*	-	-	-	-	-	-	until end of
Canned Geochemical	Rig	2*	-	-	-	-	-	-	well
Swc	Rig	1*	-	-	-	-	-	-	
Core	Rig	1*	-	-	-	-	-	½+½	*For distrib. to specialist contractors

SIDETRACK DRILLING PROGRAMME

ANEMONE-1A
VIC/P20

CONTENTS

DRILLING PROGRAMME APPROVED BY:

Technical Manager

Exploration Manager

General Manager

1 WELL OBJECTIVES

The primary objective in sidetrack well Anemone-1A lies below 4525m RKB (-4498m). The sandstones encountered in well Anemone-1 from 4525-4609m will be drilled and cored, if possible, in 6" hole. Due to the postulated presence of a gas-oil contact at 4585m RKB (-4558m) coring will take place below 4585m if operationally feasible.

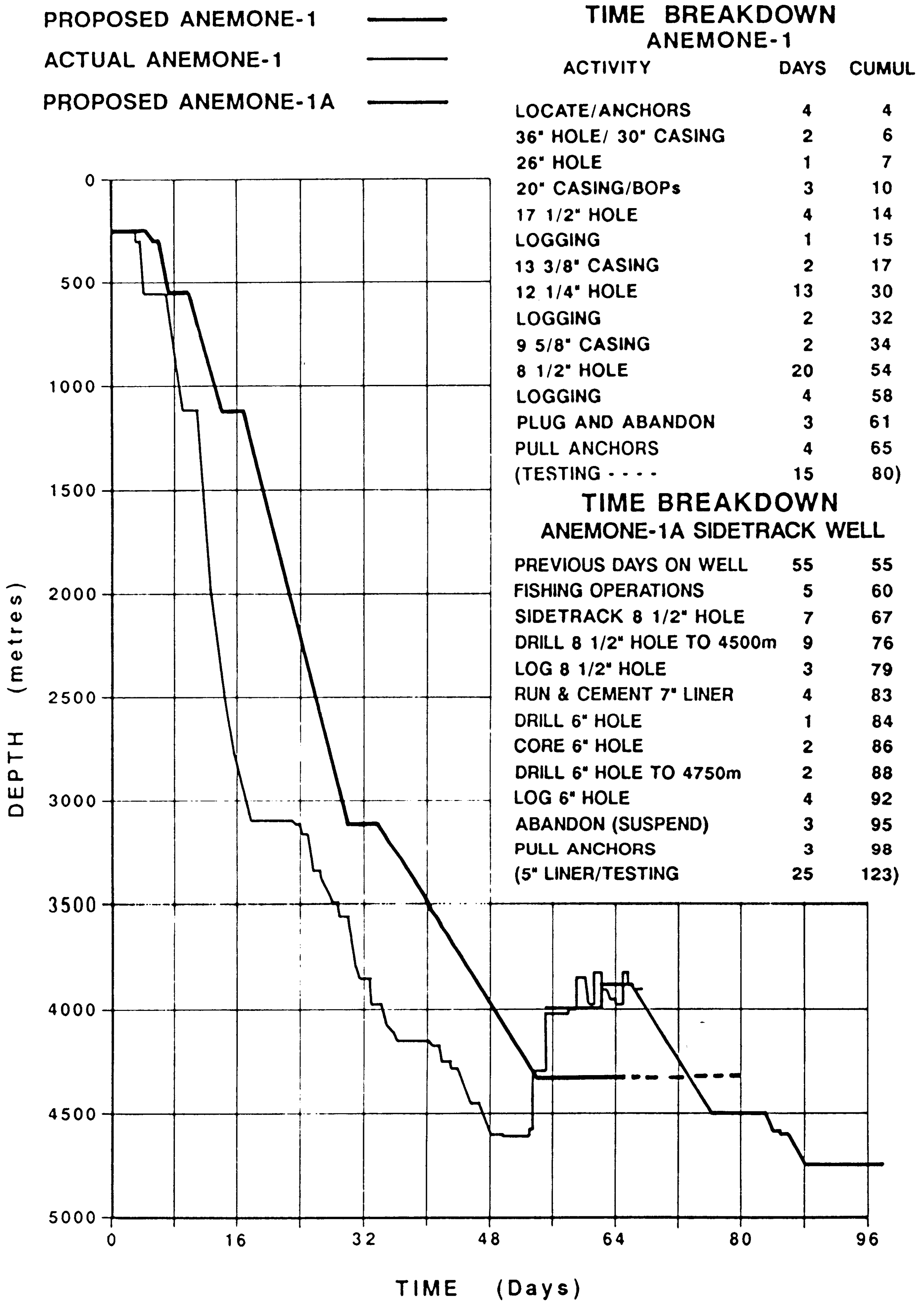
Total depth is estimated to be 4750m RKB.

A secondary objective lies between 4200 and 4240m where gas shows were recorded in the Anemone-1 8-1/2" hole. A full log evaluation and RFT analysis will be made over this section.

LICENCEES

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

2 DRILLING/TIME CURVE ANEMONE-1 / ANEMONE-1A



TIME BREAKDOWN
ANEMONE-1

ACTIVITY	DAYS	CUMUL.
LOCATE/ANCHORS	4	4
36" HOLE/ 30" CASING	2	6
26" HOLE	1	7
20" CASING/BOPs	3	10
17 1/2" HOLE	4	14
LOGGING	1	15
13 3/8" CASING	2	17
12 1/4" HOLE	13	30
LOGGING	2	32
9 5/8" CASING	2	34
8 1/2" HOLE	20	54
LOGGING	4	58
PLUG AND ABANDON	3	61
PULL ANCHORS	4	65
(TESTING - - - -	15	80)

TIME BREAKDOWN
ANEMONE-1A SIDETRACK WELL

PREVIOUS DAYS ON WELL	55	55
FISHING OPERATIONS	5	60
SIDETRACK 8 1/2" HOLE	7	67
DRILL 8 1/2" HOLE TO 4500m	9	76
LOG 8 1/2" HOLE	3	79
RUN & CEMENT 7" LINER	4	83
DRILL 6" HOLE	1	84
CORE 6" HOLE	2	86
DRILL 6" HOLE TO 4750m	2	88
LOG 6" HOLE	4	92
ABANDON (SUSPEND)	3	95
PULL ANCHORS	3	98
(5" LINER/TESTING	25	123)

3 DRILLING PROCEDURES

1. Set sidetrack plug at approximately 3850-3975m.
2. RIH and dress plug off to 3880m.
3. RIH with PDM/bent sub/MWD directional assembly and kick off plug building angle out to 4-5°.
4. RIH with 8-1/2" angle dropping BHA and drill 8-1/2" hole to 4500m TVD.
5. Log 8-1/2" hole.
6. Run 9-5/8" cement bond log.
7. Run and cement 7" liner to 4495m.
8. Test BOPs.
9. Space out and run 9-5/8" and 7" casing scrapers.
10. Run 7" cement bond log.
11. Run and set tie-back packer.
12. Pressure test tie-back packer to 4000 psi.
13. Increase mud weight to 1.38 SG and reduce fluid loss <5.0.
14. Drill out 7" liner and drill 5m of new formation.
15. Perform formation integrity test to 1.70 SG EMW.
16. Drill 6" hole to approximately 4585m TVD (GOC). Maintain ROP below 20m/hr.
17. Core 6" hole.
18. Drill 6" hole to final TVD of 4750m.
19. Log 6" hole.
20. Dependent upon logging results, a decision will be made to plug and abandon the well or to set a 5" liner and conduct a production test. Relevant programmes will be forwarded as required.
21. Plug and abandon or suspend the well.
22. Pull anchors.

4 MUD PROGRAMME

WEIGHT	VISCOSITY	PV/YP	GELS	FLUID LOSS	SOLIDS	PH	SALINITY
HOLE SIZE: 36"/26"			INTERVAL: 252-550			MUD TYPE: Seawater W/Pills	
1,95 SG	100 + Sec/qt	20-25/40-50	-	-	-	10.5-11.5	22000
NOTES/TREATMENT :							
HOLE SIZE: 17-1/2"			INTERVAL: 550-1120			MUD TYPE: S.W./Gel/Native	
1.05 SG	40+	-/12+	-	-	-	8.5-9.5	22000
NOTES/TREATMENT :							
HOLE SIZE: 12-1/4"			INTERVAL: 1120-3110			MUD TYPE: SW/Gel/Polymer	
1.1-1.20	35-45	-/15+	3/12	12-15cc	min	9.5-10.0	17-20000
NOTES/TREATMENT :							
HOLE SIZE: 8-1/2"			INTERVAL: 3110-4500			MUD TYPE: SW/Gel/Polymer	
1.05 SG	40-45	-/12-16	3/12	6-8cc	min	9.5-10.0	17-20000
NOTES/TREATMENT : The 8.5" section will be drilled with the seawater/gel/polymer from the previous section. Solids will be kept to a minimum, possibly with use of centrifuge, and fluid loss reduced to less than 8cc with additions of polymer.							
HOLE SIZE: 6"			INTERVAL: 4500-4750			MUD TYPE: SW/Gel/Polymer	
1.30	40-50	-/15-20	3/12	Less than 5cc	min	9.5-10.0	17-20000
NOTES/TREATMENT : The 6" section will be drilled with the seawater/gel/polymer from the previous section. However prior to drilling out the 7" liner the mud weight will be increased to 1.30 SG. Filtration rate should be maintained below 5cc. Additions of Baranex will be required to provide a thin tough filter cake. See Appendix for more detailed Baroid programme.							

5 CASING PROGRAMME

INTERVAL m	WEIGHT ppf	GRADE	JOINT TYPE	BURST (Safety Factor)	COLLAPSE (Safety Factor)	TENSION (Safety Factor)
HOLE SIZE 36" **DEPTH** 319m **CASING SIZE** 30" **PREVIOUS SHOE DEPTH** -						
258-268 268-313.47	460 310	B B	ST-2 ST-2	- -	- -	- -
HOLE SIZE 26" **DEPTH** 560m **CASING SIZE** 20" **PREVIOUS SHOE DEPTH** 313.47						
258-546.5	94	X-56	RL-4S	2210psi (1.82)	520psi (1.45)	1,090,000l (11.95)
HOLE SIZE 17½" **DEPTH** 1115m **CASING SIZE** 13-3/8" **PREVIOUS SHOE DEPTH** 546.5						
258-1104.8	68	N80	Buttress	5020psi (1.25)	2270psi (3.13)	1,556,000l (8.13)
HOLE SIZE 12¼" **DEPTH** 3076m **CASING SIZE** 9-5/8" **PREVIOUS SHOE DEPTH** 1104.						
258-3068	47	N80	Buttress	6870psi (1.24)	4750psi (1.11)	1,086,000 (2.47)
HOLE SIZE 8½" **DEPTH** 4500m **CASING SIZE** 7" **PREVIOUS SHOE DEPTH** 3068						
2950-4200 4200-4495	29 29	N80 P110	Buttress Buttress	8160psi 11220psi (1.32)	7020psi 8510psi (1.27)	676,000lb 929,000lb (1.67)
HOLE SIZE 6" **DEPTH** 4750m **CASING SIZE** 5" **PREVIOUS SHOE DEPTH** 4500m						
4350-4750	18	N80	Hydril SFJ-P	10,140psi (1.18)	10,490psi (1.22)	422,000lb (1.50)

6 CEMENT PROGRAMMES

CASING SIZE: 7"

SLURRY DESCRIPTION Anticipate 21.1 MT Class 'G' cement, Lead Slurry: 13.0 MT Class 'G' + Bentonite extender + retarder + freshwater + defoamer. Tail Slurry: 8.1 MT Class 'G' + fluid loss + retarder + dispersant + freshwater + defoamer.

DESIRED TOP Top of Liner @ 2950m	**EXCESS** As per caliper log or 25% OH whichever i greater			
SLURRY VOL. m³	18.4	4.4		
SLURRY YIELD m³/T	1.29	0.76		
SLURRY DENSITY-S.G.	1.53	1.90		
THICKENING TIME-HRS MIN.	As per Lab Tests	As per Lab tests		
COMPRESSIVE STRENGTH-PSI/24 HRS		±2,000		
RUNNING AND CEMENTING INSTRUCTIONS				

SHOE, COLLARS(S) AND JOINT STRENGTHENING

As per Liner Programme

MECHANICAL AIDS

As per Liner Programme

FLUSH, DISPLACEMENT RATE, PLUGS, RECIPROCATION, etc

As per Liner Programme

PRESSURE TESTING AND LANDING

Bump Plug and Pressure Test to 4000 psi

CASING SIZE: 5"

SLURRY DESCRIPTION Anticipate - 3.6 MT Class 'G' cement + fluid loss + retarder + dispersant + gas stop + freshwater + defoamer

DESIRED TOP Top of Liner @ 4350m	**EXCESS** As per caliper log or 25% OH whichever i greater			
SLURRY VOL. m³	2.8			
SLURRY YIELD m³/T	0.76			
SLURRY DENSITY-S.G.	1.90			
THICKENING TIME-HRS MIN.	As per Lab Tests			
COMPRESSIVE STRENGTH-PSI/24 HRS	±2000			
RUNNING AND CEMENTING INSTRUCTIONS				

SHOE, COLLARS(S) AND JOINT STRENGTHENING

As per Liner Programme

MECHANICAL AIDS

As per Liner Programme

FLUSH, DISPLACEMENT RATE, PLUGS, RECIPROCATION, etc

As per Liner Programme

PRESSURE TESTING AND LANDING

Bump Plug and Pressure Test to 4000 psi

7 GEOLOGICAL CORING/SAMPLING PROGRAMME

CORING

Primary Objective:

The decision to core will be subject to operational conditions.

It is planned to cut a core starting at 4585m RKB. Additional coring will be dependant upon the data recovered from Core No. 1 and operational conditions. Fibreglass inner barrels will be used.

SIDEWALL CORES

(a) Because of the high risk of jeopardising the 6" drilling phase due to caps or shots lost it is not advisable to shoot sidewall cores in the 8-1/2 section.
(b) Sidewall cores cannot be run in 6" hole with standard tool. Slim hole sidewall core gun will be utilised.

CUTTING SAMPLES

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

3900m - TD : 5m intervals

Two unwashed canned samples will be collected for geochemistry aggregated over 10m intervals from 4500m - TD.

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

DISTRIBUTION

Washed & Dried Cuttings		Unwashed Cuttings		Canned Cuttings	
Rig	1	Pexaus	2	Geochem Contractor	1
Pexaus	2			Labofina Brussels	1
Partners	3				
DITR	1				
BMR	1				

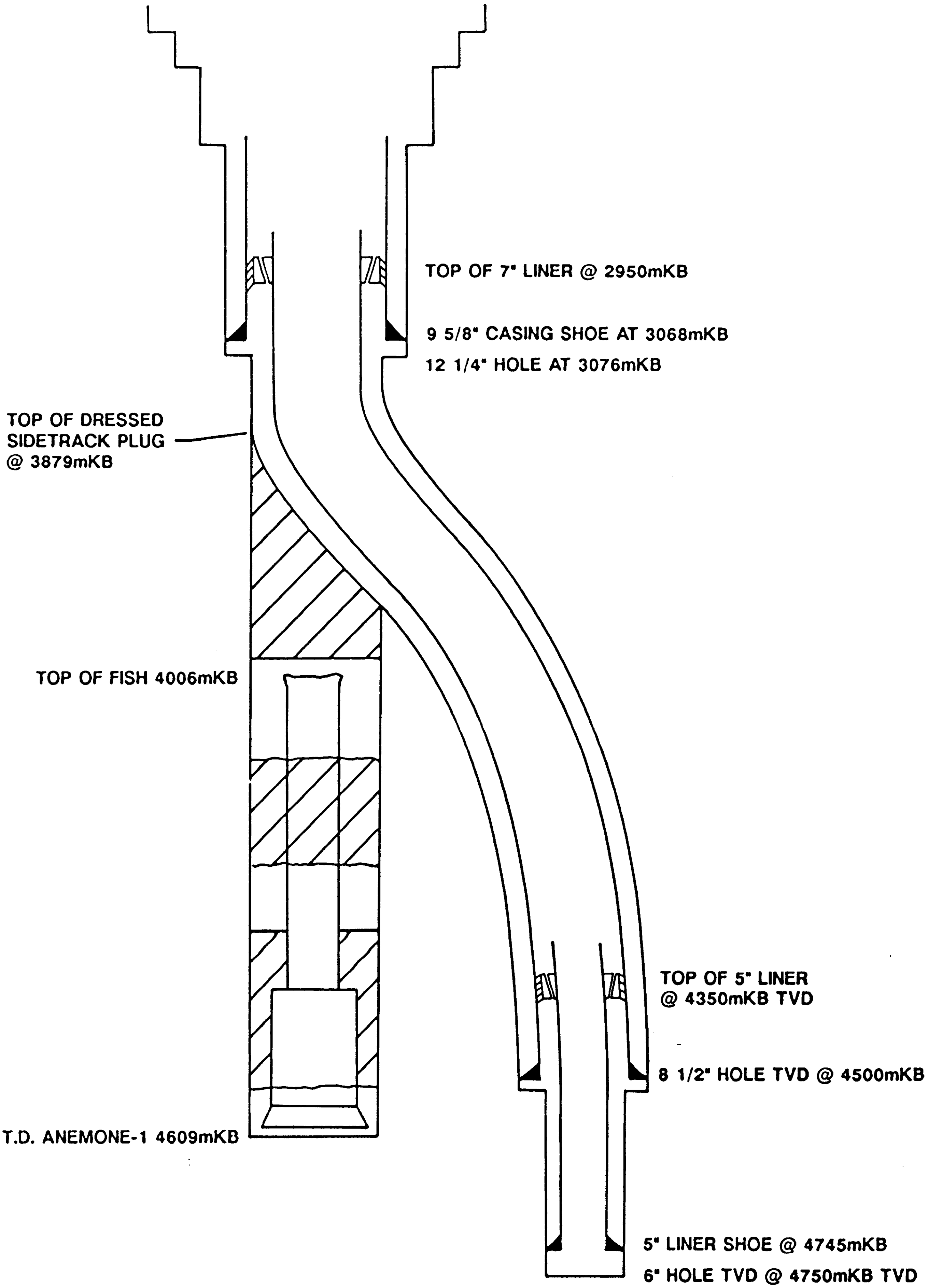
8 WIRELINE LOGGING PROGRAMME

HOLE SIZE	APPROXIMATE INTERVAL (SS)	LOGS
8-1/2"	3800 - 4500	BHC/DLT/MSFL/GR LDT/CNL/NGT SHDT/GR RFT (Pressure Profile & Sample) VSP (CBL/VDL/CCL/GR) (CBL/CET/CCL/GR)
6"	4500 - 4750 (T.D.)	SDT/DLT/MSFL/GR LDT/CNL/GR GLT VSP SHDT/FMS CST (RFT) (CBL/VDL/CCL/GR)

Notes:

1. Brackets denote to be run should hydrocarbons be encountered or as required at discretion of wellsite geologist.
2. All logs to be recorded on 1:200 and 1:500 metric scales and digitally on magnetic tape.
3. Logs to be transmitted to Melbourne Office as soon as practical after logging.
4. All changes to the above programme will be subject to approval from Exploration Manager and Technical Manager, Melbourne.

9 WELL DIAGRAM PROPOSED ANEMONE-1A SIDETRACK



7" LINER PROGRAMME

PETROFINA EXPLORATION AUSTRALIA S.A.

7" TIW ROTATING LINER:

RUNNING AND CEMENTING PROGRAMME

Prepared By: Bruno de Vinck, Steve Marinoff

Approved By: Richard H. Cordiez

Liner2.doc
BdV/ss
10 August 1989

TABLE OF CONTENTS

ANNEXURES:

Annexure A	Running Speed : Swab and Surge
Annexure B	Halliburton Job Simulation

INTRODUCTION

This programme has been written to supply more specific details pertaining to the running and cementing of a 7" liner utilising a TIW rotating liner hanger with dual stage cementation.

> **IMPORTANT:**
>
> **The following procedures to set and cement the 7" liner have been recommended by TIW. Prior to the job the Company Representative, Drilling Engineer and TIW Service Engineer should review these procedures together and propose amendments as necessary.**

The programme is to be used in conjunction with the following sections of the Petrofina Drilling Manual:

Section 10 - Casing Preparation and Running
Section 11 - Cementing Procedures
Section 12 - Liner Running and Cementation

A. EQUIPMENT AND MATERIALS

The following equipment and materials are required on the rig for the running and cementing of the 7" TIW rotating liner:

A.1 Liner Equipment (see following diagram)

1 x TIW cement set shoe, type 'CLS' with one back pressure valves, 7" 29 lb P110 buttress box up.

1 x Halliburton float collar, 7" buttress box x bin.

1 x TIW landing collar, type 'HS-SR' modified to have 2000 psi maximum shearout, 7" 29 lb P110 buttress box and pin.

2 x TIW brass setting ball 1-3/4" diameter.

2 x TIW regular liner wiper plug for 7" 29 lb casing.

2 x TIW pumpdown plug for 4½"-5" drill pipe.

2 x TIW rotating liner hanger, 1200 psi shear pinned hydraulic set, type 'IB' RRP tandem cone, 7" 29 lb N80 buttress box and pin x 9-5/8" 47 lb.

2 x TIW setting collar, type 'RP-RRP' with 5' extension nipple and type 'B' retrievable packoff bushing profile sub with a 6' tie-back receptacle, 7" 29 lb N80 buttress pin down.

1 x TIW tie-back packer, type SN-AT-6 with unitized chevron seals and goldseal packoffs, 7" 29 lb N80 VAM box x 9-5/8" 47 lb.

1 x TIW tie-back receptacle, type LG-6 for SN-AT-6 packer with RPOB profile, 7" 29 lb N80 VAM pin.

Notes:

1. Because the shoe is a CLS type (with only one back pressure valve) a Halliburton float collar has been included in the string between the TIW shoe and landing collar.
2. Because the liner will be cemented using a tail and a lead slurry with low compressive strength, once the liner is cemented a liner packer will be installed.

A.2 Liner Running Tools

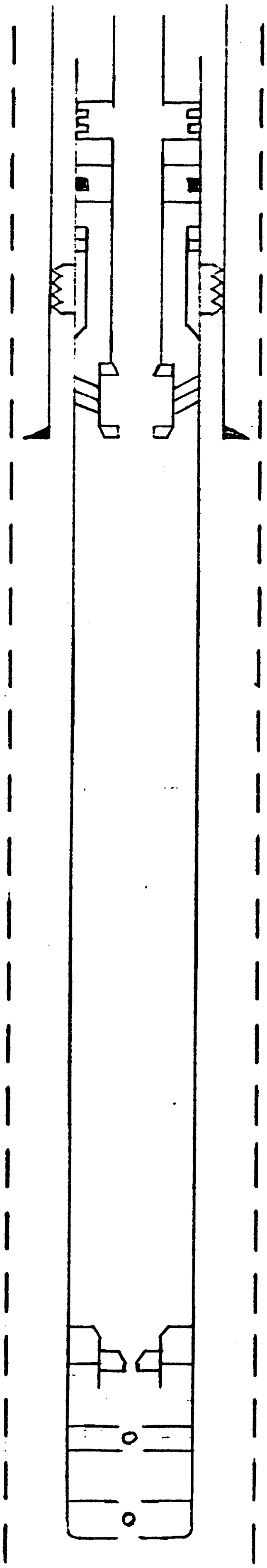
1 x TIW liner setting tool, type 'RP-RPP', size 7" complete with strainer and 4½" IF box up connection.

1 x TIW retrievable packoff bushing with internal and external packing for 7" liner.

1 x TIW slick joint for 7" RPOB, 3½" OD x 12' long.

1 x TIW reaming mill for 7" liner with 4½" IF box up connection.

ANEMONE - 1A : 7" LINER.



DEPTH (mKB)	TIW EQUIPMENT	OPERATION
	SETTING TOOL.	
	RPOB	
	BEARING	
± 2900	TANDEM CONE LINER HANGER.	① SET w/ 1200 psi (1½" BRASS BALL IN LANDING COLLAR)
3068	LINER WIPER PLUG.	③ RELEASE w/ 1000 psi (PUMP DOWN PLUG)
± 3900	high dogleg area 2 centralisers / joint	
	HS-SR LANDING COLLAR	② SHEAR w/ 2000 psi (1¾" BRASS BALL).
	FLOAT COLLAR (HALLIBURTON)	
± 4475	CLS SHOE	

1 x TIW tie-back packer setting tool, type 'LNS' for 7" liner complete with 5" drill pipe lift sub and strainer with 4½" IF box up connection.

1 x TIW heavy duty cementing head manifold complete with ball dropping sub and special swivel with 6 5/8" API LH threaded pin.

1 x Tasman 6" square cementing kelly, 31' long with 28' effective working length, complete with 27 HDP Varco kelly drive bushing, 6 5/8" LH API box up x 4½" IF pin down.

A.3 Liner

45 jts x 7" - 29lb - P110 - Buttress - Rg 3
111 jts x 7" - 29lb - N80 - Buttress - Rg 3

Note: the 7" P110 casing was necessary to improve the collapse resistance of the 7" liner below 4250m: 7020 psi (N80) to 8510 psi (P110).

A.4 Casing Accessories

60 x 7" Diamond "B" left-hand spiral slip on centralisers.

70 x 7" Diamond "B" right-hand spiral slip on centralisers.

156 x 7" Diamond "B" stop collars.

4 x pails of Lube seal.

5 x kits of thread lock.

A.5 Cement and Additives

800 sacks of Blue Circle class 'G' cement.

100 gallons of Halliburton CFR-3L.

80 gallons of Halliburton Halad-22AL.

420 gallons of Halliburton Flowchek A/Econolite

30 gallons of Halliburton NF-1.

40 gallons of Halliburton HR-6L.

1000 pounds of Baroid Bentonite.

A.6 Freshwater

170 barrels of freshwater.

B. PRE-JOB MEETING

The Company Representative will call a meeting with the following personnel:

Drilling Engineer
Rig Toolpusher
Cementing engineer
Liner equipment representative
Casing crew
Mud engineer
Mud logger

Communication is essential. The Company Representatives should prepare a programme detailing step-by-step operations and distribute copies to the toolpushers and other involved persons so that everyone knows what is required, and their role in the overall plan.

Topics of discussion:

Rig Toolpusher

Responsible for condition of mud pumps. Mud tank level indicators. Supply of bulk cement. Cementing line. Back up equipment for power tong in case of failure. Snubbing lines, etc. Operation of stabbing platform. Mud supply to the cement unit and checking all valves for leakage.

Cementing Engineer

Responsible for condition of unit. Cementing head and kelly, ball dropping and plug releasing mechanism swivel and supply of liquid additives. Calibration of gauges. Fuel for the unit. Fitment of a reliable pressure gauge to the cement line that can be easily read from the rig floor. Calculation of all cement volumes, additive requirement and displacement.

Liner Equipment Representative

Checks all his company's equipment to ensure nothing is damaged, missing or incompatible.

Casing Crew Foreman

Responsible for power tong and unit. Checks spares. Have torque gauges for required torque. Checks casing elevators and slips. Fuel for unit.

Mud Engineer

Conditions mud to low YP/PV values. Ensures sufficient tank space is available to receive spacer and cement volumes. Prepares spacers in good time and ensures no contamination. Personally watches mud levels during mixing, pumping and displacement.

Mud Logger

Ensures his mud level gauges are working properly. Monitors tank gains at each stage. Gas detector is operational. Provides surge calculations for liner running.

C. PREPARATION

C.1 Liner Equipment

The liner hanger, setting sleeve and tie-back packer should all be drifted with a 7" 29 PPF casing drift.

All liner equipment should be calipered and dimensioned. TIW equipment drawings should be completely filled in.

Check the compatibility between ball and equipment: the setting ball (1-3/4" OD brass ball) passes through the liner running tool and wiper plug. Check that ball sits correctly and forms a good seal on the landing collar seat.

Check that there is no possibility for the ball to hang in the equipment higher in the liner.

Inspect condition of seals on retrievable packoff bushing.

TIW engineer is responsible for the preassembly of the rotating liner hanger and setting sleeve onto the liner setting tool with slick joint and retrievable packoff bushing. The shear ring of the HS-SR landing collar P110 has been modified to obtain a lower shear value (2000 psi maximum instead of 2500 psi).

C.2 Casing Preparation and Tally

When casing arrives on the rig, off load the first layer and put on the pipe deck. Remove protectors and layout so that boxes only touch each other at the collar top or bottom in an alternating fashion. Avoid casings protruding into main walk-ways.

Have men available to clean and check the casing threads, number the pipe and dope the box end with the required pipe dope. Drift the pipe with the CORRECT SIZE drift. The casing should be measured by the contractor in the presence of the Company Representative or Drilling Engineer. Ensure that numbering of pipe is followed by the correct number on the next layer.

A casing length is the distance between the outermost face of the coupling or box to the position on the pin end where the coupling or box stops when the joint is made up completely, i.e. base of triangle on buttress threads. Be sure to include the lengths of the casing shoe, landing collar, port collar, liner hanger assembly and pup joints in the total casing string tally.

When all the casing is on site on the pipe rack, measured, and prepared, etc., then the Company Representative or drilling engineer should count all the pipe joints available on the rig. The total should match exactly with the highest number on the pipe and also the shipping manifest. Both persons should add up all the pipe lengths separately. Compare the outcoming figures. They must agree.

The drilling engineer on board should make up the casing running programme, with co-operation from the Company Representative. Clearly mark the joints to be excluded from the running string. Both should agree with the programme.

A Running List is prepared, stating exactly the joints to be run, and the joints to be left out, including pup joints. Indicate placement of shoe and collars (do not weld on casing). Indicate placement of centralisers and check their spacing with the caliper log. Do not place centralisers in washed out parts of the hole. Indicate at which points casing is entering points of interest; BOP, open hole, etc.

C.3 Hole Preparations

Hole must be free of tight spots to within at least 25,000 lbs overpull above normal hole drag.

Mud engineer to ensure mud is conditioned - low YP and low 10 min. gel - so that pressure surges are minimised.

Circulate hole free of cuttings. Pump a viscous sweep around if required.

Ensure there is no discrepancy in hole depth. If in doubt, strap out. Logger's and driller's depths should not vary by more than 3m.

C.4 Casing Equipment

Check that elevators are of correct load rating. Check that slips, spider elevators, power tongs and associated equipment, 'Klamp-ons', single joint elevator, casing tongs, circulating swedge, spear, stabbing board, etc. work correctly. Ensure sufficient dope and thread locking compound are available.

C.5 Cementing Equipment

Ensure cement outfit is in good working order. The cementing engineer in the presence of the Company Representative to check all his equipment, such as mud supply, water, liquid additives and dry powder cement lines. All valves in good condition and operational, report findings in the cementer's report well before the cementation and a pressure chart showing an up-to-date test on cement pump and valve manifold.

Special attention should be paid to the slurry density meter and pressure type mud balance calibration.

Liquid Additive Systems - Check that all the operating valves function correctly. Check the volume of additives discharged from an additive tank is correct for the cement mixwater requirement.

Check cementing head; ensure cement head manifold is unrestricted by flowing water through it, i.e. no cement blockages from previous job. Install on top of drifted cementing kelly.

Witness loading of dart and ball in cement head.

See that sufficient cement additives are available, they should be ordered well in advance, and mixed if required before cementing.

C.6 Rig Equipment

Ensure sufficient tank space available to receive displacement returns and cement/spacer volume returns.

Check weight of casing and 100,000 lbs overpull does not exceed rated loading of handling equipment, lines reeved, or drill pipe running string, if used. Check Ton-Miles, cut if required.

Clear floor and bring as much handling equipment to the rig floor while circulating prior to pulling out.

D. REFERENCE TORQUE MEASUREMENTS

An important aspect of running a rotating liner hanger is the need to establish baseline torque levels from which safe surface torque limitations can be derived for the start up and continual rotation of the liner.

On the last cleanout trip prior to running the liner, the drill string should be rotated, 2-3m off bottom, using the rotary table at 5, 10, 15 and 20 RPM while circulating at the rate required during cementation. Corresponding torque readings should be recorded, they give an indication of the torque that can be expected during liner rotation.

Upon POOH, again rotate the drill string, using the rotary table, when the bit is at the proposed top of liner depth. Record torque readings for 5, 10, 15 and 20 RPM rotary speeds. Using these readings, the maximum allowable surface torque for each rotary speed can be calculated by adding the optimum casing make-up torque to the torque required for drill string rotation at or near the proposed liner top depth. It is recommended that only 90% be used as the maximum torque level.

E. LINER RUNNING

E.1 Running Speed

Each time the liner is lowered in the hole a pressure surge is created on the open hole which, if great enough, could fracture the formation. This surge is a combination of drag forces between the fluid and the hole due to the fluid being displaced up the hole and the drag forces between the fluid (going up) and the liner (going down). One way to reduce pressure surge is to maintain low YP and low 10 min gels for the mud. Another way is to keep the running speed of the liner between safe limits.

Following are the results of calculations done using the Geoservices Off-Line Software using the following mud characteristics (see Annexure A).

M.W. = 1.16 gr/cc PV = 16 YP = 17
and at 3 depths - 1575m = all liner is run
3068m = liner at 9-5/8" shoe
4475m = liner at TD

Note:

- the software does not allow to change the scale for the plots
- pressure is given in kg/cm^2 rather than psi (coefficient = 14.2 (psi)/(kg/cm^2)
- the EMW (kg/ltr) in the plot is the EMW at the depth of

reference, not at TD
- the liner is considered "closed-end" because the shoe is not automatic fill-up.

The maximum allowable surge pressure at TD is calculated using the fracture gradient of 1.61 gr/cc EMW (10,917 psi). With a mud weight of 1.16 gr/cc the maximum surge pressure is therefore:

- 10,275 - 1.16 x 4475 x 1.424 = 2883 psi
  = 203 kg/cm^2

In order not to exceed the maximum surge pressure for each case the running speed should be kept slower than:

0 - 1575m = 15 sec/joint
1575-3068m = 20 sec/joint
3068-4475m = 20-25 sec/joint

Of course, the running speed will be adjusted according to hole and mud conditions at the time of running the liner. Indications that speed is too high are:

- liner taking too much weight whilst lowered = mud is too viscous
- mud losses = surge pressure great enough to fracture the formation

E.2 Shoe Track

Install stop collar on middle of first joint, then slip on a centraliser from the pin end and slide up to stop collar. Install another stop collar below centraliser leaving sufficient room for closure of centraliser.

Install the set shoe on to the bottom of the first joint of liner.

Pick up second joint of liner and install two stop collars and one centraliser in the middle of the second joint. Screw collar onto top of shoe joint, then install 2nd joint and make up.

Flush fill up line thoroughly, then circulate the first two joints of liner to ensure floats are free. Pick up liner to partially drain. Lower liner and check that level has dropped and floats are holding.

Pick up third joint of liner, install two stop collars and one centraliser on middle of joint. Screw landing collar onto top of second joint then install third joint and make up.

E.3 Remaining Liner

Proceed with running of remaining liner. Determine the maximum safe running speed from surge programme with consideration to leak off pressure.

Fill liner every joint ensuring level drops to equilibrium after each filling. Top up every five joints.

Centralisers are to be installed on every casing joint for the first 20 joints then 2 per joint in areas of high dogleg, i.e. 3850-3950m. Between these areas install 1 centraliser every 4 joints. Centralisers should be slid onto casing joints up to box then a stop collar installed below the centraliser. A radioactive marker tag and casing pup joint should be installed at approximately 4250m for correlation with the testing packer.

Install centraliser on first joint inside 9 5/8" casing shoe and one on casing joint midway inside liner lap.

After installing final joint of liner, break circulation to ensure liner can still be freely circulated. (NOTE: landing collars have known to plug.) Note circulating pressures at various pump rates. Whilst rigging up circulating swedge, check pipe rack and count remaining joints to ensure correct number of liner joints have been run.

E.4 Installing Liner Hanger Assembly

After bringing up running tool/liner hanger assembly to rig floor, install liner wiper plug on bottom slick joint.

Install running tool/hanger assembly on to top of liner. Run in and tighten various thread connections on hanger assembly as per TIW specifications.

Set liner in slips and check liner setting tool nut for hand tight make.

Pick up liner ensuring liner is full of fluid, record liner string weight.

E.5 Setting String Running

Install drill pipe wiper on setting string to prevent foreign objects from falling into well bore.

Drift every stand before making up. Fill every stand and top up drill pipe every five stands. Ensure level is draining to equilibrium after each top up.

Ensure full mud displacement is obtained whilst running in hole. Space out drill pipe so as to avoid making a connection whilst the hanger is within the BOP's.

Upon reaching 9-5/8" casing shoe depth with liner shoe, carefully break circulation remembering hanger hydraulic slip setting mechanism is shear pinned at 1200 psi. Do not exceed 800 psi dynamic pressure at hanger depth. Maximum allowable circulating surface pressure can be calculated from previous circulation when hanger was on surface.

Continue running liner through open hole. If tight spots occur, liner can be washed through but it is imperative that maximum surface pressure restrictions must be adhered to or else premature setting of the liner hanger may occur.

If no progress is made with washing alone, the TIW running tool, whilst RIH, is in a mode which allows rotation of the liner. A combination of washing and rotating might be more successful, but beside circulating pressure restrictions, maximum surface torque limitations must also be followed. Rotation should be limited to 6 RPM.

Only rotate the liner whilst RIH as a last resort.

Prior to tagging bottom, reciprocate the liner to ensure that the liner is free to move.

Pick up a landing joint of drill pipe and lightly tag bottom with 5-10,000 lbs.

E.6 Setting Hanger

Calculate space out, laying out last joint of drill and picking up cementing kelly and manifold. Space out to allow for setting tool travel and tide and heave. Cementing kelly has an 8.5m working length.

Pick up to place hanger at setting depth. Ensure that there is no casing collar within 1m of lower slips and 3m of upper slips (tie-back packer should not be set across a casing collar).

Note full string weight.

Slowly break circulation and adhere to maximum surface pressure limitation.

Once full circulating rate has been established, rotation of the liner can begin. Keeping within maximum torque limitations, rotate the liner at 6 RPM whilst circulating and conditioning the hole and mud. Note that start up torque invariably exceeds dynamic rotating torque hence for start-up, maximum torque limit should be 100% of calculated. Record weight of liner and string whilst rotating and reciprocation.

Circulate and rotate at least two hole volumes or until hole is thoroughly conditioned.

Reduce circulating rate to 2 BPM and release setting ball, allowing it to gravitate slowly down to seat on the landing collar shearout.

When slight pressure increase is noticed, stop rotating.

Slowly pressure up the setting string until the retaining pins in the hydraulic slips setting mechanism are sheared. This should occur at approximately 1200 psi and will be indicated by a slight pressure decrease.

Hold pressure constant and slack off on the setting string until the weight of the liner is resting on the hanger slips.

Continue to slack off until approximately 5000 lbs of setting string weight is applied to the setting tool. This should disengage the lower drive dogs.

Increase pump pressure until the ball seat in the landing collar shears out at approximately 2000 psi, re-establishing circulation.

Stop circulating and bleed off pressure.

The setting tool can now be released from the hanger prior to cementing. Slack off weight to shear setting tool nut (20,000 lb). Then position the setting string is in the neutral position indicated by constant string weight through the free travel of the kelly within the setting tool, if not, slowly slack off until neutral position is obtained.

Rotate the setting string to the right for 20 torque free turns (i.e. drill pipe torque only).

Pick up setting string approximately 1.5m. The disengagement of the setting tool nut from the setting sleeve, should be confirmed by the loss of liner weight on the weight indicator.

Rotate the setting string independently of the liner to establish torque limitations. These readings can be compared to the figures obtained during the cleanout trip.

After conducting torque readings, stop rotating the setting string.

Slowly lower the setting string until the upper spline drive engages into the setting sleeve. If necessary, use a chain tong to turn the setting string to the right to guide the upper spline into the setting sleeve mesh.

Once engaged, slack off until 4000 lbs of setting string weight is applied to the liner top.

Break circulation and limit circulating rate to 8 BPM in order to prevent the liner possibly packing off around the hanger.

Rotate the setting string and liner at a maximum rate of 6 RPM but within maximum rotating torque limitations.

The liner is now ready for cementing.

F. CEMENTING LINER

F.1 Cement Volume

Slurry volume, water, additive, cement and displacement calculations are to be made independently by the Company Supervisor, Drilling Engineer and cementing operator, utilising the four arm caliper log.

The desired cement tops are ± 4000 m for the tail slurry and the top of liner for the lead slurry. No excess is required for liner lap and shoe track volumes but 20% excess is to be added to open hole annular caliper volume.

F.2 Job Simulation

A job simulation has been performed by Halliburton using their Cement Job Simulation program. The results have been included in this liner program (see Annexure B).

1. Volume and Pump Rate Design

	Volume bbl	Rate bpm
Water	10	5
Flochek 21	20	5
Water	10	5
Cement - Lead	81	5
- Tail	37	5
Mud		10

Note: Cement volumes to be adjusted after the caliper log.

2. Estimation of Fracture Gradient

- gradient in water = 0.477 psi/ft = 1.565 psi/m
- gradient in formation is estimated to remain constanct below 9-5/8" casing shoe to TD at 4750m (Latrobe formation)
- gradient estimated at HELIOS-1 = 0.77 psi/ft = 2.526 psi/m
- gradient estimated using the F.I.T. at 9-5/8" shoe (Anemone -1) = 0.712 psi/ft = 2.336 psi/m.

Note: Leak off was not reached in Anemone-1 therefore result is more conservative.

	ANEMONE-1 0.712 psi/ft		HELIOS-1 0.77 psi/ft	
	Pressure psi	EMW gr/cc	Pressure psi	EMW gr/cc
Mud Line (231m)	361	1.10	361	1.10
9-5/8" shoe (3068m)	6988	1.60	7527	1.72
TD (4475m)	10275	1.61	11081	1.74

Note: Calculation using the "Eaton Correlation" gave a fracture pressure of 12,809 psi (or 2.01 gr/cc EMW).

3. Circulation Pressure

In order to have a safe cementation, the circulation pressure which takes into account annular pressure losses as well as hydrostatic pressure must not exceed the fracture pressure at any point of the formation. If liner was cemented in a single stage using a tail slurry with 1.90 gr/cc density, the fracture gradient at the shoe would be exceeded during the displacement.

By using a combination of tail slurry at 1.90 gr/cc and lead slurry with 2.5% bentonite (BWOW) at 1.53 gr/cc the equivalent circulating pressure is maintained within 2000 psi of the fracture pressure at TD during the entire job.

F.3 Preparing Spacer (Flocheck 21)

The liquid additive system is limited to three liquid additives. Therefore it is necessary to prepare additional additives with mixwater in cleaned tanks prior to the actual pumping of fluids.

A 20 BBL Flochek 21 wash will be pumped prior to each stage of the cementation. This is a loss zone treatment which effects a seal in the high permeability areas of the hole, by forming a stiff gel when in communication with formation brine. Cement is also then gelled upon contact with the flochek 21/formation brine gel.

In clean mud tank mix 420 gallons of Flochek A (Econolite) with 1400 gallons of freshwater to give a 30 BBL Flochek 21 volume (allowing for dead volume of the mud bank). Keep agitation in tank.

F.4 Preparing Cement Slurry (1st Stage)

Blue circle class 'G' cement will be mixed and pumped simultaneously with freshwater and liquid additives to give a cement slurry as follows:

Lead Slurry

Cement: Blue circle class 'G' (94 lbs/sx)
Mixwater Requirement: 10.8 gal/sx freshwater and liquid additives
Prehydrated Bentonite: 2.5% (BWOW)
Retarder HR-6L: 3.0 gal/10 BBLS

Slurry Yield: 1.94 cu ft/sx
Slurry Density: 12.8 PPG - 1.53 gr/cc
Thickening Time: 4 hr 20 min @ 170°F BHCT

Tail Slurry

Cement: Blue circle class 'G' (94 lbs/sx)
Mixwater Requirement: 5.0 gal/sx freshwater and liquid additives
Fluid Loss Additive Halad 22 AL: 18.0 gal/10 BBLS mixwater
Dispersant CFR-3L: 22.0 gal/10 BBLS mixwater

Slurry Yield: 1.15 cu ft/sx
Slurry Density: 15.8 PPG - 1.53 gr/cc
Thickening Time: 3 hr 35 min @ 250°F BHCT
Fluid Loss: 44 ml/30 min
Comprehensive Strength: 2113 psi @ shoe after 18 hours

Liquid retarder, dispersant and fluid loss additive are to be loaded separately into one of the three liquid additive storage tanks. The defoamer is to be added manually throughout the job.

F.5 Cementation

After pressure testing cement line to 5000 psi, line up cement unit onto freshwater and pump 10 BBLS of freshwater into setting string at 5.0 BPM.

Switch to displacement tanks and pump 20 BBL Flochek 21 at 5 BPM.

Line unit back onto freshwater and pump 10 BBL water at 5 BPM.

Begin mixing and pumping cement slurry. Derreckman should be on hand to periodically check slurry density with mud balance and also to take samples. Cement slurry should be pumped at 5.0 BPM.

Upon completion of pumping cement, pump down plug can be released from cementing manifold. The plug should be released by the liner engineer and witnessed by the company engineer. It is released by first closing the lower line valve on the cementing manifold, then backing out the retainer rod and then opening the top line valve.

Whilst plug is being released, cement unit should be lined up with mud tanks. Once confirmation of plug release is given, displacement can begin.

Displace with mud at 10.0 BPM. Slow the pump rate down when the ball is nearing the liner wiper plug. An increase of approximately 1200 psi will be noted as the ball seats and latches into the liner wiper plug and shears the retaining pins.

Resume displacement of the liner at 10.0 BPM. The Company Representative should count displacement tanks as well as the cement operator.

Approximately 2 BBLS before total liner displacement is pumped, slow pump rate down to ½ BPM. Continue to displace until liner wiper plug seats and latches into the landing collar. This will be indicated by a rapid increase in pressure.

Stop rotating.

Pressure up against liner wiper plug to approximately 1000 psi above maximum displacement pressure and hold for five minutes.

Release pressure and check for backflow to see if setshoe floats and liner wiper plug are holding.

Pull setting string out of hole. DO NOT REVERSE CIRCULATE. After pulling 15 stands, circulate (direct) the volume of annulus. Continue to pull string out of hole.

G. SETTING LINER PACKER

After cementation a TIW SN-AT-6 7" x 9-5/8" liner packer will be run to isolate the liner top because the lead slurry has a low compressive strength. The packer is set by applying weight and when set the packer will seal in the liner setting collar and pack-off in the 9-5/8" casing to isolate the liner top. The packer is run together with a LG6 tie-back receptacle for further tie-back of the liner to the surface and is set using a LG setting tool.

G.1 Cleaning Liner Top

Wait on cement according to the samples taken during cementation.

Make up 8-1/2" bit and 9-5/8" scraper and run to the top of liner. **Note:** TIW packer SN-AT-6 is a close tolerance packer with 9-5/8" casing.

Make up TIW 7" reaming mill and run in hole to polish I.D. of the setting collar.

G.2 Setting Liner Packer

Make up TIW tie-back receptacle LG6 with LG setting tool and RPOB, and install on top of liner packer.

Run in hole at moderate speed due to the close tolerance between the packer seals and the 9-5/8" casing.

Tag top of liner setting collar and break circulation slowly.

Stop circulation, lay down kelly and lower setting string to engage the seal assembly of the packer in the liner setting collar.

Continue to slack off until seal is completely engaged then the shear pins will shear to set the packer.

Continue to slack off until a second set of shear pins shear to set the hold-down slips. Set approximately 40,000 lb of weight on packer to ensure a good seal.

Pick up setting string and pull 5000 lb to ensure the hold-down slips are set.

Slack off until 3000-5000 lb in setting on the setting tools.

Rotate setting string to the right 15 turns to release tool from the LG setting collar.

Pressure up down the string to test packer seals in the liner setting collar and down the annulus to test packer.

Pull out of hole with setting string.

ANNEXURE A

RUNNING SPEED - SWAB AND SURGE

```
****************************************************************************
   Company : PETROFINA EXPLORATION                         Date: 08-08-1989  *
   Country : AUSTRALIA                                                       *
      Well : ANEMONE #1A                                                     *
       Rig : ZAPATA ARCTIC                                                   *
****************************************************************************
          Lngth[ m] Lngth[ft]   ID[inch]             Mud    [kg/lit]  [ ppg ]
----------------------------------------           -----------------------------
  Kelly     18.60     61.02      2.60              Weight      1.16      9.68
 Swivel      3.00      9.84      2.60             Visc.pl.    16.00
   Hose     48.77    160.01      2.60             Yield V.    17.00
St.Pipe    140.48    460.89      3.50               Gel        2.00
:hk Line   231.00    757.87      2.40               F600      49.00
.ll Line   231.00    757.87      2.40               F300      33.00

            [lt/stk]  [gl/stk] eff'cy[%] Rtng[k/cm2]  [psi]
-------------------------------------------------------------
 Pump #1     19.494     5.150    97.000     0.000     0.000
 Pump #2     19.494     5.150    97.000     0.000     0.000
 Pump #3      0.000     0.000     0.000     0.000     0.000
 Pump #1      0.000     0.000     0.000     0.000     0.000
 Pump #2      0.000     0.000     0.000     0.000     0.000
 Pump #3      0.000     0.000     0.000     0.000     0.000

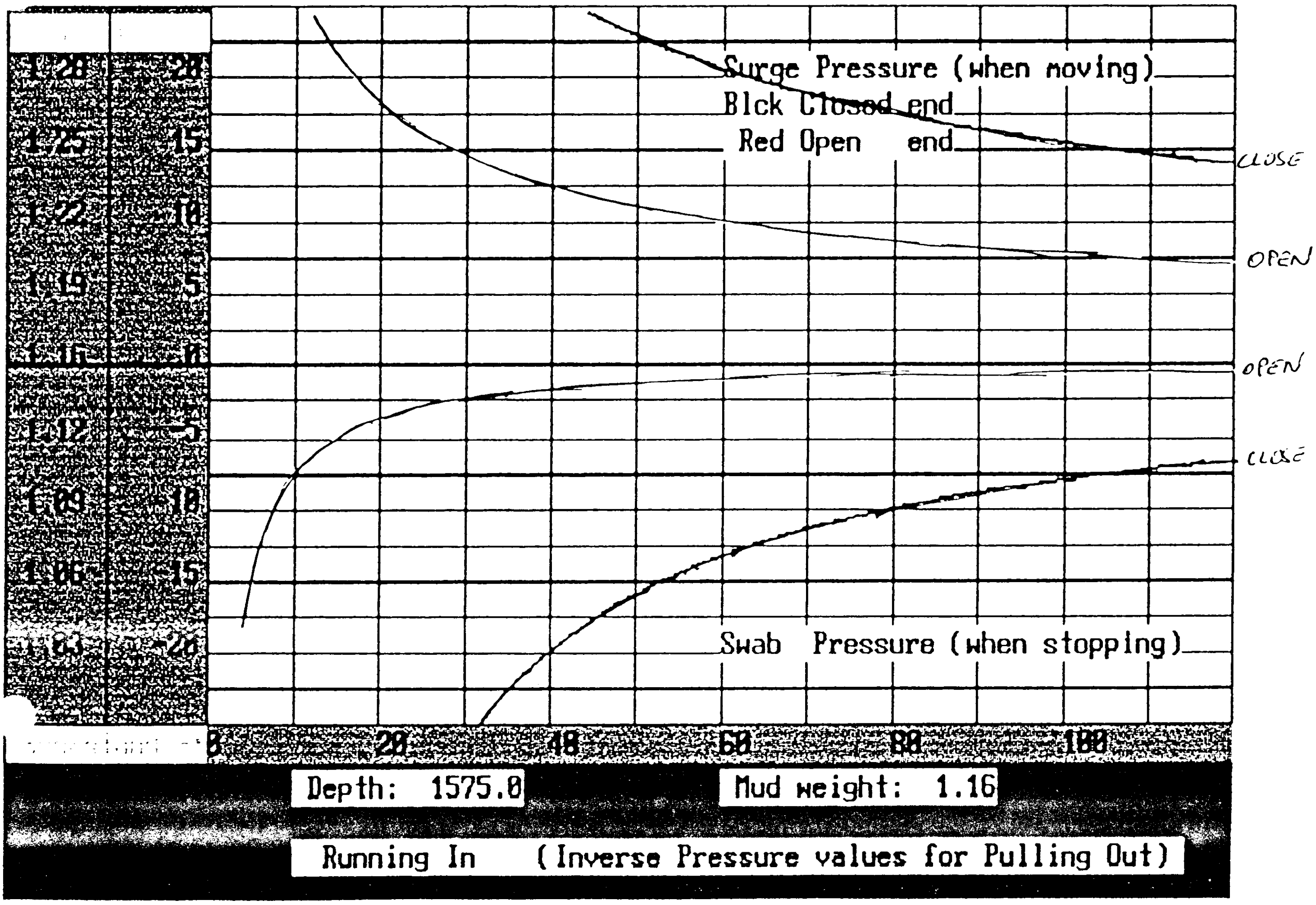
           Top[ m] Top[ft] Btm[ m]  Btm[ft] OD[inch]ID[inch] [kg/m][lbs/ft]
--------------------------------------------------------------------------
  Riser      0.0     0.0    258.0    846.5  21.000  20.000 100.000  67.192
 Casing    258.0   846.5   3068.0  10065.6   9.630   8.681  69.950  47.001
.ner # 1     0.0     0.0      0.0      0.0   0.000   0.000   0.000   0.000
.ne  # 2     0.0     0.0      0.0      0.0   0.000   0.000   0.000   0.000

          Lngth[ m]  Lngth[ft]   OD[inch]   ID[inch]  [kg/mtr]   [lbs/ft]
---------------------------------------------------------------------
:/DP # 1   1575.00    5167.32     7.000      6.180     43.600     29.296 LINER
:/DP # 2      6.10      20.01     8.250      6.180     44.648     30.000 HANGER
:/DP # 3   2900.00    9514.44     5.000      4.280     26.680     17.927 DRILL PIPE
:/DP # 4      0.00       0.00     0.000      0.000      0.000      0.000
:/DP # 5      0.00       0.00     0.000      0.000      0.000      0.000

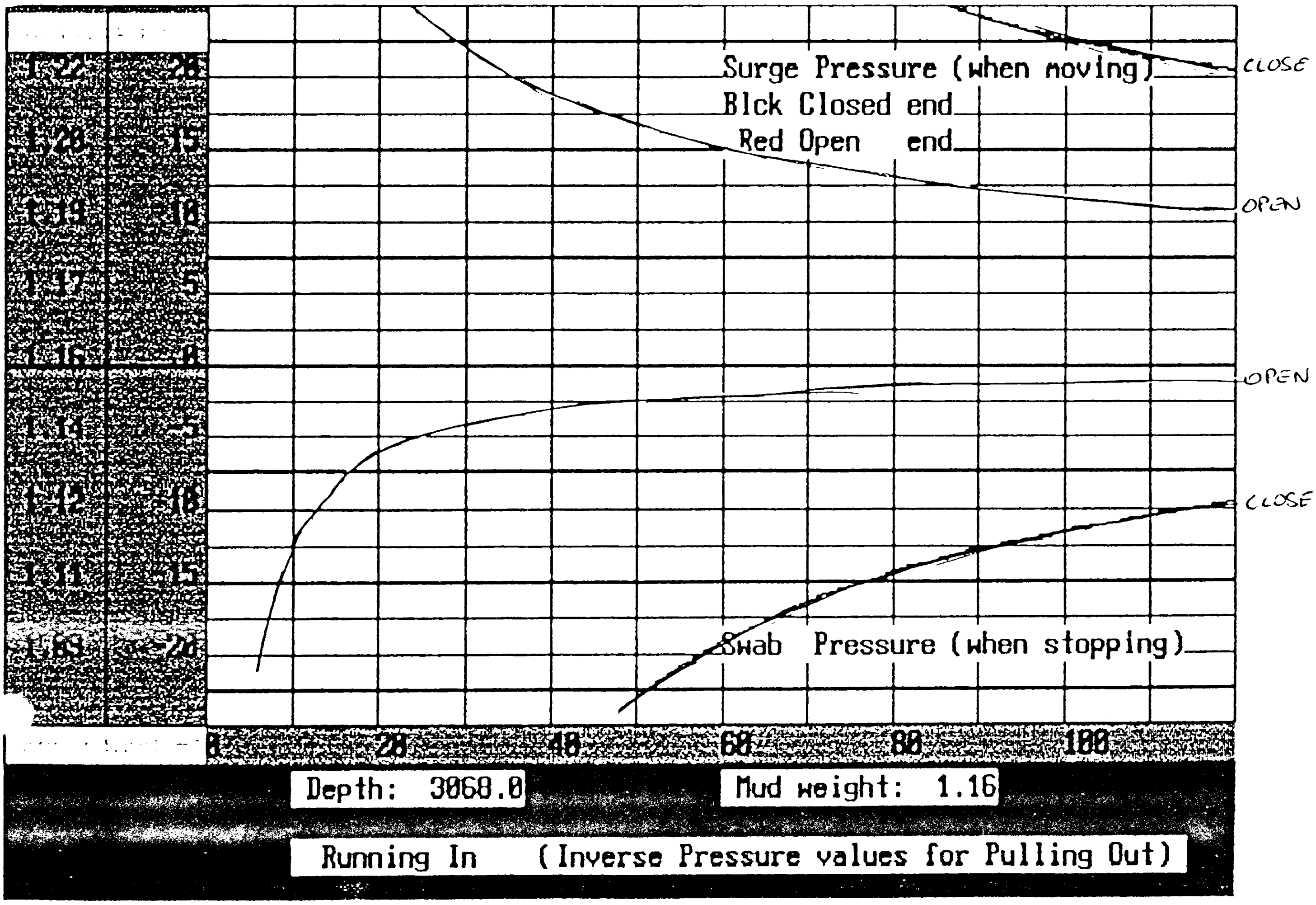
          Diam[inch] Dpth[ m]  Dpth[ft]
----------------------------------------
).Hole#1     8.500  5000.00  16404.20
).Hole#2     0.000     0.00      0.00
).Hole#3     0.000     0.00      0.00

;it size  7    Nozzles :  1/32   0/32   0/32   0/32   0/32   0/32
```

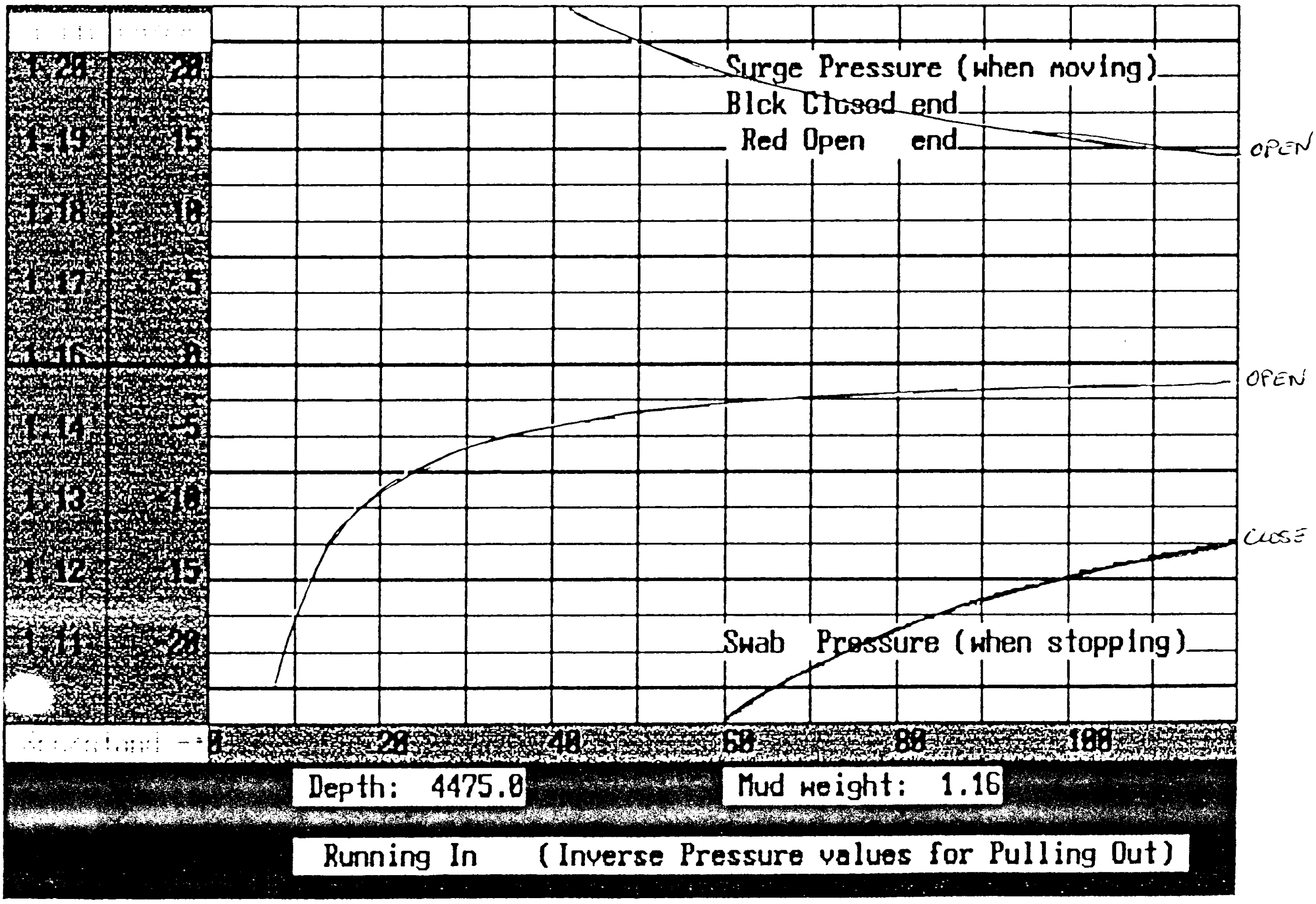
```
*****************************************************************************
SURGE AND SWAB REPORT                                                       *
*****************************************************************************
Depth:  1575.0   mtr                                                        *
*. ***************************************************************************
   Weight  :     1.160 kg/ltr                                               *
  Visc.pl. :    16                               'N':      0.600            *
  Yield V. :    17                               'K':      0.735            *
    Gel    :     2                               'R':  2647.940             *
*****************************************************************************
          RUNNING IN       (Inverse pressure values for Pulling Out)        *
*****************************************************************************
     *       SURGE (when moving)          *   *         SWAB (when stopping)        *
Time *    Open end     *   Closed end     *   *    Open end      *   Closed end     *
sec  *  kg/cm2  kg/ltr*  kg/cm2  kg/ltr*   *  kg/cm2  kg/ltr*  kg/cm2  kg/ltr*
*****************************************************************************
 10  *    28.0     1.34 *  298.6    3.06 *   *    -7.3     1.11 *  -79.5     0.65 *
 20  *    18.2     1.28 *   85.8    1.70 *   *    -3.6     1.14 *  -39.8     0.91 *
 30  *    14.5     1.25 *   41.4    1.42 *   *    -2.4     1.14 *  -26.5     0.99 *
 40  *    12.4     1.24 *   25.8    1.32 *   *    -1.8     1.15 *  -19.9     1.03 *
 50  *    11.0     1.23 *   22.7    1.30 *   *    -1.5     1.15 *  -15.9     1.06 *
 60  *    10.0     1.22 *   20.5    1.29 *   *    -1.2     1.15 *  -13.3     1.08 *
 70  *     9.2     1.22 *   18.8    1.28 *   *    -1.0     1.15 *  -11.4     1.09 *
 80  *     8.6     1.21 *   17.4    1.27 *   *    -0.9     1.15 *   -9.9     1.10 *
 90  *     8.1     1.21 *   16.3    1.26 *   *    -0.8     1.15 *   -8.8     1.10 *
100  *     7.7     1.21 *   15.4    1.26 *   *    -0.7     1.16 *   -8.0     1.11 *
110  *     7.3     1.21 *   14.6    1.25 *   *    -0.7     1.16 *   -7.2     1.11 *
120  *     7.0     1.20 *   13.9    1.25 *   *    -0.6     1.16 *   -6.6     1.12 *
```



```
*****************************************************************************
SURGE AND SWAB REPORT                                                       *
*****************************************************************************
Depth:  3068.0   mtr                                                        *
*****************************************************************************
   /eight  :    1.160 kg/ltr                                                *
  Visc.pl. :    16                                'N':      0.600           *
  Yield V. :    17                                'K':      0.735           *
    Gel    :     2                                'R':  2647.940            *
*****************************************************************************
         RUNNING IN       (Inverse pressure values for Pulling Out)         *
*****************************************************************************
     *      SURGE (when moving)        *   *        SWAB (when stopping)    *
Time *    Open end      *   Closed end     *   *    Open end     *   Closed end    *
sec  *  kg/cm2  kg/ltr* kg/cm2  kg/ltr*  *  kg/cm2  kg/ltr*  kg/cm2  kg/ltr*
*****************************************************************************
 10  *    43.4     1.30 *  473.6     2.70 *  *   -12.5    1.12 * -115.7     0.78 *
 20  *    27.3     1.25 *  136.1     1.60 *  *    -6.3    1.14 *  -57.8     0.97 *
 30  *    21.9     1.23 *   67.6     1.38 *  *    -4.2    1.15 *  -38.6     1.03 *
 40  *    18.7     1.22 *   43.0     1.30 *  *    -3.1    1.15 *  -28.9     1.07 *
 50  *    16.6     1.21 *   36.2     1.28 *  *    -2.5    1.15 *  -23.1     1.08 *
 60  *    15.1     1.21 *   31.8     1.26 *  *    -2.1    1.15 *  -19.3     1.10 *
 70  *    14.0     1.21 *   28.5     1.25 *  *    -1.8    1.15 *  -16.5     1.11 *
 80  *    13.0     1.20 *   26.1     1.25 *  *    -1.6    1.15 *  -14.5     1.11 *
 90  *    12.3     1.20 *   24.2     1.24 *  *    -1.4    1.16 *  -12.9     1.12 *
100  *    11.7     1.20 *   22.6     1.23 *  *    -1.3    1.16 *  -11.6     1.12 *
110  *    11.1     1.20 *   21.4     1.23 *  *    -1.1    1.16 *  -10.5     1.13 *
120  *    10.7     1.19 *   20.4     1.23 *  *    -1.0    1.16 *   -9.6     1.13 *
```



```
*********************************
*******************************************                                   *
SURGE AND SWAB REPORT                                                         *
*******************************************************************************
De  ı:  4475.0   mtr                                                          *
*******************************************************************************
   Weight  :     1.160 kg/ltr                                                 *
  Visc.pl. :    16                              'N':     0.600                *
  Yield V. :    17                              'K':     0.735                *
    Gel    :     2                              'R':  2647.940                *
*******************************************************************************
          RUNNING IN      (Inverse pressure values for Pulling Out)           *
*******************************************************************************
     *       SURGE (when moving)       *   *      SWAB (when stopping)        *
Time *    Open end      *  Closed end   *   *    Open end     *  Closed end   *
sec  *  kg/cm2  kg/ltr* kg/cm2  kg/ltr*   *  kg/cm2  kg/ltr* kg/cm2  kg/ltr*
*******************************************************************************
 10  *   58.0     1.29 *  619.1     2.54 *   *  -17.3     1.12 * -149.2    0.83 *
 20  *   36.6     1.24 *  177.9     1.56 *   *   -8.7     1.14 *  -74.6    0.99 *
 30  *   29.3     1.23 *   90.1     1.36 *   *   -5.8     1.15 *  -49.7    1.05 *
 40  *   25.1     1.22 *   56.7     1.29 *   *   -4.3     1.15 *  -37.3    1.08 *
 50  *   22.3     1.21 *   47.1     1.27 *   *   -3.5     1.15 *  -29.8    1.09 *
 60  *   20.3     1.21 *   41.6     1.25 *   *   -2.9     1.15 *  -24.9    1.10 *
 70  *   18.7     1.20 *   37.6     1.24 *   *   -2.5     1.15 *  -21.3    1.11 *
 80  *   17.5     1.20 *   34.5     1.24 *   *   -2.2     1.16 *  -18.7    1.12 *
 90  *   16.5     1.20 *   32.1     1.23 *   *   -1.9     1.16 *  -16.6    1.12 *
100  *   15.6     1.19 *   30.1     1.23 *   *   -1.7     1.16 *  -14.9    1.13 *
110  *   14.9     1.19 *   28.4     1.22 *   *   -1.6     1.16 *  -13.6    1.13 *
120  *   14.3     1.19 *   27.1     1.22 *   *   -1.4     1.16 *  -12.4    1.13 *
```



ANNEXURE B

HALLIBURTON JOB SIMULATION

CEMENT JOB SIMULATOR

HALLIBURTON SERVICES

ADELAIDE S.A.– AUST.

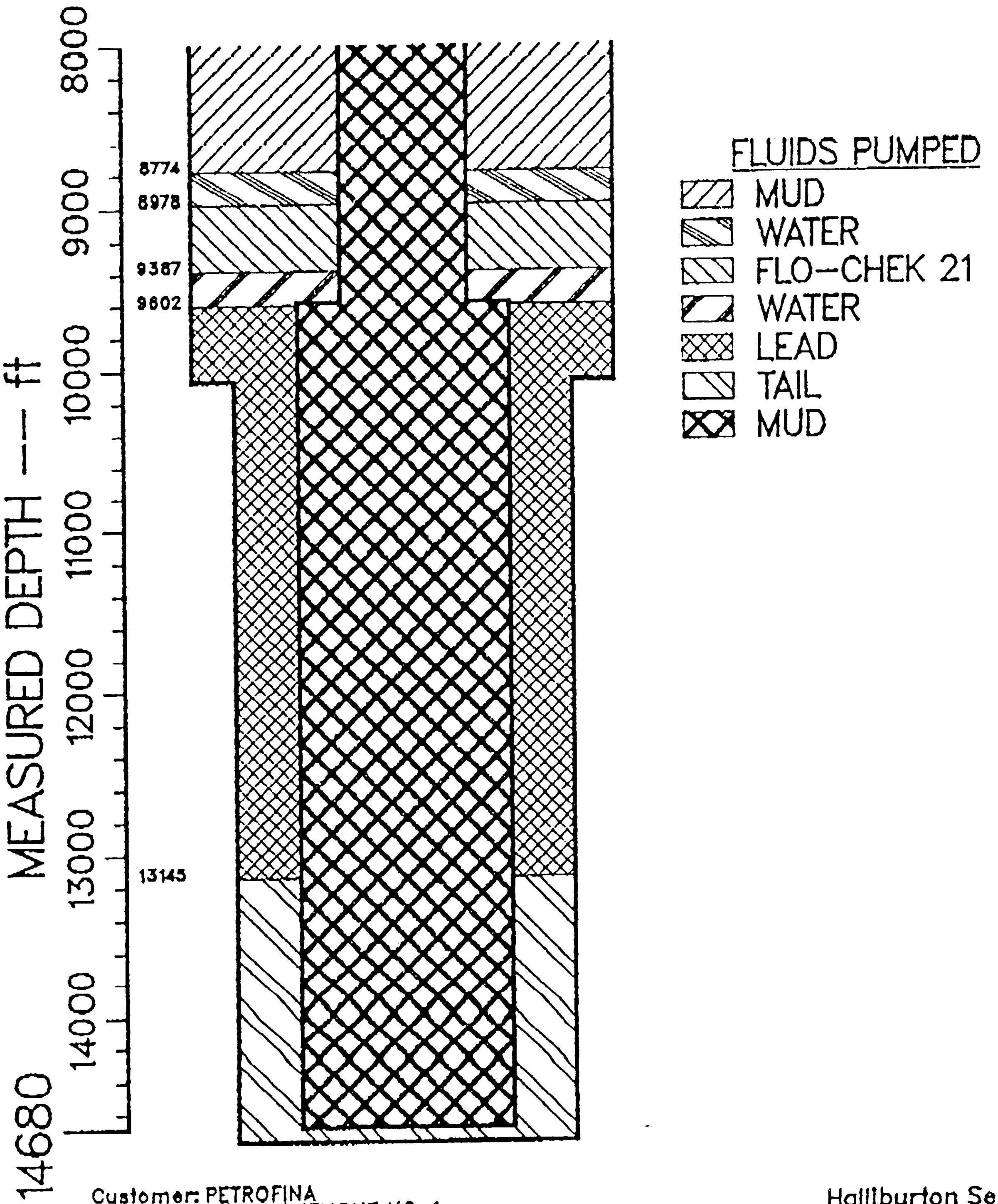
A Halliburton Company

Customer: PETROFINA
Well Description: ANEMONE NO.1 – 7 INCH LINER

ATTN: LUIS REMISIO
REVISION NO.3

CEMENT JOB SIMULATOR

Well Schematic



Customer: PETROFINA
Well Description: ANEMONE NO. 1

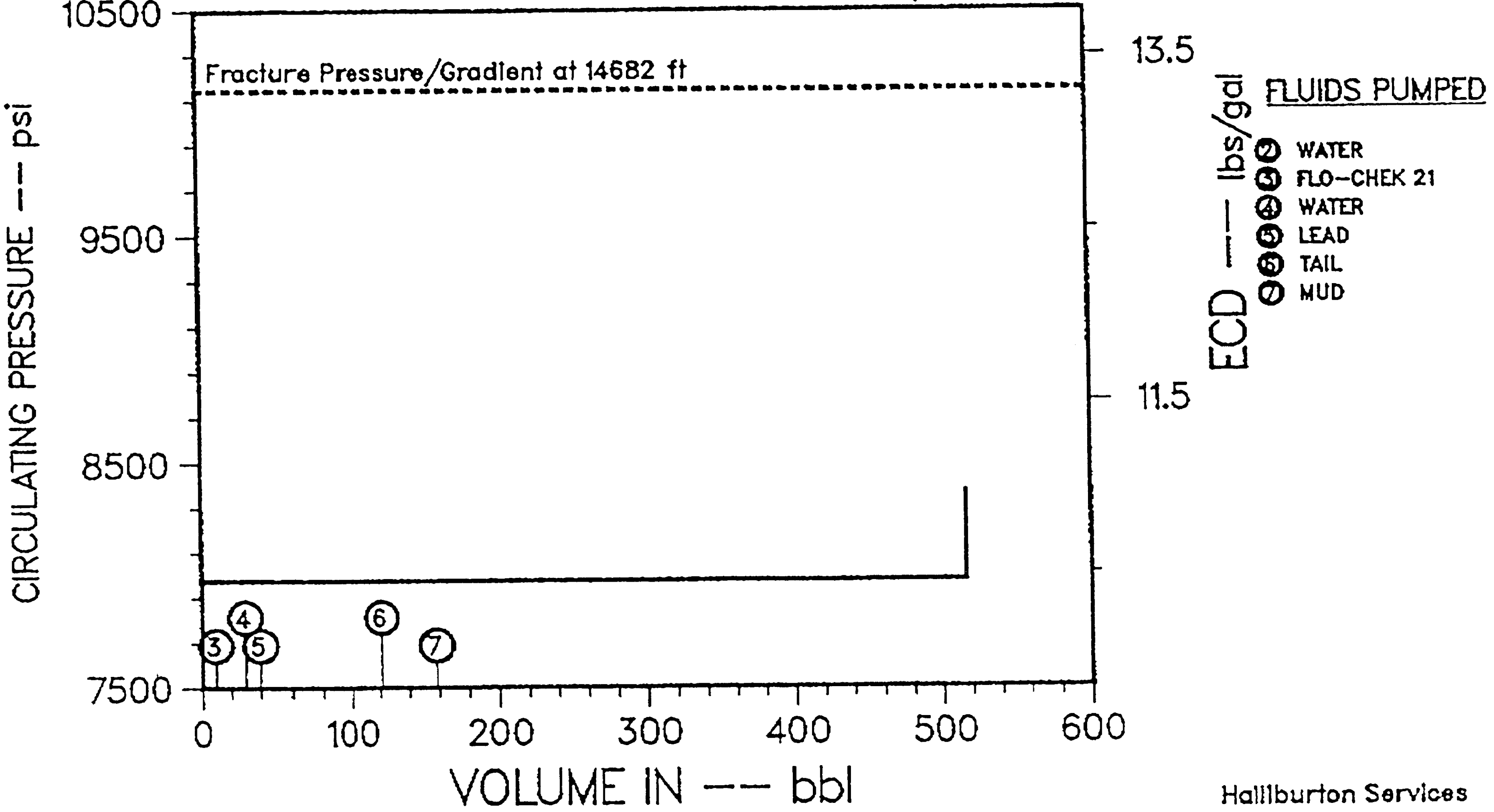
Halliburton Services

Plot Shows: Calculated Slurry Position as the Plug Lands

CEMENT JOB SIMULATOR

Circulating Pressure and Density at 14682 ft

Customer: PETROFINA
Well Description: ANEMONE NO. 1

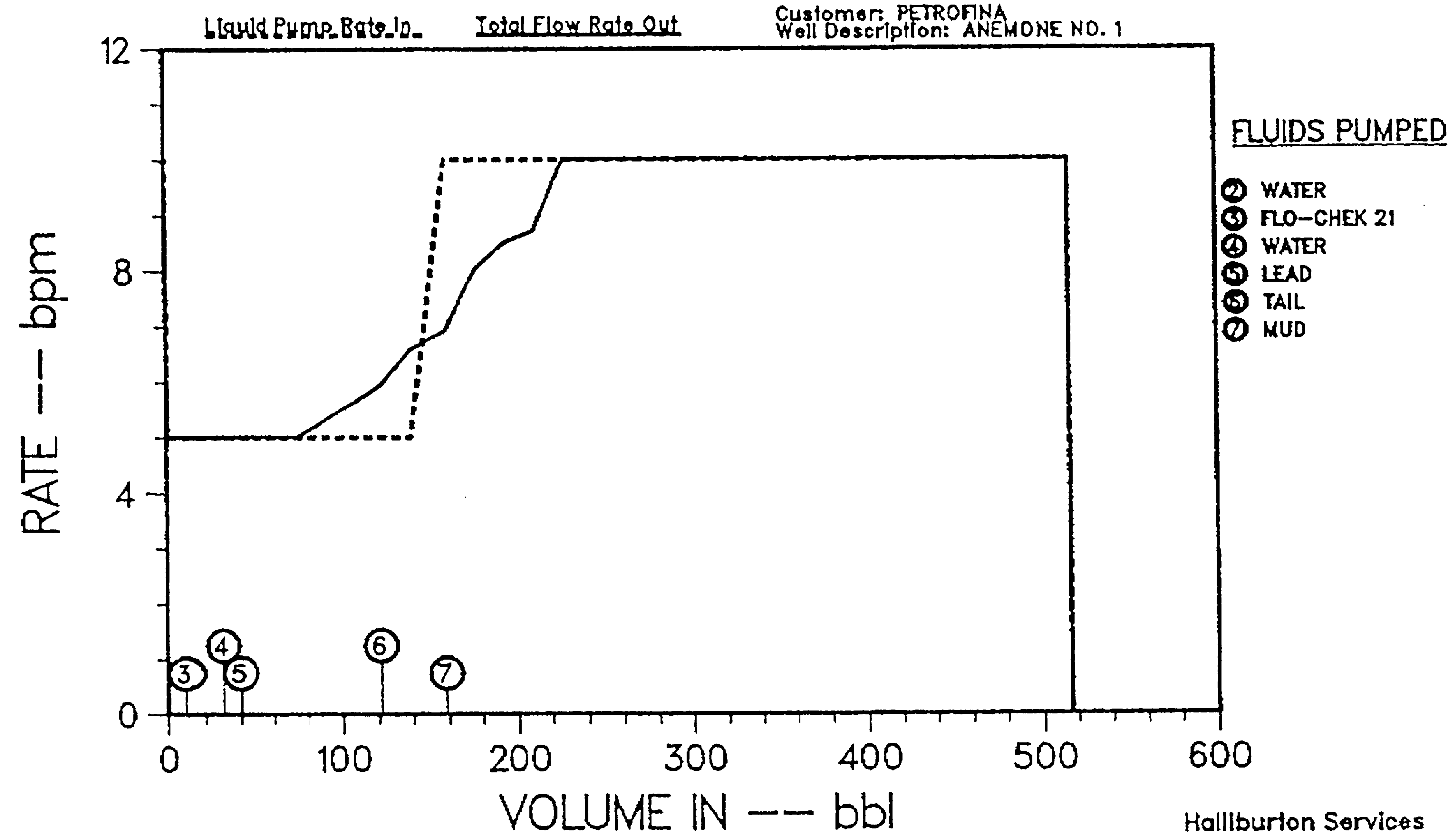


Halliburton Services

Plot Shows: Downhole Annular Pressure and Equivalent Circulating Density versus Liquid Volume Pumped Into the Well

CEMENT JOB SIMULATOR

Comparison of Rates In & Out

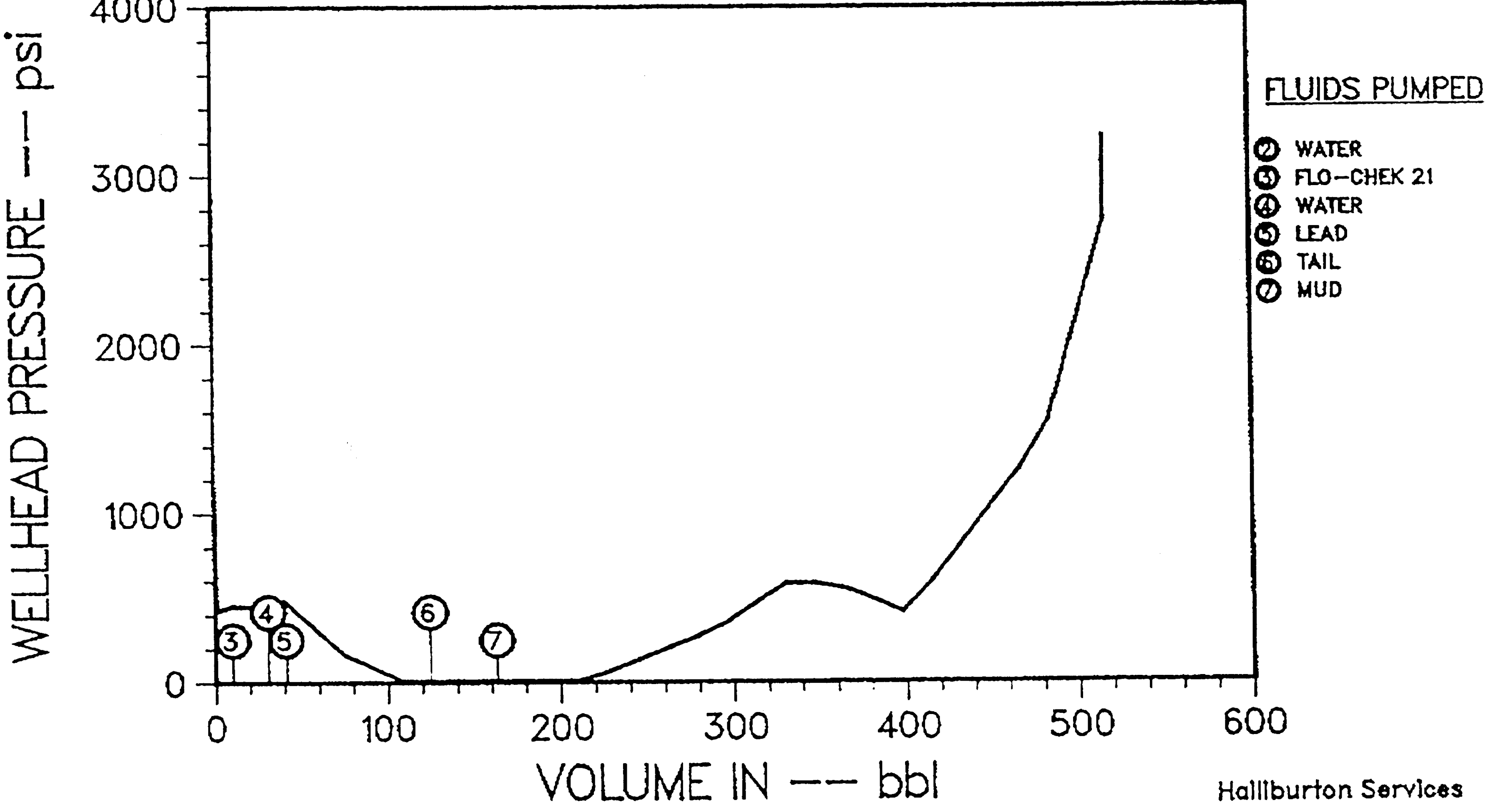


Plot Shows: Total Annular Return Rate and the Corresponding Pump Rate versus Liquid Volume Pumped Into the Well

CEMENT JOB SIMULATOR

Calculated Wellhead Pressure

Customer: PETROFINA
Well Description: ANEMONE NO. 1



Halliburton Services

Plot Shows: Calculated Wellhead Pressure versus Liquid Volume Pumped into the Well

```
** CUSTOMER: PETROFINA
** WELL DESCRIPTION: ANEMONE NO. 1                                **
** PROVIDED BY: HALLIBURTON SERVICES                              **
******************************************************************


                 ----------FLUIDS  TABLE---------

 FLUID       FLUID        DENSITY    N          K       VOLUME   1-IF
NUMBER   DESCRIPTION      LB/GAL   PRIME      PRIME      BBLS   FOAMED

  1  MUD                    9.60   0.637    0.00542    1207.8     0
  2  WATER                  8.33   1.000    0.00002      10.0     0
  3  FLO-CHEK 21            9.50   1.000    0.00002      20.0     0
  4  WATER                  8.33   1.000    0.00002      10.0     0
  5  LEAD                  12.80   0.364    0.02607      81.4     0   TRACER FLUI
  6  TAIL                  15.80   0.557    0.05406      37.4     0
  7  MUD                    9.60   0.637    0.00542     357.0     0

**************************************************************************
**************************************************************************

                 -------GEOMETRIES  TABLE-------

                                                MEASURED          ANGLE OF
 GEOMETRY                                         DEPTH          DEVIATION
  NUMBER                                       START    END     START    END

    1       TOP INNER PIPE-ID--  4.276            0.   9580.     0.0     0.0
    2       LAST INNER PIPE-ID--  6.186        9580.  14680.     0.0     0.0
    3         8.500 BY  7.000 ANNULUS         14680.  10065.     0.0     0.0
    4         8.681 BY  7.000 ANNULUS         10065.   9580.     0.0     0.0
    5         8.681 BY  5.000 ANNULUS          9580.    823.     0.0     0.0
    6        20.100 BY  5.000 ANNULUS           823.      0.     0.0     0.0
```

```
** CUSTOMER: PETROFINA [illegible]                                   **
** WELL DESCRIPTION: ANEMONE NO. 1                                   **
** PROVIDED BY: HALLIBURTON SERVICES                                 **
*********************************************************************


                     ------PUMP RATES  TABLE------


THE PUMP RATE FOR THE ----MUD                -- WILL BE 10.0 BPM.

THE PUMP RATE FOR THE ----WATER              -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----FLO-CHEK 21        -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----WATER              -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----LEAD               -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----TAIL               -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----MUD                -- WILL BE 10.0 BPM.


********************************************************************************

                     --------WELL PARAMETERS--------

SURFACE TEMPERATURE (F)---------            80.0
CIRCULATING TEMPERATURE (F)----            200.0
BACK-PRESSURE (PSI)------------             15.0
 RAC ZONE DEPTH (FT)-----------          14682.0
FRAC ZONE GRADIENT (LB/GAL)----             13.3
```

```
**********************************************************************
** CUSTOMER: PETROFINA                                              **
** WELL DESCRIPTION: ANEMONE NO. 1                                  **
** PROVIDED BY: HALLIBURTON SERVICES                                **
**********************************************************************


                 -------TURBULENCE  TABLE------


      THIS TABLE LISTS THE RATES REQUIRED TO ACHIEVE TURBULENCE
                    IN THE NUMBER  3 GEOMETRY.


             FLUID               RATE FOR TURBULENCE
          DESCRIPTION                   (BPM)


         MUD                             8.6

         WATER                           0.3

         FLO-CHEK 21                     0.3

         WATER                           0.3

         LEAD                            7.1

         TAIL                           22.0

         MUD                             8.8


*************************************************************************************

          -----PRESSURE TO BREAK CIRCULATION TABLE-----


                          SURFACE        PRESSURE         PRESSURE
     GEL STRENGTH        PRESSURE         AT TD        AT 14682. FT
     LB/100 SQ-FT           PSI            PSI              PSI


          10               295.          10085.            7515.
          25               739.          10416.            7805.
          50              1477.          10968.            8288.
         100              2955.          12072.            9255.
         150              4432.          13176.           10221.
         200              5909.          14280.           11188.

     HYDROSTATIC PRESSURE:   AT     TD       =    9864. FSI
                             AT 14682. FT =    7322. FSI
```

```
   ** CUSTOMER: PETROFINA                                            **
   ** WELL DESCRIPTION: ANEMONE NO. 1                                **
   ** PROVIDED BY: HALLIBURTON SERVICES                              **
   *******************************************************************


                 ------VOLUME & RATE  CALCULATIONS------


           SURFACE               FLUID                    SURFACE      LEADING EDGE
 TIME       FLUID          VOLUME          RATE           PRESSURE      OF TRACER
           IN  OUT        IN     OUT      IN    OUT      IN     OUT       FLUID
 (MIN)                     (BBLS)           (BPM)            (PSI)          (FT)
   0.0      1   1         0.0     0.0    10.0  10.0    1210.4    15.          0.
   0.2      2   1         1.0     1.0     5.0   5.0     425.9    15.          0.
   2.0      2   1        10.0    10.0     5.0   5.0     455.2    15.          0.
   2.2      3   1        11.0    11.0     5.0   5.0     455.2    15.          0.
   5.6      3   1        28.0    28.0     5.0   5.0     453.0    15.          0.
   6.0      3   1        30.0    30.0     5.0   5.0     453.0    15.          0.
   6.2      4   1        31.0    31.0     5.0   5.0     456.1    15.          0.
   8.0      4   1        40.0    40.0     5.0   5.0     485.4    15.          0.
   8.2      5   1        41.0    41.0     5.0   5.0     476.3    15.        -56.
  11.6      5   1        58.0    58.0     5.0   5.0     322.2    15.      -1013.
  15.0      5   1        75.0    75.0     5.0   5.0     168.0    15.      -1971.

 ************************ FREEFALL IS STARTING ************************

  21.8      5   1       109.0   111.2     5.0   5.7    ON VAC    15.      -4010.
  24.3      5   1       121.4   125.9     5.0   5.9    ON VAC    16.      -4837.
  24.5      6   1       122.4   127.1     5.0   5.9    ON VAC    15.      -4904.
  27.9      6   1       139.4   149.4     5.0   6.6    ON VAC    15.      -6162.

 ********************** DISPLACEMENT IS STARTING **********************

  31.9      7   1       159.8   176.5    10.0   6.9    ON VAC    15.      -7687.
  33.6      7   1       176.8   190.2    10.0   8.0    ON VAC    15.      -8455.
  35.3      7   1       193.8   204.6    10.0   8.5    ON VAC    15.      -9269.
  37.0      7   1       210.8   219.4    10.0   8.7    ON VAC    15.      -9830.

 ******************* THE WELL IS NO LONGER ON VACUUM ******************

  38.7      7   1       227.8   227.8    10.0  10.0      65.8    15.     -10055.
  40.4      7   1       244.8   244.8    10.0  10.0     135.4    15.     -10512.
  42.1      7   1       261.8   261.8    10.0  10.0     204.9    15.     -10969.
  43.8      7   1       278.8   278.8    10.0  10.0     274.5    15.     -11427.
  45.5      7   1       295.8   295.8    10.0  10.0     356.0    15.     -11884.
  47.2      7   1       312.8   312.8    10.0  10.0     473.2    15.     -12341.
  48.9      7   1       329.8   329.8    10.0  10.0     584.5    15.     -12799.
  50.6      7   1       346.8   346.8    10.0  10.0     584.5    15.     -13256.

 ************** WATER                IS ENTERING THE ANNULUS **************
```

```
  ***********************************************************************
  ** CUSTOMER: PETROFINA                                              **
  ** WELL DESCRIPTION: ANEMONE NO. 1                                  **
  ** PROVIDED BY: HALLIBURTON SERVICES                                **
  ***********************************************************************


                   ------VOLUME & RATE  CALCULATIONS-----


        SURFACE                 FLUID                    SURFACE     LEADING EDGE
TIME     FLUID        VOLUME             RATE            PRESSURE     OF TRACER
        IN  OUT      IN      OUT      IN     OUT        IN     OUT      FLUID
(MIN)                  (BBLS)           (BPM)              (PSI)          (FT)
 52.3    7   1     363.8   363.8    10.0   10.0      556.4     15.     -13713.

************** FLO-CHEK 21        IS ENTERING THE ANNULUS **************

 54.0    7   1     380.8   380.8    10.0   10.0      489.8     15.     -14171.

************** WATER              IS ENTERING THE ANNULUS **************

 55.7    7   1     397.8   397.8    10.0   10.0      413.3     15.     -14628.

************** LEAD               IS ENTERING THE ANNULUS **************

 57.4    7   1     414.8   414.8    10.0   10.0      595.2     15.      14013.
 59.1    7   1     431.8   431.8    10.0   10.0      815.6     15.      13260.
 60.8    7   1     448.8   448.8    10.0   10.0     1035.9     15.      12507.
 62.5    7   1     465.8   465.8    10.0   10.0     1258.5     15.      11755.

************** TAIL               IS ENTERING THE ANNULUS **************

 64.2    7   1     482.8   482.8    10.0   10.0     1547.4     15.      11002.
  5.9    7   1     499.8   499.8    10.0   10.0     2167.3     15.      10249.
 67.5    7   1     515.8   515.8    10.0   10.0     2733.5     15.       9603.
```

```
** CUSTOMER: PETROFINA                                          **
** WELL DESCRIPTION: ANEMONE NO. 1                              **
** PROVIDED BY: HALLIBURTON SERVICES                            **
******************************************************************


                    ------FREE FALL  CALCULATIONS------


                                           EQUIVALENT
       SURFACE    FLUID     SURFACE       CIRCULATING     FREE     LEADING EDGE
TIME    FLUID     VOLUME    PRESSURE        DENSITY       FALL      OF TRACER
       IN  OUT     IN         IN          TD    ZONE     HEIGHT       FLUID
(MIN)             (BBLS)     (PSI)        (LBS/GAL)       (FT)        (FT)
  0.0   1   1       0.0     1210.4       10.5 10.5          0.          0.
  0.2   2   1       1.0      425.9        9.9 10.5          0.          0.
  2.0   2   1      10.0      455.2        9.9 10.5          0.          0.
  2.2   3   1      11.0      455.2        9.9 10.5          0.          0.
  5.6   3   1      28.0      453.0        9.9 10.5          0.          0.
  6.0   3   1      30.0      453.0        9.9 10.5          0.          0.
  6.2   4   1      31.0      456.1        9.9 10.5          0.          0.
  8.0   4   1      40.0      485.4        9.9 10.5          0.          0.
  8.2   5   1      41.0      476.3        9.9 10.5          0.        -56.
 11.6   5   1      58.0      322.2        9.9 10.5          0.      -1013.
 15.0   5   1      75.0      168.0        9.9 10.5          0.      -1971.

************************ FREEFALL IS STARTING ************************

 21.8   5   1     109.0     ON VAC       10.0 10.5        161.      -4010.
 24.3   5   1     121.4     ON VAC       10.0 10.5        325.      -4837.
 24.5   6   1     122.4     ON VAC       10.0 10.5        339.      -4904.
 27.9   6   1     139.4     ON VAC       10.0 10.5        724.      -6162.

********************* DISPLACEMENT IS STARTING **********************

 31.9   7   1     159.8     ON VAC       10.1 10.5       1206.      -7687.
 33.6   7   1     176.8     ON VAC       10.2 10.5        963.      -8455.
 35.3   7   1     193.8     ON VAC       10.2 10.5        780.      -9269.
 37.0   7   1     210.8     ON VAC       10.3 10.5        623.      -9830.

******************* THE WELL IS NO LONGER ON VACUUM ******************

 38.7   7   1     227.8       65.8       10.5 10.5          0.     -10055.
 40.4   7   1     244.8      135.4       10.5 10.5          0.     -10512.
 42.1   7   1     261.8      204.9       10.5 10.5          0.     -10969.
 43.8   7   1     278.8      274.5       10.5 10.5          0.     -11427.
 45.5   7   1     295.8      356.0       10.5 10.5          0.     -11884.
 47.2   7   1     312.8      473.2       10.5 10.5          0.     -12341.
 48.9   7   1     329.8      584.5       10.5 10.5          0.     -12799.
 50.6   7   1     346.8      584.5       10.5 10.5          0.     -13256.

************** WATER              IS ENTERING THE ANNULUS **************
```

```
** CUSTOMER: PETROFINA                                              **
** WELL DESCRIPTION: ANEMONE NO. 1                                  **
** PROVIDED BY: HALLIBURTON SERVICES                                **
**********************************************************************


                    ------FREE FALL  CALCULATIONS-----


                                             EQUIVALENT
        SURFACE    FLUID     SURFACE     CIRCULATING     FREE     LEADING EDGE
TIME     FLUID     VOLUME    PRESSURE      DENSITY       FALL      OF TRACER
        IN  OUT      IN         IN        TD    ZONE    HEIGHT       FLUID
(MIN)              (BBLS)     (PSI)      (LBS/GAL)       (FT)        (FT)
 52.3    7   1      363.8      556.4     10.4 10.5          0.       -13713.

************** FLO-CHEK 21         IS ENTERING THE ANNULUS **************

 54.0    7   1      380.8      489.8     10.4 10.5          0.       -14171.

************** WATER               IS ENTERING THE ANNULUS **************

 55.7    7   1      397.8      413.3     10.3 10.5          0.       -14628.

************** LEAD                IS ENTERING THE ANNULUS **************

 57.4    7   1      414.8      595.2     10.4 10.5          0.        14013.
 59.1    7   1      431.8      815.6     10.6 10.5          0.        13260.
 60.8    7   1      448.8     1035.9     10.8 10.5          0.        12507.
 62.5    7   1      465.8     1258.5     11.0 10.5          0.        11755.

************** TAIL                IS ENTERING THE ANNULUS **************

 64.2    7   1      482.8     1547.4     11.3 10.5          0.        11002.
 65.9    7   1      499.8     2167.3     11.9 10.5          0.        10249.
 67.5    7   1      515.8     2733.5     12.5 10.5          0.         9603.


IF THE ANNULUS IS SHUT IN WITH    15. PSI BACKPRESSURE IMMEDIATELY
AFTER THE PLUG IS BUMPED THE EQUIVALENT GRADIENT ON THE
FRAC ZONE (14682. FT) WILL BE 11.0 LBS/GAL.
```

5" LINER PROGRAMME

PETROFINA EXPLORATION AUSTRALIA S.A.

5" TIW, TYPE 'RP-RRP' ROTATING LINER:

RUNNING AND CEMENTING PROGRAMME

Prepared By: Luis Remisio/Bruno de Vinck

Approved By: Richard H. Cordiez

RHC. 07/09/89

Linerlr.doc
LR/ss
6 September 1989

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INTRODUCTION

This programme has been written to supply more specific details pertaining to the running and cementing of a 5" liner utilising a TIW rotating type 'RP-RRP' hydraulic set liner hanger with single stage cementation.

> **IMPORTANT:**
>
> The following procedures to set and cement the 5" liner have been recommended by TIW. Prior to the job the Company Representative, Drilling Engineer and TIW Service Engineer should review these procedures together and propose amendments as necessary.

The programme is to be used in conjunction with the following sections of the Petrofina Drilling Manual:

Section 10 - Casing Preparation and Running
Section 11 - Cementing Procedures
Section 12 - Liner Running and Cementation

A. EQUIPMENT AND MATERIALS

The following equipment and materials are required on the rig for the running and cementing of the 5" TIW rotating liner:

A.1 Liner Equipment (see following diagram)

5" TIW tandem cone type IB-RRP 'R' hydrohanger c/w all necessary equipment and having Hydril SPJ-P connections as follows:

Packed in Box 1

1 x TIW liner wiper plug No. 26699, 5" 18ppf (11.5-21ppf).

1 x TIW drill pipe pump down plug No. 29087 for 3-1/2" DP (for 5" (4-1/2" and 5" OD) liners).

1 x TIW type 'HS-SR' landing collar No. 39978, c/w brass setting ball, 5" 18ppf N-80 w/Hydril - SFJ - P box x pin (shear pinned 2,500psi).

1 x TIW cement type LS-2 (CLS-2) set shoe No. 20991 with two back pressure valves, 5" 18ppf N-80 with Hydril-SFJ-P box.

Packed in Box 2

1 x TIW type 'SN-6-AT' liner tie-back packer No. 5415, complete with gold-seal packoffs and unitized Chevron seals, 5" 18ppf N-80 with Hydril-SFJ-P box x 7" 29ppf (29-32ppf).

Packed in Box 3A and 3B

1 x TIW LG-6 type 'RP-RRP' liner setting collar No. 38857, c/w 6ft tie-back receptacle and w/RP and RRP splines and w/5ft extension nipple and w/RPOB profile sub, 5" 18ppf N-80 w/Hydril-SFJ-P pin x 7" 29ppf (20-35ppf). (Shipped in 2 pieces.)

Packed in Box 4

1 x TIW tandem-cone IB-RRP type 'R' hydrohanger No.29828 5" 18ppf N-80 w/Hydril-SFJ-P box x pin x 7" 29ppf (29-32ppf) (shear pinned 1,200psi) (hydraulic-set liner-hanger).

Packed in Box 5

1 x TIW type 'LG-6' liner setting collar No. 38858, complete with 6ft tie-back receptacle & w/RPOB profile, 5" 18ppf N-80 w/Hydril-SFJ-P pin x 7" 29ppf (20-35ppf).

Note: Depending on CBL/VDL and pressure test results decision will be taken to run or not run the liner packer.

A.2 Back-Up 5" Liner Hanger and Equipment

1 x TIW setting collar type LG-6 w/RPOB profile & 6' tie-back receptacle 5" 18ppf N80 VAM pin x 7" 26-32lb. Serial No. 39877.

1 x TIW liner hanger hydraulic set type 'IB' (integral barrel) tandem cone w/1200psi shear pinned: 5" 18lb N80 VAM box x pin x 7" 26-32lb. Serial No. 25305.

1 x TIW landing collar type 'HS-SR' c/w setting ball and 2500psi shear out: 5" 18lb N80 Hydril-SFJ-P box x pin. Serial No. 89H01977.

1 x TIW cement set shoe, type 'CLS-2' w/two back pressure valves: 5" 18lb P-110 Hydril-SFJ-P thread box. Serial No. 89H01978.

1 x TIW liner wiper plug: 5" 18lb. Serial No. 27490.

1 x TIW combination pumpdown plug for 3-1/2"-5" drillpipe. Serial No. 28631.

TIW TIE BACK PACKER

1 x TIW type SN-AT-6 liner tie back packer c/w gold seal packoffs & unitized chevron seals 5" 18lb N80 VAM thread box x 7" 29-32lb. Serial No. 5576.

1 x TIW type LG-6 setting collar top for SN-AT-6 packer with 6ft tie back receptacle & RPOB profile: 5" 18lb N80 VAM thread pin x 7" 29-32lb. Serial No. 39878.

1 x TIW Aluminium bolt and nut assy c/w 4" OD rubber to convert 3-1/2" drillpipe pump down plug to a 3-1/2"-5" combination pump down plug.

A.3 Liner Running Tools

1 x 5" RP-RRP rotating liner setting tool c/w slick joint/polish nipple and 5" RPOB and having 3-1/2" IF box up handling sub.

1 x 5" type 'LN' setting tool with 3-1/2" IF box up handling sub.

1 x 5" TIW reaming mill with 3-1/2" IF box connection.

1 x Hydraulic setting and dog section to convert above 'LN' setting tool to either "SN-HS' or type 'L' setting tool.

1 x TIW heavy duty cementing head manifold complete with ball dropping sub and special swivel with 6-5/8" API LH threaded pin.

1 x Tasman 6" square cementing kelly, 31' long with 28' effective working length, complete with 27 HDP Varco kelly drive bushing, 6-5/8" LH API box up x 4-1/2" IF pin down.

A.4 Liner (TD at ± 4400m: Bottom at ± 4450m)

- 1 x TIW cement type LS-2 (CLS-2) set shoe No. 20991 with 2 back pressure valves, 5" 18ppf N80 with Hydril SFJ-P box
- 2 jts x 5" 18ppf N80 Hydril SFJ-P
- 1 x TIW type H5-SR landing collar No. 39978 with brass setting ball, 5" 18ppf N80 with Hydril SFJ-P box x pin (shear pinned to 2500psi)
- 26 joints x 5" 18ppf N80 SFJP-R3

- 5" x TIW tandem cone type IB-RRP "R" Hydrohanger assembly

Note: Torque/Turn Specifications:

Casing Type (18ppf)	**Reference Torque**	**Minimum Torque**	**Maximum Torque**	**Minimum Turns**	**Maximum Turns**
5" Hydril SFJ-P N80	380	3800	4750	0.0	0.8

A.5 Casing Accessories

40 x 5" Non welded centraliser for 6" hole.
80 x 5" JSH Stop Collar

A.6 Cement and Additives (For 110 bl of Cement Slurry)

± 540 sacks of Blue Circle class 'G' cement
± 90 gallons of Halliburton HR-6L
± 356 lb of Gas Stop
15 bl of Halliburton Flowchek 21 (only 10 to be pumped)
16 gallons of Defoamer (NF-1)
20bbls of Dual Spacer

A.7 Freshwater

± 100 barrels of freshwater.

B. PRE-JOB MEETING

The Company Representative will call a meeting with the following personnel:

- Drilling Engineer
- Rig Toolpusher
- Cementing engineer
- Liner equipment representative
- Casing crew
- Mud engineer
- Mud logger

Communication is essential. The Company Representatives should prepare a programme detailing step-by-step operations and distribute copies to the toolpushers and other involved persons so that everyone knows what is required, and their role in the overall plan.

Topics of discussion:

Drilling Engineer

To be on cementing unit during cementation.

Rig Toolpusher

Responsible for condition of mud pumps. Mud tank level indicators. Supply of bulk cement. Cementing line. Back up equipment for power tong in case of failure. Snubbing lines, etc. Operation of stabbing platform. Mud supply to the cement unit and checking all valves for leakage.

Cementing Engineer

Responsible for condition of unit. Cementing head and kelly, ball dropping and plug releasing mechanism swivel and supply of liquid additives. Calibration of gauges. Fuel for the unit. Fitment of a reliable pressure gauge to the cement line that can be easily read from the rig floor. Calculation of all cement volumes, additive requirement and displacement.

Liner Equipment Representative

Checks all his company's equipment to ensure nothing is damaged, missing or incompatible. To be on the rig floor during cementation.

Casing Crew Foreman

Responsible for power tong and unit. Checks spares. Have torque gauges for required torque. Checks casing elevators and slips. Fuel for unit.

Mud Engineer

Conditions mud to low YP/PV values. Ensures sufficient tank space is available to receive spacer and cement volumes. Prepares spacers in good time and ensures no contamination. Personally watches mud levels during mixing, pumping and displacement.

Mud Logger

Ensures his mud level gauges are working properly. Monitors tank gains at each stage. Gas detector is operational. Provides surge calculations for liner running.

C. PREPARATION

C.1 Liner Equipment

The liner hanger, setting sleeve and tie-back packer should all be drifted with a 5" 18 PPF casing drift.

All liner equipment should be calipered and dimensioned. TIW equipment drawings should be completely filled in.

Check the compatibility between ball and equipment: the setting ball (1-1/2" brass ball) passes through the liner running tool and wiper plug. Check that ball sits correctly and forms a good seal on the landing collar seat.

Check that there is no possibility for the ball to hang in the equipment higher in the liner.

Inspect condition of seals on retrievable packoff bushing.

TIW engineer is responsible for the preassembly of the rotating liner hanger and setting sleeve onto the liner setting tool with slick joint and retrievable packoff bushing.

C.2 Casing Preparation and Tally

When casing arrives on the rig, off load the first layer and put on the pipe deck. Remove protectors and layout so that boxes only touch each other at the collar top or bottom in an alternating fashion. Avoid casings protruding into main walk-ways.

Have men available to clean and check the casing threads, number the pipe and dope the box end with the required pipe dope. Drift the pipe with the CORRECT SIZE drift. The casing should be measured by the contractor in the presence of the Company Representative or Drilling Engineer. Ensure that numbering of pipe is followed by the correct number on the next layer.

A casing length is the distance between the outermost face of the coupling or box to the position on the pin end where the coupling or box stops when the joint is made up completely, i.e. base of triangle on buttress threads. Be sure to include the lengths of the casing shoe, landing collar, port collar, liner hanger assembly and pup joints in the total casing string tally.

When all the casing is on site on the pipe rack, measured, and prepared, etc., then the Company Representative or drilling engineer should count all the pipe joints available on the rig. The total should match exactly with the highest number on the pipe and also the shipping manifest. Both persons should add up all the pipe lengths separately. Compare the outcoming figures. They must agree.

The drilling engineer on board should make up the casing running programme, with co-operation from the Company Representative. Clearly mark the joints to be excluded from the running string. Both should agree with the programme.

A Running List is prepared, stating exactly the joints to be run, and the joints to be left out, including pup joints. Indicate placement of shoe and collars (do not weld on casing). Indicate placement of centralisers and check their spacing with the caliper log. Do not place centralisers in washed out parts of the hole. Indicate at which points casing is entering points of interest; BOP, open hole, etc.

C.3 Hole Preparations

Hole must be free of tight spots to within at least 25,000 lbs overpull above normal hole drag.

Mud engineer to ensure mud is conditioned - low YP and low 10 min. gel - so that pressure surges are minimised.

Circulate hole free of cuttings. Pump a viscous sweep around if required.

Ensure there is no discrepancy in hole depth. If in doubt, strap out. Logger's and driller's depths should not vary by more than 3m.

C.4 Casing Equipment

Check that elevators are of correct load rating. Check that slips, spider elevators, power tongs and associated equipment, 'Klamp-ons', single joint elevator, casing tongs, circulating swedge, spear, stabbing board, etc. work correctly. Ensure sufficient dope and thread locking compound are available.

C.5 Cementing Equipment

Ensure cement outfit is in good working order. The cementing engineer in the presence of the Company Representative to check all his equipment, such as mud supply, water, liquid additives and dry powder cement lines. All valves in good condition and operational, report findings in the cementer's report well before the cementation and a pressure chart showing an up-to-date test on cement pump and valve manifold.

Special attention should be paid to the slurry density meter and pressure type mud balance calibration.

Liquid Additive Systems - Check that all the operating valves function correctly. Check the volume of additives discharged from an additive tank is correct for the cement mixwater requirement.

Check cementing head; ensure cement head manifold is unrestricted by flowing water through it, i.e. no cement blockages from previous job. Install on top of drifted cementing kelly.

Witness loading of dart and ball in cement head.

See that sufficient cement additives are available, they should be ordered well in advance, and mixed if required before cementing.

C.6 Rig Equipment

Ensure sufficient tank space available to receive displacement returns and cement/spacer volume returns.

Check weight of casing and 100,000 lbs overpull does not exceed rated loading of handling equipment, lines reeved, or drill pipe running string, if used. Check Ton-Miles, cut if required.

Clear floor and bring as much handling equipment to the rig floor while circulating prior to pulling out.

D. REFERENCE TORQUE MEASUREMENTS

An important aspect of running a rotating liner hanger is the need to establish baseline torque levels from which safe surface torque limitations can be derived for the start up and continual rotation of the liner.

On the last cleanout trip prior to running the liner, the drill string should be rotated, 2-3m off bottom, using the rotary table at 5, 10, 15 and 20 RPM while circulating at the rate required during cementation (<5 BPM). Corresponding torque readings should be recorded, they give an indication of the torque that can be expected during liner rotation.

Upon POOH, again rotate the drill string, using the rotary table, when the bit is at the proposed top of liner depth. Record torque readings for 5, 10, 15 and 20 RPM rotary speeds. Using these readings, the maximum allowable surface torque for each rotary speed can be calculated by adding the optimum casing make-up torque to the torque required for drill string rotation at or near the proposed liner top depth. It is recommended that only 90% be used as the maximum torque level.

E. LINER RUNNING

E.1 Running Speed

Each time the liner is lowered in the hole a pressure surge is created on the open hole which, if great enough, could fracture the formation. This surge is a combination of drag forces between the fluid and the hole due to the fluid being displaced up the hole and the drag forces between the fluid (going up) and the liner (going down). One way to reduce pressure surge is to maintain low YP and low 10 min gels for the mud. Another way is to keep the running speed of the liner between safe limits.

Following are the results of calculations done using the Geoservices Off-Line Software using the following mud characteristics (see Annexure A).

M.W. = 1.52 gr/cc PV = 26 YP = 17
and at 3 depths - 2948m = liner at 7" liner top
4493m = liner at 7" liner shoe
4775m = liner at TD

Note:

- the software does not allow to change the scale for the plots
- pressure is given in kg/cm^2 rather than psi (coefficient = 14.2 (psi)/(kg/cm^2)
- the EMW (kg/ltr) in the plot is the EMW at the depth of reference, not at TD
- the liner is considered "closed-end" because the shoe is not automatic fill-up.

The maximum allowable surge pressure at TD is calculated using the fracture gradient of 1.70 gr/cc EMW (11,514 psi). With a mud weight of 1.16 gr/cc the maximum surge pressure is therefore:

- 11,514 - 1.52 x 4775 x 1.424 = 2883 psi
  = 203 kg/cm^2

In order not to exceed the maximum surge pressure for each case the running speed should be kept slower than:

0 - 2948m = 10 sec/stand
2948-4493m = 30 sec/stand
4493-4775m = 30-35 sec/stand

Of course, the running speed will be adjusted according to hole and mud conditions at the time of running the liner. Indications that speed is too high are:

- liner taking too much weight whilst lowered = mud is too viscous
- mud losses = surge pressure great enough to fracture the formation

E.2 Shoe Track

Install stop collar on middle of first joint, then slip on a centraliser from the pin end and slide up to stop collar. Install another stop collar below centraliser leaving sufficient room for closure of centraliser.

Install the set shoe on to the bottom of the first joint of liner.

Pick up second joint of liner and install two stop collars and one centraliser in the middle of the second joint. Screw collar onto top of shoe joint, then install 2nd joint and make up.

Flush fill up line thoroughly, then circulate the first two joints of liner to ensure floats are free. Pick up liner to partially drain. Lower liner and check that level has dropped and floats are holding.

Pick up third joint of liner, install two stop collars and one centraliser on middle of joint. Screw landing collar onto top of second joint then install third joint and make up.

E.3 Remaining Liner

Proceed with running of remaining liner. Determine the maximum safe running speed from surge programme with consideration to leak off pressure.

Fill liner every 5 joints ensuring level drops to equilibrium after each filling.

Two centralisers are to be installed on every casing joint from 20m below to 20m above the pay zone.

Prior to running the liner, stop collars should be installed ± 2m above the pin end. Centralisers should be slid onto the casing to the upper stop collar and a stop collar installed below.

Outside the pay zone install one centraliser every 2 joints. Install centraliser on first joint inside 7" casing (liner) shoe and one on casing joint midway inside liner lap.

After installing final joint of liner, break circulation to ensure liner can still be freely circulated. (NOTE: landing collars have known to plug.) Note circulating pressures at various pump rates. Whilst rigging up circulating swedge, check pipe rack and count remaining joints to ensure correct number of liner joints have been run.

E.4 Installing Liner Hanger Assembly

After bringing up running tool/liner hanger assembly to rig floor, install liner wiper plug on bottom slick joint.

Install running tool/hanger assembly on to top of liner. Run in and tighten various thread connections on hanger assembly as per TIW specifications.

Set liner in slips and check liner setting tool nut for hand tight make.

Pick up liner ensuring liner is full of fluid, record liner string weight.

E.5 Setting String Running

Install drill pipe wiper on setting string to prevent foreign objects from falling into well bore.

Drift every stand before making up. Fill every stand and top up drill pipe every five stands. Ensure level is draining to equilibrium after each top up.

Ensure full mud displacement is obtained whilst running in hole. Space out drill pipe so as to avoid making a connection whilst the hanger is within the BOP's.

Before reaching 7" casing (liner) shoe depth (± 4493m) with liner shoe, carefully break circulation remembering hanger hydraulic slip setting mechanism is shear pinned at 1200 psi. Do not exceed 800 psi dynamic pressure at hanger depth. Maximum allowable circulating surface pressure can be calculated from previous circulation when hanger was on surface.

Continue running liner through 7" liner and open hole. If tight spots occur, liner can be washed through but it is imperative that maximum surface pressure restrictions must be adhered to or else premature setting of the liner hanger may occur.

If no progress is made with washing alone, the TIW running tool, whilst RIH, is in a mode which allows rotation of the liner. A combination of washing and rotating might be more successful, but beside circulating pressure restrictions, maximum surface torque limitations must also be followed. Rotation should be limited to 6 RPM.

Important Remark:

Only rotate the liner whilst RIH as a last resort.

Prior to tagging bottom, reciprocate the liner to ensure that the liner is free to move.

Pick up a landing joint of drill pipe and lightly tag bottom with 5,000 lbs.

E.6 Setting Hanger

Calculate space out, laying out last joint of drill and picking up cementing kelly and manifold. Space out to allow for setting tool travel and tide and heave. Cementing kelly has an 8.5m working length.

Pick up to place hanger at setting depth. Ensure that there is no casing collar within 1m of lower slips and 3m of upper slips (tie-back packer should not be set across a casing collar).

Note full string weight.

Slowly break circulation and adhere to maximum surface pressure limitation.

Once full circulating rate has been established, rotation of the liner can begin. Keeping within maximum torque limitations, rotate the liner at 6 RPM whilst circulating and conditioning the hole and mud. Note that start up torque invariably exceeds dynamic rotating torque hence for start-up, maximum torque limit should be 100% of calculated. Record weight of liner and string whilst rotating and reciprocation.

Circulate and rotate at least one complete volume of DP and liner capacity or until hole is thoroughly conditioned.

Position liner hanger, reduce circulating rate to 2 BPM and release setting ball, allowing it to gravitate slowly down to seat on the landing collar shearout.

When slight pressure increase is noticed, stop rotating.

Using mud pumps, slowly pressure up the setting string until the retaining pins in the hydraulic slips setting mechanism are sheared. This should occur at approximately 1200 psi and will be indicated by a slight pressure decrease.

Hold pressure constant and slack off on the setting string until the weight of the liner is resting on the hanger slips.

Continue to slack off until approximately 5000 lbs of setting string weight is applied to the setting tool.
Increase pump pressure until the ball seat in the landing collar shears out at approximately 2500 psi, re-establishing circulation.

Stop circulating and bleed off pressure.

The setting tool can now be released from the hanger prior to cementing. Slack off weight to shear setting tool nut (20,000 lb). Then position the setting string in the neutral position by slacking off full travel then picking up 2 feet. Neutral position is indicated by constant string weight through the free travel of the kelly within the setting tool, if not, slowly slack off until neutral position is obtained.

Rotate the setting string to the right for 20 torque free turns (i.e. drill pipe torque only).

Pick up setting string, maximum 1.5m. The disengagement of the setting tool nut from the setting sleeve, should be confirmed by the loss of liner weight on the weight indicator.

Rotate the setting string independently of the liner to establish torque limitations. These readings can be compared to the figures obtained during the cleanout trip.

After conducting torque readings, stop rotating the setting string.

Slowly lower the setting string until the upper spline drive engages into the setting sleeve. If necessary, use a chain tong to turn the setting string to the right to guide the upper spline into the setting sleeve mesh.

Once engaged, slack off until 10,000 lbs of setting string weight is applied to the liner top.

Break circulation and limit circulating rate to 5 BPM in order to prevent the liner possibly packing off around the hanger. Circulate until hole is conditioned.

Rotate the setting string and liner at a maximum rate of 6 RPM but within maximum rotating torque limitations.

The liner is now ready for cementing.

F. CEMENTING LINER

F.1 Cement Volume

Slurry volume, water, additive, cement and displacement calculations are to be made independently by the Company Supervisor, Drilling Engineer and cementing operator, utilising the four arm caliper log.

The desired cement top is the top of liner for the tail slurry. No excess is required for liner lap and shoe track volumes but 20% excess is to be added to open hole annular caliper volume.

F.2 Job Simulation

A job simulation has been performed by Halliburton using their Cement Job Simulation program. The results have been included in this liner program (see Annexure B).

1. Volume and Pump Rate Design

	Volume bbl	Rate bpm
Dual Spacer	20	5
Water	5	5
Flochek 21	10	5
Water	5	5
Cement	86.7	5
Mud	-	5

Note: Cement volumes to be adjusted after the caliper log.

2. Estimation of Fracture Gradient

- gradient in water = 0.477 psi/ft = 1.565 psi/m
- gradient in formation is estimated to remain constanct below 7" casing shoe to TD at 4750m (Latrobe formation)
- gradient estimated using the F.I.T. at 7" shoe (Anemone -1A) = 0.736psi/ft = 2416psi/m.

Note: Leak off was not reached in Anemone-1 therefore result is more conservative.

	ANEMONE-1A 0.736 psi/ft Prèssure psi	 EMW gr/cc
Mud Line (231m)	361	1.10
7" Liner shoe (4493m)	10854	1.70
TD (4775m)	11535	1.70

Note: Calculation using the "Eaton Correlation" gave fracture pressure of 13595psi (or 2.00 gr/cc EMW).

3. Circulation Pressure

In order to have a safe cementation, the circulation pressure which takes into account annular pressure losses as well as hydrostatic pressure must not exceed the fracture pressure at any point of the formation.

F.3 Preparing Spacer (Flocheck 21) and Dual Spacer

The liquid additive system is limited to three liquid additives. Therefore it is necessary to prepare additional additives with mixwater in cleaned tanks prior to the actual pumping of fluids.

A 10 BBL Flochek 21 wash will be pumped prior to the cementation. This is a loss zone treatment which effects a seal in the high permeability areas of the hole, by forming a stiff gel when in communication with formation brine. Cement is also then gelled upon contact with the flochek 21/formation brine gel.

In clean mud tank mix 280 gallons of Flochek A (Econolite) with 940 gallons of freshwater to give a 25 BBL Flochek 21 volume (allowing for dead volume of the mud bank). Keep agitation in tank.

Dual Spacer Mixing Instructions:

13.0lb/gal Dual Spacer

To prepare 20 bbl:

- 1000 lb dual spacer
- 4420 lb barite
- 16 bl Fresh water

Order of Mixing:

- Take up required volume of water.
- Add Dual Spacer, blend and circulate mixing tank for 20-30 minutes.
- Add barite and continue to circulate tank.
- Continue to circulate tank until ready to pump prior to cement job.

F.4 Preparing Cement Slurry

Blue circle class 'G' cement will be mixed and pumped simultaneously with freshwater and liquid additives to give a cement slurry as follows:

Slurry

Cement: Blue circle class 'G' (94 lbs/sx)
Mixwater Requirement: 5.0 gal/sk freshwater and liquid additives
Defoamer NF-1: 2.5 gallons/10 BBLS in the mix water prior to mixing, to help reduction of air entrapment in cement slurry
Retarder HR-6L: 14.0 gal/10 BBLS HR-6L
Gas Stop (BWOC): 0.7%
Slurry Yield: 1.15 cu ft/sk
Slurry Density: 15.8 lb/gal - 1.9 S.G.

Thickening Time: 3 hrs 27 mins @ 210°F

F.5 Cementation

After pressure testing cement line to 5000 psi, line up cement unit onto Dual Spacer and pump 20 BBLS of Dual Spacer into setting string at 5.0 BPM.

Line unit onto freshwater and pump 5 BBL of fresh water at 5 BPM.

Switch to displacement tanks and pump 10 BBL Flochek 21 at 5 BPM.

Line unit back onto freshwater and pump 5 BBL water at 5 BPM.

Begin mixing and pumping cement slurry. Derrickman should be on hand to periodically check slurry density with mud balance and also to take samples. Cement slurry should be pumped at maximum 5.0 BPM.

Upon completion of pumping cement, pump down plug can be released from cementing manifold. The plug should be released by the liner engineer and witnessed by the Company representative. It is released by first closing the lower line valve on the cementing manifold, then backing out the retainer rod and then opening the top line valve.

Whilst plug is being released, cement unit should be lined up with mud tanks. Once confirmation of plug release is given, displacement can begin.

Displace with mud at 5.0 BPM. Slow the pump rate down when the ball is nearing the liner wiper plug. An increase of approximately 1200 psi will be noted as the ball seats and latches into the liner wiper plug and shears the retaining pins.

Resume displacement of the liner at 5.0 BPM. The drilling engineer should count displacement tanks as well as the cement operator.

Approximately 20 BBLS before total liner displacement is pumped, gradually slow down to 1/2 BPM and stop rotating. Continue to displace until liner wiper plug seats and latches into the landing collar. This will be indicated by a rapid increase in pressure.

Pressure up against liner wiper plug to approximately 1000 psi above maximum displacement pressure and hold for five minutes.

Release pressure and check for backflow to see if setshoe floats and liner wiper plug are holding.

Pull setting string out of hole. DO NOT REVERSE CIRCULATE. After pulling 20 stands, circulate (direct) the volume of annulus. Continue to pull string out of hole.

G. SETTING LINER PACKER

If necessary after cementation a TIW SN-AT-6 5" x 7" liner packer will be run to isolate the liner top. The packer is set by applying weight and when set the packer will seal in the liner setting collar and pack-off in the 7" casing to isolate the liner top. The packer is run together with a LG6 tie-back receptacle for further tie-back of the liner to the surface and is set using a LG setting tool.

G.1 Cleaning Liner Top

Wait on cement according to the samples taken during cementation.

Make up 6" bit and 7" scraper and run to the top of liner. Note: TIW packer SN-AT-6 is a close tolerance packer with 7" casing.

Make up TIW 5" reaming mill and run in hole to polish I.D. of the setting collar.

G.2 Setting Liner Packer

Make up TIW tie-back receptacle LG6 with LG setting tool and RPOB, and install on top of liner packer.

Run in hole at moderate speed due to the close tolerance between the packer seals and the 7" casing.

Tag top of 5" liner setting collar and break circulation slowly.

Stop circulation, lay down kelly and lower setting string to engage the seal assembly of the packer in the liner setting collar.

Continue to slack off until seal is completely engaged then the shear pins will shear to set the packer.

Continue to slack off until a second set of shear pins shear to set the hold-down slips. Set approximately 40,000 lb of weight on packer to ensure a good seal.

Pick up setting string and pull 5000 lb to ensure the hold-down slips are set.

Slack off until 3000-5000 lb in setting on the setting tools.

Rotate setting string to the right 15 turns to release tool from the LG setting collar.

Pressure up down the string to test packer seals in the liner setting collar and down the annulus to test packer.

Pull out of hole with setting string.

ANNEXURE A

RUNNING SPEED - SWAB AND SURGE

```
******************************************************************************
    Company : PETROFINA EXPLORATION                           Date: 08-31-1989
    Country : AUSTRALIA
*      Well : ANEMONE #1A
*       Rig : ZAPATA ARCTIC
******************************************************************************
          Lngth[ m] Lngth[ft]   ID[inch]                Mud    [kg/lit]   [ ppg
    --------------------------------------           ---------------------------
    Kelly    18.60     61.02       2.60              Weight        1.52     12.6
   Swivel     3.00      9.84       2.60             Visc.pl.      26.00
     Hose    48.77    160.01       2.60             Yield V.      17.00
  St.Pipe   140.48    460.89       3.50               Gel          4.00
 Chk Line   231.00    757.87       2.40              F600         69.00
Kill Line   231.00    757.87       2.40              F300         43.00

            [lt/stk]  [gl/stk] eff'cy[%] Rtng[k/cm2]  [psi]
------------------------------------------------------------
M Pump #1    19.494     5.150    97.000     0.000     0.000
M Pump #2    19.494     5.150    97.000     0.000     0.000
M Pump #3     0.000     0.000     0.000     0.000     0.000
C Pump #1     0.000     0.000     0.000     0.000     0.000
C Pump #2     0.000     0.000     0.000     0.000     0.000
C Pump #3     0.000     0.000     0.000     0.000     0.000

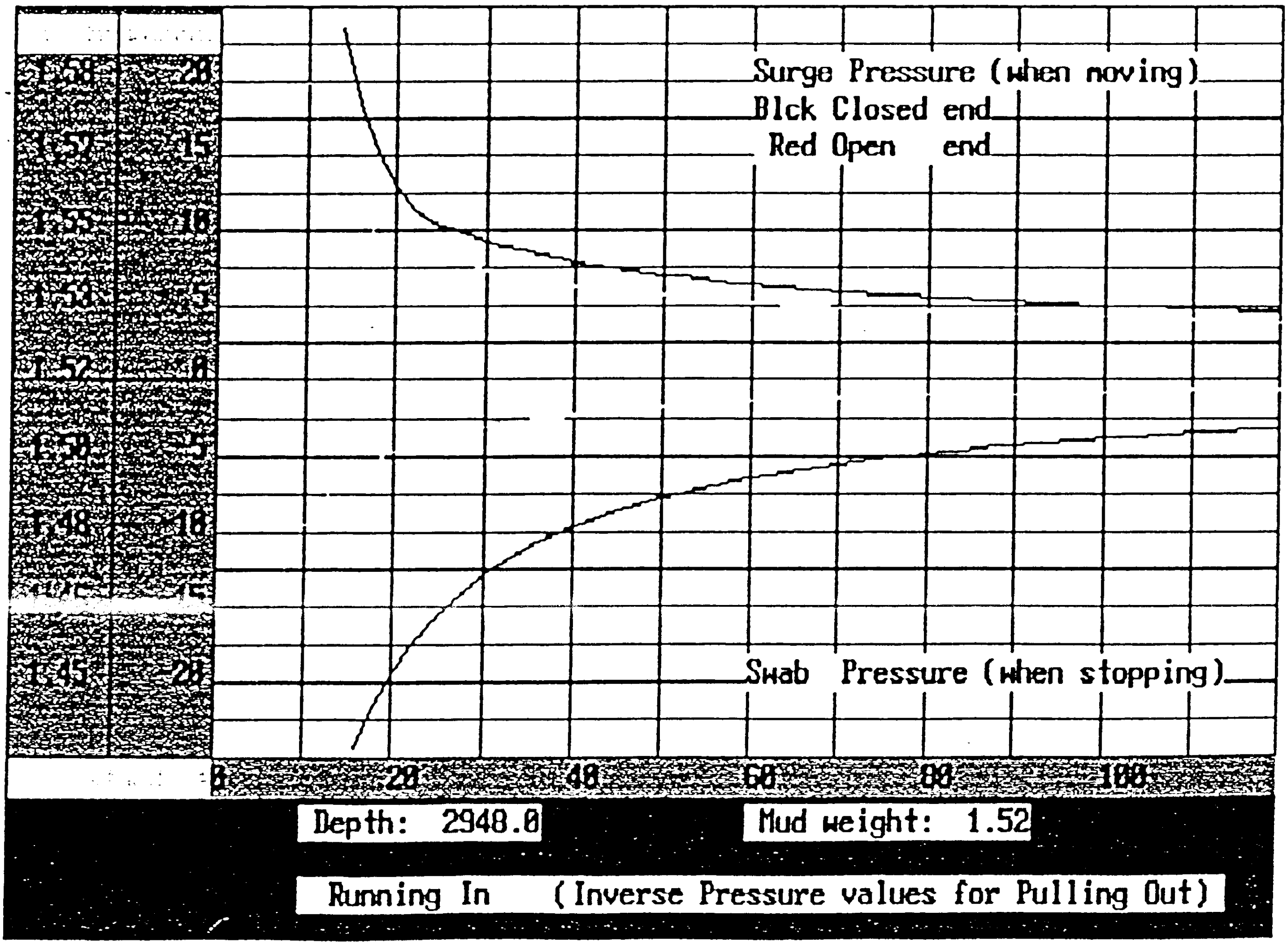
          Top[ m] Top[ft] Btm[ m] Btm[ft] OD[inch]ID[inch] [kg/m][lbs/ft]
--------------------------------------------------------------------------
    Riser    0.0     0.0   258.0   846.5  21.000  20.000 100.000  67.192
   Casing  258.0   846.5  2948.0  9671.9   9.630   8.681  69.950  47.001
 Liner # 1 2948.0 9671.9  4493.0 14740.8   7.000   6.185  43.160  29.000
 Liner # 2   0.0     0.0     0.0     0.0   0.000   0.000   0.000   0.000

          Lngth[ m]  Lngth[ft]   OD[inch]  ID[inch] [kg/mtr]  [lbs/ft]
-----------------------------------------------------------------------
DC/DP # 1   400.00    1312.34     5.000     4.276    26.789    18.000
DC/DP # 2     6.10      20.01     5.750     4.280    28.277    19.000
DC/DP # 3  1400.00    4593.18     3.500     2.760    19.794    13.300
DC/DP # 4  2900.00    9514.44     5.000     4.226    21.700    14.581
DC/DP # 5     0.00       0.00     0.000     0.000     0.000     0.000

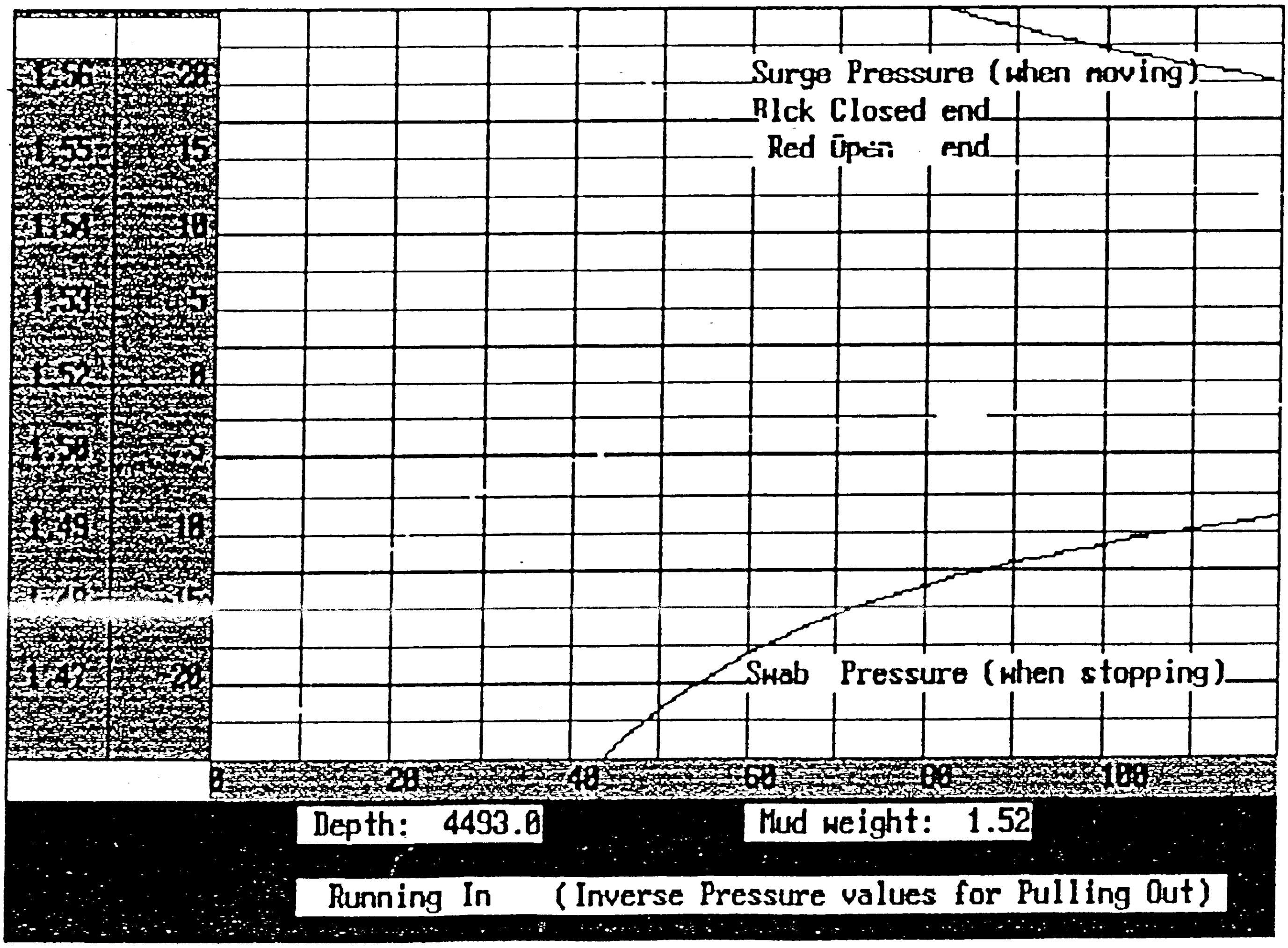
          Diam[inch] Dpth[ m]  Dpth[ft]
----------------------------------------
Op.Hole#1     6.000  5000.00  16404.20
Op.Hole#2     0.000     0.00      0.00
Op.Hole#3     0.000     0.00      0.00

 Bit size  6    Nozzles :  1/32    0/32    0/32    0/32    0/32    0/32
```

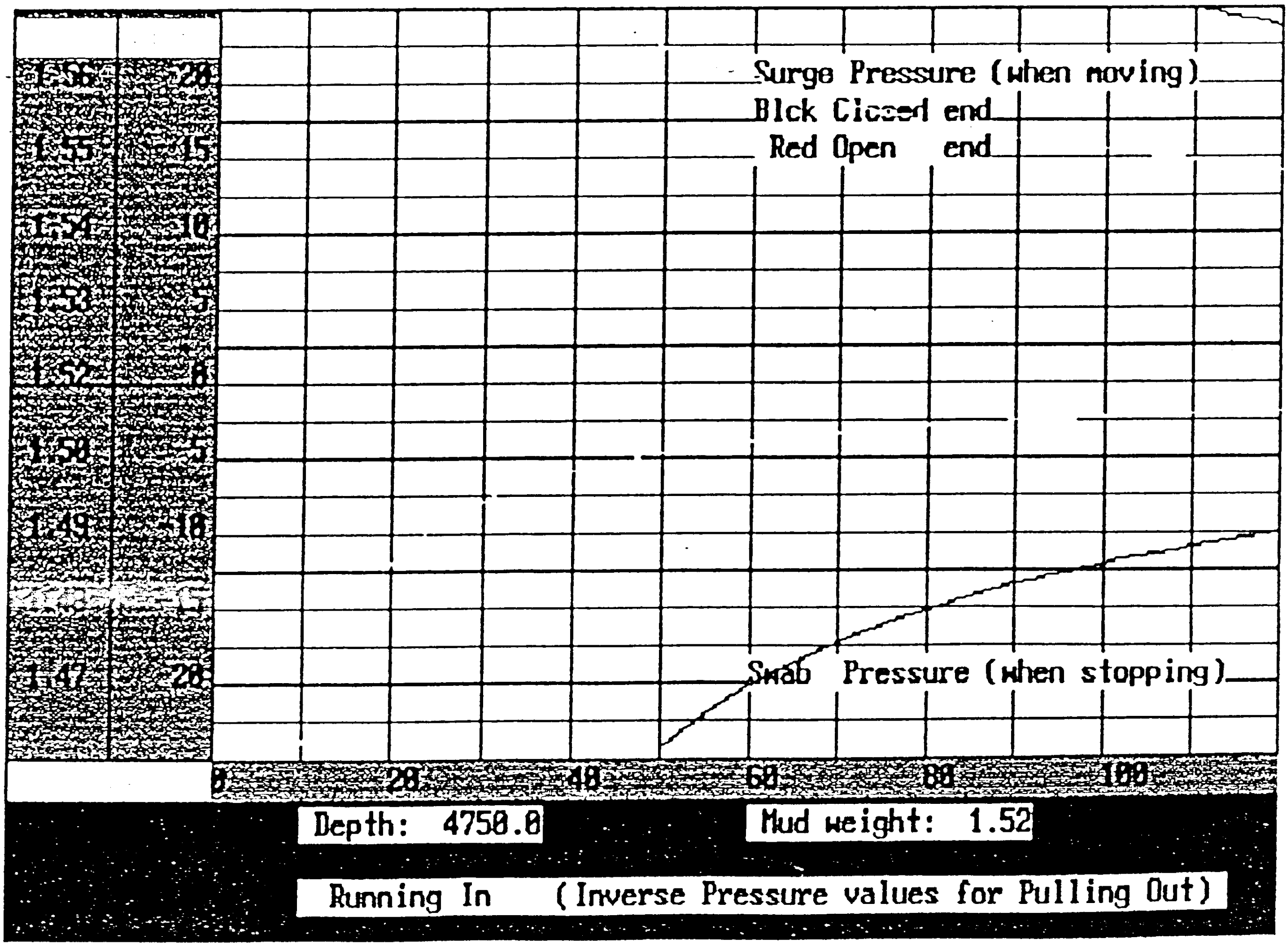
```
*****************************************************************************
  SURGE AND SWAB REPORT                                                     *
  ***************************************************************************
* Depth:  2948.0    mtr                                                     *
*****************************************************************************
*    Weight  :     1.520 kg/ltr                                             *
*   Visc.pl. :    26                                 'N':      0.737        *
*   Yield V. :    17                                 'K':      0.395        *
*     Gel    :     4                                 'R':  2460.943         *
*****************************************************************************
*          RUNNING IN       (Inverse pressure values for Pulling Out)       *
*****************************************************************************
*      *      SURGE (when moving)        *   *      SWAB (when stopping)    *
* Time *   Open end     *  Closed end    *   *   Open end     *  Closed end *
* sec  *  kg/cm2  kg/ltr* kg/cm2  kg/ltr*    * kg/cm2  kg/ltr* kg/cm2  kg/ltr*
*****************************************************************************
*  10  *   19.8    1.59 *  43.2    1.67 *    *   -9.6   1.49 *  -39.1   1.39 *
*  20  *    9.1    1.55 *  13.0    1.56 *    *   -4.8   1.50 *  -19.5   1.45 *
*  30  *    7.2    1.54 *   9.2    1.55 *    *   -3.2   1.51 *  -13.0   1.48 *
*  40  *    6.2    1.54 *   7.8    1.55 *    *   -2.4   1.51 *   -9.8   1.49 *
*  50  *    5.6    1.54 *   6.9    1.54 *    *   -1.9   1.51 *   -7.8   1.49 *
*  60  *    5.1    1.54 *   6.3    1.54 *    *   -1.6   1.51 *   -6.5   1.50 *
*  70  *    4.8    1.54 *   5.8    1.54 *    *   -1.4   1.52 *   -5.6   1.50 *
*  80  *    4.5    1.54 *   5.5    1.54 *    *   -1.2   1.52 *   -4.9   1.50 *
*  90  *    4.3    1.53 *   5.2    1.54 *    *   -1.1   1.52 *   -4.3   1.51 *
* 100  *    4.1    1.53 *   4.9    1.54 *    *   -1.0   1.52 *   -3.9   1.51 *
* 110  *    4.0    1.53 *   4.7    1.54 *    *   -0.9   1.52 *   -3.6   1.51 *
* 120  *    3.9    1.53 *   4.6    1.54 *    *   -0.8   1.52 *   -3.3   1.51 *
```



```
**********************************************************************************
* SURGE AND SWAB REPORT                                                           *
  ********************************************************************************
  Depth:  4493.0   mtr                                                            *
**********************************************************************************
*    Weight  :     1.520 kg/ltr                                                   *
*   Visc.pl. :    26                                'N':      0.737               *
*   Yield V. :    17                                'K':      0.395               *
*     Gel    :     4                                'R':   2460.943               *
**********************************************************************************
*          RUNNING IN       (Inverse pressure values for Pulling Out)            *
**********************************************************************************
*      *       SURGE (when moving)          *   *        SWAB (when stopping)     *
* Time *    Open end     *    Closed end    *   *    Open end     *   Closed end  *
* sec  *  kg/cm2  kg/ltr*  kg/cm2   kg/ltr* *  kg/cm2  kg/ltr*  kg/cm2   kg/ltr*
**********************************************************************************
*  10  *    63.8     1.66 *  359.6     2.32 *   *  -21.9     1.47 * -109.2    1.28 *
*  20  *    33.6     1.59 *  103.6     1.75 *   *  -11.0     1.50 *  -54.6    1.40 *
*  30  *    26.1     1.58 *   56.7     1.65 *   *   -7.3     1.50 *  -36.4    1.44 *
*  40  *    22.0     1.57 *   41.3     1.61 *   *   -5.5     1.51 *  -27.3    1.46 *
*  50  *    19.4     1.56 *   34.7     1.60 *   *   -4.4     1.51 *  -21.8    1.47 *
*  60  *    17.5     1.56 *   30.4     1.59 *   *   -3.7     1.51 *  -18.2    1.48 *
*  70  *    16.1     1.56 *   27.4     1.58 *   *   -3.1     1.51 *  -15.6    1.49 *
*  80  *    15.1     1.55 *   25.3     1.58 *   *   -2.7     1.51 *  -13.7    1.49 *
*  90  *    14.2     1.55 *   23.6     1.57 *   *   -2.4     1.51 *  -12.1    1.49 *
* 100  *    13.5     1.55 *   22.2     1.57 *   *   -2.2     1.52 *  -10.9    1.50 *
* 110  *    12.9     1.55 *   21.0     1.57 *   *   -2.0     1.52 *   -9.9    1.50 *
* 120  *    12.4     1.55 *   20.0     1.56 *   *   -1.8     1.52 *   -9.1    1.50 *
```



```
*************************************************************************************
* SURGE AND SWAB REPORT                                                             *
 ************************************************************************************
* Depth:  4750.0   mtr                                                              *
*************************************************************************************
*    Weight  :     1.520 kg/ltr                                                     *
*   Visc.pl. :    26                                     'N':      0.737            *
*   Yield V. :    17                                     'K':      0.395            *
*     Gel    :     4                                     'R':   2460.943            *
*************************************************************************************
*           RUNNING IN       (Inverse pressure values for Pulling Out)              *
*************************************************************************************
*       *        SURGE (when moving)          *   *        SWAB (when stopping)      *
* Time  *    Open end     *   Closed end      *   *    Open end     *   Closed end   *
* sec   *  kg/cm2  kg/ltr*  kg/cm2  kg/ltr*     *  kg/cm2  kg/ltr*  kg/cm2  kg/ltr*
*************************************************************************************
*  10   *   73.3     1.67 *  448.5     2.46 *   *  -24.0     1.47 * -121.7    1.26 *
*  20   *   38.8     1.60 *  129.1     1.79 *   *  -12.0     1.49 *  -60.9    1.39 *
*  30   *   30.1     1.58 *   69.8     1.67 *   *   -8.0     1.50 *  -40.6    1.43 *
*  40   *   25.3     1.57 *   49.2     1.62 *   *   -6.0     1.51 *  -30.4    1.46 *
*  50   *   22.3     1.57 *   41.5     1.61 *   *   -4.8     1.51 *  -24.3    1.47 *
*  60   *   20.1     1.56 *   36.3     1.60 *   *   -4.0     1.51 *  -20.3    1.48 *
*  70   *   18.5     1.56 *   32.8     1.59 *   *   -3.4     1.51 *  -17.4    1.48 *
*  80   *   17.2     1.56 *   30.2     1.58 *   *   -3.0     1.51 *  -15.2    1.49 *
*  90   *   16.2     1.55 *   28.1     1.58 *   *   -2.7     1.51 *  -13.5    1.49 *
* 100   *   15.4     1.55 *   26.4     1.58 *   *   -2.4     1.51 *  -12.2    1.49 *
* 110   *   14.7     1.55 *   25.0     1.57 *   *   -2.2     1.52 *  -11.1    1.50 *
* '20   *   14.1     1.55 *   23.7     1.57 *   *   -2.0     1.52 *  -10.1    1.50 *
```



ANNEXURE B

HALLIBURTON JOB SIMULATION

CEMENT JOB SIMULATOR

HALLIBURTON SERVICES

ADELAIDE S.A. – AUST.

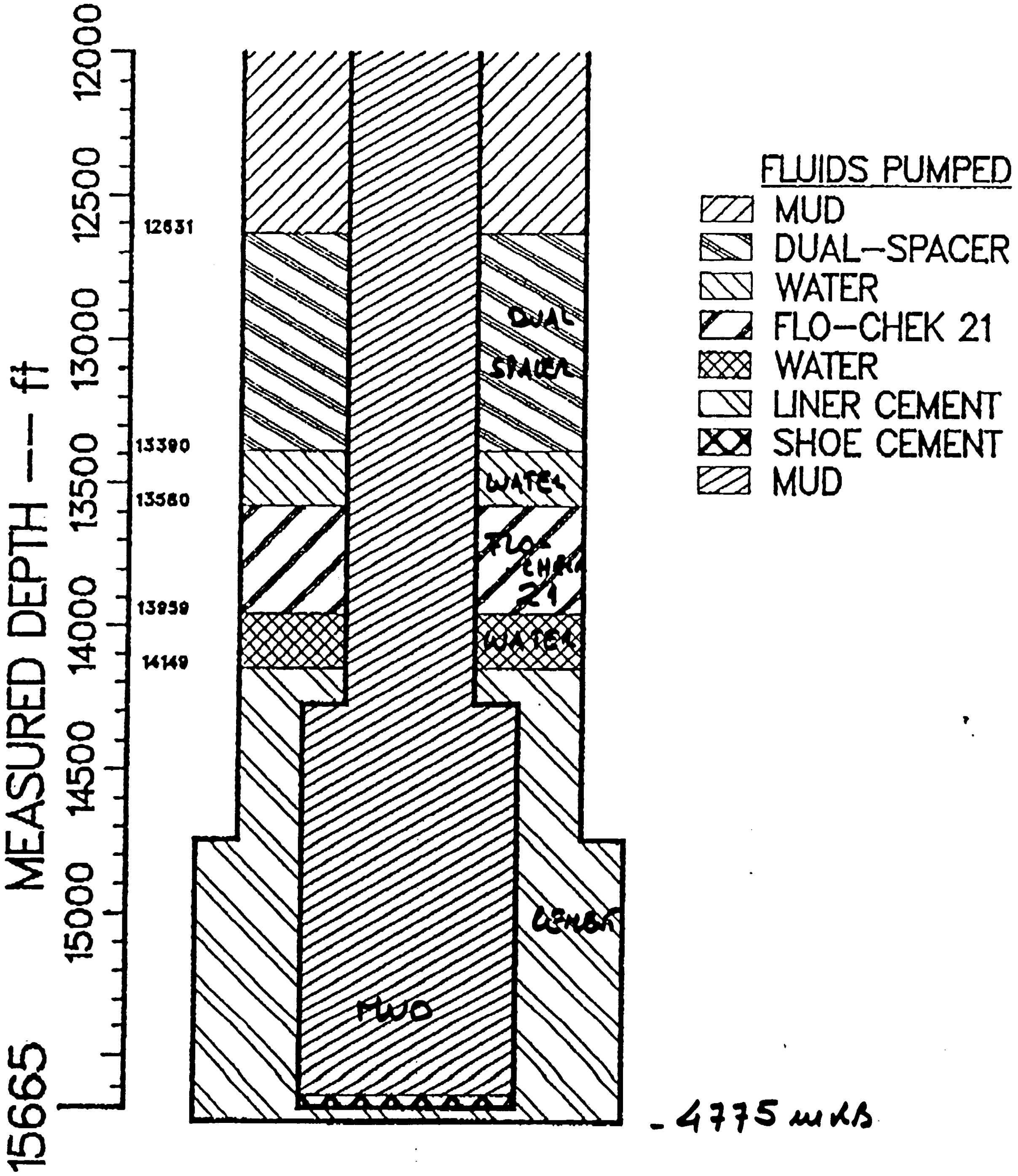
A Halliburton Company

Customer: PETROFINA
Well Description: ANEMONE NO.1 – 5.0 INCH LINER

ATTN: LUIS REMISIO
REVISION NO. 5

CEMENT JOB SIMULATOR

Well Schematic



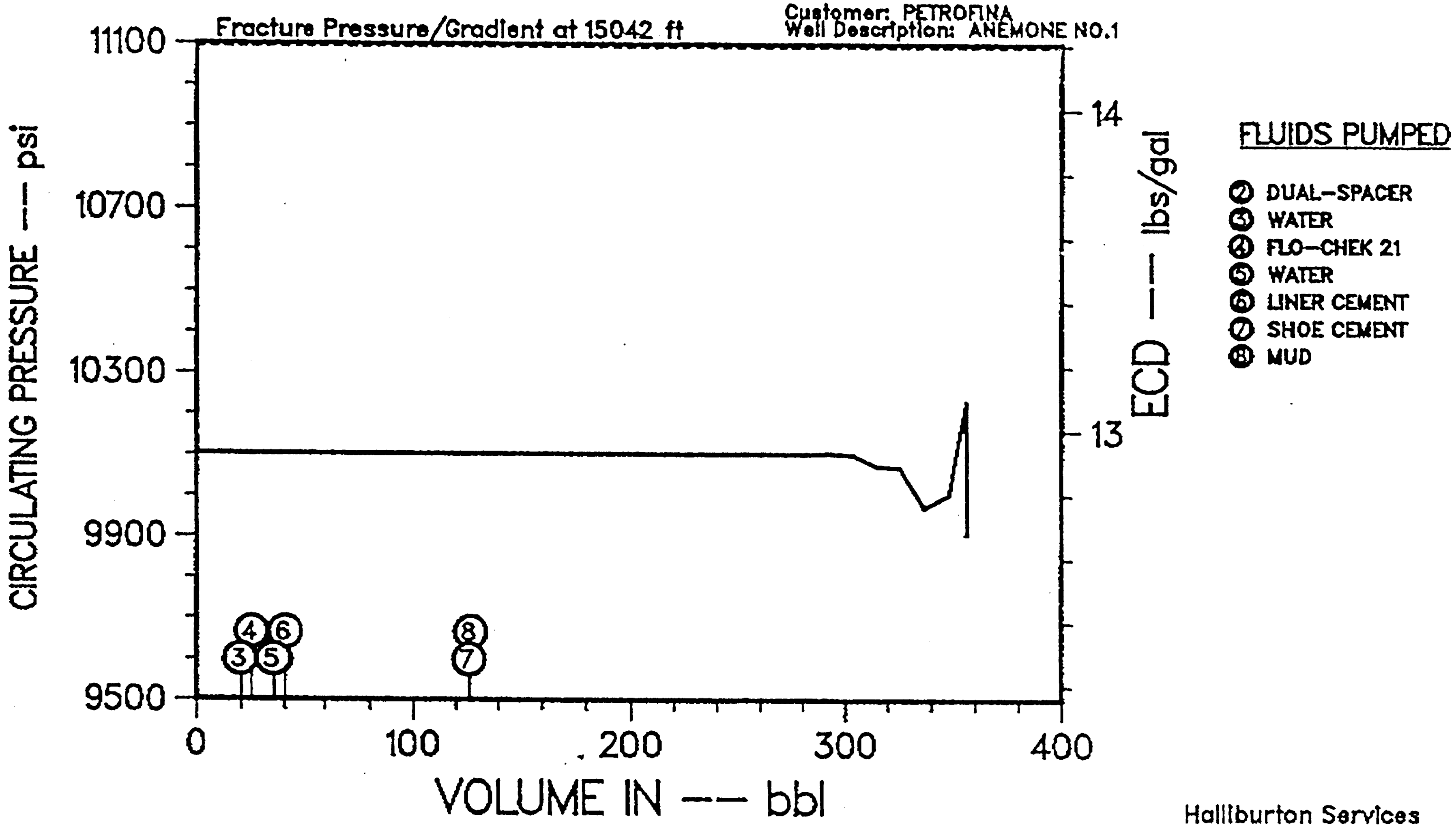
Customer: PETROFINA
Well Description: ANEMONE NO.1

Halliburton Services

Plot Shows: Calculated Slurry Position as the Plug Lands

CEMENT JOB SIMULATOR

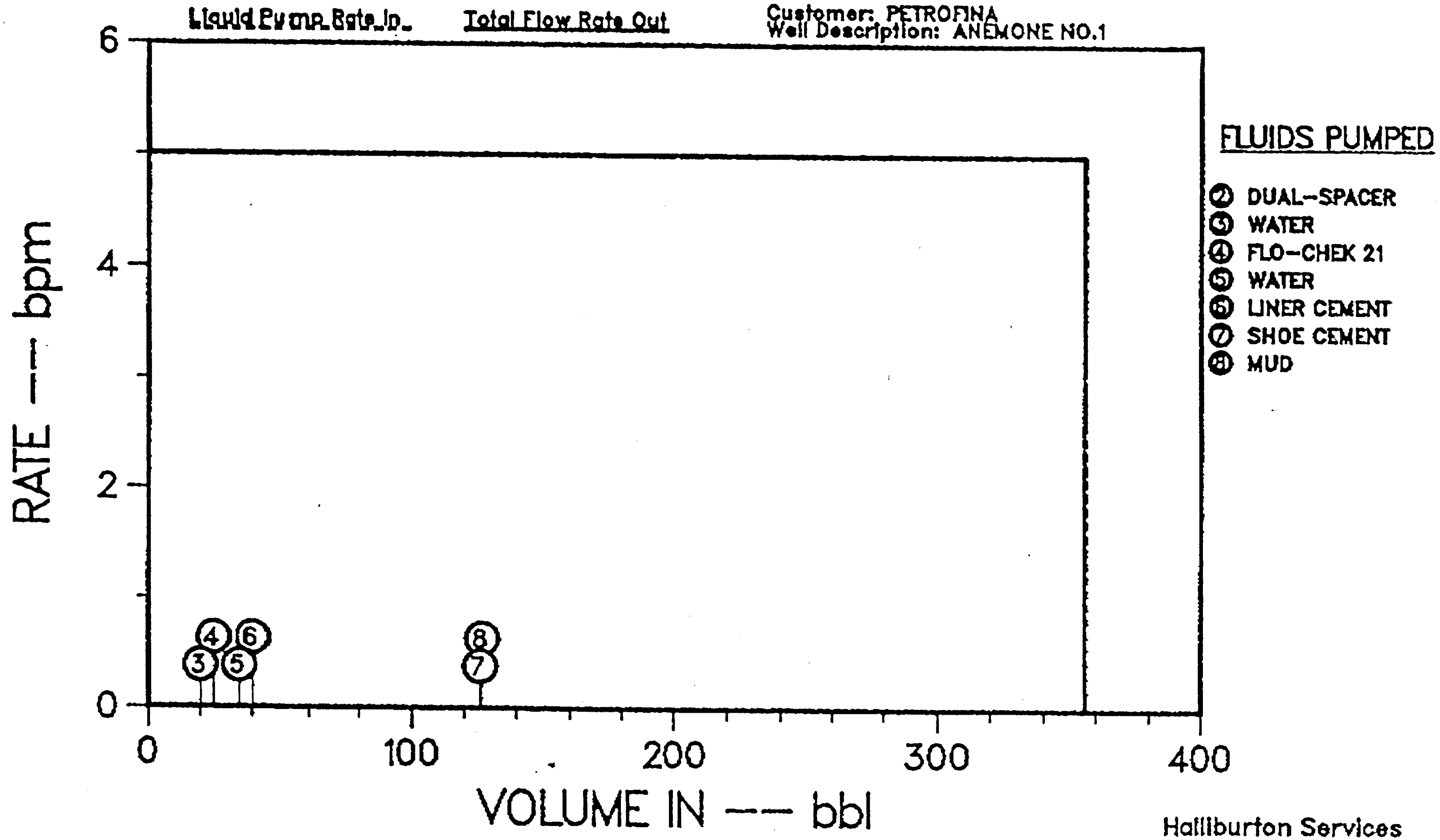
Circulating Pressure and Density at 15042 ft



Halliburton Services

Plot Shows: Downhole Annular Pressure and Equivalent Circulating Density versus Liquid Volume Pumped into the Well

CEMENT JOB SIMULATOR
Comparison of Rates In & Out



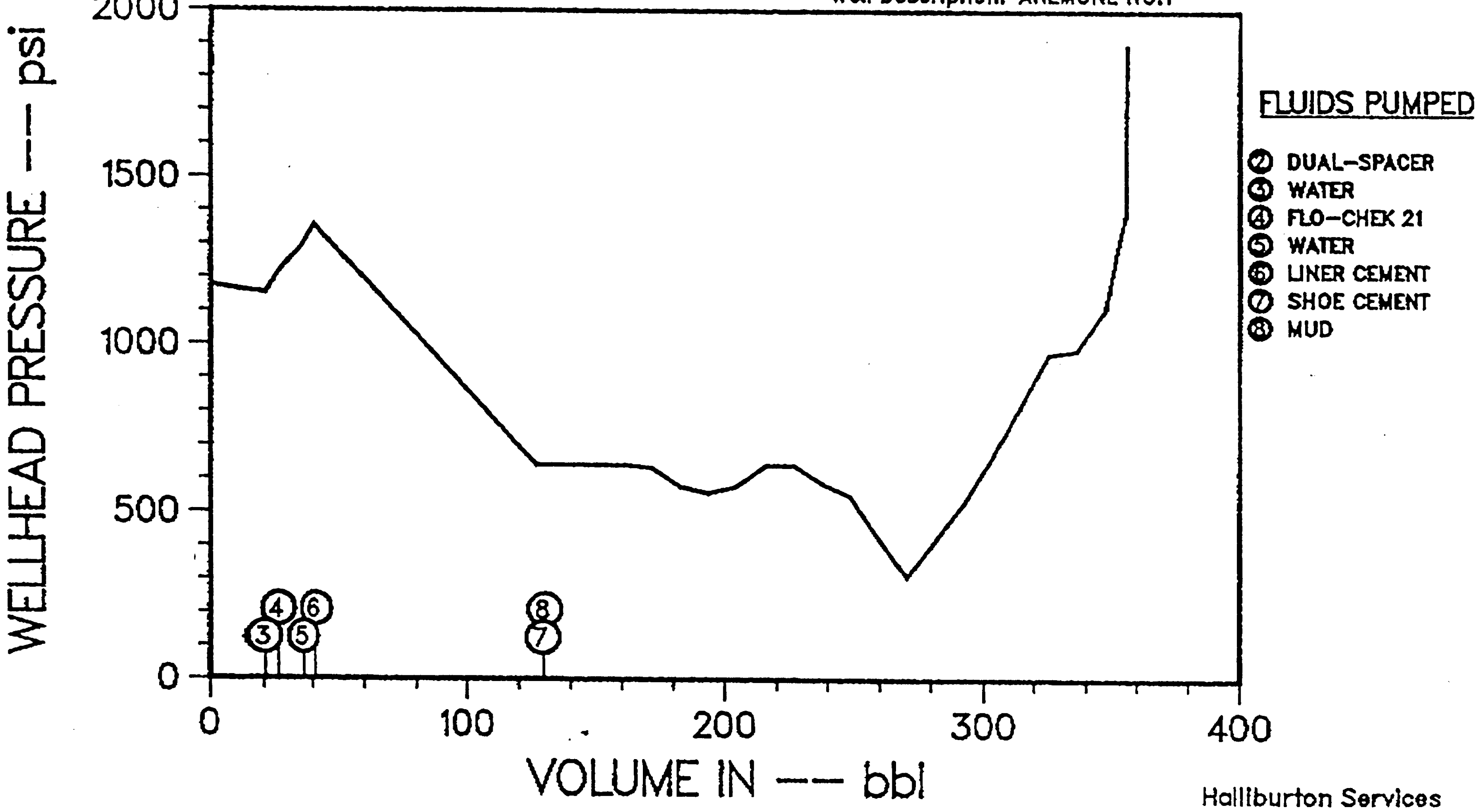
Halliburton Services

Plot Shows: Total Annular Return Rate and the Corresponding Pump Rate versus Liquid Volume Pumped Into the Well

CEMENT JOB SIMULATOR

Calculated Wellhead Pressure

Customer: PETROFINA
Well Description: ANEMONE NO.1



Plot Shows: Calculated Wellhead Pressure versus Liquid Volume Pumped into the Well

```
  ** CUSTOMER: PETROFINA                                                   **
  ** WELL DESCRIPTION: ANEMONE NO.1                                        **
  ** PROVIDED BY: HALLIBURTON SERVICES                                     **
  *************************************************************************

                        ----------FLUIDS  TABLE---------

 FLUID      FLUID          DENSITY    N          K         VOLUME   1-IF
NUMBER  DESCRIPTION        LB/GAL   PRIME      PRIME        BBLS    FOAMED

   1   MUD                 12.66    0.714     0.00484     1167.5      0
   2   DUAL-SPACER         13.00    0.441     0.00625       20.0      0
   3   WATER                8.33    1.000     0.00002        5.0      0
   4   FLO-CHEK 21          9.50    1.000     0.00002       10.0      0
   5   WATER                8.33    1.000     0.00002        5.0      0
   6   LINER CEMENT        15.80    0.755     0.01400       86.0      0  TRACER FLUID
   7   SHOE CEMENT         15.80    0.755     0.01400        0.7      0
   8   MUD                 12.66    0.714     0.00484      229.0      0

*******************************************************************************
*******************************************************************************

                        -------GEOMETRIES  TABLE------

                                                      MEASURED       ANGLE OF
GEOMETRY                                                DEPTH        DEVIATION
 NUMBER                                             START    END    START    END

   1        TOP INNER PIPE-ID--   4.276                0.    9580.    0.0    0.0
   2       SECOND INNER PIPE-ID--   2.764           9580.   14272.    0.0    0.0
   3        LAST INNER PIPE-ID--   4.276           14272.   15666.    0.0    0.0
   4         10.500 BY   5.000 ANNULUS             15666.   14747.    0.0    0.0
   5          6.276 BY   5.000 ANNULUS             14747.   14272.    0.0    0.0
   6          6.276 BY   3.500 ANNULUS             14272.    9581.    0.0    0.0
   7          8.681 BY   5.000 ANNULUS              9581.     824.    0.0    0.0
   8         20.100 BY   5.000 ANNULUS               824.       1.    0.0    0.0
```

```
***************************************************************
** CUSTOMER: PETROFINA                                       **
** WELL DESCRIPTION: ANEMONE NO.1                            **
** PROVIDED BY: HALLIBURTON SERVICES                         **
***************************************************************


                      ------PUMP RATES  TABLE-------

THE PUMP RATE FOR THE ----MUD                -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----DUAL-SPACER        -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----WATER              -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----FLO-CHEK 21        -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----WATER              -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----LINER CEMENT       -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----SHOE CEMENT        -- WILL BE  5.0 BPM.

THE PUMP RATE FOR THE ----MUD                -- WILL BE  5.0 BPM.


***************************************************************************

                      -------WELL PARAMETERS-------

SURFACE TEMPERATURE (F)---------          80.0
CIRCULATING TEMPERATURE (F)----          210.0
BACK-PRESSURE (PSI)------------           15.0
FRAC ZONE DEPTH (FT)-----------        15043.0 = 4585 mkB
FRAC ZONE GRADIENT (LB/GAL)----           14.2 = 1.7 S.G.
```

```
***********************************************************************
** CUSTOMER: PETROFINA                                               **
** WELL DESCRIPTION: ANEMONE NO.1                                     **
** PROVIDED BY: HALLIBURTON SERVICES                                 **
***********************************************************************


                    ------TURBULENCE  TABLE------

      THIS TABLE LISTS THE RATES REQUIRED TO ACHIEVE TURBULENCE
                 IN THE NUMBER  4 GEOMETRY.


                  FLUID               RATE FOR TURBULENCE
               DESCRIPTION                   (BPM)


             MUD                               16.7

             DUAL-SPACER                        9.5

             WATER                              0.3

             FLO-CHEK 21                        0.3

             WATER                              0.3

             LINER CEMENT                      37.4

             SHOE CEMENT                       37.4

             MUD                               16.7


**************************************************************************

           -----PRESSURE TO BREAK CIRCULATION TABLE-----


                         SURFACE        PRESSURE          PRESSURE
      GEL STRENGTH       PRESSURE        AT TD         AT 15043. FT
      LB/100 SQ-FT         PSI            PSI               PSI


            10             298.          10458.           10045.
            25             744.          10691.           10272.
            50            1488.          11079.           10651.
           100            2976.          11857.           11410.
           150            4463.          12634.           12168.
           200            5951.          13411.           12926.

      HYDROSTATIC PRESSURE:  AT     TD      =  10302. PSI
                             AT 15043. FT =   9893. PSI
```

```
*******************************************************************
** CUSTOMER: PETROFINA                                           **
** WELL DESCRIPTION: ANEMONE NO.1                                 **
** PROVIDED BY: HALLIBURTON SERVICES                             **
*******************************************************************


                   -----VOLUME & RATE  CALCULATIONS-----


         SURFACE                  FLUID
TIME      FLUID          VOLUME              RATE          SURFACE       LEADING EDGE
         IN  OUT        IN      OUT       IN     OUT       PRESSURE       OF TRACER
(MIN)                    (BBLS)             (BPM)          IN      OUT      FLUID
                                                             (PSI)            (FT)
  0.0     1   1         0.0      0.0     5.0    5.0      1175.8    15.         0.
  0.2     2   1         1.0      1.0     5.0    5.0      1174.0    15.         0.
  2.4     2   1        12.0     12.0     5.0    5.0      1161.4    15.         0.
  4.0     2   1        20.0     20.0     5.0    5.0      1152.2    15.         0.
  4.2     3   1        21.0     21.0     5.0    5.0      1164.1    15.         0.
  5.0     3   1        25.0     25.0     5.0    5.0      1211.9    15.         0.
  5.2     4   1        26.0     26.0     5.0    5.0      1220.4    15.         0.
  7.0     4   1        35.0     35.0     5.0    5.0      1297.4    15.         0.
  7.2     5   1        36.0     36.0     5.0    5.0      1309.4    15.         0.
  8.0     5   1        40.0     40.0     5.0    5.0      1357.1    15.         0.
  8.2     6   1        41.0     41.0     5.0    5.0      1348.9    15.       -56.
 10.4     6   1        52.0     52.0     5.0    5.0      1258.1    15.      -676.
 12.6     6   1        63.0     63.0     5.0    5.0      1167.3    15.     -1295.
 14.8     6   1        74.0     74.0     5.0    5.0      1076.5    15.     -1914.
 17.0     6   1        85.0     85.0     5.0    5.0       985.8    15.     -2534.
 19.2     6   1        96.0     96.0     5.0    5.0       895.0    15.     -3153.
 21.4     6   1       107.0    107.0     5.0    5.0       804.2    15.     -3772.
 23.6     6   1       118.0    118.0     5.0    5.0       713.4    15.     -4391.
 25.2     6   1       126.0    126.0     5.0    5.0       647.4    15.     -4842.
 25.4     7   1       127.0    127.0     5.0    5.0       639.2    15.     -4898.
 25.3     7   1       126.7    127.0     5.0    5.0       641.6    15.     -4582.

********************** DISPLACEMENT IS STARTING **********************

 25.5     8   1       127.7    127.7     5.0    5.0       641.6    15.     -4938.
 27.7     8   1       138.7    138.7     5.0    5.0       641.6    15.     -5557.
 29.9     8   1       149.7    149.7     5.0    5.0       641.6    15.     -6177.
 32.1     8   1       160.7    160.7     5.0    5.0       641.6    15.     -6796.
 34.3     8   1       171.7    171.7     5.0    5.0       633.7    15.     -7415.
 36.5     8   1       182.7    182.7     5.0    5.0       577.8    15.     -8035.
 38.7     8   1       193.7    193.7     5.0    5.0       558.5    15.     -8654.
 40.9     8   1       204.7    204.7     5.0    5.0       579.0    15.     -9273.
 43.1     8   1       215.7    215.7     5.0    5.0       641.5    15.    -10328.
 45.3     8   1       226.7    226.7     5.0    5.0       642.4    15.    -11810.

************** DUAL-SPACER        IS ENTERING THE ANNULUS ***************

 47.5     8   1       237.7    237.7     5.0    5.0       588.5    15.    -13293.
 49.7     8   1       248.7    248.7     5.0    5.0       549.6    15.    -14482.

************** WATER              IS ENTERING THE ANNULUS ***************
************** FLO-CHEK 21        IS ENTERING THE ANNULUS ***************
```

```
*******************************************************************
** CUSTOMER: PETROFINA                                           **
** WELL DESCRIPTION: ANEMONE NO.1                                 **
** PROVIDED BY: HALLIBURTON SERVICES                             **
*******************************************************************


                 ------VOLUME & RATE  CALCULATIONS-----


        SURFACE                 FLUID                   SURFACE     LEADING EDGE
TIME     FLUID        VOLUME          RATE              PRESSURE     OF TRACER
        IN  OUT      IN      OUT     IN    OUT        IN      OUT       FLUID
(MIN)                  (BBLS)          (BPM)            (PSI)            (FT)
 51.9    8   1     259.7   259.7    5.0    5.0      425.1     15.     -15101.

************* WATER                IS ENTERING THE ANNULUS **************
************* LINER CEMENT         IS ENTERING THE ANNULUS **************

 54.1    8   1     270.7   270.7    5.0    5.0      308.7     15.      15654.
 56.3    8   1     281.7   281.7    5.0    5.0      421.8     15.      15521.
 58.5    8   1     292.7   292.7    5.0    5.0      534.9     15.      15389.
 60.7    8   1     303.7   303.7    5.0    5.0      671.2     15.      15256.
 62.9    8   1     314.7   314.7    5.0    5.0      818.7     15.      15123.
 65.1    8   1     325.7   325.7    5.0    5.0      973.0     15.      14990.
 67.3    8   1     336.7   336.7    5.0    5.0      985.7     15.      14857.
 69.5    8   1     347.7   347.7    5.0    5.0     1109.5     15.      14613.
 71.1    8   1     355.7   355.7    5.0    5.0     1400.2     15.      14149.
```

```
 ** CUSTOMER: PETROFINA*                                          **
 ** WELL DESCRIPTION: ANEMONE NO.1                                **
 ** PROVIDED BY: HALLIBURTON SERVICES                             **
 ******************************************************************


                  -----FREE FALL   CALCULATIONS-----

                                              EQUIVALENT
           SURFACE     FLUID      SURFACE     CIRCULATING     FREE     LEADING EDGE
  TIME      FLUID      VOLUME     PRESSURE      DENSITY       FALL      OF TRACER
           IN  OUT       IN          IN       TD    ZONE     HEIGHT      FLUID
  (MIN)               (BBLS)       (PSI)      (LBS/GAL)       (FT)        (FT)
   0.0     1    1       0.0       1175.8     12.9 12.9         0.           0.
   0.2     2    1       1.0       1174.0     12.9 12.9         0.           0.
   2.4     2    1      12.0       1161.4     12.9 12.9         0.           0.
   4.0     2    1      20.0       1152.2     12.9 12.9         0.           0.
   4.2     3    1      21.0       1164.1     12.9 12.9         0.           0.
   5.0     3    1      25.0       1211.9     12.9 12.9         0.           0.
   5.2     4    1      26.0       1220.4     12.9 12.9         0.           0.
   7.0     4    1      35.0       1297.4     12.9 12.9         0.           0.
   7.2     5    1      36.0       1309.4     12.9 12.9         0.           0.
   8.0     5    1      40.0       1357.1     12.9 12.9         0.           0.
   8.2     6    1      41.0       1348.9     12.9 12.9         0.         -56.
  10.4     6    1      52.0       1258.1     12.9 12.9         0.        -676.
  12.6     6    1      63.0       1167.3     12.9 12.9         0.       -1295.
  14.8     6    1      74.0       1076.5     12.9 12.9         0.       -1914.
  17.0     6    1      85.0        985.8     12.9 12.9         0.       -2534.
  19.2     6    1      96.0        895.0     12.9 12.9         0.       -3153.
  21.4     6    1     107.0        804.2     12.9 12.9         0.       -3772.
  23.6     6    1     118.0        713.4     12.9 12.9         0.       -4391.
  25.2     6    1     126.0        647.4     12.9 12.9         0.       -4842.
  25.4     7    1     127.0        639.2     12.9 12.9         0.       -4898.
  25.3     7    1     126.7        641.6     12.9 12.9         0.       -4882.

********************** DISPLACEMENT IS STARTING **********************

  25.5     8    1     127.7        641.6     12.9 12.9         0.       -4938.
  27.7     8    1     138.7        641.6     12.9 12.9         0.       -5557.
  29.9     8    1     149.7        641.6     12.9 12.9         0.       -6177.
  32.1     8    1     160.7        641.6     12.9 12.9         0.       -6796.
  34.3     8    1     171.7        633.7     12.9 12.9         0.       -7415.
  36.5     8    1     182.7        577.8     12.9 12.9         0.       -8035.
  38.7     8    1     193.7        558.5     12.9 12.9         0.       -8654.
  40.9     8    1     204.7        579.0     12.9 12.9         0.       -9273.
  43.1     8    1     215.7        641.5     12.9 12.9         0.      -10328.
  45.3     8    1     226.7        642.4     12.9 12.9         0.      -11810.

************** DUAL-SPACER         IS ENTERING THE ANNULUS **************

  47.5     8    1     237.7        588.5     12.9 12.9         0.      -13293.
  49.7     8    1     248.7        549.6     12.9 12.9         0.      -14482.

************** WATER               IS ENTERING THE ANNULUS **************
************** FLO-CHEK 21         IS ENTERING THE ANNULUS **************
```

```
*****************************************************************************
** CUSTOMER: PETROFINA                                                     **
** WELL DESCRIPTION: ANEMONE NO.1                                          **
** PROVIDED BY: HALLIBURTON SERVICES                                       **
*****************************************************************************


                          -----FREE FALL  CALCULATIONS------

                                                 EQUIVALENT
       SURFACE    FLUID      SURFACE     CIRCULATING      FREE      LEADING EDGE
TIME    FLUID     VOLUME     PRESSURE      DENSITY        FALL       OF TRACER
       IN  OUT      IN          IN       TD    ZONE      HEIGHT        FLUID
(MIN)             (BBLS)      (PSI)      (LBS/GAL)        (FT)          (FT)
 51.9   8   1     259.7       425.1      12.9 12.9          0.        -15101.

************** WATER                     IS ENTERING THE ANNULUS **************
************** LINER CEMENT              IS ENTERING THE ANNULUS **************

 54.1   8   1     270.7       308.7      12.9 12.9          0.         15654.
 56.3   8   1     281.7       421.8      12.9 12.9          0.         15521.
 58.5   8   1     292.7       534.9      12.9 12.9          0.         15389.
 60.7   8   1     303.7       671.2      13.0 12.9          0.         15256.
 62.9   8   1     314.7       818.7      13.0 12.9          0.         15123.
 65.1   8   1     325.7       973.0      13.0 12.9          0.         14990.
 67.3   8   1     336.7       985.7      12.9 12.8          0.         14857.
 69.5   8   1     347.7      1109.5      12.9 12.8          0.         14613.
 71.1   8   1     355.7      1400.2      13.2 13.1          0.         14149.


IF THE ANNULUS IS SHUT IN WITH   15. PSI BACKPRESSURE IMMEDIATELY
AFTER THE PLUG IS BUMPED THE EQUIVALENT GRADIENT ON THE
FRAC ZONE (15043. FT) WILL BE 12.7 LBS/GAL.
```

LAST PAGE

TESTING PROGRAMME

PETROFINA EXPLORATION AUSTRALIA S.A.

WELL TESTING PROGRAMME

WELL: ANEMONE - 1A

PERMIT: VIC/P20

Prepared By: Steve Marinoff

Reviewed By: Luis Remisio

LRemisio

Approved By: Richard Cordiez

Rite 11.08.89

SPM/ses

Anemwell.rep

8 September 1989

TABLE OF CONTENTS

INTRODUCTION

This programme covers the design and sequence of operations for a production test conducted in 5" liner, on the well Anemone-1A, from the semi-submersible drilling rig, the Zapata Arctic.

The programme is written in conjunction with the guidelines on testing found under section 20 of the Petrofina Drilling Manual, which should be consulted in addition to this programme.

An additional test programme supplement covering in detail; perforation interval, number of shots and size, sampling requirements, shut in and flowing periods, acidising, etc, will be issued prior to the test commencing.

The objectives of any test in this well are to:

(a) Determine the type and mobility of any reservoir fluids.
(b) Determine basic productivity characteristics.
(c) Measure pressure/temperature effects over time, checking for any apparent depletion effects.
(d) Obtain PVT samples.

Testing will be carried out using cased hole testing techniques. Testing will be conducted in a 5" liner using a Schlumberger full bore PCT test system. Test tools and a 7" positrieve packer will be positioned in the 7" liner, whilst 2-3/8" EUE tubing will be used to convey the gun drop sub, mechanical firing head and 3-3/8" TCP GUNS into the 5" liner in order to test the zones of interest.

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

The well will be perforated under-balanced using a water cushion. Tubing conveyed perforating guns will be run at the base of the test string. Firing of the guns will be mechanically initiated using a drop-bar run on slick line.

All downhole, sub-surface and surface equipment supplied by Schlumberger is to be suitable for H_2S service and will be required to be rated to 10,000 psi where used for high pressure flow. Should wet gas be produced, a heater will be on line to prevent hydrate formation. All equipment will be pressure and function tested prior to its despatch to the rig and again upon its arrival on the rig.

Surface readout of downhole pressure and temperature will be provided by the MUST tool. The MUST actuator/pressure gauge assembly will be run on Schlumberger electric wireline. A 10,000 psi TPT electronic gauge will be used to transmit data. (The use of MUST is optional dependent upon prevailing circumstances.)

The primary downhole recording gauges will be four 10,000 psi EXAL EMS 700 gauges.

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

1. DESIGN

1.1 EXPECTED WELL PARAMETERS

Objective:

Estimated Reservoir Pressure:	±9000 psi @ 4600m RKB
Reservoir Temperature:	260°F @ 4750m RKB
Gravity API:	42.0 to 47.0
Sulpher (% wt):	0 to 0.23
Wax Content (% wt):	8.4 to 26.8
Initial GOR (M^3/M^3):	9 to 18
Pour Point (°C):	-42.0 to +18.3
Viscosity (cp @ 37.8°C):	0.178 to 3.02
H_2S:	Not Expected
Sand Production:	Possible
Total Depth:	4775m RKB
Actual Casing Shoes:	30" @ 313.5m RKB
	20" @ 546.5m RKB
	13 3/8" @ 1104.8m RKB
	9 5/8" @ 3068m RKB (47 PPF)
	7" @ 4492.5m RKB (29 PPF)
Planned Casing Shoe:	5" @ ± 4770m RKB (18 PPF)
Water Depth:	231m MSL
RKB Above MSL:	27m

1.2 PROPOSED WELL FLUIDS

Testing Fluid: As no RFT data is available to invalidate reservoir pressure assumed during drilling operations where a mud weight of 1.52 SG was necessary to control gas production, same will be used.

In order to avoid possible settling of barite on top of the 7" positrieve testing packer, a viscous pill is to be set above and across the forecasted packer setting depth, immediately prior to setting the packer. The viscous pill must be thermal stable in order "to hold" for several days.

Test Cushion: Prior to perforating, the test string contents will be displaced to diesel oil in order to perforate under-balanced.

Inflow Test Cushion: In order to create under-balanced conditions when inflow testing the liner lap, the string contents will be displaced to water prior to closing the circulating sleeve.

1.3 SURFACE EQUIPMENT

General: Figure 1 depicts the surface equipment layout described as follows:

Surface test tree - (flowhead) 10,000 psi, 3 1/16" ID, with swivel and failsafe flowline wing valve.

Flow line - one 45' long, 3" ID, 10,000 psi WP coflexip hose used to connect failsafe flowline wing valve on flowhead to data header which is connected to choke manifold.

Injection pump - injects glycol into the upper test string via a line down to the SSTT.

Data header - 3" ID, 10,000 psi WP, with ½" NPT take off points for data acquisition.

Choke manifold - 3" ID, 10,000 psi WP, with one fixed and one adjustable choke.

Wellhead gauges - deadweight and Bourdon tube.

Test line - 4" ID, 5000 psi WP flowline connects choke manifold on rig floor to Schlumberger test area on deck. (Petrofina/Shell owned)

Heater - diesel fired 2MMBTU/min, 5000 psi WP connected between choke manifold and separator.

Separator - 1440 psi WP, 3 phase unit with metering for oil, gas and water rated at 60 MMCFGPD, 10,000 BOPD and 2500 BWPD respectively.

Gauge tank - 2 x 50 BBL capacity with graduated sight glass.

Transfer pumps - two electric centrifugal transfer pumps rated at 2700 BBLS/day each.

Diverter valves - 4 WKM valves to switch flow between booms and oil or gas lines. (Zapata owned.) Installed near Schlumberger test area.

Flowlines - 4" SCH80XS H_2S service lines.
4 lines - starboard/port boom oil and gas lines. Run from diverter valves to burners.

Burners - 2 x 60' long burner booms with burners rated to 10,000 BOPD each.

Shut down system - will activate flowline automatic wing valve on flowhead. Remote located on rig floor.

Field Laboratory//Store

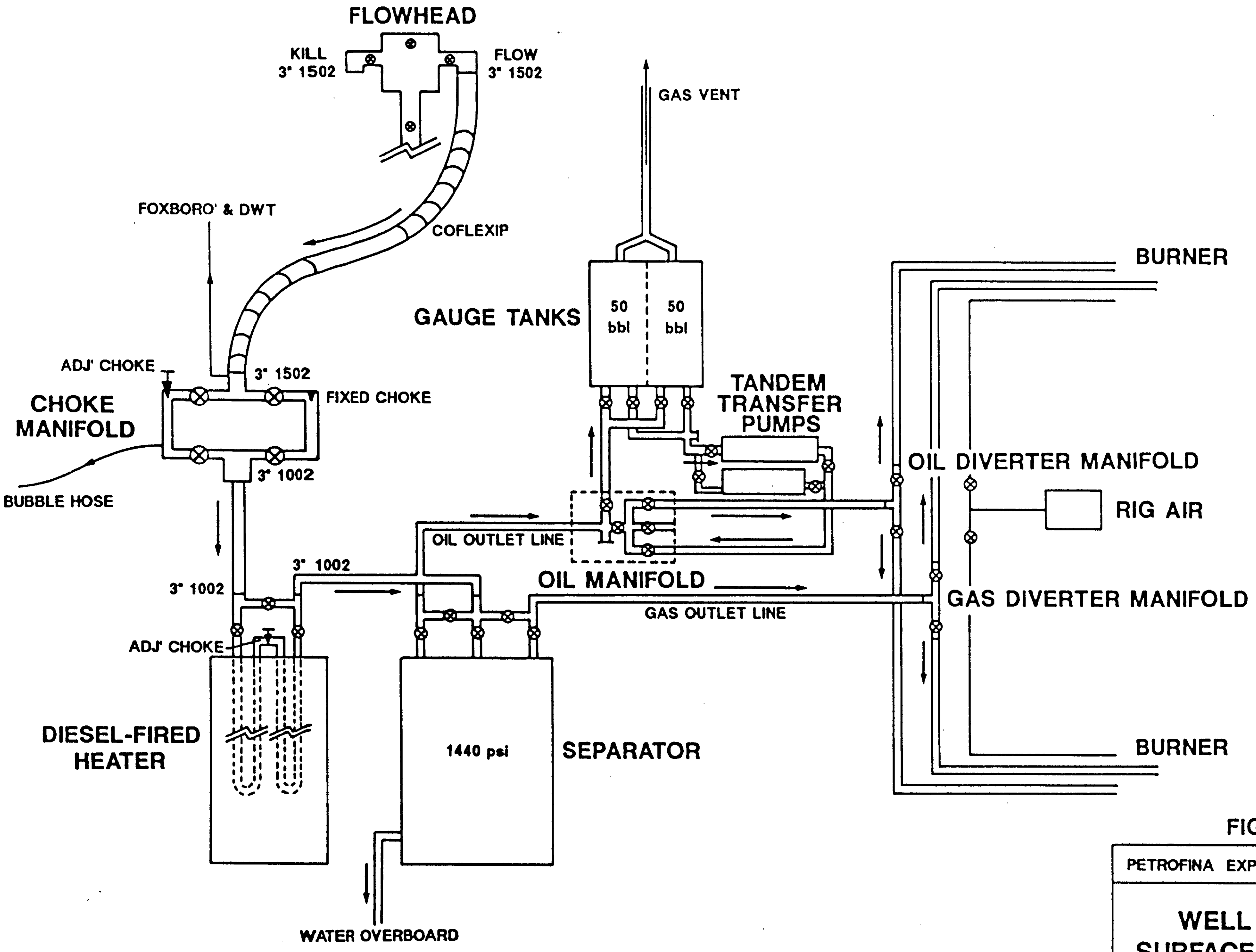


FIGURE 1

PETROFINA EXPLORATION AUSTRALIA

WELL TESTING SURFACE EQUIPMENT LAYOUT

A. WILSON MAY 1989

1.4 UPPER TEST STRING

General: Figure 2 depicts the upper test string as follows:

Crossover - crosses over from 3½" VAM tubing to acme thread on fluted hanger.

Fluted hanger - 11" OD sized to sit in 7" wear bushing.

Spacer - 5.00" OD pipe used to space out slick joint and SSTT in BOP's.

Slick joint - 5.00" OD smooth wall pipe for closing both 5" pipe rams on for annulus control.

Subsea test tree - (SSTT) E-Z tree incorporates safety valve, latch assembly and retainer valve all remotely operated from surface but all with failsafe mechanisms. Also contains facility for injection of glycol into the fluid stream.

4-1/2" tubing - high pressure integrity riser.

Lubricator valve - for wireline operations. 13" OD centralisers fitted top and bottom.

4-1/2" tubing - high pressure integrity riser.

Surface test tree - (flowhead) control of test string from surface incorporating automatic flowline wing valve for emergency shut in.

Schlumberger BOP - for wireline work.

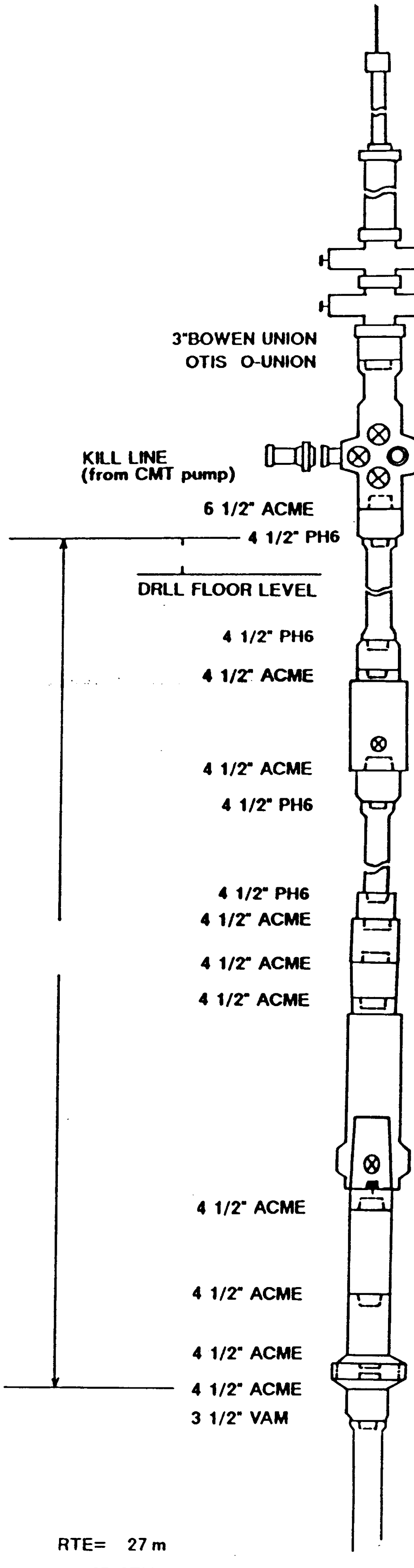
Lubricator - for wireline work.

Stuffing box - for wireline work.

Figure 3 depicts the SSTT space out in the BOPs.

UPPER TEST STRING

WELL : ANEMONE-1A DST No : 1

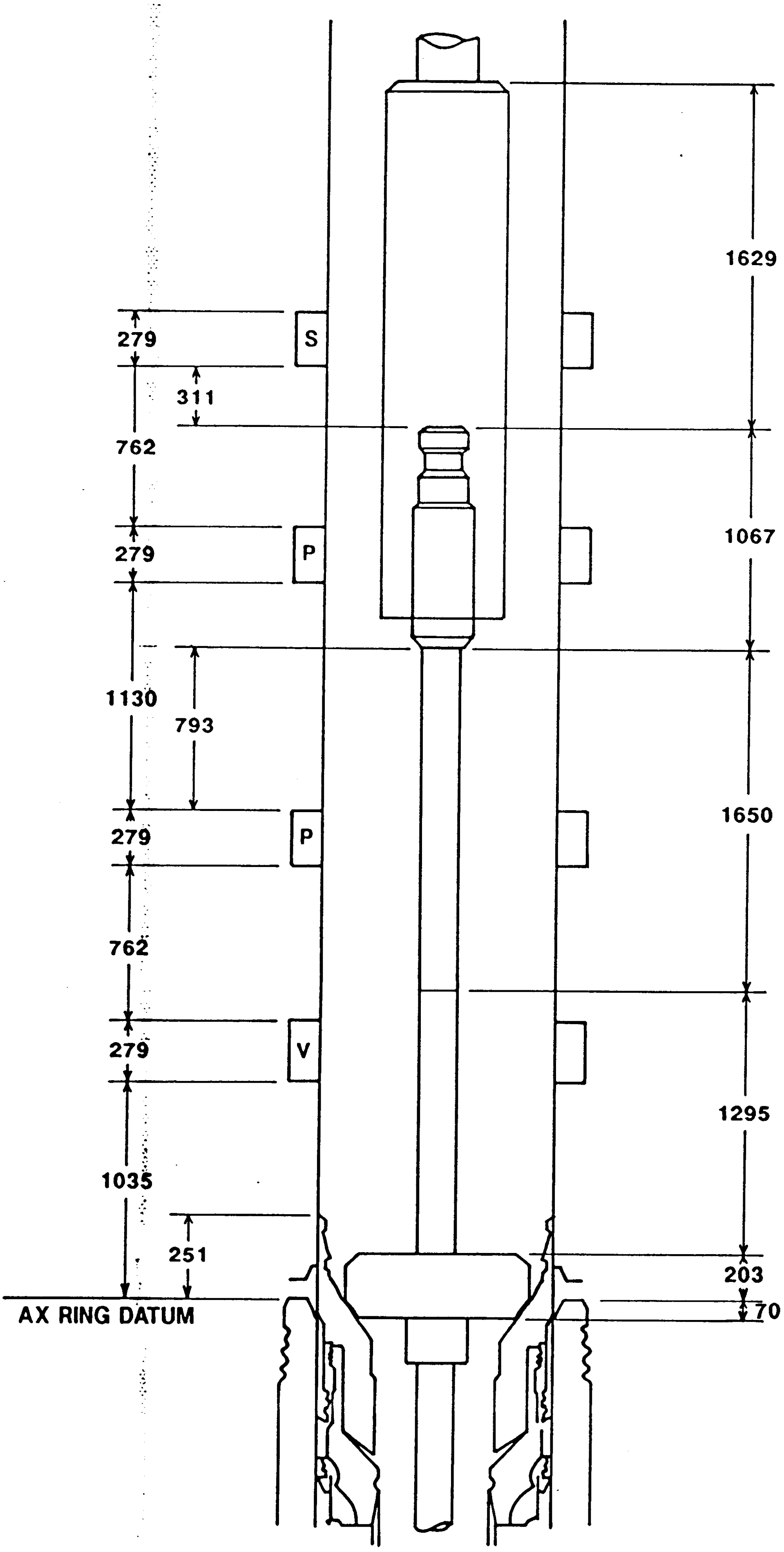


EQUIPMENT DESCRIPTION	O.D. (ins)	I.D. (ins)	LENGTH (m)
STUFFING BOX & FLOWTUBE (7/32" WIRELINE)			
LUBRICATOR			
SCHLUMBERGER WIRELINE BOP 10,000psi WP, H S			
X-O SUB		3.000	0.500
TEST FLOWHEAD WITH SWIVEL 10,000psi WP, H S 3"x 60' COFLEXIP HOSE (to choke man.)		3.000	
X-O SUB	6.50	3.000	0.457
JOINTS OF 4 1/2" L80 19.2# HYDRIL PH6 TUBING	4.50	3.515	
X-O SUB	5.00	3.000	0.457
LUBRICATOR VALVE 10,000psi WP, H S	9.00	3.000	1.800
X-O SUB	5.00	3.000	0.457
JOINTS OF 4 1/2" L80 19.2# HYDRIL PH6 TUBING	4.50	3.515	
X-O SUB	5.00	3.000	0.700
RETAINER VALVE	9.00	3.000	1.495
X-O SUB	5.00	3.000	1.000
(LATCH ASSY)			
E-Z TREE, 10,000psi WP, H S C/W INJECTION FACILITY	10.87	3.000	
(VALVE ASSY) LENGTH 1.067m	5.00	3.000	2.696
SLICK JOINT	5.00	3.000	1.650
SPACER	5.00	3.000	1.165
FLUTED HANGER	11.00	3.000	0.273
X-O SUB			
3 1/2" 12.7# L80 VAM TUBING	3.50	2.625	

RTE= 27 m

RISER STICK UP ABOVE RT (BASED ON MSL)

FIGURE 2



BOP STACK WITH FLOPETROL SUBSURFACE TEST TREE LANDED

ALL MEASUREMENTS IN MILLIMETRES

1.5 LOWER TEST STRING

General: Figure 4 depicts the lower test string as follows:

Bull nose - guides guns through liner top.

Guns - mechanically initiated, tubing conveyed, perforating guns. 3-3/8" TCP 22g HMX 6 SPF 60° phasing.

Safety spacer - used to place guns below rotary table when making up to firing head.

Firing head - contains gun detonation mechanism, mechanically initiated by impact of drop-bar which will be run on slick line. Also contains safety pin which requires 300 psi of hydrostatic pressure to override.

Tubing - 2-3/8" EUE tubing used to correctly space guns below packer.

Gun drop sub - allows release of TCP guns if desired.

Tubing - 2-3/8" EUE tubing used to correctly space guns below packer.

VAM sub - ported sub to allow formation fluid flowing through perforations, to enter the lower test string.

Crossover - 2-3/8" EUE pin x 2-7/8" EUE box.

7" positrieve packer - weight set, used to isolate perforation interval from annulus above.

Crossover - 2 7/8" EUE pin x 3½" IF Box.

Safety joint - allows the string to be parted through left hand rotation of the upper string so that the portion above the joint can be retrieved should the packer become stuck.

Hydraulic jar - if the string becomes stuck, upward blows with the jar are used to free it.

Two above packer EXAL gauge carriers - accommodates two EMS700 pressure and temperature recorders each.

Drill collars - provide weight below slip joints for setting packer.

HRT - hydrostatic reference tool used to trap hydrostatic pressure in the nitrogen chamber of the PCT valve. Run in the hole open but closed by setting weight down on it. It also acts as a bypass below closed PCT.

PCT - annulus pressure controlled tester valve. The valve is opened by an increase in annulus pressure and closed by a spring and hydrostatic bias. Valve can be cycled repeatedly but can be permanently shut by exceeding a preset annulus pressure which will perforate a rupture disk.

Drill collars

R.A. sub - stores radioactive pip tag.

SHORT - the single shot hydrostatic overpressure reversing tool is opened by a single pressuring up of the annulus to shear a rupture disc. Once opened the SHORT cannot be closed. Used as a reversing valve.

Drill collars

MIDRV - the mutli indexing reversing valve, which can be repeatedly opened and closed, is used for either normal or reverse circulating. The tool is opened by cycling tubing pressure a predetermined number of times and closed by exceeding a predetermined pump rate down the tubing.

Drill collars

Slip joints - allow for expansion of test string. Allow correct placement of packer. Give positive indication of packer setting.

MUST barrel - the multiple shut in tool is a flapper type downhole shut in valve operated by reciprocating electric line. The MUST actuator and gauges are run in on electric line and latch into the MUST barrel. The flapper valve is closed by pulling on the cable and released by slacking off. A predetermined number of cable reciprocations will unlatch the MUST tool from the MUST barrel.

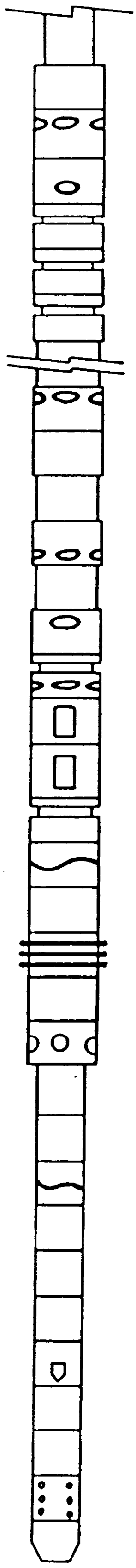
SHORT - this upper SHORT is located above the MUST barrel to guarantee a reversing point above all downhole valves should any problems occur.

Crossover - 3-1/2" VAM box x 3-1/2" IF pin.

LOWER TEST STRING

SCHLUMBERGER TCP / MUST STRING

WELL : ANEMONE-1A **DST No. : 1**

ASSEMBLY	CONNECTION	ITEM	I.D. (ins)	O.D. (ins)	LENGTH (m)	DEPTH (m)
	3 1/2" VAM P	TEST STRING TUBING 12.7 # L80 VAM	2.625	3.50		
	3 1/2" VAM B 3 1/2" IF P	CROSS OVER SUB				
	3 1/2" IF BxP	SHORT REVERSING VALVE	2.40	5.00	0.838	
	3 1/2" IF BxP	MUST	2.25	5.00	3.100	
	3 1/2" IF BxP	SLIP JOINT - OPEN	2.25	5.00	8.690	
	3 1/2" IF BxP	SLIP JOINT - 1/2 OPEN	2.25	5.00	7.910	
	3 1/2" IF BxP	SLIP JOINT - CLOSED	2.25	5.00	7.162	
	3 1/2" IF BxP	DRILL COLLARS (3 STANDS)	2.25	4.75		
	3 1/2" IF BxP	SHORT REVERSING VALVE	2.40	5.00	0.836	
	3 1/2" IF BxP	R.A. SUB				
	3 1/2" IF BxP	DRILL COLLARS (1 STAND)	2.25	4.75		
	3 1/2" IF BxP	MIDRV	2.25	5.00	2.908	
	3 1/2" IF BxP	DRILL COLLARS (1 STAND)	2.25	4.75		
	3 1/2" IF B 4.37"-4SA P	PCT	2.25	5.00	6.986	
	4.37"-4SA B 3 1/2" IF P	HRT	2.25	5.00	1.734	
	3 1/2" IF BxP	EXAL EMS700 GAUGE CARRIERS	2.30	5.375		
	3 1/2" IF BxP		2.30	5.375		
	3 1/2" IF BxP	JAR	2.25	5.00	1.980	
	3 1/2" IF BxP	SAFETY JOINT	2.40	5.00	0.520	
	3 1/2" IF B 2 7/8" EUE P	CROSS OVER				
	2 7/8"EUE BxP	POSITRIEVE PACKER (7")	2.40	5.50	1.975	
	2 7/8" EUE B 2 3/8" EUE P	CROSS OVER				
	2 3/8"EUE BxP	VAM SUB	2.00	3.06	0.890	
	2 3/8"EUE BxP	2 3/8" EUE TUBING		2.875		
	2 3/8"EUE BxP	GUN DROP SUB				
	2 3/8"EUE BxP	2 3/8" EUE TUBING		2.875		
	2 3/8"EUE BxP	MECHANICAL FIRING HEAD		3.375	2.070	
	2 3/8"EUE BxP	SAFETY SPACER		3.375		
	2 3/8"EUE BxP	3 3/8"TCP GUNS 22g HMX 6SPF 60 DEG PHASING		3.375	3.050	
	2 3/8" EUE B	BOTTOM NOSE		3.375	0.050	

1.6 OPERATING PARAMETERS

1.6.1 The following parameters will apply for the initiating, cycling, functioning, etc., of all the downhole tools in the lower test string.

TOOL	PARAMETER PRESSURE/CIRCULATING RATE	
	OPEN	CLOSE
PCT	1500 psi on annulus*	Bleed off annulus
MIDRV	psi on tubing (to give 2000 psi /\P across tool)	Exceed 4½ BBLS/min pump rate down tubing
LOWER SHORT	3000 psi on annulus*	Cannot close
UPPER SHORT	3500 psi on annulus*	Cannot close

* = Nominal values, dependent on exact depth, temperature, fluid weights and rupture discs installed.

1.6.2 The HRT is opened by picking up on the test string. The HRT has an unbalanced area of nine square inches and requires a minimum downweight of 2500 lbs to overcome the opening spring force and keep the HRT closed when the packer is set.

1.6.3 The safety joint can be parted by left hand rotation of the test string.

1.6.4 The MUST actuator will unlatch after 12 reciprocations of the electric line.

1.6.5 The MIDRV will open after every 10 cycles of applied tubing pressure.

1.6.6 Delay times are not applicable to Schlumberger DST tools.

2. GENERAL TEST PROGRAMME

2.1 Equipment Preparation

2.2 Well Preparation

2.3 Running Test String

2.4 Packer Setting

2.5 Testing Well

2.6 Killing Well

2.1 EQUIPMENT PREPARATION

All equipment will have been serviced, function and pressure tested prior to its dispatch to the rig. However the following checks should be carried out as soon as possible after its arrival on the rig.

The Fina drilling supervisor will be responsible for ensuring all checks are performed. All pressure tests should be witnessed by the rig drilling engineer.

Service company personnel must confirm to the drilling supervisor that all necessary equipment has arrived on board the rig.

2.1.1 **General:** All equipment should be drifted to its normal ID requirement. (Refer to string diagrams.)

The rig choke manifold and BOP's should be pressure tested to Fina specifications.

Check fishing tools are on board for all OD's of the test string.

Check integrity of the 4 3/4" drill collar connections.

Tubing and collars should be rattled and jetted if necessary to remove scale from the ID. This is preferably done prior to their dispatch to the rig.

All 3½" tubing, 4-3/4" drill collars and DST tools should be drifted to 2.125" before being run.

Check and record the dimensions of all downhole tools, tubing and pipe, etc. (ID, OD, length, fishing neck, grade of steel, type of connection, etc.)

2.1.2 **Surface Equipment:** Install and connect equipment as schematically indicated in Figure 1. Purge all lines with water. Wash out and drain separator and test tank. The following pressure tests should be performed:

(a) Line from Schlumberger choke manifold to heater choke to 3500 psi/15 mins. Also test the Schlumberger choke manifold upstream valves to 7500 psi/15 mins.

(b) Heater and line from heater to separator by-pass manifold to 1500 psi/15 mins.

(c) Pressure up the separator slowly against the separator outlet block valves to 1000 psi/15 mins. Ensure relief valve is set above 1000 psi.

(d) Install plugs at burners and pressure test lines downstream of separator to 500 psi/15 mins. against the burner plugs. Function test burners by pumping diesel to the propane fuelled test pilot.

(e) Ensure gas and oil outlet meter lines are free of scale. All metering devices and recorders should be accurately calibrated and zeroed. The orifice meter recorder should be calibrated with the dead weight tester and manometer.

2.1.3 **Upper Test String:** The following should be performed at a convenient time prior to running the test string.

When the wear bushing is out of hole for BOP test, check compatibility of fluted hanger and wear bushing.

RIH with fluted hanger made up to 5½" drill pipe, painted white in the vicinity of the ram closing position. Land fluted hanger in the wear bushing. Mark landing string at the rotary table. Cycle BOP rams noting volumes required to fully close and open each 5" pipe ram. POOH. Confirm ram space out.

Pressure test the E-Z tree on deck, pressuring the body and ball valve from below to 9000 psi/15 mins. Pressure test the flapper valve from below to 9000 psi/15 mins.

Make up the fluted hanger, slick joint and E-Z tree assembly. Pressure test entire assembly to 9000 psi/15 mins.

Pressure test the control lines to 3000 psi/15 mins. Function test the hydraulic release and valve assemblies.

Drift flowhead to 3.000".

Make up one 4½" tubing single with short pup joint and install single to flowhead. Pressure test from below against the swab valve and both wing valves to 9000 psi/15 mins. Bleed off pressure. Close lower master valve and pressure test from below to 9000 psi/15 mins.

2.1.4 **Lower Test String:** All downhole DST tools are to be pressure tested to 9000 psi/15 mins. Nitrogen charges should be added and observed for leakage. Value of nitrogen charges and rupture discs should be checked and recorded by the Fina test engineer.

All DST tools should be function tested and all functioning pressures noted. The PCT should be pressure tested from above to 5000 psi/15 mins and below to 9000 psi/15 mins.

The 7" positrieve packer should be made up with the safety joint and hydraulic jar. Install bullplugs with ½" NPT's at both ends and pressure test to 9000 psi/15 mins.

The HRT and PCT should be assembled and pressure tested to 9000 psi/15 mins.

2.1.5 **Test String Tubing:** Layout, strap drift, and tally all tubing. Visually inspect all box and pin ends paying particular attention to the VAM sealing surfaces on the 3-1/2" tubing. Note any joints to be rejected.

2.1.6 **7" Tie Back String:** Layout, drift, strap and tally all 7" P110 VAM casing joints. Visually inspect all box and pin ends, paying particular attention to the VAM sealing surfaces. Note any joints to be rejected.

2.2 WELL PREPARATION

After cementing of 5" liner, RIH with a 5" scraper immediately above a 4-1/8" bit and clean out cement from liner top and inside 5" liner. Also space out a 7" casing scraper so that it arrives as near as practical to the top of the 5" liner when the 4" bit reaches the landing collar depth. Tag top of cement. If plug was not bumped, drill wiper plug and shoe track cement out down to landing collar. POOH.

Run cement bond log through full length of 5"liner.

Run 7" RTTS packer on 3-1/2" tapered drill string. Set packer just above the liner top but not within 1m of a casing collar. Pressure test inside drill string to 4000 psi/10 mins. Close pipe ram and pressure test 9-5/8"/7" casing to 4000 psi/10 mins.

Open circulating sleeve and displace drill string to water so an underbalanced condition will exist. Do not displace more than 2000m of string to water. Close circulating sleeve and perform inflow test for 10 mins.

If liner lap leaks it will be necessary to run and set a 5" tie-back packer.

Open circulating sleeve and reverse out water from drill string. Close circulating sleeve and pressure test 5" liner and liner lap to 5000 psi/10 mins. Unseat and retrieve packer.

If the liner lap leaks, it will be necessary to run and set a 5" tie-back packer or alternatively, perform a remedial cement squeeze. Should a 5" tie-back packer be required it will first be necessary to clean out the tie-back extension. Space out 7" casing scraper and 5" tie-back extension mill so that 7" scraper is as close as practical to the liner top when the 5" mill bottoms out in the tie-back extension.

RIH and retrieve 9-5/8" wear bushing and flex joint bushing.

Rig up for the running of the 7" P110 VAM tie-back string. Run 7" TIW seal assembly on the bottom of 7" P110 VAM casing. Run all of 7" casing required except for top two joints. Make up LG-6 setting sleeve/TIW LN setting tool combination to the top of the casing and RIH on 5" HWDP. Ensure the drill pipe that will be placed in the BOPs is painted white to enable the space out to be measured.

Carefully stab the seal assembly into the liner tie-back extension. With the weight of the tie-back casing and running string compensated, close the 5" pipe rams on painted drill pipe. Open rams and POOH until the top of the 7" casing. Measure distance from top of 7" casing to the pipe ram marking on the painted drill pipe. Calculate remaining 7" casing (inclusive of 7" hanger pup joint) required to reach the top of the 9-5/8" casing hanger when the seal assembly has landed. Run remaining casing and make up 7" hanger/running tool. (Ensure lock-ring is installed.) RIH on 5" HWDP.

Space out to land seal assembly and casing hanger using cementing kelly. Carefully land seal assembly and note loss of casing string weight when 7" hanger lands on top of 9-5/8" hanger.

Close pipe rams and externally pressure test seal assembly and tie-back string to 4000psi/10min down choke line. Open rams and internally pressure test all casing to 5000psi/10min observing annulus for any signs of leaking.

Set packoff. Close rams and pressure test packoff to 4000psi/10min. Open rams and POOH with casing hanger running tool.

RIH with BOP test plug and pressure test BOPs as per programme. POOH with test plug.

RIH with 7" wear bushing and set same. POOH.

RIH with flex joint wear bushing and set same. POOH.

Run junk basket with gauge ring OD not less than the gauge ring OD on the 7" positrieve packer. Confirm top of 5" liner against driller's tally.

Make 6" bit/7" scraper runs as required to ensure the 7" positrieve packer can be set as near as practical to the top of the 5" liner.

2.3 RUNNING TEST STRING

This procedure assumes that:

- 7" and 5" liners have been scraped, cleaned out and pressure tested.
- 7" tie-back string has been set and pressure tested.
- All equipment, tools, BOP's, etc., have been successfully pressure tested.
- The 7" wear bushing is installed and locked.
- The E-Z tree and BOP space out has been confirmed.
- The dimensions of all items in the test string have been confirmed and the required fishing equipment is on board the rig.
- A recently calibrated surface chart recorder is installed to record annulus pressure throughout the test.

2.3.1 Make up Schlumberger TCP gun assembly. Conduct gun space out such that the packer will not be set within two metres of a casing collar. The distance from the top shot to the packer should be measured carefully and recorded.

Ensure that the packer slips are free to move and can be jayed and unjayed.

Install the gauges with start times and recording rates set as per the issued "Test Programme Supplement".

Pick up HRT/PCT assembly and install. Just before running in, check nitrogen precharge has not leaked.

2.3.2 Continue RIH with Schlumberger test tools. Install a radioactive tag in the R.A. sub between the second stand of drill collars and the secondary reversing valve (the lower SHORT).

Ensure the distance from the packer to the radioactive marker tag is measured and recorded.

2.3.3 After running the BHA, rig up to run 3½" VAM tubing. Each joint of 3-1/2" VAM tubing will be made up using the Weatherford JAM unit and the VAM connection pressure integrity checked using the Weatherford HOLD system.

Run one stand of tubing then fill the BHA with water.

Internal pressure test the BHA to 5000 psi/10 mins. against the closed PCT valve.

Continue RIH with test string making sure no rotation is applied whilst running in. Dope should be applied sparingly and only to the pin of each joint to avoid dope being squeezed into the bore of the test string.

Continue to fill the test string with water whilst RIH. Pressure test the string after every 30 stands to 5000 psi/10 mins. Ensure annulus is open to observe any leak. Pressure should be applied and bled off slowly to avoid shock loading of O-rings in test tools.

Once the 7" packer has entered the wellhead, do not run in faster than one stand/1½ mins.

Calculate space out to place the guns on depth with 1½ slip joints closed/1½ open when the packer is set. Allowance should be made for tubing stretch in the 3-1/2" tubing.

Pressure test the string immediately before installing the EZ-tree assembly to 5000 psi/10mins.

Ensure an accurate record of pressure tests is kept so that the cycle usage on the MIDRV can always be determined.

2.4 PACKER SETTING

2.4.1 RIH with landing string and land EZ-tree in wear bushing. Run CCL/GR correlation log to check space out.

If necessary, pull back to below the EZ-tree and add or subtract test string to obtain the correct space out, then pressure test entire string against PCT valve to 5000 psi/15 mins. Rerun EZ tree and landing string.

Change to 12m slings. Pick up flowhead complete with single/pup joint and coflexip. Connect a chiksan kill line while the flowhead is still on the rig floor. Install flowhead.

2.4.2 Land fluted hanger in wellhead and mark landing string at rotary table noting tide and heave. The weight of the flowhead should be compensated to take the load from the landing string.

Pick up and note the string weight. Move packer to the setting depth allowing for the closure of the HRT, jars, packer compression and 1½ slip joints. Set slips and rotate to the right one turn per 600m of packer depth. This should give ¼ turn at the packer. Mark across swivel connection with white paint to ensure connection does not back off.

Pull slips and lower the string. Observe loss of BHA weight below slip joints as they close whilst setting weight on the packer.

2.4.3 Run CCL/GR correlation log to ensure guns are on depth. Make any adjustment necessary.

2.4.4 Make up coflexip to Schlumberger choke manifold and chiksan to cement unit. Perform the following pressure tests:

(a) Kill line against closed wing valve to 5000 psi/15 mins.

(b) Flowhead against closed swab valve, Schlumberger choke manifold and closed lubricator valve to 5000 psi/15 mins.

(c) Entire string against PCT valve to 5000 psi/15 mins - then close EZ tree, bleed off pressure above to 1000 psi and observe for any leakage through the ball valve.

2.4.5 CLOSE PIPE RAMS ON EZ-TREE SLICK JOINT

2.5 TESTING WELL

2.5.1 Ensure all surface equiment is correctly lined up. All annular valves should be closed except choke valves connected to wellhead to allow monitoring of annulus pressure on the rig floor and enable annulus pressure to be bled off at the rig choke. The Schlumberger choke manifold should be closed.

2.5.2 Install Schlumberger slickline BOP's. Pick up and install gun-firing drop-bar toolstring, make up riser/lubricator sections and stuffing box. With the lubricator valve closed, pressure test via the kill line to 5000 psi/15 mins. Bleed off pressure, reopen lubricator valve.

2.5.3 Open the PCT valve by increasing the annulus pressure to 1500 psi. Note the volume pumped. Use the rig pumps to apply pressure to the annulus.

The monitoring of pressures at the driller's console is more convenient and the pressures applied can be capably handled by the rig pumps.

Run drop bar on Schlumberger slick line through wireline lubricator, to fire guns. Observe for signs of guns firing.

Retrieve drop bar and slick line.

IF GUNS FAIL TO FIRE a decision will be made whether to pull and re-run the string and TCP guns, or to drop off the guns and perforate the test interval using thru'-tubing guns.

2.5.4 Open the well and flow to clean up. Clean up should be at as high a rate as possible, paying attention to any possibility of sand or water production tendencies.

If the well fails to clean up or achieve a satisfactory flow rate, consideration will be given to acidising, procedure for which will be incorporated in the test programme supplement.

If the test interval has low permeability or the initial flow was adequate to justify surface read out (SRO) and no plugging or mechanical damage is suspected, the MUST actuator can be utilised.

2.5.5 Ensure that the wireline tension device is accurately calibrated and that the cable weak point rating is adequate to withstand the tension used to operate the MUST actuator.

Close well in at PCT valve. **Do not bleed down tubing pressure.** RIH and latch MUST actuator into MUST barrel at top of testing BHA. Pull up on wireline to confirm tool is latched and to shut tool. Re-open PCT valve. Bleed off some tubing pressure to confirm MUST is closed and holding pressure.

Record stable shut in pressure via MUST tool.

Close the PCT valve to equalise MUST tool. Open the MUST tool then pressure up the annulus to 1500 psi to open the PCT valve. Open the well at surface for main flow, allow to stabilise and perform 12 hour flow test through separator.

Whilst flowing, gather the following samples:

6 sets separator oil and gas companion samples
3 x 45 gals dead oil
3 x 5 gals produced water

If possible, reduce choke size such that FTHP is above the calculated bubble point, then gather 6 x 600cc monophasic oil upstream of the Schlumberger choke manifold.

At end of main flow, shut well in at the MUST, then at surface, for main build up. At end of main build up, close well in at PCT valve, unlatch and retrieve MUST tool.

2.5.6 If programmed, rig up bottom hole samplers on Schlumberger slick line and carry out sampling requirements as stated in the test programme supplement.

2.6 KILLING WELL

2.6.1 Open MIDRV and reverse circulate tubing contents to the burners ensuring pump pressure is below that required to open the PCT valve. Catch samples if required. When clean returns are observed at the burners, divert to mud pits. Continue to reverse circulate and condition brine checking density and gas content.

2.6.2 Open the PCT valve and bull head the string contents below the MIDRV plus the casing contents between the packer and perforations, into the formation. Close PCT valve. Open the lower SHORT.

2.6.3 Open pipe rams and observe annulus. Pick up string to open HRT by-pass ports and equalise across packer. Continue to pick up to unseat packer. If jars are required to pull packer free, maintain 50,000lb overpull until jars hit. Jars are recocked by setting down weight of the BHA.

2.6.4 With packer unseated, observe that well is dead and that there are no losses. Rig down surface equipment and lay out flowhead. POOH with upper test string laying down or racking back as required. Do not exceed one stand per 2 minutes until the packer is above the wellhead. Layout test tools and guns. Process gauges.

2.6.5 Proceed with suspension or abandonment as per Petrofina issued programme.

APPENDIX A

SCHLUMBERGER TESTING

TOOL SPECIFICATIONS FB-DST

E-Z Tree

	150000 psi NOMINAL (Integrated Hydrate Inhibitor Injection System)	10000 psi NOMINAL
. Working Pressure	15000 psi H_2S Service	10000 psi H_2S Service
. Test Pressure	22500 psi	15000 psi
. Working Load	467000 lbs @ 0 psi 278000 lbs @ 15000 psi	425000 lbs @ 0 psi 300000 lbs @ 10000 psi
. Yield Tensile Strenght	700000 lbs	635000 lbs
. Minimum ID	2.25"	3"
. Maximum OD	10"	10.87"
. Overall Length with Saver Sub without Saver Sub	 118.0" 108.0"	 106.18" 96.2"
. Length of Valve Assembly	45.9"	41.5"
. Weights:		
- Valve Assembly	420 lbs (Ref. # 88 054)	420 lbs (Former Ref. # 87 676) new Ref. # 88 680 H_2S # 88 692 non H_2S
- Hydraulic Assembly	1200 lbs (Ref. # 88 090)	1215 lbs (Former Ref. # 87 487) new Ref. # 88 674 H_2S # 88 691 non H_2S
Connections	4 1/8 - 4 - 60 Stub	4 1/2 - 4 Stub ACME

. Torsional Shear Release 1250, 2500, 3750, 5000, 7500 lb/ft according to Shear Pins used.

RETAINER VALVE

	15000 psi - RV # 88 223	10000 psi - RV former # 87 760 new # 88 694
. Working Pressure	15000 psi H_2S	10000 psi H_2S
. Test Pressure	22500 psi	15000 psi
. Working Load	467000 lbs @ 0 psi 278000 lbs @ 15000 psi	425000 lbs @ 0 psi 300000 lbs @ 10000 psi
. Yield Tensile Strength	700000 lbs	635000 lbs
. Minimum I.D.	2.25"	3"
. Maximum O.D.	9.0"	9.0"
. Overall Length	63.50" including Saver Sub (9.75")	58.87" including Saver Sub (10.07")
. Weight	850 lbs	710 lbs
. Top and Bottom Connections	4 1/8 - 4 - 60 Stub	4 1/2 - 4 Stub ACME

LUBRICATOR VALVE

	15000 psi - LV # 88 176	10000 psi - LV former # 87 735 new # 88 693
. Working Pressure	15000 psi H_2S	10000 psi H_2S
. Test Pressure	22500 psi	15000 psi
. Working Load	467000 lbs @ 0 psi 278000 lbs @ 15000 psi	425000 lbs @ 0 psi 300000 lbs @ 10000 psi
. Tensile Strength	700000 lbs	635000 lbs
. Minimum I.D.	2.25"	3"
. Maximum O.D.	9.0"	9.0"
. Overall Length	72" including Saver Sub (9.75")	68.44" including Saver Sub (10")
. Weight	1000 lbs	885 lbs
. Top and Bottom Connections	4 1/8 - 4 - 60 Stub	4 1/2 - 4 Stub ACME

SLIP JOINT

Specifications

Description:	5" X 2-1/4" Slip Joint Model "B" (SLPJ-C)
Assembly No.	56050
Service:	H_2S and Acidizing
Tensile Strength at Minimum Yield:	378,000 lbs.
Torsional Strength at Minimum Yield:	10,000 ft-lbs.
Maximum Recommended Make-Up Torque:	4,000 ft-lbs.
Maximum Working Pressure Differential (Burst and Collapse) @ 67% Minimum Yield:	10,000 psi
Top Connection:	3-1/2" API IF Box
Bottom Connection:	3-1/2" API IF Pin
Stroke:	5' (60 inches)
Length:	23'6" to 28'6"
Weight:	1,010 lbs.

MUST

a) Valve Assembly:

Dimensions:	Length:	3.1 m
	Maximum O.D.:	5" (127 mm) or 5 1/4" (133 mm)
	Minimum I.D.:	2 1/8" or 2 1/4"
	Flow passage area:	3.98 $\text{in}^2 \equiv$ Ø 2 1/4"
Pressure ratings:	Collapse: ΔP: 7000 psi at yield 5" Sleeve 10000 psi at yield 5 1/4" Sleeve	
	Shut-in maximum pressure: 10000 psi (across Flapper)	
Tensile Strength:	360000 lbs at yield	
Torsional Strength:	20000 ft.lbs at yield	
Service:	H_2S	
Top Connection:	3 1/2" IF BOX	
Bottom Connection:	3 1/2" IF PIN	
Weight: 215 kg		

b) Pressure Gauge/Actuator:

Gauge - CRG or TPT (with Modified Bellows Housing/Buffer-Tube Housing)

Valve Actuator - Maximum O.D.: 58 mm (2 1/4" VERSION)
54 mm (2 1/8 VERSION)

Length: 1.4 m

Working Pressure: 10000 psi

Description:	5" x 2-1/4" Multi-ID Reversing Valve (MIRV-C)
Assembly No.:	57521
Service:	H_2S and Acidizing
Tensile Strength @ Minimum Yield:	380,000 lbs.
Strength at 67% of Minimum Yield:	255,000 lbs.
Torsional Strength @ Minimum Yield:	10,000 ft-lbs.
Maximum Recommended Make-Up Torque:	4,000 ft-lbs.
Maximum Working Pressure Differential: (Burst and Collapse) @ 67% Minimum Yield	10,000 psi
Top Connection:	3-1/2" API IF Box
Bottom Connection:	3-1/2" API IF Pin
Length:	9.54 ft.
Weight:	440 lbs.

JAR Specifications

Description:	5" x 2-1/4" HFR Jar (JAR-C)
Assembly No.:	53530
Service:	H_2S and Acidizing
Tensile Strength after Jarring @ 100% of Minimum Yield:	272,000 lbs.
Maximum Recommended Jarring Pull @ 67% of Minimum Yield:	52,000 lbs.
Maximum Recommended Jarring Pull @ 100% of Minimum Yield:	78,700 lbs.
Torsional Strength at Minimum Yield:	7,000 ft-lbs.
Maximum Recommended Make-up Torque:	4,000 ft-lbs.
Maximum Working Pressure Differential: (Burst and Collapse @ 67% Minimum Yield)	10,000 psi
Top Connection:	3-1/2" API IF Box
Bottom Connection:	3-1/2" API IF Pin
Length:	6.50 ft.
Weight:	322 lbs.

Tool Name	15K 5" X 2.40" Single Shot Hydrostatic Overpressure Reversing Tool ("SHORT")
Assembly No.	77014
Service	H2S and Acid
Maximum Working Pressure	15,000 psi Differential Burst and Collapse @ 80% Minimum Yield
Temperature	350 deg. F
Tensile Strength	424,000 lbs at minimum yield
Torsion Strength	10,800 ft-lbs
Maximum Recommended Make-up Torque	4,000 ft-lbs
Top Connection	3 1/2 API IF Box
Bottom Connection	3 1/2 API IF Pin

METROLOGICAL CHARACTERISTICS

O.D. - 5.00" I.D. - 2.40"

Length - 2'9"

Weight - 150 lbs

Specifications

Description:	5" x 2-1/4" Fullbore Pressure Controlled Tester (PCTV-C)
Assembly No.:	58136
Service:	H_2S and Acidizing
Tensile Strength at Minimum Yield:	380,000 lbs.
Torsional Strength at Minimum Yield:	10,000 ft-lbs.
Maximum Recommended Make-Up Torque:	4,000 ft-lbs.
Maximum Working Pressure Differential (Burst and Collapse) Based on 67% Minimum Yield:	10,000 psi
Maximum Opening Pressure Differential Across Ball Valve from Below:	5,000 psi
Maximum Static Pressure Below Ball:	10,000 psi
Maximum Static Pressure Above Ball (H_2S Valve Cage - 58238):	7,500 psi
Maximum Static Pressure Above Ball (Non-H_2S Valve Cage - 59136):	10,000 psi
Top Connection:	3-1/2 API IF Box
Bottom Connection:	4.37"-4 Stub Acme Pin
Length:	19.43 ft. + 3.53 ft. for each extra nitrogen chamber
Weight:	930 lbs.

HRT

Specifications

Description:	5" x 2-1/4" Fullbore Hydrostatic Reference Tool (SHRT-C)
Assembly No.:	57625
Service:	H_2S and Acidizing
Tensile Strength at Minimum Yield:	380,000 lbs.
Torsional Strength at Minimum Yield:	10,000 ft-lbs.
Maximum Recommended Make-Up Torque:	4,000 ft-lbs.
Maximum Working Pressure Differential (Burst and Collapse) Based on 67% Minimum Yield:	10,000 psi
Top Connection:	4.37"-4 Stub Acme Box
Bottom Connection:	3-1/2" API IF Pin
Length:	5.58 ft.
Weight:	230 lbs.

TABLE 11-1 POSI-TEST SPECIFICATIONS

	POSI-TEST PACKER						
Tool Size:	6-5/8" - 7-5/8"	6-5/8" - 7-5/8"	6-5/8" - 7-5/8" (w/o bypass)	6-5/8" - 7-5/8"	8-5/8" - 9-5/8" (w/o bypass)	8-5/8" - 9-5/8"	10-3/4" - 13-5/8"
Assembly No.:	49277	52518	74892	53508	49278	54009	49694
Casing Range:	6-5/8", 20-24# Thru 7-5/8", 20-26.4#	6-5/8", 20-24# Thru 7-5/8", 20-26.4#		6-5/8", 20-24# Thru 7-5/8", 20-26.4#	8-5/8", 40-49# Thru 7-5/8", 20-26.4#	8-5/8", 40-49# Thru 9-5/8", 29.3-40#	10-3/4", 60.7-65.7# Thru 13-3/8", 45-61#
Service:	Standard	H_2S	Standard	H_2S			
Body OD:	5.50"	5.50"		5.50"	6.81"	6.81"	9.00"
Mandrel ID:	2.00"	1.78"	2.40"	2.25"	2.50"	2.25"	3.00"
Length:	4'6"	4'8"		4'1"	5'5"	5'5"	6'5"
Connections:							
Up (Box)	2-7/8" EUE	2-7/8" IF		3-1/2" IF	3-1/2" EUE	3-1/2" EUE	4-1/2" FH
Down (Pin)	2-7/8" EUE	2-7/8" EUE		2-7/8" EUE	3-1/2" EUE	3-1/2" EUE	3-1/2" EUE
Standard Mandrel:							
Working Pressure	9,800	—			8,200		11,100
Yield Pressure	14,600	—			12,200		16,600
High Pressure Mandrel:							
Working Pressure	15,400	11,700		16,800	14,000	15,700	16,600
Yield Pressure	23,000	17,500		25,00	20,900	23,500	24,800
Tensile (lb.):							
Working	111,300	122,800		169,000	231,800	258,000	188,500
Yield	166,100	183,300		252,000	345,900	385,000	281,300

APPENDIX B

TORQUE/TURN SPECIFICATIONS

Casing/Tubing Type	Reference Torque	Minimum Torque	Maximum Torque	Minimum Turns	Maximum Turns
7" VAM 29ppf P110	1140	8460	10340	0.1	1.2
3-1/2" VAM 12.7ppf L80	510	5100	6900	0.1	0.8
4-1/2" PH6 19.2ppf L80	750	7500	9370	0.0	0.8

PETROFINA EXPLORATION AUSTRALIA S.A.

ANEMONE-1A

TESTING PROGRAMME

SAFETY PROCEDURES

PREPARED BY: RICHARD CORDIEZ, LUIS REMISIO

CHECKED BY: ANDREW PATERSON

APPROVED BY: RICHARD CORDIEZ

ANEMONE-1A - TESTING PROGRAMME

SAFETY

1. PREPARATORY WORK

1.1 A houskeeping inspection shall be made and all loose or combustible material placed in a safe area. Working areas around separators, heaters and flare lines are to be kept clear and have unobstructed access at all times.

1.2 Check that only electrical equipment suitable for hazardous areas is used in the well test area(s).

1.3 All high pressure piping is to be snubbed or securely anchored.

1.4 Working areas around the wellhead and separator/heater should be kept clear and there must be unobstructed access to these areas at all times.

Only authorised personnel are permitted in the vicinity of the derrick floor, pumphouse roof, and separator/heater area.

Cranes must not be operated over or in the vicinity of separator, tanks or lines.

1.5 Adequate killing fluid of the correct weight must be available.

Drill fluid should be conditioned for the test.

Killing lines from the Halliburton pump should be as direct as possible.

All valves should be trimmed and the non-return valve checked to ensure that it is not leaking.

1.6 All testing and kill equipment must be satisfactorily pressure tested with a pressure above the maximum pressures that can be anticipated during the operation (refer Testing Programme dated 8 September 1989).

1.7 The Petrofina Wellsite Supervisor shall hold a pre-test meeting. All persons participating in the test should be present. The programme, as well as safety practices, should be discussed.

1.8 An "Abandon Rig and Fire Drill" to be held prior to testing operations to make sure all production testing personnel are fully acquainted with the procedures to be followed.

1.9 The burner ignition system should be checked and an emergency ignition system is to be available.

1.10 Welding or cutting may only take place when authorised by a "Welding Permit" which is obtained from the Zapata Toolpusher and which is to be signed by both the Zapata Toolpusher and Petrofina Drilling Supervisor, and not at all during flow periods.

1.11 Before commencement of perforating operations, the emergency fire fighting system should be under pressure and maintained so for the duration of the test.

Fire fighting equipment and extinguishers in the well test area are to be inspected and in operating condition.

1.12 Notify standby boat and all approaching helicopters when flaring is about to commence.

While flaring gas/oil, standby boat(s) will keep anchors up and will remain in vicinity of flare and be ready to put out any fire on the water.

1.13 Gas explosion meters, a hydrogen sulphide detector and portable breathing apparatus sets must be available. Where required, H_2S detectors and breathing apparatus shall be installed on the rig floor, mud pit area, and well test area. All the above shall be checked before commencing DST operations. As soon as possible the gas must be checked for the presence of hydrogen sulphide by the Drilling Engineer.

Periodic gas detection checks will be made under the supervision of the Drilling Engineer in all compartments while the well is flowing i.e. (Engine room, Pump room, Mud Chemical room, Ballast Pump room, Living quarters) - any positive indications are to be reported immediately to the Zapata Toolpusher.

1.14 The Drilling Supervisor shall supervise Schlumberger or the wireline operator in opening or closing the wellhead valves during perforating or wireline operations at times specified by the wellsite reservoir engineer.

1.15 The Schlumberger operators shall be on duty at all times from the time that the well is perforated until the test is concluded.

1.16 All contractor personnel not connected with the test are to leave the rig.

1.17 Any spillage of flammable liquids must be cleaned off decks and all combustible materials including oxygen and acetylene bottles stored at a safe location prior to testing.

1.18 A Schlumberger operator will remain at the SSTT control manifold during testing.

2. TIMING - TESTING OPERATIONS

2.1 Prior to starting a DST, notify the proper governmental agencies.

2.2 Opening up a well to clean-up, or initial start up of a separator, must be carried out in daylight; production testing may then continue into the night.

2.3 Blowing off operations may be carried out under the following conditions:

(a) Daylight

(b) Semi Submersible heave of less than 3 feet

(c) Weather suitable for rescue operations

(d) Wind force sufficient to carry gases away from the rig

(e) Shipping and aircraft are warned to stay clear during the test period

(f) Standby boat(s) advised that this operation is to take place.

2.4 An individual shall be designated to monitor the casing pressure and hole volume using trip tank while test tools are open.

2.5 Check the weather forecast. Do not perform the DST during an electrical storm.

Stop testing if any of the following danger signals occur:

a) Pressure approaches the pressure rating of any of the equipment used.

b) Surface equipment becomes overloaded by excessive production.

c) Annular pressure indicates communication between the annulus and test string.

d) Gases reach explosive levels in critical areas, or poisonous gases are produced.

e) Vessel motion approaches unsafe conditions.

f) Sand production above safe criteria.

NOTE: Appendix 1 - Drilling Contractor (Zapata) Safe Plan of Action During DST; Station Assignments and Rig Equipment Preparations for Well Testing

Appendix 2 - H_2S detected during DST

Appendix 3 - Sand production criteria

Appendix 4 - Schlumberger Explosives - Field Safety Procedures

SAFE PLAN OF ACTION DURING DRILL STRING TESTING

This plan contains the steps to be taken to reduce the risks inherent in drill string testing. These risks arise from bringing oil and/or gas, while under pressure, to the surface for tests.

1. A meeting is to be held with all personnel directly involved with the testing prior to opening the well.

2. Department Heads will be briefed on operations scheduled by the Toolpusher. These supervisors are responsible for briefing their hands accordingly.

3. All hands should be familiar with the use of self contained breathing apparatus and know their location.

4. All fire fighting equipment shall be checked and fully operational.

5. Captain/RSTR will ensure that all hands are fully briefed on capsule assignments.

6. Captain and Operator Representative will check the standby boats' fire fighting and anti-pollution capability.

7. If an oil spill is sighted, immediately notify the Toolpusher/Captain. They will notify the Operator Representative.

8. Captain/Operator Representative will ensure that the standby boat is close by and upwind.

9. Radio Operator will notify Operator Representative and Captain of incoming helicopters; to be redirected if necessary.

10. All radio transmitters and cathodic protection systems will be shut down while loading perforating guns and will stay secured until Operator Representative grants permission to resume transmitting.

11. Radio Operator to notify standby boat and ensure that it mans a radio around the clock, starting when the well is perforated and ending when it is plugged.

12. Appropriate personnel to be instructed on the Emergency Shutdown System (ESS).

13. Chief Engineer/RSTR check out fixed and portable H_2S and combustible gas detectors.

14. RSTR will roam the entire rig periodically and take H_2S and combustible gas readings in all areas of interest, while also ensuring that operating procedures and safety rules are being adhered to.

15. In the event the H_2S alarm sounds, FOLLOW THE COMBUSTIBLE GAS CONTINGENCY PLAN. The alarm for H_2S is a yelping sound and an amber flashing light.

    Note: The Combustible Gas Contingency Plan is posted in conspicuous locations on the bulkheads in the passageways and in other areas on the rig.

16. Captain/Barge Engineer are responsible for the organisation and briefing of the Emergency Fire Fighting Team (see attached). The Emergency Team will be on station on initial opening of the well and at the beginning of each tour; at other times team members will be on call at the Captain's discretion.

17. There will be no welding, cutting or grinding throughout the testing programme; Welder will ensure that the power supply to the welding unit is turned off, all gas bottles are in allocated storage area and turned off, and pipe cutting machine is padlocked.

18. Chief Engineer will ensure that three EMDs are on line for initial opening of the well.

19. All lines used for testing shall be colour coded to indicate the contents.

20. All hands in the testing area or on the drill floor during a flow period or shut-in period should have a valid reason for being there. Casual traffic or loitering is not permitted in these areas.

21. There will be NO SMOKING in any area outside the Accommodation. This includes the Coffee Break Room when the well is on flow.

22. All lines, valves, and related testing equipment shall be pressure tested to their working pressures.

23. The portside access stairway to the Drill Floor will be "out of bounds" to all personnel except those directly involved with the testing.

24. All gas tight and water tight doors will be kept closed, except for passage, at all times during the testing programme, without exception.

25. Stay clear of burner booms; the flare could be shifted at any time from one side to the other.

26. Do not turn any valves or beat on any lines without contacting testing company personnel.

27. Cranes are not to be operated over flow lines or test equipment unless authorised by Toolpusher/Operator Representative.

28. All pre-cement vents to be closed and barite tank pressured up during flow periods.

29. All portholes in messhall will be kept closed during flow periods.

30. Derrickman is to ensure he can transfer kill mud to the Halliburton unit at short notice.

31. Driller and Drill Crews to be briefed on "Emergency Shut-in Procedures".

32. The oncoming crew at tour change are to be fully briefed on operations projected for their shift.

33. Report anything out of the ordinary to the Toolpusher or Captain.

34. Drillers will monitor hole level using trip tank to check for leaks in BOP or test string.

35. The diverter packer will be installed whenever practical.

36. All personnel will maintain good housekeeping in their respective areas.

37. A copy of the test programme will be available in the Toolpusher's office for Drillers and Department Heads.

38. The Captain has the ultimate responsibility for the vessel.

39. The port crane will be isolated electrically during testing.

<u>Note</u>: Major precautions/procedures, e.g. "well control" will be discussed with the specialist personnel concerned.

STATION ASSIGNMENTS FOR WELL TESTING

CAPTAIN	IN CHARGE, IN CONTROL ROOM
CHIEF MATE	TOP OF PILOT HOUSE
BALLAST CONTROL OPERATOR	MAIN DECK: DEPLOY FIRE FIGHTING EQUIPMENT AS DIRECTED BY CHIEF MATE
AB	MAN DRY CHEMICAL HOSE
AB	MAN FOAM HOSE
MECHANIC	MAN CHOPPER DECK WATER CANNON: ACTIVATE FOAM & DRY CHEMICAL ON ORDERS FROM CHIEF MATE
CRANE OP & TWO ROUSTABOUTS	DON FIRE SUITS AND MAN HOSE STATION #12
WELDER, AB, ONE ROUSTABOUT	DON FIRE SUITS AND MAN HOSE STATION #7
CHIEF ENGINEER	IN CHARGE, SCR ROOM
ELECTRICIAN	ASSIST CHIEF ENGINEER
DRILL CREW	AS DIRECTED BY TOOLPUSHER
OPERATOR & THIRD PARTY PERSONNEL	AS DIRECTED BY OPERATOR REPRESENTATIVE
OTHER ON TOUR HANDS	NORMAL STATIONS
OFF-TOUR HANDS	REPORT TO NORMALLY ASSIGNED STATIONS ON SOUNDING OF GENERAL ALARM

EQUIPMENT PREPARATIONS FOR WELL TESTING

- ONE FIRE PUMP ON THE LINE
- SCBAs POSITIONED AS DESIRED BY TEST SUPERVISOR & TOOLPUSHER
- PORTABLE FIRE EXTINGUISHERS POSITIONED AS DESIRED BY TEST SUPERVISOR
- DELUGE SYSTEM MANUAL VALVES OPEN
- LEEWARD ANCHORS READY FOR SLIPPING
- WINDWARD ANCHORS READY FOR HAUL-IN
- CAPSULES READY FOR LAUNCHING
- FIRE HOSES & APPLICATORS RIGGED ATOP AFT WINCH HOUSES
- COVER REMOVED FROM ESS-7 BOX ON BRIDGE
- BOX GIRDERS UNLOCKED
- TWO GEL BLANKETS POSITIONED CLOSE WINDWARD OF TEST AREA

HYDROGEN SULPHIDE DETECTED DURING DST

- If necessary, shut in the well until sufficient positive pressure self contained breathing apparatus are available to allow the work to proceed safely.

- Monitor hydrogen sulphide levels at the drill floor and adjacent to the burner boom in use, flowlines, testing equipment area.

- Designate a safe breathing area (SBA) and instruct all personnel to report to this SBA if a gas alarm is declared.

- Advise the standby boat and all marine vessels to proceed to upwind of the rig.

- Advise the helicopters base of the situation

- Advise Petrofina Melbourne Office and shore base and also the drilling contractors office of the situation.

- If conditions allow, flow the well continually checking the Hydrogen Sulphide level in the well fluids. If this does not drop below 160 ppm within 30 minutes, shut in the well and designate the well as a known hydrogen sulphide well and proceed accordingly.

- When pulling and breaking out DST tools rig floor personnel should wear BA sets until proven safe to return to normal operations.

APPENDIX 3

SAND PRODUCTION CRITERIA

1. SAND PRODUCTION CRITERIA FOR OIL WELLS

a) The recommended maximum allowable sustained sand production concentration is no more than 50 lbs/1000 bbls (less than .02 per cent). This value is too low to be accurately measured during drill stem test operations without the aid of additional equipment. Therefore, regular checks must be made on erosion probes or on the choke to monitor for the effects of sand production. An eroding choke will react as if the choke is being increased, resulting in a decreasing wellhead pressure along with increasing flow rate. For the purpose of estimation, 1% sand is roughly equivalent to 500 lbs sand per 1000 bbl of production.

b) Sand detection probes will be used to indicate sand production in relative terms. These probes cannot quantify concentrations. Sand probes are useful to monitor relative changes following changes in the choke setting.

2. MAXIMUM SAND PRODUCTION CRITERIA IN GAS SANDS

a) The maximum allowable sand production to avoid erosion of the surface equipment during gas zone testing cannot be determined solely based on lbs/mmscfd. It is advised to take regular ultrasonic wall thickness checks on surface equipment during the flow test if sand production is sustained.

b) Sand detection equipment such as "SANDEC probes" only give an indication if sand is produced, but cannot quantify the concentration clearly. Especially when condensate is produced, readings can be confusing. Regular checks on erosion probes and on the choke are good erosion identifiers.

EXPLOSIVES Field Safety Procedures

Schlumberger

1. Hold consultation with client if possible.
2. Check well area for hazards and correct when necessary.
3. Hold spot safety meeting.
4. No smoking except in designated areas. Smoking materials must be stored when leaving these areas.
5. Rig up cable. Remove rig wiring that might contact cable.
6. Outside preparation before attaching an explosive device:
   - a. Check voltage between the rig, casing and cable armor. Eliminate at source if present.
   - b. Install safety grounding straps and connect to unit.
   - c. Install Casing-to-Rig Voltage monitor.
   - d. DO NOT PROCEED WITH OPERATIONS IF RESIDUAL VOLTAGE IS IN EXCESS OF 0.25 V.
   - e. Put out sign reading "Danger – Explosives – Turn Off – 2 Way Radios – Radio Phones".
   - f. Turn off all radio transmitters within 1000' of the well. Radios must be disabled such that an incoming call does not activate the transmitter.
   - g. If the well is within 2-1/2 miles of a large transmitter (radio or TV station), or if all well-site transmitters cannot be turned off, contact your Division Engineer or Unit Technical Manager.
   - h. On water operations, install the positive grounding cable from truck to barge or CSU to generator skid.
   - i. WARNING - "HOTCHECKS" (passing current through cable, head and CCL) are permitted only on the condition that the cable head is brought INTO the logging cab.
7. Instrument cab preparations for explosive operations:
   - a. Disconnect the survey AK plug.
   - b. Turn off all USP switches and power down CSU.
   - c. Turn off main circuit breakers.
   - d. Turn off AC generators. (On units with generator driven by main engine, pull "Main Disconnect" switch of the Power Distribution Panel to "OFF". Also turn off exciter field switch.)
   - e. Turn off safety switch and remove key.
8. Procedure for attaching any explosive device (such as CST, FIT, FT, BST, Perforating Guns, etc.) to the cable. Refer to step 9 for arming procedures.
   - a. Verify that Casing-to-Rig Voltage Monitor is reading less than 0.25 V.
   - b. Clear line of fire of all personnel.
   - c. Attach explosive device to the head or collar locator. The individual performing this operation must have the safety switch key in his possesion at this time and retain it until the tool is 100' below ground level.
9. Arming perforating guns (ONLY THE ENGINEER MAY ARM A GUN)
   - a. If a thunderstorm threatens to arrive on location within 30 minutes, do not arm the gun.
   - b. The cable must be attached to the gun string before the bottom gun is armed. Guns that are not electrically connected to the cable when the head is attached (multi-carrier selective switching systems) may be armed immediately prior to their use then attached to the cable.
   - c. Confirm that line of fire is still clear.
   - d. Check gun wires for sparking.
   - e. Trim gun wires and trim Primacord.
   - f. Insert blasting cap in Blasting Cap Safety Tube.
   - g. Connect blasting cap wires to gun lead wires.
   - h. Remove blasting cap from Safety Tube and crimp to Primacord, using Blasting Cap Crimping Pliers, or insert blasting cap in booster holder.
   - i. Prepare gun for water-tight seal.
10. Proceed into well.
11. Operational procedure in hole:
    - a. At or below 100' below ground level, turn on safety switch, restore AC power, etc. Proceed in hole.
    - b. Tie in, position gun, and shoot.
    - c. Come out of hole. At or below 100' below ground level, prepare the instrument cab as for explosives operations (7a-e and 9a).
12. All guns must be safely relieved of any trapped pressure immediately upon removal from well according to instructions in Perforating FOM.
13. If the gun(s) did not fire, immediately disarm the lowermost gun (using the procedure prescribed in the Perforating FOM) before the gun is disconnected from the cable.
14. After the job, check to see that all equipment brought to the well is loaded on the truck.
15. Repack all unused blasting caps in the BC Carry case. Police the ared for Primacord remnants, unused on misfired charges, etc. and pack them in the explosives remnant box.

P 294169 Rev B. April 82

ANEMONE-1A

TESTING PROGRAMME

SUPPLEMENT NO. 1

Prepared By: L. Remisio

Approved By: R. Cordiez

anlasupp.doc
13 September 1989

1. **Perforation Intervals**

The proposed intervals to be perforated for the first run are as follows:

Top Set:	From 4599m to 4618m (19m)
Bottom Set:	From 4629m to 4652m (23m)
Guns:	Tubing conveyed, perforating guns. 3-3/8" TCP 22gr HM 6 SPF 60° phasing

Total Length of the Gun: ± 53m

Reference Log: GR from the DLL/SDT/GR/MSFL run - 3 September 1989

2, **Gun Drop Sub Placement**

Depending on the testing results of the above intervals, consideration will be given to test another interval between 4525m and 4575m.

In order to allow any interval between 4525m and 4575m to be perforated at a later stage without pulling the testing string by using 1-11/16" Enerjet guns (4 spf-zero phasing) the gun drop sub must be placed above 4520m (± 5m above the top of reservoir).

Note: This set up will not allow to re-perforate the intervals 4599m-4611m and 4629m-4652m with 1-11/16" Enerjet in case of misfire of tubing conveyed guns. Test string will have to be pulled to check the guns.

3. **Proposed Drawdown**

In order to have a maximum drawdown on the formation and still be within the safety limits of the drawdown across the testing packer (maximum drawdown recommended = 5000 psi), displace tubing contents with diesel. Assuming a diesel cushion of 4100m the maximum drawdown imposed on the packer at the opening of the test string will be:

(1.52 SG - 0.87 SG) x 4100m = ± 3900 psi.

The maximum drawdown imposed on the formation at 4600m assuming hereafter reservoir pressures will be:

Reservoir Pressure E.M.W. (S.G.)	**Reservoir Pressure @ 4600m (psi)**	**Drawdown Imposed w/4100m of Diesel Cushion (psi)**
1.15	±7500	±1500
1.20	±7830	±1830
1.25	±8160	±2160
1.30	±8490	±2490
1.35	±8820	±2820
1.40	±9150	±2490
1.45	±9480	±2820

Note: By using Fresh Water instead of Diesel the drawdown will be decreased by 750 psi.

4. **Duration of Flowing, Shut-in Periods and Sampling Requirements**

A supplementary programme will be issued and adapted as required to cover all aspects of Reservoir Engineering related with the testing operations.

General guide lines on the lengths of flowing and shut-in periods are given below:

The drill stem test will normally be divided into four periods:

1. Initial flow
2. Initial shut-in
3. Final flow
4. Final shut-in.

Unprogrammed choke size changes should be avoided where possible as they make analysis of the rate/pressure data difficult if not impossible.

The following are some recommended times which can be used when specific information about the potential test zone is unknown.

1. **Initial Flow Period**

The purpose of the initial flow period is to allow the pressure in the wellbore below the packer to decrease to a value less than the formation pressure. Therefore, the duration of the initial flow period should be short. An initial flow period of 5 to 10 minutes will accomplish the necessary pressure reduction. The full 10 minute initial flow period should be used only when testing very tight formations. The presence of any detectable blow is an indication that the initial flow period has been adequate.

The time required should be stipulated by the Wellsite Reservoir Engineer.

2. **Initial Shut-In Period**

The pressure build up during initial shut-in is slower than the pressure decline during the initial flow. Thus, the minimum initial shut-in time should be longer than the initial flow time. Generally, permeability decreases with depth. At depths below 4000m and in low permeability wells 120 minutes is considered as being the minimum time for initial shut-in. If the zone to be tested has very low permeability, extra time is required.

3. **Final Flow Period**

The purpose of the final flow period is to determine the producible fluid content and the rate of flow. In some low pressure reservoirs the weight of the fluid column will balance the formation pressure and prevent further entry of fluids.

Therefore, flow period need not extend beyond the time that the well continues to flow.

4. **Final Shut-In Period**

The purpose of the final shut-in period is to obtain formation pressure build-up data to determine well bore damage, permeability, and to check for pressure depletion. This is done by comparing the pressure data from the final shut-in period with the initial reservoir pressure. The final shut-in period normally should be be at least one and a half (1-1/2) times the final flow period. <u>Do not reverse out during final shut-in</u>.

5. Use of MUST

If the test interval has low permeability or the initial flow was adequate to justify surface read out (SRO) and no plugging or mechanical damage is suspected, the MUST actuator can be utilised.

ANEMONE-1A

TESTING PROGRAMME

SUPPLEMENT NO. 2

Prepared By: D. Sousa

Checked By: L. Remisio

Approved By: R. Cordiez

anlasupp.doc
19 September 1989

1. INTRODUCTION

Limited data is available to estimate the reservoir pressure, nature of reservoir fluids and petrophysical rock properties to design the DST.

From the mud density used to drill the reservoir section, the initial pressure is estimated between 7500 psi and 9500 psi at 4600m.

The transient pressure testing of the proposed intervals (4599m to 4618m and 4629m to 4652m) will consist of:

- First flow/shut-in period to obtain the initial pressure.
- Second flow/shut-in period to clean up the well and eventually to run the MUST valve actuator
- Depending on production fluids the test will proceed as follows:

Oil Case - A long drawdown/build-up test. The duration will be decided, at well site by the Reservoir Engineer as per the surface read out pressure and production data.

Bottom hole samples are to be obtained with the well flowing at low stabilized rate.

Gas or Gas Condensate Case - an increasing rate isochronal test (3 rates) followed by a stabilised drawdown is to be carried out. Surface gas and condensate samples are to be collected at the end of the flow period.

2. PROGRAMME

This is a tentative programme subject to modification at well site depending on the well performance and operational and safety constraints.

2.1 Perforate the well under drawdown. Proposed bottom hole pressure ± 6700 psi at 4600m which can be obtained with a ± 4300m (or MIDRV depth) water cushion. The underbalance will be between 800 psi and 2800 psi depending on the reservoir pressure (7500 psi to 9500 psi).

2.2 Pull the drop bar and slick line to ± 4250m.

2.3 Open the well at wellhead for 10 minutes.

2.4 Shut in the well at PCT during the time required to retrieve the drop bar and slick line.

2.5 Open the well at PCT until clean formation fluids are produced. Use the adjustable choke to control the rate.

2.6 Close the well at PCT and RIH the MUST actuator. Shut in the MUST valve and open the PCT valve.

2.7 **Oil Reservoir Case:**

- Make a long drawdown followed by a build-up. Production and shut in times to be decided according to SRO pressure data.

- POOH the MUST actuator

- Produce the well at low rate to take bottom hole samples.

Dry Gas or Condensate Gas Case:

- Perform a 3 rate isochronal test (10/64, 20/64, 32/64 chokes) followed by a long drawdown (24/64 choke). Production time to be decided on site.

3. TEST DURATION AND PRESSURE GAUGES PROGRAMMING

The total testing time including RIH the test string (but excluding the reverse circulation and POOH) is estimated at 6 to 7 days (low permeability case), therefore the pressure gauges are to be programmed for 8 days (2 Exal gauges) and 14 days (2 Exal gauges).

Include two Ameradas pressure recorders with 144 hour clock in the string.

ANEMONE-1A

TESTING PROGRAMME

SUPPLEMENT NO. 3

Prepared By: A. Paterson

Approved By: R. Cordiez

an1asupp.doc
20 September 1989

TEST PROCEDURE

To Commence Upon Completion of 7" Gauge Ring/Junk Basket Run

1. Recover flex joint wear bushing.

2. Make up Assembly 1 - Fluted hanger, 2 slick joints, EZ tree plus 2 jnts 4-1/2" PH6 tubing, stand back.

3. Make up Assembly 2 - Lubricator valve, 3 joints 4-1/2" PH6 tubing, stand back. Minimum 4-3/4" PH6 torque 7500 ft/lb, maximum torque 9370 ft/lb. "Hold" test pressure 5500 psi, test time 30 seconds.

4. Make up and RIH with bottom nose, perforating guns (9) incl. safety spacer, firing head - this equipment to be picked up from forward catwalk. Radio silence is NOT required.

5. Pick up and RIH with 1 joint 2-3/8" EUE tubing (from aft catwalk). ALL tubing to be drifted in V-door, and loose scale knocked out, minimum 2-3/4" EUE torque 1500 ft/lb, maximum 2300 ft/lb.

6. Pick up and RIH with vent sub.

7. Pick up and RIH with 1 joint 2-3/8" EUE tubing.

8. Pick up and RIH with 2-3/8" gun drop sub. Total drop assembly length = top of drop assembly when dropped @

9. Pick up and RIH with joints 2-3/8" EUE tubing.

10. Make up and RIH with Assembly 3 - Perf x/over, 2-7/8" drop sub, Amerada gauge carrier (if available), packer, X/over, safety joint, jar. Dope to be applied sparingly to pin ends only.

11. RIH with 1 stand 4-3/4" DC, 3-1/2" IF, from Derrick.

12. Make up Exal gauge carrier, install gauges. Petrofina Wellsite Reservoir Engineer to be present.

13. RIH with 1 stand 4-3/4" DC, 3-1/2" IF, from Derrick.

14. Make up Exal gauge carrier, install gauges. Petrofina Wellsite Reservoir Engineer to be present.

15. Make up and RIH with Assembly 4 - HRT, PCT. Fill with XC Polymer, drill water, viscous cushion.

16. RIH with 1 stand 4-3/4" DC, 3-1/2" IF from Derrick. Fill with vis cushion.

17. Make up and RIH with Assembly 5 - RA sub, MIDRV. Fill with vis cushion. Schlumberger to install radio active tag in RA sub.

18. RIH with 1 stand 4-3/4" DC, 3-1/2" IF from Derrick. Fill with vis cushion.

19. Pick up and RIH with Short.

20. Pick up and RIH with x/over, 3-1/2" IF pin x 3-1/2" XH box. Fill with vis cushion.

21. Pick up and RIH with 18 x 4-3/4" DC, 4-1/2 XH from AFT pipe rack.

22. Pick up and RIH with x/over, 3-1/2" XH from Derrick.

23. Pick up and RIH with 3 x slip joints. Caution must be taken when handling slip joints.

24. Pick up and RIH with MUST.

25. Pick up and RIH with x/over, 3-1/2" IF pin x 3-1/2" VAM box.

26. Pick up 1 joint 3-1/2" VAM tubing, minimum 3-1/2" VAM torque 4590 ft/lb. Maximum torque 5610 ft/lb. "HOLD" test pressure 6000 psi, time 30 seconds.

27. Pressure test against PCT to 5000 psi, Test 1.

28. Pick up and RIH with 3-1/2" VAM tubing, filling with water approximately every 30 joints. Pressure tests will be marked on tubing tally sheet, so as to total 6 when packer is on depth. Test 2 - 5800 psi. Test 3 - 6600 psi. Test 4 - 7400 psi. Test 5 - 8200 psi. Test 6 - 9000 psi. Pick up 1 joint every 10 joints to unwind torque. NO rotation of string at any time. Pick up 1 joint before entering 5" liner.

29. Space out to pick up back-up fluted hanger plus x/overs so that top guns at 4599m plus squat when hanger at wear bushing.

30. Pick up and RIH with 4-1/2" PH6 tubing. Changeout to 10.0m bails and land fluted hanger with 1.0m plus "heave movement" stick up, compensating with 4-1/2" PH6 tubing weight as string weight.

31. Perform Pressure Test 6 (refer step 28).

32. Run Schlumberger Correlation Log.

33. POOH to below fluted hanger - space out below hanger.

34. Make up Assembly 1 - Function EZ tree, RIH.

35. RIH on 4-1/2" PH6 tubing, filling with water. Install pin x pin x/over 4-1/2" PH6 x 4-1/2" ACME.

36. Make up Assembly 2 - RIH.

37. RIH on 4-1/2" PH6 tubing.

38. Run Schlumberger Correlation Log.

39. Pressure test to 9000 psi - Test 7.

40. Pick up and make flowhead with pup below. Make up flow and kill lines.

41. Pick up to allow for squat. Rotate 5-6 turns to right. Pick up sufficiently to remove DP slips, sit down with BHA weight on packer. Check weight.

42. Sit hanger down to wear bushing.

43. Close lubricator valve. Pressure test to 9000 psi against front valves choke manifold, swab valve, with Halliburton through kill valve.

44. Bleed off pressure.

45. Open Lubricator valve.

46. Close No. 3 rams. Check failsafes are open, i.e. communication is established with tubing and 7" annulus.

47. Open MIDRV with 5500 psi internal pressure (3 cycles remain) using Halliburton. Annular pressure to be 100 psi - Mud Pump. Log of strokes vs pressure is to be kept by driller whenever annulus is pressured up using mud pump. Pressure is to be bled off using valve fitted to choke manifold, never autochokes. Returns to be to the trip tank. All volumes vented to the trip tank to be logged. When bleeding off pressure due to thermal expansion or tubing ballooning, driller must log initial and final pressures and volume bled off to trip tank.

48. Reverse circulate out contents of tubing - down flowline, overboard, using mud pump, initially choking back flow so as to limit flowrate to 2 bpm max. Continue to reverse circulate until 1.52 SG returns or clean mud returns whichever is later.

49. Pump 20 bbl Hi Vis mud followed by drillwater. Spot Hi Vis outside MIDRV. Maximum pump rate 1 bpm with Halliburton.

50. Increase pump rate until MIDRV closes - approximately 2 bpm with 1 port open.

51. Rig up Schlumberger slick line BOPs and lubricator with drop bar assembly. Pressure test to 9000 psi against lubricator valve and flowline to choke manifold, using Halliburton.

52. Bleed pressure to 1000 psi in tubing to PCT. Close kill valve.

53. Pressure up annulus to 1500 psi to open PCT. Bleed off remaining tubing pressure through choke manifold.

54. RIH with drop bar assembly. Tag firing head. Pick up 10.0m. Free fall onto firing head. Well closed in at choke manifold front valves.

55. Monitor and record pressure and choke manifold. When pressure stabilised (provided not excessively high), pull drop bar assembly to surface. Close swab valve.

56. Open adjustable choke - full close to full open in approximately 1 minute.

57. Initial flow period - 10 minutes.

58. Close well in at PCT by bleeding off annulus pressure. Monitor and record pressure and choke manifold. Close choke manifold front valve - approximately 1 hour.

59. Open PCT with approximately 1500 psi annular pressure (mud pump). Using adjustible choke flow well until satisfactorily cleaned up - if flow rate is low take returns to gauge tank - approx. 3-6 hours expected.

60. Close well at PCT by bleeding off annulus pressure. Close in at choke manifold, record tubing head pressure. Close lubricator valve - bleed off above valve.

61. Rig up Schlumberger mono cable, wireline BOPs and lubricator with MUST equipment installed (Actuator and gauges).

62. Pressure test lubricator against lubricator valve and flowline with Halliburton to 9000 psi.

63. Bleed off pressure to previously recorded tubing head pressure (Step 60).

64. Open lubricator valve, RIH and locate MUST gauges in MUST body.

65. Open PCT by applying 1500psi annular pressure with mud pump.

66. Monitor pressures below MUST to ensure MUST is not leaking - approximately 1/2 hour minimum.

Further procedures to be issued when well response - fluid type, pressures, flow rates, are known - i.e. around Step 60.

ANEMONE-1A

TESTING PROGRAMME

SUPPLEMENT NO. 4

ACID PROGRAMME GUIDELINES

Prepared By: L. Remisio

Approved By: R. Cordiez

anlasupp.doc
22 September 1989

1. INTRODUCTION

Depending on test results on the 1st two perforated intervals, a decision will be taken to acidize the well in order to improve the flow characteristics by removing formation damage caused during drilling and cementing. (Refer Appendix 1)

2. GENERAL DATA

Intervals to be stimulated:

4599 to 4618 (19m)
4629 to 4652 (23m)

Type of Mud:

Halliburton MCA (Mud cleanout acid)

Acid Concentration:

15% HCl

Quantity:

3700 gallons (± 27 gallons/ft gross
or ± 50 gallons/ft - new related with GR be;pw 60 GAPI)
(See Appendix 3)

Diverting Agent:

20 gallons of gellified water.
Note: The decision to utilize the diverting agent will depend on the injectivity test(s) results.

Acid Preflush:

None

Overflush:

± 1000 gallons of diesel with Musola (50 gal) in case of an oil well but only if diversion is utilized.

3. ACID AND DIVERTING AGENT COMPOSITION

3.1 ACID COMPOSITION

3700 gallons of 15% HCl Halliburton MCA acid.

Chemical	Amount	Purpose
Freshwater	1675 gal	Base fluid
HAI-75	56 gal	Corrosion inhibitor
FR-1A	37 gal	) PH control
FR-2	185 lb	) Iron sequestring agent
PEN 88	3.7 gal	Penetrating agent
Morflo II	110 gal	Surfactant
Musol A	185 gal	Mutual solvent
20^{o} Bi-Hydrochloric Acid	1633 gal	Treatment fluid

3.2 Diverting Agent Composition:

200 gallons of gellified water diverting agent.

Chemical	Amount	Purpose
Fresh water	200 gal	Base fluid
WG-11	12 lb	Gelling agent
K-34	0.5 lb	PH adjust
HYG-3	0.5 lb	PH adjust
TBA-350	40 lb	Diverting agent

Note: Decision to utilize or not the diverting gellified water combination will depend mainly on injectivity test results.

4. SAFETY

4.1 Safety Gear:

As a minimum every person working on the Acid Programme should wear safety glasses. Also those working directly with the acid, as well as the Pump Operator should be wearing a full face mask, rubber gloves and wet suit.

4.2 Neutralizing Agents:

A neutralizing agent, such as sodium bicarbonate, should be available on location for the following purposes:

i) Neutralization of any acid inadvertently spilled onto deck.
ii) Neutralizating agent, in a water solution, for immediate treatment of anyone who comes into direct contact with hydrochloric acid.
iii) Neutralization, if necessary, of returned partially spent acid.

Note: Halliburton will be responsible for supply of top drum required to hold neutralizing agent, as well as a shower which should be available near the acid tank area.

5. EQUIPMENT REQUIRED

1. Suction Hoses - Miniumum 100 ft
2. 1 x Acid Tank
3. 1 x Acid Transfer Pump - air operated
4. 1 x Centrifugal Pump - with Zone 01 motor
5. 1 x 2" Check Valve

6. PROGRAMME

This programme is based on the following assumptions:

A. The well produces the minimum to have liquid hydrocarbons above MIRV inside the tubing.

B. The test string above MIRV is clean from drilling mud or has been circulated to clean diesel with Musol A.

6.1 Rig up a suction HT-400 pumping unit, including the mixing pump in the suction hole rig up.

6.2 Pressure test Halliburton lines up to 9000 psi - 15 minutes.

6.3 With PCT open, perform injectivity test with diesel and Musol A - minimum 10 bls.
Maximum Pressure - depending on well data and test string contents.

6.4 If the well has enough injectivity (>0.05 bl/wire) prepare for acid job.

6.5 Mix acid and associated chemicals as per programme and as directed by Halliburton engineer.

6.6 Close PCT and with MIRV open, circulate the acid down as close as practical to the MIRV.

6.7 Pump in Sequence:

- 2000 gal 15% HCA acid
- 200 gal gellified water with diverting (see note)
- 1700 gal 15% HCA acid
- 1000 gal diesel with 50 gal/1000 gal Musol A
- Follow with diesel

6.8 Close MIRV and start bullheading test string contents into formation. Do not exceed FRAC pressure - estimated to be 13,600 psi at 4775 mkb.

6.9 Pump acid into formation as fast as possible without exceeding FRAC pressure until diverting solution reaches top of perforations, then reduce, if possible, the rate to ± 1 BPM until the end of overflush.

6.10 Flush displacement and open the well.

ANEMONE-1A

TESTING PROGRAMME

SUPPLEMENT NO. 5

STANDARD KILL PROCEDURE

Prepared By: A. Paterson

Approved By: R. Cordiez

an1asupp.doc
22 September 1989

STANDARD KILL PROCEDURE

1. If produced fluid is gas, bullhead mud to MIDRV with Halliburton.
2. Bleed off annular pressure to close PCT.
3. Open MIDRV using Halliburton with flowline and swab valves closed (SHORT is back-up for MIDRV).
4. Close kill valve, open flowline valve.
5. Reverse circulate, taking returns through test manifold adjustible choke. Max circulating rate 2 bpm.
6. When "clean" mud at surface stop circulation.
7. Close flowline valve, open kill valve.
8. Circulate mud down tubing to close MIDRV.
9. Open PCT with annular pressure.
10. Halliburton bullhead contents below MIDRV of "tubing and below packer annulus" into formation.
    a) At maximum rate possible with maximum 80% of FRAC pressure
    b) Graph of volume vs bottom hole hydrostatic pressure prepared
11. Observe well static for 30 minutes.
12. Increase annular pressure to rupture disc in SHORT, 2900-3600 psi.
13. Bleed off annular pressure to close PCT. Open No. 3 rams.
14. Pick up to unseat packer - care must be taken as gas may have accumulated under packer.
15. Taking care not to set packer, sit back down on hanger.
16. Close No. 3 rams.
17. Observe well at rig choke manifold for 30 minutes.
18. Circulate down tubing through SHORT, taking returns through autochoke on rigmanifold to degasser.
19. Open No. 3 rams. Observe well static for 30 minutes.
20. Close lubricator valve.
21. Disconnect flowhead.
22. Open lubricator valve.
23. POOH.

KILL SCENARIOS

1. **Fire Onboard:**

   a) Kill procedure as normal if time available. If it is judged that time is not available, bullhead to PCT.

   b) Close PCT

   c) Close SSTT and master valve

   d) Flush surface equipment with Halliburton

2. **Bad Weather:**

   a) Close PCT

   b) Bleed off tubing pressure

   c) Close SSTT

   d) Unlatch SSTT. Pick up above flex joint

   e) Close shear rams and lower choke failsafes

   f) Disconnect LMRP

   Note: If produced fluid is gas them reverse out from MIRDV before Step B

3. **Leak in Surface Lines**

   a) Close upstream valve closest to leak

   b) Close next upstream valve. Suitable valves are: test choke manifold valves, flowline valve, master valve, lubricator valve, SSTT.

   d) Bleed off surface equipment

4. **Leak Between SSTT and Flowhead:**

   a) Close SSTT

   b) Close PCT

   c) Allow pressure to bleed off

   d) Unlatch SSTT, pull back

   e) Close shear rams.

   Note: A regular log (15 mins) of trip tank volume will be kept by Driller to detect such a leak.

5. **Test String Leaking Below SSTT:**

a) Close SSTT

b) Pressure up annulus to rupture SHORT

c) Bleed off pressure through rig autochoke to close PCT

d) Reverse circulate to kill well

e) Open DCT

f) Bullhead mud to perforation then proceed as normal for kill
If leak is below PCT, then bullhead down annulus to kill well.

EQUIPMENT TRIM

Normal Trim - Well Flowing:

Lower inner and outer failsafes	Open
Kill and upper choke failsafes	Closed
No. 3 rams	Closed
PCT, SSTT, lubricator, master valve	Open
MIDRV	Closed
Swab and kill valves - surface tree	Closed
Flowline valve	Open
Rig manifold - Vales 4, 9, 10 and to aft side sensor	Open
Rig manifold - Valves 3, 7, 8, 13, 14, 15, 19, 20, aft autochoke	Closed
Halliburton unit - cement line valves	Open
Cement standpipe lo-torque - rig floor	Closed

Normal Trim - Well Closed:

Lower inner and outer failsafes	Open
Kill and upper choke failsafes	Closed
No. 3 rams	Closed
PCT, MIDRV	Closed
SSTT, lubricator valve, master valve	Open
Swab and kill valves - surface tree	Closed
Flowline valve	Open
Upstream valves Schlumberger choke manifold	Closed
Rig manifold - Vales 4, 9, 10 and to aft side sensor	Open
Rig manifold - Valves 3, 7, 8, 13, 14, 15, 19, 20, aft autochoke	Closed
Halliburton unit - cement line valves	Open
Cement standpipe lo-torque - rig floor	Closed

ANEMONE-1A

TESTING PROGRAMME

SUPPLEMENT NO. 6

(DST NO. 2 GUIDELINES)

Prepared By: L. Remisio/S. Marinoff

Approved By: R. Cordiez

anlasupp.doc
2 October 1989

1. After DST No. 1 Surface Sampling Programme is completed, kill the well as per standard Kill Procedure in Testing Programme Supplement No. 5.

2. POOH with test string, racking back upper test tree in derrick. Also rack back 3-1/2" VAM tubing in stands. NOTE: Protect the pin ends before racking back.

3. Lay out testing BHA but rack back 4-3/4" drill collars.

4. RIH with 2-7/8" x 3-1/2" tapered drill pipe string with spaced out 7" and 5" scrapers in order to scrape the 7" casing and 5" liner until 4599m (top of the perforation).

5. Circulate the well at maximum rate for as long as necessary to have the well clean and the mud completly homogenous. Pump one or more viscous pills if necessary.

6. POOH with 2-7/8" and 3-1/2" open ended drill pipe.

7. Rig up Schlumberger and RIH with 4.05" gauge ring until top of perforations at 4599m.

8. Schlumberger RIH with 5" EZSV Halliburton bridge plug with CCL and GR. Schlumberger set bridge plug on the middle of the first joint above top perforations.

9. POOH with Schlumberger and pressure test BP up to 4000 psi over 15 minutes.

10. Perform complete BOP, choke manifold and surface equipment pressure test.

11. Prepare to RIH with DST No. 2 test string.

12. The test string will be run as per DST No. 1 except for the tail pipe below packer that will be modified to accommodate the new gun length and positioning of gun drop sub and vent sub. NOTE: Packer setting depth will be slightly raised in order to have the slips on an unmarked portion of casing.

13. String will be run as per **Testing Programme Supplement No. 3 from Point No. 3 onwards** with the only differences being as follows:
    - The "Hold" to test tubing system will not be utilised, use jam system only.
    - A tracer should be spiked into water cushion and mud in hole, so that it will be easier to clearly monitor recovered fluids.
    - The MUST will not be run.

14. The proposed intervals to be perforated and a clearly defined programme of flow and shut in periods, together with a list of data/parameters to be monitored every 30 minutes/hourly, will be provided in a separate programme.

ANEMONE-1A

TESTING PROGRAMME

SUPPLEMENT NO. 7

(DST NO. 2 TESTING GUIDELINES)

Prepared By: D. Sousa

Approved By: R. Cordiez

anlasupp.doc
4 October 1989

1. INTERVAL TO TEST

The interval to be perforated for the DST #2 is as follows:

Interval	4535m to 4545m
Guns	Tubing conveyed. Perforating guns 3-3/8" TCP 22 GR HM 6 SPF 60° phasing
Ref. Log	GR from DLL/SDT/GR/MSFL run - 3.9.89

2. PROGRAMME

2.1 With the well closed at choke manifold, fire the TCP guns by running the drop bar assembly with a slick line. The underbalance is obtained with a drilling water (SG=1.0) cushion from the surface to the MIRDV.

2.2 Pull out of drop bar assembly and open the well for 10 minutes. Flow to be diverted to the gauge tanks.

2.3 Close the well at PCT for 2 hours.

2.4 Open the well for clean up.

2.4.1 The clean up should be done at maximum possible rate only limited by surface capacity installations, safety, maximum allowed pressure differential across the packer (10,000 psi) and possible sand production.

Note: After clean up is completed do not allow the wellhead pressure to drop below 300 psi.

2.4.2 Produce the water cushion to the gauge tank and monitor every 15 minutes the cumulative production when the well starts producing the mud cushion below MIRDV switch flow to the burner booms.

2.4.3 After the well is clean and BSW is acceptable ($\leq$ 5%) divert production through the separator. Choke to be advised by Reservoir Engineer.

2.4.4 During the water cushion and mud unloading take and keep wellhead (not pressurized) samples every 1 hour.

2.4.5 With the well producing through the separator record every 30 minutes the following data:

- wellhead pressure
- wellhead temperature
- gas, oil and water rates
- gas, oil and water specific gravity
- temperature and pressure at separator

2.4.6 Every hour take samples of the water at separator and make chemical analysis to determine the salinity and the presence of the tracer used in water cushion and mud.

2.4.7 The duration of clean up period and last choke before shut-in for build up will be decided by the Reservoir Engineer.

2.5 Shut in the well at PCT for build up. Duration to be decided by the Reservoir Engineer.

2.6 Produce the well on stable conditions to collect surface or bottom hole samples as will be dictated by produced reservoir fluids.

- 6 pressured oil samples
- 6 pressured gas samples

Note: If the cleaning period indicates the test interval has low permeability, which implies a long time to reach stabilisation, the sampling will be carried out just before the well is shut in for build-up.

ABANDONMENT PROGRAMME

PETROFINA EXPLORATION AUSTRALIA S.A.

ANEMONE-1A

ABANDONMENT PROGRAMME

Prepared By: Luis Remisio

Approved By: Richard Cordier

11 October 1989

PETROFINA EXPLORATION AUSTRALIA S.A.

ANEMONE-1A

ABANDONMENT PROGRAMME

Well Name:	Anemone
Location:	Offshore Bass Strait - Vic/P20 Permit Co-ordinates: Latitude - 38°45'52.24"S Longitude- 148°19'49.7"E
Rig:	Zapata Arctic (Semisubmersible) KBE = 27m
Water Depth:	231m
Formation:	Latrobe Group Sandstones
Type of Job:	Cement Plug, Abandonment and Wellhead Recovery

1. Well Summary

Please refer to Well Diagram and Well Stratigraphy.

2. Objective

Abandon Anemone-1A and recover wellhead accordingly with Submerged Lands Act Schedule recommendations.

ANEMONE-1A
ABANDONMENT PROGRAMME

1. After DST 2 testing programme is complete on interval 4535 to 4545m kill the well as per standard kill procedure in Testing Programme Supplement No. 5.

2. POOH with test string, laying down all the DST tools and 3-1/2" tubing.

3. RIH with tapered 2-3/8" tubing (±400m) x 3-1/2" drill string until top of the 5" EZSV bridge plug (4593m).

4. Circulate the well clean and displace mud with corrosion inhibited mud.

5. Rig up and pressure test Halliburton cementing line up to 5000psi, pump balanced 150m cement plug (cement plug #1) on top of the 5" bridge plug.

   Pump in sequence:

   - 5 bbl seawater
   - 8.7 bbl slurry (1.90 SG)
   - 1 bbl seawater and displacement

   Note: Cement additives as per Halliburton recommendation.

6. POOH until 4400mkb and reverse circulate at least 200% tubing and drill pipe volume.

7. With tubing shoe at 4400mkb, pump balanced 150m cement plug (cement plug #2) - expected top of cement at 4250mkb.

   Pump in sequence:

   - 5 bbl seawater
   - 14.5 bbl slurry (1.90 SG)
   - 0.5 bbl seawater and displacement

   Note: Cement additives as per Halliburton recommendation.

8. POOH with 10 stands and reverse circulate at least 200% tubing and drill pipe volume.

9. WOC, then run back in and tag cement with ±5000lb.

10. Pull to ±3000mkb (±50m below 7" liner packer) and pressure test cement plug to 4000psi over 15 minutes.

11. With tubing shoe at ±3000mkb pump 100m balanced cement plug #3.

    Pump in sequence:

    - 5 bbl seawater
    - 13 bbl slurry (1.90 SG)
    - 0.5 bbl seawater and displacement

    Note: Cement additives as per Halliburton recommendation.

12. POOH 10 stands and reverse circulate at least 200% tubing and DP volume.

13. POOH with 2-3/8" tubing x 3-1/2" drill pipe tapered string.

14. Prepare and RIH 7" casing + 9-5/8" casing cutter BHA on 3-1/2" DP until 1075mkb (±30m above 13-3/8" casing shoe).

15. Cut 7" casing and 9-5/8" casing strings at ±1075mkb.

16. Confirm cut of the 9-5/8" casing strings by observing pressure leak off after pressure testing up to 1000psi.

17. POOH with casing cutter assembly.

18. RIH with tapered 2-3/8" tubing (±300m) x 3-1/2" drill pipe string to ±1110mkb. Pump and set 150m balanced Cement Plug #4 (±100m after squeeze).

    Pump in sequence:

    - 5 bbl seawater
    - 18 bbl slurry (1.90 SG)
    - 0.5 bbl seawater and displacement

    Note: Cement additives as per Halliburton recommendation.

19. POOH 10 stands. Close pipe rams and squeeze cement in the 12-1/4" hole x 9-5/8" casing annulus. Squeeze a maximum 5 bbl in hesitation. Maximum surface pressure during squeeze 1000psi.

20. Reverse circulate at least 200% tubing and drill pipe volume.

21. Pressure test cement plug to 1000psi.

22. Pull with 2-3/8" tubing to 340mkb and pump 50m balanced Cement Plug #5.

    Pump in sequence:

    - 5 bbl seawater
    - 7 bbl slurry (1.90 SG)
    - 0.5 bbl seawater and displacement

    Note: Cement additives as per Halliburton recommendation.

23. Pull to 280mkb and reverse circulate at least 200% drill pipe volume.

24. POOH. Make up jet sub and RIH. Circulate and wash wellhead and BOPs. Displace to seawater. Recover wear bushings.

25. Rig up Schlumberger and perforate 2-3 shots at 266mkb with 4" casing gun. Observe the well and POOH with Schlumberger.

26. Run back in and tag surface cement plug.

27. Pull BOP stack.

28. RIH with wellhead retrieving tool (with plugs removed) and shot cannister spaced out so that top of explosive is aligned with first 30" connection, i.e. 266.38mkb. Engage retrieving tool and remove ROV and/or Subsea camera.

29. Make up detonator in primer charge (observe radio silence and stop welding). Run primer body on firing cable into shot cannister.

30. Apply 100,000lb pull and fire explosives.

31. Pull wellhead and RIH with 2-3/8" tubing or 3-1/2" inside 7" casing if possible until 290mkb (Cement Plug #5 TOP). Utilize ROV to guide tubing if necessary. Pump cement plug No. 6 in order to cover cut casings and cover the well until mud line.

    Pump in sequence:

    - 5 bbl seawater
    - 20 bbl slurry (1.90 SG)
    - 1 bbl seawater and displacement

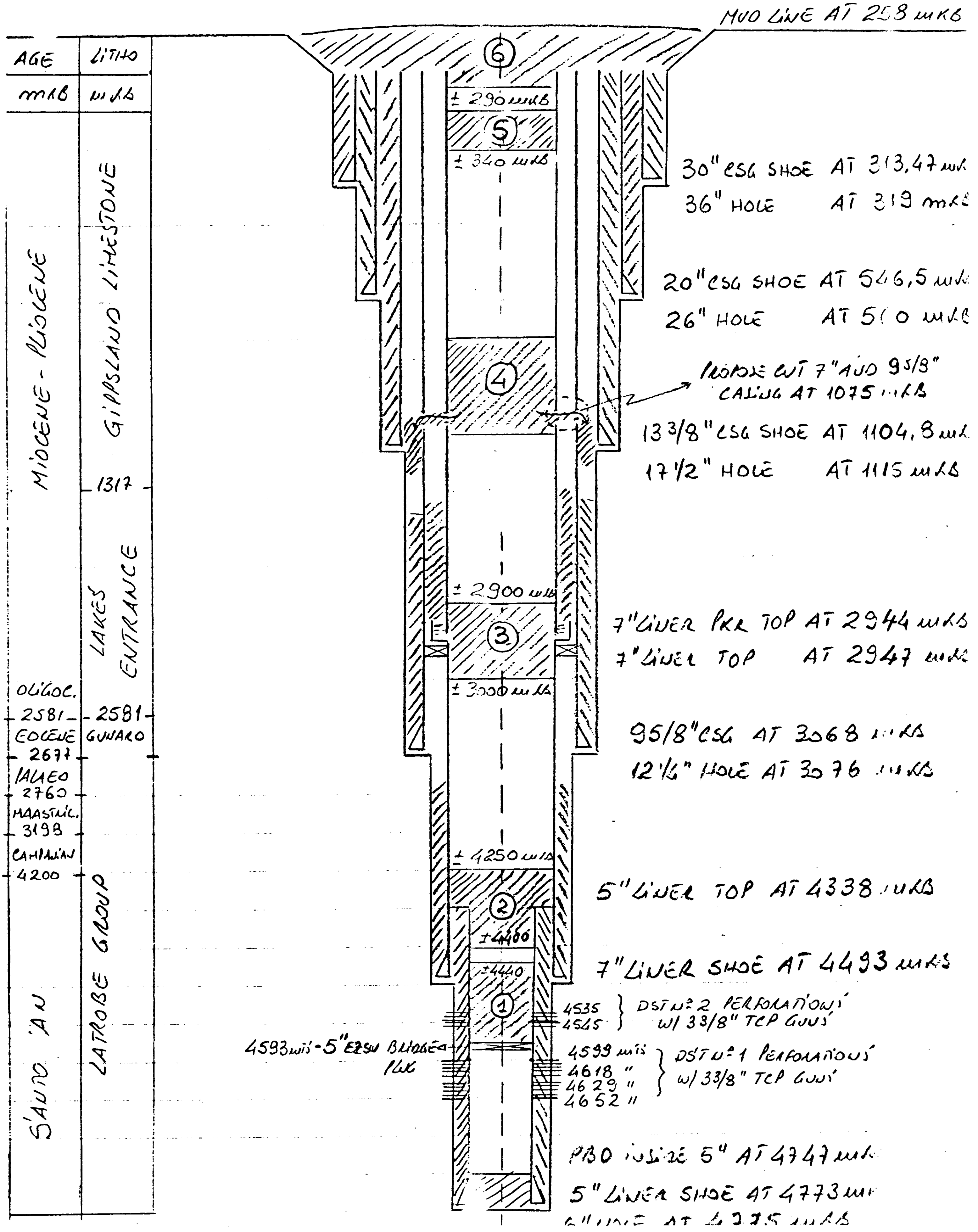
    Note: Cement additives as per Halliburton recommendation.

32. POOH and go down with ROV to inspect seabed within 70m of the abandoned well. Fill in Certificate of Seabed Clearance.

33. Prepare to rack anchors and move.

ANEMONE 01A

ABANDONMENT PROGRAMME



3. DRILLING UNIT

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 CONTRACTOR

A. 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 strengtening 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-4000

DRILLING UNIT, DRILLING EQUIPMENT, MATERIALS, SUPPLIES AND SERVICES

PART II
DRILLING EQUIPMENT TO BE FURNISHED BY CONTRACTOR

A. DRILLING MACHINERY

1. 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 20,0000' 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 suchtions; 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 0-8°, 0-16°, 0-7° (Hotwell), and 0-14° (Hotwell), double chart with sinker bar retrieving assembly

B. DRILL STRING

1. 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, 18° 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, 18° 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. 18° shoulder, 3-1/4" i.d.

2 - 10' pup joints, Grade G-105 x-hole box and pin, 6-1/2" o.d., 18° shoulder, 3-1/4" i.d.

2 - 15' pup joints, Grade G-105 5" x-hole box and pin, 6-1/2" o.d., 18° 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 fpr 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 stanless 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 stanless 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^{o} 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

4. LOCATION SURVEY

SITE SURVEY

4427NT/REP2
HY8078

REPORT ON SITE SURVEY
AT ANEMONE 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: MAY, 1989

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

Associated Surveys International Pty. Ltd. was contracted by Petrofina Exploration Aust. S.A. to carry out a site survey at Anemone location in Bass Strait, in order to determine the seabed topography over this location.

The field operations were carried out between May 9th and May 18th, 1989 on board the Survey Vessel "M.T. Wongara". The rig positioning of the "Zapata Arctic" was carried out between May 20th and May 30th.

This report details operations and results over the Anemone site survey only, with those at the Anemone Rig Move 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 2200 metres radius, centred on Latitude 38°45′52.24"S, 148°19′49.22"E (Easting 615580m, Northing 5708499m). An additional adjacent area to the west encompassing the Archer site had been previously surveyed. As this area partially overlapped the Anemone site, it was not resurveyed.

The grid consisted of 11 lines at 100 metre spacing run in an East-West direction, with an additional 16 lines run at 200 metres in an East West direction, and seven lines at 500 metre spacings run in a North-South direction. Four extra north-south direction lines at 200 metre spacings were run west of the Archer site.

See the following diagram for site layout.

LINE PLAN
ANEMONE SITE SURVEY

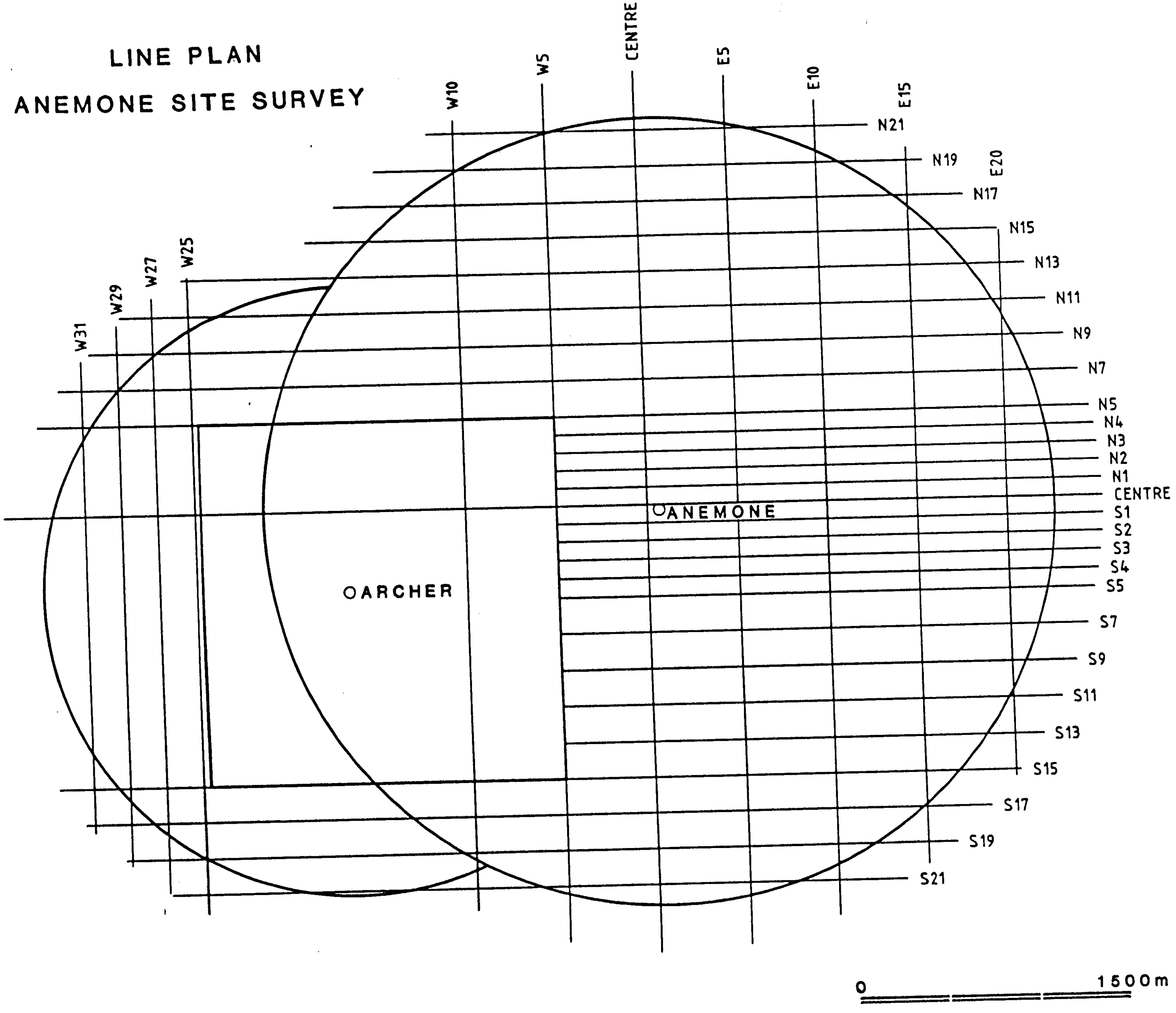


FIG. 1

3.0 SUMMARY AND CONCLUSIONS

3.1 Summary

After award of the Contract to Associated Surveys International (ASI), mobilisation of the vessel M.T. "Wongara" commenced on 12 May 1989.

During the previous two days, stations for the Syledis had been installed and calibrated in suitable locations both onshore and also on the Bass Strait oil platforms. The chain installation and calibration was completed on 13 May 1989.

All Syledis positioning and computer processing equipment was installed on the vessel during the 12 and 13 May and the side scan sonar equipment was installed during the 13 and 14 May.

The Petrofina representative joined the vessel on the 13 May and the vessel departed from Eden for Anemone site on the 14 May at 1400 hours.

At 0600 on 15 May the vessel arrived on site and the survey equipment was deployed. After an initial attempt at tuning the side scan sonar a leak was discovered in the cable. The fish was recovered and the cable was satisfactorily "re-potted".

At 2300 hours the side scan fish was re-deployed and the survey commenced at 2343 hours on the 15th May, 1989.

The remainder of the survey at the Anemone site was undertaken without further incident and was completed at 0030 hours on the 18 May 1989. The vessel then proceeded to Port Welshpool arriving on the high tide at 1050 hours.

The vessel was demobilised with the Syledis and Minitrac equipment being stored at Welshpool for transport to "Zapata Arctic".

M. Gale and J. Vigurs departed for Sale where preliminary interpretation of the side scan sonar data was undertaken on the 19 May. The results of this preliminary interpretation were then faxed to the Petrofina representative at 1850 hours. M. Gale remained on standby in Sale for the "Zapata Arctic" move.

3.2 Conclusions

The area slopes steeply from northwest to southeast with a water depth of approximately 228.5 metres at the Anemone location. The average gradient across the site is about 1:20 and the seabed throughout most of it has a fairly regular slope. To the south east of location the seabed becomes more rugged with steep drops over what appear to be scarp faces. However around location there do not appear to be any obstacles or hazards for the approach of the rig.

4.0 PERSONNEL AND EQUIPMENT

4.1 Personnel

The following personnel were utilised on this contract:

M. Gale	Senior Hydrographic Surveyor/Party Chief
J. Vigurs	Geophysicist
J. Veitch	Electronics Technician
A. Murphy	Hydrographic Surveyor
B. Hutcheson	Chain Manager/Electronics Technician

4.2 Equipment

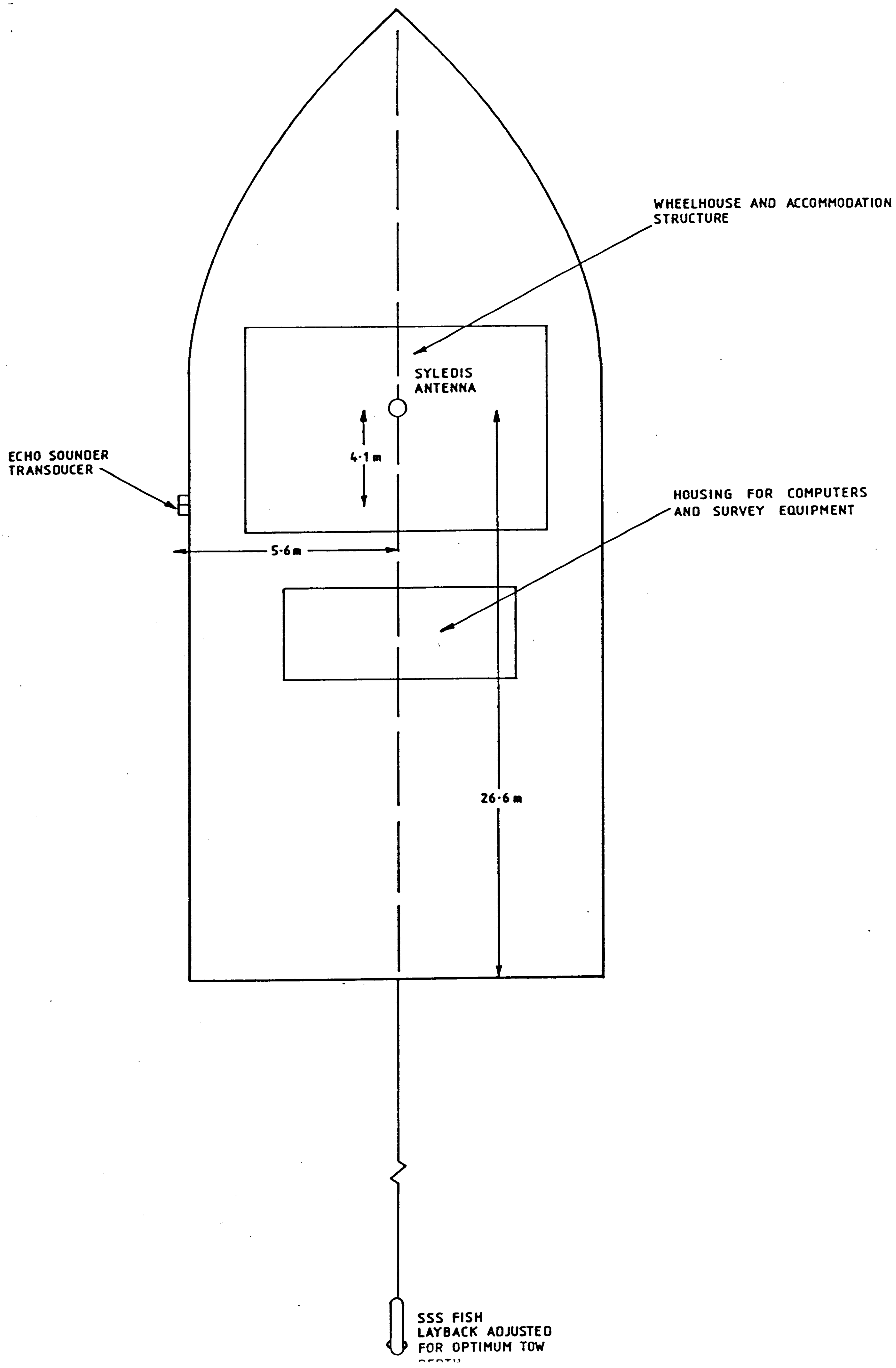
The following equipment was utilised on this contract:

Syledis B Positioning System
QUBIT TRAC IVB Navigation Computer and Data Logger
Atlas Deso 10 Echo Sounder
ORE Side Scan Sonar
Grab Sampler
Drop Corer
MINITRAC Data Processing/Logging Computer

Vessel

The vessel was used for the Anemone site survey was M.T. "Wongara". The vessel was designed as a tug and is owned by Charter Craft & Marine Services Pty. Ltd., of Eden. It is a steel hulled, single screw 38 metre long vessel. There is adequate accommodation for 8 ships crew and 5 survey crew, including the clients representative, provided in two berth cabins. For the purpose of survey, Charter Craft have installed a container on the back deck to house all computers and survey equipment. 240V power is supplied from the ships generator.

SURVEY VESSEL EQUIPMENT LAYOUT



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 B medium frequency 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 HP9920 computer was used for navigation control. The system reads the Syledis ranges via a QUBIT 2781 intelligent interface, and converts these ranges into a position on the AMG co-ordinate system by the method of Least Squares adjustment. 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 conned 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 with its own colour coded cable and antenna, were set up at the Western end of the baseline, and the mobile units, again with colour coded 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 Atlas Deso 10 echo sounder with its transducer mounted on a bracket over the Port side of the vessel. A 30 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 AD3digitiser 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 on the sounder was set to zero and compensated for velocity of sound on the sounder. Depths were checked at 4 metres and then at 2 metre increments down to 20m depth. As no temperature/salinity probe or velocity probe was on board the speed of sound below 20m was arrived at from values determined from previous works within the area.

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 ORE Side Scan Sonar system was used incorporating an EPC 3200 Recorder and an ORE Model 159 100 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 EPC Recorder processes the reflected signals detected by the transducers, and prints the facsimile records.

The EPC recorder was interfaced to the navigation system in order that records could be automatically annotated with navigation 'fix' information.

For this survey, the system was operated to record data from 186 to 375 metres range either side of the vessel track.

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) Carrajung (Code 2)
Easting 471691.9
Northing 5752663.5
Antenna Height 627m

ii) Snapper (offset) (Code 3)
Easting 589696.8
Northing 5771950.9
Antenna Height 32.6m (AHD)

iii) Flounder (offset) (Code 4)
Easting 625736.3
Northing 5758478.4
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. 6061 in the Australian National Tide Tables) by applying height and time differences to the Devonport (Murray River) tides.

The survey revealed a seabed sloping steeply from the northwest to the southeast with depths ranging from 90 metres to 400 metres. The contours have a fairly consistent SSW-NNE trend, however towards the eastern edge of the site they indicate a more irregular seabed topography with "valleys" and sharp drops down what appear to be steep escarpments. These drops can be up to 12 metres high. The average gradient over the site is 1:20 but the seabed in the western part tends to have a much less steep gradient. The water depth at location is approximately 228.5 metres.

6.2 Seabed Features

Seabed data was acquired using an ORE side scan sonar system interfaced to an EPC 3200 recorder. The eleven central east/west lines were spaced 100 metres apart and were run on a 1/4 second sweep, corresponding to a slant range of approximately 187.5 metres. All other east/west lines were spaced 200 metres apart and were run on a 1/2 second sweep corresponding to an approximate slant range of 375 metres. Seafloor coverage, therefore, has an overlap between lines of at least 300%.

Record quality is fairly good however the general steepness in slope across the site necessitated constant adjustments to the length of cable out in an attempt to keep the side scan fish at an optimum height above the seabed. This caused some degradation in data quality.

The slope also caused much variation in the reflectivity of the sediments as the channel looking up slope receives stronger return from the seabed than the channel looking downslope due to the greater deflection of the signal when scanning down slope.

The absence of core samples from the seafloor, means that interpretation of side scan data is based solely on the reflectivity of the seabed sediments and is therefore tentative.

Seabed sediments can be divided into three main areas. The western portion of the site at the top of the slope is largely covered by a moderately reflective sediment, indicative of sand. Most of the remainder of the area appears to be covered by a more highly reflective sandy gravel which can be distinguished by differences in surface texture in the south eastern area of the site. The seabed has a relatively smooth texture whereas much of the central eastern area has an irregular hummocky surface texture. Boundaries between sediments are often gradational and, because of this and also problems associated with the slope, can sometimes be a little difficult to define accurately.

The north western corner of the site is covered by fairly highly reflective material. The presence of clearly visible trawl scours in this area seems to indicate a slightly finer less mobile sediment and it has therefore been interpreted as a muddy gravel. From this there is gradational change westwards into another fairly highly reflective sediment, however as trawl scours are not visible here it is thought to represent a gravelly sand.

A well defined boundary to the southeast separates these sediments from a moderately reflective sediment, interpreted as a coarse shelly sand. Within this sand, large areas of sand ripples have been outlined on the charts. These are two areas of sand ripples in which a more highly reflective coarse material, possible shell debris, appears to have been selectively deposited on the seabed, giving the records a patchy appearance. These two areas are separated by another area of rippled sand where there are no shell concentrations.

The sand ripples tend to have a NNW/SSE orientation indicating a prevailing bottom current direction perpendicular to this. Towards the northeast the coarse shelly sand forms a narrowing ribbon trending approximately northeast/southwest which separates two areas of gravelly sand. Areas of rippled sand are visible within this but tend to be narrow features extending in the direction perpendicular to the ripple orientation.

Rippled sand becomes less evident southwards. Coarse shelly sand extends over most of the western area of the site, with the exception of two highly reflective areas which have been interpreted as a sandy gravel. One of these areas coincides approximately with the area of sandy gravel outlined on the Archer "A" site survey, however the gravel appears now to extend slightly further north and possible indicates the mobility of the superficial sand in this area. Another area of sandy gravel has been outlined to the south of this area.

Towards the east the coarse shelly sand grades almost imperceptibly into a coarser gravelly sand, having a slightly higher reflectivity on the sonar records. In both the northeastern corner and the southeastern corner the seabed has a smooth texture. The main exceptions to this being within the areas of high topographical relief in the southeast where a slightly rough seafloor surface suggests a thin cover of sand and gravel overlay a low lying rock outcrop.

Most of the central eastern region is covered with a fairly highly reflective material interpreted as gravelly sand. However this sediment has been distinguished from that discussed previously because of the irregular seabed which causes the records to have an hummocky appearance. Small highly reflective features with some relief are present throughout this area. The most obvious have been outlined on the chart. The majority of them appear as linear features generally having an WNW/ESE trend but a few, particularly towards the eastern edge of the site, have developed into a distinctive zigzag form. The exact cause of these features are unknown, however it is possibly due to slope instability where sediments are slumping down the slope at different rates.

In the southeastern portion of the site, large usually linear features are apparent on the side scan records. These features have a high topographic relief and appear as steep escarpments generally trending in a northeast/southwest direction. They are mainly concentrated into three areas outlined on the charts, although they are not confined to these areas. A few occur to the south of location and one is located just beyond the western edge of the site. These features vary greatly in length and can be up to 600 metres long. They all have one consistent feature, however, and that is the steeply dipping side is to the southeast. The absence of sub-bottom data makes a definitive assessment of these features difficult, but it would appear that these features are a surface expression of the underlying geology, and may, therefore indicate the presence of near surface faulting beneath some or most of the site.

Location is situated in an area of coarse shelly sand on a steeply dipping slope where the gradient approaches 1:20. Up slope from location is an area of sandy gravel with an irregular and hummocky surface. As has been discussed previously this may be an indication of slope instability which might cause problems should drilling result in sufficient disturbance to the surrounding seabed sediments.

In the absence of sub-bottom profiling data, the depth of unconsolidated surface sediments is difficult to determine for anchoring purposes. However it appears that most of the site has an adequate cover of unconsolidated sediment, the main exceptions being to the east and southeast of location where rock outcrops on the seabed.

The closest escarpment is approximately 1000 metres to the ESE of location and is in itself unlikely to present any problems to the location of the drilling rig. Problems may occur should similar features exist below location. There do not appear to be any further hazards which may affect the siting of a semi-submersible rig.

RIG POSITIONING

WP4463NT/REP1

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

Prepared for:

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DATE: JULY 1989

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APPENDICES

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 Anemone 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 May 21st and May 30th, 1989.

2.0 SUMMARY OF FINAL LOCATION RESULTS

Mast Position	E	615526.5
	N	5708493.7
Offset Position	E	615565.6
(Drill stem)	N	5708493.7
Heading	307° True	
Latitude	38°45′52".5S	
Longitude	148°19′48".1E	

A translocated G.P.S. Position obtained on the morning of 30th May confirmed the above position.

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

3.0 SEQUENCE OF EVENTS

20/05/89	M. Gale standby in Sale.
21/05/89	M. Gale, E. Arandiga, J. McCall in Sale.
22/05/89	M. Gale, E. Arandiga and equipment drive to Welshpool and fly to Zapata Arctic. Set up equipment on rig.
23/05/89	Standby on rig.
24/05/89 - 25/05/89	Standby on rig while anchor handling boats recover anchors at Angler Site.
26/05/89 - 29/05/89	Positioning rig with Syledis while rig manoeuvres to site and anchor handling boats deploy anchors.
30/05/89	Obtain final position of drillsten with Syledis. Check position with G.P.S. Demobilise equipment and personnel from rig.
31/05/89	Complete demobilisation of shore stations and personnel.

4.0 DESCRIPTION OF EQUIPMENT

4.1 Radio Positioning System

The Navigation system used for this project was Syledis, which operates in the 420-450MHz frequency band. This system has continually been used by Associated Surveys since 1981 in most areas around the Australian coastline. Syledis has been found by Associated Surveys to be the best system available for the operational requirements of this Contract.

Equipment List

Syledis Mobiles (2 off)
Syledis Beacons (4 off)
Syledis Cables
Texas Towers

Mode of Operation

Each beacon operates on a time sharing window called a "slot", which is determined by a synchronisation pulse. The normal mode of operation is using 20 watt output. This can be increased to 300 watt with use of boosters, however the 20 watt mode was used for this project.

The mobile onboard unit interrogates each beacon in the range/range mode with a coded signal of relatively long time duration, thus producing a pulse of low power containing the same amount of energy as a very powerful short pulse system of 50kw.

Each beacon detects the code via a correlation method and sends back a coded signal to the mobile. The mobile receiving the signal will extract from the code a single short pulse which in turn represents the time taken by the code to travel to the remote beacon and back to the mobile. This code is converted into a range in the mobile and displayed.

Syledis can be set up in either Range-Range, Hyperbolic or Compound mode.

Range-Range mode provides the capability to operate up to four mobiles simultaneously. This mode was used for this operation.

Hyperbolic mode provides the capability to operate any number of mobiles.

Compound mode enables the system to be set up prior to deployment with the option of using three mobiles in Range-Range mode simultaneously with any nunmber of mobiles in Hyperbolic mode.

4.2 Real Time Navigation and Data Logging Minitrac

The Minitrac system is based on a Hewlett Packard 85 desk top calculator and the Qubit Q2781 intelligent interface unit. This is the same interface unit as the Trac IVB.

Minitrac is a basic real time navigation and data logging system capable of being interfaced to a number of positioning systems including:

Syledis
Sonardyne Acoustics
Motorola Miniranger MRS III (4 or 16 codes)
Trisponder 540

The operator may enter either manually or from a library a runline or setpoint. The internal CRT displays all navigation data including time, position, raw ranges, quality of fix, bearing and distance to a defined setpoint or offsets from a defined runline. An offset position may also be tracked, however ships heading must be manually entered.

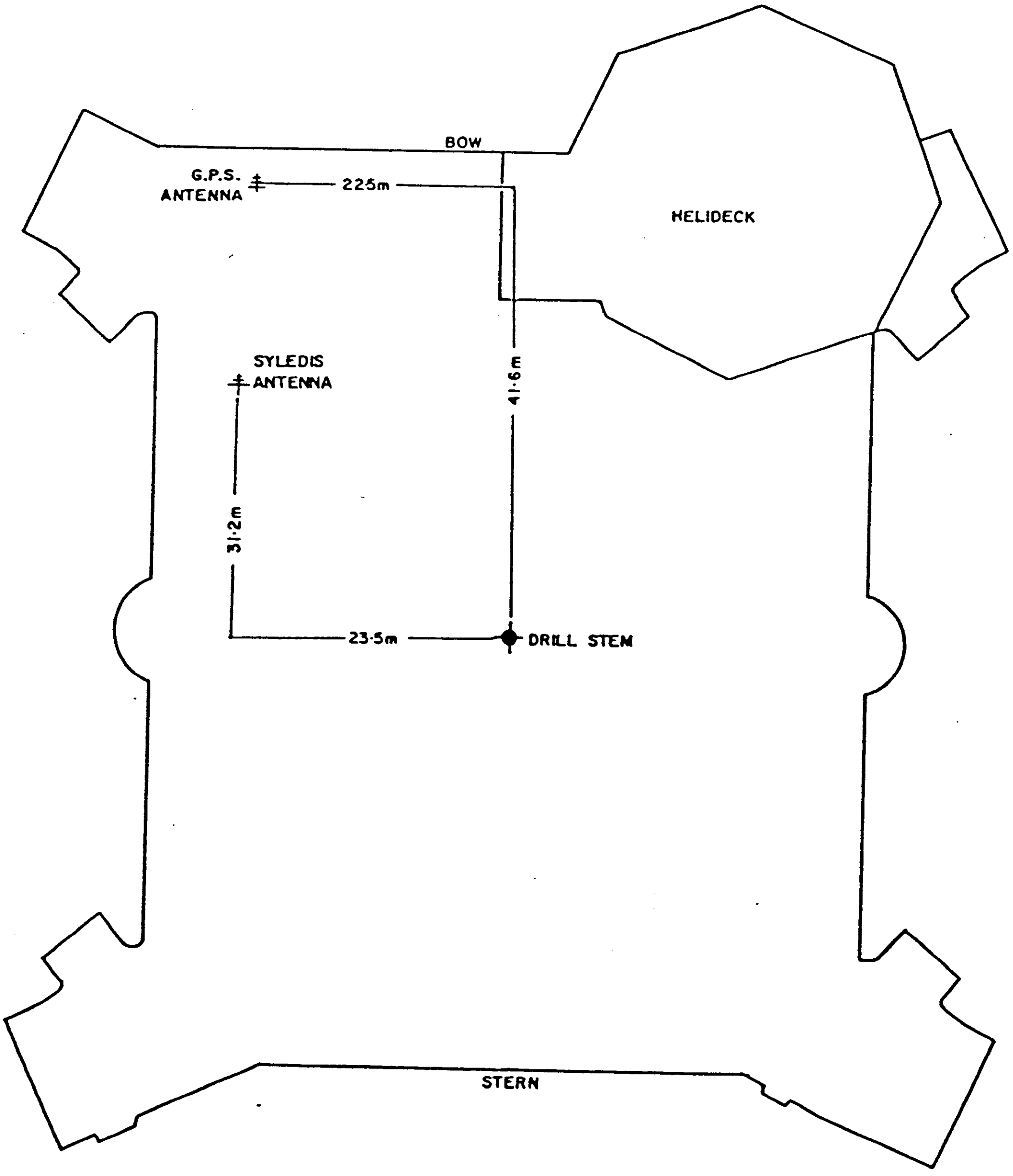
5.0 DESCRIPTION OF TECHNIQUES EMPLOYED

The Syledis antenna was mounted on top of the radar mast on the "Zapata Arctic", with the Syledis module and the Minitrac Navigation System located in the Wheelhouse. The G.P.S. antenna was mounted on a guard rail directly above the wheelhouse, with the G.P.S. monitor also in the wheelhouse. The rig was navigated to site using 3 range Syledis fixes and readings derived from the rigs gyro compass. All positions were calculated to place the drillstem or derrick over the location. Offsets for the Syledis and GPS antennae are shown in the diagram in Appendix A.

6.0 SUMMARY OF SYLEDIS 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 Minitrac software.

APPENDIX A



ZAPATA ARCTIC
ANTENNA OFFSETS

ORIENTATION

SURVEYED	M.F.G.
DRAWN	T.M.
CHECKED	

"THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. UNAUTHORISED USE OF THIS DOCUMENT IN ANY FORM WHATSOEVER IS PROHIBITED"

DATE	MARCH 89
SCALE	N.T.S.
DATUM	
REF.	HY 8069
PLAN No.	REV.

```
 ================================
  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  625736.29 5758478.40   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: 625736.3 N: 5758478.4

DEFINED OFFSETS
       X:  23.5 Y: -31.2

WAY POINT ANEMONE SET:-
     E: 615580.0 N: 5708499.0

FIX:   1
========

Mast Posn:       615526.5 East
                5708493.7 North
                       .2 Rmse
Offset Posn:     615565.6 East
                5708493.7 North
                    307.0 Gyro

Offset to Waypoint: ANEMONE
Brg:  69.8       Dist:    15.4

       Ranges       C-Os
       ------       ----
     150518.3        .1
      68531.4       -.2
      51027.9        .2

----------------------------------
```

GPS POSITION: 615568.4 EAST

5708489.9 NORTH

ANEMONE - 1/1A

SUMMARY OF ACTIVITIES

DATE	REPORT NO.	DEPTH m	MUD WEIGHT (S.G.)	ACTIVITY
27.05.89	1	-	-	Moved to location. Ran anchors. Fire in 1 propulsion motor, had to shut down 2 motors. Only able to hold position in high winds. Ran anchors 2,4,6,12.
28.05.89	2	-	-	Ran anchors 1,3,8,7,10.
29.05.89	3	299	1.03	Ran anchors 9,11 (5 still on deck). Ballasted. Pretensioned anchors. Tagged bottom at 258m. ROV placed hole finder buoys and recovered sea bed sample. Drilled 36" to 299m.
30.05.89	4	319	1.08	Drilled 36" hole to 319m. Filled hole with hi-vis mud. Ran and cemented 30" casing. Pulled stinger. Tagged cement at 309m. Drilled cement to 312m.
31.05.89	5	560	1.08	Drilled cement and shoe to 319m. Drilled and surveyed 26" hole to 560m. Ran 20" casing.
01.06.89	6	560	-	Ran 20" casing. Landed 18-3/4" housing. Cemented casing. Ran riser and BOP.
02.06.89	7	565	1.03	Ran riser and BOP. Pressure tested casing against shear rams to 1500psi. Tested BOP. Ran wear bushing. Tested surface equipment. Picked up 17-1/2" BHA. RIH and tagged cement at 536m. Safety drill. Drilled out cement and shoe to 560m. Drilled 17-1/2" hole to 565m. Performed F.I.T.
03.06.89	8	883	1.10	Drilled 17-1/2" hole to 703m. Ran Totco, wireline parted. POOH and found wireline in HWDP. RIH. Drilled 17-1/2" hole to 883m.
04.06.89	9	1115	1.10	Drilled 17-1/2" hole to 945m. Lost circulation due to stabiliser packing-off. Slowed pump rate and regained circulation. Drilled to 1115m.
05.06.89	10	1115	1.10	POOH. Schlumberger log

				DLT/LSS/GR/CAL. Ran 13-3/8" casing. Ran and cemented 13-3/8" casing.
06.06.89	11	1115	1.04	Set pack off and tested BOP. POOH landing string. Laid down 17-1/2" BHA. Picked up 12-1/4" BHA. Drilled out cement and plugs.
07.06.89	12	1580	1.09	Located restriction in choke line. Drilled out shoe to 1115m. Drilled 12-1/4" hole to 1119m. Performed FIT to 1.80SG EMW. Drilled to 1580m. Displaced to seawater/gel/polymer mud.
08.06.89	13	1981	1.11	Drilled 12-1/4" hole to 1621m. Wiper trip to shoe. Drilled to 1981m.
09.06.89	14	2394	1.15	Drilled 12-1/4" hole to 2022m. Wiper trip to 1516m. Drilled to 2394m.
10.06.89	15	2669	1.15	Drilled 12-1/4" hole to 2428m. Wiper trip to shoe. Drilled to 2669m.
11.06.89	16	2857	1.15	Drilled 12-1/4" hole to 2765m. Drilling break, flow check, circulated bottoms up. Drilled to 2806m. Wiper trip to 1950m. Drilled to 2857m.
12.06.89	17	2929	1.15	Drilled 12-1/4" hole to 2874m. POOH. Laid down PDM and changed bit. RIH. Drilled to 2929m.
13.06.89	18	3040	1.15	Drilled 12-1/4" hole to 2994m. Lost pressure. POOH and found wash out in DP. RIH and washed to bottom. Drilled to 3040m.
14.06.89	19	3076	1.15	Drilled 12-1/4" hole to 3076m. Wiper trip to 2665m. RIH to bottom. Circulated. POOH. Schlumberger log supercombo DLT/SLT/LDT/CNT/MSFL/GR.
15.06.89	20	3076	1.15	Schlumberger log SHDT/CST. Made up 9-5/8" hanger. RIH. Washed 3053 to 3069m.
16.06.89	21	3076	1.15	Washed to bottom. POOH - tight spot. RIH. Washed to bottom. Circulated. POOH. Flushed BOP. Ran 9-5/8" casing.
17.06.89	22	3076	1.15	Ran and cemented 9-5/8" casing. POOH with running tool. Tested BOP.
18.06.89	23	3076	1.16	Tested BOP. Laid down 12-1/4" BHA.

				Picked 8-1/2" BHA and MWD. RIH to float collar. Circulated bottoms up to check for H_2S.
19.06.89	24	3089	1.13	Drilled out cement and shoe to 3076m. Drilled 8-1/2" hole to 3082m. Performed FIT to 1.60SG EMW. Drilled to 3087m. POOH. Changed bit, picked up junk sub. RIH. Reamed to 3089m.
20.06.89	25	3181	1.12	Worked junk sub. Drilled 8-1/2" hole to 3181m. POOH. Changed bit.
21.06.89	26	3358	1.12	RIH. Reamed to 3181m. Worked junk sub. Drilled 8-1/2" hole to 3358m. Controlled rpm due to high torque.
22.06.89	27	3416	1.12	Drilled 8-1/2" hole to 3371m. POOH. Changed bit and MWD. RIH. Reamed to 3371m to log MWD - MWD failed. Drilled to 3397m. Drilling break. Circulated for samples. Drilled to 3416m.
23.06.89	28	3471	1.12	Drilled 8-1/2" hole to 3468m. Pressure lost. POOH and found wash out in DP. RIH. Drilled to 3471m. POOH.
24.06.89	29	3531	1.12	POOH. Picked PDC and PDM. RIH. Reamed to 3471m. Drilled 8-1/2" hole to 3531m. PDM locked. POOH. Retrieved wear bushings.
25.06.89	30	3566	1.12	Tested BOP. Set wear bushings. RIH. Drilled 8-1/2" hole to 3566m (low rpm).
26.06.89	31	3766	1.12	Drilled 8-1/2" hole to 3766m.
27.06.89	32	3851	1.12	Drilled 8-1/2" hole to 3851m. POOH. Collided with crown saver. Changed bit. Picked up PDM - not operational - RIH.
28.06.89	33	3971	1.11	RIH. Reamed to 3851m. Drilled 8-1/2" hole to 3971m.
29.06.89	34	3985	1.12	Drilled 8-1/2" hole to 3981m. Pressure increased. POOH. Changed bit - RIH. Reamed to 3981m. Drilled to 3985m.
30.06.89	35	4077	1.12	Drilled 8-1/2" hole to 4050m. Circulated for sample. Drilled to 4077m.

01.07.89	36	4155	1.12	Drilled 8-1/2" hole to 4155m.
02.07.89	37	4158	1.12	Drilled 8-1/2" hole to 4158m. Torque increased. Worked free. POOH. Bit lost 3 cones. RIH with reverse circulating junk basket. Washed to bottom. Milled on junk. POOH.
03.07.89	38	4158	1.13	POOH. Laid down reverse circulating junk basket - no junk. RIH with bit and 2 junk subs. Washed in bottom. Milled on junk. POOH. Recovered 7lb junk including 45 inserts. Schlumberger log: supercombo.
04.07.89	39	4158	1.13	Schlumberger log: supercombo and Electromagnet (recovered small quantity of fine junk). Tested BOP. Made up bit and RIH.
05.07.89	40	4159	1.14	Washed to bottom. Worked on junk. POOH. Recovered 1 lb of junk. Made up reverse circulated junk basket and RIH. Milled on junk. POOH. Recovered 2 lb of junk and core. Made up bit.
06.07.89	41	4174	1.13	RIH. Washed to 4159m. Drilled 8-1/2" hole to 4174m. POOH. Changed bit and RIH.
07.07.89	42	4242	1.13	RIH. Reamed to 4174m. Drilled 8-1/2" hole to 4232m. Circulated for sample. Drilled 8-1/2" hole 4242m.
08.07.89	43	4277	1.13	Drilled 8-1/2" hole to 4245m. POOH. Changed bit. Picked up PDM and MWD (failed). Changed MWD. RIH. Reamed to 4245m. Drilled to 4277m.
09.07.89	44	4314	1.14	Drilled 8-1/2" hole to 4293m. MWD not working. Dropped Totco. POOH. Laid down PDM and MWD. Changed bit. RIH. Drilled to 4314m.
10.07.89	45	4407	1.14	Drilled 8-1/2" hole to 4407m.
11.07.89	46	4454	1.14	Drilled 8-1/2" hole to 4454m. POOH. RIH with test plug.
12.07.89	47	4494	1.15	Tested BOP. Picked up and tested MWD. RIH to 4443m. Took weight. Jarred free. Reamed to 4454m. Drilled to 4494m.
13.07.89	48	4605	1.30	Drilled 8-1/2" hole to 4525m. Drilling break - flow check.

				Circulated for samples. Drilled to 4562m - 47% gas. Circulated and increased mud weight to 1.18SG. Drilled to 4605m - high gas. No gain. Increased mud weight to 1.30SG. Increase in flow rate: shut well in. SIDPP = 0; SICP = 200psi - 0 bbl gain.
14.07.89	49	4605	1.50	Well shut in. Circulated with 1.30SG mud. Shut well in. SIDPP = 280psi - SICP = 350psi. Increased mud weight to 1.43SG. Killed well (max gas 65%). Circulated riser with kill mud. Observed well static. Worked pipe free. Washed to bottom. Increased mud weight to 1.48SG.
15.07.89	50	4609	1.46	Worked pipe and circulated - max gas 60%. Pulled 4 stands and circulated. Washed to 4605m. Drilled 8-1/2" hole to 4609m. Unable to pass 4595m after connection. Pipe stuck. Worked on pipe and spotted EZ-spot. Pumped 1 bbl every 1/2 hour, working pipe. RIH with Schlumberger free point indicator.
16.07.89	51	4609	1.42	Schlumberger FPI - pipe stuck at 3532m. Circulated EZ spot to stuck point working pipe. Circulated EZ-spot out. Decreased mud weight to 1.42 SG. Spotted new pill of EZ-spot. Ran Schlumberger FPI. POOH to repair FPI. Reran FPI - pipe stuck at 3532m. RIH with back off tool.
17.07.89	52	4609	1.42	Attempted to back off - negative. POOH and rigged up 2nd charge while circulating well. Ran back off tool - backed off at 3515m. POOH. Picked up fishing assembly. RIH and engaged fish. Worked pipe.
18.07.89	53	4609	1.44	Jarred on fish while circulating. Flow increased. Shut well in. Filled riser with kill mud. Monitored well. Opened well and jarred on pipe. Gained 5 bbl - shut well in. Circulated well on choke with 1.42 SG mud. Flow checked. Opened well. Fishing string stuck. Worked on pipe and increased mud weight to 1.44 SG. Ran Schlumberger pengo charge and cut BHA at 4573m.
19.07.89	54	4609	1.44	Spotted cement plug. Applied 280psi on annulus while WOC. Ran

				Schlumberber temperature log - TOC at 4274m. Monitored well - 3 bbl gain. Shut well in. Perforated 1 shot with Schlumberger at 4254m - 3 bbl gain. Attempted to circulate - no success. Perforated 1 shot at 4150m - 1.5 bbl gain. Attempted to circulate without success.
20.07.89	55	4609	1.46	Cut pipe at 4146m with Schlumberger pengo charge. Circulated and increased mud weight to 1.46 SG. Shut in well and displaced riser to kill mud. Opened and monitored well. Circulated. Spotted cement plug to 4026m.
21.07.89	56	4015	1.44	WOC holding 400 psi on annulus. Ran Schlumberger temperature log - TOC 4020m. Observed annulus - no flow. Ran with pengo charge to cut drill pipe at 4015m. Circulated while decreasing mud weight.
22.07.89	57	4015	1.24	Circulated and decreased mud weight to 1.38 SG. Flow check static. Reduced mud weight to 1.21 SG and worked on pipe.
23.07.89	58	4004	1.15	Circulated and reduced mud weight to 1.15 SG. Worked pipe. Pumped EZ spot pill. Fishing assy came free while RIH with free point indicator. Worked jar - no movement on fish. Ran free point indicator string stuck at 4015m. Backed fishing string at safety joint. Screwed back in and cut string at 4006m with pengo charge. Circulated and POOH.
24.07.89	59	3876	1.16	POOH and laid down fishing assy. RIH with bit to 4006m. Circulated and POOH. RIH and set cement plug 4006-3876m.
25.07.89	60	3876	1.16	POOH. WOC holding 500 psi. Tested BOP. Picked sidetrack BHA and RIH.
26.07.89	61	3976	1.15	RIH. Dressed cement from 3863 to hard cement at 3887m. Attempted to sidetrack 8-1/2" hole to 3976m. POOH. RIH to set cement plug.
27.07.89	62	3874	1.14	RIH and set cement plug 3976 to 3846. POOH. Picked up sidetrack assy and RIH. Dressed cement 3846 to 3850m.

				Attempted to sidetrack 8-1/2" hole to 3874m.
28.07.89	63	3913	1.14	Attempted to sidetrack 8-1/2" hole to 3908m. POOH. Picked Delta 500 and 2° bent sub. RIH. Attempted to sidetrack to 3913m.
29.07.89	64	3929	1.14	Attempted to sidetrack 8-1/2" hole to 3926m. POOH. Changed bit, RIH. Attempted to sidetrack to 3929m.
30.07.89	65	3943	1.14	Attempted to sidetrack 8-1/2" hole to 3943m. POOH. RIH and set cement plug 3843-3943m. POOH. RIH to dress off plug.
31.07.89	66	3896	1.15	Dressed off cement from 3845 to 3879m. POOH and picked up sidetracking BHA with 2-1/2° bent sub. Sidetracked 8-1/2" hole to 3896m.
01.08.89	67	3905	1.15	Drilled sidetrack 8-1/2" hole to 3905m. POOH. Laid down PDM and bent sub. Picked up F2000S with 3/4° bent housing. RIH.
02.08.89	68	3922	1.15	RIH. Drilled sidetrack 8-1/2" hole to 3909m. Unable to orientate. POOH. Picked up Delta 500 and 2-1/2° bent sub. RIH. Drilled sidetrack hole to 3922m. POOH.
03.08.89	69	3992	1.15	POOH. Laid down sidetrack BHA. RIH. Drilled 8-1/2" hole to 3992m.
04.08.89	70	4118	1.16	Drilled 8-1/2" hole to 4118m. Magnetic interference from fish. POOH.
05.08.89	71	4119	1.16	POOH. Tested BOP. RIH. Washed to 4118m. Worked junk sub. Drilled 8-1/2" hole to 4119m.
06.08.89	72	4210	1.15	Drilled 8-1/2" hole to 4210m.
07.08.89	73	4296	1.15	Drilled 8-1/2" hole to 4296m. POOH.
08.08.89	74	4344	1.15	POOH. Changed bit. RIH. Drilled 8-1/2" hole to 4344m.
09.08.89	75	4420	1.15	Drilled 8-1/2" hole to 4420m.
10.08.89	76	4488	1.15	Drilled 8-1/2" hole to 4488m.
11.08.89	77	4500	1.15	Drilled 8-1/2" hole to 4500m. Wiper trip to 3900m. Circulated. POOH.

				L/D MWD. RIH with Schlumberger supercombo: DLL/DHC/LDT/CNT/NGT/MSFL/AMS/SP.
12.08.89	78	4500	1.15	Schlumberger log supercombo DLT/MSFL/AMS/SP/SHDT, VSP (malfunction), RFT.
13.08.89	79	4500	1.15	Schlumberger log RFT - cable stuck, aborted run - CBL/VDL/CCL/GR in 9-5/8" casing. RIH. Tight hole at 4456m. Attempted to circulate - hole packed off. Worked pipe and reamed to TD. Circulated. POOH.
14.08.89	80	4500	1.15	POOH. Schlumberger log RFT (+ 1 segregated sample), VSP - tool failure - changed tool.
15.08.89	81	4500	1.15	Schlumberger log VSP, RFT chamber - cable stuck. Pulled free. Made up liner hanger assy. RIH with bit.
16.08.89	82	4500	1.16	RIH and reamed from 4362 to 4500m. Circulated. POOH to shoe. RIH to TD. Circulated. Spotted hi-vis pill on bottom. POOH.
17.08.89	83	4500	1.16	POOH. Ran 7" liner. Set liner hanger. Cemented liner.
18.08.89	84	4500	1.16	POOH. RIH and jet wellhead. Tested BOP.
19.08.89	85	4500	1.16	Picked up 8-1/2" bit and 9-5/8" casing scraper. RIH. Hanging up at 501m POOH and laid down scraper, bit damaged. RIH with 8-1/4" flat bottom mill. Tagged at 472m. Circulated and recovered rubber. RIH and tagged at 2945m. Dressed off with mill. POOH and laid down drill collars. Picked up 6" BHA.
20.08.89	86	4500	1.16	RIH with 3-1/2" DP. Picked up 9-5/8" casing scraper. RIH. Washed down to 4453m. Drilled out landing collar and cement to 4475m. POOH.
21.08.89	87	4500	1.16	POOH to 1750m laying out 5" DP. Tested liner lap - leak off at 2380 psi. POOH. Ran CBL/VDL/CCL/GR. RIH with 7" polished mill and cleaned tie-back receptacle. POOH.
22.08.89	88	4500	1.16	POOH. Laid down polished mill. RIH and set 7" x 9-5/8" tie-back packer.

				Pressure tested to 4000 psi. POOH. Tested BOP.
23.08.89	89	4500	1.16	Tested BOP. RIH and jet wellhead. Attempted to set wear bushing - no success. RIH with 8-1/2" bit. Still unable to set wearbushing. RIH with mill and flush tool - set wearbushing. RIH with 6" bit.
24.08.89	90	4503	1.30	RIH. Drilled out cement and shoe. Drilled 6" hole to 4503m. FIT to 1.70 SG. Circulated and increased mud weight to 1.30 SG. POOH.
25.08.89	91	4508	1.30	POOH. Changed bit. RIH and drilled 6" hole to 4508m. POOH.
26.08.89	92	4533	1.31	POOH. Changed bit. RIH. Drilled 6" hole to 4530m. Flow checked. Drilled to 4533m. Circulated and observed well - max gas 52.7%. Increased MW to 1.31 SG.
27.08.89	93	4585	1.45	Increased MW to 1.35 SG. Observed well. Drilled 6" hole to 4585m. Increased MW to 1.37 SG. Circulated bottoms up - POOH 3 stands. Flushed riser - monitored well - 5 bbl gain over 1 hour. RIH. Increased MW to 1.38 SG. Shut well in - SIDPP 260psi, SICP 270 psi. Increased MW to 1.45SG. Started to kill well.
28.08.89	94	4585	1.45	Killed well. POOH to shoe and observed well. RIH and circulated. Flow checked. POOH 10 stands. POOH to top of 7" liner. Flow checked. RIH to 7" shoe. Observed well. RIH and circulated. POOH 9 stands - 1 bbl gain. RIH to TD.
29.08.89	95	4647	1.48	Circulated. Increased MW to 1.48 SG. POOH 10 stands. Flow checked. RIH to shoe. Observed well. RIH. Circulated bottoms up. Flow checked. POOH 3 stands. RIH. Drilled 6" hole to 4647m.
30.08.89	96	4652	1.48	Drilled 6" hole to 4648m. POOH 6 stands. RIH and circulated. POOH. Changed bit. RIH. Washed to 4648m. Drilled to 4652m.
31.08.890	97	4750	1.48	Drilled 6" hole to 4750m. Drilling break. Flow checked. Circulated. Pulled 10 stand wiper trip.

01.09.89	98	4750	1.52	Observed well - 1-1/2 bbl gain. RIH. Circulated and increased MW to 1.52 SG. Flow checked. POOH 5 stands, RIH and circulated. Flow checked, POOH 10 stands. RIH - circulated - flow checked. POOH to shoe. Flow checked. POOH.
02.09.89	99	4750	1.52	POOH to top of liner - flow checked. POOH. Ran Schlumberger logs DLT/BHC/MSFL/AMS/GR and LDT/CNL/GR/GPT/TLL/AMS. Could not enter 6" hole.
03.09.89	100	4757	1.52	Schlumberger log RFT - could not enter 6" hole. RIH with bit. Reamed to 4750m. Drilled 6" hole to 4757m.
04.09.89	101	4775	1.52	Drilled 6" hole to 4775m. Wiper trip to shoe. POOH. Schlumberger log LDT/CNL/GR/MLT/GPT/TCC/AMS. Stuck in hole.
05.08.89	102	4775	1.52	Attempted to free Schlumberger. RIH with overshot over Schlumberger cable.
06.09.89	103	4775	1.52	Tagged fish at 4520m. Engaged fish, pulled free. POOH. RIH and jetted wellhead. Retrieved wearbushing.
07.09.89	104	4775	1.52	Tested BOP. RIH with 6" bit. Reamed to 4525m.
08.09.89	105	4775	1.52	Reamed to 4775m. Wiper trip to shoe. Circulated. POOH. Ran 5" liner.
09.09.89	106	4775	1.52	Ran 5" liner. Set liner hanger. Cemented liner. POOH with running tool.
10.09.89	107	4775	1.51	Picked up 6" bit and 7" casing scraper. RIH and tagged cement at 4326m. Drilled cement to 4338m. Tagged top of liner. Tested top of liner with 4000 psi - OK. POOH. Picked up 4-1/8" bit and 5" casing scraper.
11.09.89	108	4775	1.51	Picked 2-3/8" DP. RIH. Reamed to 4747m. Drilled on plugs. No progress. Circulated. POOH.
12.09.89	109	4775	1.51	POOH. Laid down bit and scraper. Ran Schlumberger logs CBL/VDL/CCL/GR, CNL/GR, GST/GR.

13.09.89	110	4775	1.52	Picked up 7" polish mill. RIH. Polished tie back packer. POOH laying down 5" DP. RIH and jet wellhead. Retrieved wearbushing. Made up 7" casing hanger. Ran 7" VAM tie-back string.
14.09.89	111	4775	1.52	Ran 7" string. Stung into receptacle. Tested seals to 2500 psi - OK. Picked up 1 ft and closed No. 3 ram on painted DP. POOH. No mark on DP. Reran. Closed No. 3 rams and POOH. No mark. Reran. Closed No. 4 ram. POOH and spaced out. RIH and landed hanger. Attempted to test 4000 psi - no. POOH with 7" casing.
15.09.89	112	4775	1.52	POOH with 7" casing. Redressed TIW seal nipple. RIH with 7" casing.
16.09.89	113	4775	1.52	RIH with 7" casing. Landed hanger. Attempted to test to 3000 psi - No. POOH with 7" casing (lock ring missing). RIH and jetted wellhead. Observed well.
17.09.89	114	4775	1.52	Unlatched BOP. Functioned same and recovered lock ring and VX-gasket with ROV. Installed new VX-gasket. Latched BOP. Pressure tested to 9000 psi - OK. Ran 7" casing with orifice collar.
18.09.89	115	4775	1.52	Ran 7" casing. Landed hanger. Picked up 3m and cemented casing. Landed hanger. Torqued up pack off (20,000 ft lb) and tested to 9000 psi - OK. Tested BOP. RIH with 6" bit.
19.09.89	116	4775	1.52	RIH. Tagged cement at 2895m. Drilled out cement and orifice collar. Washed to 3000m. Circulated. POOH. RIH with 4.05" flat bottom mill and 5" scraper.
20.09.89	117	4775	1.52	RIH picking up 3-1/2" DP to 4746m. Circulated. Pumped hi-vis pill. POOH. Laid down 5" DP.
21.09.89	118	4775	1.52	POOH. Schlumberger ran 5-3/4" gauge ring. Hung up at tie-back and at 4310m. RIH with 6" flat bottom mill and 7" casing scraper and junk sub. Circulated. Pumped hi-vis pill. POOH.

22.09.89	119	4775	1.52	POOH. Laid down mill, scraper, junk sub. Made up EZ tree assy, lubricator valve assy, flowhead. Picked up guns and DST tools. RIH on 3-1/2" tubing using Weatherford "Hold" system.
23.09.89	120	4775	1.52	RIH with DST #1 with 3-1/2" tubing.
24.09.89	121	4775	1.52	RIH with DST #1 on 3-1/2" and 4-1/2" tubing. Landed fluted hanger. Schlumberger ran correlation log. POOH and spaced out.
25.09.89	122	4775	1.50	Picked up flowhead and landed hanger. Set packer. Schlumberger ran correlation log. Opened MIRV. Attempted to reverse circulate - no success. Pumped 20 bbl hi-vis mud down string to clear annulus.
26.09.89	123	4775	1.50	Reverse circulated through MIRV. Tested surface equipment. Ran with drop bar assy. Opened PCT valve. Worked through tight spots. Detonated guns. Opened well for 10 min. Closed well in for 1 hr. Opened well and flowed to tank for 1 hr. Closed well in for night and monitored choke manifold pressure.
27.09.78	124	4775	1.51	Opened well and flowed through 3-1/4" then 1/2" choke. Flowed to separator.
28.09.89	125	4775	1.51	Well flowing. Closed well in. RIH with Must tool. Opened well. Fire at Flopetrol heater. Emergency shut in while extinguishing fire. Opened well monitoring pressure with Must tool.
29.09.89	126	4775	1.50	Shut well in and monitored pressure build up with Must tool. Must malfunction. Attempted to pull wire - line parted. Monitored build up at choke manifold.
30.09.89	127	4775	1.51	Well shut in.
01.10.89	128	4775	1.51	Opened well and flowed through separator. Shut well in. Opened well for sampling.
02.10.89	129	4775	1.52	Shut well in at choke manifold. Halliburton bullheaded 96 bbl down tubing. Formation pressured up. Opened well static. Closed PCT. Attempted to open MIRV - no success.

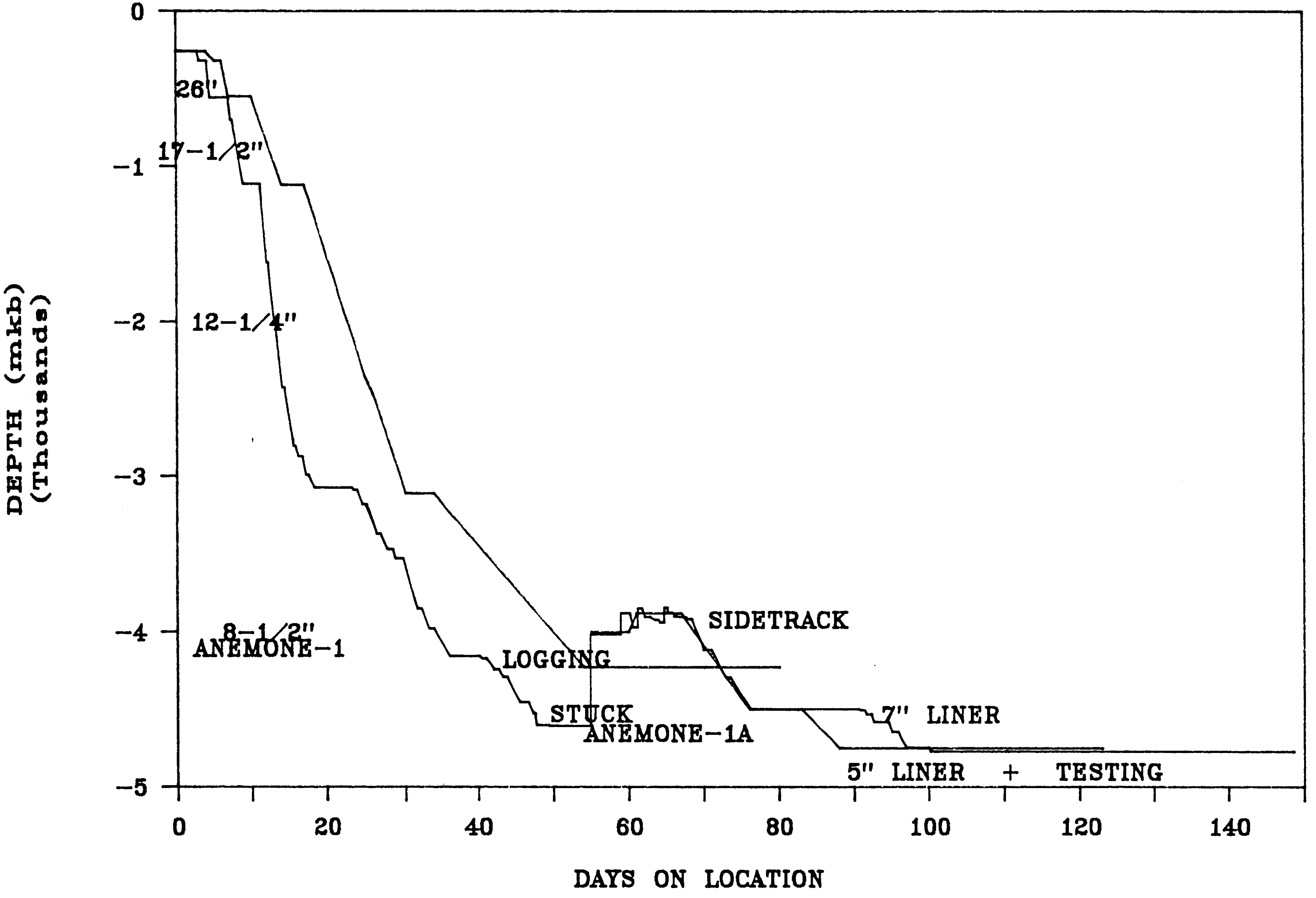
				Pressured up annulus to open SHORT with 3450 psi. Reverse circulated.
03.10.89	130	4775	1.52	Reverse circulated through choke manifold. Observed well. Unseated packer. Flushed riser. POOH with DST #1 string.
04.10.89	131	4775	1.52	Laid down DST tools. RIH with 5" and 7" casing scraper.
05.10.89	132	4775	1.52	RIH with scraper to 4652m. Circulated. Observed well. POOH and laid down scrapers. Ran Schlumberger gauge ring. Schlumberger set 5" EZSV bridge plug at 4593m. Pressure tested to 4000 psi. Tested BOP.
06.10.89	133	4775	1.51	Tested BOP. RIH with DST #2 assy.
07.10.89	134	4775	1.50	RIH with DST #2 on tubing. Made up fluted hanger, lubricator, flowhead. Tested string to PCT. Set packer. Schlumberger ran correlation log. Tested Flopetrol surface equipment.
08.10.89	135	4775	1.50	Opened PCT. Dropped firing bar. Observed well - guns did not fire. RIH with overshot. Worked bar. POOH - bar bent. Changed bar in overshot - bar fell off. Opened well for 10 min. Closed well in for night.
09.10.89	136	4775	1.50	Opened well for DST #2.
10.10.89	137	4775	1.50	Well flowing. Ran with gauges and sample catcher on wireline. Took 2 samples and recorded pressure gradient. POOH. Recovered samples. Well flowing.
11.10.89	138	4775	1.50	Closed PCT. Opened MIRV. Reverse circulated to kill well. Closed MIRV. Opened PCT. Attempted to bullhead rest of tubing - no success. Closed well in. Opened short and unseated packer. Observed well. POOH with DST #2 string.
12.10.89	139	4775	1.50	POOH. Laid down tubing and DST tools. RIH with open ended drill pipe.
13.10.89	140	4775	1.50	RIH. Reamed to bridge plug. Circulated. Set cement plug #1 - 4593-4400m. Pulled to 4400m and reverse circulated. Set cement plug #2 - 4400-4250m. POOH. Laid down DP.

14.10.89	141	4775	1.50	POOH to 3000m. Pressure tested plug with 4000 psi. Set cement plug #3 - 3000-2850m. Circulated and spotted corrosion inhibitied mud. POOH. Laid down DP. RIH with 7" and 9-5/8" casing cutter to 1075m. Attempted to cut - no success. POOH. RIH with 7" casing cutter to 1075m. Attempted to cut 7" casing - not conclusive. POOH.
15.10.89	142	4775	1.46	RIH with 9-5/8" casing cutter. Attempted to cut - no success. POOH. Schlumberger perforated 1076-1083m. Established leak off at 13-3/8" shoe - 1050 psi with 1.49 SG mud. RIH with open-ended DP. Spotted corrosion inhibited mud. Set cement plug #4 - 1110-960m. Squeezed 5 bbl in 9-5/8" and 13-3/8" annulus. POOH. RIH with pack off retrieving tool. Attempted to back out pack off - connection loose with 28,000 ft lb torque. POOH. RIH with tool on 8" DC.
16.10.89	143	4775		Attempted to back out pack off. Connection loose with 40,000 ft lb. POOH checking connections. RIH and jetted wellhead. RIH with pack off retrieving tool. Attempted to back out pack off - connection loose with 40,000 ft lb. POOH. RIH with open-ended DP to 340m. Set cement plug #5 - 340-280m. POOH. Laid down DP. Schlumberger perforated at 262m. Observed well static. RIH. Tagged cement at 278m. Displaced hole to seawater.
17.10.89	144	4775		POOH. Laid down DP. Unlatched BOP and pulled BOP and riser.
18.10.89	145	4775		Pulled and laid down riser and BOP. RIH with casing hanger running tool and explosive charge #1. Detonated charge at 266m. Attempted to connect running tool - connection loose. POOH and retorqued HWDP. RIH and screwed into 7" hanger. Pulled with 320k lb overpull - no success. POOH. RIH with running tool and charge #2. Detonated at 265.5m. Unable to screw into 7" casing hanger. POOH. RIH with H4 connector.
19.10.89	146	4775		RIH with H4 connector and latched onto wellhead. Pulled 200k lb overpull - no success. POOH. RIH with H4

			connector and charge #3 - unable to enter wellhead. POOH. RIH and jetted wellhead. RIH with casing hanger running tool - unable to screw onto casing hanger. RIH with charge #3 and H4 connector. Detonated charge at 264.5m. Latched connector and pulled wellhead free with 180k lb overpull.
20.10.89	147	4775	POOH with wellhead, guide base and 5 strings of casing. Laid down connector. RIH with HWDP and stabbed into hole. Spotted cement plug #6. Ran seabed inspection survey. POOH. Laid down all pipe. Deballasted rig.
21.10.89	148	4775	Pulled anchors.
22.10.89	149	4775	Pulled anchors. Rig released at 1600 hours.

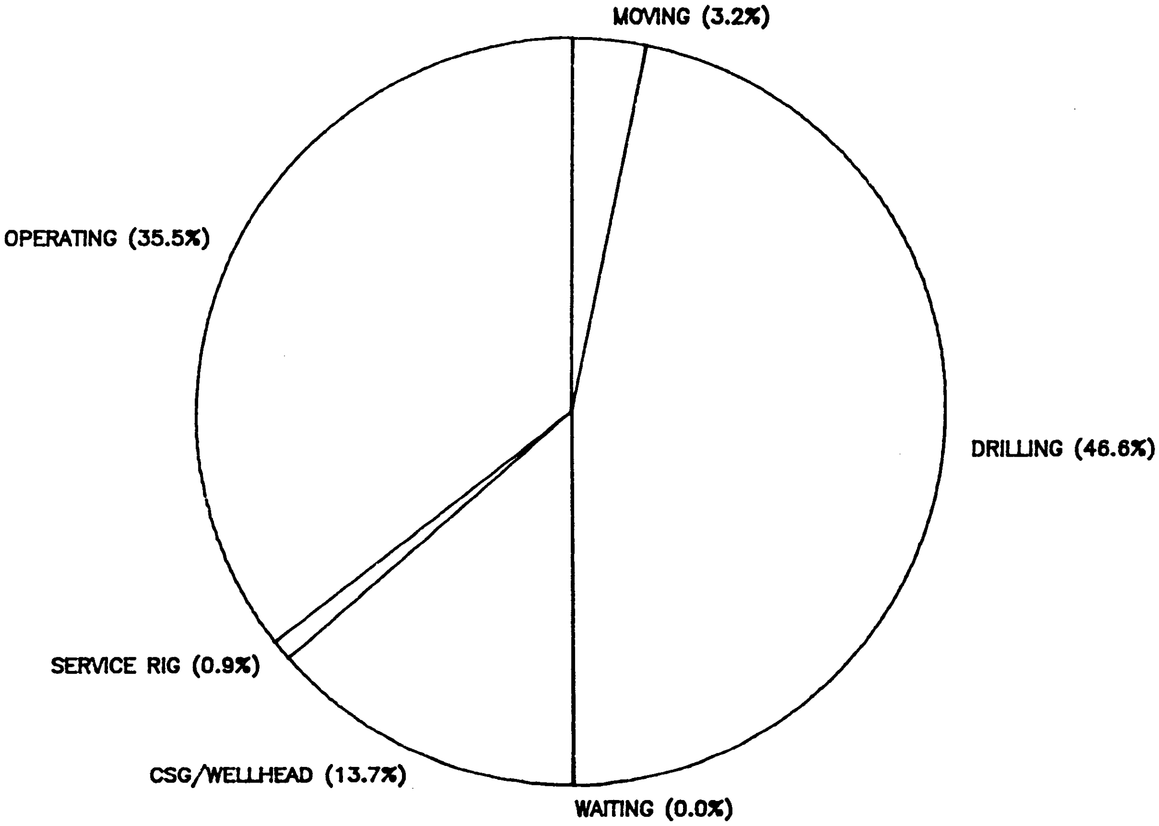
B. deVinck
24.10.89

ANEMONE – 1 / 1A

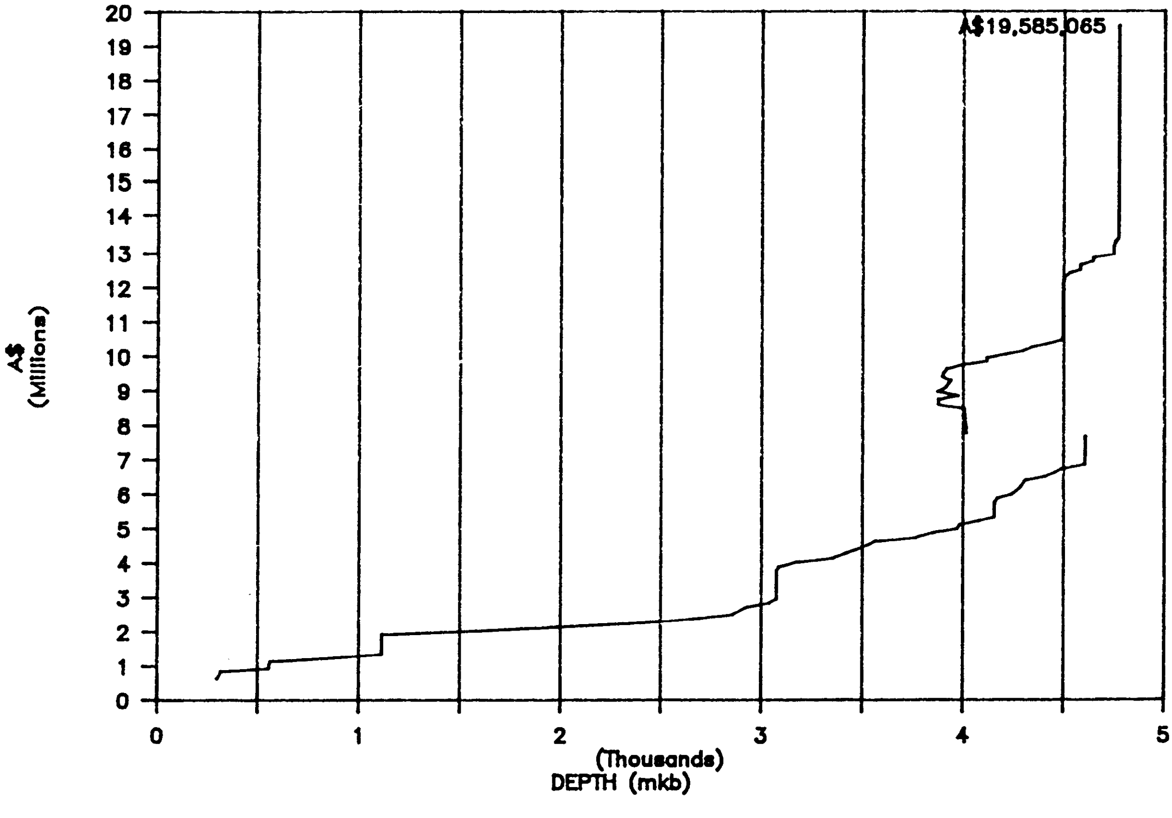


DEPTH (mkb)
(Thousands)
0
-1
-2
-3
-4
-5
26"
17-1/2"
12-1/4"
8-1/2"
ANEMONE-1
LOGGING
STUCK
ANEMONE-1A
SIDETRACK
7" LINER
5" LINER + TESTING
0
20
40
60
80
100
120
140
DAYS ON LOCATION

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
- Stuck Pipe
- Fishing
- Directional Work (Sidetrack)
- Leak Off Test
- ROV Operations
- Safety Drill
- Plug and Abandon
- Kill Well

5. WAITING

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

6. SERVICE RIG

- Lubricate Rig
- Repair Rig
- Slip and Cut Line

ANEMONE 1/1A

CONTRACTOR SUMMARY

Drilling	Zapata Off-Shore Company
Mud Engineering & Products	Baroid Australia
Mud Logging	Geoservices
Electrical Logging	Schlumberger
MWD	Teleco Smith International
Directional Drilling	Smith International
Downhole Motors	Eastman Christensen Smith International
Casing and Tubing Crew	Weatherford
Rental Tools	Tri-State Tasman Oil Tools Petrodrill
Cementing	Halliburton
Liner Hanger	TIW (Petrodrill)
Testing : Downhole Tool	Schlumberger
Testing : Surface Readout	Schlumberger
Testing : Memory Gauges	Exal
Coring	Diamant Boart Stratabit
Wellhead	Vetco Gray
Wellhead Retrieving	Techmaster
Casing Cutting	Tri-State
R.O.V.	SubSea International
Helicopters	Bristow Helicopters
Supply Boats	Australian Offshore Services
Positioning	Associated Surveys
Site Survey	Associated Surveys
Telecommunications	Utek
Weather Forecasting	Oceanroutes
Transport and Handling	Peter Stoitse Transport
Local Labour (Base)	Gippsland Offshore Services

6. DRILLING DATA

BIT RECORD

BIT RECORD

BIT	DIAM	MAKE	TYPE	SER No	NOZZLES	OUT	FOOTAGE	HOURS	ROP	WOB	RPM	GPM	PRESS	DEVI	SG	M VIS	COND	LITHOLOGY	REMARK
NR	in					m	m		m/hr	Klb			PSI	deg	gr/cc				
1RR	26	REED	Y11	K26271	4x11,4x8	319	61	3.25	18.8	0-5	30-90	300-900	2300	-	1.03	100		SAND (SPUD)	
	36	SMITH	HO		3x9														
2	17-1/2	HTC	CX3A	614PC	4x14	560	241	9.5	25.4	5-10	130	1000	2900	0.5	1.10	100	2.3.I	SAND/CLAY	
	26	SMITH	HO	112012	3x8														
2RR	17-1/2	HTC	CX3A	614PC	4x14	1115	555	38.5	14.4	5-20	130	865	3050	0.3	1.10	37	3.3.I	CALCARENITE	
3	12-1/4	HTC	B9M+	122CAA5267	5x16,12	2874	1759	101.5	17.3	5-25	295-340	730-775	2400-3200	6.1	1.15	49	75-90%	CLYST/SLST/SST	pdc+pdm
4	12-1/4	HYCALOG	DS34H	9247	2x16,2x14	3076	202	28	7.2	5-30	100-150	720-740	3000-3200	1.0	1.15	45	90%	SST/SLST/COAL	
5	12-1/4	REED	HP43A	J60045	OPEN					5-25	100	725-745	2150		1.15	44	1.1.I		wiper trip
6	8-1/2	EC	R435S	149077	4x12	3089	13	6.5	2.0	10-25	70-100	500	3200	1.2	1.13	41	100%	SLST/SST	drilled float equipment
7	8-1/2	REED	HP43AJK	C99887	3x13	3181	92	17	5.4	25-35	70	490	3035	0.5	1.12	42	6.2.1/16	SST/SLST/COAL	
8	8-1/2	DBS	TD290	7890445	13,13,14	3371	190	27	7.0	0-35	60-90	500	3000-3100	0.7	1.12	43	100%	SLST/SST/COAL	
9	8-1/2	REED	HP51AJK	EH1188	3x13	3471	100	24	4.2	10-30	30-90	490-500	3000-3100	1.0	1.12	44	4.2.1/8	SST/SLST	
10	8-1/2	EC	R437G	1490197	4x12	3531	60	6.5	9.2	0-15	250	450	2800	1.1	1.12	44	15%	SLST/SST	PDC+PDM - pdm locked
10RR	8-1/2	EC	R437G	1490197	4x12	3851	380	50	7.6	0-25	30-90	450	2650	1.4	1.12	43	100%	SLST/SST	1/16 undergauge
11	8-1/2	EC	R437G	1490196	4x12	3981	130	26.5	4.9	15-25	50-80	450	2400-2650	1.1	1.12	46	100%	SLST/SST	ringed
12	8-1/2	REED	HP53AJK	BT5596	3x12	4158	177	51.5	3.4	0-40	65-85	440-450	3120-3250	1.0	1.12	48	8.8.1/2	SLST/SST	3 cones lost
13	8-1/2	REED	S31G	BT1860	3x12	4158	0	4.5	0.0	5-15	30-80	440	3250	1.0	1.13	47	6.6.1/4		drilling junk
14	8-1/2	REED	S31G	BT1070	3x12	4158	0	2	0.0	5-40	50-80	440	3250	1.0	1.14	46	4.3.1/8		drilling junk
15RR	8-1/2	HTC	JD8	ZJ189	12,13,13	4174	16	8	2.0	35-45	60-85	440	3067	1.0	1.13	44	5.5.1/16	SHALE	bit ex-esso
16	8-1/2	REED	S21GJ	BT7373	3x12	4245	71	22.5	3.2	25-40	60-80	450	3120	1.9	1.13	48	5.6.1/8	SST/SLST	seal failure
17	8-1/2	LONGYEAR	DP15AG	033901	4x12	4293	48	12	4.0	10-40	250	425	3150	2.3	1.14	45	80%	SLST/SST	pdc+pdm : even wear
18	8-1/2	REED	HP51AJK	BT4485	3x11	4454	161	40.5	4.0	30-42	60-75	440-450	3500-3600	6.2	1.14	46	2.3.1/8	SLST/SST/SHALE	
19	8-1/2	REED	HP51AJK	BT4340	3x12	4609	155	22.5	6.9	7-30	75-100	340-460	3300-3650	6.2	1.46	45		SLST/SST	lost in hole
18RR	8-1/2	REED	HP51AJK	BT4485	3x11							544	2950		1.16	38			wiper trip
20	8-1/2	DBS	PDS1	HS1088011	3x13	3976	100	10	10.0	5-20	200	300	1800	1.5	1.15	49	10%	CMT	sidetrack:PDC+F2000S(3/4)
21	8-1/2	REED	HP13GJ	BT7117	3x12	3908	58	7	8.3	0-10	200	300	1620	1.5	1.14	47	2.2.1/8	CMT	sidetrack:F2000S(3/4DEG)
22	8-1/2	REED	HP13GJ	BT7106	3x15	3926	18	16.5	1.1	0-10	400	275	1620	1.5	1.14	47	6.8.1/2	CMT	sidetrack:D500(2 DEG)
23	8-1/2	REED	S21GJ	BT7390	3x15	3943	17	4.5	3.8	10-30	400	325	1519	1.5	1.14	46	3.4.1/8	CMT	sidetrack:D500(2 DEG)
21RR	8-1/2	REED	HP13GJ	BT7117	OPEN			1.5		10-20		325	1470		1.15	24	2.2.1/8	CMT	dress off plug

BIT RECORD

BIT NR	DIAM in	MAKE	TYPE	SER No	NOZZLES	OUT m	FOOTAGE m	HOURS	ROP m/hr	WOB Klb	RPM	GPM	PRESS PSI	DEVI deg	SG gr/cc	M VIS	COND	LITHOLOGY	REMARK
24	8-1/2	REED	HP13GJ	BT7118	3x15	3905	26	14.5	1.8	5-20	400	325-350	1470-2219	2.0	1.15	46	5.8.1/4	CMT/SST	sidetrack:D500(2.5DEG)
25	8-1/2	REED	HP51AJ	BT7176	3x12	3909	4	2	2.0	5-30	200	325	1932	4.1	1.15	44	1.4.1/4	SST/CMT	sidetrack:F2000S(3/4DEG)
26	8-1/2	REED	HP51AJ	BT7177	3x15	3922	13	3.5	3.7	15-20	400	295	1450	5.5	1.15	44	2.6.1/4	SST/SLST	sidetrack:D500(2.5DEG)
27	8-1/2	REED	HP43AJK	L44294	3x12	4118	196	36	5.4	30-40	68-76	443	3245	0.2	1.16	48	5.5.1/4	SST/SLST	
28	8-1/2	REED	HP43AJK	L44261	3x12	4296	178	46.5	3.8	20-42	70-113	440	3220-3490	2.3	1.15	51	5.8.1/4	SST/SLST	
29	8-1/2	SECURITY	S84F	400210	13,13,11	4500	204	65.5	3.1	35-42	75-80	440-465	3170-3550	5.2	1.15	60	3.4.I	SILTSTONE	
29RR	8-1/2	SECURITY	S84F	400210	OPEN					0-10	80	480	2560		1.15	52	3.4.I		wiper trip
30	8-1/2	REED	S21G	EH1359	OPEN					5-15	80	400	1750		1.16	46			wiper trip
31	6	REED	HP12	EH1833	OPEN			4		15	40	430	3050		1.16	46	4.2.I		drill float equipment
32	6	REED	HP12	EB1874	3x13	4503	3	3.5	0.9	10-25	48	300	2500		1.30	46	8.2.1/16	SLST/CMT	drill shoe
33	6	REED	HP12	EB1904	13,13,12	4508	5	7	0.7	15-20	50-75	300	2632		1.30	52	2.2.I	SILTSTONE	
34	6	REED	HP51AJ	BH1835	3x12	4648	140	21.5	6.5	25	70-80	300	2900-3120		1.48	49	4.4.3/8	SST/SLST	
35	6	LONGYEAR	DP15G	102101	3x11	4750	102	23	4.4	5-25	60-80	250-300	2950-3100		1.48	46	100%	SANDSTONE	ringed
36	6	REED	HP51AJ	EH1836	3x12	4775	25	6	4.2	15-25	68	275	2950		1.52	48	6.7.1/8	SANDSTONE	
34RR	6	REED	HP12	BH1835	OPEN														wiper trip
33RR	6	REED	HP12	EB1904	OPEN														clean out 7" liner
37	4-1/8	HTC	DR5	642EA	OPEN														clean out 5" liner
33RR	6	REED	HP12	EB1904	OPEN														clean out 7" liner

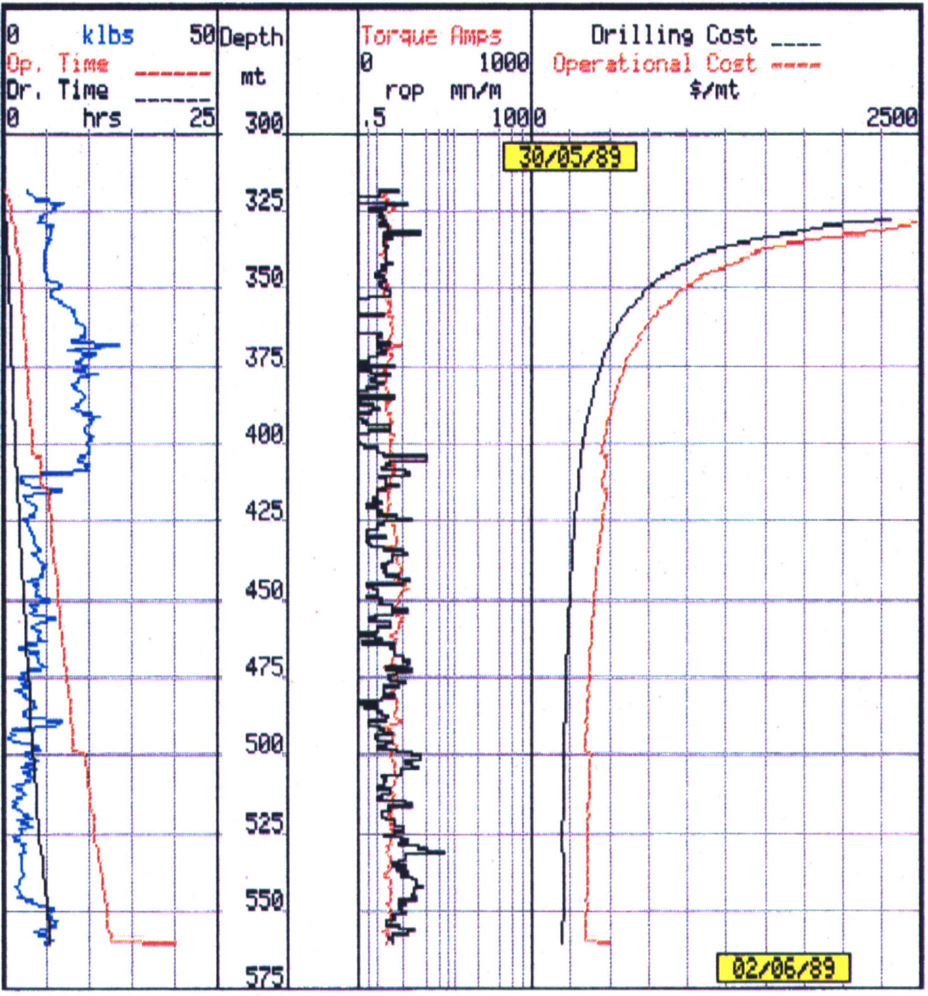
PE903141_colour4

Sequence #	1	
Bit #	2	
Bit size	17.5 + 26 HO	inch
Bit type	HTC CX3A	
Nozzles/tfa	4x14,3x8	/32
Depth in	319	mt
Depth out	560	mt
Dr.hours	9.5	hrs
wob	5/10	klbs
rpm	130	
Flow	1000	gpm
spp	2900	psi
Tooth wear	2	/8
Bit wear	3	/8
Gauge	I	/8
av.Trip time	2	hrs
Rig Cost/hr	5000	($)
Bit price	10000	($)

Bit Cost Chart

Average over the run

rop:	1.3	mn/m
wob:	9.6	klbs
rpm:	113.1	rpm
Flow:	942.2	gpm
spp:	733.7	psi
mwin:	1.0	s.g.
trque:	189.3	Amps
	hrs	$/mt
Drilling:	5.3	194
Operational:	19.9	497

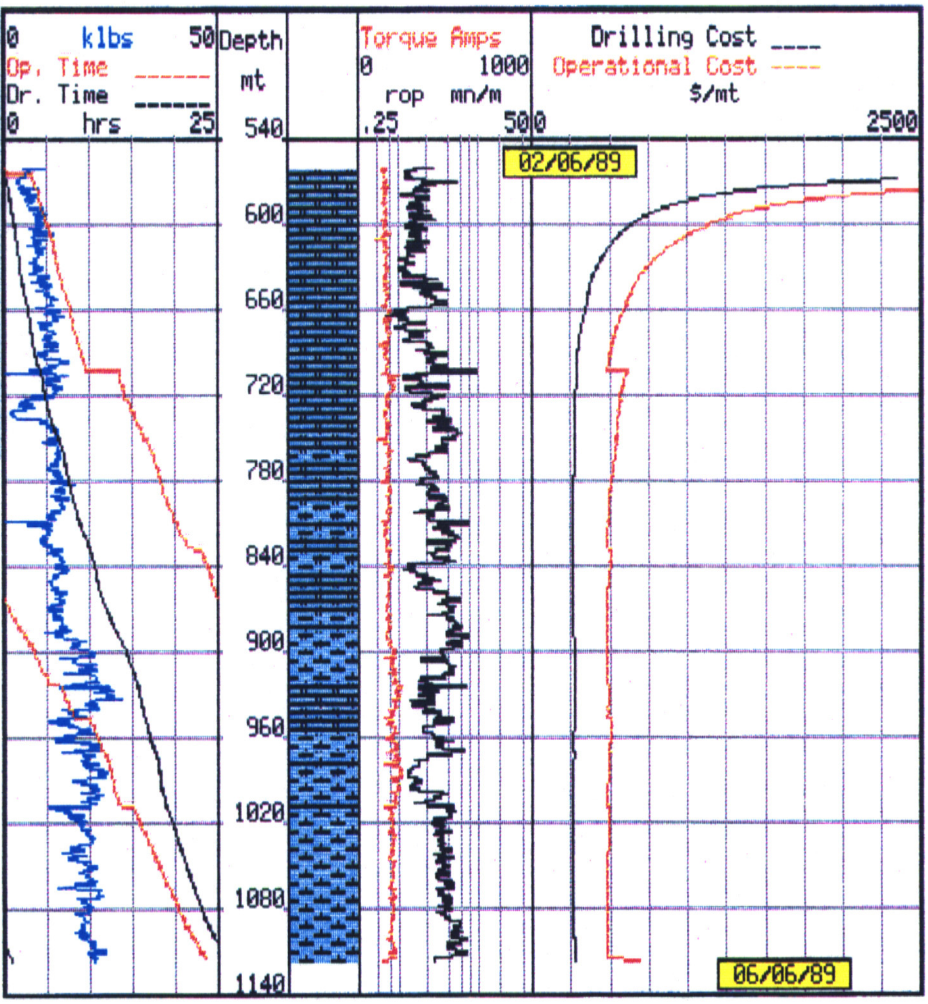


Sequence #	2	
Bit #	2RR	
Bit size	17.5	inch
Bit type	HTC CX3A	
Nozzles/tfa	4x14	/32
Depth in	560	mt
Depth out	1115	mt
Dr.hours	38.5	hrs
wob	5/20	klbs
rpm	130	
Flow	865	gpm
spp	3050	psi
Tooth wear	3	/8
Bit wear	3	/8
Gauge	I	/8
av.Trip time	4	hrs
Rig Cost/hr	5000	($)
Bit price	00000	($)

Bit Cost Chart

Average over the run

rop:	2.7	mn/m
wob:	13.7	klbs
rpm:	118.7	rpm
Flow:	835.7	gpm
spp:	3090.9	psi
mwin:	1.0	s.g.
trque:	179.5	Amps
	hrs	$/mt
Drilling:	25.7	268
Operational:	71.3	678



INTERPRETATIVE

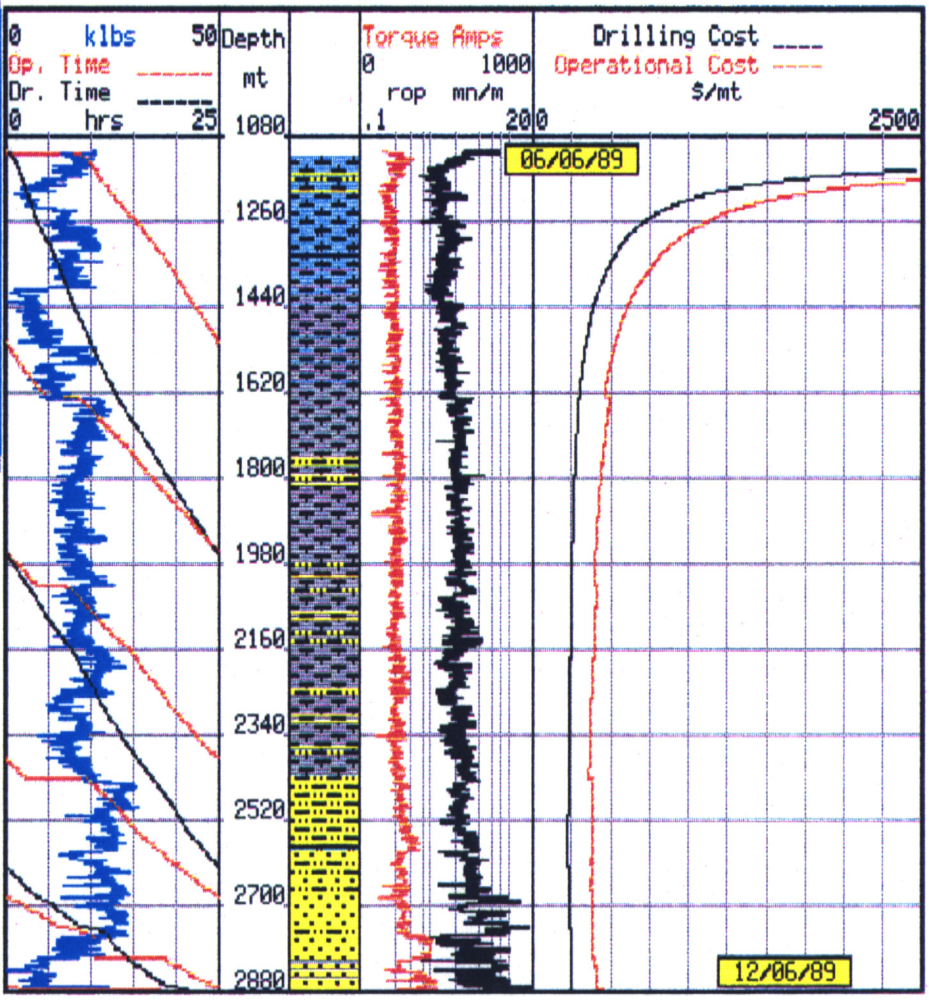
PE903141_colour02

Sequence #	3	
Bit #	3	
Bit size	12,25	inch
Bit type	HTC B9M+	
Nozzles/tfa	5x16,1x12	/32
Depth in	1115	mt
Depth out	2874	mt
Dr.hours	101.5	hrs
wob	5-25	klbs
rpm		
Flow	730-775	gpm
spp	2400-3200	psi
Tooth wear		/8
Bit wear	90 %	/8
Gauge		/8
av.Trip time	8	hrs
Rig Cost/hr	5000	($)
Bit price	45385	($)

Bit Cost Chart

Average over the run

rop:	2.4	mn/m
wob:	17.0	klbs
rpm:	117.1	rpm
Flow:	744.5	gpm
spp:	2815.4	psi
mwin:	1.0	s.g.
trque:	230.5	Amps
	hrs	$/mt
Drilling:	71.1	250
Operational:	142.9	454

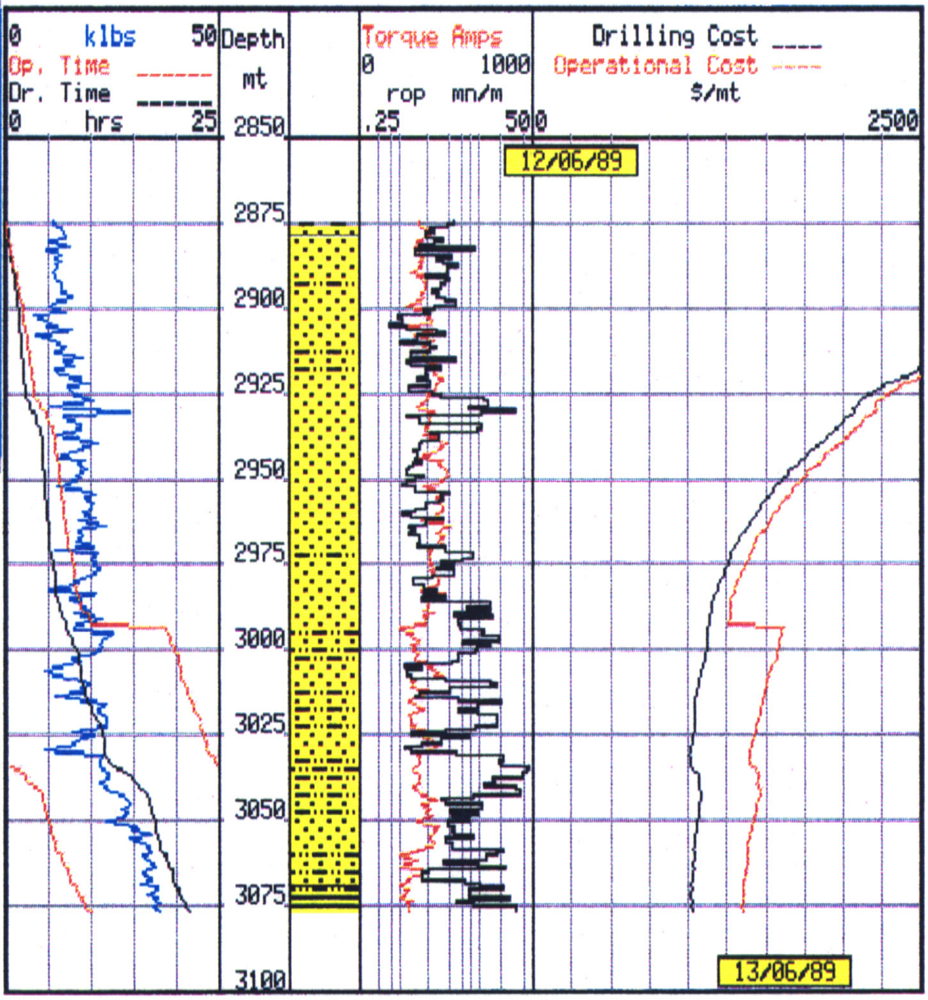


Sequence #	4	
Bit #	4	
Bit size	12-1/4	inch
Bit type	HYC DS34H	
Nozzles/tfa	2x16, 2x14	/32
Depth in	2874	mt
Depth out	3076	mt
Dr.hours	28	hrs
wob	5-30	klbs
rpm	100-150	
Flow	720-740	gpm
spp	3000-3200	psi
Tooth wear		/8
Bit wear	90	/8
Gauge		/8
av.Trip time	10	hrs
Rig Cost/hr	5000	($)
Bit price	49240	($)

Bit Cost Chart

Average over the run

rop:	6.3	mn/m
wob:	19.3	klbs
rpm:	148.5	rpm
Flow:	727.4	gpm
spp:	3044.5	psi
mwin:	1.1	s.g.
trque:	383.8	Amps
	hrs	$/mt
Drilling:	21.5	1025
Operational:	34.9	1357



INTERPRETATIVE

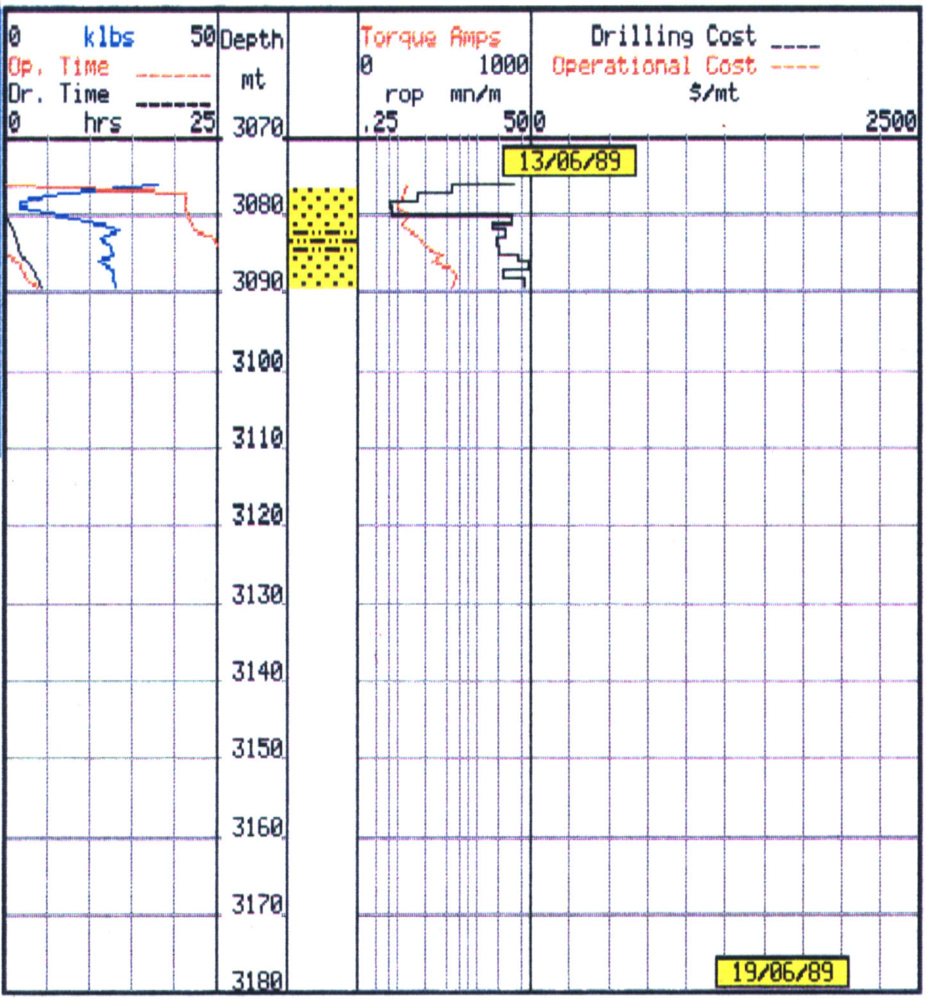
PE903141_colour03

Sequence #	5	
Bit #	6	
Bit size	8-1/2	inch
Bit type	R435S	
Nozzles/tfa	12,12,12	/32
Depth in	3076	mt
Depth out	3089	mt
Dr.hours	6.5	hrs
wob	10-25	klbs
rpm	70-100	
Flow	500	gpm
spp	3200	psi
Tooth wear		/8
Bit wear	100%	/8
Gauge		/8
av.Trip time	10	hrs
Rig Cost/hr	5000	($)
Bit price	31795	($)

Bit Cost Chart

Average over the run

rop:	18.8	mn/m
wob:	18.4	klbs
rpm:	70.7	rpm
Flow:	453.8	gpm
spp:	2562.4	psi
mwin:	1.0	s.g.
trque:	356.5	Amps
	hrs	$/mt
Drilling:	4.4	7985
Operational:	28.8	17374

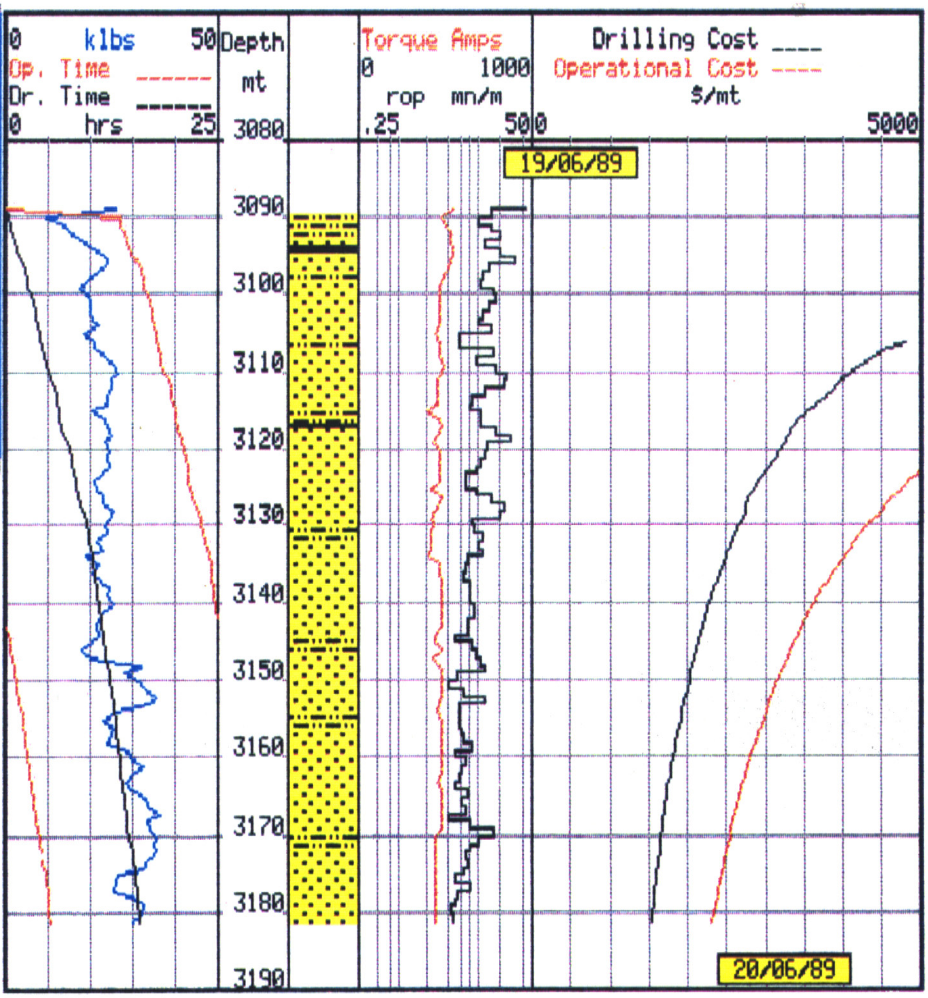


Sequence #	6	
Bit #	7	
Bit size	8-1/2	inch
Bit type	HP43AJK	
Nozzles/tfa	13,13,13	/32
Depth in	3089	mt
Depth out	3181	mt
Dr.hours	17	hrs
wob	25-35	klbs
rpm	70	
Flow	490	gpm
spp	3035	psi
Tooth wear	6	/8
Bit wear	2	/8
Gauge	1/16	/8
av.Trip time	11	hrs
Rig Cost/hr	5000	($)
Bit price	5906	($)

Bit Cost Chart

Average over the run

rop:	10.1	mn/m
wob:	24.8	klbs
rpm:	70.7	rpm
Flow:	482.7	gpm
spp:	3131.3	psi
mwin:	1.0	s.g.
trque:	466.3	Amps
	hrs	$/mt
Drilling:	15.7	1519
Operational:	30.2	2305



INTERPRETATIVE

PE903141_colour 04

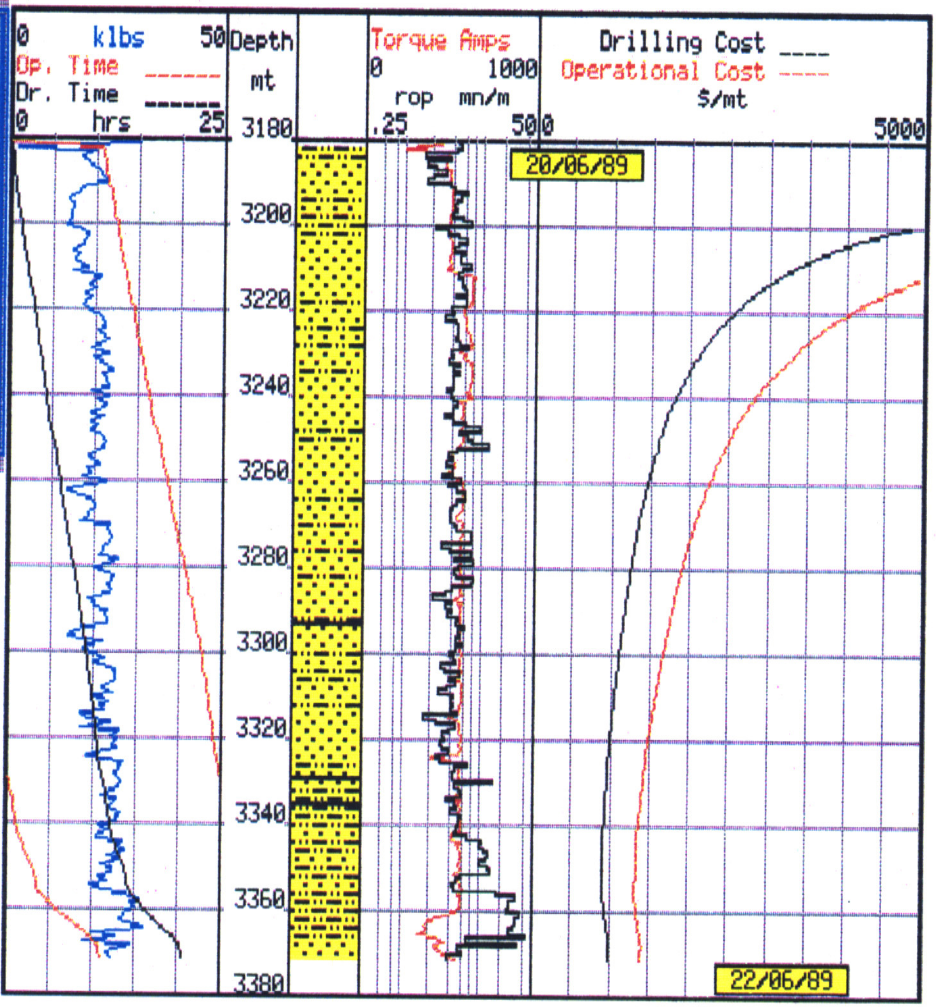
Sequence #	7	
Bit #	8	
Bit size	8-1/2	inch
Bit type	DBS TD290	
Nozzles/tfa	13/13/14	/32
Depth in	3181	mt
Depth out	3371	mt
Dr.hours	27	hrs
wob	0-35	klbs
rpm	60-90	
Flow	500	gpm
spp	3000-3100	psi
Tooth wear		/8
Bit wear	100%	/8
Gauge		/8
av.Trip time	11	hrs
Rig Cost/hr	5000	($)
Bit price	29870	($)

Bit Cost Chart

Average over the run

rop:	6.4	mn/m
wob:	21.2	klbs
rpm:	82.8	rpm
Flow:	482.3	gpm
spp:	3070.9	psi
mwin:	1.0	s.g.
trque:	554.8	Amps

	hrs	$/mt
Drilling:	20.4	985
Operational:	35.9	1392



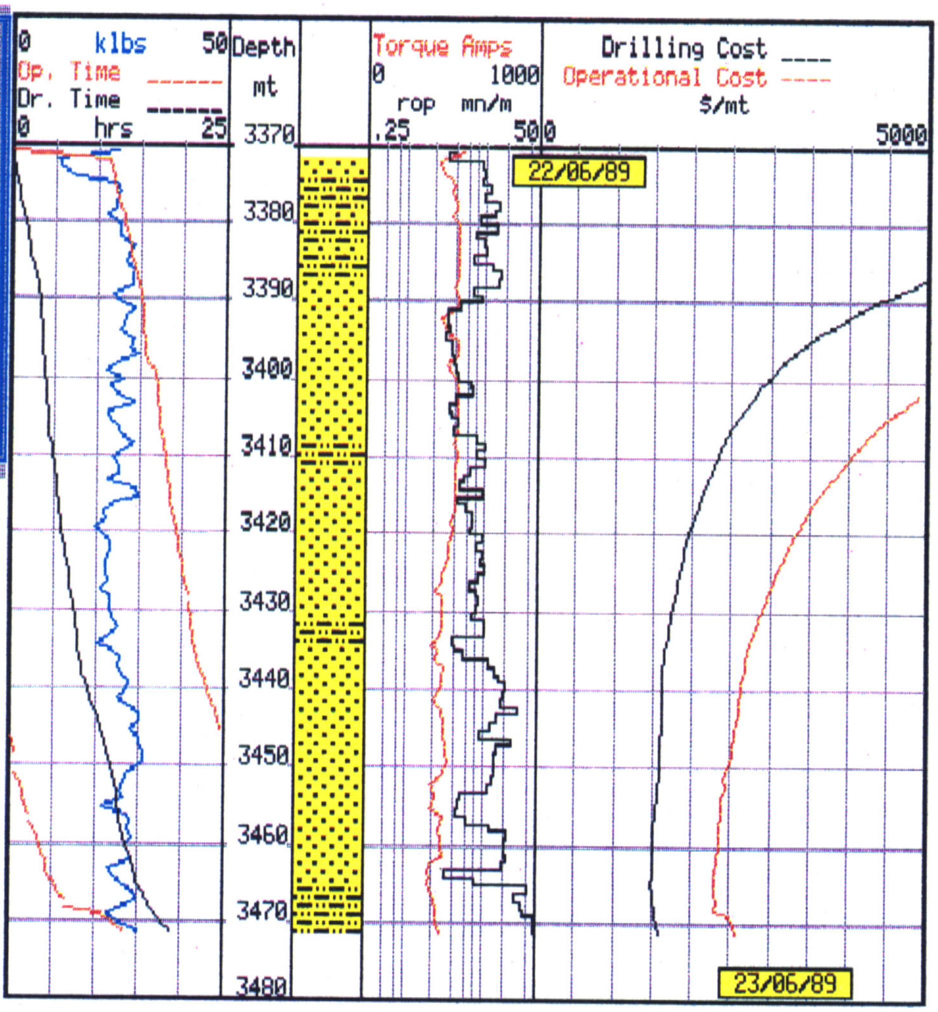
Sequence #	8	
Bit #	9	
Bit size	8-1/2	inch
Bit type	HP51AJK	
Nozzles/tfa	13,13,13	/32
Depth in	3371	mt
Depth out	3471	mt
Dr.hours	24	hrs
wob	10-30	klbs
rpm	30-90	
Flow	490-500	gpm
spp	3000-3100	psi
Tooth wear	4	/8
Bit wear	2	/8
Gauge	1/8	/8
av.Trip time	12	hrs
Rig Cost/hr	5000	($)
Bit price	5906	($)

Bit Cost Chart

Average over the run

rop:	11.1	mn/m
wob:	24.9	klbs
rpm:	77.2	rpm
Flow:	476.3	gpm
spp:	3098.1	psi
mwin:	1.0	s.g.
trque:	471.8	Amps

	hrs	$/mt
Drilling:	18.7	1594
Operational:	38.2	2571



INTERPRETATIVE

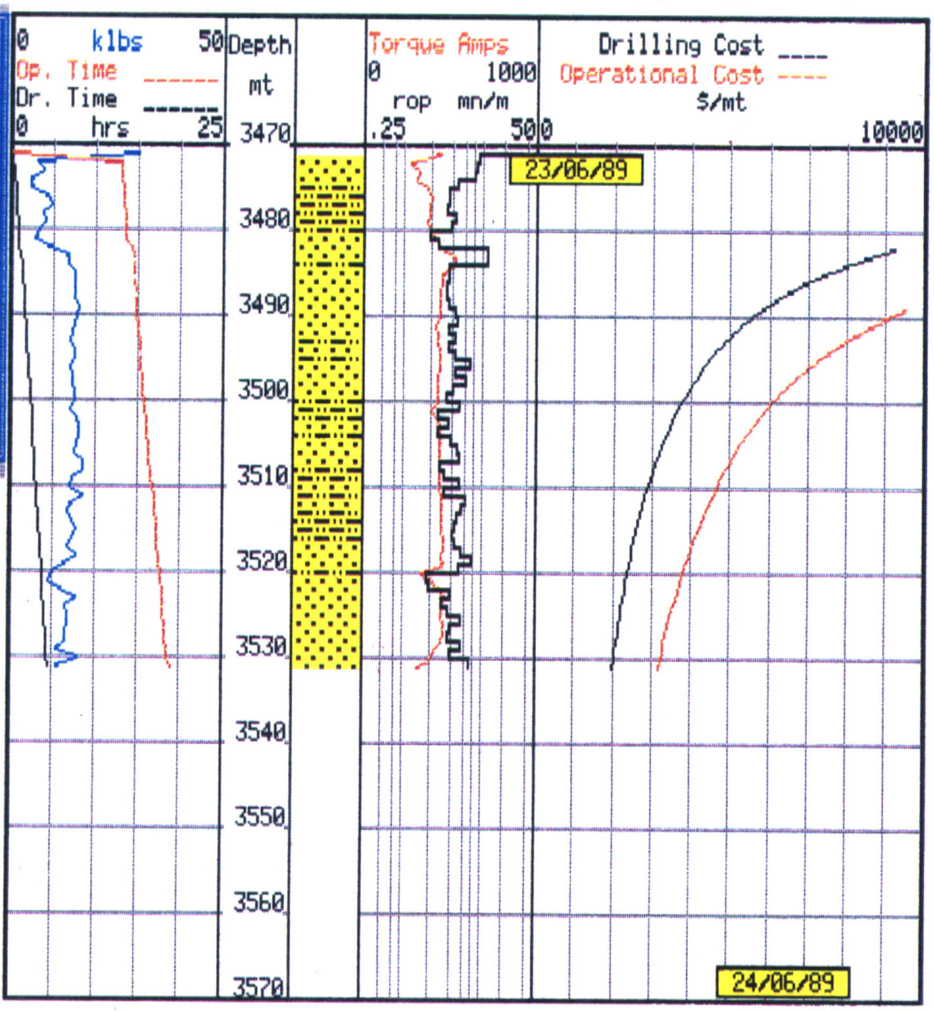
PE903141_colour05

Sequence #	9	
Bit #	10	
Bit size	8-1/2	inch
Bit type	EC R437	
Nozzles/tfa	4 x 12	/32
Depth in	3471	mt
Depth out	3531	mt
Dr.hours	6.5	hrs
wob	0-15	klbs
rpm		
Flow	450	gpm
spp	2800	psi
Tooth wear		/8
Bit wear	15%	/8
Gauge		/8
av.Trip time	13	hrs
Rig Cost/hr	5000	($)
Bit price	31795	($)

Bit Cost Chart

Average over the run

rop:	4.4	mn/m
wob:	12.8	klbs
rpm:	68.9	rpm
Flow:	417.8	gpm
spp:	2797.2	psi
mwin:	1.1	s.g.
trque:	427.4	Amps
	hrs	$/mt
Drilling:	4.4	1987
Operational:	19.0	3198

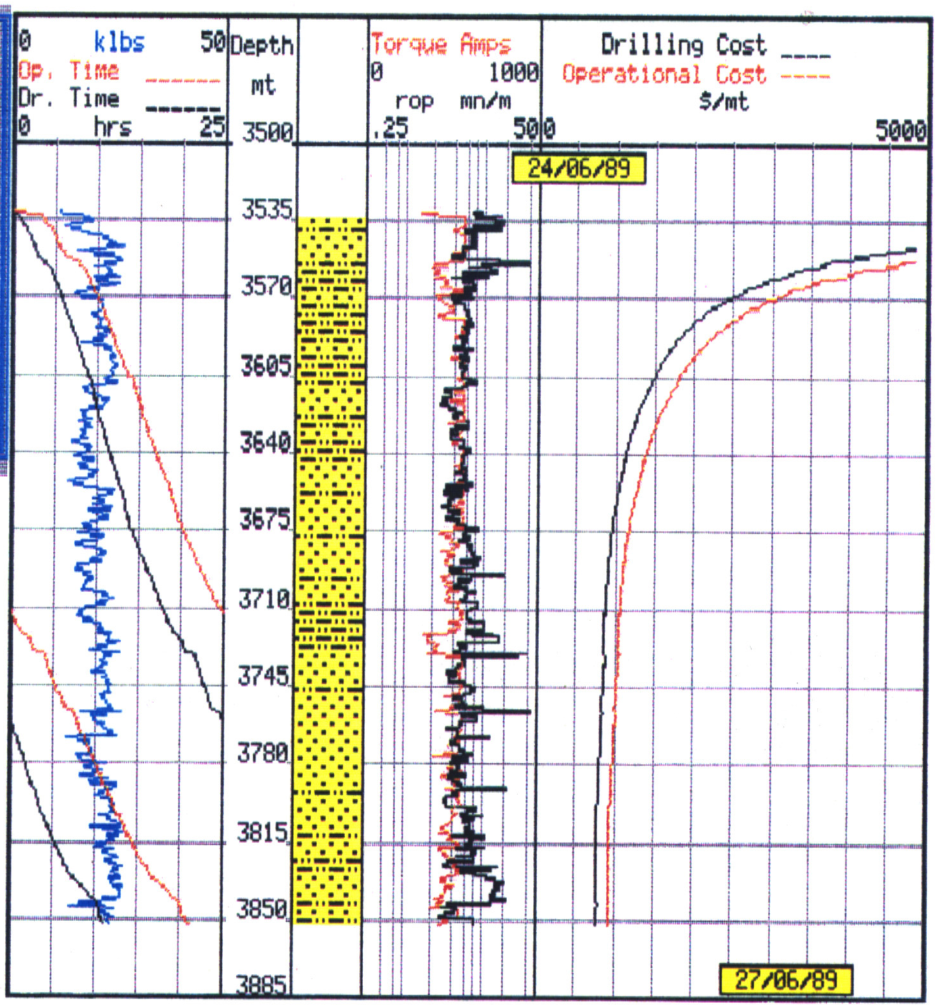


Sequence #	10	
Bit #	10RR	
Bit size	8-1/2	inch
Bit type	EC R437	
Nozzles/tfa	4x12	/32
Depth in	3531	mt
Depth out	3851	mt
Dr.hours	50	hrs
wob	0-25	klbs
rpm	30-90	
Flow	450	gpm
spp	2650	psi
Tooth wear		/8
Bit wear	100%	/8
Gauge	1/16	/8
av.Trip time	13	hrs
Rig Cost/hr	5000	($)
Bit price	0	($)

Bit Cost Chart

Average over the run

rop:	6.7	mn/m
wob:	20.6	klbs
rpm:	71.4	rpm
Flow:	443.0	gpm
spp:	2642.6	psi
mwin:	1.1	s.g.
trque:	527.2	Amps
	hrs	$/mt
Drilling:	35.9	764
Operational:	46.2	925



INTERPRETATIVE

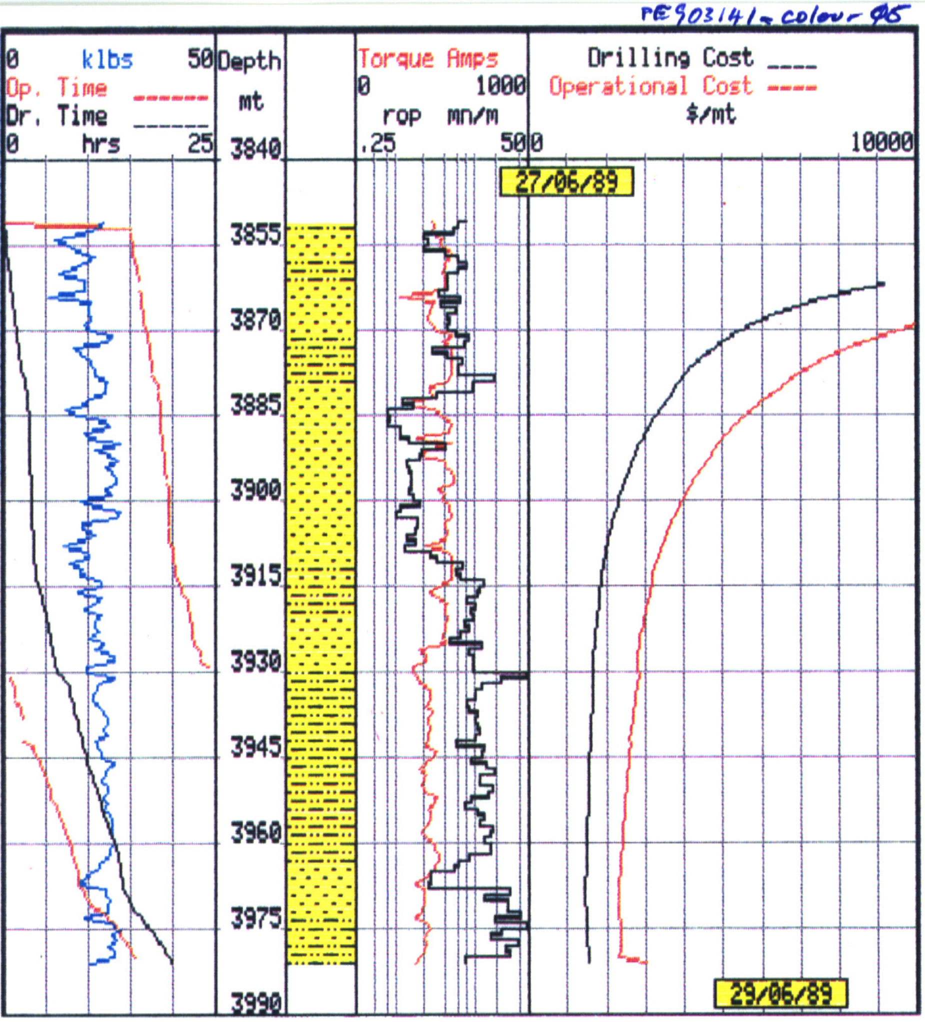
PE903141 - colour 05

Sequence #	11	
Bit #	11	
Bit size	8-1/2	inch
Bit type	EC R437	
Nozzles/tfa	4X12	/32
Depth in	3851	mt
Depth out	3981	mt
Dr.hours	26.5	hrs
wob	15-25	klbs
rpm	50-80	
Flow	450	gpm
spp	2400-2650	psi
Tooth wear		/8
Bit wear	100% ringed	/8
Gauge		/8
av.Trip time	13	hrs
Rig Cost/hr	5000	($)
Bit price	31795	($)

Bit Cost Chart

Average over the run

rop:	9.0	mn/m
wob:	21.8	klbs
rpm:	62.0	rpm
Flow:	443.5	gpm
spp:	2483.2	psi
mwin:	1.0	s.g.
trque:	461.4	Amps
	hrs	$/mt
Drilling:	19.6	1501
Operational:	58.3	2989

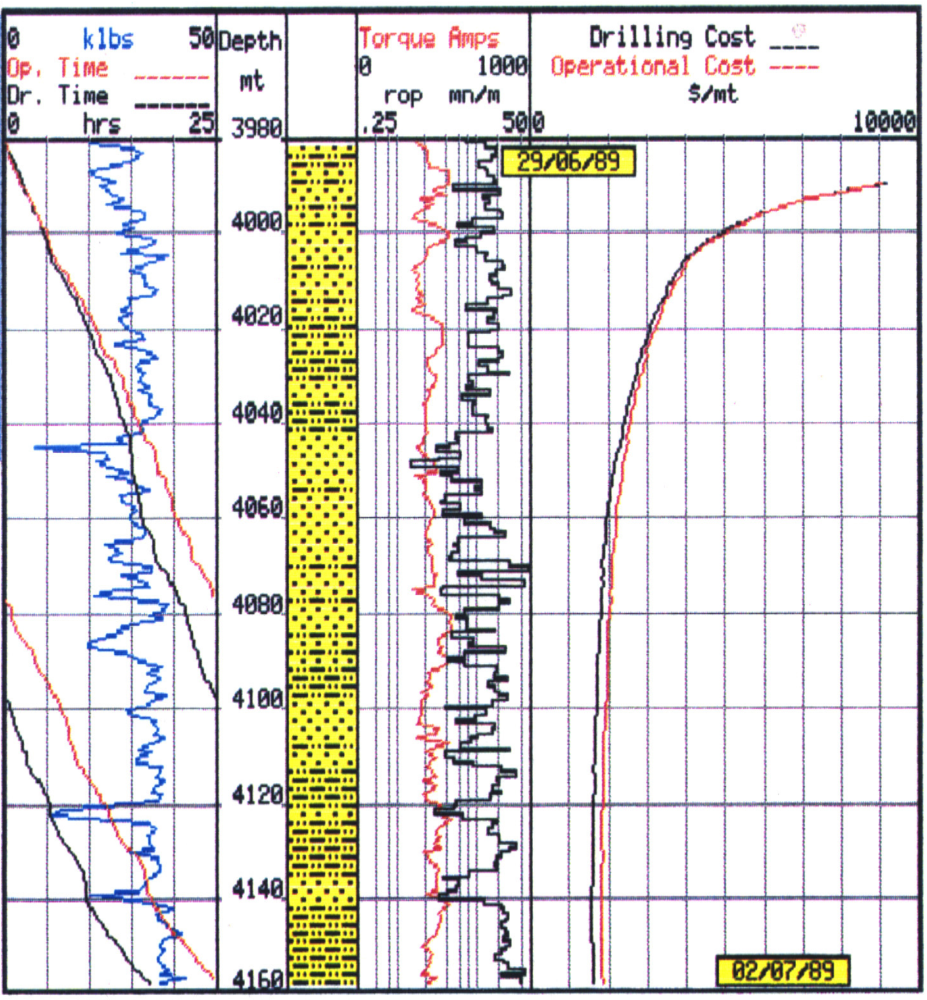


Sequence #	12	
Bit #	12	
Bit size	8.5	inch
Bit type	HP 53AJK	
Nozzles/tfa	3 X 12	/32
Depth in	3981	mt
Depth out	4158	mt
Dr.hours	51.5	hrs
wob	0-40	klbs
rpm	65-85	
Flow	440-450	gpm
spp	3120-3250	psi
Tooth wear	8 3 CONES	/8
Bit wear	8 LOST	/8
Gauge	1/2	/8
av.Trip time	13	hrs
Rig Cost/hr	5000	($)
Bit price	5906	($)

Bit Cost Chart

Average over the run

rop:	14.1	mn/m
wob:	31.2	klbs
rpm:	66.0	rpm
Flow:	431.9	gpm
spp:	3212.5	psi
mwin:	1.1	s.g.
trque:	432.0	Amps
	hrs	$/mt
Drilling:	41.9	1585
Operational:	50.5	1828



INTERPRETATIVE

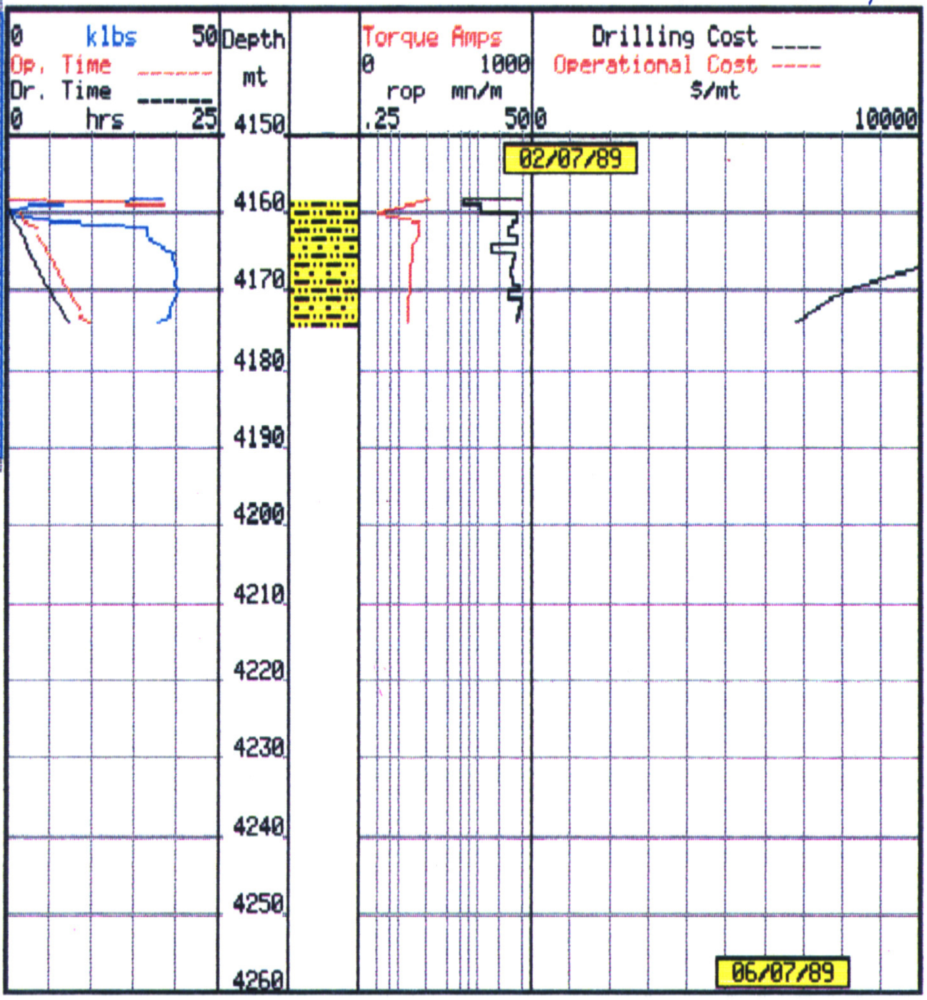
PE903141_colour_07

Sequence #	13	
Bit #	15RR	
Bit size	8.5	inch
Bit type	HTC JD8	
Nozzles/tfa	12/13/13	/32
Depth in	4158	mt
Depth out	4174	mt
Dr.hours	8.0	hrs
wob	35-45	klbs
rpm	60-85	
Flow	440	gpm
spp	3067	psi
Tooth wear	5	/8
Bit wear	5	/8
Gauge	1/16	/8
av.Trip time	14	hrs
Rig Cost/hr	5000	($)
Bit price	1925	($)

Bit Cost Chart

Average over the run

rop:	25.8	mn/m
wob:	30.0	klbs
rpm:	56.5	rpm
Flow:	407.0	gpm
spp:	2239.0	psi
mwin:	1.0	s.g.
trque:	278.3	Amps
	hrs	$/mt
Drilling:	7.3	6783
Operational:	34.7	15343

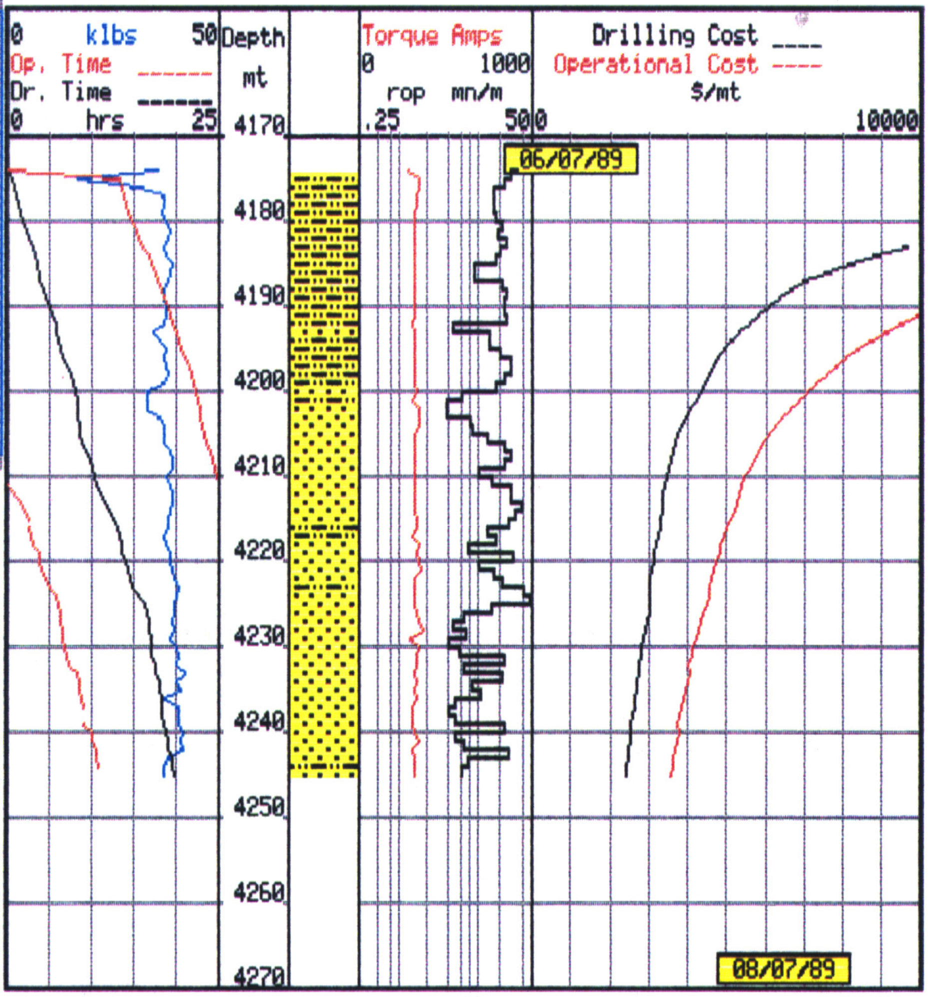


Sequence #	14	
Bit #	16	
Bit size	8.5	inch
Bit type	S21GJ	
Nozzles/tfa	3x12	/32
Depth in	4174	mt
Depth out	4245	mt
Dr.hours	22.5	hrs
wob	25-40	klbs
rpm	60-80	
Flow	450	gpm
spp	3120	psi
Tooth wear	5	/8
Bit wear	6	/8
Gauge	1/8	/8
av.Trip time	14	hrs
Rig Cost/hr	5000	($)
Bit price	2152	($)

Bit Cost Chart

Average over the run

rop:	16.3	mn/m
wob:	37.3	klbs
rpm:	74.2	rpm
Flow:	451.7	gpm
spp:	2955.3	psi
mwin:	1.1	s.g.
trque:	323.6	Amps
	hrs	$/mt
Drilling:	19.6	2400
Operational:	35.8	3538



INTERPRETATIVE

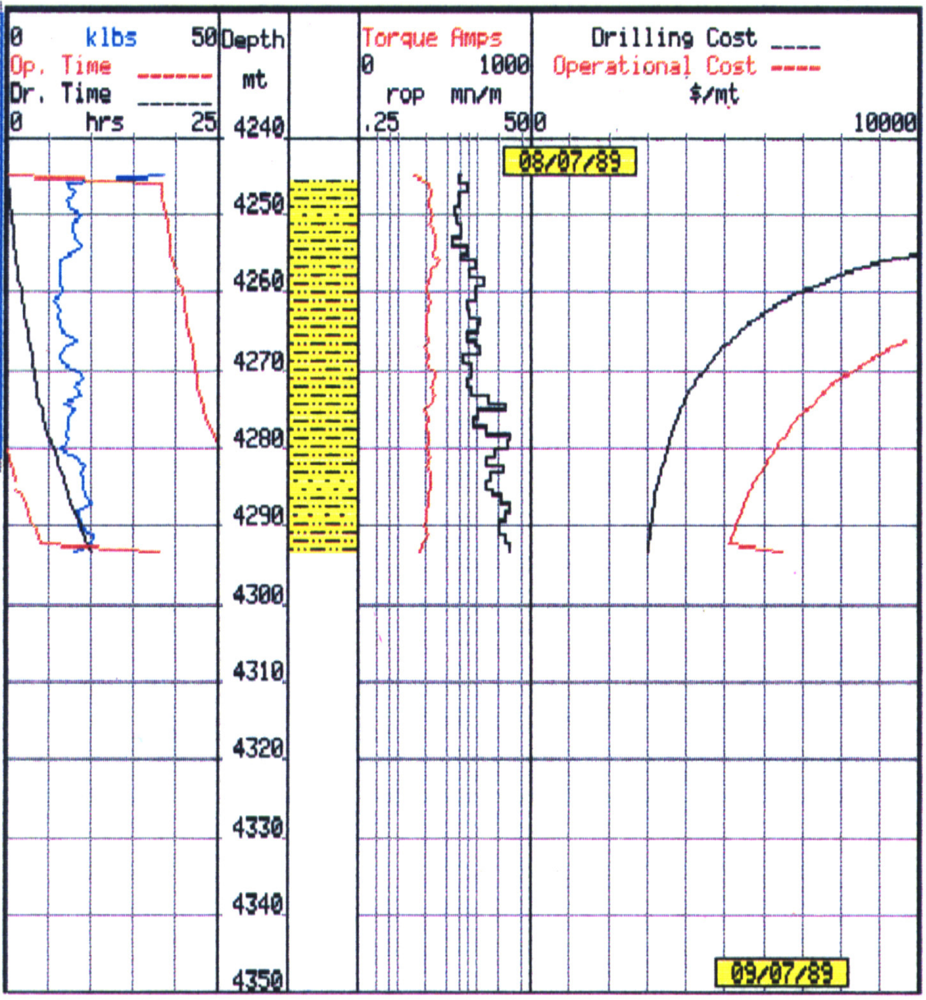
PE903141_colour08

Sequence #	15	
Bit #	17	
Bit size	8.5	inch
Bit type	DP15AG	
Nozzles/tfa	4 X 12	/32
Depth in	4245	mt
Depth out	4293	mt
Dr.hours	12	hrs
wob	10-40	klbs
rpm	PDM	
Flow	425	gpm
spp	3150	psi
Tooth wear		/8
Bit wear	80%	/8
Gauge		/8
av.Trip time	12	hrs
Rig Cost/hr	5000	($)
Bit price	34600	($)

Bit Cost Chart

Average over the run

rop:	12.1	mn/m
wob:	15.0	klbs
rpm:	79.4	rpm
Flow:	409.0	gpm
spp:	3041.1	psi
mwin:	1.1	s.g.
trque:	406.0	Amps
	hrs	$/mt
Drilling:	9.9	3002
Operational:	42.9	6449

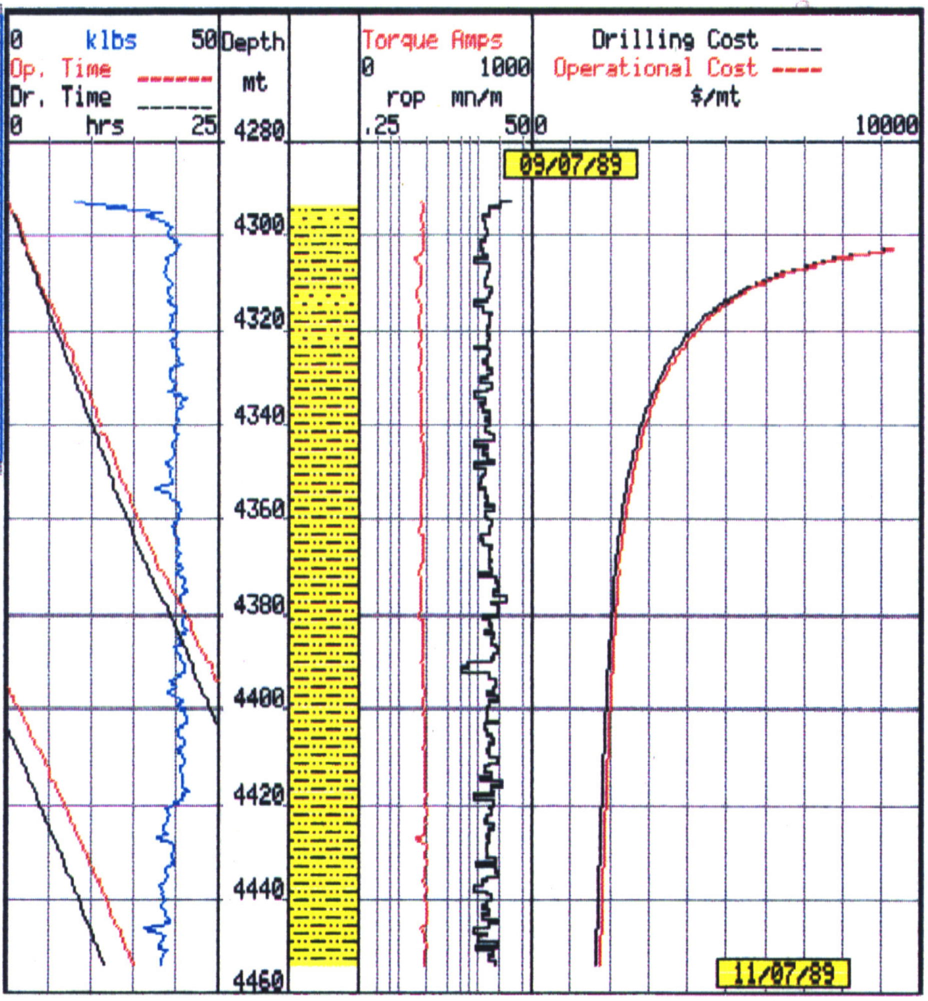


Sequence #	16	
Bit #	18	
Bit size	8.5	inch
Bit type	HP51AJK	
Nozzles/tfa	3 X 11	/32
Depth in	4293	mt
Depth out	4454	mt
Dr.hours	40.5	hrs
wob	30-42	klbs
rpm	60-75	
Flow	440-450	gpm
spp	3500-3600	psi
Tooth wear	2	/8
Bit wear	3	/8
Gauge	1/8	/8
av.Trip time	15	hrs
Rig Cost/hr	5000	($)
Bit price	5906	($)

Bit Cost Chart

Average over the run

rop:	13.5	mn/m
wob:	39.1	klbs
rpm:	69.0	rpm
Flow:	437.7	gpm
spp:	3503.4	psi
mwin:	1.1	s.g.
trque:	369.8	Amps
	hrs	$/mt
Drilling:	36.6	1640
Operational:	40.0	1746



INTERPRETATIVE

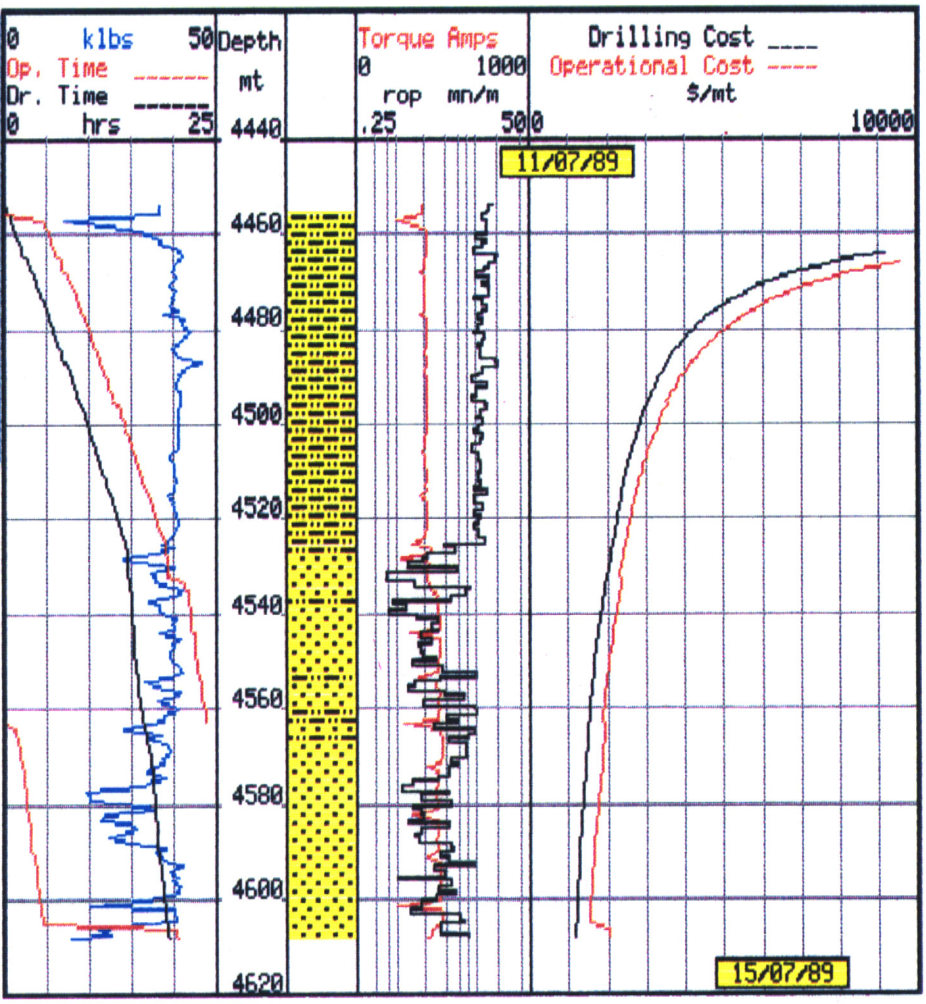
PE903141_colour09

Sequence #	17	
Bit #	20	
Bit size	8.5	inch
Bit type	HP51AJK	
Nozzles/tfa	3x12	/32
Depth in	4454	mt
Depth out	4608	mt
Dr.hours	22.5	hrs
wob	7-302	klbs
rpm	75-100	
Flow	340-460	gpm
spp	3300-3650	psi
Tooth wear		/8
Bit wear	Left in hole	/8
Gauge		/8
av.Trip time	15	hrs
Rig Cost/hr	5000	($)
Bit price	5906	($)

Bit Cost Chart

Average over the run

rop:	7.5	mn/m
wob:	37.0	klbs
rpm:	73.2	rpm
Flow:	460.4	gpm
spp:	3355.9	psi
mwin:	1.1	s.g.
trque:	427.4	Amps
	hrs	$/mt
Drilling:	19.4	1155
Operational:	45.4	2000



INTERPRETATIVE

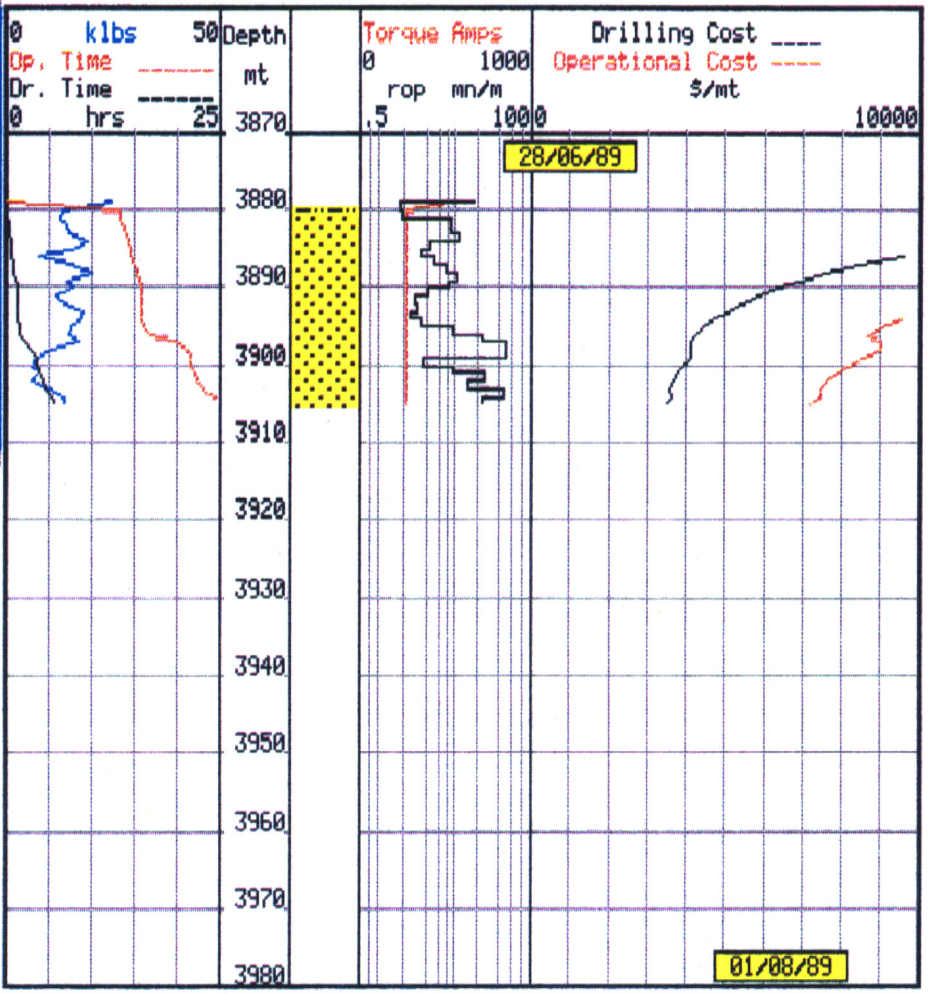
PE903141_colour 10

Sequence #	12	
Bit #	24	
Bit size	8-1/2	inch
Bit type	HP 13GJ	
Nozzles/tfa	3 X 15	/32
Depth in	3879	mt
Depth out	3905	mt
Dr.hours	14.5	hrs
wob	5-20	klbs
rpm	400 (pdm)	
Flow	325-350	gpm
spp	1470-2219	psi
Tooth wear	5	/8
Bit wear	8	/8
Gauge	1/4	/8
av.Trip time	12	hrs
Rig Cost/hr	5000	($)
Bit price	3778	($)

Bit Cost Chart

Average over the run

rop:	12.3	mn/m
wob:	12.6	klbs
rpm:	73.6	rpm
Flow:	314.3	gpm
spp:	1474.7	psi
mwin:	1.1	s.g.
trque:	262.8	Amps
	hrs	$/mt
Drilling:	5.5	3520
Operational:	24.6	7186

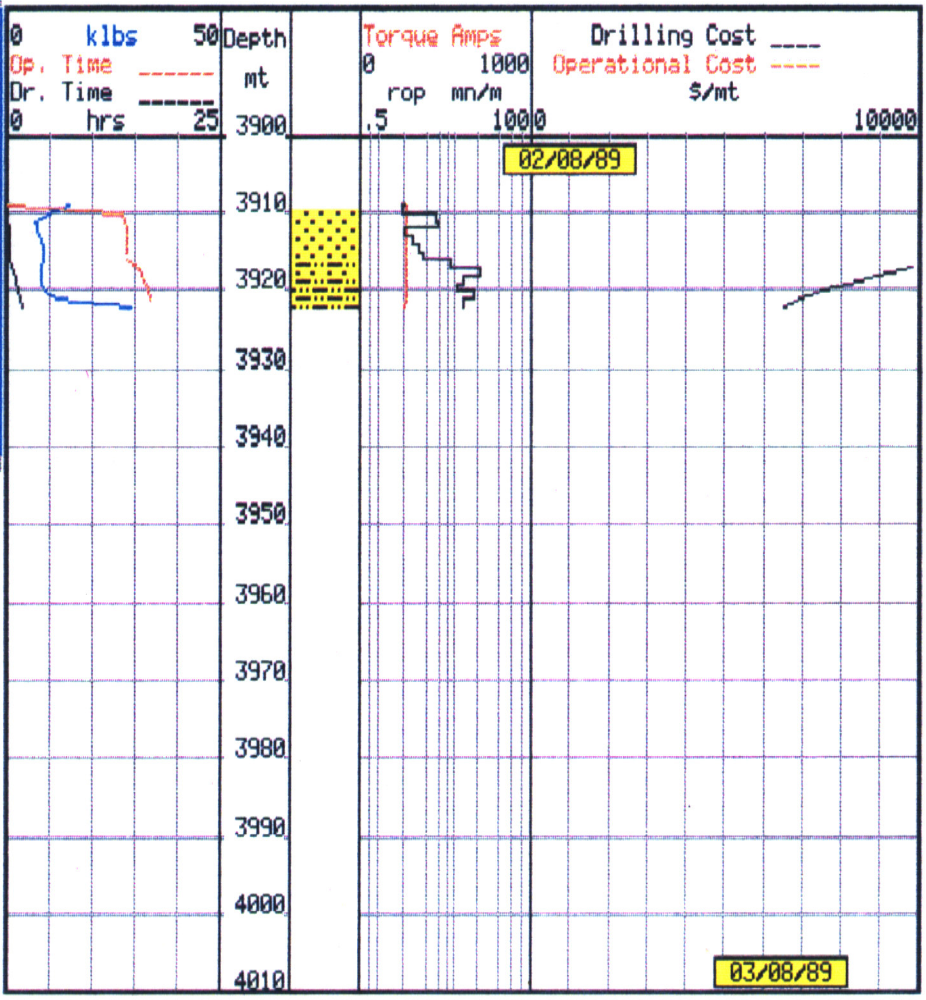


Sequence #	14	
Bit #	26	
Bit size	8-1/2	inch
Bit type	HP51A	
Nozzles/tfa	3x15	/32
Depth in	3909	mt
Depth out	3922	mt
Dr.hours	3.5	hrs
wob	15-20	klbs
rpm	400 (pdm)	
Flow	295	gpm
spp	1450	psi
Tooth wear	2	/8
Bit wear	6	/8
Gauge	1/4	/8
av.Trip time	14	hrs
Rig Cost/hr	5000	($)
Bit price	5786	($)

Bit Cost Chart

Average over the run

rop:	7.7	mn/m
wob:	9.3	klbs
rpm:	71.1	rpm
Flow:	279.3	gpm
spp:	1486.0	psi
mwin:	1.0	s.g.
trque:	253.0	Amps
	hrs	$/mt
Drilling:	1.8	6523
Operational:	32.5	18337



INTERPRETATIVE

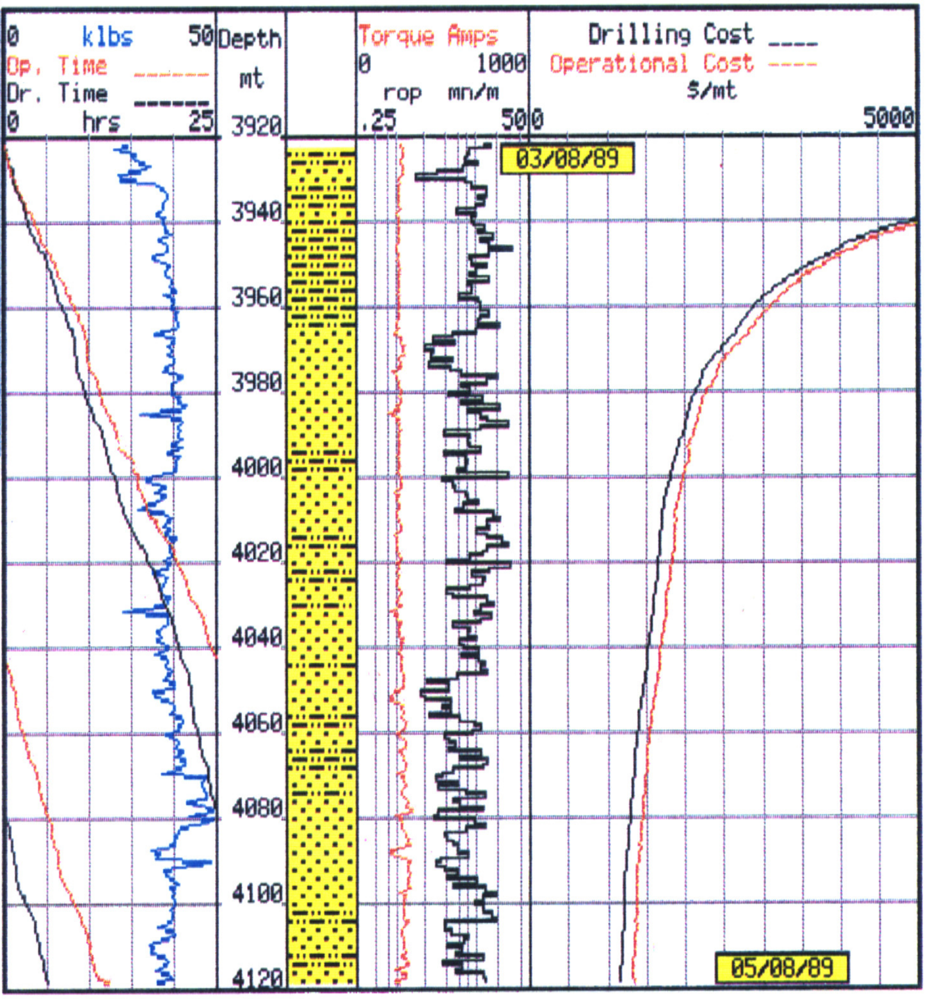
PE903141_colour 11

Sequence #	15	
Bit #	27	
Bit size	8-1/2	inch
Bit type	HP43AJK	
Nozzles/tfa	3x12	/32
Depth in	3922	mt
Depth out	4118	mt
Dr.hours	36.1	hrs
wob	30-40	klbs
rpm	68-76	
Flow	443	gpm
spp	3245	psi
Tooth wear	5	/8
Bit wear	5	/8
Gauge	1/4	/8
av.Trip time	14	hrs
Rig Cost/hr	5000	($)
Bit price	5906	($)

Bit Cost Chart

Average over the run

rop:	9.1	mn/m
wob:	38.6	klbs
rpm:	72.0	rpm
Flow:	435.2	gpm
spp:	3199.8	psi
mwin:	1.1	s.g.
trque:	256.1	Amps
	hrs	$/mt
Drilling:	30.0	1154
Operational:	37.3	1339

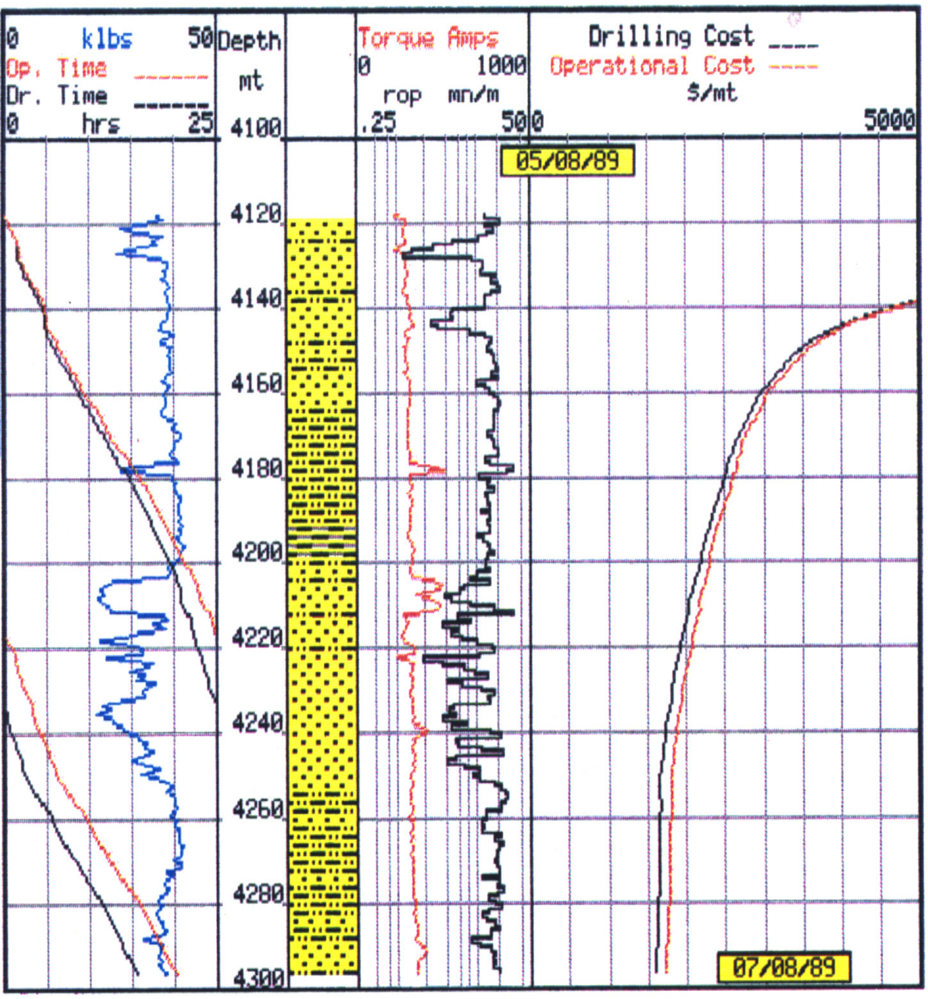


Sequence #	16	
Bit #	28	
Bit size	8-1/2	inch
Bit type	HP43A	
Nozzles/tfa	3x12	/32
Depth in	4118	mt
Depth out	4296	mt
Dr.hours	46.5	hrs
wob	20-42	klbs
rpm	70-113	
Flow	440	gpm
spp	3220-3490	psi
Tooth wear	5	/8
Bit wear	8	/8
Gauge	1/4	/8
av.Trip time	15	hrs
Rig Cost/hr	5000	($)
Bit price	5906	($)

Bit Cost Chart

Average over the run

rop:	13.5	mn/m
wob:	35.9	klbs
rpm:	75.1	rpm
Flow:	441.4	gpm
spp:	3233.7	psi
mwin:	1.1	s.g.
trque:	319.7	Amps
	hrs	$/mt
Drilling:	40.5	1593
Operational:	45.2	1726



INTERPRETATIVE

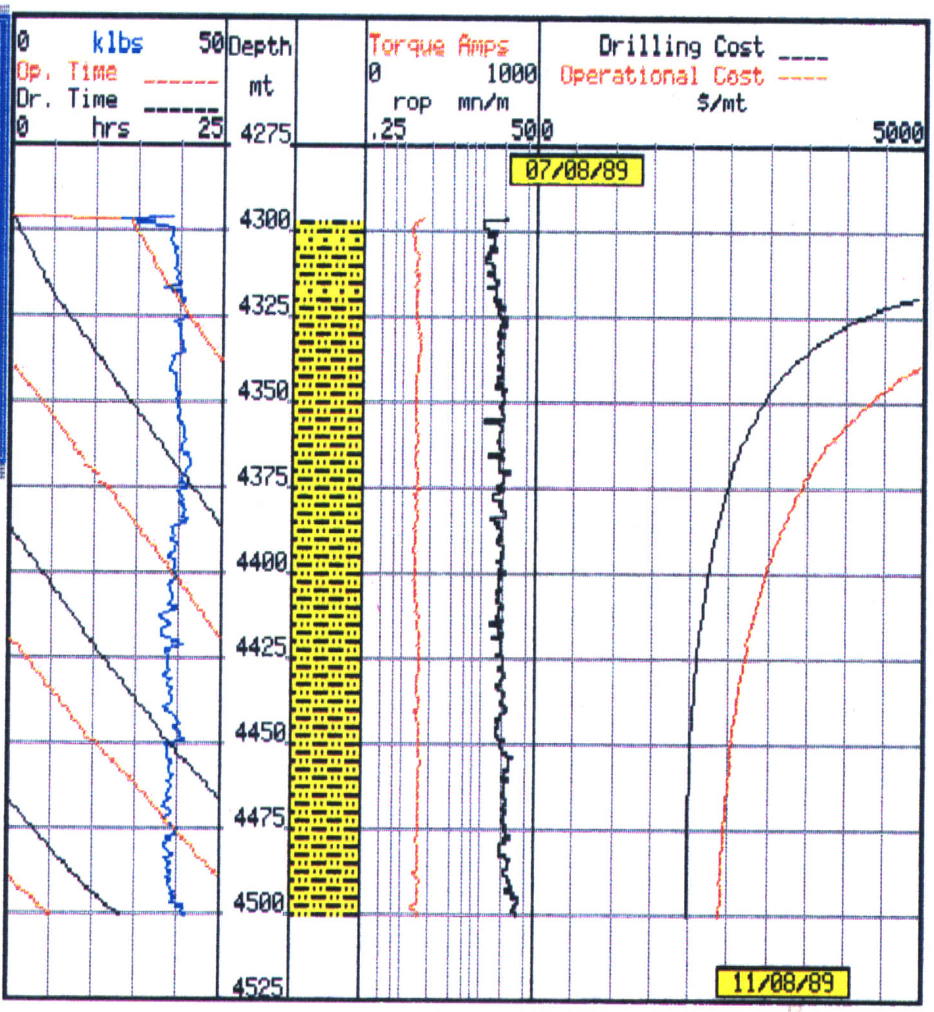
PE903141_colour12

Sequence #	17	
Bit #	29	
Bit size	8-1/2	inch
Bit type	SECURIT S84F	
Nozzles/tfa	11/13/13	/32
Depth in	4296	mt
Depth out	4500	mt
Dr.hours	65.5	hrs
wob	35-42	klbs
rpm	75-80	
Flow	440-465	gpm
spp	3170-3555	psi
Tooth wear	3	/8
Bit wear	4	/8
Gauge	I	/8
av.Trip time	15	hrs
Rig Cost/hr	5000	($)
Bit price	12144	($)

Bit Cost Chart

Average over the run

rop:	18.5	mn/m
wob:	38.7	klbs
rpm:	76.4	rpm
Flow:	448.0	gpm
spp:	3225.9	psi
mwin:	1.1	s.g.
trque:	321.3	Amps
	hrs	$/mt
Drilling:	63.2	1978
Operational:	80.0	2389



INTERPRETATIVE

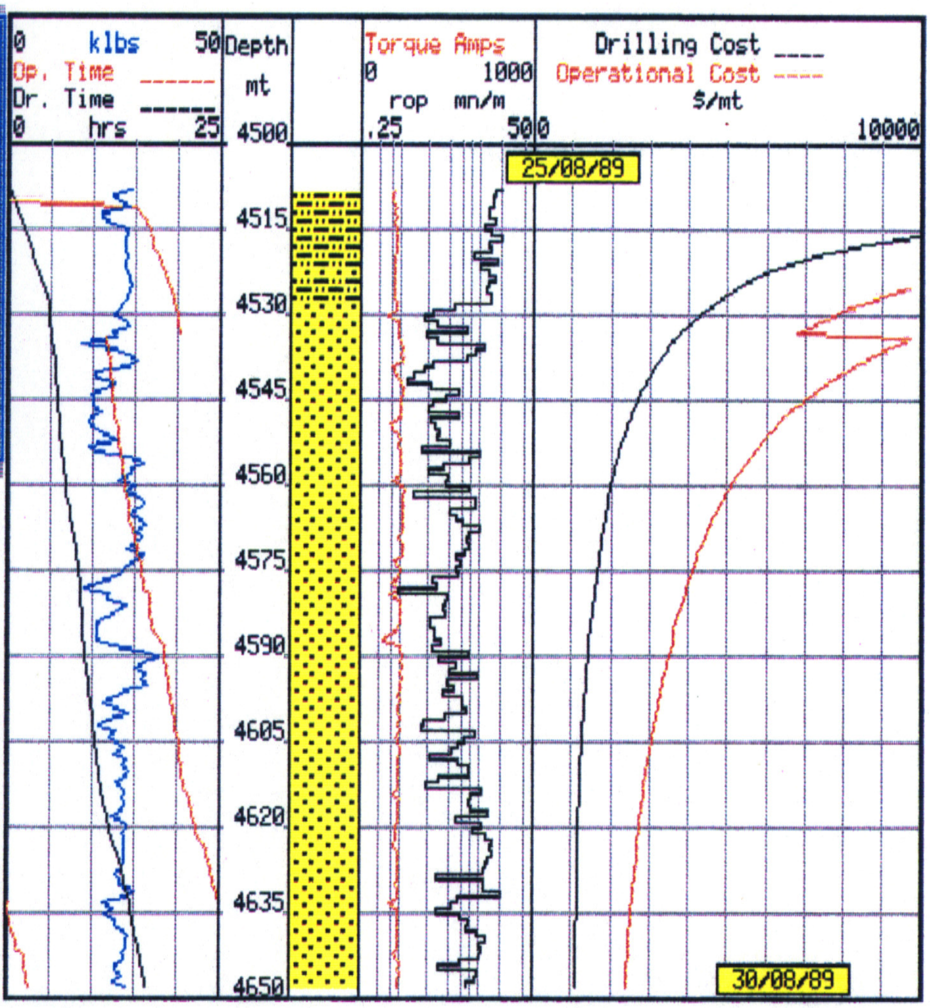
PE903141_colour 13

Sequence #	20	
Bit #	34	
Bit size	6	inch
Bit type	HP51AJ	
Nozzles/tfa	3X12	/32
Depth in	4508	mt
Depth out	4648	mt
Dr.hours	21.5	hrs
wob	25	klbs
rpm	70-80	
Flow	300	gpm
spp	2900-3120	psi
Tooth wear	4	/8
Bit wear	4	/8
Gauge	3/8	/8
av.Trip time	13	hrs
Rig Cost/hr	5000	($)
Bit price	4590	($)

Bit Cost Chart

Average over the run

rop:	6.9	mn/m
wob:	26.2	klbs
rpm:	78.1	rpm
Flow:	293.6	gpm
spp:	2957.2	psi
mwin:	1.3	s.g.
trque:	220.2	Amps
	hrs	$/mt
Drilling:	16.3	1080
Operational:	52.6	2376

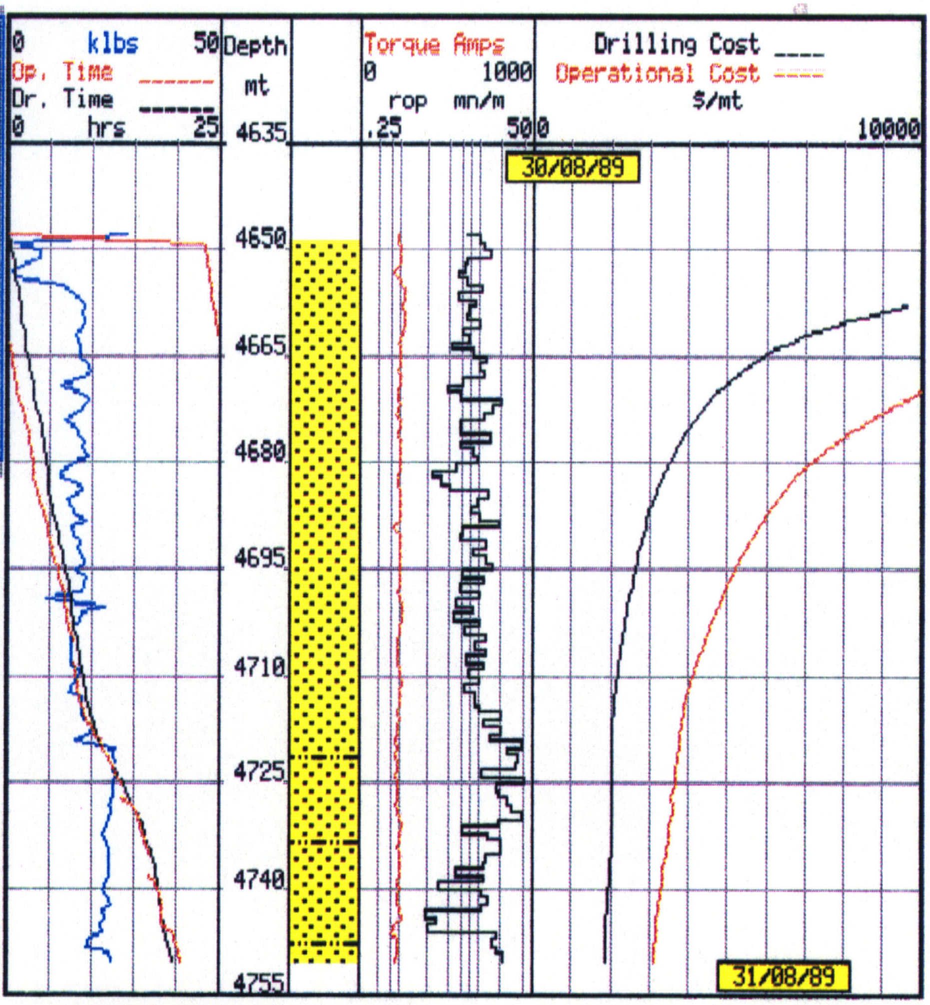


Sequence #	21	
Bit #	35	
Bit size	6	inch
Bit type	L'YEAR DP15G	
Nozzles/tfa	3x11	/32
Depth in	4648	mt
Depth out	4750	mt
Dr.hours	23	hrs
wob	5-25	klbs
rpm	60-80	
Flow	250-300	gpm
spp	3950-3100	psi
Tooth wear		/8
Bit wear	100%	/8
Gauge	I	/8
av.Trip time	13	hrs
Rig Cost/hr	5000	($)
Bit price	23815	($)

Bit Cost Chart

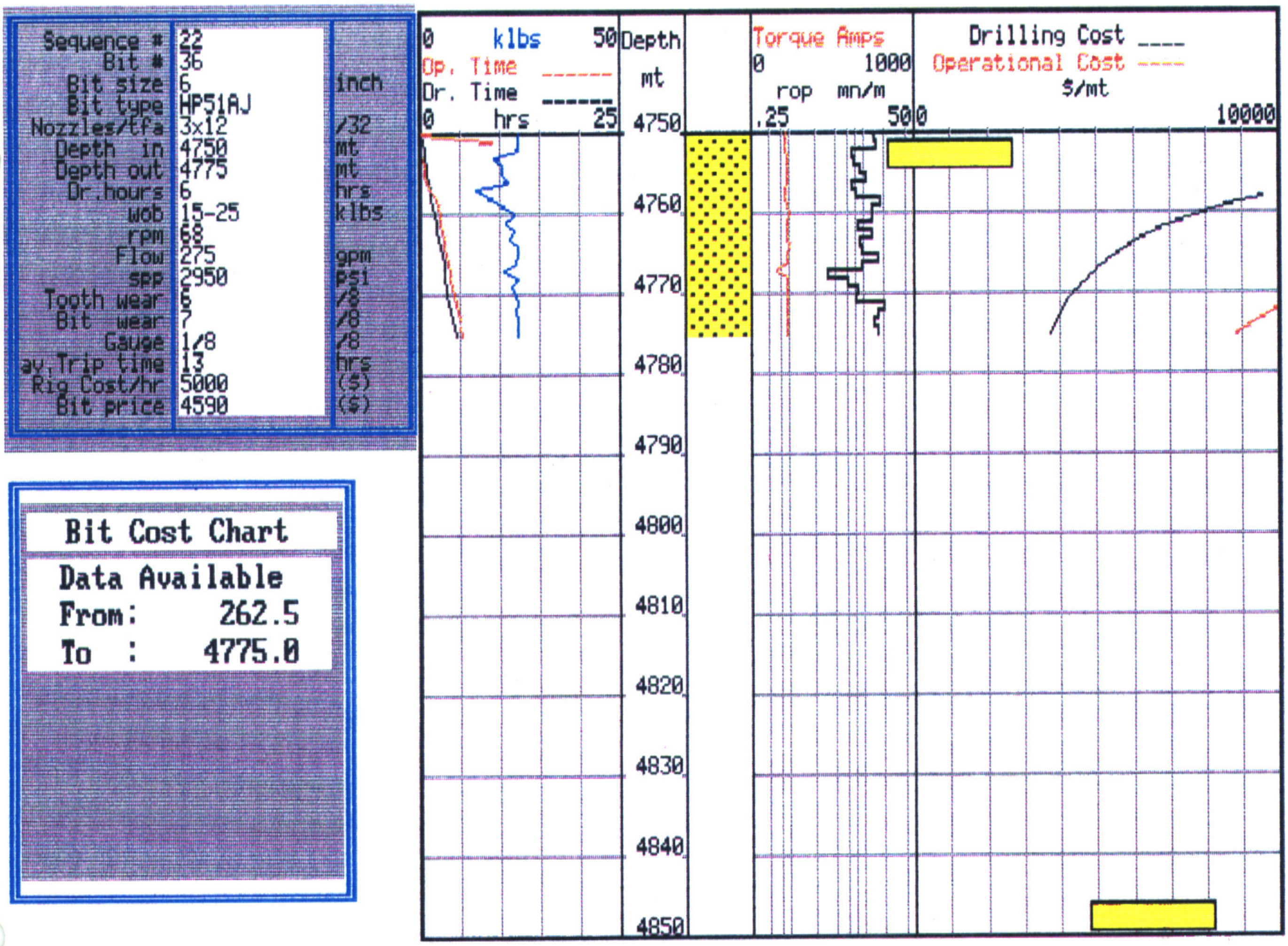
Average over the run

rop:	11.4	mn/m
wob:	17.8	klbs
rpm:	71.6	rpm
Flow:	272.3	gpm
spp:	2985.6	psi
mwin:	1.4	s.g.
trque:	229.0	Amps
	hrs	$/mt
Drilling:	19.5	1830
Operational:	45.5	3105



INTERPRETATIVE

PE903141_colour 14



Sequence #	22	
Bit #	36	
Bit size	6	inch
Bit type	HP51AJ	
Nozzles/tfa	3x12	/32
Depth in	4750	mt
Depth out	4775	mt
Dr.hours	6	hrs
wob	15-25	klbs
rpm	68	
Flow	275	gpm
spp	2950	psi
Tooth wear	6	/8
Bit wear	7	/8
Gauge	1/8	/8
av.Trip time	13	hrs
Rig Cost/hr	5000	($)
Bit price	4590	($)

Bit Cost Chart

Data Available

From: 262.5

To : 4775.0

INTERPRETATIVE

BHA RECORD

BHA REPORT

B . nr	Date	Description	Length (m)	Hrs	REMARKS
1	29/05/89	BIT 1RR, H.O., B SUB, 2*9-1/2 DC, X/O, 10*8" DC, X/O 15 HWDP	256.2	2.0	DRILL 36" HOLE
2	30/05/89	BIT 2RR, H.O., 2*9-1/2" DC, 26" STAB, X/O, 8*9-1/2" DC, X/O 15 HWDP	257.0	9.5	DRILL 26" HOLE
3	02/06/89	BIT 2RR, B SUB, 2*9-1/2" DC, STAB, X/O, X/O, MWD, STAB, 6*8 DC, JARS, 2*8", X/O, HWDP	137.5	38.5	DRILL 17-1/2" HOLE
4	07/06/89	BIT 3(PDC), 12-1/4" PDM, SHOCK SUB, STAB, X/O, MWD, STAB, NMDC, 9*8" DC, JARS, 2*8" DC, X/O, 15 HWDP, DART SUB	291.3	101.5	DRILL 12-1/2" HOLE (PDC)
5	14/06/89	BIT 4(PDC), BIT SUB, X/O, MWD, NMDC, STAB, 1*8" DC, STAB 8*8" DC, JARS, 2*8" DC, X/O, 15 HWDP, DART SUB	280.4	28.0	DRILL 12-1/2" HOLE (PDC)
6	16/06/89	BIT 5RR, JUNK SUB, BIT SUB, 2*8" DC, STAB, 1*8" DC, STAB, 6*8" DC, JARS, 2*8" DC, X/O, 15 HWDP, DART SUB	259.2	2.0	WIPER TRIP
7	18/06/89	BIT 6(PDC), X/O, MWD, ROLL REAM, X/O, STAB, 13*6-1/2" DC X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, DART SUB	262.5	6.5	DRILL 8-1/2" HOLE (PDC)
8	19/06/89	BIT 7, JUNK SUB, X/O, MWD, X/O, STAB, X/O, NMDC, X/O, STAB 12*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP	254.0	17.0	DRILL 8-1/2" HOLE
9	21/06/89	BIT 8(PDC), JUNK SUB, X/O, MWD, X/O, R.R., X/O, NMDC, STAB 13*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP	263.4	27.0	DRILL 8-1/2" HOLE (PDC)
10	22/06/89	BIT 9, X/O, MWD, X/O, R.R., X/O, NMDC, STAB, 13*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	262.3	24.0	DRILL 8-1/2" HOLE
11	24/06/89	BIT 10(PDC), PDM, X/O, X/O, DP SUB, MWD, X/O, R.R., X/O, NMDC, STAB, 13*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	270.7	6.5	DRILL 8-1/2" HOLE (PDC)
12	25/06/89	BIT 10RR, X/O, MWD, X/O, R.R., X/O, NMDC, STAB, 16*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	290.1	43.5	DRILL 8-1/2" HOLE (PDC)
13	28/06/89	BIT 11, X/O, MWD, X/O, RR, X/O, NMDC, STAB, 16*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	290.1	26.5	DRILL 8-1/2" HOLE (PDC)
14	29/06/89	BIT 12, X/O, MWD, STAB, NMDC, STAB, 19*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	316.7	51.5	DRILL 8-1/2" HOLE
15	02/07/89	REV CIRC JUNK BSKT, X/O, 19*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP	294.2	2.0	FISH LOST CONES
16	03/07/89	BIT 13, JUNK SUB, JUNK SUB, B.S., 19*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	294.6	4.5	WORK ON JUNK
17	05/07/89	BIT 14, JUNK SUB, JUNK SUB, B.S., 19*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	294.6	2.0	WORK ON JUNK

BHA REPORT

F A. nr	Date	Description	Length (m)	Hrs	REMARKS
18	05/07/89	REV CIRC JUNK BSKT, X/O, 19*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	294.2	3.5	FISH JUNK
19	06/07/89	BIT 15RR, JUNK SUB, B.S., 19*6-1/2" DC, X/O, JARS, X/O 2*6-1/2" DC, X/O, 9 HWDP	293.9	8.0	DRILL ON JUNK
20	08/07/89	BIT 16, JUNK SUB, BS, 19*6-1/2" DC, X/O, JARS, X/O 2*6-1/2" DC, X/O, 9 HWDP	293.9	22.5	DRILL 8-1/2" HOLE
21	08/07/89	BIT 17(PDC), PDM, X/O, MWD, STAB, NMDC, X/O, 19*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	323.1	12.0	DRILL 8-1/2" HOLE (PDC)
22	09/07/89	BIT 18, B.S., X/O, NMDC, X/O, 19*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, DART SUB	304.1	40.5	DRILL 8-1/2" HOLE
23	12/07/89	BIT 19, X/O, MWD, NMDC, X/O, STAB, 19*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, DART SUB	316.2	22.5	DRILL 8-1/2" HOLE / LIH
24	24/07/89	BIT 18RR, BIT SUB, 18*6-1/2" DC, X/O, 15 HWDP	308.9		CLEAN HOLE
25	26/07/89	BIT 20(PDC), PDM, X/O, PONY, STAB, MWD, NMDC, X/O, 15*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP	283.2	10.0	SIDETRACK 8-1/2" HOLE
	27/07/89	BIT 21, PDM, X/O, PONY 10', STAB, MWD, NMDC, X/O 15*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP	283.2	7.0	SIDETRACK 8-1/2" HOLE
27	28/07/89	BIT 22, PDM, 2 DEG BENT SUB, X/O, MWD, NMDC, X/O 15*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP	279.1	16.5	SIDETRACK 8-1/2" HOLE
28	29/07/89	BIT 23, PDM, 2 DEG BENT SUB, X/O, MWD, NMDC, X/O 15*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP	279.1	4.5	SIDETRACK 8-1/2" HOLE
29	31/07/89	BIT 21RR, BIT SUB, 15*6-1/2" DC, X/O, JARS, 2*6-1/2" DC, X/O, 9 HWDP, DART SUB	258.4	2.0	DRESS OFF CEMENT PLUG
30	31/07/89	BIT 24, PDM, 2.5 DEG BENT SUB, MWD, NMDC, X/O, 15*6-1/2" DC X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, DART SUB	278.9	14.5	SIDETRACK 8-1/2" HOLE
31	02/08/89	BIT 25, PDM (3/4 DEG HOUSING), X/O, PONY DC, STAB, MWD, NMDC, X/O, 15*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	283.3	2.0	SIDETRACK 8-1/2" HOLE
32	02/08/89	BIT 26, PDM, 2.5 DEG BENT SUB, MWD, NMDC, X/O, 15*6-1/2" DC X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, DART SUB	278.9	3.5	SIDETRACK 8-1/2" HOLE
33	03/08/89	BIT 27, X/O, MWD, NMDC, X/O, 2*6-1/2" DC, RR, 16*6-1/2 DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	301.8	36.0	DRILL 8-1/2" HOLE
	06/08/89	BIT 28, JUNK SUB, X/O, MWD, NMDC, X/O, 1*6-1/2" DC, RR, 17*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP,	302.5	46.5	DRILL 8-1/2" HOLE
35	08/08/89	BIT 29, JUNK SUB, X/O, MWD, NMDC, X/O, RR, 18*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, HYD SUB	302.5	65.6	DRILL 8-1/2" HOLE

BHA REPORT

A. nr	Date	Description	Length (m)	Hrs	REMARKS
36	13/08/89	BIT 29RR, BS, 2*6-1/2" DC, RR, 16*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, DART SUB	287.4		WIPER TRIP
37	16/08/89	BIT 30, BS, 2*6-1/2" DC, RR, 16*6-1/2" DC, X/O, JARS, X/O, 2*6-1/2" DC, X/O, 9 HWDP, DART SUB	287.4		WIPER TRIP
38	20/08/89	8-1/4" MILL, BS, 20*6-1/2" DC, X/O, 9 HWDP, HYD SUB	273.6	0.5	MILL ON RESTRICTION
39	20/08/89	BIT 31, BS, 15*4-3/4" DC, JAR, 2*4-3/4" DC, 9 HWDP, 135*3-1/2" DP, X/O, DP, X/O, 9-5/8" CSG SCRAPER, BS, X/O	1534.4	4.0	CLEAN 7" LINER
40	21/08/89	7-3/8" POLISH MILL, 24*5" HWDP, X/O, 9*4-3/4" DC, X/O	303.6	4.0	POLISH TIE-BACK RECEPT.
41	24/08/89	BIT 32, JUNK SUB, BIT SUB, 15*4-3/4" DC, JAR, 2*4-3/4" DC, 9 HWDP, X/O, DART SUB	254.4	3.5	DRILL 7" SHOE
42	25/08/89	BIT 33, JUNK SUB, BIT SUB, 15*4-3/4" DC, JAR, 2*4-3/4" DC, 9 HWDP, X/O, DART SUB	245.4	7.0	DRILL 6" HOLE
43	26/08/89	BIT 34, JUNK SUB, BIT SUB, 2*4-3/4" DC, STAB, 13*4-3/4" DC, JARS, 2*4-3/4" DC, 9 HWDP, X/O, HYD SUB	256.0	21.5	DRILL 6" HOLE
	30/08/89	BIT 35(PDC), NMDC, 1*4-3/4" DC, STAB, 13*4-3/4" DC, JAR, 2*4-3/4" DC, 9 HWDP, (60 STD 3-1/2" DP), X/O, DART SUB	254.7	23.0	DRILL 6" HOLE (PDC)
45	03/09/89	BIT 36, JUNK SUB, BIT SUB, NMDC, 1*4-3/4" DC, STAB 13*4-3/4" DC, JAR, 2*4-3/4" DC, 9 HWDP, (60 STD 3-1/2" DP), X/O, DART SUB	255.5	6.0	DRILL 6" HOLE
46	07/09/89	BIT 34RR, JUNK SUB, BIT SUB, NMDC, 1*4-3/4" DC, STAB 13*4-3/4" DC, JAR, 2*4-3/4" DC, 9 HWDP, 60 STD 3-1/2" DP, X/O, DART SUB	1961.1		WIPER TRIP
47	10/09/89	BIT 33RR, 7" SCRAPER, BS, 20*4-3/4" DC, 9 HWDP, 60 STD 3-1/2" DP, X/O	1977.8		CLEAN 7" LINER
48	11/09/89	BIT 37, 5" SCRAPER, BS, 13*2-1/2" DC, X/O, 33*2-3/8" DP, X/O, 18*4-3/4" DC, 9 HWDP, 60 STD 3-1/2" DP, X/O	2391.9		CLEAN 5" LINER
49	19/09/89	BIT 33RR, BS, 12*4-3/4" DC, 9 HWDP	195.6		DRILL CEMENT
50	20/09/89	4.05" MILL, 5" SCRAPER, BS, 13*2-1/2" DC, X/O, 33*2-3/8" DP X/O, X/O, 7" SCRAPER, X/O	436.64		CLEAN 5" LINER
51	21/09/89	6" MILL, 7" SCRAPER, JUNK SUB, B.S., 12*4-3/4" DC, 9 HWDP	198.04		CLEAN 7" STRING
52	04/10/89	5" AND 7" SCRAPER WITH 2-3/8", 3-1/2", 5" DP			CLEAN 5" & 7"

7. DIRECTIONAL DATA

TELECO DIRECTIONAL SURVEY LISTING

Company...................... PETROFINA EXPL. AUST. S.A.
Well......................... ANEMONE #1
Survey Calc. Method.......... Minimum Curvature
Vert. Sect. Calc. Method..... Vertical well: Closure calculated at each survey station.
Proposed Azimuth............. N.A.

Page 2 of 3
Teleco Job ID.: TAU #119
Grid Correction: 13.995
Mag. Decl. Corr.: 13.162
Grid Decl. Corr.: 27.157

M.DPTH meters	CRS LEN meters	INCLINATION degrees	AZIMUTH degrees	T.V.D. meters	CLOSURE meters	NORTH/SOUTH meters	EAST/WEST meters	DOGLEG SEV. deg/30m
INITIAL TIE-IN COORDINATES								
826.0		0.000	0.000	826.00	0.00	0.00	0.00	
833.0	7.0	0.250	10.000	833.00	0.02	0.02	0.00	1.089
968.0	135.0	0.000	0.000	968.00	0.31	0.31	0.05	0.056
1822.0	54.0	0.250	355.000	1022.00	0.42	0.42	0.04	0.141
1156.4	134.4	0.100	70.900	1156.40	0.76	0.75	0.13	0.056
1250.8	94.4	0.100	85.300	1250.80	0.84	0.79	0.29	0.008
1335.0	84.2	0.200	247.300	1335.00	0.77	0.74	0.23	0.107
1419.8	84.8	0.200	274.800	1419.80	0.69	0.68	-0.06	0.034
1504.5	84.7	0.200	272.000	1504.50	0.79	0.71	-0.35	0.004
1589.7	85.2	0.500	284.600	1589.69	1.18	0.81	-0.86	0.110
1681.4	91.7	0.700	271.600	1681.39	2.03	0.92	-1.81	0.080
1766.6	85.2	0.900	285.700	1766.58	3.18	1.12	-2.97	0.100
1850.1	83.5	1.100	266.700	1850.07	4.58	1.25	-4.40	0.140
1935.4	85.3	1.300	274.100	1935.35	6.32	1.27	-6.19	0.090
2018.5	83.1	1.600	287.800	2018.42	8.40	1.70	-8.23	0.167
2122.7	104.2	2.000	290.600	2122.57	11.65	2.78	-11.32	0.120
2199.2	76.5	2.000	300.400	2199.02	14.27	3.92	-13.72	0.136
2283.3	84.1	2.300	300.800	2283.06	17.34	5.53	-16.43	0.109
2365.7	82.4	2.600	316.600	2365.39	20.64	7.74	-19.14	0.272
2441.6	75.9	3.000	312.400	2441.20	24.11	10.33	-21.79	0.180
2525.3	83.7	3.300	311.300	2524.77	28.55	13.39	-25.22	0.111
2610.3	85.0	3.700	320.500	2609.61	33.50	17.12	-28.80	0.247
2703.2	92.9	4.300	329.600	2702.28	39.47	22.44	-32.47	0.286
2747.6	44.4	4.600	323.300	2746.55	42.68	25.30	-34.37	0.393
2788.2	40.6	5.200	314.100	2787.00	46.07	27.89	-36.67	0.741
2817.2	29.0	5.400	312.700	2815.88	48.73	29.73	-38.61	0.250
2843.9	26.7	5.800	311.700	2842.45	51.33	31.48	-40.55	0.470
2855.1	11.2	6.200	310.300	2853.62	52.50	32.25	-41.43	1.156
2873.1	18.0	6.100	311.000	2871.48	54.43	33.50	-42.89	0.212
2892.6	19.5	4.900	309.200	2890.89	56.29	34.71	-44.32	1.895
2910.7	18.1	4.200	309.200	2908.94	57.73	35.62	-45.43	1.179
2930.4	19.7	3.600	310.600	2928.59	59.07	36.47	-46.46	0.940
2974.0	43.6	2.000	296.210	2972.13	61.18	37.70	-48.18	1.213
3060.0	86.0	1.000	303.210	3058.10	63.40	38.78	-50.16	0.380
3080.1	20.1	1.300	292.300	3078.20	63.79	38.96	-50.51	0.561
3090.3	10.2	1.200	289.200	3088.40	64.01	39.04	-50.72	0.361
3108.7	18.4	1.400	280.700	3106.79	64.39	39.14	-51.13	0.459
3128.3	19.6	1.100	275.800	3126.39	64.76	39.21	-51.55	0.495

TELECO DIRECTIONAL SURVEY LISTING

Company....................... PETROFINA EXPL. AUST. S.A.
Well.......................... ANEMONE #1
Survey Calc. Method......... Minimum Curvature
Vert. Sect. Calc. Method..... Vertical well: Closure calculated at each survey station.
Proposed Azimuth............. N.A.

Page 3 of 3
Teleco Job ID.: TAU #119
Grid Correction: 13.995
Mag. Decl. Corr.: 13.162
Grid Decl. Corr.: 27.157

M.DPTH meters	CRS LEN meters	INCLINATION degrees	AZIMUTH degrees	T.V.D. meters	CLOSURE meters	NORTH/SOUTH meters	EAST/WEST meters	DOGLEG SEV. deg/30m
3148.0	19.7	0.800	281.800	3146.08	65.05	39.25	-51.87	0.488
3175.7	27.7	0.500	280.400	3173.78	65.33	39.31	-52.18	0.331
3224.6	48.9	0.400	277.200	3222.68	65.67	39.37	-52.56	0.064
3271.0	46.4	0.400	213.200	3269.08	65.80	39.26	-52.81	0.278
3317.3	46.3	0.400	182.300	3315.38	65.70	38.96	-52.90	0.140
3355.5	38.2	0.400	187.600	3353.58	65.56	38.70	-52.93	0.030
3383.0	27.5	0.700	199.200	3381.08	65.47	38.44	-52.99	0.353
3431.3	48.3	1.100	203.400	3429.37	65.29	37.74	-53.27	0.256
3466.9	35.6	1.000	211.500	3464.96	65.20	37.16	-53.57	0.153
3496.6	29.7	1.100	216.800	3494.66	65.20	36.71	-53.88	0.143
3538.6	42.0	0.400	232.900	3536.65	65.26	36.30	-54.24	0.526
3590.8	52.2	0.900	137.000	3588.85	64.92	35.89	-54.10	0.597
3648.0	57.2	1.000	138.700	3646.04	64.01	35.19	-53.47	0.055
3694.3	46.3	1.400	148.900	3692.33	63.11	34.40	-52.91	0.298
3741.4	47.1	1.000	153.100	3739.42	62.24	33.54	-52.42	0.265
3788.6	47.2	0.500	64.900	3786.62	61.77	33.26	-52.05	0.713
3837.1	48.5	1.400	61.700	3835.11	61.37	33.63	-51.34	0.566
3846.1	9.0	1.400	55.000	3844.11	61.28	33.75	-51.15	0.554
3901.5	55.4	1.700	73.000	3899.48	60.52	34.37	-49.81	0.313
3929.5	28.0	1.900	61.700	3927.47	60.06	34.72	-49.01	0.442
3975.7	46.2	1.100	42.700	3973.65	59.67	35.40	-48.03	0.615
4030.4	54.7	0.900	299.000	4028.35	60.04	36.00	-48.05	0.879
4078.4	48.0	0.400	304.600	4076.34	60.58	36.28	-48.52	0.320
4124.2	45.8	1.000	334.500	4122.14	61.09	36.73	-48.82	0.455
4237.6	113.4	1.900	301.800	4235.50	63.84	38.61	-50.85	0.319
4262.0	24.4	2.250	305.000	4259.88	64.73	39.10	-51.58	0.460
4448.0	186.0	6.200	277.000	4445.27	77.23	42.42	-64.54	0.712
4519.3	71.3	4.700	286.600	4516.24	83.52	43.72	-71.16	0.748
4537.0	17.7	4.200	287.700	4533.88	84.85	44.13	-72.47	0.873

PROJECTED BOTTOM-HOLE LOCATION
(Extrapolated from last survey station)

4750.0	213.0	4.200	287.700	4746.31	100.08	48.87	-87.34	

CLOSURE AZIMUTH = 299.229

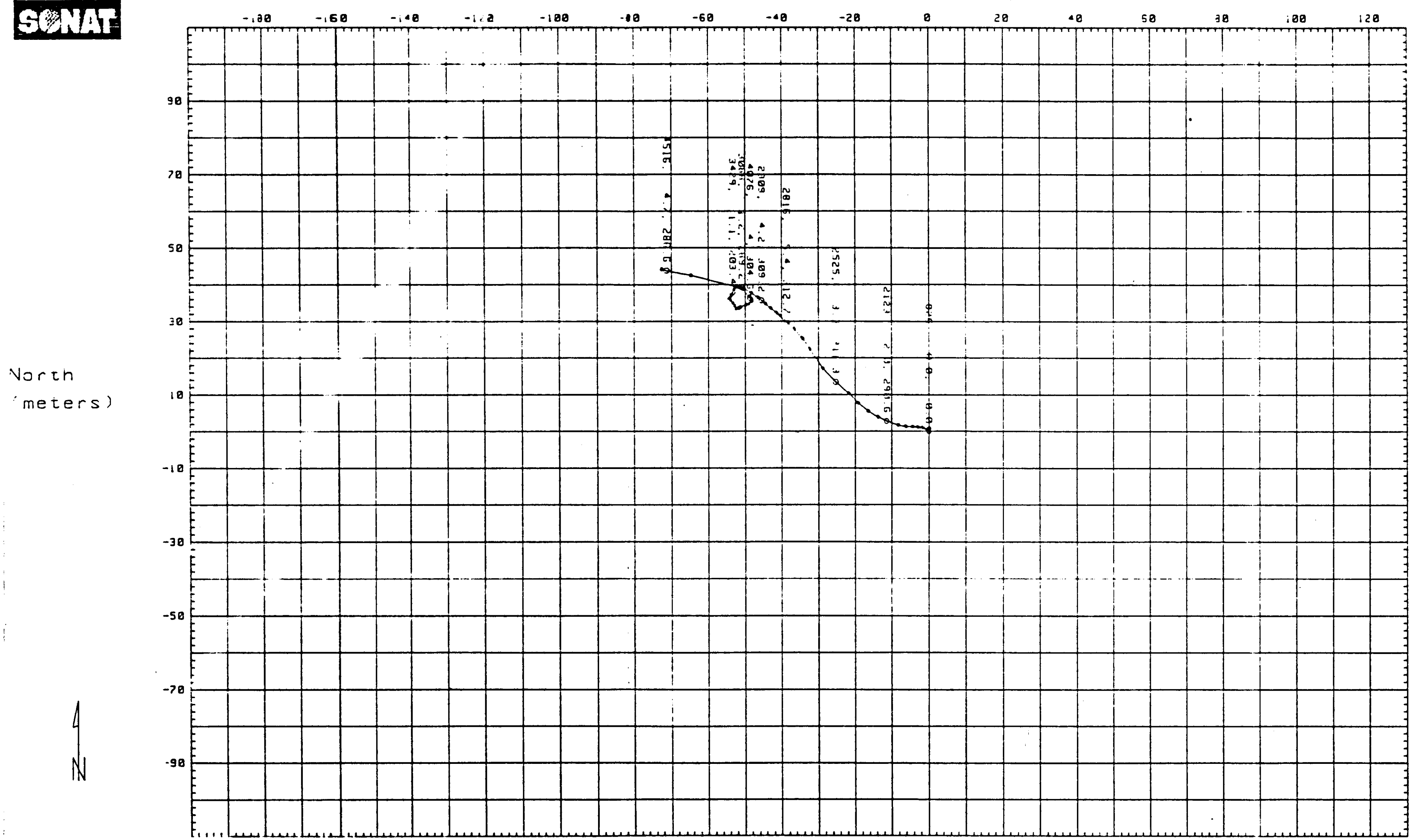
TELECO SONAT

TELECO SONAT

PLAN VIEW

East (meters)

Date: 14 Jul 1989



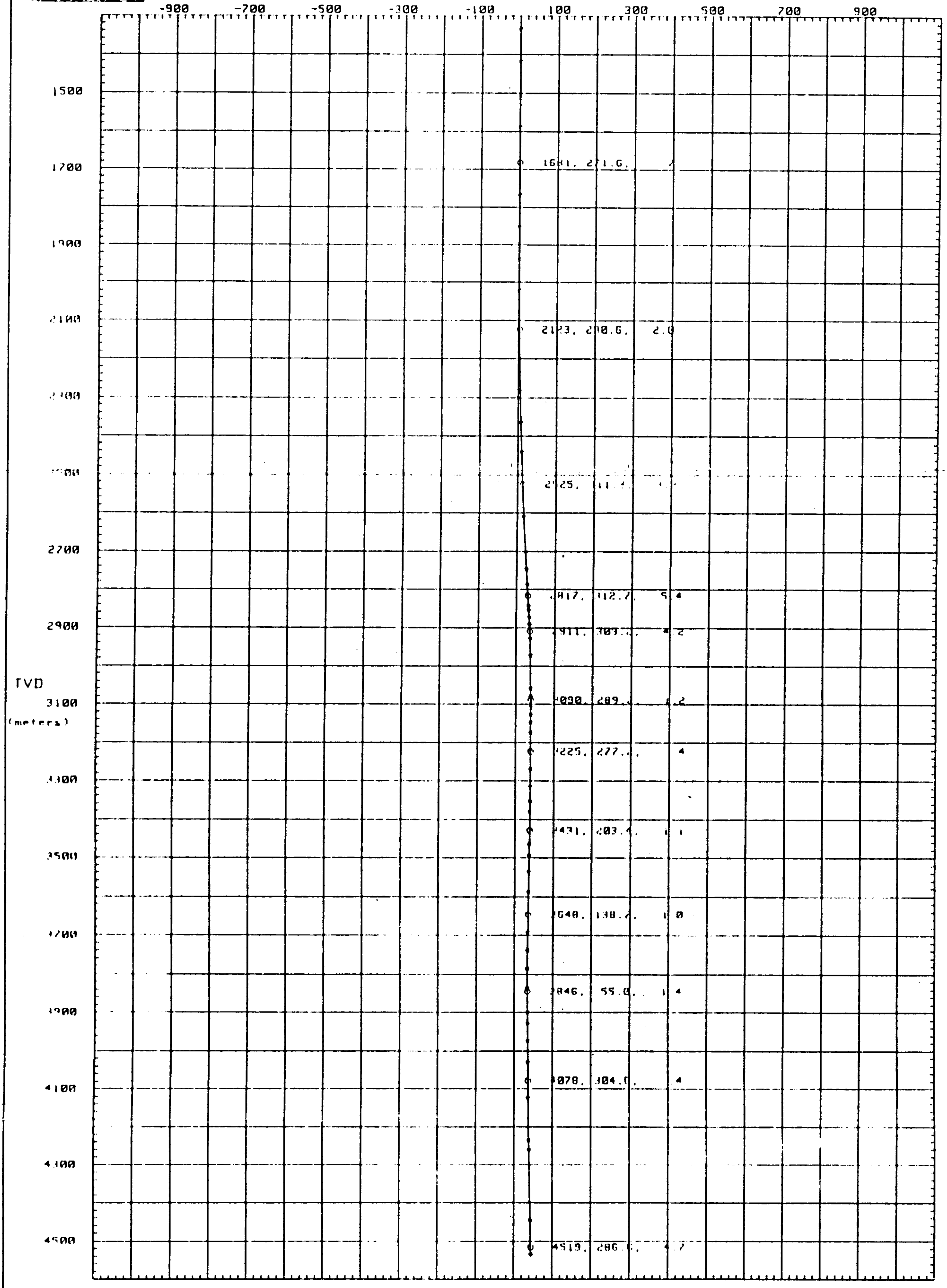
Company: PETROFINA
Well: ANEMOME #1
Scale: 1 Square= 10(meters).

Slot North: 0(meters)
Slot East: 0(meters)
Labeled Surveys: TVD Inclination Azimuth

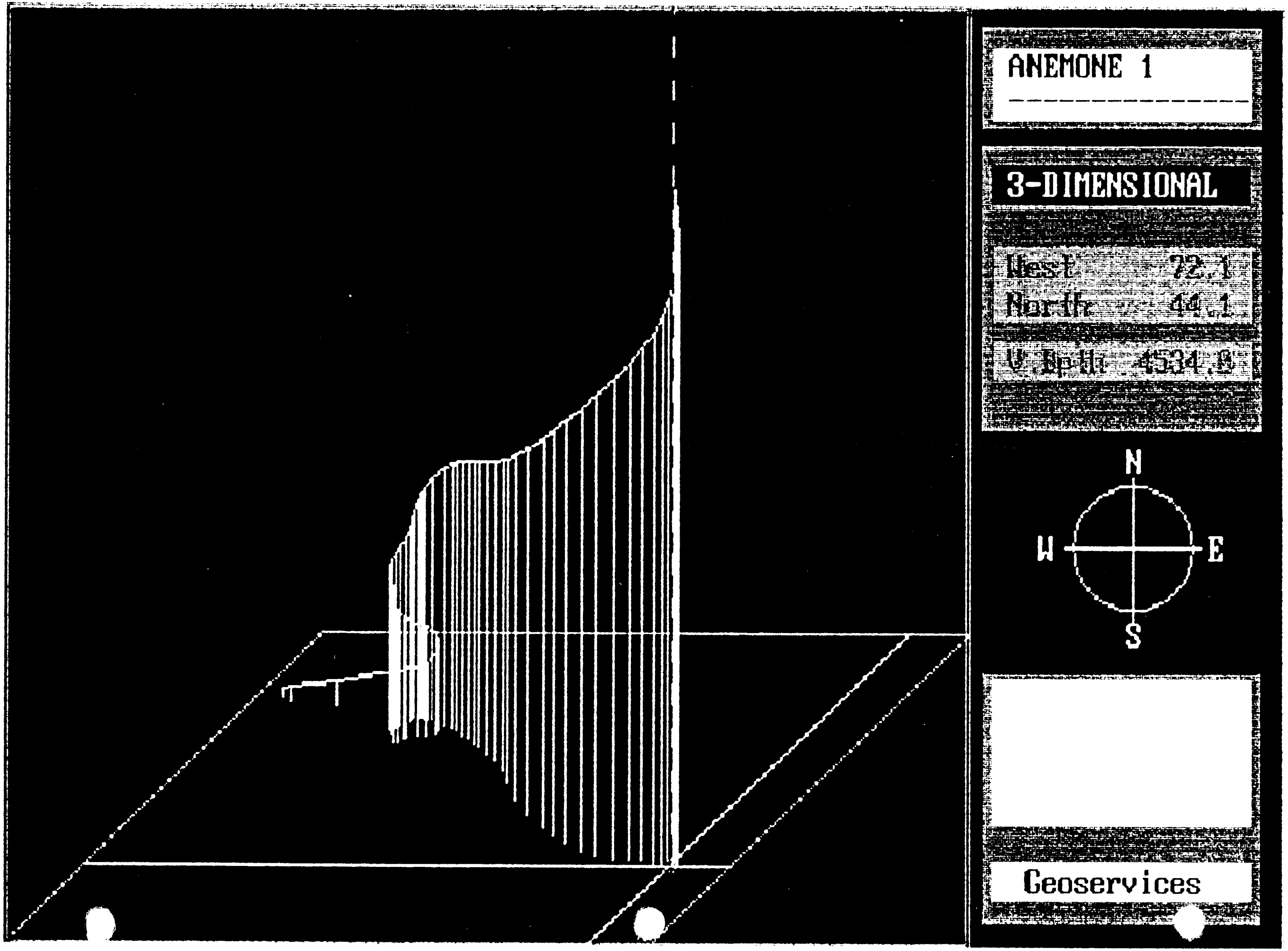
Proposal Origin North: -13(meters)
Proposal Origin East: -7.2(meters)
Proposal Azimuth: 0(Degrees)

TELECO SONAT

VERTICAL SECTION Horizontal Distance (meters) Date: 14 Jul 1989



Company: PETROFINA		Slot North:	0(meters)
Well: ANEMONE #1		Slot East:	0(meters)
Scale:1 Square= 100(meters)		Proposal Origin North:	-13(meters)
Proposal Azimuth:	0(Degrees)	Proposal Origin East:	-7.2(meters)
Labeled Surveys: M.Depth Azimuth Inclination		V.S. Calc. Method:	Incremental



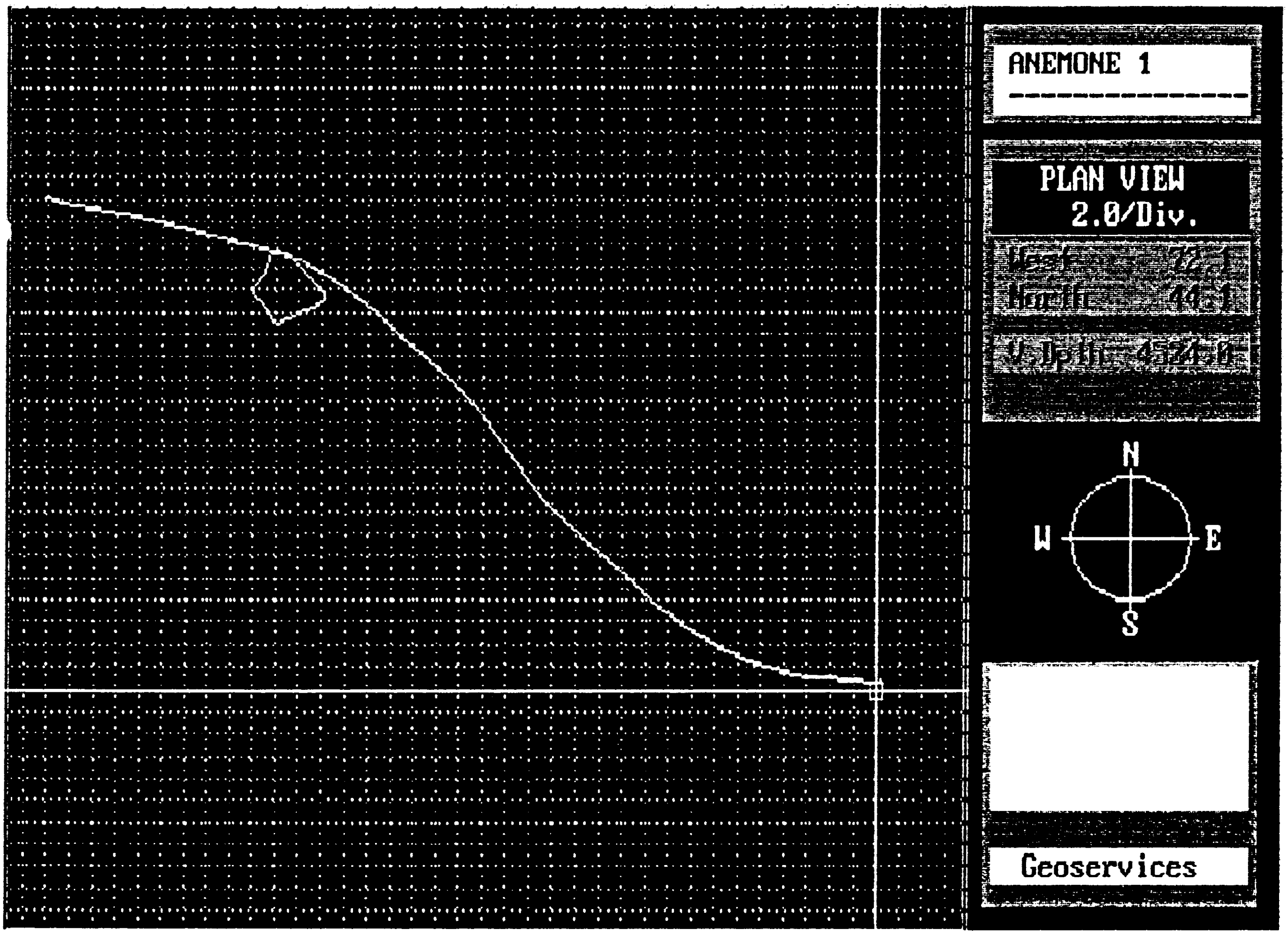
ANEMONE 1

3-DIMENSIONAL

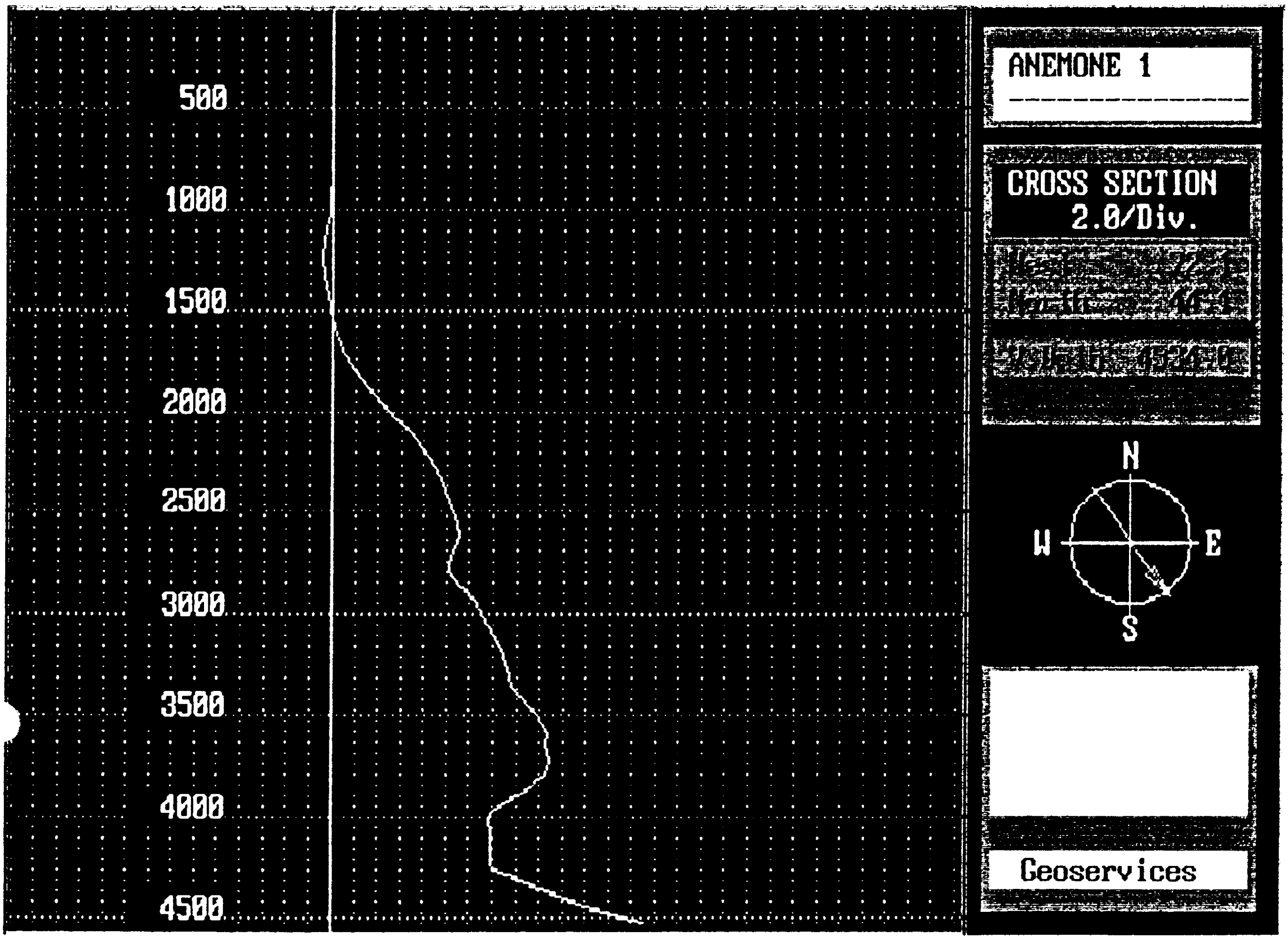
West 72.1
North 44.1

V Dpth 4534.8

Geoservices



West : 72.1
North : 40.1
V.Dpth : 4524.0



West : 72.1
North : 40.1
V.Dpth : 4524.0

DATADRIL

PETROFINA EXPLORATION AUSTRALIA -
ANEMONE #1 (SIDETRACK)
BASS STRAIT
OFFSHORE VICTORIA
15th AUGUST 1989

PROPOSED FROM BHL AT 3880M
GRID DECLINATION 13.995 Deg EAST

ANE1ST_SUR

*** RECORD OF SURVEY ***

Calculated by DATADRIL's CADDS System

Radius of Curvature Method
All Angles are Decimal

MEASURED DEPTH (M)	INCL ANGLE (DEG)	DRIFT AZIMUTH (DEG)	COURSE LENGTH (M)	TOTAL VERTICAL DEPTH	TOTAL RECTANGULAR COORDINATES (M)		CLOSURE DISTANCE (M)	CLOSURE AZIMUTH (DEG)	DOGLEG SEVERITY (DEG/30 M)
826.00	0.00	0.00	0.00	826.00	0.00 N	0.00 E	0.00	0.00	0.00
833.00	.25	356.84	7.00	833.00	.02 N	0.00 W	.02	356.84	1.07
968.00	0.00	0.00	135.00	968.00	.31 N	.02 W	.31	356.84	.06
10[illegible].00	.25	341.84	54.00	1022.00	.42 N	.05 W	.42	352.72	.14
1156.40	.10	57.74	134.40	1156.40	.78 N	.08 E	.78	5.51	.05
1250.80	.10	72.14	94.40	1250.80	.85 N	.22 E	.88	14.78	.01
1335.00	.20	234.14	84.20	1335.00	.71 N	.29 E	.77	22.41	.11
1419.80	.20	261.64	84.80	1419.80	.60 N	.02 E	.60	2.10	.03
1504.50	.20	258.84	84.70	1504.50	.55 N	.27 W	.61	333.98	0.00
1589.70	.50	271.44	85.20	1589.70	.51 N	.79 W	.94	302.83	.11
1681.40	.70	258.44	91.70	1681.39	.42 N	1.74 W	1.79	283.66	.08
1766.60	.90	272.54	85.20	1766.58	.33 N	2.92 W	2.94	276.44	.10
1850.10	1.10	253.54	83.50	1850.07	.15 N	4.36 W	4.37	272.02	.14
1935.40	1.30	260.94	85.30	1935.35	.24 S	6.11 W	6.11	267.75	.09
2018.50	1.60	274.64	83.10	2018.42	.32 S	8.20 W	8.21	267.76	.16
2122.70	2.00	277.44	104.20	2122.57	.02 N	11.46 W	11.46	270.12	.12
2199.20	2.00	287.24	76.50	2199.03	.59 N	14.06 W	14.07	272.42	.13
2283.30	2.30	278.64	84.10	2283.07	1.30 N	17.13 W	17.18	274.34	.16
2365.70	2.60	303.44	82.40	2365.39	2.55 N	20.39 W	20.55	277.14	.40
2441.60	3.00	299.24	75.90	2441.20	4.48 N	23.56 W	23.98	280.77	.18
2525.30	3.30	298.14	83.70	2524.77	6.69 N	27.60 W	28.39	283.63	.11

DATADRIL

PETROFINA EXPLORATION AUSTRALIA
ANEMONE #1 (SIDETRACK)

BASS STRAIT
OFFSHORE VICTORIA

MEASURED DEPTH (M)	INCL ANGLE (DEG)	DRIFT AZIMUTH (DEG)	COURSE LENGTH (M)	TOTAL VERTICAL DEPTH	TOTAL RECTANGULAR COORDINATES (M)		CLOSURE DISTANCE (M)	CLOSURE AZIMUTH (DEG)	DOGLEG SEVERITY (DEG/30 M)
2610.30	3.70	307.34	85.00	2609.61	9.49 N	31.96 W	33.34	286.55	.24
2703.20	4.30	316.44	92.90	2702.29	13.82 N	36.77 W	39.28	290.59	.28
2747.60	4.60	310.14	44.40	2746.55	16.18 N	39.28 W	42.48	292.38	.39
2788.20	5.20	300.94	40.60	2787.01	18.19 N	42.10 W	45.86	293.37	.73
2817.20	5.40	299.54	29.00	2815.88	19.54 N	44.41 N	48.52	293.75	.25
2843.90	5.80	298.54	26.70	2842.45	20.80 N	46.69 W	51.12	294.02	.46
2855.10	6.20	297.14	11.20	2853.59	21.35 N	47.73 W	52.28	294.10	1.14
2873.10	6.10	297.84	18.00	2871.49	22.24 N	49.44 W	54.21	294.22	.21
2892.60	4.90	296.04	19.50	2890.90	23.09 N	51.10 W	56.08	294.31	1.86
2910.70	4.20	296.04	18.10	2908.94	23.72 N	52.39 W	57.51	294.36	1.16
730.40	3.60	297.44	19.70	2928.60	24.32 N	53.59 W	58.85	294.41	.93
2974.00	2.00	283.05	43.60	2972.14	25.06 N	55.58 W	60.97	294.26	1.19
3060.00	1.00	290.05	86.00	3058.11	25.70 N	57.74 W	63.20	293.99	.35
3080.10	1.30	279.14	20.10	3078.21	25.80 N	58.13 W	63.60	293.93	.55
3090.30	1.20	276.04	10.20	3088.41	25.83 N	58.35 W	63.81	293.88	.35
3108.70	1.40	267.54	18.40	3106.80	25.84 N	58.77 W	64.20	293.74	.45
3128.30	1.10	262.64	19.60	3126.40	25.80 N	59.19 W	64.57	293.55	.49
3148.00	.80	268.64	19.70	3146.09	25.78 N	59.52 W	64.86	293.42	.48
3175.70	.50	267.24	27.70	3173.79	25.77 N	59.83 W	65.15	293.30	.33
3224.60	.40	264.04	48.90	3222.69	25.74 N	60.22 W	65.49	293.14	.06
3271.00	.40	200.04	46.40	3269.09	25.55 N	60.46 W	65.63	292.91	.27
3317.30	.40	169.14	46.30	3315.39	25.23 N	60.48 W	65.54	292.64	.14
3355.50	.40	174.44	38.20	3353.59	24.97 N	60.45 W	65.40	292.44	.03
3383.00	.70	186.04	27.50	3381.09	24.70 N	60.45 W	65.30	292.23	.35
3431.30	1.10	190.24	48.30	3429.38	23.95 N	60.55 W	65.12	291.58	.25
3466.90	1.00	198.34	35.60	3464.97	23.32 N	60.71 W	65.04	291.01	.15
3496.60	1.10	203.64	29.70	3494.67	22.81 N	60.91 W	65.04	290.53	.14
3538.60	.40	219.74	42.00	3536.66	22.35 N	61.20 W	65.15	290.06	.52
3590.80	.90	123.84	52.20	3588.86	21.83 N	61.12 W	64.90	289.65	.59
3648.00	1.00	125.54	57.20	3646.05	21.29 N	60.34 W	63.99	289.43	.05
3694.30	1.40	135.74	46.30	3692.34	20.66 N	59.61 W	63.09	289.11	.29
3741.40	1.00	139.94	47.10	3739.43	19.93 N	58.95 W	62.22	288.68	.26
3788.60	.50	51.74	47.20	3786.63	19.87 N	58.39 W	61.68	288.79	.70

DATADRIL

PETROFINA EXPLORATION AUSTRALIA
ANEMONE #1 (SIDETRACK)

BASS STRAIT
OFFSHORE VICTORIA

MEASURED DEPTH (M)	INCL ANGLE (DEG)	DRIFT AZIMUTH (DEG)	COURSE LENGTH (M)	TOTAL VERTICAL DEPTH	TOTAL RECTANGULAR COORDINATES (M)		CLOSURE DISTANCE (M)	CLOSURE AZIMUTH (DEG)	DOGLEG SEVERITY (DEG/30 M)
3837.10	1.40	48.54	48.50	3835.12	20.38 N	57.77 W	61.26	289.43	.56
3846.10	1.40	41.84	9.00	3844.12	20.54 N	57.62 W	61.17	289.62	.55
3879.00	1.10	69.10	32.90	3877.01	20.94 N	57.03 W	60.75	290.16	.60
3898.00	2.20	60.30	19.00	3896.00	21.18 N	56.54 W	60.37	290.53	1.78
3904.00	4.10	62.20	6.00	3901.99	21.33 N	56.25 W	60.16	290.77	9.51
3911.00	5.50	58.20	7.00	3908.97	21.63 N	55.74 W	59.79	291.20	6.17
3927.00	5.60	73.60	16.00	3924.89	22.26 N	54.33 W	58.71	292.27	2.79
3934.00	5.20	80.30	7.00	3931.86	22.40 N	53.69 W	58.18	292.65	3.20
3946.00	4.60	91.90	12.00	3943.82	22.47 N	52.67 W	57.26	293.11	2.89
3964.00	3.60	81.40	18.00	3961.77	22.55 N	51.39 W	56.12	293.69	2.08
992.00	2.50	141.50	28.00	3989.73	22.03 N	50.06 W	54.69	293.75	3.43
4020.00	1.50	148.20	28.00	4017.71	21.23 N	49.50 W	53.86	293.21	1.10
4067.00	.70	65.90	47.00	4064.71	20.99 N	48.71 W	53.04	293.31	1.00
4106.00	.10	74.00	39.00	4103.70	21.08 N	48.45 W	52.84	293.51	.46
4132.00	.20	91.70	26.00	4129.70	21.09 N	48.39 W	52.78	293.55	.13
4161.00	.70	344.00	29.00	4158.70	21.24 N	48.27 W	52.74	293.76	.81
4181.00	1.20	345.10	20.00	4178.70	21.56 N	48.36 W	52.95	294.03	.75
4191.00	1.50	307.10	10.00	4188.70	21.76 N	48.48 W	53.14	294.17	2.77
4216.00	1.70	24.10	25.00	4213.69	22.38 N	48.65 W	53.55	294.71	2.40
4237.00	1.70	27.10	21.00	4234.68	22.94 N	48.38 W	53.54	295.37	.13
4256.00	1.70	345.70	19.00	4253.67	23.49 N	48.31 W	53.72	295.93	1.90
4285.00	2.30	263.50	29.00	4282.65	24.02 N	49.08 W	54.64	296.08	2.76
4303.00	2.70	301.10	18.00	4300.64	24.18 N	49.83 W	55.39	295.89	2.76
4362.00	4.20	250.90	59.00	4339.53	24.54 N	53.25 W	58.63	294.74	1.64
1484.00	5.20	255.10	122.00	4481.12	21.62 N	62.81 W	66.42	288.99	.26

BOTTOM HOLE CLOSURE: 66.42 Meters at 288.99 Degrees

LEAST DISTANCE BETWEEN WELLS

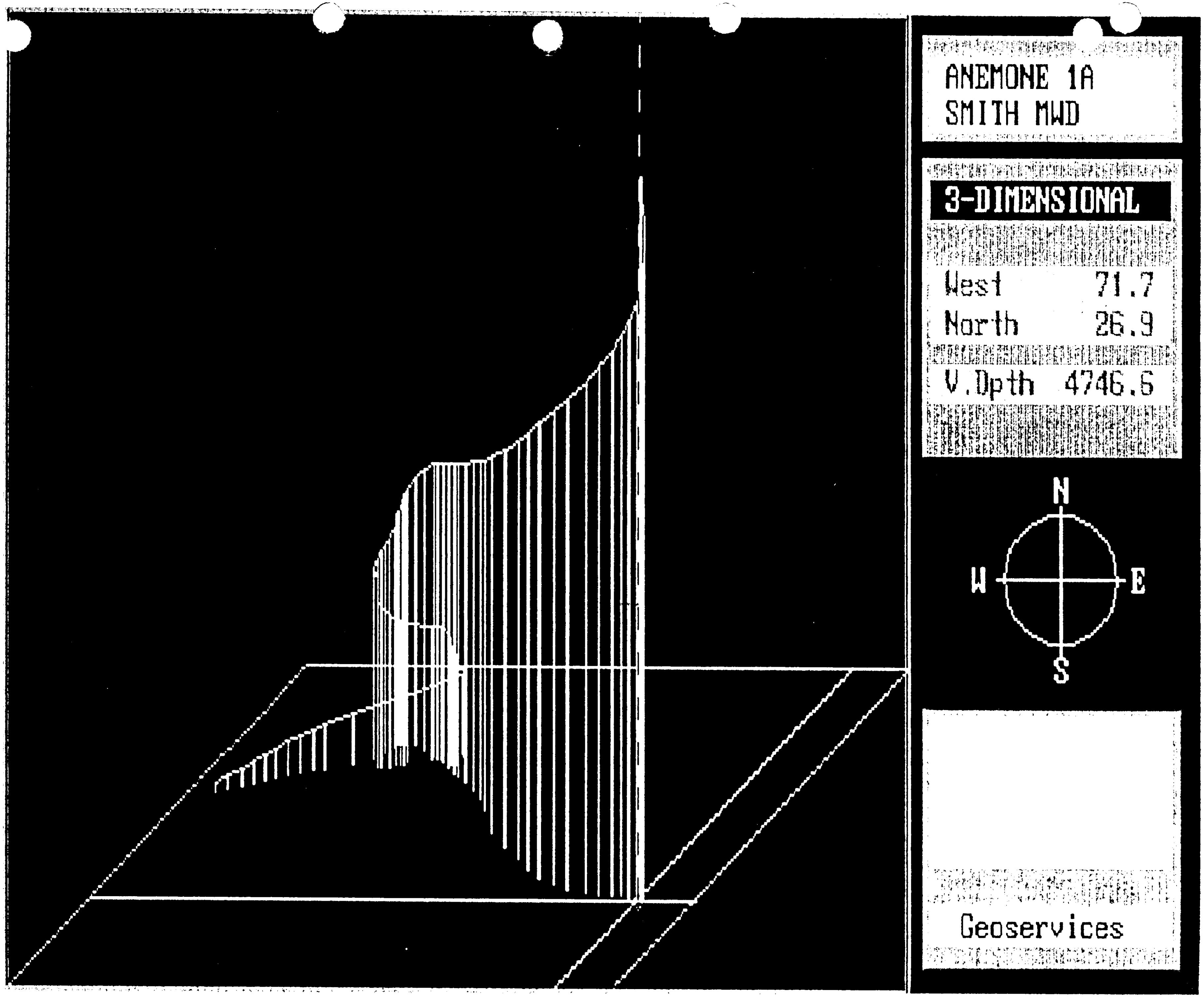
Reference Well: ANE1ST_SUR	Compare Well: ANE1OLDSUR
PETROFINA EXPLORATION AUSTRALIA ANEMONE #1 (SIDETRACK) BASS STRAIT OFFSHORE VICTORIA 15th AUGUST 1989	PETROFINA EXPLORATION AUSTRALIA ANEMONE #1 (OLD WELL) BASS STRAIT OFFSHORE VICTORIA 15th AUGUST 1989

Compare Well and Reference Well have NO horizontal offset!

There is NO vertical KB Elevation offset!

Reference Well				Compare Well				Least	
TVD	MD	N/S	E/W	TVD	MD	N/S	E/W	Dist.	Azimuth
3844	3846.10	20.54	-57.62	3844	3846.10	20.54	-57.62	0.00	289.75
3854	3856.10	20.66	-57.44	3854	3856.10	20.72	-57.45	.06	346.87
3864	3866.11	20.78	-57.26	3864	3866.11	20.89	-57.28	.11	348.21
3874	3876.11	20.91	-57.08	3874	3876.11	21.07	-57.12	.17	348.66
3884	3886.11	21.03	-56.85	3884	3886.11	21.24	-56.92	.23	340.88
3894	3896.12	21.15	-56.59	3894	3896.12	21.41	-56.71	.28	334.73
3904	3906.13	21.42	-56.09	3904	3906.12	21.58	-56.47	.41	292.45
3914	3916.18	21.83	-55.28	3914	3916.13	21.76	-56.22	.94	266.00
3924	3926.22	22.22	-54.40	3924	3926.13	21.95	-55.96	1.59	259.95
3934	3936.27	22.42	-53.50	3934	3936.13	22.14	-55.77	2.29	263.13
3944	3946.30	22.47	-52.65	3944	3946.14	22.35	-55.61	2.96	267.51
3954	3956.33	22.52	-51.93	3954	3956.14	22.55	-55.44	3.51	270.52
3964	3966.35	22.50	-51.28	3964	3966.14	22.75	-55.28	4.01	273.52
3974	3976.37	22.32	-50.80	3974	3976.15	22.95	-55.12	4.37	278.31
3984	3986.38	22.13	-50.33	3984	3986.15	23.09	-55.18	4.95	281.17
3994	3996.39	21.90	-49.97	3994	3996.15	23.23	-55.24	5.43	284.16
4004	4006.40	21.62	-49.77	4004	4006.15	23.37	-55.30	5.79	287.62
4014	4016.40	21.33	-49.57	4014	4016.15	23.51	-55.35	6.18	290.65
4024	4026.41	21.20	-49.39	4024	4026.16	23.65	-55.41	6.50	292.19
4034	4036.41	21.15	-49.22	4034	4036.16	23.73	-55.50	6.79	292.41
4044	4046.41	21.09	-49.06	4044	4046.16	23.77	-55.61	7.07	292.22
4054	4056.41	21.04	-48.89	4054	4056.16	23.80	-55.71	7.36	292.04
4064	4066.41	20.99	-48.72	4064	4066.16	23.84	-55.82	7.65	291.88
4074	4076.41	21.01	-48.65	4074	4076.16	23.88	-55.93	7.82	291.50
4084	4086.41	21.03	-48.58	4084	4086.16	23.94	-56.03	7.99	291.33
4094	4096.42	21.06	-48.52	4094	4096.16	24.01	-56.12	8.16	291.23
4104	4106.42	21.08	-48.45	4104	4106.16	24.08	-56.22	8.33	291.14

4114	4116.42	21.08	-48.43	4114	4116.16	24.16	-56.32	8.47	291.27
4124	4126.42	21.09	-48.40	4124	4126.16	24.24	-56.44	8.63	291.43
4134	4136.42	21.11	-48.37	4134	4136.17	24.38	-56.64	8.90	291.58
4144	4146.42	21.17	-48.33	4144	4146.17	24.53	-56.85	9.16	291.54
4154	4156.42	21.22	-48.29	4154	4156.17	24.67	-57.05	9.42	291.50
4164	4166.42	21.33	-48.29	4164	4166.18	24.81	-57.26	9.62	291.24
4174	4176.42	21.49	-48.34	4174	4176.18	24.96	-57.46	9.76	290.81
4184	4186.42	21.67	-48.43	4184	4186.18	25.10	-57.66	9.86	290.39
4194	4196.42	21.89	-48.52	4194	4196.19	25.24	-57.87	9.93	289.73
4204	4206.43	22.14	-48.58	4204	4206.19	25.39	-58.07	10.03	288.88
4214	4216.43	22.39	-48.64	4214	4216.19	25.53	-58.28	10.14	288.03
4224	4226.44	22.66	-48.51	4224	4226.20	25.67	-58.48	10.42	286.81
4234	4236.44	22.93	-48.38	4234	4236.20	25.82	-58.69	10.70	285.66
4244	4246.45	23.22	-48.35	4244	4246.21	25.94	-59.01	11.01	284.36
4254	4256.45	23.50	-48.33	4254	4256.21	26.07	-59.35	11.32	283.13
4264	4266.46	23.68	-48.59	4263	4265.23	26.17	-59.78	11.51	282.56
4274	4276.46	23.86	-48.85	4273	4275.26	26.27	-60.50	11.94	281.70
4284	4286.47	24.03	-49.14	4283	4285.28	26.37	-61.23	12.35	280.97
4294	4296.48	24.12	-49.56	4293	4295.31	26.47	-61.95	12.65	280.74
4304	4306.49	24.20	-50.03	4303	4305.34	26.57	-62.68	12.90	280.62
4314	4316.51	24.26	-50.61	4313	4315.37	26.67	-63.40	13.05	280.67
4324	4326.53	24.33	-51.19	4323	4325.40	26.77	-64.13	13.20	280.72
4334	4336.55	24.39	-51.78	4333	4335.43	26.87	-64.85	13.35	280.77
4344	4346.56	24.45	-52.36	4343	4345.46	26.97	-65.57	13.49	280.82
4354	4356.58	24.51	-52.94	4353	4355.49	27.07	-66.30	13.64	280.86
4364	4366.61	24.43	-53.61	4363	4365.52	27.17	-67.02	13.73	281.55
4374	4376.64	24.19	-54.40	4373	4375.55	27.27	-67.75	13.74	283.00
4384	4386.68	23.95	-55.18	4383	4385.58	27.37	-68.47	13.76	284.44
4394	4396.71	23.71	-55.97	4393	4395.61	27.47	-69.20	13.79	285.87
4404	4406.74	23.47	-56.76	4403	4405.64	27.57	-69.92	13.83	287.30
4414	4416.78	23.23	-57.54	4413	4415.66	27.67	-70.65	13.87	288.72
4424	4426.81	22.99	-58.33	4423	4425.69	27.77	-71.37	13.93	290.13
4434	4436.85	22.75	-59.11	4433	4435.72	27.87	-72.10	13.99	291.53
4444	4446.88	22.51	-59.90	4443	4445.75	27.97	-72.82	14.06	292.92
4454	4456.91	22.27	-60.69	4453	4455.79	27.98	-73.72	14.27	293.64
4464	4466.95	22.03	-61.47	4463	4465.84	27.95	-74.67	14.51	294.17
4474	4476.98	21.79	-62.26	4473	4475.89	27.93	-75.63	14.75	294.68
4481	4484.00	21.62	-62.81	4480	4482.91	27.91	-76.29	14.92	295.02

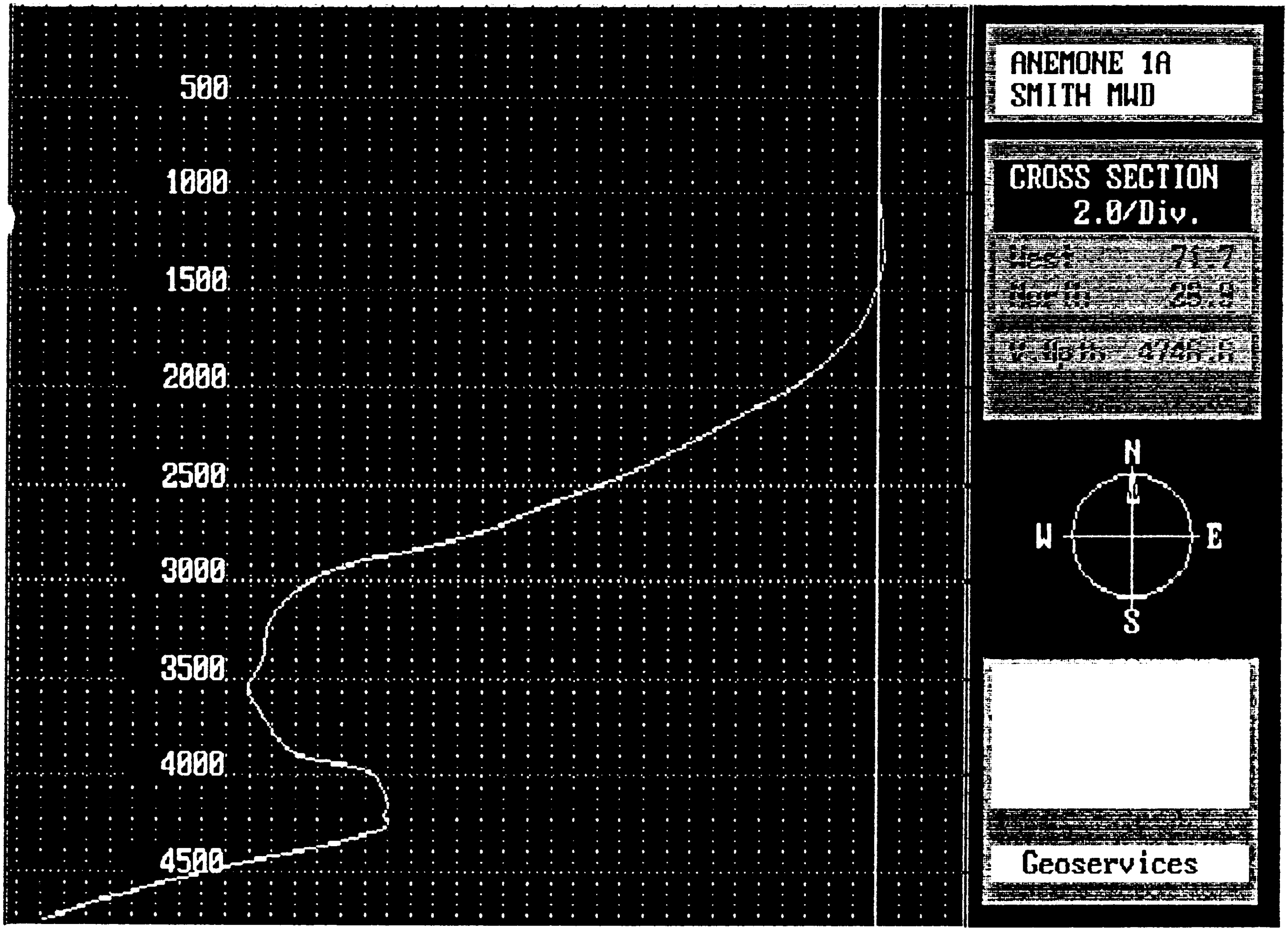


ANEMONE 1A
SMITH MWD

3-DIMENSIONAL

West	71.7
North	26.9
V.Dpth	4746.6

Geoservices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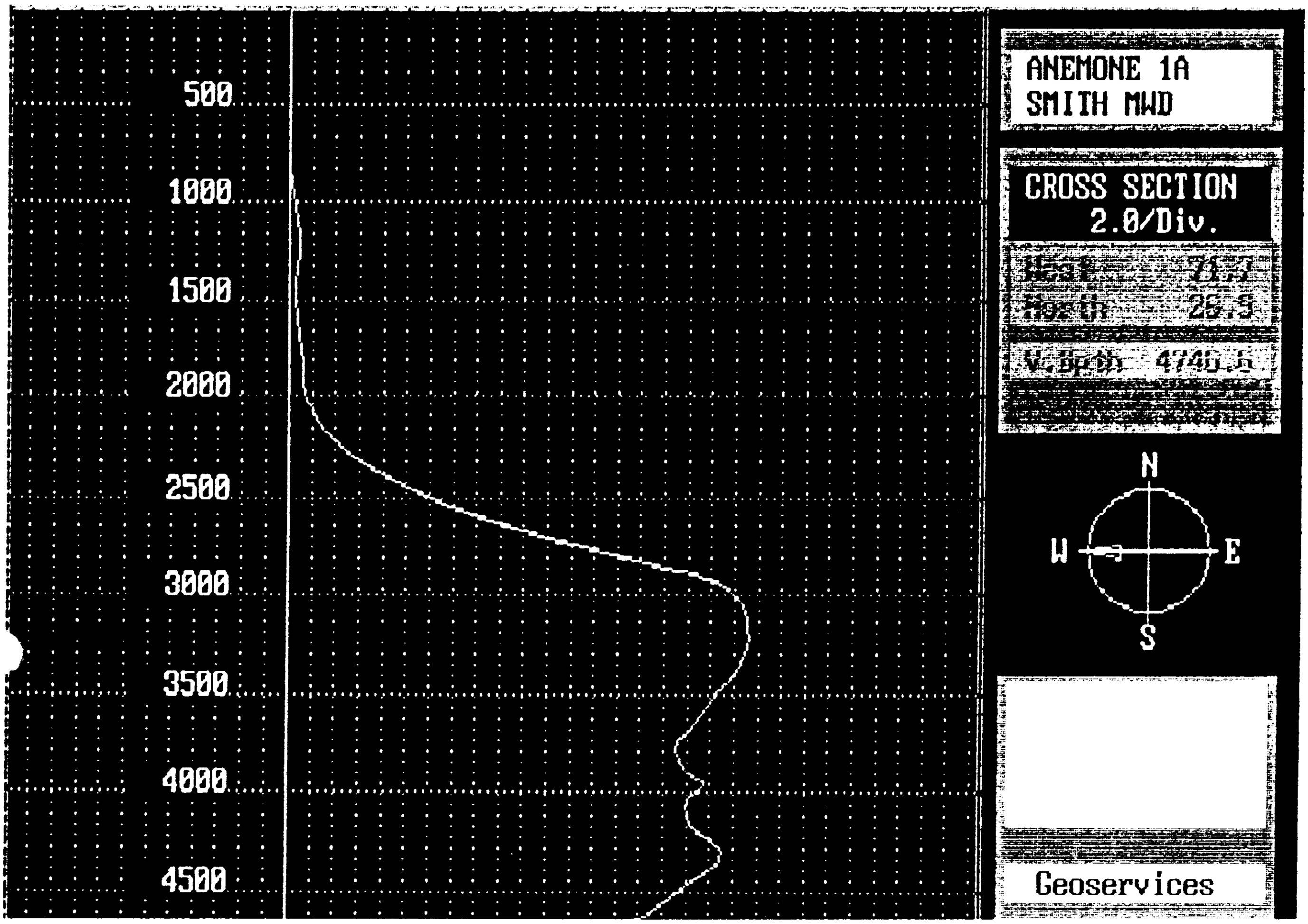
1500
2000
2500
3000
3500
4000
4500
ANEMONE 1A
SMITH MWD
CROSS SECTION
2.0/Div.
West 71.7
North 25.9
V.Dpth 4745.5
N
W
E
S
Geoservices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SMITH MWD
CROSS SECTION
2.0/Div.
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North 25.9
V.Dpth 4745.5
N
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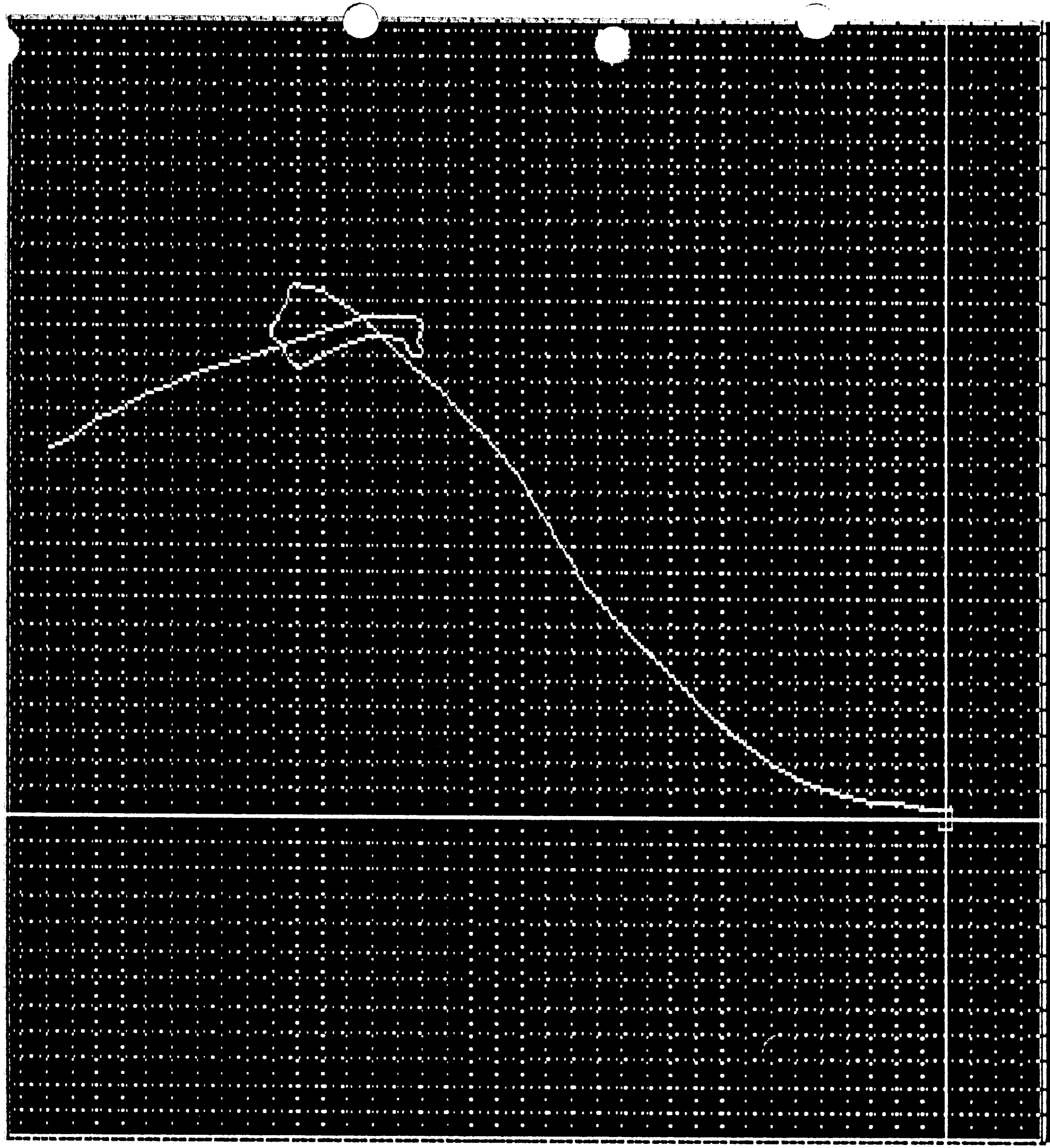
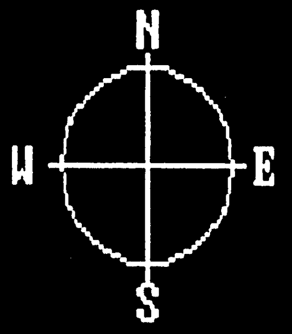
E
S
Geoservices



ANEMONE 1A
SMITH MWD

PLAN VIEW
2.0/Div.

West	71.7
North	26.9
V.Dpth	4746.6



Geoservices

8. MUD DATA

MUD REPORT

DAY	DEPTH	t°	S.G.	M VIS	PV	YP	GEL 1	GEL 2	W.L.	CAKE	pH	Pf	Mf	CHLOR	Ca	SAND	SOLIDS	WATER	OIL	MBT
0																				
1																				
2																				
3	299		1.03	100																
4	319		1.08	100																
5	560		1.08	100																
6	560		1.10	100																
7	565		1.03	26																
8	883	31.0	1.10	32	4	13	6	6			9.6	0.14	0.20	17.5	520	TR	4.80	95.20		15.0
9	1115	31.0	1.10	37	6	18	7	7			9.2	0.08	0.12	18.5	440	TR	4.80	95.20		10.0
10	1115		1.10	37	6	18	7	7			9.2	0.08	0.12	18.5	440	TR	4.80	95.20		10.0
11	1115		1.04	37	7	6	1	1	7.8	1	10.1	0.14	0.36	19.5	80	TR	1.20	98.80		4.0
12	1580	37.0	1.09	41	10	12	1	2	5.9	1	10.0	0.15	0.32	19.0	60	0.50	3.20	96.80		6.0
13	1981	38.0	1.11	40	11	11	1	2	5.6	1	9.6	0.12	0.24	19.0	200	0.25	5.25	94.75	0	11.0
14	2394	41.0	1.15	49	14	19	8	24	7.0	1	9.1	0.06	0.18	19.0	240	0.10	7.25	92.75	0	19.0
15	2669	42.0	1.15	47	12	16	9	13	10.9	2	9.3	0.09	0.22	18.5	200	0.10	7.30	92.70	0	22.0
16	2857	43.0	1.15	48	12	16	14	19	11.8	2	9.7	0.14	0.25	18.5	360	0.15	7.30	92.70	0	22.0
17	2929	56.8	1.15	49	13	17	8	14	13.9	2	10.2	0.19	0.39	18.5	360	0.15	7.30	92.70	0	19.0
18	3040	57.9	1.15	47	12	17	10	12	13.2	2	9.7	0.14	0.27	18.5	360	0.10	7.30	92.70	0	19.0
19	3076	60.0	1.15	45	14	16	9	20	12.6	2	10.1	0.23	0.36	18.5	400	0.10	7.30	92.70	0	20.0
20	3076		1.15	49	14	16	9	20	12.6	2	10.1	0.23	0.36	18.5	400	0.10	7.30	92.70	0	20.0
21	3076		1.15	44	10	14	12	22	14.5	2	9.1	0.08	0.23	18.5	360	0.20	7.30	92.70	0	20.0
22	3076		1.16	44	13	13	12	20	32.1	4	11.6	0.72	1.23	17.0	100	0.40	7.30	92.70	0	19.0
23	3076		1.16	44	13	13	12	20	32.1	4	11.6	0.72	1.23	17.0	120	0.40	7.30	92.70	0	19.0
24	3089		1.13	41	10	12	8	24	21.0	3	11.4	0.40	0.75	17.0	240	0.20	6.30	93.70	0	18.0
25	3181		1.12	42	11	11	6	18	12.9	2	10.6	0.30	0.60	17.0	340	TR	5.30	94.70	0	15.0
26	3358	28.0	1.12	44	11	12	7	19	10.8	1	10.3	0.19	0.35	17.0	400	TR	5.30	94.70	0	15.0
27	3416	29.0	1.12	43	11	11	5	16	11.1	1	10.6	0.22	0.44	17.0	440	TR	6.30	93.70	0	15.0
28	3471	29.0	1.11	44	12	11	7	26	10.6	1	10.6	0.22	0.40	17.0	400	TR	6.30	93.70	0	14.5
29	3531	25.0	1.12	44	11	14	4	18	8.4	1	10.4	0.19	0.38	17.0	400	TR	6.30	93.70	0	14.0
30	3566	29.0	1.12	42	11	12	4	17	9.5	1	9.8	0.14	0.30	17.0	440	TR	6.30	93.70	0	13.5
31	3766	31.0	1.11	41	12	12	4	18	8.5	1	10.1	0.16	0.30	17.0	440	TR	5.80	94.20	0	12.0
32	3851	31.0	1.12	43	12	13	4	18	7.3	1	9.9	0.17	0.39	17.0	440	TR	6.30	93.70	0	11.0
33	3971	35.0	1.11	42	11	14	5	16	7.8	1	9.9	0.19	0.44	17.5	400	TR	5.80	94.20	0	11.5
34	3985	31.0	1.12	46	12	17	7	20	7.7	1	11.0	0.34	0.52	17.5	400	TR	5.80	94.20	0	12.0
35	4077	34.0	1.12	45	12	16	6	18	7.7	1	10.3	0.20	0.40	18.0	400	TR	5.80	94.20	0	11.0
36	4155	35.0	1.12	45	12	17	6	20	7.6	1	9.9	0.18	0.30	18.0	400	TR	6.00	94.00	0	11.0
37	4158		1.12	48	13	18	7	18	7.6	1	10.0	0.18	0.32	18.0	460	TR	5.80	94.20	0	11.0

MUD REPORT

DAY	DEPTH	t°	S.G.	M VIS	PV	YP	GEL 1	GEL 2	W.L.	CAKE	pH	Pf	Mf	CHLOR	Ca	SAND	SOLIDS	WATER	OIL	MBT
38	4158	29.3	1.13	47	13	18	6	17	7.8	1	10.0	0.14	0.27	18.0	440	0.10	6.30	93.70	0	11.0
39	4158		1.13	47	13	18	6	17	7.8	1	10.0	0.14	0.27	18.0	440	0.10	6.30	93.70	0	11.0
40	4159	25.3	1.14	46	12	14	6	18	12.0	1	9.0	0.08	0.24	17.0	520	0.10	7.30	92.70	0	11.0
41	4174	36.5	1.13	44	11	16	7	16	10.8	2	9.4	0.08	0.20	17.0	520	TR	6.30	93.70	0	11.0
42	4242	39.3	1.13	49	13	17	8	21	10.2	2	10.5	0.18	0.30	17.5	520	TR	6.30	93.70	0	11.0
43	4277	37.4	1.13	48	13	17	10	24	9.2	1	10.8	0.18	0.32	18.0	400	0.10	6.30	93.70	0	10.0
44	4314	39.6	1.14	45	12	15	10	21	9.2	1	9.6	0.09	0.36	18.0	360	TR	7.30	92.70	0	11.0
45	4407	32.5	1.14	45	12	16	9	15	6.9	1	10.8	0.35	0.62	18.0	240	TR	7.30	92.70	0	12.0
46	4454	33.9	1.14	46	11	18	13	25	7.6	1	10.5	0.35	0.64	17.5	200	TR	7.30	92.70	0	11.0
47	4494	35.9	1.15	48	13	20	14	22	10.4	2	10.3	0.29	0.47	17.5	200	TR	7.30	92.70	0	11.0
48	4605	38.9	1.30	46	15	17	14	20	9.2	2	10.3	0.46	0.73	16.0	80	1.25	11.90	88.10	0	12.0
49	4605		1.50	46	21	18	16	30	10.6	2	9.6	0.40	1.00	16.0	80	1.75	17.50	82.50	0	12.0
50	4609		1.46	45	19	18	16	25	9.1	2	10.5	0.64	1.00	16.0	80	1.00	15.50	84.50	0	12.0
51	4609		1.42	43	25	17	17	31	9.6	2	10.5	0.90	1.14	16.0	40	1.00	14.50	84.50	1	11.0
52	4609	21.0	1.42	47	17	22	21	32	8.9	2	10.3	0.67	1.30	15.0	80	1.00	15.00	83.00	2	11.0
53	4609	31.0	1.44	41	16	18	18	25	7.6	2	10.0	0.52	1.10	15.0	60	1.00	14.00	84.00	2	10.0
54	4609		1.44	44	16	19	20	26	7.9	1	9.8	0.45	1.00	15.0	40	1.00	14.00	84.00	2	10.0
55	4609	29.0	1.46	42	14	18	17	32	10.2	2	11.6	0.42	0.85	15.0	80	1.00	15.50	83.00	1.5	10.0
56	4015	28.0	1.44	40	13	18	17	23	11.8	2	10.8	0.30	0.60	15.0	80	1.00	14.50	84.00	1.5	10.0
57	4015	44.0	1.21	38	8	13	9	15	7.3	1	9.9	0.10	0.22	16.0	140	0.00	8.40	90.60	1	8.5
58	4004		1.15	40	11	7	3	7	5.6	1	9.4	0.05	0.15	16.0	260	0.00	6.40	90.10	3.5	7.5
59	3876		1.16	38	11	8	3	7	5.8	1	10.1	0.15	0.32	16.0	180	0.00	6.90	91.10	2	7.5
60	3876		1.16	39	10	9	4	8	5.8	1	10.1	0.10	0.20	16.0	180	0.00	6.90	91.10	2	7.5
61	3976	27.0	1.15	49	16	15	3	17	10.3	2	13.9	1.20	1.60	15.0	800	TR	6.40	92.10	1.5	9.5
62	3874	22.0	1.14	43	11	9	1	7	6.2	1	13.1	0.72	1.30	14.0	TR	TR	5.50	93.50	1	8.5
63	3913		1.14	47	15	12	3	6	6.0	1	13.6	0.75	1.00	14.0	40	TR	6.00	93.00	1	8.0
64	3929	23.0	1.14	48	16	13	3	6	5.4	1	13.5	0.52	0.85	14.0	220	0.25	5.50	93.50	1	8.0
65	3943		1.14	46	15	12	1	4	5.8	1	13.6	0.75	1.00	13.5	400	0.25	5.50	93.50	1	8.0
66	3896	27.3	1.15	44	14	11	2	4	6.6	1	13.7	1.17	1.40	13.0	600	0.25	6.50	92.50	1	9.0
67	3905	28.4	1.15	46	15	12	2	4	6.8	1	13.6	1.10	1.30	13.0	560	0.25	6.50	92.50	1	9.0
68	3922	28.4	1.15	44	13	12	2	3	6.1	1	13.5	0.80	0.95	13.0	480	0.20	5.50	93.50	1	10.0
69	3992	28.3	1.15	48	16	12	2	4	5.8	1	13.2	0.36	0.40	13.5	520	0.15	5.50	93.50	1	9.0
70	4118	27.6	1.16	48	16	13	2	4	5.8	1	12.9	0.22	0.26	13.5	520	0.20	6.50	92.50	1	9.0
71	4119	23.2	1.16	55	13	25	3	6	5.6	1	12.1	0.17	0.22	14.0	600	0.25	6.50	93.00	0.5	10.0
72	4210	29.1	1.15	52	16	17	3	6	5.8	1	11.4	0.22	0.36	13.0	800	0.15	5.50	94.00	0.5	9.0
73	4296	31.2	1.15	51	16	17	2	6	6.0	1	12.0	0.37	0.60	13.5	560	0.20	5.50	94.00	0.5	10.0
74	4344	23.3	1.15	51	17	18	3	7	6.0	1	11.7	0.30	0.59	13.5	600	0.10	5.50	94.00	0.5	11.0

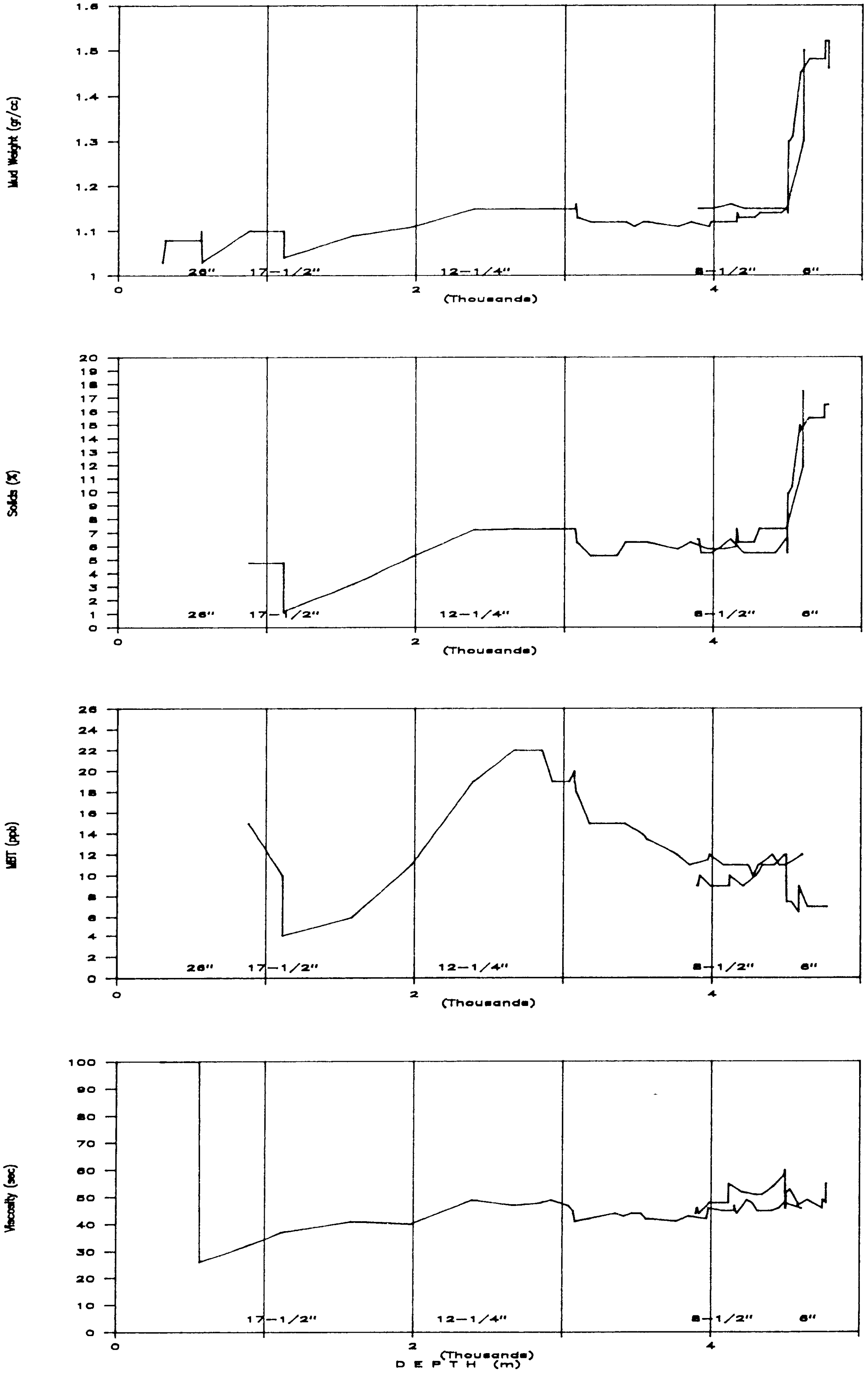
MUD REPORT

DAY	DEPTH	t°	S.G.	M VIS	PV	YP	GEL 1	GEL 2	W.L.	CAKE	pH	Pf	Mf	CHLOR	Ca	SAND	SOLIDS	WATER	OIL	MBT
75	4420	31.5	1.15	54	18	20	4	11	6.4	1	11.4	0.25	0.40	14.0	560	0.10	5.50	94.00	0.5	11.0
76	4488	30.3	1.15	58	18	21	4	15	6.4	1	11.3	0.26	0.46	14.0	600	0.10	6.50	93.50	TR	12.0
77	4500	29.0	1.15	60	21	22	4	14	6.6	1	11.1	0.30	0.50	14.0	600	0.20	6.50	93.50	TR	12.0
78	4500		1.15	60	21	22	4	14	6.6	1	11.1	0.30	0.50	14.0	600	0.20	6.50	93.50	TR	12.0
79	4500	29.5	1.15	52	16	18	3	12	6.8	1	11.2	0.23	0.39	14.0	560	0.10	5.50	94.50	TR	12.0
80	4500		1.15	52	16	17	3	10	6.6	1	11.0	0.20	0.40	14.0	540	TR	5.50	94.50	TR	12.0
81	4500	20.0	1.14	55	19	19	4	15	8.1	1	8.2	0.00	0.50	14.0	880	TR	6.50	93.50	TR	10.0
82	4500	31.0	1.16	46	14	13	4	12	8.9	1	10.2	0.18	0.30	14.5	520	TR	6.50	93.50	TR	9.5
83	4500	37.0	1.16	44	12	14	4	13	9.6	1	9.3	0.05	0.20	15.0	580	TR	6.90	93.10	TR	8.5
84	4500		1.16	52	15	16	6	17	9.9	1	10.9	0.20	0.40	15.0	500	TR	6.90	93.10	TR	8.5
85	4500		1.16	53	12	19	11	20	11.2	1	10.6	0.14	0.28	15.0	340	TR	6.90	93.10	TR	8.5
86	4500	32.0	1.16	46	13	11	4	21	15.5	1	12.7	0.30	0.50	15.0	400	TR	5.90	94.10	TR	8.5
87	4500		1.16	43	11	10	4	12	14.8	1	12.4	0.28	0.48	15.0	320	TR	5.90	94.10	TR	8.5
88	4500		1.16	44	11	9	4	12	14.6	1	11.0	0.16	0.35	15.0	300	TR	5.90	94.10	TR	8.5
89	4500		1.16	40	10	10	4	13	14.8	1	11.0	0.20	0.40	15.0	260	TR	5.90	94.10	TR	8.5
90	4503	20.0	1.30	46	20	11	4	10	5.7	1	10.9	0.20	0.40	15.5	380	0.75	9.90	90.10	TR	7.5
91	4508	24.0	1.30	52	22	15	4	9	4.8	1	10.6	0.25	0.44	15.5	400	0.75	9.90	90.10	TR	7.5
92	4533	28.8	1.31	53	22	22	4	10	4.1	1	10.7	0.25	0.50	15.5	340	0.60	10.40	89.60	TR	7.5
93	4585	16.9	1.45	48	21	22	3	9	4.3	1	10.9	0.28	0.54	15.0	240	1.00	15.00	85.00	TR	6.5
94	4585	26.4	1.45	47	27	15	3	9	4.2	1	10.4	0.19	0.42	14.5	280	1.00	14.50	85.50	TR	9.0
95	4647	27.1	1.48	49	28	20	3	12	4.4	1	10.9	0.31	0.52	14.0	80	1.00	15.50	84.50	0	7.0
96	4652	23.3	1.48	49	26	18	4	14	4.8	1	10.5	0.32	0.56	14.0	80	0.75	15.50	84.50	0	7.0
97	4750	36.2	1.48	46	25	14	4	12	3.8	1	10.0	0.29	0.56	14.0	40	1.00	15.50	84.50	0	7.0
98	4750	29.1	1.52	49	28	15	4	15	4.2	1	10.3	0.51	0.73	14.0	40	1.00	16.50	83.50	0	7.0
99	4750		1.52	49	28	15	4	15	4.2	1	10.3	0.51	0.73	14.0	40	1.00	16.50	83.50	0	7.0
100	4757	23.6	1.52	49	27	15	5	16	4.8	1	10.3	0.44	0.75	14.5	60	1.00	16.50	83.50	0	7.0
101	4775	28.3	1.52	48	26	15	4	13	3.8	1	9.8	0.31	0.54	14.0	40	1.00	16.50	83.50	0	7.0
102	4775		1.52	48	26	15	4	13	3.8	1	9.8	0.31	0.54	14.0	40	1.00	16.50	83.50	0	7.0
103	4775	31.1	1.52	48	25	15	4	12	5.3	1	9.4	0.17	0.42	14.0	40	1.00	16.50	83.50	0	7.0
104	4775		1.52	48	25	15	4	12	5.3	1	9.4	0.17	0.42	14.0	40	1.00	16.50	83.50	0	7.0
105	4775	37.6	1.52	47	24	16	3	14	4.6	1	10.5	0.48	0.83	14.0	40	1.00	16.50	83.50	0	7.0
106	4775		1.52	48	27	10	2	5	7.0	2	13.0	1.11	1.44	13.5	320	1.00	16.50	83.50	0	7.0
107	4775	31.2	1.51	47	25	12	3	12	7.0	1	12.6	0.88	1.34	13.5	280	1.00	16.60	83.40	0	7.0
108	4775	24.4	1.51	58	28	19	5	20	8.6	1	13.0	1.39	1.82	13.0	440	1.10	16.50	83.50	0	7.0
109	4775		1.52	58	32	20	4	23	8.5	1	13.1	1.18	1.67	13.0	480	1.10	16.50	83.50	0	7.0
110	4775		1.52	56	31	18	3	16	8.8	1	13.2	1.70	2.40	13.0	480	1.00	16.50	83.50	0	7.0
111	4775		1.52	56	31	18	3	16	8.8	1	13.2	1.70	2.40	13.0	480	1.10	16.50	83.50	0	7.0

MUD REPORT

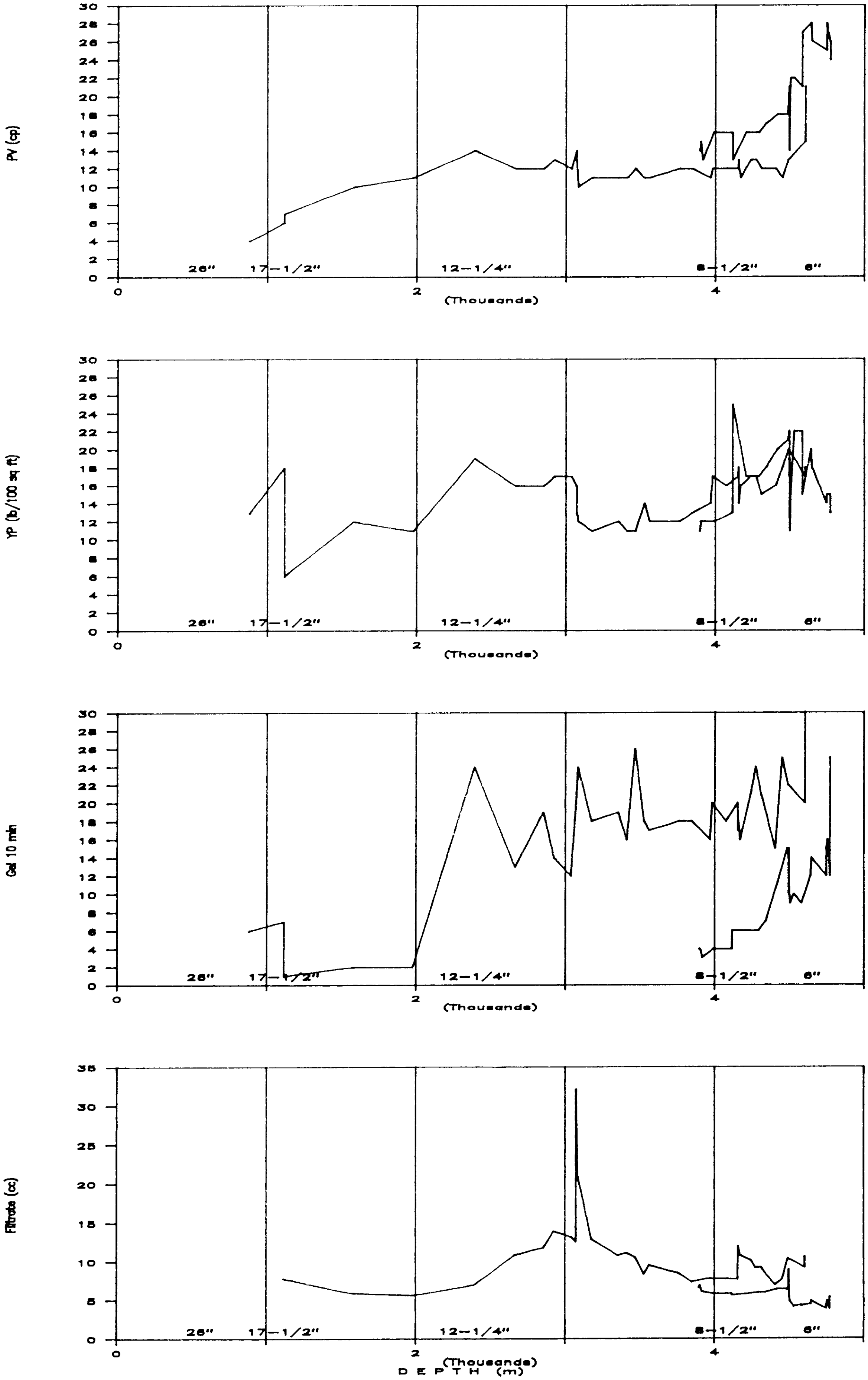
DAY	DEPTH	t°	S.G.	M VIS	PV	YP	GEL 1	GEL 2	W.L.	CAKE	pH	Pf	Mf	CHLOR	Ca	SAND	SOLIDS	WATER	OIL	MBT
112	4775		1.47	47	26	10	2	11	11.8	1	13.2	1.17	1.49	13.0	440	1.10	13.60	86.40	0	7.0
113	4775		1.47	47	24	10	2	7	10.8	2	13.0	1.00	1.31	13.0	460	1.20	13.60	86.40	0	6.0
114	4775		1.52	57	38	22	5	23	10.8	2	13.0	1.02	1.38	13.0	440	1.10	16.50	83.50	0	6.0
115	4775	25.4	1.51	55	28	18	5	17	10.4	1	12.8	0.80	0.15	13.0	400	1.00	16.60	83.40	0	6.0
116	4775	25.0	1.52	58	27	18	4	18	10.9	2	12.6	0.80	1.40	13.5	400	1.00	16.60	83.40	0	6.0
117	4775		1.52	50	26	15	4	24	19.0	2	12.8	1.10	1.90	13.0	460	1.25	16.60	83.40	0	6.0
118	4775		1.52	67	38	27	5	31	9.8	2	12.6	1.00	1.70	13.0	360	1.25	16.60	83.40	0	6.0
119	4775		1.52	65	36	26	5	29	10.0	2	12.6	1.00	1.70	13.0	360	1.25	16.60	83.40	0	6.0
120	4775		1.52	67	42	21	3	23	9.0	1	12.7	0.90	1.50	13.0	360	1.25	16.60	83.40	0	6.0
121	4775		1.52	70	41	22	4	25	9.4	2	12.7	0.91	1.48	13.0	360	1.25	16.60	83.40	0	6.0
122	4775		1.50	69	36	18	5	18	9.9	2	12.7	0.92	1.52	13.0	360	1.25	16.50	83.50	0	6.0
123	4775		1.50	62	38	20	4	14	10.4	2	12.7	0.70	1.20	12.0	200	1.25	16.40	83.60	0	6.0
124	4775		1.51	59	38	19	4	14	10.3	2	12.6	0.70	1.20	12.0	200	1.25	16.40	83.60	0	6.0
125	4775		1.51	58	38	19	4	13	10.3	2	12.6	0.70	1.18	12.0	200	1.25	16.40	83.60	0	6.0
126	4775		1.50	55	34	15	3	14	10.8	2	13.0	0.70	1.10	12.0	200	1.25	16.10	83.90	0	6.0
127	4775		1.51	57	34	19	5	16	8.5	1	12.7	0.40	0.75	12.0	160	1.25	16.40	83.60	0	10.5
128	4775		1.51	57	34	19	5	17	8.5	1	12.7	0.40	0.75	12.0	160	1.25	16.40	83.60	0	10.5
129	4775		1.52	54	28	18	5	23	8.8	1	12.8	0.55	0.80	12.0	200	1.00	16.60	83.40	0	7.0
130	4775		1.52	56	31	18	6	25	8.9	1	13.0	0.70	0.88	12.0	200	1.25	16.60	83.40	0	7.5
131	4775	17.0	1.52	56	30	19	6	23	8.9	1	12.2	0.34	0.60	12.0	160	1.25	16.60	83.40	0	7.5
132	4775		1.52	54	30	18	6	23	8.9	1	12.4	0.40	0.63	12.0	180	1.25	16.60	83.40	0	7.5
133	4775		1.51	51	26	18	4	15	9.4	2	12.7	0.32	0.60	11.5	180	1.25	15.60	84.40	0	7.0
134	4775		1.50	51	26	16	4	16	9.4	1	12.7	0.32	0.60	11.5	180	1.25	15.60	84.40	0	7.0
135	4775		1.50	51	27	16	3	13	9.5	1	12.6	0.27	0.50	12.0	180	1.25	15.60	84.40	0	7.0
136	4775		1.50	51	27	16	3	13	9.5	1	12.6	0.27	0.51	12.0	180	1.25	15.60	84.40	0	7.0
137	4775		1.50	50	26	16	4	14	9.4	2	12.5	0.27	0.51	12.0	180	1.25	15.60	84.40	0	7.0
138	4775		1.50	49	24	16	3	15	10.1	1	12.3	0.26	0.52	11.5	240	1.25	15.60	84.40	0	7.0
139	4775		1.50	51	25	16	3	16	10.1	1	12.3	0.26	0.52	11.5	240	1.25	15.60	84.40	0	7.0
140	4775		1.50	62	29	20	10	64	13.1	2	13.0	0.60	0.95	12.0	440	1.30	15.60	84.40	0	7.0
141	4775		1.50	49	26	14	3	16	12.9	2	11.0	0.24	0.40	12.0	440	1.30	15.40	84.60	0	7.0
142	4775		1.46	55	24	13	5	25												

ANEMONE 1/1A

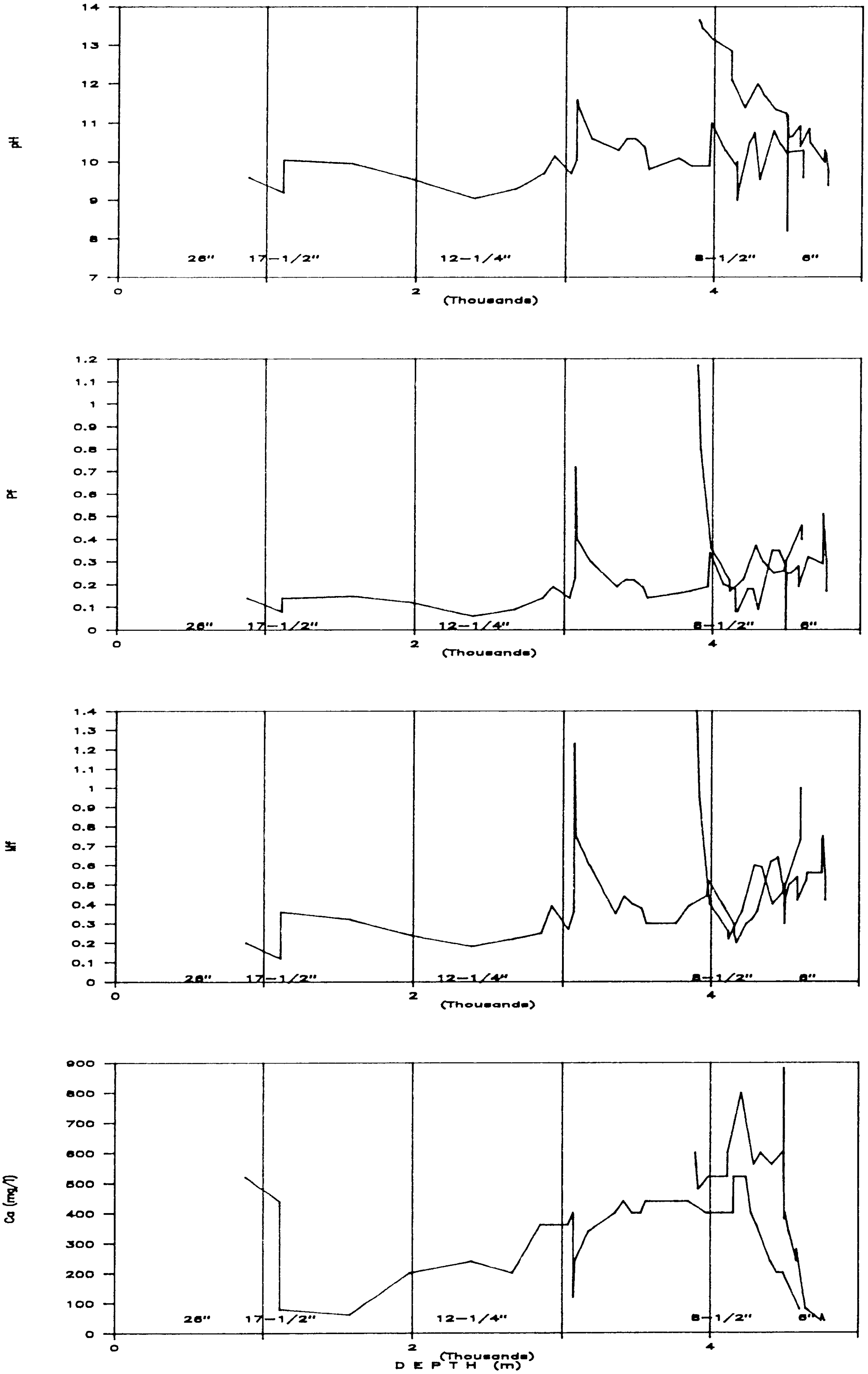


Mud Weight (gr/cc)
1.6
1.5
1.4
1.3
1.2
1.1
1
26"
17-1/2"
12-1/4"
8-1/2"
6"
0
2
4
(Thousands)
Solids (%)
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
26"
17-1/2"
12-1/4"
8-1/2"
6"
0
2
4
(Thousands)
MBT (ppb)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
26"
17-1/2"
12-1/4"
8-1/2"
6"
0
2
4
(Thousands)
Viscosity (sec)
100
90
80
70
60
50
40
30
20
10
0
17-1/2"
12-1/4"
8-1/2"
6"
0
2
4
(Thousands)
D E P T H (m)

ANEMONE 1/1A


PV (cp)
YP (lb/100 sq ft)
Gel 10 min
Filtrate (cc)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
35
26"
17-1/2"
12-1/4"
8-1/2"
6"
0
2
4
(Thousands)
DEPTH (m)

ANEMONE 1/1A



pH
14
13
12
11
10
9
8
7
Pf
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Mf
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Ca (mg/l)
900
800
700
600
500
400
300
200
100
0
26"
17-1/2"
12-1/4"
8-1/2"
6"
0
2
4
(Thousands)
DEPTH (m)

MATERIAL RECAP

MATERIAL	UNIT	ANEMONE - 1										ANEMONE - 1 A						TOTAL
		36"		26"		17-1/2"		12-1/4"		8-1/2"		8-1/2"		6"		TESTING		
		USED	PPB	USED	PPB	USED	PPB	USED	PPB	USED	PPB	USED	PPB	USED	PPB	USED	PPB	
AQUAGEL	Tonne	5.2	17.80	9.6	21.70	11.3	6.01	2.7	1.26	2.9	1.39	7.6	6.68			0.6		39.9
BARITE	Tonne			12.9	62.6			12.9	6.02	272.6	130.40	25.3	22.24	228.6	190.20	133		685.3
CAUSTIC SODA	25 kg	7	0.60	14	0.79	32	0.43	224	2.62	233	3.10	77	1.69	92	1.91	6		685
LIME	25 kg	10	0.86	7	0.73	9	0.12	33	0.39	104	1.24	2	0.04	8	0.17			173
DEXTRID	50 lb							250	2.66	516	5.59	83	1.66	157	2.96			1006
PAC-R	50 lb							132	1.40	87	1.46	78	1.56	21	0.36	18		336
XCD POLYMER	25 kg					8	0.25	35	0.41	15	0.18	14	0.31	15	0.31	20		107
BARANEX	50 lb													155	2.92			155
Q-BROXIN	50 lb							23	0.24	64	0.69	50	1.00	21	0.36	10		168
SODA ASH	25 kg							22	0.26	27	0.32	4	0.09	2	0.04	1		56
SODIUM BICARB	25 kg							5	0.06	1		51	1.12	10	0.21	25		92
BARADEFOAM	208 L									1		1		2				4
BARAFILM 415	208 L							1		4				2				7
BARASCAV 777	208 L							4		8	1.03	4		3		3		22
CONDET	208 L							1		2		2						5
BARACIDE	30 kg							4	0.06	6	0.09	3	0.08	2	0.05	1		16
TORQ TRIM	208 L									5								5
EZ SPOT	208 L									9								9
COST	A$	$2,014		$6,883		$7,076		$45,167		$124,839		$30,960		$83,830		$43,036		343803.6
COST/METER	A$	$64.97		$28.56		$12.75		$23.03		$81.43		$49.85		$304.83		-		$65.90
COST/DAY	A$	$2,014		$6,883		$1,769		$5,646		$3,374		$1,290		$8,383		$1,103		$2,773
METER	M	31		241		555		1961		1533		621		275		0		5217
DRILLING DAY		1		1		4		8		37		24		10		39		124

9. CSG & CEMENTING

30"

PETROFINA EXPLORATION AUSTRALIA S.A.

CASING AND CEMENTING REPORT

WELL ANEMONE #1 FIELD VIC/P20 CASING SIZE 30" SET AT 313.5 M m

DRILLERS TD 319 m LAST CASING SIZE - SET AT - m

JOINTS RECEIVED 10 OF 30" WEIGHT 310 LB/FT GRADE B LENGTH 114.35 m

AMOUNT USED 4 JTS LENGTH 47.09 m No. JTS FAIL RABBIT 0 No. JTS DAMAGED 0

(including Shoe & Float Jts but not Hanger Pup) TOTAL REJECTED 0 TOTAL BACKLOADED 6

JOINTS RECEIVED 2 OF 30" WEIGHT 460 LB/FT GRADE B LENGTH 20.76 m

AMOUNT USED 1 JTS LENGTH 10.38 m No. JTS FAIL RABBIT 0 No. JTS DAMAGED 0

TOTAL REJECTED 0 TOTAL BACKLOADED 1

CASING DATA

No. OF PIECES	SIZE–WT–GRADE–TYPE THREAD	MAKE UP LENGTH	SETTING DEPTH
1	30"-310#-B-ST2 (Shoe Jt)	11.99	313.47
3	30'-310#-B-ST2 (Int)	35.10	301.48
1	30"-460#-B-ST2 (Housing)	10.38	266.38
	TOP OF Housing TO RKB	256.00	

CEMENTING DATA

SLURRY	CALCULATED TOP	CEMENT (SACKS & CLASS)	ADDITIVES (GAL/BBL)						MIX WEIGHT S.G.	YIELD FT3/SK
1	Mud Line	1200 'G'	1%	CaCl2					15.8	1.15
2	Mud Line	100 'G'							15.8	1.15

No. OF PLUGS USED 0 OPEN HOLE EXCESS 300% CIRC. VOL - BBL CIRC TIME - MINS

MIXING CEMENT 60 MINS DISPLACE TIME 5 MINS DISPLACE VOL 22 BBLS RETURNS? Yes

DISPLACE PUMP PRESS 1400 PSI PLUG BUMP PRESS - PSI VOL LOST - BBLS FLOAT HOLD? Yes

SPACERS 20 BBLS Seawater

CENTRALISERS USED: 0 SPACING -

REMARKS: TAGGED TOP OF CEMENT 5 METRES BELOW MUDLINE WITH 10,000 LBS.
TOPPED UP WITH 100SXS OF CLASS 'G' NEAT CEMENT AT 15.8 PPG.

CEMENT COMPANY HALLIBURTON DRILLING SUPERVISOR ED SNOWLING

CEMENTER PETER WATSON DRILLING ENGINEER STEVEN MARINOFF DATE 30-5-89

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******************************************************************************
*   CASING  LIST                                              Page no:  1    *
**  **************************************************************************
*    Company : PETROFINA EXPLORATION         Shoe @:     313.5    mtr        *
*   Location : BASS STRAIT                Casing OD:     193.548  cm    30"  *
*       Well : ANEMONE #1                 Casing ID:     180.645  cm         *
*        Rig : ZAPATA ARCTIC               Cas wght:      95.52  kg/mtr      *
*----------------------------------------------------------------------------*
*   Hook wght:      52.16  ton             Mud wght:       1.07  kg/ltr      *
******************************************************************************
: No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*  Designation  *
*     *   mtr    *   mtr    *   mtr    *   ton    *   mtr3   *               *
*-----*----------*----------*----------*----------*----------*---------------*
*   1 *    11.99 *    11.99 *   301.48            *     4.55 *1 shoe joint c *
*   2 *    11.71 *    23.70 *   289.77            *     8.99 *8              *
*   3 *    11.69 *    35.39 *   278.08            *    13.43 *7              *
*   4 *    11.70 *    47.09 *   266.38            *    17.86 *6              *
*   5 *    10.38 *    57.47 *   256.00            *    21.80 *1 housing      *
```

20"

PETROFINA EXPLORATION AUSTRALIA S.A.

CASING AND CEMENTING REPORT

WELL Anemone-1 FIELD Vic/P20 CASING SIZE 20" SET AT 546.5 m

DRILLERS TD 560 m LAST CASING SIZE 30" SET AT 313.5 m

JOINTS RECEIVED 30 OF 20 WEIGHT 94 LB/FT GRADE X56 LENGTH 356.64 m

AMOUNT USED 24 JTS LENGTH 284.71 m No. JTS FAIL RABBIT 0 No. JTS DAMAGED 0

(including Shoe & Float Jts but not Hanger Pup) TOTAL REJECTED 0 TOTAL BACKLOADED 6

JOINTS RECEIVED 2 OF 20" WEIGHT - LB/FT GRADE - LENGTH 11.49 m

AMOUNT USED 1 JTS LENGTH 5.76 m No. JTS FAIL RABBIT 0 No. JTS DAMAGED 0

TOTAL REJECTED 0 TOTAL BACKLOADED 1

CASING DATA

No. OF PIECES	SIZE–WT–GRADE–TYPE THREAD	MAKE UP LENGTH	SETTING DEPTH
1	20" 94# X56 RL4S Float collar &	12.92	546.47
	Float shoe		
22	20" 94# X56 RL4S Intermediate	260.12	533.55
1	20" 94# X56 RL4S/ALTZ Crossove	11.67	273.43
1	18-3/4" SG5 wellhead - distance	5.76	261.76
	to lock ring		
	Wellhead stick up above 30" housing	1.00	256.00
	TOP OF Wellhead TO RKB		255.00

CEMENTING DATA

SLURRY	CALCULATED TOP	CEMENT (SACKS & CLASS)	ADDITIVES (GAL/BBL)						MIX WEIGHT S.G.	YIELD FT^3/SK
1	256	2500 G							15.8	1.15

No. OF PLUGS USED 0 OPEN HOLE EXCESS 100% CIRC. VOL - BBL CIRC TIME 20 MINS

MIXING CEMENT 65 MINS DISPLACE TIME 5 MINS DISPLACE VOL 30 BBLS RETURNS? Yes

DISPLACE PUMP PRESS 1400 PSI PLUG BUMP PRESS - PSI VOL LOST - BBLS FLOAT HOLD? Yes

SPACERS

CENTRALISERS USED: 3 SPACING Centralisers at 544, 533 and 309m

REMARKS:

CEMENT COMPANY Halliburton DRILLING SUPERVISOR E. Snowling

CEMENTER P. Watson DRILLING ENGINEER S. Marinoff DATE 1.10.89

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19Dk2Ss1B*********************************************************************
*   CASING  LIST                                          Page no:  1
******************************************************************************
*    Company : PETROFINA EXPLORATION        Shoe @:      546.5   mtr
*   Location : BASS STRAIT                Casing OD:      50.800  cm      20"
*       Well : ANEMONE #1                 Casing ID:      48.575  cm
*        Rig : ZAPATA ARCTIC               Cas wght:     139.70  kg/mtr
*-----------------------------------------------------------------------------
*   Hook wght:      52.16  ton             Mud wght:        1.20  kg/ltr
******************************************************************************
* No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*   Designation
*     *   mtr    *   mtr    *   mtr    *   ton    *  mtr3    *
*-----*----------*----------*----------*----------*----------*----------------
*   1 *    12.92 *    12.92 *   533.55 *    53.70 *     0.22 *1-shoe A-2 cent
*   2 *    11.83 *    24.75 *   521.72 *    55.10 *     0.43 *26
*   3 *    11.84 *    36.59 *   509.88 *    56.51 *     0.64 *25
*   4 *    11.82 *    48.41 *   498.06 *    57.91 *     0.84 *24
*   5 *    11.82 *    60.23 *   486.24 *    59.32 *     1.05 *23
*   6 *    11.83 *    72.06 *   474.41 *    60.72 *     1.25 *22
*   7 *    11.82 *    83.88 *   462.59 *    62.13 *     1.46 *21
*   8 *    11.81 *    95.69 *   450.78 *    63.53 *     1.66 *20
*   9 *    11.83 *   107.52 *   438.95 *    64.94 *     1.87 *19
*  10 *    11.83 *   119.35 *   427.12 *    66.35 *     2.07 *18
*  11 *    11.81 *   131.16 *   415.31 *    67.75 *     2.28 *17
*  12 *    11.83 *   142.99 *   403.48 *    69.15 *     2.48 *16
*  13 *    11.84 *   154.83 *   391.64 *    70.56 *     2.69 *15
*  14 *    11.83 *   166.66 *   379.81 *    71.97 *     2.90 *14
*  15 *    11.83 *   178.49 *   367.98 *    73.37 *     3.10 *13
*  16 *    11.82 *   190.31 *   356.16 *    74.78 *     3.31 *12
*  17 *    11.80 *   202.11 *   344.36 *    76.18 *     3.51 *11
*  18 *    11.81 *   213.92 *   332.55 *    77.58 *     3.72 *10
*  19 *    11.83 *   225.75 *   320.72 *    78.99 *     3.92 *09
*  20 *    11.82 *   237.57 *   308.90 *    80.40 *     4.13 *08-cent
*  21 *    11.81 *   249.38 *   297.09 *    81.80 *     4.33 *07
*  22 *    11.83 *   261.21 *   285.26 *    83.21 *     4.54 *06
*  23 *    11.83 *   273.04 *   273.43 *    84.61 *     4.74 *05
*  24 *    11.67 *   284.71 *   261.76 *    86.00 *     4.95 *2-X/O C
*  25 *     5.76 *   290.47 *   256.00 *    86.68 *     5.05 *3-WELLHEAD NO.1
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13-3/8"

PETROFINA EXPLORATION AUSTRALIA S.A.

CASING AND CEMENTING REPORT

WELL Anemone-1 FIELD Vic/P20 CASING SIZE 13-3/8" SET AT 1104.8 m

DRILLERS TD 1115 m LAST CASING SIZE 20" SET AT 546.5 m

JOINTS RECEIVED 93 OF ______ WEIGHT 68 LB/FT GRADE N80 LENGTH ______ m

AMOUNT USED 72 JTS LENGTH 845.1 m No. JTS FAIL RABBIT 0 No. JTS DAMAGED 0

(including Shoe & Float Jts but not Hanger Pup) TOTAL REJECTED 0 TOTAL BACKLOADED 21

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" Shoe Jt 68ppf N80 Butt	11.93	1104.84
1	13-3/8" Collar Jt 68ppf N80 Butt	11.87	1092.91
70	13-3/8" 68ppf N80 Butt	821.34	1081.04
1	13-3/8" Pup Jt with Hanger	3.20	259.70
	TOP OF 256.5 TO RKB		

CEMENTING DATA

SLURRY	CALCULATED TOP	CEMENT (SACKS & CLASS)	ADDITIVES (GAL/BBL)						MIX WEIGHT S.G.	YIELD FT^3/SK
			Econolite (gal/sx)							
Lead	320	1380 G	0.45						1.50	2.16
Tail	920	500 G	-						1.90	1.15

No. OF PLUGS USED 2 OPEN HOLE EXCESS Caliper CIRC. VOL 420 BBL CIRC TIME 30 MINS

MIXING CEMENT 60 MINS DISPLACE TIME ______ MINS DISPLACE VOL 418 BBLS RETURNS? Yes

DISPLACE PUMP PRESS ±1000 PSI PLUG BUMP PRESS 2000 PSI VOL LOST - BBLS FLOAT HOLD? Yes

SPACERS 50bbl water

CENTRALISERS USED: 7 SPACING 1 on first 5 joints and 1 on joints Number 49-50 (inside 20" casing)

REMARKS:

CEMENT COMPANY Halliburton DRILLING SUPERVISOR E. Snowling

CEMENTER P. Watson DRILLING ENGINEER B. de Vinck DATE 7.6.89

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*****************************************************************************
  CASING LIST 1                                        Page no:  1      *
*****************************************************************************
   Company : PETROFINA EXPLORATION        Shoe @:    1104.8   mtr            *
  Location : BASS-STRAIT               Casing OD:     33.972  cm   13-3/8"  *
      Well : ANEMONE #1                Casing ID:     31.534  cm             *
       Rig : ZAPATA ARCTIC              Cas wght:    101.20  kg/mtr         *
----------------------------------------------------------------------------*
  Hook wght:     52.16  ton            Mud wght:       1.07  kg/ltr         *
*****************************************************************************
No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*  Designation   *
    *   mtr    *   mtr    *   mtr    *   ton    *  mtr3    *                *
----*----------*----------*----------*----------*----------*----------------*
    *     0.00 *     0.00 *  1104.84 *    52.16 *     0.00 *shoe depth      *
  1 *    11.93 *    11.93 *  1092.91 *    53.21 *     0.15 *1-SHOE F / centr *
  2 *    11.87 *    23.80 *  1081.04 *    54.25 *     0.30 *1-COLLAR D / cent*
  3 *    11.68 *    35.48 *  1069.36 *    55.27 *     0.45 *87 / centr      *
  4 *    11.78 *    47.26 *  1057.58 *    56.31 *     0.59 *86 / centr      *
  5 *    11.73 *    58.99 *  1045.85 *    57.34 *     0.74 *85 / centr      *
  6 *    11.30 *    70.29 *  1034.55 *    58.33 *     0.88 *84              *
  7 *    11.60 *    81.89 *  1022.95 *    59.35 *     1.03 *83              *
  8 *    11.45 *    93.34 *  1011.50 *    60.35 *     1.17 *82              *
  9 *    11.75 *   105.09 *   999.75 *    61.38 *     1.32 *81              *
 10 *    12.00 *   117.09 *   987.75 *    62.44 *     1.47 *80              *
 11 *    11.65 *   128.74 *   976.10 *    63.46 *     1.62 *79              *
 12 *    11.96 *   140.70 *   964.14 *    64.51 *     1.77 *78              *
 13 *    11.79 *   152.49 *   952.35 *    65.54 *     1.91 *77              *
 14 *    11.43 *   163.92 *   940.92 *    66.55 *     2.06 *76              *
 15 *    11.23 *   175.15 *   929.69 *    67.53 *     2.20 *75              *
 16 *    11.85 *   187.00 *   917.84 *    68.57 *     2.35 *74              *
  : *    11.88 *   198.88 *   905.96 *    69.62 *     2.50 *73              *
 18 *    11.29 *   210.17 *   894.67 *    70.61 *     2.64 *72              *
 19 *    11.48 *   221.65 *   883.19 *    71.62 *     2.78 *71              *
 20 *    11.44 *   233.09 *   871.75 *    72.62 *     2.93 *70              *
 21 *    11.63 *   244.72 *   860.12 *    73.64 *     3.07 *69              *
 22 *    11.88 *   256.60 *   848.24 *    74.68 *     3.22 *68              *
 23 *    12.04 *   268.64 *   836.20 *    75.74 *     3.37 *67              *
 24 *    11.79 *   280.43 *   824.41 *    76.77 *     3.52 *66              *
 25 *    11.81 *   292.24 *   812.60 *    77.81 *     3.67 *65              *
  6 *    11.92 *   304.16 *   800.68 *    78.86 *     3.82 *64              *
 27 *    11.70 *   315.86 *   788.98 *    79.88 *     3.96 *63              *
 28 *    11.69 *   327.55 *   777.29 *    80.91 *     4.11 *62              *
 29 *    12.02 *   339.57 *   765.27 *    81.97 *     4.26 *61              *
 30 *    11.99 *   351.56 *   753.28 *    83.02 *     4.41 *60              *
 31 *    11.89 *   363.45 *   741.39 *    84.06 *     4.56 *59              *
 32 *    12.04 *   375.49 *   729.35 *    85.12 *     4.71 *58              *
 33 *    12.09 *   387.58 *   717.26 *    86.18 *     4.86 *57              *
 34 *    11.33 *   398.91 *   705.93 *    87.17 *     5.01 *56              *
 35 *    11.66 *   410.57 *   694.27 *    88.20 *     5.15 *55              *
 36 *    11.13 *   421.70 *   683.14 *    89.17 *     5.29 *54              *
 37 *    11.43 *   433.13 *   671.71 *    90.18 *     5.44 *53              *
 38 *    11.94 *   445.07 *   659.77 *    91.23 *     5.59 *52              *
 39 *    11.75 *   456.82 *   648.02 *    92.26 *     5.73 *51              *
 40 *    11.86 *   468.68 *   636.16 *    93.30 *     5.88 *50              *
 41 *    11.49 *   480.17 *   624.67 *    94.31 *     6.03 *49              *
  4 *    11.72 *   491.89 *   612.95 *    95.34 *     6.17 *48              *
 4  *    11.16 *   503.05 *   601.79 *    96.31 *     6.31 *47              *
 44 *    11.75 *   514.80 *   590.04 *    97.35 *     6.46 *46              *
 45 *    11.41 *   526.21 *   578.63 *    98.35 *     6.60 *45              *
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********************************************************************************
*   CASING LIST 1                                         Page no:  2     *
********************************************************************************
*     Company : PETROFINA EXPLORATION        Shoe @:    1104.8   mtr          *
*    Location : BASS STRAIT                Casing OD:     33.972  cm          *
*        Well : ANEMONE #1                 Casing ID:     31.534  cm          *
*         Rig : ZAPATA ARCTIC               Cas wght:    101.20  kg/mtr       *
*------------------------------------------------------------------------------*
*    Hook wght:       52.16   ton            Mud wght:       1.07  kg/ltr     *
********************************************************************************
* No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*   Designation   *
*     *    mtr    *    mtr   *   mtr    *   ton    *   mtr3   *                 *
*-----*-----------*----------*----------*----------*----------*-----------------*
*  46 *     11.97 *   538.18 *   566.66 *    99.40 *     6.75 *44              *
*  47 *     11.27 *   549.45 *   555.39 *   100.39 *     6.90 *43              *
*  48 *     11.89 *   561.34 *   543.50 *   101.43 *     7.05 *42              *
*  49 *     11.83 *   573.17 *   531.67 *   102.47 *     7.19 *41 / centr      *
*  50 *     12.03 *   585.20 *   519.64 *   103.53 *     7.34 *40 / centr      *
*  51 *     11.94 *   597.14 *   507.70 *   104.57 *     7.49 *39              *
*  52 *     11.81 *   608.95 *   495.89 *   105.61 *     7.64 *38              *
*   3 *     11.98 *   620.93 *   483.91 *   106.66 *     7.79 *37              *
*  54 *     12.03 *   632.96 *   471.88 *   107.72 *     7.94 *36              *
*  55 *     11.97 *   644.93 *   459.91 *   108.77 *     8.09 *35              *
*  56 *     11.98 *   656.91 *   447.93 *   109.82 *     8.24 *34              *
*  57 *     11.98 *   668.89 *   435.95 *   110.87 *     8.39 *33              *
*  58 *     11.91 *   680.80 *   424.04 *   111.92 *     8.54 *32              *
*  59 *     11.98 *   692.78 *   412.06 *   112.97 *     8.69 *31              *
*  60 *     11.30 *   704.08 *   400.76 *   113.96 *     8.84 *30              *
*  61 *     11.82 *   715.90 *   388.94 *   115.00 *     8.98 *29              *
*  62 *     11.21 *   727.11 *   377.73 *   115.98 *     9.13 *28              *
*   3 *     11.99 *   739.10 *   365.74 *   117.03 *     9.28 *27              *
*  64 *     11.89 *   750.99 *   353.85 *   118.08 *     9.43 *26              *
*  65 *     11.85 *   762.84 *   342.00 *   119.12 *     9.57 *25              *
*  66 *     11.96 *   774.80 *   330.04 *   120.17 *     9.72 *24              *
*  67 *     11.80 *   786.60 *   318.24 *   121.20 *     9.87 *23              *
*  68 *     11.88 *   798.48 *   306.36 *   122.25 *    10.02 *22              *
*  69 *     11.37 *   809.85 *   294.99 *   123.24 *    10.16 *21              *
*  70 *     11.75 *   821.60 *   283.24 *   124.28 *    10.31 *20              *
*  71 *     11.69 *   833.29 *   271.55 *   125.30 *    10.46 *19              *
*  72 *     11.85 *   845.14 *   259.70 *   126.34 *    10.61 *18              *
*     *      3.20 *   848.34 *   256.50 *   126.43 *    10.62 *hanger joint    *
*     *    256.50 *  1104.84 *    -0.00 *   133.71 *    11.49 *wellhead to surf *
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9-5/8"

PETROFINA EXPLORATION AUSTRALIA S.A.

CASING AND CEMENTING REPORT

WELL Anemone-1 FIELD Vic/P20 CASING SIZE 9-5/8" SET AT 3068 m

DRILLERS TD 3076 m LAST CASING SIZE 13-3/8" SET AT 1105 m

JOINTS RECEIVED 139 OF ___ WEIGHT 47 LB/FT GRADE N80 LENGTH 2833 m

AMOUNT USED 137 JTS LENGTH 2809 m No. JTS FAIL RABBIT 0 No. JTS DAMAGED 0

(including Shoe & Float Jts but not Hanger Pup) TOTAL REJECTED 0 TOTAL BACKLOADED 2

JOINTS RECEIVED 31 OF Shell WEIGHT 47 LB/FT GRADE L80 LENGTH 368 m

AMOUNT USED 0 JTS LENGTH - m No. JTS FAIL RABBIT 0 No. JTS DAMAGED 0

TOTAL REJECTED 0 TOTAL BACKLOADED 31

CASING DATA

No. OF PIECES	SIZE–WT–GRADE–TYPE THREAD	MAKE UP LENGTH	SETTING DEPTH
1	9-5/8" Shoe Joint #47 N80 Butt	12.27	3068.02
1	9-5/8" Float Joint #47 N80 Butt	11.68	3055.75
235	9-5/8" Casing #47 N80 Butt	2785.28	3044.07
1	9-5/8" Pup Joint with Hanger	2.79	258.79
	TOP OF 256 TO RKB		

CEMENTING DATA

SLURRY	CALCULATED TOP	CEMENT (SACKS & CLASS)	ADDITIVES (GAL/BBL)						MIX WEIGHT S.G.	YIELD FT³/SK
Lead	805	1290	2.5 Prehydrated Gel						12.8	1.94
Tail	2644	435	2 gal/10bbl HR-6L						15.8	1.15

No. OF PLUGS USED 2 OPEN HOLE EXCESS Caliper CIRC. VOL ___ BBL CIRC TIME ___ MINS

MIXING CEMENT 180 MINS DISPLACE TIME 70 MINS DISPLACE VOL 680 BBLS RETURNS? ___

DISPLACE PUMP PRESS 1400 PSI PLUG BUMP PRESS 3000 PSI VOL LOST ___ BBLS FLOAT HOLD? ___

SPACERS 15bbl water + 40bbl Flocheck 21 + 15bbl water

CENTRALISERS USED: 12 SPACING 4 middle shoe + 1 middle float joint, 1 on next 8 connections, 2 on first 2 joints inside 13-3/8" casing

REMARKS:

CEMENT COMPANY Halliburton DRILLING SUPERVISOR E. Snowling

CEMENTER Denis Banks DRILLING ENGINEER C. Jaspers DATE 17.6.89

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*****************************************************************************
*   CASING LIST                                          Page no:  1       *
*****************************************************************************
*     Company : PETROFINA EXPLORATION        Shoe @:     3068.0   mtr        *
*    Location : VIC P20                   Casing OD:      24.447   cm  9-5/8"*
*        Well : ANEMONE 1                 Casing ID:      22.050   cm        *
*         Rig : ZAPATA ARCTIC              Cas wght:      69.95  kg/mtr      *
*---------------------------------------------------------------------------*
*   Hook wght:        52.16  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 *  3068.02            *     0.00 *shoe depth     *
*     *    12.27 *    12.27 *  3055.75 *    52.50 *     0.04 *SHOE D   /centr*
*     *    11.68 *    23.95 *  3044.07 *    52.83 *     0.08 *FLOAT A  /centr*
*   1 *    11.87 *    35.82 *  3032.20 *    53.54 *     0.19 *228 A    /centr*
*   2 *    11.80 *    47.62 *  3020.40 *    54.25 *     0.29 *228      /centr*
*   3 *    11.68 *    59.30 *  3008.72 *    54.95 *     0.39 *227      /centr*
*   4 *    11.80 *    71.10 *  2996.92 *    55.66 *     0.49 *226      /centr*
*   5 *    11.85 *    82.95 *  2985.07 *    56.37 *     0.60 *225      /centr*
*   6 *    11.86 *    94.81 *  2973.21 *    57.08 *     0.70 *224      /centr*
*   7 *    11.79 *   106.60 *  2961.42 *    57.78 *     0.81 *223      /centr*
*   8 *    11.78 *   118.38 *  2949.64 *    58.49 *     0.91 *222      /centr*
*   9 *    11.77 *   130.15 *  2937.87 *    59.19 *     1.01 *221            *
*  10 *    11.80 *   141.95 *  2926.07 *    59.90 *     1.12 *220            *
*  11 *    11.81 *   153.76 *  2914.26 *    60.60 *     1.22 *219            *
*  12 *    11.79 *   165.55 *  2902.47 *    61.31 *     1.32 *218            *
*  13 *    11.89 *   177.44 *  2890.58 *    62.02 *     1.43 *217            *
*  14 *    11.75 *   189.19 *  2878.83 *    62.73 *     1.53 *216            *
*  15 *    11.80 *   200.99 *  2867.03 *    63.43 *     1.63 *215            *
*  16 *    11.84 *   212.83 *  2855.19 *    64.14 *     1.74 *214            *
*  17 *    12.00 *   224.83 *  2843.19 *    64.86 *     1.84 *213            *
*  18 *    11.96 *   236.79 *  2831.23 *    65.58 *     1.95 *212            *
*  19 *    12.00 *   248.79 *  2819.23 *    66.29 *     2.05 *211            *
*  20 *    11.87 *   260.66 *  2807.36 *    67.01 *     2.16 *210 thru WELLHEAD*
*  21 *    11.76 *   272.42 *  2795.60 *    67.71 *     2.26 *209            *
*  22 *    11.84 *   284.26 *  2783.76 *    68.42 *     2.36 *208            *
*  23 *    11.98 *   296.24 *  2771.78 *    69.14 *     2.47 *207            *
*  24 *    11.88 *   308.12 *  2759.90 *    69.85 *     2.57 *206            *
*  25 *    11.85 *   319.97 *  2748.05 *    70.56 *     2.67 *205            *
*  26 *    11.80 *   331.77 *  2736.25 *    71.26 *     2.78 *204            *
*     *    11.89 *   343.66 *  2724.36 *    71.98 *     2.88 *203            *
*  28 *    11.81 *   355.47 *  2712.55 *    72.68 *     2.99 *202            *
*  29 *    11.88 *   367.35 *  2700.67 *    73.39 *     3.09 *201            *
*  30 *    11.82 *   379.17 *  2688.85 *    74.10 *     3.19 *200            *
*  31 *    11.89 *   391.06 *  2676.96 *    74.81 *     3.30 *199            *
*  32 *    11.82 *   402.88 *  2665.14 *    75.52 *     3.40 *198            *
*  33 *    11.97 *   414.85 *  2653.17 *    76.24 *     3.51 *197            *
*  34 *    11.85 *   426.70 *  2641.32 *    76.95 *     3.61 *196            *
*  35 *    11.87 *   438.57 *  2629.45 *    77.66 *     3.71 *195            *
*  36 *    11.88 *   450.45 *  2617.57 *    78.37 *     3.82 *194            *
*  37 *    11.90 *   462.35 *  2605.67 *    79.08 *     3.92 *193            *
*  38 *    11.86 *   474.21 *  2593.81 *    79.79 *     4.03 *192            *
*  39 *    11.94 *   486.15 *  2581.87 *    80.51 *     4.13 *191            *
*  40 *    11.83 *   497.98 *  2570.04 *    81.22 *     4.23 *190            *
*  41 *    11.94 *   509.92 *  2558.10 *    81.93 *     4.34 *189            *
*  42 *    12.02 *   521.94 *  2546.08 *    82.65 *     4.44 *188            *
*  43 *    11.81 *   533.75 *  2534.27 *    83.36 *     4.55 *187            *
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*********************************************************************************
  CASING LIST ¶                                         Page no:  2      *
*********************************************************************************
    Company : PETROFINA EXPLORATION          Shoe @:     3068.0   mtr          *
   Location : VIC P20                       Casing OD:    24.447   cm           *
       Well : ANEMONE 1                     Casing ID:    22.050   cm           *
        Rig : ZAPATA ARCTIC                  Cas wght:    69.95  kg/mtr        *
-------------------------------------------------------------------------------*
   Hook wght:       52.16  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   *                  *
-----*----------*----------*----------*----------*----------*------------------*
 44  *    11.89 *   545.64 *  2522.38 *    84.07 *     4.65 *186               *
 45  *    12.00 *   557.64 *  2510.38 *    84.79 *     4.76 *185               *
 46  *    11.84 *   569.48 *  2498.54 *    85.50 *     4.86 *184               *
 47  *    11.85 *   581.33 *  2486.69 *    86.21 *     4.96 *183               *
 48  *    11.84 *   593.17 *  2474.85 *    86.91 *     5.07 *182               *
 49  *    11.87 *   605.04 *  2462.98 *    87.63 *     5.17 *181               *
 50  *    11.81 *   616.85 *  2451.17 *    88.33 *     5.28 *180               *
 51  *    11.86 *   628.71 *  2439.31 *    89.04 *     5.38 *179               *
 52  *    11.81 *   640.52 *  2427.50 *    89.75 *     5.48 *178               *
 53  *    11.81 *   652.33 *  2415.69 *    90.46 *     5.59 *177               *
 54  *    11.80 *   664.13 *  2403.89 *    91.16 *     5.69 *176               *
 55  *    12.02 *   676.15 *  2391.87 *    91.88 *     5.79 *175               *
 56  *    11.94 *   688.09 *  2379.93 *    92.60 *     5.90 *174               *
 57  *    11.86 *   699.95 *  2368.07 *    93.31 *     6.00 *173               *
 58  *    11.87 *   711.82 *  2356.20 *    94.02 *     6.11 *172               *
 59  *    11.35 *   723.17 *  2344.85 *    94.70 *     6.21 *171               *
 60  *    11.83 *   735.00 *  2333.02 *    95.41 *     6.31 *170               *
 61  *    11.81 *   746.81 *  2321.21 *    96.11 *     6.41 *169               *
 62  *    11.81 *   758.62 *  2309.40 *    96.82 *     6.52 *168               *
 63  *    11.73 *   770.35 *  2297.67 *    97.52 *     6.62 *167               *
 64  *    11.89 *   782.24 *  2285.78 *    98.24 *     6.72 *166               *
 65  *    11.84 *   794.08 *  2273.94 *    98.94 *     6.83 *165               *
 66  *    11.83 *   805.91 *  2262.11 *    99.65 *     6.93 *164               *
 67  *    11.89 *   817.80 *  2250.22 *   100.36 *     7.04 *163               *
 68  *    11.97 *   829.77 *  2238.25 *   101.08 *     7.14 *162               *
 69  *    11.91 *   841.68 *  2226.34 *   101.79 *     7.24 *161               *
 70  *    11.86 *   853.54 *  2214.48 *   102.50 *     7.35 *160               *
 71  *    11.79 *   865.33 *  2202.69 *   103.21 *     7.45 *159               *
 72  *    11.90 *   877.23 *  2190.79 *   103.92 *     7.56 *158               *
 73  *    12.09 *   889.32 *  2178.70 *   104.65 *     7.66 *157               *
 74  *    11.80 *   901.12 *  2166.90 *   105.35 *     7.77 *156               *
 75  *    11.86 *   912.98 *  2155.04 *   106.06 *     7.87 *155               *
 76  *    11.94 *   924.92 *  2143.10 *   106.78 *     7.97 *154               *
 77  *    11.89 *   936.81 *  2131.21 *   107.49 *     8.08 *153               *
 78  *    11.92 *   948.73 *  2119.29 *   108.20 *     8.18 *152               *
 79  *    11.82 *   960.55 *  2107.47 *   108.91 *     8.29 *151               *
 80  *    11.68 *   972.23 *  2095.79 *   109.61 *     8.39 *150               *
 81  *    11.82 *   984.05 *  2083.97 *   110.32 *     8.49 *149               *
 82  *    11.86 *   995.91 *  2072.11 *   111.03 *     8.60 *148               *
 83  *    11.85 *  1007.76 *  2060.26 *   111.74 *     8.70 *147               *
 84  *    11.83 *  1019.59 *  2048.43 *   112.45 *     8.80 *146               *
 85  *    11.74 *  1031.33 *  2036.69 *   113.15 *     8.91 *145               *
 86  *    11.89 *  1043.22 *  2024.80 *   113.86 *     9.01 *144               *
 87  *    11.83 *  1055.05 *  2012.97 *   114.57 *     9.11 *143               *
 88  *    11.83 *  1066.88 *  2001.14 *   115.28 *     9.22 *142               *
 89  *    11.90 *  1078.78 *  1989.24 *   115.99 *     9.32 *141               *
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*******************************************************************************
*   CASING LIST ¶                                      Page no:  3      *
*******************************************************************************
*     Company : PETROFINA EXPLORATION          Shoe @:    3068.0   mtr          *
*     ocation : VIC P20                     Casing OD:     24.447   cm          *
*        Well : ANEMONE 1                   Casing ID:     22.050   cm          *
*         Rig : ZAPATA ARCTIC                Cas wght:     69.95   kg/mtr       *
*-----------------------------------------------------------------------------*
*   Hook wght:      52.16   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   *                 *
*-----*----------*----------*----------*----------*----------*-----------------*
*  90 *    12.09 *  1090.87 *  1977.15 *   116.71 *     9.43 *140              *
*  91 *    11.96 *  1102.83 *  1965.19 *   117.43 *     9.53 *139              *
*  92 *    11.86 *  1114.69 *  1953.33 *   118.14 *     9.64 *138 enterOPENHOLE*
*  93 *    11.93 *  1126.62 *  1941.40 *   118.86 *     9.74 *137              *
*  94 *    11.77 *  1138.39 *  1929.63 *   119.56 *     9.84 *136              *
*  95 *    11.89 *  1150.28 *  1917.74 *   120.27 *     9.95 *135              *
*  96 *    11.95 *  1162.23 *  1905.79 *   120.99 *    10.05 *134              *
*  97 *    11.87 *  1174.10 *  1893.92 *   121.70 *    10.16 *133              *
*  98 *    11.81 *  1185.91 *  1882.11 *   122.41 *    10.26 *132              *
*  99 *    11.79 *  1197.70 *  1870.32 *   123.11 *    10.36 *131              *
* 10C *    12.03 *  1209.73 *  1858.29 *   123.83 *    10.47 *130              *
* 101 *    11.98 *  1221.71 *  1846.31 *   124.55 *    10.57 *129              *
* 102 *    11.91 *  1233.62 *  1834.40 *   125.26 *    10.68 *128              *
* 103 *    11.66 *  1245.28 *  1822.74 *   125.96 *    10.78 *127              *
* 104 *    11.83 *  1257.11 *  1810.91 *   126.67 *    10.88 *126              *
* 105 *    11.84 *  1268.95 *  1799.07 *   127.38 *    10.99 *125              *
* 106 *    11.78 *  1280.73 *  1787.29 *   128.08 *    11.09 *124              *
* 10  *    11.94 *  1292.67 *  1775.35 *   128.80 *    11.20 *123              *
* 108 *    11.72 *  1304.39 *  1763.63 *   129.50 *    11.30 *122              *
* 109 *    11.84 *  1316.23 *  1751.79 *   130.21 *    11.40 *121              *
* 110 *    11.90 *  1328.13 *  1739.89 *   130.92 *    11.51 *120              *
* 111 *    11.87 *  1340.00 *  1728.02 *   131.63 *    11.61 *119              *
* 112 *    11.92 *  1351.92 *  1716.10 *   132.35 *    11.71 *118              *
* 113 *    12.01 *  1363.93 *  1704.09 *   133.06 *    11.82 *117              *
* 114 *    11.84 *  1375.77 *  1692.25 *   133.77 *    11.92 *116              *
* 115 *    11.92 *  1387.69 *  1680.33 *   134.49 *    12.03 *115              *
* 116 *    11.85 *  1399.54 *  1668.48 *   135.20 *    12.13 *114              *
* 117 *    11.75 *  1411.29 *  1656.73 *   135.90 *    12.23 *113              *
* 118 *    11.86 *  1423.15 *  1644.87 *   136.61 *    12.34 *112              *
* 11  *    11.76 *  1434.91 *  1633.11 *   137.31 *    12.44 *111              *
* 120 *    12.00 *  1446.91 *  1621.11 *   138.03 *    12.55 *110              *
* 121 *    11.80 *  1458.71 *  1609.31 *   138.74 *    12.65 *109              *
* 122 *    11.83 *  1470.54 *  1597.48 *   139.45 *    12.75 *108              *
* 123 *    11.95 *  1482.49 *  1585.53 *   140.16 *    12.86 *107              *
* 124 *    11.87 *  1494.36 *  1573.66 *   140.87 *    12.96 *106              *
* 125 *    11.81 *  1506.17 *  1561.85 *   141.58 *    13.07 *105              *
* 126 *    11.59 *  1517.76 *  1550.26 *   142.27 *    13.17 *104              *
* 127 *    11.73 *  1529.49 *  1538.53 *   142.98 *    13.27 *103              *
* 128 *    11.84 *  1541.33 *  1526.69 *   143.69 *    13.37 *102              *
* 129 *    11.79 *  1553.12 *  1514.90 *   144.39 *    13.48 *101              *
* 130 *    11.84 *  1564.96 *  1503.06 *   145.10 *    13.58 *100              *
* 13  *    11.81 *  1576.77 *  1491.25 *   145.81 *    13.68 *99               *
* 13  *    11.88 *  1588.65 *  1479.37 *   146.52 *    13.79 *98               *
* 133 *    11.91 *  1600.56 *  1467.46 *   147.23 *    13.89 *97               *
* 134 *    11.78 *  1612.34 *  1455.68 *   147.94 *    14.00 *96               *
* 135 *    11.77 *  1624.11 *  1443.91 *   148.64 *    14.10 *95               *
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*****************************************************************************
*   CASING LIST                                      Page no:  4     *
*****************************************************************************
*    Company : PETROFINA EXPLORATION          Shoe @:    3068.0   mtr      *
*   Location : VIC P20                     Casing OD:     24.447   cm       *
*       Well : ANEMONE 1                   Casing ID:     22.050   cm       *
*        Rig : ZAPATA ARCTIC                Cas wght:     69.95   kg/mtr   *
*---------------------------------------------------------------------------*
*   Hook wght:       52.16   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    *                *
*-----*----------*----------*----------*----------*----------*----------------*
* 136 *     11.87 *  1635.98 *  1432.04 *   149.35 *    14.20 *94              *
* 137 *     12.04 *  1648.02 *  1420.00 *   150.07 *    14.31 *93              *
* 138 *     11.79 *  1659.81 *  1408.21 *   150.78 *    14.41 *92              *
* 139 *     11.87 *  1671.68 *  1396.34 *   151.49 *    14.52 *91              *
* 140 *     11.82 *  1683.50 *  1384.52 *   152.20 *    14.62 *90              *
* 141 *     11.99 *  1695.49 *  1372.53 *   152.92 *    14.72 *89              *
* 142 *     11.85 *  1707.34 *  1360.68 *   153.63 *    14.83 *88              *
* 143 *     11.87 *  1719.21 *  1348.81 *   154.34 *    14.93 *87              *
* 144 *     11.80 *  1731.01 *  1337.01 *   155.04 *    15.04 *86              *
* 145 *     11.99 *  1743.00 *  1325.02 *   155.76 *    15.14 *85              *
* 14  *     11.90 *  1754.90 *  1313.12 *   156.47 *    15.24 *84              *
* 14  *     11.79 *  1766.69 *  1301.33 *   157.18 *    15.35 *83              *
* 148 *     11.87 *  1778.56 *  1289.46 *   157.89 *    15.45 *82              *
* 149 *     11.89 *  1790.45 *  1277.57 *   158.60 *    15.56 *81              *
* 150 *     11.74 *  1802.19 *  1265.83 *   159.31 *    15.66 *80              *
* 151 *     11.83 *  1814.02 *  1254.00 *   160.01 *    15.76 *79              *
* 152 *     11.81 *  1825.83 *  1242.19 *   160.72 *    15.87 *78              *
* 1   *     11.77 *  1837.60 *  1230.42 *   161.43 *    15.97 *77              *
* 154 *     11.82 *  1849.42 *  1218.60 *   162.13 *    16.07 *76              *
* 155 *     11.76 *  1861.18 *  1206.84 *   162.84 *    16.18 *75              *
* 156 *     11.79 *  1872.97 *  1195.05 *   163.54 *    16.28 *74              *
* 157 *     11.60 *  1884.57 *  1183.45 *   164.24 *    16.38 *73              *
* 158 *     11.90 *  1896.47 *  1171.55 *   164.95 *    16.48 *72              *
* 159 *     11.85 *  1908.32 *  1159.70 *   165.66 *    16.59 *71              *
* 160 *     11.93 *  1920.25 *  1147.77 *   166.37 *    16.69 *70              *
* 161 *     11.82 *  1932.07 *  1135.95 *   167.08 *    16.80 *69              *
* 162 *     12.01 *  1944.08 *  1123.94 *   167.80 *    16.90 *68              *
* 163 *     11.86 *  1955.94 *  1112.08 *   168.51 *    17.01 *67              *
* 164 *     11.55 *  1967.49 *  1100.53 *   169.20 *    17.11 *66  /centr 66-65 *
* 16  *     11.90 *  1979.39 *  1088.63 *   169.92 *    17.21 *65  /centr 65-64 *
* 166 *     11.80 *  1991.19 *  1076.83 *   170.62 *    17.31 *64              *
* 167 *     11.81 *  2003.00 *  1065.02 *   171.33 *    17.42 *63              *
* 168 *     11.80 *  2014.80 *  1053.22 *   172.04 *    17.52 *62              *
* 169 *     11.68 *  2026.48 *  1041.54 *   172.73 *    17.62 *61              *
* 170 *     11.81 *  2038.29 *  1029.73 *   173.44 *    17.73 *60              *
* 171 *     11.74 *  2050.03 *  1017.99 *   174.14 *    17.83 *59              *
* 172 *     11.87 *  2061.90 *  1006.12 *   174.86 *    17.93 *58              *
* 173 *     11.76 *  2073.66 *   994.36 *   175.56 *    18.04 *57              *
* 174 *     11.85 *  2085.51 *   982.51 *   176.27 *    18.14 *56              *
* 175 *     11.73 *  2097.24 *   970.78 *   176.97 *    18.24 *55              *
* 176 *     11.74 *  2108.98 *   959.04 *   177.67 *    18.35 *54              *
* 177 *     11.74 *  2120.72 *   947.30 *   178.38 *    18.45 *53              *
* 17  *     11.90 *  2132.62 *   935.40 *   179.09 *    18.55 *52              *
* 179 *     11.87 *  2144.49 *   923.53 *   179.80 *    18.66 *51              *
* 180 *     11.92 *  2156.41 *   911.61 *   180.51 *    18.76 *50              *
* 181 *     11.88 *  2168.29 *   899.73 *   181.23 *    18.87 *49              *
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*****************************************************************************
*  CASING LIST ¶                                     Page no:  5      *
*****************************************************************************
*    Company : PETROFINA EXPLORATION          Shoe @:    3068.0   mtr       *
*     cation : VIC P20                     Casing OD:     24.447   cm       *
*       Well : ANEMONE 1                   Casing ID:     22.050   cm       *
*        Rig : ZAPATA ARCTIC                Cas wght:     69.95  kg/mtr     *
*---------------------------------------------------------------------------*
*  Hook wght:      52.16  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   *               *
*------*----------*----------*----------*----------*----------*---------------*
* 182  *    11.77 *  2180.06 *   887.96 *   181.93 *    18.97 *48            *
* 183  *    11.88 *  2191.94 *   876.08 *   182.64 *    19.07 *47            *
* 184  *    11.88 *  2203.82 *   864.20 *   183.35 *    19.18 *46            *
* 185  *    11.86 *  2215.68 *   852.34 *   184.06 *    19.28 *45            *
* 186  *    11.95 *  2227.63 *   840.39 *   184.78 *    19.39 *44            *
* 187  *    11.89 *  2239.52 *   828.50 *   185.49 *    19.49 *43            *
* 188  *    11.93 *  2251.45 *   816.57 *   186.21 *    19.59 *42            *
* 189  *    11.89 *  2263.34 *   804.68 *   186.92 *    19.70 *41            *
* 190  *    11.75 *  2275.09 *   792.93 *   187.62 *    19.80 *40            *
* 191  *    11.81 *  2286.90 *   781.12 *   188.33 *    19.90 *39            *
* 192  *    11.84 *  2298.74 *   769.28 *   189.04 *    20.01 *38            *
* 193  *    12.03 *  2310.77 *   757.25 *   189.76 *    20.11 *37            *
* 194  *    11.80 *  2322.57 *   745.45 *   190.46 *    20.22 *36            *
* 195  *    12.01 *  2334.58 *   733.44 *   191.18 *    20.32 *35            *
* 196  *    11.79 *  2346.37 *   721.65 *   191.89 *    20.43 *34            *
* 197  *    11.84 *  2358.21 *   709.81 *   192.60 *    20.53 *33            *
* 198  *    11.84 *  2370.05 *   697.97 *   193.31 *    20.63 *32            *
* 199  *    11.95 *  2382.00 *   686.02 *   194.02 *    20.74 *31            *
* 200  *    12.03 *  2394.03 *   673.99 *   194.74 *    20.84 *30            *
* 201  *    12.10 *  2406.13 *   661.89 *   195.47 *    20.95 *29            *
* 202  *    11.77 *  2417.90 *   650.12 *   196.17 *    21.05 *28            *
* 203  *    11.86 *  2429.76 *   638.26 *   196.88 *    21.16 *27            *
* 204  *    11.81 *  2441.58 *   626.45 *   197.59 *    21.26 *26            *
* 205  *    12.05 *  2453.63 *   614.40 *   198.31 *    21.37 *25            *
* 206  *    11.87 *  2465.50 *   602.52 *   199.02 *    21.47 *24            *
* 207  *    11.93 *  2477.43 *   590.59 *   199.74 *    21.57 *23            *
* 208  *    11.94 *  2489.37 *   578.66 *   200.45 *    21.68 *22            *
* 209  *    11.82 *  2501.19 *   566.83 *   201.16 *    21.78 *21            *
* 210  *    11.83 *  2513.02 *   555.00 *   201.87 *    21.89 *20            *
* 211  *    11.93 *  2524.95 *   543.07 *   202.58 *    21.99 *19            *
* 212  *    11.85 *  2536.80 *   531.22 *   203.29 *    22.09 *18            *
* 213  *    11.97 *  2548.77 *   519.25 *   204.01 *    22.20 *17            *
* 214  *    11.87 *  2560.64 *   507.38 *   204.72 *    22.30 *16            *
* 215  *    11.86 *  2572.50 *   495.52 *   205.43 *    22.41 *15            *
* 216  *    11.87 *  2584.37 *   483.65 *   206.14 *    22.51 *14            *
* 217  *    11.93 *  2596.30 *   471.72 *   206.85 *    22.61 *13            *
* 218  *    11.88 *  2608.18 *   459.84 *   207.56 *    22.72 *12            *
* 219  *    11.84 *  2620.02 *   448.00 *   208.27 *    22.82 *11            *
* 220  *    11.92 *  2631.94 *   436.08 *   208.99 *    22.93 *10            *
* 221  *    11.96 *  2643.90 *   424.12 *   209.70 *    23.03 *9             *
* 222  *    11.85 *  2655.75 *   412.27 *   210.41 *    23.14 *8             *
* 223  *    11.94 *  2667.69 *   400.33 *   211.13 *    23.24 *7             *
* 224  *    11.95 *  2679.64 *   388.38 *   211.84 *    23.35 *6             *
* 225  *    11.84 *  2691.48 *   376.54 *   212.55 *    23.45 *5             *
* 226  *    11.71 *  2703.19 *   364.83 *   213.25 *    23.55 *4             *
* 227  *    11.78 *  2714.97 *   353.05 *   213.96 *    23.65 *3             *
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*******************************************************************************
   CASING LIST ¶                                       Page no:  6     *
*******************************************************************************
    Company : PETROFINA EXPLORATION          Shoe @:   3068.0   mtr           *
   Location : VIC P20                     Casing OD:     24.447  cm            *
       Well : ANEMONE 1                   Casing ID:     22.050  cm            *
        Rig : ZAPATA ARCTIC                Cas wght:     69.95  kg/mtr         *
------------------------------------------------------------------------------*
  Hook wght:      52.16  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  *                  *
-----*----------*----------*----------*----------*----------*-----------------*
228 *     11.84 *  2726.81 *   341.21 *   214.67 *     23.76 *2                *
229 *     11.80 *  2738.61 *   329.41 *   215.37 *     23.86 *1                *
230 *     11.83 *  2750.44 *   317.58 *   216.08 *     23.97 *701              *
231 *     11.92 *  2762.36 *   305.66 *   216.80 *     24.07 *702              *
232 *     11.61 *  2773.97 *   294.05 *   217.49 *     24.17 *703              *
233 *     11.89 *  2785.86 *   282.16 *   218.20 *     24.28 *704              *
234 *     11.82 *  2797.68 *   270.34 *   218.91 *     24.38 *705              *
235 *     11.55 *  2809.23 *   258.79 *   219.60 *     24.48 *706              *
    *      2.79 *  2812.02 *   256.00 *   219.68 *     24.49 *HANGER X         *
    *    256.00 *  3068.02 *     0.00 *   226.87 *     25.36 *WELLHEAD DEPTH   *
```

7" LINER

PETROFINA EXPLORATION AUSTRALIA S.A.

CASING AND CEMENTING REPORT

WELL Anemone-1A FIELD Vic/P20 CASING SIZE 7" SET AT 4492.5 m

DRILLERS TD 4500 m LAST CASING SIZE 9-5/8" SET AT 3068 m

JOINTS RECEIVED 45 OF 7" WEIGHT 29 LB/FT GRADE P110 LENGTH ___ m

AMOUNT USED 21 JTS LENGTH 245.22 m No. JTS FAIL RABBIT - No. JTS DAMAGED -

(including Shoe & Float Jts but not Hanger Pup) TOTAL REJECTED - TOTAL BACKLOADED 24

JOINTS RECEIVED 130 OF 7" WEIGHT 29 LB/FT GRADE N80 LENGTH ___ m

AMOUNT USED 108 JTS LENGTH 1290.7 m No. JTS FAIL RABBIT - No. JTS DAMAGED -

TOTAL REJECTED - TOTAL BACKLOADED 22

CASING DATA

No. OF PIECES	SIZE–WT–GRADE–TYPE THREAD	MAKE UP LENGTH	SETTING DEPTH
1	7" TIW CLS Shoe - 29# P110 - BUT	0.81	4492.55
1	7" 29# - P110 - BUT	11.57	4491.74
1	7" Hallib. Float Collar - 29# P110 BUT	0.51	4480.17
2	7" 29# - P110 - BUT	22.98	4479.66
1	7" TIW HS-SR Landing Collar -		
	29# - P110 - BUT	0.30	4456.38
18	7" 29# - P110 - BUT	210.67	4445.15
108	7" 29# - N80 - BUT	1290.70	4245.71
1	7" TIW RP-RRP Liner Hanger -		
	29# - N80 - BUT	2.59	2955.01
1	7" TIW Setting Collar -		
	29# - N80 - BUT	4.46	2952.42
	TOP OF 2947.96 TO RKB		

CEMENTING DATA

SLURRY	CALCULATED TOP	CEMENT (SACKS & CLASS)	ADDITIVES (GAL/BBL)						MIX WEIGHT S.G.	YIELD FT3/SK
			HR-6L	Bent	HALAD 22	CFR-3				
Lead	2948.4	394 G	0.3	2.5%	BWOW				1.53	1.94
Tail	4000	275 G			1.8	2.2			±.90	1.15

No. OF PLUGS USED 1 OPEN HOLE EXCESS 40% CIRC. VOL 960 BBL CIRC TIME 180 MINS

MIXING CEMENT 40 MINS DISPLACE TIME 58 MINS DISPLACE VOL 359 BBLS RETURNS? Yes

DISPLACE PUMP PRESS 2500/ ~~4500~~ PSI PLUG BUMP PRESS 1000 PSI VOL LOST 0 BBLS FLOAT HOLD? Yes

SPACERS 10 bbl water + 20 bbl Flocheck 21 + 10 bbl water

CENTRALISERS USED: Yes SPACING on joints 1,2,3,4,5,6,7,8,9,10,11,14,17,20,23,26,29,32, 35,38,41,44,47,48(x2),49(x2),50(x2),51,54,57,60,63,66,69,72,75,78,81,84,87,90,93,96,98, 102,105,108,111,114,117,120,123,126

REMARKS:

No rotation during cementation

No losses but pressure surge 2500-4500psi at 298 bbl of displacement

CEMENT COMPANY Halliburton DRILLING SUPERVISOR A. Paterson

CEMENTER D. Banks DRILLING ENGINEER B. de Vinck DATE 17/8/89

```
*************************************************************************************
*   CASING LIST 1                                              Page no:  1     *
*************************************************************************************
*     Company : PETROFINA AUSTRALIA              Shoe @:     4492.5   mtr        7"
*    Location : VIC/P20                       Casing OD:      17.780   cm
*        Well : ANEMONE NO.1A                 Casing ID:      15.710   cm    LINER
*         Rig : ZAPATA ARCTIC                  Cas wght:      43.16  kg/mtr
*-----------------------------------------------------------------------------------
*   Hook wght:          54.43   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 *  4492.55 *    54.43 *     0.00 *SHOE DEPTH
*     *     0.81 *     0.81 *  4491.74 *    54.45 *     0.00 *SET SHOE
*   1 *    11.57 *    12.38 *  4480.17 *    54.88 *     0.07 *151 / c
*     *     0.51 *    12.89 *  4479.66 *    54.90 *     0.07 *FLOAT COLLAR
*   2 *    11.64 *    24.53 *  4468.02 *    55.32 *     0.13 *150 / c
*   3 *    11.34 *    35.87 *  4456.68 *    55.74 *     0.19 *149 / c
*     *     0.30 *    36.17 *  4456.38 *    55.75 *     0.19 *LANDING COLLAR
*   4 *    11.23 *    47.40 *  4445.15 *    56.17 *     0.25 *148 / c
*   5 *    11.88 *    59.28 *  4433.27 *    56.60 *     0.32 *147 / c
    6 *    11.69 *    70.97 *  4421.58 *    57.04 *     0.38 *146 / c
*   7 *    11.74 *    82.71 *  4409.84 *    57.47 *     0.45 *145 / c
*   8 *    12.08 *    94.79 *  4397.76 *    57.91 *     0.51 *144 / c
*   9 *    11.78 *   106.57 *  4385.98 *    58.35 *     0.58 *143 / c
*  10 *    11.66 *   118.23 *  4374.32 *    58.78 *     0.64 *142 / c
*  11 *    11.57 *   129.80 *  4362.75 *    59.21 *     0.70 *141 / c
*  12 *    12.03 *   141.83 *  4350.72 *    59.65 *     0.77 *140
*  13 *    11.77 *   153.60 *  4338.95 *    60.08 *     0.83 *139
*  14 *    11.83 *   165.43 *  4327.12 *    60.52 *     0.90 *138 / c
*  15 *    11.82 *   177.25 *  4315.30 *    60.96 *     0.96 *137
*  16 *    11.00 *   188.25 *  4304.30 *    61.36 *     1.02 *136
*  17 *    11.34 *   199.59 *  4292.96 *    61.78 *     1.08 *135 / c
*  18 *    11.93 *   211.52 *  4281.03 *    62.22 *     1.15 *134
*  19 *    11.79 *   223.31 *  4269.24 *    62.66 *     1.21 *133
*  20 *    11.81 *   235.12 *  4257.43 *    63.09 *     1.28 *132 / c
*  21 *    11.72 *   246.84 *  4245.71 *    63.52 *     1.34 *131-FLEX JOINT A
*  22 *    11.65 *   258.49 *  4234.06 *    63.95 *     1.40 *130         244.08
*  23 *    12.00 *   270.49 *  4222.06 *    64.40 *     1.47 *129 / c
   24 *    12.00 *   282.49 *  4210.06 *    64.84 *     1.54 *128
   25 *    11.93 *   294.42 *  4198.13 *    65.28 *     1.60 *127
*  26 *    12.00 *   306.42 *  4186.13 *    65.72 *     1.67 *126 / c
*  27 *    12.00 *   318.42 *  4174.13 *    66.17 *     1.73 *125
*  28 *    12.00 *   330.42 *  4162.13 *    66.61 *     1.80 *124
*  29 *    12.00 *   342.42 *  4150.13 *    67.05 *     1.86 *123 / c
*  30 *    12.00 *   354.42 *  4138.13 *    67.49 *     1.93 *122
*  31 *    12.00 *   366.42 *  4126.13 *    67.94 *     1.99 *121
*  32 *    12.00 *   378.42 *  4114.13 *    68.38 *     2.06 *120 / c
*  33 *    11.92 *   390.34 *  4102.21 *    68.82 *     2.12 *119
*  34 *    12.00 *   402.34 *  4090.21 *    69.26 *     2.19 *118
*  35 *    12.00 *   414.34 *  4078.21 *    69.70 *     2.25 *117 / c
*  36 *    12.01 *   426.35 *  4066.20 *    70.15 *     2.32 *116
*  37 *    12.00 *   438.35 *  4054.20 *    70.59 *     2.38 *115
*  38 *    12.00 *   450.35 *  4042.20 *    71.03 *     2.45 *114 / c
*  39 *    12.00 *   462.35 *  4030.20 *    71.48 *     2.52 *113
*  40 *    11.99 *   474.34 *  4018.21 *    71.92 *     2.58 *112
*  41 *    11.99 *   486.33 *  4006.22 *    72.36 *     2.65 *111 / c
*  42 *    11.99 *   498.32 *  3994.23 *    72.80 *     2.71 *110   JOINT NO.10
```

```
*************************************************************************
*    CASING LIST 1                                    Page no:  2     *
*************************************************************************
*      Company : PETROFINA AUSTRALIA          Shoe @:    4492.5   mtr
*     Location : VIC/P20                    Casing OD:     17.780  cm
*         Well : ANEMONE NO.1A              Casing ID:     15.710  cm
*          Rig : ZAPATA ARCTIC               Cas wght:     43.16  kg/mtr
*   ---------------------------------------------------------------------
*     Hook wght:        54.43   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   *
*-----*----------*----------*----------*----------*---------*-------------
*  43 *     11.83 *    510.15 *  3982.40 *    73.24 *      2.78 *109     IS DAMAGE
*  44 *     12.00 *    522.15 *  3970.40 *    73.68 *      2.84 *107 / c
*  45 *     11.99 *    534.14 *  3958.41 *    74.12 *      2.91 *106
*  46 *     11.99 *    546.13 *  3946.42 *    74.57 *      2.97 *105
*  47 *     12.00 *    558.13 *  3934.42 *    75.01 *      3.04 *104 / c
*  48 *     12.00 *    570.13 *  3922.42 *    75.45 *      3.10 *103 / cc
*  49 *     12.00 *    582.13 *  3910.42 *    75.90 *      3.17 *102 / cc
*  50 *     11.99 *    594.12 *  3898.43 *    76.34 *      3.23 *101 / cc
*  51 *     11.99 *    606.11 *  3886.44 *    76.78 *      3.30 *100 / c
   52 *     12.00 *    618.11 *  3874.44 *    77.22 *      3.36 *99
*  53 *     11.29 *    629.40 *  3863.15 *    77.64 *      3.42 *98
*  54 *     12.01 *    641.41 *  3851.14 *    78.08 *      3.49 *97 / c
*  55 *     11.63 *    653.04 *  3839.51 *    78.51 *      3.55 *96
*  56 *     12.01 *    665.05 *  3827.50 *    78.95 *      3.62 *95
*  57 *     12.00 *    677.05 *  3815.50 *    79.40 *      3.68 *94 / c
*  58 *     12.00 *    689.05 *  3803.50 *    79.84 *      3.75 *93
*  59 *     11.99 *    701.04 *  3791.51 *    80.28 *      3.82 *92
*  60 *     12.00 *    713.04 *  3779.51 *    80.73 *      3.88 *91 / c
*  61 *     11.92 *    724.96 *  3767.59 *    81.17 *      3.95 *90
*  62 *     11.86 *    736.82 *  3755.73 *    81.60 *      4.01 *89
*  63 *     11.94 *    748.76 *  3743.79 *    82.04 *      4.08 *88 / c
*  64 *     11.99 *    760.75 *  3731.80 *    82.49 *      4.14 *87
*  65 *     12.00 *    772.75 *  3719.80 *    82.93 *      4.21 *86
*  66 *     11.65 *    784.40 *  3708.15 *    83.36 *      4.27 *85 / c
*  67 *     12.00 *    796.40 *  3696.15 *    83.80 *      4.33 *84
*  68 *     12.01 *    808.41 *  3684.14 *    84.24 *      4.40 *83
*  69 *     12.00 *    820.41 *  3672.14 *    84.69 *      4.47 *82 / c
*  70 *     12.00 *    832.41 *  3660.14 *    85.13 *      4.53 *81
   71 *     12.01 *    844.42 *  3648.13 *    85.57 *      4.60 *80
*  72 *     12.00 *    856.42 *  3636.13 *    86.02 *      4.66 *79 / c
*  73 *     12.00 *    868.42 *  3624.13 *    86.46 *      4.73 *78
*  74 *     11.71 *    880.13 *  3612.42 *    86.89 *      4.79 *77
*  75 *     12.01 *    892.14 *  3600.41 *    87.33 *      4.86 *76 / c
*  76 *     11.99 *    904.13 *  3588.42 *    87.78 *      4.92 *75
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*  80 *     12.00 *    952.11 *  3540.44 *    89.55 *      5.18 *71
*  81 *     11.99 *    964.10 *  3528.45 *    89.99 *      5.25 *70 / c
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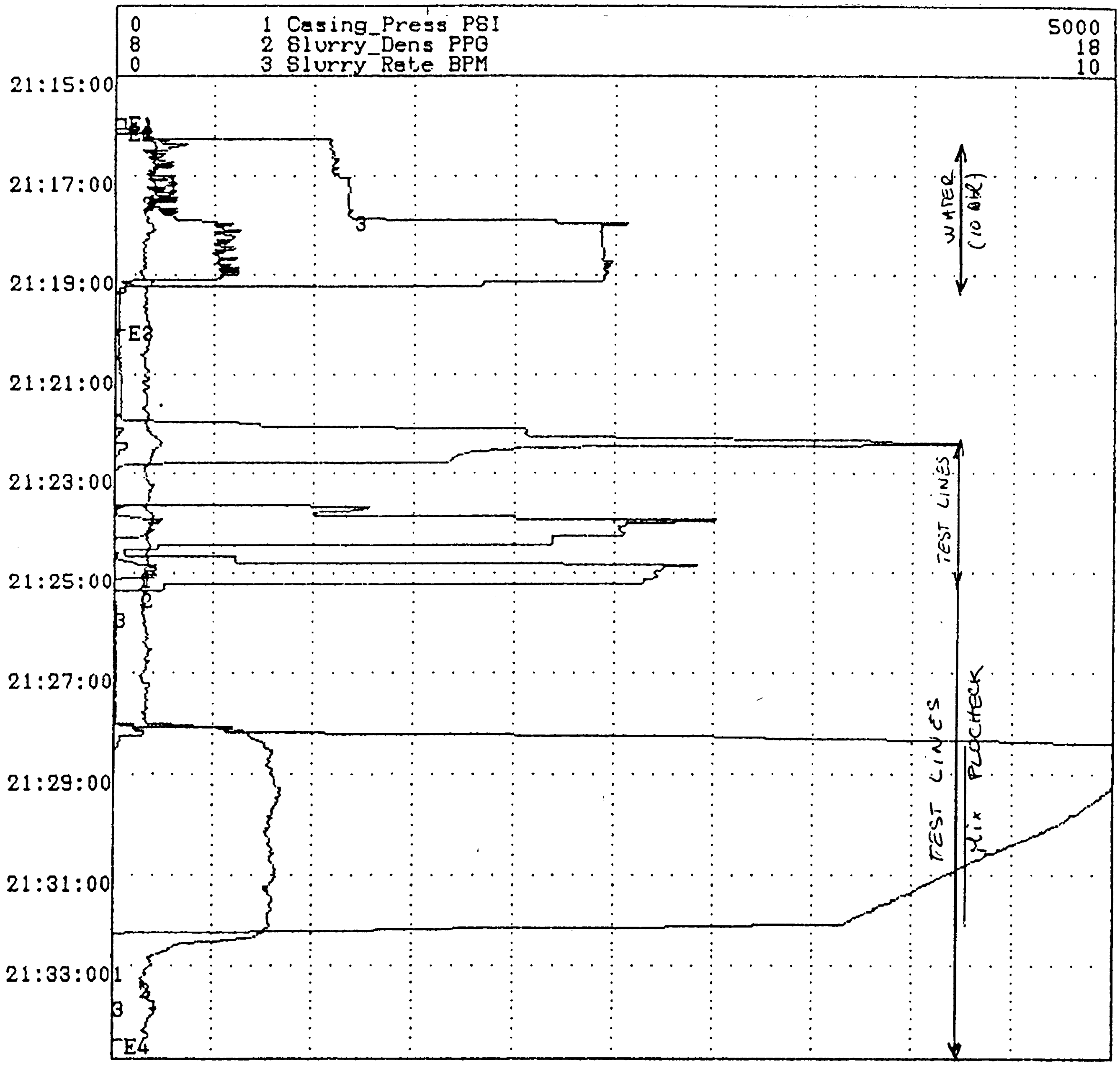
*  83 *     12.00 *    988.10 *  3504.45 *    90.87 *      5.38 *68
*  84 *     11.91 *   1000.01 *  3492.54 *    91.31 *      5.44 *67 / c
*  85 *     12.00 *   1012.01 *  3480.54 *    91.76 *      5.51 *66
*  86 *     11.99 *   1024.00 *  3468.55 *    92.20 *      5.57 *65
*  87 *     11.99 *   1035.99 *  3456.56 *    92.64 *      5.64 *64 / c
*  88 *     12.00 *   1047.99 *  3444.56 *    93.08 *      5.71 *63
```

```
*******************************************************************************
*   CASING LIST I                                        Page no:  3     *
*******************************************************************************
*     Company : PETROFINA AUSTRALIA          Shoe @:      4492.5   mtr
*    Location : VIC/P20                    Casing OD:       17.780  cm
*        Well : ANEMONE NO.1A              Casing ID:       15.710  cm
*         Rig : ZAPATA ARCTIC               Cas wght:       43.16   kg/mtr
-------------------------------------------------------------------------------
*    Hook wght:        54.43   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   *
*-----*----------*----------*----------*----------*----------*----------------
*  89 *    12.00 *  1059.99 *  3432.56 *    93.53 *     5.77 *62
*  90 *    12.00 *  1071.99 *  3420.56 *    93.97 *     5.84 *61 / c
*  91 *    12.00 *  1083.99 *  3408.56 *    94.41 *     5.90 *60
*  92 *    12.00 *  1095.99 *  3396.56 *    94.85 *     5.97 *59
*  93 *    12.00 *  1107.99 *  3384.56 *    95.30 *     6.03 *58 / c
*  94 *    12.00 *  1119.99 *  3372.56 *    95.74 *     6.10 *57
*  95 *    11.69 *  1131.68 *  3360.87 *    96.17 *     6.16 *56
*  96 *    12.00 *  1143.68 *  3348.87 *    96.61 *     6.23 *55 / c
*  97 *    11.58 *  1155.26 *  3337.29 *    97.04 *     6.29 *54
   98 *    12.00 *  1167.26 *  3325.29 *    97.48 *     6.35 *53
*  99 *    12.00 *  1179.26 *  3313.29 *    97.93 *     6.42 *52 / c
* 100 *    11.90 *  1191.16 *  3301.39 *    98.37 *     6.48 *51
* 101 *    12.00 *  1203.16 *  3289.39 *    98.81 *     6.55 *50
* 102 *    12.00 *  1215.16 *  3277.39 *    99.25 *     6.62 *49 / c
* 103 *    12.01 *  1227.17 *  3265.38 *    99.69 *     6.68 *48
* 104 *    12.00 *  1239.17 *  3253.38 *   100.14 *     6.75 *47
* 105 *    11.66 *  1250.83 *  3241.72 *   100.57 *     6.81 *46 / c
* 106 *    12.00 *  1262.83 *  3229.72 *   101.01 *     6.88 *45
* 107 *    11.92 *  1274.75 *  3217.80 *   101.45 *     6.94 *44
*  08 *    12.00 *  1286.75 *  3205.80 *   101.89 *     7.01 *43 / c
* 109 *    11.94 *  1298.69 *  3193.86 *   102.33 *     7.07 *42
* 110 *    11.92 *  1310.61 *  3181.94 *   102.77 *     7.14 *41
* 111 *    12.00 *  1322.61 *  3169.94 *   103.22 *     7.20 *40 / c
* 112 *    11.99 *  1334.60 *  3157.95 *   103.66 *     7.27 *39
* 113 *    12.00 *  1346.60 *  3145.95 *   104.10 *     7.33 *38
* 114 *    11.91 *  1358.51 *  3134.04 *   104.54 *     7.40 *37 / c
* 115 *    11.99 *  1370.50 *  3122.05 *   104.98 *     7.46 *36
  116 *    11.99 *  1382.49 *  3110.06 *   105.43 *     7.53 *35
  117 *    11.99 *  1394.48 *  3098.07 *   105.87 *     7.59 *34 / c
* 118 *    12.00 *  1406.48 *  3086.07 *   106.31 *     7.66 *33
* 119 *    12.01 *  1418.49 *  3074.06 *   106.75 *     7.72 *32
* 120 *    11.64 *  1430.13 *  3062.42 *   107.18 *     7.79 *31 / c
* 121 *    12.00 *  1442.13 *  3050.42 *   107.63 *     7.85 *30
* 122 *    11.91 *  1454.04 *  3038.51 *   108.07 *     7.92 *29
* 123 *    11.99 *  1466.03 *  3026.52 *   108.51 *     7.98 *28 / c
* 124 *    11.70 *  1477.73 *  3014.82 *   108.94 *     8.05 *27
* 125 *    11.98 *  1489.71 *  3002.84 *   109.38 *     8.11 *26
* 126 *    12.00 *  1501.71 *  2990.84 *   109.82 *     8.18 *25 / c
* 127 *    12.00 *  1513.71 *  2978.84 *   110.27 *     8.24 *24
* 128 *    12.00 *  1525.71 *  2966.84 *   110.71 *     8.31 *23
* 129 *    11.83 *  1537.54 *  2955.01 *   111.15 *     8.37 *22
*     *     2.59 *  1540.13 *  2952.42 *   111.22 *     8.38 *LINER HANGER
*     *     4.46 *  1544.59 *  2947.96 *   111.34 *     8.40 *LG SETTING COLLAR
```



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0 3 Slurry_Rate BPM 10
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E2
E3
E4
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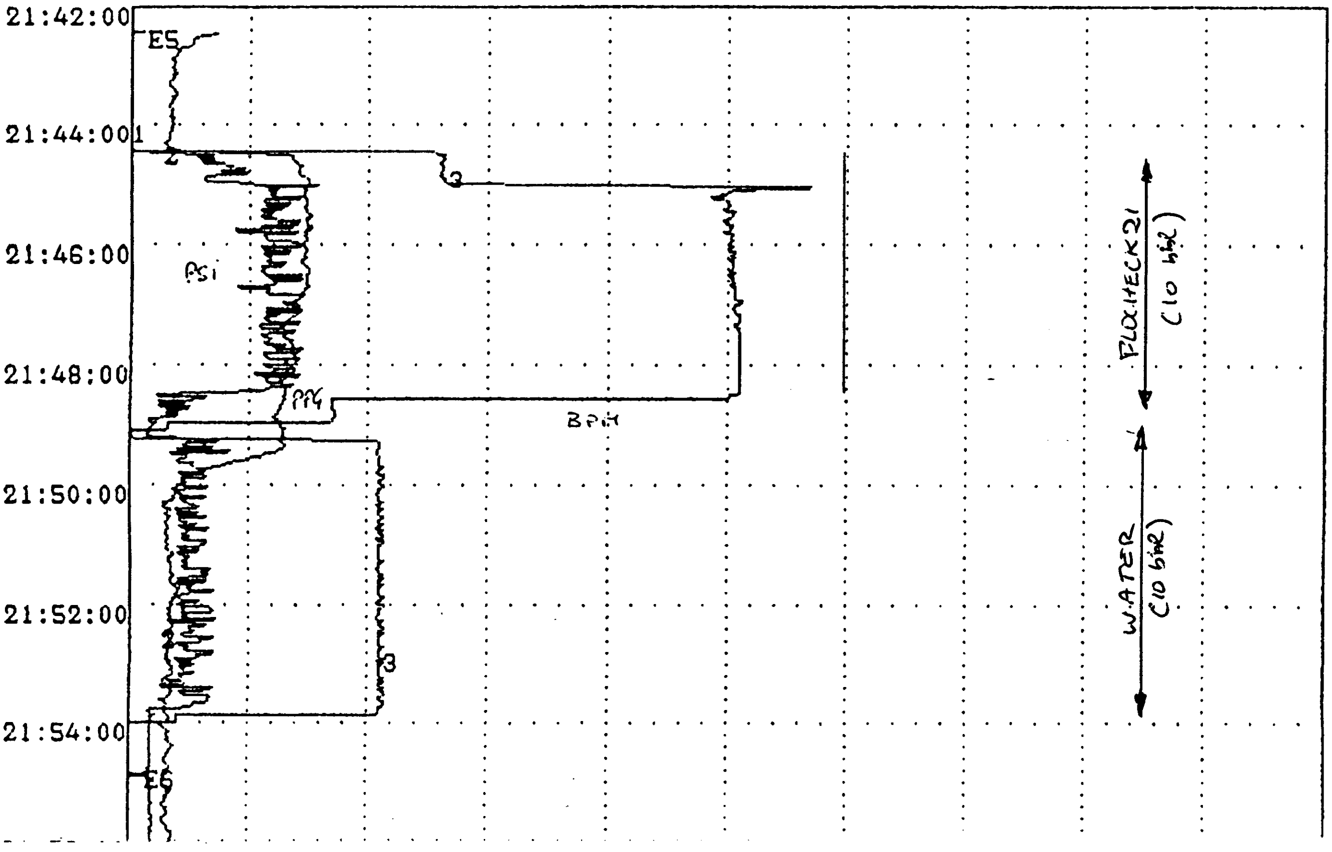
2
3
WATER (10 bbl)
TEST LINES
TEST LINES
Mix FLOCHECK



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BPM
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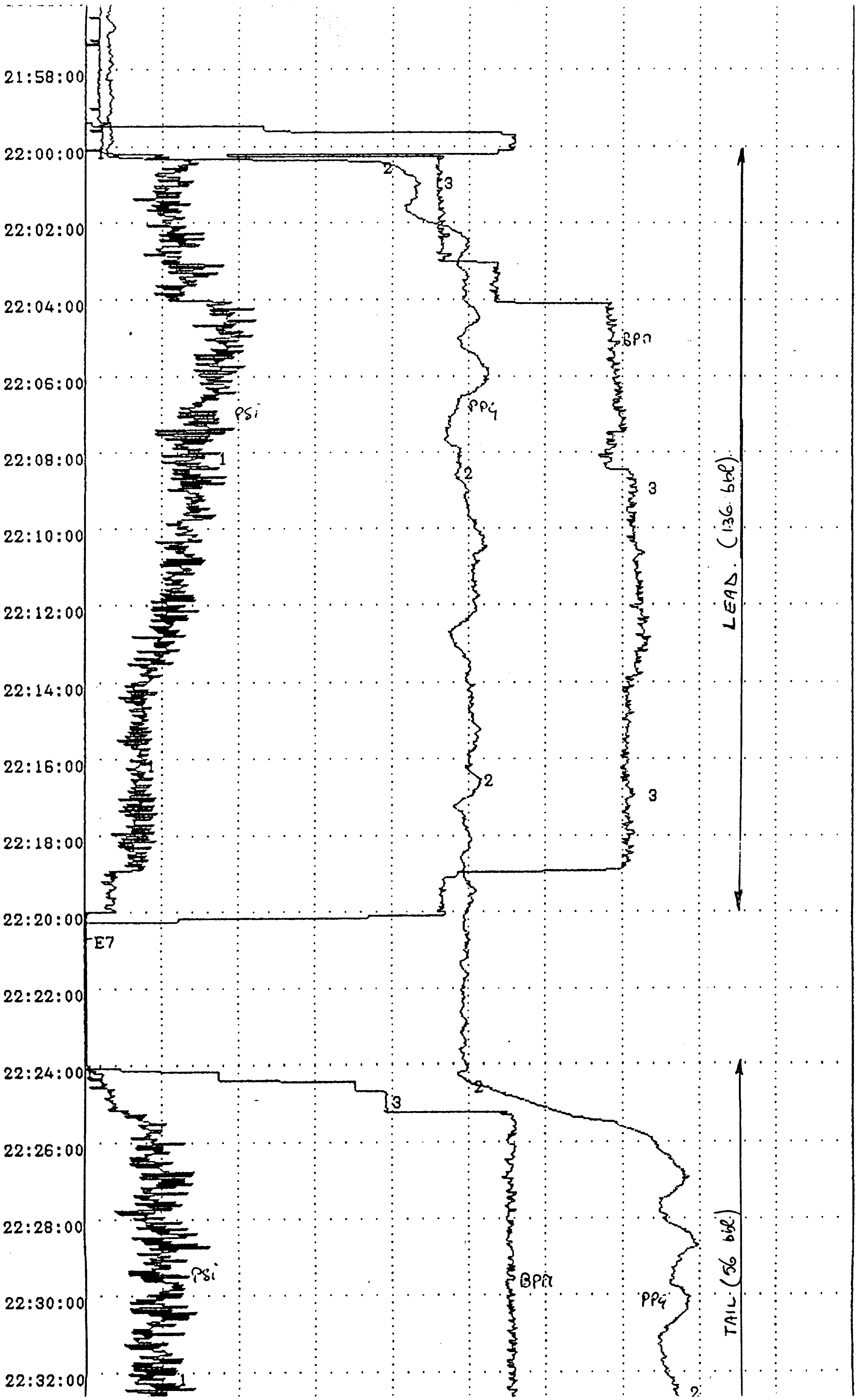
WATER (10 bbl)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22:28:00
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22:32:00
1
2
3
BPM
Psi
PPG
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2
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3
E7
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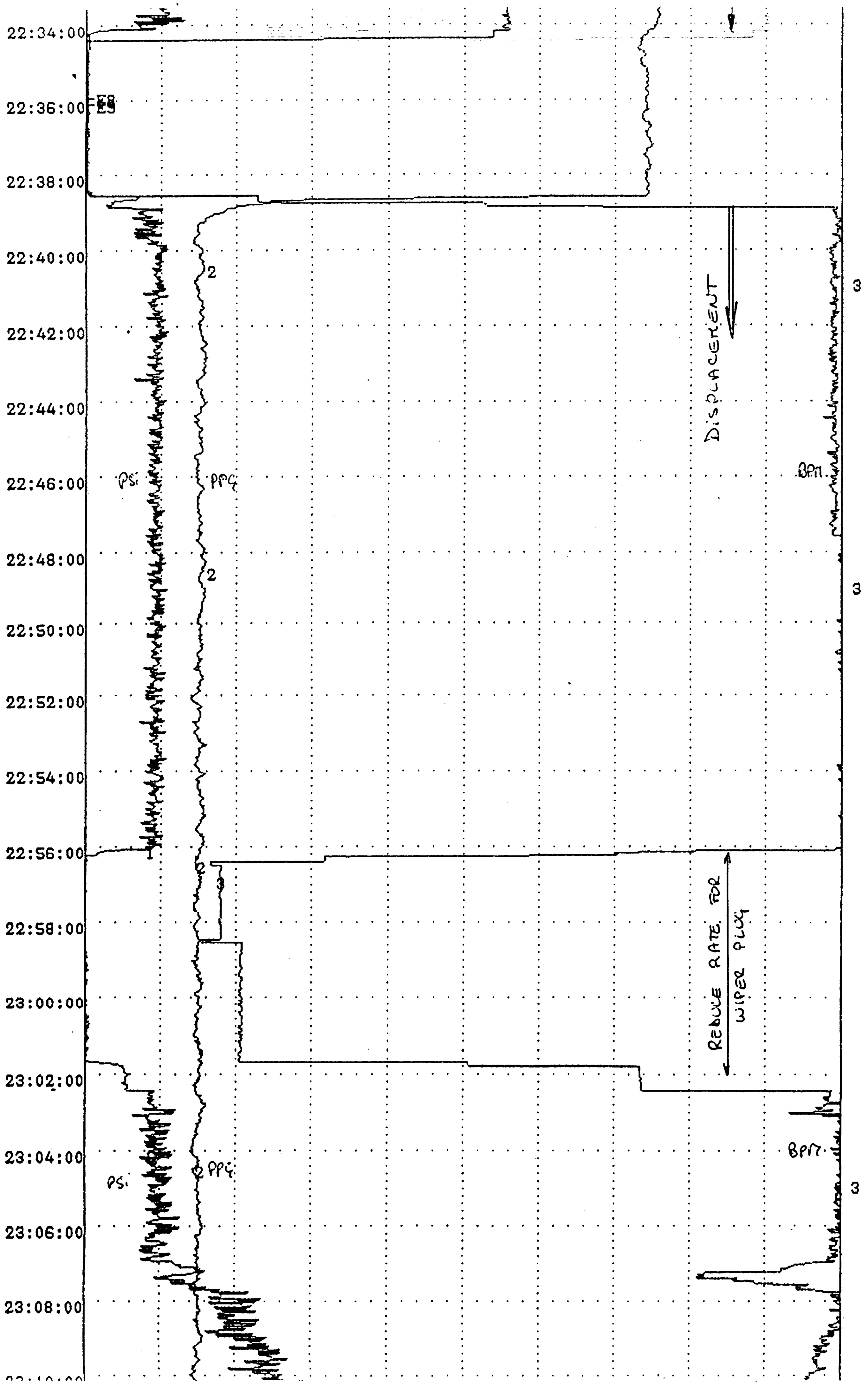
3
BPM
Psi
PPG
TAIL (56 bbl)
1
2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PSi
PPG
BPM
22:48:00
2
3
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22:52:00
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2
3
REDUCE RATE FOR WIPER PLUG
22:58:00
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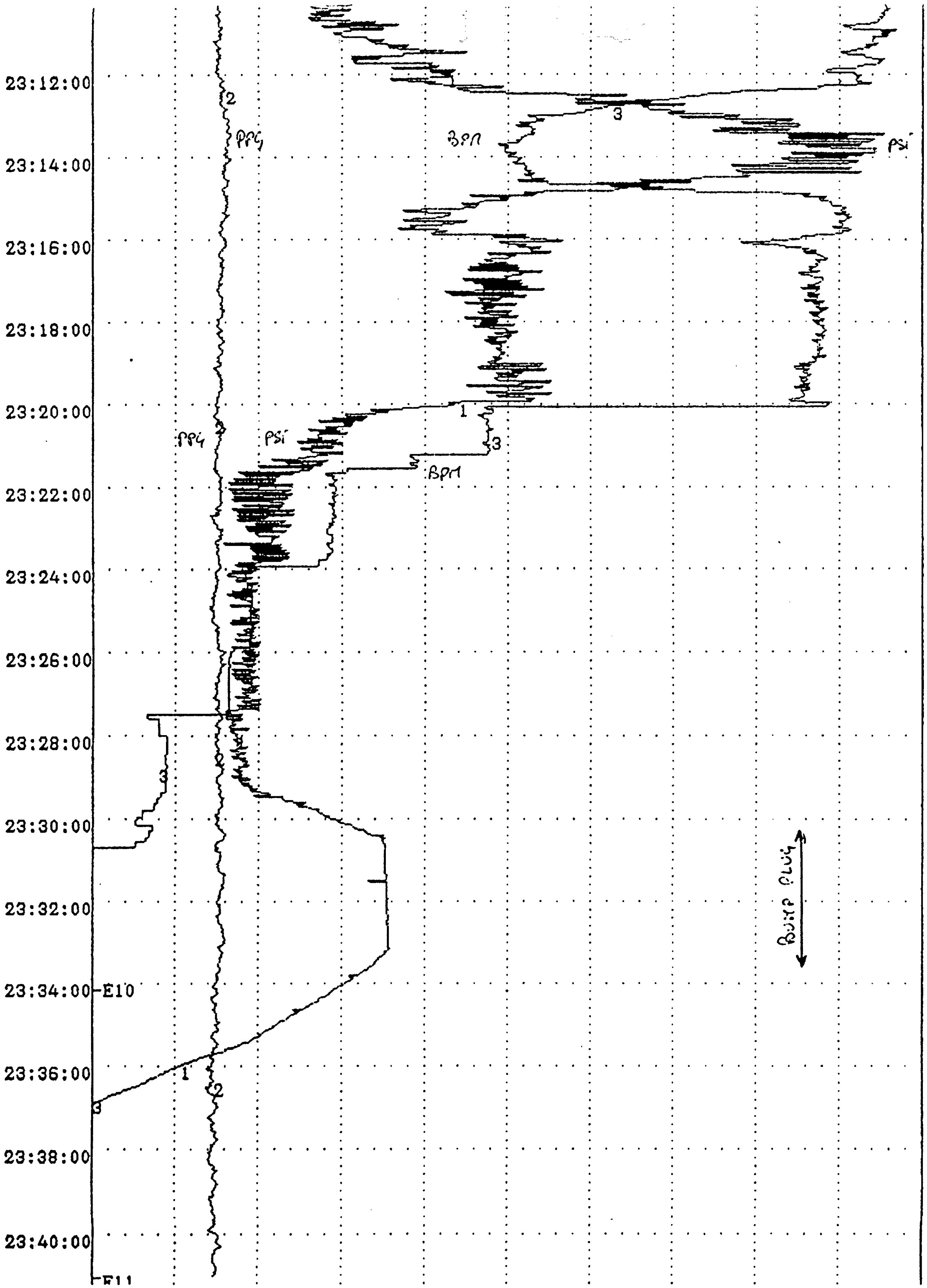
23:02:00
23:04:00
PSi
2 PPG
BPM
3
23:06:00
23:08:00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E11
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PPG
3
BPM
PSi
1
3
PPG
PSi
BPM
3
2
1
2
3
Bump plug

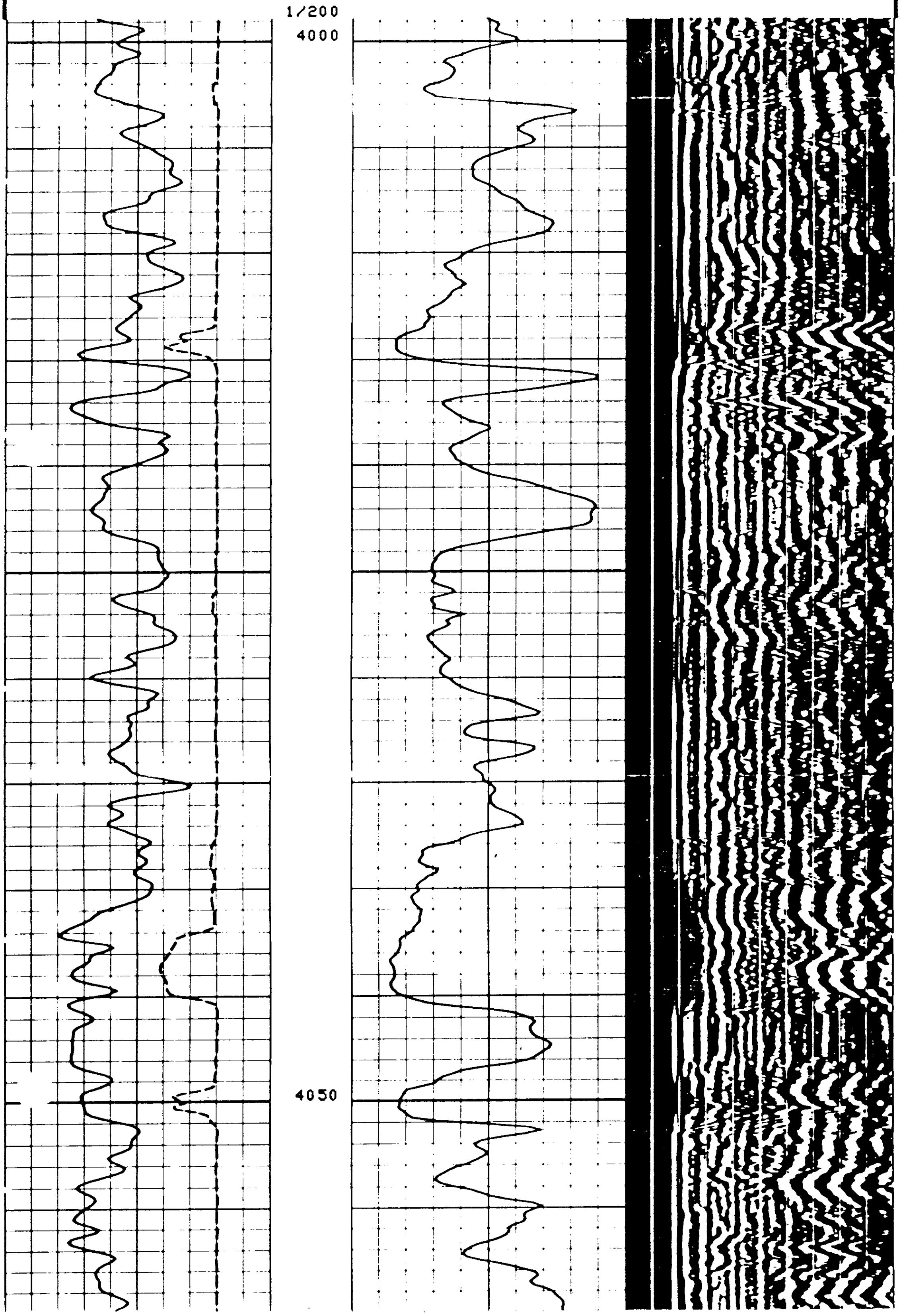
Schlumberger

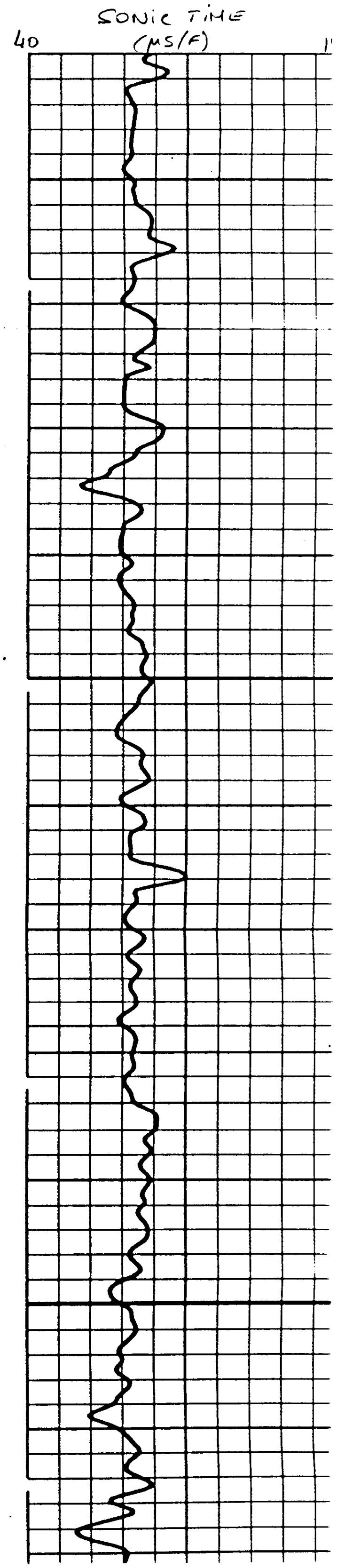
MAIN LOG

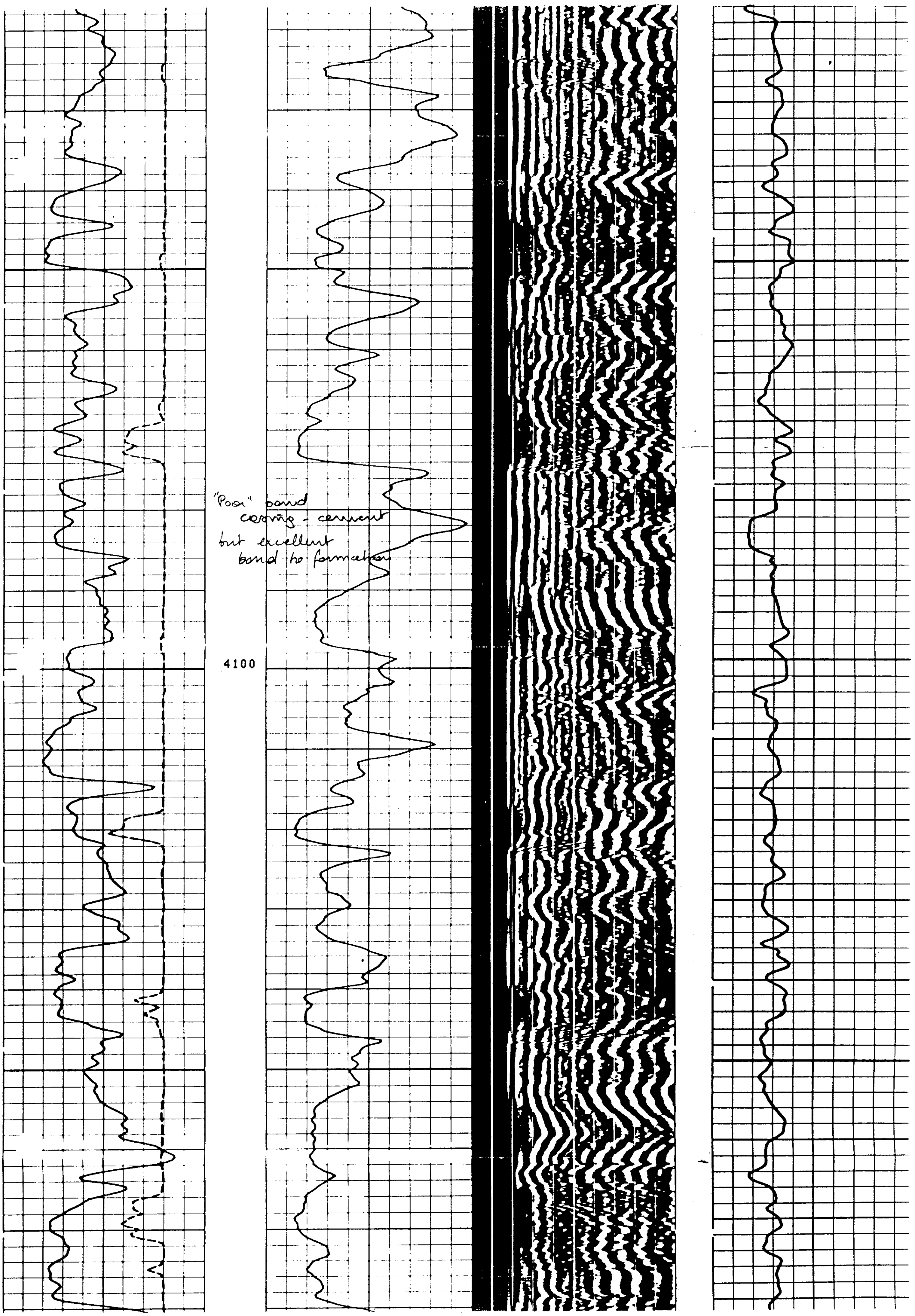
CSU Field Log

TT2 (US)		CBL (MV)	
400.00	200.00	0.0	50.000
GR (GAPI)		CBL (MV)	
0.0	150.00	50.000	100.00

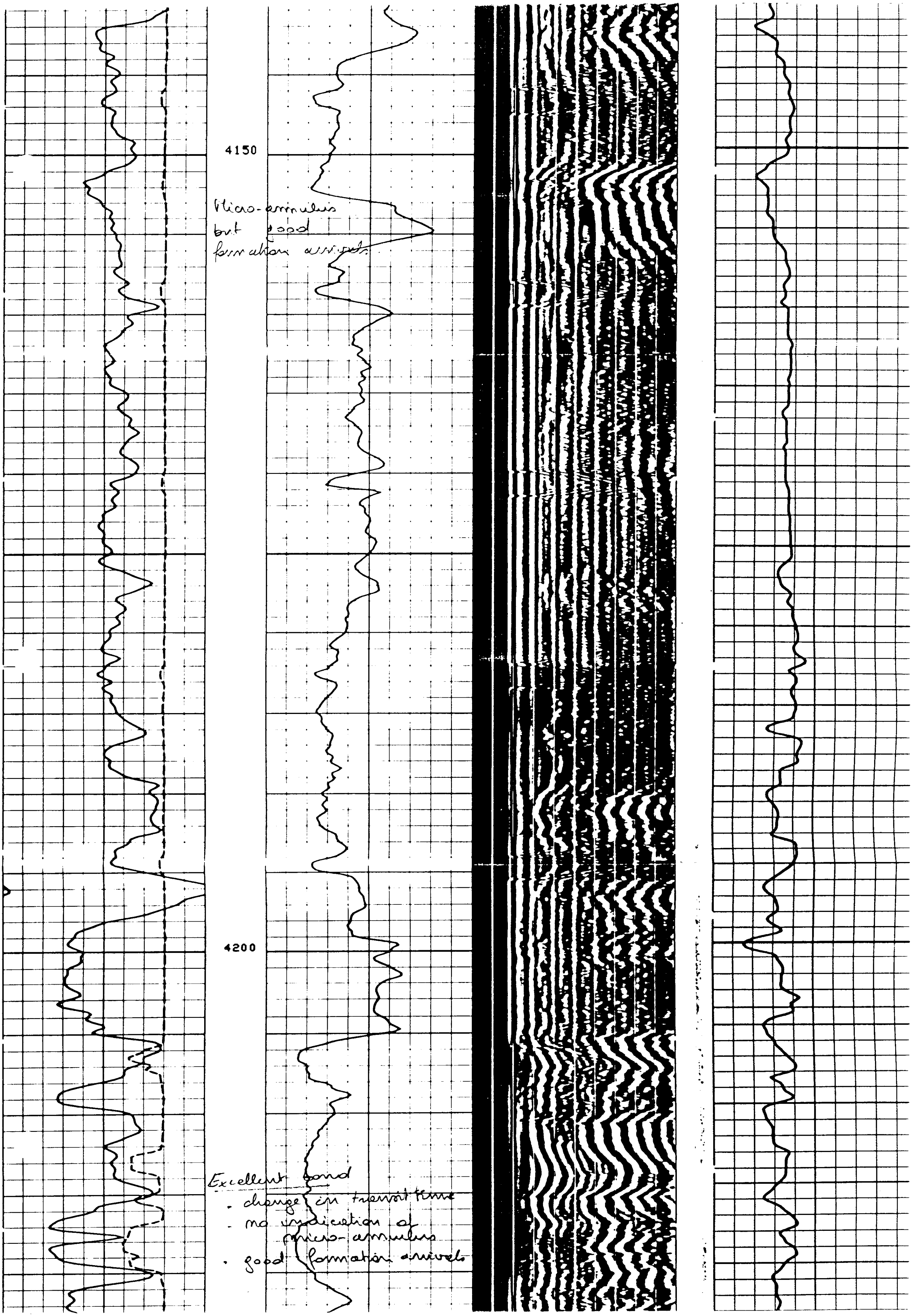
CP 29.882A FILE 2 21-AUG-89 12:37





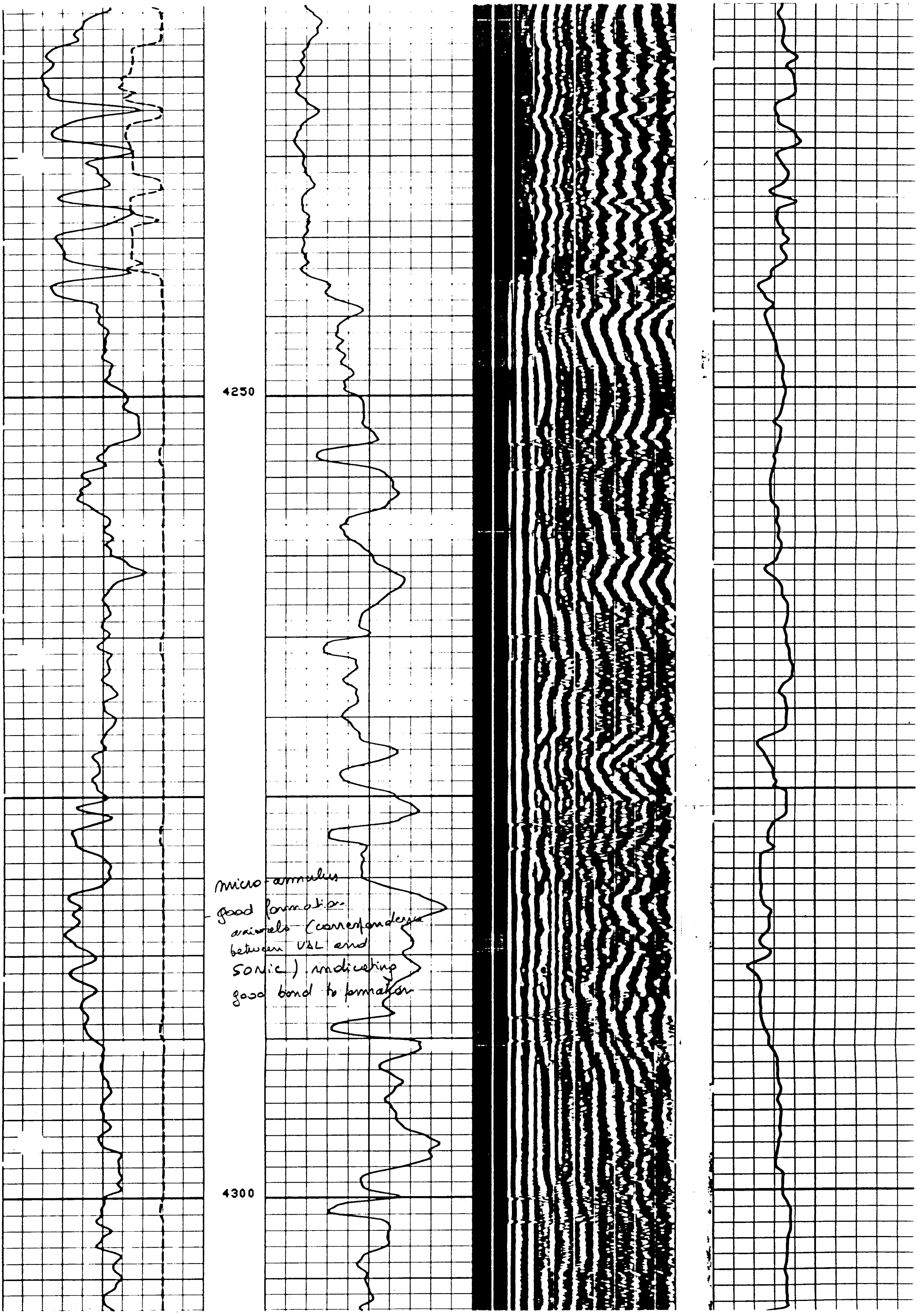


"Poor" bond casing - cement but excellent bond to formation

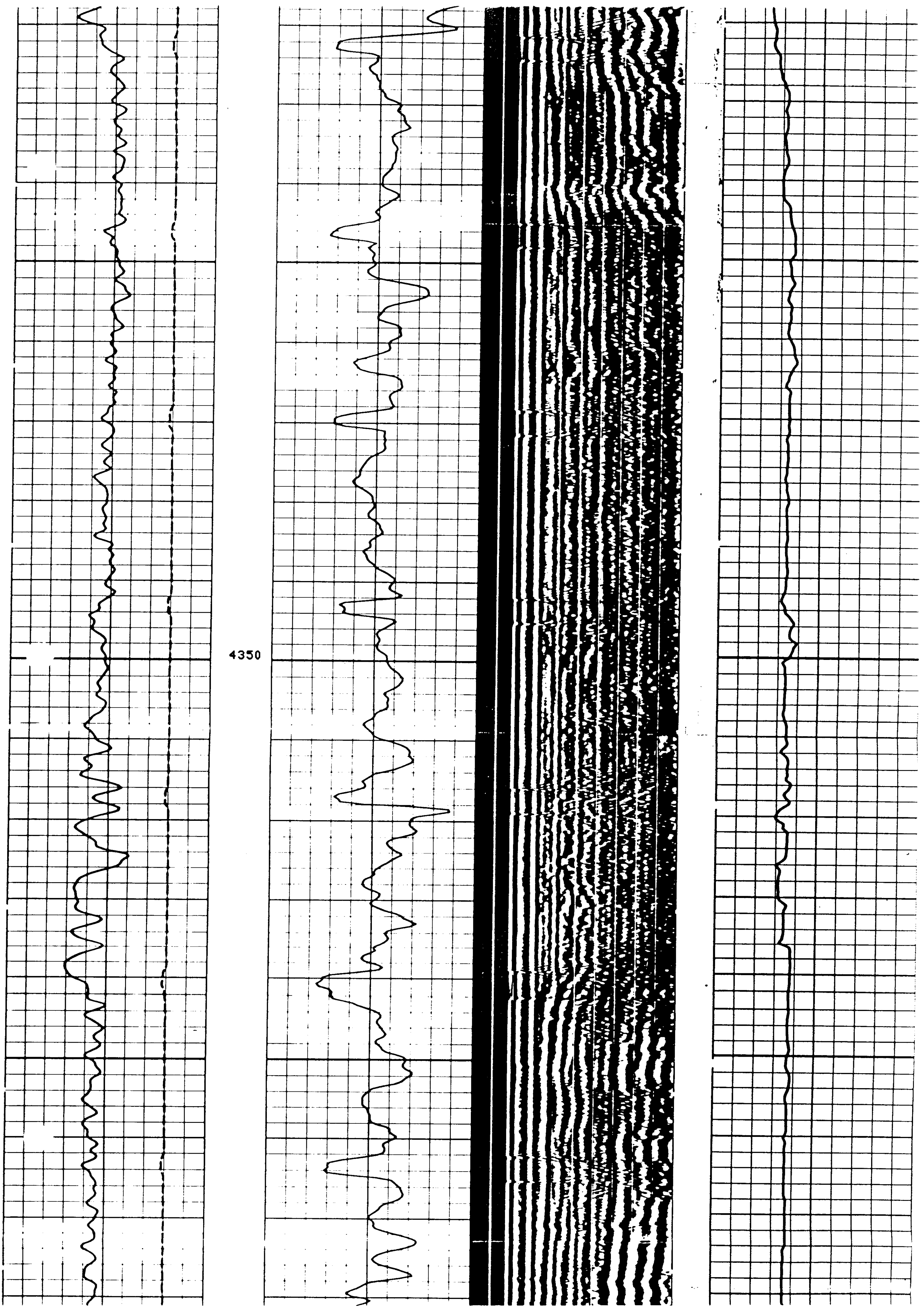


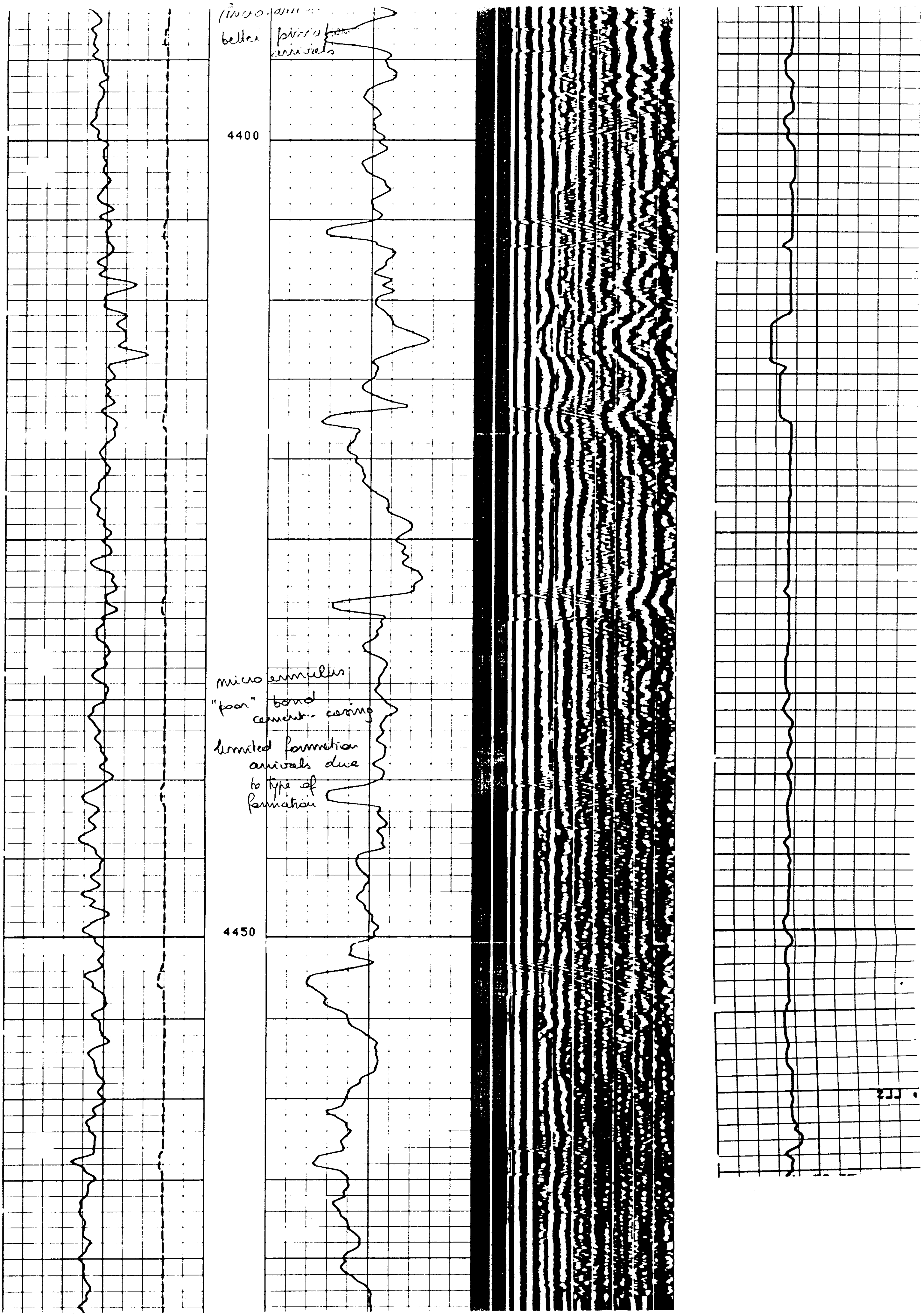
Micro-annulus
but good
formation arrivals

Excellent bond
- change in transit time
- no indication of micro-annulus
- good formation arrivals



micro-annulus
- good formation arrivals (correspondence between VDL and SONIC) indicating good bond to formation


4350



(micro-annu

better formation arrivals

micro annulus
"poor" bond cement - casing
limited formation arrivals due to type of formation

7" TIE-BACK

PETROFINA EXPLORATION AUSTRALIA S.A.

CASING AND CEMENTING REPORT

WELL Anemone-1A FIELD Vic/P20 CASING SIZE 7" Tie-back SET AT 2945 m

DRILLERS TD ______ m ______ LAST CASING SIZE ______ SET AT ______ m

JOINTS RECEIVED 149 OF VAM WEIGHT 29 LB/FT GRADE N80 LENGTH ______ m

AMOUNT USED 140 JTS LENGTH 1720.7 m No. JTS FAIL RABBIT ______ No. JTS DAMAGED ______

(including Shoe & Float Jts but not Hanger Pup) TOTAL REJECTED ______ TOTAL BACKLOADED 9

JOINTS RECEIVED 91 OF New VAM WEIGHT 29 LB/FT GRADE N80 LENGTH ______ m

AMOUNT USED 75 JTS LENGTH 941.03 m No. JTS FAIL RABBIT ______ No. JTS DAMAGED ______

TOTAL REJECTED ______ TOTAL BACKLOADED 16

CASING DATA

No. OF PIECES	SIZE–WT–GRADE–TYPE THREAD	MAKE UP LENGTH	SETTING DEPTH
1	TIW - LG6 seal - 7" 29ppf VAM	0.30	2945.00
1	7" 29ppf N80 VAM	13.56	2944.70
1	TIW Orifice Collar 7" VAM	0.30	2931.14
139	7" 29ppf N80 VAM	1707.14	2930.84
1	X/O 7" VAM x New VAM	5.01	1223.70
75	7" 29ppf N80 New VAM	941.03	1218.69
1	7" 29ppf N80 New VAM Pup	6.60	277.66
1	7" 29ppf N80 New VAm Pup	4.05	271.06
1	7" 29ppf N80 New VAM Pup	6.60	267.01
1	7" 29ppf N80 New VAM Hanger Pup	2.72	260.41
	TOP OF ______ TO RKB		257.69

CEMENTING DATA

SLURRY	CALCULATED TOP	CEMENT (SACKS & CLASS)	ADDITIVES (GAL/BBL)						MIX WEIGHT S.G.	YIELD FT3/SK
			HR-6L							
Tail	1445	610 G	0.5						1.90	1.15

No. OF PLUGS USED 2 OPEN HOLE EXCESS - CIRC. VOL 6 BBL CIRC TIME 5 MINS

MIXING CEMENT ______ MINS DISPLACE TIME ______ MINS DISPLACE VOL 341 BBLS RETURNS? Yes

DISPLACE PUMP PRESS 1660 PSI PLUG BUMP PRESS - PSI VOL LOST - BBLS FLOAT HOLD? Yes

SPACERS 5bbl water - 10bbl FLOCHECK 21 - 5bbl water

CENTRALISERS USED: No SPACING ______

REMARKS: ______

CEMENT COMPANY Halliburton DRILLING SUPERVISOR A. Paterson

CEMENTER P. Watson DRILLING ENGINEER B. de Vinck DATE 18.9.89

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***********************  *******************************  ******************
*   CASING LIST ¶                                   Page no:  1    *
*****************************************************************************
*    Company : PETROFINA EXPL AUSTRALIA    Shoe @:    2945.0   mtr       7"
*   Location : VIC P20                  Casing OD:     17.780  cm
*       Well : ANEMONE - 1A             Casing ID:     15.707  cm   TIE-BAC
*        Rig : ZAPATA ARCTIC             Cas wght:      43.16  kg/mtr
*----------------------------------------------------------------------------
*   Hook wght:      53.50  ton            Mud wght:       1.53  kg/ltr
*****************************************************************************
* No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*   Designation
*     *   mtr    *   mtr    *   mtr    *   ton    *  mtr3    *
*-----*----------*----------*----------*----------*----------*---------------
*     *     0.30 *     0.30 *  2944.70 *    53.51 *     0.00 *LG6 NIPPLE
*   1 *    13.56 *    13.86 *  2931.14 *    53.98 *     0.07 *240 - BP VAM
*     *     0.30 *    14.16 *  2930.84 *    53.99 *     0.08 *ORIFICE COLLAR
*   2 *    12.56 *    26.72 *  2918.28 *    54.42 *     0.14 *239
*   3 *    13.63 *    40.35 *  2904.65 *    54.90 *     0.22 *238
*   4 *    11.48 *    51.83 *  2893.17 *    55.30 *     0.28 *237
*   5 *    12.95 *    64.78 *  2880.22 *    55.75 *     0.35 *236
    6 *    11.91 *    76.69 *  2868.31 *    56.16 *     0.42 *235
    7 *    13.44 *    90.13 *  2854.87 *    56.63 *     0.49 *234
*   8 *    11.77 *   101.90 *  2843.10 *    57.04 *     0.55 *233
*   9 *    13.27 *   115.17 *  2829.83 *    57.50 *     0.63 *232
*  10 *    13.13 *   128.30 *  2816.70 *    57.96 *     0.70 *231
*  11 *    13.13 *   141.43 *  2803.57 *    58.42 *     0.77 *230
*  12 *    13.70 *   155.13 *  2789.87 *    58.89 *     0.84 *229
*  13 *    13.52 *   168.65 *  2776.35 *    59.36 *     0.92 *228
*  14 *    13.54 *   182.19 *  2762.81 *    59.83 *     0.99 *227
*  15 *    13.34 *   195.53 *  2749.47 *    60.30 *     1.07 *226
*  16 *    13.16 *   208.69 *  2736.31 *    60.76 *     1.14 *225
*  17 *    12.89 *   221.58 *  2723.42 *    61.21 *     1.21 *224
*  18 *    11.49 *   233.07 *  2711.93 *    61.60 *     1.27 *223
*  19 *    11.74 *   244.81 *  2700.19 *    62.01 *     1.33 *222
*  20 *    11.76 *   256.57 *  2688.43 *    62.42 *     1.40 *221
*  21 *    11.76 *   268.33 *  2676.67 *    62.83 *     1.46 *220
*  22 *    11.81 *   280.14 *  2664.86 *    63.24 *     1.53 *219
*  23 *    12.49 *   292.63 *  2652.37 *    63.68 *     1.59 *217-left 218 out
*  24 *    13.13 *   305.76 *  2639.24 *    64.13 *     1.67 *216
*  25 *    11.47 *   317.23 *  2627.77 *    64.53 *     1.73 *214-left 215 out
*  26 *    11.16 *   328.39 *  2616.61 *    64.92 *     1.79 *212-left 213 out
*  27 *    11.02 *   339.41 *  2605.59 *    65.31 *     1.85 *211
*  28 *    11.64 *   351.05 *  2593.95 *    65.71 *     1.91 *210
*  29 *    12.54 *   363.59 *  2581.41 *    66.15 *     1.98 *209
*  30 *    13.22 *   376.81 *  2568.19 *    66.61 *     2.05 *208
*  31 *    13.34 *   390.15 *  2554.85 *    67.07 *     2.13 *206-left 207 out
*  32 *    13.50 *   403.65 *  2541.35 *    67.54 *     2.20 *205
*  33 *    13.43 *   417.08 *  2527.92 *    68.01 *     2.27 *204
*  34 *    12.46 *   429.54 *  2515.46 *    68.44 *     2.34 *200
*  35 *    11.81 *   441.35 *  2503.65 *    68.85 *     2.41 *202
*  36 *    12.46 *   453.81 *  2491.19 *    69.29 *     2.47 *201
*  37 *    12.72 *   466.53 *  2478.47 *    69.73 *     2.54 *203
*  38 *    11.93 *   478.46 *  2466.54 *    70.14 *     2.61 *198
*  39 *    11.74 *   490.20 *  2454.80 *    70.55 *     2.67 *199
*  40 *    11.61 *   501.81 *  2443.19 *    70.96 *     2.74 *197
*  41 *    12.63 *   514.44 *  2430.56 *    71.40 *     2.80 *196
*  42 *    11.42 *   525.86 *  2419.14 *    71.79 *     2.87 *195
*  43 *    12.12 *   537.98 *  2407.02 *    72.21 *     2.93 *194
*  44 *    12.96 *   550.94 *  2394.06 *    72.67 *     3.00 *193- left 192 out
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**********************************************************************
*   CASING LIST ¶                                  Page no:  2     *
**********************************************************************
*    Company : PETROFINA EXPL AUSTRALIA    Shoe @:     2945.0   mtr
*   Location : VIC P20                   Casing OD:      17.780  cm
*       Well : ANEMONE - 1A              Casing ID:      15.707  cm
*        Rig : ZAPATA ARCTIC              Cas wght:      43.16  kg/mtr
*----------------------------------------------------------------------
*   Hook wght:       53.50   ton           Mud wght:       1.53  kg/ltr
**********************************************************************
* No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*   Designation
*     *   mtr    *   mtr    *   mtr    *   ton    *  mtr3    *
*-----*----------*----------*----------*----------*----------*----------------
*  45 *    12.67 *   563.61 *  2381.39 *    73.11 *     3.07 *190- left 191 out
*  46 *    12.84 *   576.45 *  2368.55 *    73.55 *     3.14 *189 - BP VAM
*  47 *    11.98 *   588.43 *  2356.57 *    73.97 *     3.21 *188 - BHP VAM
*  48 *    11.89 *   600.32 *  2344.68 *    74.38 *     3.27 *187
*  49 *    12.04 *   612.36 *  2332.64 *    74.80 *     3.34 *186
*  50 *    11.99 *   624.35 *  2320.65 *    75.22 *     3.40 *185
*  51 *    12.05 *   636.40 *  2308.60 *    75.64 *     3.47 *184
*  52 *    11.84 *   648.24 *  2296.76 *    76.05 *     3.53 *183
*  53 *    11.99 *   660.23 *  2284.77 *    76.47 *     3.60 *182
*  54 *    12.03 *   672.26 *  2272.74 *    76.89 *     3.66 *181
*  55 *    11.99 *   684.25 *  2260.75 *    77.30 *     3.73 *180
*  56 *    12.03 *   696.28 *  2248.72 *    77.72 *     3.80 *179
*  57 *    11.98 *   708.26 *  2236.74 *    78.14 *     3.86 *178
*  58 *    11.99 *   720.25 *  2224.75 *    78.56 *     3.93 *177
*  59 *    12.03 *   732.28 *  2212.72 *    78.98 *     3.99 *176
*  60 *    11.98 *   744.26 *  2200.74 *    79.39 *     4.06 *175
*  61 *    12.03 *   756.29 *  2188.71 *    79.81 *     4.12 *174
*  62 *    11.99 *   768.28 *  2176.72 *    80.23 *     4.19 *173
*  63 *    11.97 *   780.25 *  2164.75 *    80.64 *     4.25 *172
*  64 *    11.97 *   792.22 *  2152.78 *    81.06 *     4.32 *171
*  65 *    11.98 *   804.20 *  2140.80 *    81.48 *     4.38 *170
*  66 *    11.99 *   816.19 *  2128.81 *    81.89 *     4.45 *169
*  67 *    12.03 *   828.22 *  2116.78 *    82.31 *     4.52 *168
*  68 *    11.99 *   840.21 *  2104.79 *    82.73 *     4.58 *167
*  69 *    11.98 *   852.19 *  2092.81 *    83.15 *     4.65 *166
*  70 *    11.98 *   864.17 *  2080.83 *    83.56 *     4.71 *165
*  71 *    10.82 *   874.99 *  2070.01 *    83.94 *     4.77 *164
*  72 *    12.02 *   887.01 *  2057.99 *    84.36 *     4.84 *163
   73 *    11.97 *   898.98 *  2046.02 *    84.78 *     4.90 *162
*  74 *    11.99 *   910.97 *  2034.03 *    85.19 *     4.97 *161
*  75 *    12.02 *   922.99 *  2022.01 *    85.61 *     5.03 *160
*  76 *    12.06 *   935.05 *  2009.95 *    86.03 *     5.10 *159
*  77 *    11.83 *   946.88 *  1998.12 *    86.44 *     5.16 *158
*  78 *    12.02 *   958.90 *  1986.10 *    86.86 *     5.23 *157
*  79 *    12.03 *   970.93 *  1974.07 *    87.28 *     5.29 *156
*  80 *    11.80 *   982.73 *  1962.27 *    87.69 *     5.36 *155
*  81 *    11.47 *   994.20 *  1950.80 *    88.09 *     5.42 *154
*  82 *    11.98 *  1006.18 *  1938.82 *    88.51 *     5.49 *153
*  83 *    12.03 *  1018.21 *  1926.79 *    88.92 *     5.55 *152
*  84 *    12.04 *  1030.25 *  1914.75 *    89.34 *     5.62 *151
*  85 *    11.99 *  1042.24 *  1902.76 *    89.76 *     5.68 *150
*  86 *    12.03 *  1054.27 *  1890.73 *    90.18 *     5.75 *149
*  87 *    12.02 *  1066.29 *  1878.71 *    90.60 *     5.81 *148
*  88 *    11.99 *  1078.28 *  1866.72 *    91.01 *     5.88 *147
*  89 *    11.99 *  1090.27 *  1854.73 *    91.43 *     5.94 *146
*  90 *    11.98 *  1102.25 *  1842.75 *    91.85 *     6.01 *145
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*****************************************************************************
*   CASING LIST ¶                                       Page no:  3       *
*****************************************************************************
*    Company : PETROFINA EXPL AUSTRALIA    Shoe @:     2945.0    mtr
*   Location : VIC P20                   Casing OD:     17.780   cm
*       Well : ANEMONE - 1A              Casing ID:     15.707   cm
*        Rig : ZAPATA ARCTIC              Cas wght:     43.16   kg/mtr
*-----------------------------------------------------------------------------
*   Hook wght:      53.50   ton           Mud wght:      1.53   kg/ltr
*****************************************************************************
* No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*   Designation
*     *   mtr    *   mtr    *   mtr    *   ton    *   mtr3   *
*-----*----------*----------*----------*----------*----------*----------------
*  91 *     11.99 *  1114.24 *  1830.76 *     92.27 *      6.08 *144
*  92 *     12.02 *  1126.26 *  1818.74 *     92.68 *      6.14 *143
*  93 *     12.06 *  1138.32 *  1806.68 *     93.10 *      6.21 *142
*  94 *     12.01 *  1150.33 *  1794.67 *     93.52 *      6.27 *141
*  95 *     11.96 *  1162.29 *  1782.71 *     93.94 *      6.34 *140
*  96 *     11.96 *  1174.25 *  1770.75 *     94.35 *      6.40 *139
*  97 *     12.00 *  1186.25 *  1758.75 *     94.77 *      6.47 *138
*  98 *     11.97 *  1198.22 *  1746.78 *     95.19 *      6.53 *137
*  99 *     12.01 *  1210.23 *  1734.77 *     95.61 *      6.60 *136
* 100 *     11.97 *  1222.20 *  1722.80 *     96.02 *      6.66 *135
* 101 *     11.96 *  1234.16 *  1710.84 *     96.44 *      6.73 *134
* 102 *     12.01 *  1246.17 *  1698.83 *     96.86 *      6.79 *133
* 103 *     11.97 *  1258.14 *  1686.86 *     97.27 *      6.86 *132
* 104 *     11.99 *  1270.13 *  1674.87 *     97.69 *      6.93 *131
* 105 *     11.97 *  1282.10 *  1662.90 *     98.11 *      6.99 *130
* 106 *     11.97 *  1294.07 *  1650.93 *     98.52 *      7.06 *129
* 107 *     11.97 *  1306.04 *  1638.96 *     98.94 *      7.12 *128
* 108 *     11.97 *  1318.01 *  1626.99 *     99.36 *      7.19 *127
* 109 *     12.01 *  1330.02 *  1614.98 *     99.77 *      7.25 *126
* 110 *     11.99 *  1342.01 *  1602.99 *    100.19 *      7.32 *125- left 124 out
* 111 *     12.02 *  1354.03 *  1590.97 *    100.61 *      7.38 *123
* 112 *     11.96 *  1365.99 *  1579.01 *    101.03 *      7.45 *122
* 113 *     11.97 *  1377.96 *  1567.04 *    101.44 *      7.51 *121
* 114 *     12.02 *  1389.98 *  1555.02 *    101.86 *      7.58 *120
* 115 *     12.02 *  1402.00 *  1543.00 *    102.28 *      7.64 *119
* 116 *     11.98 *  1413.98 *  1531.02 *    102.70 *      7.71 *118
* 117 *     11.97 *  1425.95 *  1519.05 *    103.11 *      7.78 *117
* 118 *     12.06 *  1438.01 *  1506.99 *    103.53 *      7.84 *116
* 119 *     12.02 *  1450.03 *  1494.97 *    103.95 *      7.91 *115 - BHP VAM
* 120 *     13.29 *  1463.32 *  1481.68 *    104.41 *      7.98 *114 - TASMAN VAM
* 121 *     13.42 *  1476.74 *  1468.26 *    104.88 *      8.05 *113
* 122 *     13.36 *  1490.10 *  1454.90 *    105.34 *      8.12 *112
* 123 *     11.43 *  1501.53 *  1443.47 *    105.74 *      8.19 *111
* 124 *     11.34 *  1512.87 *  1432.13 *    106.14 *      8.25 *110
* 125 *     13.30 *  1526.17 *  1418.83 *    106.60 *      8.32 *109
* 126 *     11.34 *  1537.51 *  1407.49 *    106.99 *      8.38 *107
* 127 *     13.51 *  1551.02 *  1393.98 *    107.46 *      8.46 *106
* 128 *     13.33 *  1564.35 *  1380.65 *    107.93 *      8.53 *105
* 129 *     13.36 *  1577.71 *  1367.29 *    108.39 *      8.60 *104
* 130 *     11.45 *  1589.16 *  1355.84 *    108.79 *      8.67 *103
* 131 *     13.39 *  1602.55 *  1342.45 *    109.26 *      8.74 *102
* 132 *     13.58 *  1616.13 *  1328.87 *    109.73 *      8.81 *101
* 133 *     13.55 *  1629.68 *  1315.32 *    110.20 *      8.89 *108
* 134 *     13.71 *  1643.39 *  1301.61 *    110.68 *      8.96 *100
* 135 *     13.15 *  1656.54 *  1288.46 *    111.14 *      9.03 *99
* 136 *     13.55 *  1670.09 *  1274.91 *    111.61 *      9.11 *98
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******************************************************************************
*   CASING LIST ¶                                        Page no:  4      *
******************************************************************************
*    Company : PETROFINA EXPL AUSTRALIA     Shoe @:     2945.0   mtr
*   Location : VIC P20                   Casing OD:      17.780  cm
*       Well : ANEMONE - 1A              Casing ID:      15.707  cm
*        Rig : ZAPATA ARCTIC              Cas wght:      43.16  kg/mtr
*-----------------------------------------------------------------------------
*   Hook wght:      53.50   ton           Mud wght:        1.53  kg/ltr
******************************************************************************
* No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*   Designation
*     *   mtr    *   mtr    *   mtr    *   ton    *   mtr3   *
*-----*----------*----------*----------*----------*----------*----------------
* 137 *     13.37 *  1683.46 *  1261.54 *   112.07 *      9.18 *97
* 138 *     11.98 *  1695.44 *  1249.56 *   112.49 *      9.24 *96
* 139 *     12.62 *  1708.06 *  1236.94 *   112.93 *      9.31 *94-left 95-93 out
* 140 *     13.24 *  1721.30 *  1223.70 *   113.39 *      9.39 *92 - TASMAN VAM
*     *      5.01 *  1726.31 *  1218.69 *   113.52 *      9.40 *X/O C NEW VAMxVAM
* 141 *     12.25 *  1738.56 *  1206.44 *   113.95 *      9.47 *91 - TAS NEW VAM
* 142 *     12.11 *  1750.67 *  1194.33 *   114.37 *      9.54 *90
* 143 *     13.10 *  1763.77 *  1181.23 *   114.83 *      9.61 *89
* 144 *     12.67 *  1776.44 *  1168.56 *   115.27 *      9.68 *88
* 145 *     12.02 *  1788.46 *  1156.54 *   115.69 *      9.74 *87
* 146 *     12.11 *  1800.57 *  1144.43 *   116.11 *      9.81 *86
* 147 *     11.66 *  1812.23 *  1132.77 *   116.51 *      9.87 *85
* 148 *     12.35 *  1824.58 *  1120.42 *   116.94 *      9.94 *84
* 149 *     12.36 *  1836.94 *  1108.06 *   117.37 *     10.01 *83
* 150 *     12.72 *  1849.66 *  1095.34 *   117.81 *     10.08 *82
* 151 *     12.07 *  1861.73 *  1083.27 *   118.23 *     10.14 *81
*  52 *     13.20 *  1874.93 *  1070.07 *   118.69 *     10.21 *80
* 153 *     12.59 *  1887.52 *  1057.48 *   119.13 *     10.28 *79
* 154 *     12.90 *  1900.42 *  1044.58 *   119.58 *     10.35 *78
* 155 *     13.06 *  1913.48 *  1031.52 *   120.04 *     10.42 *72
* 156 *     12.84 *  1926.32 *  1018.68 *   120.48 *     10.49 *73
* 157 *     12.58 *  1938.90 *  1006.10 *   120.92 *     10.56 *74
* 158 *     13.26 *  1952.16 *   992.84 *   121.38 *     10.63 *75
* 159 *     11.42 *  1963.58 *   981.42 *   121.78 *     10.70 *76
* 160 *     12.82 *  1976.40 *   968.60 *   122.22 *     10.77 *77
* 161 *     12.65 *  1989.05 *   955.95 *   122.67 *     10.84 *51
* 162 *     12.50 *  2001.55 *   943.45 *   123.10 *     10.90 *71
* 163 *     13.09 *  2014.64 *   930.36 *   123.56 *     10.98 *59
  164 *     12.67 *  2027.31 *   917.69 *   124.00 *     11.04 *49
* 165 *     12.72 *  2040.03 *   904.97 *   124.44 *     11.11 *68
* 166 *     12.45 *  2052.48 *   892.52 *   124.87 *     11.18 *55
* 167 *     12.49 *  2064.97 *   880.03 *   125.31 *     11.25 *62-leave 57 out
* 168 *     12.60 *  2077.57 *   867.43 *   125.75 *     11.32 *65
* 169 *     12.94 *  2090.51 *   854.49 *   126.20 *     11.39 *67
* 170 *     12.43 *  2102.94 *   842.06 *   126.63 *     11.46 *60
* 171 *     11.99 *  2114.93 *   830.07 *   127.05 *     11.52 *61
* 172 *     12.51 *  2127.44 *   817.56 *   127.48 *     11.59 *56
* 173 *     13.10 *  2140.54 *   804.46 *   127.94 *     11.66 *63
* 174 *     12.70 *  2153.24 *   791.76 *   128.38 *     11.73 *48
* 175 *     12.92 *  2166.16 *   778.84 *   128.83 *     11.80 *69
* 176 *     12.84 *  2179.00 *   766.00 *   129.27 *     11.87 *64
*  77 *     12.62 *  2191.62 *   753.38 *   129.71 *     11.94 *54
* 178 *     12.96 *  2204.58 *   740.42 *   130.16 *     12.01 *53
* 179 *     11.73 *  2216.31 *   728.69 *   130.57 *     12.07 *66
* 180 *     13.21 *  2229.52 *   715.48 *   131.03 *     12.15 *70
* 181 *     12.02 *  2241.54 *   703.46 *   131.45 *     12.21 *58
```

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*********************** ******************************** ***********************
*   CASING LIST ¶                                    Page no:  5    *
********************************************************************************
*    Company : PETROFINA EXPL AUSTRALIA    Shoe @:    2945.0   mtr
*   Location : VIC P20                  Casing OD:     17.780  cm
*       Well : ANEMONE - 1A             Casing ID:     15.707  cm
*        Rig : ZAPATA ARCTIC             Cas wght:     43.16  kg/mtr
*------------------------------------------------------------------------------
*   Hook wght:      53.50   ton           Mud wght:       1.53  kg/ltr
********************************************************************************
* No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*  Designation
*     *   mtr    *   mtr    *   mtr    *   ton    *   mtr3   *
*-----*----------*----------*----------*----------*----------*----------------
* 182 *    13.09 *  2254.63 *   690.37 *   131.91 *    12.28 *50
* 183 *    11.82 *  2266.45 *   678.55 *   132.32 *    12.35 *47
* 184 *    12.82 *  2279.27 *   665.73 *   132.76 *    12.42 *46
* 185 *    12.97 *  2292.24 *   652.76 *   133.21 *    12.49 *45
* 186 *    12.81 *  2305.05 *   639.95 *   133.66 *    12.56 *43- left 44 out
* 187 *    13.09 *  2318.14 *   626.86 *   134.12 *    12.63 *42
* 188 *    12.06 *  2330.20 *   614.80 *   134.54 *    12.70 *40- left 41 out
  189 *    12.57 *  2342.77 *   602.23 *   134.97 *    12.76 *39
  190 *    13.14 *  2355.91 *   589.09 *   135.43 *    12.84 *38
* 191 *    12.52 *  2368.43 *   576.57 *   135.87 *    12.90 *37
* 192 *    13.06 *  2381.49 *   563.51 *   136.32 *    12.98 *36
* 193 *    12.31 *  2393.80 *   551.20 *   136.75 *    13.04 *35
* 194 *    11.51 *  2405.31 *   539.69 *   137.15 *    13.11 *34
* 195 *    13.03 *  2418.34 *   526.66 *   137.60 *    13.18 *33
* 196 *    11.95 *  2430.29 *   514.71 *   138.02 *    13.24 *32
* 197 *    12.73 *  2443.02 *   501.98 *   138.46 *    13.31 *31
* 198 *    11.57 *  2454.59 *   490.41 *   138.86 *    13.37 *30
* 199 *    12.57 *  2467.16 *   477.84 *   139.30 *    13.44 *29
* 200 *    12.49 *  2479.65 *   465.35 *   139.74 *    13.51 *28
* 201 *    12.74 *  2492.39 *   452.61 *   140.18 *    13.58 *27
* 202 *    12.90 *  2505.29 *   439.71 *   140.63 *    13.65 *26
* 203 *    12.84 *  2518.13 *   426.87 *   141.07 *    13.72 *25
* 204 *    12.01 *  2530.14 *   414.86 *   141.49 *    13.79 *17
* 205 *    12.14 *  2542.28 *   402.72 *   141.92 *    13.85 *23
* 206 *    12.29 *  2554.57 *   390.43 *   142.34 *    13.92 *18
* 207 *    13.27 *  2567.84 *   377.16 *   142.80 *    13.99 *15
  208 *    11.79 *  2579.63 *   365.37 *   143.21 *    14.06 *11
* 209 *    12.60 *  2592.23 *   352.77 *   143.65 *    14.13 *9
* 210 *    12.51 *  2604.74 *   340.26 *   144.09 *    14.19 *8
* 211 *    12.65 *  2617.39 *   327.61 *   144.53 *    14.26 *2
* 212 *    12.56 *  2629.95 *   315.05 *   144.97 *    14.33 *22
* 213 *    12.55 *  2642.50 *   302.50 *   145.40 *    14.40 *3
* 214 *    12.45 *  2654.95 *   290.05 *   145.84 *    14.47 *6
* 215 *    12.39 *  2667.34 *   277.66 *   146.27 *    14.53 *19
*     *     6.60 *  2673.94 *   271.06 *   146.44 *    14.56 *pup 6 m
*     *     4.05 *  2677.99 *   267.01 *   146.55 *    14.57 *pup 4 m
*     *     6.60 *  2684.59 *   260.41 *   146.73 *    14.59 *pup 6 m
*     *     2.72 *  2687.31 *   257.69 *   146.80 *    14.60 *hanger pup
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5" LINER

PETROFINA EXPLORATION AUSTRALIA S.A.

CASING AND CEMENTING REPORT

WELL Anemone-1A FIELD Vic/P20 CASING SIZE 5" SET AT 4773 m

DRILLERS TD 4775 m LAST CASING SIZE 7" SET AT 4492.5 m

JOINTS RECEIVED 28 OF SFJ-P WEIGHT 18 LB/FT GRADE N80 LENGTH ___ m

AMOUNT USED 2 JTS LENGTH ___ m No. JTS FAIL RABBIT ___ No. JTS DAMAGED ___

(including Shoe & Float Jts but not Hanger Pup) TOTAL REJECTED ___ TOTAL BACKLOADED 26

JOINTS RECEIVED 33 OF FL-4S WEIGHT 18 LB/FT GRADE N80 LENGTH ___ m

AMOUNT USED 31 JTS LENGTH ___ m No. JTS FAIL RABBIT ___ No. JTS DAMAGED ___

TOTAL REJECTED ___ TOTAL BACKLOADED 2

CASING DATA

No. OF PIECES	SIZE–WT–GRADE–TYPE THREAD	MAKE UP LENGTH	SETTING DEPTH
1	TIW Shoe 5" N80 18ppf SFJ-P	0.79	4773.00
2	5" 18ppf N80 SPJ-P	24.71	4772.21
1	TIW-HSSR Collar 5" 18ppf N80 SFJ-P	0.33	4747.50
1	X/Over 5" N80 18ppf SFJ-P Pin x		
	FL-4S Box	1.77	4747.17
31	5" 18ppf N80 FL-4S	398.44	4745.40
1	X/Over 5" N80 18ppf FL-4S Pin x	1.57	4346.96
	SFJ-P Box		
1	TIW Hanger 5" x 7" N80 18ppf SFJ-P	2.49	4345.39
1	TIW-LG6 Set Collar 5" N80 18ppf	4.50	4342.90
	TOP OF Liner TO RKB		4338.40

CEMENTING DATA

SLURRY	CALCULATED TOP	CEMENT (SACKS & CLASS)	ADDITIVES (GAL/BBL)						MIX WEIGHT S.G.	YIELD FT^3/SK
			HR-6L	Gas Stop						
1	4338	537 G	1.4	0.7%	(BWOC)				1.90	1.15

No. OF PLUGS USED 1 OPEN HOLE EXCESS 20% CIRC. VOL 1300 BBL CIRC TIME 185 MINS

MIXING CEMENT 43 MINS DISPLACE TIME 57 MINS DISPLACE VOL 223.5 BBLS RETURNS? Yes

DISPLACE PUMP PRESS 850 PSI PLUG BUMP PRESS 2000 PSI VOL LOST No BBLS FLOAT HOLD? Yes

SPACERS 20bbl dual spacer - 5bbl water - 10bbl Flocheck 21 - 5bbl water

CENTRALISERS USED: 14 SPACING Joint Nos: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 22, 25, 28, 31

REMARKS: Sheared liner wiper plug with 2500psi. Displaced at 5 bpm and reduced to 3 bpm for last 40bbl of displacement

CEMENT COMPANY Halliburton DRILLING SUPERVISOR E. Snowling

CEMENTER P. Watson DRILLING ENGINEER B. de Vinck DATE 11.9.89

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**********************************************************************
*   CASING LIST ¶                                   Page no:  1    *
**********************************************************************
*    Company : PETROFINA EXPLORATION          Shoe @:   4773.0   mtr     5"
*   Location : VIC/P20                   Casing OD:     12.700  cm
*       Well : ANEMONE NO. 1A            Casing ID:     10.544  cm    LINER
r        Rig : ZAPATA ARCTIC              Cas wght:      26.79  kg/mtr
----------------------------------------------------------------------
*   Hook wght:       54.43   ton            Mud wght:      1.52  kg/ltr
**********************************************************************
* No: * Jnt.Lngth* Cas.Lngth*Dpth fr.RT* Hook Load*Displ.Vol.*   Designation
*     *    mtr   *    mtr   *    mtr   *    ton   *   mtr3   *
*-----*----------*----------*----------*----------*----------*--------------
*     *     0.00 *     0.00 *  4773.00 *    54.43 *     0.00 *shoe depth
*     *     0.79 *     0.79 *  4772.21 *    54.45 *     0.00 *SET SHOE SFJ-P
*   1 *    13.15 *    13.94 *  4759.06 *    54.73 *     0.05 *61 SFJ-P
*   2 *    11.56 *    25.50 *  4747.50 *    54.97 *     0.10 *62 SFJ-P
*     *     0.33 *    25.83 *  4747.17 *    54.98 *     0.10 *LDG CLR  SFJ-P
*     *     1.77 *    27.60 *  4745.40 *    55.02 *     0.11 *CROSSOVER E
*   3 *    13.19 *    40.79 *  4732.21 *    55.30 *     0.16 *33 FL-4S
*   4 *    12.90 *    53.69 *  4719.31 *    55.57 *     0.21 *32 FL-4S
*   5 *    11.93 *    65.62 *  4707.38 *    55.81 *     0.26 *31 FL-4S
*   6 *    13.21 *    78.83 *  4694.17 *    56.09 *     0.31 *30 FL-4S
*   7 *    13.31 *    92.14 *  4680.86 *    56.37 *     0.36 *29 FL-4S
*   8 *    12.57 *   104.71 *  4668.29 *    56.63 *     0.41 *28 FL-4S
*   9 *    13.42 *   118.13 *  4654.87 *    56.91 *     0.46 *27 FL-4S
*  10 *    12.57 *   130.70 *  4642.30 *    57.17 *     0.51 *26 FL-4S / c
*  11 *    12.44 *   143.14 *  4629.86 *    57.43 *     0.56 *25 FL-4S / c
*  12 *    13.26 *   156.40 *  4616.60 *    57.70 *     0.61 *24 FL-4S / c
*  13 *    12.56 *   168.96 *  4604.04 *    57.96 *     0.66 *23 FL-4S / c
*  14 *    13.45 *   182.41 *  4590.59 *    58.24 *     0.72 *22 FL-4S / c
*  15 *    13.04 *   195.45 *  4577.55 *    58.52 *     0.77 *21 FL-4S / c
   16 *    13.01 *   208.46 *  4564.54 *    58.79 *     0.82 *20 FL-4S / c
   17 *    12.76 *   221.22 *  4551.78 *    59.05 *     0.87 *19 FL-4S / c
*  18 *    13.08 *   234.30 *  4538.70 *    59.32 *     0.92 *18 FL-4S / c
*  19 *    12.31 *   246.61 *  4526.39 *    59.58 *     0.97 *17 FL-4S / c
*  20 *    13.35 *   259.96 *  4513.04 *    59.86 *     1.02 *16 FL-4S
*  21 *    12.91 *   272.87 *  4500.13 *    60.13 *     1.07 *15 FL-4S
*  22 *    13.21 *   286.08 *  4486.92 *    60.40 *     1.12 *14 FL-4S / c
*  23 *    13.27 *   299.35 *  4473.65 *    60.68 *     1.18 *13 FL-4S
*  24 *    12.35 *   311.70 *  4461.30 *    60.93 *     1.23 *12 FL-4S
*  25 *    11.21 *   322.91 *  4450.09 *    61.17 *     1.27 *11 FL-4S / c
*  26 *    12.64 *   335.55 *  4437.45 *    61.43 *     1.32 *10 FL-4S
*  27 *    12.68 *   348.23 *  4424.77 *    61.69 *     1.37 *9  FL-4S
*  28 *    13.17 *   361.40 *  4411.60 *    61.97 *     1.42 *8  FL-4S / c
*  29 *    13.09 *   374.49 *  4398.51 *    62.24 *     1.47 *7  FL-4S
*  30 *    13.08 *   387.57 *  4385.43 *    62.51 *     1.52 *6  FL-4S
*  31 *    13.43 *   401.00 *  4372.00 *    62.79 *     1.58 *5  FL-4S / c
*  32 *    12.22 *   413.22 *  4359.78 *    63.05 *     1.63 *4  FL-4S
*  33 *    12.82 *   426.04 *  4346.96 *    63.31 *     1.68 *3  FL-4S
*     *     1.57 *   427.61 *  4345.39 *    63.36 *     1.68 *CROSSOVER C
*     *     2.49 *   430.10 *  4342.90 *    63.42 *     1.69 *HANGER     SFJ-
*     *     4.50 *   434.60 *  4338.40 *    63.54 *     1.71 *LG STG CLR SFJ-
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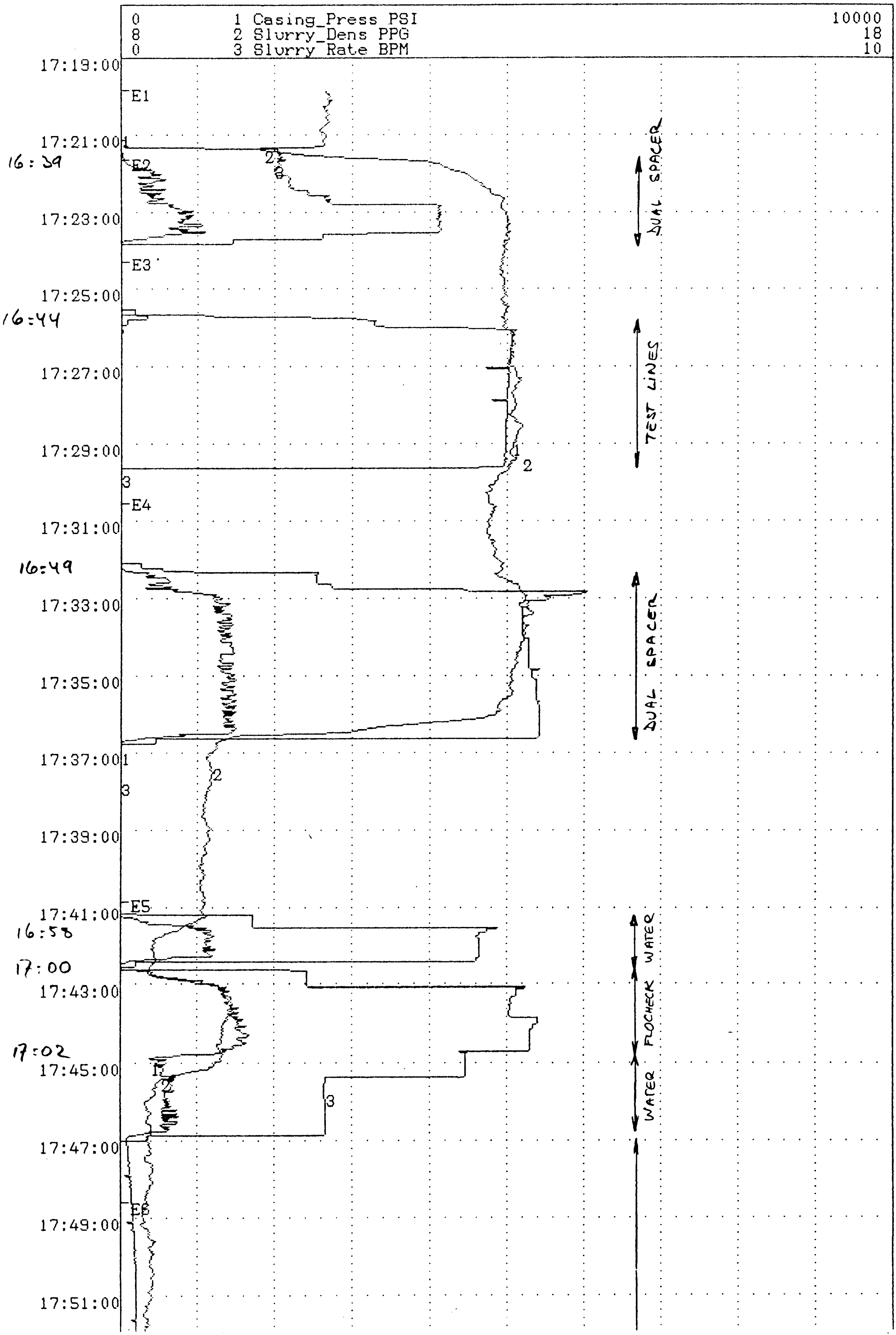
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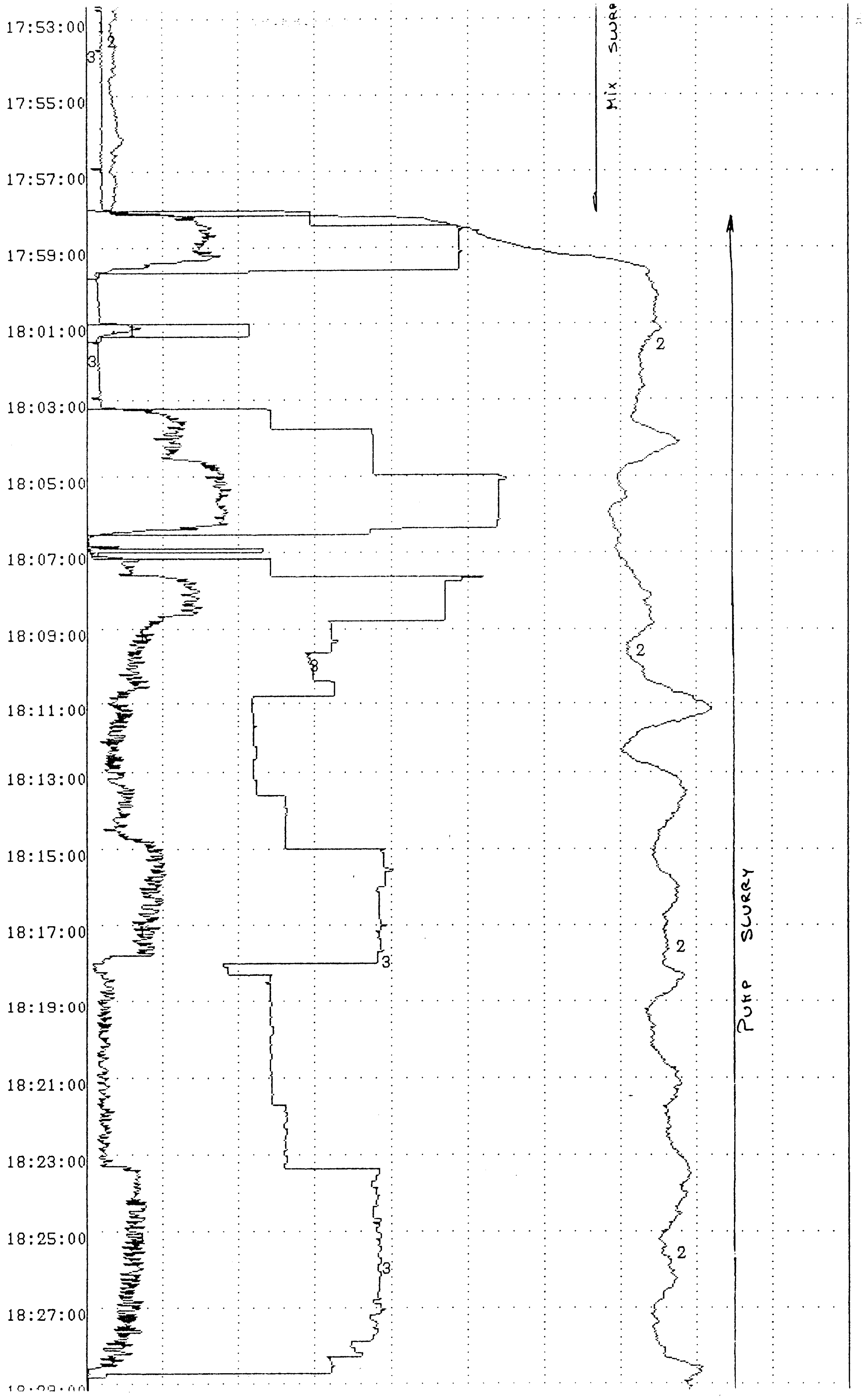
3
DUAL SPACER
TEST LINES
DUAL SPACER
WATER
FLOCHECK
WATER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2
3
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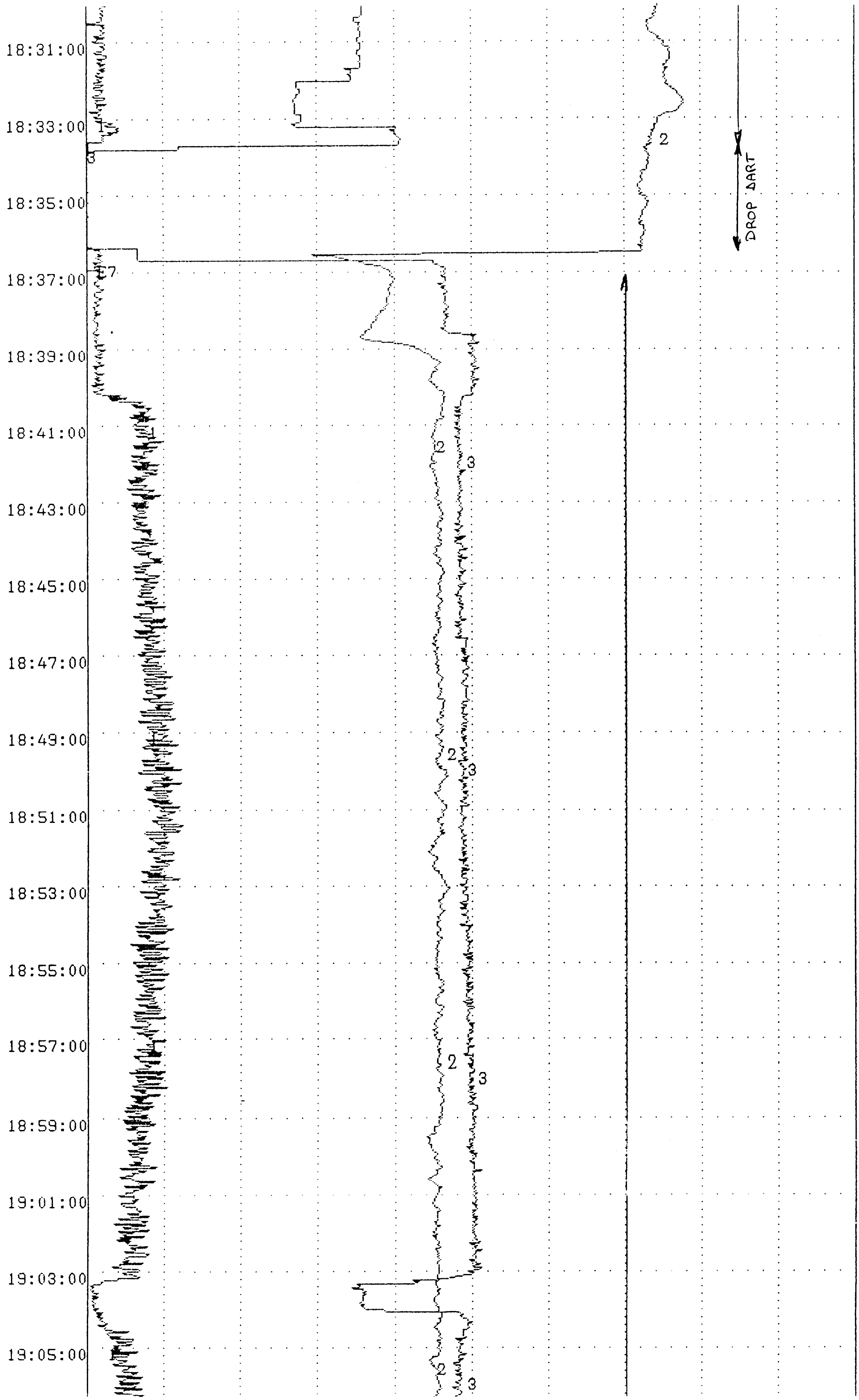
Pump slurry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DROP DART
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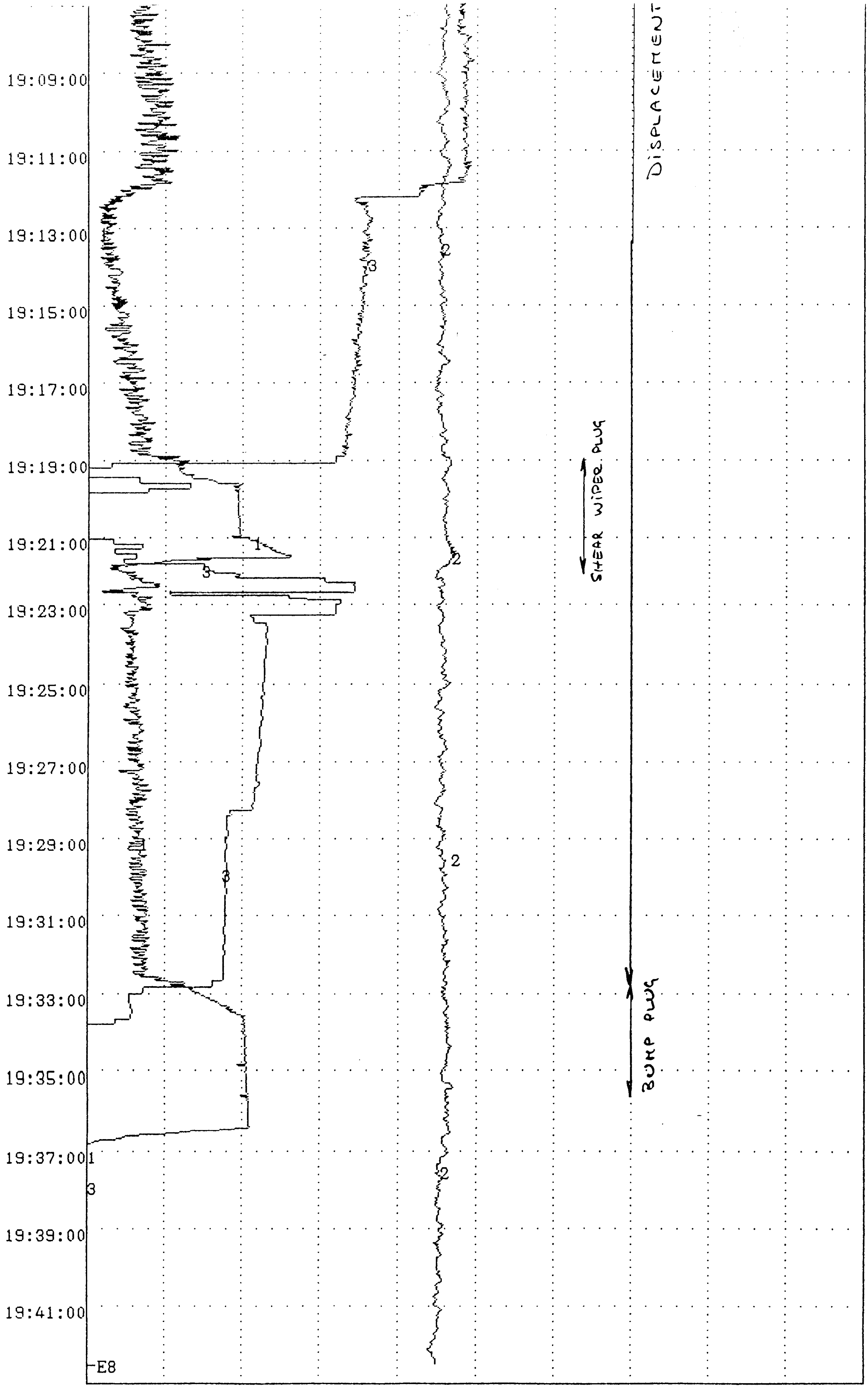
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1
2
3
E8
DISPLACEMENT
SHEAR WIPER PLUG
BUMP PLUG

Schlumberger

MAIN LOG

CSU Field Log

TT2 (US)		CBL (MV)	
300.00 100.00		0.0 50.000	
GR (GAPI)		CBL (MV)	VDL
0.0 150.00		50.000 100.00	200.00 1200.0

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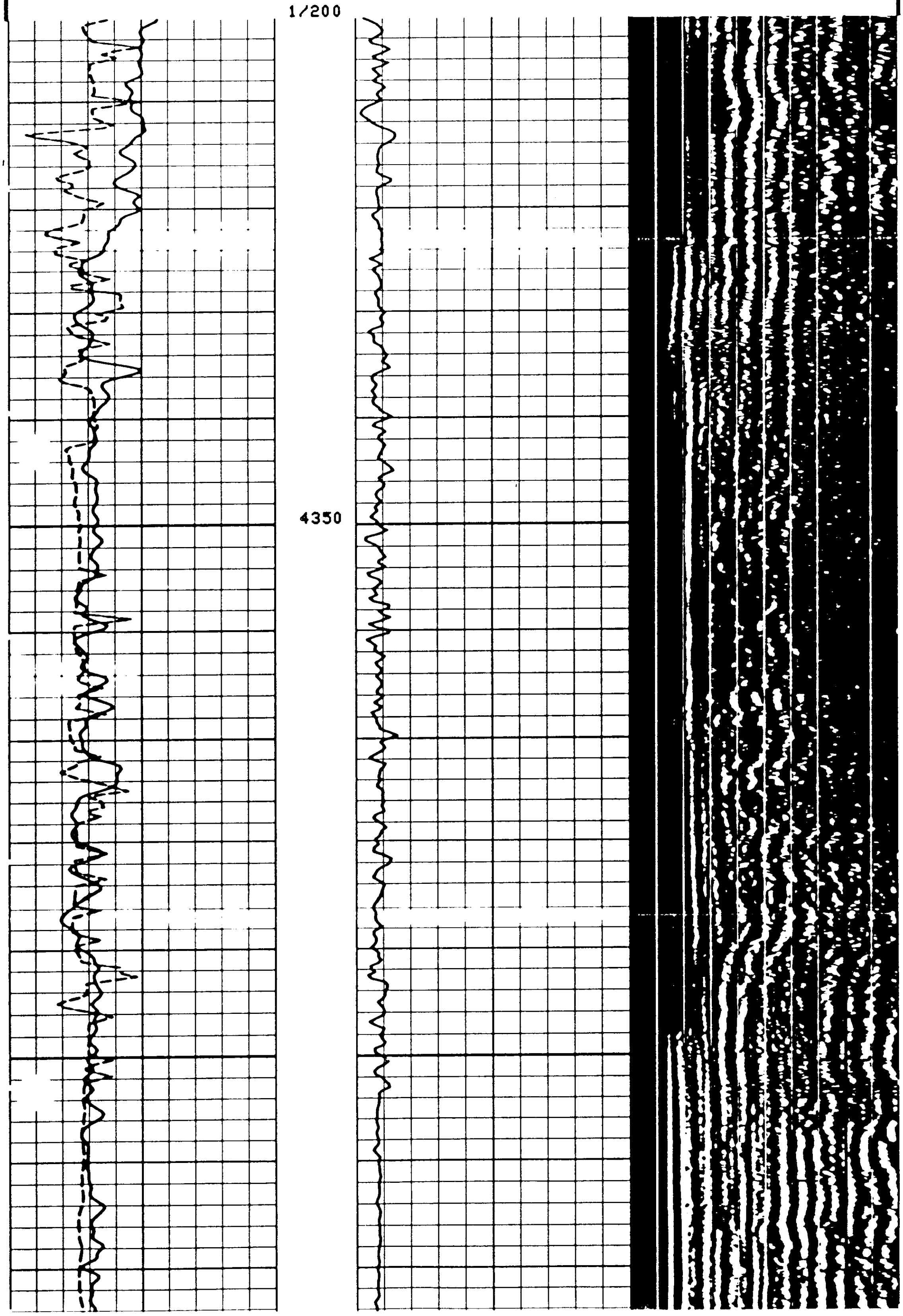

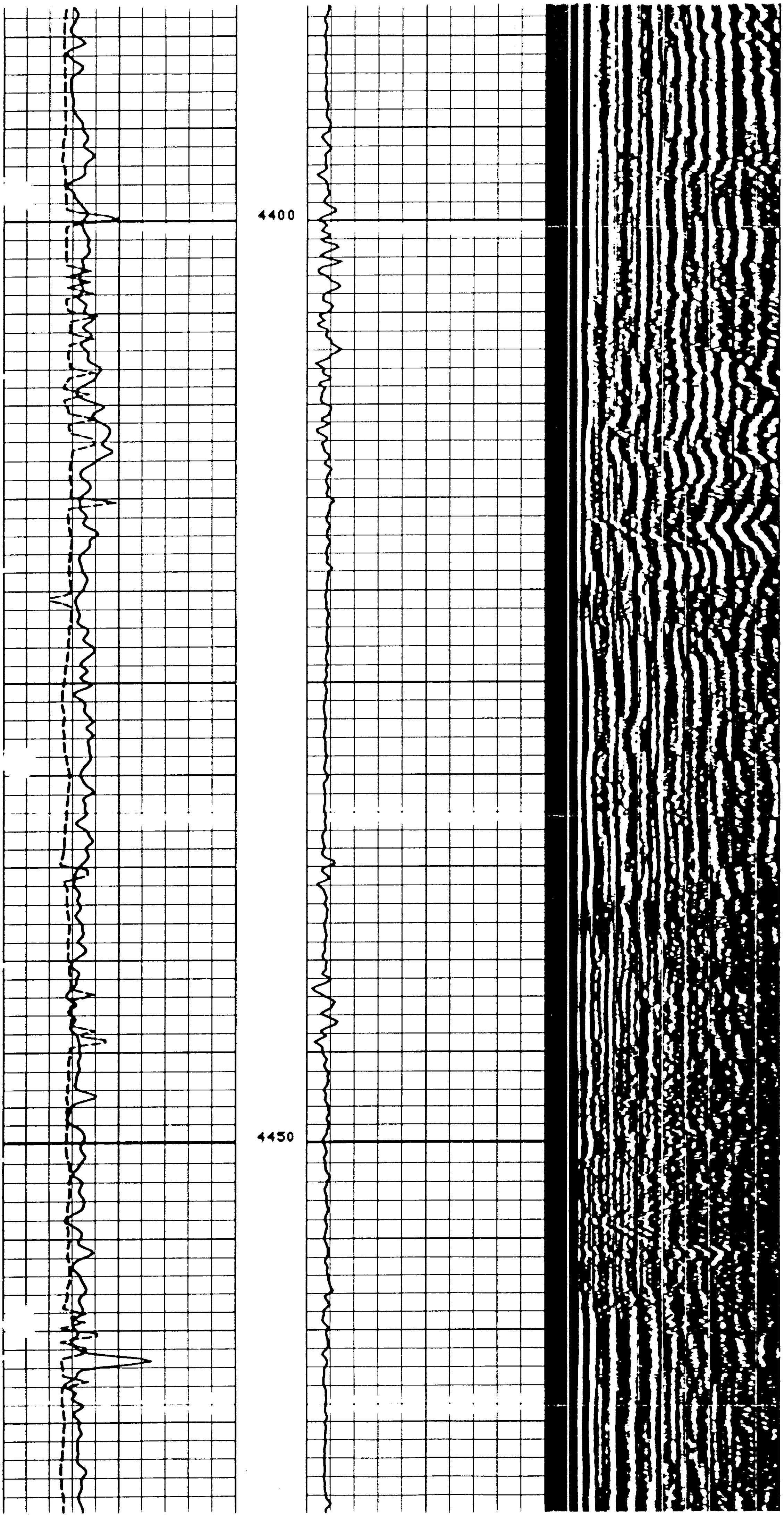
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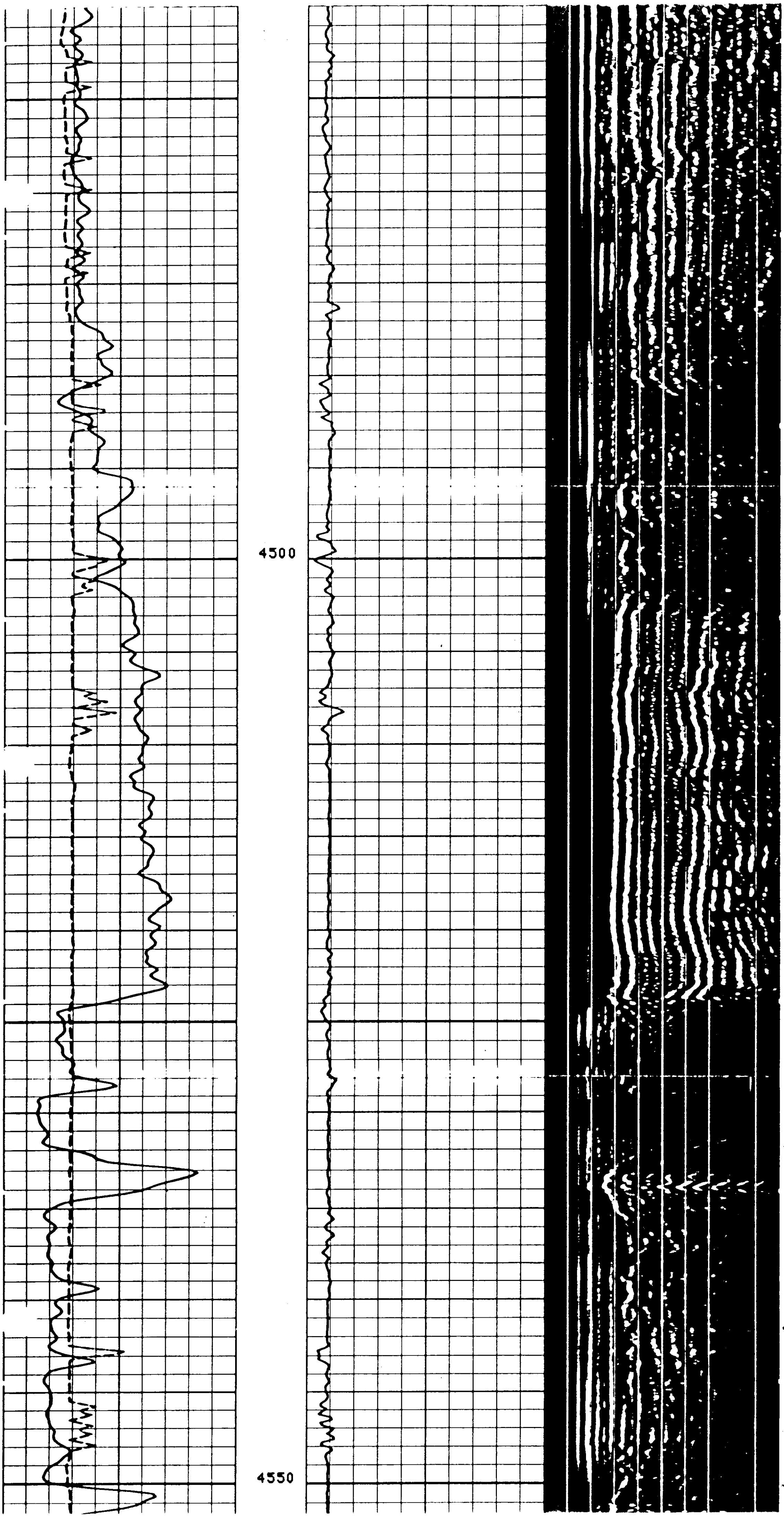
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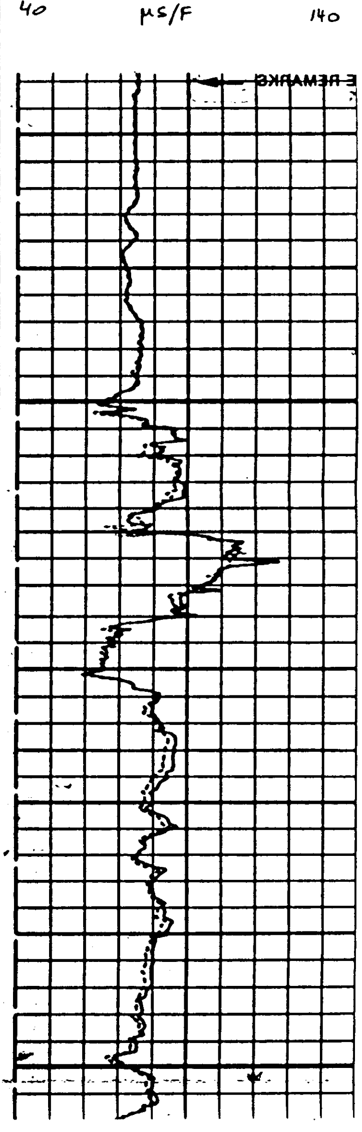
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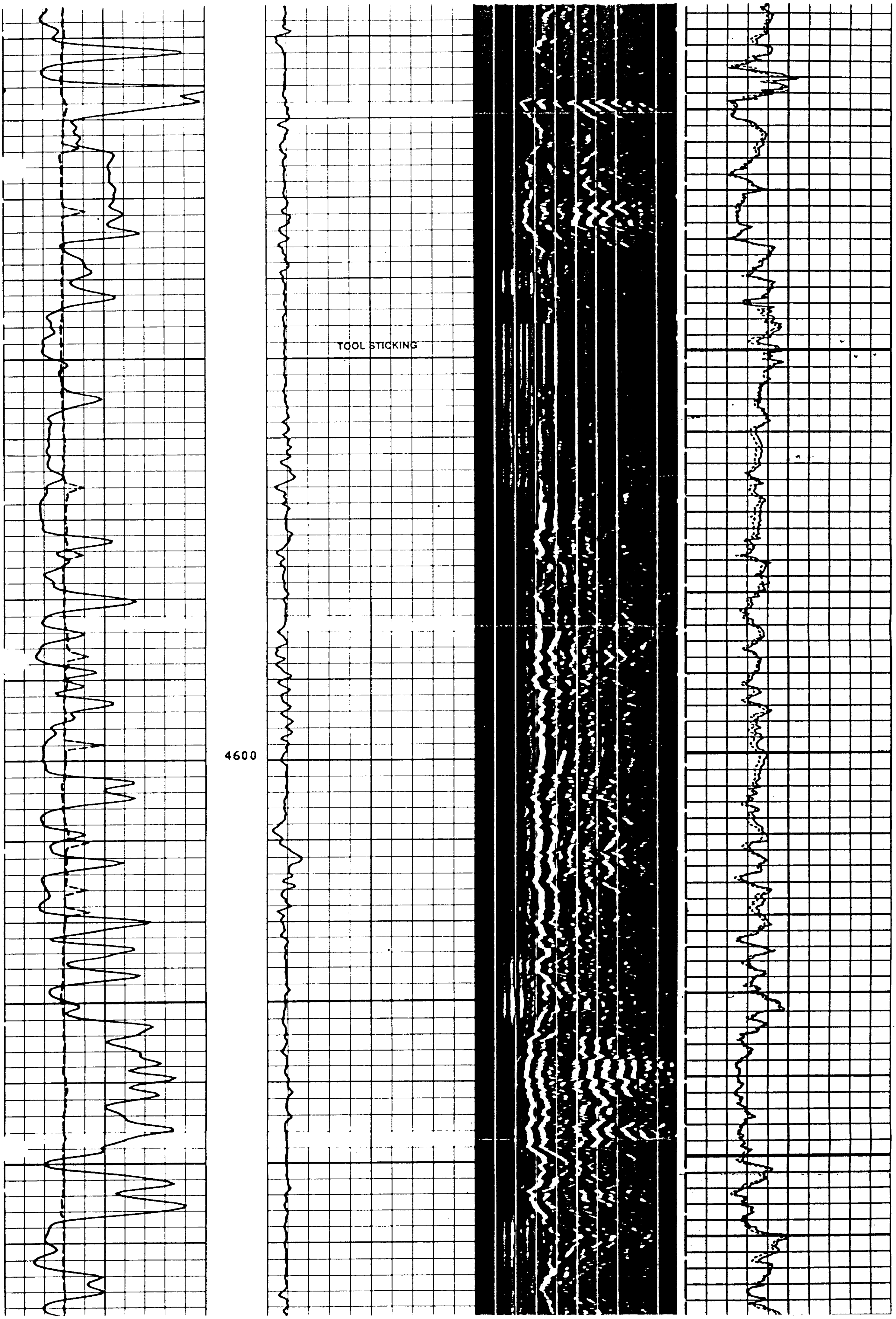
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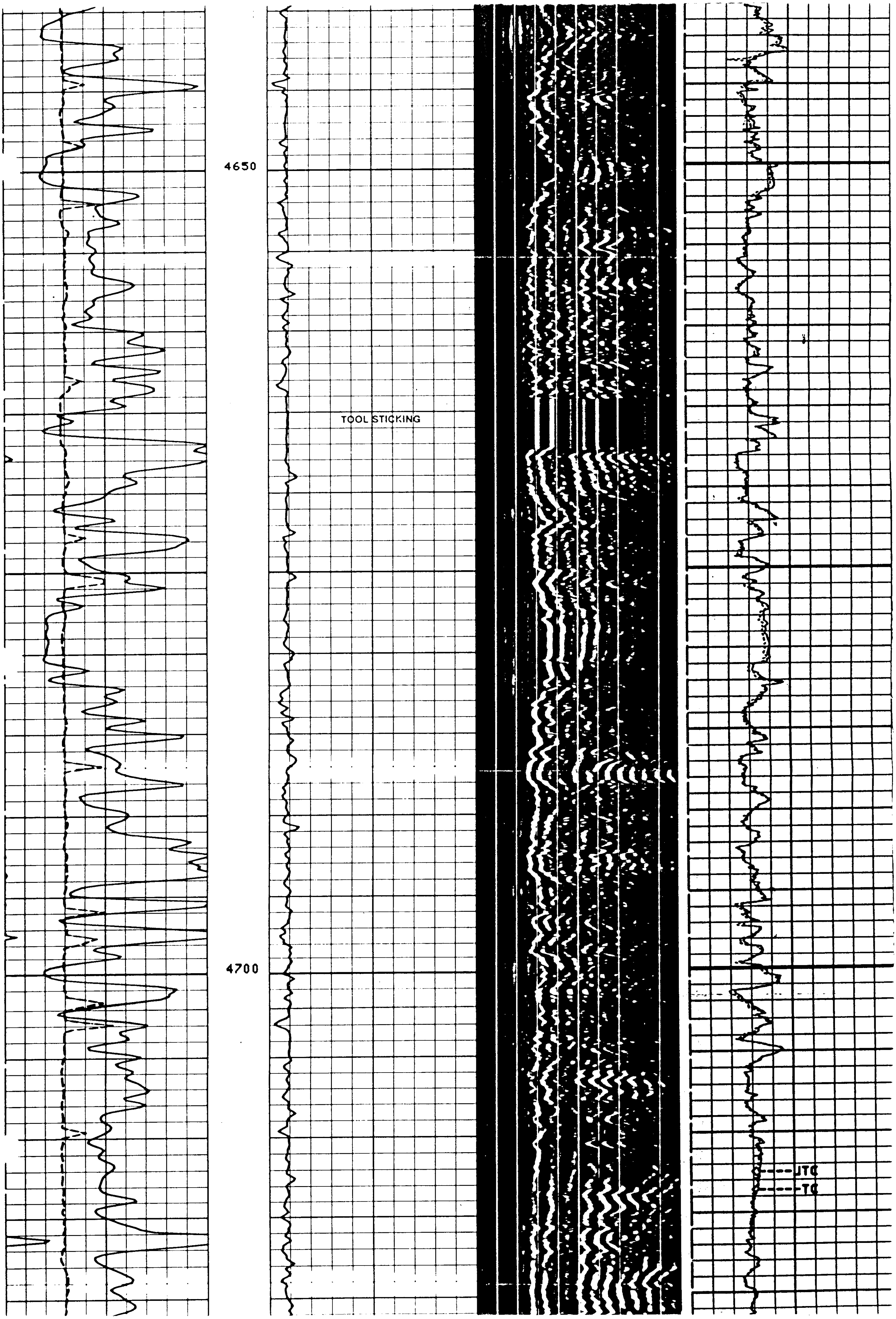
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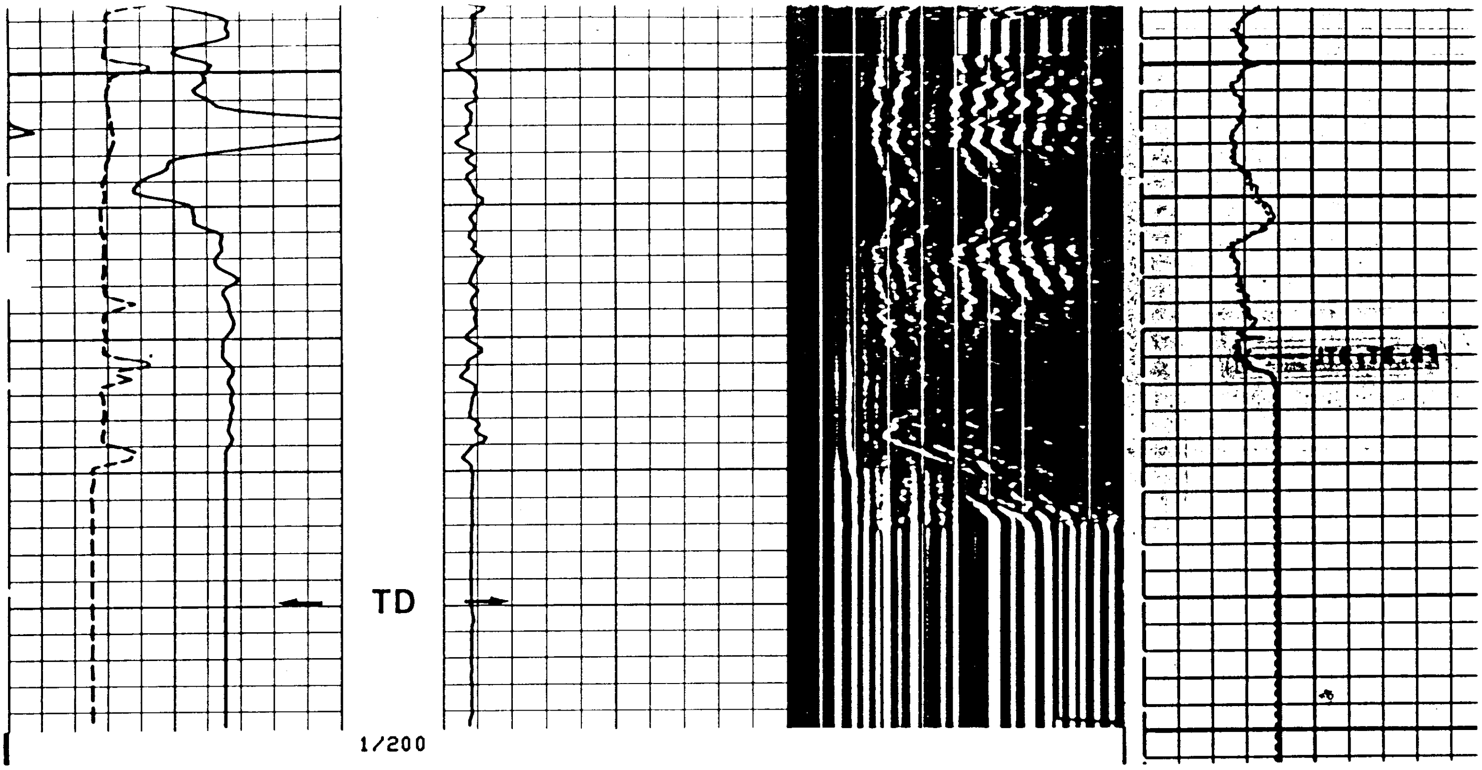
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10. FORMATION DATA

FORMATION FRACTURE DATA

FORMATION FRACTURE PRSSURE

	DEPTH (mkb)	EMW (gr/cc)	PRESSURE (psi)	FRAC GRAD (psi/ft)	REMARK
20" CASING SHOE	546.5	1.40	1090	0.79	NO LEAK OFF
13-3/8" CASING SHOE	1105	2.16	3399	1.10	LEAK OFF
9-5/8" CASING SHOE	3068	1.70	7427	0.77	LEAK OFF
7" CASING SHOE	4492.5	1.70	10875	0.76	NO LEAK OFF

RFT DATA

ANEMONE-1A RFT SURVEY INTERMEDIATE LOGGING RUN

	LEVEL	DEPTH M BKB	DEPTH ft BKB	HYDROSTATIC PRESSURE PSI	FORMATION PRESSURE PSI	PRESSURE GRADIENT PSI/ft	Kh md	DELTA PRESSURE	DEPTH ft SUBSEA
	1	3121.00	10239.38	5115.60	4459.80	0.4394	1200	655.80	-10150.80
	2	3171.00	10403.42	5196.30	4529.30	0.4391	220	667.00	-10314.84
	3	3251.00	10665.88	5324.90	4638.30	0.4385	1050	686.60	-10577.30
	4	3350.00	10990.68	5483.60	4777.80	0.4382	400	705.80	-10902.10
	5	3364.00	11036.61	5505.20	4802.00	0.4386	100	703.20	-10948.03
	6	3365.50	11041.53	5506.00	4803.40	0.4385	210	702.60	-10952.95
	7	3368.50	11051.37	5510.30	4807.60	0.4385	200	702.70	-10962.79
	8	3416.00	11207.21	5587.10	4875.90	0.4385	42	711.20	-11118.63
	9	3665.00	12024.13	5990.20	5247.80	0.4397	126	742.40	-11935.55
	10	3739.00	12266.91	6111.50	5349.50	0.4393	214	762.00	-12178.33
	11	3907.00	12818.09	6387.60	5662.70	0.4448	8	724.90	-12729.50
	12	3965.00	13008.37	6482.80	5718.80	0.4426	298	764.00	-12919.79
	13	4031.00	13224.90	6589.80	5825.50	0.4435	117	764.30	-13136.32
	14	4044.00	13267.56	6596.15	5843.25	0.4434	72	752.90	-13178.97
	15	4055.50	13305.28	6615.70	5861.60	0.4435	11	754.10	-13216.70
	16	4065.00	13336.45	6631.20	5884.00	0.4441	12	747.20	-13247.87
	17	4074.50	13367.62	6646.90	5893.13	0.4438	80	753.77	-13279.04
	18	4081.00	13388.94	6653.05	5903.40	0.4439	66	749.65	-13300.36
	19	4139.00	13579.23	6746.80	5990.87	0.4441	74	755.93	-13490.65
*	20	4201.50	13784.28	6847.60	6189.70	0.4519	18	657.90	-13695.70
	21	4203.60	13791.17	6852.40	6188.30	0.4516	28	664.10	-13702.59
*	22	4209.50	13810.53	6860.00	Dry				-13721.95
*	23	4217.20	13835.79	6874.20	6193.70	0.4505	108	680.50	-13747.21
	24	4219.30	13842.68	6874.70	6192.95	0.4503	62	681.75	-13754.10
*	25	4222.00	13851.54	6878.50	S.F.				-13762.96
*	26	4222.40	13852.85	6877.40	6309.00	0.4584		568.40	-13764.27
*	27	4227.50	13869.58	6892.20	6207.30	0.4504		684.90	-13781.00
	28	4229.30	13875.49	6894.40	6203.85	0.4500		690.55	-13786.91
+	29	4230.50	13879.42	6895.50	6204.90	0.4499		690.60	-13790.84
*	30	4233.70	13889.92	6904.70	S.F.				-13801.34
*	31	4234.00	13890.91	6904.90	S.F.				-13802.33
	32	4236.70	13899.77	6903.40	6207.10	0.4494	26	696.30	-13811.18
	33	4241.00	13913.87	6910.15	6210.00	0.4492	38	700.15	-13825.29
	34	4243.80	13923.06	6914.50	6212.15	0.4490	15	702.35	-13834.48

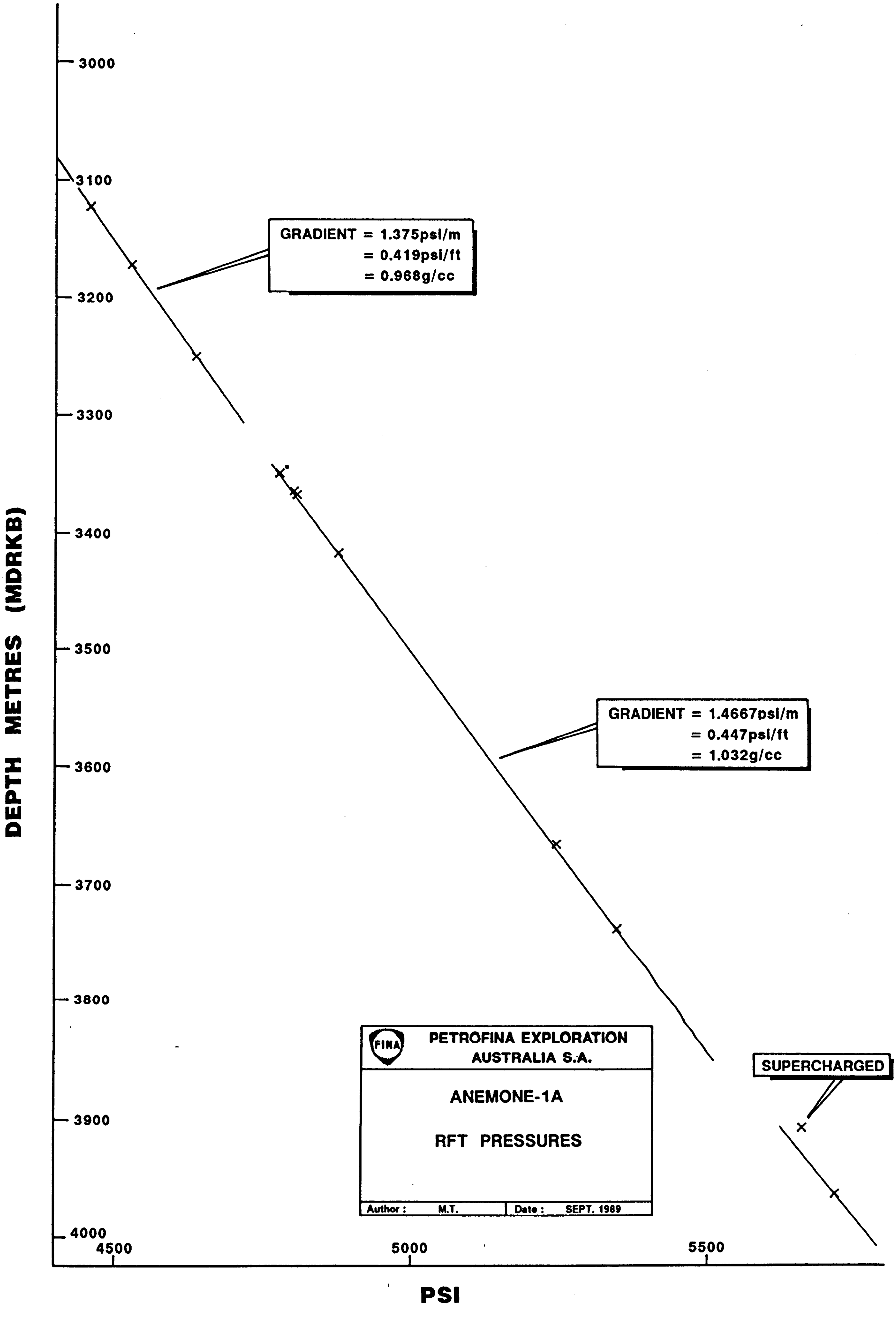
* For sample points taken following Measurement @ 4243.8m, Pressure readings are +1.0 psi higher.

\+ Sample recovered from 2 3/4 gallon chamber contained:
21.35 cu ft gas C1 - 77% C2 - 13% C3 - 6.6% 1C4 - 0.4% nC4 - 0.5% CO2 - nil H2S - nil
5.9 litres of filtrate and 150 ml light oil emulsion

Composition:
Cl- = 13,500 ppm
SO3 2- = 60 mg/l
Ca2+ = 520 mg/l
Nitrates = 0.352 mg/l
Resistivity = 0.287

The drilling mud composition was:
Cl- = 13,000 ppm
SO3 2- = 80 g/l
Ca2+ = 560 g/l
Nitrates = none added
Resistivity = 0.284

Sample in 1 gallon chamber preserved.
From the compositions, the fluid sample is probably mostly mud filtrate.
The oil emulsion on top of the sample is too small to measure specific gravity.
It is light green in colour with a very volatile smell and is probably condensate.



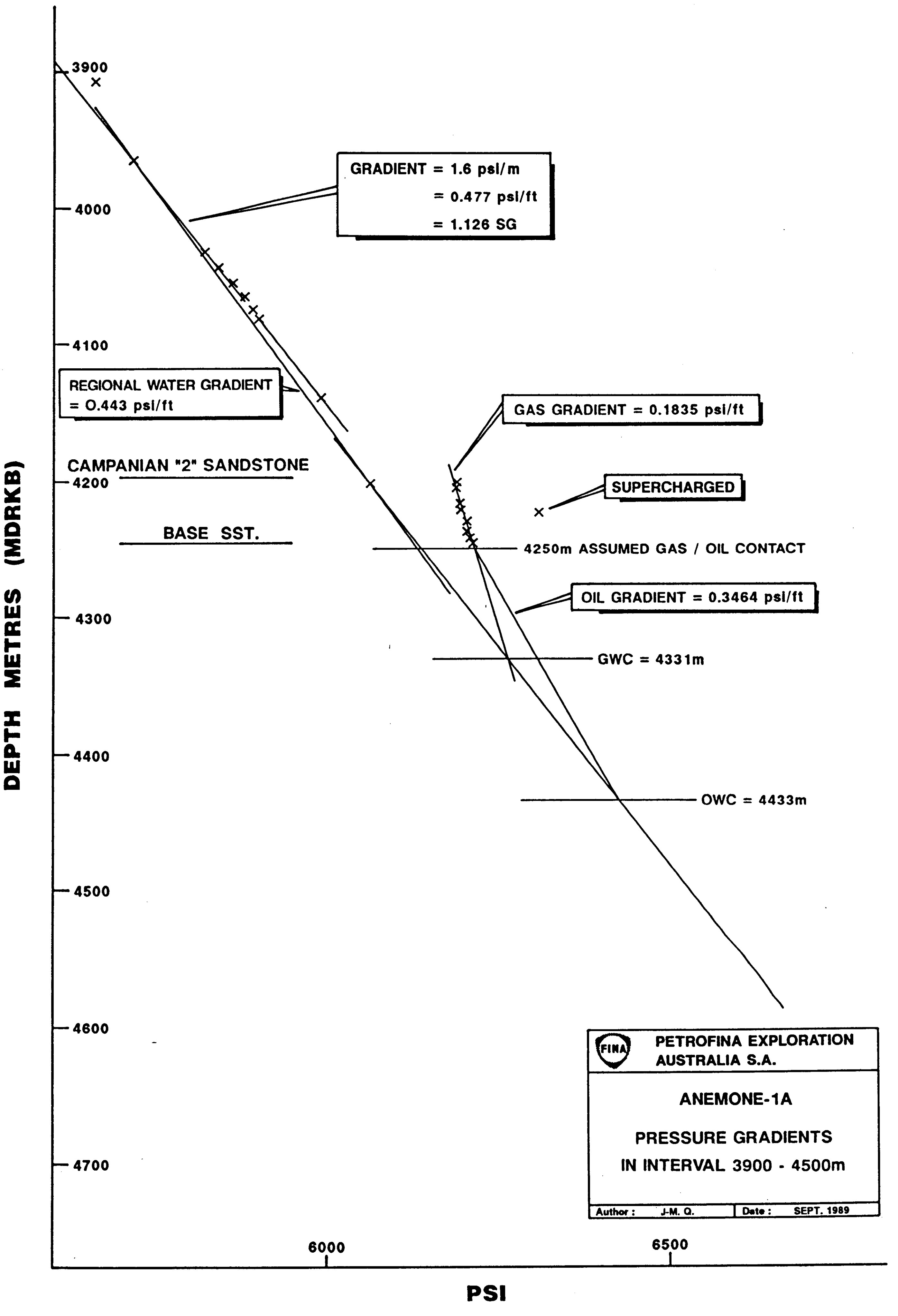
PETROFINA EXPLORATION AUSTRALIA S.A.

ANEMONE-1A

RFT PRESSURES

Author :	M.T.	Date :	SEPT. 1989

G 348



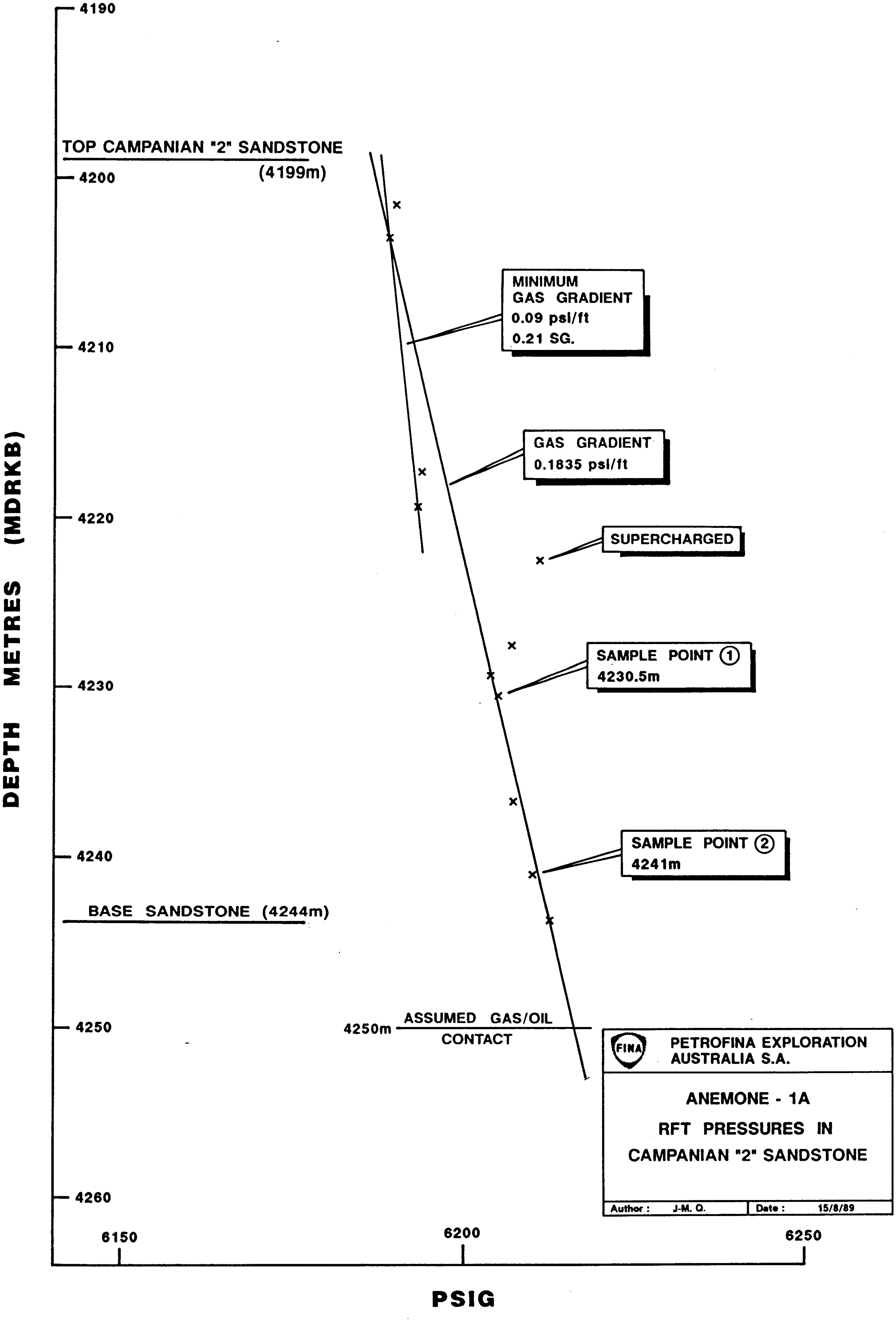
PETROFINA EXPLORATION
AUSTRALIA S.A.

ANEMONE-1A

PRESSURE GRADIENTS
IN INTERVAL 3900 - 4500m

Author : J-M. Q. Date : SEPT. 1989

G 356



PETROFINA EXPLORATION
AUSTRALIA S.A.

ANEMONE - 1A
RFT PRESSURES IN
CAMPANIAN "2" SANDSTONE

Author : J-M. Q. Date : 15/8/89

G 357

RFT FLUID REPORT

47 Woodforde Road, Magill,
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P.O. Box 410,
Magill, South Australia, 5072

PETROLAB

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Reservoir Fluid and Core Services, Laboratory Consulting and Analysis

Adelaide, August 31 1989
P. O. Box 410
Magill
S. A. 5072

ANEMONE-1A RFT SAMPLE FROM 4230.5m

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

Subject: Reservoir Fluid Study
Well : Anemone # A-1
File : P - 89028

Attention: Mr. Brian Thurley

Dear Sirs,

On August 14 1989, Petrolab received a reservoir fluid sample from the subject well in Schlumberger's R F T chamber # R F S - AD 1182, which was transferred under pressure into laboratory storage cylinders.

Recoveries and other details of the transfer can be found in a summary on page 1.

We then proceeded with the determination of the extended composition of the bottom hole sample by flashing a small portion of the bottom hole sample at atmosferic conditions and analysing the flashed products for composition, by means of chromatography, density and molecular weight.

A mathematical recombination into their produced ratio resulted in the reservoir fluid composition, which has been reported on page 2.

At the reservoir temperature of 231 °F, the dew point pressure of the gas reservoir fluid, determined in a high pressure visual P V T cell during a constant composition expansion, was found to be 5180 psig.

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.

The reservoir fluid properties found in this partial P V T study indicate the fluid to be a rich gas condensate. We would recommend a constant volume depletion study to be performed on this fluid in order to simulate the behaviour of the fluid during reservoir depletion. This experiment is designed to permit continuous accounting of the produced liquid and gas phases.
The resulting wellstream compositions can be directly used in surface recovery calculations.

We thank Petrofina Exploration Australia S. A. for the opportunity to be of service. If there remain any questions or if we can assist in any other way please do not hesitate in contacting us.

Yours sincerely,

Jan G. Bon
Manager

PETROLAB

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

Page: 1 of 10
File: P 89028

SUMMARY OF RESULTS

TRANSFER:

R F T Chamber # RFS - AD 1182 received August 14 1989 and transferred into Petrolab cylinders # 65, 66 and 48.

Opening pressure @ 19 deg C: 1600 psig.

Injected 90 cc's Hg in chamber to stir up hydrocarbons.

Compressed to 7000 psig with 1100 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 approximately 1420 cc's of mud/filtrate/water mixture.

CONSTANT MASS:

SATURATED VAPOUR:

Reservoir Temperature (deg F)	:	231
Dew Point Pressure (psig)	:	5180
Gas Formation Volume Factor (Bg)	:	0.00330
Gas Expansion Factor (E)	:	0.00370
Gas Deviation Factor (Z)	:	269.97
Specific Volume (cft/lb)	:	0.04905
Density (gm/cc)	:	0.3266
Molecular Weight	:	28.67
Gas Gravity (Air = 1.000)	:	0.995
Gross Heating Value (BTU/ft3)	:	1633

Total Plant Products in Dew Point Fluid (GPMM)

Ethane	:	1089
Propane	:	179
Butanes	:	776
Pentanes Plus	:	5111

COMPOSITIONAL ANALYSIS OF
BOTTOM HOLE SAMPLE # 1

From RFT 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	0.03	2.13	2.00
Nitrogen	N2	0.00	0.71	0.67
Methane	C1	0.51	84.40	79.35
Ethane	C2	0.16	4.33	4.08
Propane	C3	0.10	0.69	0.65
Iso-Butane	iC4	0.06	0.16	0.15
N-Butane	nC4	1.27	2.38	2.31
Iso-Pentane	iC5	1.77	1.22	1.25
N-Pentane	nC5	2.07	1.10	1.16
Hexanes	C6	7.93	1.26	1.66
Heptanes	C7	22.00	1.09	2.35
Octanes	C8	15.08	0.33	1.22
Nonanes	C9	14.35	0.14	1.00
Decanes	C10	8.71	0.05	0.57
Undecanes	C11	5.34	0.01	0.33
Dodecanes Plus	C12+	20.62	0.00	1.25
TOTAL		100.00	100.00	100.00
Ratios				
Molar Ratio	:	0.0602	0.9398	1.0000
Mass Ratio	:	0.2742	0.7258	1.0000
Gas Liquid Ratio	:	1.0000 bbl @ SC	12250 SCF	--
Stream Properties				
Molecular Weight	:	130.6	22.14	28.7
Density obs. (gm/cc)	:	0.7706 @60F	--	--
Gravity (AIR = 1.000)	:	51.9 API @60F	0.767	1.002
GHV (BTU/scf)	:	--	1279	1643
Hexanes Plus Properties				
Mol %	:	94.03	2.88	8.38
Molecular Weight	:	134.9	94.1	121.5
Density (gm/cc @ 60 F)	:	0.7773	0.6810	0.7508
Gravity (API @ 60 F)	:	50.4	76.1	56.8
Heptanes Plus Properties				
Mol %	:	86.10	1.62	6.72
Molecular Weight	:	139.6	101.9	130.8
Density (gm/cc @ 60 F)	:	0.7831	0.6916	0.7653
Gravity (API @ 60 F)	:	49.0	72.9	53.2
Decanes Plus Properties				
Mol %	:	34.67	0.06	2.15
Molecular Weight	:	189.2	136.2	187.2
Density (gm/cc @ 60 F)	:	0.8213	0.7299	0.8194
Gravity (API @ 60 F)	:	40.6	62.2	41.0
Undecanes Plus Properties				
Mol %	:	25.96	0.01	1.58
Molecular Weight	:	207.7	147.0	206.3
Density (gm/cc @ 60 F)	:	0.8313	0.7400	0.8309
Gravity (API @ 60 F)	:	38.5	59.5	38.6
Dodecanes Plus Properties				
Mol %	:	20.62	0.00	1.25
Molecular Weight	:	223.4	--	221.9
Density (gm/cc @ 60 F)	:	0.8390	--	0.8390
Gravity (API @ 60 F)	:	37.0	--	37.0

* Sampled @ (P)ressure 6205 psia, (T)emperature 231 deg.F

CONSTANT MASS STUDY
@ 231 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)
7000		0.8916	0.00330	302.79	1.186	0.04374
6830		0.8988	0.00333	300.36	1.167	0.04409
6620		0.9082	0.00336	297.26	1.143	0.04455
6410		0.9179	0.00340	294.11	1.119	0.04503
6185		0.9291	0.00344	290.56	1.093	0.04558
5910		0.9437	0.00350	286.08	1.061	0.04629
5500		0.9701	0.00359	278.28	1.015	0.04759
5180	*	1.0000	0.00370	269.97	0.985	0.04905

* 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.

CONSTANT MASS STUDY
@ 231 deg F

Pressure (psig)	Relative Volume (V/Vsat) (1)	Retrograde Liquid Deposit (Bbl/MMSCF) (2)	Retrograde Liquid Deposit (Volume%) (3)
5180 *	1.0000	0.00	0.00
5000	1.0149	12.20	1.85
4850	1.0292	22.82	3.46
4635	1.0535	37.53	5.69
4415	1.0815	56.32	8.54
4055	1.1399	85.80	13.01
3800	1.1901	106.05	16.08
3495	1.2661	121.55	18.43
3225	1.3496	135.60	20.56
2975	1.4483	141.81	21.50
2760	1.5475	145.43	22.05
2535	1.6788	146.12	22.16
2160	1.9583	143.52	21.76

* 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.

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

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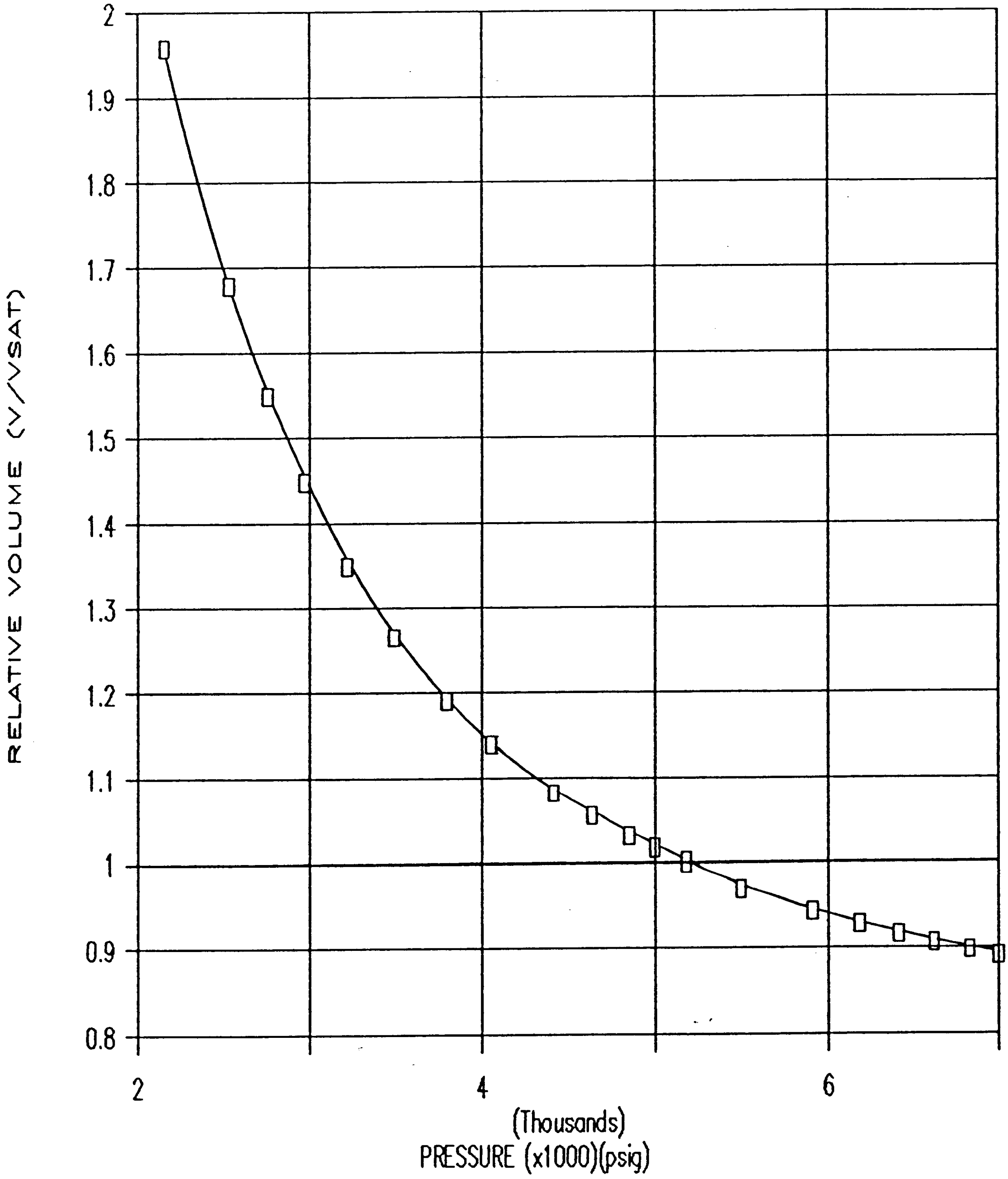
File: P 89028

RELATIVE VOLUME



P E T R O L A B

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

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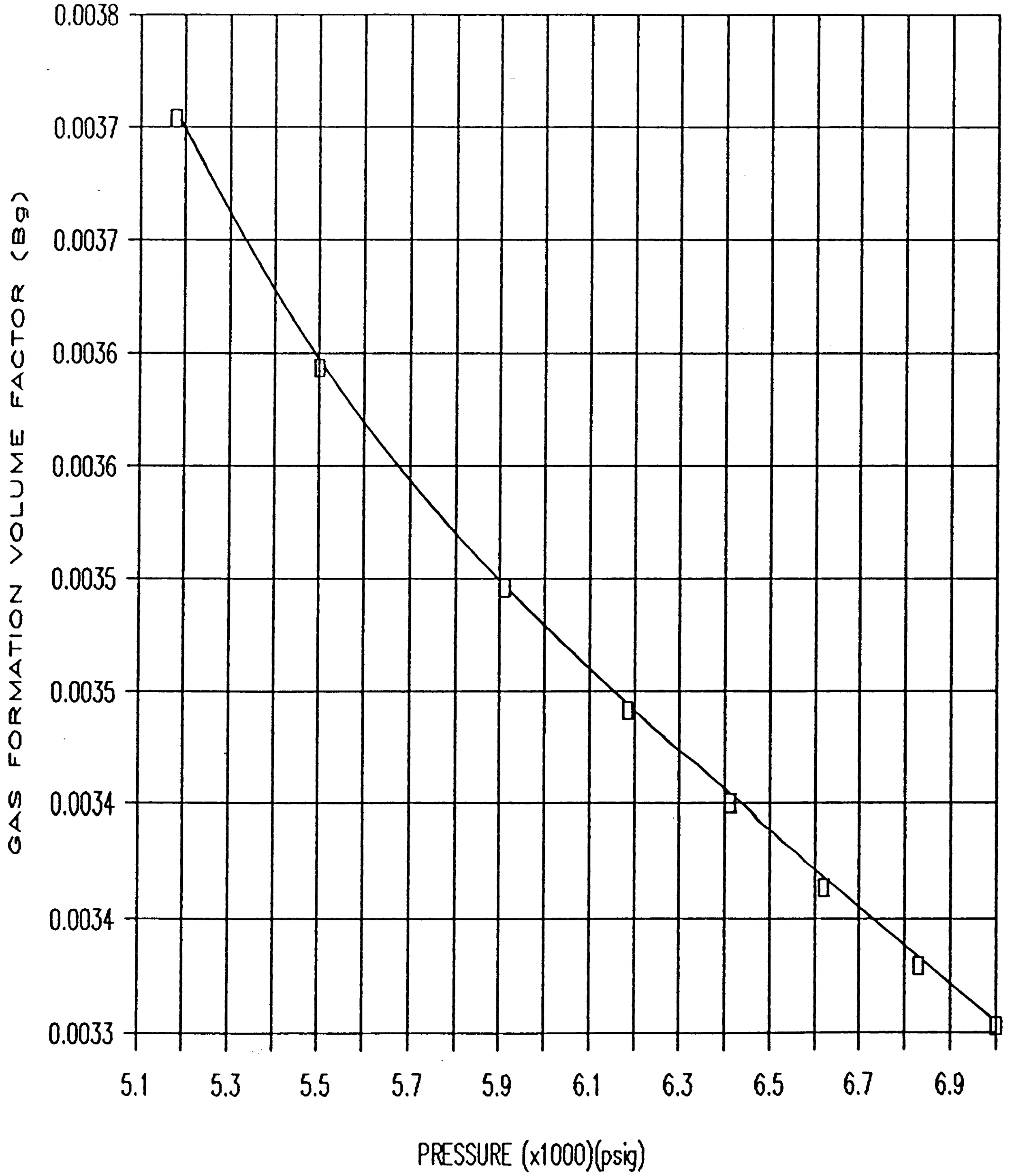
GAS FORMATION VOLUME FACTOR



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

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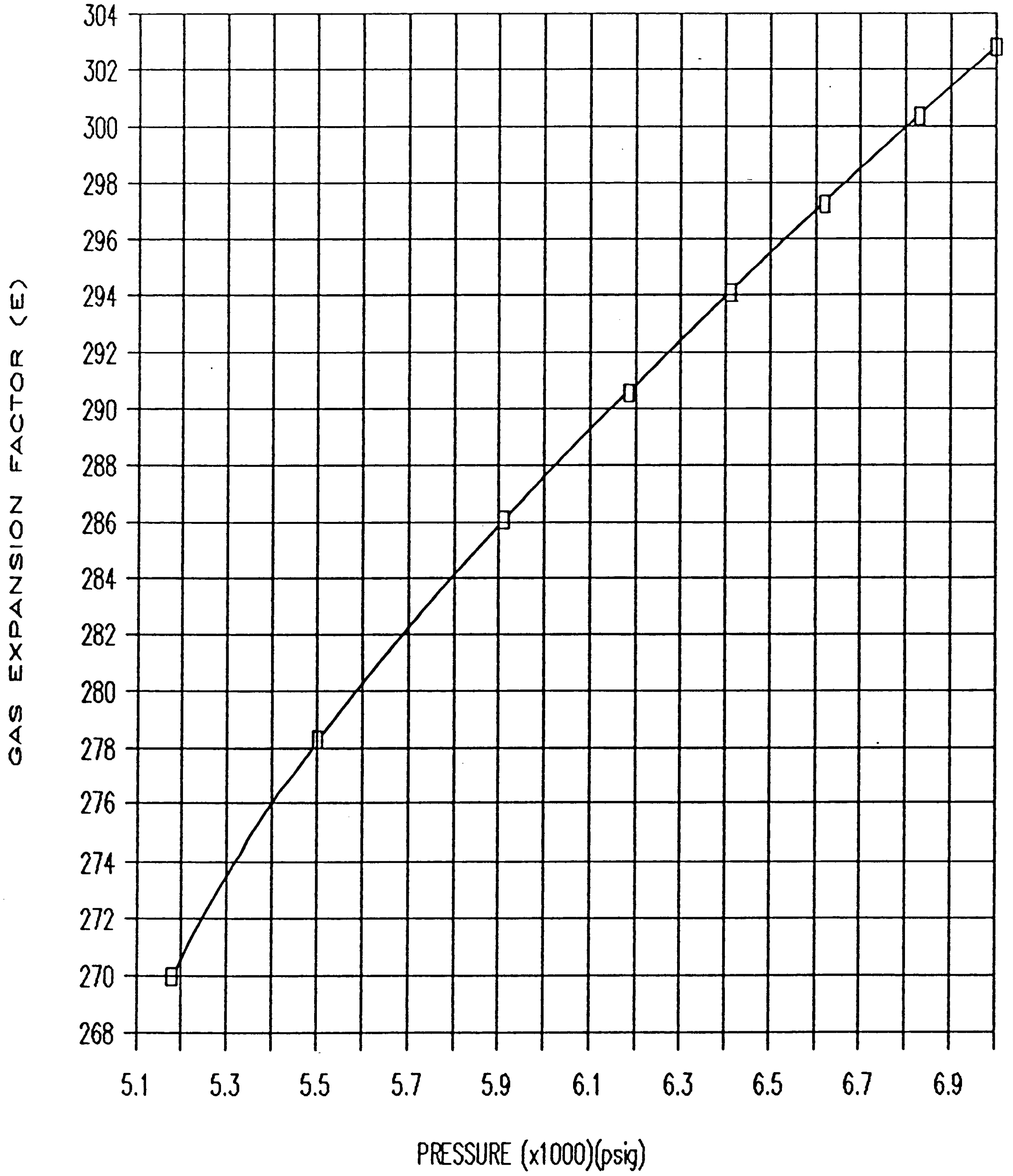
GAS EXPANSION FACTOR



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

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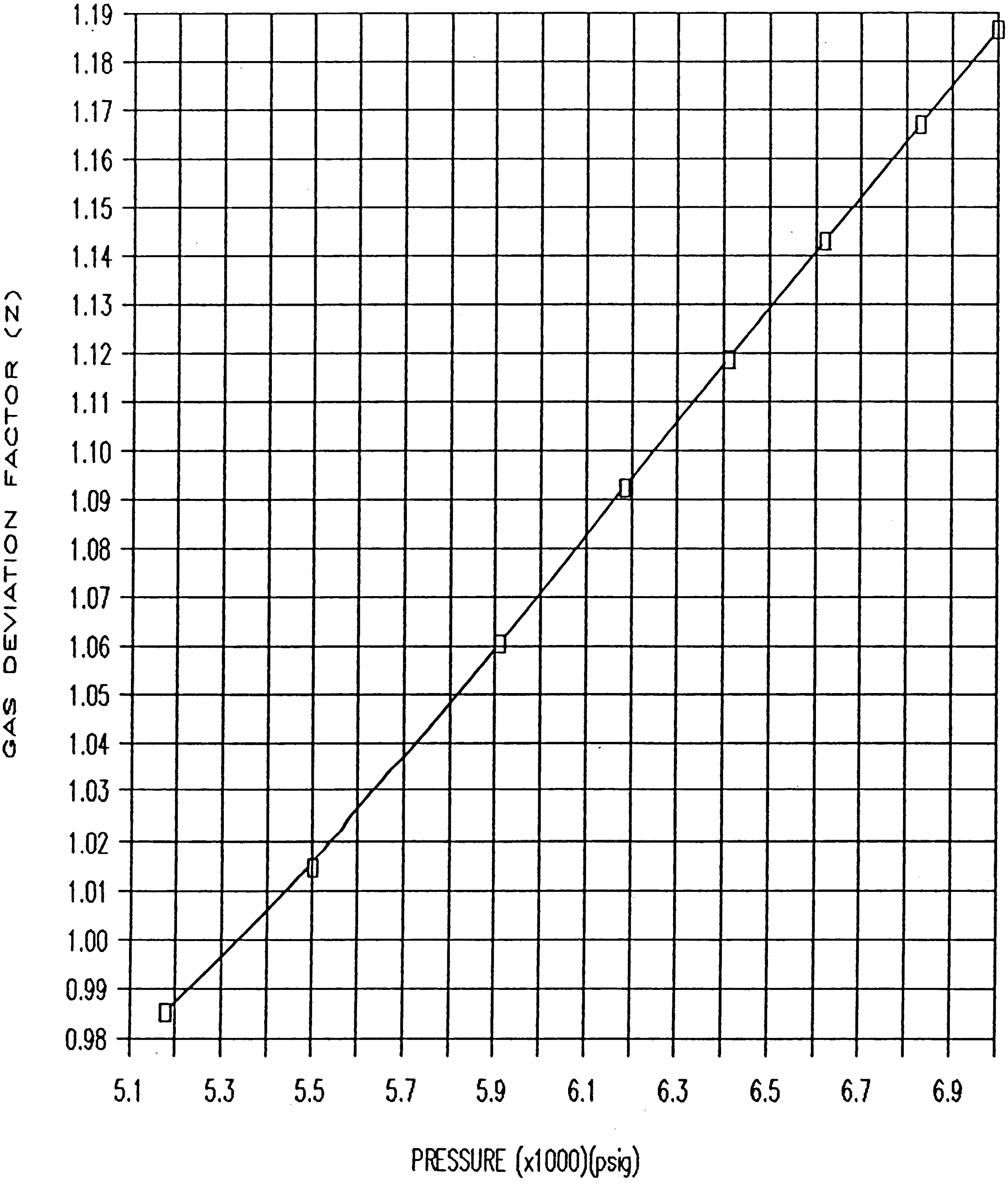
GAS DEVIATION FACTOR



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

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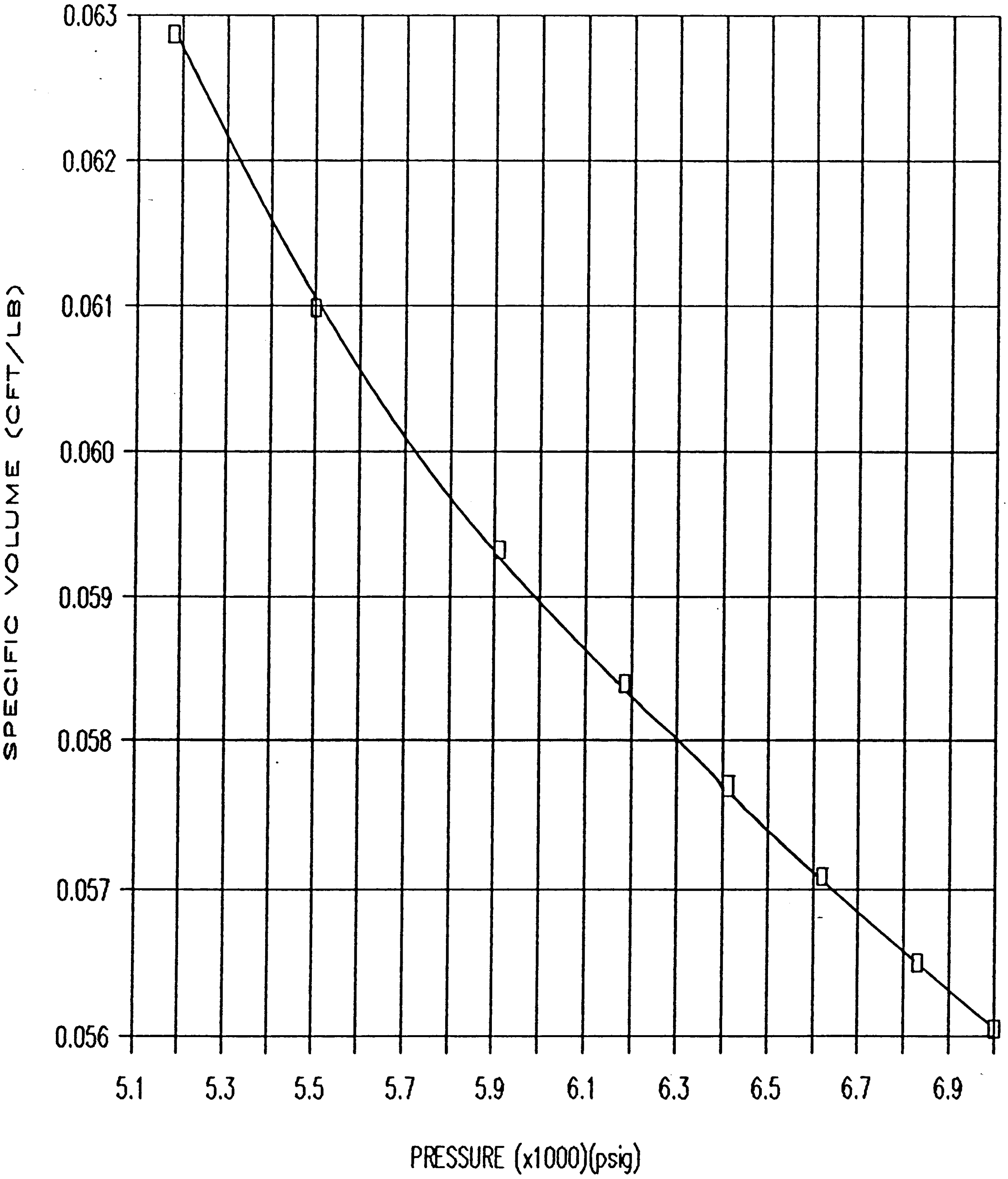
RESERVOIR FLUID SPECIFIC VOLUME



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

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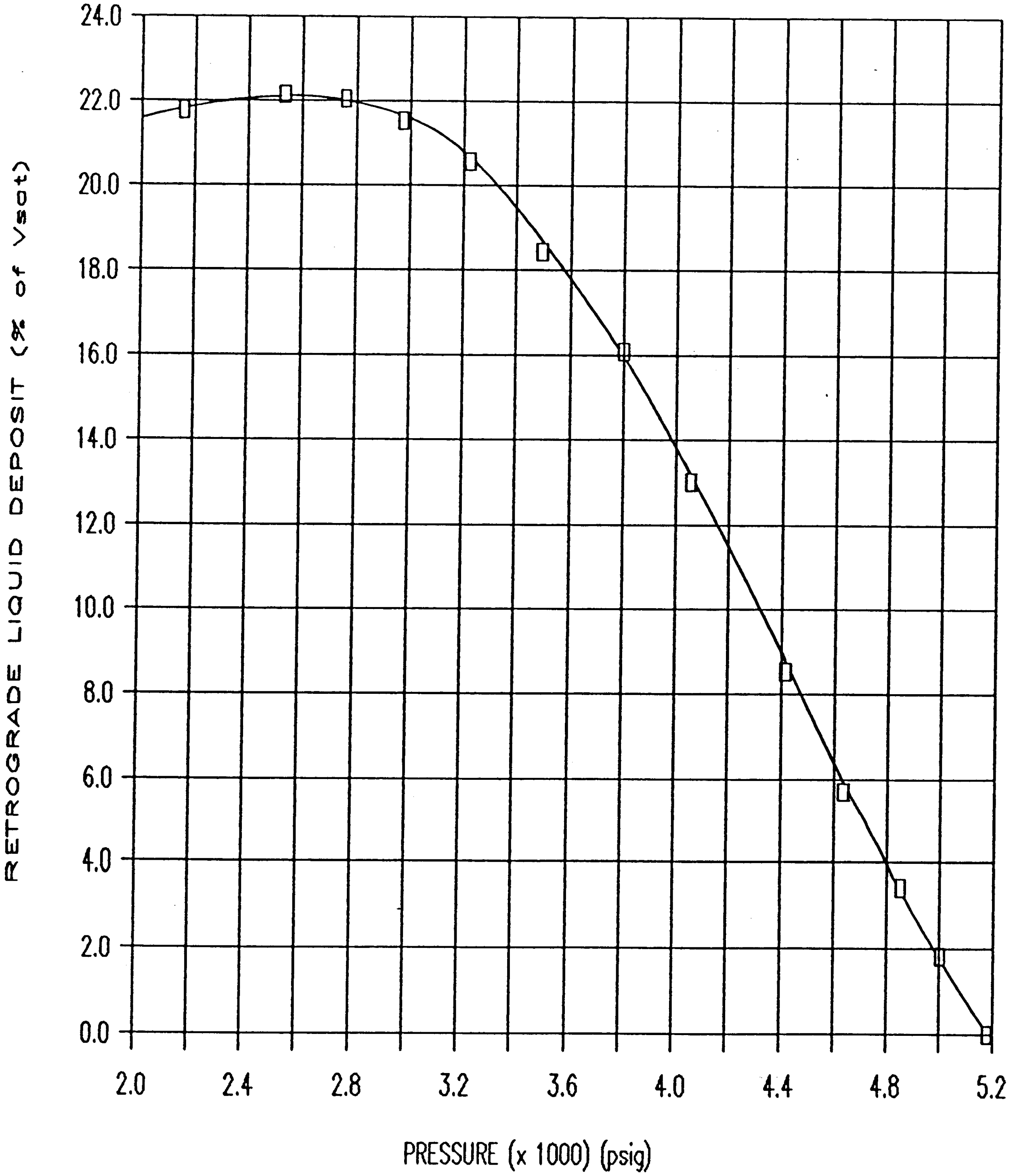
RETROGRADE CONDENSATION



DST FLUID REPORT

47 Woodforde Road, Magill,
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P.O. Box 410,
Magill, South Australia, 5072

PETROLAB

Fax: 364 1500
Telex: AA88214
Tel: (08) 364 1500
(08) 333 0787

Reservoir Fluid and Core Services, Laboratory Consulting and Analysis

Adelaide, November 6 1989
P. O. Box 410
Magill
S. A. 5072

Petrofina Exploration
Australia S. A.
476 St. Kilda Road
Melbourne, Vic. 3004

Subject: Reservoir Fluid Study
Well : Anemone # 1-A
File : P - 89035

Attention: Mr. Brian Thurley

Dear Sirs,

Please find enclosed our results of reservoir fluid analyses performed on surface samples from the subject well.

Two sets of primary separator gas and liquid samples, two additional gas samples and eight water samples, taken while production testing two zones, were received in our laboratory in Adelaide and subjected to standard quality checks.

The single phase opening pressures of the gas samples were determined at approximately 10°C higher than separator temperature to see if any leakage had taken place during transportation prior to compositional analyses by means of gas chromatography.

The validity of the separator liquid samples was determined by measuring their bubble point pressures at room temperature and correlate these pressures with gas opening pressures and field separator pressure.

The best set of DST # 1 was used for extended compositional analyses, mathematical and physical recombination.

The composition of the high pressure separator liquid was determined with the help of an atmospheric flash. The evolved stock tank gas and liquid from each flash were then analysed for composition, some physical properties and the ratio in which they were produced. A mathematical recombination of these products resulted in the desired separator liquid composition.

The separator liquid composition was extended by means of a high temperature distillation of flashed stock tank liquid and a mathematical recombination of the separator products into their produced field ratios, resulted in the actual produced reservoir fluid composition.

We then continued with two physical recombinations using the best set of separator products and mixing them in different ratios.

Mixture # 1 was made using a gas liquid ratio of 8540 SCF / STBBL while the second mixture only contained 2506 standard cubic feet for every barrel of stock tank liquid produced.

On each mixture, we continued with a Constant Mass Study to identify the actual phase of the reservoir fluid and found the first mixture to be a gas condensate reservoir fluid with a dew point of 5550 psig, while the second mixture was an oil reservoir fluid, having a bubble point of 3010 psig.

We thank Petrofina Exploration Australia S. A. for the opportunity to be of service. If there remain any questions or if we can assist you in any other way please do not hesitate in contacting us.

Sincerely Yours,

Jan G. Bon
Manager.

PETROLAB

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A File: P - 89035

REPORT INDEX

SUMMARY OF RESULTS

DST # 1

Date sampled : October 1 1989
Average Condensate Rate (bbl/day): 44.5
Average GOR (scf/bbl) : 2506
Average Water Rate (bbl/day) : 44.6
Wellhead Temperature (deg C) : 12
Wellhead Pressure (psig) : 674
Separator Pressure (psig) : 91
Separator Temperature (deg C) : 8
Liquid Specific Gravity (gr/cc) : 0.762
Gas Specific Gravity (air=1.000) : 0.965
Static Reservoir Pressure (psig) : 9600 to 9900 @ 4600 m.
(flowing) (psig) : 5400 @ 4267 m.
: 5700 @ 4600 m.
Surface Choke (inch) : 8/64

G O R = 8540 scf / stbbl

SATURATED VAPOUR:

Reservoir Temperature (deg F) : 260
Dew Point Pressure (psig) : 5550
Gas Formation Volume Factor (Bg) : 0.00366
Gas Expansion Factor (E) : 272.98
Gas Deviation Factor (Z) : 1.002
Specific Volume (CFT/LB) : 0.04112
Density (gm/cc) : 0.3896
Molecular Weight : 33.82
Gas Gravity (Air = 1.000) : 1.168

G O R = 2506 scf / stbbl

SATURATED OIL:

Reservoir Temperature (deg F) : 260
Bubble Point Pressure (psig) : 3010
Oil Compressibility (10^-6 / psi): 120.83
Oil Thermal Expansion (1 / deg C): 0.0129
Oil Thermal Expansion (1 / deg F): 0.0072
Specific Volume (CFT/LB) : 0.03682
Density (gm/cc) : 0.4350
Molecular Weight : 47.3

PETROLAB

Company : Petrofina
Well : Anemone # 1-A
File : P-89035

Surface Samples Set # 1

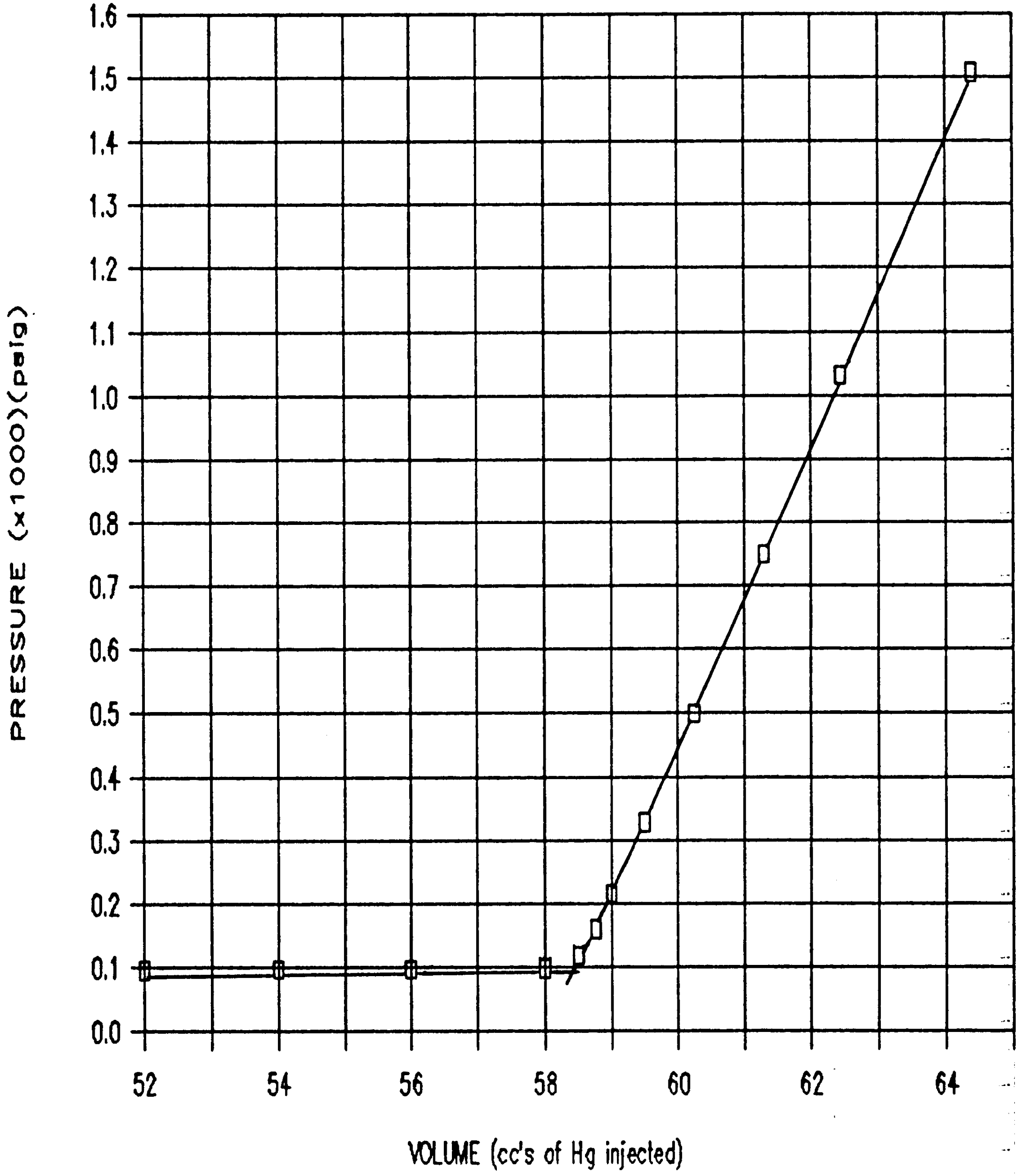
Sampling Conditions
Date : October 1 1989
Pressure : 85 psig
Temperature : 54 deg F

Cylinder # : A 12134 (gas)
Opening Pressure : 91 psig @ 72 deg F

Cylinder # : 12689/92 (liquid)
Opening Pressure : 86 psig @ 62 deg F

Volume (cc's)	Pressure (psig)
52.00	95
54.00	96
56.00	97
58.00	98
58.50	118
58.75	160
59.00	215
59.50	328
60.25	500
61.29	750
62.45	1031
64.39	1507

Saturation Pressure : 99 psig @ 63 deg F.



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Company : Petrofina
Well : Anemone # 1-A
File : P-89035

Surface Samples Set # 2

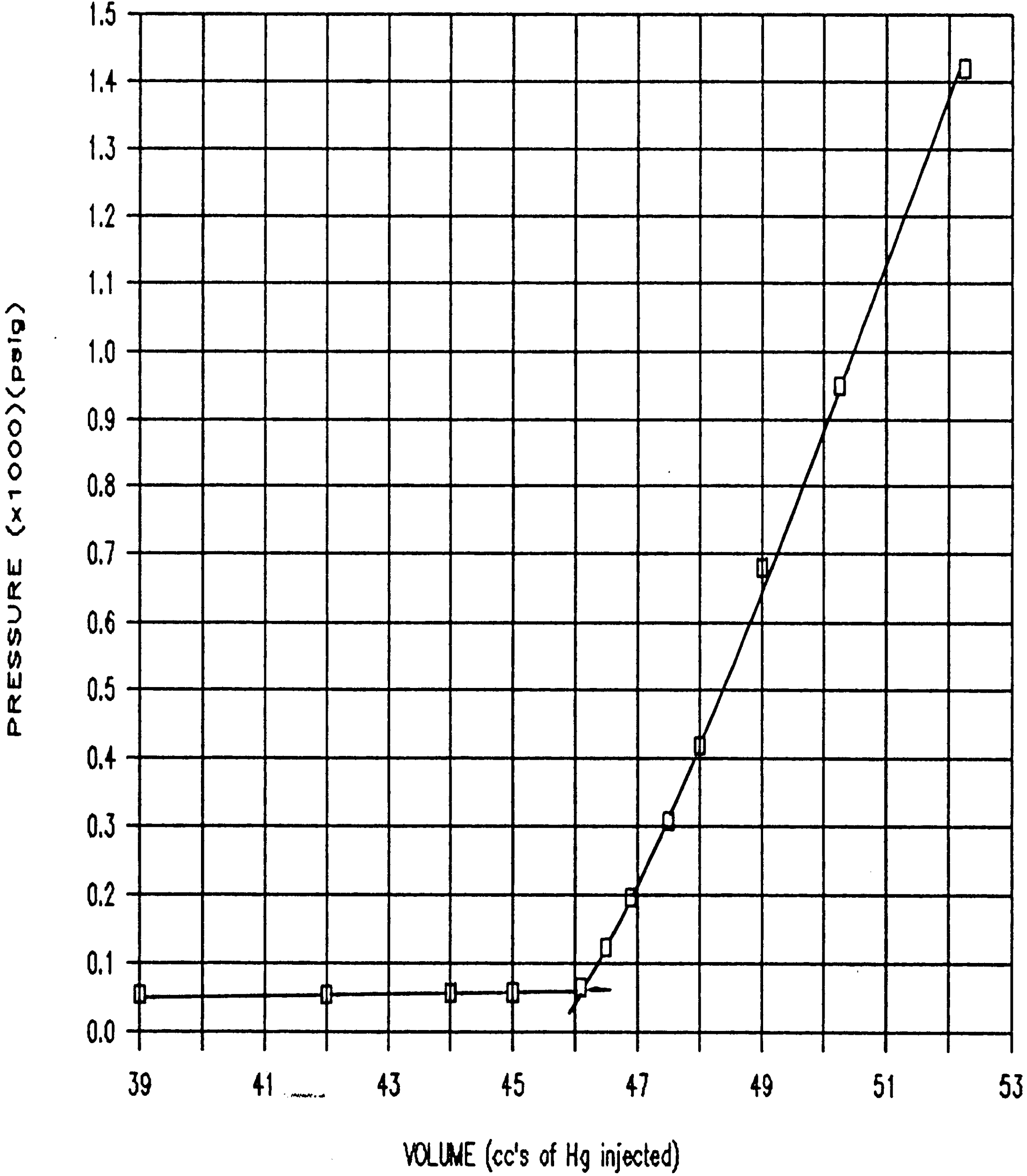
Sampling Conditions
Date : October 1 1989
Pressure : 90 psig
Temperature : 54 deg F

Cylinder # : A 13762 (gas)
Opening Pressure : 77 psig @ 72 deg F

Cylinder # : 80291/53 (liquid)
Opening Pressure : 40 psig @ 64 deg F

Volume (cc's)	Pressure (psig)
39.00	55
42.00	56
44.00	57
45.00	58
46.10	66
46.50	125
46.90	197
47.50	309
48.00	420
49.00	680
50.25	950
52.25	1420

Saturation Pressure : 58 psig @ 64 deg F.



Company: Petrofina Exploration Australia S.A.
Well : Anemone # 1-A

SEPARATOR GAS COMPOSITIONS

Cylinder #:	A-12134	A-13762	A-11924	A-13752
Component	Mol %	Mol %	Mol %	Mol %
Hydrogen Sulphide	0.00	0.00	0.00	0.00
Carbon Dioxide	14.33	14.54	14.59	15.24
Nitrogen	0.67	0.58	0.67	0.57
Methane	64.05	65.31	65.14	61.88
Ethane	9.70	9.49	9.26	10.57
Propane	6.72	6.08	6.34	7.42
Iso-Butane	1.00	0.94	0.94	1.10
N-Butane	2.02	1.91	1.79	2.10
Iso-Pentane	0.50	0.44	0.44	0.44
N-Pentane	0.41	0.34	0.35	0.33
Hexanes	0.32	0.20	0.25	0.20
Heptanes	0.20	0.11	0.18	0.11
Octanes	0.03	0.03	0.04	0.02
Nonanes	0.01	0.01	0.01	0.01
Decanes	0.01	0.01	0.00	0.01
Undecanes	0.02	0.01	0.00	0.00
Dodecanes Plus	0.01	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00
Stream Properties				
Molecular Weight :	25.63	25.14	25.23	25.98
Gravity (AIR = 1.000) :	0.889	0.871	0.875	0.901
Gross HV (BTU/SCF) :	1162	1132	1134	1160
Nett HV (BTU/SCF) :	1056	1027	1030	1054
Wobbe Index :	1233	1212	1212	1222
Critical Pressure (psia):	716.9	719.2	718.8	721.4
Critical Temperature (R):	434.2	429.5	430.0	438.7
G P M Content				
Ethane Plus :	5.979	5.548	5.567	6.302
Propane Plus :	3.391	3.016	3.096	3.482
Butanes Plus :	1.544	1.345	1.353	1.442
Pentanes Plus :	0.583	0.437	0.483	0.422
Hexanes Plus Properties				
Mol % :	0.60	0.37	0.48	0.35
Molecular Weight :	94.0	93.5	91.2	91.6
Density (gm/cc @ 60 F) :	0.734	0.733	0.730	0.731
Gravity (API @ 60 F) :	61.2	61.4	62.1	62.0
Heptanes Plus Properties				
Molecular Weight :	105.4	104.7	99.0	101.7
Density (gm/cc @ 60 F) :	0.747	0.746	0.740	0.743
Gravity (API @ 60 F) :	57.7	57.9	59.6	58.8

COMPOSITIONAL ANALYSIS OF
RECOMBINED SEPARATOR LIQUID

Cylinder # 12689/92

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Separator Liquid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.11	7.33	1.33
Nitrogen	N2	0.00	0.08	0.01
Methane	C1	0.08	14.03	2.44
Ethane	C2	0.44	12.59	2.49
Propane	C3	3.98	31.26	8.59
Iso-Butane	iC4	2.47	7.67	3.35
N-Butane	nC4	7.60	16.36	9.08
Iso-Pentane	iC5	5.00	4.05	4.84
N-Pentane	nC5	5.03	3.17	4.72
Hexanes	C6	15.80	2.15	13.50
Heptanes	C7	20.30	1.16	17.06
Octanes	C8	11.26	0.14	9.38
Nonanes	C9	9.37	0.01	7.79
Decanes	C10	4.50	0.00	3.74
Undecanes	C11	3.11	0.00	2.58
Dodecanes Plus	C12+	10.95	0.00	9.10
TOTAL		100.00	100.00	100.00

	Stock Tank Liquid	Stock Tank Gas	Separator Liquid
Ratios			
Molar Ratio :	0.8310	0.1690	1.0000
Mass Ratio :	0.9189	0.0811	1.0000
Liquid Ratio (bbl/bbl):	1.0000 @ SC	--	1.0916 @ PT*
Gas Liquid Ratio :	1.0000 bbl @ SC	195 SCF	--
Stream Properties			
Molecular Weight :	104.4	45.33	94.4
Density obs. (gm/cc) :	0.7530 @ 60 F	--	0.7519 @ PT*
Gravity (AIR = 1.000) :	56.2 API @60F	1.594	--
GHV (BTU/scf) :	--	2443.0	--
Hexanes Plus Properties			
Mol % :	75.29	3.46	63.15
Molecular Weight :	118.7	89.1	118.5
Density (gm/cc @ 60 F):	0.7904	0.6738	0.7895
Gravity (API @ 60 F):	47.3	78.3	47.6
Heptanes Plus Properties			
Mol % :	59.49	1.31	49.65
Molecular Weight :	128.5	97.4	128.4
Density (gm/cc @ 60 F):	0.8133	0.6856	0.8128
Gravity (API @ 60 F):	42.3	74.7	42.4
Decanes Plus Properties			
Mol % :	18.57	0.00	15.42
Molecular Weight :	185.1	--	185.2
Density (gm/cc @ 60 F):	0.8814	--	0.8814
Gravity (API @ 60 F):	28.9	--	28.9
Undecanes Plus Properties			
Mol % :	14.06	0.00	11.68
Molecular Weight :	204.0	--	204.1
Density (gm/cc @ 60 F):	0.8982	--	0.8982
Gravity (API @ 60 F):	25.9	--	25.9
Dodecanes Plus Properties			
Mol % :	10.95	0.00	9.10
Molecular Weight :	220.4	--	220.5
Density (gm/cc @ 60 F):	0.9158	--	0.9158
Gravity (API @ 60 F):	22.9	--	22.9

* (P)ressure 85 psig, (T)emperature 54 deg.F

Company: Petrofina Exploration Australia S. A.
Jell : Anemone # 1-A

COMPOSITIONAL ANALYSIS OF
RECOMBINED SEPARATOR LIQUID

Cylinder # 80291/53

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Separator Liquid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.09	6.12	1.03
Nitrogen	N2	0.00	0.09	0.01
Methane	C1	0.05	8.96	1.45
Ethane	C2	0.46	12.97	2.41
Propane	C3	4.34	34.09	8.99
Iso-Butane	iC4	2.63	8.15	3.49
N-Butane	nC4	8.23	17.72	9.71
Iso-Pentane	iC5	5.39	4.37	5.23
N-Pentane	nC5	5.44	3.43	5.13
Hexanes	C6	15.40	2.32	13.35
Heptanes	C7	19.78	1.39	16.90
Octanes	C8	10.97	0.28	9.30
Nonanes	C9	9.13	0.08	7.71
Decanes	C10	4.39	0.02	3.70
Undecanes	C11	3.03	0.01	2.56
Dodecanes Plus	C12+	10.68	0.00	9.03
TOTAL		100.00	100.00	100.00
Ratios				
Molar Ratio :		0.8436	0.1564	1.0000
Mass Ratio :		0.9215	0.0785	1.0000
Liquid Ratio (bbl/bbl):		1.0000 @ SC	--	1.0855 @ PT*
Gas Liquid Ratio :		1.0000 bbl @ SC	179 SCF	--
Stream Properties				
Molecular Weight :		103.3	47.47	94.5
Density obs. (gm/cc) :		0.7498 @ 60 F	--	0.7509 @ PT*
Gravity (AIR = 1.000) :		57.0 API @60F	1.673	--
GHV (BTU/scf) :		--	2597.0	--
Hexanes Plus Properties				
Mol % :		73.37	4.10	62.55
Molecular Weight :		118.7	90.8	118.4
Density (gm/cc @ 60 F):		0.7904	0.6763	0.7894
Gravity (API @ 60 F):		47.3	77.5	47.6
Heptanes Plus Properties				
Mol % :		57.97	1.78	49.20
Molecular Weight :		128.4	99.6	128.2
Density (gm/cc @ 60 F):		0.8133	0.6885	0.8127
Gravity (API @ 60 F):		42.3	73.8	42.4
Decanes Plus Properties				
Mol % :		18.09	0.03	15.29
Molecular Weight :		184.8	138.3	184.5
Density (gm/cc @ 60 F):		0.8815	0.7320	0.8815
Gravity (API @ 60 F):		28.9	61.6	28.9
Undecanes Plus Properties				
Mol % :		13.71	0.01	11.59
Molecular Weight :		203.7	147.0	203.2
Density (gm/cc @ 60 F):		0.8984	0.7400	0.8984
Gravity (API @ 60 F):		25.9	59.5	25.9
Dodecanes Plus Properties				
Mol % :		10.68	0.00	9.03
Molecular Weight :		220.0	--	219.4
Density (gm/cc @ 60 F):		0.9161	--	0.9161
Gravity (API @ 60 F):		22.8	--	22.8

* (P)ressure 90 psig, (T)emperature 54 deg.F

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

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HIGH TEMPERATURE DISTILLATION OF STOCK TANK LIQUID SAMPLE
(Hexanes to Eicosanes Plus)

Flashed from separator liquid sample in cylinder # 80291/53

	Cut (Deg C)	Mol %	Mol Weight	Weight %	Density (gm/cc)	Volume %	API Gravity
	IBP 28						
Hexanes	59 - 84	20.99	82	14.43	0.6779	16.83	77.0
Heptanes	85 - 112	26.96	96	21.78	0.7446	23.12	58.4
Octanes	113 - 138	14.95	105	13.20	0.7719	13.52	51.6
Nonanes	139 - 162	12.44	115	12.08	0.7969	11.99	45.9
Decanes	163 - 185	5.98	126	6.37	0.8053	6.25	44.0
Undecanes	186 - 206	4.13	146	5.08	0.8146	4.93	42.0
Dodecanes	207 - 227	3.62	153	4.65	0.8530	4.31	34.2
Tridecanes	228 - 246	2.75	171	3.97	0.8850	3.55	28.2
Tetradecanes	247 - 263	2.12	187	3.35	0.9040	2.93	24.9
Pentadecanes	264 - 280	0.63	203	1.07	0.9210	0.92	22.0
Hexadecanes	281 - 296	1.08	214	1.94	0.9260	1.66	21.2
Heptadecanes	297 - 312	0.95	220	1.76	0.9330	1.49	20.0
Octadecanes	313 - 322	0.61	238	1.23	0.9410	1.03	18.7
Nonadecanes	323 - 335	0.92	256	2.00	0.9550	1.65	16.5
Eicosanes Plus	> 336	1.87	450	7.09	0.9640	5.82	15.1
		------		------		------	
		100.00		100.00		100.00	

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

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COMPOSITIONAL ANALYSIS OF
SEPARATOR GAS

Cyl # A12134

Component	Mol %	GPM
Hydrogen Sulphide	0.00	
Carbon Dioxide	14.33	
Nitrogen	0.67	
Methane	64.05	
Ethane	9.70	2.588
Propane	6.72	1.847
Iso-Butane	1.00	0.326
N-Butane	2.02	0.635
Iso-Pentane	0.50	0.183
N-Pentane	0.41	0.148
Hexanes	0.32	0.124
Heptanes	0.20	0.084
Octanes	0.03	0.014
Nonanes	0.01	0.005
Decanes	0.01	0.005
Undecanes	0.02	0.012
Dodecanes	0.01	0.008
Tridecanes	0.00	0.000
Tetradecanes	0.00	0.000
Pentadecanes	0.00	0.000
Hexadecanes	0.00	0.000
Heptadecanes	0.00	0.000
Octadecanes	0.00	0.000
Nonadecanes	0.00	0.000
Eicosanes Plus	0.00	0.000
TOTAL	100.00	5.979

Pressure Base :	14.696
Zsc:	0.996
Mol Weight :	25.63
Gas Gravity:	0.889
Pc :	716.9
Tc :	434.2
Mol Weight C6+:	94.0
Density C6+:	0.6809
Mol Weight C7+:	105.4
Density C7+:	0.6960
Mol Weight C12+:	--
Density C12+:	--
Mol Weight C20+:	--
Density C20+:	--
Heating Value (BTU/ft3)	
Gross:	1162
Nett:	1056
Wobbe Index:	1233
Zpt:	0.973
Liquid Content (Bbl/MMSCF of Raw Gas):	
Ethane :	46.0
L P G :	64.4
Pentanes Plus:	13.9

Remarks: Laboratory Opening Pressure - 91 psig @ 72 deg.F
Sampled at 85 psig and 54 deg.F

COMPOSITIONAL ANALYSIS OF
RECOMBINED SEPARATOR LIQUID

Cylinder # 12689/92

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Separator Liquid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.11	7.33	1.33
Nitrogen	N2	0.00	0.08	0.01
Methane	C1	0.08	14.03	2.44
Ethane	C2	0.44	12.59	2.49
Propane	C3	3.98	31.26	8.59
Iso-Butane	iC4	2.47	7.67	3.35
N-Butane	nC4	7.60	16.36	9.08
Iso-Pentane	iC5	5.00	4.05	4.84
N-Pentane	nC5	5.03	3.17	4.72
Hexanes	C6	15.80	2.15	13.49
Heptanes	C7	20.30	1.16	17.07
Octanes	C8	11.26	0.14	9.38
Nonanes	C9	9.37	0.01	7.79
Decanes	C10	4.50	0.00	3.74
Undecanes	C11	3.11	0.00	2.58
Dodecanes	C12	2.73	0.00	2.27
Tridecanes	C13	2.07	0.00	1.72
Tetradecanes	C14	1.60	0.00	1.33
Pentadecanes	C15	0.47	0.00	0.39
Hexadecanes	C16	0.81	0.00	0.67
Heptadecanes	C17	0.72	0.00	0.60
Octadecanes	C18	0.46	0.00	0.38
Nonadecanes	C19	0.69	0.00	0.57
Eicosanes Plus	C20+	1.40	0.00	1.17
TOTAL		100.00	100.00	100.00
Ratios				
Molar Ratio :		0.8310	0.1690	1.0000
Mass Ratio :		0.9189	0.0811	1.0000
Liquid Ratio (bbl/bbl):		1.0000 @ SC	--	1.0916 @ PT*
Gas Liquid Ratio :		1.0000 bbl @ SC	195 SCF	--
Stream Properties				
Molecular Weight :		104.4	45.33	94.4
Density obs. (gm/cc) :		0.7530 @ 60 F	--	0.7519 @ PT*
Gravity (AIR = 1.000) :		56.2 API @60F	1.594	--
GHV (BTU/scf) :		--	2443.0	--
Heptanes Plus Properties				
Mol % :		59.49	1.31	49.66
Molecular Weight :		128.5	97.6	128.3
Density (gm/cc @ 60 F):		0.8133	0.6858	0.8128
Gravity (API @ 60 F):		42.3	74.6	42.4
Octanes Plus Properties				
Mol % :		39.19	0.15	32.59
Molecular Weight :		145.3	109.7	145.3
Density (gm/cc @ 60 F):		0.8398	0.7013	0.8397
Gravity (API @ 60 F):		36.8	70.1	36.8
Eicosanes Plus Properties				
Mol % :		1.40	0.00	1.17
Molecular Weight :		450.0	--	447.5
Density (gm/cc @ 60 F):		0.9640	--	0.9640
Gravity (API @ 60 F):		15.1	--	15.1

* (P)ressure 85 psig, (T)emperature 54 deg.F

PETROLAB

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

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COMPOSITIONAL ANALYSIS OF
RECOMBINED GAS RESERVOIR FLUID

Cyl.#12689/92 Cyl.#A12134

Component		Separator Liquid Mol %	Separator Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	1.33	14.33	12.78
Nitrogen	N2	0.01	0.67	0.59
Methane	C1	2.44	64.05	56.69
Ethane	C2	2.49	9.70	8.84
Propane	C3	8.59	6.72	6.94
Iso-Butane	iC4	3.35	1.00	1.28
N-Butane	nC4	9.08	2.02	2.86
Iso-Pentane	iC5	4.84	0.50	1.02
N-Pentane	nC5	4.72	0.41	0.92
Hexanes	C6	13.49	0.32	1.89
Heptanes	C7	17.07	0.20	2.21
Octanes	C8	9.38	0.03	1.15
Nonanes	C9	7.79	0.01	0.94
Decanes	C10	3.74	0.01	0.45
Undecanes	C11	2.58	0.02	0.33
Dodecanes	C12	2.27	0.01	0.28
Tridecanes	C13	1.72	0.00	0.21
Tetradecanes	C14	1.33	0.00	0.16
Pentadecanes	C15	0.39	0.00	0.05
Hexadecanes	C16	0.67	0.00	0.08
Heptadecanes	C17	0.60	0.00	0.07
Octadecanes	C18	0.38	0.00	0.05
Nonadecanes	C19	0.57	0.00	0.07
Eicosanes Plus	C20+	1.17	0.00	0.14
TOTAL		100.00	100.00	100.00

Ratios			
Molar Ratio :	0.1193	0.8807	1.0000
Mass Ratio :	0.3328	0.6672	1.0000
Liquid Ratio (bbl/bbl):	1.0000 @ PT*	--	4.9683 @ PT**
Gas Liquid Ratio :	1.0000 bbl @ PT*	7823 SCF***	--
Stream Properties			
Molecular Weight :	94.40	25.63	33.82
Density obs. (gm/cc) :	0.7519 @ PT*	--	0.4565 @ PT**
Gravity (AIR = 1.000) :	56.5 API @ 60	0.889	--
GHV (BTU/scf) :	--	1162.0	--
Heptanes Plus Properties			
Mol % :	49.66	0.28	6.19
Molecular Weight :	128.3	105.4	127.0
Density (gm/cc @ 60 F):	0.8128	0.6960	0.8083
Gravity (API @ 60 F):	42.4	71.6	43.4
Octanes Plus Properties			
Mol % :	32.59	0.08	3.98
Molecular Weight :	145.3	128.9	144.2
Density (gm/cc @ 60 F):	0.8397	0.7226	0.8376
Gravity (API @ 60 F):	36.9	64.1	37.3
Eicosanes Plus Properties			
Mol % :	1.17	0.00	0.14
Molecular Weight :	447.5	--	446.1
Density (gm/cc @ 60 F):	0.9640	--	0.9640
Gravity (API @ 60 F):	15.1	--	15.1

* (P)ressure 85 psig, (T)emperature 54 deg.F
** (P)ressure 9900 psig, (T)emperature 260 deg.F
*** 7823 SCF / SEP BBL @ PT = 8540 SCF / ST BBL

COMPOSITIONAL ANALYSIS OF

RECOMBINED OIL RESERVOIR FLUID

Cyl.#12689/92 Cyl.#A12134

Component		Separator Liquid Mol %	Separator Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	1.33	14.33	10.23
Nitrogen	N2	0.01	0.67	0.46
Methane	C1	2.44	64.05	44.60
Ethane	C2	2.49	9.70	7.42
Propane	C3	8.59	6.72	7.31
Iso-Butane	iC4	3.35	1.00	1.74
N-Butane	nC4	9.08	2.02	4.25
Iso-Pentane	iC5	4.84	0.50	1.87
N-Pentane	nC5	4.72	0.41	1.77
Hexanes	C6	13.49	0.32	4.48
Heptanes	C7	17.07	0.20	5.53
Octanes	C8	9.38	0.03	2.98
Nonanes	C9	7.79	0.01	2.47
Decanes	C10	3.74	0.01	1.19
Undecanes	C11	2.58	0.02	0.83
Dodecanes	C12	2.27	0.01	0.72
Tridecanes	C13	1.72	0.00	0.54
Tetradecanes	C14	1.33	0.00	0.42
Pentadecanes	C15	0.39	0.00	0.12
Hexadecanes	C16	0.67	0.00	0.21
Heptadecanes	C17	0.60	0.00	0.19
Octadecanes	C18	0.38	0.00	0.12
Nonadecanes	C19	0.57	0.00	0.18
Eicosanes Plus	C20+	1.17	0.00	0.37
TOTAL		100.00	100.00	100.00

Ratios			
Molar Ratio :	0.3157	0.6843	1.0000
Mass Ratio :	0.6296	0.3704	1.0000
Liquid Ratio (bbl/bbl):	1.0000 @ PT*	--	2.1240 @ PT**
Gas Liquid Ratio :	1.0000 bbl @ PT*	2296 SCF***	--
Stream Properties			
Molecular Weight :	94.40	25.63	47.34
Density obs. (gm/cc) :	0.7519 @ PT*	--	0.5635 @ PT**
Gravity (AIR = 1.000) :	56.5 API @ 60	0.889	--
GHV (BTU/scf) :	--	1162.0	--
Heptanes Plus Properties			
Mol % :	49.66	0.28	15.87
Molecular Weight :	128.3	105.4	128.0
Density (gm/cc @ 60 F):	0.8128	0.6960	0.8114
Gravity (API @ 60 F):	42.4	71.6	42.7
Octanes Plus Properties			
Mol % :	32.59	0.08	10.34
Molecular Weight :	145.3	128.9	145.3
Density (gm/cc @ 60 F):	0.8397	0.7226	0.8391
Gravity (API @ 60 F):	36.9	64.1	37.0
Eicosanes Plus Properties			
Mol % :	1.17	0.00	0.37
Molecular Weight :	447.5	--	446.8
Density (gm/cc @ 60 F):	0.9640	--	0.9640
Gravity (API @ 60 F):	15.1	--	15.1

* (P)ressure 85 psig, (T)emperature 54 deg.F
** (P)ressure 9900 psig, (T)emperature 260 deg.F
*** 2296 SCF / SEP BBL @ PT = 8540 SCF / ST BBL

CONSTANT MASS STUDY
@ 260 deg F

ON RECOMBINED GAS RESERVOIR FLUID

Pressure (psig)		Relative Volume (V/Vsat) (1)	Formation Volume Factor (Bg) (2)	Gas Expansion Factor (E) (3)	Deviation Factor (Z)	Specific Volume (CFT/LB)
9900	*	0.8533	0.00313	319.93	1.523	0.03509
9000		0.8707	0.00319	313.53	1.413	0.03581
8000		0.8927	0.00327	305.80	1.288	0.03671
7500		0.9077	0.00333	300.74	1.228	0.03733
7000		0.9257	0.00339	294.89	1.169	0.03807
6500		0.9464	0.00347	288.43	1.110	0.03892
6000		0.9725	0.00356	280.71	1.053	0.03999
5550	**	1.0000	0.00366	272.98	1.002	0.04112

* Reservoir Pressure
** 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.

CONSTANT MASS STUDY
@ 260 deg F

ON RECOMBINED GAS RESERVOIR FLUID

Pressure (psig)	Relative Volume (V/Vsat) (1)	Retrograde Liquid Deposit (Bbl/MMSCF) (2)	(Volume%) (3)
5550 *	1.0000	0.00	0.00
5260	1.0195	2.01	0.31
4975	1.0429	3.73	0.57
4490	1.0880	6.90	1.06
4025	1.1462	13.88	2.13
3615	1.2165	26.40	4.05
3190	1.3197	44.04	6.75
2680	1.5285	82.61	12.66
2220	1.8436	96.50	14.79
1880	2.2105	102.24	15.67
1560	2.7758	104.46	16.01

* Dew Point Pressure

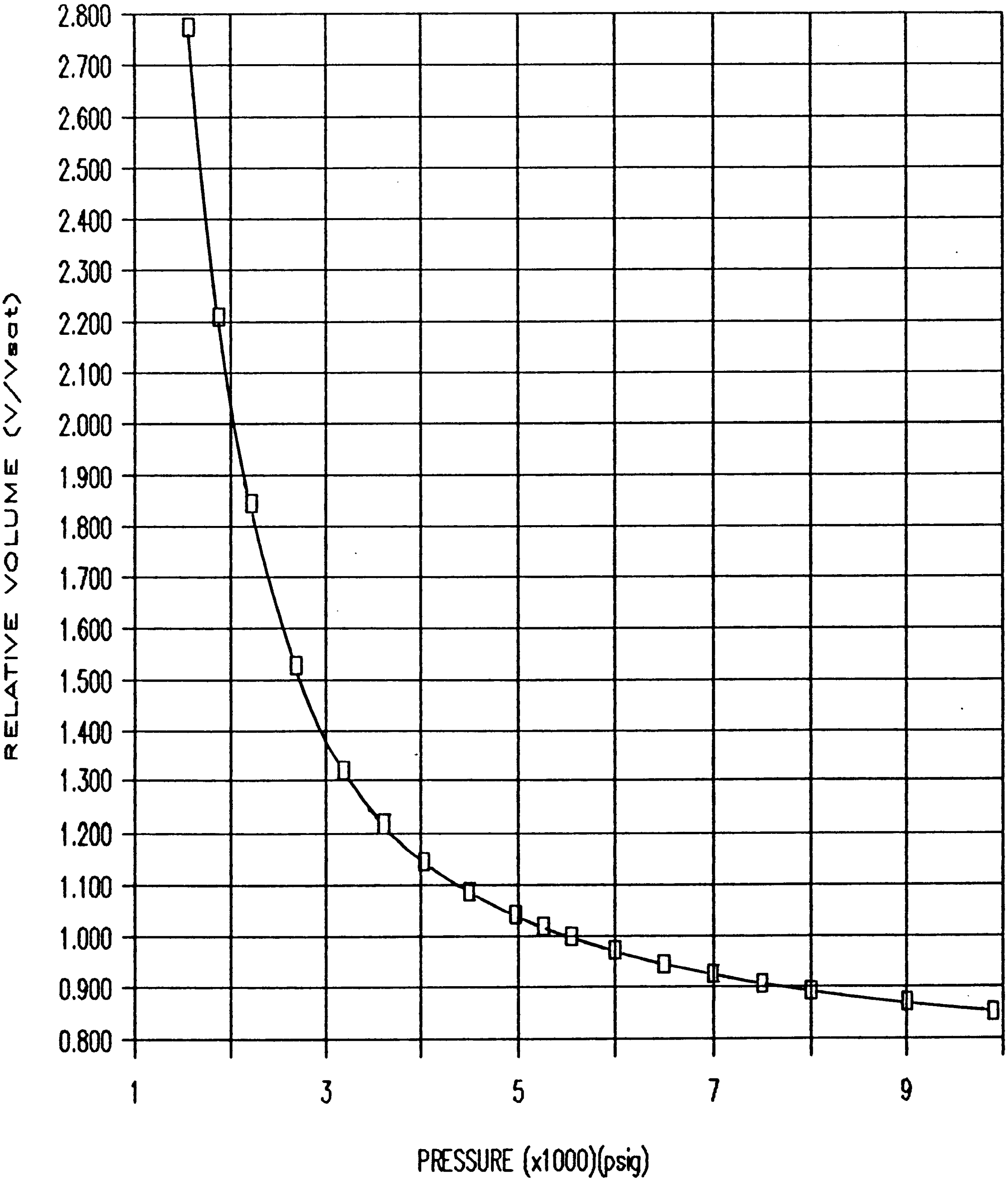
(1) Cubic feet at indicated pressure and temperature per cubic foot at saturation pressure.

(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.

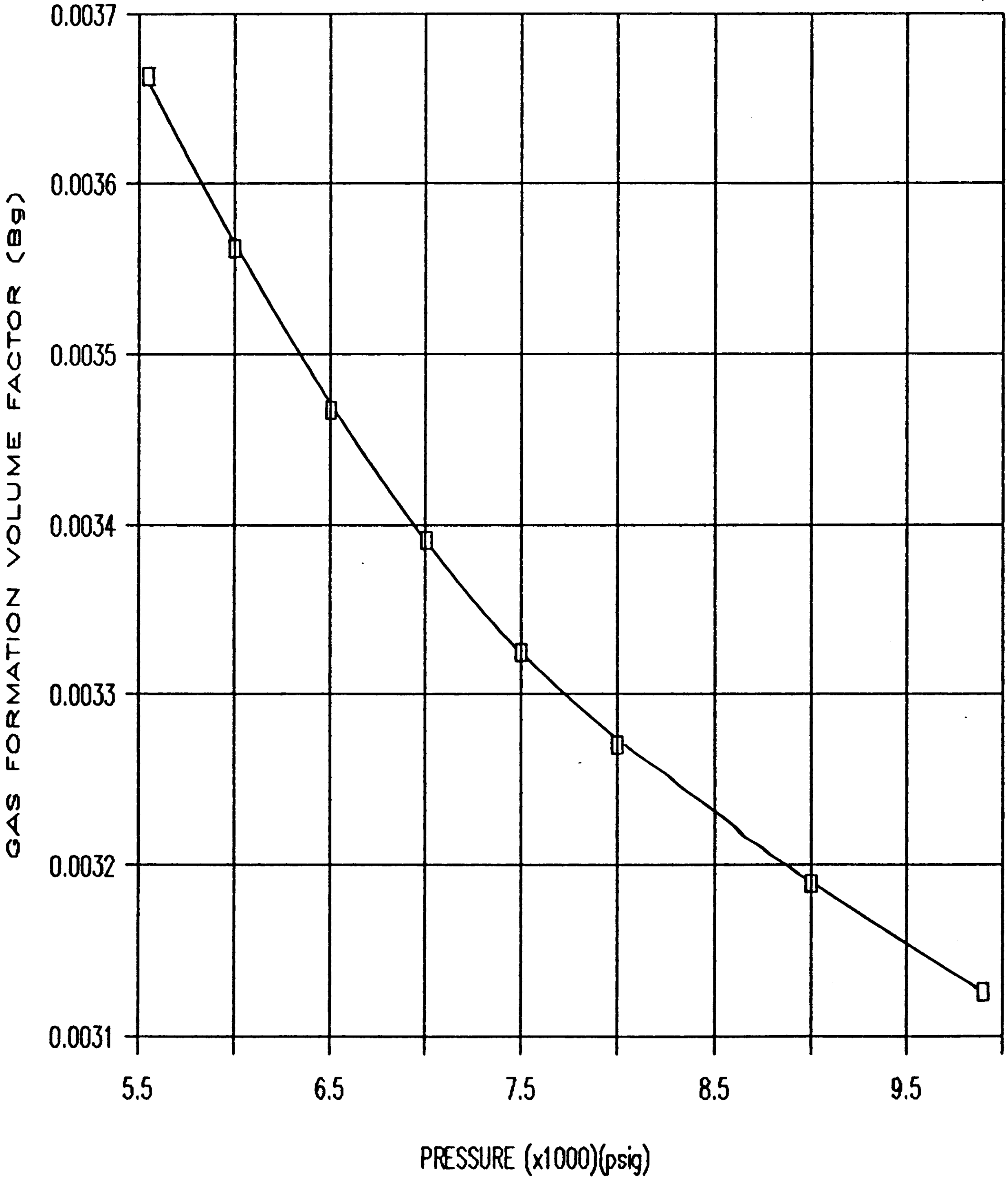
GAS RESERVOIR FLUID

RELATIVE VOLUME

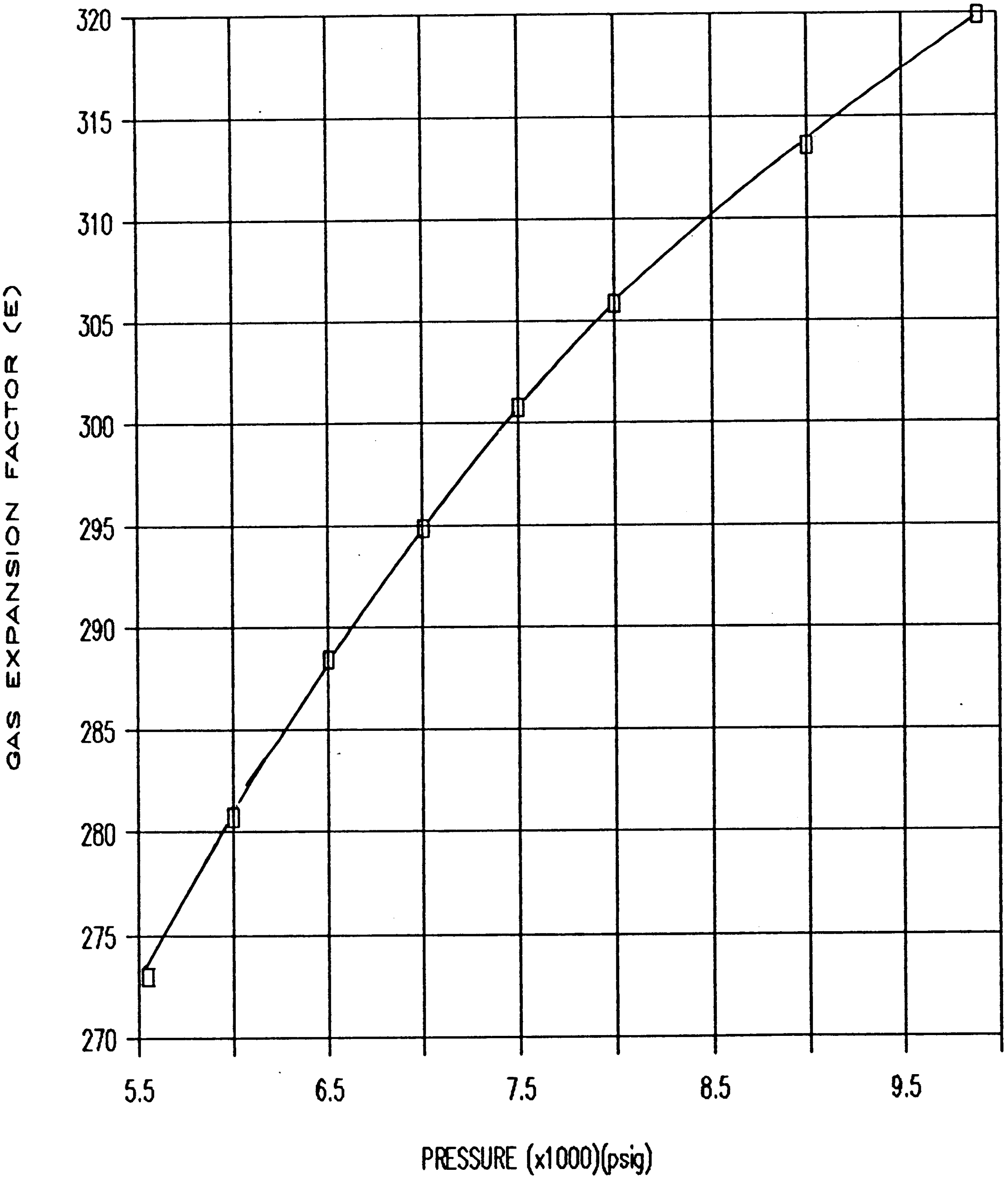


GAS RESERVOIR FLUID

GAS FORMATION VOLUME FACTOR



GAS RESERVOIR FLUID
GAS EXPANSION FACTOR



Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

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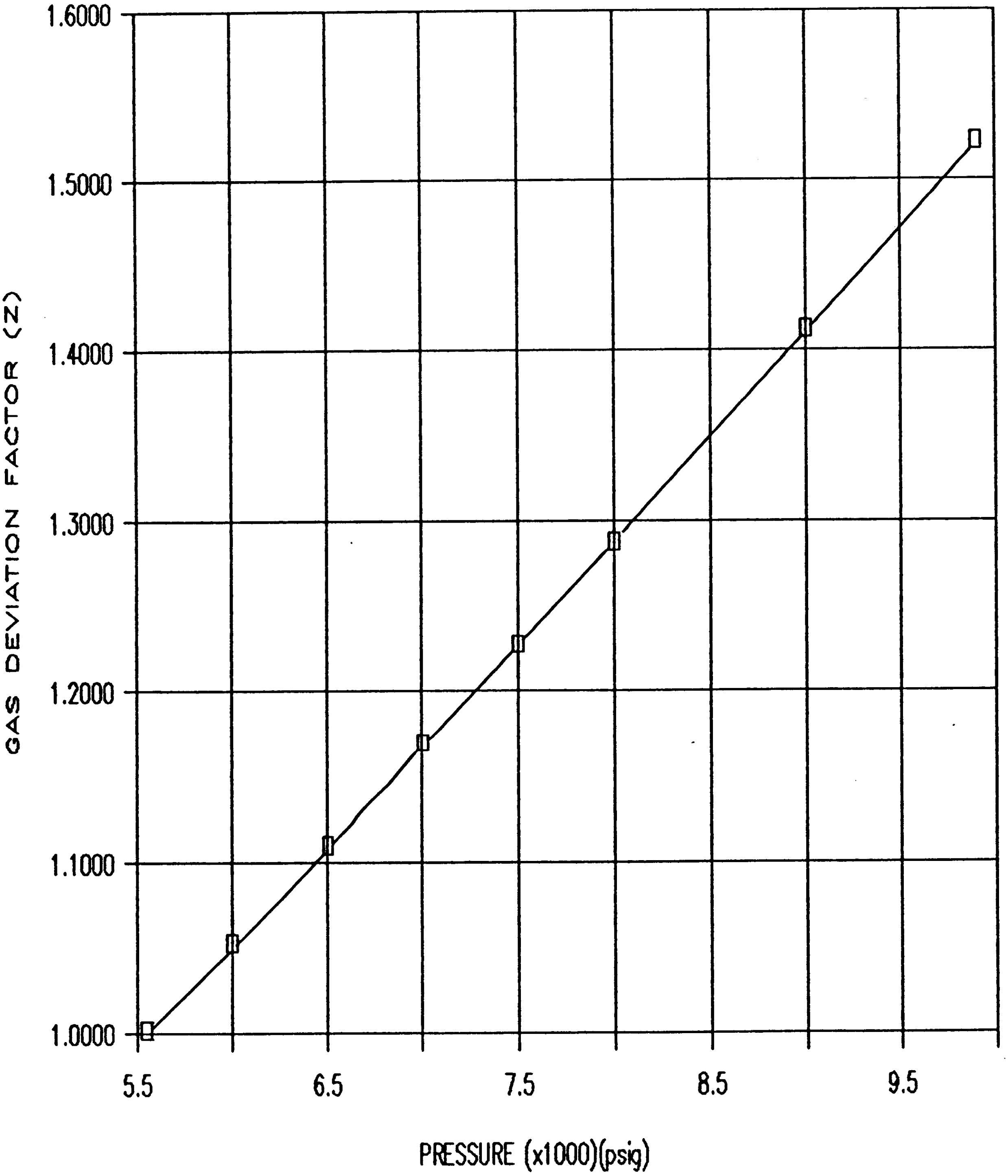
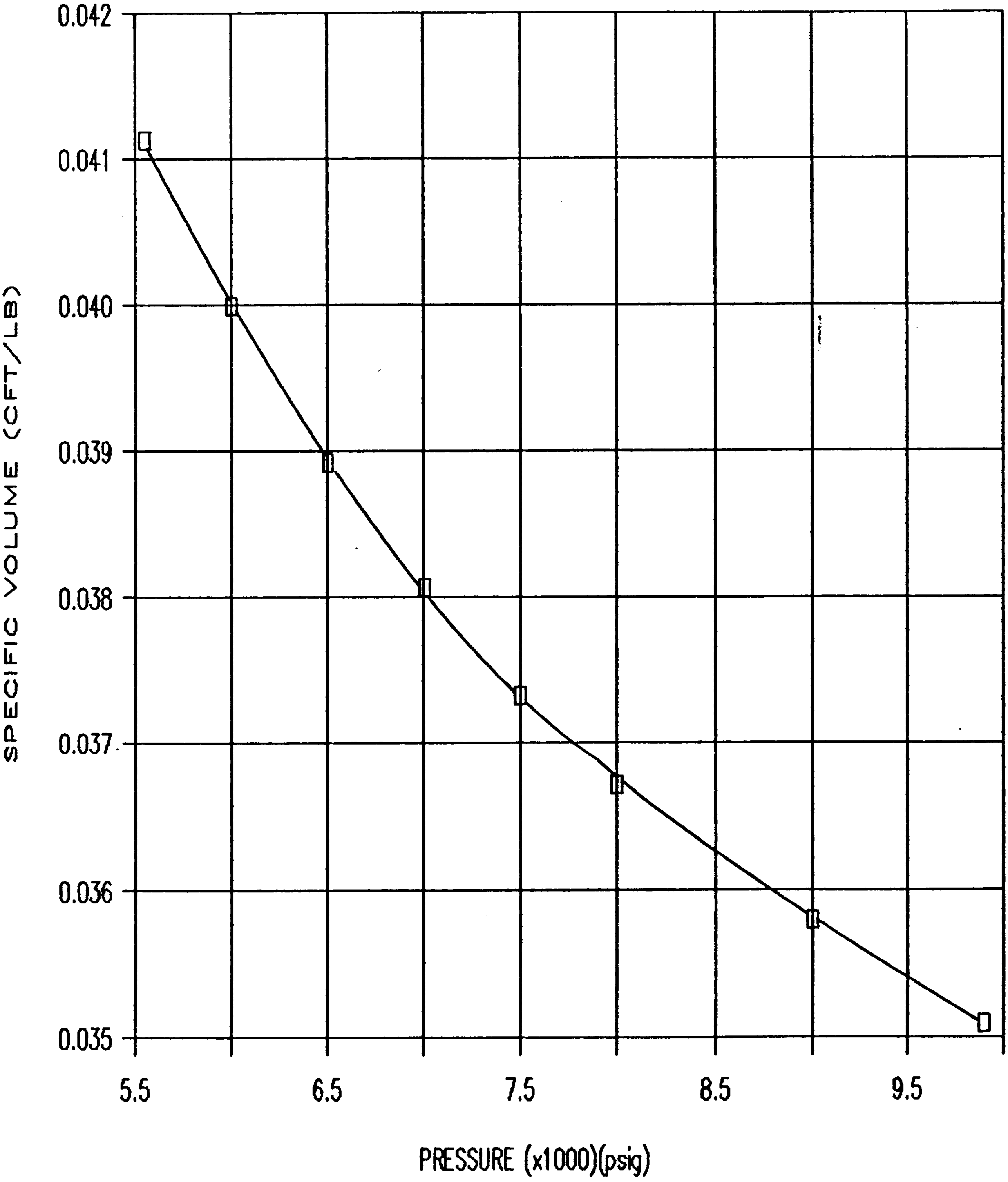
GAS RESERVOIR FLUID
GAS DEVIATION FACTOR

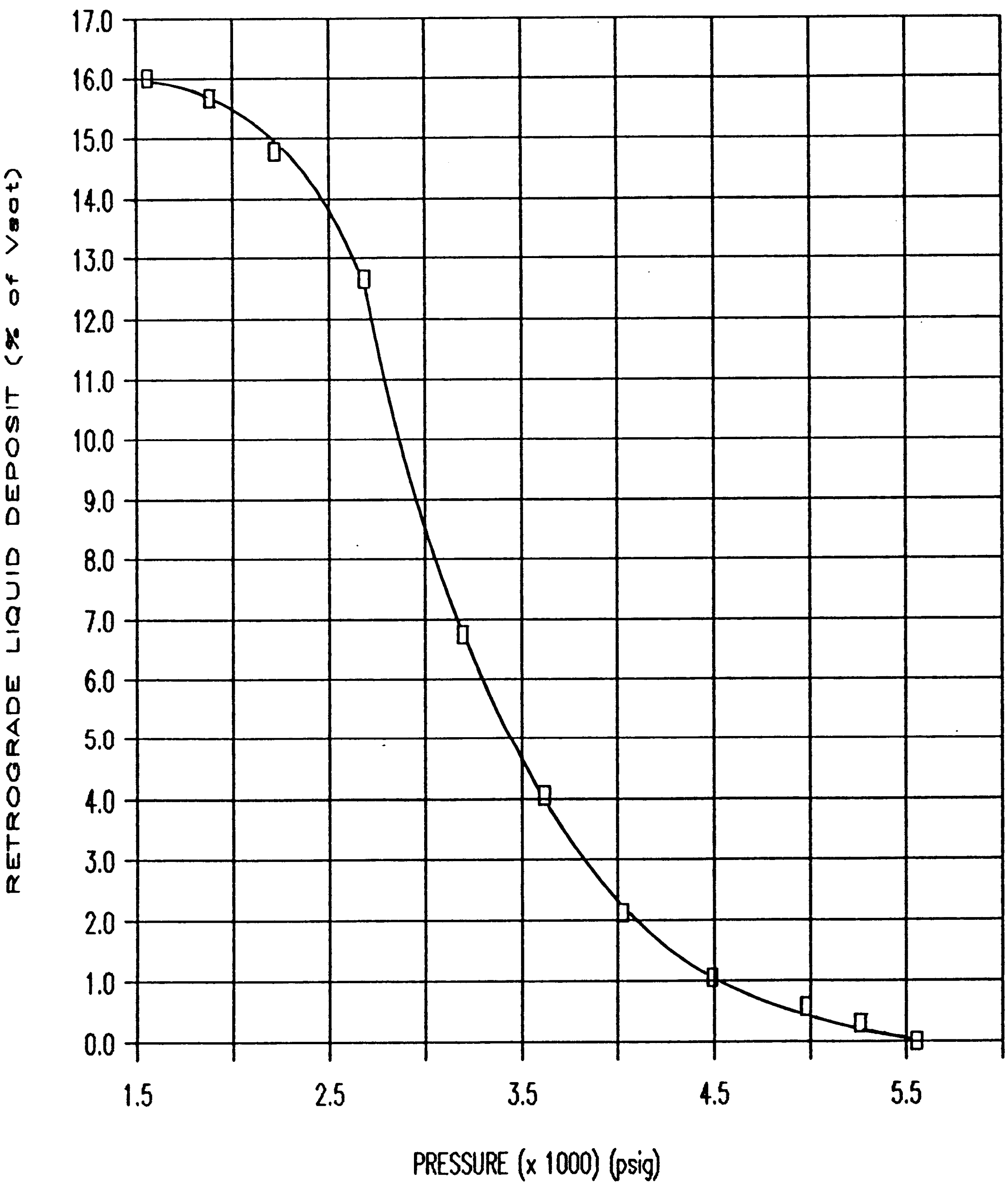


GAS RESERVOIR FLUID
SPECIFIC VOLUME



GAS RESERVOIR FLUID

RETROGRADE LIQUID DEPOSIT



CONSTANT MASS STUDY
@ 260 deg F

ON RECOMBINED OIL RESERVOIR FLUID

Pressure (psig)	Relative Volume (V/Vsat) (1)	Oil Compressibility (x 10^-6)(psig^-1) (2)	Y Function (3)	Thermal Expansion (x10^-4)(degF^-1) (4)	Liquid %
9900 *	0.7720	16.00		62.10	
9000	0.7842	17.31		62.62	
8000	0.7997	19.42		63.24	
7000	0.8186	23.08		63.98	
6000	0.8429	28.78		64.95	
5000	0.8757	37.47		66.32	
4000	0.9257	53.98		68.70	
3010 **	1.0000	120.83		72.52	100.00
2985	1.0047		1.791		96.25
2950	1.0131		1.553		90.70
2910	1.0233		1.472		85.16
2860	1.0372		1.408		79.89
2800	1.0553		1.356		74.53
2755	1.0698		1.326		71.15
2695	1.0897		1.303		67.02
2540	1.1443		1.282		63.07
2415	1.1948		1.265		60.62
2300	1.2468		1.251		58.65
2180	1.3085		1.234		57.05
2075	1.3696		1.219		55.55
1810	1.5590		1.186		51.88
1620	1.7397		1.160		49.44
1455	1.9433		1.133		47.18
1220	2.3278		1.105		44.18

* Reservoir pressure
** Saturation pressure

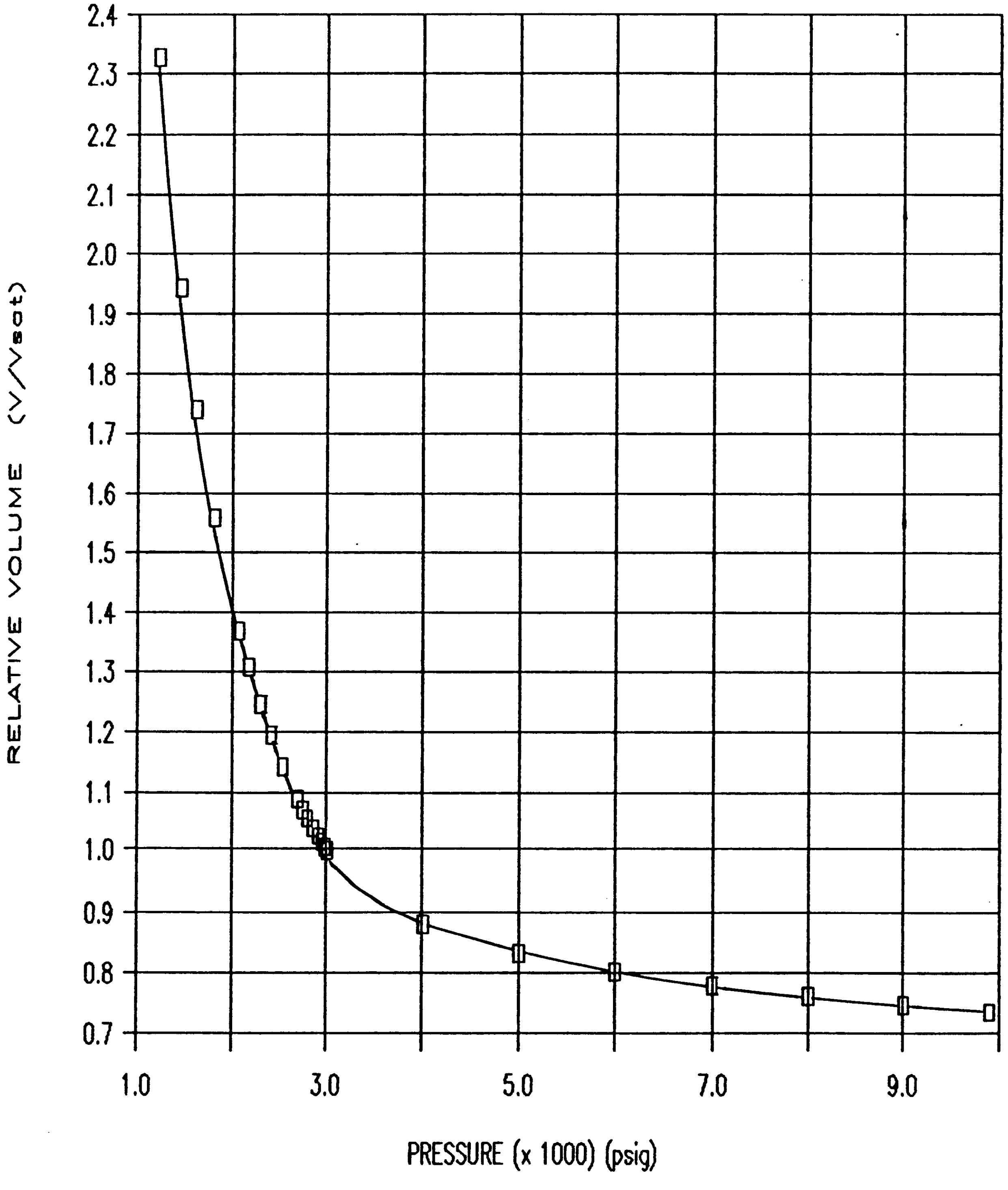
(1) Barrels at indicated pressure per barrel at saturation pressure.

(2) Oil Compressibility = - (1/V) * (dV/dP)

(3) Y Function = (Psat - P) / (P)*(V/Vsat-1)

(4) Thermal Expansion = - (1/V) * (dV/dT)

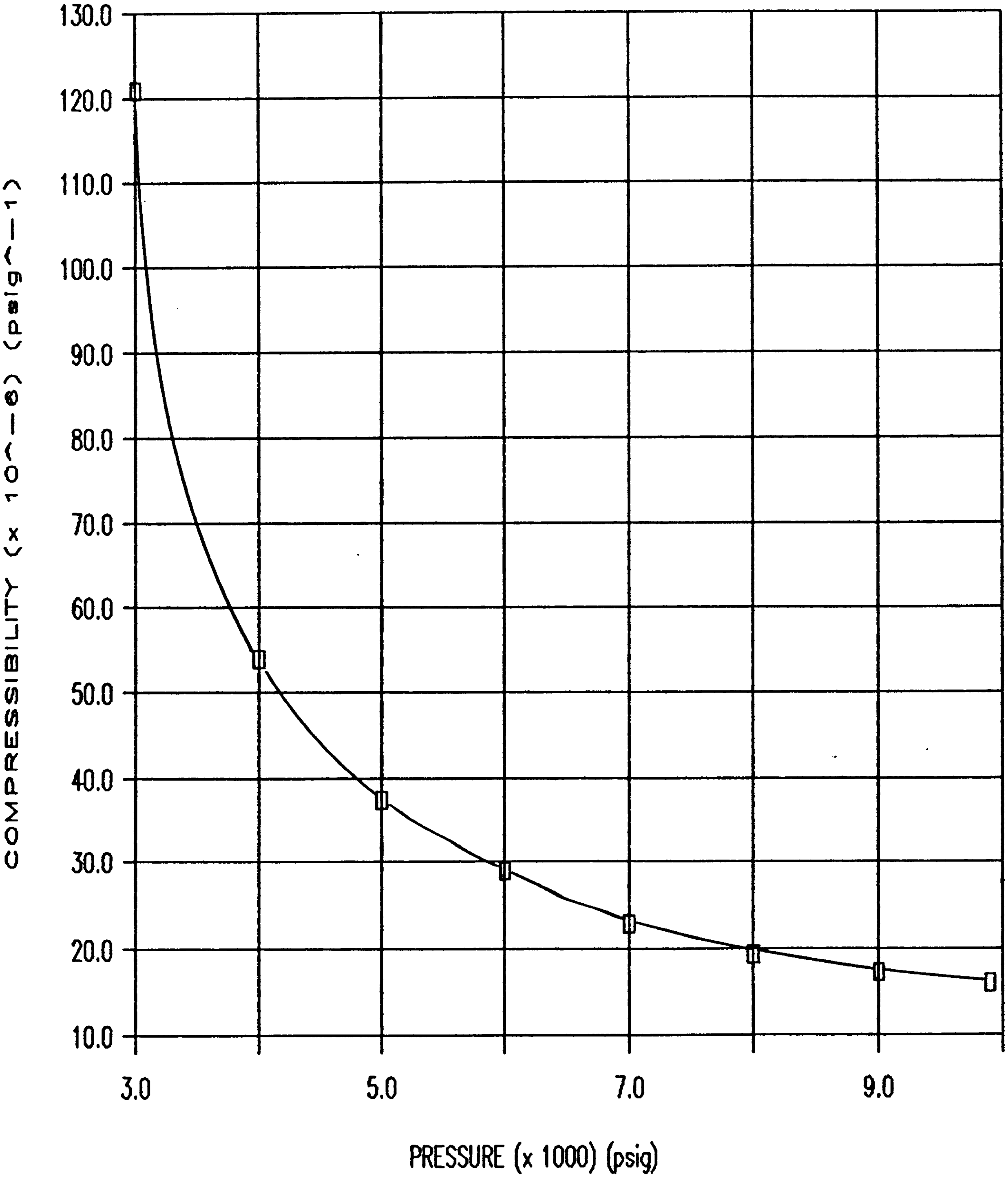
OIL RESERVOIR FLUID
RELATIVE VOLUME



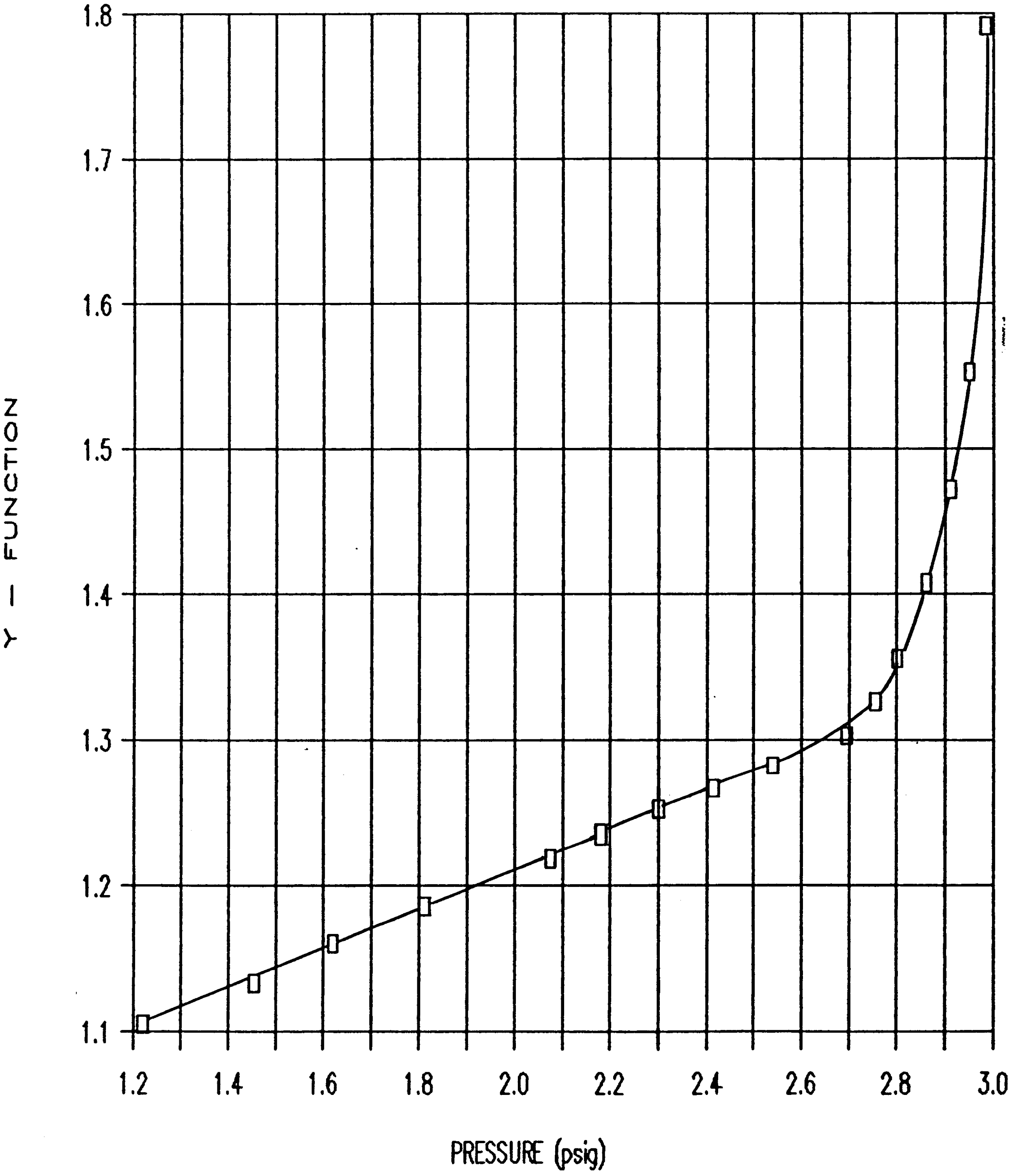
Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

OIL RESERVOIR FLUID

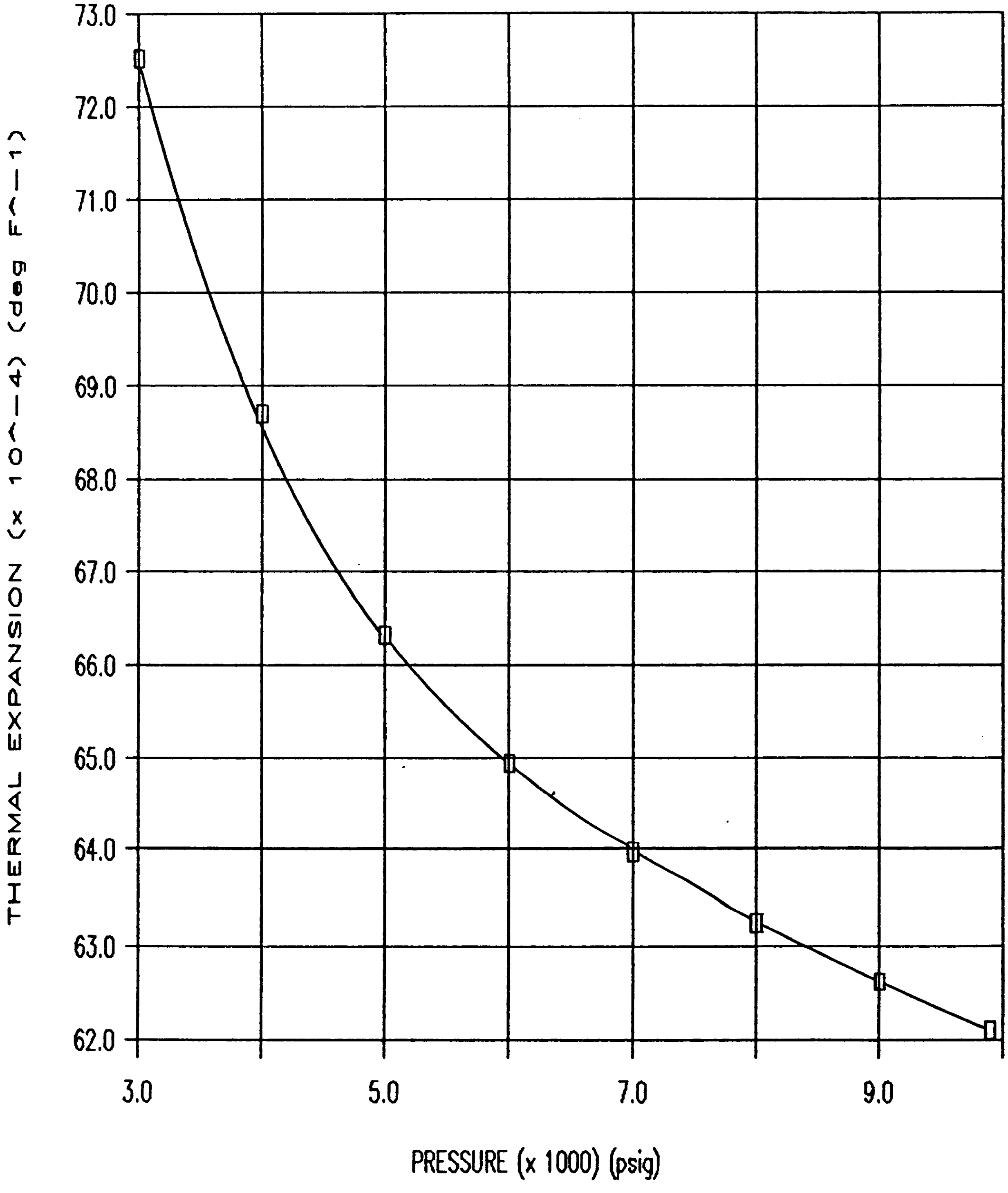
OIL COMPRESSIBILITY



OIL RESERVOIR FLUID
Y - FUNCTION



OIL RESERVOIR FLUID
OIL THERMAL EXPANSION



Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

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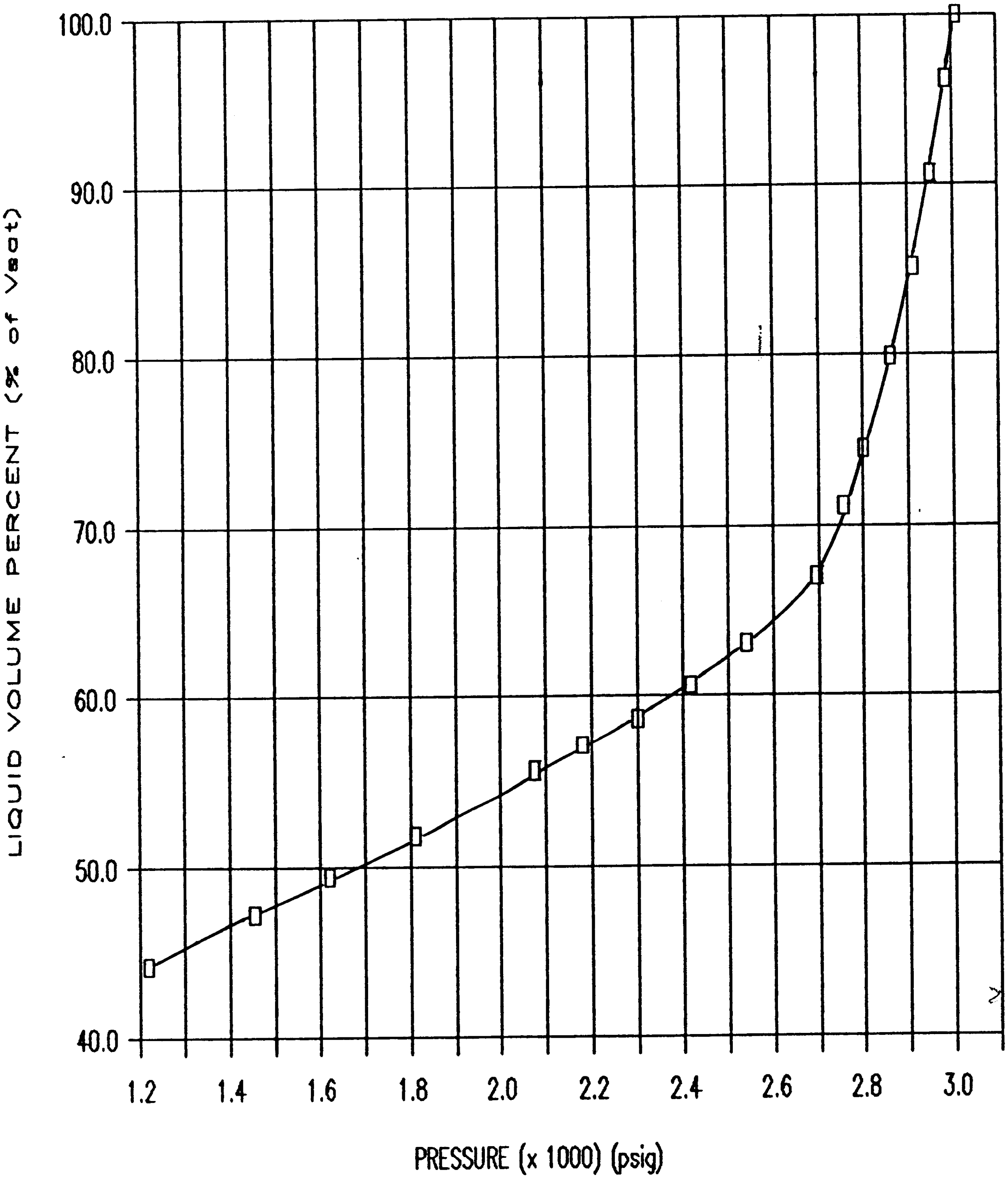
File: P 89035

OIL RESERVOIR FLUID

LIQUID VOLUME PERCENT



PETROLAB

Company: Petrofina Exploration Australia S. A   Page: 26 of 33
Well   : Anemone # 1-A, DST # 2   File: P-89035

WATER ANALYSIS

Sampled 9/10/89 @ 21.00 hrs. from choke manifold.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
1.397	7160	7.8

Cations: / Anions:

Cations:		mg/l	meq/l	Anions:		mg/l	meq/l
Calcium	(Ca):	57.0	2.84	Hydroxide	(OH):	0.0	0.00
Magnesium	(Mg):	92.3	7.60	Carbonate	(CO3):	0.0	0.00
Sodium	(Na):	1390.0	60.46	Bi-Carbonate	(HCO3):	291.1	4.77
Potassium	(K):	63.0	1.61	Sulphate	(SO4):	277.0	5.77
				Chloride	(Cl):	2134.0	60.11
				Nitrate	(NO3):	10.2	0.17
Total cations			72.51	Total anions			70.81

ION BALANCE: (72.51-70.81) / (72.51+70.81) * 100% = 1.19 %

SODIUM / CATION RATIO: 83.38 %

Total dissolved solids mg/l:

Calculated: 4169   From resistivity: 4254

Hardness:

Total: 522   Carbonate: 284   Non-Carbonate: 238

Total alkalinity: 284

PETROLAB

Company: Petrofina Exploration Australia S. A　　Page: 27 of 33
Well : Anemone # 1-A, DST # 2　　File: P-89035

WATER ANALYSIS

Bottom hole sample from 3904 mRT. Sampled 10/10/89.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.552	18100	7.5

Cations:		mg/l	meq/l	Anions:		mg/l	meq/l
Calcium	(Ca):	54.0	2.70	Hydroxide	(OH):	0.0	0.00
Magnesium	(Mg):	3.2	0.26	Carbonate	(CO3):	0.0	0.00
Sodium	(Na):	5040.0	219.23	Bi-Carbonate	(HCO3):	6746.5	110.60
Potassium	(K):	124.0	3.17	Sulphate	(SO4):	140.0	2.92
				Chloride	(Cl):	3954.0	111.37
				Nitrate	(NO3):	< 0.1	< 0.10
Total cations			225.36	Total anions			224.88

ION BALANCE:(225.36-224.88) / (225.36+224.88) * 100%　　0.11 %

SODIUM / CATION RATIO:　　97.28 %

Total dissolved solids mg/l:

Calculated: 12688　　From resistivity: 11776

Hardness:

Total: 148 Carbonate: 148 Non-Carbonate: 0

Total alkalinity: 6582

PETROLAB

Company: Petrofina Exploration Australia S. A   Page: 28 of 33
Well : Anemone # 1-A, DST # 2   File: P-89035

WATER ANALYSIS

Bottom hole sample from 4428 mRT. Sampled 10/10/89.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.559	17900	7.6

Cations:		mg/l	meq/l	Anions:		mg/l	meq/l
Calcium	(Ca):	58.0	2.89	Hydroxide	(OH):	0.0	0.00
Magnesium	(Mg):	1.6	0.13	Carbonate	(CO3):	0.0	0.00
Sodium	(Na):	5100.0	221.84	Bi-Carbonate	(HCO3):	6551.8	107.41
Potassium	(K):	112.0	2.86	Sulphate	(SO4):	112.0	2.33
				Chloride	(Cl):	3788.0	106.69
				Nitrate	(NO3):	0.6	0.01
Total cations			227.73	Total anions			216.44

ION BALANCE:(227.73-216.44) / (227.73+216.44) * 100% 2.54 %

SODIUM / CATION RATIO: 97.41 %

Total dissolved solids mg/l:

Calculated: 12448   From resistivity: 11627

Hardness:

Total: 151   Carbonate: 151   Non-Carbonate: 0

Total alkalinity: 6392

PETROLAB

Company: Petrofina Exploration Australia S. A
Well : Anemone # 1-A, DST # 2

File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 @ 06.00 hrs.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.410	24400	7.5

Cations:

	mg/l	meq/l
Calcium (Ca):	42.0	2.10
Magnesium (Mg):	21.0	1.73
Sodium (Na):	6745.0	293.39
Potassium (K):	163.0	4.17
Total cations		301.38

Anions:

	mg/l	meq/l
Hydroxide (OH):	0.0	0.00
Carbonate (CO3):	0.0	0.00
Bi-Carbonate (HCO3):	5596.5	91.75
Sulphate (SO4):	1002.0	20.86
Chloride (Cl):	6443.0	181.51
Nitrate (NO3):	< 0.1	< 0.10
Total anions		294.11

ION BALANCE:(301.38-294.11) / (301.38+294.11) * 100% 1.22 %

SODIUM / CATION RATIO: 97.35 %

Total dissolved solids mg/l:

Calculated: 17215 From resistivity: 16663

Hardness:

Total: 191 Carbonate: 191 Non-Carbonate: 0

Total alkalinity: 5460

PETROLAB

Company: Petrofina Exploration Australia S. A　　Page: 30 of 33
Well　: Anemone # 1-A, DST # 2　　File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 @ 09.07 hrs.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.461	21700	7.1

Cations:

	mg/l	meq/l
Calcium (Ca):	37.0	1.85
Magnesium (Mg):	13.0	1.07
Sodium (Na):	6330.0	275.34
Potassium (K):	151.0	3.86
Total cations		282.12

Anions:

	mg/l	meq/l
Hydroxide (OH):	0.0	0.00
Carbonate (CO3):	0.0	0.00
Bi-Carbonate (HCO3):	5822.0	95.44
Sulphate (SO4):	603.0	12.56
Chloride (Cl):	5347.0	150.62
Nitrate (NO3):	< 0.1	< 0.10
Total anions		258.62

ION BALANCE:(282.12-258.62) / (282.12+258.62) * 100%　4.35 %

SODIUM / CATION RATIO:　97.60 %

Total dissolved solids mg/l:

Calculated:　15392　　From resistivity:　14519

Hardness:

Total:　146　Carbonate:　146　Non-Carbonate:　0

Total alkalinity:　5680

PETROLAB

Company: Petrofina Exploration Australia S. A   Page: 31 of 33
Well : Anemone # 1-A, DST # 2   File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 after 70 bbls. reverse circulation.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.562	17800	7.7

Cations:	mg/l	meq/l	Anions:	mg/l	meq/l
Calcium (Ca):	41.0	2.05	Hydroxide (OH):	0.0	0.00
Magnesium (Mg):	2.4	0.20	Carbonate (CO3):	0.0	0.00
Sodium (Na):	5000.0	217.49	Bi-Carbonate (HCO3):	6129.5	100.48
Potassium (K):	124.0	3.17	Sulphate (SO4):	115.0	2.39
			Chloride (Cl):	3757.0	105.84
			Nitrate (NO3):	< 0.1	< 0.10
Total cations		222.90	Total anions		208.72

ION BALANCE:(229.90-208.72) / (222.90+208.72) * 100% 3.29 %

SODIUM / CATION RATIO: 97.57 %

Total dissolved solids mg/l:

Calculated: 12105   From resistivity: 11553

Hardness:

Total: 112 Carbonate: 112 Non-Carbonate: 0

Total alkalinity: 5980

PETROLAB

Company: Petrofina Exploration Australia S. A
Well : Anemone # 1-A, DST # 2

Page: 32 of 33
File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 after 90 bbls. reverse circulation.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.571	17500	7.7

Cations:		mg/l	meq/l	Anions:		mg/l	meq/l
Calcium	(Ca):	29.0	1.45	Hydroxide	(OH):	0.0	0.00
Magnesium	(Mg):	2.4	0.20	Carbonate	(CO3):	0.0	0.00
Sodium	(Na):	4980.0	216.62	Bi-Carbonate	(HCO3):	6311.9	103.48
Potassium	(K):	120.0	3.07	Sulphate	(SO4):	91.0	1.90
				Chloride	(Cl):	3622.0	102.02
				Nitrate	(NO3):	1.3	0.0
Total cations			221.33	Total anions			207.41

ION BALANCE:(221.33-207.41) / (221.33+207.41) * 100% 3.25 %

SODIUM / CATION RATIO: 97.87 %

Total dissolved solids mg/l:

Calculated: 12001 From resistivity: 11331

Hardness:

Total: 82 Carbonate: 82 Non-Carbonate: 0

Total alkalinity: 6158

PETROLAB

Company: Petrofina Exploration Australia S. A   Page: 33 of 33
Well : Anemone # 1-A, DST # 2   File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 after 100 bbls. reverse circulation.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.575	17400	7.3

Cations:

	mg/l	meq/l
Calcium (Ca):	51.0	2.55
Magnesium (Mg):	2.4	0.20
Sodium (Na):	4960.0	215.75
Potassium (K):	124.0	3.17
Total cations		221.66

Anions:

	mg/l	meq/l
Hydroxide (OH):	0.0	0.00
Carbonate (CO3):	0.0	0.00
Bi-Carbonate (HCO3):	6432.9	105.46
Sulphate (SO4):	79.0	1.65
Chloride (Cl):	3659.0	103.08
Nitrate (NO3):	< 0.1	< 0.10
Total anions		210.18

ION BALANCE:(221.66-210.18) / (221.66+210.18) * 100% 2.66 %

SODIUM / CATION RATIO: 97.33 %

Total dissolved solids mg/l:

Calculated: 12092   From resistivity: 11258

Hardness:

Total: 137 Carbonate: 137 Non-Carbonate: 0

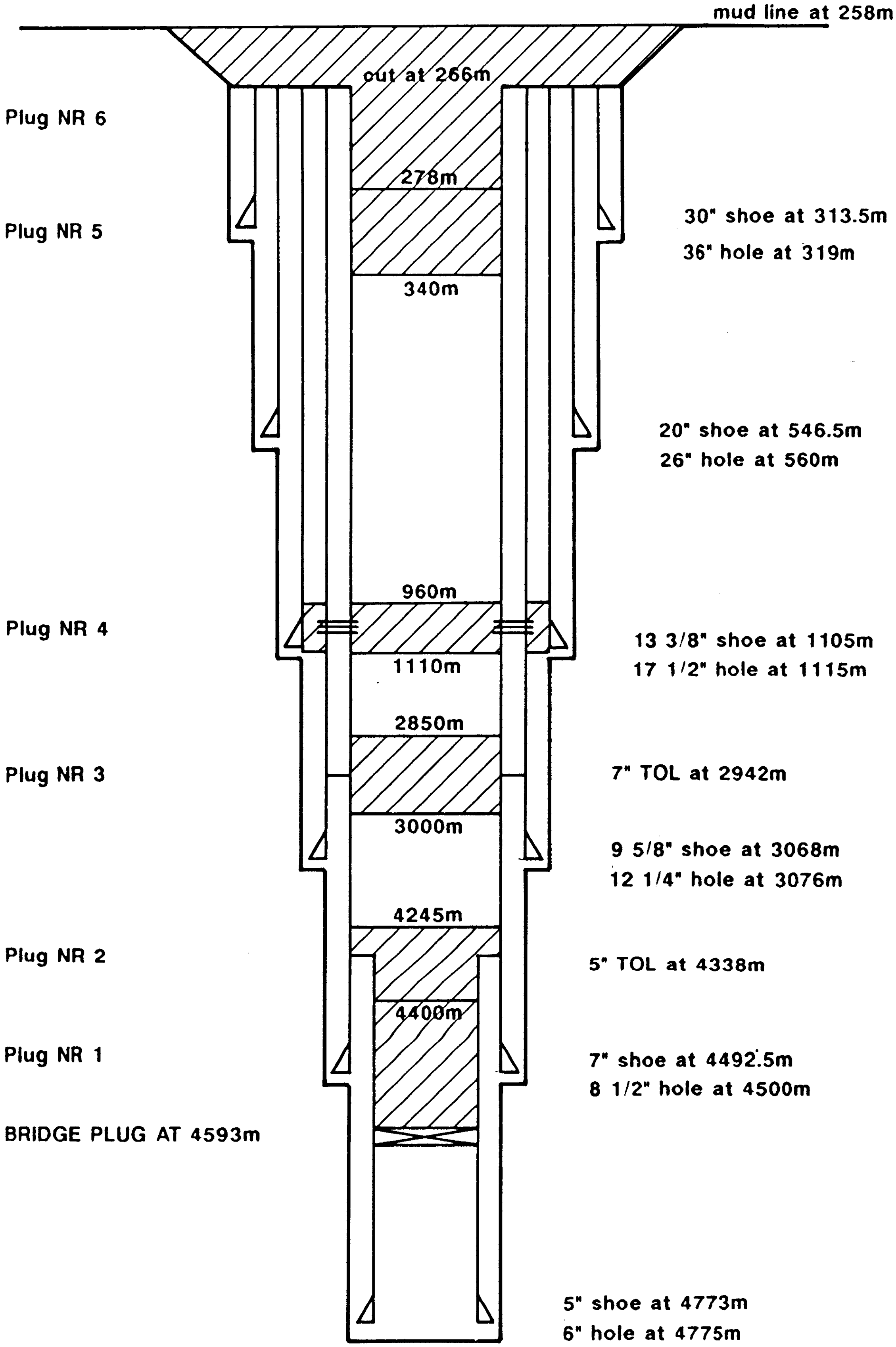
Total alkalinity: 6276

11. ABANDONMENT

ANEMONE - 1/1A

ABANDONMENT DIAGRAM

(DEPTH RKB)



SEABED CLEARANCE

FINA

Petrofina Exploration Australia S.A.
Incorporated in Belgium with Limited Liability
Registered in New South Wales

Level 2
476 St Kilda Road
Melbourne Vic. 3004

Telephone: (03) 267 7999
Telex: 154767 PEXAUS
Telefax: (03) 267 7776

CERTIFICATE OF SEABED CLEARANCE

OPERATOR: PETROFINA EXPLORATION AUSTRALIA S.A.

RIG: ZAPATA ARCTIC.

FIELD: VIC P20.

LOCATION: ANEMONE 1A.

DATE: 20th OCT 89.

THIS IS TO CERTIFY THAT:

A. ALL STRINGS OF CASING HAVE BEEN CUT AT A DEPTH OF 26' FEET BELOW THE SEA BED AND THAT ALL STRUCTURES ABOVE THIS POINT HAVE BEEN RECOVERED WITH THE CASING.

SIGNED
O.I.M.
COMPANY ZAPATA

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
R.O.V. SUPT/DIVING SUPV.
COMPANY Sub Sea Int.

C. THE WELLHEAD EQUIPMENT AND DEBRIS REMOVED FROM THE WELL SITE ANEMONE 1A. WILL BE RETURNED TO PETROFINA WAREHOUSE FACILITIES, PORT WELSHPOOL.

SIGNED E.B Snowling
PETROFINA DRILLING SUPERVISOR

PAGE 1 OF 2

SubSea International
(Diving Services)
Australia Inc.

99 Howe Street,
Osborne Park W.A. 6017

Telephone: (09) 443 3455
Telex: AA 94622 (SUBSEA)

To PETROFINA Location AUST

From DAVID BARWOOD. SUBSEA INT'L Location ZAPATA ARTIC

Date 20-10-89.

Subject BOTTOM SURVEY ANEMONE #1. REPORT.

THE FINAL SEABED SURVEY OF WELL ANEMONE #1 RESULTED IN NO DEBRIS BEING LOCATED AS OF 20-10-89.

DURING THE WELL PROGRAM THE FOLLOWING ITEMS WERE LOCATED AND RECOVERED TO THE SURFACE BY THE R.O.V. SEE PAGE 2 OF 2.

DEBRIS RECOVERED.

A. USED AX RING.
B. SLEDGE HAMMER.
C. 250 lb GRATING
D. 2 x SHALE SHAKER COVERS
E. 2 x 10 FT SLINGS
F. 1 x 8½ DRILL BIT
G. 1 x SHEAVE BLOCK.

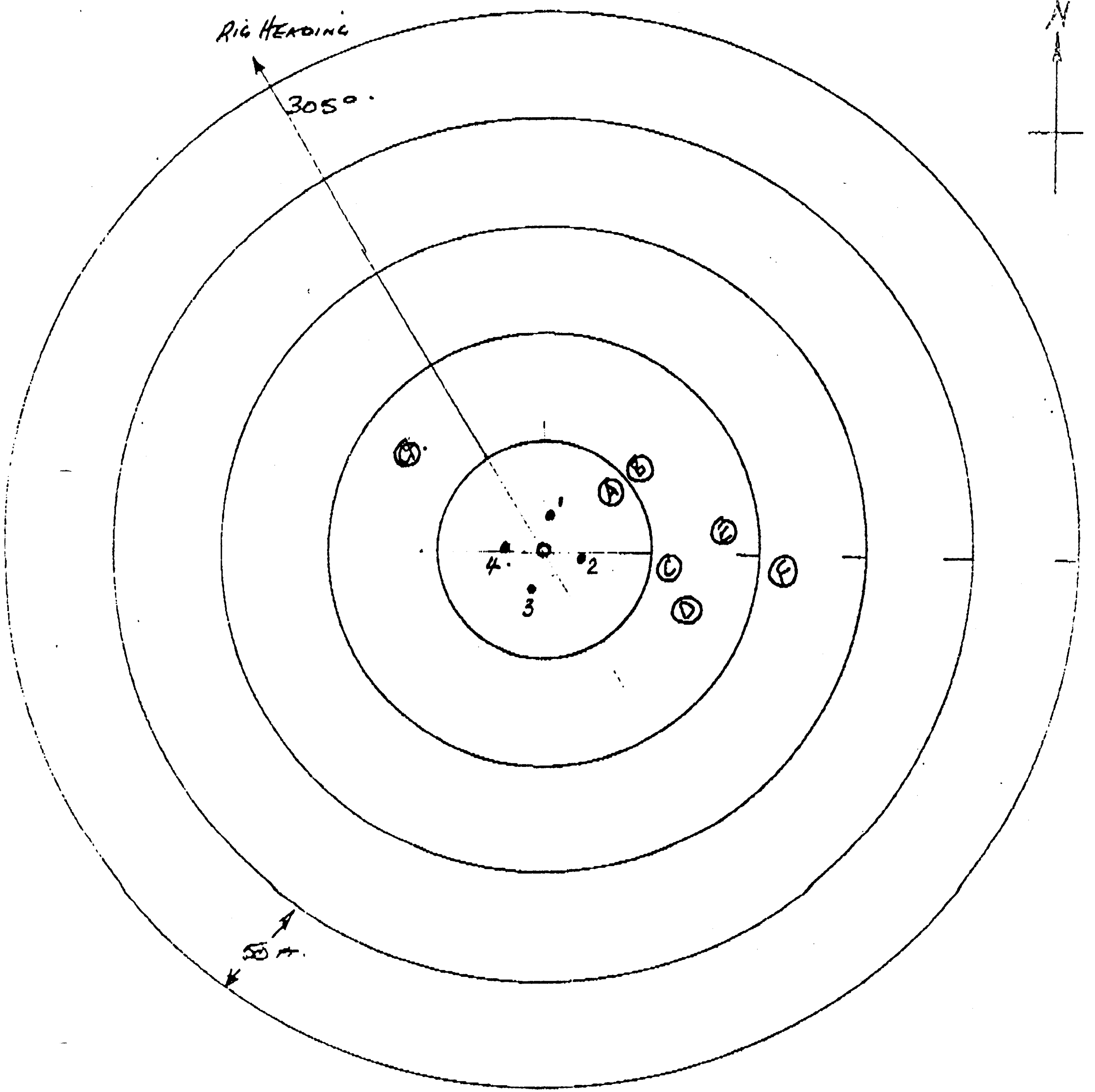
ON COMPLETION OF GROUTING WELL CRATER, THE SEABED WAS SEEN TO BE IN MUCH THE SAME CONDITION AS BEFORE THE SPUD.

SUBSEA INTERNATIONAL SUPERVISOR

REPORT 1A & ~~B~~ **SUBSEA INTERNATIONAL DEBRIS SURVEY REPORT**

Client : PETROFINA AUST.
Location : ANEMONE #1
Vessel : ZAPATA ARTIC
Submersible : SCORPIO 22.
Dive Number : 262/124.
Dive Task : FINAL DIVE.

Date : 20-10-89.
Area of Survey : 200M RADIUS OF PGB
Depth : 756 FEET.
Visibility : VARIED.



Debris: See Page 1 of 2.

SUBSEA REPRESENTATIVE :
CLIENT'S REPRESENTATIVE: EG Snowle

Petrofina Exploration Australia S.A.
Incorporated in Belgium with Limited Liability
Registered in New South Wales

Level 2
476 St Kilda Road
Melbourne Vic 3004

Telephone: (03) 267 7999
Telex: 154767 PEXAUS
Telefax: (03) 267 7776

CERTIFICATE OF SEABED CLEARANCE

OPERATOR: PETROFINA EXPLORATION AUSTRALIA S.A.

RIG: ZAPATA ARCTIC,

FIELD: VIC P20.

LOCATION: ANEMONE 1A.

DATE: 21th OCT '89.

THIS IS TO CERTIFY THAT:

R.O.V. VISUAL AND SONAR INSPECTION WAS DONE AT THE POINT OF #1 ANCHOR AND CHASER WAS LOST. NO VISUAL OR SONAR PICK UP OBSERVED.

E.S. Snowling.
PETROFINA DRILLING SUPERVISOR.

O.I.M. ZAPATA.

ROV. SUB SEA INT.
DIVING SUPV,

DAVID BURWOOD.

12. COST

P E T R O F I N A E X P L O R A T I O N A U S T R A L I A

C O S T E S T I M A T E

A.F.E. no: VIC/P20 1102
Revision no: 5
Currency : Aust Dollars
US$ / A$: 1.33
Date : 25-Oct-89

OPERATOR : PETROFINA EXPLORATION AUSTRALIA
DESCRIPTION of JOB : Drill and test exploration well ANEMONE 1 (ST1) to 5000 m

ITEM	DESCRIPTION	CUMULATIVE COST DRY (A$)	CUMULATIVE COST TEST (A$)	AFE CUMULATIVE (A$)	CUMULATIVE DAY COST (A$)	
	TANGIBLES					
20x	Wellhead and Accessories	100,000	0	100,000	79,329	79%
20x	Casing,Liners and Accessories	612,375	204,125	816,500	784,134	96%
20x	Tubing and Downhole Production Equipment	0	0	0	0	
	Sub - Total Tangibles	712,375	204,125	916,500	863,463	94%
				0		
	INTANGIBLES			0		
				0		
101	Mobilisation and Demobilisation Rig	174,563	0	174,563	166,287	95%
102	Rig Contract	5,621,324	2,134,021	7,755,346	7,558,621	97%
103	Cementing Services Contract	136,458	51,804	188,262	228,897	122%
10x	Directional & turbo - Drilling	844,575	0	844,575	742,570	88%
105	Location Survey and Preparation	132,136	0	132,136	132,136	100%
106	Diving and Subsea Services	388,800	147,600	536,400	535,506	100%
114	Equipment lost	532,000	0	532,000	532,000	100%
10x	Miscellaneous Contracts	279,220	108,065	387,285	650,184	168%
20x	Drilling Bits,Coreheads,Stabilizers and Accessories	512,050	53,200	565,250	533,962	94%
21x	Mud Products and Completion Fluids	297,000	41,250	338,250	341,913	101%
21x	Cement and Stimulation Products	200,000	50,000	250,000	264,390	106%
21x	Fuel,Lubricants and Water	567,000	213,950	780,950	741,693	95%
21x	Miscellaneous Consumables	10,800	1,500	12,300	0	0%
30x	Electric Logging	1,283,450	219,450	1,502,900	1,499,200	100%
30x	Miscellaneous Geological Evaluation	259,000	102,000	361,000	321,720	89%
4xx	Production Testing and Evaluation	157,828	342,211	500,039	754,646	151%
501	Local Air Transport and Helicopters	648,000	246,000	894,000	824,667	92%
502	Supply and Stand-by Boats	1,890,000	717,500	2,607,500	2,531,208	97%
5xx	Miscellaneous Shorebase Facilities	302,400	81,800	384,200	229,717	60%
6xx				0		
x20	Supervisors Operator	21,600	56,200	77,800	238,400	306%
x21	Supervisors Contracted	165,321	123,908	289,229	171,982	59%
	Sub-Total Intangibles	14,422,525	4,691,456	19,113,983	18,999,693	99%
	Contingency 3 %	454,047	146,867	600,914	0	0%
	T O T A L G E N E R A L A $	15,588,947	5,042,451	20,631,398	19,863,156	96%
	US$	11,721,013	3,791,316	15,512,329	14,934,704	96%