Areas ER97-A, B and C, located in the Eromanga Basin of South Australia, are available for application for Petroleum Exploration Licences (Figs. 1 and 2). The approximate area of each block and seismic coverage are as follows:

<table>
<thead>
<tr>
<th>Block</th>
<th>Area (km²)</th>
<th>Area (million acres)</th>
<th>Seismic (line km)</th>
<th>Seismic (line miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER97-A</td>
<td>7506</td>
<td>1.85</td>
<td>1556</td>
<td>967</td>
</tr>
<tr>
<td>ER97-B</td>
<td>5752</td>
<td>1.42</td>
<td>1974</td>
<td>1227</td>
</tr>
<tr>
<td>ER97-C</td>
<td>7098</td>
<td>1.75</td>
<td>659</td>
<td>409</td>
</tr>
</tbody>
</table>

The blocks on offer overlie prospective sediments of four superimposed intracratonic basins separated by unconformities – the Cambro-Ordovician Warburton Basin, the Permo-Carboniferous Pedirka Basin, the Triassic Simpson Basin, and the Jurassic-Cretaceous Eromanga Basin (Fig. 3). The Eromanga Basin is in turn, covered by the Cainozoic Lake Eyre Basin. The three blocks together occupy the entire South Australian portion of the Pedirka Basin east of the Dalhousie-McDills Ridge (Fig. 3).

The Pedirka and Simpson basins are separated from the Permo-Triassic Cooper Basin by the Birdsville Track Ridge, a complex structural high that formed during the Devonian to Carboniferous in response to the Alice Springs Orogeny. The Cooper Basin is Australia’s largest and most important onshore gas and oil province, and significant volumes of oil are being produced from the overlying Eromanga Basin sequence. Although the depositional and structural histories of the Cooper/Eromanga and Pedirka/Eromanga depocentres are similar, exploration in the Pedirka Basin region has been sparse.

Only seven petroleum exploration wells have been drilled within the 20356 km² (5.0 million acre) area occupied by the three offered blocks, and only three of these wells are considered valid structural tests. One of the three wells encountered drilling problems and did not evaluate the Permain (Pedirka Basin) sequence. Seismic coverage is limited with large areas within each of the three blocks not being covered by modern seismic. An approximately 2.5 kilometre spacing of 1980 to 1985 seismic data in a dip direction and 5 kilometre spacing in a strike direction across local areas, provides the most comprehensive seismic grid in the area. Oil accumulations that have been discovered in the Eromanga Basin are commonly in the order of about five million barrels in-place, and the existing seismic grid is far too coarse to locate reserves of this magnitude.

Fair to excellent quality sandstone reservoirs sealed by siltstone and shale units are present within the Pedirka, Simpson and Eromanga Basin sequences. Both oil and gas prone, organically rich source
rocks are present within the Triassic Peera Peera Formation and the Jurassic Poolowanna Formation. Mainly gas prone source coals and shales are present in the Permian Purni Formation.

Nine Prospects, 16 Strong Leads and 19 Weak Leads are identified within the three blocks and given the current paucity of seismic data in the region, it is certain that numerous additional structures will be found with future seismic acquisition. Most of the structures identified to date access large hydrocarbon drainage areas. There is also considerable stratigraphic trapping potential within the Release Area with the two Triassic formations, the upper Permian formation and the lowermost Jurassic formation pinching out on the western flank of the basin, and the eastern edge of the Pedirka Basin sequence being more or less coincident with the eastern boundaries of ER97-B and C.

Organic maturity levels have historically provided the main exploration concern in the Pedirka Basin region. Oil prone source rocks of the Purni, Peera Peera and Poolowanna formations will have achieved peak maturity over much of ER97-A and C and virtually all of ER97-B. In the western-most part of ER97-A, and southwestern-most part of ER97-C, source rocks will be marginally mature to immature. Poolowanna and Algebuckina reservoirs, however, are permeable and extensive, and long distance migration from the structurally deeper eastern area is expected. The Purni Formation contains a mixture of oil and gas prone source rocks. The relatively high temperatures that would have been required to generate significant volumes of gas would have been reached only in the deepest (western) parts of the Basin.

**KEY DATA**

<table>
<thead>
<tr>
<th>Depth to target zones:</th>
<th>1 000–3 000 m (3280–9842 ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness:</td>
<td>Up to 3 050 m or 10 000 ft</td>
</tr>
<tr>
<td>Hydrocarbon shows:</td>
<td>Oil and gas shows in the Poolowanna and Peera Peera formations.</td>
</tr>
<tr>
<td>First discovery:</td>
<td>1978 - Poolowanna 1, a non-commercial oil recovery, -located some 35 kms (22 mi) east of ER97- B and C.</td>
</tr>
<tr>
<td>Basin type:</td>
<td>Intracratonic.</td>
</tr>
<tr>
<td>Depositional setting:</td>
<td>Non-marine, fluvio-lacustrine.</td>
</tr>
<tr>
<td>Reservoirs:</td>
<td>Good-excellent quality braided and meandering fluvial sandstone reservoirs. Four main reservoir objectives: Permian Purni Formation, Triassic Peera Peera Formation and Jurassic Poolowanna and Algebuckina formations.</td>
</tr>
<tr>
<td>Regional structure:</td>
<td>Broad, four way dip closed anticlinal trends in regional sag basin. Potential for stratigraphic accumulations on basin’s western flank.</td>
</tr>
<tr>
<td>Seals:</td>
<td>Lacustrine and floodplain siltstone and shale, marine shale.</td>
</tr>
<tr>
<td>Source rocks:</td>
<td>Pedirka Basin – Purni Formation coal, shale and siltstone; Simpson Basin – Peera Peera Formation coal, shale and siltstone; Eromanga Basin – Poolowanna Formation coal, siltstone and shale.</td>
</tr>
<tr>
<td>Migration</td>
<td>Vertical migration from Permian, Triassic and Jurassic source rocks. Potential long distance lateral migration in permeable Algebuckina Sandstone.</td>
</tr>
</tbody>
</table>
APPLICATIONS FOR PETROLEUM EXPLORATION LICENCES

Applications may be made for any or all of the areas ER97-A to C. Applicants are encouraged to apply for all areas of interest. Licences are offered on the basis of the most competitive work program. In the event that more than one area is offered to an applicant for licence, there is no obligation for the applicant to accept any or all of the offers.

Enquiries and requests for Guidelines for Onshore Petroleum Exploration and applications for Petroleum Exploration Licences should be addressed to:

Mr R Laws
Director, Petroleum Division
Mines and Energy Resources South Australia
191 Greenhill Road
PARKSIDE SA 5063

PO Box 151
EASTWOOD SA 5063

Telephone: National (08) 8274 7680
International *618 8274 7680
Facsimile: National (08) 8373 3269
International *618 8373 3269

* Dial appropriate International Access Code

Application forms should be accompanied by a proposed five year work program, a map of the area applied for, a $2,000 application fee and details of the technical and financial resources of the applicant.

The closing date for applications is 15 October 1997 at 4.00 pm.
Fig 1. Locality plan of blocks ER97-A to C.

Fig 2. Leads and prospects map.
EXPLORATION HISTORY

Previous exploration

ER97-A to C (Figure 1), were formerly part of OELs 20 and 21 which in 1964 were incorporated into PELs 5 and 6. Each of the areas were initially held by Santos Ltd. The area was fully relinquished in 1988.

Exploration in OELs 20 and 21 commenced in 1958 when Delhi-Taylor Oil Corporation entered into a farmout agreement with Santos Ltd to explore the Santos held leases in South Australia and Queensland. Following aeromagnetic surveys in 1961, the French Petroleum Company (Australia) (FPC) entered into a farmout agreement in 1963 with Delhi and Santos to further explore the Pedirka sector of South Australia. Between 1963 and 1966, FPC conducted various seismic and gravity surveys and drilled four wells. During this same period, Beach Petroleum drilled two petroleum exploration wells in the Northern Territory part of the Pedirka region. By late 1966, without any encouragement from drilling, interest in the area waned.

The next stage of drilling followed the signing of a farmout agreement between Western Mining and the then existing interest holders, whereas Western Mining earned a 50% working interest in the ‘Pedirka Block’. The first well drilled under the agreement was Poolowanna 1 in 1977. The well encountered a thick prospective Triassic - Jurassic source and reservoir interval from which sub-commercial oil flows were obtained (the first oil discovered in the Eromanga Basin).

A coarse grid of seismic data was established over the Mokari and Macumba areas through the acquisition of the Christmas Creek seismic survey in 1982 and the Hogarth seismic survey in 1984. A few additional lines were acquired as part of the 1985 Morphett Survey. The interpretation of this seismic led to the drilling of four petroleum exploration wells, as well as a follow-up to the Poolowanna 1 well. In 1988 Santos and partners relinquished the area. No petroleum exploration has occurred in the area covered by the three blocks since that time.

Nine prospects, 16 strong leads and 19 weak leads are identified within the three blocks (Fig. 2, Appendix 2). A number of companies have taken up PELs east of ER97-B and C and drilling is scheduled for later this year (Fig. 1). Table 1 summarises the drilling activity that has taken place in the Pedirka Basin region.

A number of seismic surveys have been conducted in the region and many prospects and leads delineated (Fig. 2). The most recent seismic lines were acquired in 1987. Several of the surveys were conducted over very large areas that extended beyond the boundaries of ER97-A to C (Table 2).

The amount of seismic data that has been acquired in each of the three blocks, by decade, is shown in Table 3.

Dry hole analysis

Oil shows have been recorded in Walkandi 1, Kuncherinna 1, Poolowanna 2 and 3, and Miandana 1, all located in permit areas adjacent to ER97-A to C. No shows were encountered in the seven wells that have been drilled within the three blocks on offer, but only two of these wells are considered to have been drilled within closure or to have tested closures in optimum positions.

A detailed dryhole analysis of each petroleum exploration well in the region is included as Appendix 1.
<table>
<thead>
<tr>
<th>Well Name</th>
<th>Date Drilled</th>
<th>Operator</th>
<th>Total Depth Drilled</th>
<th>TD Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erabena 1</td>
<td>1981</td>
<td>Delhi</td>
<td>8480 (2585 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Glen Joyce 1</td>
<td>1985</td>
<td>Delhi</td>
<td>7510 (2289 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Killumi 1</td>
<td>1985</td>
<td>Delhi</td>
<td>7586 (2312 m)</td>
<td>Peera Peera Fm</td>
</tr>
<tr>
<td>Macumba 1</td>
<td>1977</td>
<td>Delhi</td>
<td>8586 (2617 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Miandana 1</td>
<td>1985</td>
<td>Delhi</td>
<td>8768 (2673 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Mokari 1</td>
<td>1966</td>
<td>FPC</td>
<td>7827 (2385 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Mount Crispe 1</td>
<td>1966</td>
<td>FPC</td>
<td>5647 (1721 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Oolarinna 1</td>
<td>1985</td>
<td>Delhi</td>
<td>8787 (2678 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Poolowanna 1</td>
<td>1977</td>
<td>Delhi</td>
<td>10086 (3074 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Poolowanna 2</td>
<td>1985</td>
<td>Delhi</td>
<td>9568 (2916 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Poolowanna 3</td>
<td>1989</td>
<td>Delhi</td>
<td>8831 (2692 m)</td>
<td>Peera Peera Fm</td>
</tr>
<tr>
<td>Purni 1</td>
<td>1964</td>
<td>FPC</td>
<td>6168 (1880 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Walkandi 1</td>
<td>1981</td>
<td>Delhi</td>
<td>10253 (3125 m)</td>
<td>Warburton Basin</td>
</tr>
<tr>
<td>Witcherie 1</td>
<td>1963</td>
<td>Delhi</td>
<td>4803 (1464 m)</td>
<td>Warburton Basin</td>
</tr>
</tbody>
</table>

Table 2: Relevant seismic surveys

<table>
<thead>
<tr>
<th>Survey Name</th>
<th>Date</th>
<th>Line km</th>
<th>Operator</th>
<th>Contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poolowanna</td>
<td>1965</td>
<td>1360</td>
<td>FPC</td>
<td>Compagnie Geophys</td>
</tr>
<tr>
<td>Beal Hill</td>
<td>1974</td>
<td>290</td>
<td>Delhi</td>
<td>United Geophysical</td>
</tr>
<tr>
<td>Lake Thomas</td>
<td>1974</td>
<td>437</td>
<td>Delhi</td>
<td>Seismograph Service</td>
</tr>
<tr>
<td>Pillan Hill vibroseis</td>
<td>1976</td>
<td>893</td>
<td>Delhi</td>
<td>Seismograph Service</td>
</tr>
<tr>
<td>Peera Peera vibroseis</td>
<td>1979</td>
<td>1570</td>
<td>Delhi</td>
<td>G.E.S.</td>
</tr>
<tr>
<td>Koomarinna</td>
<td>1980</td>
<td>1051</td>
<td>Delhi</td>
<td>G.E.S.</td>
</tr>
<tr>
<td>Christmas Creek</td>
<td>1982</td>
<td>1083</td>
<td>Delhi</td>
<td>G.E.S.</td>
</tr>
<tr>
<td>Hogarth</td>
<td>1984</td>
<td>1162</td>
<td>Delhi</td>
<td>Norpac</td>
</tr>
<tr>
<td>Morphett</td>
<td>1985</td>
<td>1014</td>
<td>Delhi</td>
<td>Norpac</td>
</tr>
<tr>
<td>Mitchell</td>
<td>1987</td>
<td>204</td>
<td>Santos</td>
<td>G.S.I.</td>
</tr>
</tbody>
</table>

Table 3: Seismic lines within blocks, by decade (line km)

<table>
<thead>
<tr>
<th>BLOCK</th>
<th>SEISMIC BY DECADE (Line Kilom and Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER97-A</td>
<td>783.7 km (487.0 mi)</td>
</tr>
<tr>
<td>ER97-B</td>
<td>454.8 km (282.6 mi)</td>
</tr>
<tr>
<td>ER97-C</td>
<td>174.3 km (108.3 mi)</td>
</tr>
</tbody>
</table>
Fig. 3 Locality map of blocks ER97A to C showing principal structural features.
The stratigraphy of northern South Australian basins is summarised in a recent publication produced by MESA entitled *The Petroleum Geology of South Australia. Volume 2: Eromanga Basin* (Alexander and Hibburt, 1996). Figure 4 summarises the stratigraphy of the area.

**Warburton and Amadeus Basin (Early Palaeozoic)**

During the Cambrian-Devonian, thick successions of marine and non-marine sediments were deposited in the Warburton, Amadeus and Georgina Basins (Gravestock, 1995). A more detailed discussion of Warburton and Amadeus Basin units in the Pedirka Basin region, is included in Alexander and Jensen-Schmidt (1995). The petroleum potential of this basin is poorly understood in this area as data is limited to seismic, a few cores and cuttings. The preserved top of Early Palaeozoic sediments corresponds to the ‘Z’ seismic horizon.

**Pedirka Basin (Permo-Carboniferous)**

Sedimentation recommenced towards the end of the Carboniferous period and extended into the Early Permian. The Pedirka Basin sequence comprises glacial and glacio-lacustrine sands and shales of the *Crown Point Formation*, overlain by interbedded sands, silts and coals of the *Purni Formation*, that were deposited in a meandering fluvial environment in which extensive backswamp and coal beds were prominent.

**Simpson Basin (Triassic)**

During the Triassic, the climate was warmer and widespread subaerial weathering and pedogenesis occurred. Two formations have been defined in the Simpson Basin (Moore, 1986). The *Walkandi Formation* is the oldest Triassic unit and consists of oxidised, pale-grey, grey-green, brick red, brown and maroon interbedded shale, siltstone, and minor sandstone (Moore, 1986). Desiccation cracks and pedogenic structures indicate a shallow ephemeral lacustrine and flood plain environment of deposition.

The *Walkandi Formation* is conformably overlain by the Late Triassic *Peera Peera Formation* in the Poolowanna Trough. The Peera Peera Formation consists of grey and black carbonaceous shale, coal and thin sandstone interbeds deposited in a high sinuosity fluvial environment (Moore, 1986). Deposition in the region was terminated at the end of the Triassic with mild but widespread compressional deformation, regional uplift and erosion. The Simpson Basin sequence onlaps the Pedirka Basin in a westwards direction (Fig. 5).

**Eromanga Basin (Jurassic-Cretaceous)**

The Eromanga Basin sequence comprises mainly sandy facies across ER97-A to C; - shaley units i.e. the Birkhead, Westbourne and Murta formations which are well developed in the central Eromanga Basin region to the east, do not occur in the Pedirka region. The lowermost unit of the Eromanga Basin is the *Poolowanna Formation* of Early to Middle Jurassic age (Alexander and Sansome, 1996). It consists of interbedded siltstone, sandstone and coal, deposited in meandering fluvial and overbank environments. The Poolowanna Formation intertongues with and is overlain by braided fluvial deposits of the Algebuckina Sandstone. In the southeastern corner of ER97-C, sediments of the *Birkhead Formation* may be present.

The *Algebuckina Sandstone* is a fine to coarse-grained, cross-bedded quartzose sandstone, deposited in a braided fluvial environment (Moore, 1986), with aeolian input and possible development of shallow sandy lakes (Wiltshire, 1989). It reaches a maximum thickness of 750 m (2460 ft) in the Poolowanna Trough depocentre (Moore, 1986).

The *Cadna-owie Formation* records the transition into marine conditions during the Early Cretaceous and conformably overlies the Murta Formation. It consists of interbedded sandstone, siltstone and claystone with minor limestone. The lower part of the Cadna-owie
**Fig 4. Geological summary of blocks ER97-A to C.**
Formation is non-marine (lacustrine), the upper part paralic (Moore and Pitt, 1985).

The contact between sandstones of the upper Cadna-owie Formation and overlying marine shales of the Bulldog Shale or Wollumbilla Formation approximates a prominent seismic reflector - the C horizon – which is mappable across the entire Eromanga Basin. Formations of the Early Cretaceous (Aptian to Albian) are of secondary interest to petroleum exploration in the area and are not discussed here. Readers are referred to Moore and Pitt (1985) and Krieg and Rogers (1995) for more detail. The marine succession is overlain by the non-marine Winton Formation (Rogers, 1995).

A period of erosion and deep weathering followed Winton deposition and non-marine sediments of the Cenozoic Lake Eyre Basin unconformably overlie the Eromanga Basin. Krieg et al. (1990) recognised three phases of deposition in the Lake Eyre Basin, interrupted by two phases of structural movement (Fig. 4).

STRUCTURE

Tectonic history

The structural grain of the region is a product of a series of deformations and epierogenic movements that have taken place since the Cambrian. The Late Cambrian Delamerian Orogeny comprised a series of major tectonic events which affected the Adelaide Geosyncline and the Palaeozoic mobile belt to the east. However, the Warburton Basin was not severely deformed by these events (Gravestock and Flint, 1995).

The structural grain of both the Pedirka and the Cooper regions (Fig. 6a and 6b) has been profoundly influenced by northwest-southeast oriented compression and uplift associated with the Devonian to Carboniferous Alice Springs Orogeny (360-330 Ma). Roberts et al. (1990) described overthrusts in Cambrian rocks beneath the Cooper Basin from seismic sections and drillholes. Overthrusts form northeast-southwest arcuate domal trends (e.g. the Gidgealpa-Merrimelia-Innaminka Ridge, Dalhousie-McDills Ridge and Birdsville Track Ridge) in the region.

Permian structuring in the Cooper Basin region is evidenced by a regional disconformity which separates the Late Carboniferous to Early Permian Gidgealpa Group and Late Permian to Middle Triassic Nappamerri Group. West of the Birdsville Track Ridge, the Poolowanna Trough was initiated by tilting and by uplift and erosion of the western Pedirka Basin during the Early to Late Permian (Hibburt and Gravestock, 1995). The Dalhousie-McDills Trend is a large scale structural high which originated during the Permian. Sediment was shed into the Poolowanna Trough where 300 m of Triassic are preserved (Moore, 1986). The Triassic-Jurassic depocentre lies considerably to the east of the Permian depocentre, and Triassic and Jurassic sediments progressively onlap Permian sediments in a westwards direction across ER97-A, B and C. Regional uplift, tilting and erosion terminated deposition in the Pedirka/Simpson and Cooper basins at the end of the Early to Middle Triassic.

Deposition in the Eromanga Basin was initially controlled by the topography of the Triassic unconformity surface, especially for the Poolowanna Formation and lower Hutton Sandstone. No major depositional breaks occur in the Eromanga Basin, indicating a period of tectonic quiescence.

During the Cainozoic, the continental compressive stress field evolved from east-west to north-south as Australia drifted in a northeasterly direction from Antarctica towards collision with the Southeast Asian and Pacific Plates (Smith, 1990). Events on the margins of the Australian Plate strongly influenced Cainozoic deposition and structuring in the interior of the continent. Continent-wide Miocene structural movements formed traps and influenced hydrocarbon migration in a number of Australian basins including the Gippsland and Bass Basins (Baillie and Jacobsen, 1995).

The significance of Cainozoic structuring in the Eromanga Basin region has been recognised by Moore and Pitt (1984), Wopfner (1985) and
Fig 5. Simplified structural cross section, Pedirka Basin region.
Sprigg (1986) amongst others. During the Early Oligocene, major surface anticlines formed (Wopfner et al., 1974; Moore and Pitt, 1984). A second phase of compression occurred during the Miocene, reactivating pre-existing faults and producing localised uplift and erosion with folding and faulting (Santos, 1988). Uplifts of the order of 350m to 500m occurred near the margin of the basin (Foster et al., 1994; Krieg, 1986; Alexander and Jensen-Schmidt, 1995). Cainozoic uplifts strongly influenced groundwater flow in aquifers within the Great Artesian Basin and may have influenced hydrocarbon migration and re-migration in the region. Tingate and Duddy (1996) noted widespread evidence for a recent (< 5 Ma) increase in geothermal gradient in the Eromanga Basin linked to the flow of hot groundwater. This recent heating has not had sufficient time to increase the thermal maturity of Eromanga Basin source rocks over structural highs, but has probably caused recent petroleum generation in troughs within the Cooper Basin and within the Poolowanna Trough (Tingate and Duddy, 1996).

Structural elements

The Permain Pedirka Basin’ proper has been divided into two sub-basins lying east and west of the Dalhousie-McDills Ridge. The western sub-basin is known as the Eringa Trough, while the eastern sub-basin is commonly referred to as the Poolowanna Trough (Figs. 3 and 5). The ‘Poolowanna Trough’ is bounded on its eastern flank by the Birdsville Track Ridge which separates the Trough from the Cooper Basin. The two ridges were initiated as overthrusts during the Devonian to Carboniferous Alice Springs Orogeny. They represent major pre-Permian tectonic boundaries, but through erosion and sediment fill, had become relatively subtle features by Permian time. ER97-A to C occupy the relatively undeformed, western flank of the ‘Poolowanna Trough’ (Figs 6 and 6b).

The shape and internal geometry of the Pedirka Basin have been strongly influenced by older, Proterozoic and Palaeozoic features. Most structures in the region are related to episodes of basement fault reactivation. Major anticlines are orientated northerly to northeasterly. The Erabena Anticline is the largest anticlinal feature within the area bounded by the three blocks, but seismic indicates the possibility of other anticlinal features of similar magnitude. Most of the known anticlines appear to be faulted at basement and Permian horizons, but unfaulted at Cadna-owie level.

The Pertaka-Peralla anticlinal trend has developed along a prominent fault trend that parallels the Dalhousie-McDills Ridge, west of the Mokari 1 well.

Traps

Trapping mechanisms are dominantly provided by anticlines with four-way dip closure over pre-existing, ‘basement’ highs. Eromanga Basin reservoirs appear to be rarely faulted, but Permian and Triassic reservoir objectives commonly rely on faults to establish full closure. Onlap and pinchout traps against Warburton Basin highs are expected along the eastern flank of the Dalhousie-McDills Ridge. Eromanga Basin structures in South Australia and Queensland are typically not filled with oil to spill; – net oil columns are relatively thin compared to the area under closure. This is an important concept given that exploration in the area , and in particular seismic acquisition, has focused on large structures.

Some 44 prospects and leads were mapped from seismic by Delhi, within the area enclosed by ER97-A, B and C (Fig. 2 and Table 4). Most of these have been verified through independent, regional mapping of four seismic horizons by MESA.
Fig 6a. Depth structure map of base of Eromanga Basin.

Fig 6b. Depth structure map of top Purni Formation.
HYDROCARBON POTENTIAL

Source rocks

Potential source rocks occur within the Permian Purni Formation, the Triassic Peera Peera Formation and the Jurassic Poolowanna Formation (Michaelsen and McKirdy, 1996a and 1996b).

Purni Formation
Roughly equal proportions of vitrinite and exinite macerals suggest the Purni Formation is capable of generating both gas and oil. The formation exhibits good organic carbon content and adequate source thickness. Coals provide the main source rock intervals.

Peera Peera Formation
The Peera Peera Formation is rich in organic matter (TOC up to 5%) and should be oil mature in the Poolowanna Trough (Cook, 1986). It is, however, considered to be predominantly gas-prone in places, with modest oil generative potential.

Poolowanna Formation
The Poolowanna Formation has good to excellent source richness and has good oil generative potential. The formation has reached a peak maturity of 0.9 % R_o in the Poolowanna Trough. Elsewhere in the region, the Poolowanna Formation is marginally mature (Michaelsen and McKirdy, 1996a, 1996b).

Reservoirs and seals

Meandering fluvial channel sandstones (Purni and Poolowanna Formations) and stacked braided fluvial sandstones (Algebuckina Sandstone) offer excellent reservoir potential in the area (Alexander, 1996). Primary porosity reduction has occurred in these reservoirs, but secondary porosity has been created.

Purni Formation
A high energy channel sequence which presents a maximum measured sand thickness of 45 m (147 ft) in Mokari 1 extends well into the basin. Porosity increases towards the west and around the edges of the Pedirka Basin where it reaches 11 % in Glen Joyce 1 and Mokari 1 and 12 % in Macumba 1, but is only 6% at Oolarinna 1. Flood plain and lacustrine sediments provide adequate seals for Purni Formation reservoirs.

Peera Peera Formation
A broad, high energy channel system with thick aggrading sandstone varying from 23 m (75 ft) of sandstone thickness in Killumi 1 to 36 m (120 ft) in Kuncherinna is present in the middle of the unit. Porosity values range from 4 % in Walkandi 1 to 13 % in Oolarinna 1. The diagenetic alterations in this unit have been extensive, resulting in very poor reservoir quality over much of its distribution.

The Peera Peera Formation is for the most part poorly permeable, providing a good regional seal. In places, however intervals of good reservoir quality have been encountered.

Poolowanna Formation

the Poolowanna Formation contains the deepest reservoir units in the Eromanga Basin sequence, occurring at depths up to 2226 m in the Poolowanna Trough. Deeper samples show the lowest average porosities due to the formation of quartz overgrowths. Porosity averages 13 %, permeability ranges from 0.001 md to 3674 md.

Siltstones within the Poolowanna Formation are intraformational seals, but the occurrence of stacked oil pools in fields in the Cooper Basin region indicate they are not wholly effective. Seal effectiveness is reduced by their limited areal extent, thickness and siltstone mineralogy.

Algebuckina Sandstone

The Algebuckina Sandstone exhibits good-excellent porosity and permeability and forms a major artesian aquifer. Few laboratory measurements are available, but log-derived porosities average more than 20 % (e.g. New, 1989). Reservoir properties can also be gauged from aquifer flow rates which are of the
order of 500-1000 kL/day (Krieg, 1985). Thick marine shales of the Wallumbilla Formation and Bulldog Shale form a regional seal to the Algebuckina Sandstone. Siltstones at the base of the Cadna-owie Formation may also act as seals.

*Cadna-owie Formation and Wyandra Sandstone Member*

In South Australia, the formation is generally poorly permeable and not considered as a potential reservoir unit. Drillstem tests in the Cadna-owie Formation have recovered only small amounts of oil, and oil and gas-cut mud. Thick marine shales of the Wallumbilla Formation and Bulldog Shale form a regional seal to the Cadna-owie Formation and Wyandra Sandstone Member.

*Migration*

Prior to the discovery of Eromanga Basin oil in the late 1970s at Poolowanna 1 and at Strzelecki oil and gas field, it was widely believed that any Jurassic oil and gas had been flushed out by movement of artesian water (the Eromanga Basin encloses the multi-aquifer systems of the Great Artesian Basin). The hydrodynamic gradient in the region flows from the northeast to the southwest (Habermehl, 1980; Fig. 12). Bowering (1982) postulated that the hydraulic gradient during the Plio-Pleistocene may have been stronger and partially flushed some hydrocarbons from accumulations, however he concluded that the modern hydraulic gradient is insufficient to flush hydrocarbons.

Exploration activity has focussed on the Eromanga Basin where it overlies the Cooper Basin, as the origin of oil in Eromanga reservoirs has been regarded as the result of vertical migration from Permian source rocks (e.g. Heath *et al.*, 1989). This conventional wisdom is challenged by the work of Michaelsen and McKirdy (1989, 1996a and b) who conclude that migration from Permian source rocks into Eromanga Basin reservoirs has not appreciably occurred in the southern Cooper Basin region and that many of the oils reservoired in the Eromanga Basin were generated in situ. Long-distance lateral migration towards the basin margin has also been proposed (McKirdy and Willink, 1988).

The main phases of hydrocarbon generation occurred between the Late Triassic to Late Cretaceous with peak expulsion occurring during the Cretaceous. Structures which formed during the Cainozoic are less favourable prospects.

**ACCESS TO LAND**

The main forms of land use within the Eromanga Basin are pastoralism, conservation, tourism, petroleum exploration, production and transport of oil, gas and gas liquids. The major primary industry is cattle. Access to such land requires giving notice to the landowner. The most common issues are repair of damage to fences, gates and tracks and avoiding excessive disturbance of cattle. There are standard techniques for managing such issues and the landholders are generally accepting of exploration and associated activities.

*National Parks and Reserves*

A number of National Parks and Reserves have been created to conserve the best examples of vegetation and landforms in the region (Fig. 1). The parks are of three types of reserve classifications: - Conservation Parks, National Parks and Regional Reserves. Access for petroleum exploration and production is allowed in all parks other than the Simpson Desert and Elliott Price Conservation Parks. In all other respects exploration and production is carried out under the provisions of the Petroleum Act and Regulations.

*Witjira National Park*

Witjira National Park covers part of Block ER97-A. It was established in 1985 to protect the unique Dalhousie Mound Springs, created by upwelling of artesian water. Exploration is permitted in the park subject to the conditions set at in the Park Management Plan (NPWS, 1993), outside of the immediate vicinity of the mound springs. These conditions are not onerous, referring mainly to notification procedures and time frames.
Simpson Desert Regional Reserve

ER97-A to C lie within the Simpson Desert Regional Reserve (Fig. 1). The Regional Reserve provides for the conservation of wildlife and the natural or historic features of the land while, at the same time, permitting use of its natural resources. Petroleum and mineral exploration activity may take place provided that they are subject to controls consistent with the management plan for the reserve (as occurs in the Cooper Basin where much of the production is sourced from the Innamincka Regional Reserve). Mineral and petroleum exploration licence applications for areas within Regional Reserves are processed by MESA but are referred to the MENR (Minister for Environment and Natural Resources) for comment. Exploration work programmes are discussed with DENR (Department of Environment and Natural Resources) as a matter of policy. In the case of production tenements, approval must be given by the MENR. Failing Ministerial agreement, the issue is referred to the Governor for decision.

Simpson Desert Conservation Park

Access for exploration and production is not permitted in the Simpson Desert Conservation Park.

Aboriginal heritage

The Aboriginal Heritage Act, 1988 enables the Minister for Aboriginal Affairs (MAA) to delegate responsibility to Aboriginal people and communities for their cultural and archaeological sites. The legislation encourages companies to liaise with Aboriginals to assist with the protection of Aboriginal heritage in South Australia. Companies should contact the Department of Mines and Energy if they require assistance with identifying the appropriate Aboriginal persons and communities. Sites discovered during operations are to be notified to the MAA (this is done through the Manager of the Aboriginal Heritage Branch, Department of State Aboriginal Affairs). Penalties for damage to sites are $50,000 in the case of a company, and $10,000 or 6 months imprisonment in any other case. The attention of a licensee(s) is drawn to the provisions of this legislation via a notice accompanying the offer of a new PEL.

Commonwealth Native Title Act 1993

The Native Title Act 1993 was passed by Federal Parliament on 22 December 1993. The lengthy and complex Act provides statutory recognition and protection for the concept of native title as recognised by the High Court in the case of Mabo v Queensland in 1992. Native title means rights held by indigenous inhabitants of Australia at European settlement - it differs from conventional titles. The nature of native title rights vary from group to group according to laws and customs, however there must be a sufficient and relevant connection to the land in question, continuous since 1836 in South Australia. Native title may include the right to camp or travel across land, rights to hunt, fish, gather food and take materials (timber, bark, ochre etc.) from the land. Applications by Aboriginal claimants are recorded in the Register of Native Title Claims. The National Native Title Tribunal (MNNT) makes determinations on applications under the Act. A National Native Title Register comprising a record of all approved determinations made by the NNTT, Federal Court, High Court, other Courts or Tribunals and recognised State/Territory arbitral bodies.

The Premier of South Australia declared in April 1994 that SA would enact State legislation to ensure that State laws were consistent with the Commonwealth's Racial Discrimination Act and as far as appropriate, the Native Title Act, while retaining the option to challenge the Native Title Act in whole or in part to make it more workable and less complex. Late in 1994, a package of 4 Native Title Bills was introduced into the House of Assembly and were all passed:

- The Native Title (South Australia) Bill,
- The Environment, Resources and Development Court (Native Title) Amendment Bill,
- The Mining (Native Title) Amendment Bill,
• The Land Acquisition (Native Title) Amendment Bill.

Following passage of the Commonwealth Native Title Act up until the High Court Wik decision, petroleum exploration and production licences continue to be issued over South Australian land over which Native Title Rights have been extinguished on the advice of the Crown Solicitor (leasehold and freehold land which comprises the vast majority of the State). In 1995 a 'safety net' clause was introduced into the Petroleum Act which gives a licensee the right to seek an agreement with the Minister to a first right to any licence which may be terminated due to no fault of the licensee.

As a result of the Wik decision in December 1996, it has been confirmed that Native Title has not necessarily been extinguished by grant of a Pastoral Lease (virtually all of the areas on offer were a Pastoral Lease at some stage). As a consequence the right to negotiate provisions of the Native Title Act need to be followed before tenements are issued. The proposed ten point plan of the Commonwealth Government includes a proposal which should eliminate the need for the right to negotiate to be initiated for exploration tenements. Legislation to give effect to the ten point plan may be in place late in 1997.
REFERENCES


**OTHER RELEVANT REPORTS**


Giuliano, M. F., 1988. The Geology and Hydrocarbon Potential of the Pedirka Basin. Thesis submitted as partial fulfilment for the Bachelor of Science Honours Degree in
Petroleum Geology and Geophysics at the University of Adelaide South Australia (unpublished).


SELECTED MAPS

Vitrinite Reflectance (Rv max %) at the top of the Lower Purni and Stuart Ranges Formation - Pedirka Sector), Prepared by Delhi Petroleum, 1985. Scale 1:500 000 (MESA Envelope 4891, - 34.

Vitrinite Reflectance (Rv max %) at the base of the Poolowanna Formation - Pedirka Sector), prepared by Delhi Petroleum, 1985. Scale 1: 500 000 (MESA Envelope 4891, - 32.

Vitrinite Reflectance (Rv max %) at the base of the Permian, Triassic or Jurassic (Z Horizon)- Pedirka Sector, Prepared by Delhi Petroleum, 1985. Scale 1: 500 000 (MESA Envelope 4891, - 35.

Vitrinite Reflectance (Ro max) Pedirka Block. Purni Formation Unit IV, Upper Peera Peera Unit, Poolowanna Formation Unit III, prepared by Delhi Petroleum 1986. MESA Envelope 4891, - 87, 89, and 91


Porosity Pedirka Block, Lower Poolowanna Member Unit I and Unit II, prepared by Delhi 1986. MESA Envelope 4891 - 97 and 98

Palaeogeography Pedirka Block Lower Poolowanna Member Unit I Upper Peera Peera Formation and Lower Peera Peera Formation, prepared by Delhi Petroleum, 1986, Scale 1: 500 000. MESA Envelope 4891 - 64, 69 and 72

Hydrocarbon Prospectivity Pedirka Block, Middle Peera Peera Formation Unit, Poolowanna Formation Lower Member and Poolowanna Formation Upper Member, prepared by Delhi Petroleum, 1986. Scale 1: 500 000. MESA Envelope 4891 - 103, 104 and 105.

APPENDIX 1
Dry hole analysis

Well Name ERABENA 1
Operator Delhi Petroleum

Location:
Latitude 26° 01’ 15.040’’ S
Longitude 137° 13’ 39.990’’ E
Easting 722 946.77T
Northing 7 120 095.72
Seismic SP/Line 189/80-WGN

Date Drilling Commenced 19 November 1981
Rig Released 18 December 1981

Elevations:
KB 239.4 ft 72.9 m
Ground 221.6 ft 67.5 m

Total Depth Drilled 8480 ft 2584.7 m
In Ordovician shale

Hydrocarbon Shows
Gas values low throughout drilled interval. Up to 10 % dull to moderately bright yellow fluorescence with a slow crush cut was encountered in the Peera Peera Formation. Log interpretation indicates potential reservoirs are water saturated.

Test Results
No drill stem tests were conducted

Post Drilling Analysis
The Erabena structure is a large (=15 km x 4.5 km), NNW-SSE trending anticlinal dome that is delineated by an approximately 2 km grid of seismic. Erabena 1 was drilled in a near crestal position on the northern and larger of two mapped culminations, and is considered a valid structural test. Although there appears to have been minor structural growth of the Erabena feature during the Triassic and ?Early Jurassic, the main phase of structural development did not occur until the mid to late Tertiary. Maturation modelling indicates peak hydrocarbon generation conditions would have been reached during the Late Cretaceous to Early Triassic. The lack of hydrocarbons in the Erabena structure at Erabena 1 may in part be due to there having been no significant structural closure prior to the main phase of hydrocarbon migration. Further, it is probable that the Erabena structure is too large an exploration target for the volumes of hydrocarbons that may have been generated within the structure’s drainage area. Smaller closures on the flank of the Erabena feature should provide better drilling targets.

Reservoir quality in the Algebuckina Sandstone is good with porosity in the order of 10 to 20 %. Porosity in the Poolowanna Formation ranges from 5 to 15 %, but permeability (from core analysis) appears to be low. Log interpretation indicates porosity development in the Peera Peera Formation is poor. Source rocks are considered as being marginally mature to mature (base Poolowanna Formation Ro =0.76+).
<table>
<thead>
<tr>
<th>Well Name</th>
<th>GLEN JOYCE 1</th>
<th>Operator</th>
<th>Delhi Petroleum</th>
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</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Latitude 26° 18’ 16.89” S</td>
<td>Longitude 136° 31’ 10.30” E</td>
<td>Easting 651 687.786</td>
</tr>
<tr>
<td></td>
<td>Seismic SP/Line 262/82-WKS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date Drilling Commenced</td>
<td>1 August 1985</td>
<td>Rig Released</td>
<td>16 August 1985</td>
</tr>
<tr>
<td>Elevations:</td>
<td>KB 249 ft 75.9 m</td>
<td>Ground 231.3 ft 70.5 m</td>
<td></td>
</tr>
<tr>
<td>Total Depth Drilled</td>
<td>7510 ft 2289 m</td>
<td>In Early Cambrian shale</td>
<td></td>
</tr>
</tbody>
</table>

**Hydrocarbon Shows**
No hydrocarbon fluorescence was observed during the drilling of Glen Joyce 1. Small gas peaks were associated with coal seams. The peaks were of small magnitude when compared to peaks achieved while drilling through coals of similar thickness in the Cooper Basin. Log interpretation indicates all formations to be water saturated.

**Test Results**
No drill stem tests were conducted

**Post Drilling Analysis**
Glen Joyce 1 was drilled in a crestal position on an unfaulted, closed, low relief anticlinal feature and is considered to be a valid structural test. The well location is towards the western limit of shaley Poolowanna facies and to the west of the limit of Triassic sedimentation. Glen Joyce 1 penetrated a thick Permian section as prognosis. The prominent suite of coals present in the Purni Formation at Purni 1 and Mokari 1 was present in Glen Joyce 1.

The Glen Joyce anticline exhibits an early, but subtle structural presence. Reactivation produced only gentle thinning of the Eromanga section above the Poolowanna Formation and hence the structure is not as clearly defined as other structures in the basin that have experienced more horst block movement. It appears that Vitrinite Reflectance measurements have not been undertaken at Glen Joyce 1, but data obtained from other wells in the basin suggest Lower Jurassic and Triassic rocks at Glen Joyce would not have not reached peak hydrocarbon conditions.

The Poolowanna Formation was encountered 197 ft low to prediction; the Purni Formation was encountered 189 ft low to prediction.
Well Name: KILLUMI 1  
Operator: Delhi Petroleum

Location:
Latitude 26° 31’ 22.85’’ S  
Longitude 136° 45’ 06.380’’ E  
Easting 674 546.79  
Northing 7 065 191.63  
Seismic SP/Line 203/82-WLB

Date Drilling Commenced: 25 June 1985  
Rig Released: 25 July 1985

Elevations:
KB 185.1 ft 56.4 m  
Ground 165.1 ft 50.3 m

Total Depth Drilled: 7586 ft 2312.2 m  
In Peera Peera Formation

Hydrocarbon Shows
Severe lost circulation was experienced while drilling in basal sands of the Algebuckina Sandstone, and shows would have been obscured by the lack of returns to the surface. The only reported hydrocarbon show was in a four foot Poolowanna Formation sand (7050 -7054’). The fluorescence was described as trace, patchy, moderately bright yellow to pale yellow orange with a slow streaming cut and thin film residue. No significant gas was associated with the fluorescence. Low water saturation zones were calculated from log analysis over the interval 7015 - 7035 ft in the top of the Poolowanna Formation siltstones. Minor anomalous zones were detected in the Peera Peera Formation, but no fluorescence was recorded.

Test Results
No drill stem tests were conducted

Post Drilling Analysis
Killumi 1 is located in a near crestal position on an elongate, north south trending anticlinal dome that exhibits considerable fault independent closure. Severe loss of circulation was experienced whilst drilling in basal sands of the Algebuckina Sandstone. Numerous attempts to control this problem resulted in only partial success and drilling was terminated prematurely. The Killumi structure is not ideally situated to receive migrating hydrocarbons. Leads to the north are better positioned to be charged with hydrocarbons that may have been generated from the large, mature (Ro ≥ 8.0) hydrocarbon drainage area to the northwest.

The Permian interval was not tested and remains prospective due to the abundant coals in the basin and the depth of burial. Log interpretation indicates good porosity development in the Peera Peera Formation (10%+) and Poolowanna Formation (12%+), but all of the potential reservoir sands that were penetrated at Killumi 1 are interpreted to be water saturated.

The Poolowanna Formation was intersected 494 ft low to prognosis; the Peera Peera Formation was encountered 358 ft low to prognosis.
Well Name: KUNCHERINNA 1  Operator: Delhi Petroleum

Location:  
Latitude: 26° 42’ 39.47”S  
Longitude: 138° 15’ 59.96”E  
Easting: 228 057.93  
Northing: 7 042 650.17  
Seismic SP/Line: 288/80-WFJ

Date Drilling Commenced: 30 December 1981  
Rig Released: 2 February 1982

Elevations:  
KB: 69 ft 21.0 m  
Ground: 51 ft 15.5 m

Total Depth Drilled: 9404 ft 2866.3 m  
In Ordovician shale and sandstone

Hydrocarbon Shows
An interval of 15 - 20 % bright yellow fluorescence yielding an instant crush cut in the upper Poolowanna Formation was tested, resulting in the recovery of 90 ft of rat hole mud with a trace of oil. Negligible gas readings were noted in the sands. Log analysis indicates the sands to have poor porosity and high water saturation. Poor fluorescence with a minor increase in recorded gas was noted in the upper section of the lower Poolowanna Formation. Sands within the Peera Peera Formation exhibited up to 20 % yellow fluorescence, which gave a weak, milky yellow crush cut and slight residue ring. The sands are poorly permeable due to heavy silica cementation. Tight sands associated with thin coal beds and carbonaceous silts in the lower Peera Peera Formation were seen to contain negligible quantities of gas. Negligible gas readings were recorded throughout the penetrated Triassic interval.

Test Results
DST 1: (Lower Poolowanna Formation) - recovered 90 ft of rat hole mud with a trace of oil.

Post Drilling Analysis
The Kuncherinna structure is a low relief NW-SE elongate anticline, uncomplicated by faulting above the pre Triassic section. Kuncherinna 1 is situated in a near crestal position on the southernmost of three mapped culminations that are present within the Kuncherinna closure, and is thus considered to be a valid structural test. Isochron mapping indicates subtle structural growth of the Kuncherinna feature during Triassic and earliest Jurassic time, with rejuvenation during very recent time. It was thought prior to drilling the well that sufficient closure would have been present from the earlier period of deformation to allow the entrapment of hydrocarbons.

Potential traps were thought to exist in the more shaley, uppermost interval of the Algebuckina Sandstone, however the sands were devoid of any signs of hydrocarbons. Sands of the lower Poolowanna Formation and the Peera Peera Formation contain poor shows of residual oil, however no movable hydrocarbons were detected. Log interpretation indicates the sands are poorly porous and permeable.

The Kuncherinna structure is poorly situated to receive migrating hydrocarbons, having access to only a small hydrocarbon drainage area. Early closure was very subtle and might not have been complete and therefore perhaps not conducive to hydrocarbon entrapment. The period of deformation that gave the structure its present day form may have post-dated the main phase of hydrocarbon migration.
Well Name: MACUMBA 1
Operator: Delhi Petroleum

Location:
- Latitude 26° 26’ 38.6’’ S
- Longitude 136° 51’ 17.77’’ E
- Easting 684 954.60
- Northing 7 073 794.585
- Seismic SP/Line 160/76-WCC

Date Drilling Commenced: 15 October 1977
Rig Released: 16 November 1977

Elevations:
- KB 175 ft 53.3 m
- Ground 158.9 ft 48.4 m

Total Depth Drilled: 8586 ft 2617.0 m
In Devonian redbeds (sandstone)

Hydrocarbon Shows
No hydrocarbon shows of any significance were noted during drilling, and moderately saline water was recovered during testing of both reservoir objectives.

Test Results
DST 1: 8211 - 8283 ft, Purni Formation, recovered 4350 ft water.
DST 2: 7313 - 7418 ft, Poolowanna Formation, misrun.
DST 3: 7312 - 7456 ft, Poolowanna Formation, flowed water at 575 BPD.

Post Drilling Analysis
The Macumba structure is a medium sized (approx 7 x 5 km) anticlinal closure, fault bounded on its western flank at basement through basal Jurassic levels, but independent of faulting at stratigraphically higher levels. Closure appears to be dependent upon fault sealing of the western and southern margins of the structure at Poolowanna Formation level. With the juxtaposition of Poolowanna Formation reservoirs against the massive, permeable sands of the Algebuckina Sandstone, it is unlikely that a competent fault seal is present. Regardless of the sealing capabilities of the Macumba faults, current interpretations indicate some 25 m of structural advantage over an area of nearly 3500 acres can be gained from off-crest well Macumba 1.

Poolowanna Formation and older source rocks at Macumba 1 are well within the peak oil generation window (Ro base Poolowanna Formation = 0.89; Ro base Permian = 1.08) and the Macumba structure itself lies within a reasonably large hydrocarbon drainage area. Moderate amounts of both oil and gas prone organic material were present in the lower Jurassic, Triassic and Permian intervals of the Macumba 1 well cuttings, and source richness should have been adequate for the generation of commercial volumes of both oil and gas.

Good porosity and permeability development is present in the Poolowanna, the Peera Peera and the Purni formations, and sizeable hydrocarbon reserves may be present, hosted by these formations, in the Macumba structure updip of the Macumba 1 well. Potential seal units are abundant and appear to be competent.
Well Name: MIANDANA 1  Operator: Delhi Petroleum

Location:
- Latitude: 27° 03’ 13.24” S
- Longitude: 137° 23’ 41.43” E
- Easting: 737 533.44
- Northing: 7 005 350.37
- Seismic SP/Line intersection lines: 80-WFM and 80-WFN

Date Drilling Commenced: 24 August 1985  Rig Released: 15 September 1985

Elevations:
- KB: 84.8 ft 25.8 m
- Ground: 64.8 ft 19.8 m

Total Depth Drilled: 8768 ft 2672.5 m
- In Proterozoic sandstone

Hydrocarbon Shows
The only hydrocarbon show of significance recorded while drilling was in an eight foot sand from 7988’ to 7996’ in the Peera Peera Formation. The fluorescence was described as rare, moderately bright, patchy to solid, yellow-white with a weak crush cut and a thin ring residue. No significant gas was associated with the interval. No hydrocarbon pay is interpreted.

Test Results
No drill stem tests were conducted in Miandana 1.

Post Drilling Analysis
Miandana 1 is located near the mapped crest of a NNW-SSE trending anticlinal dome on the northern end of a prominent northwestern trending nose. It appears, however, that the well is actually located outside of effective closure at reservoir levels. Oil migration would have been largely away from the Miandana area and towards the undrilled Miamiana structure to the south.

The Poolowanna Formation contains many coals and carbonaceous intervals and therefore has significant source potential. Previous wells have indicated the ability of such organics to yield oil at similar depths of burial. A Vitrinite Reflectance value of 0.85 at the base of the Poolowanna Formation indicates that source rocks have achieved peak oil generation temperatures at the well location. Despite such potential, only trace hydrocarbon shows were noted in the well. Sandstone quality is poor, with potential reservoirs in the Poolowanna and Peera Peera formations being poorly permeable due to diagenetic alteration. This diagenesis, seen in all wells drilled to date in the deeper parts of the Poolowanna Trough, may have had an affect in retarding hydrocarbon migration from the basin’s primary source area.

The Miandana structure appears to have undergone steady growth throughout the filling of the Poolowanna Trough and sediments of the Eromanga Basin sequence show significant thinning across the structure’s crest. The Miandana structure has a relatively large hydrocarbon drainage area and is consequently well positioned to have received significant volumes of migrating hydrocarbons. Actual mapped closure at Miandana is, however, small, and most of the hydrocarbons that may have migrated into the Miandana area would have continued to migrate in a southward direction into the large Miamiana closure. A recent interpretation suggests that Miandana 1 was drilled outside of structural closure.
<table>
<thead>
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<th>Well Name</th>
<th>MOKARI 1</th>
<th>Operator</th>
<th>FPC</th>
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<tr>
<td>Location:</td>
<td>Latitude 26° 19’ 11.89” S</td>
<td>Longitude 136° 26’ 24.750” E</td>
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<tr>
<td>Seismic SP/Line</td>
<td>Easting 643 749.76</td>
<td>Northing 7 088 069.55</td>
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<td>Date Drilling Commenced</td>
<td>28 May 1966</td>
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<td>26 June 1966</td>
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<td>Elevations:</td>
<td>KB 244 ft 74.4 m</td>
<td>Ground 222 ft 67.7 m</td>
<td></td>
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<tr>
<td>Total Depth Drilled</td>
<td>7827 ft 2385.7 m</td>
<td>In Ordovician shales</td>
<td></td>
</tr>
</tbody>
</table>

**Hydrocarbon Shows**
No significant hydrocarbon shows were recorded while drilling except for a weak gas show at the top of the Crown Point Formation. No pay is interpreted.

**Test Results**
DST 1: 5739 - 5826 ft, Poolowanna Formation - Water to surface at 1654 BPD.
DST 2: 6468 - 6557 ft, Purni Formation - misrun.
DST 3: 6593 - 6693 ft, Purni Formation - Water to surface at 1654 BPD.
DST 4: 7011 - 7131 ft, Purni/Crown Point formations - Recovered 366 ft mud and salt water.

**Post Drilling Analysis**
Mokari 1 was drilled to evaluate Permian reservoirs within a seismic and gravity defined anticlinal structure of 13.6 sq miles with a presumed vertical closure of about 130 ft. Mokari 1 encountered a thick sequence of Permian sediments but subsequent seismic indicates the well was not drilled within structural closure. Mokari 1 is therefore not a valid structural evaluation.

Porosity/permeability are generally poor to fair throughout the Permian, but improve within the Jurassic sequence and are very good within the Poolowanna Formation at Mokari 1. It is anticipated that the presence of hydrocarbons in Permian reservoirs would have retarded the effects of detrimental diagenesis; - an up-dip evaluation should not be discounted entirely on the basis of reservoir quality.
Well Name  MOUNT CRISPE 1  Operator  FPC

Location:  
Latitude 26° 26’ 42.4’’ S  
Longitude 135° 22’ 36.0’’ E  
Easting 537 553.03  
Northing 7 074 956.3  

Date Drilling Commenced  31 March 1966  
Rig Released  16 May 1966  

Elevations:  
KB  453 ft  138.1 m  
Ground  440 ft  134.1 m  

Total Depth Drilled  5647 ft  1721.2 m  
In Cambrian sandstones  

Hydrocarbon Shows  
No significant hydrocarbon shows were recorded while drilling. Log evaluation indicates all potential reservoir intervals to be water saturated.  

Test Results  
DST 1:  3729 - 3777 ft, (‘Mount Crispe Beds’ - Ordovician) - recovered 975 ft of water  

Post Drilling Analysis  
Mount Crispe 1 was a stratigraphic evaluation and was not located within structural or stratigraphic closure. The well was drilled primarily to ascertain whether or not prospective Cambrian-Ordovician sediments were present beneath the Pedirka Sub-Basin sequence. The well site is on the flank of a surface structure defined by structural study and by a seismic reflection and gravity survey. Good porosity development is present within sands of the Middle Ordovician Stairway Sandstone equivalent (avg 14.4% porosity for 27.5 ft net porous interval), and from Late Cambrian sandstones (avg 11.4% porosity for 48 ft net porous interval). Good porosity and permeability development is present throughout the Mesozoic sequence.  

There is a major facies change within the Cambrian section between Northern Territory well McDills 1 (carbonates) and Mount Crispe 1 (clastics). This suggests a palaeo-shoreline to the southwest of Mount Crispe 1.
Well Name: OOLARINNA 1  
Operator: Delhi Petroleum  

Location:  
Latitude: 26° 13’ 24.66’’ S  
Longitude: 136° 51’ 23.17’’ E  
Easting: 685 455.39  
Northing: 7 098 224.79  
Seismic SP/Line: 1097/84-WML  

Date Drilling Commenced: 27 May 1985  
Rig Released: 19 June 1985  

Elevations:  
KB: 211 ft 64.3 m  
Ground: 188.5 ft 57.5 m  

Total Depth Drilled: 8776 ft 2674.9 m  
In Ordovician shale  

Hydrocarbon Shows  
Apart from a thin interval in the Poolowanna Formation, organic fluorescence was not observed during the drilling of Oolarinna 1. Total gas rarely exceeded 0.5 units (100 ppm equivalent methane) and consisted entirely of C1.

A gas peak of 2.2 units was liberated from finely interbedded sandstone and siltstone in the lower Poolowanna Formation at a depth of 7608 ft. Minor fluorescence was observed over the interval 7598 to 7624 ft. It was described as trace, dull, yellow-green and patchy with a slow streaming cut and thin to thick ring residue. Porosity/permeability within the interval are considered to be poor and consequently the zone was not tested. Several sandstones of good reservoir quality with seals suitable for hydrocarbon retention were present within the Peera Peera Formation. Generally background gas remained at less than 1 unit throughout the formation, however two sands liberated gas peaks above background (3.0 and 3.2 units). 5310 ft of gas cut water was recovered during a drill stem test of the interval 8004 to 8030 ft.

Background gas increased to typically 2 to 4 and as high as 8 units throughout the Purni Formation and several large peaks of up to 82 units occurred in response to rare well developed coals in the upper part of the formation. Sandstone beds are rare, thin, of poor reservoir quality and water saturated and consequently no pay is mapped.

Test Results  
DST 1: 8004 - 8030 ft, Peera Peera Formation, recovered 5310 ft of gas cut water.

Post Drilling Analysis  
Current interpretations suggest Oolarinna 1 was not optimally located on the large, anticlinal feature. The C to JL interval shows thinning in the order of 40 ms over the crest of the Oolarinna structure, clearly indicating substantial structuring prior to the Cretaceous, and most importantly, prior to the main phase of oil generation and migration in the basin. Potential source rocks within the Poolowanna Formation are considered marginally mature for oil generation (Ro max value at base of Poolowanna Formation = 0.76). Triassic and Permian source rocks are considered to be mature for oil generation with an Ro value of 1.02 being reached at the base of the Permian (Crown Point Formation) sequence. The drainage area that would have influenced the migration of hydrocarbons into the Oolarinna structure, is considered to have been adequate.
<table>
<thead>
<tr>
<th>Well Name</th>
<th>POOLOWANNA 1</th>
<th>Operator</th>
<th>Delhi Petroleum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Latitude 26° 25’ 34.56’’ S</td>
<td>Longitude 137° 40’ 20.41’’ E</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Easting 766 528.33</td>
<td>Northing 7 074 330.77</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seismic SP/Line 340/WBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date Drilling Commenced</td>
<td>2 August 1977</td>
<td>Rig Released</td>
<td>2 October 1977</td>
</tr>
<tr>
<td>Elevation:</td>
<td>KB 115.4 ft 5.2 m</td>
<td>Ground 99.2 ft 30.2 m</td>
<td></td>
</tr>
<tr>
<td>Total Depth Drilled</td>
<td>10,086 ft 3074.3 m</td>
<td>In Ordovician shale</td>
<td></td>
</tr>
</tbody>
</table>

**Hydrocarbon Shows**
DST 2 recovered in excess of 2000 ft (610m) of oil from the Poolowanna Formation. A subsequent cased hole test (DST 5) over a four hour period resulted in the flow of four barrels of oil to surface. This equates to a theoretical flow rate of 96 BOPD. There was almost no associated gas. The oil is dark brown, very waxy, and possibly water washed with a pour point of 41°C. There is some evidence that the oil is associated with fracture development in the basal Jurassic sequence. Pay is interpreted in the intervals: 7946 - 7966 ft, 8053 - 8098 ft, 8303 - 8329 ft and 8340 - 8400 ft. Except for a thin sandstone between 8394 and 8397 ft, the oil does not appear to have saturated the reservoir units. Because of the interspersing of oil and water in complex association, electric logs are not readily interpreted.

Rich fluorescence and minor associated gas were present in the Peera Peera Formation, in particular over the interval 8593 to 8604 ft. DST 3 which tested the interval 8585 to 8642 ft indicated the host sandstone was poorly permeable. Gas flowed to surface after two hours at a rate too small to measure, but a small volume of condensate was subsequently extracted from drilling mud recovered in the drill string.

**Test Results**

**Open Hole**
DST 1: 7938 - 8007 ft, Poolowanna Formation, - misrun.
DST 2: 8216 - 8328 ft, Poolowanna Formation, - recovered approx 5500 ft fluid of which approximately half was oil, - no gas.
DST 3: 8585 - 8642 ft, Peera Peera Formation, - gas to surface at rate too small to measure, recovered 110 ft slightly oil cut mud.

**Cased Hole**
DST 4: 8070 - 8090 ft, Poolowanna Formation, - recovered 160 ft brine.
DST 5: 8223 - 8260 ft, Poolowanna Formation, - recovered 71 barrels of water and 9.5 barrels oil.
DST 6: 8392 - 8425 ft, Poolowanna Formation, - recovered 3.65 barrels condensate and 4.25 barrels water.
DST 7: 8452 - 8466 ft, Poolowanna Formation, - recovered 3869 ft salt water.
DST 8: 8870 - 8944 ft, Peera Peera Formation, - recovered 200 ft salt water.

**Post Drilling Analysis**
The Poolowanna structure is a sinuous, north-south trending anticline that is bounded by a high angle reverse fault on its western limb. Vertical closure at the base of the Lower Jurassic is some 60 m. The mapped areal closure measures approximately 17 km x 3 km. Poolowanna 1 is located on the northern nose of the closure.
The Poolowanna structure lies near the axis of the Poolowanna Trough, the major depocentre of the Pedirka Basin. The Lower Jurassic and Triassic sequences at Poolowanna 1 contain mature, exinite rich source rocks, fluvial sands of fair reservoir quality and competent seals. The Poolowanna structure has a large hydrocarbon drainage area and is well positioned to have received significant volumes of migrating hydrocarbons.

A 40 foot interval within the Poolowanna Formation offers the best source rock potential of the well. The kerogen from this interval included about 25% diffuse sapropelic material that is rich in exinite, but also in inertinite. Nearly 18 m of organic rich shales form the top of the Triassic Peera Peera Formation. The Peera Peera Formation appears to be less prospective for liquid hydrocarbons than the Lower Jurassic section, although higher yields of kerogen have been attained in the upper part of the Peera Peera Formation.
Well Name: POOLOWANNA 2  Operator: Delhi Petroleum

Location:
Latitude: 26° 26' 52.52' S  Longitude: 137° 40' 09.08' E
Easting: 766 164.48  Northing: 7 071 937.341
Seismic SP/Line: intersection 76-WBY and 80-WJF

Date Drilling Commenced: 19 April 1985  Rig Released: 19 May 1985

Elevations:
KB: 100 ft  30.5 m  Ground: 69.8 ft  21.3 m

Total Depth Drilled: 9568 ft  2916.3 m  In: ?Ordovician sandstone

Hydrocarbon Shows
No shows were encountered in the first significant sand of the Poolowanna Formation, although this sand was tested. Hydrocarbon shows were recorded throughout the rest of the formation. The fluorescence was characteristically yellow-white with weak crush to slow streaming cut. As was the case with Poolowanna 1, very little gas was associated with these shows. The Peera Peera Formation displayed fluorescence shows throughout all but the lowermost sands. The fluorescence was similar to that seen in the Poolowanna Formation, however, was accompanied by an orange fluorescence. Very little gas was associated with these shows. A well developed 16 foot sand at the base of the Walkandi Formation liberated gas to peak at 16 units over a background of 2.5 units. No pay has been mapped across this interval.

The four successful drill stem tests that were conducted failed to recover significant hydrocarbons. Log interpretation indicates all potential reservoir intervals are water saturated.

Test Results
DST 1: 7924 - 8009 ft, Poolowanna Formation, - recovered 350 ft slightly gas cut water, 1800 ft slightly gas cut muddy water and 2870 ft gas cut water.
DST 2: 8154 - 8187 ft, Poolowanna Formation, - recovered 380 ft muddy water cushion.
DST 3: 8160 - 8277 ft, Poolowanna Formation, - recovered 1026 ft very slightly gas cut watery mud and 306 ft slightly gas cut mud.
DST 4: 8276 - 8421 ft, Poolowanna Formation, - misrun.
DST 5: 8220 - 8421 ft, Poolowanna Formation, - misrun.
DST 6: 8620 - 8754 ft, Peera Peera Formation, - recovered 240 ft very slightly gas cut muddy water.

Post Drilling Analysis
Poolowanna 2 was designed to evaluate Poolowanna Formation and Peera Peera Formation sandstone reservoirs in a crestal position on the southern culmination of the Poolowanna structure. The well prognosis proved to be poor and the reservoir horizons were encountered at lower depths subsea, than at the discovery well. Current mapping indicates that Poolowanna 2 was located some 25 m downdip of the actual crest of the southern culmination.

Drill stem test recoveries from the Poolowanna Formation suggest deliverability problems in Poolowanna 2. This is supported by log evaluation which indicates that porosity in the Poolowanna and Peera Peera Formation sands is generally less than 10 %.
Well Name  POOLOWANNA 3  
Operator  Santos Limited  

Location:  
Latitude  26° 25' 02.039'' S  
Longitude  137° 40' 03.953' E  
Easting  766 092.949  
Northing  7 075 341.378  
Seismic SP/Line  326/87-WQL  

Date Drilling Commenced  5 March 1989  
Rig Released  3 April 1989  

Elevations:  
KB  117 ft  35.7 m  
Ground  102.2 ft  31.1 m  

Total Depth Drilled  8831 ft  2691.7 m  
In  Peera Peera Formation  

Hydrocarbon Shows  
Slight trace spotted dull yellow/green fluorescence with weak crush cut and thin ring residue was noted within five thin intervals within the Algebuckina Sandstone. Numerous fluorescence and minor gas shows were noted over the Poolowanna and Peera Peera formations, but all of the abundant sands proved to be both poorly porous and permeable.  

Test Results  
DST 1:  8156 - 8230 ft, Poolowanna Formation, - recovered 90 ft rat hole mud with trace oil film.  
DST 2:  8256 - 8374 ft, Poolowanna Formation, - recovered 450 ft watery mud and 1250 ft slightly muddy gas cut water.  
DST 3:  8408 - 8551 ft, Poolowanna Formation, - gas to surface at rate too small to measure. Fluid to surface at 80 barrels water per day over 171 minutes. Recovered 560 ft watery mud, 5550 ft slightly oil and gas cut water, and 2290 ft water.  

Post Drilling Analysis  
Poolowanna 3 is situated in a near crestal position on the northern culmination of the Poolowanna structure, some 43 ft structurally higher than at Poolowanna 1 at Poolowanna Formation level and 9 ft higher at Peera Peera Formation level.  

Although the source potential and thermal maturity of the Lower Poolowanna member is sufficient for oil generation of commercial significance, the volume of oil that appears to have been generated appears to be low. Further, reservoir quality at Poolowanna is poor. Reservoir development may have been poor across the palaeo structural high (Poolowanna 3) as compared to the structurally lower parts of the Poolowanna structure (Poolowanna 1). Oil emplacement at Poolowanna took place after diagenesis.  

The ‘spiky’ nature of the sonic log across much of the Poolowanna Formation, may indicate some fracture porosity.
Well Name  PURNI 1  Operator  FPC

**Location:**
- Latitude 26° 17’ 11.81” S
- Longitude 136° 05’ 47.79” E
- Easting 609 482.81
- Northing 7 092 100.76

**Date Drilling Commenced**  16 December 1963  **Rig Released**  15 January 1964

**Elevations:**
- KB 255 ft 77.7 m
- Ground 239 ft 72.8 m

**Total Depth Drilled**  6168 ft 1880 m

**Hydrocarbon Shows**
Trace fluorescence and minor gas kicks were noted within carbonaceous sands in the upper part of the Purni Formation. No other hydrocarbon shows were noted.

**Test Results**
DST 1: 5673 - 5743 ft, Crown Point Formation, - misrun due to sand invasion. No shows were noted within the tested interval. Instantaneous flow on opening, but stopped after only 1 minute.

**Post Drilling Analysis**
Purni 1 was drilled as a stratigraphic well and does not lie within structural closure. The well was drilled to test the nature of the formations seen on seismic “under the main unconformity of supposed Permian”. There were no particular petroleum targets. Vitrinite reflectance values measured from the base of the Permian sequence are in the order of 0.42 and indicate that potential source rocks encountered by the well are immature for hydrocarbon generation.

Good porosity exists throughout the Jurassic sequence. Basal conglomerates of the Crown Point Formation exhibit very good matrix porosity. These were unsuccessfully tested in DST 1 as a result of invasion by sand. No pay is mapped in the conglomerate interval.
## Well Name
- **WALKANDI 1**

## Location:
- **Latitude**: 26° 33’ 41.34” S
- **Longitude**: 137° 28’ 03.75’ E
- **Easting**: 745,823.49
- **Northing**: 7,059,754.73
- **Seismic SP/Line**: 175/80-WGE

## Date Drilling Commenced
- **20 September 1981**

## Rig Released
- **8 November 1981**

## Elevations:
- **KB**: 102.9 ft 31.4 m
- **Ground**: 85 ft 25.9 m

## Total Depth Drilled
- **10,274 ft (L)** 3131.6 m

## Hydrocarbon Shows
Good fluorescence shows were seen in shaley sands over a 200 ft interval in the lower part of the Poolowanna Formation. The fluorescence was described as being dull yellow and occasionally bright yellow and patchy, and yielding a very slow pale streaming cut. Negligible gas readings were associated with the fluorescence bearing sands. Minor gas peaks were found to correspond with thin coal interbeds. Two drill stem tests were conducted to evaluate the shows. Both indicated the interval to be poorly permeable and water saturated.

Sands within a “middle” member of the Peera Peera Formation exhibited appreciable percentages of fluorescence, with only negligible quantities of gas. DST 3 tested an interval of 30 % bright yellow fluorescence, with a slow, yellow streaming cut and a poor residue ring, and 60 % dull yellow-orange fluorescence. Seventy seven ft of rat hole mud was recovered from the test, indicating poorly permeable reservoirs.

Transitional sands in the upper part of the Walkandi Formation were tested in response to a show of fluorescence accompanied by an increase in porosity. The test was aborted due to packer seat failure after 53 minutes.

### Test Results
- **DST 1**: 5673 - 5743 ft, Crown Point Formation, - misrun due to sand invasion. No shows were noted within the tested interval.

### Post Drilling Analysis
The Walkandi structure is believed to be a recent structure, with early structural form being very subtle. Recent mapping confirms that Walkandi 1 was drilled within closure and is a valid structural test. The Walkandi structure, however, has access to only a small hydrocarbon drainage area.

No appreciable seal is present to isolate the upper Poolowanna Formation sands from the overlying massive and extensive water bearing, Algebuckina Sandstone.

Sandstones of the Lower Poolowanna and Peera Peera formations were initially thought to be highly prospective for hydrocarbons. In many parts of the basin, however, and in particular the central parts of the basin (eg Walkandi), there has been a significant reduction in reservoir porosities and permeabilities through extensive silica cementation and other diagenetic events. Permian sediments are not present at Walkandi 1.
Well Name: WITCHERRIE 1
Operator: Delhi Petroleum

Location:
- Latitude 26° 22’ 18.98” S
- Longitude 135° 39’ 01.25” E
- Easting 564 880.00
- Northing 7 082 951.56
- Seismic SP/Line seismic profile B close to SP 94

Date Drilling Commenced: 14 October 1963
Rig Released: 30 November 1963

Elevations:
- KB 282 ft 85.9 m
- Ground 269 ft 82 m

Total Depth Drilled: 4803 ft 1464 m

Hydrocarbon Shows
No hydrocarbon shows were encountered while drilling.

Test Results
DST 1: 2552 - 2592 ft, Finke Group, flowed fresh water to surface at rate 906 BPD; flowing pressure 1200 psi.

Post Drilling Analysis
Witcherrie 1 was drilled as a stratigraphic well intended to identify seismic markers and to evaluate and identify the older rock units lying under the Upper Palaeozoic unconformity. The well location is not associated with structural or stratigraphic closure. Good porosity and permeability development is present within the ?Siluro-Devonian sandstone but the section is interpreted to be water saturated.
RESERVES ASSIGNMENTS

Reserves are based on areas of closure determined from Delhi Petroleum’s 1987 mapping of the ‘C’ (top Cadna-owie Formation) and ‘Z’ horizon (base Permian) seismic horizons. Three potential reservoir units are considered: - the Jurassic Algebuckina Sandstone and Poolowanna Formation, and the Permian Purni Formation. Over much of the area, the Triassic Peera Peera Formation provides additional potential. Reserves estimates for the Peera Peera Formation would be similar to those obtained for the Purni Formation. Unless limited by moderate vertical closures, a conservative net pay value of 9 m (30 ft) has been used in assessing reserves for the two Jurassic formations, while 6 m (20 ft) has been used for the Purni Formation.

Assigned pay thicknesses are considered conservative. For example, within the ER97-A, B and C blocks, the Algebuckina Sandstone ranges in thickness between 300 and 745 m (984 and 2444 ft), and essentially all of the formation comprises porous and permeable sandstone. Areas of closure for the Algebuckina Sandstone and Poolowanna Formation were assumed to be the same as that measured at ‘C’ Horizon level for each structure. As maximum possible areas of closure at ‘C’ level were not used, it is considered that the above is warranted. The following summarises the parameters that were used in estimating potential reserves:

**TABLE 4: Parameters used for potential reserve estimation.**

<table>
<thead>
<tr>
<th>Reservoir Unit</th>
<th>Max. Net Pay m (ft)</th>
<th>Av. Porosity %</th>
<th>Av. Hydrocarbon Saturation (%)</th>
<th>Recovery Factor %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebuckina</td>
<td>9m (30 ft)</td>
<td>20</td>
<td>75</td>
<td>40</td>
</tr>
<tr>
<td>Poolowanna</td>
<td>9m (30 ft)</td>
<td>15</td>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td>Purni</td>
<td>6m (20 ft)</td>
<td>13</td>
<td>65</td>
<td>30</td>
</tr>
</tbody>
</table>

Formation Volume Factors of 0.9 for oil and 180 for gas have assumed for all prospects and leads. Assigned reserves are unrisked.
Fig 7. Leads and prospects index map.
### TABLE 5: Summary of potential oil and gas reserves by prospect

<table>
<thead>
<tr>
<th>Lead/Prospect</th>
<th>Block</th>
<th>Poolowanna Fm</th>
<th>Algebuckina SST</th>
<th>Purni Fm</th>
<th>Purni Fm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>mmbbl</td>
<td>BCF</td>
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<td><strong>Prospeks</strong></td>
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<td>Peralla</td>
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<td>72.8</td>
<td>138.8</td>
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<td>25.4</td>
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<tr>
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<td>53.5</td>
<td>101.8</td>
<td>28.7</td>
<td>91.6</td>
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<tr>
<td>Updip Macumba</td>
<td>ER97-B</td>
<td>20.0</td>
<td>37.4</td>
<td>9.0</td>
<td>27.0</td>
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<td>Updip Mokari</td>
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<td>18.5</td>
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<td>0.9</td>
<td>2.7</td>
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<td>10.6</td>
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<td>3.0</td>
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<td><strong>Sub Total</strong></td>
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<td>486.1</td>
<td>86.4</td>
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<td>Lead/Prospect</td>
<td>Block</td>
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<td>Purni Fm</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>mmbbl</td>
<td>BCF</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weak Leads (cont.)</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PED-L25</td>
<td>ER97-B</td>
<td>7.3</td>
<td>13.9</td>
<td>3.0</td>
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<tr>
<td>PED-L26</td>
<td>ER97-B</td>
<td>6.6</td>
<td>12.6</td>
<td>2.8</td>
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</tr>
<tr>
<td>PED-L27</td>
<td>ER97-C</td>
<td>60.2</td>
<td>114.6</td>
<td>21.2</td>
<td>63.6</td>
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<tr>
<td>PED-L28</td>
<td>ER97-C</td>
<td>38.3</td>
<td>72.9</td>
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<td>PED-L30</td>
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<td>5.3</td>
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<td>4.1</td>
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<td>PED-L31</td>
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<td>5.3</td>
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<tr>
<td>PED-L32</td>
<td>ER97-C</td>
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<td>9.6</td>
<td>1.4</td>
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</tr>
<tr>
<td>PED-L33</td>
<td>ER97-C</td>
<td>10.6</td>
<td>20.1</td>
<td>2.8</td>
<td>8.5</td>
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<td><strong>Sub Total</strong></td>
<td></td>
<td>232.8</td>
<td>458.7</td>
<td>97.7</td>
<td>291.9</td>
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<td><strong>TOTAL</strong></td>
<td></td>
<td>706.4</td>
<td>1359.7</td>
<td>325.3</td>
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</tr>
</tbody>
</table>
Kilumi - Oolarinna area prospects and leads. Top C Horizon depth structure map. MESA, 1997.
Prospect/Lead: PED-L18

Sedimentary Basin(s): Western Eromanga, Pedirka, Simpson

Structural Province: Pedirka Basin

- Onshore

- Oil
- Wet Gas
- Dry Gas
- Oil & Gas

Trapping Mechanism: Anticline

Prospect Longitude: 136° 51’S

Latitude: 26° 25’E

Strong Lead

Seismic Line Location: 82 WKZ SP 335

Weak Lead

Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth: 2660 m (8730 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road: 200 km, 125 miles; Nearest Gas Pipeline: 360 km, 225 miles

Current Tenement Holder: Open

Previous Tenement Holder: Santos-Delhi

---

### Reservoirs and Reserves Potential

<table>
<thead>
<tr>
<th>Formation Name</th>
<th>Approx Depth m (ft)</th>
<th>Unrisked Reserves Potential mmbbl</th>
<th>BCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Objective 1</td>
<td>Poolowanna Formation</td>
<td>2230 (7320)</td>
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</tr>
<tr>
<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
<td>1480 (4855)</td>
<td>12.0</td>
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<tr>
<td>Secondary Objective 1</td>
<td>Purni Formation</td>
<td>2480 (8140)</td>
<td>2.8</td>
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<tr>
<td>Secondary Objective 2</td>
<td></td>
<td></td>
<td>8.5</td>
</tr>
<tr>
<td>Secondary Objective 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Concept / Description / Comment

PED-L18 is a medium size dome located 2 km (1.2 mi) north of the Macumba 1 well. The structure is controlled by faults at Warburton Basin and basal Permian level, and forms part of the Macumba structural complex. The structure drains synclinal regions to the west, north and south. Macumba 1 was drilled outside of structural closure. Poolowanna and older source rocks at Macumba 1 are well within the peak oil generation window (Ro base Poolowanna Fm = 0.89; Ro base Permian = 1.08). Moderate amounts of both oil and gas prone organic material were present in the lower Jurassic, Triassic and Permian intervals of the Macumba 1 well cuttings, and source richness should have been adequate for the generation of commercial volumes of oil, although no shows were recorded during the drilling of the Macumba 1 well. Good porosity and permeability development are present in the Poolowanna, the Peera Peera and the Purni formations, and sizeable hydrocarbon reserves may be hosted by these formations in the Macumba structure updip of Macumba 1. There may not be effective closure at Permian level.

---

### Work Required to Mature to Drillable Prospect Status

Acquisition of 10 km of seismic data.
UPDIP MACUMBA LEAD, PEDIRKA LEAD 16 and LEAD 18
Depth structure top Cadna-owie Formation
C Horizon (metres)
After Delhi Petroleum Pty Ltd mapping

LINE 82 WKZ
- C Horizon
- Base Jurassic
- Z Horizon
PROSPECT/LEAD       PED-L17

Sedimentary Basin(s)       Western Eromanga, Pedirka, Simpson

Structural Province       Pedirka Basin  ✓ Onshore

✓ Oil        Wet Gas        Dry Gas        Oil & Gas  Trapping Mechanism: Anticline

Prospect        Longitude  137º 00’ E        Latitude  26º 20’ S
✓ Strong Lead  Seismic Line Location  85 WNM SP 680 & 74 WAA SP 550
Weak Lead  Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth  2710 m (8890 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  200 km, 125 miles; Nearest Gas Pipeline  375 km, 230 miles
Current Tenement Holder: Open       Previous Tenement Holder: Santos - Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation Name</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Primary Objective 1</td>
</tr>
<tr>
<td>Primary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
</tr>
<tr>
<td>Secondary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 3</td>
</tr>
</tbody>
</table>

Concept / Description / Comment

PED-L17 is a potentially very large closure, faulted up to the top Poolowanna Formation. As the feature lies in very close proximity to the interpreted eastern limit of the Pedirka Basin, Purni formation source rocks and reservoirs may be poorly developed. Poolowanna Formation source rocks should be well developed, however, and with Base Jurassic depths in the order of 2500 m (8200 ft) should be well within the peak oil generation window. The structure is very well positioned, having large drainage areas to the north, east and south. Diagenesis will have affected reservoir porosity and permeability.

Work Required to Mature to Drillable Prospect Status

Acquisition of 70 km of seismic
PEDIRKA LEAD 17
Depth structure top Cadna-owie Fm.
C Horizon (metres)
After Delhi Petroleum mapping

Depth structure top Lower Palaeozoic
Z Horizon (metres)
After Delhi Petroleum mapping

LINE 85 WNM
PROSPECT/LEAD PED-L16

Sedimentary Basin(s) Western Eromanga, Pedirka, Simpson

Structural Province Pedirka Basin  Onshore

✓ Oil Wet Gas Dry Gas Oil & Gas Trapping Mechanism: Anticline

Prospect

Longitude 136° 52’E  Latitude 26° 20’S

✓ Strong Lead Seismic Line Location 74 WAA SP 425 and 82 WKW SP 310-342

Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 2785 m (9140 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 200 km, 125 miles; Nearest Gas Pipeline 375 km, 230 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation Name</td>
</tr>
<tr>
<td>Primary Objective 1</td>
</tr>
<tr>
<td>Primary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
</tr>
<tr>
<td>Secondary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 3</td>
</tr>
</tbody>
</table>

Concept / Description / Comment

PED-L16 is a medium sized feature that is highly faulted at the seismic ‘Z’ horizon, but unfaulted above. The structure appears to have formed over a Warburton Basin palaeo-topographic high, and to have been affected by Triassic and Tertiary compressional events. PED-L16 drains only a small region and it is unlikely that significant volumes of oil would have migrated into the structure. Both Poolowanna and Purni formation source rock intervals should be well developed and optimally mature for oil generation. Closure at Permian level is not mapped.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of seismic data.
PROSPECT/LEAD  PED-L15

Sedimentary Basin(s)  Western Eromanga, Pedirka, Simpson

Structural Province  Pedirka Basin  ✓ Onshore

Oil        Wet Gas        Dry Gas  ✓ Oil & Gas  Trapping Mechanism: Anticline

Prospect Longitude  136° 51’E  Latitude  26° 09’S

Strong Lead  Seismic Line Location  76WBC SP120

✓ Weak Lead  Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth  2710 m (8890 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road  200 km, 125 miles;  Nearest Gas Pipeline  380 km, 235 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

<table>
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<tr>
<th>Reservoirs and Reserves Potential</th>
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<tbody>
<tr>
<td>Primary Objective 1 Formations Name</td>
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<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Poolowanna Formation</td>
</tr>
<tr>
<td>Albebuckina Sandstone</td>
</tr>
<tr>
<td>Purni Formation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concept / Description / Comment</th>
</tr>
</thead>
</table>
PED-L15 is a small, low relief, domal structure located to the north of the Oolarinna structure. Roll-over is seen on a single seismic line. Given that oil accumulations that have been discovered in the Eromanga Basin are commonly in the order of about five million barrels or less, in-place, closures of PED-L15 size provide ideal exploration targets. PED-L15 accesses large hydrocarbon drainage areas to the west and east. Oolarinna 1, located some 8 km south of PED-L15, was drilled by Delhi in 1985. Post drilling seismic interpretations suggest the well was not drilled in an optimum crestal position. Dull yellow-green, patchy fluorescence with a slow streaming cut and a thin to thick ring residue was present over an 8 metre (26 ft) interval of the Lower Poolowanna Formation in Oolarinna 1. A vitrinite reflectance value of Ro = 1.02 was measured from the base of the Permian at Oolarinna 1. Oolarinna 1 intersected both Pedirka Basin and Simpson Basin sequences and consequently source potential is offered by the Purni (oil and gas), Peera Peera (mainly oil) and Lower Poolowanna (mainly oil) Formations.

<table>
<thead>
<tr>
<th>Work Required to Mature to Drillable Prospect Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition of 20 km of seismic data.</td>
</tr>
</tbody>
</table>
PROSPECT/LEAD       PED-L14

Sedimentary Basin(s)       Western Eromanga, Pedirka, Simpson

Structural Province       Pedirka Basin    ✓ Onshore

Oil        Wet Gas        Dry Gas       ✓ Oil & Gas       Trapping Mechanism: Anticline

Prospect         Longitude  136° 43’E     Latitude  26° 15’S
Strong Lead       Seismic Line Location  84WML SP700
 ✓ Weak Lead       Map Reference : Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth  2615 m (8580 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  230 km, 140 miles; Nearest Gas Pipeline  230 km, 140 miles

Current Tenement Holder: Open        Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation Name</td>
</tr>
<tr>
<td>Primary Objective 1</td>
</tr>
<tr>
<td>Primary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
</tr>
<tr>
<td>Secondary Objective 2</td>
</tr>
</tbody>
</table>

| Concept / Description / Comment |
PED-L14 is a medium sized, low relief ?unfaulted weak lead located midway between the Oolarinna 1 and Glen Joyce 1 exploration wells. With further seismic acquisition, it is expected that additional structures will be located in the area. The structure is associated with only a relatively small to moderate hydrocarbon drainage area. Purni Formation and lower Poolowanna Formation source rocks are expected to be well developed in the PED-L14 area, and within the peak oil generation window. Purni Formation coals are expected to be marginally mature for gas generation, with Ro values in the order of 1.0. The structure exhibits a subtle but early structural history with thinning of most intervals across the crest.

| Work Required to Mature to Drillable Prospect Status |
Acquisition of 65 km of seismic data.
PEDIRKA LEAD 14
Depth structure top Cadna-owie Fm.
C Horizon (metres)
After Dhiki Petroleum mapping

LINE 84 WML
PROSPECT/LEAD      PED-L13

Sedimentary Basin(s)    Western Eromanga, Pedirka

Structural Province   Pedirka Basin   ✓ Onshore

Oil          Wet Gas          Dry Gas          ✓ Oil & Gas

Trapping Mechanism: Anticline

Prospect     Longitude  136° 40’E    Latitude  26° 00’S

Strong Lead  Seismic Line Location  65AA SP1335

✓ Weak Lead   Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth  2410 m (7900 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  240 km, 150 miles; Nearest Gas Pipeline  400 km, 250 miles
Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
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<th>Unrisked Reserves Potential</th>
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<tbody>
<tr>
<td>Formation Name</td>
<td>Approx Depth (m ft)</td>
</tr>
<tr>
<td>Primary Objective 1</td>
<td>Poolowanna Formation</td>
</tr>
<tr>
<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
<td>Purni Formation</td>
</tr>
<tr>
<td>Secondary Objective 2</td>
<td></td>
</tr>
<tr>
<td>Secondary Objective 3</td>
<td></td>
</tr>
</tbody>
</table>

Concept / Description / Comment

PED-L13 is a large, elongate feature, some 19 km in length, that extends into the Northern Territory where it was evaluated by the Colson 1 well. Excellent reservoir rocks were encountered by the Colson 1 well, but it is unlikely that independent closure is present within the South Australian extent of the structure. Seismic acquisition may, however, reveal otherwise.

Work Required to Mature to Drillable Prospect Status

Acquisition of 60 km of seismic data.
**PROSPECT/LEAD**  **PED-L6**

**Sedimentary Basin(s)**  Western Eromanga, Pedirka

**Structural Province**  Pedirka Basin  ✓ Onshore

**Prospect**

- **Oil**  ✓ Oil & Gas
- **Dry Gas**
- **Wet Gas**

**Trapping Mechanism:**  Anticline

**Prospect Longitude**  136° 22’E  **Latitude**  26° 35’S

**Strong Lead**

- **Seismic Line Location**  82WKQ  SP 440

**Weak Lead**

- **Map Reference:**  Delhi Petroleum 1987 and MESA 1995 Regional

**Total Drilling Depth**  2270 m  7450 ft in Warburton/Amadeus Basin sediments

**Distance to Nearest Sealed Road**  300 km, 185 miles;  **Nearest Gas Pipeline**  440 km, 270 miles

**Current Tenement Holder:**  Open  **Previous Tenement Holder:**  Santos-Delhi

### Reservoirs and Reserves Potential

<table>
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<th>Primary Objective 1</th>
<th>Formation Name</th>
<th>Approx Depth m (ft)</th>
<th>Unrisked Reserves Potential mmbbl</th>
<th>BCF</th>
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<tbody>
<tr>
<td></td>
<td>Poolowanna Formation</td>
<td>1730 (5675)</td>
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<td>Primary Objective 2</td>
<td>Albebuckina Sandstone</td>
<td>1190 (3900)</td>
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<td>Purni Formation</td>
<td>1870 (6135)</td>
<td>1.9</td>
<td>5.8</td>
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<td>Secondary Objective 2</td>
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</tr>
<tr>
<td>Secondary Objective 3</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Concept / Description / Comment

PED-L6 is a weak, one line reversal lead interpreted as a small domal feature. As the nearest relevant seismic line, other than the line that defines the lead, is some 13.5 km (8.4 mi) to the south, there is potential for a relatively large closure to be present. Well developed Permian and Poolowanna formation sections are expected, offering considerable source potential and multiple reservoir objectives. As the depth to the base of Permian sediments is in the order of 2200 m (7200 ft), source rocks should lie in the peak oil generation window. The lead is located near the depocentre of the Pedirka Basin sequence, but beyond the limit of the Simpson Basin sequence.

### Work Required to Mature to Drillable Prospect Status

Acquisition of 25 km of seismic data.
PROSPECT/LEAD  UPDIP OOLARINNA-1

**Sedimentary Basin(s)**  Western Eromanga, Pedirka, Simpson

**Structural Province**  Pedirka Basin  ✓ Onshore

<table>
<thead>
<tr>
<th>Oil</th>
<th>Wet Gas</th>
<th>Dry Gas</th>
<th>✓ Oil &amp; Gas</th>
<th>Trapping Mechanism: Anticline</th>
</tr>
</thead>
</table>

✓ Prospect  

**Strong Lead**  

- Longitude: 136° 51’30” E  
- Latitude: 26° 14’ S  
- Seismic Line Location: 80 WHA SP 155

**Weak Lead**  

- Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

**Total Drilling Depth**  2650 m (8700 ft) in Warburton/Amadeus Basin sediments

**Distance to Nearest Sealed Road**  200 km, 125 miles;  
**Nearest Gas Pipeline**  360 km, 225 miles

**Current Tenement Holder**: Open  
**Previous Tenement Holder**: Santos-Delhi

### Reservoirs and Reserves Potential

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
</tr>
</thead>
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<tr>
<td><strong>Formation Name</strong></td>
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</tr>
<tr>
<td>Primary Objective 1</td>
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<tr>
<td>Primary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
</tr>
<tr>
<td>Secondary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 3</td>
</tr>
</tbody>
</table>

### Concept / Description / Comment

The Oolarinna structure is a large, relatively flat topped dome with vertical closure of approximately 58 m (190 ft). The ‘C’ to ‘JL’ interval shows thinning in the order of 40 ms TWT over the crest of the structure, clearly indicating substantial structuring prior to the main phase of oil generation in the basin. Oolarinna 1 was drilled by Delhi in 1985 as a crestal test of the structure. Dull yellow-green, patchy fluorescence with a slow streaming cut and a thin to thick ring residue was present over an 8 metre (26 ft) interval of the Lower Poolowanna Formation. Updip potential is now interpreted in a small closure immediately to the south of the Oolarinna 1 well location. Given that oil accumulations that have been discovered in the Eromanga Basin are commonly in the order of about five million barrels, or less, in-place, one perhaps would not expect there to be commercial volumes of oil at the Oolarinna 1 location. Santos’ oil exploration approach in PELs 5 and 6 has recently focused on locating the ultimate crests of larger anticlinal structures and an updip redrill of the Oolarinna structure is worth consideration.

### Work Required to Mature to Drillable Prospect Status

**Acquisition of 15 km of seismic data.**
OOLARINNA STRUCTURE, UPDIP OOLARINNA, PEDITKA LEAD 15 and PROSPECT 3
Time structure top Cadna-owie Formation
C Horizon (metres)
After Delhi Petroleum Pty Ltd mapping

LINE 80 WBC
PROSPECT/LEAD        UPDIP MOKARI 1

Sedimentary Basin(s)    Western Eromanga, Pedirka

Structural Province    Pedirka Basin                                  ✓ Onshore

Oil    Wet Gas    Dry Gas    ✓ Oil & Gas    Trapping Mechanism:    Faulted anticline

✓ Prospect        Longitude  136° 50’ E        Latitude  26° 20’ S

Strong Lead        Seismic Line Location  82 WKJ SP 340

Weak Lead        Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth   2250 m  (7380 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  260 km, 160 miles;  Nearest Gas Pipeline  425 km, 265 miles

Current Tenement Holder: Open    Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation Name</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Primary Objective 1</td>
</tr>
<tr>
<td>Primary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
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<tr>
<td>Secondary Objective 2</td>
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<tr>
<td>Secondary Objective 3</td>
</tr>
</tbody>
</table>

Concept / Description / Comment

Mokari 1 was drilled in 1966 to evaluate Permian reservoirs within a gravity and seismic defined anticlinal structure. No significant hydrocarbon shows were recorded while drilling except for weak gas show at the top of the Permian Crown Point Formation. Porosity was found to be poor to good within Permian reservoirs and very good within the Jurassic intervals. Modern seismic data indicate that Mokari 1 was drilled outside of structural closure. An untested, elongate, north-northeast trending anticlinal feature with three culminations is currently mapped at all reservoir levels. Organic content (TOC) was high in both the lower Poolowanna and the Purni formations at Mokari 1. Vitrinite reflectance values of 0.7 were measured for the uppermost Purni Formation, but values for the deeper section were not obtained. The Updip Mokari Prospect is not ideally located, as nearby leads PED-L8 and PED-L9, should they prove to be valid closures, would intercept most of the hydrocarbons migrating from the major source area to the east. Updip Mokari is in a good position to receive hydrocarbons that may have been generated from two small, relatively shallow depressions, located on either side of the anticline.

Work Required to Mature to Drillable Prospect Status

Acquisition of approximately 15 km of seismic data would better define position of structural crest.
PROSPECT/LEAD  PERALLA

Sedimentary Basin(s)  Western Eromanga, Pedirka

Structural Province  Pedirka Basin  ✓ Onshore

Oil  Wet Gas  Dry Gas  ✓ Oil & Gas  Trapping Mechanism:  Faulted anticline

✓ Prospect  Longitude  136º 20’ E  Latitude  26º 25’ S

Strong Lead  Seismic Line Location  82 WKK  SP 275

Weak Lead  Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth  1930 m  (6330 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road  290 km, 180 miles;  Nearest Gas Pipeline  430 km, 265 miles

Current Tenement Holder:  Open  Previous Tenement Holder:  Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation Name</td>
</tr>
<tr>
<td>Primary Objective 1 Poolowanna Formation</td>
</tr>
<tr>
<td>Primary Objective 2 Albebuckina Sandstone</td>
</tr>
<tr>
<td>Secondary Objective 1 Purni Formation</td>
</tr>
<tr>
<td>Secondary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 3</td>
</tr>
</tbody>
</table>

Concept / Description / Comment

Two prospects and three leads are mapped along the western, upthrown side of the prominent Border Fault; Peralla is the larger of the two prospects. The fifteen kilometre long, early formed roll-over structure presents nearly 40 ms TWT (40 m) of fault independent vertical closure. The prospect accesses a large hydrocarbon drainage area to the west and should the Border Fault not have provided an effective barrier to fluid migration, a very large hydrocarbon drainage area to the east. As the recognised depositional limit of the Poolowanna Formation lies a short distance to the west of Peralla and shales and coals within the unit may not be well developed, the Purni Formation may provide the only significant local source potential. Nevertheless, the depocentre of the Purni Formation more or less underlies the Peralla feature, and an expected 215 m (700 ft) of Upper Purni Formation shales and coals offer both oil and gas source potential while interbedded sands offer reservoir potential. Oil prone source rocks should be within the peak oil generation window, but burial depths of 1800 to 2000 m (5900 to 6560 ft) would not have been sufficient to bring gas prone source rocks to peak maturity conditions. The Algebuckina Sandstone, sealed by the Cadna-owie Formation, is conducive to long distance hydrocarbon migration.

Work Required to Mature to Drillable Prospect Status

Acquisition of approximately 35 km of seismic data to define actual crestal culminations.
PROSPECT/LEAD PERTAKA

Sedimentary Basin(s) Western Eromanga, Pedirka

Structural Province Pedirka Basin ✓ Onshore

Oil Wet Gas Dry Gas ✓ Oil & Gas Trapping Mechanism: Faulted anticline

✓ Prospect

Strong Lead

Weak Lead

Prospect Longitude 136º 19’ E Latitude 26º 15’ S

Seismic Line Location 82 WKE SP 200

Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 1920 m (6300 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 290 km, 180 miles; Nearest Gas Pipeline 430 km, 265 miles

Current Tenement Holder: Open Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
<th>Unrisked Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation Name</td>
<td>Approx Depth m (ft)</td>
</tr>
<tr>
<td>Primary Objective 1</td>
<td>Poolowanna Formation</td>
</tr>
<tr>
<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
<td>Purni Formation</td>
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<tr>
<td>Secondary Objective 2</td>
<td></td>
</tr>
<tr>
<td>Secondary Objective 3</td>
<td></td>
</tr>
</tbody>
</table>

Concept / Description / Comment

Two prospects and three leads are mapped along the western, upthrown side of the prominent Border Fault; Pertaka is the smaller of the two prospects. The twelve kilometre long, early formed, roll-over structure presents some 35 ms TWT (35 m) of fault independent vertical closure. The prospect accesses a large hydrocarbon drainage area to the west and should the Border Fault not have provided an effective barrier to fluid migration, a very large hydrocarbon drainage area to the east. As the recognised depositional limit of the Poolowanna Formation lies a short distance to the west of Pertaka and shales and coals within the unit may not be well developed, the Purni Formation may provide the only significant local source potential. Nevertheless, the depocentre of the Purni Formation more or less underlies the Pertaka feature, and an expected 215 m (700 ft) of Upper Purni Formation shales and coals offer both oil and gas source potential while interbedded sands offer reservoir potential. Oil prone source rocks should be within the peak oil generation window, but burial depths of 1800 to 2000 m (5900 to 6560 ft) would not have been sufficient to bring gas prone source rocks to peak maturity conditions. The Algebuckina Sandstone, sealed by the Cadna-owie Formation, is conducive to long distance hydrocarbon migration.

Work Required to Mature to Drillable Prospect Status

Possibly additional 15 km seismic data required.
PROSPECT/LEAD PED-P1

Sedimentary Basin(s) Western Eromanga, Pedirka, Simpson

Structural Province Pedirka Basin  ✓ Onshore

Oil Wet Gas  ✓ Oil & Gas  Trapping Mechanism: Faulted anticline

✓ Prospect

Strong Lead

Weak Lead

Prospect Longitude 136º 58’ E  Latitude 26º 19’ S

Seismic Line Location 74 WAA SP 495

Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 2675 m (8775 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 200 km, 125 miles; Nearest Gas Pipeline 375 km, 230 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

| Reservoirs and Reserves Potential |
|-----------------------------------|------------------|------------------|
| Formation Name | Approx Depth m (ft) | Unrisked Reserves Potential mmbbl | BCF |
| Primary Objective 1 | Poolowanna Formation | 2275 (7465) | 29.0 |
| Primary Objective 2 | Algebuckina Sandstone | 1525 (5000) | 55.3 |
| Secondary Objective 1 | Purni Formation | 2525 (8285) | 3.5 10.6 |
| Secondary Objective 2 | | | |
| Secondary Objective 3 | | | |

Concept / Description / Comment

PED-P1 is a moderate relief, east-west trending, domal feature, formed over a pre-Permian palaeo-high. Seismic across the lead reveals thick Poolowanna Formation and Simpson Basin sections. Permian sediments are relatively thin, but thicken considerably off the crest of the structure. Considerable throw is seen across a local fault at pre Permian level, but displacement at Poolowanna Formation level is only minor. PED-P1 accesses a moderate hydrocarbon drainage area in which Purni and Poolowanna formation source rocks have been buried to in excess of 2300 meters (7545 ft), placing them within the peak oil generation window. PED-P1 is, however, one of a ‘swarm’ of structures in the immediate area, and would have had to compete for migrating hydrocarbons.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of seismic data.
PROSPECT/LEAD      PED-P2

Sedimentary Basin(s)    Western Eromanga, Pedirka, Simpson

Structural Province   Pedirka Basin

Oil        Wet Gas        Dry Gas        ✓ Oil & Gas

Trapping Mechanism:  Anticline
✓ Prospect

Onshore

Prospect Longitude   136º 57’ E   Latitude   26º 33’ S

Strong Lead

Seismic Line Location   85 WNP SP 275-420

Weak Lead

Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth   2605 m (8545 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road   200 km, 125 miles; Nearest Gas Pipeline  340 km, 210 miles

Current Tenement Holder: Open   Previous Tenement Holder: Santos-Delhi

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<td>Unrisked Reserves Potential</td>
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<td>Primary Objective 2</td>
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<tr>
<td>Secondary Objective 1</td>
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<tr>
<td>Secondary Objective 2</td>
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<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment
The PED-P2 prospect is a large, linear, north-south trending, unfaulted anticline located southeast of the Macumba feature. Three sub-culminations are aligned along the crest of the structure. The structure is ideally situated in that it accesses a large drainage area (Poolowanna Trough) to the east in which potential source rocks have been buried up to 3000 m (9800 ft), while formations within the closure itself have been only moderately buried and diagenesis should not have severely affected reservoir quality. Purni, Peera Peera and Lower Poolowanna formation source rocks should all be well developed and within the peak oil generation window. Oil recovered from the Poolowanna 1 well was generated from Poolowanna Formation source rocks in the Poolowanna Trough. Purni Formation gas prone source rocks should be marginally mature for gas generation and may have achieved peak gas generation conditions. The structure exhibits considerable thinning of Jurassic and older units across its crest, and would have provided an excellent trap for migrating hydrocarbons. PED-P2 provides a very exciting exploration target.

Work Required to Mature to Drillable Prospect Status

Acquisition of 8 km of seismic data.
PROSPECT/LEAD PED-P3

Sedimentary Basin(s) Western Eromanga, Pedirka, Simpson

Structural Province Pedirka Basin ✓ Onshore

Oil Wet Gas Dry Gas ✓ Oil & Gas Trapping Mechanism: Anticline

Prospect Longitude 136° 54’ E Latitude 26° 16’ S

✓ Strong Lead Seismic Line Location 76 WBC SP 210

Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 2690 m (8825 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road 200 km, 125 miles; Nearest Gas Pipeline 360 km, 225 miles

Current Tenement Holder: Open Previous Tenement Holder: Santos-Delhi

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<td>Secondary Objective 3</td>
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</table>

Concept / Description / Comment
The PED-P3 prospect is a small crestal closure located in the southeastern reaches of the large, Oolarinna dome. The prospect would provide a good follow-up opportunity to the Oolarinna Updip Prospect. Given that oil accumulations that have been discovered in the Eromanga Basin are commonly in the order of about five million barrels or less, in-place, closures of PED-P3 size provide ideal exploration targets. PED-P3 accesses large hydrocarbon drainage areas to the west and east. Oolarinna 1, located some 7 km north of PED-P3, was drilled by Delhi in 1985. Post drilling seismic interpretations suggest the well was not drilled in an optimum crestal position. Dull yellow-green, patchy fluorescence with a slow streaming cut and a thin to thick ring residue was present over an 8 metre (26 ft) interval of the Lower Poolowanna Formation in Oolarinna 1. A vitrinite reflectance value of Ro = 1.02 was measured from the base of the Permian at Oolarinna 1. Oolarinna 1 intersected both Pedirka Basin and Simpson Basin sequences and consequently source potential is offered by the Purni (oil and gas), Peera Peera (mainly oil) and Lower Poolowanna (mainly oil) Formations.

Work Required to Mature to Drillable Prospect Status
Acquisition of 10 km of seismic data.
PROSPECT/LEAD PED-L33

Sedimentary Basin(s) Western Eromanga, Pedirka, Simpson

Structural Province Pedirka Basin ✓ Onshore
Offshore

Oil Wet Gas Dry Gas ✓ Oil & Gas Trapping Mechanism: ✓ Anticline

Prospect Longitude 136º44′E Latitude 27º18′S

Strong Lead Seismic Line Location 84 TZH SP 2100

✓ Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Oil        Wet Gas        Dry Gas

Total Drilling Depth 1955 m (6415 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road 190 km, 120 miles; Nearest Gas Pipeline 320 km, 200 miles

Current Tenement Holder: Open. Previous Tenement Holder: Santos-Delhi.

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<td>Secondary Objective 3</td>
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Concept / Description / Comment

PED-L33 is a single line (1984 vintage) high relief, roll-over feature. The nearest modern seismic control other than the line from which the lead is based, is more than 25 km from PED-L33. The lead is situated within but near the southern limit of the Pedirka Basin sequence, and beyond the western edge of the Simpson Basin. A shaley but relatively thin Poolowanna Formation facies is expected. The lead appears to drain an adequate area in which depths to the base Permian range between 2000 and 2600 m (6560 - 8530 ft). Poolowanna and Purni formation source rocks should be marginally mature to mature for oil generation. Purni Formation source rocks may be largely gas prone rather than oil prone, and immature for significant gas generation.

Work Required to Mature to Drillable Prospect Status

Acquisition of 35 km of seismic data.
PEDIRKA LEAD 33
Depth structure top Cadna-owie Formation
C Horizon (metres)
After Delta Petroleum Pty Ltd mapping

LINE 84 TZH
PROSPECT/LEAD    PED-L32

Sedimentary Basin(s)    Western Eromanga, Pedirka

Structural Province    Pedirka Basin

Oil    Wet Gas    Dry Gas    ✓ Oil & Gas    Trapping Mechanism:    Anticline

Prospect Longitude    136º41’E    Latitude    27º00’S

Strong Lead Seismic Line Location    85WPR SP 205-320

✓ Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth    2255 m (7400 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road    190 km, 120 miles; Nearest Gas Pipeline    325 km, 200 miles

Current Tenement Holder: Open    Previous Tenement Holder: Santos-Delhi

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<td>Secondary Objective 2</td>
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<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment

PED-L32 is a small roll-over feature which exhibits an early structural development. The lead lies beyond the western limit of Simpson Basin sediments, but overlies a thick Pedirka Basin sequence. Subsurface control is poor but a well developed Poolowanna formation is expected. Existing seismic control suggests the lead accesses a small but adequate drainage area in which Poolowanna and Purni Formation source rocks should have achieved peak oil maturity.

Work Required to Mature to Drillable Prospect Status

Acquisition of 18 km of seismic.
PEDIRKA LEAD 32
Depth structure top Cadna-owie Fm.
C Horizon (metres)
After Delhi Petroleum mapping

LINE 85 WPR
PROSPECT/LEAD   PED-L31

Sedimentary Basin(s)   Western Eromanga, Pedirka, Simpson

Structural Province   Pedirka Basin   ✓ Onshore

Oil        Wet Gas        Dry Gas   ✓ Oil & Gas   Trapping Mechanism: Anticline

Prospect Longitude 136º45’E   Latitude 26°53’S
Strong Lead Seismic Line Location 84 WMY SP 400
✓ Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 2495 m (8185 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road 180 km, 110 miles; Nearest Gas Pipeline 320 km, 200 miles
Current Tenement Holder: Open   Previous Tenement Holder: Santos-Delhi

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<tr>
<td>Secondary Objective 1</td>
<td>Purni Formation</td>
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<td>Secondary Objective 3</td>
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</table>

Concept / Description / Comment
PED-L31 is a small, low relief domal lead, located some 60+ km (37 miles) from the nearest petroleum exploration well. The early formed lead is situated within, but very near to the interpreted western edge of the Simpson Basin sequence, but overlies a thick Pedirka Basin section. Mapping of the limited seismic in the area indicates PED-L31 drains a particularly large area which extends nearly 40 km (25 miles) to the axial regions of the Poolowanna Trough. Base Permian depths within the drainage area range from 2300 m(7545 ft) to 3000 m (9840 ft). Oil prone source rocks will have reached peak maturity over the entire drainage area, while gas prone source rocks should have reached peak maturity towards the more axial regions of the Poolowanna Trough. Poolowanna source and seal intervals should be well developed.

Work Required to Mature to Drillable Prospect Status
Acquisition of 15 km of seismic data.
PROSPECT/LEAD        PED-L30

Sedimentary Basin(s)             Western Eromanga, Pedirka, Simpson

Structural Province     Pedirka Basin              ✓ Onshore

Oil       Wet Gas       Dry Gas       ✓ Oil & Gas       Trapping Mechanism: :   Anticline

Prospect       Longitude  136°52’E    Latitude  27°02’S

Strong Lead       Seismic Line Location  85WPS SP425

 ✓ Weak Lead       Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth   2380 m (7810 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  180 km, 110 miles; Nearest Gas Pipeline  320 km, 200 miles

Current Tenement Holder: Open       Previous Tenement Holder: Santos-Delhi

<table>
<thead>
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<tbody>
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<td>Secondary Objective 2</td>
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<tr>
<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment
PED-L30 is a small, low relief, domal lead, located some 60+ km (37 miles) from the nearest petroleum exploration well. The early formed lead is situated within, but very near to the interpreted western edge of the Simpson Basin sequence, but overlies a thick Pedirka Basin section. Mapping of the limited seismic in the area indicates PED-L30 drains a particularly large area which extends nearly 40 km (25 miles) to the axial regions of the Poolowanna Trough. Base Permian depths within the drainage area range from 2300 m (7545 ft) to 3000 m (9840 ft). Oil prone source rocks will have reached peak maturity over the entire drainage area, while gas prone source rocks should have reached peak maturity towards the more axial regions of the Poolowanna Trough. Poolowanna source and seal intervals should be well developed.

Work Required to Mature to Drillable Prospect Status
Acquisition of 15 km of seismic data.
PEDIRKA LEAD 29, LEAD 30 and LEAD 31
Time structure top Cadna-owie Formation
C Horizon (metres)
After Dehi Petroleum Pty Ltd mapping

LINE 85WPS

C Horizon
Base Jurassic
Z Horizon
PROSPECT/LEAD       PED-L29

Sedimentary Basin(s)       Western Eromanga, Pedirka, Simpson

Structural Province       Pedirka       ✓ Onshore

Oil       Wet Gas       Dry Gas       ✓ Oil & Gas       Trapping Mechanism:       Anticline

Prospect       Longitude 136°47’E       Latitude 26°38’S

✓ Strong Lead       Seismic Line Location 84WMY SP720 & 85 WPR SP 530-670
Weak Lead       Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 2340 m (7675 ft) in Warburton Basin sediments
Distance to Nearest Sealed Road 180 km, 110 miles; Nearest Gas Pipeline 320 km, 200 miles
Current Tenement Holder: Open       Previous Tenement Holder: Santos-Delhi

<table>
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<tbody>
<tr>
<td>Formation Name</td>
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<td>Primary Objective 2</td>
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<td>Secondary Objective 1</td>
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<td>Secondary Objective 3</td>
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</table>

| Concept / Description / Comment |
PED-L29 is a large, low relief, linear lead, located some 60+ km (37 miles) from the nearest petroleum exploration well. The early formed lead is situated within, but very near to the interpreted western edge of the Simpson Basin (Triassic) sequence, but overlies a thick Pedirka Basin (Permian) section. Mapping of the limited seismic in the area indicates PED-L29 drains a particularly large area which extends nearly 40 km (25 miles) to the axial regions of the Poolowanna Trough. Base Permian depths within the drainage area range from 2300 m (7545 ft) to 3000 m (9840 ft). Oil prone source rocks will have reached peak maturity over the entire drainage area, while gas prone source rocks should have reached peak maturity towards the more axial regions of the Poolowanna Trough. Poolowanna source and seal intervals should be well developed.

| Work Required to Mature to Drillable Prospect Status |
Acquisition of 60 km of seismic data.
PEDIRKA LEAD 29 and LEAD 31
Depth structure top Cadna-owie Formation
C Horizon (metres)
After Delhi Petroleum Pty Ltd mapping

PEDIRKA LEAD 29 and LEAD 31
Depth structure top Lower Palaeozoic
Z Horizon (metres)
After Delhi Petroleum Pty Ltd mapping

LINE 85WPR

C Horizon
Base Jurassic
Z Horizon
PROSPECT/LEAD   PED-L28

Sedimentary Basin(s)   Western Eromanga, Pedirka, Simpson

Structural Province   Pedirka Basin

Oil         Wet Gas        Dry Gas   ✓ Oil & Gas

Trapping Mechanism:   ✓ Anticline

Prospect Longitude   137°15’E

Strong Lead Latitude   26°57’S

Seismic Line Location

Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth   2885 m (9465 ft); in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road   160 km, 100 miles; Nearest Gas Pipeline 300 km, 185 miles

Current Tenement Holder: Open   Previous Tenement Holder: Santos-Delhi

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<tbody>
<tr>
<td>Located near the axis of the Poolowanna Trough, reservoirs in this potentially large, weak lead access the most mature source rocks in the basin. Basal Permian rocks within the lead’s hydrocarbon drainage area, are buried to depths of between 2900 and 3000 m (9500-9850 ft). PED-L28 is well positioned to receive hydrocarbons, being effectively surrounded by large synclinal areas. Both oil and gas might be expected, although the Lead is located near to the Permian depositional edge, and Purni Formation source shales and coals may not be well developed. Lower Poolowanna Formation source rock intervals should be thick and organically rich and therefore offer significant source potential for oil. Permeability reduction due to diagenetic alteration can be expected given the relatively large depths of burial of potential reservoirs and consequently, reservoir quality is considered to be a major exploration risk. Early hydrocarbon fill may have preserved reservoir porosity and permeability. The nearest petroleum exploration well to PED-L28 is Miandana 1. Rare moderately bright fluorescence was recorded from the Peera Peera Formation during the drilling of this well, but Miandana 1 appears to be located outside of effective closure at reservoir levels. Miandana 1 encountered a thick, well developed Birkhead Formation sequence. Additional source potential would be provided at PED-L27 should this unit extend north-westward beyond Miandana 1. Additional trapping potential would be provided beneath the unit.</td>
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<table>
<thead>
<tr>
<th>Work Required to Mature to Drillable Prospect Status</th>
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<tbody>
<tr>
<td>Acquisition of 65 km of seismic data.</td>
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</table>
PROSPECT/LEAD PED-L27

Sedimentary Basin(s) Western Eromanga, Pedirka, Simpson

Structural Province Pedirka Basin ✓ Onshore

Oil Wet Gas Dry Gas ✓ Oil & Gas Trapping Mechanism: : Anticline

Prospect Longitude 137°13’E Latitude 26°52’S

Strong Lead Seismic Line Location 79WDW SP820 & 82 WKC SP 100-165

✓ Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 2875 m (9430 ft); in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road 160 km, 100 miles; Nearest Gas Pipeline 300 km, 185 miles

Current Tenement Holder: Open Previous Tenement Holder: Santos, Delhi

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Concept / Description / Comment

Located near the axis of the Poolowanna Trough, reservoirs in this potentially large, weak lead access the most mature source rocks in the basin. Basal Permian rocks within the lead’s hydrocarbon drainage area, are buried to depths of between 2900 and 3000 m (9500-9850 ft). PED-L27 is well positioned to receive hydrocarbons, being effectively surrounded by large synclinal areas. Both oil and gas might be expected, although the Lead is located near to the Permian depositional edge, and Purni Formation source shales and coals may not be well developed. Lower Poolowanna Formation source rock intervals should be thick and organically rich and therefore offer significant source potential for oil. Permeability reduction due to diagenetic alteration can be expected given the relatively large depths of burial of potential reservoirs and consequently, reservoir quality is considered to be a major exploration risk. The nearest petroleum exploration well to PED-L27 is Miandana 1. Rare moderately bright fluorescence was recorded from the Peera Peera formation during the drilling of this well, but Miandana 1 appears to be located outside of effective closure at reservoir levels. Miandana 1 encountered a thick, well developed Birkhead Formation sequence. Additional source potential would be provided at PED-L27 should this unit extend north-westward beyond Miandana 1. Additional trapping potential would be provided beneath the unit.

Work Required to Mature to Drillable Prospect Status

Acquisition of 80 km of seismic data.
PROSPECT/LEAD PED-L26

Sedimentary Basin(s) Western Eromanga, Pedirka, Simpson

Structural Province Pedirka Basin ✓ Onshore

Oil Wet Gas Dry Gas ✓ Oil & Gas Trapping Mechanism: ✓ Anticline

Prospect Longitude 137º13’E Latitude 26º43’S

Strong Lead Seismic Line Location 82WKA SP 220

✓ Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 3050 m (10,000 ft); in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 180 km, 110 miles; Nearest Gas Pipeline 325 km, 200 miles

Current Tenement Holder: Open Previous Tenement Holder: Santos, Delhi

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</table>

Concept / Description / Comment
PED-L26 is one of four weak leads that have been identified as part of a northwest orientated structural trend between the Macumba 1 and Walkandi 1 wells. Seismic line spacing is in the order of 7.5 km and PED-L26 is one of the three leads that are recognised as single line roll-over anomalies. Located near the axis of the Poolowanna Trough, reservoirs in each of the four leads access the most mature source rocks in the basin. Basal Permian rocks within the lead’s hydrocarbon drainage area, are buried to depths of between 2900 and 3000 m (9500-9850 ft). Both oil and gas might be expected, although the leads are located near to the Permian depositional edge, and Purni Formation source shales and coals may not be well developed. Lower Poolowanna Formation source rock intervals should be thick and organically rich and therefore offer significant source potential for oil and the underlying Triassic sequence offers additional source potential. Permeability reduction due to diagenetic alteration can be expected given the relatively large depths of burial of potential reservoirs and consequently, reservoir quality is considered to be a major exploration risk. Early hydrocarbon fill may have preserved reservoir porosity and permeability. Hydrocarbon drainage areas for each of the four leads are considered to be only moderate in size. Good fluorescence shows were seen in shaley sands over a 60 metre (200 ft) interval in the lower part of the Poolowanna Formation, and within a middle member of the Peera Peera Formation at Walkandi 1.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of seismic data.
PROSPECT/LEAD PED-L25

Sedimentary Basin(s) Western Eromanga, Pedirka, Simpson

Structural Province Pedirka Basin

Oil Wet Gas Dry Gas ✓ Oil & Gas Trapping Mechanism: ✓ Anticline

Prospect

Longitude 137º09’E

Latitude 26º40’S

Strong Lead Seismic Line Location off-line - 85WNS SP800

✓ Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 3020 m (9900 ft); in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 180 km, 110 miles; Nearest Gas Pipeline 325 km 200 miles

Current Tenement Holder: Open Previous Tenement Holder: Santos, Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation Name</td>
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<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>Primary Objective 1</td>
</tr>
<tr>
<td>Primary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
</tr>
<tr>
<td>Secondary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 3</td>
</tr>
</tbody>
</table>

Concept / Description / Comment

PED-L25 is one of four weak leads that have been identified as part of a northwest orientated structural trend between the Macumba 1 and Walkandi 1 wells. Seismic line spacing is in the order of 7.5 km and PED-L25 is one of the three leads that are recognised as single line roll-over anomalies. Located near the axis of the Poolowanna Trough, reservoirs in each of the four leads access the most mature source rocks in the basin. Basal Permian rocks within the lead’s hydrocarbon drainage area, are buried to depths of between 2900 and 3000 m (9500-9850 ft). Both oil and gas might be expected, although the leads are located near to the Permian depositional edge, and Purni Formation source shales and coals may not be well developed. Lower Poolowanna Formation source rock intervals should be thick and organically rich and therefore offer significant source potential for oil and the underlying Triassic sequence offers additional source potential. Permeability reduction due to diagenetic alteration can be expected given the relatively large depths of burial of potential reservoirs and consequently, reservoir quality is considered to be a major exploration risk. Early hydrocarbon fill may have preserved reservoir porosity and permeability. Hydrocarbon drainage areas for each of the four leads are considered to be only moderate in size. Good fluorescence shows were seen in shaley sands over a 60 metre (200 ft) interval in the lower part of the Poolowanna Formation, and within a middle member of the Peera Peera Formation at Walkandi 1.

Work Required to Mature to Drillable Prospect Status

Acquisition of 30 km of seismic data.
PROSPECT/LEAD       PED-L24

Sedimentary Basin(s)    Western Eromanga, Pedirka, Simpson

Structural Province     Pedirka Basin     ✓ Onshore

Oil       Wet Gas       Dry Gas       ✓ Oil & Gas       Trapping Mechanism:        Anticline

Prospect Longitude 137º10’E Latitude 26º35’S

✓ Strong Lead Seismic Line Location 76WBG SP360 & 84WMQ SP1550

Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 3050 m (10,000 ft); in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 180 km, 110 miles; Nearest Gas Pipeline 325 km, 200 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos, Delhi

Reservoirs and Reserves Potential

<table>
<thead>
<tr>
<th>Primary Objective</th>
<th>Formation Name</th>
<th>Approx Depth m (ft)</th>
<th>Unrisked Reserves Potential mmbbl</th>
<th>BCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Objective 1</td>
<td>Poolowanna Formation</td>
<td>2490 (8170)</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
<td>1755 (5760)</td>
<td>24.8</td>
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<tr>
<td>Secondary Objective 1</td>
<td>Purni Formation</td>
<td>2735 (8970)</td>
<td>4.5 13.5</td>
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<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment

PED-L24 is one of four weak leads that have been identified as part of a northwest orientated structural trend between the Macumba 1 and Walkandi 1 wells. Seismic line spacing is in the order of 7.5 km and PED-L24 is the only one of the four leads that are recognised as roll-over anomalies on more than one seismic line. Located near the axis of the Poolowanna Trough, reservoirs in each of the four leads access the most mature source rocks in the basin. Basal Permian rocks within the lead’s hydrocarbon drainage area, are buried to depths of between 2900 and 3000 m (9500-9850 ft). Both oil and gas might be expected, although the leads are located near to the Permian depositional edge, and Purni Formation source shales and coals may not be well developed. Lower Poolowanna Formation source rock intervals should be thick and organically rich and therefore offer significant source potential for oil and the underlying Triassic sequence offers additional source potential. Permeability reduction due to diagenetic alteration can be expected given the relatively large depths of burial of potential reservoirs and consequently, reservoir quality is considered to be a major exploration risk. Early hydrocarbon fill may have preserved reservoir porosity and permeability. Hydrocarbon drainage areas for each of the four leads are considered to be only moderate in size. Good fluorescence shows were seen in shaley sands over a 60 metre (200 ft) interval in the lower part of the Poolowanna Formation, and within a middle member of the Peera Peera Formation at Walkandi 1.

Work Required to Mature to Drillable Prospect Status

Acquisition of 25 km of seismic data.
PROSPECT/LEAD       PED-L23

Sedimentary Basin(s)  Western Eromanga, Pedirka, Simpson

Structural Province  Pedirka Basin  ✓ Onshore

Oil          Wet Gas  Dry Gas  ✓ Oil & Gas  Trapping Mechanism:  ✓ Anticline

Prospect  Longitude  137°06’30”E  Latitude  26°32’S
Strong Lead  Seismic Line Location  84WMQ SP1400
✓ Weak Lead  Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth  3020 m  (9900 ft); in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  180 km, 110 miles;  Nearest Gas Pipeline  325 km, 200 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
<th>Unrisked Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Approx Depth m (ft)</td>
</tr>
<tr>
<td>Primary Objective 1</td>
<td>Poolowanna Formation</td>
</tr>
<tr>
<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
<td>Purni Formation</td>
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<tr>
<td>Secondary Objective 2</td>
<td></td>
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<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment
PED-L23 is one of four weak leads that have been identified as part of a northwest orientated structural trend between the Macumba 1 and Walkandi 1 wells. Seismic line spacing is in the order of 7.5 km and PED-L23 is one of three of the leads that are recognised as single line roll-over anomalies. Located near the axis of the Poolowanna Trough, reservoirs in each of the four leads access the most mature source rocks in the basin. Basal Permian rocks within the lead’s hydrocarbon drainage area, are buried to depths of between 2900 and 3000 m (9500-9850 ft). Both oil and gas might be expected, although the leads are located near to the Permian depositional edge, and Purni Formation source shales and coals may not be well developed. Lower Poolowanna Formation source rock intervals should be thick and organically rich and therefore offer significant source potential for oil and the underlying Triassic sequence offers additional source potential. Permeability reduction due to diagenetic alteration can be expected given the relatively large depths of burial of potential reservoirs and consequently, reservoir quality is considered to be a major exploration risk. Early hydrocarbon fill may have preserved reservoir porosity and permeability. Hydrocarbon drainage areas for each of the four leads are considered to be only moderate in size. Good fluorescence shows were seen in shaley sands over a 60 metre (200 ft) interval in the lower part of the Poolowanna Formation, and within a middle member of the Peera Peera Formation at Walkandi 1.

Work Required to Mature to Drillable Prospect Status
Acquisition of 35 km of seismic data.
PROSPECT/LEAD PED-L22

Sedimentary Basin(s) Western Eromanga, Pedirka, Simpson

Structural Province Pedirka Basin Onshore

Oil Wet Gas Dry Gas Oil & Gas Trapping Mechanism: Anticline

Prospect

Strong Lead Seismic Line Location 85WNT SP560 & 84 WMT SP 2290 - 2390

Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 2660 m (8730 ft); in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 200 km, 125 miles; Nearest Gas Pipeline 340 km, 210 miles

Current Tenement Holder: Open Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
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<tbody>
<tr>
<td>Formation Name</td>
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<tr>
<td>Primary Objective 1</td>
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<tr>
<td>Primary Objective 2</td>
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<tr>
<td>Secondary Objective 1</td>
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<tr>
<td>Secondary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 3</td>
</tr>
</tbody>
</table>

Concept / Description / Comment

PED-L22 is a medium sized strong lead which offers good Jurassic, Triassic and Permian reservoir potential. The structure is very well situated in that it accesses large drainage areas to the east (Poolowanna Trough) and to the south, in which potential source rocks have been buried up to 3000 m (9800 ft), while formations within the closure itself have been only moderately buried and diagenesis should not have severely affected reservoir quality. Purni, Peera Peera and Lower Poolowanna formation source rocks should all be well developed and within and beyond the peak oil generation window. Purni Formation source rocks should be marginally mature for gas generation and may have achieved peak gas generation conditions in the deepest parts of the troughs. Oil recovered from the Poolowanna 1 well was generated from Poolowanna Formation source rocks in the Poolowanna Trough.

Work Required to Mature to Drillable Prospect Status

Acquisition of 40 km of seismic data.
PROSPECT/LEAD    PED - L21

Sedimentary Basin(s)    Western Eromanga, Pedirka, Simpson

Structural Province    Pedirka Basin    ✓ Onshore

Oil        Wet Gas        Dry Gas    ✓ Oil & Gas    Trapping Mechanism: Anticline

Prospect Longitude   136° 46' E    Latitude   26° 29' S

✓ Strong Lead    Seismic Line Location   82WLA    SP220

Weak Lead    Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth   2575 m   (8450 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road   200 km, 125 miles; Nearest Gas Pipeline   360 km, 225 miles

Current Tenement Holder: Open    Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Formation Name</td>
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<tr>
<td>----------------</td>
</tr>
<tr>
<td>Primary Objective 1</td>
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<tr>
<td>Primary Objective 2</td>
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<tr>
<td>Secondary Objective 1</td>
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<tr>
<td>Secondary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 3</td>
</tr>
</tbody>
</table>

Concept / Description / Comment

PED-L21 is a small, low relief domal closure that forms part of the north-south trending Killumi anticlinal nose. The PED-L21 prospect is located some 6 km (3.7 mi) north of the Killumi 1 well. Killumi 1 was drilled in a near crestal position on a separate closure. Drilling problems forced the Operator to terminate the well prematurely and as a result, the Permian interval was not tested. Log interpretation indicates good porosity development in the Peera Peera and Poolowanna formations at Killumi 1, although all of the potential reservoir sands were found to be water saturated. PED-L21 has a large, oil mature drainage area. The lead is much better positioned than the Killumi structure to attract hydrocarbons that might have migrated from synclinal regions located to the northwest and northeast.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of seismic data.
PROSPECT/LEAD  PED-L20

Sedimentary Basin(s)  Western Eromanga, Pedirka, Simpson

Structural Province  Pedirka Basin  ✓ Onshore

Oil  Wet Gas  Dry Gas  ✓ Oil & Gas  Trapping Mechanism: Anticline

Prospect

Longitude  136° 50’ E  Latitude  26° 33’ S

Strong Lead  Seismic Line Location  82WLC  SP305

✓ Weak Lead  Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth  2785 m  (9140 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road  200 km, 125 miles; Nearest Gas Pipeline  360 km  225 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

Reservoirs and Reserves Potential

<table>
<thead>
<tr>
<th>Formation Name</th>
<th>Approx Depth m (ft)</th>
<th>Unrisked Reserves Potential mmbbl</th>
<th>BCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Objective 1</td>
<td>Poolowanna Formation</td>
<td>2230 (7320)</td>
<td>5.6</td>
</tr>
<tr>
<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
<td>1500 (4920)</td>
<td>10.6</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
<td>Purni Formation</td>
<td>2475 (8120)</td>
<td>1.4</td>
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<tr>
<td>Secondary Objective 2</td>
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<td></td>
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<tr>
<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment

PED-L20 is an unfaulted, medium sized domal structure at seismic ‘C’ horizon level, but is mapped as part of an elongate, sinuous nose at ‘Z’ level. The feature drains a very small area, and it is unlikely that sufficient volumes of oil (or gas) would have been generated within the drainage area to significantly charge the structure. Poolowanna and Peera Peera formation source rocks are expected to be well developed and to have reached peak oil generation maturity. The source rock facies of the Purni Formation at nearby Macumba 1 is not particularly good, with only thin coal and shale beds developed. Nevertheless, the Purni Formation does provide some oil and gas potential.

Work Required to Mature to Drillable Prospect Status

Acquisition of 25 km of seismic data.
PROSPECT/LEAD     PED-L19

Sedimentary Basin(s)     Western Eromanga, Pedirka, Simpson

Structural Province     Pedirka Basin

Onshore

Oil          Wet Gas          Dry Gas          ✓ Oil & Gas

Trapping Mechanism:     Anticline

Prospect Longitude  136º 50'E  Latitude  26º 31'S

✓ Strong Lead Seismic Line Location   82 WLB   SP 325

Weak Lead Map Reference: Delhi Petroleum 1987 and MESA 1995 Regional

Total Drilling Depth 2775 m   (9100 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road 200 km, 125 miles; Nearest Gas Pipeline 360 km, 225 miles

Current Tenement Holder: Open     Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
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<tbody>
<tr>
<td>Formation Name</td>
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<tr>
<td></td>
</tr>
<tr>
<td>Poolowanna Formation</td>
</tr>
<tr>
<td>Primary Objective 1</td>
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<tr>
<td>Primary Objective 2</td>
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<td>Secondary Objective 1</td>
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<tr>
<td>Secondary Objective 2</td>
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<tr>
<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment

PED-L19 is an unfaulted, medium sized domal structure at seismic ‘C’ horizon level, but is mapped as part of an elongate, sinuous nose at ‘Z’ level. The feature drains a very small area, and it is unlikely that sufficient volumes of oil (or gas) would have been generated within the drainage area to significantly charge the structure. Poolowanna and Peera Peera source rocks are expected to be well developed and to have reached peak oil generation maturity. The source rock facies of the Purni Formation at nearby Macumba 1 is not particularly good, with only thin coal and shale beds developed. Nevertheless, the Purni Formation does provide some oil and gas potential.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of seismic data.
PROSPECT/LEAD      PED-L13

Sedimentary Basin(s)  Western Eromanga, Pedirka

Structural Province  Pedirka Basin  ✓ Onshore

Oil        Wet Gas        Dry Gas  ✓ Oil & Gas  Trapping Mechanism: Anticline

Prospect Longitude  136° 40’ E  Latitude  26° 00’ S
✓ Strong Lead  Seismic Line Location  65 AA SP 1335
Weak Lead  Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth  2410 m (7900 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  240 km, 150 miles;  Nearest Gas Pipeline  400 km, 250 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

<table>
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<tr>
<th>Reservoirs and Reserves Potential</th>
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<tbody>
<tr>
<td>Formation Name</td>
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<tr>
<td>Primary Objective 1</td>
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<tr>
<td>Primary Objective 2</td>
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<td>Secondary Objective 1</td>
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<tr>
<td>Secondary Objective 2</td>
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<tr>
<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment

PED-L13 is a large, elongate feature, some 19 km in length, that extends into the Northern Territory where it was evaluated by the Colson 1 well. Excellent reservoir rocks were encountered by the Colson 1 well, but it is unlikely that independent closure is present within the South Australian extent of the structure. Seismic acquisition may, however, reveal otherwise.

Work Required to Mature to Drillable Prospect Status

Acquisition of 60 km of modern seismic data.
PROSPECT/LEAD       PED-L12

Sedimentary Basin(s)   Western Eromanga, Pedirka

Structural Province   Pedirka Basin

Onshore

Oil      Wet Gas      Dry Gas ✓ Oil & Gas Trapping Mechanism: Anticline

Prospect

Longitu de 136° 29’30” E     Latitude 26° 16’30” S

✓ Strong Lead

Seismic Line Location 82 WKF SP 455

Weak Lead

Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth 2235 m (7330 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 260 km, 160 miles; Nearest Gas Pipeline 430 km 265 miles

Current Tenement Holder: Open

Previous Tenement Holder: Santos-Delhi

Reservoirs and Reserves Potential

<table>
<thead>
<tr>
<th></th>
<th>Formation Name</th>
<th>Approx Depth m (ft)</th>
<th>Unrisked Reserves Potential mmbbl</th>
<th>BCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Objective 1</td>
<td>Poolowanna Formation</td>
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<td>7.9</td>
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<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
<td>1290 (4230)</td>
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<tr>
<td>Secondary Objective 1</td>
<td>Purni Formation</td>
<td>1970 (6465)</td>
<td>3.0</td>
<td>9.0</td>
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<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment

PED-L12 is one of four low relief leads that are mapped around the Glen Joyce 1 well location. The lead exhibits an early, but subtle structural presence and reactivation in the Tertiary produced only gentle thinning of the Eromanga section. Post drilling reinterpretation of seismic data indicates that the Glen Joyce 1 well was located on a much smaller closure than originally thought, and may not have been within effective closure at Jurassic and younger levels. No fluorescence was noted while drilling the well, although small gas peaks were associated with coal seams. PED-L12 is well positioned, draining large areas to the east, west, north and south. Depth to basement is in the order of 2200 m (7200 ft) which should place oil prone source rocks into the window of peak generation. The lead is situated near the western limit of shaley Poolowanna facies, and Jurassic source potential is considered relatively poor. Gas and oil prone Purni Formation coals are well developed in the area. Gas prone source rocks will be immature.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of modern seismic data.
PROSPECT/LEAD      PED-L11

Sedimentary Basin(s)  Western Eromanga, Pedirka
Structural Province  Pedirka Basin  ✓ Onshore

Oil        Wet Gas        Dry Gas  ✓ Oil & Gas  Trapping Mechanism: Anticline

Prospect Longitude  136° 32’30” E  Latitude  26° 19’ S
✓ Strong Lead  Seismic Line Location  74WAA SP185
Weak Lead  Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth  2250 m  (7380 ft) in Warburton/Amadeus Bain sediments
Distance to Nearest Sealed Road  260 km, 160 miles; Nearest Gas Pipeline  430 km, 265 miles
Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
<th>Unrisked Reserves Potential</th>
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</thead>
<tbody>
<tr>
<td>Formation Name</td>
<td>Approx Depth (m ft)</td>
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<tr>
<td>Primary Objective 1</td>
<td>Poolowanna Formation</td>
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<tr>
<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
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<tr>
<td>Secondary Objective 1</td>
<td>Purni Formation</td>
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<tr>
<td>Secondary Objective 2</td>
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<tr>
<td>Secondary Objective 3</td>
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</tr>
</tbody>
</table>

Concept / Description / Comment

PED-L11 is one of four low relief leads that are mapped around the Glen Joyce 1 well location. The lead exhibits an early, but subtle structural presence and reactivation in the Tertiary produced only gentle thinning of the Eromanga section. Post drilling reinterpretation of seismic data indicates that the Glen Joyce 1 well was located on a much smaller closure than originally thought, and may not have been within effective closure at Jurassic and younger levels. No fluorescence was noted while drilling the well, although small gas peaks were associated with coal seams. PED-L11 is well positioned, draining large areas to the east, west, north and south. Depth to basement is in the order of 2200 m (7200 ft) which should place oil prone source rocks into the window of peak generation. The lead is situated near the western limit of shaley Poolowanna facies, and Jurassic source potential is considered relatively poor. Gas and oil prone Purni Formation coals are well developed in the area. Gas prone source rocks will be immature.

Work Required to Mature to Drillable Prospect Status

Acquisition of 10 km of modern seismic data.
PROSPECT/LEAD PED-L10

Sedimentary Basin(s) Western Eromanga, Pedirka

Structural Province Pedirka Basin ✓ Onshore

Oil ✓ Wet Gas Dry Gas Oil & Gas Trapping Mechanism:

Prospect Longitude 136° 30’ E Latitude 26° 20’ S
✓ Strong Lead Seismic Line Location 84 WMF SP 240
Weak Lead Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth 2270 m (7450 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road 260 km, 160 miles; Nearest Gas Pipeline 430 km, 265 miles
Current Tenement Holder: Open Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
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<tbody>
<tr>
<td>Formation Name</td>
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</tr>
<tr>
<td>Primary Objective 1</td>
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<tr>
<td>Primary Objective 2</td>
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<tr>
<td>Secondary Objective 2</td>
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<tr>
<td>Concept / Description / Comment</td>
</tr>
</tbody>
</table>
PED-L10 is one of four low relief leads that are mapped around the Glen Joyce 1 well location. The lead is recognised at Permian levels, but closure is not seen at the 'C' seismic horizon. Depth to basement is in the order of 2200 m (7200 ft) which should place oil prone source rocks into the window of peak generation. The lead is situated near the western limit of shaley Poolowanna facies, and Jurassic source potential is considered relatively poor. Gas and oil prone Purni Formation coals are well developed in the area. Gas prone source rocks will be immature.

Work Required to Mature to Drillable Prospect Status

Acquisition of 10 km of modern seismic data.
PERUMBA LEAD,
PEDIRKA LEAD 10, LEAD 11, LEAD 12
Depth structure top adna-owie ornament
ori on metres
After Delhi Petroleum Pty ltd mapping

PERUMBA LEAD
PEDIRKA LEAD 10, LEAD 11, LEAD 12
Depth structure top adna-owie ornament
ori on metres
After Delhi Petroleum Pty ltd mapping

LINE WKF
PROSPECT/LEAD PED-L9

Sedimentary Basin(s) Western Eromanga, Pedirka

Structural Province Pedirka Basin ✓ Onshore

✓ Oil Wet Gas Dry Gas Oil & Gas Trapping Mechanism: Anticline

Prospect Longitude 136º 30’ E Latitude 26º 20’ S

✓ Strong Lead Seismic Line Location 82 WKK SP 480

Weak Lead Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth 2315 m (7600 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 260 km, 160 miles; Nearest Gas Pipeline 430 km, 265 miles

Current Tenement Holder: Open Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
<th>Unrisked Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation Name</td>
<td>Approx Depth (m ft)</td>
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<tr>
<td>Primary Objective 1</td>
<td>Poolowanna Formation</td>
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<tr>
<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
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<td>Secondary Objective 1</td>
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</tbody>
</table>

Concept / Description / Comment

PED-L9 is one of several medium sized, low relief anticlinal features that were delineated by the 1982 Christmas Creek seismic survey in the immediate Mokari 1 area. The feature is mapped as a structural nose without full closure at ‘Z’ horizon level. PED-L9 is well positioned to be charged with hydrocarbons migrating from the eastern source centre. On the basis of results from the drilling of Mokari 1, good to very good reservoir development should be expected in the Purni, Poolowanna and Algebuckina formations, although the Poolowanna Formation may not be effectively sealed. Organic content (TOC) was high in both the lower Poolowanna and the Purni formations at Mokari 1, although the organically rich, oil prone interval was thin in the former formation. The unit’s source rocks should progressively thicken eastwards. Vitrinite reflectance values of 0.7 were measured for the uppermost Purni Formation, but values for the deeper section were not obtained.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of modern seismic data.
PERUMBA LEAD
PEDIRKA LEAD 10 LEAD 11 LEAD 1
Depth structure top adna-owel ornation
ori on metres
After Delhi Petroleum Pty ltd mapping

PERUMBA LEAD
PEDIRKA LEAD 10 LEAD 11 LEAD 1
Depth structure top ower Palaeo oic
ori on metres
After Delhi Petroleum Pty ltd mapping

PERUMBHA LEAD
PEDIRKA LEAD 10 LEAD 11 LEAD 1
Depth structure top adna-owel ornation
ori on metres
After Delhi Petroleum Pty ltd mapping

LINE WKF
PROSPECT/LEAD           PED-L8

Sedimentary Basin(s)    Western Eromanga, Pedirka

Structural Province    Pedirka Basin
Onshore

Oil        Wet Gas        Dry Gas      Oil & Gas
Prospect

Longitude   136° 27’ E
Latitude   26° 27’ S

Strong Lead

Seismic Line Location   82 WKM SP 430

Weak Lead

Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth   2285 m (7500 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  260 km, 160 miles;  Nearest Gas Pipeline  425 km, 265 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

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<td>Formation Name</td>
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<td>Primary Objective 2</td>
<td>Algebuckina Sandstone</td>
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</table>

Concept / Description / Comment
PED-L8 is one of several medium sized, low relief anticlinal features that were delineated by the 1982 Christmas Creek seismic survey in the immediate Mokari 1 area. The feature is mapped as a structural nose at ‘Z’ horizon level. Of the Updip Mokari prospect, and leads PED-L07 to L09, PED-L08 is the best positioned to be charged with hydrocarbons migrating from the eastern source centre. On the basis of results from the drilling of Mokari 1, good to very good reservoir development should be expected in the Purni, Poolowanna and Algebuckina formations, although the Poolowanna Formation may not be effectively sealed. Organic content (TOC) was high in both the lower Poolowanna and the Purni formations at Mokari 1, although the organically rich oil prone interval was thin in the former formation. The unit’s source rocks should progressively thicken eastwards. Vitrinite reflectance values of 0.7 were measured for the uppermost Purni Formation, but values for the deeper section were not obtained.

Work Required to Mature to Drillable Prospect Status
Acquisition of 20 km of modern seismic data.
PERUMBA LEAD, PEDIRKA LEAD 10, LEAD 11 and LEAD 12
Depth structure top Cadna-owie Formation
C Horizon (metres)
After Delhi Petroleum Pty Ltd mapping

PERUMBA LEAD, PEDIRKA LEAD 10, LEAD 11 and LEAD 12
Depth structure top Lower Palaeozoic
Z Horizon (metres)
After Delhi Petroleum Pty Ltd mapping

LINE 82 WKF
LINE 82 WKM

LINE 82 WKK
PROSPECT/LEAD PED-L7

Sedimentary Basin(s) Western Eromanga, Pedirka

Structural Province Pedirka Basin Onshore

Oil Wet Gas Dry Gas Oil & Gas Trapping Mechanism: Anticline

Prospect Longitude 136° 23’ E Latitude 26° 27’ S

Strong Lead Seismic Line Location 82 WKM SP 320

Weak Lead Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth 2195 m (7200 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road 260 km, 160 miles; Nearest Gas Pipeline 425 km, 265 miles

Current Tenement Holder: Open Previous Tenement Holder: Santos-Delhi

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<td>Formation Name</td>
<td>Approx Depth m (ft)</td>
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<tr>
<td>Primary Objective 1 Poolowanna Formation</td>
<td>1740 (5710)</td>
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<tr>
<td>Primary Objective 2 Algebuckina Sandstone</td>
<td>1225 (4020)</td>
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</table>

| Concept / Description / Comment |

PED-L7 is a strong lead of moderate size, but subtle vertical relief, that forms a southern extension to the Mokari Anticline. The feature is mapped as a structural nose at ‘Z’ horizon level. On the basis of results from the drilling of Mokari 1, good to very good reservoir development should be expected in the Purni, Poolowanna and Algebuckina formations. The lead lies adjacent to two small, shallow depressions, and may have obtained small volumes of oil from them. Nearby lead PED-L08, should it prove to be a valid closure, would, however, have intercepted virtually all of the hydrocarbons migrating from the major source area to the east, that would have otherwise charged PED-L7. The Peralla Prospect is located immediately to the west of PED-L7.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of seismic data.
**Prospect/Lead**  
**PED-L5**

**Sedimentary Basin(s)**  
Western Eromanga, Pedirka

**Structural Province**  
Pedirka Basin  
✓ Onshore

<table>
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<tr>
<th>Oil</th>
<th>Wet Gas</th>
<th>Dry Gas</th>
<th>✓ Oil &amp; Gas</th>
<th>Trapping Mechanism: Anticline</th>
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</thead>
<tbody>
<tr>
<td>Prospect</td>
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<tr>
<td>Longitude</td>
<td>136° 16’ E</td>
<td>Latitude</td>
<td>26° 35’ S</td>
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</tr>
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</table>

✓ Strong Lead  
Seismic Line Location  
82 WKP SP 155

Weak Lead  
Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

**Total Drilling Depth**  
1695 m (5560 ft) in Warburton/Amadeus Basin sediments

**Distance to Nearest Sealed Road**  
300 km, 185 miles  
Nearest Gas Pipeline  
440 km, 270 miles

**Current Tenement Holder:** Open  
**Previous Tenement Holder:** Santos-Delhi

### Reservoirs and Reserves Potential

<table>
<thead>
<tr>
<th>Primary Objective 1</th>
<th>Formation Name</th>
<th>Approx Depth m (ft)</th>
<th>Unrisked Reserves Potential</th>
<th>BCF</th>
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<td>Poolowanna Formation</td>
<td>1560 (5120)</td>
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<td>Algebuckina Sandstone</td>
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<td>Secondary Objective 1</td>
<td>Purni Formation</td>
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**Concept / Description / Comment**

Two prospects and three leads are mapped along the western, upthrown side of the prominent Border Fault. PED-L5 is a strong lead located eight km south of Peralla Prospect, near the southern-most extent of the Border Fault. The feature is not faulted at Jurassic and younger levels as are the Peralla and Pertaka prospects to the north. Vertical closure is in the order of 8 ms TWT (8 m). The prospect accesses a large hydrocarbon drainage area to the east and a small one to the west. Seismic line 82 WKP shows an anomalous, deep Purni trough contiguous with the structure’s eastern flank. As the recognised depositional limit of the Poolowanna Formation lies a short distance to the west of the lead, and shales and coals within the unit may not be well developed, the Purni Formation may provide the only significant local source potential. Nevertheless, the depocentre of the Purni Formation more or less underlies the feature, and an expected 215 m (700 ft) of Upper Purni Formation shales and coals offer both oil and gas source potential while interbedded sands offer reservoir potential. Oil prone source rocks should be within the peak oil generation window, but burial depths of 1800 to 2000 m (5900 to 6560 ft) would not have been sufficient to bring gas prone source rocks to peak maturity conditions. The Algebuckina Sandstone, sealed by the Cadna-owie Formation, is conducive to long distance hydrocarbon migration.

**Work Required to Mature to Drillable Prospect Status**

Acquisition of 35 km of modern seismic data.
PEDIRKA LEAD 5
Depth structure top Cadna-owie Formation C Horizon (metres)
After Dehi Petroleum Pty Ltd mapping

LINE 82-WKP
PROSPECT/LEAD       PED-L4

Sedimentary Basin(s)  Western Eromanga, Pedirka

Structural Province  Pedirka Basin  ✓ Onshore

Oil        Wet Gas        Dry Gas  ✓ Oil & Gas  Trapping Mechanism:  Anticline

Prospect

Longitude  136° 19' E  Latitude  26° 07' S

Strong Lead  Seismic Line Location  65 BA

✓ Weak Lead  Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth  2175 m  (7135 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  300 km, 185 miles; Nearest Gas Pipeline  440 km, 270 miles
Current Tenement Holder:  Open  Previous Tenement Holder: Santos-Delhi

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<tr>
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<td>Purni Formation</td>
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<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment

Two prospects and three leads are mapped along the western, upthrown side of the prominent Border Fault. PED-L4 is a weak lead which may not offer northern closure, but given the existing seismic control, the structure could prove to be fully closed and equal in size to the large Pertaka and Peralla Prospects to the south. The Prospect accesses a large hydrocarbon drainage area to the northwest and should the Border Fault not have provided an effective barrier to fluid migration, a very large hydrocarbon drainage area to the east. As the recognised depositional limit of the Poolowanna Formation lies a short distance to the west of the Border Fault, and shales and coals within the unit may not be well developed, the Purni Formation may provide the only significant local source potential. Nevertheless, the depocentre of the Purni Formation more or less underlies the feature, and an expected 215 m (700 ft) of Upper Purni Formation shales and coals offer both oil and gas source potential, while interbedded sands offer reservoir potential. Oil prone source rocks should be within the peak oil generation window, but burial depths of 1800 to 2000 m (5900 to 6560 ft) would not have been sufficient to bring gas prone source rocks to peak maturity conditions. The Algebuckina Sandstone, sealed by the Cadna-owie Formation, is conducive to long distance hydrocarbon migration.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of modern seismic data.
PROSPECT/LEAD       PED-L3

Sedimentary Basin(s)       Western Eromanga, Pedirka

Structural Province       Pedirka Basin       ✓ Onshore

Oil          Wet Gas       Dry Gas       ✓ Oil & Gas       Trapping Mechanism: Anticline

Prospect       Longitude 136º 22’ E       Latitude 26º 02’ S

Strong Lead       Seismic Line Location 65 AKI, 65 AA

✓ Weak Lead       Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth 2265 m (7430 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road 300 km, 185 miles; Nearest Gas Pipeline 440 km, 270 miles
Current Tenement Holder: Open       Previous Tenement Holder: Santos-Delhi

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<tr>
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<td>Secondary Objective 3</td>
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</tbody>
</table>

Concept / Description / Comment
Two prospects and three leads are mapped along the western, upthrown side of the prominent Border Fault. PED-L3 is a potentially large weak lead which may not offer northern closure, or alternatively it may combine with lead PED-L4 to form a high relief closure, similar in size to the large Pertaka and Peralla prospects. The prospect accesses a large hydrocarbon drainage area to the northwest and should the Border Fault not have provided an effective barrier to fluid migration, a very large hydrocarbon drainage area to the east. As the recognised depositional limit of the Poolowanna Formation lies a short distance to the west of the Border Fault, and shales and coals within the unit may not be well developed, the Purni Formation may provide the only significant local source potential. Nevertheless, the depocentre of the Purni Formation more or less underlies the feature, and an expected 215 m (700 ft) of Upper Purni Formation shales and coals offer both oil and gas source potential while interbedded sands offer reservoir potential. Oil prone source rocks should be within the peak oil generation window, but burial depths of 1800 to 2000 m (5900 to 6560 ft) would not have been sufficient to bring gas prone source rocks to peak maturity conditions. The Algebuckina Sandstone, sealed by the Cadna-owie Formation, is conducive to long distance hydrocarbon migration.

Work Required to Mature to Drillable Prospect Status
Acquisition of 35 km of modern seismic data.
PROSPECT/LEAD PED-L2

Sedimentary Basin(s): Western Eromanga, Pedirka

Structural Province: Pedirka Basin ✓ Onshore

Oil Wet Gas Dry Gas ✓ Oil & Gas Trapping Mechanism: Anticline

Prospect

Longitude 136º 13’E Latitude 26º 10’ S

Strong Lead Seismic Line Location SP 627 LINE 65 AG1

✓ Weak Lead Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth 1835 m (6020 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 300 km, 185 miles; Nearest Gas Pipeline 440 km, 270 miles

Current Tenement Holder: Open Previous Tenement Holder: Santos-Delhi

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<td>Secondary Objective 2</td>
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<tr>
<td>Secondary Objective 3</td>
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Concept / Description / Comment

The PED -L2 weak lead, as currently mapped on the basis of three 1960’s vintage seismic lines, is a potentially large, fault independent anticlinal closure with nearly 20 m (65 ft) of vertical relief. Regional mapping suggests that the structure is orientated in a north-northwest direction at ’C’ Horizon level, and a northeast direction at ’Z’ Horizon level. The feature is well positioned to have received hydrocarbons that may have been generated in synclinal areas to the east and west. As the interpreted depositional limit of the Poolowanna Formation lies in the immediate vicinity of the PED-L2 lead, and shales and coals within the unit may not be well developed, and as the Simpson Basin sequence isn’t present, the Purni Formation provides the only significant local source potential. Nevertheless, the depocentre of the Purni Formation more or less underlies the feature, and an expected 215 m (700 ft) of Upper Purni Formation shales and coals offer both oil and gas source potential while interbedded sands offer reservoir potential. Oil prone source rocks should be close to the peak oil generation window, but burial depths of 1800 to 2000 m (5900 to 6560 ft) would not have been sufficient to bring gas prone source rocks to peak maturity conditions. The Algebuckina Sandstone, sealed by the Cadna-owie Formation, is conducive to long distance hydrocarbon migration.

Work Required to Mature to Drillable Prospect Status

Acquisition of 30 km of modern seismic data.
PROSPECT/LEAD      PED-L1

Sedimentary Basin(s)  Western Eromanga, Pedirka

Structural Province  Pedirka Basin  ✓ Onshore

Oil      Wet Gas      Dry Gas  ✓ Oil & Gas  Trapping Mechanism: Anticline

Prospect

Longitude 136° 06’30”E  Latitude 26° 15’ S

Strong Lead

Seismic Line Location  63 AC SP 201

✓ Weak Lead  Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth  1720 m  (5645 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  300 km, 185 miles; Nearest Gas Pipeline  440 km,  270 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

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<td>Primary Objective 2</td>
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<td>Secondary Objective 1</td>
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</table>

Concept / Description / Comment

PED-L1 is a weak lead situated immediately north of the Purni 1 well location. Purni 1 was drilled outside of closure as a stratigraphic test in 1964. PED-L1 is mapped as a northwesterly trending closure on the downthrown eastern (basin-ward) side of a north-south trending reverse fault. Vitritine reflectance values measured from the base of the Permian section at Purni 1 are in the order of 0.42 % and indicate potential source rocks encountered by the well are immature for hydrocarbon generation. There is, however, evidence of reflectance suppression in the basin, and oil generation temperatures will have been reached in the large synclinal region to the east of the lead. PED-L1 is well positioned to receive hydrocarbons migrating from the syncline. The Simpson Basin sequence and the Poolowanna Formation are not present in the PED-L1 area, and the Purni Formation therefore offers the only significant source potential. The Algebuckina Sandstone, sealed by the Cadna-owie Formation, is conducive to long distance hydrocarbon migration.

Work Required to Mature to Drillable Prospect Status

Acquisition of 20 km of modern seismic data.
PROSPECT/LEAD       PED-P4

Sedimentary Basin(s)  Western Eromanga, Pedirka, Simpson

Structural Province   Pedirka Basin    ✓ Onshore

Oil            Wet Gas        Dry Gas        ✓ Oil & Gas        Trapping Mechanism:  Anticline

✓ Prospect      Longitude    136° 46’ E       Latitude    26° 34’ S

Strong Lead    Seismic Line Location  84 WMR   SP 390

Weak Lead      Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth   2275 m  (7465 ft) in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road  200 km, 124 miles;  Nearest Gas Pipeline  360 km,  225 miles

Current Tenement Holder:  Open       Previous Tenement Holder: Santos-Delhi

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<td>Secondary Objective 2</td>
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<tr>
<td>Secondary Objective 3</td>
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</table>

Concept / Description / Comment
PED-P4 is a small domal closure located less than 2 km (1.2 mi) south of the Killumi closure that was evaluated by Killumi 1. Killumi 1 was drilled in a near crestal position. Drilling problems forced the Operator to terminate the well prematurely. As a result, the Permian interval was not evaluated. Log interpretation indicates good porosity development in the Peera Peera and Poolowanna formations at Killumi 1, although all of the potential reservoir intervals were found to be water saturated. Poolowanna, Peera Peera and Purni formation source rocks should be well developed and mature for peak oil generation. PED-P4, however, accesses a relatively small drainage area and it is unlikely sufficient hydrocarbons would have been generated to significantly charge the prospect.

Work Required to Mature to Drillable Prospect Status

Acquisition of 12 km of seismic data.
KILLUMI NORTH PROSPECTS and LEADS
PEDERI LEAD, PEDIRKA LEAD 21 and PROSPECT 4
Depth structure top Cadna-owie Formation
C Horizon (metres)
After Delhi Petroleum Pty Ltd mapping

LINE 84 WMR

0.0
0.5
1.0
1.5
2.0

C Horizon
Base Jurassic
Z Horizon

97-0417 MESA
PROSPECT/LEAD  PENDERI

Sedimentary Basin(s)  Western Eromanga, Pedirka, Simpson

Structural Province  Pedirka Basin  ✔ Onshore

Oil  Wet Gas  Dry Gas  ✔ Oil & Gas  Trapping Mechanism: Anticline

Prospect

✔ Strong Lead  Seismic Line Location  82 WKW SP 260
Weak Lead  Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth  2770 m (9100 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road  200 km, 125 miles;  Nearest Gas Pipeline  360 km, 225 miles

Current Tenement Holder: Open  Previous Tenement Holder: Santos-Delhi

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<td>Formation Name</td>
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<td>Secondary Objective 2</td>
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<td>Secondary Objective 3</td>
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</table>

Concept / Description / Comment

The Penderi Lead is a small low relief, domal closure at the northern end of the Killumi anticlinal nose. Penderi is located some 16 km (10 mi) north of the Killumi 1 well. Killumi 1 was drilled in a near crestal position on a separate closure. Drilling problems forced the Operator to terminate the well prematurely and as a result, the Permian interval was not tested. Log interpretation indicates good porosity development in the Peera Peera and Poolowanna formations at Killumi 1, although all of the potential reservoir sands were found to be water saturated. Penderi has a large, oil mature, drainage area. The lead is much better positioned than the Killumi structure to attract hydrocarbons that might have migrated from synclinal regions located to the northwest and northeast.

Work Required to Mature to Drillable Prospect Status

Acquisition of 40 km of seismic data.
KILLUMI NORTH PROSPECTS and LEADS
PEDERI LEAD, PEDIRKA LEAD 21 and PROSPECT 4
Depth structure top Cadna-owie Formation
C Horizon (metres)
After Delhi Petroleum Pty Ltd mapping

KILLUMI NORTH PROSPECTS and LEADS
PEDERI LEAD, PEDIRKA LEAD 21 and PROSPECT 4
Depth structure top Lower Palaeozoic
Z Horizon (metres)
After Delhi Petroleum Pty Ltd mapping

LINE 84 WMR
C Horizon
Base Jurassic
Z Horizon

97-0417 MESA
PROSPECT/LEAD PERUMBA

Sedimentary Basin(s) Western Eromanga, Pedirka

Structural Province Pedirka Basin ✓ Onshore

Oil Wet Gas Dry Gas ✓ Oil & Gas Trapping Mechanism: Anticline

Prospect Longitude 136° 32’ E Latitude 26° 16’ S
Strong Lead Seismic Line Location 82 WKF SP 500
✓ Weak Lead Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth 2200 m (7220 ft) in Warburton/Amadeus Basin sediments
Distance to Nearest Sealed Road 280 km, 175 miles; Nearest Gas Pipeline 430 km, 265 miles
Current Tenement Holder: Open Previous Tenement Holder: Santos-Delhi

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</table>

Concept / Description / Comment
Perumba is one of four low relief leads that are mapped around the Glen Joyce 1 well location. The lead exhibits an early, but subtle structural presence and reactivation in the Tertiary produced only gentle thinning of the Eromanga section. Post drilling reinterpretation of seismic data indicates that the Glen Joyce 1 well was located on a much smaller closure than originally thought, and may not have been within effective closure at Jurassic and younger levels. No fluorescence was noted while drilling the well, although small gas peaks were associated with coal seams. Perumba is well positioned, draining large areas to the east, west, north and south. Depth to basement is in the order of 2200 m (7200 ft) which should place oil prone source rocks into the window of peak generation. The lead is situated near the western limit of shaley Poolowanna facies, and Jurassic source potential is considered relatively poor. Gas and oil prone Purni Formation coals are, however, well developed in the area. Gas prone source rocks will be immature.

Work Required to Mature to Drillable Prospect Status
Acquisition of 12 km of seismic data.
PROSPECT/LEAD ERABENA FLANK

Sedimentary Basin(s) Western Eromanga, Pedirka

Structural Province Pedirka Basin ✓ Onshore

Oil Wet Gas Dry Gas ✓ Oil & Gas Trapping Mechanism: Anticline/stratigraphic

Prospect

Longitude 137° 10’ E Latitude 26° 10’ S

Strong Lead

Seismic Line Location 80 WGK SP 100-220

Weak Lead

Map Reference: Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth: up to 2170 m (8860 ft) in upper Warburton Basin sediments

Distance to Nearest Sealed Road km, miles; Nearest Gas Pipeline km miles

Current Tenement Holder: Open Previous Tenement Holder: Santos-Delhi

<table>
<thead>
<tr>
<th>Reservoirs and Reserves Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation Name</td>
</tr>
<tr>
<td>Primary Objective 1</td>
</tr>
<tr>
<td>Primary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
</tr>
<tr>
<td>Secondary Objective 2</td>
</tr>
<tr>
<td>Secondary Objective 3</td>
</tr>
</tbody>
</table>

Concept / Description / Comment

The Erabena structure is a very large (15 km x 4.5 km) NNW-SSE trending, upthrown fault structure with some 85 m (275 ft) of vertical closure. The structure was evaluated in a near crestal position with the drilling of Erabena 1 in 1981. The Erabena structure has been delineated by an approximately 2 kilometre seismic grid in its crestal region, but only sparse seismic on its flanks. Closer spaced seismic along the crest of the structure may delineate sufficient closure updip of Erabena 1 to warrant a second well. There is also the potential for small closures along the western and southern flanks of the structure. There appears to have been minor structural growth of the feature during the Triassic and Early Jurassic, but the main phase of structural development did not occur until the mid to late Tertiary. Permian sands may provide stratigraphic potential.

Work Required to Mature to Drillable Prospect Status
**Sedimentary Basin(s)** Western Eromanga, Pedirka and Simpson Basins

Structural Province: Pedirka Basin

Onshore

Oil and possibly Wet Gas

Trapping Mechanism Faulted Anticline

Prospect

Longitude 136°50’E  
Latitude 26°25’S

Strong Lead

Seismic Line Location 82 WLA SP 300 - 395

Weak Lead

Map Reference Delhi Petroleum 1987 & MESA 1995 Regional

Total Drilling Depth: 2600 m  8530 ft; in Warburton/Amadeus Basin sediments

Distance to Nearest Sealed Road 200 km, 125 miles; Nearest Gas Pipeline 360 km, 225 miles

If Offshore, Distance to Shoreline _____ km, _____ miles; Water Depth _____ m, _____ ft

Current Tenement Holder Open

Previous Tenement Holder Santos - Delhi

### Reservoirs and Reserves Potential

<table>
<thead>
<tr>
<th>Formation Name</th>
<th>Approx Depth m (ft)</th>
<th>Unrisked Reserves Potential mmbbl</th>
<th>BCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Objective 1</td>
<td>Lower Poolowanna</td>
<td>2210 (7250)</td>
<td>20.0</td>
</tr>
<tr>
<td>Primary Objective 2</td>
<td>Algebuckina</td>
<td>1450 (4750)</td>
<td>37.4</td>
</tr>
<tr>
<td>Secondary Objective 1</td>
<td>Purni</td>
<td>2440 (8000)</td>
<td>9.0</td>
</tr>
</tbody>
</table>

### Concept / Description / Comment

Some 25 m of structural advantage over an area of nearly 3500 acres may be gained from off-crest petroleum exploration well Macumba 1. Poolowanna Formation and older source rocks at Macumba 1 are well within the peak oil generation window (Ro base Poolowanna Formation = 0.89; Ro base Permian = 1.08) and the Macumba structure itself lies within a reasonably large hydrocarbon drainage area. Moderate amounts of both oil and gas prone organic material were present in the lower Jurassic, Triassic and Permian intervals of the Macumba 1 well cuttings, and source richness should have been adequate for the generation of commercial volumes of both oil and gas, although no significant hydrocarbon shows were noted during the drilling of Macumba 1. Good porosity and permeability development is present in the Algebuckina, the Poolowanna, the Peera Peera and the Purni formations, and sizeable hydrocarbon reserves may be hosted by these formations in the Macumba structure updip of the Macumba 1 well. Although the Macumba structure is faulted at Poolowanna Formation and deeper levels, some 10 - 15 ms of fault independent closure is mapped. Potential seal units are abundant in Macumba 1 and appear to be competent.

### Work Required to Mature to Drillable Prospect Status

No additional seismic is required although most lines across structure are pre 1980. Possibly some reprocessing of existing lines required.