

SECTION 1 ENGINEERING DATA1.1 Engineering Summary

Altree-1 & 2 are located in Northern Territory Exploration Permit 24 (EP24) approximately 60km to the north east of Daly Waters (Figure 1). The hole was drilled primarily as a stratigraphic test and in order to tie into a reflection seismic survey to be conducted in the following field season. The wells were drilled by Pacific Oil & Gas Pty. Ltd. as sole permit holder and operator using Rockdril Contractors Pty Ltd's Rig 20, a Longyear 600.

Access to the location was via the Nutwood Downs Road, existing pastoral roads and a one kilometre access track. Drill site preparation involved clearing a drilling pad over an area of approximately 150m x 150m. Potable and drill water were initially obtained from a water bore on site. This bore quickly became unserviceable, following which water was trucked from a bore on the adjacent property.

Well site supervision was provided by G. Weste, J. Torkington and J. Chiupka.

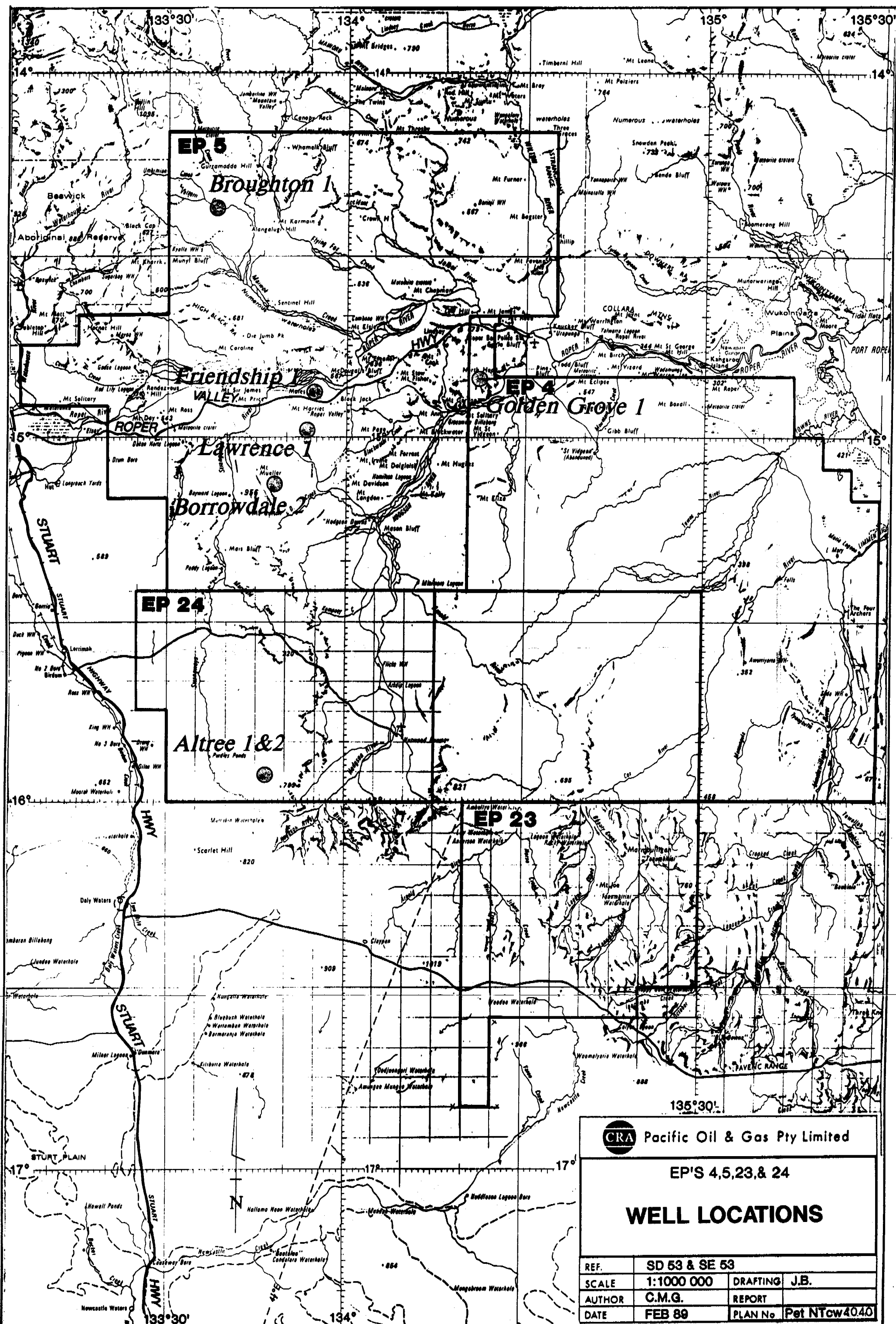
Drilling operations commenced at Altree-1 on September 24, 1988 with the drilling of an 8½ inch precollar hole to 102.0 metres by Gorey & Cole Drilling Pty Ltd. Rockdril Contractors Pty. Ltd's Rig 20 was moved on site and commenced operations at 0600 hours on September 26, 1988. An attempt was made to enter the hole with an 8½ inch rotary bit but the hole was found to be closed below 64 metres. Over the next seven days an attempt was made to open the hole both with an 8½ inch and a 6 inch rotary bit, with 75 metres being the deepest point reached. Severe caving and lost circulation was encountered throughout the seven days and could not be remedied with copious application of cement. A total of 105 barrels of cement was lost to the hole in an attempt to remedy the circulation problems. The hole was subsequently plugged and abandoned at 1900 hours on October 2 1988.

Rockdril's Rig 20 was then moved 52 metres to the south-south west and Altree-2 spudded at 1330 hours on October 5, 1988 with the augering of a 15 inch hole to 8.5 metres. A 13-5/8 inch conductor was then run and cemented at 8.5 metres. A 12¼ inch rotary assembly was then made up and the hole drilled to 22 metres where 9-5/8 inch casing was set. An 8½ inch rotary assembly was then made up and the hole drilled to 68.5 metres where circulation was lost. Two cement plugs were pumped with limited results and the well deepened to 104 metres with only limited returns. A seven inch casing string was then set and cemented at 103.4 metres. The BOP stack was nipped up and tested to 1000 psi prior to cement being drilled out with a 6½ inch rotary bit.

The well was drilled to 105.6 metres where a Formation Integrity Test was conducted. The formation was found to still hold pressure at 510 psi. The 6½ inch hole was then drilled to 209.2 metres encountering lost circulation at 167 metres. The hole was then logged with BPB Instruments (Australia) Pty Ltd prior to running 5 inch casing to 208.7 metres.

The CHD 101 core assembly was made up and the hole drilled to 214.75 metres. A Formation Integrity test was again conducted and the formation found to leak off at 650 psi. The hole was then fully cored to 970 metres where swelling clays of the Lower Velkerri Formation were encountered. The mud system was adjusted with the addition of approximately 3% KCl and this was found to hold back the swelling clays. Coring was recommenced and the well deepened to 1317.1 metres where the rig was placed on standby while awaiting a hard formation bit. Following the arrival of the new bit, drilling operations were recommenced (9¼ hours on standby) and continued to 1557.95 metres where the drillstring became differentially stuck at 1500 hours on November 28, 1988. Over the next 12 hours approximately 90 litres of Milfree mixed with 2200 litres of diesel oil were spotted against the stuck pipe which came free at 1930 hrs on November 29 (28.5 hrs lost). Coring was recommenced and the hole deepened to a total depth of 1699.85 metres which was reached at 0030 hrs on December 6, 1988. The hole was circulated and wireline logs, including a velocity survey, were run.

Following evaluation of wireline logs and other drilling data it was decided to abandon the hole with the setting of cement plugs over the following intervals: 1230-1180 metres, 238.7 - 183 metres and from 45 metres to surface. The abandonment was completed and the rig released at 1145 hrs on December 10, 1988.



CRA Pacific Oil & Gas Pty Limited

EP'S 4,5,23,& 24

WELL LOCATIONS

REF.	SD 53 & SE 53		
SCALE	1:1000 000	DRAFTING	J.B.
AUTHOR	C.M.G.	REPORT	
DATE	FEB 89	PLAN No	Pet NTcw4040

1.2 General Data

Well Name: Altree-1 & 2

Well Type: Stratigraphic

Operator: Pacific Oil & Gas Pty Limited

Licence Holders: Pacific Oil & Gas Pty Limited 100%

Petroleum Title: EP 24, Northern Territory

Location: Altree-2
 Latitude: 15°55'30.311" South
 Longitude: 133°47'07.360" East
 Maryfield: 1:100,000 sheet
 AMG : 369 988.55 East 8 238 966.9 North
 Zone 53.

Elevation: Altree-2
 Ground level: 212.8 m.
 Drilling Floor: 214.8 m.

Total Depth: Altree-1: 102m (Driller) below drilling floor
 Altree-2: 1699.85m (Driller) "
 1699m (Logger) "

Commencement Date: Altree-1: 1800 Hrs September 25, 1988
 N.B. precollared hole
 Altree-2: 1330 Hrs October 5, 1988

Total Depth Reached: Altree-1: N/A
 Altree-2: 0030 Hrs December 6, 1988

Rig Released: Altree-1: 1430 Hrs October 2, 1988
 Altree-2: 1145 Hrs December 10, 1988

Precollar Contractor: Gorey & Cole Drilling Pty. Ltd.

Drilled by: Rockdril Contractors Pty. Ltd.

Drilling Rig: Rig 20, Longyear 600

Hole Size: Altree-1: 8½ inch to 102 m
 Altree-2: 15 inch to 8.5 m
 12½ inch to 22 m
 8½ inch to 104 m
 6½ inch to 209.2m
 110.5mm to 1310.2 m
 103 mm to 1699.85 m
 All Depths below drilling Floor.

Wireline Logs:

Altree-2
Spontaneous Potential
Dual Focussed Resistivity
Gamma Ray, Caliper
Density
Multichannel Sonic
Run as two suites 1699m to 209m
209m to Surface

Velocity Survey:

Altree-2
20 levels, NB digital system was not used
owing to faulty power supply.

Abandonment:

Altree-1: Cement plug at surface
Altree-2: Cement plugs over the following
intervals:
1230 - 1180m, 238.7 - 183m,
45m - Surface.

1.3 Drilling Rig

ROCKDRIL RIG 20 - RIG AND EQUIPMENT DESCRIPTION

DRILLING RIG: Longyear

Depth Capacity: CHD 134 1,747 m (Rod Rating 1956m)
 CHD 101 2,180 m (Rod Rating 3050m)
 CHD 76 3,428 m (Rod Rating 2750m)

Power Unit: Caterpillar 3306-T 210 Hp @ 2,000 RPM
 620 lb. Ft. @ 1,400 RPM

Transmission: To Powerhead and Hoist Hydr/Mech (Funk) 4 speed
 Ratios: 6.27-1 (Blocked out on hoist)
 3.12-1
 1.75-1
 1.00-1

Bit Speeds: Based on 2000 Engine RPM @ 3,000 psi Pump
 Pressure: 1st - 130 RPM
 2nd - 260 RPM
 3rd - 466 RPM
 4th - 822 RPM

Powerhead: Pump & Drive Motor - Sunstrand 23 lb.
 Powerhead Ratio - 2.081:1
 Overall Ratio - 1st 13.09:1
 2nd 6.51:1
 3rd 3.65:1
 4th 2.087:1

Lubrication: Positive Lube Pump

Torque @ 4,500 psi - 1st 4,219 ft. Ib
 2nd 2,099 Ft. Ib
 3rd 1,179 Ft. Ib
 4th 673 Ft. Ib

Spindle I.D. 4-3/16" (106mm)
 Retraction 14" (355.6mm)

Max. casing size with head retracted - 12"
 (304.8mm).

Feed System: Feed Length - 11 ft (3.35m)
 Cylinder Size - 5" Bore x 2-1/2" Piston Rod
 Lift Capacity - 73,625 lbs (33,396 kgs) @ 2500
 PSI
 Thrust - 7,856 lbs (3,422 kgs) @ 200 PSI
 Hydraulic Pump -2 stage Compensator 2500 PSI
 and 200 PSI (Delavan)

Chuck: Hydraulic 3 - Jaw tungsten Inserts, Subs required to convert to top drive of Kelly from approximately 1200m 101 size hole.

Main Hoist: Type: Hydr/Gear
 Drum Diam: 9-1/2" (241.3mm) - Grooved
 Drum Length: 20-5/8" (523.87mm)
 Flange Diam: 18-1/4" (463.55mm)
 Drum Capacity: 730' x 5/8" Cable (223m x 16mm)
 Hydr. Pump: Sunstrand f23
 Hydr. Motor: Sunstrand f23 2-speed

	<u>Low</u>	<u>High</u>
1st	N/A	N/A
2nd	0-118ft/m (136m/m)	0-177ft/m (54m/m)
3rd	0-211ft/m (64.3m/m)	0-316ft/m (96m/m)
4th	0-370ft/m (113m/m)	0-555ft/m (169m/m)

Hoisting Capacity:

	<u>Single</u>	<u>4 Pt. Line</u>
1st	N/A	N/A
2nd	5,000 lbs (6804 kgs)	60,000 lbs (27,216 kgs)
3rd	9,750 lbs (4422 kgs)	39,000 lbs (17,690 kgs)
4th	5,500 lbs (2495 kgs)	22,000 lbs (9,979 kgs)

Brake: Size - 18" x 14" (457 mm x 101 mm)
 Area - 226 sq. ins. (1458 cm²)
 Brakes used for holding loads only
 Power up and down through hydraulics

Wireline Hoist: Type: Hydraulic-Chain drive from Main Hoist Motor
 Drum Diam: 5-1/2" (140mm)
 Drum Length: 17-1/8" (435mm)
 Flange Diam: 30" (726mm)
 Drum Capacity: 6486 ft. x 5/16" Cable (1996 mm x 8 mm) at 75% of Spool Level Wind
 Bare Drum Speed: 0-1000 F.P.M. (305 m/m)
 Control: Power up and down through hydraulics with free wheel.

Mast: Crown Block Rating 121000 lbs. (54886 kgs) inc.
 1.64 Factor of safety
 Hook Load Rating: 60000 lbs (27216 kgs) with 4
 part line
 Method of Raising: Hyd. Cyl. (2)
 Rod Stacking Cap: 30 & 40 ft. stands
 Guy Lines Required: 4
 Mast Length: 58.4" (17.78 m)
 Weight Indicator: Indicator gauge to 60000 lbs
 with 4 part line.

Mounting: Trailer mounted with four levelling jacks

Mud Pump: 5 x 6 G.D. Pump rated 150 G.P.M. @ 310 PSI
 Powered by Sunstrand f21 Pump & Motor with Gear
 Reducer
 7-1/2 x 10 G.D. Pump Rated 487 G.P.M. @ 255 PSI
 (211 G.P.M. @ 574 PSI - Powered by 4-71 G.M.
 Diesel.

Fluid Pumps: 2 x 535 Bean Pumps Powered by Sunstrand
 f21 Pump Driving 2 sunstrand f20 in series with
 bypass
 Max. Flow - 1 pump 35 G.P.M.
 Max. Flow - 2 pumps 70 G.P.M.

Specifications of Associated Equipment

Substructure:

Rig raising sub-base - 7m long 2.5m width x 2.0m high

Derrick Floor - 3.5 m long width x 2.0 m high

Swivel: Longyear Type LD max. safe static working load
 28 tons. Max safe working load when rotating
 15 tons at 200/300 RPM.

Weight Indicator; Martin-Decker Model WS8-11

Mud System:

a. Mud system consisting of the following items:

Settling Tank

Overall dimensions 4.8m long 2.00m wide 0.90m high
 Mounted on oilfield type skid 6m long
 Capacity 8,600 litres (2,275 gals-54 BBLs)

Equipped with:

Geosource shale shaker capacity 300/500 GPM size 4' x 5'
dual screen driven by an hydraulic motor 10HP

Pickup pump fe centrifugal 500 GPM hydraulic motor

Desilter 200 GPM model Economaster S2-E4

Mud agitator type axial flow impell 45 degree flat blade
turbine, driven by a hydraulic low speed 60 RPM high
torque motor.

Pump type Mission 3 x 4 x 13 centrifugal belt driven from
engine.

Prime mover W/Power takeoff type Lister HR4 52 HP 1800
RPM

Hydraulic System: Gear pump tandem type suitable to
operate pick-up, shale shaker, 2 mud agitators,
centrifugal pump 2 x 2-1/2 x 12 (No. 1 Agitator and 2
Centrifugal pumps are fitted on the other tank)

Mud gun

Degasser

- b. Mixing/storage tank-two compartments
Overall Dimensions 4.8m long 2.00 wide 1.20 high mounted on
oilfield type skid 6m long capacity 11,500 litres (3,042 gals -
72.4 BBLs)

Equipped with:

Centrifugal pump-Kelly-Lewis 2 x 2-1/2 x 13 driven by a
hydraulic motor 18 HP

2 mud agitator W/impeller 26" hydraulic driven

2 mud gun

- c. Cementing/Killing unit mounted skid 6m long 22m wide w/two tanks
around 1,000 gals. capacity each

Prime mover Lister diesel engine mel H46 103 Hp

Power take-off twin disc dry type

Gear box flexible coupling

Oilwell pump model D-323 type Triplex max. bore x stroke
2-1/2" x 3" rated HP 60 rated press. 4,000 PSI rated RPM
500

Agitators 6 HP capacity 60RPM hydraulic driven one on each tank

Centrifugal pump type Kelly-Lewis K-70 2" x 2-1/2 x 9" Hydraulic driven

Hydraulic system including tandem gear pump driven from front of engine.

Cameron gate valve 2" 3,000 PSI

Cameron pressure gauge 3,000 PSI

Shear relief valve 3,000 PSI

Wellhead Equipment:

No.1 BOP Hydril 6"-3000 PSI W.P. Type GK bottom flanged 6"-3000 PSI bore size 7-1/6"

No.1 BOP Shaffer 6" x 3,000 PSI W.P. Type B double unit top and bottom studed bore size 7-1/16"

No.1 Breda National Wellhead 5000 PSI to suit 7", 5", 4" casing plus all accessories

No.1 Drilling spacer spool 3000 PSI W.P. bottom and top flanged 6"-3000 PSI two outlets-1st flanged 2"-3000 PSI, 2nd 3"-3000 PSI bore size 7-1/6"

No.2 National valve 2"-3000 PSI W.P. flanged for kill line

No.1 National valve 3"-3000 PSI W.P. flanged for choke line

No.1 National valve flo-tork model 3"-3000 PSI W.P. W./Hydraulic actuator

No.1 Cameron check valve type R2"-3000 PSI W.P.

No.1 National choke manifold assy. 3"x2-1/2" 3000 PSI W.P.

No.1 Kill line 2"-3000 PSI W.P.

No.1 Choke line 3"-3000 PSI W.P.

No.1 Hydril automatic pump accumulator unit type HP-17-K80

No.1 Shaffer hydraulic control panel pedestal type for BOP remote control

No.1 Shaffer auxiliary control panel
 No.1 Bourne upper kelly cock 3000 PSI W.P.
 No.1 TIW Lower kelly cock 3000 PSI W.P.
 No.2 Gray Inside BOP (float valve) 3000 PSI W.P.
 No.1 Guiberson type G tubing preventor 1,500 PSI W.P.
 No.1 Guiberson Wireline oil savers type H W/hydraulic pump 3000 PSI W.P.
 No.1 Guiberson Type C releasing attachment
 Set stabbing valves for different thread connections-flare line

Tubular Equipment and Fishing Tools:

CHD 101 Longyear rods O.D. 3.701" I.D. 3.268 (Midbody)
 I.D. 3.091 joint depth rating 10,000 ft. (3,050m)
 Set of cross-over subs
 Core barrels for CHD 101mm
 Gotco overshot O.D. 5-7/8" w/spiral to catch from 2-3/8" to 4-7/8
 Taper and bell taps for all tubing sizes

Surface and Casing Equipment:

Longyear automatic pre-torque and break-out tool rod size CHD 76 through CHD 101
 Casing size E through N
 Max. torque (breakout) 2,8000 lb/ft
 Max. torque (make-up) 2,4000 lb/ft
 Rod clamp weight capacity 4,000 lb
 Baash-Ross hinged casing spider w/different bushing
 Baash-Ross casing slips 6-5/8"
 Handling tools for 4", 5" and 7" casing
 Set of circulating head for different sizes of casing
 Set of lifting plugs for all tubing

Auxiliary Equipment:

Explosion proof lighting system
A.C. electric generator KVA60
A.C. electric generator KVA35
Water storage tank 2,000 gallons
Fuel storage tank 500 gallons
Workshop barrack
Motorpump type mono
Centrifugal pumps (2") - Petrol driven

Transportation and Lifting Means:

1 6 x 6 Mack truck fitted with hydraulic crane
2 Toyota Land-cruiser pick-up 4WD

Miscellaneous:

Radio-wireless set SSB radio fitted with appropriate
flying doctor frequency
Set of mats for setting rig
Set of extinguishers
Drill collars and stabilizers to suit hole
specifications.

1.4 Hole Sizes and Depths

Altree-1: 8½ inch precollared to 102.0m
 Altree-2: Drilling commenced with the augering of a 15" hole to 8.5m. The hole was then rotary drilled with a 12¼" bit to 22 meters, with a 8½" bit to 104, then with a 6½" bit to 209.2m. This last part of the hole was drilled without returns. The remainder of the hole was fully cored with CHD 101, initially with a 110.5mm near bit reamer, but this was subsequently replaced with a 103mm reamer at 1310.2m.

1.5 Casing and Cementing

Altree-1: No casing was run in Altree-1.
 Altree-2: 13 5/8" pre conductor set at 8.5m.
 Make: Kawasaki
 No. of Joints: 1
 Cement Used: 12 sacks class A cement
 Remarks: Cemented to surface

9 5/8" conductor set at 22m.
 Make: Kawasaki
 No of Joints: 2
 Cement Used: 21 sacks class A cement
 Accessories: Cement shoe
 Remarks: Cemented to surface

7" surface casing set at 103.4m
 Make: Kawasaki
 Weight: 26 lb/ft
 Grade: N80
 No of Joints: 10
 Cement Used: 76 sacks class A cement
 2 sacks CFR2
 Accessories: Cement shoe
 Remarks: Cemented to Surface

5" intermediate casing set at 208.7m
 Make: Kawasaki
 Weight: 13 lb/ft
 Grade: K55
 No of Joints: 21
 Cement Used: 70 sacks class A cement
 1 sack CFR2
 Accessories: Cement shoe
 Remarks: No returns were observed at the surface.

1.6 Drilling Mud

Altree-1 was precollared with a downhole hammer. As a result of lost circulation all subsequent attempts to drill in this well were conducted using fresh water with Rapidgel.

Altree-2 was spudded using a Newdrill polymer mud system. However lost circulation throughout the Tindall limestone required this part of the hole to be drilled with fresh water and occasional viscous sweeps of Rapidgel. Throughout most of the Tindall Limestone the well was drilled without returns.

Following casing off the lost circulation zones the well was fully cored, using a Newdrill polymer mud system which resulted in excellent hole conditions. The intersection of swelling clays in the top of the lower Velkerri formation necessitated the addition of KCl to the mud. A concentration of 3% KCl was achieved without any changes to the Newdrill polymer system.

Details of the drilling fluid properties and mud consumed for each of the two holes are given in Appendix 1.

1.7 Water Supply

Both drill water and potable water for use in the camp were obtained initially from a water bore at the well site. Shortly after the commencement of drilling operations this water bore became inoperative necessitating the trucking of water from a bore on the adjoining property approximately 12km from the well site.

1.8 Bit & Deviation Record

1.8.1 Drilling Bits

Two drilling bits were used in the drilling of Altree-1 and eighteen bits in Altree-2. Details of bit usage are given in Table 1.

TABLE 1

BIT SUMMARY

Altree 1 & 2

Bit No	Make/Type	Serial No	Depth in (m)	Depth out (m)	W.O.B. (kg)	R.P.M.	Pump Pressure (psi)
1 2	<u>ALTREE 1</u> Smith F4 SEC 1789TF	367400	Reaming "	Precollared "	Hole "		
1 2 3 4 5 6 7 8 RR7 9 10 11 12 13 14 15 16 17 18 RR9	<u>ALTREE 2</u> HTC-J3 SEL-544F VAREL-U537 VAREL-V617 Longyear-Impregnated Longyear-8 Step Longyear-8 Step Longyear-4 Step Longyear-8 Step Longyear-Impregnated S6 Longyear-Impregnated S8 Ausbit-Impregnated Orange Longyear-Impregnated S8 Longyear-Impregnated S10 Longyear-Impregnated S8 Longyear-Impregnated S10 Longyear-Impregnated S10 Longyear-Impregnated S10 Longyear-Impregnated S10 Longyear-Impregnated S8 Longyear-Impregnated S6	 447207 15583 26833 L10693 L28183 L28184 L31705 L88184 L28215 L83059 38410 L69347 L30127 L30131 L31349 L31350 L30128 L31347 L28215	 6 22 80.65 104 209.7 339.15 584.35 845.65 1257.9 1265 1273.7 1306 1310 1317.1 1408.5 1445.5 1487.3 1493.25 1598.45 1649	 22 80.65 104 209.7 339.15 584.35 845.65 1257.9 1265 1273.7 1306 1310 1317.1 1408.5 1445.5 1487.3 1493.25 1598.45 1649 1699.85	 5000 5000 5000 5000 2500 2500 2000 2000 3000 3000 3500 3500 3000 3000 3000 3000 3000 2500 2500 3000	 80 70 70 70 300 250 300 250 230 230 250 250 250 250 250 250 250 250 220 250	 100 100 100 100 400 450 450 400 450 350 400 400 400 400 600 500 650 600 430 600

1.8.2 Deviation

Deviation Survey details are given in Table 2.

TABLE 2
Deviation Survey Records
Altree-2

Depth (m)	Deviation (°)
105	0.5
245	1
350	0.5
475	0
650	3
730	4
786	6
850	7½
900	7½
970	7½
1065	7½
1208	7½
1310	9
1355	9
1516	10
1605	11

No attempt was made to survey the Altree-1 hole due to the severe hole conditions encountered.

Altree-2 remained within allowable deviation requirements throughout the upper part of the hole, but quickly became deviated once in the Roper Group. This reflects the hardness of the rocks penetrated and the low rotary speed of the drilling unit.

Although the well was outside allowable requirements over the lower 1000 metres. It was decided that this deviation could be tolerated in order to continue the well to its prognosed total depth.

1.9 Fishing and Related Operations

No fishing operations were conducted at either Altree-1 or 2.

In Altree-2 at 1557.95 metres on November 27th (1500 HRS) the drill string became differentially stuck while lowering to bottom after a connection. A 70 litre Milfree (mixed with 800 litres of Diesel) pill was spotted and the pipe worked for 24 hours. A subsequent pill consisting of 20 litres of Milfree and 1400 litres of Diesel was spotted with the pipe coming free at 1930 HRS on November 28th.

1.10 Formation Testing

No formation tests were conducted in Altree-2.

1.11 Time Distribution

Time spent on the various phases of the drilling operation are given in Appendix 2, and a time-depth curve for Altree-1&2 is included as Figure 2.

1.12 Well Costs

A detailed cost break down for Altree-1 & 2 is given in Table 3.

Pacific Oil & Gas Pty Limited
 ALTREE 1 & 2 - TIME DEPTH CURVE

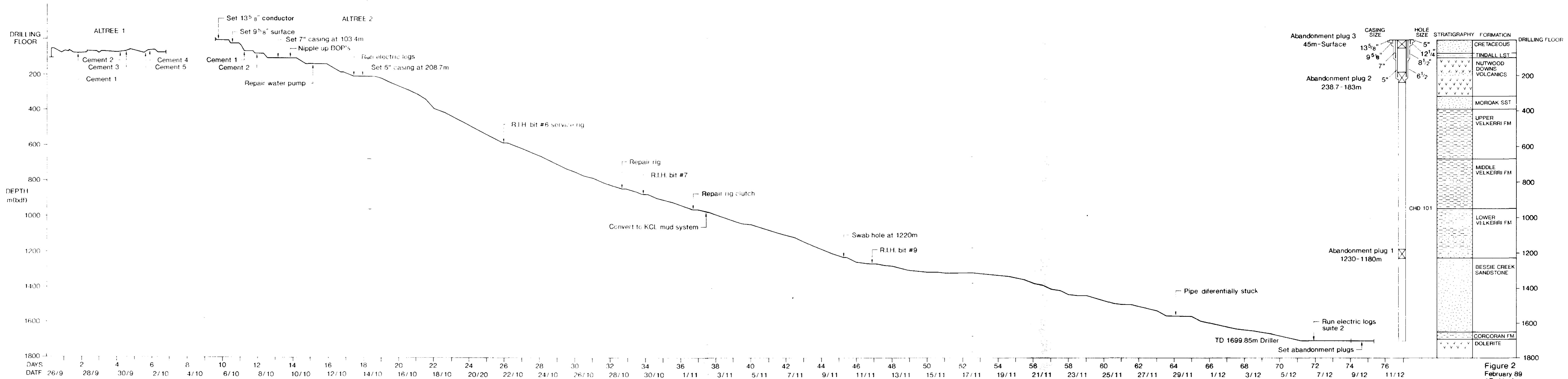


Figure 2
 February 89
 J Torkington

TABLE 3WELL COSTSALTREE-1 & 2

Drilling General	283,288.66
Diamond Drilling	46,148.39
Grading/Bulldozing	17,891.18
Drilling Materials	42,468.15
Drill Stem Testing	988.89
Geophysical Logging	61,767.47
Wages and Office Costs	36,169.46
Supplies & Communications Gen.	24,496.35
Vehicle Operation General	3,964.09
Travel & Accommodation General	18,704.78
Hire of Camp Accom. Facilities	17,045.70
Depreciation	166.13
Insurances	0.00
Contractors/Consultants General	9,499.80
Aircraft Hire	1,114.15
Geological Consultants	0.00
Laboratory Analysis General	8,725.68
Mineralogical Determinations	0.00
TOTAL	572,438.89