THE OFFER

Five new petroleum exploration licences (PEL) in the Cooper and Eromanga Basins are being offered by the South Australian Government on the basis of work program bidding (Figure. 1).

The bid blocks CO2009-A to E cover 8876 km² at this stage, maps of each block are included in Appendix 1. If additional acreage (e.g. further relinquished production or exploration licence areas) becomes available before 17 September 2009 (i.e. one month before the close of bidding), it will be added into the surrounding block. Figure 1 shows the current blocks and ‘zones’ – any vacant acreage in a zone will be added to the relevant block. These blocks contain proven oil and gas plays and seismically defined prospects. The CO2009 release blocks are comprised of:

- partial acreage relinquishments from Petroleum Exploration Licences (PELs)
- relinquished conditional Petroleum Production Licences (PPLs) or parts thereof formerly held by the South Australian Cooper Basin Joint Venture.

Although this release comprises relinquished PEL or PPL areas, much of it has not been explored by drilling or seismic since 2001 (Figure. 2).

### Block Area Exploration 2D 3D

<table>
<thead>
<tr>
<th>Block</th>
<th>Area km²</th>
<th>Exploration wells</th>
<th>2D seismic (km)</th>
<th>3D seismic (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO2009-A</td>
<td>2369</td>
<td>4</td>
<td>5153</td>
<td>141</td>
</tr>
<tr>
<td>CO2009-B</td>
<td>666</td>
<td>0</td>
<td>8881</td>
<td>3125</td>
</tr>
<tr>
<td>CO2009-C</td>
<td>1389</td>
<td>1</td>
<td>10061</td>
<td>601</td>
</tr>
<tr>
<td>CO2009-D</td>
<td>3035</td>
<td>0</td>
<td>1323</td>
<td></td>
</tr>
<tr>
<td>CO2009-E</td>
<td>1416</td>
<td>5</td>
<td>3667</td>
<td>2717</td>
</tr>
</tbody>
</table>

The licences will be granted for an initial five year term plus a right of renewal for a further five year term (minimum 50% area relinquishment at renewal), unless proposed amendments to the Petroleum Act 2000 are enacted, in which case they will be granted for initial five year term plus a right of renewal for a further two five year terms (minimum 33.33% area relinquishment at each renewal). It is anticipated that the proposed amendments will go to Parliament in early 2009. Applicants should check the PIRSA website for Petroleum Act 2000 proposed amendment status before lodging applications.

Previous exploration data and reports are readily available from PIRSA in digital format on removable hard drives, including:

- well completion reports
- GIS datasets including wells, seismic, tenements, pipelines
- seismic survey shot point location data
- seismic survey reports and archive stack data (SEGY format)
- digital well logs
- velocity survey check shot information
- structure maps and datasets
- PEPS database with production, well, seismic and engineering data
- company prospectivity reports

Bids close 4.00pm
Thursday 15 OCTOBER 2009
Australian Central Standard Time

www.petroleum.pir.sa.gov.au
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Figure 1

Cooper and Eromanga Basins, South Australia

PETROLEUM LICENCES

Petroleum tenements
- Acreage release block
- Acreage release zone
- Exploration licence (PEL)
- Exploration licence application (PELA)
- Production licence (PPL)
- Production licence application (PPLA)
- Retention licence (PRL)
- Retention licence application (PRLA)

Petroleum pipelines
- Pipeline licence (PL) – liquids
- Pipeline licence (PL) – gas and liquids
- Pipeline licence (PL) – gas

Discoveries 2002 – 2008
- Oil
- Gas

Cooper Basin subcrop limit
Coongie Lakes control zone – no access

Datum GDA 94 - Projection MGA Zone 54

Government of South Australia
Department of Planning,消費者 Services and Infrastructure SA

Innamincka
Moomba
Cooper Basin
INTRODUCTION
The Cooper Basin is a Permo-Carboniferous to Triassic intracratonic basin located 800 km north of Adelaide, extending into southwest Queensland (Gravestock et al., 1996). It is overlain by the prospective Jurassic to Cretaceous intracratonic Eromanga Basin which extends of much of central-eastern Australia (Cotton et al., 2006). The Cooper and Eromanga Basins collectively contain up to 3700 m of predominantly fluvial, glaciofluvial, lacustrine and deltaic sediment with some Cretaceous marine sediments (Figure 3). Targets are 1200–3700 m deep. The Cooper and Eromanga basins lie unconformably over early Palaeozoic marine sediments of the Warburton Basin and Mid-Carboniferous Big Lake Suite granite, which is currently being evaluated as a source of geothermal energy (e.g. Wyborn et al., 2004; Wyborn, 2008).

The Cooper Basin and overlying Eromanga Basin remain Australia’s largest and most mature onshore hydrocarbon province (Figure 1), supplying major southeastern Australian gas markets for almost 40 years and producing oil for over 26 years. The Cooper Basin Liquids Project (1980–84) was initiated to market the oil and existing gas liquids. A liquids pipeline links Moomba to a processing plant and storage and export loading facilities at Port Bonython.

Over 1800 exploration and development wells have been drilled and over 75 300 2D and 8346 km² 3D seismic recorded. Total cumulative product sales to end June 2008 includes: 479 Tcf of gas, 72.2 mmboe of condensate, 140.9 mmbbl of oil and 72.7 mmboe of LPG. Annual petroleum production and the value of sales since 1970 is shown in Figure 4. Oil production was declining until 2002 when new discoveries caused a resurgence of drilling activity and exploration success, while gas sales peaked in 1989 and have been declining since 1998.
The Cooper Basin unconformably overlies flat lying to compressively deformed Cambro-Ordovician Warburton Basin strata and Carboniferous granitic intrusives. The unconformity is mapped as the Z seismic horizon. The intracratonic Cooper Basin represents a Late Carboniferous to Triassic depositional episode terminated at the end of the Middle Triassic with regional uplift and erosion. Three major troughs (Patchawarra, Nappamerri and Tenappa) are separated by structural ridges (Gidgealpa–Merrimelia–Innaminka (GMI) and Murteree) associated with the reactivation of NW-directed thrust faults in the underlying Warburton Basin (Figure 6). These troughs contain up to 2500 m of Permo-Carboniferous to Triassic sedimentary fill overlain by as much as 1300 m of Jurassic to Tertiary cover.
Cooper Basin

The Cooper Basin succession consists of basal glaciofluvial clastics and proglacial outwash deposits, overlain by thick coal measures (peat swamp), floodplain, lacustrine and high sinuosity fluvial facies. 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. The top of the Permian is mapped as the P Seismic Horizon.

Eromanga Basin

The Eromanga Basin can be divided into three sequences — lower non-marine, marine and upper non-marine. Exploration is concentrated on the productive lower non-marine sequence, which consists of basal high-sinuosity fluvial and floodplain deposits, overlain by extensive and thick low-sinuosity fluvial sandstones. Two intervening floodplain and lacustrine units occur within this sand package, which is overlain by extensive lacustrine and shoreface facies, deposited in a large lake which extended throughout the Cooper Basin region. This lower non-marine sequence is overlain by Early Cretaceous marine shales that form a regional seal, and Late Cretaceous non-marine deposits. The top Cadna-owie Formation is mapped as the C Seismic Horizon.

Lake Eyre

Tertiary to Recent fluvial to lacustrine deposits of the Lake Eyre Basin unconformably cover the Eromanga Basin. The unconformity at the top of the Eromanga Basin is often difficult to distinguish in wells and seismic.

SOURCE ROCKS

Numerous producing wells and significant gas and oil shows in wells throughout the region indicate that sufficient mature source rocks are present and have generated hydrocarbons. Permian coal measures and shales have high Total Organic Content and represent the main hydrocarbon source for Cooper Basin oil and gas accumulations. They are dominated by Type III kerogens derived from higher plant assemblages.
Oils and condensates are typically medium to light (30–60° API) and paraffinic, with low to high wax contents. Most Permian oils in Permian reservoirs contain significant dissolved gas and show no evidence of water washing. Gas composition is closely related to maturity/depth with drier gas occurring towards basin depocentres although there is strong geological control on hydrocarbon composition.

The Patchawarra Trough contains the bulk of the oil and wet gas reserves consistent with local source rocks being in the ‘oil window’, while the hot Nappamerri Trough (40–50 °C/km), underlain in part by granite, is over mature and contains mainly dry gas. Permian source rocks have average TOC and S2 pyrolysis yields of 3.9% and 6.9 kg/t, respectively (excluding coals). Locally, the Toolachee Formation is the richest source unit. The Patchawarra Formation is considered the other major source unit, especially the lower shales and coals. The lacustrine Murteree and Roseneath shales have little source potential.

Together, the petrographic and geochemical evidence support coals and associated dispersed organic matter as the effective source rocks capable of generating gas and minor oil, albeit in low yields. At maturity levels between 0.7–0.95% Ro, initial generation from the richer facies has led to partial filling of reservoirs with wet gas and oil. There is a sharp onset of significant hydrocarbon accumulation when the source reaches a maturity of 0.95% Ro.

Thin, laterally discontinuous coals represent the best source rocks of the upper Nappamerri Group, whilst shales tend to be organically lean. The lower Nappamerri Group is coal-poor, contains kerogen that tends to be oxidised, and any source rocks are humic-rich and gas-prone.

In the Eromanga Basin, the Pooloowanna and Birkhead formations contain organic-rich shales that are oil-prone (Type II/III kerogen) and maturity ranges from 5-0.7% Ro. Lateral migration from these source areas has also been postulated. The Murta Formation is interpreted to have potential to generate light paraffinic crude oils, even at maturity levels as low as 0.50–0.55% Ro. It contains Type II/III kerogen however the best Murta source facies contain telalginite and indicators of bacterial precursors occur.

The marine sequence and upper non-marine sequence are immature for hydrocarbon generation over much of the basin (< 0.45% Ro). Both Permian and Mesozoic source rocks have contributed to oil accumulations in the Eromanga Basin. Each Eromanga oil accumulation needs to be considered in terms to its juxtaposition to potential source kitchens, to assess the likelihood of Permian and/or Mesozoic sources (McKirdy et al., 2005).

RESERVOIRS AND SEALS
Multi-zone high-sinuosity fluvial sandstones form poor to good quality reservoirs. The main gas reservoirs occur primarily within the Patchawarra Formation (porosities up to 23.8%, average 10.5%; permeability up to 2500 mD) and Toolachee Formation (porosities up to 25.3%, average 12.4%; permeability up to 1995 mD). Shoreface and delta distributary sands of the Epsilon and Daralingie formations are also important reservoirs. Oil is produced principally from low-sinuosity fluvial sands within the Tirrawarra Sandstone (porosities up to 18.8%, average 11.1%; permeability up to 329 mD). Towards the margin of the Cooper
Basin, oil is also produced from the Patchawarra Formation and from fluvial channel sands in the Merrimelia Formation in Malgoona Field.

The Callamurra Member of the Arrabury Formation is conventionally regarded as a regional seal, but nevertheless contains economic oil and gas reservoirs in some areas and is a leaky seal in others. Low sinuosity fluvial sandstones of the Paning and Wimma Sandstone members form economic oil and gas reservoirs, and high-sinuosity fluvial sandstone of the Tinchoo Formation reservoirs oil. As yet, there have been no economic oil or gasfields discovered in the Cuddapan Formation in South Australia.

Intraformational shale and coal form local seals in the major reservoir units. Beneath the Daralingie unconformity are two important early Permian regional seals — the Roseneath and Murteree shales. The Roseneath Shale is the top seal of the Epsilon Formation, and the Murteree Shale seals the Patchawarra Formation. A younger regional seal is provided by the Triassic Arrabury Formation.

The principal Eromanga Basin reservoirs are good to excellent reservoir quality Hutton and Namur braided fluvial sandstones (porosities up to 25%, permeability up to 2500 mD). Oil is also reservoired in fair to excellent quality sandstones in the Poolowanna and Birkhead formations, McKinlay Member and Murta Formation. The Wyandra Sandstone Member of the Cadna-owie Formation forms a significant oil reservoir in Queensland, however, the only significant accumulation in SA occurs in the Aldinga Oil Field. Seals consist of intraformational diagenetic sandstones, siltstones and shales of the Poolowanna, Birkhead and Murta formations.

### TRAPS

#### Warburton Basin

It is easy to overlook that initial exploration by Santos Limited in the 1950s targeted the Early Palaeozoic carbonates of the Warburton Basin. However, Gidgealpa-2 discovered gas in the overlying Cooper Basin and exploration focus diverted away from the potential of the Eromanga and Warburton basins for many years.

The Warburton Basin remains under-explored, yet has all the required ingredients of a valid hydrocarbon system: oil and gas shows and flows, reservoir, seal, traps and access to proven mature source rocks via down dip migration pathways from the Eromanga and Cooper basins (Sun and Gravestock, 2001). Hallmann et al. (2006) present evidence for small amounts of migrated Warburton Basin oil in Permian reservoirs. Locally, Permian oil has migrated into Warburton Basin reservoirs on the basin margin and gas has migrated into fractured Ordovician reservoirs fringing the Allunga Trough. Overlying Merrimelia Formation glaciolacustrine shale would form an effective seal.

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#### Cooper

Anticlinal and faulted anticlinal traps have been relied on as proven exploration targets but potential remains high for discoveries in stratigraphic and sub-unconformity traps, especially where the Permian sediments are truncated by the overlying Eromanga Basin succession. Economic oil and gas are reservoired in the Nappamerri Group, paradoxically regarded as a regional seal to the Cooper Basin.

Structural growth during the Permian and Jurassic and differential compaction played an important role in trap formation and fill, as
well as strongly affecting reservoir properties. Anticlinal, fault, sub-
unconformity truncation, structure–stratigraphic (e.g. channel fairway facies draped on structural nose) and stratigraphic pinchout traps are also proven plays. Beach Petroleum has recently harnessed 3D seismic data to identify stratigraphic traps like Brownlow 1, a pinch-out play, which discovered gas in November 2008.

Eromanga

Trapping mechanisms within the Eromanga Basin are dominantly structural (anticlines with four-way dip closure or drapes over pre-existing highs) with a stratigraphic component (e.g. Poolowanna Formation, Hutton–Birkhead transition, McKinlay Member and Murta Formation). Seals consist of intraformational siltstones within the Poolowanna, Birkhead and Murta Formations. The Birkhead-Hutton petroleum system is the most productive in the Eromanga Basin.

Stacked oil pay in the McKinlay/Namur, Hutton and Birkhead occurs around the Cooper basin region. The Eromanga Basin also contains rare gas accumulations, where Permian gas has migrated upwards along faults and been trapped higher in the section (e.g. Namur Gas Field).

EXPLORATION POTENTIAL

The number of oil discoveries in the South Australian part of the Cooper Basin reached 100 in 2008 (Figure 5) and it is valid to ask where the next 100 discoveries will come from. Extensive areas on the flanks of the Cooper Basin and in the broader Eromanga Basin, including parts of the CO2009 blocks, remain under-explored.

In the core Cooper province, Cooper Basin oil and gas exploration and Eromanga Basin oil exploration has typically focused on four-way dip-closed anticlines. 3D seismic is an extremely useful tool for prospect delineation in the Eromanga Basin. However, potential also exists for as yet overlooked discoveries in even shallower pools such as the Cadna-Owie Formation and the Coorikiana Sandstone. Recent seismic processing has shown that the structural configuration at Coorikiana level can be independent of the older structural framework. While stratigraphic plays are a proven play concept in the Cooper Basin, they remain a tantalising possibility in the Eromanga Basin (e.g. Nakanashi and Lang, 2002; Nakanashi et al., 2003).

Although the current focus is very much on oil exploration, significant gas potential remains. Huge volumes of gas exist in low-permeability rocks in deeper gas fields and in the Nappamerri Trough area of the Cooper Basin, and this potential is being explored in South Australia by the Cooper Basin Joint Venture and new explorers such as Adelaide Energy. In addition to conventional petroleum, coal seam methane may be a viable target in the shallower parts of the basin, and, providing a different energy perspective, the Santos Joint Venture has introduced the concept of Moomba as a future CO₂-sequestration hub for the country. The region is also being explored for geothermal energy (e.g. Wyborn et al., 2004, 2008).

INFRASTRUCTURE and TRANSPORT

A total of 5240 km of pipeline have been laid to gas markets in South Australia, New South Wales and Victoria and to the liquids load out
Cooper Basin Acreage Release • CO2009-A, B, C, D and E

facility at Port Bonython (Figure 1 inset map). 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. Crude oil is transported by either pipeline or truck to the Moomba plant which was designed to process 25.4 x 10 m (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. Unprocessed gas produced around Ballera (Queensland) is carried to Moomba through the South West Queensland Pipeline.

The new entrant Cooper Basin explorers have secured access to Moomba facilities operated by Santos Ltd. Oil is trucked from the Acrasia, Sellicks, Aldinga, Christies and Worrior fields to Moomba. Condensate, LPG, crude and some ethane are transported as a cocktail from Moomba via a pipeline to Port Bonython where they are separated and exported.

The township of Innamincka is located in the middle of the release block, 65 km NE of Moomba. It offers a hotel, general store, and light-aircraft airstrip, and is accessible by good quality roads. The causeway at Innamincka provides the major crossing point for the Cooper Creek, which in times of flood is impassable by vehicle.

Accommodation and support facilities are located at the Moomba Production Facility, operated by the Cooper Basin Joint Venture, and not open to the general public. Access is by arrangement with the operator. The full range of support services are located at the Moomba camp including, logging, wireline, fraccing, cementing, transport, fuel supply, aviation (including helicopter) and emergency services. There is a sealed airstrip at the Moomba Production Facility.

LAND ACCESS

National parks and reserves

Some of the current gazettal areas lie within the Strzelecki and Innamincka Regional Reserves, in the core of Australia’s arid region (Figure 7). The Innamincka and Strzelecki Regional Reserves are a reserve classification proclaimed in 1988 and 1991 respectively under amendments to the National Parks and Wildlife Act 1972, that specifically accommodates multiple land use. A PEL application incorporating any portion of the Innamincka or Strzelecki Regional Reserve will be referred to the Minister for Environment and Conservation and the views of such Minister are required to be taken into account when granting the PEL. In the case of Petroleum Production Licences within the Innamincka and Strzelecki Regional Reserves, approval must be obtained from the Minister for Environment and Conservation. Failing such Minister’s approval, the issue is referred to the Governor for decision.

Parts of the Cooper Creek system are also listed as wetlands of international significance under the Ramsar Convention (1971). The Ramsar area overlies roughly the north-western half of the CO2009 blocks (Figure 7). South Australia’s obligations are to manage the wetlands wisely to maintain their ecological character, this does not necessarily restrict exploration access.
Cooper Basin Acreage Release • CO2009-A, B, C, D and E

Figure 7

Cooper and Eromanga Basins, South Australia
REGIONAL RESERVES and ENVIRONMENTAL ZONES

Environmental areas
- Park or reserve – petroleum exploration access
- Park or reserve – no petroleum exploration access
- National Estate Register
- Ramsar site
- Acreage release zone
- Acreage release block
- Cooper Basin subcrop limit
- Cooper Creek

Current tenements not shown

Government of South Australia
Primary Industries and Resources SA

MER Publishing Services 203752_006

Cooper Basin subcrop limit
Cooper Creek
Current tenements not shown
ENVIRONMENTAL REGULATION

One of the key environmental requirements of the Petroleum Act 2000 is the need for all regulated activities to be covered by an approved Statement of Environmental Objectives (SEO), whether in a Regional Reserve or on pastoral leases. The purpose of the SEO is to address all risks associated with activities and to address issues and concerns addressed by stakeholders detailed in a supporting document - an Environmental Impact Report (EIR). The SEO is prepared on the basis of the EIR through stakeholder consultation. The SEO also provides an effective mechanism for establishing 'one-window-to-government' for the industry by engaging the other agencies in the SEO consultation process.

An SEO does not have to be prepared for every individual activity proposal in the case where a licensee can demonstrate that their proposed activity is covered by an existing approved SEO, such as the current regional Cooper Basin SEOs for drilling and seismic activities, available on this data package.

Heritage and land access

A PEL cannot be granted in the Cooper Basin unless an access agreement is in place with the Registered Native Title Claimants, the State Government and the explorer. Industry, the State Government, South Australian Native Title Services Ltd (SANTS) and registered Native Title claimants have been working together to create greater certainty and expedite grant of new PELs through conjunctive Indigenous Land Use Agreements (ILUAs) in the South Australian Cooper Basin (Figure 8). In February 2007, the Yandruwandha/Yawarrawarba peoples entered into the first petroleum ILUA in the South Australian Cooper Basin over approximately 40,000 km². Negotiations are progressing with the two relevant Native Title claim groups over the remainder of the Cooper Basin. ILUAs now form an alternative to the right-to-negotiate process pursuant to the Commonwealth Native Title Act 1993 in the Cooper Basin.

Breakthrough native title access agreements via the right to negotiate process for 11 Cooper Basin exploration licence application areas were signed in late 2001, enabling the grant of new Cooper Basin licences. In late 2002 through to early 2003, additional native title access agreements (modelled on the deeds established in late 2001) enabled the grant of an additional 16 licences. All these native title access agreements are:
1. conjunctive, e.g. cover all petroleum licence activities from exploration through to production
2. considered both fair to the native title claimants and sustainable with respect to petroleum exploration, development and production.

These Cooper Basin native title access agreements sustain efficient processes to protect Aboriginal heritage in relation to field operations and provide appropriate benefits to the registered native title claimants. The native title deeds for all South Australian petroleum exploration licences subject to the right-to-negotiate process pursuant to the Commonwealth Native Title Act 1993 are available for public scrutiny from the PIRSA website.

It may be necessary to access adjoining accessible areas to conduct regulated activities relative...
Cooper Basin Acreage Release • CO2009-A, B, C, D and E

Figure 8

Cooper and Eromanga Basins, South Australia

INDIGENOUS LAND USE AGREEMENT and REGISTERED NATIVE TITLE CLAIMANTS

Registered Native Title claims
- SC97/03: The Wangkangurru/Yarluyandi Native Title Claim
- SC97/4: Dieri Native Title Claim
- SC98/01: Yandruwandha/Yawarrawarrka Native Title Claim
- SC99/01: Adnyamathanha No.1
- SC08/02: Dieri No 2 Native Title Claim

Petroleum tenements
- Acreage release zone
- Acreage release block
- Cooper Basin subcrop limit

Current tenements not shown

Datum GDA 94 - Projection MGA Zone 54
to the PEL, via an Associated Facilities Licence (AFL). The right-to-negotiate process will include negotiation for facilitation of appropriate access to such adjacent accessible areas reasonably necessary to conduct such regulated activities, and will also include negotiation for facilitation of access relative to the grant of any ensuing licence for future production and necessary infrastructure development.

For further details of the right-to-negotiate process contact Joe Zabrowarny, Manager, Petroleum Licensing and Royalties, email <zabrowarny.joe@saugov.sa.gov.au>, phone (08) 8463 3203.

A number of sites of European heritage significance such as historical buildings, structures and geological monuments may also occur in the area. The majority of sites are small, and easily avoided by exploration activities.

OTHER LICENCES

Geothermal Exploration Licences

A number of Geothermal Exploration Licences (GELs) coincide with petroleum exploration and production licences in the Cooper Basin region (Figure 9). The GEL licensee must be notified of activities in PELs granted as a result of this acreage release. The GEL licensee may object to the activity and may be able to claim compensation if their activities or resources are affected. Likewise the GEL holder must notify the PEL holder of their activities, and the PEL holder may also object and claim compensation.

Associated Facilities Licences

Associated Facilities Licences (AFLs) are now available under the Petroleum Act 2000. These licences allow explorers to establish facilities or undertake surface surveys (e.g. seismic surveys) in proximity to petroleum exploration, retention and production licences. AFLs are typically used to enable the recording of full-fold seismic control within a PEL by recording tails of seismic lines outside the licence area.

CLIMATE and LAND USE

Australia’s seasons are opposite to those of the northern hemisphere – the hottest months are January-February and the coldest month is July. At Moomba temperatures can range as high as 48 °C (118 °F) in summer, while overnight temperatures can drop to 2 °C (36 °F). The Cooper Basin is located in the core of Australia’s arid region. The average annual rainfall in far northern South Australia is 176 mm (7 in), with the heaviest rainfall during December–February.

The northern part of South Australia is sparsely populated and relatively undeveloped due to its remoteness and harsh climate. The main industries are petroleum exploration and development, followed by large pastoral leases producing cattle and tourism.
Cooper Basin Acreage Release • CO2009-A, B, C, D and E

Figure 9

Cooper and Eromanga Basins, South Australia

Geothermal Licences

Petroleum tenements
- Acreage release block
- Acreage release zone

Geothermal tenements
- Exploration licence (GEL)
- Exploration licence application (GELA)
- Retention licence (GRL)
- Retention licence application (GRLA)

Cooper Basin subcrop limit

Datum GDA 94 - Projection MGA Zone 54
BIDDING and AWARD PROCESS

Winning bidders will be selected on the basis of the total five-year work program bid. The work program must be completed within the overall area of the PEL. It must include a statement of exploratory operations the applicant proposes to carry out in the first five-year licence term. It is expected that at least one petroleum exploration well would be included in the program.

Bids will be assessed using the philosophies expressed in ‘Selecting the winning bid’. The specific scoring scheme is detailed in ‘CO2009 Bid Assessment Policy’. Copies of both documents are included on this DVD.

In general, it is important to note that the timing of well drilling and seismic or other data acquisition will be taken into account. Key assessment criteria include:

- The number of exploration wells to be drilled in the PEL, their timing and anticipated targets.
- The number of years the applicant is prepared to guarantee the program.
- The extent to which proposed wells are supported by existing or new programmed seismic data.
- The amount and nature of seismic surveying (i.e. 2D versus 3D) to be carried out and its timing.
- Other data acquisition (e.g. gravity, aeromagnetic or geochemical surveys).
- Seismic reprocessing to be carried out.

In addition to the above criteria, where bids are similar, the benefits of the introduction of new explorers into the area may be taken into account. In the case of cascading bids (i.e. multiple or hybrid bids by one applicant or joint venture), only the highest bid will be considered.

The closing date for CO2009-A, B, C, D and E applications is 4.00 pm, Thursday 15 October 2009.

The Minister will announce the winning bidders, together with details of work program in January 2010.

CONTACT INFORMATION
Comments, inquiries and applications for exploration licences may be addressed to:

**Director, Petroleum and Geothermal Group**
Office of Minerals and Energy Resources
Primary Industries and Resources South Australia

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International +61 8 8463 3229

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www.petroleum.pir.sa.gov.au

**EMAIL**
pirsa.petroleum@sa.gov.au
REFERENCES


APPENDIX 1
Detailed maps of CO2009 blocks.

Any vacant acreage in a zone will be added to the surrounding CO2009 release block up until 17 September 2009.

Please visit <www.petroleum.pir.sa.gov.au> for updates.
Figure 10

Cooper Basin Acreage Release • CO2009-A, B, C, D and E

Cooper Basin – South Australia

ACREAGE RELEASE

CO2009-A
Cooper Basin – South Australia

ACREAGE RELEASE
CO2009-B

Figure 12

Cooper Basin Acreage Release ● CO2009-A, B, C, D and E
Cooper Basin Acreage Release • CO2009-A, B, C, D and E

Figure 13

Cooper Basin

PETROLEUM TENEMENTS
- Acreage release block
- Acreage release zone
- Exploration licence (PEL)
- Exploration licence application (PELA)
- Production licence (PPL)
- Production licence application (PPLA)
- Retention licence (RL)
- Retention licence application (PRLA)

PETROLEUM PIPELINES
- Satellite station
- Gas
- Gas and liquids
- Liquids
- Gas trunk pipeline
- Liquid trunk pipeline

Coonong Lakes control zone – no access

PETROLEUM WELLS
- Dry hole
- Dry hole with oil shows
- Gas shows
- Gas well
- Gas well with oil shows
- Oil and gas well
- Oil and gas shows
- Oil well

Cooper Basin – South Australia

ACREAGE RELEASE
CO2009-B
Figure 14

Cooper Basin Acreage Release • CO2009-A, B, C, D and E

PETROLEUM TENEMENTS
- Acreage release block
- Exploration licence (PEL)
- Exploration licence application (PELA)

PETROLEUM WELLS
- Dry hole
- Dry hole with oil shows
- Gas shows
- Gas well
- Gas well with oil shows
- Oil and gas well
- Oil and gas shows
- Oil well

PETROLEUM PIPELINES
- Gas
- Gas and liquids
- Liquids
- Liquid trunkline
- Gas trunkline

SEISMIC COVERAGE
- 2 dimension (shown white)
- 3 dimension
- 4 dimension
- Cooper Basin subcrop

Parks with petroleum exploration access
Parks with no petroleum exploration access
Ramsar site

ACREAGE RELEASE
Cooper Basin – South Australia

GDA 94 – MGA Zone 54
Figure 17

Cooper Basin Acreage Release • CO2009-A, B, C, D and E

Cooper Basin – South Australia

ACREAGE RELEASE
CO2009-D
Figure 18
Figure 19

[Map of Cooper Basin Acreage Release CO2009-A, B, C, D and E]
APPENDIX 2

Information about the Lycium (now in Block CO2009-A) and Nungeroo West (now in Block CO2009-E) Prospects can be accessed here. Lycium and Nungeroo West Prospects were included in the previous CO2001 and CO2002 acreage releases.