

WEST MEREENIE NO. 5

WELL COMPLETION REPORT

PETROLEUM LEASE NO. 4, NORTHERN TERRITORY

Oilmin N.L.,
Level 23,
12 Creek St.,
Brisbane.

November, 1984.

NORTHERN TERRITORY
GEOLOGICAL SURVEY



R85/2

C O N T E N T S

Sect.

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SUMMARY

West Mereenie No.5 is the thirteenth well of a 20 well appraisal programme to delineate and develop the Mereenie oilfield. It was drilled to test the production potential of the Pacoota P3 reservoirs on the western-south flank of the field. A secondary objective was to provide information on the distribution of potential Pacoota P1 reservoir sands.

The well is located approximately 2.5 miles WSW of West Mereenie No.3 and 2.2 miles SE of West Mereenie No.4 and intersected the target horizon, the P3-120/130 sands at approximately -2234 feet MSL.

The well was spudded on 26th May, 1984 at 0730 hours using the OIME SL 750 Mereenie Rig No.1 and reached a total depth of 5060 feet on the 4th July 1984.

The well was drilled with air and foam to the 10-3/4" casing point at 2167 feet. A maximum influx of water was estimated at 1100 bbls/hr at 1946 feet with the initial influx occurring at 610 feet. After setting the 10-3/4" casing, a deviation programme was initiated in 9-7/8" hole with air. At 2842 feet, the hole had been deviated to 12.75 degrees and the bit size was changed to 7-7/8". The 7-7/8" deviated hole was drilled ahead to 4128 feet with air, 19 feet into the Pacoota P1. At this point the hole was displaced with a 9.0 ppg water based mud as per the well programme. The 7-7/8" deviated hole was continued to 4727 feet, 38 feet into the Pacoota P3, with water based mud. At this stage the hole was displaced with oil based mud and the well continued in 7-7/8" hole to TD (5060 feet) in the Pacoota P4 sub unit. The final hole deviation is 15.90 degrees from vertical with a maximum deviation of 20 degrees achieved at 4171 feet.

Two drill stem tests were completed in the Pacoota P3 sub-unit with D.S.T. No.1 confirming the good reservoir characteristics of the middle sandstone interval. Drill Stem Test No.1 (4789-4843 feet) recovered 392 BOPD and recorded gas at 290 mcf/d from the P3-120/130 sands. Drill Stem Test No.2 (4842-4917 feet) covering the P3-150/190 sands flowed no oil or gas to surface, but recovered 1 cup of oil from the test tool.

Four cores were cut throughout the drilling of the well, recovering 7 feet of the P1-280 sand, 30 feet of the P3-130 sand and 24 feet of the P3-230 sand. Good correlation between core analysis porosity and log density porosity was achieved.

The gas/oil contact was determined to be at -2130 feet MSL as with the rest of the field. The oil/water transition zone begins at -2356 feet MSL, only 7 feet higher than that calculated for West Mereenie No. 3.

After logging with Gearhart and Schlumberger, 5-1/2" casing was run to 5058 feet and perforations completed using the Geovann tubing (2-3/8") conveyed perforation guns. After flowing for 1 hour to clean, the well was flowed for one further hour through a separator recording 8.75 bbls of oil in the stocktank or 210 BOPD with 58 mcf/d of gas.

West Mereenie No.5 was completed as an oil producer and the rig released at 2130 hours on 10th July, 1984.

1. GENERAL DATA

1. GENERAL DATA

Well Name and Number: West Mereenie No.5

Operator: Oilmin N.L.

Beneficial Interest Holders: Oilmin N.L.
Canso Resources Limited
Flinders Petroleum N.L.
The Moonie Oil Company Limited
Magellan Petroleum Australia Limited
Petromin N.L.
Transoil N.L.

Petroleum Title: Petroleum Lease No.4

District: Alice Springs, Northern Territory

Location: Latitude: 23°58'17"S
Longitude: 131°27'19"E
Shot Point 2104: Line MM83-11
2.53 miles bearing 250½° true from West Mereenie No.3
2.15 miles bearing 145° true from West Mereenie No.4

Elevation: Ground Level: 2465 ft MSL
Kelly Bushing: 2485 ft MSL

Total Depth: 5060 ft (driller)

Spudded: 25th May, 1984

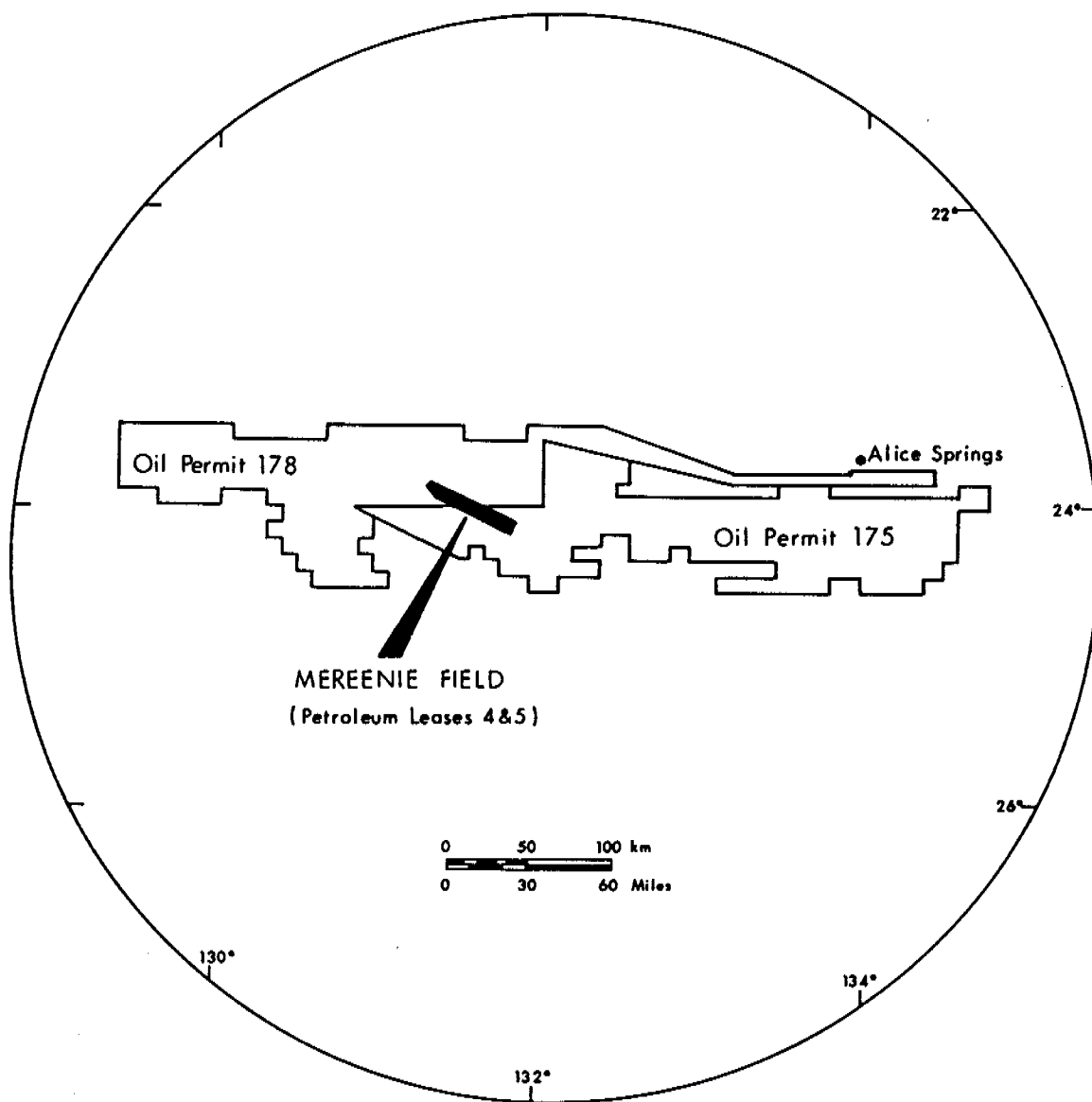
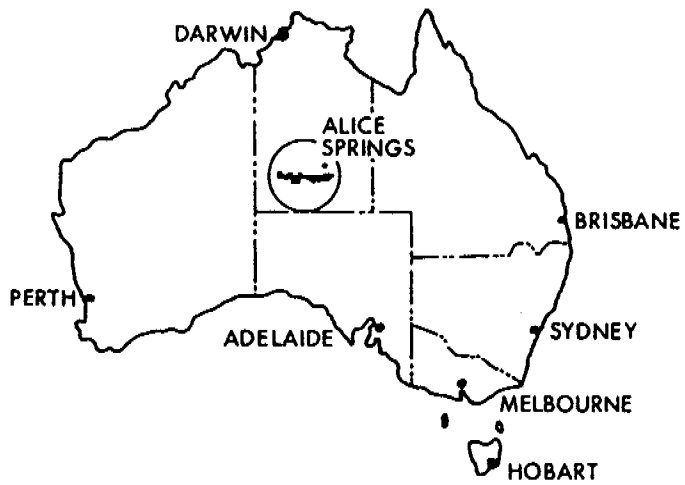
Rig Released: 10th July, 1984 2130 hours

Total Days Drilling: 41

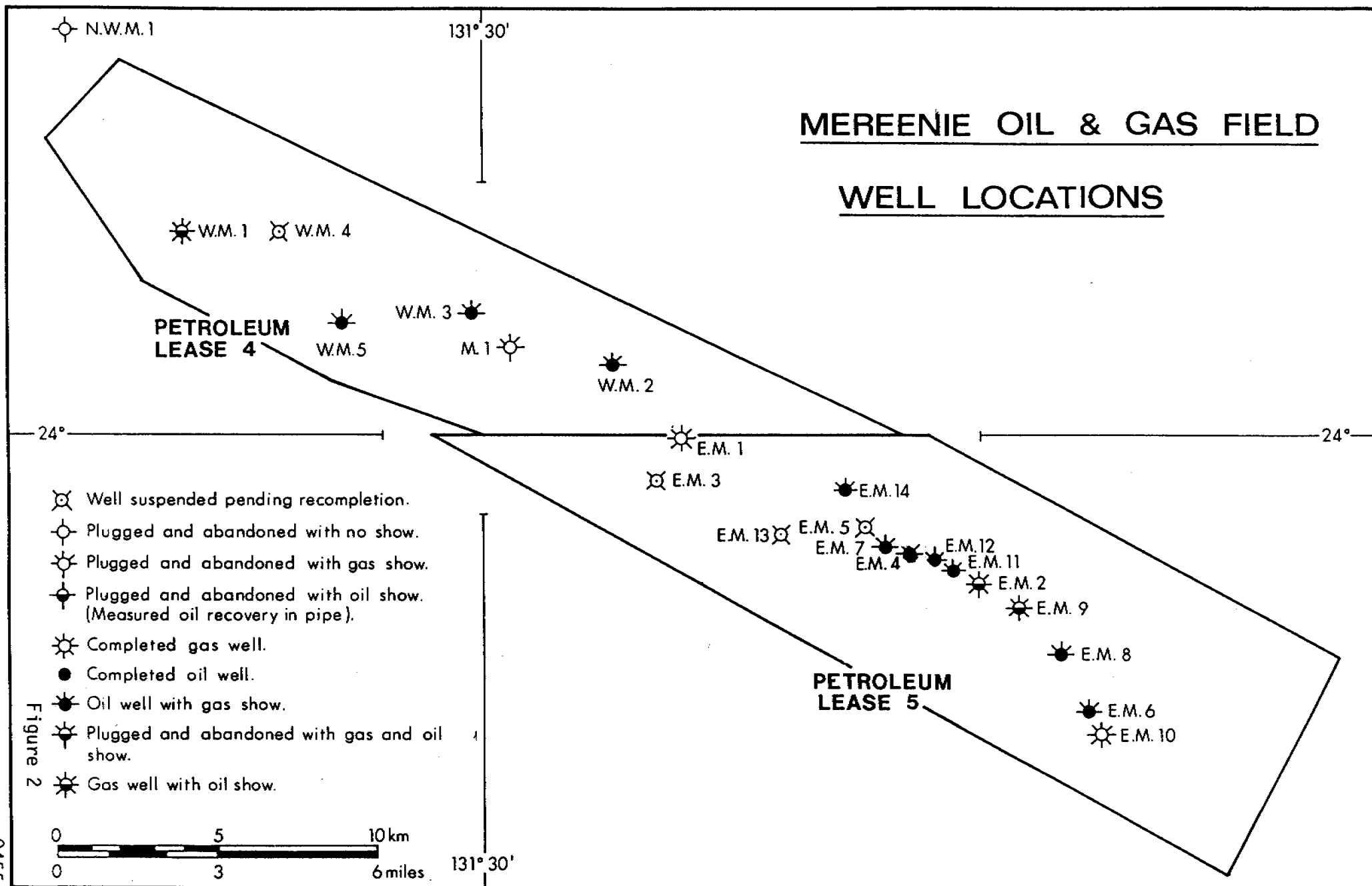
Well Status: Completed in the P3 reservoir for oil production

Geological Formation Tops:

Mereenie Sandstone	Surface
Carmichael Sandstone	1493 feet
Stokes Siltstone	1837 feet
Stairway Sandstone	2977 feet
Horn Valley Siltstone	3835 feet
Pacoota Sandstone	4109 feet



LOCATION MAP



2. E N G I N E E R I N G D A T A

2. ENGINEERING DATA:

2.1 Rig Data

Drilling Contractor: Mereenie Joint Venture Partners

Drilling plant: Make: OIME
Type: Model SL-5 (SL-750)
Rated
Capacity: 12,500 ft. with 4-1/2" OD drill pipe.
Motors: 3 - Caterpillar D-3408 (compounded) 385 BHP 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 HCR flanged valve.

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

2.1 Rig Data (contd.)

<i>Diverter:</i>	<i>Make:</i>	<i>Shaffer</i>
	<i>Model:</i>	<i>Type 79 rotating BOP.</i>
	<i>Rating:</i>	<i>3000 psi.</i>
<i>Injection pumps:</i>	<i>Make:</i>	<i>2 only Aldrich</i>
	<i>Model:</i>	<i>not specified</i>
	<i>Capacity:</i>	<i>8 GPM at 1600 psi each powered by SCR variable speed electric motors.</i>

2.2 DRILLING DATA

The following is a summary of relevant drilling activities on a day by day basis and Figure 3 is the annotated time/depth curve.

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results
26/5/84	89	Moved in and rigged up Mereenie OIME SL 750 Rig No. 1. Spudded at 0730 hours. Air and foam drilled 17-1/2" hole to 89 ft.
27/5/84	158	Drilled 17-1/2" hole to 158 feet with air and foam. Rig to run conductor pipe.
28/5/84	173	Ran and cemented 15" conductor pipe using 135 sacks of construction class cement with 2% CaCl in a 15.5 ppg slurry. Nipple up blooey line. Make-up 13-1/2" BHA and RIH with same. Drilled 13-1/2" hole to 173 feet. Air dusting.
29/5/84	416	Drilled 13-1/2" hole to 323 feet. Rig up and drill mouse hole. Drilled 13-1/2" hole to 416 feet. Air dusting.
30/5/84	643	Drilled 13-1/2" to 604 feet. POH to change bit and stabilizer bodies. RIH with Bit No. 4. Drilled 13-1/2" hole to 643 feet. Started misting at 610 feet. Foam injection rate 5 bbls/hour.
31/5/84	872	Drilled 13-1/2" hole to 872 feet. Air misting. Foam injection 5 bbls/hr.
1/6/84	1005	Drilled 13-1/2" hole to 942 feet. POH to change bit. RIH with Bit No. 5. Drilled 13-1/2" hole to 1005 feet. Water returns 200 bbls/hour. Foam injection rate 5 bbls/hour.
2/6/84	1177	Drilled 13-1/2" hole to 1177 feet. Water returns 220 bbls/hour. Foam injection rate 9 bbls/hr.
3/6/84	1251	Drilled 13-1/2" hole to 1245 feet. POH to change bit and stabilizer rubbers. RIH with Bit No. 6. Drilled 13-1/2" hole to 1251 feet. Water returns 275 bbls/hour. Foam injection rate 10 bbls/hr. Work tight hole at 1251 feet.

Well: WEST MEREENIE No.5 Field: MEREENIE

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results
4/6/84	1434	POH. Break out bit and unblock same. Make up RR Bit No.6 and RIH to 1156 feet. Reamed from 1156 to 1251 feet. Drilled 13-1/2" hole to 1434 feet. Water returns 400 bbls/hour. Foam injection rate 8 bbls/hour
5/6/84	1693	Drilled 13-1/2" hole to 1584 feet. POH to change bit. RIH with Bit No.7. Drilled 13-1/2" hole to 1693 feet. Water returns 800 bbls/hour. Foam injection rate 10 bbls/hour
6/6/84	1946	Drilled 13-1/2" hole to 1946 feet. Water returns 1100 bbls/hour. Foam injection rate 11 bbls/hour
7/6/84	2104	Drilled 13-1/2" hole to 1998 feet. POH to change bit and one stabilizer rubber. RIH with Bit No.8RR. Drilled 13-1/2" hole to 2104 feet. Water returns 1100 bbls/hr Foam injection rate 12 bbls/hour.
8/6/84	2167	Drilled 13-1/2" hole to 2167 feet. Strapped out of hole on wiper trip. RIH and circulate clean. POH to run 10-3/4" casing. Ran 55 joints, 40.5*, H40 to 2148 feet.
9/6/84	2167	Cemented 10-3/4" casing using 200 sacks Class "A" cement and 0.2% HR 4 in a 15.8 ppg slurry. Displaced cement with 206 bbls water and bumped plug with 900 psi. Cemented top of casing from 200 feet to surface with 155 sacks Class "A" cement. Nipple up BOP's. Pressure test choke manifold, blind rams, upper kelly cock, HCR valve, all to 1000 psi. Pressure test flow prover to 500 psi.
10/6/84	2170	Layout 8" DC. Make up new BHA. Pick up 6" DC. RIH Bit No.9. Tag cement at 2008 feet and collar at 2117 feet. Drill out cement plug and float, tag shoe at 2147 feet. Unload hole. Drill 9-7/8" hole to 2170 feet.
11/6/84	2842	POH to change stabilizers and BHA. RIH with RR Bit No.9. Drill 9-7/8" deviated hole with building assembly to 2842 feet. Air dusting.

Well: West Mereenie No. 5 Field: Mereenie

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results.
12/6/84	3192	POH to change stabilizers and BHA. RIH with Bit No. 10. Drill 7-7/8" deviated hole to 3192 ft. with rigid assembly. Air dusting.
13/6/84	3804	Drill 7-7/8" deviated hole to 3804 ft. POH to change BHA for building assembly. RIH with Bit No. 11 and ream from 3673 ft. to 3748 ft. Air dusting.
14/6/84	4163	Ream from 3748 ft. to 3804 ft. Drill 7-7/8" deviated hole to 4128 ft. Air dusting. Displace hole with water based mud. Drill 7-7/8" deviated hole with mud to 4163 ft. POH to change BHA. Layout rotating head. Rig up flow nipple and flow line.
15/6/84	4234	RIH with Bit No. 12. Ream from 4163 ft. to 4197 ft. Drill 7-7/8" deviated hole with mud to 4197 ft. using a dropping assembly. POH to change BHA. RIH with RR Bit No. 12. Drill 7-7/8" deviated hole with mud to 4234 ft. with dropping assembly.
16/6/84	4366	Drill 7-7/8" deviated hole with mud to 4366 ft. Circulate bottoms up. POH for core run No. 1. Make-up core barrel assembly.
17/6/84	4388	RIH for Core No. 1. Cut 7-15/16" core from 4366 to 4377 ft. Chain out of hole. Retrieve core. Service and make up barrel. RIH for Core No. 2. Cut 7-15/16" core from 4377 to 4388 ft.
18/6/84	4462	Cut core 4388 to 4404 ft. Chain out of hole. Retrieve core No. 2, 4377 to 4404 ft. Make up new BHA. RIH with Bit No. 15 to 4366 ft. Ream rat hole from 4366 ft. to 4404 ft. Drill 7-7/8" hole to 4462 ft. Stuck in hole. Work stuck pipe.
19/6/84	4462	Work stuck pipe. Pump 50 bbls EZ1 spot. Work stuck pipe. Rig up Gearhart and run free point tool.

Well: ... West Mereenie No. 5 Field: Mereenie

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results.
20/6/84	4462	POH free point tool. RIH and attempt to shoot off pipe. Pipe freed. Chain out of hole. Left in hole; stabilizers, 1 drill collar, 1 monel, bit assembly. RIH for fish. Tag and jar on fish. Chain out of hole.
21/6/84	4478	Chain out of hole. Recover and layout fish. Make up new BHA. RIH with Bit No. 16. Ream from 4366 ft. to 4462 ft. working junk sub. Drill 7-7/8" hole to 4478 ft.
22/6/84	4585	POH. Make up new BHA. RIH with Bit No. 17. Drill 7-7/8" hole to 4585 ft.
23/6/84	4633	Drill 7-7/8" hole to 4630 ft. POH. Make-up new BHA. RIH with Bit 18RR. Ream from 4494 ft. to 4600 ft. Drill 7-7/8" hole to 4633 ft.
24/6/84	4727	Drill 7-7/8" hole to 4635 ft. POH. RIH with bit No. 19. Ream from 4630 ft. to 4635 ft. Drill 7-7/8" hole to 4727 ft. POH to shoe. Mix and build volume of oil based mud.
25/6/84	4787	RIH to 4727 ft. Displace water base with oil base mud using 25 bbls of crude as spacer. Drill 7-7/8" hole to 4778 ft. POH. Pick-up roller reamer. Make-up new BHA. RIH with Bit No. 20. Ream from 4685 to 4778 ft. Drill 7-7/8" hole to 4787 ft.
26/6/84	4820	Drill 7-7/8" deviated hole to 4813 ft. Work junk sub. POH. Lay out junk sub, roller reamer and stabilizer. Make up and service core barrel. RIH with core barrel for core run No. 3. Cut core No. 3 from 4813 ft. to 4820 ft.
27/6/84	4843	Cut core No. 3 to 4843 ft. Chain out of hole. Recover core No. 3, 4813 ft. to 4843 ft. Pick up and make up test tools. RIH for DST No. 1, 4789 ft. to 4843 ft over the P3-120/130 interval.

Well: West Mereenie No. 5 Field: Mereenie

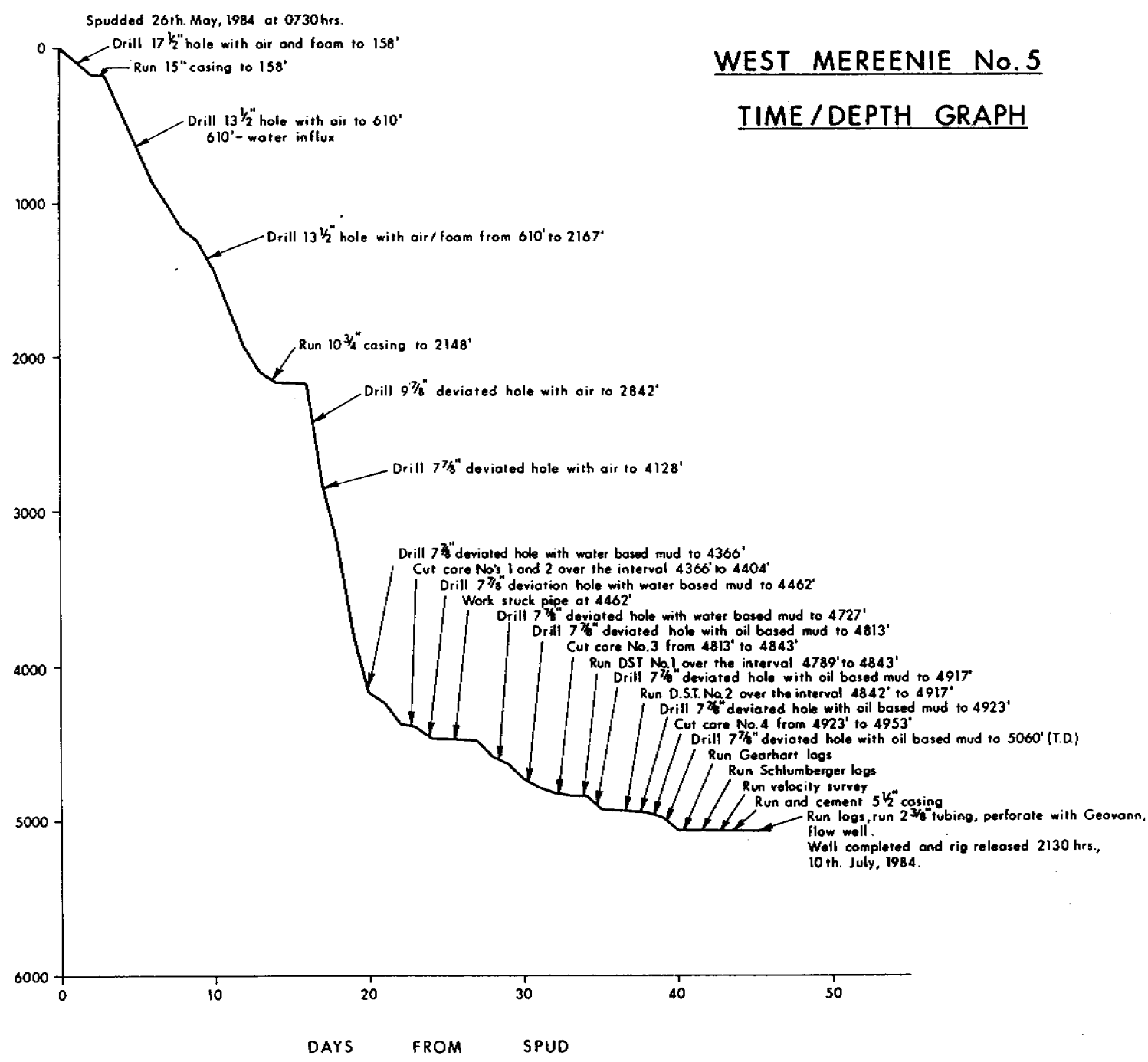
Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results.														
28/6/84	4843	<p>Open tool initially for 16 minutes, close in for 36 minutes. Re-open for 125 minutes, close for 257 minutes. Oil flow 392 BOPD. Gas flow 290 mcf. Field chart readings:</p> <table data-bbox="826 616 1503 683"> <tr> <td>IHP</td> <td>IFP</td> <td>ISIP</td> <td>FFP</td> <td>FSIP</td> <td>FHP</td> <td>BHT</td> </tr> <tr> <td>2297</td> <td>380</td> <td>1786</td> <td>705</td> <td>1786</td> <td>2287</td> <td>-</td> </tr> </table> <p>Reverse circulate. POH. Layout test tools. Make up BHA and RIH with Bit No. 22. Ream from 4800 ft. to 4826 ft.</p>	IHP	IFP	ISIP	FFP	FSIP	FHP	BHT	2297	380	1786	705	1786	2287	-
IHP	IFP	ISIP	FFP	FSIP	FHP	BHT										
2297	380	1786	705	1786	2287	-										
29/6/84	4917	<p>Ream from 4826 ft to 4843 ft. Drill 7-7/8" deviated hole with oil based mud to 4917 ft.</p>														
30/6/84	4917	<p>Circulate bottoms-up. POH. Make up test tools and RIH for DST No. 2 4842 to 4917 ft over the P3-150/240 interval. Open tool initially for 15 minutes, close for 30 minutes. Re-open for 90 minutes and close for 180 minutes. No flow to surface.</p> <table data-bbox="826 1198 1503 1265"> <tr> <td>IHP</td> <td>IFP</td> <td>ISIP</td> <td>FFP</td> <td>FSIP</td> <td>FHP</td> <td>BHT</td> </tr> <tr> <td>2388</td> <td>66</td> <td>753</td> <td>73</td> <td>1699</td> <td>2401</td> <td>-</td> </tr> </table> <p>Reverse circulate. POH. Layout test tools.</p>	IHP	IFP	ISIP	FFP	FSIP	FHP	BHT	2388	66	753	73	1699	2401	-
IHP	IFP	ISIP	FFP	FSIP	FHP	BHT										
2388	66	753	73	1699	2401	-										
1/7/84	4923	<p>RIH to shoe. Slip and cut drilling line. POH. RIH with reaming assembly. POH to pick-up junk sub. RIH and ream from 4827 ft to 4917 ft. Work junk sub. Drill 7-7/8" deviated hole to 4923 ft. POH to core. Pick up and RIH with core barrel for core run No. 4.</p>														
2/7/84	4946	<p>Cut core No. 4 from 4923 ft. to 4946 ft.</p>														
3/7/84	4974	<p>Cut core from 4946 ft to 4952 ft. Recover core No. 4, 4923 ft to 4952 ft. Make-up new BHA and RIH with Bit No. 25. Ream from 4923 ft to 4952 ft. Drill 7-7/8" deviated hole with oil based mud to 4974 ft.</p>														
4/7/84	5060	<p>Drill 7-7/8" deviated hole to 5060 ft (TD). Circulate bottoms up. Strap out of hole to log. Rig up Gearhart. RIH logging tool.</p>														

Well: ...~~West. Merenie~~ No. 5..... Field:~~Merenie~~.....

Date	E.T.D. (ft.)	Details of Operations, Descriptions and Results.
5/7/84	5060	Log with Gearhart. Rig down Gearhart. RIH and ream from 4979 ft. to 5060 ft. Circulate bottoms up. POH laying down drill pipe and BHA. Rig up Schlumberger and RIH to log.
6/7/84	5060	Log with Schlumberger. Rig down Schlumberger. Change pipe rams. Make up BHA and pick up 2-3/8" tubing. Circulate at 5059 ft. POH tubing.
7/7/84	5060	POH tubing. Rig up Schlumberger and run logs. Rig down Schlumberger. Rig up Gearhart and run Velocity Data. Rig down Gearhart. Make-up BHA. RIH and circulate.
8/7/84	5060	POH tubing. Rig to run casing and change rams. Run 5-1/2" casing, 128 joints, 14 lbs/ft, buttress, K55 to 5058 ft. Circulate Cement casing with 450 sacks of Class "G" oilwell cement after flushing hole with 30 bbls EZ spot and 10 bbls SAAP. Slurry weight was 15.5 ppg with 0.5% Hallad 22A and 0.75% CFR-2. Displace cement, set 5-1/2" casing slips and nipple down BOPs.
9/7/84	5060	Cut casing. Nipple down BOPs and lay out. Final cut on casing and nipple up B section. Pressure test to 1000 psi. Rig to run bit and scraper. RIH and circulate. POH and layout BHA. Rig up Gearhart and run CBL. Make up perforating tools.
10/7/84	5060	RIH with packer and perforating tools. Rig up Gearhart and log. Rig down Gearhart. Set packer and land do-nut. Nipple up Christmas tree and pressure test to 1500 psi. Drop bar - failed to shoot. Rig up Gearhart and RIH to fish for bar. Knock bar down and perforate casing. Retrieve wireline minus fishing tools. Fish for wireline and tools. Recover fish and rig down. Well was flowed to clean for 1 hour then switched through the separator for 1 hour. A total of 8.75 bbls of oil was recovered in that period.

WEST MEREENIE No.5

TIME / DEPTH GRAPH

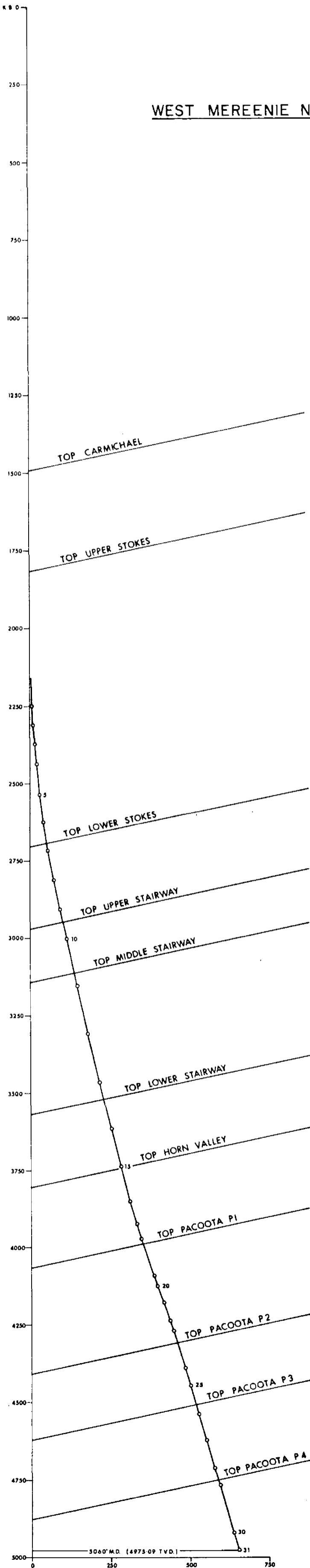


CAMBRIAN	PACOOTA	HORN VALLEY	STAIRWAY	ORDOVICIAN	STOKES	CARM-ICHAEL	SILURIAN - DEVONIAN	MEREENIE

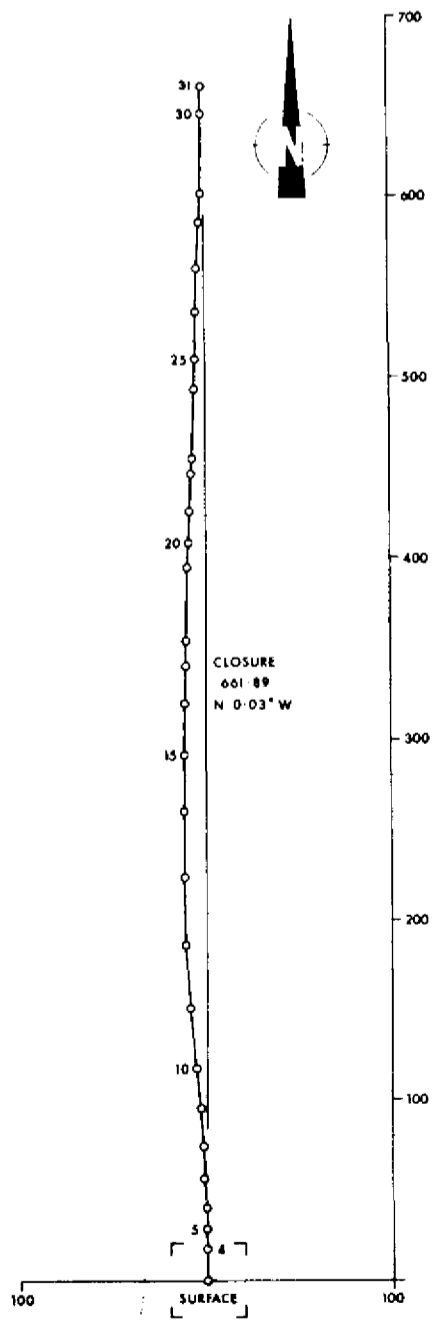
FIGURE 3

W.M. 5

WEST MEREENIE No. 5



VERTICAL SECTION



PLAN VIEW

SCALE 1 CM = 20'

2.3 Hole Sizes and Depths

17-1/2" to 158 feet
13-1/2" to 2167 feet
9-7/8" to 2842 feet
7-7/8" to 5060 feet

2.4 Casing and Cementing Record

15" conductor Weight: 38.5 lb/ft
 Grade: A538 welded rolled 1/4" wall
 Shoe depth: 158 feet
 Cement used: 135 sacks Construction Class
 Additives: 2% Calcium Chloride
 Slurry weight: 15.5 ppg

10-3/4" casing Weight: 40.5 lb/ft
 Grade/Connections: H40,ST & C
 No. of Joints: 55
 Total Length: 2131 feet
 Shoe Depth: 2148 feet
 Cement used: 200 sacks Class "A"
 Additives: 0.2% HR4
 Slurry weight: 15.8 ppg

Top casing cemented from 200 ft. to surface with
155 sacks Class "A" cement. Petal basket on 51st
joint.

5-1/2" casing Weight: 14 lb/ft.
 Grade/Connections: K55, Buttress
 No of Joints: 128
 Total Length: 5076 feet
 Shoe Depth: 5058 feet
 Cement used: 450 sacks Class "G"
 Additives: 0.5% Hallad 22A
 0.75% CFR-2
 Slurry weight: 15.5 ppg

2.5 Drilling Fluids

A summary of the drilling fluid properties is shown below -

WELL : WEST MERENIE No.5 **Drilling Fluids** TABLE 1

DATE	DEPTH (feet)	WEIGHT (ppg)	VISC (sec)	W.L. (cc)	PH	SALT (ppm)	OIL (%)	SAND (%)	SOLIDS (%)	REMARKS
26.5.84	89									Foam/air
27.5.84	158									"
										Cement 15" conductor
28.5.84	173									Air dusting
29.5.84	416									"
						Foam Injection Rate BBLs/HR			Water Influx BBLs/HR	
30.5.84	643	Started	misting	at 610 feet		5				Air/foam
31.5.84	872					5				"
1.6.84	1005					5			200	"
2.6.84	1177					8-10			220	"
3.6.84	1251					10			275	"
4.6.84	1434					8			400	"
5.6.84	1693					10			800	"
6.6.84	1946					10-12			1100	"
7.6.84	2104					12			1100	"
8.6.84	2167	Ran 10-3/4" casing				14			1100	"
9.6.84	2167									Cement 10-3/4" casing
10.6.84	2170									Drill out cement
11.6.84	2842	Drill deviated hole with	air							Air dusting
12.6.84	3192									"
13.6.84	3804									"
14.6.84	4163									"
										Change to water based mud
15.6.84	4234	8.8	47		10			0.6		Water based mud
16.6.84	4366	9.0	50		10.5			0.5		"
17.6.84	4388	9.1	53		10			0.5		"
18.6.84	4462	9.1	53		10			0.5		"
19.6.84	4462	9.2	56		8			0.5		"
20.6.84	4462	Stuck in hole								"
21.6.84	4478	9.2	52		9			0.5		"
22.6.84	4585	9.1	46		8.5			0.5		"
23.6.84	4633	9.2	52		9			0.5		"
24.6.84	4727	9.1	48		8			0.5		"
						Oil Water Ratio	Stability			Change to oil based mud
25.6.84	4740	9.0	66	67/33	380	215,000	67	0.25	10	Oil based mud
26.6.84	4805	8.9	73	69/31	395	210,000	69	0.25	12	"
27.6.84	4826	9.0	69	67/33	420	218,000	67	0.5	13	"
28.6.84	4843	9.1	76	67/33	440	212,000	67	0.5	13	"
29.6.84	4849	9.0	68	68/32	410	208,000	68	0.25	13	"
30.6.84	4917	9.0	60	69/31	480	220,000	69	0.25	11	"

2.7 Hole Deviation

The site of West Mereenie No. 5 on the south flank of the anticline allowed for a natural tendency for the well to deviate in the updip direction. A maximum horizontal moveout of 200 feet was predicted at the target horizon with an expected bottom hole angle of 5°. Formations dips were estimated at 19° from seismic.

Identification of formation tops during drilling coupled with measured formation dips at surface of 12° showed that a deviation programme would need to be implemented if the target horizon was to be intersected at the correct level. A greater hole angle of 19° was considered necessary to achieve this.

With the Pacoota P1 top coming in lower than expected at 4109 feet, a dropping assembly was incorporated into the BHA to bring the deviation back to 16°. The hole however continued to build angle, reaching a maximum of 20° at 4171 feet before it began to respond. Deviation was held at around 16° from 4605 feet to TD. At 5060 feet (TD) the hole angle was 15.9° and the horizontal drift 662 feet at 0.03° true North of West.

The hole intersected the P3-120 target at 4719 feet TVD and 580 feet horizontal drift. Appendix 7 shows the relevant deviation survey results and Figure 4 is a trace of the hole orientation in plan and section.

2.8 Formation Testing

Two Drill Stem Tests were run during the drilling of the well. A summary of the results is presented below with full details included as Appendix 5. An analysis of the gas sample taken during the first Drill Stem Test is included as Appendix 6.

Drill Stem Test No. 1

Interval :	4789 to 4843 (59 feet)
Date:	28th June, 1984
Tester:	Halliburton
Formation:	Pacoota P3-120/130 sands
Type of Test:	Bottom hole conventional dual packers
Water cushion:	Nil
Times:	First flow: 16 mins
	First Shut-In: 36 mins
	Second Flow: 125 mins

2.8 Formation Testing (contd.)

Times: (contd.) Second Shut-In: 257 mins
Bottom Borden Recorder Pressures (Field Results)
Initial Hydrostatic - 2297 psi
First Flow - 380 psi
Initial Shut-In - 1786 psi
Second Flow - 705 psi
Second Shut-In - 1786 psi
Final Hydrostatic - 2287 psi

Results: Tool opened with an immediate strong blow, rapidly increasing to very strong. Gas flowed to surface after 18 minutes whilst tool was shut-in. During the second flow period gas and oil cut mud flowed to surface after 40 minutes with oil to surface after 45 minutes. Oil and gas were flowed through the separator for 1 hour, recovering 2600 litres of oil in the stock tank. Gas flow was measured through a 1/2" orifice on a 2" flow prover.

Oil Rate = 392 BOPD
Gas Rate = 290 mcf/d
GOR = 740 cu. ft./bbl

Conclusions: Formation contains oil and has moderate permeability.

Drill Stem Test No. 2

Interval: 4842 to 4917 (75 feet)
Date: 30th June 1984
Tester: Halliburton
Formation: Pacoota P3-150/190 sands
Type of Test: Bottom hole conventional dual packers
Water Cushion: Nil
Times: First Flow: 15 mins
 First Shut-In: 30 mins
 Second Flow: 90 mins
 Second Shut-In: 180 mins
Bottom Borden Recorder Pressures (Field Results)
Initial Hydrostatic - 2388
First Flow - 66
Initial Shut-In - 753
Second Flow - 73
Second Shut-In - 1699
Final Hydrostatic - 2401

2.8 Formation Testing (contd.)

Drill Stem Test No. 2 (contd.)

Results: Tool opened with a very weak blow, decreasing steadily till the initial shut-in. During the second flow period, a very weak blow was recorded, decreasing to zero after 41 minutes. Four barrels of rat hole mud were recovered along with 1 cup oil from test tool.

Conclusions: Formation does contain oil but has very poor permeability.

2.9 Completion Data

The 5-1/2" production casing was run to 5058 feet. Using a 4" Geovann casing gun on 2-3/8" tubing the following intervals were perforated with a shot density of four shots per foot:

4797 to 4811 feet

4820 to 4838 feet

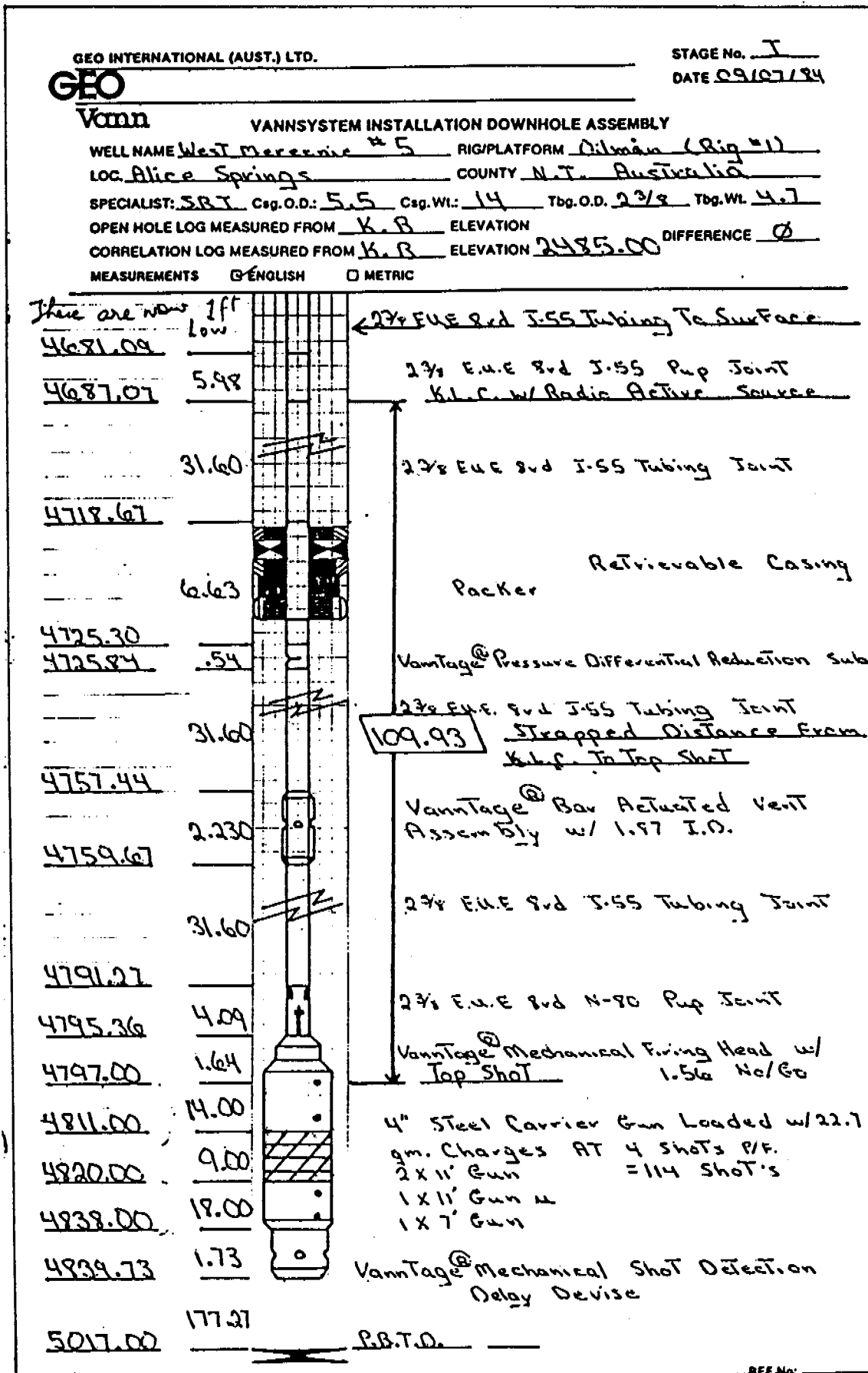
Total footage perforated = 32 feet.

Details are shown in Table 3. After flowing the well to clean for 1 hour the flow was switched through a separator for 1 hour. The well flowed 8.75 bbls of oil through a 1/2" choke, or 210 BOPD, with 58 mcf of gas. The wellhead diagram is shown in Figure 4.

West Mereenie No. 5 was closed in for future production testing and the rig released at 2130 hours on 10th July, 1984.

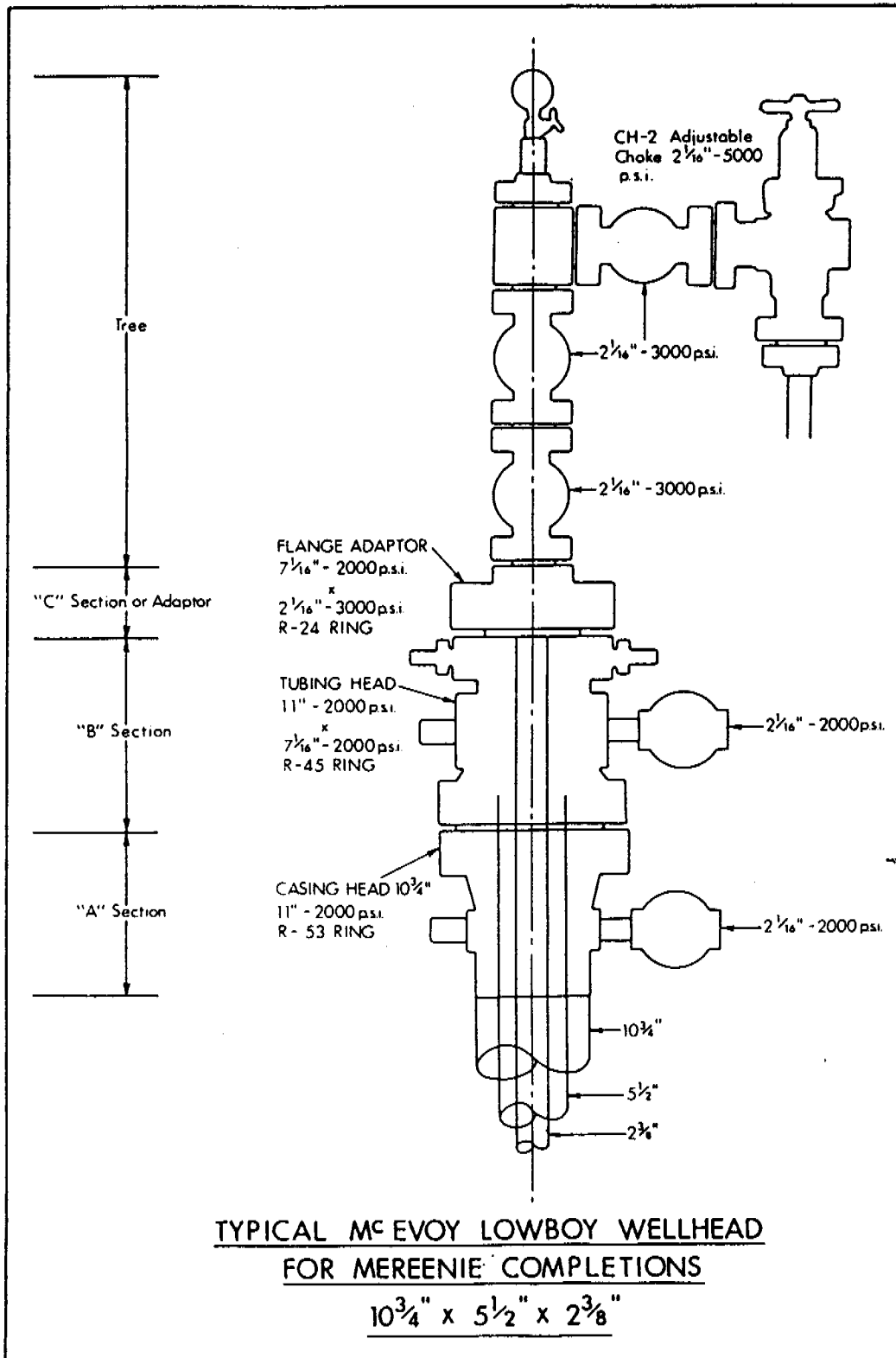
2.9 Completion Data (contd.)

TABLE 3



WELL HEAD DIAGRAM

FIGURE 5



2.10 Time Analysis

Table 4 shows a breakdown of time versus activities. A time/depth curve is included as Figure 3.

TIME ANALYSIS

TABLE 4

<i>OPERATION</i>	<i>TIME (hrs)</i>	<i>TIME %</i>
<i>Drilling</i>	<i>427.00</i>	<i>39.0</i>
<i>Trips/handling tools</i>	<i>258.50</i>	<i>23.6</i>
<i>Reaming</i>	<i>45.25</i>	<i>4.1</i>
<i>Conditioning</i>	<i>49.25</i>	<i>4.5</i>
<i>Nipple up/down/test BOPs</i>	<i>38.50</i>	<i>3.5</i>
<i>Rig service/repairs</i>	<i>12.00</i>	<i>1.1</i>
<i>Slip drill line</i>	<i>4.50</i>	<i>0.4</i>
<i>Casing and cementing</i>	<i>35.50</i>	<i>3.2</i>
<i>Deviation surveys</i>	<i>29.00</i>	<i>2.7</i>
<i>Fishing</i>	<i>24.75</i>	<i>2.3</i>
<i>Stuck pipe</i>	<i>17.00</i>	<i>1.6</i>
<i>Logging</i>	<i>44.50</i>	<i>4.1</i>
<i>Testing</i>	<i>13.25</i>	<i>1.2</i>
<i>Coring</i>	<i>65.50</i>	<i>6.0</i>
<i>Completion operations</i>	<i>29.50</i>	<i>2.7</i>
<i>TOTAL TIME</i>	<i>1094.00</i>	<i>100.0</i>

3. G E O L O G I C A L D A T A

3. GEOLOGICAL DATA:

3.1 REASONS FOR DRILLING

West Mereenie No. 5 was drilled to test the production potential of the middle and lower P3 reservoir horizons on the south flank of the Mereenie Anticline in Petroleum Lease No. 4. It is the thirteenth well in the 20 well appraisal programme for the Mereenie oilfield, and the third of the appraisal wells to be drilled in Petroleum Lease No. 4.

The well is located 2.5 miles WSW of West Mereenie No. 3 which flowed 679 BOPD on DST No. 2 from the Pacoota P3-120/130 sands, and 2.2 miles SE of West Mereenie No. 4 which although did not flow oil due to technical problems, did confirm good porosity for the P3-120/130 sands and is suspended awaiting recompletion.

3.2 STRATIGRAPHY

West Mereenie No. 5 spudded near the top of the Mereenie Sandstone, and reached TD at 5060 feet in the P4 sub-unit of the Pacoota Sandstone. The intersected sequence ranged in age from Upper Cambrian to Middle Devonian and is shown in Table 5.

Comparison with the adjacent wells of West Mereenie No. 3 and West Mereenie No. 4 shows a general thickening WSW by most units between West Mereenie No. 3 and West Mereenie No. 5. This is especially apparent in the Carmichael Sandstone and Upper Stokes Siltstone. The thickening in the Upper Stokes Siltstone is however offset to a certain extent by a corresponding thinning in the Lower Stokes Siltstone.

In the Pacoota Sandstone section, the P1 sub-unit shows a thickening of some 17 feet from West Mereenie No. 3, while a minor thinning is recorded in the P3.

Unit thicknesses between West Mereenie No. 5 and West Mereenie No. 4 show only minor variations.

For a more detailed description of the stratigraphy the reader is referred to the West Mereenie No. 3 Well Completion Report.

3.3 FORMATION SAMPLING

(i) Ditch Cuttings

Samples were taken at 30 foot intervals from 400 feet to 4100 feet with closer spaced sampling undertaken adjacent to predicted formation tops. From 4100 feet to 5060 feet (TD) the sampling interval was reduced to 10 feet.

Throughout the whole drilling operation two untreated bagged samples were obtained for each sample interval. For each interval a washed and dried portion was then produced from which a three-way sample split was made.

WEST MEREENIE NO. 5 STRATIGRAPHIC TABLE

TABLE 5

AGE	FORMATION	DEPTH (ft)		TRUE THICKNESS (ft)
		KB (ft)	MSL (ft)	
SILURIAN TO DEVONIAN	PARKE SILTSTONE	-	-	-
	MEREENIE SANDSTONE	SURFACE	+2465	1441+
UPPER ORDOVICIAN	CARMICHAEL SANDSTONE	1493	+ 992	336
	STOKES SILTSTONE	1837	+ 648	859
	Upper Stokes Siltstone	1837	+ 648	
	Lower Stokes Siltstone	2706	- 218	271
	STAIRWAY SANDSTONE	2977	- 483	187
	Upper Stairway Sandstone	2977	- 483	
	Middle Stairway Sandstone	3164	- 665	
	Lower Stairway Sandstone	3591	-1081	244
LOWER ORDOVICIAN	HORN VALLEY SILTSTONE	3835	-1318	273
	PACOOTA SANDSTONE	4109	-1580	357
	P1 Sub Unit	4109	-1580	
	P2 Sub Unit	4467	-1920	221
	P3 Sub Unit	4689	-2133	267
	P4 Sub Unit	4957	-2391	103+
CAMBRIAN	GOYDER FORMATION	NR	-	
	TOTAL DEPTH:	5060	-2490	

Remarks: Hole was deviated updip from the 10-3/4" casing shoe at 2148 ft. KB reaching a Maximum deviation of 20°. Formation thickness was calculated from survey data (Appendix 7) and an assumed formation dip of 12°S. MSL depths calculated from surveyed true vertical depths.

3. GEOLOGICAL DATA (cont)

3.3 FORMATION SAMPLING (cont)

(i) Ditch Cuttings (cont)

The samples were distributed as follows:

Oilmin: 1 set washed & dried, 1 set unwashed

Magellan: 1 set washed & dried

N.T.

Department

of Mines: 1 set washed & dried, 1 set unwashed.

Sample descriptions are presented in Appendix 1.

(ii) Coring

A total of 97.4 feet of core was cut over four coring runs with an average recovery of 91%.

All core depths have been corrected to the corresponding electric log depths. Descriptions are given in Appendices 3 and 4.

CORE No.	INTERVAL DRILLER (ft)	INTERVAL CORRECTED (ft)	CUT (ft)	REC (ft)	REC (%)	BIT TYPE
1	4366-4377	4362-4373	11.0	8.5	77	Christ SC266 7-15/16"
2	4377-4404	4373-4400	27.0	26.0	96	Christ C23 7-15/16"
3	4813- 4843.3	4811- 4841.3	30.3	30.3	100	Christ C23 7-15/16"
4	4923- 4952.1	4923- 4952.1	29.1	24.3	83	Christ C34 7-27/32"
TOTALS			97.4	89.1	91	

Core No.2 recovered the top 7 feet of the P1-280 sand from 4392 to 4399 feet.

Core No.3 recovered the lower 30 feet of the P3-120/130 sand.

Core No.4 recovered 24 feet of the P3-230 sand from 4923 to 4944 feet.

(iii) Sidewall Sampling

No sidewall samples were taken.

3. GEOLOGICAL DATA (CONTD.)

3.4 CORE ANALYSIS

A total of 36 intervals of core from the P1-280, P3-130 and P3-230 sands were sent to Core Laboratories for routine plug analysis. Tests performed on the samples included summation of fluids, helium injection porosity and permeability measurements. Of the 36 samples, 9 were also assessed by full diameter techniques comprising horizontal permeability, horizontal permeability at 90° to initial measurement, vertical permeability and helium injection porosity.

Core analysis porosities in general agree with those determined by density log. The log method does however tend to yield a slightly higher value.

All core analysis results are shown in Appendices 3 and 4.

West Mereenie No. 5 is the second Mereenie well to have a programme of whole core analysis undertaken in conjunction with conventional plug analysis. Whole core testing was carried out at Core Lab Perth, followed by routine plug analysis from the same intervals in Brisbane.

The primary objective of this exercise was to compare the results of the two methods and thence establish whether conventional plug analysis is indeed giving an accurate assessment of reservoir capabilities.

Conventional plug analysis data is obtained from a 1.5 inch diameter plug cut from a particular core interval while whole core testing is undertaken on a full diameter piece of core between 6 inches and 1 foot long. Whole core analysis will give a more representative assessment of the sand.

A secondary objective was to provide information on the possible effect of worm burrows and fine silty laminations within a reservoir sand on porosity and permeability.

A comparison of whole core and plug analysis data is shown in Table 7.

3. GEOLOGICAL DATA (cont)

3.4 CORE ANALYSIS (cont)

T A B L E 6

SAMPLE No.	DEPTH INT	WHOLE CORE ANALYSIS				PLUG ANALYSIS	
		Max Horiz K	90° Horiz K	Vert K	∅	K	∅
CORE 2							
3	4397.8'	13.0	13.0	1.8	6.1	26.0	5.9
6	4401.3'	33.0	22.0	57 frac	7.8	99.0	7.6
7	4402.3'	14.0	12.0	10.0	7.0	6.4	6.3
CORE 3							
17	4826.0'	13.0	10.0	8.1	8.1	18.0	8.3
20	4829.6'	19.0	18.0	14.0	9.4	18.0	9.6
23	4832.7	25.0	23.0	29.0	8.8	41.0	8.5
27	4837.4'	2.0	1.7	1.5	6.0	1.8	6.2
CORE 4							
33	4937.5'	2.1	2.0	1.9	6.3	3.6	6.8
36	4942.9'	2.4	2.2	2.5	7.3	2.2	7.0

The most significant result of the assessment is that porosity, whether determined by whole core or plug methods, remains essentially the same. The maximum deviation difference in recorded porosity is 0.7% with the average difference in results achieved by the 2 methods, only 0.3%. This result is significant on the basis of the above information as it means the data given by previous conventional plug analyses are realistic and pertinent to reserve calculations.

Permeability is seen to be the variable parameter. An indication of the streaky and discontinuous nature of permeability within reservoir sands is given by the fact that values obtained by the two methods can vary by up to as much as 100%.

No factual relevance as yet can be attached to the presence of worm burrows or silty laminations. It has been observed in the field however, that silty laminations sometimes sweat oil more profusely than surrounding areas, indicating perhaps that the contact between siltstone laminae and sandstone provides a permeability channel.

3. GEOLOGICAL DATA (cont)

3.5 LOGGING & SURVEYS

(i) Electric Logging

Apart from the usual Gearhart electric logs, West Méreenie No.5 was also used to test Schlumberger's open hole logging suite.

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

LOG	RUN	INTERVAL	DATE
DIL-GR	1	2800-5060	4.7.84
CDL-CNS-GR-CAL	1	2155-5060 (GR to surface)	5.7.84
CBL	1	3000-5009	9.7.84
GR	1	4536-4688	10.7.84

The following logs were run by Schlumberger:

LOG	RUN	INTERVAL	DATE
DIS-GR	1	4000-5058	5.7.84
LDT-CNL-EPT-GR	1	4000-5058	5.7.84
EPT-GR	1	4000-5043	5.7.84
LDT-CNL-GR	1	4000-5056	5.7.84
RFT	1	4000-5043	7.7.84

Prints of all wireline logs are included as Enclosure 3.

(ii) Velocity Survey

A velocity survey was run by Velocity Data of Brisbane, with all shots being placed in the sump.

The results of the velocity survey are included in Appendix 8.

3. GEOLOGICAL DATA (cont)

3.5 LOGGING & SURVEYS (cont)

(iii) Penetration Rate & Gas Logs

The penetration rate was recorded continuously from spud to total depth. The mud gas was monitored continuously by 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.

3.6 PETROLEUM GEOLOGY

Although good porosity is evident in the Mereenie Sandstone, only those formations below the Stokes Siltstone show any sign of hydrocarbons. Of these formations only the Upper and Lower Stairway Sandstone and Pacoota P1, P3 and P4 Sandstone sub units have significant reservoir potential.

Upper Stairway Sandstone

This section showed no evidence of hydrocarbons whilst drilling with air, however density log porosities of between 6% and 11% are present over several intervals in the Upper Stairway's lower sandstone facies. These are:

3101 - 3104 (3) feet
3119 - 3132 (13) feet
3140 - 3145 (5) feet
3155 - 3163 (8) feet.

The unit is considered to have poor permeability.

Middle Stairway Sandstone

Three zones within the Middle Stairway Sandstone were noted to have traces of faint yellow white fluorescence:

3190 - 3250 feet
3310 - 3340 feet
3500 - 3530 feet.

No cut was observed from the samples and no residual or live hydrocarbon staining apparent in any cuttings. As this unit has no effective porosity, it is considered that the fluorescence is attributable to mineral fluorescence.

3. GEOLOGICAL DATA (cont)

3.6 PETROLEUM GEOLOGY (cont)

Lower Stairway Sandstone

The upper sandstone unit of the Lower Stairway Sandstone has minor thin porosity development of between 6% and 9% over the following intervals:

- 3621 - 3625 (4) feet
- 3637 - 3640 (3) feet
- 3657 - 3661 (3) feet
- 3669 - 3672 (4) feet
- 3692 - 3694 (2) feet

No evidence of hydrocarbons was noted whilst drilling the section with air, indicating that these zones have poor permeability.

The middle siltstone unit shows no reservoir potential, nor were any hydrocarbons evident.

The lower arenaceous unit of the Lower Stairway Sandstone, although showing good development of the sands, has poor porosity and permeability throughout. Only a minor zone between 3758 feet and 3761 feet shows a density log porosity greater than 6%. No sign of hydrocarbons was noted in the cuttings or as fluid entry into the well bore whilst drilling the section with air.

Pacoota Sandstone (P1 sub-unit)

Sample cuttings, core analyses and electric logs showed the majority of P1 sandstones to have poor porosity and permeability, due mainly to advanced secondary silicification.

Using a density log porosity of 6% as a cut off, the Pacoota P1 net sand intervals are as follows -

<u>Sand</u>	<u>Interval Thickness</u>	<u>Average Log porosity</u>	<u>Maximum Log porosity</u>
P1-60	4188-4196 (8) feet	9%	10.5%
P1-80	4202-4212 (10) feet	9%	10%
P1-280	4397-4399 (2) feet	6.5%	7%
P1-350	4464-4467 (3) feet	7%	7.5%

The total net sand for the P1 is 23 feet.

Both the P1-60 and P1-80 sands show considerable improvement in their reservoir characteristics from West Mereenie No. 3 and No. 4. In particular, the P1-60 sand, which is partly developed in West Mereenie No. 3 and not present at all in West Mereenie No. 4, is seen to have developed on the south flank with 8 feet of net sand interval and an average porosity of 9%. Electric logs indicated the possibility of liquid hydrocarbons in this zone. White fluorescence and streaming cut were noted in cuttings from the interval 4190 to 4200, corresponding to the P1-60 sand.

3. GEOLOGICAL DATA (contd.)

3.6 PETROLEUM GEOLOGY (contd.)

Pacoota Sandstone (P1 sub-unit contd.)

Two cores were cut in the P1 of which Core No. 2 recovered the top 7 feet of the P1-280 sand. The presence of hydrocarbons in this sand was indicated by patchy blue white fluorescence and faint white streaming cut. A distinct petroliferous odour emanated from the core over this interval. Core analysis permeabilities for the P1-280 gross sand (GR API < 80) are good considering the relatively low porosities, averaging 17 md's.

Although no drill stem tests were run in the P1, all indications are that the P1 section is totally within the gas column with the possibility of liquid hydrocarbons in the P1-60 sand.

Pacoota Sandstone (P3 sub-unit)

The Pacoota P3 sub-unit has a total net sand thickness of 71 feet in 14 separate intervals, some of which are no more than one to two feet thick. Only the significant (> 2 feet) are listed. The remainder are grouped under miscellaneous.

<u>Sand</u>	<u>Interval Thickness</u>	<u>Average Log porosity</u>	<u>Maximum Log porosity</u>
P3-120/130	4796-4803 (7) feet	10%	11%
	4805-4809 (4) feet	8%	9.5%
	4821-4836 (15) feet	10%	11.5%
P3-190	4893-4900 (7) feet	7%	8%
P3-230	4918-4925 (7) feet	8%	9%
	4926-4937 (11) feet	8%	10.5%
	4939-4942 (3) feet	7%	7.5%
P3-250	4948-4954 (6) feet	7%	8.5%
Miscellaneous	(11) feet	6.8%	8.5%

Total net sand in the P3 sub unit of West Mereenie No. 5 shows a decline of some 38 feet from the 109 feet intersected in West Mereenie No. 3. In particular, the P3-120/130 (the main producing zone) shows a reduction in net pay of 12 feet with the central portion of the sand pinching out.

Two cores were cut in the P3, Core No. 3 in the P3-120/130 sand and Core No. 4 over the P3-230/250 interval.

Core No. 3, when corrected to match log depth, correlated well with zones of good density log porosity by exhibiting strong white fluorescence and streaming cut with associated hydrocarbon sweating over these intervals. Consequent core analysis showed good oil saturations and permeabilities of between 14 and 41 md (average of 28 md). An average helium injection porosity for the net sands analyses of 8.5% compares with an average density log porosity for the same interval of 10%.

3. GEOLOGICAL DATA (cont)

3.6 PETROLEUM GEOLOGY (cont)

Pacoota Sandstone (P3 sub unit)

Core No. 4 contained patchy zones of hydrocarbon sweating with poor to fair fluorescence and cut throughout. A significant feature was the observed sweating of salty water from fractures along the core length. Core analysis indicated generally poor oil saturation and very poor permeabilities with a maximum of 8.5 md and an average of 3 md. Helium injection porosity at an average of 6% for the analyses interval compares with an average density log porosity for that same section of 7.5%. Full core analysis results are included as Appendices 3 and 4.

Two drill stem tests were completed in the P3 with oil flow to surface in DST No. 1 only.

Drill Stem Test No. 1 (4789 - 4843 feet) tested the P3-120/130 sand. Oil recovery was measured at 392 BOPD and gas recorded at 290 mcfd.

Drill Stem Test No. 2 (4842 - 4917 feet) tested an interval which encompassed the P3-150/190 sands. No oil or gas flowed to surface, however 1 cup of oil was recovered from the test tool.

Both DSTs indicate that the sands tested lie within the oil column, however only the P3-120/130 has significant porosity and permeability.

The gas/oil contact is not expected to occur within the P3 sub-unit.

From logs and core the oil/water transition zone begins at -2356 feet MSL or 4900 feet KB.

Pacoota Sandstone (P4 sub unit)

The porosity distribution in the P4 sub unit is much the same as found in most of the wells drilled previously with the main zone of porosity as seen from electric logs and cuttings, the P4-40 occurring 35 feet below the top of the P4. It has a net sand thickness of 30 feet (4991 - 5021 feet) with an average density log porosity of 8%. Two smaller zones of porosity occur below the P4-40 from 5031 to 5041 (10) feet and 5044 to 5056 (12) feet, both with an average density log porosity of 7%.

No core or drill stem tests were made in the P4, however from previous testing the P4-40 sand is known to have very poor permeabilities.

The P4 sub unit is expected to be totally within the water column. Although fluorescence and cut was reported down to TD (5060 feet) the cuttings samples may have been contaminated by the oil based mud.

3. GEOLOGICAL DATA (cont.)

3.7 RELEVANCE TO APPRAISAL PROGRAMME

West Mereenie No. 5 showed that the P3 sands encountered on the northern flank of the western end of the field were present on the southern flank, albeit with reduced porosity.

A flow of 392 BOPD and 290 mcf/d gas from the mid P3 reservoir horizon (P3-120/130 sand) showed that this reservoir has reasonable production potential. The production of oil without any water indicates that the target horizon was intersected in the oil column.

Although the gas/oil contact was not discernable from electric logs it is expected to occur at -2130 feet MSL, equivalent to the contact over the rest of the field.

Cutting samples and electric logs indicate that there is a possibility of liquid hydrocarbons in the P1-60 sand. This zone was not tested.

From logs the top of the oil/water transition zone is estimated to occur at -2356 feet MSL, 7 feet higher than that calculated for West Mereenie No. 3.

The above fluid contacts indicate that the oil column in West Mereenie No. 5 is 226 feet compared to 320 feet in the eastern end P3 pool.

Data from electric logs, drill cuttings and cores indicate that the P1-60 and P1-80 and to a lesser extent the P1-280 and P1-350 sands are prospective targets for oil production down dip from this location.