

EAST MEREENIE NO. 11

WELL COMPLETION REPORT

Oilmin N.L.  
27-35 Turbot Street  
Brisbane Q 4000

March 1984

DEPT. OF MINES & ENERGY  
DO NOT REMOVE

100043

NORTHERN TERRITORY  
GEOLOGICAL SURVEY

PR84/11C

## LIST OF CONTENTS

	<u>Page</u>	<u>Sect.</u>
SECTION 1 - GENERAL DATA	1	1
SECTION 2 - ENGINEERING DATA	2	
2.1 Rig Data	2	2
2.2 Drilling Record	4	2
2.3 Hole Sizes and Depths	11	2
2.4 Casing and Cementing Record	11	2
2.5 Drilling Fluid	13	2
2.6 Bit Record	15	2
2.7 Deviation Record	17	2
2.8 Formation Testing	18	3
2.9 Completion Data	21	4
2.10 Time Analysis	22	4
2.11 Temperature Survey	23	5
SECTION 3 - GEOLOGICAL DATA	24	
3.1 Reasons for Drilling	24	6
3.2 Stratigraphy	24	7
3.3 Formation Sampling	26	8
3.4 Logging and Surveys	26	9
3.5 Petroleum Geology	27	10
3.6 Relevance to Appraisal Programme	29	11

---

LIST OF ATTACHMENTS

Sect.

TABLES

1.	Drilling Fluid	2
2.	Bit Record	2
3.	Deviation Record	2
4.	Completion Data	4
5.	Time Analysis	4
6.	Stratigraphic	7

FIGURES

1.	Location Map	1
2.	Mereenie Field Well Locations	1
3.	Time/Depth Curve	2

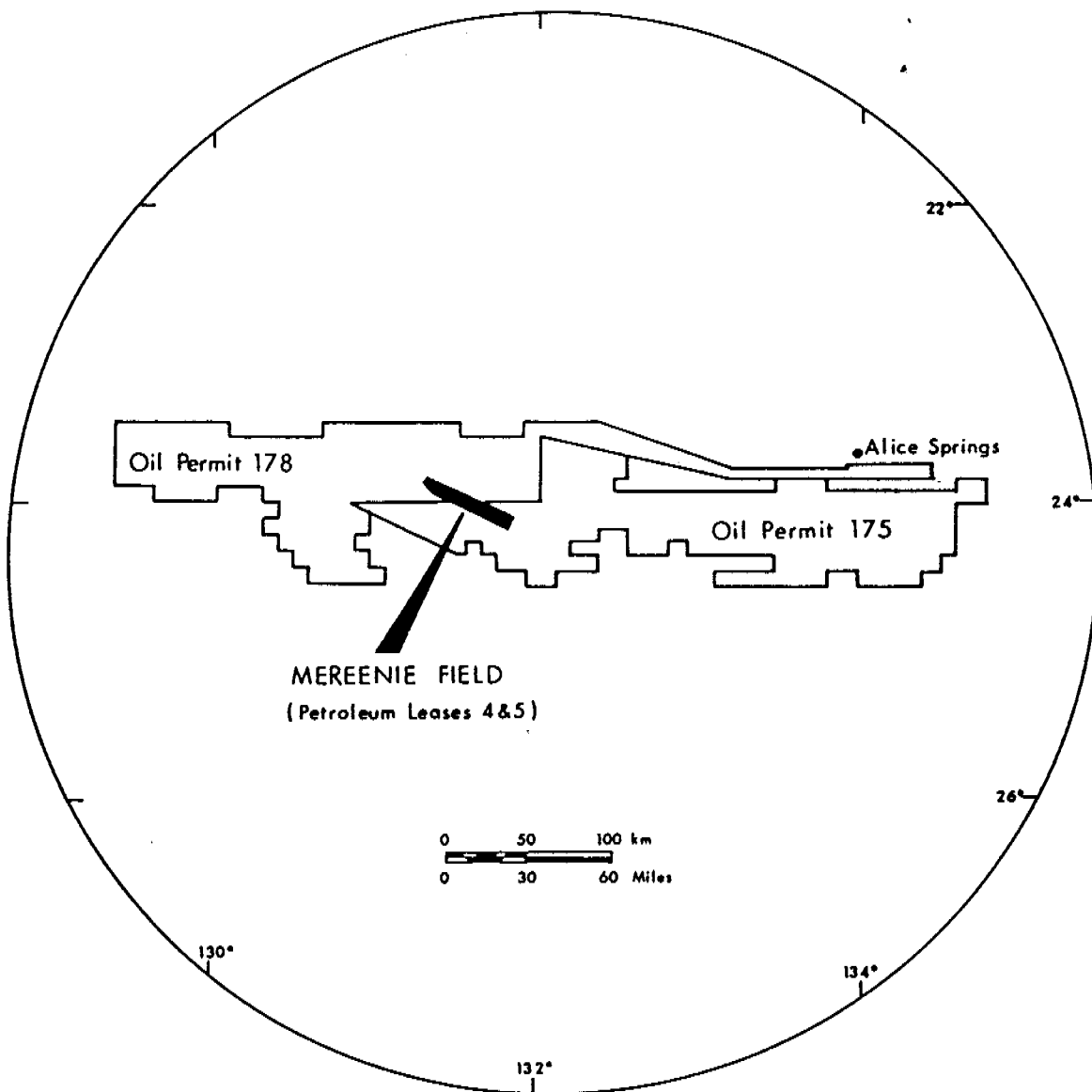
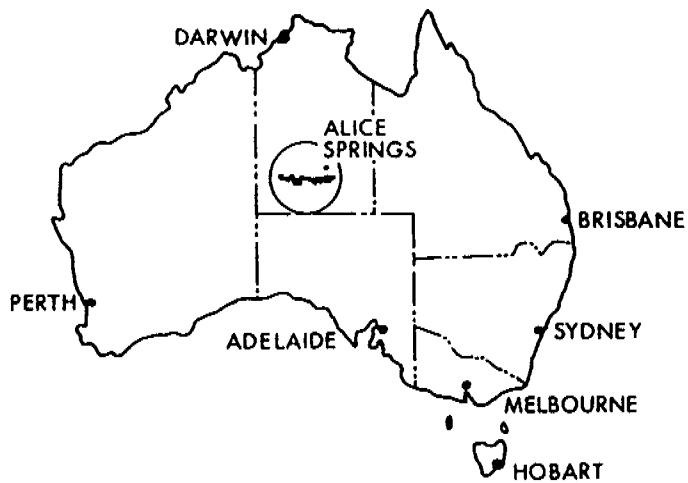
APPENDICES

1.	Cuttings Descriptions	12-13
2.	Drill Stem Test Results	14-15
3.	Fluid Analyses	16

ENCLOSURES

1.	Composite Well Log	17
2.	Mud Log	18
3.	Electric Logs	19-23

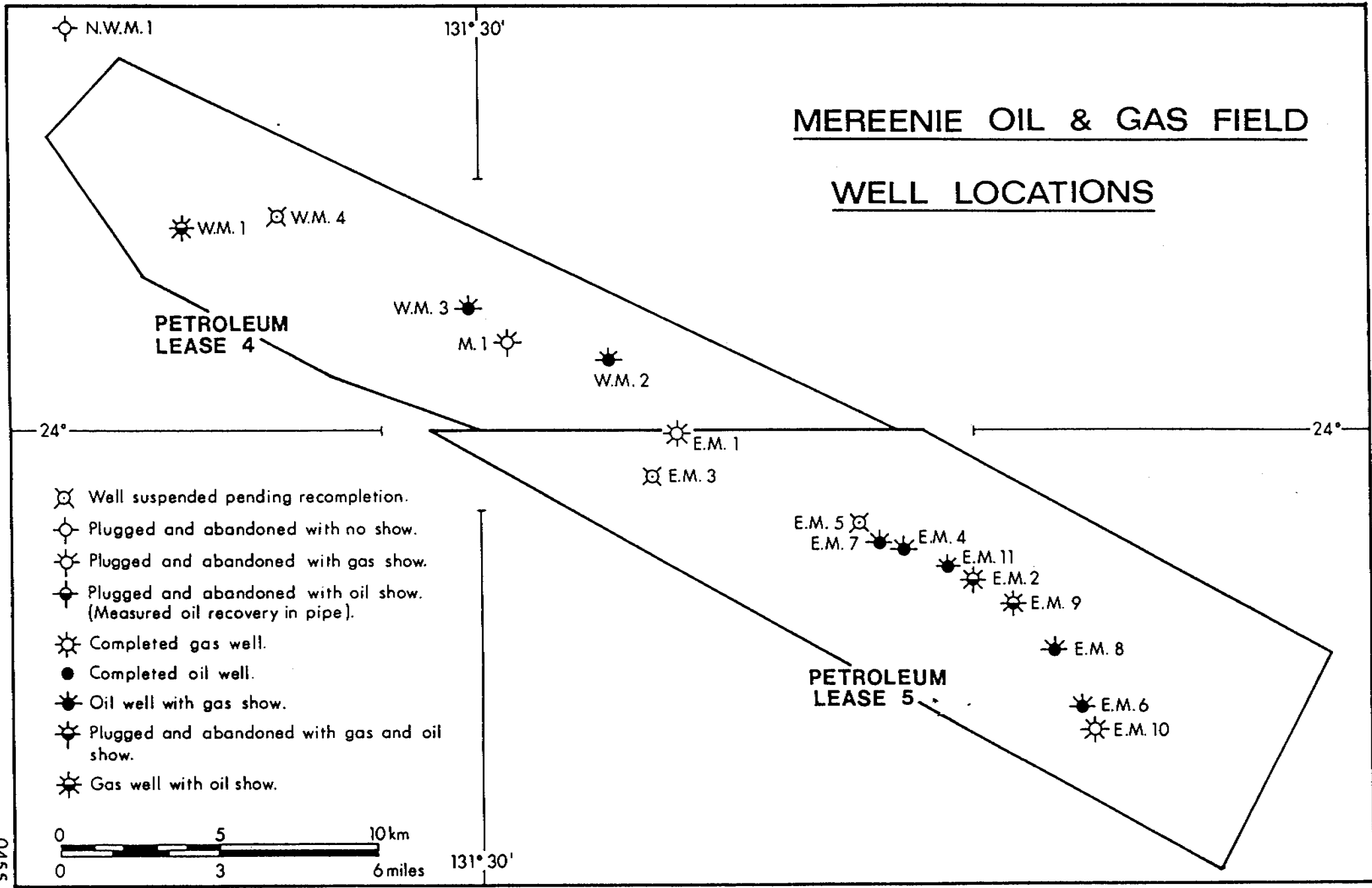
SUMMARY



LOCATION MAP

# MEREENIE OIL & GAS FIELD

## WELL LOCATIONS



N.W.M. 1

131° 30'

W.M. 1 W.M. 4

PETROLEUM LEASE 4

W.M. 3

M. 1

W.M. 2

E.M. 1

E.M. 3

E.M. 5 E.M. 7

E.M. 4

E.M. 11

E.M. 2

E.M. 9

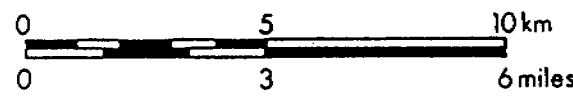
E.M. 8

PETROLEUM LEASE 5

E.M. 6

E.M. 10

- ⊗ Well suspended pending recompletion.
- ⊙ Plugged and abandoned with no show.
- ☀ Plugged and abandoned with gas show.
- ⊕ Plugged and abandoned with oil show. (Measured oil recovery in pipe).
- ☀ Completed gas well.
- Completed oil well.
- ⊕ Oil well with gas show.
- ☀ Plugged and abandoned with gas and oil show.
- ☀ Gas well with oil show.



131° 30'

24°

24°

5510

1. SUMMARY:

East Mereenie No. 11 is the ninth well of a 20 well appraisal programme to delineate and develop the Mereenie oilfield. It was drilled to test the easterly extent of the oil column in the P3 sub-unit and to test the production potential of the P3 sub-unit reservoir horizons. The well was located 0.45 miles west of East Mereenie No. 2 and intersected the primary target horizon, the P3-120/130 sandstone interval, approximately 150 feet updip. (Figures 1 and 2).

The well was spudded on October 12, 1983 at 1530 hours using the OIME SL 750 Mereenie Rig No. 1 and reached a total depth of 4853 feet in the Pacoota P4 sub-unit on November 21, 1983 at 1715 hours.

The well was drilled with air and air foam to the 10-3/4" casing shoe at 2276 feet in the top of the Stokes Siltstone. A maximum water influx of 1500 barrels/hour was measured at 1380 feet with the initial influx occurring at approximately 800 feet. After setting 10-3/4" casing, 9-7/8" hole was drilled with air to 3957 feet where the well was killed with a 9.0 ppg oil based mud. From this point a 7-7/8" hole was drilled to total depth with oil based mud.

The Pacoota P3 sub-unit was tested with three drill stem tests. Drill stem test No. 1 (4599 to 4655 feet) flowed oil and gas to surface at 735 BOPD and 580 Mcfd respectively from the P3-120/130 interval. Drill stem test Nos. 2 and 3 recovered minor hydro-carbons but showed the Lower P3 reservoirs to be poorly permeable. The results of drill stem test No. 3 do not correlate with the electric log interpretation which indicated good reservoir characteristics over this interval.

Neither the gas/oil nor oil/water contacts were detected. However, comparison with surrounding wells indicate the gas/oil contact at -2130 feet MSL and oil/water contact at -2450 feet MSL are appropriate.

During final electric logging a bubble of gas from the Lower Stairway Sandstone caused the well to be shut-in. This initiated lost circulation in the zone later discovered to be a hole in the 10-3/4" casing. As the thief zone could not be healed several cement plugs were spotted and 8-5/8" casing run. The well was then drilled out to total depth and completed by running and perforating 5-1/2" casing.

After running 2-3/8" tubing, a one hour clean up flow rate of approximately 1000 BOPD was measured from the P3-120/130 interval prior to shut-in.

1. GENERAL DATA



SECTION 1 - GENERAL DATA

Well name and number: East Mereenie No. 11

Operator: Oilmin N.L.

Beneficial interest holders: Magellan Petroleum Australia Ltd  
Canso Resources Limited  
Oilmin N.L.  
Transoil No Liability  
Petromin No Liability  
Flinders Petroleum No Liability  
The Moonie Oil Company Pty Ltd

Petroleum title: Petroleum Lease No. 5

District: Alice Springs, Northern Territory

Location: Latitude: 24° 02' 10" S  
Longitude: 131° 38' 41" E  
(Not surveyed)

Elevation: Ground level: 2329 feet  
Kelly bushing: 2349 feet  
(datum for all measurements  
not surveyed)

Total depth: 4853 feet (Driller)  
4853.5 feet (Logger)

Spudded: 12th October, 1983 (1530 hrs)

Total depth reached: 21st November, 1983 (1715 hrs)

Rig released: 4th December, 1983 (1000 hrs)

Well status: Completed for oil production from  
the P3-120/130 reservoir

2. ENGINEERING DATA

SECTION 2 - ENGINEERING DATA

2.1 Rig Data

Drilling contractor: Mereenie Joint Venture Partners

Drilling plant:            Make:            O.I.M.E.  
                          Type:            Model SL-5 (SL-750)  
                          Rated  
                          capacity:       12,500 ft. with 4-1/2" O.D.  
  drill pipe.  
                          Motors:         3 - Caterpillar D-3408  
  (compounded) 385 B.H.P.  
  each.

Mast -                    Make:            Parco Model P-131  
                          Type:            Cantilever  
                          Rated  
                          capacity:       550,000 lbs. (10 lines)

Pumps -                    Make:            2 - Continental Emsco  
  Triplex.  
                          Type:            F-800 - V-belt driven from  
  compound.  
                          Size:            6-3/4" x 9"

Rotary table -            Make:            IDECO LR-275 (27-1/2")  
                          Capacity:       570 tons dead load.

Blowout preventors -    Make:            Cameron            Cameron  
                          Model:         "U" Double Gate    "D" Annular  
                          Size:           13-5/8"            13-5/8"  
                          Rating (PSI)   5000               5000

Choke manifold -        Make:            McEvoy  
                          Size & type:   3" - 5000 PSI W.P. choke  
  and kill with one positive  
  and one adjustable choke  
  and Cameron 3" - 5000 H.C.R.  
  flanged valve.

Mud tanks -              Size &  
                          capacity:       3 tank system - returns,  
  settling and suction -  
  Total capacity: 777  
  barrels.

Shale shaker -          Make:            Brandt  
                          Type:            Single dual screen

Mud mixers -             Make:            4-Brandt heavy duty.  
                          Type:            32" blade - electrically  
  driven

2.1 Rig Data (Contd.)

Desander -	Make:	DEMCO
	Model:	84, comprising 4 x 8" cones.
	Capacity:	540 to 700 GPM, electrically driven.
Desilter -	Make:	DEMCO
	Model:	412-H, comprising 12 x 4" cones.
	Capacity:	960 to 1080 GPM, electrically driven.
Drill pipe -	4-1/2" O.D. 16.6 lbs/ft. API Grade "E" - EUE. Seamless range 2 - 18° taper, internally coated with 6-1/4" O.D. by 3-1/2" tool joints, hardbanded, 4-1/2" x H connections.	
Drill collars -	6 x 8" O.D. 2-13/16" I.D. x 31 ft. 6-5/8" reg. connections.	
	12 x 7" O.D. 2-13/16" I.D. x 31 ft. 4" I.F. connections.	
	27 x 6-1/2" O.D. 2-1/4" I.D. x 31 ft. 4" I.F. connections.	
	3 x 4-1/8" O.D. 2" I.D. x 31 ft. 3-1/2" reg. connections.	

Air drilling equipment:

Air compressors -	Make:	3 only Sullair units.
	Model:	900/250 D.U.
	Capacity:	900 CFM at 250 PSI each.
Air compressor booster -	Make:	Knight Industries
	Model:	K.O.A. Model 2.
	Capacity:	245 PSI inlet and 1400 PSI discharge at 1500 CFM.
Diverter -	Make:	Shaffer
	Model:	Type 79 rotating BOP.
	Size:	13-5/8"
	Rating:	3000 PSI.
Injection pumps -	Make:	2 only "LATO"
	Model:	LATO L421D
	Capacity:	6 GPM at 2135 PSI each. Powered by Lombardini diesel engines.

2.2 DRILLING RECORD

Well: EAST MEREENIE NO. 11 Field: MEREENIE

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results
12.10.83	31	Rig up. Drill rat hole. Spud at 1530 hours. Drill 17-1/2" hole with air to 31 feet. Ream 17-1/2" crooked hole.
13.10.83	158	Ream to 31 feet. Drill 17-1/2" hole to 158 feet.
14.10.83	177	Drill 17-1/2" hole with air to 177 feet. P.O.H. and run 15" conductor pipe to 177 feet. Cement inside with 15 sacks of Class A cement with 3 sacks of plaster. Cement outside conductor with 75 sacks Class A cement with 2.5% CaCl <sub>2</sub> . Cut and set conductor and weld on circulating head. Nipple up blooey line.
15.10.83	256	Drill mouse hole. R.I.H. Install rotating head and drive bushing. Clean to bottom. Drill 13-3/4" hole with air to 256 feet.
16.10.83	485	Drill 13-3/4" hole to 445 feet. Drill 13-1/2" hole to 485 feet with air.
17.10.83	701	Drill 13-1/2" hole to 701 feet.
18.10.83	881	Drill 13-1/2" hole with air to 800 feet. Influx of water at rates up to 640 BPH. Drill 13-1/2" hole to 881 feet with air/foam. Injection of foam at rate 5 bbls/hr.
19.10.83	1099	Drill 13-1/2" hole with air/foam to 1099 feet. Hole making 1000 BPH water. Foam injection at 7 BPH.
20.10.83	1380	Drill 13-1/2" hole to 1104 feet with air/foam. Change bit. Ream from 1080 to 1104 feet. Drill 13-1/2" hole to 1380 feet. Water influx at 1500 BPH. Foam injection rate 10 BPH.
21.10.83	1446	Drill 13-1/2" hole with air/foam to 1446 feet. Run survey. Misrun. POH. BHA twisted off between 12" drill collars. RIH with overshot and jars. Latch onto fish at 1385 feet. POH. No fish. RIH with overshot. POH with fish. Cones sheared off bit. Pick up magnet, and RIH.

Well: EAST MEREENIE NO. 11

Field: MEREENIE

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results.
22.10.83	1446	Work magnet. POH. No fish. RIH with mill, circulate and mill on junk, POH and RIH with bit No. 5. Ream 100 feet to 13-1/2" to bottom. POH. RIH with reverse circulating junk basket. Drop ball. Ball stuck in jars. POH and retrieve ball. RIH with reverse circulating junk basket.
23.10.83	1446	Fishing with reverse circulating junk basket. POH and RIH with mill. Mill on junk at 1446 feet. POH with junk mill. RIH 8" mill. Mill on junk. POH and RIH with new mill. Mill on junk with air/foam.
24.10.83	1446	Mill on junk, 2 more runs with mill. RIH with cone less 13-1/2" bit. Work junk. POH. Cut 2 shanks of bit. RIH with 13-1/2" shank bit. Rotate. POH. Build up shank on bit. RIH, work junk. POH.
25.10.83	1446	RIH with magnet. POH and RIH with 13-1/2" shank bit. Work junk. POH and RIH with magnet. POH and RIH with 13-1/2" shank bit. 2 runs. Mill around fish.
26.10.83	1446	POH and RIH with 12" junk mill. Mill on junk. POH and RIH with 13-1/2" bit No. 6 RR. Drill on junk. POH. RIH with magnet. POH. RIH with 13-1/2" bit No. 7 RR. Drill on junk.
27.10.83	1454	Drill on junk. POH. RIH with 13-1/2" bit No. RR3. Drill on junk 1447 to 1448 feet. POH. RIH with core bit and reverse circulating junk basket. POH, recover fish and core. RIH with bit No. 8. Drill 13-1/2" hole to 1454 feet with air mist with foam injection at 7 BPH.
28.10.83	1587	Drill 13-1/2" hole to 1587 feet with air/mist. Foam injection at 5-7 BPH.
29.10.83	1686	POH. RIH with bit No. 9. Drill 13-1/2" hole to 1653 feet. POH and RIH with bit No. 10. Drill 13-1/2" hole to 1686 feet with air/foam. Foam injection at 9 BPH.

Well: EAST MEREENIE NO. 11 .....

Field: MEREENIE .....

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results.
30.10.83	2010	POH. RIH bit No. 11. Ream 1653-1686 feet. Drill 13-1/2" hole to 2010 feet with air/foam.
31.10.83	2215	Drill 13-1/2" hole to 2118 feet with air/foam. POH and RIH with bit No. 12. Ream 120 feet. Drill 13-1/2" hole to 2215 feet with air/foam.
1.11.83	2297	Drill 13-1/2" hole to 2297 feet with air/foam. Run wiper trip. Pump pill. Strap out of hole. Run 10-3/4" casing and wash to bottom. Set at 2274 feet. Cement with 425 sacks Class A cement in a 15.5-15.6 ppg slurry. Displace with 244 bbls. Bump plug with 500 psi.
2.11.83	2297	W.O.C. Nipple up BOPs and pressure test BOP and choke manifold. RIH with bit No. 13. Tag cement at 2227 feet. Drill out plug and cement.
3.11.83	2563	Pressure test pipe rams and manifold. Hydril and kelly cock to 1000 psi. Drill out cement. Unload and dry hole. Drill 9-7/8" hole with air to 2563 feet.
4.11.83	2971	Air drill 9-7/8" hole to 2971 feet.
5.11.83	3187	Drill 9-7/8" hole to 2981 feet. POH, RIH bit No. 14. Drill 9-7/8" hole to 3187 feet.
6.11.83	3610	Drill 9-7/8" hole to 3610 feet.
7.11.83	3904	Drill 9-7/8" hole to 3904 feet.
8.11.83	3957	Air drill 9-7/8" hole to 3957 feet. Kill well with 9 ppg oil base mud (OBM). POH, change BHA and make up 7-7/8" bit and BHA. RIH. Nipple up rotating head.
9.11.83	4072	Drill 7-7/8" hole to 4072 feet. Mud weight 9.3/9.4. Viscosity 53/57.
10.11.83	4166	Drill 7-7/8" hole to 4166 feet. Mud weight 9.0/9.6. ppg Viscosity 55/58.

Well: EAST MEREENIE NO. 11

Field: MEREENIE

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results.														
11.11.83	4252	Drill 7-7/8" hole with OBM to 4212 feet. POH. Make up and RIH with bit No. 16. Ream 4117 to 4212 feet. Drill 7-7/8" hole to 4252 feet. Mud weight 9.0/9.5. Viscosity 52/60.														
12.11.83	4368	Drill 7-7/8" hole to 4368 feet. Mud weight 9.1/9.6. Viscosity 51/55.														
13.11.83	4422	Drill 7-7/8" hole to 4404 feet. POH. Make up and RIH with bit No. 17. Ream 4289 to 4404 feet. Drill 7-7/8" hole to 4422 feet. Mud weight 9.0/9.6. Viscosity 51/60.														
14.11.83	4517	Drill 7-7/8" hole to 4517 feet. Mud weight 9.3/9.5. Viscosity 56/63.														
15.11.83	4577	Drill 7-7/8" hole to 4577 feet. Pump pill. POH. RIH with bit No. 18. Ream from 4517 to 4530 feet. Circulate gas out of hole. Ream from 4530 to 4577 feet. Mud weight 9.4/9.6. Viscosity 62/64.														
16.11.83	4655	Drill 7-7/8" hole to 4655 feet. Pump pill. POH. Run in hole with DST No. 1. Mud weight 9.5/9.5. Viscosity 61/64.														
17.11.83	4662	Run DST No. 1 4599 to 4655 feet. Open tool 10 mins. and close in for 40 mins. Re-open tool for 104 mins. and closed in for 175 mins. Gas to surface 7 mins. Oil to surface 34 mins. Gas flow 580 mcf. Oil flow 735 BOPD.  Field Chart Readings DST No. 1: <table border="1" data-bbox="847 1641 1513 1731"> <thead> <tr> <th><u>IHP</u></th> <th><u>IFP</u></th> <th><u>ISIP</u></th> <th><u>FFP</u></th> <th><u>FSIP</u></th> <th><u>FHP</u></th> <th><u>BHT</u></th> </tr> </thead> <tbody> <tr> <td>2339</td> <td>107</td> <td>1806</td> <td>1023</td> <td>1806</td> <td>2299</td> <td>130°F</td> </tr> </tbody> </table> Reverse circulate out gas. Condition mud. POH. RIH with bit No. 19. Drill 7-7/8" hole to 4662 feet with OBM.	<u>IHP</u>	<u>IFP</u>	<u>ISIP</u>	<u>FFP</u>	<u>FSIP</u>	<u>FHP</u>	<u>BHT</u>	2339	107	1806	1023	1806	2299	130°F
<u>IHP</u>	<u>IFP</u>	<u>ISIP</u>	<u>FFP</u>	<u>FSIP</u>	<u>FHP</u>	<u>BHT</u>										
2339	107	1806	1023	1806	2299	130°F										
18.11.83	4727	Drill 7-7/8" hole to 4727 feet with OBM. POH. RIH with DST No. 2, 4665 to 4727 feet. Open test tool 10 mins., shut in 28 mins.														



Well: EAST MEREENIE NO. 11

Field: MEREENIE

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results.														
19.11.83	4760	<p>Open test tool 119 mins., shut in 240 mins. Gas to surface in first shut-in period TSTM, nil oil to surface.</p> <p>Field Chart Readings DST No. 2:</p> <table border="1"> <thead> <tr> <th><u>IHP</u></th> <th><u>IFP</u></th> <th><u>ISIP</u></th> <th><u>FFP</u></th> <th><u>FSIP</u></th> <th><u>FHP</u></th> <th><u>BHT</u></th> </tr> </thead> <tbody> <tr> <td>2445</td> <td>134</td> <td>1793</td> <td>453</td> <td>1792</td> <td>2445</td> <td>130°F</td> </tr> </tbody> </table> <p>Recover 7 bbls mud and 12 bbls oil on reverse circulation. Reverse circulate and condition mud. Pump pill. POH. Pick up circulating head. RIH. Circulate gas cut mud. Drill 7-7/8" hole to 4760 feet. Mud weight 9.3/10.0. Viscosity 57/74.</p>	<u>IHP</u>	<u>IFP</u>	<u>ISIP</u>	<u>FFP</u>	<u>FSIP</u>	<u>FHP</u>	<u>BHT</u>	2445	134	1793	453	1792	2445	130°F
<u>IHP</u>	<u>IFP</u>	<u>ISIP</u>	<u>FFP</u>	<u>FSIP</u>	<u>FHP</u>	<u>BHT</u>										
2445	134	1793	453	1792	2445	130°F										
20.11.83	4786	<p>Drill 7-7/8" hole to 4786 feet. POH. RIH with DST No. 3, 4735 to 4786 feet. Open hole for 10 mins. Shut in for 30 mins. Open 120 mins. and shut in 240 mins. Gas to surface 9 mins. TSTM. Nil oil to surface.</p> <p>Field Chart Readings DST No. 3:</p> <table border="1"> <thead> <tr> <th><u>IHP</u></th> <th><u>IFP</u></th> <th><u>ISIP</u></th> <th><u>FFP</u></th> <th><u>FSIP</u></th> <th><u>FHP</u></th> <th><u>BHT</u></th> </tr> </thead> <tbody> <tr> <td>2457</td> <td>85</td> <td>1378</td> <td>212</td> <td>1602</td> <td>2442</td> <td>130°F.</td> </tr> </tbody> </table> <p>Reverse circulate. Recover 4 bbls gas cut mud and 200 ml of mud cut oil between DCIP and Hydrospring. Circulate out gas. Flow check. Pump pill. POH. Mud weight 9.7/9.9. Viscosity 57/63.</p>	<u>IHP</u>	<u>IFP</u>	<u>ISIP</u>	<u>FFP</u>	<u>FSIP</u>	<u>FHP</u>	<u>BHT</u>	2457	85	1378	212	1602	2442	130°F.
<u>IHP</u>	<u>IFP</u>	<u>ISIP</u>	<u>FFP</u>	<u>FSIP</u>	<u>FHP</u>	<u>BHT</u>										
2457	85	1378	212	1602	2442	130°F.										
21.11.83	4853 (TD)	<p>POH. RIH with bit No. RR19. Circulate gas out of hole. Drill 7-7/8" hole to 4853 feet. Mud weight 9.2/9.8 Viscosity 54/67. Pump pill. POH. Rig to run Gearhart. Mud weight 9.3/9.7. Viscosity 54/67.</p>														
22.11.83	4853	<p>Log with Gearhart.</p> <p>Run 1 - Density Neutron 4852 to 3852 ft. Run 1 - Dual Induction 4846 to 2274 feet. Run 1 - SFT. Run 2 - SFT.</p> <p>POH, well flowing. Shut in well. Circulate gas out. Lost circulation. Mix mud volume and observe well.</p>														

Well: EAST MEREENIE NO. 11

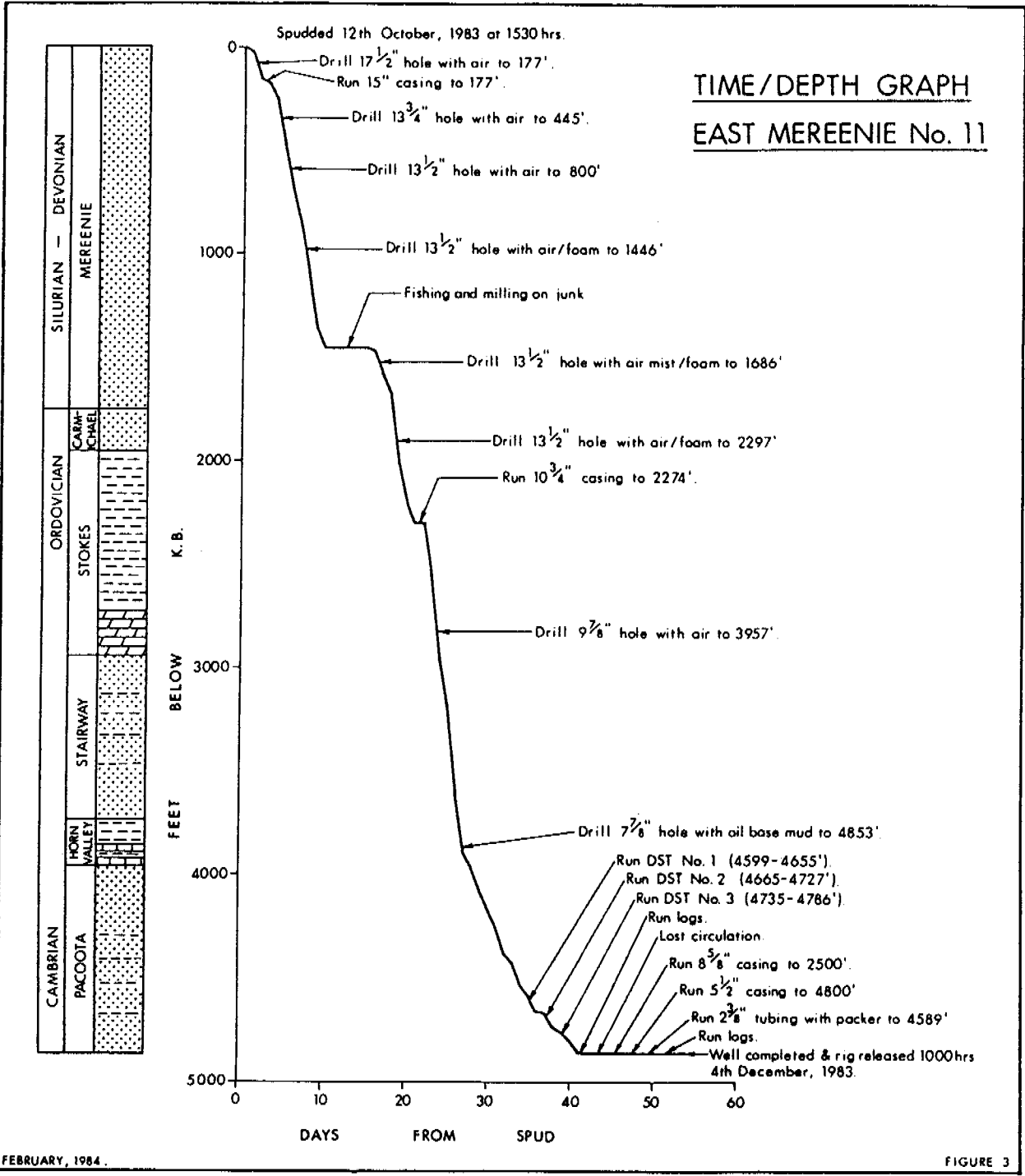
Field: MEREENIE

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results.
23.11.83	4853	Pump 187 bbls oil base mud with lost circulation material. No circulation. Mix mud build volume. Pump 15 bbls OBM and 15 bbls LCM. Mix mud build volume. Pump 130 bbls OBM down drill pipe. Bleed off gas from annulus. Pump 230 bbls OBM and LCM down drill pipe. Bleed off gas in annulus to 0 psi. Mud weight 9.5/9.8. Viscosity 48/49.
24.11.83	4853	Mix mud. Pump 5 bbls mud into annulus. Annulus open to atmosphere. Flare increasing 1 foot to 6 feet. Mix mud and build volume. Pump 10 bbls mud. Mix mud. RIH with Gearhart temperature probe.
25.11.83	4853	Log with temperature probe - unable to detect lost circulation zone. Well kicked with gas from the Stairway and possible P1. Killed well with 378 bbls mud at 9.5 ppg and 12 ppg with slow pumping 14 SPM water down annulus. Observe well. Pull back 8 stands to 4067 feet. Check fluid level in pipe with Gearhart 600 feet. Pump cement plug No. 1 (200 ft) across top Pacoota. Mix mud and build volume. Bleed off annulus pressure. Pumped water and mud down drill pipe and annulus. Control well by bleeding off annulus pressure and pumping down annulus and drill pipe. Change to water based mud.
26.11.83	4853	Observe well. Build mud volume. Bleed off annulus pressure. Pump mud. RIH to tag cement. Run cement plug No. 2 at 3941 feet. POH to 3688 feet. Observe well. Mix mud build volume and bleed off annulus. Pump mud down drill pipe and annulus. Slow pump water into annulus. RIH. Tag cement at 3760 feet. Pull back and control well as before.
27.11.83	4853	Pump lost circulation material (Howco flow-check). No success but lost circulation zone indicated at 1400 feet in 10-3/4" casing which coincides with anomaly on temperature log. Mix mud.

Well: EAST MEREENIE NO. 11

Field: MEREENIE

Date	E.T.O. (ft.)	Details of Operations, Descriptions and Results.
28.11.83	4853	Observe well. Mix mud spot 13 ppg water based mud on bottom. Kill well. Run 7 joints 8-5/8" J55 flush joint hydril and 56 joints 8-5/8" J55 ST&C casing to 2500 feet. Cement with 180 sacks Class A cement treated with 0.2% HR4 in a 15 ppg slurry.
29.11.83	4853	W.O.C. Mix mud and build volume. Nipple down BOP. Cut and weld 10-3/4" casing and install BOP on 8-5/8" casing. Pressure test blind rams to 1000 psi. RIH with bit No. RR21.
30.11.83	4853	RIH. Tag cement at 2435 feet. Pressure test BOP, manifold and 8-5/8" casing to 1000 psi. Drill cement from 2985 to 2988 feet. Circulate and condition mud. Displace with oil based mud 10.2 ppg. 49 Viscosity. Drill out cement 3988 to 4100 feet. Wash 30 feet to bottom. POH.
1.12.83	4853	POH, laying down drill pipe and collars. Run 122 joints 14.0 lb/ft K55 5-1/2" casing to 4800 feet and cement with 500 sacks of Class G cement treated with 1/2% Halad 22-A and 1/2% CFR-2. Nipple down BOP and cut 5-1/2" casing.
2.12.83	4853	Nipple up BOP. Pressure test - no test. Nipple down and nipple up BOP - test o.k. RIH with casing scraper and 2-3/8" tubing.
3.12.83	4853	RIH. Circulate. POH. Run Gearhart cement bond log. Perforate with Gearhart 4617 to 4644 feet at 4 shots per foot. Run perforating and collar log. RIH with tubing and packer assembly. Nipple up Christmas tree. Displace hole with KCl packer fluid.
4.12.83	4853	Displace tubing with crude. Drop ball and set packer. Shear ball catcher sub. Observe well. No appreciable flow. Swab well with Gearhart. Well flowed oil to surface. Flow to clean. Flow oil and gas through separator and measure oil and gas flow. Gas 582 mcf. Oil 981 BPD. Rig released 1000 hrs.



2.3 Hole Sizes and Depths

- 17-1/2" to 177 feet.
- 13-3/4" to 445 feet.
- 13-1/2" to 2297 feet.
- 9-7/8" to 3957 feet.
- 7-7/8" to 4853 feet.

2.4 Casing and Cementing Record

15" Conductor:	Weight:	1/4" wall
	Grade/Connections:	Welded
	Shoe depth:	177 feet
	Cement used:	75 sacks Class A
	Additives:	2.5% CaCl <sub>2</sub>
	Slurry weight:	15.5 ppg
10-3/4" Casing:	Weight	40.5 lb/ft
	Grade/Connections:	H40
	No. of joints:	57
	Shoe depth:	2275.96 feet
	Cement used:	425 sacks Class A
	Additives:	nil
8-5/8" Casing:	Slurry weight:	15.5 to 15.6 ppg
	Weight:	36.0 lb/ft
	Grade/Connections:	J55/Hydri1
	No. of joints:	7
	Weight:	32.0 lb/ft
	Grade/Connections:	J55/ST & C
	No. of joints:	57
	Shoe depth:	2462 feet
	Cement used:	150 sacks Class A
	Additives:	0.2% HR4
	Slurry weight:	15.4 ppg

2.4 Casing and Cementing Record (cont'd)

5-1/2" Casing:	Weight:	14.0 lb/ft
	Grade/Connections:	K55
	No. of joints:	122
	Shoe Depth	4850 feet
	Cement used:	500 sacks Class G
	Additives:	1/2% Halad 22-A 1/2% CFR-2
	Slurry weight:	15.2 ppg

2.5 Drilling Fluids

A summary of the drilling fluid properties is shown below.

WELL : . . . EAST MERENIE NO. 11 . . . . .

TABLE 1

DATE	DEPTH (feet)	WEIGHT (ppg)	VISC (sec)	W.L. (cc)	PH	SALT (ppm)	OIL (%)	SOLIDS (%)	SAND (%)	REMARKS
12.10.83	31									AIR/STIFF FOAM
13.10.83	158									"
14.10.83	177									"
15.10.83	256									Air
16.10.83	485									Water influx at 440/feet Air/Foam
17.10.83	701									Foam Injection at 6 BPH "
18.10.83	881									Water Influx 640 BPH. Foam Injection 5 BPH. "
19.10.83	1099									Water Influx 1000 BPH. Foam Injection 7 BPH. "
20.10.83	1380									Water Influx 1500 BPH. Foam Injection 10 BPH. "
21.10.83	1446									Air/Foam / Fishing
22.10.83	1446									" "
23.10.83	1446									" "
24.10.83	1446									" "
25.10.83	1446									" "
26.10.83	1446									" "
27.10.83	1454									Foam Injection 7 BPH Air/Foam
28.10.83	1587									Foam Injection 7 BPH "
29.10.83	1686									Foam Injection 9 BPH "
30.10.83	2010									Foam Injection 8 BPH "
31.10.83	2215									Foam Injection 9 BPH "
1.11.83	2297									Foam Injection 9 BPH "
2.11.83	2297									Drill out cement shoe with water "
3.11.83	2563									Air - Dusting
4.11.83	2971									"
5.11.83	3187									"
6.11.83	3610									"
7.11.83	3904									"
8.11.83	3957	9.1	47							Oil/Water = 75/25 (Incl Volatiles) Oil Based Mud
9.11.83	4072	9.5	47							Oil/Water = 75/25 "
10.11.83	4166	9.4	62					25	6.0	Oil/Water = 72/28 "
11.11.83	4252	9.4	52					20	1.0	Oil/Water = 75/25 "
12.11.83	4368	9.6	54					26	0.75	Oil/Water = 74/26 "
13.11.83	4423	9.0	60					26	1.25	Oil/Water = 80/20 "
14.11.83	4517	9.2	57					20	1.25	Oil/Water = 72/28 "
15.11.83	4570	9.4	62					22	1.25	Oil/Water = 72/28 "
16.11.83	4655	9.5	61					24	1.0	Oil/Water = 74/26 "
17.11.83	4662	9.6	81					24	0.75	Oil/Water = 74/26 "
18.11.83	4727	9.5	63					25	1.0	Oil/Water = 71/29 "
19.11.83	4760	9.9	67					24	1.0	Oil/Water = 71/29 "
20.11.83	4786	9.7	60					24	0.75	Oil/Water = 71/28 "

(Cont'd)...





## BIT RECORD

WELL NO.		FIELD		PETROLEUM LEASE		STATE		LOCATION																							
EAST MEREENIE NO. 11		MEREENIE		P.L. 5		N.T.		24° 02' 10" S 131° 38' 41" E																							
OPERATOR		CONTRACTOR		RIG		RIG SUPERVISOR		SPUD		REACHED T.D.																					
OILMIN N.L.		MEREENIE PARTNERS		RIG 1		R. YOUNG/M. ERWOOD		12TH OCTOBER, 1983		21ST NOVEMBER, 1983																					
PUMPS		TYPE		LINER		PUMP POWER		AIR COMPRESSORS		CAPACITY		AIR BOOSTER		CAPACITY		DRILLING FLUID															
2 x CONT ENSCO		F-800		6 x 9		COMPOUND		3-SULLAIR 900/250 DU		900 CFM AT 250 PSI EACH		KOA MODEL 2		245 PSI INPUT; 1400 PSI OUTPUT AT 1500 CFM		AIR/OIL BASED MUD															
DRILL PIPE		TYPE		THREAD		TOOL JOINTS		DRILL COLLARS		LAST STRING		LENGTH		DRAWWORKS POWER																	
4 1/2"		16.6 lb/ft		4 1/2" X H		EUE 18° TAPER		NO. 21		6 1/2"		2 1/2"		3-3408 CATS																	
NO.	SIZE	MAKE	TYPE	JET 3/2ND IN	SERIAL	DEPTH OUT	FEET	HOURS	FT/MH	ACCUM. DELG. MRL.	WT. 1000 LBS.	R P M	VERT. DEVI.	PUMP PRESS.	PUMP OPER. ATION	S P M			MUD			DULL. COND.				FORMATION REMARKS					
																1	2	WE	WE	WE	T	B	S	OTHER							
	9-7/8	HTC	X3A		FT086	Drill Rat	Hole and Mouse Hole - Return to Stock																								
1	17-1/2	HTC	OSCIQJ	-	674SR	177	177	17	10.4	17	15	50	1 1/2"								Stiff Foam								Mereenie Sandstone		
2	13-3/4	SMITH	Q9JS	-	AU8187	445	268	22	12.2	39	10	60	4 1/2"								Air Dust								Cracked Shanks		
3	13-1/2	HTC	X33	-	ZS783	1104	659	72 1/2	9.1	111 1/2	15	50/60	3	125							Air Misc										
4	13-1/2	HTC	X33	-	ZS714	1446	342	26 1/2	13	137 1/2	12	50/60	1 1/2"	425							Air Misc								Cones Sheared		
5 RR	13-1/2	HTC	X33	-	ZS435	1446																								Ream to 1446 to check for undergauge hole	
6 RR	13-1/2	HTC	X33	-	ZS435	1446	0	3																						Drill on cones	
7 RR	13-1/2	HTC	X33	-	ZS537	1446	0	4																						Drill on cones	
8 RR	13-1/2	HTC	X33	-	ZS515	1447	1	5 1/2																						Drill on cones	
9 RR	13-1/2	HTC	X33	-	ZS783	1448	1	3 1/2																						Drill on cones	
10	13-1/2	HTC	X33	-	ZS750	1587	139	26	5.35	163 1/2	55	60	1 1/2"								Air Misc										
11	13-1/2	HTC	X33	-	ZS767	1653	66	4 1/2	14.6	168	40	60	1 1/2"																		
12	13-1/2	HTC	X33	-	ZS573	1686	33	10 1/2	3.1	178 1/2	40	60	1 1/2"								Air Misc										
13	13-1/2	HTC	X33	-	ZS767	2118	432	26	16.6	204 1/2	35	60	1 1/2"								Air										
14	13-1/2	HTC	X33	-	ZS736	2297	180	13 1/2	13	218 1/2	35	60	1								Air Dust										
15	9-7/8	HTC	J22	-	ZC422	2981	683	37	18.4	255 1/2	10	60	1								Air Dust										
16	9-7/8	HTC	J22	-	ZC419	3957	976	62 1/2	15.6	317 1/2	20	60	1 1/2"								Air Dust										
17	7-7/8	HTC	J33	3x16	VB126	4212	255	55	4.6	372 1/2	25	60	2 1/2"								Oil Base										change to oil base mud
18	7-7/8	HTC	J33	3x16	VB036	4404	192	38 1/2	5	411	40	60																			
19	7-7/8	HTC	J44	3x16	V2278	4577	173	42	4.1	453	40	60																			
20	7-7/8	HTC	J44	3x16	V2313	4655	78	15 1/2	5	468 1/2	40	60																			
21	7-7/8	HTC	J55	3x16	V2322	4727	72	16	4.5	484 1/2	40	60																			

TABLE 2

(Cont'd)...

2.6 Bit Record  
See Table 2 below.



2.7 Deviation Record

A list of the deviation surveys run is presented as follows in Table 3.

TABLE 3

Depth (ft.)	Deviation (deg.)	Depth (ft.)	Deviation (deg.)
82	1	1486	2-1/2
110	1	1580	1-3/4
175	1-1/2	1710	1-3/4
216	3-1/2	1840	1-1/2
248	2	2030	1-1/4
280	3-1/2	2155	1-1/2
365	4-1/2	2341	1/2
428	4-1/2	2404	1/2
533	4-1/2	2499	1/2
626	3-1/2	2684	1/2
718	4-1/2	2879	1-1/4
749	3	2969	1
842	4-1/2	3036	1/2
874	2	3131	1
906	3/4	3348	1-1/4
969	3	3541	1-3/4
1064	1	4083	3
1096	5	4155	2-1/4
1166	3/4	4241	3
1260	1/2	4343	2-3/4
1355	1/2	4501	2-1/2
1454	2-1/2	4832	2

2.8 Formation Testing

Three drill stem tests were run during the drilling of the well. Summary results are given below and full details are included as Appendix 2. An analysis of the gas sample taken during the first test is included as Appendix 3.

Drill Stem Test No. 1 (4599 - 4655 feet)

Date: November 17, 1983  
Tester: Halliburton Services  
Formation: Pacoota Sandstone P3-120/130 Sand  
Type of Test: Bottom hole conventional dual packers  
Water Cushion: Nil  
Times: First flow - 10 mins  
First shut-in - 40 mins  
Second flow - 104 mins  
Second shut-in - 175 mins  
Pressures: Initial hydrostatic- 2339 psi  
(4651 feet) First flow - 107 psi  
Initial shut-in - 1806 psi  
Second flow - 1023 psi  
Second shut-in - 1806 psi  
Final hydrostatic - 2299 psi  
Results: Tool opened with moderate blow rapidly increasing to strong. Gas to surface 7 mins. Oil to surface 34 mins. (24 mins. into second flow period). Flowed oil and gas through separator through flow prover and oil output into stock tank. Recovered 25.47 bbls oil in 50 mins. Oil rate = 735 BOPD. Gas rate = 580 Mcfd. GOR = 790 cu ft/bbl. Oil is light green brown, 46 API at 60°F.  
Conclusions: Formation has good permeability and contains oil.

2.8 Formation Testing (cont'd)

Drill Stem Test No. 2 (4665 - 4727 feet)

Date: November 18 and 19, 1983  
Tester: Halliburton  
Formation: Pacoota Sandstone P3-150 to P3-190 sands  
Type of Test: Bottom hole conventional dual packers  
Water Cushion: Nil  
Times: First flow - 10 mins  
First shut-in - 28 mins  
Second flow - 119 mins  
Second shut-in - 240 mins  
Pressures: Initial hydrostatic - 2445 psi  
First flow - 134 psi  
First shut-in - 1793 psi  
Second flow - 453 psi  
Second shut-in - 1792 psi  
Final hydrostatic - 2445 psi  
Results: Tool opened with a weak blow slowly increasing to strong. Gas to surface in 17 mins. (in first shut-in period). Blow decreases to weak in second flow period. Gas TSTM. Recover 7 bbls of mud and 12 bbls of oil from test string on reverse circulation.  
Conclusions: Oil in zone or zones of moderate permeability.

2.8 Formation Testing (cont'd)

Drill Stem Test No. 3 (4735 to 4786 feet)

Date: November 20, 1983  
Tester: Halliburton  
Formation: Pacoota Sandstone P3-250 sand and top of P4 sub-unit  
Type of Test: Bottom hole conventional dual packers  
Water Cushion: Nil  
Times: First flow - 11 mins  
First shut-in - 30 mins  
Second flow - 120 mins  
Second shut-in - 240 mins  
Pressures: Initial hydrostatic - 2457 psi  
(4871 feet) First flow - 85 psi  
First shut-in - 1378 psi  
Second flow - 212 psi  
Second shut-in - 1602 psi  
Final hydrostatic - 2442 psi  
Results: Initial weak blow slowly decreasing to moderate. Sudden strong blow at 4 mins. Gas to surface 9 mins. Gas TSTM. Blow decreasing to zero from maximum surface pressure of 3 psi. No liquid to surface. Recovered 4 bbls of gas cut mud on reverse circulation and a small quantity of mud cut oil between the DCIP and hydrospring.  
Conclusions: The interval contains oil but has very poor permeability.



2.10 Time Analysis

A time/depth curve is included as Figure 3 and an account, in hours, of the time spent on the well is given as follows in Table 5.

TABLE 5.

Operation	Time (hrs.)	Time (percentage) rounded to nearest %
Drilling	528.75	39
Trips	165.5	12
Coring	-	-
Conditioning hole	254.25	19
Casing	86.25	6
Cementing/drill cement	35.25	3
Rig service/repairs	17.50	1
Nipple up/down/test BOP etc.	37.75	3
Testing	23.75	2
Logging and perforating	27.5	2
Fishing	67.25	5
Deviation surveys	10.75	1
Wait on orders/equipment	-	-
Completion/abandonment	32.5	2
Rig move	52.5	4
TOTAL TIME	1339.5	100



2.11 Temperature Survey

A temperature log was run inside the drill pipe after lost circulation occurred to try and detect the thief zone. Several comparison runs were made over zones where temperature anomalies occurred to try and determine which was the true lost circulation zone, however, no such distinction could be made.

During the pumping of Howco Flow-Check lost circulation material a small pressure increase was noted which coincided to a partial heal of the lost circulation zone. Calculations based on displacement volume indicated the lost circulation zone coincided with an anomaly of the temperature log at 1400 feet.

The temperature log is included in Enclosure No. 3.

Maximum temperature recorded by the log was

Other temperatures recorded were:

Halliburton	-	4650 feet	-	130°F	-	DST No. 1
Halliburton	-	4722 feet	-	130°F	-	DST No. 2
Halliburton	-	4782 feet	-	130°F	-	DST No. 3
Gearhart	-	4853 feet	-	130°F.		

3. GEOLOGICAL DATA

### 3.1 Reasons for Drilling

East Mereenie No. 12 is located between East Mereenie Nos. 2 and 4, both of which were drilled using water based conventional mud systems. Neither well produced oil to surface from initial drill stem tests nor completion without stimulation. East Mereenie No. 7 indicated that conventional production was possible with an open hole completion using oil based mud as a drill fluid. Thus East Mereenie No. 11 was drilled to ascertain the following.

1. To confirm the production potential of the P3-120/130 sand interval in the eastern zone area.
2. To test the viability of the drilling fluid currently in use (i.e., oil based mud).
3. To test the viability of using a conventional completion procedure in this zone.

### 3.2 Stratigraphy

The stratigraphy of the sediments in East Mereenie No. 11 show very little change from that present in the surrounding wells, East Mereenie Nos. 2, 4, 7, and 9. The only difference occurs in the P3 sub unit therefore only this section will be discussed. The reader is referred to the well completion reports of the East Mereenie Nos. 2, 4, 7, and 9 for fuller descriptions of the stratigraphic units.

#### Pacoota Sandstone (P3 sub unit)

The green redish brown shales described below 4700 feet in East Mereenie No. 4 seem to have changed colour to dominantly grey and grey-brown in East Mereenie No. 11 and East Mereenie No. 2. A change in the colour of the argillaceous lithologies from grey brown to red and greenish brown below the P3-120/130 interval occurs in most of the wells drilled to date, but not in the area of East Mereenie Nos. 2 and 11.

Two intervals in the P3 sub unit show anomalously high radioactivity. Different gamma tools showed a very similar response over the same sections therefore tool malfunction can be effectively ruled out. These zones do not coincide with shale intervals therefore the presence of radioactive sandstones is indicated.

### 3.1 Reasons for Drilling

East Mereenie No. 12 is located between East Mereenie Nos. 2 and 4, both of which were drilled using water based conventional mud systems. Neither well produced oil to surface from initial drill stem tests nor completion without stimulation. East Mereenie No. 7 indicated that conventional production was possible with an open hole completion using oil based mud as a drill fluid. Thus East Mereenie No. 11 was drilled to ascertain the following.

1. To confirm the production potential of the P3-120/130 sand interval in the eastern zone area.
2. To test the viability of the drilling fluid currently in use (i.e., oil based mud).
3. To test the viability of using a conventional completion procedure in this zone.

### 3.2 Stratigraphy

The stratigraphy of the sediments in East Mereenie No. 11 show very little change from that present in the surrounding wells, East Mereenie Nos. 2, 4, 7, and 9. The only difference occurs in the P3 sub unit therefore only this section will be discussed. The reader is referred to the well completion reports of the East Mereenie Nos. 2, 4, 7, and 9 for fuller descriptions of the stratigraphic units.

#### Pacoota Sandstone (P3 sub unit)

The green redish brown shales described below 4700 feet in East Mereenie No. 4 seem to have changed colour to dominantly grey and grey-brown in East Mereenie No. 11 and East Mereenie No. 2. A change in the colour of the argillaceous lithologies from grey brown to red and greenish brown below the P3-120/130 interval occurs in most of the wells drilled to date, but not in the area of East Mereenie Nos. 2 and 11.

Two intervals in the P3 sub unit show anomalously high radioactivity. Different gamma tools showed a very similar response over the same sections therefore tool malfunction can be effectively ruled out. These zones do not coincide with shale intervals therefore the presence of radioactive sandstones is indicated.

TABLE 6

EAST MEREENIE NO. 1 | STRATIGRAPHIC TABLE

AGE	FORMATION	DEPTH (feet)		THICKNESS (ft.)
		KB (ft.)	MSL (ft.)	
DEVONIAN	PARKE SILTSTONE	Surface	2329	Estimated 200
	MEREENIE SANDSTONE	Estimated 200	2149	1546
UPPER SILURIAN				
UPPER ORDOVICIAN	CARMICHAEL SANDSTONE	1746	603	203
MIDDLE ORDOVICIAN	STOKES SILTSTONE	1949	400	979
	Upper Stokes Siltstone	1949	400	752
	Lower Stokes Siltstone	2701	-352	227
	STAIRWAY SANDSTONE	2928	-579	794
	Upper Stairway Sandstone	2928	-579	173
	Middle Stairway Sandstone	3101	-752	419
	Lower Stairway Sandstone	3520	-1171	202
LOWER ORDOVICIAN	HORN VALLEY SILTSTONE	3722	-1373	213
	PACOOTTA SANDSTONE	3935	-1586	918+
	P1 unit	3935	-1586	335
	P2 unit	4270	-1921	222
	P3 unit	4492	-2143	271
	P4 unit	4763	-2414	90+
UPPER CAMBRIAN	GOYDER FORMATION	NR	-	-
	TOTAL DEPTH	Drillers Depth 4853 Loggers Depth 4853		

3.3 Formation Sampling

(i) Ditch cuttings -

Samples were taken at intervals of 30 feet from below the 15" casing shoe at 170 feet to 4460 feet in the Middle Stairway Sandstone. From this depth samples were taken at intervals of 10 feet to total depth at 5835 feet. When drilling with mud two splits of the sample were bagged and untreated and three splits then made of the washed and dried samples. Where air or mist drilling provided only cuttings powder this was split five ways. The samples were distributed as follows:-

Oilmin:	1 set washed and dried ) mud drilling
	1 set untreated )
	2 sets of powder - air/mist drilling
Magellan:	1 set washed and dried - mud drilling
	1 set powder - air/mist drilling
NT. Dept. of	1 set washed and dried )
Mines:	1 set untreated ) mud drilling
	2 sets of powder - air/mist drilling

Sample descriptions are given in Appendix 1.

(ii) Coring -

No cores were taken.

(iii) Sidewall sampling -

No sidewall samples were taken.

3.4 Logging and Surveys

(i) Electric logging -

The following logs were run using a Gearhart DDL logging unit.

3.3 Formation Sampling

(i) Ditch cuttings -

Samples were taken at intervals of 30 feet from below the 15" casing shoe at 170 feet to 4460 feet in the Middle Stairway Sandstone. From this depth samples were taken at intervals of 10 feet to total depth at 5835 feet. When drilling with mud two splits of the sample were bagged and untreated and three splits then made of the washed and dried samples. Where air or mist drilling provided only cuttings powder this was split five ways. The samples were distributed as follows:-

Oilmin:                    1 set washed and dried ) mud drilling  
                             1 set untreated            )

2 sets of powder - air/mist drilling

Magellan:                1 set washed and dried - mud drilling  
                             1 set powder - air/mist drilling

NT. Dept. of              1 set washed and dried )  
Mines:                    1 set untreated         ) mud drilling

2 sets of powder - air/mist drilling

Sample descriptions are given in Appendix 1.

(ii) Coring -

No cores were taken.

(iii) Sidewall sampling -

No sidewall samples were taken.

3.4 Logging and Surveys

(i) Electric logging -

The following logs were run using a Gearhart DDL logging unit.

3.4 Logging and Surveys (cont'd)

(i) Electric logging (cont'd)

<u>Log</u>	<u>Run</u>	<u>Interval</u>	<u>Date</u>
CDL-CNS-GR-CAL	1	3852'-4852'	22.11.83
DIL-GR-CAL	1	2274'-4846'	22.11.83
TEMP	1	10'-4823'	25.11.83
CBL	1	2800'-4802'	4.12.83
CCL	1	4560'-4770'	3.12.83

A copy of all electric logs is included in Enclosure 3.

(ii) Velocity Survey -

No velocity survey was run.

(iii) Penetration rate and gas logs -

The penetration rate was recorded continuously from spud to total depth. The mud gas was monitored continuously on a conventional hotwire detector during the mud drilling phase.

A mud log showing penetration rate, gas, lithological and other pertinent data was prepared at the wellsite on a daily basis and is included as Enclosure 2.

A composite log is also included as Enclosure 1.

3.5 Petroleum Geology

Although good porosity is evident in the Mereenie Formation only those formations below the Stokes Siltstone contained hydrocarbons. Of these formations only the Upper and Lower Stairway Sandstone and Pacoota Sandstone P1 and P3 and P4 sub-units have reservoir potential.

Upper Stairway Sandstone

This arenaceous unit has poor porosity and permeability. The section was drilled with air without any evidence of hydrocarbons.

Lower Stairway Sandstone

As in other wells in the area the Lower Stairway Sandstone has three distinct units of which the upper sandstone and middle siltstone unit show very poor reservoir potential.

The lower sandstone section from 3647 feet to 3710 feet has coarser grained sandstones and minor porosity development is evident from cuttings and electric logs. The most significant zone of porosity development is between 3647 and 3670 feet where density log porosities in the 3 to 6% range occur. However, it would appear that this zone is impermeable as no gas appeared on the connection at 3673 feet. A permeable zone was penetrated in the next 31 feet as a gas flow of 76 mcf/d was measured at the next kelly down, 3704 feet.



3.4 Logging and Surveys (cont'd)

(i) Electric logging (cont'd)

<u>Log</u>	<u>Run</u>	<u>Interval</u>	<u>Date</u>
CDL-CNS-GR-CAL	1	3852'-4852'	22.11.83
DIL-GR-CAL	1	2274'-4846'	22.11.83
TEMP	1	10'-4823'	25.11.83
CBL	1	2800'-4802'	4.12.83
CCL	1	4560'-4770'	3.12.83

A copy of all electric logs is included in Enclosure 3.

(ii) Velocity Survey -

No velocity survey was run.

(iii) Penetration rate and gas logs -

The penetration rate was recorded continuously from spud to total depth. The mud gas was monitored continuously on a conventional hotwire detector during the mud drilling phase.

A mud log showing penetration rate, gas, lithological and other pertinent data was prepared at the wellsite on a daily basis and is included as Enclosure 2.

A composite log is also included as Enclosure 1.

3.5 Petroleum Geology

Although good porosity is evident in the Mereenie Formation only those formations below the Stokes Siltstone contained hydrocarbons. Of these formations only the Upper and Lower Stairway Sandstone and Pacoota Sandstone P1 and P3 and P4 sub-units have reservoir potential.

Upper Stairway Sandstone

This arenaceous unit has poor porosity and permeability. The section was drilled with air without any evidence of hydrocarbons.

Lower Stairway Sandstone

As in other wells in the area the Lower Stairway Sandstone has three distinct units of which the upper sandstone and middle siltstone unit show very poor reservoir potential.

The lower sandstone section from 3647 feet to 3710 feet has coarser grained sandstones and minor porosity development is evident from cuttings and electric logs. The most significant zone of porosity development is between 3647 and 3670 feet where density log porosities in the 3 to 6% range occur. However, it would appear that this zone is impermeable as no gas appeared on the connection at 3673 feet. A permeable zone was penetrated in the next 31 feet as a gas flow of 76 mcf/d was measured at the next kelly down, 3704 feet.

3.5 Petroleum Geology (cont'd)

Lower Stairway Sandstone (cont'd)

This zone is not evident on the electric logs. Subsequent drilling procedures showed this gas to be abnormally pressured however an accurate estimate of formation pressure is not possible.

Pacoota Sandstone (P1 sub unit)

As in the surrounding wells the P1 unit has few permeable reservoir horizons. Total net sand in the P1 using a density log porosity of 6% is 12 feet, 10 feet of which occurs in the P1-80 sand. No other significant development of porosity is evident except in the P1-310 where some 24 feet has porosity in the 3 to 6% range.

Although no tests or cores of the P1 were made comparison with the results of surrounding wells indicates the P1 contains gaseous hydrocarbons throughout its whole section.

Pacoota Sandstone (P3 sub unit)

The Pacoota P3 sub unit has a total net sand thickness of 73 feet. Both the net sand thickness and the distribution of the porosity in the P3 sub unit of this well is very similar to that of the surrounding wells East Mereenie Nos. 2 and 4. The net sand intervals are:

4560-4562 feet (2)	Average log porosity	10%
4582-4584 feet (2)	" " "	7%
4597-4600 feet (3)	" " "	7%
4606-4608 feet (2)	" " "	7.5%
4611-4614 feet (3)	" " "	6.5%
4617-4644 feet (27)	" " "	8.5%
4666-4668 feet (2)	" " "	8%
4709-4712 feet (3)	" " "	8.5%
4719-4721 feet (2)	" " "	6.5%
4726-4729 feet (3)	" " "	7%
4734-4736 feet (2)	" " "	7.5%
4740-4759 feet (19)	" " "	9%

The P3 sub unit was tested for oil production potential by three drill stem tests. Drill stem test No. 1 (4599 - 4655 feet) tested the P3-120/130 sand interval and resulted in a flow of oil, at 735 BOPD, and gas at 580 mcf. These results confirm the good permeability of the P3-120/130 sand in this area.

Drill stem test No. 2 (4665 - 4727 feet) tested the thinly interbedded silty sand and sandstone section from the bottom of the P3-120/130 interval to the top of the P3-250 sandstone.

3.5 Petroleum Geology (cont'd)

Pacoota Sandstone (P3 sub unit) (cont'd)

The results of the drill stem test showed the reservoirs to be poorly permeable but oil filled.

Drill stem test No. 3 (4735 - 4786 feet) tested the P3-250 sandstone interval. Drill cuttings indicated that this zone had moderate porosity and permeability, however, the results of the test indicate very poor permeability.

Comparison with surrounding wells indicate that the P3 sub unit is totally within the oil column in a structural position closely akin to East Mereenie No. 4.

Pacoota Sandstone (P4 sub unit)

As in the surrounding wells the P4 sub unit shows a limited porosity development. Average density log porosity in the P4-40 sand is 4.5%. Total net sand is 4 feet.

Although no oil/water contact can be detected from the electric logs it is inferred from surrounding well information to occur at 4799 feet KB some 36 feet below the top of the P4 sub unit.

3.6 Relevance to Appraisal Programme

The results of this well confirmed the presence and production potential of the permeable P3-120/130 interval in the area between East Mereenie No. 4 and East Mereenie No. 2.

A recovery of oil in drill stem test No. 2 showed that the section between the P3-130 and P3-250 sands may be capable of oil production without stimulation in this area and would contribute in an open hole production completion.

The test of the P3-250 sand interval showed poor permeability however, the electric logs show that a significant zone of porosity (19 feet thick; average porosity 9%) is present. This zone is almost identical to the P3-250 sand in East Mereenie No. 7 which produced 320 BOPD. This would suggest that formation damage has occurred and that treatment may result in a commercial oil flow from this zone.

The clean up flow of approximately 1000 BOPD through a 1/2 inch thick choke indicated that the completion procedure of perforating through 5-1/2" casing is valid for the P3-120/130 interval.

3.5 Petroleum Geology (cont'd)

Pacoota Sandstone (P3 sub unit) (cont'd)

The results of the drill stem test showed the reservoirs to be poorly permeable but oil filled.

Drill stem test No. 3 (4735 - 4786 feet) tested the P3-250 sandstone interval. Drill cuttings indicated that this zone had moderate porosity and permeability, however, the results of the test indicate very poor permeability.

Comparison with surrounding wells indicate that the P3 sub unit is totally within the oil column in a structural position closely akin to East Mereenie No. 4.

Pacoota Sandstone (P4 sub unit)

As in the surrounding wells the P4 sub unit shows a limited porosity development. Average density log porosity in the P4-40 sand is 4.5%. Total net sand is 4 feet.

Although no oil/water contact can be detected from the electric logs it is inferred from surrounding well information to occur at 4799 feet KB some 36 feet below the top of the P4 sub unit.

3.6 Relevance to Appraisal Programme

The results of this well confirmed the presence and production potential of the permeable P3-120/130 interval in the area between East Mereenie No. 4 and East Mereenie No. 2.

A recovery of oil in drill stem test No. 2 showed that the section between the P3-130 and P3-250 sands may be capable of oil production without stimulation in this area and would contribute in an open hole production completion.

The test of the P3-250 sand interval showed poor permeability however, the electric logs show that a significant zone of porosity (19 feet thick; average porosity 9%) is present. This zone is almost identical to the P3-250 sand in East Mereenie No. 7 which produced 320 BOPD. This would suggest that formation damage has occurred and that treatment may result in a commercial oil flow from this zone.

The clean up flow of approximately 1000 BOPD through a 1/2 inch thick choke indicated that the completion procedure of perforating through 5-1/2" casing is valid for the P3-120/130 interval.