Department of Resources and Energy
Bureau of Mineral Resources, Geology and Geophysics

Australian Petroleum Accumulations Report 1
Amadeus Basin, central Australia

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FOREWORD

The Bureau of Mineral Resources, Geology & Geophysics is presenting data on Australian petroleum accumulations in a new series of reports. Each report will characterise the petroleum from a sedimentary basin, and include notes on the basin's setting, stratigraphy, structure, traps, reservoir and source rocks, and petroleum characteristics, resources and production developments. The data presented are designed as a ready reference to Australian petroleum exploration and developments.

This report, the first in the series, summarises the data from 17 petroleum accumulations found to date in the Amadeus Basin, Northern Territory and Western Australia.

L.C. Ranford
First Assistant Director
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ABSTRACT

Three economic (1 oil and gas/condensate, 1 gas/condensate, and 1 gas) and fourteen uneconomic (6 oil, 7 gas, and 1 oil/gas) petroleum accumulations have been discovered since 1963 in the Amadeus Basin of central Australia.

The petroleum in the Amadeus Basin mainly occupies the structural, fold-related traps within the Upper Proterozoic to Upper Ordovician marine to marginal marine clastic and evaporitic sequences. It is believed to be of algal/bacterial origin. The API gravity ranges from 18 to 54° for crude oils, and from 52 to 64° for condensates; gases are dry and wet.

The basin's estimated petroleum resources as at 31 December 1985 comprise $5.74 \times 10^6$ m$^3$ of oil, $1.53 \times 10^6$ m$^3$ of natural-gas liquids, and $14.93 \times 10^9$ m$^3$ of sales gas.

Production from Mereenie (oil) and Palm Valley (gas/condensate) accumulations commenced during 1984. Up to 31 December 1985 the cumulative production from the basin stood at $156.3 \times 10^3$ m$^3$ of oil and condensate, and $44.0 \times 10^6$ m$^3$ of sales gas. The gas/condensate is transported 146 km to Alice Springs through a 20-cm-diameter pipeline; the oil is transported 269 km to Alice Springs through a 20-cm-pipeline, and from there by rail tankers to Adelaide refinery. As from February 1987 gas from Palm Valley will also be transported to Darwin via a 1537-km pipeline of 35.3 cm diameter.
INTRODUCTION

This report summarises information on the petroleum accumulations found in the Amadeus Basin up to 31 December 1985 (Fig.1). It describes the basin's setting, structure and traps, reservoir and source rocks, nature of petroleum, and petroleum resources and developments.

The objectives in summarising the available data are:
- to provide the capacity to understand the distribution and characteristics of petroleum accumulations in the Amadeus Basin;
- to provide assistance for exploration for additional reserves; and
- to enhance basic geological and geochemical research.

The data presented in this report were drawn from the continuing petroleum exploration and development programs in the Amadeus Basin in which the detailed assessments of individual accumulations have been released by the operators.

BASIN SUMMARY

Setting and stratigraphy

The Amadeus Basin is an east-west-trending elongate downwarp covering about 170 000 km² of the southern part of the Northern Territory (Wells & others, 1970); a small portion of the basin also extends into Western Australia. The basin margins are well defined to the north and south by igneous and metamorphic rocks of the Precambrian Arunta and Musgrave Blocks. To the east and to the west, the basin margin is obscured by a cover of younger rocks.

The basin's major stratigraphic units and their thicknesses are shown in Plates 1 and 2. The stratigraphy reflects a basal Upper Proterozoic succession of shelf, lagoonal, continental, and shallow-marine sediments, including carbonates and evaporites, overlain by Cambrian-Ordovician marine sediments — all unconformably overlain by continental Devonian-Carboniferous sediments. In general the sedimentary succession thins westwards over an apparent basement arch, and merges with the Canning Basin sequence. The eastward extension of the basin is truncated and overlapped by Mesozoic sediments of the Eromanga Basin.

Petroleum accumulations

In the Amadeus Basin, petroleum occurs in both economic and uneconomic quantities. Crude oil was first discovered in 1963 in AP1 stratigraphic hole
Fig. 1  Index to petroleum accumulations, Amadeus Basin
Since then over 50 petroleum exploration wells have been drilled, resulting in the discovery of two major and one minor economic accumulations:

- Mereenie (oil and gas/condensate)
- Palm Valley (gas/condensate)
- Dingo (gas)

Further, there are another 14 uneconomic accumulations:

- Ooraminna (gas)
- Alice (oil)
- East Johnny Creek (oil, gas)
- West Walker (gas)
- Lake Amadeus (oil)
- Gosses Bluff (gas)
- Orange (gas)
- Rodinga (oil)
- Wallaby (gas)
- Mount Winter (oil)
- Undandita (oil)
- Tempe Vale (oil)
- Finke (gas)
- Tent Hill (gas)

Details of all the basin's petroleum accumulations are summarised in the 'Petroleum accumulations summaries' section of this report, and are graphically depicted in Plates 1 and 2.

Structure and petroleum traps

Structures evident in the Amadeus Basin are the result of directed north-south compressional forces (Wells & others, 1970). Fold structures are characterised by broad flat synclines and tight, commonly asymmetric anticlines. Cross-faulting appears minimal, and is generally related to thrust adjustment. Two major episodes of tectonic deformation have largely controlled development of the structures suitable for petroleum entrapment and preservation: the Late Proterozoic Petermann Ranges Orogeny and the Late Devonian to Early Carboniferous Alice Springs Orogeny.

Petroleum accumulations in the Amadeus Basin occupy structural/stratigraphic traps in rocks of Cambro-Ordovician and Proterozoic ages. The principal Cambro-Ordovician traps are aligned along a northwest or east-west trend. This trend appears to conform to the general strike of the basin's
palaeoslope across which major delta distributory channels flowed. The presence of petroleum is probably the result of the traps having intersected the southeast and southwest-trending delta distributory channels through which the petroleum fluids migrated. The nature of the traps suggests that the migration and trapping of the petroleum were probably initially controlled by lithofacies, but that localised secondary migration of the petroleum into anticlinal traps took place as a result of the formation of later structures. The traps in the Proterozoic rocks are mainly anticlinal and display no directional alignment, unlike the traps in the overlying Cambro-Ordovician rocks. There is, however, evidence that the traps in the older rocks formed as the Proterozoic succession compacted differentially over pillows and lenses of tectonically mobile salt.

**Petroleum-bearing rock units**

The quality of petroleum-bearing rock units in the Amadeus Basin ranges from poor to moderate. Sedimentological studies suggest that the basin contains five different petroleum-bearing facies: distributory-channel sandstones, overbank sheet sandstones, delta-front sheet sandstones, linear barrier sandstones, and shallow-marine deposits (Jackson & others, 1984). Most of the oil zones are confined to sandy nearshore facies, whereas the gas has been discovered in all five facies.

The Lower and Middle Ordovician Larapinta Group clastic rocks are proven petroleum-bearing units, and have been tested by the Mereenie and Palm Valley discoveries. These units consist of fine to coarse-grained nearshore and marine quartzose and feldspathic sandstones. The porosity (intergranular and in parts fracture-induced) of the Ordovician petroleum-bearing rock units is low to moderate, ranging from 4 per cent to 12 per cent (Kurylowicz & others, 1976). The porosity decreases regionally to the southwest, away from the Palm Valley area. Fracture porosity predominates in the Palm Valley area, whereas intergranular porosity predominates to the east of Alice No. 1 and in the Mereenie area to the west. The fracture porosity in the major Cambro-Ordovician sandstone bodies has been evaluated from surface studies and wireline-log analysis; it is best developed along the northern basin margin. The cap rocks to the Cambro-Ordovician petroleum-bearing rock units comprise shale, siltstone, limestone, and impervious sandstone.
The quality of the Cambrian and Proterozoic petroleum-bearing rock units tested by drilling is poorer than that of the overlying Ordovician petroleum-bearing units. These older units comprise sandstone, siltstone, and carbonate with a porosity averaging less than 5 per cent. However, the distribution of wells that have tested these units is too sparse to conclude that their general reservoir quality is unfavourable. Cap rocks to the Cambrian and Proterozoic petroleum-bearing rock units are adequate, and consist of shale, siltstone, impervious sandstone, and carbonate.

**Source rocks**

The potential petroleum source rocks in the Amadeus Basin include siltstone, shale, carbonate, and evaporite units in Proterozoic and Cambro-Ordovician successions (Jackson & others, 1984).

Numerous source-rock studies of the Ordovician succession have established that the Horn Valley Siltstone, which averages up to 10 per cent of total organic matter, is the most important source that charged the Mereenie rock units with gas, condensate, and oil (Gorter, 1984). Lateral differences in organic facies of the Horn Valley Siltstone, and the timing of the petroleum trapping, possibly account for the occurrences of dry gas and condensate in the Palm Valley rock units.

The Cambrian succession appears to be organically lean. In general it contains gas-prone matter, but the few isolated samples from the Chandler Limestone and Tempe Formation indicate limited oil potential.

The Proterozoic fine-grained clastic carbonate and evaporite rocks contain mainly gas-prone matter. A small amount of oil-prone kerogen derived from the Pertatataka and Areyonga Formations and Gillen Member of the Bitter Springs Formation suggests some oil-source potential for the Proterozoic succession.

**Nature of petroleum**

The gravity of the Amadeus Basin oils ranges from 18 to 54°API; condensate from 52 to 64°API; and the gas composition from dry to wet, and with a notable variation in nitrogen content.

Oils discovered in the Pacoota Sandstone and Stairway Sandstone rock units of the Mereenie accumulations have a gravity ranging from 45 to 54°API, and are highly paraffinic to paraffinic in composition (Table 1). The heavy oil discovered in APl stratigraphic hole (Barrie, 1964) has a gravity of 18°API, and is interpreted to be a residual accumulation.
<table>
<thead>
<tr>
<th>Sample</th>
<th>Petroleum °API</th>
<th>°S</th>
<th>δC_{pdb}</th>
<th>C_{5}-C_{7} Hydrocarbons</th>
<th>C_{12} + Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MCH</td>
<td>i-C_{5}</td>
</tr>
<tr>
<td>E. Mereenie No. 1 cond. Pacoota (P1-P3)</td>
<td>61</td>
<td>0.07</td>
<td>-30.3</td>
<td>7.69</td>
<td>0.46</td>
</tr>
<tr>
<td>E. Mereenie No. 3 oil Pacoota (F1)</td>
<td>45</td>
<td>0.07</td>
<td>3.56</td>
<td>0.69</td>
<td>8.02</td>
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<tr>
<td>E. Mereenie No. 4 oil Pacoota (P3)</td>
<td>47</td>
<td>0.07</td>
<td>-31.0</td>
<td></td>
<td></td>
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<td>E. Mereenie No. 6 oil Pacoota (P1)</td>
<td>49</td>
<td></td>
<td>6.88</td>
<td>0.75</td>
<td>7.28</td>
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<tr>
<td>E. Mereenie No. 8 oil Pacoota (P1)</td>
<td>50</td>
<td></td>
<td>6.20</td>
<td>0.77</td>
<td>7.80</td>
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<tr>
<td>E. Mereenie No. 10 oil Stairway (Lower)</td>
<td>54</td>
<td></td>
<td>3.98</td>
<td>0.64</td>
<td>5.91</td>
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Table 1 (cont'd)

<table>
<thead>
<tr>
<th>Sample</th>
<th>Petroleum °API -bearing unit</th>
<th>S</th>
<th>δCpdb</th>
<th>C5-C7 Hydrocarbons</th>
<th>C12 + Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MCH/Tol</td>
<td>i-C5</td>
</tr>
<tr>
<td>Palm Valley</td>
<td>USSst, Horn Valley &amp; Pacoota (P1 &amp; P2)</td>
<td>52</td>
<td>0.07</td>
<td>-28.9</td>
<td>0.72</td>
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<tr>
<td>Palm Valley</td>
<td>LSSst, Horn Valley &amp; Pacoota (P1)</td>
<td>64</td>
<td>0.03</td>
<td>-29.2</td>
<td>0.85</td>
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<td>Palm Valley</td>
<td>Pacoota (P1)</td>
<td>58</td>
<td>0.04</td>
<td>-29.9</td>
<td>0.90</td>
</tr>
<tr>
<td>API oil</td>
<td>Stairway (Lower)</td>
<td>18</td>
<td></td>
<td>-30.8</td>
<td></td>
</tr>
<tr>
<td>Alice No. 1 oil</td>
<td>Jay Creek</td>
<td>43</td>
<td>0.2</td>
<td>-28.8</td>
<td></td>
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</tbody>
</table>

The columns headed 'IV' and 'HV' are the isoheptane and heptane values respectively as defined by Thompson (1983). 'MCH/Tol' is the methylcyclohexane to toluene ratio.

The above data are from McKirdy (1977), except for Alice No 1 oil show (McKirdy & others, 1983); and C12 + fractions from East Mereenie No. 6 and 10 and the Palm Valley accumulation gasoline-range hydrocarbons (Jackson & others, 1984). Where 'Sat' + 'Arom' + 'ONS' fractions total less than 100 per cent, the remainder is the asphaltene fraction.
<table>
<thead>
<tr>
<th>Accumulation</th>
<th>Petroleum-bearing unit</th>
<th>C&lt;sub&gt;1&lt;/sub&gt;</th>
<th>i-C&lt;sub&gt;4&lt;/sub&gt;</th>
<th>i-C&lt;sub&gt;5&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>CO&lt;sub&gt;2&lt;/sub&gt;</th>
<th>Volume %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mereenie Stairway</td>
<td></td>
<td>0.68</td>
<td>0.42</td>
<td>1.28</td>
<td>2.6</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Pacoota (P1)</td>
<td></td>
<td>0.80</td>
<td>0.36</td>
<td>0.78</td>
<td>7.9</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Pacoota (P3)</td>
<td></td>
<td>0.80</td>
<td>0.36</td>
<td>0.79</td>
<td>9.5</td>
<td>nd</td>
<td></td>
</tr>
<tr>
<td>Pacoota (P4)</td>
<td></td>
<td>0.83</td>
<td>0.38</td>
<td>0.83</td>
<td>15.0</td>
<td>nd</td>
<td></td>
</tr>
<tr>
<td>Palm Valley No. 2</td>
<td>Pacoota (P1)</td>
<td>0.91</td>
<td>0.56</td>
<td>1.66</td>
<td>2.0</td>
<td>nd</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.91</td>
<td>0.54</td>
<td>1.88</td>
<td>2.3</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>West Walker No. 1</td>
<td>Pacoota (P1)</td>
<td>0.80</td>
<td>0.36</td>
<td>1.78</td>
<td>8.3</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>Dingo No. 1</td>
<td>Arumbera</td>
<td>0.96</td>
<td>0.66</td>
<td>4.67</td>
<td>9.5</td>
<td>nd</td>
<td></td>
</tr>
<tr>
<td>Ooraminna No. 1</td>
<td>Areyonga</td>
<td>0.96</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The condensate in both the Mereenie and Palm Valley accumulations has a gravity ranging from 52 to 64°API, and is ultraparaffinic to highly paraffinic. The sulphur content of oil and condensate alike is low (less than 0.1 per cent). Both Mereenie oil and Palm Valley condensate are supermature and of algal/bacterial origin.

Analytical data for oil from the Cambrian and Proterozoic successions are few.

The composition of gas from the Amadeus Basin varies considerably, and apparently reflects regional differences in source and maturity. Table 2 lists analytical data for gases recovered from a number of rock units.

Petroleum resources

Estimated petroleum resources for the Amadeus Basin as at 31 December 1985 comprised 5.74 x 10^6 m^3 of oil; 1.53 x 10^6 m^3 of natural-gas liquids; and 14.93 x 10^9 m^3 of sales gas (BMR, 1986). Figure 2 depicts the basin's petroleum resources assessment trend from 1972 to 1985 (BMR, 1972-85). All resources listed in Figure 2, and in Plates 1 and 2, either have been provided to BMR by the Department of Mines and Energy, Northern Territory, or are BMR estimates.

Petroleum production developments

Petroleum has been produced from only two accumulations in the Amadeus Basin: Palm Valley and Mereenie.

The Palm Valley gas project was brought on stream in 1984, following installation of gathering, field treatment, and metering facilities. The delivery of gas/condensate from the accumulation into the Palm Valley-Alice Springs gas pipeline was initiated on 31 August 1984. The pipeline, over 146 km long, has an outside diameter of 20 cm. The gas is being sold to the Northern Territory Electricity Commission for use as fuel in the Alice Springs power plant. In August 1984 the Department of Mines and Energy, Northern Territory, announced plans for building of a gas pipeline from the Palm Valley accumulation to Darwin for electricity generation. The 1537-km pipeline from Palm Valley to Darwin will have an outside diameter of 35.5 cm, and is expected to be commissioned in February 1987.

Oil production from the Mereenie accumulation commenced in June 1984 at a rate of 238 m^3 per day (1500 bbl per day). Production started from the East Mereenie Pacoota Sandstone trap, and increased to 476 m^3 per day (3000 bbl per day) when the Mereenie Pacoota Sandstone trap was brought into production.
Up to October 1985, the produced oil was transported from the accumulation's gathering facility to Alice Springs by road tankers, and then by rail tankers to Adelaide refinery. Since October 1985 the oil has been transported to Alice Springs via a 269-km pipeline of 20.3 cm diameter, and then by rail tankers to Adelaide refinery.

Up to 31 December 1985, the cumulative production from the basin stood at $156.3 \times 10^3\,\text{m}^3$ of oil and condensate, and $44.0 \times 10^6\,\text{m}^3$ of gas.
PETROLEUM ACCUMULATIONS SUMMARIES
ACCUMULATION: Mereenie

COMPILATION DATE: 2/06/86

OPERATOR: Oilmin NL

TYPE: Oil; gas/condensate

COMMERCIAL STATUS: Economic and developed

LOCATION: Approximately 240 km west-southwest of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP178, L4; OP175, L5

FIRST DISCOVERY WELL: Mereenie No.1 (Pemberton & others, 1964)
- latitude: 23º59'25" longitude: 131º30'10"
- discovery: gas/condensate
- date total depth reached: February 1964

SECOND DISCOVERY WELL: East Mereenie No.2 (Benbow & others, 1964)
- latitude: 24º02'42" longitude: 131º38'58"
- discovery: oil
- date total depth reached: October 1964

THIRD DISCOVERY WELL: Mereenie No.6 (Oilmin, 1982)
- latitude: 24º04'21" longitude: 131º40'58"
- discovery: oil
- date total depth reached: May 1982

NUMBER OF WELLS DRILLED: 22 exploration
14 development

STRUCTURE: Anticline: northwest-southeast-trending, symmetrical, breached, eastward-plunging
- areal closure: 98.4 sq.km
- vertical closure: 427 m

SUBDIVISION OF PETROLEUM ACCUMULATION:
4 traps
10 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas
- Nil gas/condensate
- Nil gas/oil
2 oil

DRIVE MECHANISM: Gas expansion with possibly minor water drive

PRODUCTION COMMENCED: June 1984

PRODUCTION INFRASTRUCTURE: Oil is transported from the accumulation via a 269-km pipeline to Alice Springs then railed to Adelaide refinery
TRAP

TRAP 1: Stairway Sandstone

DISCOVERY WELL: Mereenie No.1

CONTENTS: Gas/condensate

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: USSst
PETROLEUM CONTENTS: Gas/condensate
PRODUCTION STATUS: Dormant
FORMATION: Stairway Sandstone
AGE: Late Middle Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; streaks of siltstone and shale, and phosphate pellets are also present
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 738.3 m below rotary table (BRT)
POROSITY: Up to 8%
PERMEABILITY: 5 md
TEMPERATURE GRADIENT: Normal (1.822 °C/100m)
PRESSURE GRADIENT: Normal, 9789.8 Pascals/metre (Pa/m)

PETROLEUM-BEARING UNIT 2: LSSst
PETROLEUM CONTENTS: Gas/condensate
PRODUCTION STATUS: Dormant
FORMATION: Stairway Sandstone
AGE: Early Middle Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; streaks of siltstone and shale, rare phosphate and pyrite cement
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 955.5 m BRT
POROSITY: Up to 12%
PERMEABILITY: 5 md
TEMPERATURE GRADIENT: Normal
PRESSURE GRADIENT: Abnormally high (10833.9 Pa/m)
**PETROLEUM ACCUMULATIONS SUMMARY SHEET**

### TRAP

**TRAP 2:** Pacoota Sandstone

**DISCOVERY WELL:** Mereenie No.1 gas/condensate; East Mereenie No.2 oil

**CONTENTS:** Gas/condensate, oil

### PETROLEUM-BEARING UNIT(S)

**PETROLEUM-BEARING UNIT 1:** P1

**PETROLEUM CONTENTS:** Gas/condensate; oil

**PRODUCTION STATUS:** Dormant

**FORMATION:** Pacoota Sandstone

**AGE:** Early Ordovician

**TRAPPING MECHANISM:** Structural

**LITHOLOGY:** Sandstone: marginal marine; streaks of siltstone and shale, partly glauconitic, pyritic and phosphatic

**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** 1267.3 m BRT

**POROSITY:** Up to 6%

**PERMEABILITY:** Up to 12 md, generally less than 1 md

**TEMPERATURE GRADIENT:** Normal

**PRESSURE GRADIENT:** Normal

**PETROLEUM-BEARING UNIT 2:** P2

**PETROLEUM CONTENTS:** Gas/condensate; oil

**PRODUCTION STATUS:** Dormant

**FORMATION:** Pacoota Sandstone

**AGE:** Early Ordovician

**TRAPPING MECHANISM:** Structural

**LITHOLOGY:** Sandstone: marginal marine; streaks of siltstone and shale, partly glauconitic and phosphatic

**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** 1349.0 m BRT

**POROSITY:** Up to 10%

**PERMEABILITY:** Up to 14 md, generally less than 2 md

**TEMPERATURE GRADIENT:** Normal

**PRESSURE GRADIENT:** Normal
PETROLEUM-BEARING UNIT 3: P3
PETROLEUM CONTENTS: Gas/oil show
PRODUCTION STATUS: Dormant
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; siltstone and shale streaks
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1415.8 m BRT
POROSITY: Up to 10%
PERMEABILITY: Up to 10 md, generally less than 2 md
TEMPERATURE GRADIENT: Normal
PRESSURE GRADIENT: Normal

PETROLEUM-BEARING UNIT 4: P4
PETROLEUM CONTENTS: Gas/oil show
PRODUCTION STATUS: Dormant
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; calcareous and irregularly bedded with siltstone and shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1499.6 m BRT
POROSITY: Up to 9%
PERMEABILITY: Up to 10 md, generally less than 2 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
TRAP 3: Stairway Sandstone (East Mereenie)

DISCOVERY WELL: East Mereenie No.2

CONTENTS: Gas

PETROLEUM-BEARING UNIT 1: LSSst

PETROLEUM CONTENTS: Gas

PRODUCTION STATUS: Dormant

FORMATION: Stairway Sandstone

AGE: Middle Ordovician

TRAPPING MECHANISM: Structural

LITHOLOGY: Sandstone: marginal marine; partly cemented by phosphate and pyrite

DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1119.5 m BRT

POROSITY: Up to 10%

PERMEABILITY: Up to 10 md, generally less than 2 md

TEMPERATURE GRADIENT: Not determined

PRESSURE GRADIENT: Not determined
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 4: Pacoota Sandstone (East Mereenie)

DISCOVERY WELL: East Mereenie No.2

CONTENTS: Oil

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: P1
PETROLEUM CONTENTS: Oil/gas
PRODUCTION STATUS: Producing
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural and stratigraphic
LITHOLOGY: Sandstone: marginal marine; glauconitic; interbedded with thin limestone
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1452.6 m BRT
POROSITY: Up to 10%, average 7.6%
PERMEABILITY: Up to 78 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined

PETROLEUM-BEARING UNIT 2: P2
PETROLEUM CONTENTS: Gas/oil
PRODUCTION STATUS: Dormant
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural and stratigraphic
LITHOLOGY: Sandstone: marginal marine; glauconitic and calcareous; interbedded with siltstone and shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1349.0 m BRT
POROSITY: Up to 7%
PERMEABILITY: Up to 5 md, generally less than 1 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
PETROLEUM-BEARING UNIT 3: *P3*
PETROLEUM CONTENTS: *Oil/gas*
PRODUCTION STATUS: *Producing*
FORMATION: *Pacoota Sandstone*
AGE: *Early Ordovician*
TRAPPING MECHANISM: *Structural and stratigraphic*
LITHOLOGY: *Sandstone: marginal marine; interbedded with siltstone and shale*
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: *1415.8 m BRT*
POROSITY: *Up to 11%*
PERMEABILITY: *Up to 6 md, generally less than 3 md*
TEMPERATURE GRADIENT: *Not determined*
PRESSURE GRADIENT: *Not determined*
ACCUMULATION: *Palm Valley*

COMPILATION DATE: 2/06/86

OPERATOR: *Magellan Petroleum (NT) Pty Ltd*

TYPE: *Gas/condensate*

COMMERCIAL STATUS: *Economic and developed*

LOCATION: *Approximately 125 km southwest of Alice Springs, NT*

STATE: *Northern Territory*

PETROLEUM TITLE(S): *OP175, L3*

DISCOVERY WELL: *Palm Valley No.1 (Magellan, 1965)*
- latitude: 24º00'00"
- longitude: 132º46'20"
- discovery: *gas/condensate*
- date total depth reached: *May 1965*

NUMBER OF WELLS DRILLED: 6 exploration
- 3 development

STRUCTURE: *Anticline: symmetrical, east-west-trending, gently plunging to both east and west*
- areal closure: 312 sq.km
- vertical closure: 305 m

SUBDIVISION OF PETROLEUM ACCUMULATION:
- 3 traps
- 7 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- *Nil* gas
- *1* gas/condensate
- *Nil* gas/oil
- *Nil* oil

DRIVE MECHANISM: *Gas expansion; ? water drive*

PRODUCTION COMMENCED: *August 1984*

PRODUCTION INFRASTRUCTURE: *Produced gas/condensate is being piped 146 km to Alice Springs via a 20-cm-diameter pipeline*
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 1: Stairway Sandstone

DISCOVERY WELL: Palm Valley No.1

CONTENTS: Gas/condensate

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: USSst
PETROLEUM CONTENTS: Gas/condensate
PRODUCTION STATUS: Dormant
FORMATION: Stairway Sandstone
AGE: Middle Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; lenses of shale and calcareous siltstone
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1317.0 m BRT
POROSITY: Up to 3.5%
PERMEABILITY: Generally low; usually less than 1 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Normal (9789.8 Pa/m)

PETROLEUM-BEARING UNIT 2: LSSst
PETROLEUM CONTENTS: Gas/condensate
PRODUCTION STATUS: Dormant
FORMATION: Stairway Sandstone
AGE: Middle Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; lenses of carbonaceous shale and calcareous siltstone
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1486.0 m BRT
POROSITY: Up to 5%
PERMEABILITY: Generally less than 1 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Normal (9789.9 Pa/m)
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 2: Horn Valley Siltstone

DISCOVERY WELL: Palm Valley No.1

CONTENTS: Gas/condensate

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: HVSlst
PETROLEUM CONTENTS: Gas/condensate show
PRODUCTION STATUS: Nil
FORMATION: Horn Valley Siltstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marine; sandy; interbedded with fossiliferous limestone and carbonaceous shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1618.5 m BRT
POROSITY: Low, generally less than 2%
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
TRAP

TRAP 3: Pacoota Sandstone

DISCOVERY WELL: Palm Valley No.1

CONTENTS: Gas/condensate

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: P1
PETROLEUM CONTENTS: Gas/condensate
PRODUCTION STATUS: Producing
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; interbedded with siltstone and shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT : 1717.2 m BRT
POROSITY: Up to 5% (some fracture porosity has been observed)
PERMEABILITY: Low, generally less than 1 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Possibly overpressured (10133 Pa/m)

PETROLEUM-BEARING UNIT 2: P2
PETROLEUM CONTENTS: Gas/condensate
PRODUCTION STATUS: Dormant
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; fine to medium; in parts silty, glauconitic, and calcareous
DEPTH TO TOP OF PETROLEUM-BEARING UNIT : 1792.8 m BRT
POROSITY: Less than 5% (mainly fracture porosity)
PERMEABILITY: Low, generally less than 1 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Possibly overpressured (10133 Pa/m)
PETROLEUM-BEARING UNIT 3: P3
PETROLEUM CONTENTS: Gas/condensate
PRODUCTION STATUS: Dormant
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; fine to coarse; interbedded with siltstone and shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT : 1877.5 m BRT
POROSITY: Less than 5%
PERMEABILITY: Low
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Possibly overpressured (10100 Pa/m)

PETROLEUM-BEARING UNIT 4: P4
PETROLEUM CONTENTS: Gas/condensate
PRODUCTION STATUS: Dormant
FORMATION: Pacoota Sandstone
AGE: Late Cambrian
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; fine to medium; irregularly interbedded with siltstone and shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT : 1953.9 m BRT
POROSITY: No intergranular porosity observed; < 5% (attributed to fractures)
PERMEABILITY: Very low
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Possibly overpressured (10000 Pa/m)
ACCUMULATION: Dingo

COMPILATION DATE: 2/06/86

OPERATOR: Pancontinental Petroleum Ltd

TYPE: Gas

COMMERCIAL STATUS: Economic and undeveloped

LOCATION: Approximately 75 km south of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP175

DISCOVERY WELL: Dingo No.1 (Gorter & others, 1982a)
- latitude: 24º13'26" longitude: 133º53'46"
- discovery: gas
- date total depth reached: December 1981

NUMBER OF WELLS DRILLED: 2 exploration
Nil development

STRUCTURE: Anticline/dome trending slightly west of north
- areal closure: 68.9 sq.km
- vertical closure: 160 m

SUBDIVISION OF PETROLEUM ACCUMULATION:
2 traps
2 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas
Nil gas/condensate
- Nil gas/oil
Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
## PETROLEUM ACCUMULATIONS SUMMARY SHEET

### TRAP

**TRAP 1: Arumbera Sandstone**

**DISCOVERY WELL:** *Dingo No.1*

**CONTENTS:** *Gas*

### PETROLEUM-BEARING UNIT(S)

**PETROLEUM-BEARING UNIT 1: Arumbera Sandstone**

**PETROLEUM CONTENTS:** *Gas*

**PRODUCTION STATUS:** *Nil*

**FORMATION:** *Arumbera Sandstone*

**AGE:** *Late Proterozoic*

**TRAPPING MECHANISM:** *Structural*

**LITHOLOGY:** *Sandstone: marine; interbedded with siltstone, minor shale, and dolomite*

**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** *2945.0 m below kelly bushing (BKB)*

**POROSITY:** *4-8%*

**PERMEABILITY:** *Not determined*

**TEMPERATURE GRADIENT:** *Not determined*

**PRESSURE GRADIENT:** *Not determined*
## PETROLEUM ACCUMULATIONS SUMMARY SHEET

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### TRAP

**TRAP 2:** *Julie Formation*

**DISCOVERY WELL:** *Dingo No. 1*

**CONTENTS:** *Gas*

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### PETROLEUM-BEARING UNIT(S)

**PETROLEUM-BEARING UNIT 1:** *Julie Formation*

**PETROLEUM CONTENTS:** *Gas*

**PRODUCTION STATUS:** *Nil*

**FORMATION:** *Julie Formation*

**AGE:** *Late Proterozoic*

**TRAPPING MECHANISM:** *Structural*

**LITHOLOGY:** *Sandstone: marine; calcareous; interbedded with siltstone and shale*

**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** *3003.0 m BKB*

**POROSITY:** *Poor to moderate*

**PERMEABILITY:** *Not determined*

**TEMPERATURE GRADIENT:** *Not determined*

**PRESSURE GRADIENT:** *Not determined*
ACCUMULATION:  *Ooraminna*

COMPILATION DATE:  5/12/84

OPERATOR:  *Exoil NL*

TYPE:  *Gas show*

COMMERCIAL STATUS:  *Uneconomic and undeveloped*

LOCATION:  *Approximately 67 km southeast of Alice Springs, NT*

STATE:  *Northern Territory*

PETROLEUM TITLE(S):  *OP43*

DISCOVERY WELL:  *Ooraminna No.1 (Planalp & Pemberton, 1963)*
   - latitude:  24°06'00"
   - longitude:  134°09'50"
   - discovery:  *gas*
   - date total depth reached:  *June 1963*

NUMBER OF WELLS DRILLED:  1  exploration
                                 *Nil*  development

STRUCTURE:  *Anticline poorly defined by surface mapping*
   - areal closure:  *Not determined*
   - vertical closure:  *304.8 m*

SUBDIVISION OF PETROLEUM ACCUMULATION:
   1  traps
   1  petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
   - *Nil*  gas
   - *Nil*  gas/condensate
   - *Nil*  gas/oil
   - *Nil*  oil

DRIVE MECHANISM:  *

PRODUCTION COMMENCED:  *Nil*

PRODUCTION INFRASTRUCTURE:  *Nil*
TRAP

TRAP 1: Areyonga Formation

DISCOVERY WELL: Ooraminna No.1

CONTENTS: Gas

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: Areyonga Formation

PETROLEUM CONTENTS: Gas show

PRODUCTION STATUS: Nil

FORMATION: Areyonga Formation

AGE: Late Proterozoic

TRAPPING MECHANISM: Structural

LITHOLOGY: Limestone: marine; brecciated and partly siliceous

DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1138.0 m BKB

POROSITY: Less than 3%

PERMEABILITY: Not determined

TEMPERATURE GRADIENT: Not determined

PRESSURE GRADIENT: Not determined
PETROLEUM ACCUMULATIONS SUMMARY SHEET

ACCUMULATION: Alice

COMPILATION DATE: 20/08/86

OPERATOR: Exoil (NT) Pty Ltd

TYPE: Oil show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 30 km south of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP43

DISCOVERY WELL: Alice No.1 (Exoil, 1963)
- latitude: 23°54'47" longitude: 133°58'00"
- discovery: oil
- date total depth reached: September 1963

NUMBER OF WELLS DRILLED: 1 exploration

Nil development

STRUCTURE: Anticline poorly defined by surface mapping
- areal closure: 0.83 sq.km
- vertical closure: 42.67 m

SUBDIVISION OF PETROLEUM ACCUMULATION:
2 traps
2 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas
- Nil gas/condensate
- Nil gas/oil
- Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 1: Goyder Formation

DISCOVERY WELL: Alice No.1

CONTENTS: Oil

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: Goyder Formation
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Goyder Formation
AGE: Late Cambrian
TRAPPING MECHANISM: Structural
LITHOLOGY: Limestone: marine; calcareous; interbedded with minor siltstone
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 915.6 m BRT
POROSITY: Not determined
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 2: Jay Creek Limestone

DISCOVERY WELL: Alice No.1

CONTENTS: Oil

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: Jay Creek Lst
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Jay Creek Limestone
AGE: Middle Cambrian
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marine; calcareous; interbedded with siltstone
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1770 m BRT
POROSITY: Not determined
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
ACCUMULATION: East Johnny Creek

COMPILATION DATE: 3/06/86

OPERATOR: Exoil (NT) Pty Ltd

TYPE: Oil and gas show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 220 km southwest of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP43

DISCOVERY WELL: East Johnny Creek No.1 (McTaggart & Benbow, 1965)
- latitude: 24º11'00" longitude: 131º37'55"
- discovery: oil
- date total depth reached: May 1965

NUMBER OF WELLS DRILLED: 1 exploration
Nil development

STRUCTURE: Anticline: poorly defined by surface mapping; part of the Johnny Creek Anticlinorium
- areal closure: Not determined
- vertical closure: Not determined

SUBDIVISION OF PETROLEUM ACCUMULATION:
2 traps
3 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas Nil gas/condensate
- Nil gas/oil Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 1: Pacoota Sandstone

DISCOVERY WELL: East Johnny Creek No.1

CONTENTS: Oil

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: P1
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; glauconitic in parts; interbedded with pyritic silty shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 106.0 m BKB
POROSITY: Not determined
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined

PETROLEUM-BEARING UNIT 2: P4
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Pacoota Sandstone
AGE: Late Cambrian
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; interbedded with minor siltstone
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 329.0 m BKB
POROSITY: Not determined
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
## PETROLEUM ACCUMULATIONS SUMMARY SHEET

**TRAP**

**TRAP 2: Upper Goyder Formation**

**DISCOVERY WELL:** *East Johnny Creek No.1*

**CONTENTS:** *Gas*

## PETROLEUM-BEARING UNIT(S)

**PETROLEUM-BEARING UNIT 1: Upper Goyder Formation**

**PETROLEUM CONTENTS:** *Gas show*

**PRODUCTION STATUS:** *Nil*

**FORMATION:** *Goyder Formation*

**AGE:** *Late Cambrian*

**TRAPPING MECHANISM:** *Structural*

**LITHOLOGY:** *Sandstone: marine; calcareous, glauconitic, and pyritic; interbedded with minor siltstone and shale*

**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** *393.0 m BKB*

**POROSITY:** *Not determined*

**PERMEABILITY:** *Not determined*

**TEMPERATURE GRADIENT:** *Not determined*

**PRESSURE GRADIENT:** *Not determined*
PETROLEUM ACCUMULATIONS SUMMARY SHEET

ACCUMULATION: West Walker

COMPILATION DATE: 7/12/84

OPERATOR: Pancontinental Petroleum Ltd

TYPE: Gas show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 222 km west of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP175

DISCOVERY WELL: West Walker No.1 (Gorter & others, 1982c)
- latitude: 24º10'21" longitude: 131º54'24"
- discovery: gas
- date total depth reached: June 1982

NUMBER OF WELLS DRILLED: 1 exploration Nil development

STRUCTURE: Anticline: poorly defined closure on top of Pacoota Sandstone along the plunging nose of the Walker Creek Anticline
- areal closure: 38.1 sq.km
- vertical closure: 60.0 m

SUBDIVISION OF PETROLEUM ACCUMULATION:
- traps
- petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- gas
- gas/condensate
- gas/oil
- oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
TRAP

TRAP 1: Pacoota Sandstone

DISCOVERY WELL: West Walker No.1

CONTENTS: Gas

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: P1
PETROLEUM CONTENTS: Gas show
PRODUCTION STATUS: Nil
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; calcareous, glauconitic and pyritic; in parts interbedded with micaceous siltstone
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1431.0 m BKB
POROSITY: Poor, generally less than 5.0%
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
ACCUMULATION: Lake Amadeus

COMPILATION DATE: 3/06/86

OPERATOR: Bureau of Mineral Resources

TYPE: Oil show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 220 km west of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP178

DISCOVERY WELL: API (Barrie, 1964); renamed to Lake Amadeus No.1
- latitude: 24º17'00" longitude: 131º41'00"
- discovery: oil
- date total depth reached: August 1963

NUMBER OF WELLS DRILLED: 1 exploration
Nil development

STRUCTURE: Anticline: eastern end of Johnny Creek Anticlinorium
- areal closure: Not determined
- vertical closure: Not determined

SUBDIVISION OF PETROLEUM ACCUMULATION:
1 traps
1 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas Nil gas/condensate
- Nil gas/oil Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
TRAP 1: Stairway Sandstone

DISCOVERY WELL: Lake Amadeus No.1

CONTENTS: Oil

PETROLEUM-BEARING UNIT 1: LSSst
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Stairway Sandstone
AGE: Early Middle Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; silicified; interbedded with thin sandy siltstone
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 198.12 m BKB
POROSITY: Moderate, generally less than 8%
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
ACCUMULATION: Gosses Bluff

COMPILATION DATE: 3/06/86

OPERATOR: Exoil (NT) Pty Ltd

TYPE: Gas show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 60 km northwest of Palm Valley, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP43

DISCOVERY WELL: Gosses Bluff No.1 (Pemberton & Planalp, 1965)
- latitude: 23°49’00” longitude: 132°18’00”
- discovery: gas
- date total depth reached: March 1965

NUMBER OF WELLS DRILLED: 1 exploration Nil development

STRUCTURE: Anticline: symmetrical, gently dipping, underlying a meteorite depression
- areal closure: Not determined
- vertical closure: Not determined

SUBDIVISION OF PETROLEUM ACCUMULATION:
1 traps
1 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas Nil gas/condensate
- Nil gas/oil Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
**PETROLEUM ACCUMULATIONS SUMMARY SHEET**

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**TRAP**

**TRAP 1: Stairway Sandstone**

**DISCOVERY WELL:** Gosses Bluff No.1

**CONTENTS:** Gas

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**PETROLEUM-BEARING UNIT(S)**

**PETROLEUM-BEARING UNIT 1: LSSst**

**PETROLEUM CONTENTS:** Gas show

**PRODUCTION STATUS:** Nil

**FORMATION:** Stairway Sandstone

**AGE:** Middle Ordovician

**TRAPPING MECHANISM:** Structural

**LITHOLOGY:** Sandstone: marginal marine; interbedded with calcareous shale

**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** 330.7 m BRT

**POROSITY:** Not determined

**PERMEABILITY:** Not determined

**TEMPERATURE GRADIENT:** Not determined

**PRESSURE GRADIENT:** Not determined
ACCUMULATION: Orange

COMPILATION DATE: 3/06/86

OPERATOR: Magellan Petroleum (NT) Pty Ltd

TYPE: Gas show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 40 km south of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP43

DISCOVERY WELL: Orange No.1 (Magellan, 1967)
- latitude: 24º02'34" longitude: 133º46'32"
- discovery: gas
- date total depth reached: October 1966

NUMBER OF WELLS DRILLED: 2 exploration
Nil development

STRUCTURE: Anticline: a large seismically defined structure plunging east-west
- areal closure: 25.3 sq.km
- vertical closure: 274.3 m

SUBDIVISION OF PETROLEUM ACCUMULATION:
1 traps
1 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas
Nil gas/condensate
- Nil gas/oil
Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 1: Chandler Limestone

DISCOVERY WELL: Orange No.1

CONTENTS: Gas

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: Chandler Limestone
PETROLEUM CONTENTS: Gas show
PRODUCTION STATUS: Nil
FORMATION: Chandler Limestone
AGE: Early Cambrian?
TRAPPING MECHANISM: Structural
LITHOLOGY: Siltstone: marine; minor pyritic and silty shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 2286.0 m BKB
POROSITY: Not determined
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
PETROLEUM ACCUMULATIONS SUMMARY SHEET

ACCUMULATION: Rodinga

COMPILATION DATE: 3/06/86

OPERATOR: Bureau of Mineral Resources

TYPE: Oil show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 70 km southeast of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP43

DISCOVERY WELL: Rodinga No.1A (Felton, 1981)
- latitude: 24°02'00" longitude: 134°15'00"
- discovery: oil
- date total depth reached: September 1980

NUMBER OF WELLS DRILLED: 1 exploration Nil development

STRUCTURE: Anticline: poorly defined, located on the southern flank of the east-northeast-trending Mount Burrell Anticlinorium
- areal closure: Not determined
- vertical closure: Not determined

SUBDIVISION OF PETROLEUM ACCUMULATION:
1 traps
1 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas Nil gas/condensate
- Nil gas/oil Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 1: Chandler Limestone

DISCOVERY WELL: Rodinga No.1A

CONTENTS: Oil

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: Chandler Limestone
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Chandler Limestone
AGE: Early Cambrian
TRAPPING MECHANISM: Structural
LITHOLOGY: Limestone: marine; interbedded with siltstone and shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 133.0 m BRT
POROSITY: Good, up to 24%
PERMEABILITY: Low, less than 10 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
ACCUMULATION: Wallaby

COMPILATION DATE: 3/06/86

OPERATOR: Pancontinental Petroleum Ltd

TYPE: Gas show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 28 km east of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP175

DISCOVERY WELL: Wallaby No.1 (Gorter & others, 1982d)
- latitude: 23º55'00" longitude: 134º01'00"
- discovery: gas
- date total depth reached: August 1981

NUMBER OF WELLS DRILLED: 1 exploration
Nil development

STRUCTURE: Anticline: east-northeast-trending, bounded to the north by a reverse fault
- areal closure: 4.5 sq.km
- vertical closure: 250 m

SUBDIVISION OF PETROLEUM ACCUMULATION:
2 traps
2 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas
Nil gas/condensate
- Nil gas/oil
Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 1: Giles Creek Dolomite

DISCOVERY WELL: Wallaby No.1

CONTENTS: Gas

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: Giles Creek Dolomite
PETROLEUM CONTENTS: Gas show
PRODUCTION STATUS: Nil
FORMATION: Giles Creek Dolomite
AGE: Middle Cambrian
TRAPPING MECHANISM: Structural
LITHOLOGY: Dolomite: marine; interbedded with minor calcareous siltstone and shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 1473.4 m BKB
POROSITY: Not determined
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
## PETROLEUM ACCUMULATIONS SUMMARY SHEET

### TRAP

**TRAP 2: Arumbera Sandstone**

**DISCOVERY WELL:** Wallaby No.1  
**CONTENTS:** Gas

### PETROLEUM-BEARING UNIT(S)

**PETROLEUM-BEARING UNIT 1: Arumbera Sandstone**  
**PETROLEUM CONTENTS:** Gas show  
**PRODUCTION STATUS:** Nil  
**FORMATION:** Arumbera Sandstone  
**AGE:** Early Cambrian  
**TRAPPING MECHANISM:** Structural  
**LITHOLOGY:** Limestone: marine; interbedded with minor dolomite and siltstone  
**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** 1905.0 m BKB  
**POROSITY:** Moderate, generally less than 9%  
**PERMEABILITY:** Poor to moderate, less than 27 md  
**TEMPERATURE GRADIENT:** Not determined  
**PRESSURE GRADIENT:** Not determined
PETROLEUM ACCUMULATIONS SUMMARY SHEET

ACCUMULATION: Mount Winter

COMPILATION DATE: 3/06/86

OPERATOR: Pancontinental Petroleum Ltd

TYPE: Oil show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 65 km west of Mereenie accumulation, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP178

DISCOVERY WELL: Mount Winter No.1 (Gorter & others, 1982b)
- latitude: 23º51'57" longitude: 130º47'41"
- discovery: oil
- date total depth reached: February 1982

NUMBER OF WELLS DRILLED: 1 exploration
                           Nil development

STRUCTURE: Anticline: trending east-west and bounded by parallel faults
- areal closure: 1.6 sq.km
- vertical closure: Not determined

SUBDIVISION OF PETROLEUM ACCUMULATION:
2 traps
2 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas         Nil gas/condensate
- Nil gas/oil    Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 1: Stairway Sandstone

DISCOVERY WELL: Mount Winter No.1

CONTENTS: Oil

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: LSSst
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Stairway Sandstone
AGE: Early Middle Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; streaks of siltstone and shale;
rare phosphate and pyrite cement
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 137.0 m BKB
POROSITY: Not determined
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
TRAP

TRAP 2: *Bitter Springs Formation*

DISCOVERY WELL: *Mount Winter No.1*

CONTENTS: *Oil*

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: *‘Johnny Creek beds’*

PETROLEUM CONTENTS: *Oil show*

PRODUCTION STATUS: *Nil*

FORMATION: *Bitter Springs Formation*

AGE: *Late Proterozoic*

TRAPPING MECHANISM: *Structural*

LITHOLOGY: *Calcarenite: marine; agglomeration of limestone, dolomite and minor sandstone*

DEPTH TO TOP OF PETROLEUM-BEARING UNIT: *1683.0 m BKB*

POROSITY: *Not determined*

PERMEABILITY: *Not determined*

TEMPERATURE GRADIENT: *Not determined*

PRESSURE GRADIENT: *Not determined*
ACCUMULATION: Undandita

COMPILATION DATE: 3/06/86

OPERATOR: Pancontinental Petroleum Ltd

TYPE: Oil show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 235 km west of Alice Springs, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP178

DISCOVERY WELL: Undandita No.1A (Gorter & others, 1983)
- latitude: 23°42'00" longitude: 131°55'00"
- discovery: oil
- date total depth reached: January 1983

NUMBER OF WELLS DRILLED: 1 exploration
Nil development

STRUCTURE: Anticline: thrust-faulted growth structure
- areal closure: Not determined
- vertical closure: Not determined

SUBDIVISION OF PETROLEUM ACCUMULATION:
1 traps
1 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas Nil gas/condensate
- Nil gas/oil Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
**PETROLEUM ACCUMULATIONS SUMMARY SHEET**

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**TRAP**

**TRAP 1:** *Unnamed fault zone*

**DISCOVERY WELL:** *Undandita No.1A*

**CONTENTS:** *Oil*

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**PETROLEUM-BEARING UNIT(S)**

**PETROLEUM-BEARING UNIT 1:** *Unnamed arkose fault zone*

**PETROLEUM CONTENTS:** *Oil show*

**PRODUCTION STATUS:** *Nil*

**FORMATION:** *Unnamed arkosic marl*

**AGE:** *Late Cambrian*

**TRAPPING MECHANISM:** *Structural*

**LITHOLOGY:** *Brecciated arkosic marl grading in parts to dolomitic sandstone and siltstone*

**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** *755.0 m BKB*

**POROSITY:** *6.9 to 22.9%*

**PERMEABILITY:** *0.14 to 439.0 md*

**TEMPERATURE GRADIENT:** *Not determined*

**PRESSURE GRADIENT:** *Not determined*
ACCUMULATION: *Tempe Vale*

COMPILATION DATE: 4/06/86

OPERATOR: *Pancontinental Petroleum Ltd*

TYPE: *Oil show*

COMMERCIAL STATUS: *Uneconomic and undeveloped*

LOCATION: *Approximately 260 km southwest of Alice Springs, and 15 km southwest of the Mereenie accumulation, NT*

STATE: *Northern Territory*

PETROLEUM TITLE(S): *OP175*

DISCOVERY WELL: *Tempe Vale No.1 (Marsden & others, 1983)*
- latitude: 24º00'00" longitude: 131º18'00"
- discovery: oil
- date total depth reached: April 1983

NUMBER OF WELLS DRILLED: 1 exploration Nil development

STRUCTURE: *Anticline: northwest-southeast trending, fault-dissected, seismically defined*
- areal closure: 15.5 sq.km
- vertical closure: *Not determined*

SUBDIVISION OF PETROLEUM ACCUMULATION:
- 3 traps
- 4 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas Nil gas/condensate
- Nil gas/oil Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: *Nil*

PRODUCTION INFRASTRUCTURE: *Nil*
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 1: Stairway Sandstone

DISCOVERY WELL: Tempe Vale No.1

CONTENTS: Oil

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: MSSst
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Stairway Sandstone
AGE: Middle Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marine; silty sandstone with lenses of dolomite and minor rudaceous phosphate debris
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 290.7 m BKB
POROSITY: Poor, generally less than 4%
PERMEABILITY: Not determined
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 2: Pacoota Sandstone

DISCOVERY WELL: Tempe Vale No.1

CONTENTS: Oil

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: P1
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; massive sandstone interbedded with minor shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 460.85 m BKB
POROSITY: Moderate, 9.8 to 17.0%
PERMEABILITY: Moderate, 9.8 to 33.0 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined

PETROLEUM-BEARING UNIT 2: P3
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Pacoota Sandstone
AGE: Early Ordovician
TRAPPING MECHANISM: Structural
LITHOLOGY: Sandstone: marginal marine; glauconitic; interbedded with siltstone and pyritic shale
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 546.0 m BKB
POROSITY: Generally low, maximum 10%
PERMEABILITY: Moderate, up to 92 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
PETROLEUM ACCUMULATIONS SUMMARY SHEET

TRAP

TRAP 3: Goyder Formation

DISCOVERY WELL: Tempe Vale No.1

CONTENTS: Oil

PETROLEUM-BEARING UNIT(S)

PETROLEUM-BEARING UNIT 1: Goyder Formation
PETROLEUM CONTENTS: Oil show
PRODUCTION STATUS: Nil
FORMATION: Goyder Formation
AGE: Late Cambrian
TRAPPING MECHANISM: Structural
LITHOLOGY: Dolomite: marine; interbedded with calcareous sandstone and siltstone
DEPTH TO TOP OF PETROLEUM-BEARING UNIT: 789.0 m BKB
POROSITY: Moderate, up to 13%
PERMEABILITY: Moderate, up to 33 md
TEMPERATURE GRADIENT: Not determined
PRESSURE GRADIENT: Not determined
ACCUMULATION: *Finke*

COMPILATION DATE: 4/06/86

OPERATOR: *Pancontinental Petroleum Ltd*

TYPE: *Gas show*

COMMERCIAL STATUS: *Uneconomic and undeveloped*

LOCATION: *Approximately 110 km southwest of Alice Springs, NT*

STATE: *Northern Territory*

PETROLEUM TITLE(S): *OP175*

DISCOVERY WELL: *Finke No.1 (Gorter, 1983)*
- latitude: 24º10'00"
- longitude: 132º55'05"
- discovery: gas
- date total depth reached: *May 1983*

NUMBER OF WELLS DRILLED: 1 exploration
Nil development

STRUCTURE: *Anticline poorly defined by surface mapping*
- areal closure: *Not determined*
- vertical closure: *Not determined*

SUBDIVISION OF PETROLEUM ACCUMULATION:
1 traps
1 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas Nil gas/condensate
- Nil gas/oil Nil oil

DRIVE MECHANISM: *

PRODUCTION COMMENCED: *Nil*

PRODUCTION INFRASTRUCTURE: *Nil*
TRAP 1: *Bitter Springs Formation*

**DISCOVERY WELL:** *Finke No.1*

**CONTENTS:** *Gas*

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**PETROLEUM-BEARING UNIT 1:** *Bitter Springs Formation*

**PETROLEUM CONTENTS:** *Gas show*

**PRODUCTION STATUS:** *Nil*

**FORMATION:** *Bitter Springs Formation*

**AGE:** *Late Proterozoic*

**TRAPPING MECHANISM:** *Structural*

**LITHOLOGY:** *Dolomite: marine; interbedded with calcareous siltstone and shale*

**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** *253.0 m BKB*

**POROSITY:** *Poor, generally less than 5%*

**PERMEABILITY:** *Poor, generally less than 6 md*

**TEMPERATURE GRADIENT:** *Not determined*

**PRESSURE GRADIENT:** *Not determined*
ACCUMULATION: Tent Hill

COMPILATION DATE: 4/06/86

OPERATOR: Pancontinental Petroleum Ltd

TYPE: Gas show

COMMERCIAL STATUS: Uneconomic and undeveloped

LOCATION: Approximately 195 km west of Alice Springs, and 15 km southeast of West Walker gas accumulation, NT

STATE: Northern Territory

PETROLEUM TITLE(S): OP175

DISCOVERY WELL: Tent Hill No.1 (Marsden & Schroder, 1984)
- latitude: 24º13'45" longitude: 132º02'30"
- discovery: gas
- date total depth reached: August 1983

NUMBER OF WELLS DRILLED: 1 exploration
Nil development

STRUCTURE: Anticline: east-west-trending, fault-bounded
- areal closure: 16.6 sq.km
- vertical closure: 100.0 m

SUBDIVISION OF PETROLEUM ACCUMULATION:
1 traps
1 petroleum-bearing units

NUMBER AND TYPE OF PRODUCING ZONES:
- Nil gas
Nil gas/condensate
- Nil gas/oil
Nil oil

DRIVE MECHANISM: ?

PRODUCTION COMMENCED: Nil

PRODUCTION INFRASTRUCTURE: Nil
# PETROLEUM ACCUMULATIONS SUMMARY SHEET

## TRAP

**TRAP 1:** Horn Valley Siltstone  
**DISCOVERY WELL:** Tent Hill No.1  
**CONTENTS:** Gas

## PETROLEUM-BEARING UNIT(S)

**PETROLEUM-BEARING UNIT 1:** HVSlst  
**PETROLEUM CONTENTS:** Gas show  
**PRODUCTION STATUS:** Nil  
**FORMATION:** Horn Valley Siltstone  
**AGE:** Early Ordovician  
**TRAPPING MECHANISM:** Structural  
**LITHOLOGY:** Siltstone: marine; interbedded with calcareous and carbonaceous shale  
**DEPTH TO TOP OF PETROLEUM-BEARING UNIT:** 1091.83 m BKB  
**POROSITY:** Poor, 3.2 to 6.4%  
**PERMEABILITY:** Not determined  
**TEMPERATURE GRADIENT:** Not determined  
**PRESSURE GRADIENT:** Not determined
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REFERENCES

All well completion reports referred to in this report are available from the Department of Mines and Energy, Northern Territory.


BMR 1972-1985 - Petroleum reserves. The Petroleum Newsletter 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92 & 96.


OILMIN, 1982 - East Mereenie No. 6 well completion report. Oilmin NL (unpublished)


**GLOSSARY**

**Accumulation:** a general term representing all petroleum finds irrespective of their commercial potential. An accumulation may comprise a single or multiple petroleum traps all grouped on, or related to, the same individual geological structure and/or stratigraphic position.

**Condensate:** a liquid mixture consisting of pentanes and heavier hydrocarbons that are recoverable from a gas well through a surface-separating facility.

**Crude oil:** a mixture of hydrocarbons that existed in the liquid phase in underground rock formations, and remains liquid at atmospheric pressure after passing through a surface-separating facility.

**Economic accumulation:** a petroleum accumulation which has been declared commercial by the operator or by the designated authority (the State departments of mines).

**Liquid petroleum gas (LPG):** a liquid mixture consisting of all the propane and butane that are recoverable from a gas well through a surface-separating facility.

**Natural gas:** a mixture of hydrocarbons and non-hydrocarbons which exist as a gas in underground rock formations.

**Natural-gas liquids:** a liquid mixture of LPG and condensate.

**Petroleum:** a gaseous and/or liquid mixture of a great many hydrocarbons and hydrocarbon compounds occurring naturally in rocks.

**Petroleum-bearing unit:** an interval, containing petroleum, that can be distinguished on one or more characters (e.g., lithology, stratigraphic zone, etc.).

**Sales gas:** a mixture of methane and ethane and up to 3 per cent of carbon dioxide.

**Trap:** any geologic condition (structural or stratigraphic, or both) which prevents the vertical or lateral movements of gaseous or liquid petroleum.

**Uneconomic accumulation:** a petroleum accumulation (generally a show only) that is deemed by the operator or by the designated authority to be volumetrically insignificant and most probably non-recoverable.