A new Petroleum Exploration Licence (PEL) in the Cooper Basin, SA is being offered by the South Australian Government on the basis of work program bidding. This PEL comprises six small sub-blocks.

- Five blocks are adjacent to existing oil and gas fields, and a number contain known prospects.
- Previous exploration data and reports are readily available from PIRSA, including:
  - well completion reports
  - seismic shot points
  - surveys and archive stack data (SEG/Y format)
  - digital well logs
  - structure maps
  - company prospectivity reports.
- Areas are subject to native title negotiation.
- A free acreage release CD-ROM is available.

**COOPER BASIN**

- The Cooper Basin is a Permian-Carboniferous to Triassic intracratonic basin located 800 km north of Adelaide. It is overlain by the prospective Eromanga Basin. The Cooper and Eromanga Basins collectively contain up to 3700 m of predominantly fluvial, glaciofluvial, lacustrine and deltaic sediments with some marine sediments. Targets are 1200 to 3700 m deep.
- The basins represent Australia’s largest onshore oil and gas province, with in excess of 1350 wells drilled and over 81 000 line km of 2D and 5800 km of 3D seismic recorded.
- Cooper Basin gas supplies markets in Adelaide, Sydney, Brisbane and Melbourne.
- Cooper Basin oil and gas liquids are exported via facilities at Port Bonython and supply local and overseas markets via Port Stanvac.

**THE OFFER**

<table>
<thead>
<tr>
<th>Block</th>
<th>Status</th>
<th>Area (km²)</th>
<th>Location</th>
</tr>
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<tbody>
<tr>
<td>CO2002-A</td>
<td>Released</td>
<td>50</td>
<td>Cooper Basin</td>
</tr>
<tr>
<td>CO2002-B</td>
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<td>Cooper Basin</td>
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<tr>
<td>CO2002-F</td>
<td>Released</td>
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<td>Cooper Basin</td>
</tr>
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</table>

**CONTACT INFORMATION**

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EXECUTIVE SUMMARY

A single Petroleum Exploration Licence Application (PELA) comprised of six sub-blocks is being offered in Australia’s largest onshore oil and gas province (Cooper Basin) on the basis of work program bidding. The total area of the PEL is 21.6 km² (5342 acres). The sub-blocks (CO2002-A to F) making up this PEL range in size from 1 to 7.8 km² (250-1840 acres). Bidding closes at 4.00 pm on Thursday 22 August 2002, and the winning bid for the PEL will be announced by mid-September.

Four of the sub-blocks lie on the flanks of, or adjacent to, producing fields – CO2002-A (Lake Jagi gas field); C (Kujuni gas field); E (Monaro oil field); and F (Naracoorte oil field). Block CO2002-B includes a well with oil shows (Lycum 1), and Block CO2002-D lies to the west of the Nungurru prospect. Discovery of oil in this block occurred in 1986 and April 2000. A prospect is defined by seismic in Block CO2002-D.

Cooper Basin gas supplies markets in the cities of Adelaide, Sydney, Brisbane and Melbourne via an extensive pipeline network. The Cooper Basin Liquids Project (1980-84) was initiated to market the newly discovered oil and existing gas liquids. A liquids pipeline links Moomba to a processing plant and storage and export loading facilities at Port Bonython. The remaining reserves estimated by Santos are provided in Table 1.

Table 1 Cooper Basin reserve summary. 1.1.2001 (after Santos).

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Sales gas</th>
<th>Ethane</th>
<th>Condensate</th>
<th>Oil</th>
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<tbody>
<tr>
<td>Reserve</td>
<td>2155 PJE</td>
<td>274 PJ</td>
<td>4.89 x 10^10 kL (30.8 mmbbl)</td>
<td>4.14 x 10^10 kL (26.1 mmbbl)</td>
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<tr>
<td>LPG</td>
<td>7.6 x 10^10 kL (48.2 mmbbl)</td>
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</table>

Opening up the Cooper Basin has attracted national and international interest. A phased acreage release of seven sub-blocks commenced around February 1999 when all of the exploration tenements held by the Santos joint venture since 1954 expired without right of renewal. Total commissions for the next five years is $116 million, with a minimum of 117 exploration wells to be drilled.

Native title negotiations for Round 1 (CO98) applicants concluded successfully in October 2001. Indigenous groups on each sub-block agreement, involving unprecedented cooperation between native title claimants and petroleum explorers, was signed in Adelaide. This will allow $45 million worth of new investment in petroleum exploration over 11 new exploration licences.

This agreement is an Australian first and will form precedents for future native title negotiations, not only in the Cooper Basin and South Australia, but throughout Australia. These cover not only the exploration phase, but also provide for development of any discoveries should exploration be successful.

A future Cooper Basin acreage release is awaiting a decision on blocks to be made available in the Coongie Lakes area. This will be made following completion of a consultation process on issues relating to access to this environmentally important area.

PETROLEUM GEOLOGY

The intracratonic Cooper Basin comprises Late Carboniferous to Triassic non-marine sediments. It lies unconformably over early Palaeozoic sediments of the Warburton Basin and is overlain discontinuously by the Jurassic to Cretaceous Eromanga Basin sandstones. Major troughs in the region contain up to 2500 m (8200 ft) of Cooper Basin sediments, overlying a base of 1300 m (4300 ft) of Eromanga Basin sediments.

The Late Carboniferous to Late Permian formations consist of basal glacioclastic clastics and proglacial outwash deposits, overlain by thick post-snow, fluvial, lacustrine and high-sinuosity fluvial sediments. Uplift and erosion at the end of the Early Permian resulted in a depositional break and Late Permian to Early Triassic fluvial and floodplain facies were deposited on the unconformity surface. Deposition in the region was terminated at the end of the Early Triassic with slight but widespread deformation, regional tilt and erosion. Permian coal measures and shales are the principal hydrocarbon source rocks in the region. The main gas reservoirs are multi-zone fluvial sandstones with poor to good reservoir characteristics, primarily within the Patchawarra and Tootchee Formations. Shoreface and deltaic distributary sands of the Epsilon and Darlingie Formations are also important reservoirs. Oil is produced principally from the Turrirawra Sandstone, which is also a tight gas reservoir in the Nappamerri Trough. Towards the margin of the basin, oil is also produced from the Patchawarra Formation and from fluvial channel sands in the Merrimela Formation in Malgooga Field. Although the Arbuckle Formation is commonly regarded as a regional seal, it nevertheless contains economic oil and gas reservoirs in some areas and is a leaky seal in others.

The overlying Eromanga Basin can be divided into three deep-seated sub-basins – Lower, non-marine, marine and upper non-marine. Exploration is concentrated on the productive lower non-marine sequence, which consists of basin high-sinuosity fluvial and floodplain deposits, overlain by extensive and thick low-sinuosity fluvial sandstones. Two interworking floodplain and lacustrine depositional systems occur within this sand package, which is overlain by extensive lacustrine and shoreface facies. These are stacked in coaxial Permian to Mesozoic anticlines with four-way dip closure or drapes over pre-existing basin geometry.

Where the regional seal is thin or absent, multiple oil and gas pools are stacked in coaxial Permian to Mesozoic anticlines with four-way dip closure or drapes over pre-existing basin geometry. The extent to which proposed wells are supported by seismic data. Other data acquisition and seismic reprocessing to be carried out.

The most important criteria for assessment of CO2002 work programs are:

- The number of exploration wells to be drilled, their timing and anticipated targets (Eromanga, Cooper and Warburton Basins).
- The number of years the applicant is prepared to guarantee the program.
- Adequacy of financial resources and technical competence of the applicant’s past performance in fulfilling work program commitments elsewhere in Australia.
- Secondary criteria that may be taken into account:
  - The amount and nature of seismic surveying to be conducted.
  - The type of exploration methods to be used.
  - Other data acquisition and seismic reprocessing to be carried out.

Infrastructure

A total of 5238 km of pipeline have been laid to gas markets in South Australia, New South Wales and Victoria and to the liquids load out facility at Port Bonython. Gas from individual wells passes via field gathering systems (flowlines) to satellite stations, which separate gas, free water and condensate. Evaporation ponds are used for water disposal. The essentially water-free gas and condensate pass to the Moomba treatment plant through trunklines. Approximately 1010 km of trunklines and 1135 km of flowlines had been laid to date in the region. Crude oil is transported by either pipeline or truck to the Moomba plant which has been designed to process 25.4 x 10^6 m³ (902 mmcf) of raw gas and 6000 kL (42 000 bbl) of condensate and crude oil per day. Nine oil and 11 gas satellites are currently in operation.