1 ENGINEERING DATA

1.1 Engineering Summary

Mason 1, in EP18, Northern Territory, was located 38km east-south-east of Dunmarra Roadhouse (refer Figure 1, Plan PetNTcw4618). Rockdril Rig 23 was used to drill this well.

Prior to the arrival of the rig, a 26 inch hole was drilled to 13m (Driller) and a 20 inch conductor was set at this depth.

Drilling commenced at 1400 hours, 27 November 1991. A 17½ inch hole was drilled to 103m (Driller). Unexpected total loss of circulation occurred at 87m. 13 3/8 inch casing was set at 90m but its cementation was only partly effective. A 13 5/8 inch annular preventer was installed and satisfactorily tested.

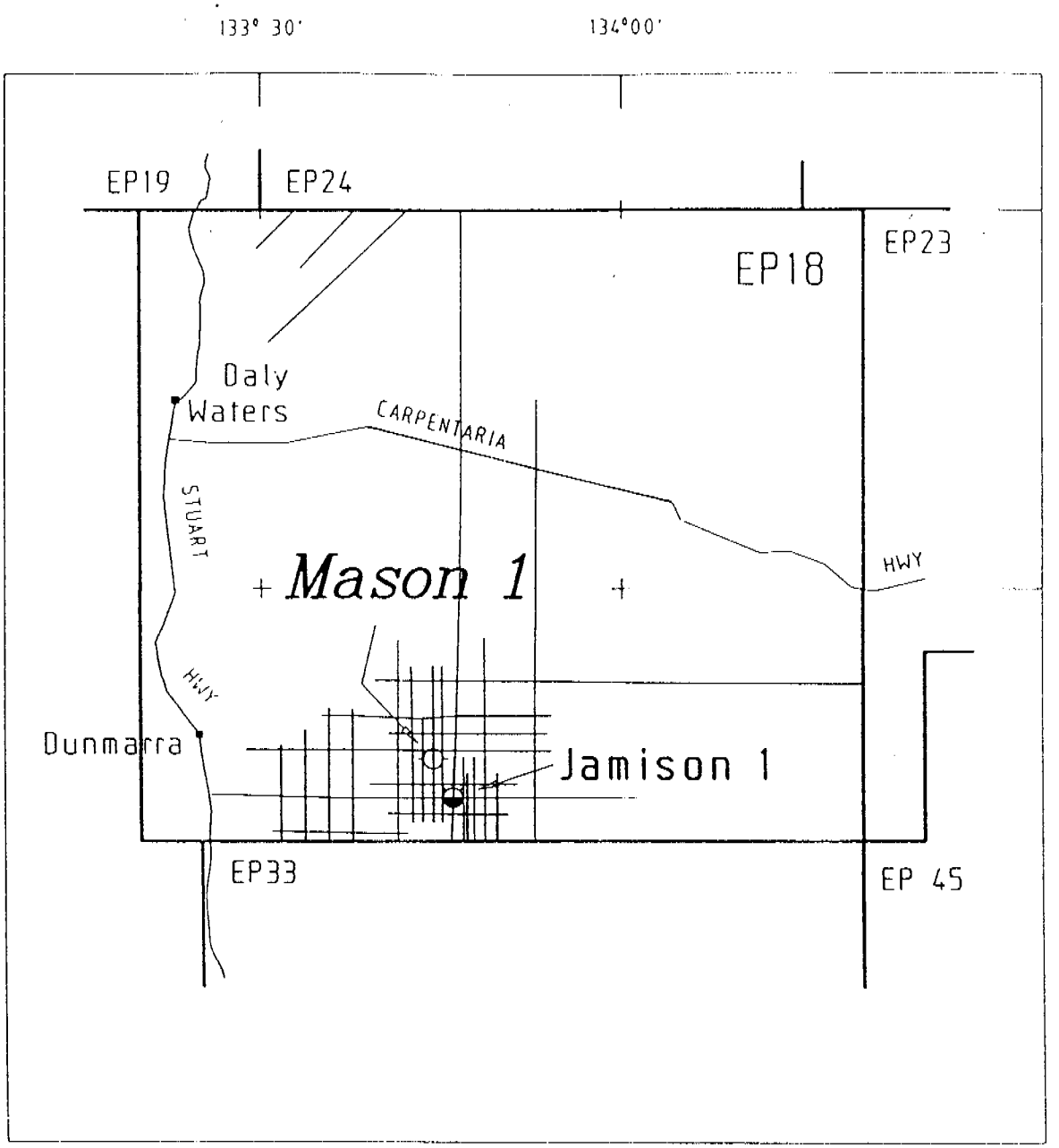
A 12¼ inch hole was drilled, without returns to 517m (Driller). Hole conditions were such that attempts to record intermediate logs were abandoned and some difficulty was experienced in landing the 9 5/8 inch casing at 514m (Driller). This casing was cemented from 10 to 47m and from 350m to 514m. The 13 5/8 inch annular preventer was removed and the 9 inch 5000 psi BOP stack installed. The wellhead assembly was satisfactorily tested. A leak-off test indicated satisfactory formation strength (equivalent mud weight of SG 1.63).

An 8½ inch hole was drilled to 1103m (Driller). Three 9m cores were cut, with 100% recovery in every case. Two drill stem tests were performed with a small volume of gas suspected to have flowed on DST 1, and a film of oil observed on the test tools after DST 2. A suite of logs was recorded and a velocity survey conducted at total depth.

Apart from the difficulties caused by drilling in the cavernous Tindall Limestone, the operation was virtually trouble-free.

The well was suspended by setting two cement plugs and installing a cap on the wellhead. The rig was released at 1100 hours, 22 December 1991. A drilling progress chart is included in this report as Figure 2 (Plan PetNTcw4490).

The drilling operation at **Mason 1** lasted 24 days and 21 hours and cost $1,210,600.25.



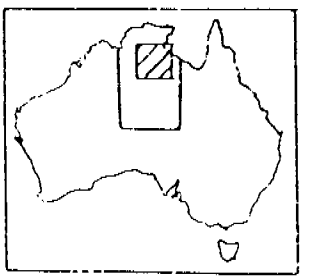


FIGURE 1

20 0 20km

1 : 1,000,000

CRA Pacific Oil & Gas Pty Limited

McARTHUR BASIN

EP 18
MASON 1
LOCATION PLAN

REF.	SE 53	DRAFTING	J.B.
SCALE	1 : 1 000 000	CHECKED	J.T.
AUTHOR	J.T.	REPORT	304567
DATE	MAY 1992	PLAN No.	PetNTcw4618

TABLE 3

EP18 - MASON 1

WELL COSTS

ITEMS	COSTS
Site Preparation	$62,266.50
Water Supply	$102,002.78
Mobilization	$50,800.00
Drilling	$282,800.72
Casing	$100,342.15
Cementing Services	$54,855.14
Mud Supplies & Services	$71,388.75
Wireline Logging	$77,636.97
Camp	$50,682.85
Mudlogging Services	$43,862.30
Drill Stem Testing	$56,134.95
Communications	$8,775.16
Freight	$42,939.62
Travel	$47,246.22
Vehicle Costs	$5,038.29
Lab Analysis	$21,841.50
Supervision	$34,207.75
CRA Overheads	$34,000.61
Consultants	$63,273.75
Insurance	$469.56
Bank charges	$66.68
Entertainment	$28.00
	$1,210,660.25

As at 24th August 1992

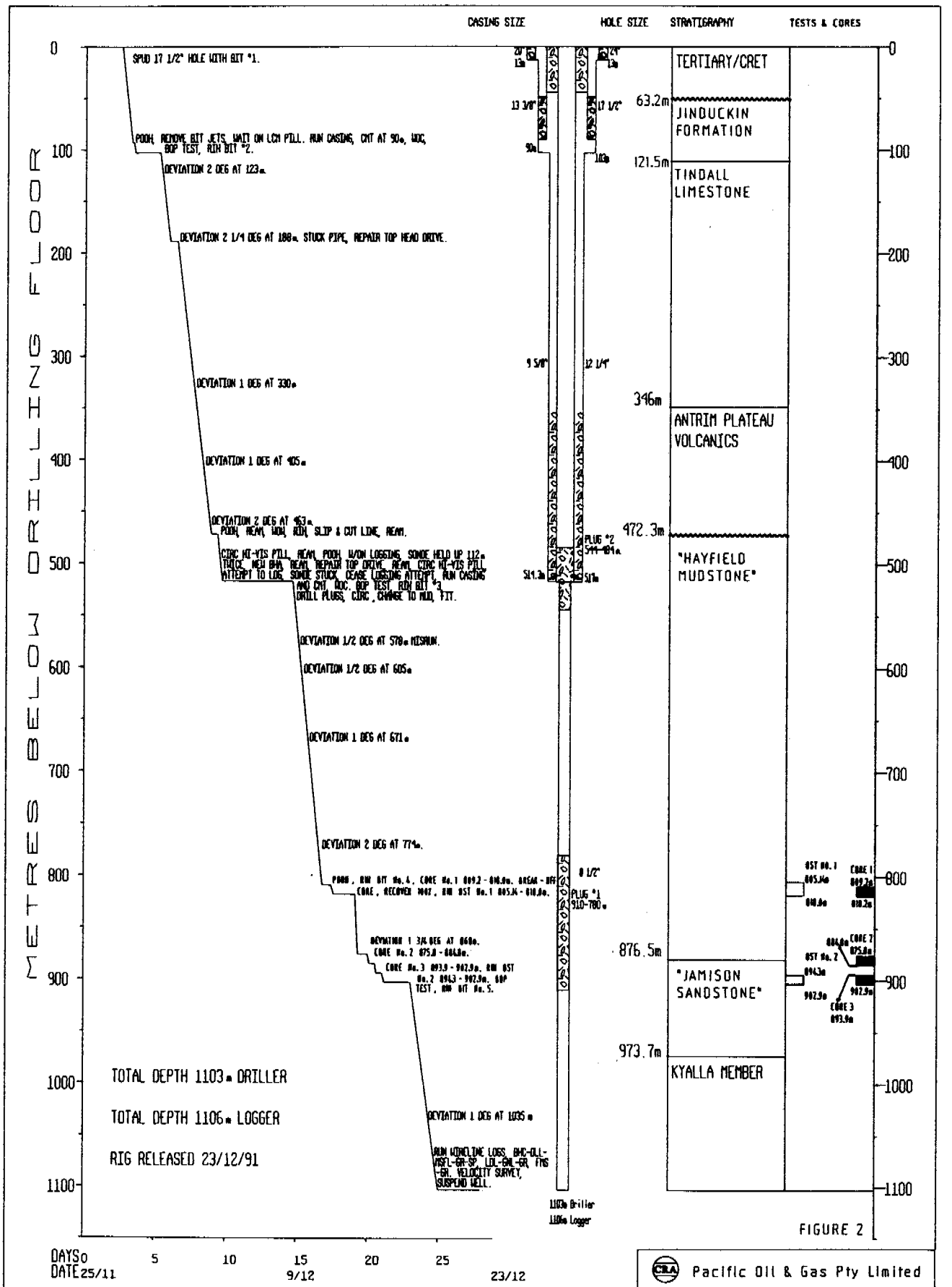


FIGURE 2

Pacific Oil & Gas Pty Limited

McArthur Basin

MASON 1

DRILLING PROGRESS CHART

REF.		DRAFTING	L.I.&J.B.
SCALE	N.T.S.	CHECKED	J.T.
AUTHOR	J.T.	REPORT	304567
DATE	JAN 92	PLAN No.	PetNTcw 4490

1.2 General Data

Well name:	**Mason 1**
CRAE Drillhole No:	RD91MB22
Well Type:	Exploration well
Operator:	Pacific Oil & Gas Pty. Limited
Title holders:	Pacific Oil & Gas Pty. Limited - 90% Pardi Pty Limited - 10%
Location:	16° 43' 28" South 133° 44' 16" East AMG Zone 53, 365 445 E; 8 150 487 N SP 570, Line MA91-223 38km @ 106°T from Dunmarra Roadhouse
Elevation:	265.7m - Drilling floor, Datum 261.0m - Ground level
Datum:	Unless stated all depths are loggers depths below Drilling Floor
Total Depth:	1103m - Driller 1106m - Schlumberger
Well Spudded:	27 November 1991 @ 1400 hours
At total depth:	20 December 1991 @ 1700 hours
Rig released:	22 December 1991 @ 1100 hours
Status:	Dry hole, plugged and suspended
Drilling rig:	Walker-Neer Apache Model 228-38-4 Rockdril Rig 23
Hole Size:	26 inch to 13m (Driller) 17½ inch to 103m (Driller) 12¼ inch to 517m (Driller) 8½ inch to 1103m (Driller)
Casing:	20 inch at 13m (Driller) 13 3/8 inch at 90m (Driller) 9 5/8 inch at 514m (Driller)
Wireline Logs:	DIL-BHC-GR 247-147m BHC-DLL-MSFL-GR-SP-CAL 1104-514m LDL-CNL-NGS 1104-514m FMS-GR 1070-770m
Velocity Survey:	An eleven level velocity survey was recorded.

1.3 Drilling Rig

Rockdril Contractors Rig 23, a Walker-Neer, was used to drill **Mason 1**. Specifications for this rig and associated plant are given in Appendix 1.

1.4 Service Companies

The following service companies were employed:

Milpark:	Mud supply, mud engineering
Halliburton:	Cementing, testing
Halliburton-Geodata:	Mudlogging
Schlumberger:	Logging
Australian DST:	Coring

1.5 Hole Size

26 inch to 13m (Driller):
Pre-drilled by the water-well drilling contractor.

17½ inch to 103m (Driller):
Conventionally drilled to 87m (Driller) where there was total loss of circulation. The hole was drilled on to 103m (Driller) without returns.

12¼ inch to 517m (Driller):
Drilled without mud returns.

8½ inch to 1103m (Driller):
Conventionally drilled. Cores were cut over the following intervals:

CORE 1:	809.2	-	818.2m (Driller)	100% recovery
	811.2	-	820.9m (Logger)	
CORE 2:	875.8	-	884.8m (Driller)	100% recovery
	878.45	-	887.45m (Logger)	
CORE 3:	893.9	-	902.9m (Driller)	100% recovery
	896.7	-	905.7m (Logger)	

1.6 Drilling Problems

Two major problems occurred:

1. After examining the cuttings from the nearby No. 1 water bore it was concluded that circulation would be lost in the cavernous Tindall Limestone at 127m (Driller). It was planned, therefore, to drill 17½ inch hole to 115m (Driller) and set 13 3/8 inch surface casing at that depth.

   However, circulation was lost at 87m (Driller), and as it seemed that prediction of cavernous zones was not possible, it was decided to drill only to 103m

(Driller) and set the surface casing at 102m (Driller). The casing held up at 94m (Driller) and had to be set at 90m (Driller). The cementation was probably only partly effective.

2. The 12¼ inch hole was drilled to 517m (Driller), without undue difficulty. Although the hole appeared in good condition, on two occasions the logging tools could not be run below 112m (Driller). On the third attempt, the tools were run to 247m, but were again held up. Whilst retrieving them, they became stuck at 147m, but they were recovered undamaged without recourse to fishing.

   Some difficulty was experienced in running the 9 5/8 inch casing, but it was eventually washed and worked to the planned setting depth of 514m (Driller).

1.7 Casing

26 inch at 13m (Driller)

Type	Conductor pipe
Range	3
No. of joints	1
Remarks	Set by the water-well drilling contractor. The pipe was cemented to the cellar floor at 5.7m (Driller).

13 3/8 inch at 90m (Driller)

Grade	H40
Weight	48 lb
Thread	STC
Range	3
No. of joints	7
Accessories	Float shoe Centralisers at 18m and 78m.
Cement used	(i) 200 sacks G plus 1% $CaCl_2$ (ii) 85 sacks G plus 1% $CaCl_2$ (iii) 40 sacks G plus 1% $CaCl_2$
Cementation	(i) Pumped 10bbl, water pre-flush; released bottom plug; mixed and pumped cement at 15.3 ppg; released top plug; displaced with 46.5bbl water - no returns; bumped plug with 800 psi; float held. (ii) Mixed and pumped cement at approximately 15.3 ppg to the 20 x 13 3/8 inch annulus; no returns.

	(iii) Mixed and pumped cement at approx. 15.3 ppg to the 20 x 13 3/8 inch annulus; No returns
Top of cement	Unknown
Leak-off test	Not performed
Remarks	At best, the cementation of this casing was only partly effective.

9 5/8 inch at 514m (Driller).

Grade	K55
Weight	36 lb
Thread	LTC
Range	3
No. of joints	43
Accessories	Float shoe. Float collar between joints 1 and 2. Cement retainer at 47m (Driller). Centralisers at 27 and 491m (Driller).
Cement used	(i) 205 sacks G
	(ii) 30 sacks G
Cementation	(i) Pumped 10bbl water pre-flush; released bottom plug; mixed and pumped cement at 15.8 ppg; released top plug; displaced with 127bbl water - no returns; bumped plug with 1500 psi; floats held.
	(ii) Mixed and pumped cement at 14.8 ppg to the 13 3/8 x 9 5/8 inch annulus.

Top of cement	(i) 350m (calculated)
	(ii) 10m (calculated)
Leak-off test	Leak-off at 450 psi EMW SG 1.63
Remarks	The casing had to be worked through a number of tight sections but was landed at the planned depth.

1.8 Drilling Fluids

A 17½ inch hole was drilled with a light weight spud mud to 87m (Driller), where there was a total loss of circulation. The hole was deepened to 93m (Driller) without returns, using water as the drilling fluid. At 93m a pill of lost circulation material was set, but was ineffective. The hole was further deepened to 103m (Driller). As noted earlier in this report, the 13 3/8 inch casing could not be run deeper than 94m (Driller).

As had been planned, the 12¼ inch hole was drilled without returns, using water with periodic high viscosity mud sweeps. At 189m (Driller), the pipe became stuck, but was freed by jarring after 3½ hours. The hole was then drilled to 517m (Driller) without further incident, although the break-down of the No. 1 water bore pump and the resultant shortage of water caused some minor delays in the lower part of this hole. As noted earlier in this report, efforts to record intermediate logs had to be abandoned and some difficulties were experienced in landing the 9 5/8 inch casing at the planned depth of 514m (Driller).

An 8½ inch hole was drilled using a light weight, low viscosity, low water-loss polymer/polyacrylamide KCl mud. KCl content by weight was increased from 3% to 6% below 600m. No problems were experienced in drilling the 8½ inch hole. Maximum hole size was 10 inches and the caliper log indicates average hole size was slightly in excess of 8 5/8 inches.

No attempt was made to use an optimised hydraulic programme whilst drilling the 17½ and 12¼ inch holes, as it was considered that the requisite small diameter nozzles would be prone to plugging under the circumstances. An optimised hydraulic programme was deliberately not used during the drilling of the 8½ inch hole in order to minimise any possible formation damage.

Appendix 2, "Drilling Fluids Report" by Farquhar and Arndt (Milpark) contains full details of the properties of the drilling fluid and of the chemical consumption.

1.9 Water Supply

It was anticipated that circulation would be lost in the Tindall Limestone and that the 12¼ inch hole would have to be drilled without returns.

To ensure adequate hole cleaning, it was considered that, as a minimum, an annular velocity of 60 feet per minute was required and consequently an assured supply of 18,000 gallons per hour was necessary.

As there were no significant surface water supplies available the following system was constructed to supply the quantity of water specified.

(i) Two bores were drilled into the Tindall Limestone, which is an excellent aquifer.

- No. 1 bore was drilled to 151m; 6 inch (nominal) casing, slotted between 139 and 145m, was run to bottom.
- No. 2 bore was drilled to 136m; 6 inch (nominal) casing, slotted between 129.5 and 136m, was run to bottom.
- Both bores were equipped with Mono pumps, each with a nominal output of 8000 gallons per hour.
- Standing water level was 103m.

  (Note that the depths quoted are relative to ground level).

(ii) A plastic-lined turkey's nest, with a nominal capacity of 1,000,000 gallons was constructed. Both bores produced into this reservoir.

(iii) A further reserve was established in a natural depression, about 500m from the rig. Water could be pumped direct from the No. 1 bore or from the turkey's nest to this reserve.

(iv) An 8 x 10 inch duplex pump and a 3 x 4 inch triplex pump were used to transfer water from the turkey's nest to the rig tanks. Water was to be transferred from the reserve by a 3 inch centrifugal pump.

The water supply system is shown diagrammatically on Figure 3 (PetNTcw4563).

Prior to the commencement of drilling, the turkey's nest was filled and water also pumped to the reserve.

Although a quite large water supply had been established, an annular velocity of greater than 60 feet per minute in the 12¼ inch hole, could not be sustained. Whilst drilling the lower part of the 12¼ inch hole the No. 1 bore pump broke down and was inoperative for approximately 60 hours. As a consequence, some time was lost waiting for the water volume to be increased to allow drilling operations to be resumed. High losses due to seepage and evaporation reduced the water volume in the reserve storage to the extent it was of no use.

After normal circulation was established in the 8½ inch hole, no water shortages were experienced.

1.10 Drilling Bits and Bottom Hole Assemblies

17½ inch

To 103m (Driller)
1 Type 1-1-1 (steel tooth) bit
Slick BHA
Average penetration 5.5 m/hr
Bit graded 2-2-I and reusable.

12¼ inch

To 517m (Driller)
1 Type 5-3-7 (insert) bit
Simple pendulum BHA
Average penetration:

Tindall Limestone	7.83 m/hr
Antrim Plateau Volcanics	3.54 m/hr
"Hayfield Mudstone"	6.21 m/hr

Bit graded 2-2-I but with 5 broken inserts, discarded.

8½ inch

To 1103m (Driller)
2 Type 5-3-7 (insert) bits
Simple pendulum BHA
Average penetration:

"Hayfield Mudstone"	6.48 m/hr
"Jamison Sandstone"	3.62 m/hr
Kyalla Member	3.19 m/hr

Both bits were graded 3-3-I and discarded.

For full details of the bits and BHA's used, refer to Appendices 3 and 4.

1.11 Deviation Record

Deviation surveys were carried out with a 14° Totco instrument. Results are presented in Table 1.

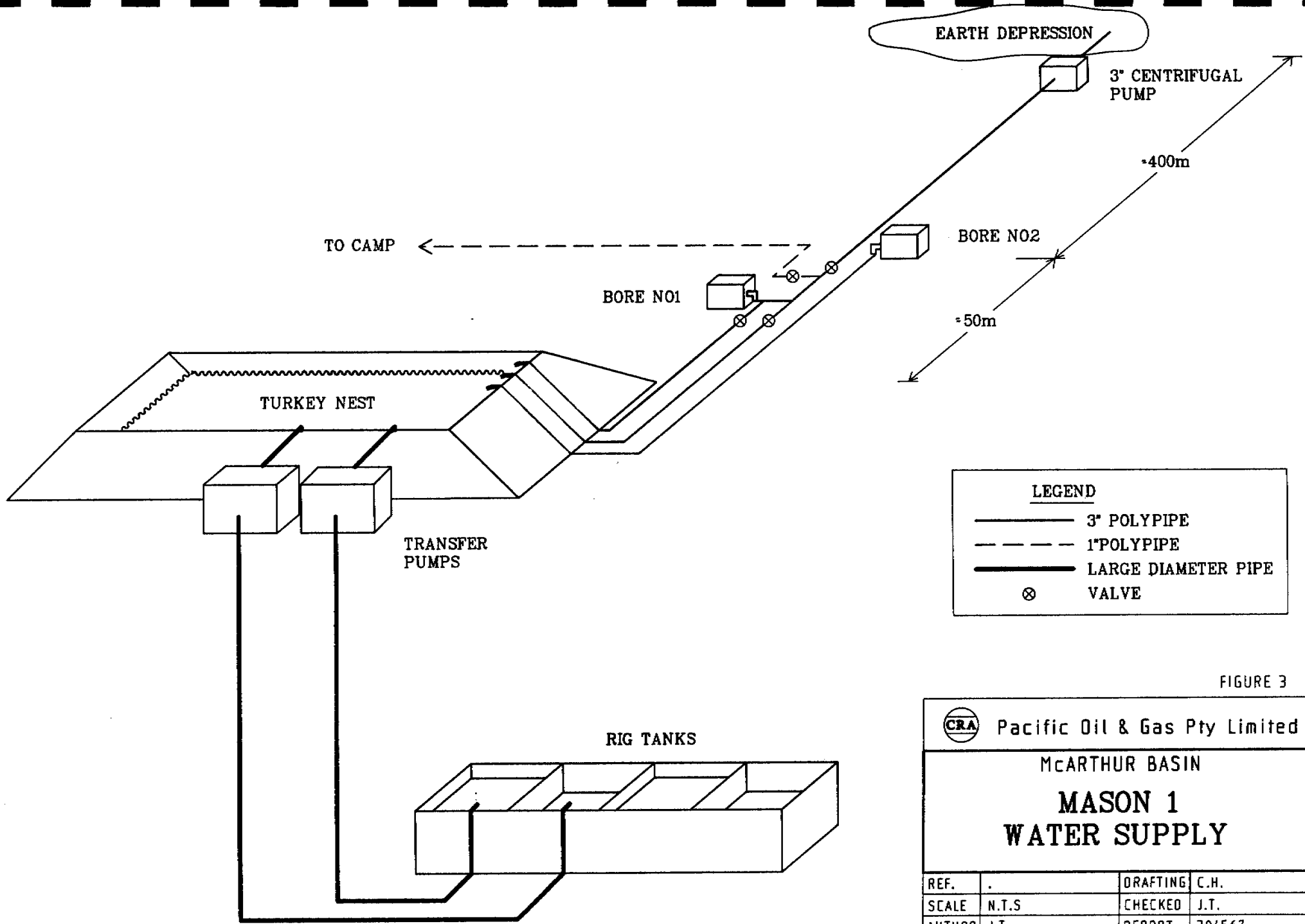


FIGURE 3

CRA Pacific Oil & Gas Pty Limited

McARTHUR BASIN

MASON 1 WATER SUPPLY

REF.	.	DRAFTING	C.H.
SCALE	N.T.S	CHECKED	J.T.
AUTHOR	J.T.	REPORT	304567
DATE	MAR 92	PLAN No.	PetNTcw4563

123m	2°
188m	2¼°
330m	1°
405m	1°
463m	2°
578m	½°
605m	½°
672m	1°
774m	2°
868m	1 3/4°
1035m	1°

TABLE 1
DEVIATION SURVEYS - MASON 1

1.12 Fishing Operations

Fishing operations were not necessary.

1.13 Cores

Sidewall — None attempted

Conventional — Cut using a Diamant Boart type CB303 (I.A.D.C. D3x8) bit, a 9m outer barrel and fibre glass inner barrels.
1. 809.2 to 818.2m (Driller).
2. 875.8 to 884.8m (Driller).
3. 893.9 to 902.9m (Driller).
Recovery in each case was 100%.

1.14 Electric Logs

The following Schlumberger logs were recorded:

Suite 1

DIL-BHC-GR 147 to 245m

Further attempts to log were abandoned after the sonde would not pass 245m and for some time was stuck at 147m during its retrieval.

Suite 2

BHC-DLL-MSFL-GR-SP	514 to 1104m
LDL-CNL-NGS	514 to 1104m
FMS-GR	770 to 1070m
WSS	65.7 to 1100m - 11 levels

1.15 Formation Tests

Two bottom hole drill stem tests were conducted with the packer set in the open hole. The closed chamber technique was used in each test.

In summary, the results were:

DST 1

Interval	805.14 to 818.0m (Driller)
Unit	"Hayfield Mudstone"
1st Flow	15 min.
1st Shut-in	63 min.
2nd Flow	168 min.
2nd Shut-in	617 min.
Flow	Nil (closed chamber)
Recovery	12m drilling mud Surface pressure data indicates a small inflow of gas during the test.

DST 2

Interval	894.93 to 902.9m
Unit	"Jamison Sandstone"
1st Flow	15 min.
1st Shut-in	60 min.
2nd Flow	209 min.
2nd Shut-in	724 min.
Flow	Nil (closed chamber)
Recovery	15m drilling mud A thin film of oil/emulsion was observed in the test tools after being pulled from the hole.

Full details of the testing operations and the pressure data is included in this report as Appendices 5 and 6.

The subsequent analyses of these data are contained in Appendix 7.

1.16 Suspension

As it was considered possible that in the future the well might be re-entered and deepened, it was suspended rather than abandoned.

Suspension took the following form:

(i) Plug No. 1 was set from 780 to 910m with 146 sacks of Class G cement.

(ii) Plug No. 2 was set from 481 to 544m with 75 sacks of Class G cement plus 2.4% calcium chloride. The top of hard cement was located at 481m.

(iii) The pH of the mud within the 9 5/8 inch casing was raised to 11 and a corrosion inhibitor was added to the mud.

(iv) A cap, fitted with an observation valve, was placed on the wellhead.

The status of the well at the time of its suspension is shown diagrammatically in Figure 4 (PetNTcw 4562). The wellhead fitted is shown diagrammatically on Figure 5 (PetNTcw 4561).

1.17 Time Distribution

A full break-down of drilling operations can be found in Appendix 8. Drilling operations at **Mason 1** commenced at 1400 hours, 27 November 1991 and ceased at 1100 hours, 22 December 1991, a period of 24 days 21 hours. An analysis of the time spent is contained in Table 2 and shown graphically on Figure 6 (PetNTcw 4560).

1.18 Well Costs

A summary of costs for the drilling of **Mason 1** is given in Table 3.

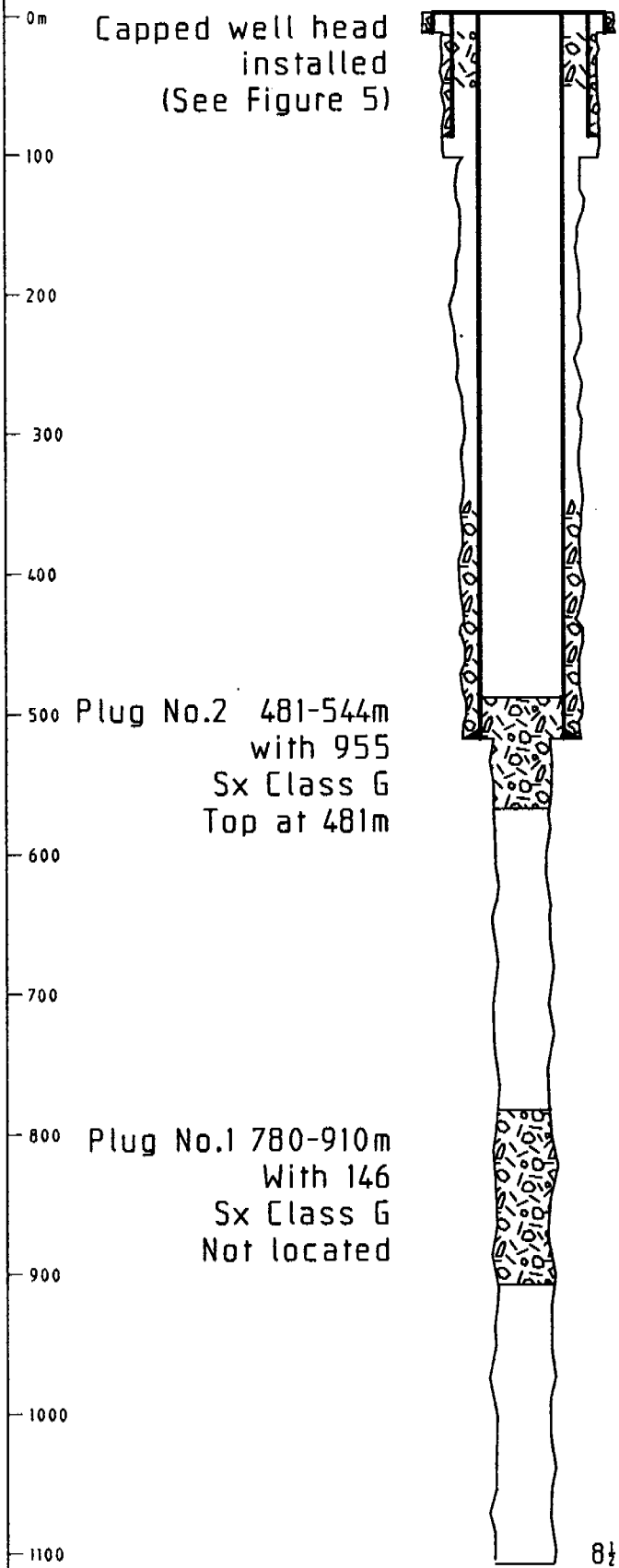


FIGURE 4

Pacific Oil & Gas Pty Limited

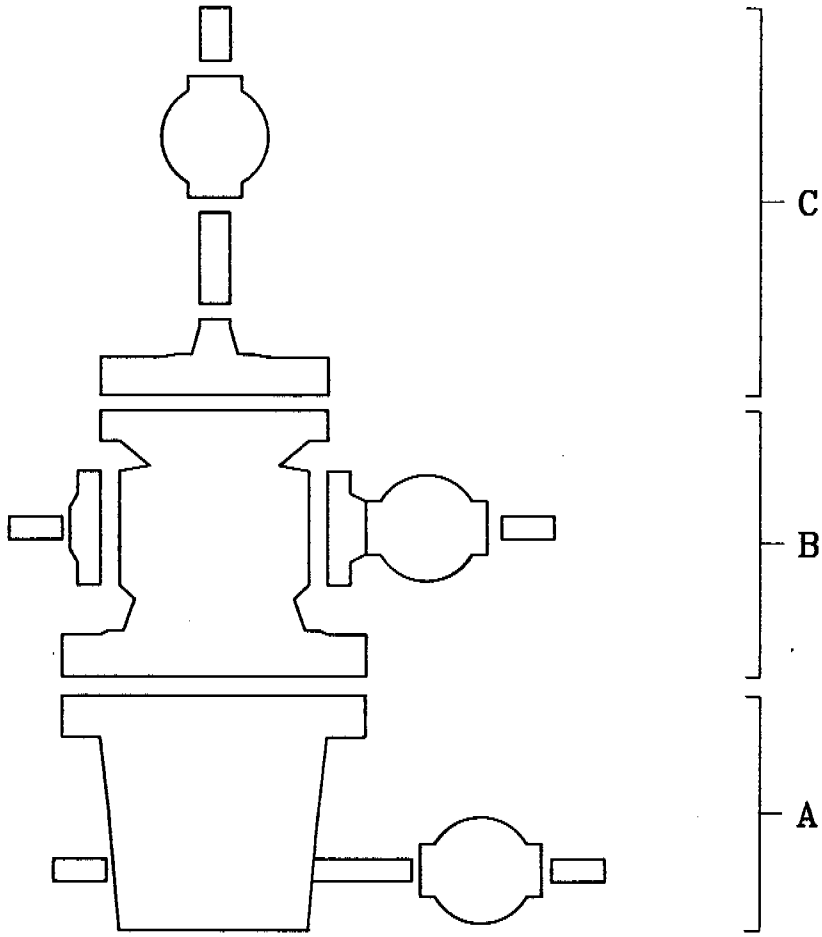
McArthur Basin

EP18

MASON 1

STATUS AT 22 DEC 1991

REF.		DRAFTING	J.B.
SCALE	1:5000	CHECKED	J.T.
AUTHOR	S.D.	REPORT	304567
DATE	Feb 92	PLAN No.	PetNTcw4562



A C.I.W. TYPE WF CASING HEAD. (13 5/8"x3000psi) FITTED WITH C.I.W. TYPE G GATE VALVE (2"LP) AND C.I.W. TYPE CA SLIP + SEAL ASSY (13 3/8x9 5/8)

B C.I.W. CASING SPOOL (13 5/8"-3000psi x 11"-5000psi) FITTED WITH C.I.W. TYPE G GATE VALVE (2"x 5000psi FLANGED) TWO COMPANION FLANGES AND X BUSHING (13 3/8" x 9 5/8")

C C.I.W. ADAPTOR FLANGE (11"-5000psi x 2" SCREWED). FITTED WITH C.I.W. TYPE G GATE VALVE (2"LP).

FIGURE 5

CRA Pacific Oil & Gas Pty Limited

McARTHUR BASIN

MASON 1 WELLHEAD

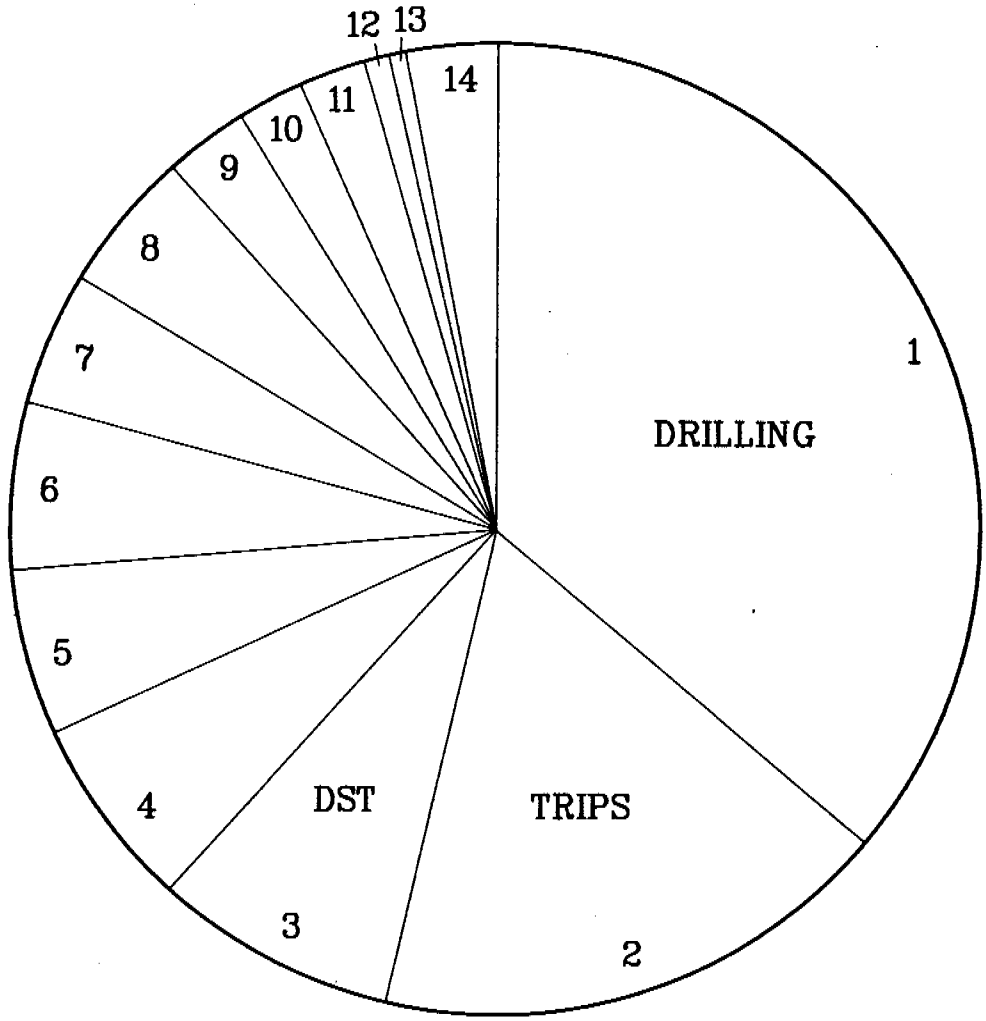
REF.		DRAFTING	C.H.
SCALE	NTS	CHECKED	J.T.
AUTHOR	S.D.	REPORT	304567
DATE	MAR 92	PLAN No.	PetNTcw4561

TABLE 2

TIME SUMMARY

MASON 1

OPERATION	HOURS	PERCENTAGE
Drilling	211.25	35.39
Trips	108.00	18.09
Drill Stem Tests	47.75	8.00
N.U. BOPS, Pressure Tests etc	37.75	6.32
Cementing, WOC	34.50	5.78
Reaming	31.00	5.19
Logging	28.75	4.82
Circulating and Conditioning	23.50	3.94
Repairs	18.75	3.14
Coring	15.25	2.55
Running Casing	15.00	2.51
Deviation Surveys	5.50	0.92
Rig Service	3.50	0.59
Miscellaneous	16.50	2.76
TOTAL	597.00	100.00



1 DRILLING	211¼ hrs
2 TRIPS	108 hrs
3 DRILL STEM TESTS	47¾ hrs
4 N.U. BOP'S, PRESSURE TESTS ETC	37¾ hrs
5 CEMENTING, WOC	34½ hrs
6 REAMING	31 hrs
7 LOGGING	28¾ hrs
8 CIRCULATING AND CONDITIONING	23½ hrs
9 REPAIRS	18¾ hrs
10 CORING	15¼ hrs
11 RUNNING CASING	15 hrs
12 DEVIATION SURVEYS	5½ hrs
13 RIG SERVICE	3½ hrs
14 MISCELLANEOUS	16½ hrs
	597 hrs

FIGURE 6

CRA Pacific Oil & Gas Pty Limited

McARTHUR BASIN

MASON 1
TIME DISTRIBUTION

REF.		DRAFTING	C.H.
SCALE	NTS	CHECKED	J.T.
AUTHOR	S.D.	REPORT	304567
DATE	MAR 92	PLAN No.	PetNTcw4560

TABLE 3

EP18 - MASON 1

WELL COSTS

ITEMS	COSTS
Site Preparation	$58,181.50
Water Supply	$102,002.78
Mobilization	$101,600.00
Drilling	$297,031.04
Drilling Supplies	$38,851.06
Casing	$100,342.15
Cementing Services	$54,855.14
Mud Supplies & Services	$131,388.75
Wireline Logging	$77,636.97
Camp	$50,682.85
Mudlogging Services	$43,862.30
Drill Stem Testing	$56,134.95
Communications	$9,099.34
Freight	$46,439.62
Travel	$47,026.22
Vehicle Costs	$5,038.29
Lab Analysis	$16,057.50
Supervision	$34,736.94
CRA Overheads	$37,690.00
Consultants	$61,848.75
Insurance	$469.56
Bank charges	$66.68
Entertainment	$28.00
	$1,371,070.39