

Directional Drilling (cont.):

Non magnetic drill collar in string.

1794' - 2016'
 2064' - 2095'
 2879' - 3007' (twist off)
 3832' Trip with drill pipe
 4930' Trip with drill pipe

Drilling Observations:

A total of 1436 hours were required to drill East Mereenie No. 3. Total rotating hours on bottom (excluding coring) were 537½, approximately 38% of total time. A total of 34 bits drilled 5001 feet of hole. These bits were used as follows:-

<u>Fluid</u>	<u>No. of Bits</u>	<u>Footage Drilled</u>	<u>Hours Required</u>	<u>Average Penetration</u>	<u>Ft./Bit</u>
Gas	31	4790	496¾	9.7 ft./hr.	155
Salt Water	3	211	41	5.1 ft./hr.	70

Average penetration rate for the hole (excluding coring) was 9.3 ft./hour. 30 conventional and 4 button bits were used in drilling operations. Penetration averaged 147 feet/bit. Average penetration rate for the 214 feet of hole cored was 2.0 feet/hour.

Gas drilling operations required 42 days to drill and core 4807 feet of hole, 14 days were required to core and drill the remaining 408 feet of hole.

Breakdown of Drilling Operations:

	<u>Footage</u>	<u>Hours Required</u>	<u>Ft./Hr.</u>	<u>No. of Bits</u>	<u>Ft./Bit</u>
Surface Hole	85	7.5	11.3	1	85
Gas drill 13¾" hole	545	40.5	13.5	2	272
Gas/mist drill 13¾" hole	1990	253.5	7.9	18	111
Gas/mist drill 9¾" hole	1425	107.75	13.2	5	285
Gas/water drill 9¾" hole	745	87.5	8.5	5	149
Salt water drill 9¾", 8¼" and 7¾" hole	211	41.0	5.1	3	70

G E O L O G Y

Previous Work:

Geological:

The well was programmed as a south flank test of the Mereenie Anticline. A surface location was originally picked from available geological and geophysical information some 800 feet south-west of the Mereenie/Pertnjara contact on the south flank of the Anticline. After consideration by the partners, the well was sited 1100 feet down dip from the Mereenie/Pertnjara

Geological (cont.):

contact. This location was thought to allow for 700 feet of up drift to intersect the top of the Pacoota formation within the known oil column. However, approximately 1,000 feet of up dip drift was necessary to achieve the objective.

Geophysical:

Little seismic control was available at this location, what was available was combined with geological control to give the above conclusions.

Drilling:

The nearest well drilled is East Mereenie No. 1 approximately one mile to the north-east. As no previous wells had been drilled on the south flank, little well control could be applied to this test.

FORMATIONS PENETRATED:

Stratigraphic Table

All depths measured from K.B. +2532 feet a.s.l.

<u>Formation</u>	<u>Depth</u>	<u>Subsea</u>	<u>Thickness*</u>	<u>Corrected Thickness</u>
Pertnjara	Surface	+2518'	386'+	347'
Upper Mereenie	386'	+2146'	1814'	1633'
Middle Mereenie	2200'	+ 332'	152'	137'
Lower Mereenie	2352'	+ 180'	325'	293'
Upper Stokes	2677'	- 145'	871'	814'
Lower Stokes	3548'	-1005'	276'	280'
Upper Stairway	3834'	-1277'	214'	211'
Middle Stairway	4048'	-1470'	330'	328'
Lower Stairway	4378'	-1756'	290'	285'
Horn Valley	4668'	-1997'	234'	231'
Upper Pacoota	4902'	-2183'	313' penetrated	309'

Pacoota Formation penetrated in oil column.

* Thickness in well; not corrected for hole deviation or formation dip.

T.D. 5215 feet (-2422')

<u>Formation</u>	<u>Thickness</u>
Pertnjara	386'+
Mereenie	2291'
Stokes	1147'
Stairway	834'
Horn Valley	234'
Pacoota	313' penetrated

DETAILED STRATIGRAPHY:

Surface - 386' (Penetrated thickness 386')

Pertnjara Formation

Age: Palaeozoic (Devonian)

Interbedded siltstone and shale generally red, brown, occasionally vari-coloured, grading in part to very fine grained sandstone with occasional fine grained sandstone interbeds.

386' - 2677' (Thickness 2291')

Mereenie Sandstone

Age: Palaeozoic (Ordovician)

386' - 2200' (Thickness 1814')

Upper Mereenie Sandstone

Description as for Mereenie No. 1. Increase in siltstone in section difficult to correlate with other wells on Mereenie field (basinward depositional feature).

2200' - 2352' (Thickness 152')

Middle Mereenie Sandstone.

Description as for East Mereenie No. 1. Interbedded siltstone and fine grained sandstone, minor shale.

2352' - 2677' (Thickness 325')

Lower Mereenie Sandstone.

Description as for Mereenie No. 1. Increase in siltstone through interval. Porous red brown sandstone with minor white sandstone and scattered siltstone interbeds.

2677' - 3834' (Thickness 1147')

Stokes Shale

Age: Palaeozoic (Ordovician)

2677' - 3548' (Thickness 871')

Upper Stokes Shale

Description as for Mereenie No. 1. Generally red brown, minor green siltstone and shales. Increase in shale percentage below 3100 feet. Minor scattered limestone throughout section.

3548' - 3834' (Thickness 276')

Lower Stokes Shale

Description as for Mereenie No. 1. Green calcareous shale with limestone interbeds.

3834' - 4668' (Thickness 834')

Stairway sandstone

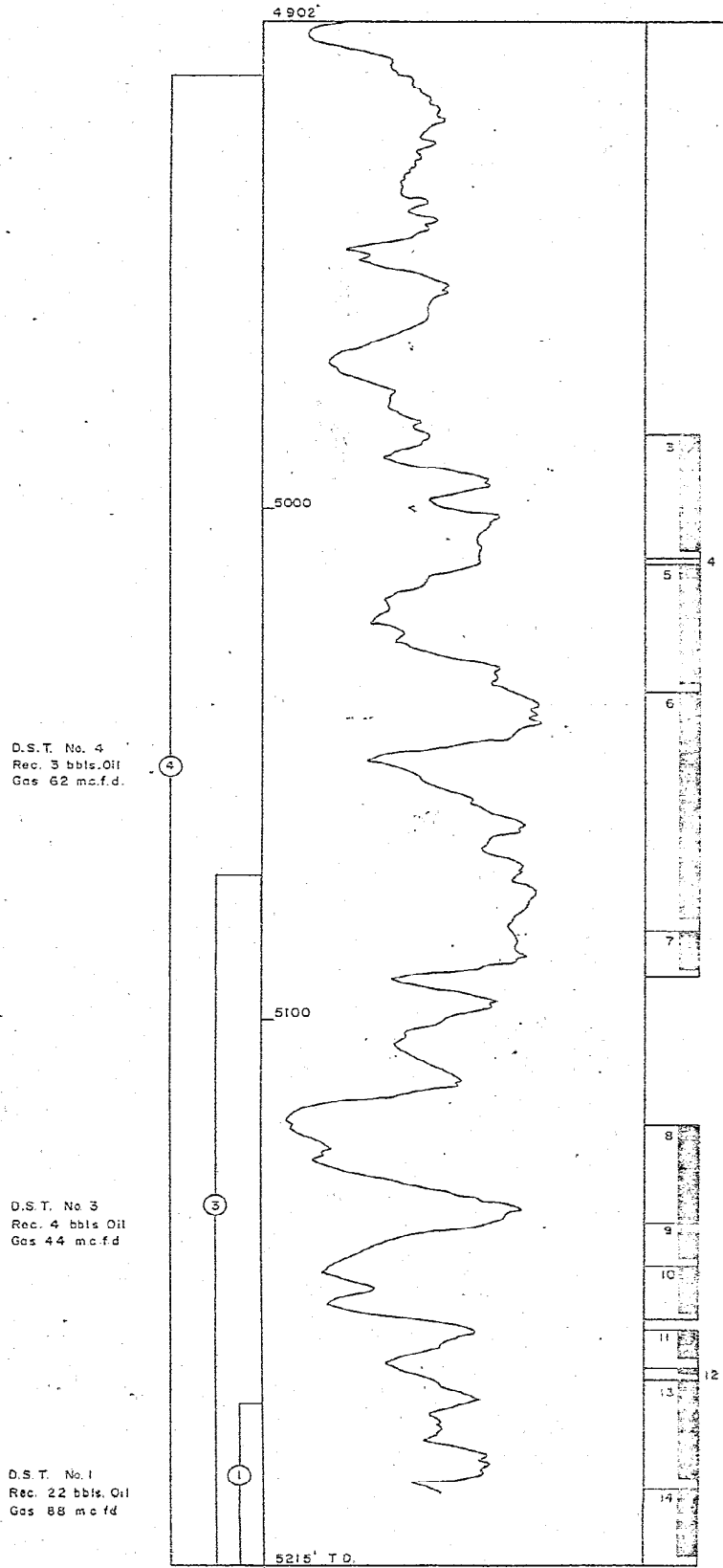
Age: Palaeozoic (Ordovician)

EAST MEREENIE No. 3 PACOOTA SANDSTONE

D.S.T.

GAMMA - RAY

CORES



DETAILED STRATIGRAPHY (cont.):

3834' - 4048' (Thickness 214')

Upper Stairway Sandstone

Description as for Mereenie No. 1. White, clean sandstone with scattered, minor interbeds phosphatic siltstone.

4048' - 4378' (Thickness 330')

Middle Stairway Sandstone

Description as for Mereenie No. 1. Phosphatic material (usually pellets) common through siltstone in this section. Increase in sandstone through interval in this well possibly reflects "flank" deposition.

4378' - 4668' (Thickness 290')

Lower Stairway Sandstone

Description as for Mereenie No. 1. White, clean sandstone with scattered siltstone and shale interbeds.

4668' - 4902' (Thickness 234')

Horn Valley Shale

Description as for Mereenie No. 1. Grey, black shales and siltstones with scattered limestone interbeds. A sandstone zone occurs in this unit for the first time at Mereenie. The sandstone is clean, very fine to fine grained, well sorted, with sub-angular to sub-rounded quartz grains.

4902' - 5215' (Penetrated thickness 313')

Upper Pacoota Sandstone

Age: Palaeozoic (Ordovician)

Description as for East Mereenie No. 1. The Upper Pacoota is generally similar to East Mereenie No. 1. There is a marked lessening of gross permeability in the sandstone sections compared with that well. Grain size is generally similar to that at East Mereenie No. 1 with possibly a slight increase in coarseness. However, secondary silicification is more pronounced in this well and both porosities and permeabilities suffer as a result. The well penetrated the target zone in the Upper Pacoota and bottomed approximately two feet below the base of this zone.

Structure:

East Mereenie No. 3 penetrated the top of the Pacoota 83 feet lower than was programmed. However, to achieve this result almost 1,000 feet of drift had to be achieved. This confirms the presence of steep dips (20° - 30°) on the southern flank of the Mereenie Anticline.

Notes on Lithologies:

An increase in sandstone section in the Middle Stairway Sandstone and the presence of sandstone in the Horn Valley Shale suggests a change in depositional condition on this flank of the structure. The sand in the Horn Valley Shale was tested, but was tight. The sand in the Middle Stairway represents an increase in thickness of a thin sandstone zone which is generally present in this unit. It is thought that the sand in the Horn Valley Shale is present as thin interbeds through a 40 foot section.

POROSITY AND PERMEABILITY OF
SEDIMENTS PENETRATED

Visual examination of cores and cuttings showed some porosity to be present in the Mereenie Sandstone, particularly in the Lower Mereenie Aquifer. Porosity was also noted in minor zones in the Stairway Sandstone. Porosity determined from visual observations is noted in the sample descriptions. Core samples from the major permeable zone in the Upper Pacoota Sandstone were sent to Core Laboratories in Brisbane for analysis. The results are tabulated in Appendix A (ii). Results of this analysis and of D.S.T's. show a marked decrease of gross permeability compared with East Mereenie No. 1. Reworking and secondary silicification of the sandstone zones in the Upper Pacoota at East Mereenie No. 3 possibly account for this decrease.