

DINICHTHYS  
(5km NE)

GORGONICHTHYS  
(13km SW)

BREWSTER 1A

TITANICHTHYS  
(4 km NE)

BASE TERTIARY

TURONIAN

APTIAN

VALANGINIAN

BASE  
CRETACEOUS

CALLOVIAN

BASE JURASSIC

NEAR TOP  
PERMIAN

# OIL & GAS

RESOURCES OF Australia

2000

Geoscience Australia



Department of Industry, Tourism and Resources

## **Oil and Gas Resources of Australia 2000**

Geoscience Australia

## GEOSCIENCE AUSTRALIA

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Cover: Interpretation of Geoscience Australia regional line 119-04 through Brewster 1A discovery well showing projected locations of Inpex Browse Ltd's 2000 discovery wells in the Browse Basin exploration permit WA-285-P off north-western Australia.

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(in envelope with report)

# Glossary

°API	Degrees American Petroleum Institute—a measure of oil density. $\text{API gravity} = \frac{141.5}{\text{specific gravity at } 60^{\circ}\text{F}} - 131.5$
Basin	A geological depression filled with sediments. Several basins of different ages overlying each other are referred to as stacked basins (e.g. Cooper/Eromanga Basins).
Completion	The process by which a finished well is either sealed off or prepared for production.
Condensate	A liquid mixture of pentane and heavier hydrocarbons that is recoverable from a gas well through a separation system.
Crude oil	A mixture of hydrocarbons that existed in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities.
Demonstrated resources	The amount of petroleum that can be recovered from the part of identified resources whose existence is established and whose quantity is considered probable, based on well data and geological projection. In this publication, demonstrated resources are taken to be equal to remaining, proved plus probable, commercial and non-commercial reserves of petroleum as maintained at Geoscience Australia.
Development	Phase of the petroleum industry in which a proven oil or gas field is brought into production by drilling production wells.
Discovery	The first well (in a new field) from which any measurable amount of oil or gas has been recovered. A well that makes a discovery is classified as a new field discovery (NFD).
Exploration	The phase of operations in which a company searches for oil or gas by carrying out detailed geological and geophysical surveys followed up where appropriate by exploratory drilling in the most promising places.
Extension/appraisal wells	Wells drilled to determine the physical extent, reserves and likely production rate of a field.
Gross	Including both permeable and non-permeable intervals.
Identified resources	The total amount of petroleum that can be recovered from specific accumulations that have been identified by drilling.
Initial resources	Resources before subtraction of cumulative production.



LNG	Liquefied natural gas, gaseous at normal temperature and pressures, but held in the liquid state at very low temperatures to facilitate storage and transport.
LPG	Liquefied petroleum gas, a liquid mixture of all the propane and butane that are recoverable from a well through a separating facility.
MDT	Multirate differential tool (a form of repeat formation tester).
Natural gas	A mixture of methane and ethane and up to 3% of carbon dioxide.
New-field wildcat well	A petroleum exploration well drilled on a structural or stratigraphic trap that has not previously been shown to contain petroleum.
Petroleum	A naturally occurring hydrocarbon or mixture of hydrocarbons. As oil or gas or in solution, it is widespread in Australian sedimentary rocks, but major concentrations are generally rare.
Petroleum resources	The part of Australia's petroleum endowment that may be produced profitably by currently feasible or near-feasible technology and for specified product prices. Petroleum resources are defined to include only those natural concentrations from which economic extraction of a part is feasible within the range of technology and prices likely to be seen within the next 20 to 25 years. Hence, petroleum resources is a subset of petroleum endowment and can change according to the assumed technological and economic conditions.
Play	A continuous portion of sedimentary volume which contains pools showing the following characteristics: (1) reservoirs within the same productive sequence occurring throughout the zone; (2) hydrocarbons of similar chemical composition; and (3) traps of the same type.
Production	The phase of bringing well fluids to the surface and separating them and storing, gauging and otherwise preparing the product for transportation.
Production test	A test on a cased well whereby the nature and quantity of the formation fluids in a possible oil- or gas-bearing stratum are determined by allowing them to flow to the surface through the drill string under carefully controlled conditions.
Prospective	Likely to contain producible petroleum.
Proved and probable reserves	Reserves established at the median value—that is with a 50% cumulative probability of existence.
Remaining resources	Resources after subtraction of cumulative production from the initial amount of resources.
Repeat formation test	Test run on a wireline in a well, to measure the pressure and temperature of the specific depths and to take small fluid samples from the reservoir.

Risked	Amount multiplied by the probability of existence.
Success rate	A ratio obtained by dividing the number of new-field discoveries by the number of new-field wildcat wells drilled.
Trap	Any barrier to the upward movement of oil or gas, allowing either or both to accumulate.
Undiscovered accumulation	A general term representing all undiscovered petroleum deposits irrespective of economic potential.
Undiscovered field	All of the petroleum accumulations that may occur in multiple reservoirs within the same structural or stratigraphic trap.
Undiscovered resources	The amount of conventional petroleum that can be recovered from unspecified accumulations that have not been identified by drilling, but may exist within a specific reservoir sequence wherever it lies within a structural or stratigraphic trap.

## Abbreviations

°API	degrees American Petroleum Institute
bbl	barrel
Bm <sup>3</sup>	billion cubic metres
cc	cubic centimetre
CGS	concrete gravity structure
d	day
DA	Designated Authority
DBNGP	Dampier to Bunbury natural gas pipeline
DST	drill stem test
dwt	dead weight tonnes
EOR	enhanced oil recovery
EUR	estimated ultimate recovery
EXT	extension to previously discovered petroleum fields
FPSO	floating production, storage and offloading
FSO	floating storage and offloading
ft	feet
GIS	geographic information system
GL	gigalitre = 10 <sup>6</sup> cubic metres
JPDA	Joint Petroleum Development Area
k	thousand
kL	kilolitre
km	kilometre
km <sup>2</sup>	square kilometre
LPG	liquefied petroleum gas
m	metre
m <sup>3</sup>	cubic metres
mm	millimetre
MOPU	mobile offshore production unit
na	not applicable
NCC	navigation control and communication
NFD	new-field discovery
NPD	new-pool discovery
OGRA	<i>Oil and Gas Resources of Australia</i>
PEDIN	Petroleum Exploration Data Index
PIMS	Petroleum Information Management System
PJ	petajoule = 10 <sup>15</sup> joules

psig	pounds per square inch gauge
PSSA	<i>Petroleum Search Subsidy Act 1957</i>
P(SL)A	<i>Petroleum (Submerged Lands) Act 1967</i>
RFT	repeat formation test
RTM	riser turret mooring
scf	standard cubic feet (cubic feet at standard atmospheric temperature and pressure)
SECWA	State Electricity Commission of Western Australia
t	tonne
Tcf	trillion cubic feet = $10^{12}$ cubic feet
TJ	terajoule = $10^{12}$ joules
USGS	United States Geological Survey
y	year
ZOC A	Australia–Indonesia Zone of Cooperation Area A

### **Conversion factors (approximate)**

1 kilolitre = 6.2898 barrels

1 cubic metre = 1 kilolitre = 35.315 cubic feet

Throughout the text one thousand million ( $10^9$ ) is referred to as one billion, and one million million ( $10^{12}$ ) as one trillion.





# Summary

## Exploration 1999

The total number of 51 offshore exploration wells drilled in Australia in 1999 was down from 73 wells drilled in 1998. Offshore, 42 new-field wildcat wells resulted in 13 new-field discoveries, 12 off north-western Australia and one in the Gippsland Basin off Victoria. Discoveries occurred in:

- the Carnarvon Basin at Bennett, Coaster, Enfield, North Gypsy, Sage (oil), Cadell, Geryon, Lee, Narvik, Orthrus, Windsor (gas), Nasutus (oil and gas); and
- the Gippsland Basin at Cuttlefish (oil and gas).

Onshore, 44 exploration wells were drilled in 1999 including 28 new-field wildcat wells, resulting in eight new-field discoveries. The overall level of drilling activity is low compared to previous years following the relinquishment during the year of Petroleum Exploration Licences 5 and 6 in the Cooper and Eromanga Basins of South Australia. However, as in previous years, the Cooper and Eromanga Basins had the most activity and discoveries. Discoveries were made in the Bowen, Cooper, Eromanga, Otway and Perth Basins and all were gas except for one oil and gas discovery at Jacaranda Ridge in the South Australian part of the Otway Basin.

In 1999, 523 410 line kilometres of seismic were recorded (compared to 1 062 810 line kilometres in 1998); 11 075 line kilometres onshore and 512 335 line kilometres offshore. The offshore level of seismic activity, although down on the record level of 1998, was the second highest level of offshore seismic line kilometres of acquisition ever recorded.

## Exploration 2000

A total of 61 offshore exploration wells were drilled in 2000; up from 51 wells drilled in 1999, a high level, but less than the record 73 wells drilled in 1998. Offshore, 57 new-field wildcat wells resulted in 23 new-field discoveries (a record level) and includes those discoveries inferred from well logs and repeat formation tests. All the discoveries occurred off north-western Australia. In 2000 discoveries occurred in:

- the Bonaparte Basin at Coleraine (oil), Crux, Prometheus, Rubicon and Saratoga (gas);
- the Browse Basin at Brecknock South, Dinichthys, Gorgonichthys, and Titanichthys (gas); and
- the Carnarvon Basin at Antiope, Baker, Corvus, Gaea, Iago, Linda, Maenad, Urania (gas), Coniston, Oryx, Tusk (oil), Chamois, Laverda and North Alkimos (oil and gas).

Onshore, 36 exploration wells were drilled in 2000 including 24 new-field wildcat wells resulting in nine new-field discoveries. Most of the success and activity occurred in the Cooper and Eromanga Basins of South Australia and Queensland. The decrease in exploration drilling continued to be driven by the relinquishment in 1999 of Petroleum Exploration Licences 5 and 6 in South Australia and a focus on development drilling throughout the numerous production licences held in the Cooper and Eromanga Basins. There were five gas discoveries in the Cooper and Eromanga Basins, two in the Carnarvon Basin at Bandar (oil) and Phantom (gas), one in the Otway Basin at Penrynn (gas) and at Trifon (gas) in the Gippsland Basin—the first onshore gas discovery in the basin.

In 2000, 135 828 line kilometres of 2-D and 3-D seismic and 15 178 square kilometres of 3-D seismic were recorded, 15 272 line kilometres and 2228 square kilometres onshore and 120 556 line kilometres and 12 950 square kilometres offshore. This is the first time that Geoscience Australia has reported seismic survey acquisition in both line kilometres and square kilometres and reflects the increasing difficulty in converting the different acquisition techniques. In future all 3-D seismic acquisition will be recorded as square kilometres and all 2-D seismic data as line kilometres.

## **Timor Gap Joint Petroleum Development Area (JPDA)**

On 5 July 2001, the Hon. Alexander Downer, MP, Minister for Foreign Affairs; Senator the Hon. Nick Minchin, MP, Minister for Industry, Science and Resources; and East Timorese and United Nations representatives initialed and endorsed a new Timor Sea Arrangement (Arrangement) to govern petroleum development in the Timor Sea. The area was previously referred to as the Zone of Cooperation Area A.

The terms of the Arrangement will be incorporated into a new Treaty to come into force on East Timor's independence, expected in early 2002. The Treaty will replace an existing agreement between Australia and the United Nations.

Key elements of the Arrangement include:

- a revenue split of 90% for East Timor and 10% for Australia from petroleum activities in the Joint Petroleum Development Area (JPDA);
- deferral of permanent delineation of the seabed boundary without prejudice to Australia's and East Timor's rights and entitlements;
- maintenance of the contractual terms of the existing petroleum projects (Bayu/Undan, Greater Sunrise and Elang/Kakatua);
- Australian jurisdiction over the planned pipeline from the JPDA to Australia;
- unitisation of the Greater Sunrise field (which straddles the JPDA and an area under Australian jurisdiction) on the basis that 20% of the field lies within the JPDA and 80% within Australian jurisdiction;

The new treaty will have a duration of 30 years.

## Reserves and resources

Two-thirds of Australia's commercial oil reserves (608 of 925 GL) have been discovered in Tertiary reservoirs in the offshore Gippsland Basin. Additional major oil reserves have been discovered in the Carnarvon and Bonaparte Basins. The most significant gas reserves are located in the Carnarvon, Browse, Bonaparte, Gippsland and Cooper Basins.

Remaining commercial reserves at 1 January 2000 are:

<b>Crude oil</b>	<b>Condensate</b>	<b>Liquid petroleum gas</b>	<b>Sales gas</b>
<b>(GL)</b>	<b>(GL)</b>	<b>(GL)</b>	<b>(Bm<sup>3</sup>)</b>
192.8	120.5	134.8	861
<b>(million barrels)</b>	<b>(million barrels)</b>	<b>(million barrels)</b>	<b>(trillion cubic feet)</b>
1213	758	848	30.4

Estimates of reserves that have not yet been declared commercially viable (non-commercial reserves) are:

<b>Crude oil</b>	<b>Condensate</b>	<b>Liquid petroleum gas</b>	<b>Sales gas</b>
<b>(GL)</b>	<b>(GL)</b>	<b>(GL)</b>	<b>(Bm<sup>3</sup>)</b>
71.9	223.7	215.1	2384
<b>(million barrels)</b>	<b>(million barrels)</b>	<b>(million barrels)</b>	<b>(trillion cubic feet)</b>
452	1407	1353	84.2

New estimates of undiscovered resource potential in the major basins are reported in Chapter 3. For the Bonaparte, Browse, Carnarvon and Gippsland Basins the total estimates are:

	<b>P<sub>95</sub></b>	<b>Mean</b>	<b>P<sub>05</sub></b>
<b>Oil (GL)</b>	250	799	1565
(Million barrels)	1577	5032	9846
<b>Gas (Bm<sup>3</sup>)</b>	943	3235	6187
(Trillion cubic feet)	33	114	218
<b>Condensate (GL)</b>	280	959	1890
(Million barrels)	1762	6035	11887



## Development

Development and production expenditure onshore and offshore increased slightly from \$1926 million in 1998 to \$2245 million in 1999.

Major new developments during 2000 were offshore from Western Australia and the Northern Territory. In the JPDA part of the Bonaparte Basin, detailed design continued for the Bayu/Undan gas/condensate development. In the Carnarvon Basin, planning continued for Legendre oil development for commencement of production in May 2001. Additional wells in the Perseus pool, part of the North Rankin gas field, were drilled. Additional development at Stag oilfield increased the production rate. A proposal was made to develop the Echo/Yodel gas/condensate field by 2002.

Onshore, major developments included extensive field development by Santos to increase deliverability from the Cooper Basin gas fields.

## Production

Daily petroleum production rates in 1998 were:

Crude oil plus condensate		Gas	
Megalitres/day	83.0	Million cubic metres/day	107.3
Barrels/day	522 000	Billion cubic feet/day	3.8

Daily petroleum production rates in 1999 were:

Crude oil plus condensate		Gas	
Megalitres/day	80.6	Million cubic metres/day	104.7
Barrels/day	507 000	Billion cubic feet/day	3.7

Estimates by the Geoscience Australia of future crude oil plus condensate production suggest production in 2001 at between about 81.0 and 114.5 GL/d (510 000 and 720 000 bbl/d) and a decline to between about 25.4 and 55.6 GL/d (160 000 and 350 000 bbl/d) in 2015.

## Sufficiency

Crude oil and condensate remaining economic demonstrated resources at the end of 1999 could sustain production of 30.3 GL per year for 16.8 years. This average production level was calculated for the period 1990 to 1999. The consumption of crude oil and condensate in 1999 could be sustained by remaining economic demonstrated resources for only 11.8 years.

# 1: Exploration 1999 and 2000

## 1.1 Exploration drilling and seismic surveys

In 2000, 97 exploration wells were drilled (95 in 1999). These consisted of:

		2000	1999
Onshore	New-field wildcats	24	28
	Extension/appraisal	12	16
Offshore	New-field wildcats	57	42
	Extension/appraisal	4	9

Total exploration metres drilled in 2000 were 215 061 m (207 557 m in 1999).

In 2000, 129 858 line kilometres of 2-D and 3-D seismic data and 22 605 square kilometres of 3-D seismic data were recorded. During 1999, 309 318 line kilometres of 2-D and 3-D seismic data were recorded. Table 1.1 shows the break up between onshore and offshore acquisition for both 2-D and 3-D seismic data and for 2000 included 3-D square kilometres of data acquired. Previous to 2000, 3-D seismic acquisition reported by operators in square kilometres was converted to line kilometres of seismic shot but to follow the convention in industry, reporting for modern 3-D acquisition this practice has been discontinued. Geoscience Australia is reporting 3-D seismic recorded only in square kilometres from the beginning of 2000.

Petroleum exploration expenditure in 1999 was \$699 403 663 of which \$99 995 646 was onshore and \$599 408 017 was offshore. Exploration expenditure incurred in the area now known as the Joint Petroleum Development Area (JPDA) previously known as the Zone of Cooperation Area A (ZOC A) is included in the above figures and in Appendix E which summarises petroleum exploration and development expenditure in 1999.

Note that the Northern Territory administers the Commonwealth Territory of Ashmore and Cartier Islands—for petroleum purposes—under an agency agreement with the Commonwealth.

**Table 1.1 Seismic survey acquisition 1999–2000**

Year	Onshore			Offshore			Total	
	2D line km	3D line km	3D sq km	2D line km	3D line km	3D sq km	Line km	Square km
1999	4 098	7 161	-	83 277	214 782	-	309 318	-
2000	2 291	14 547	5 014	25 064	87 956	17 591	129 858	22 605

## Offshore drilling 1999 and 2000

The level of offshore exploration drilling activity in 2000 (61 wells drilled) was at a high level but less than the record 73 wells drilled in 1998. In 1999, 51 wells were drilled (Figure 1.1). Offshore drilling in 2000 accounted for 57 new-field wildcat wells and four extension/appraisal wells. In 1999 offshore drilling accounted for 42 new-field wildcat wells and nine extension/appraisal wells (Appendices A, F and G). Drilling was undertaken in 2000 in the Bonaparte (11 wells), Browse (6 wells) and Carnarvon (44 wells) Basins. In 1999 drilling was undertaken in the Bass (1 well), Bonaparte (9 wells), Browse (4 wells), Carnarvon (34 wells) and Gippsland (3 wells) Basins.

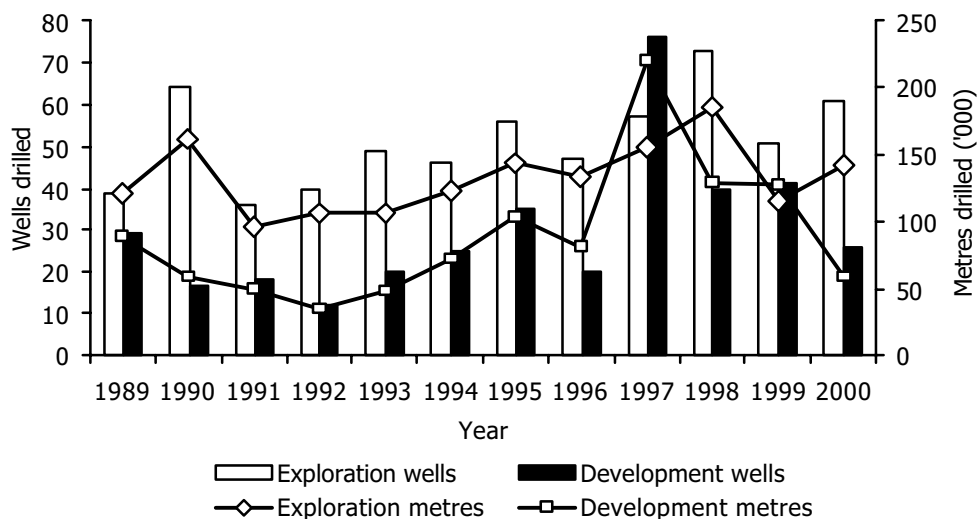
Offshore exploration drilling in 2000 accounted for 23 discoveries—a record level of new-field discoveries. It includes those discoveries inferred from well logs and repeat formation testing (RFT). All of the discoveries occurred off north-western Australia. In 1999 13 new-field discoveries were made, 12 off north-western Australia and one in the Gippsland Basin off Victoria (Figure 1.1).

In 2000 discoveries occurred in the:

- Bonaparte Basin at Coleraine (oil), Crux, Prometheus, Rubicon and Saratoga (gas);
- Browse Basin at Brecknock South, Dinichthys, Gorgonichthys and Titanichthys (gas);
- Coniston, Oryx, Tusk (oil), Carnarvon Basin at Antiope, Baker, Corvus, Gaea, Iago, Linda, Carnarvon Basin at Maenad, Urania (gas) and Chamois, Laverda, North Alkimos (oil and gas).

In 1999 discoveries occurred in the:

- Carnarvon Basin at Bennet, Coaster, Enfield, North Gipsy, Sage (oil), Cadell, Geryon, Lee, Narvik, Orthrus, Windsor (gas) and Nasutus (oil and gas); and
- Gippsland Basin at Cuttlefish (oil and gas).



**Figure 1.1 Wells and metres drilled offshore 1989–2000**

## Offshore discoveries 1999

During 1999 and despite a significant increase in the last quarter offshore exploration drilling (51 wells) remained at average levels over the last 10 years. Most of the successful drilling (13 discoveries) was in the Carnarvon Basin of the North West Shelf off Western Australia. One reported discovery occurred in the Gippsland Basin off Victoria.

### Carnarvon Basin

**Bennet 1**, an oil discovery located 51 km north-north-east of Onslow in 19 m of water, was drilled to test a low relief, four-way-dip closure along trend from the Chervil field at Top Barrow Group level. Wireline test and logs indicate that three hydrocarbon columns were intersected over the interval 1060 m – 1150 m. The upper two intervals were gas saturated and the lower interval from 1093 m – 1110 m was interpreted to be an oil column in relatively poor quality Barrow Group sands. The well was plugged and abandoned.

**Cadell 1**, located 8.5 km south south-west of Airlie Island in 16 m of water, was drilled to test a fault-dependent, two-way-dip closure located at the intersection of two large faults at Mungaroo Formation level. Wireline test and logs indicated a 74 m gas column from 1248 m – 1322 m. The well was plugged and abandoned.

**Coaster 1** was drilled in 10 m of water some 5 km south-west of Roller 3. Logs indicated that the well intersected a 15 m oil column in the Barrow Group sands. No tests were carried out and the well was plugged and abandoned.

**Enfield 1** is located 10 km south-west of the Vincent oil discovery in 544 m of water. The well intersected a 33 m oil column in the lower Barrow Group Birdrong sandstone and on test flowed 763 kL of oil per day (4800 bbl/d) of 22 °API oil and gas at a rate of 33 131 cubic metres per day (1.17 million scf/d). The well was plugged and abandoned.

**Geryon 1** is located 6 km west-south-west of Saturn 1 and 18 km north of Dionysus 1 near the edge of the Exmouth Plateau. The well drilled in 1231 m of water, encountered three major gas zones with high quality reservoir (interpreted from logs) giving a total of 112.9 m of net gas pay in the Mungaroo Formation. No production tests were carried out and the well was plugged and abandoned as a gas discovery.

**Lee 1**, located in 31 m of water 11 km north-east of Varanus Island and 3 km north of Rose 1, intersected gas saturated intervals in North Rankin Formation sandstones, Brigadier Formation sandstones and Mungaroo Formation sandstones. Wireline logs also indicated a new lower Mungaroo Formation sandstone oil reservoir. The well was plugged as a gas discovery and plans were put forward to further appraise the oil shows seen.

**Narvik 1**, located in TP/8 in the Barrow Sub-basin in 17 m of water, is a test of Lower Cretaceous sandstones juxtaposed against the Flinders Fault. Logs and pressure data indicated a gross gas column of 31 m of which 10.7 m is interpreted to be productive reservoir. The well was plugged and abandoned as a gas discovery.

**Nasutus 1** is located approximately 10 km to the east of the Chervil Field and 1 km to the south-west of the Nares 1 well. The well was drilled in 14 m of water and targeted the Barrow Group and the Mardie Greensand and intersected a 48 m oil and gas column. A drill stem test (DST) over the interval 640 m to 644 m flowed 20.6 °API oil at a rate of 253.6 kL/d (1595 bbl/d). The well was plugged and abandoned.

**North Gipsy 1** is located between the Gipsy oil discovery and the Rose and Lee gas/condensate discoveries in 27 m of water. The well tested the Jurassic North Rankin Formation sandstone and the Triassic Brigadier Formation sandstone. A test over the interval 2236 m – 2255 m flowed oil at a rate of 944.4 kL/d (5940 bbl/d). The well was cased and suspended as a future oil producer.



**Orthrhus 1** was drilled in 1203 m of water and is located 20 km west of Dionysus 1. The primary objective of the well was the sands of the Mungaroo Formation and followed the drilling of the Geryon 1 well. Logs indicated 52.6 m of net gas pay. The well was not tested and was plugged and abandoned as a gas discovery.

**Sage 1** is located in the Dampier Sub-basin updip of Rosemary North 1 and on trend with the Legendre and Saffron oil and gas accumulations in 66 m of water. A single zone test in the Intra-Muderong Saffron sandstone over the interval 1909 m – 1934 m yielded 350 kL/d (2200 bbl/d) of 48.8 °API oil with 11 327 cubic metres of gas per day. The well was subsequently plugged and abandoned due to the proximity of a cyclone.

**Windsor 1** is located in 26 m of water near the Harriet oil field infrastructure. The primary objective of the well is the Flag sandstone. Log interpretation indicated a thin 3.5 m gas column between 2090.5 m – 2094 m. The discovery was not considered commercial and the well was plugged and abandoned.

#### Gippsland Basin

**Cuttlefish 1**, drilled in the Gippsland Basin in 47 m of water was the only reported discovery during the year made outside the Carnarvon Basin. The well is located 8 km north and updip from the Sweetlips oil and gas field. The well's objective was to test the Top Latrobe Formation. Wireline log interpretation indicates a possible thin oil or gas column at the top of the Latrobe Formation. The well was plugged and abandoned on completion of logging. No further information on this well is available at date of publication.

### Offshore discoveries 2000

The significant rise in the oil price during the year did not translate into significantly increased operator's exploration budgets. However, the overall level of offshore exploration drilling (61 wells drilled) is the third highest level reached compared to a record 73 wells drilled in 1998. A record of 23 discoveries were made offshore, in the Bonaparte, Browse and Carnarvon Basins off north-western Australia.

#### Bonaparte Basin

**Coleraine 1** was drilled in 68 m of water in the JPDA 96-16. The well was designed to test the Middle-Upper Jurassic Elang and Plover Formations in a large fault block structure. The well intersected a poor quality Elang Formation reservoir. Logs indicated a 7 m oil column in the Flamingo Group. The well was plugged and abandoned.

**Crux 1** was drilled in 163.5 m of water as a tight hole operation in the Vulcan Sub-Basin. The well had two objectives—the Montara Formation and a Plover Formation secondary objective. Two DST over the intervals 3816 m – 3853 m and 3642 m – 3660 m were conducted after the well intersected a 280 m gross hydrocarbon column in a sandstone reservoir. These tests confirmed the productivity of the reservoir, flowing 962 206 cubic metres per day (33.98 million scf/d) of gas and 121 kL/d (761 bbl/d) of condensate. The well was plugged and abandoned.

**Prometheus 1** was drilled in permit WA-278-P with an Upper and Lower Permian Keyling Formation sandstone objective. The well intersected a 72 m gross gas column within the Upper Permian Tern and Cape Hay member sandstones (indicated by logs). A significant volume of gas is estimated to be contained within the structure although testing was not carried out. The well has been plugged and abandoned.

**Rubicon 1** is located 3.5 km east of Prometheus 1 gas discovery in 72 m of water. The well intersected a 30 m gross gas column within Permian sandstones. Log data indicates excellent reservoir quality with an average porosity of 25%. The well was plugged and abandoned.

**Saratoga 1** was drilled in 94.6 m of water in permit WA-276-P and encountered a gas bearing reservoir of 9 m gross thickness within the Flamingo sandstone. Following the completion of logging the well was plugged and abandoned.

#### Browse Basin

**Brecknock South 1** located in 424 m of water, 20 km to the south of Brecknock 1 encountered a 167 m gross gas column on wireline logs over a single interval in the primary reservoir objective. No tests were carried out and the well was plugged and abandoned.

**Dinichthys 1**, **Gorgonichthys 1** and **Titanichthys 1** are in close proximity to the Brewster 1A discovery well drilled in 1980. On test Dinichthys 1 flowed 622 971 cubic metres of gas per day (22 million scf/d) with 206.7 kL/d (1300 bbl/d) of condensate. Gorgonichthys 1, although not initially tested, was re-entered in early 2001 for testing. Unconfirmed reports suggest that the well flowed gas at significantly greater rates than that achieved at Dinichthys 1. Titanichthys 1 tested the Brewster sands and unconfirmed reports indicate that the well flowed significant quantities of gas and condensate on test.

#### Carnarvon Basin

**Antiope 1** is located in 226 m of water near the Minden 1 gas discovery in permit WA-290-P. The well which was sidetracked due to mechanical problems was drilled as a tight hole. RFT samples indicate that the well encountered two separate gas columns in Barrow Group sands. No tests were carried out and the well was plugged and abandoned.

**Baker 1** located in 30 m of water 1.5 km east of the Gipsy 1 oil discovery in permit TL/1 was drilled to further test the Gipsy/Rose/Lee fields. The well encountered gas in three reservoir levels; an interval in the Jurassic North Rankin Formation with a gross thickness of 8.5 m, a 17 m gross interval within the Brigadier Formation and a 6 m gross interval within the Mungaroo Formation A sandstones. No tests were carried out and the well was plugged and abandoned.

**Chamois 1** was drilled in WA-261-P in 48 m of water in the North Carnarvon Basin short of the planned total depth of 1529 m due to lost circulation problems. Formation testing indicated a 3 m net gas column in the M. australis sandstone (Muderong Formation) and about 6 m of net pay oil in the D. caddaense sandstone of the Athol Formation. The well was plugged and abandoned.

**Coniston 1** is located in 415 m of water in the south-eastern part of permit WA-255-P on the flanks of the Novara Arch and in proximity to the heavy oil discovery at Novara 1. On test the well flowed heavy oil at a rate of 337 kL/d (2119 bbl/d). The oil gravity is consistent with other discoveries at Enfield and Vincent where the oil has a gravity of 17 °API. The well was plugged and abandoned.

**Corvus 1** is located in 61 m of water in permit WA-246-P on trend with the Sage and Saffron oil discoveries. Initial logging suggested a 399 m gas column within the Mungaroo Formation and the well was deepened. Further logging indicated a gross gas column of 591 m within the Triassic Mungaroo Formation. On test over the interval 3557 m – 3709 m the well flowed 424 753 cubic metres (15 million scf/d) of gas per day with 3.2 kL/d (20 bbl/d) of condensate through a 7/16 inch choke. Analysis indicated that higher flow rates could have been achieved had a larger choke size been used. The well was plugged and abandoned on completion of testing.

**Gaea 1** is located in permit WA-1-L near the North Rankin and Perseus gas/condensate fields in 125 m of water. The well intersected two separate gas columns, in the Jurassic Angel Formation and North Rankin Formation. Logging indicated that the higher column has a net thickness of 22 m and a gross thickness of 30 m. Upon deepening the well a 210 m gross gas column was intersected in the lower North Rankin Formation. The well was plugged and abandoned.

**Iago 1** is located in 118 m of water in permit WA-25-P and was drilled to test the Triassic Mungaroo Formation sandstone. A gas-bearing interval in the Mungaroo Formation was identified from logging and sampling and the well was subsequently plugged and abandoned.

**Laverda 1** was drilled in the Exmouth Sub-Basin in permit WA-271-P in 840 m of water. The well tested a prospect located at the Top Macedon reservoir horizon within tieback range of the projected Enfield development. The well encountered a 70 m gross hydrocarbon column, comprising 61 m of oil with a 9 m gas cap. No testing was carried out and the well was plugged and abandoned.

**Linda 1** is located between the Harriet and Gipsy fields in licence area TL/1 in 33 m of water. The well tested a new play, an interpreted submarine fan deposit in the Jurassic Biggada Formation, basinward of the Gipsy/Rose/Lee discoveries. The well intersected a 91 m gross hydrocarbon column in the Biggada Formation between depths of 2659 m and 2750 m and on test flowed 891 981 cubic metres (31.5 million scf/d) of gas per day with 233.7 kL/d (1470 bbl/d) of condensate. The well was plugged and abandoned but plans were announced for further appraisal drilling of the field.

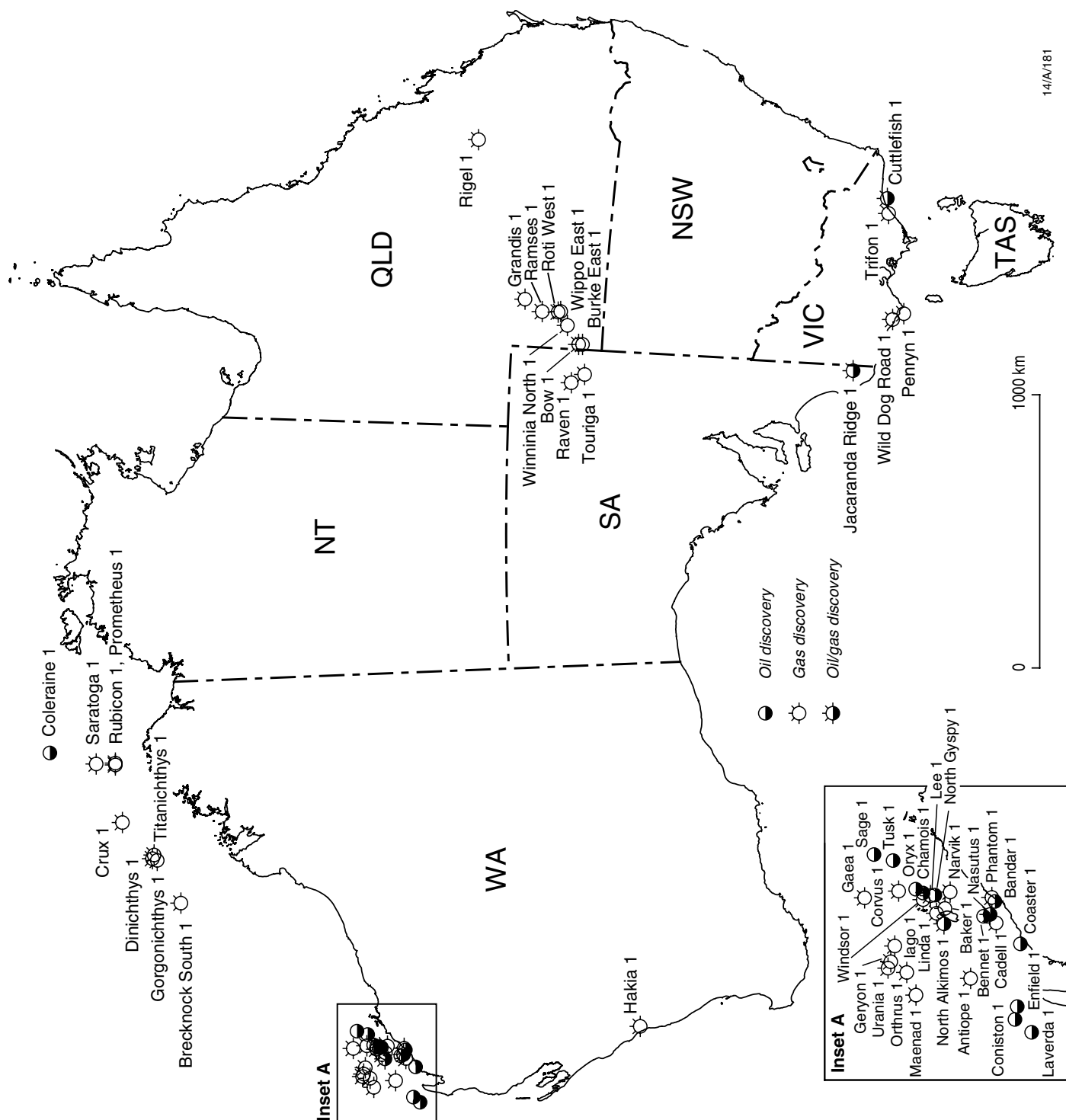
**Maenad 1A** is located in 1221 m of water on the Exmouth Plateau in permit WA-267-P and was drilled to test a large Triassic play on trend with the Geryon and Orthrus gas discoveries. Wireline logging indicated two high quality reservoir zones with 20 m of total net gas pay possibly analogous to Geryon, Orthrus and Urania discoveries. No tests were carried out and the well was plugged and abandoned.

**North Alkimos 1** was drilled in 6 m of water as a deviated well 4 km south-west of the Harriet A platform in licence area TL/1. The well targeted the Lower Cretaceous Flag Sandstone in a four-way dip-closed structure. The well intersected a hydrocarbon column of 11.9 m comprising a gas cap of 5.7 m and a 6.2 m oil leg. The accumulation is small and the well was plugged and abandoned.

**Oryx 1** is located to the west of the Stag oil field in permit WA-209-P in 52 m of water. The well recovered 120 ml of 18.7 °API oil and it is understood that the accumulation is unlikely to be commercial. The well was plugged and abandoned.

**Tusk 1** is located on the eastern flank of the Dampier Sub-basin in exploration permit WA-246-P. Drilled in 55 m of water, the well intersected three oil-bearing sandstones within the Jurassic Athol Formation and a fourth in the Triassic Mungaroo Formation (all hydrocarbon zones were inferred from wireline logs). Although no petroleum was recovered from this well, an appraisal well (Tusk 2) recovered a quantity of oil in an MDT tool from the Athol Formation.

**Urania 1** is located on the Exmouth Plateau in deep water (over 1200 m) in the north-eastern part of permit WA-267-P and along trend from the Geryon and Orthrus gas discoveries. Logging indicated a possible 54.5 m net gas pay zone was intersected and this may indicate potential gas in place of several trillion cubic feet of gas. The well was not tested and was plugged and abandoned.



**Figure 1.2 Location of discoveries in 1999 and 2000 (refer to Appendix C)**



## Onshore drilling 1999 and 2000

### Onshore 1999

In 1999, 44 onshore exploration wells were drilled (Figure 1.3). Of these, 28 were new-field wildcat wells and 16 were extension/appraisal wells (Appendices A, F and G). Drilling was undertaken in the Bowen/Surat (3 wells), Bowen (3 wells), Clarence/Moreton (1 well), Cooper/Eromanga (16 wells), Eromanga (3 wells), Gippsland (3 wells), Otway (5 wells), Perth (2 wells) and Surat (8 wells) Basins.

Onshore exploration drilling accounted for eight new-field discoveries (Figure 1.2). A list of discoveries made during the year appears in Appendix C. As in previous years the Cooper and Eromanga Basins had the most activity and discoveries of the onshore basins. However, the overall level of drilling activity is low compared to previous years following the relinquishment in 1999 of Petroleum Exploration Licences 5 and 6 in South Australia.

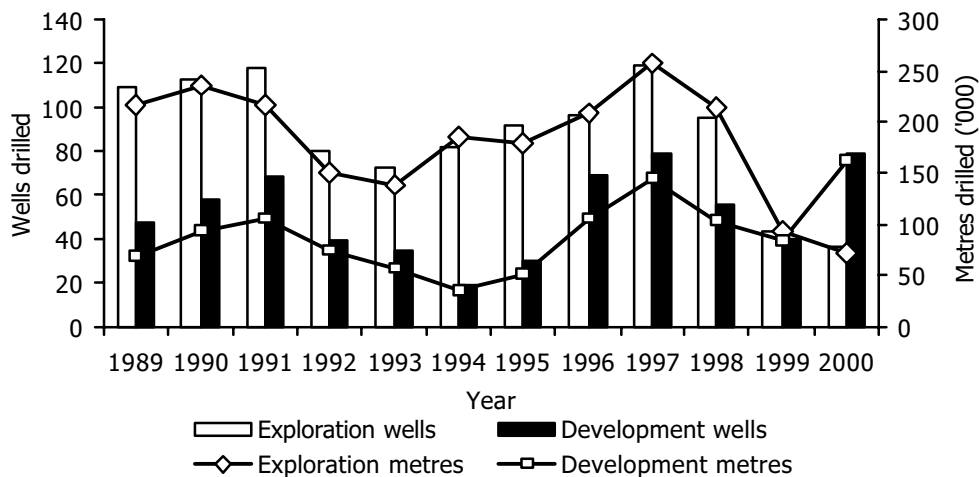
In the South Australian sector of the Cooper and Eromanga Basins gas discoveries included **Grandis 1**, **Raven 1** and **Touriga 1**. **Raven 1** tested 254 900 cubic metres per day (9 million scf/d) of gas and 26 kL/d (163.5 bbl/d) of condensate. **Touriga 1** tested 153 000 cubic metres per day (5.4 million scf/d) of gas and 28 kL/d (176.1 bbl/d) of condensate. The Queensland sector saw successful drilling of **Winnia North 1** which flowed 21 238 cubic metres per day (0.75 million scf/d) of gas and was subsequently cased and suspended as a Permian gas producer. **Rigel 1** gas discovery in the Bowen Basin was plugged and suspended as a future gas producer. In the Otway Basin discoveries of gas were made at **Jacaranda Ridge 1** and **Wild Dog Road 1**. **Jacaranda Ridge 1** is an oil and gas discovery which flowed 64.9 kL/d (408 bbl/d) of 44.8 °API oil and 22 653 cubic metres (0.8 million scf/d) of gas per day. **Wild Dog Road 1** flowed 427 584 cubic metres per day (15.1 million scf/d) of gas per day during testing and was subsequently completed as a future gas producer. The **Hakia 1** gas discovery in the Perth Basin flowed 14 158 cubic metres per day (0.5 million scf/d) with 0.5 kL/d (3 bbl/d) of condensate and was plugged and abandoned.

## Onshore 2000

In 2000, 36 onshore exploration wells were drilled (Figure 1.3). Of these 24 were new-field wildcat wells and 12 were extension/appraisal wells (Appendices A, F and G). Drilling was undertaken in the Bowen (1 well), Bowen/Surat (2 wells), Carnarvon (4 wells), Cooper/Eromanga (22 wells), Gippsland (2 wells), Otway (2 wells), Perth (one well), Surat (1 well) and Sydney (1 well) Basins.

Onshore exploration drilling accounted for nine new-field discoveries (Appendix C and Figure 1.2). Most of the success can be attributed to activity and continuing discoveries in the Cooper and Eromanga Basins, of South Australia and Queensland. A list of discoveries made during the year appears in Appendix C. The decrease in exploration drilling in the Cooper and Eromanga Basins continued to be driven by the relinquishment in 1999 of Petroleum Exploration Licences 5 and 6 in South Australia and a focus on development drilling throughout the numerous production licences held in the basin.

The five gas discoveries in the Cooper and Eromanga Basins were cased and suspended for future gas production. There were two onshore Carnarvon Basin discoveries at **Bandar 1** (oil) and **Phantom 1** (gas) but both wells were plugged and abandoned. The **Trifon 1** gas discovery in the Gippsland Basin flowed 127 426 cubic metres per day (4.5 million scf/d). This was the first onshore gas discovery in the Gippsland Basin. The **Penryn 1** gas discovery in the Otway Basin of Victoria discovered a 20 m gross gas column and was cased and suspended as a future gas producer.



**Figure 1.3 Wells and metres drilled onshore 1989–2000**

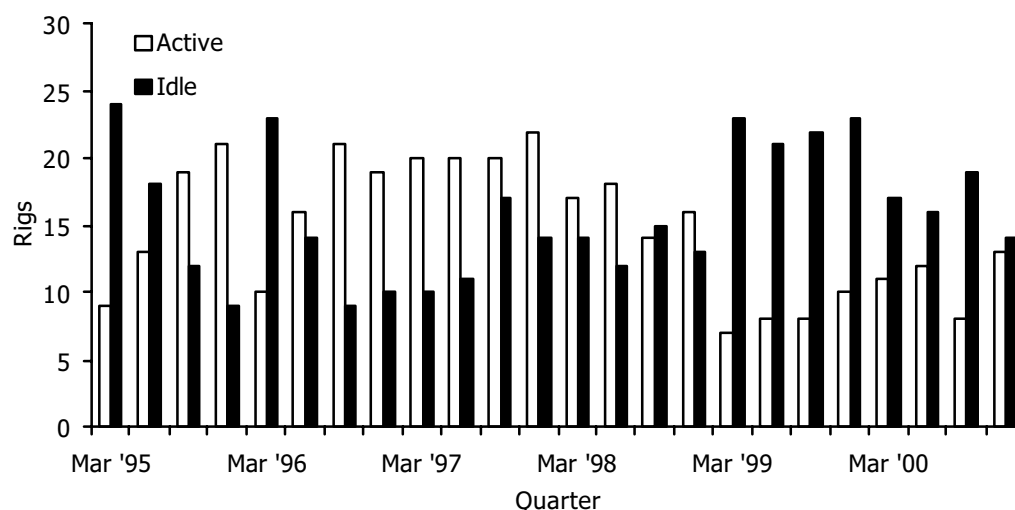
## 1.2 Rig activity 1999 and 2000

### 1999

The total number of active rigs during December 1999 was 18—nine less than at December 1998. At the end of 1999, ten onshore rigs were active; eight offshore rigs were engaged or in the process of mobilising.

Onshore, rig activity had risen from nine active rigs in January 2000 to 10 rigs active by the end of December (Figure 1.4). The 10 rigs active at the end of December were drilling, carrying out workovers or mobilising in the Cooper/Eromanga (6), Perth (3) and Surat (1) Basins.

Offshore, the level of rig activity varied from 10 rigs active in January 2000, nine rigs in June, a low of five rigs in September to eight rigs active at the end of December (Figure 1.5). Of the eight rigs active at the end of the year, five were operating in the Carnarvon Basin and one each in the Bonaparte, Browse and Gippsland Basins.



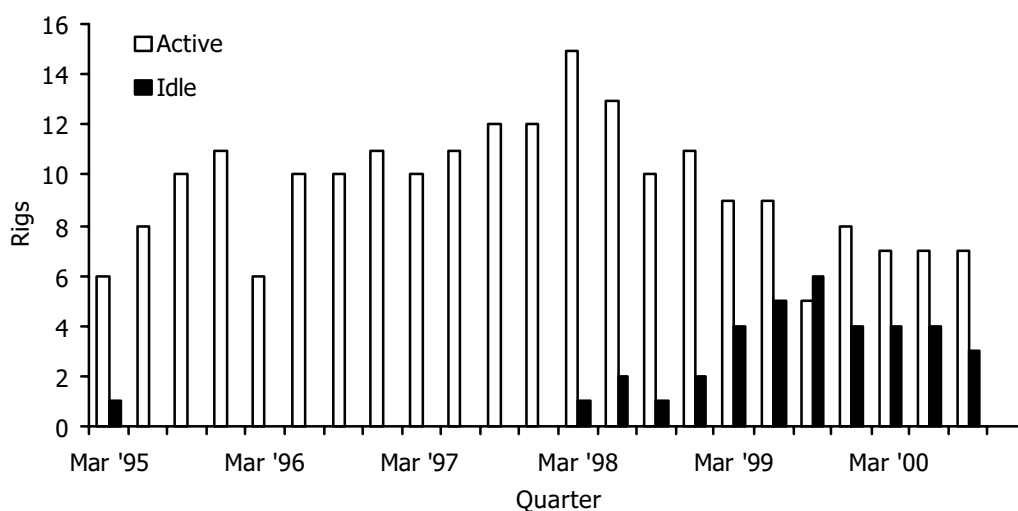
**Figure 1.4 Onshore drilling rig activity 1995–2000**

## 2000

At the end of December 2000 there were 20 active rigs onshore and offshore, two more than at the end of 1999. Thirteen of the available onshore rigs were active and seven of the 11 offshore rigs were engaged or in the process of mobilising.

Onshore, 13 rigs were active at the end of the year compared to nine active rigs at the end of January 2000 (Figure 1.4). Ten of the rigs were undertaking work in the Cooper/Eromanga Basin, and one each in the Bowen, Canning and Gippsland Basins.

Offshore, rig activity varied between six to eight rigs active throughout the second half of the year, falling to seven active rigs at the end of December. Of the seven rigs active at the end of 2000, five were operating in the Carnarvon Basin and one each in the Bonaparte and Browse Basins.



**Figure 1.5 Offshore drilling rig activity 1995–2000**

## 1.3 Petroleum licences

At the end 2000, onshore and offshore petroleum licences in force or pending renewal covered approximately 1 400 000 km<sup>2</sup> (including the JPDA). Of this area, 840 000 km<sup>2</sup> comprised onshore licences and 560 000 km<sup>2</sup> offshore licences. This is a significant increase in the acreage held under licence compared to that held at the end of 1999 (822 795 km<sup>2</sup> onshore and 411 335 km<sup>2</sup> offshore).

In 1999, 57 areas were offered in the Offshore Petroleum Acreage Release program, with closing dates in October 1999 and April 2000. Of these, 14 received successful bids (eight in frontier areas of the Great Australian Bight and Browse Basins). As part of a government initiative to allow permittees to maintain 'good standing', 18 areas not bid on in the first closing of the 1999 Acreage Release program were offered again in the 1999 Re-Release program (first closing). Of these, four received successful bids. An additional re-release of 25 areas not bid on in the second closing of the 1999 Acreage Release program failed to attract further bids.

The 2000 Offshore Petroleum Acreage Release program offered 86 areas with closing dates for applications in November 2000 and May 2001. At the date of publication, successful applicants had yet to be announced. A total of 67 areas that failed to receive bids were subsequently re-released in two rounds, with closing dates for applications in May 2001 and October 2001.

A further 42 offshore areas were offered in April 2001 with closing dates in October 2001 and April 2002.

## 1.4 Success rates

The success rates shown in Table 1.2 are based on the number of new-field wildcat petroleum discoveries and new-field wildcat wells drilled in Australia onshore and offshore for each year from 1988 to 2000. No assumptions have been made as to whether a 'discovery' has proved or will prove to be commercial. Geoscience Australia defines a discovery for these purposes as a well from which any measurable amount of oil or gas has been recovered and exclude those discoveries inferred from well logs or repeat formation tests (RFT).

A summary of exploration and development drilling is presented in Appendix A.

**Table 1.2 New-field wildcat success rates 1988–2000**

Year	Success rate			Percentage success rate		
	Onshore	Offshore	Combined	Onshore	Offshore	Combined
1988	1:4.8	1:3.0	1:4.4	20.8	33.3	22.7
1989	1:2.8	1:3.0	1:2.9	35.7	33.3	34.5
1990	1:3.0	1:4.5	1:3.5	33.3	22.2	28.6
1991	1:2.9	1:7.8	1:3.6	34.5	12.8	27.8
1992	1:3.2	1:4.7	1:3.6	31.3	21.3	27.8
1993	1:3.0	1:4.0	1:3.4	33.3	25.0	29.4
1994	1:1.9	1:4.3	1:2.8	52.6	23.3	35.7
1995	1:2.5	1:3.8	1:2.8	40.0	26.3	35.7
1996	1:2.5	1:6.2	1:3.1	40.0	16.1	32.3
1997	1:1.8	1:5.4	1:2.3	55.6	18.5	43.5
1998	1:2.3	1:8.6	1:3.5	43.5	11.6	28.6
1999	1:2.5	1:3.9	1:3.2	40.0	25.6	31.3
2000	1:3.8	1:4.7	1:4.4	26.3	21.3	22.7

## 2: Identified resources

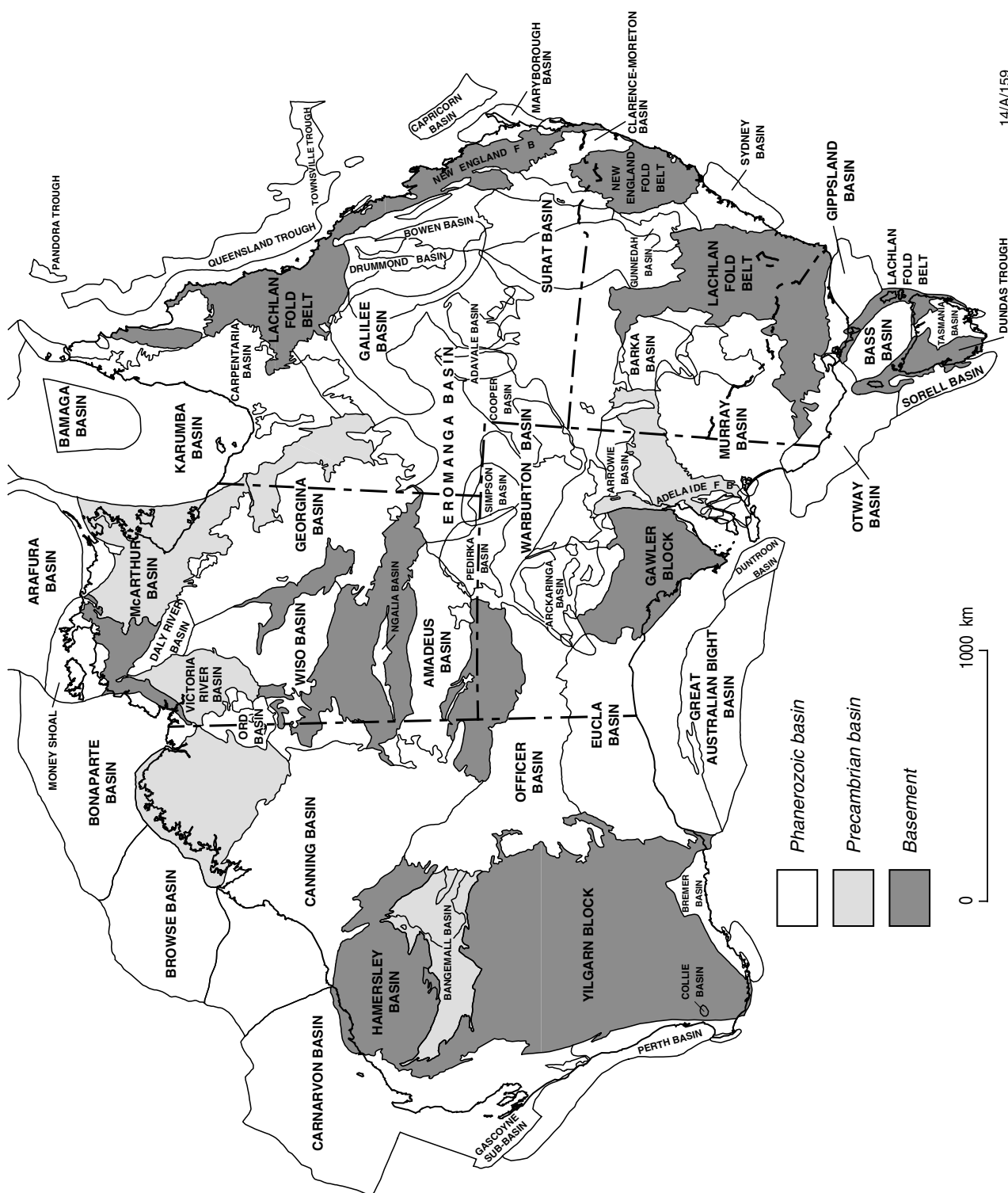
### 2.1 Basin geology and petroleum potential

Sedimentary rocks ranging in age from Proterozoic to Tertiary underlie about 4.3 million square kilometres or about half of the land area of Australia (Figure 2.1), and about 2 million square kilometres of the continental shelf. Forty-eight sedimentary basins are now recognised; 20 lie partly or wholly offshore.

Petroleum systems active in Australian sedimentary basins and the history of Australian petroleum discovery to date have recently been reviewed by Bradshaw et al. (1999) and Longley et al. (2001).

Australia's petroleum reservoirs range in age from Proterozoic to Early Tertiary. Most of the oil resources discovered so far are in offshore Tertiary reservoirs in the Gippsland Basin, while major oil and gas resources are present on the North West Shelf (Carnarvon, Browse and Bonaparte Basins) and in the Cooper and Eromanga Basins. The petroleum reservoirs in the Carnarvon, Browse and Otway Basins are Mesozoic. Both Mesozoic and Permian reservoirs exist in the Bonaparte Basin. Onshore, petroleum occurs in Jurassic and Cretaceous reservoirs in the Eromanga Basin, and Jurassic reservoirs in the Surat Basin. The reservoirs are Permian and Triassic in the Perth, Bowen and Cooper Basins. In Adavale Basin, the reservoirs are Devonian, while Canning Basin reservoirs are Permian and Devonian. Late Precambrian and Late Ordovician reservoirs occur in the Amadeus Basin.

The early to mid-Palaeozoic reservoirs in the Amadeus, Canning and Adavale Basins are in shallow marine sedimentary sequences. The Canning Basin contains Australia's only petroleum producing carbonate reservoir—a Devonian reef. However, most of Australia's petroleum resources have been discovered in Tertiary, Mesozoic and Late Palaeozoic clastic sequences.



**Figure 2.1 Australia's sedimentary basins**

Basement is regions generally unprospective for petroleum—mainly areas underlain by crystalline rocks or by tightly folded or metamorphosed strata. Locally, relationships are complex (e.g. the Galilee Basin overlies the Adavale Basin and underlies the Eromanga Basin).



Significant new petroleum discoveries, extension wells and plays during 1999 and 2000 include the following.

## **Oil**

Following oil discoveries at Vincent in 1998 and Enfield in 1999, the recovery of oil in Laverda 1 drilled in October 2000 confirmed the presence of a new heavy oil play in the north-eastern Exmouth Sub-basin of the Carnarvon Basin (Figure 1.2). This play appears to extend at least as far north as the Coniston oil discovery made in February 2000 in the southern Barrow Sub-basin. The full extent of this play and its implications for future oil exploration elsewhere in the Carnarvon Basin remain to be evaluated.

Oil and gas discoveries continued to be made in Triassic to Cretaceous reservoirs along the shoreward flanks of the Dampier Sub-basin of the Carnarvon Basin. These include Oryx 1 (oil), Chamois 1 (oil and gas) and Tusk 1 (oil) (Figure 1.2).

## **Gas and condensate**

Evaluation of the drilling results from Dinichthys 1, Titanichthys 1 and Gorgonichthys 1 in the northern Browse Basin and Crux 1 in the southernmost Bonaparte Basin confirmed the presence of a major, condensate-rich gas province. These wells have identified a giant gas/condensate resource (which may comprise one of Australia's largest condensate discoveries to date).

Other drilling in the Browse Basin (Brecknock South 1) increased the known extent of the super-giant Scott Reef/Brecknock gas trend to the south.

The western Carnarvon Basin continued to yield significant gas discoveries including Iago 1, Gaea 1 and Antiope 1.

Gas discoveries at Prometheus 1, Rubicon 1 and Saratoga 1 (west of the Ascalon gas discovery), have raised expectations for exploration of the southern Londonderry High in the Bonaparte Basin.

## 2.2 Identified resources

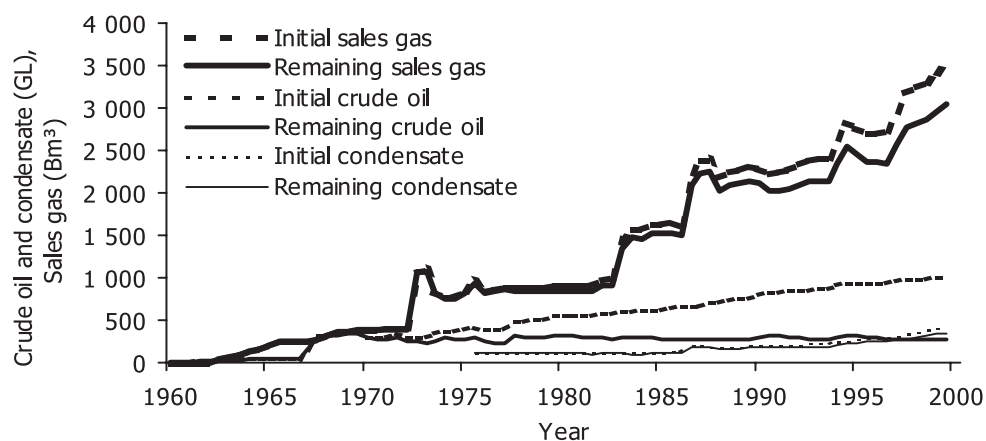
Australia's identified resources are compiled from Geoscience Australia's in-house data and data provided by companies and State and Northern Territory mines departments. Information on individual accumulations is provided in the Geoscience Australia series *Australian Petroleum Accumulations*. The reserves estimates at 1 January 1999 and 1 January 2000 are presented in Table 2.1 and categorised by basin. The corresponding estimates according to the McKelvey reporting system are listed in Table 2.2.

Initial and remaining crude oil, condensate and gas reserves, together with production, for the period 1960–1999 are shown in Figure 2.2. Remaining oil reserves are approximately unchanged since 1970. Most (391 of 709 GL) of the increase in initial oil reserves since 1970 is due to growth in reserves in fields discovered before 1970. During the same period, remaining gas reserves have increased more than eight times, mainly due to discoveries of major gas resources off north-western Australia. Reduction in reserves through production have been more than offset by discoveries and reassessment of identified fields since 1 January 1998.

Major changes to the Category 1 figures are due to commercialisation of Bonaparte oil reserves and revisions to Carnarvon oil and gas reserves. Decreases in the Gippsland Basin are due to oil and gas production. Category 2 oil volumes have decreased primarily through transfer to Category 1. Undeveloped gas reserves in the Browse Basin have been reduced through reassessment, while those in the Bonaparte Basin have increased after further appraisal drilling.

Recent gas discoveries in the Browse Basin (Dinichthys/Titanichthys/Gorgonichthys) have the potential to significantly add to Australia's gas resources. Press reports at the time of discovery indicated a resource of up to 280 Bcm (10 Tcf) of gas and 95 GL (600 million barrels) of condensate may be present in the greater Gorgonichthys area.

Recent discoveries have also identified large additional gas reserves in the Carnarvon Basin.



**Figure 2.2 Australia's initial and remaining commercial plus non-commercial reserves of crude oil, condensate and sales gas**

**Table 2.1: Petroleum reserves estimates by basin as at 1 January 1999**

Category Basin	Oil		Condensate		LPG		Sales gas	
	GL	million barrels	GL	million barrels	GL	million barrels	Bcm	Tcf
<b>Category 1</b>								
Adavale	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.01
Amadeus	1.25	7.84	0.56	3.50	0.44	2.78	12.27	0.43
Bonaparte	1.21	7.59	0.00	0.00	0.00	0.00	0.15	0.01
Bowen	0.08	0.53	0.15	0.94	0.16	0.98	2.18	0.08
Canning	0.03	0.19	0.00	0.00	0.00	0.00	0.00	0.00
Carnarvon	75.17	472.82	88.72	558.03	83.13	522.87	592.80	20.93
Cooper	1.32	8.28	16.72	105.14	9.03	56.80	89.93	3.18
Eromanga	6.60	41.53	0.17	1.10	0.08	0.50	1.74	0.06
Gippsland	75.60	475.51	18.40	115.73	34.70	218.26	137.30	4.85
Otway	0.00	0.00	0.06	0.39	0.00	0.00	0.94	0.03
Perth	0.20	1.26	0.12	0.75	0.00	0.00	3.33	0.12
Surat	0.23	1.47	0.02	0.11	0.03	0.17	0.74	0.03
<b>TOTAL</b>	<b>161.69</b>	<b>1 017.01</b>	<b>124.92</b>	<b>785.70</b>	<b>127.57</b>	<b>802.36</b>	<b>841.79</b>	<b>29.73</b>
<b>Category 2</b>								
Amadeus	0.00	0.00	0.03	0.18	0.13	0.81	7.20	0.25
Bass	2.45	15.41	5.51	34.66	8.14	51.20	9.70	0.34
Bonaparte	57.34	360.69	86.16	541.95	64.84	407.82	417.94	14.76
Bowen	0.00	0.00	0.01	0.04	0.01	0.09	1.11	0.04
Browse	0.48	3.00	36.30	228.32	60.16	378.40	529.71	18.71
Carnarvon	21.08	132.60	65.64	412.88	49.47	311.17	914.07	32.28
Cooper	0.03	0.20	3.40	21.37	2.51	15.81	40.93	1.45
Eromanga	0.10	0.62	0.03	0.20	0.05	0.30	0.66	0.02
Gippsland	30.90	194.35	4.02	25.25	1.00	6.29	82.46	2.91
Otway	0.00	0.00	0.32	2.04	0.00	0.00	12.37	0.44
Perth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surat	0.00	0.00	0.00	0.01	0.00	0.01	0.07	0.00
<b>TOTAL</b>	<b>112.38</b>	<b>706.87</b>	<b>201.42</b>	<b>1 266.89</b>	<b>186.32</b>	<b>1 171.90</b>	<b>2 016.21</b>	<b>71.20</b>
<b>GRAND TOTAL</b>	<b>274.07</b>	<b>1 723.88</b>	<b>326.34</b>	<b>2 052.59</b>	<b>313.88</b>	<b>1 974.26</b>	<b>2 858.00</b>	<b>100.93</b>

**NOTES**

Category 1 comprises current reserves of those fields which have been declared commercial. It includes both proved and probable reserves.

Category 2 comprises estimates of recoverable reserves which have not yet been declared commercially viable; they may be either geologically proved or are awaiting further appraisal. For McKelvey resource classification see Table 2.2.

**Table 2.1: Petroleum reserves estimates by basin as at 1 January 2000**

Category Basin	Oil		Condensate		LPG		Sales gas	
	GL	million barrels	GL	million barrels	GL	million barrels	Bcm	Tcf
<b>Category 1</b>								
Adavale	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.01
Amadeus	1.14	7.20	0.58	3.68	0.46	2.88	11.35	0.40
Bonaparte	41.35	260.06	0.00	0.00	0.00	0.00	0.08	0.00
Bowen	0.05	0.32	0.12	0.73	0.15	0.96	2.52	0.09
Canning	0.02	0.13	0.00	0.00	0.00	0.00	0.00	0.00
Carnarvon	77.38	486.67	94.14	592.12	91.81	577.49	620.72	21.92
Cooper	1.19	7.48	7.32	46.05	9.33	58.70	86.81	3.07
Eromanga	6.31	39.72	0.17	1.10	0.06	0.40	1.55	0.05
Gippsland	64.90	408.21	18.00	113.22	32.90	206.93	133.10	4.70
Otway	0.00	0.00	0.10	0.65	0.00	0.00	1.19	0.04
Perth	0.19	1.20	0.01	0.06	0.00	0.00	2.91	0.10
Surat	0.23	1.47	0.02	0.13	0.03	0.20	0.68	0.02
<b>TOTAL</b>	<b>192.77</b>	<b>1 212.46</b>	<b>120.47</b>	<b>757.75</b>	<b>134.75</b>	<b>847.55</b>	<b>861.29</b>	<b>30.42</b>
<b>Category 2</b>								
Amadeus	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.02
Bass	2.45	15.41	5.51	34.66	8.14	51.20	9.70	0.34
Bonaparte	11.67	73.37	92.10	579.31	64.84	407.82	614.67	21.71
Bowen	0.00	0.01	0.01	0.06	0.02	0.12	2.42	0.09
Browse	0.48	3.00	35.45	222.97	64.75	407.27	528.55	18.67
Carnarvon	34.21	215.20	83.37	524.40	74.67	469.68	1 095.84	38.70
Cooper	0.03	0.20	2.95	18.56	2.01	12.66	36.36	1.28
Eromanga	0.07	0.42	0.06	0.40	0.08	0.50	1.20	0.04
Gippsland	22.95	144.35	3.92	24.62	0.60	3.77	82.58	2.92
Otway	0.00	0.00	0.32	2.04	0.00	0.00	12.37	0.44
Perth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surat	0.00	0.00	0.00	0.02	0.01	0.04	0.05	0.00
<b>TOTAL</b>	<b>71.86</b>	<b>451.96</b>	<b>223.70</b>	<b>1 407.04</b>	<b>215.12</b>	<b>1 353.07</b>	<b>2 384.41</b>	<b>84.21</b>
<b>GRAND TOTAL</b>	<b>264.62</b>	<b>1 664.42</b>	<b>344.17</b>	<b>2 164.79</b>	<b>349.87</b>	<b>2 200.63</b>	<b>3 245.70</b>	<b>114.62</b>

**NOTES**

Category 1 comprises current reserves of those fields which have been declared commercial. It includes both proved and probable reserves.

Category 2 comprises estimates of recoverable reserves which have not yet been declared commercially viable; they may be either geologically proved or are awaiting further appraisal. For McKelvey resource classification see Table 2.2.

**Table 2.2: McKelvey classification estimates by basin as at 1 January 1999**

Category Basin	Oil		Condensate		LPG		Sales gas	
	GL	million barrels	GL	million barrels	GL	million barrels	Bcm	Tcf
<b>EDR</b>								
Adavale	0	0	0	0	0	0	0	0
Amadeus	1	8	1	3	0	3	12	0
Bass	2	9	1	5	1	5	3	0
Bonaparte	50	313	83	520	65	408	363	13
Bowen	0	1	0	1	0	1	2	0
Canning	0	0	0	0	0	0	0	0
Carnarvon	84	529	153	961	132	833	1 321	47
Cooper	1	8	17	105	9	57	90	3
Eromanga	7	42	0	1	0	0	2	0
Gippsland	98	615	19	116	35	220	183	6
Otway	0	0	0	1	0	0	9	0
Perth	0	1	0	1	0	0	3	0
Surat	0	1	0	0	0	0	1	0
<b>TOTAL</b>	<b>243</b>	<b>1 528</b>	<b>273</b>	<b>1 715</b>	<b>243</b>	<b>1 527</b>	<b>1 989</b>	<b>70</b>
<b>SDR</b>								
Amadeus	0	0	0	0	0	1	7	0
Bass	1	6	5	30	7	47	7	0
Bonaparte	9	55	4	22	0	0	55	2
Bowen	0	0	0	0	0	0	1	0
Browse	0	3	36	228	60	378	530	19
Carnarvon	12	77	2	10	0	1	186	7
Cooper	0	0	3	21	3	16	41	1
Eromanga	0	1	0	0	0	0	1	0
Gippsland	9	54	4	25	1	4	37	1
Otway	0	0	0	1	0	0	4	0
Perth	0	0	0	0	0	0	0	0
Surat	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>31</b>	<b>196</b>	<b>54</b>	<b>338</b>	<b>71</b>	<b>447</b>	<b>869</b>	<b>31</b>
<b>GRAND TOTAL</b>	<b>274</b>	<b>1 724</b>	<b>326</b>	<b>2 053</b>	<b>314</b>	<b>1 974</b>	<b>2 858</b>	<b>101</b>

**NOTES**

Economic Demonstrated Resources are resources judged to be economically extractable and for which the quantity and quality are computed partly from specific measurements, and partly from extrapolation for a reasonable distance on geological evidence.

Subeconomic Demonstrated Resources are similar to Economic Demonstrated Resources in terms of certainty of occurrence and, although considered to be potentially economic in the foreseeable future, these resources are judged to be subeconomic at present.

For traditional petroleum industry classification see Table 2.1.

**Table 2.2: McKelvey classification estimates by basin as at 1 January 2000**

Category Basin	Oil		Condensate		LPG		Sales gas	
	GL	million barrels	GL	million barrels	GL	million barrels	Bcm	Tcf
<b>EDR</b>								
Adavale	0	0	0	0	0	0	0	0
Amadeus	1	7	1	4	0	3	11	0
Bass	2	9	1	5	1	5	3	0
Bonaparte	45	283	88	551	65	408	567	20
Bowen	0	0	0	1	0	1	3	0
Canning	0	0	0	0	0	0	0	0
Carnarvon	92	576	167	1 052	153	965	1 355	48
Cooper	1	7	7	46	9	59	87	3
Eromanga	6	40	0	1	0	0	2	0
Gippsland	80	503	18	114	33	208	179	6
Otway	0	0	0	2	0	0	10	0
Perth	0	1	0	0	0	0	3	0
Surat	0	1	0	0	0	0	1	0
<b>TOTAL</b>	<b>227</b>	<b>1 429</b>	<b>282</b>	<b>1 775</b>	<b>262</b>	<b>1 648</b>	<b>2 219</b>	<b>78</b>
<b>SDR</b>								
Amadeus	0	0	0	0	0	0	1	0
Bass	1	6	5	30	7	47	7	0
Bonaparte	8	51	4	28	0	0	48	2
Bowen	0	0	0	0	0	0	2	0
Browse	0	3	35	223	65	407	529	19
Carnarvon	20	126	10	65	13	82	362	13
Cooper	0	0	3	19	2	13	36	1
Eromanga	0	0	0	0	0	1	1	0
Gippsland	8	49	4	24	1	3	37	1
Otway	0	0	0	1	0	0	4	0
Perth	0	0	0	0	0	0	0	0
Surat	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>37</b>	<b>236</b>	<b>62</b>	<b>390</b>	<b>88</b>	<b>553</b>	<b>1 027</b>	<b>36</b>
<b>GRAND TOTAL</b>	<b>265</b>	<b>1 664</b>	<b>344</b>	<b>2 165</b>	<b>350</b>	<b>2 201</b>	<b>3 246</b>	<b>115</b>

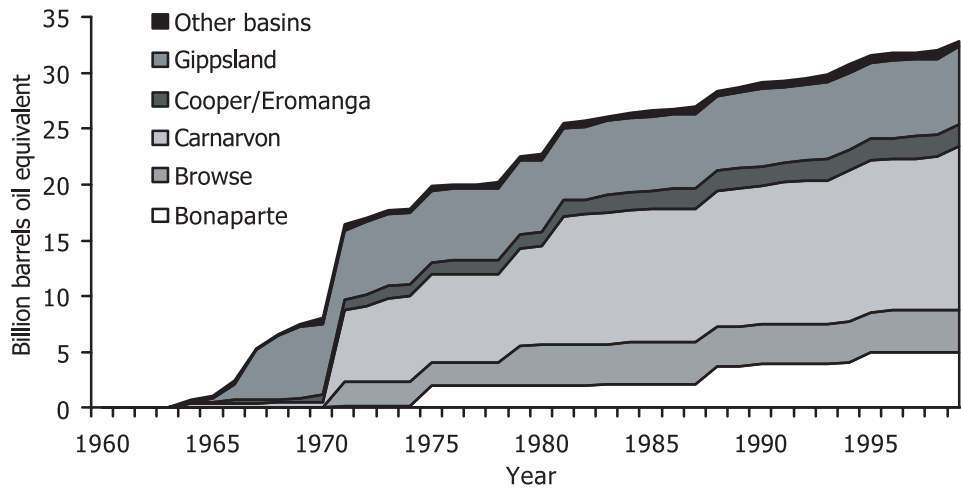
**NOTES**

Economic Demonstrated Resources are resources judged to be economically extractable and for which the quantity and quality are computed partly from specific measurements, and partly from extrapolation for a reasonable distance on geological evidence.

Subeconomic Demonstrated Resources are similar to Economic Demonstrated Resources in terms of certainty of occurrence and, although considered to be potentially economic in the foreseeable future, these resources are judged to be subeconomic at present.

For traditional petroleum industry classification see Table 2.1.

Total reserves per basin in terms of oil equivalent barrels are shown in Figure 2.3. The reserves are backdated to the year of discovery. This indicates the major reserves continue to be in the Gippsland, Carnarvon and Browse Basins. The latter two are dominated by gas reserves.



**Figure 2.3 Growth in Australian reserves by basin (back-dated to year of discovery)**

## 2.3 Coalbed methane resources

In 1993 an estimate of Australian coalbed methane resources was published (Miyazaki & Korsch 1993). Two eastern Australian basins—the Bowen and Sydney Basins—currently represent the significant potential provinces of coalbed methane in Australia.

The inferred coalbed methane resources are 1760 billion cubic metres (62 Tcf). The low permeability of the coal seams hinders current attempts to use this vast energy resource. Coal rank, gas content, depth, gas composition and ash content affect the estimate. The economic and uneconomic demonstrated resources of coalbed methane are yet to be estimated on a project-by-project basis. The inferred coalbed methane resources should not be compared with the remaining commercial and non-commercial gas resources (3246 billion cubic metres or 115 Tcf), because the degree of certainty is substantially different.

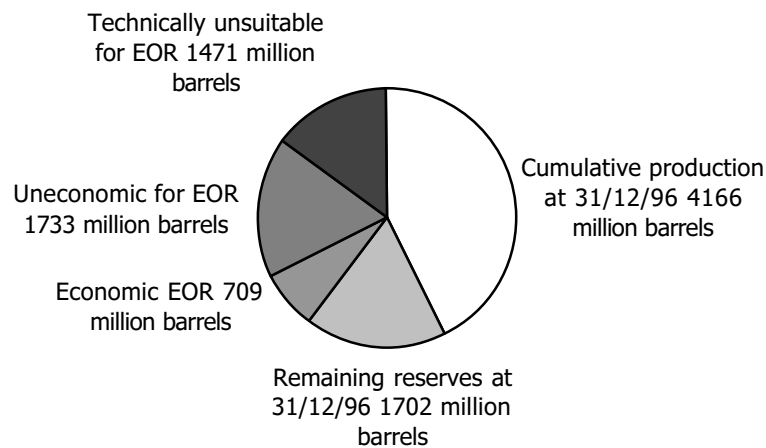
Commercial production of coalbed methane gas has now commenced both in Queensland and New South Wales. Reassessment of coalbed methane resources may be possible when the production performance of commercial ventures has been assessed.



## 2.4 Enhanced oil recovery

In 1991, results of a three-year study of enhanced oil recovery (EOR) opportunities in Australia were published (Wright et al. 1991). Initiated in late 1987, the study aimed to provide assistance in planning EOR projects and policy and to demonstrate the scope for EOR in Australia.

A total of 177 oil accumulations, representing 95% of Australia's oil in place, was used to assess EOR processes applicable to Australian reservoirs. The assessment employed criteria used by the US National Petroleum Council in a 1984 study, and simulation models for the various processes provided by the US Department of Energy. The processes considered were miscible, alkaline polymer, surfactant and steam flooding, and in situ combustion. Miscible flooding with carbon dioxide or ethane was found to have the widest applicability to Australian reservoirs. Figure 2.4 summarises the results of the study, using in-place oil volumes at 1 January 1997. While significant volumes of crude oil have been discovered since 1986, this is offset by higher than expected primary recovery from many of the large fields, resulting in reduced potential for enhanced oil recovery in these fields.



**Figure 2.4 Australia's oil in place and EOR potential**

In the South Australian section of the Cooper Basin there have been two EOR projects—the Tirrawarra and Moorari miscible gas floods. EOR in the basin began in 1984 with a two-year pilot project in the Tirrawarra oil pool. This pilot involved a single gas injection well and six producers. The full-scale miscible floods began in 1986 with four gas injection wells in Tirrawarra and one in Moorari. The Tirrawarra flood was gradually expanded until a total of eleven wells were converted to gas injection. The Moorari oil pool was not large enough to warrant expansion. The injection gas used in the two floods was the ethane stream from Moomba gas plant. This gas had to be transported 49 km to Tirrawarra and 63 km to Moorari. Injection has now ceased but oil production continues. It is currently estimated that these two floods have added 24 million barrels of oil reserves.

In addition to improving oil recovery, these miscible floods served the secondary function of storing ethane until a market could be established. In 1996, this market was established and by the start of 1997 ethane injection had ceased. Currently, all the ethane produced at the Moomba gas plant is required to supply the ethane market and therefore no ethane is being injected.

The economics of alternative miscible injection fluids have been reviewed. Both carbon dioxide and raw gas from nearby fields were considered. Neither option was economic due to high initial capital and/or high fluid costs.

In the Timor Sea section of the Northern Bonaparte Basin there is another EOR project—the Corallina miscible gas flood. The gas injector in Corallina was primarily designed for the environmental purpose to dispose of surplus gas produced from Laminaria and Corallina. The well is located at the eastern flank of the Corallina structure. The produced gas is injected into the aquifer and then expected to migrate up dip towards the crest of Corallina. The injected gas is expected to mix with the Corallina oil to perform a miscible displacement. Gas injection commenced shortly after Laminaria/Corallina production began in 1999. A study indicates that the EOR project may yield an incremental recovery of about 5%.

## 2.5 References

- Bradshaw, M.T., Foster, C.B., Fellows, M.E. & Rowland, D.C., (1999) The Australian search for petroleum: Patterns of discovery. *The APPEA Journal*, 39(1), 12–29.
- Longley, I.M., Bradshaw, M.T. & Hebberger, J., (2001) Australian petroleum provinces of the 21<sup>st</sup> Century. In: Downey, M., Threet, J. & Morgan, W. (eds), *Petroleum Provinces of the 21<sup>st</sup> Century*, AAPG Memoir 74, (in press).
- Miyazaki, S. & Korsch R.J. (1993) Coalbed methane resources in the Permian of eastern Australia and their tectonic setting. *The APEA Journal*, 33(1), 161–175.
- Wright, D., le Poidevin, S.R., Morrison, G., Thomas, R.G. & Centre for Petroleum Engineering, University of New South Wales (1991) Potential for enhanced oil recovery applications in Australia. NERDPP Project 976. *Bureau of Mineral Resources, Australia, Record* 1991/20, 129 pp.



## 3: Undiscovered resources

### 3.1 Introduction

This year sees a major shift in the way undiscovered resource numbers are reported by Geoscience Australia. The United States Geological Survey (USGS) *US Geological Survey World Petroleum Assessment 2000* provides the new ultimate potential volume for the undiscovered resources in the major offshore producing basins of Australia. Geoscience Australia has adopted this assessment since it allows the prospectivity of Australian basins to be benchmarked against international petroleum basins included in the USGS study.

The undiscovered resource numbers produced by Geoscience Australia's AUSTPLAY program presented in previous OGRA editions have been judged to more closely predict the volumes of hydrocarbons likely to be discovered within the next five to ten years rather than an ultimate potential. The USGS assessment differs from previous AUSTPLAY assessments in that:

- AUSTPLAY assessments have not been done in many deep water regions; and
- USGS methodology attempts to account for the phenomenon of reserves growth whereas this has never been a feature of AUSTPLAY assessments.

AUSTPLAY will continue to have a future, as it is the best assessment methodology for providing input to production forecasts and economic analyses. Development work will continue to bring AUSTPLAY up-to-date with major modifications required on the database aspects of the program including the addition of GIS capabilities.

In conjunction with this shift to an ultimate potential number is the decision not to estimate the undiscovered potential of non-producing basins. The figures presented in previous years have been 'risked volumes' and with the very high perceived geological risks in these basins, the contribution from the frontier basins has often been negligible and not reflective of the exploration opportunities available (see Powell 2001 for discussion). The most useful description of these basins as potential future exploration targets is in demonstrating that they have the necessary ingredients for an active petroleum system of significant size, rather than calculating a speculative volume (Powell 2001). The regional project groups within the Petroleum and Marine Division of Geoscience Australia are undertaking studies to assess the petroleum potential of non-producing basins.

### 3.2 The USGS assessment

The USGS assessment methodology is a geology-based assessment methodology. The assessment has a nominal 30-year forecast timeframe. This can be equated to a volume that has the potential to be discovered within the foreseeable future. Emphasis is also on the volume that has the potential to be discovered rather than on trying to predict what will be discovered. The latter would require knowledge of future economics and technology.

More details about the methodology can be found in the USGS CD-ROM set (USGS 2000).

This world assessment was conducted over a five-year period by a team of about 40 people; 1995 is used as a base year for calculation purposes.

Four regions have been assessed for Australia:

- Bonaparte Basin;
- Browse Basin;
- Carnarvon Basin; and
- Gippsland Basin.

At the mean expectation, Australia's potential is approximately 5032 million barrels (799 GL) oil, 114 trillion cubic feet (3235 billion m<sup>3</sup>) gas and 6035 million barrels (959 GL) of condensate. Table 3.1 summarises the results at various probabilities and by basin.

### 3.3 Reserves growth

Experience shows that the estimates of the sizes of oil and gas fields made at particular times are consistently low. Continued production generally results in an increase in the reported volume within hydrocarbon fields. The increase in the reported reserves over time is generally referred to as either 'reserves growth' or 'field growth'.

The issue of reserves growth is considered to be a very important factor, and in the *US Geological Survey World Petroleum Assessment 2000*, the authors point out that:

*Reserve growth is a major component – perhaps the major component – of remaining US oil and natural gas resources. Projections of the potential reserve growth of known fields have therefore become necessary elements of US petroleum resource assessments.*

Schmoker & Klett (USGS 2000)

Reserves growth is attributed to a combination of activities including:

- increases in the known reservoir rock volume of discovered pools;
- new pool discoveries within the boundaries of existing fields;
- revised assessment of reservoir properties (porosity, water saturation, residual hydrocarbon saturations and fluid properties);
- better than simulated performance, particularly in thin oil columns; and
- improved application of technology.

In Australia during the 13 years 1982/83 to 1994/95, about 2090 million barrels (332 GL) of crude oil were produced; current estimates suggest that only about 1200 million barrels (190 GL) could be attributed to production from newly discovered fields. However, remaining reserves stayed approximately constant because reserves growth compensated for the difference between production and discoveries. A 1992 study identified median reserves growth for mature Australian offshore oilfields as 69% of initial reserves as estimated at the time of production startup (Wright & le Poidevin 1992).

The potential for reserves growth has been recognised for producing fields as a major factor in Australia's petroleum production forecasts. Allowance for reserves growth has been made since 1987 in Bureau of Mineral Resources/Bureau of Resource Sciences/AGSO forecasts. A project is currently underway at Geoscience Australia to better define reserves growth and its effect on production forecasts.

### 3.4 The USGS assessment of Australia's undiscovered petroleum resources

Table 3.1 summarises the assessment results from the *US Geological Survey World Petroleum Assessment 2000*.

**Table 3.1 Assessments of Australia's undiscovered hydrocarbon resources for the four major offshore producing basins (USGS 2000)**

Oil	P95		Mean		P05	
			(millions of barrels, giga litres)			
Bonaparte	383	61	1 286	204	2 605	414
Browse	229	36	1 055	168	2 606	414
Carnarvon	862	137	2 381	378	4 052	644
Gippsland	103	16	310	49	583	93
<b>TOTAL</b>	<b>1 577</b>	<b>250</b>	<b>5 032</b>	<b>799</b>	<b>9 846</b>	<b>1 565</b>

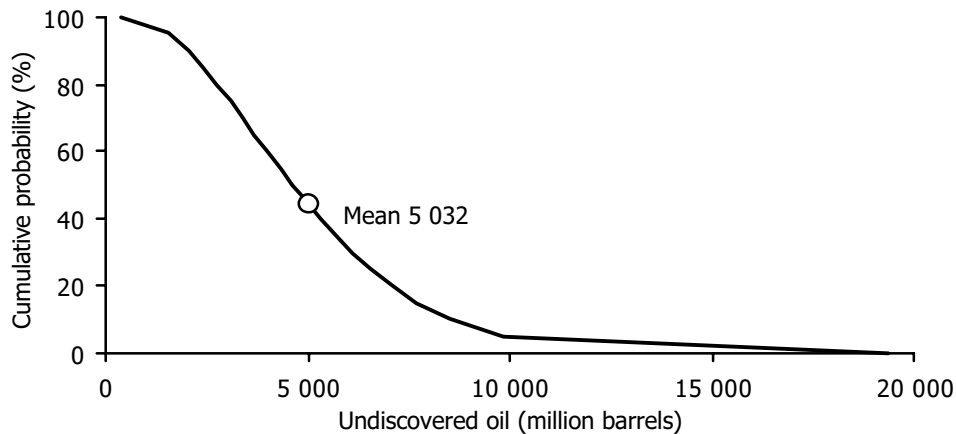
Gas	P95		Mean		P05	
			(trillions of cubic feet, billions of cubic metres)			
Bonaparte	6	159	24	674	50	1 406
Browse	5	137	20	569	46	1 293
Carnarvon	22	612	65	1 832	111	3 145
Gippsland	1	35	6	160	12	343
<b>TOTAL</b>	<b>33</b>	<b>943</b>	<b>114</b>	<b>3 235</b>	<b>218</b>	<b>6 187</b>

Condensate	P95		Mean		P05	
			(millions of barrels, giga litres)			
Bonaparte	266	42	1 079	172	2 402	382
Browse	211	34	934	148	2 205	351
Carnarvon	1 214	193	3 682	585	6 532	1 038
Gippsland	72	11	339	54	748	119
<b>TOTAL</b>	<b>1 762</b>	<b>280</b>	<b>6 035</b>	<b>959</b>	<b>11 887</b>	<b>1 890</b>

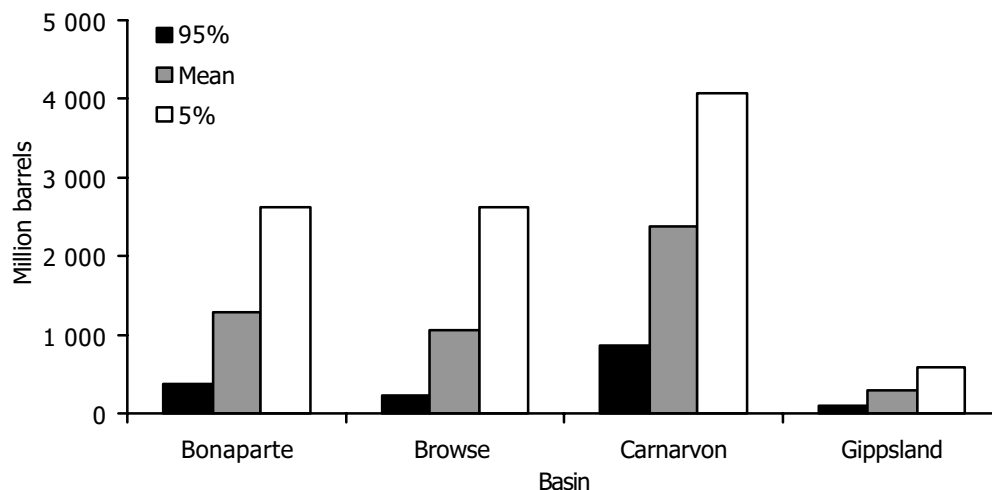
### Australia's undiscovered resources of oil

Table 3.1 and Figure 3.1 show the assessment of undiscovered oil resources in the major offshore producing basins as generated by the USGS (2000). Each point on the curve shows the probability (on the vertical axis) of discovering at least the amount of oil shown on the horizontal axis. The assessment indicates that the basins assessed have the potential for further discoveries probably between 1577 and 9846 million barrels (250 to 1565 GL) of oil. The average of the assessment is 5032 million barrels (799 GL).



**Figure 3.1 Australia's undiscovered oil resources (USGS 2000)**

Figure 3.2 shows 95% (low), mean (average) and 5% (high) estimates of the amount of undiscovered oil in the four basins assessed by the USGS. Other hydrocarbon-bearing basins including Cooper, Eromanga, Bowen, Surat, Perth, Otway, Bass and Amadeus were not assessed by the USGS.

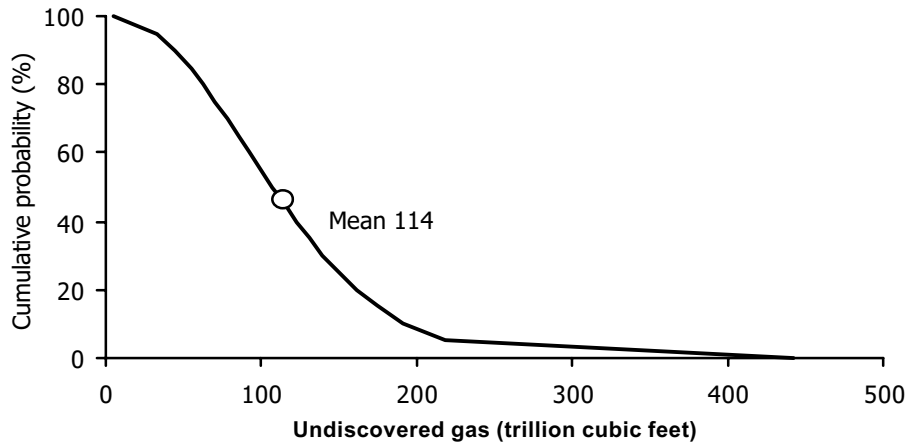


**Figure 3.2 Undiscovered resources of oil in Australia's most prospective offshore basins (USGS 2000)**



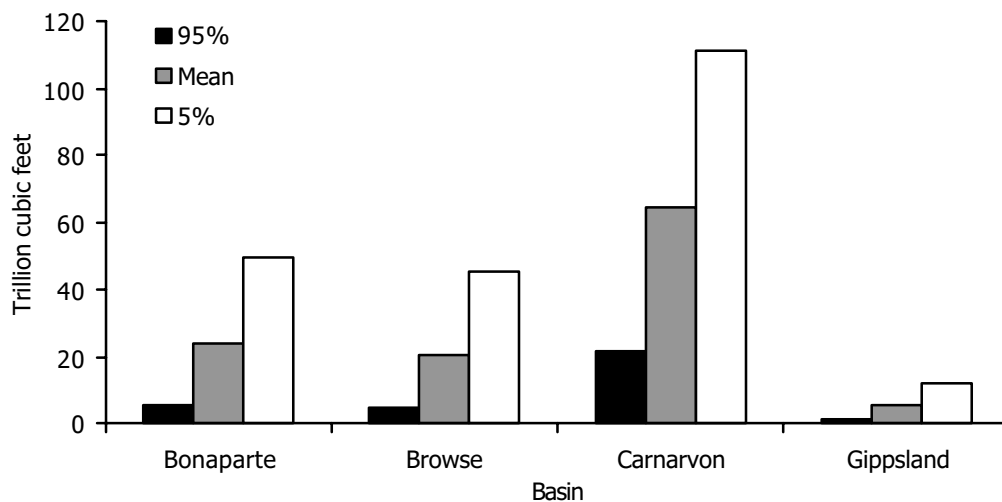
### Australia's undiscovered resources of gas

Table 3.1 and Figure 3.3 show the assessment of undiscovered gas resources as generated by the USGS. This assessment covered the major offshore producing basins. The assessment indicates a potential for further discoveries probably between 33 and 218 trillion cubic feet (943 to 6187 billion m<sup>3</sup>). The average of the assessment is 114 trillion cubic feet (3235 billion m<sup>3</sup>).



**Figure 3.3 Australia's undiscovered gas resources (USGS 2000)**

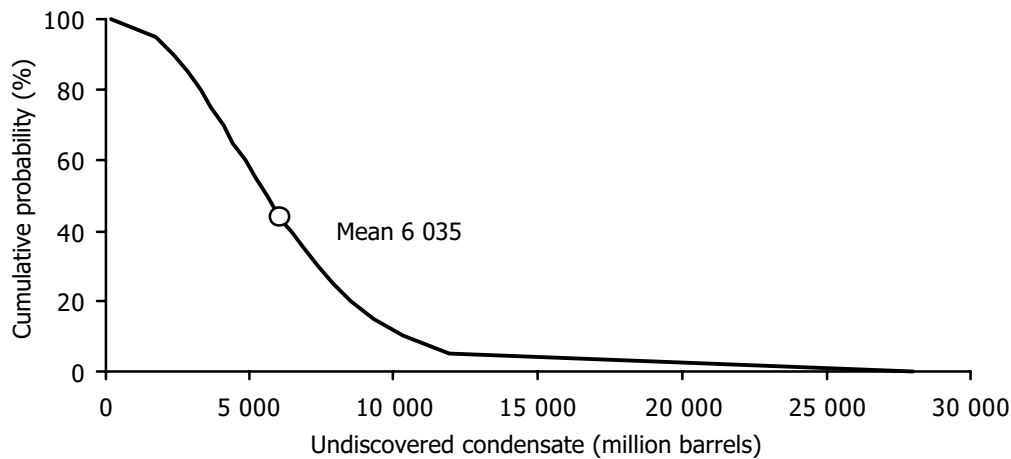
Figure 3.4 shows 95% (low), mean (average) and 5% (high) estimates of the amount of undiscovered gas in the four basins assessed by the USGS. The Carnarvon Basin dominates these figures but most of the gas is expected to be in deeper water. The Browse Basin mean volume of 20 trillion cubic feet would appear to be on the low side given that major gas discoveries have been made since the assessment was started in 1995.



**Figure 3.4 Undiscovered resources of gas in Australia's most prospective offshore basins (USGS 2000)**

### Australia's undiscovered resources of condensate

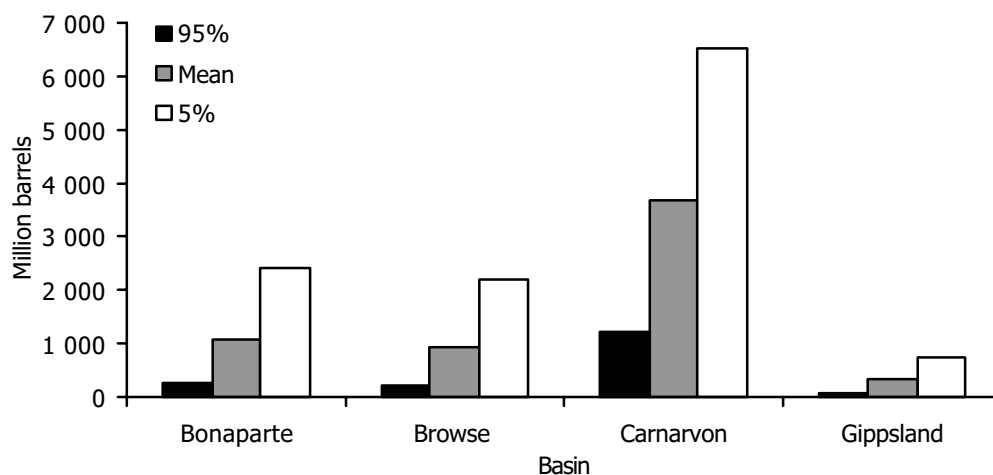
Table 3.1 and Figure 3.5 show the assessment of undiscovered condensate as generated by the USGS. This assessment only covered the major offshore producing basins. The assessment indicates that there is the potential for further discoveries probably between 1762 and 11 887 million barrels (280 to 1890 GL). The average of the assessment is 6035 million barrels (959 GL).



**Figure 3.5 Australia's undiscovered condensate resources (USGS 2000)**

The assessment for condensate exceeds that for oil. This indicates that any discussion on Australia's future liquids supply has to consider the production of gas as the condensate will only be produced in conjunction with gas production. Australia's future liquids supply is inextricably linked with gas developments.

Figure 3.6 shows 95% (low), mean (average) and 5% (high) estimates of the amount of undiscovered condensate in the four basins assessed by the USGS. Not surprisingly, the Carnarvon Basin dominates these figures. Some of the Browse Basin discoveries since 1995 contain large condensate resources.



**Figure 3.6 Undiscovered resources of condensate in Australia's most prospective offshore basins (USGS 2000)**

### 3.5 References

Powell, T.G. (2001) Understanding Australia's petroleum resources, future production trends and the role of frontiers. *The APPEA Journal*, pp. 273–287.

Schmoker, J.W. & Klett, T.R. (2000) Estimating potential reserve growth of known (discovered) fields: a component of the USGS World Petroleum Assessment 2000. In: US Geological Survey World Energy Assessment Team (2000) *US Geological Survey World Petroleum Assessment 2000 – Description and results*. USGS Digital Data Series DDS-60.

US Geological Survey World Energy Assessment Team (2000) *US Geological Survey World Petroleum Assessment 2000 – Description and results*. USGS Digital Data Series DDS-60.

Wright, D.J. & le Poidevin, S.R. (1992) Development options for offshore oil and gas fields: implications for optimum long-term recovery. *The APEA Journal*, pp. 391–396.



## 4: Developments

### 4.1 Major new developments

#### Offshore

Two variant big bore wells, PEN 01 and PEN 02, were drilled and completed into the Perseus accumulation from the North Rankin platform as the first stage of additional development of the Perseus accumulation in January 2001. Each well will produce over 8.5 million cubic metres of gas per day (300 million scf/d). The wells were completed with 9 5/8 inch tubing in the upper section and 7 5/8 inch tubing in the lower section.

The Perseus accumulation lies within the graben between the Goodwyn and North Rankin horsts. The field was first penetrated in 1972 by the North Rankin 4 well but was considered uneconomic because of the poor reservoir quality encountered in the well and the limited extent of the mapped closure. Following the acquisition of 3-D seismic data over the field in 1983, and the subsequent reprocessing of data in 1987, a small pinch out closure was mapped on a structural nose plunging to the north-west of the North Rankin 4 well. The closure was tested in 1991 by the deviated appraisal well, North Rankin A 22, drilled from the North Rankin A platform. The well encountered a gross gas column of 144 m in excellent quality reservoir and has been producing since completion through the North Rankin facilities.

During the early phase of production from this well it was observed that the pressure decline in the reservoir was less rapid than expected with such a small closure. This indicated much greater reservoir energy and therefore, potentially, a larger gas accumulation. The acquisition of regional 3-D seismic data in 1992 served as a basis for a re-evaluation of the closure and identified the possibility of a much larger trap. This evaluation led to the drilling of exploration well Perseus 1 in 1995. This well confirmed the existence of a large trap. The reservoir pressures collected in this well, together with the pressure monitoring in North Rankin A 22 well, indicated likely gas in place of between 227 000 and 340 000 billion cubic metres (8 and 12 Tcf).

Woodside's Legendre development is proceeding as planned. The field is located in the exploration permit WA-1-P in the Dampier Sub-basin of the Carnarvon Basin. The Legendre accumulation 100 km north of Dampier was intersected in 1968 with the drilling of the Legendre 1 well, which indicated at that time, a small uneconomic field. However, further appraisal and exploration drilling, Titan 1 in 1995, Jaubert 1 in 1997 and Legendre South 1 in 1998, changed the initial assessment. Currently reserves for Legendre have been estimated at 6.5 GL (40.7 million bbl). The Legendre development includes three horizontal development wells in Legendre North, one in Legendre South and an injector well for the western margin of the field. The field was developed using the jack-up drilling rig *Ocean Legend* which was converted into a mobile offshore production unit (MOPU). Oil is exported through a 254 mm, 2.5 km subsea pipeline to a mooring system, from which it is offloaded into a dedicated floating storage and offloading (FSO) vessel the *Karratha Spirit* for transfer into trading tankers. First production was in May 2001. The field is expected to have maximum oil production of 7950 kL (50 kbbbl/d). Gas produced beyond requirements for powering production facilities will be re-injected.

The Bayu/Undan gas/condensate field development, located in the Bonaparte Basin, approximately 500 km north-west of Darwin in the Joint Petroleum Development Area (JPDA) in the Timor Sea, will be developed in several phases. Development drilling is expected to start in early 2002. The Phase 1 development is based on production and export of sales specification condensate and liquified petroleum gas (LPG), and the re-injection of lean gas into the reservoir. The gas recycling scheme is designed for production of 31 million cubic metres of wet gas per day (1100 million scf/d), 11.1 ML/d of condensate (70 kbbbl/d) and 7 ML/d of LPG (44 kbbbl/d). The first commercial liquids production from the field is planned to commence in January 2004 with an expected commercial field life of approximately 20 years. Total estimated capital cost for the proposed development is US\$1358.2 million. The operating costs for the expected 20-year commercial production are estimated to average US\$52.7 million per year.

The selected surface facilities consist of a remote wellhead platform, a central production and processing complex and a FSO facility. Both the wellhead platform and central production and processing complex are to serve as drilling centres for up to 14 and 16 wells respectively for wet gas production and lean gas re-injection. The central production and processing complex comprises two platforms:

- the drilling, production and processing platform; and
- the compression, utilities and quarters platform.

The sales products will be pumped via subsea pipelines to the FSO facility for storage and export via chartered tankers. The production facilities are designed to allow the future export of up to 14.7 million cubic metres of sales gas per day (520 million scf/d).

Sixteen wells (10 producers and 6 injectors) will be drilled initially from the two fixed platform drilling centres using a cantilever jack-up drilling rig. Further wells will be drilled later. The final well numbers, type and locations are subject to future field evaluation and reservoir studies.

The Stag oilfield has exceeded production of 3657 kL/d (23 kbbbl/d) due to Apache's program of well workovers and two new producing wells as well as installation of new pumps and water injectors. This is a substantial increase from the 1999 average output of about 1590 kL/d (10 kbbbl/d). Stag, which is in 46 m of water 30 km north-west of Dampier, is now operating with eight producing wells and four water injection wells.

Woodside have been granted a production licence over the Echo/Yodel gas/condensate field which is located 23 km west-south-west of Goodwyn platform and 150 km north-west of Karratha. The accumulation lies mostly within Location 5SL/90-1 and partly within Retention Lease WA-11-R. The proposal is to produce the Lower E accumulation with two subsea horizontal wells (Yodel East and Yodel West) that intersect the Lower E reservoir near the crest of the structure. Recoverable reserves for the proposed development are estimated at 5.79 GL (36.4 million bbl) of condensate and 9.63 billion cubic metres (0.34 Tcf) of gas. The subsea wells will be tied back to the existing Goodwyn platform through a corrosion resistant alloy lined pipeline. Existing processing facilities at Goodwyn platform will be used for processing the Echo/Yodel production. Export to onshore facilities will be through the existing trunkline via North Rankin platform to the existing onshore gas plant at Dampier. Woodside plans to have the project on stream by the first half of 2002.

## **Onshore**

Major onshore projects during 2000 included an accelerated works program undertaken by Santos on existing producing fields as well as extensive field development focused on gas deliverability. Santos drilled a total of 60 development wells in South Australia and Queensland, undertook 10 compression projects and 76 projects in existing wells.

## 4.2 Overview of present and past offshore developments

Offshore production facilities in Australia consist of conventional fixed steel jacket production platforms, concrete gravity platforms, various types of fixed mini-platforms, floating production facilities and subsea completions. Conventional steel jacketed platforms are generally large complex structures weighing up to 50 000 tonnes, installed in water depths of between 45 m and 125 m, with four or more 'legs' fixed to the seabed by piles and catering for wellheads. The platforms accommodate a drilling rig when necessary, processing and transportation equipment, utilities, a helipad and living quarters, and sometimes, storage facilities.

Conventional platforms operating in Australia can be conveniently divided into two generations depending on their type of construction. The first-generation platforms were constructed between 1967 and 1969 on the earliest discovered fields in Bass Strait, and consisted of tubular steel jackets with steel superstructures built onto them. Later platforms in Bass Strait and those on the North West Shelf were constructed with modular decks, integral modular support frames, and drilled and grouted pile foundations. Remotely operated satellite platforms, generally of a different construction (e.g. single leg monotower or mini-platforms), floating production, storage and offloading systems, and more recently, subsea completions have resulted from the need to economically develop smaller offshore fields.

A description of current and planned offshore production facilities in Australia is given below. Locations are given in Figure 4.1.

### 4.2.1 Bonaparte Basin

#### Buffalo

The Buffalo oil field was discovered in 1996 in the Bonaparte basin, 7 km south-east of the Laminaria East 1 well in permit WA-260-P. Field production commenced in December 1999, with peak production rates between 6360 and 7950 kL/d (40 and 50 kbbbl/d). The Buffalo field is estimated to have reserves of 3.5 GL (22 million bbl). The field development consists of an unmanned wellhead platform supporting three vertical wells producing to a nearby FPSO.

#### Challis and Cassini

The Challis and Cassini oil fields are located on the Australian continental shelf in 106 m water depth, approximately 280 km from the nearest mainland and 600 km west of Darwin. The field was discovered in October 1984 and production started in December 1989. The production facilities at the Challis field consist of an FPSO vessel, a single anchor leg rigid arm mooring (SALRAM) system comprising a mooring base on the sea floor and a mooring column which is connected to the FPSO by a steel yoke, a total of 80 km of flowlines and control umbilicals connecting to the subsea wells; and eleven subsea wells (including three currently suspended wells). The FPSO is a permanently moored barge purpose-built as floating oil production storage and offloading facility for the Challis field and does not have seagoing capabilities.

The mooring column is a cylindrical, welded steel structure reinforced with internal stiffeners. Its weight is 2850 tonnes and is ballasted with 2500 tonnes of iron ore. It is 10.5 m in diameter and 121 m long. It has an upper, watertight section comprising nine separate compartments, and a lower section, which is flooded and ballasted with iron ore. None of the compartments in the column has ever contained hydrocarbons or any liquids other than water.

The gravity base is an all-welded steel fabricated structure ballasted with iron ore and designed to penetrate the seabed to prevent any lateral movement of the mooring column. With ballast, the base weighs more than 15 000 tonnes, has outside dimensions of 33 x 33 m, and a height of 24 m.



#### Elang/Kakatua

The Elang/Kakatua oil fields started production in July 1998. The fields are located in the Bonaparte Basin, approximately 450 km north-west of Darwin in the JPDA in the Timor Sea. The development is by subsea completion of the existing vertical Elang 1 and 2 and Kakatua 1 wells connected to an FPSO vessel *Modec Venture 1* (formerly the *Skua Venture*) moored over the Elang field. Export of crude is via shuttle tankers. The reserves are estimated at 2.7 GL (17 million bbl), while peak production is expected to reach 5250 kL/d (33 kbbl/d). The Kakatua North development involved subsea completion of the Kakatua North 1 discovery well and tie-in to the Elang/Kakatua development through a 12 km pipeline. The Kakatua North field reserves have been estimated at 1.9 million cubic metres (12 million bbl). Production from the Kakatua North field started in December 1998.

#### Jabiru

The Jabiru oil field was brought on stream in August 1986 following installation of the FPSO using a converted tanker, the *Jabiru Venture*, of approximately 140 000 tonnes moored on a single point system of catenary design. Oil and associated gas is produced from subsea completed wells via flowlines to the mooring system and hence to the tanker where the oil is stabilised and stored. A connect/disconnect system is incorporated into the facility to allow the tanker, and elements of the mooring system, to disengage in the event that the system loads exceed preset criteria, or upon warning of an approaching cyclone. Rapid reconnection is possible. The FPSO is located in approximately 119 m of water and 900 m from the Jabiru 1A subsea wellhead. Crude oil is transferred from the FPSO to a shuttle tanker moored in tandem.

#### Laminaria/Corallina

The Laminaria oil field is located offshore in permit AC/P8, in the Territory of Ashmore and Cartier Islands area, in the Timor Sea just outside the JPDA, approximately 550 km west-north-west of Darwin. The field was discovered in October 1994 when the Laminaria 1 exploration well encountered a 52 m hydrocarbon column in a water depth of 361 m. Further drilling and wireline logging extended the depth of the oil column to 102 m.

The Corallina oil field is located offshore 10 km north-west of Laminaria 1 within permit AC/P8. The field was discovered in December 1995 when the Corallina 1 exploration well encountered a 77 m oil column.

Due to the close proximity of the Laminaria and Corallina fields, the operator undertook a joint development of the fields using a system of subsea wellheads linked through flowlines and risers to a common FPSO facility, permanently moored to an internal turret mooring system. Production from the Laminaria field and the adjacent Corallina field commenced in November 1999. The Laminaria FPSO vessel, *Northern Endeavour*, is moored in a water depth of about 385 m, making it Australia's deepest offshore site for an oil production facility. This water depth required the development of diverless subsea systems. The internal turret system includes provision for future risers and riser tubes, as well as future piping arrangements, thereby allowing other fields to be linked to the development at a later stage. The FPSO has a production capacity of 27 000 kL/d (170 kbbl/d) and a storage capacity of 0.22 GL (1.4 million bbl).

The combined reserves have been estimated at 39.7 GL (250 million bbl). The peak production rates from the two fields is expected to be up to 27 000 kL/d (170 kbbl/d). A production life of about 14 years is expected. The combined development is estimated to cost between A\$1.275 billion and A\$1.325 billion.

#### Skua

Skua oil and gas field, located in the Vulcan Sub-basin of the Timor Sea, was discovered in 1985. The field was developed by the FPSO facility. Oil production commenced in December 1991 and continued for a little over five years until production ceased in January 1997 after recovering 3.2 GL (20.2 million bbl) of oil from the three producing wells. The field was still producing at 300 kL/d (1.9 kbbbl/d) when production was shut-in on 30 January 1997.

### 4.2.2 Carnarvon Basin

#### Agincourt

The Agincourt oil field is within the Harriet production licence area, 10 km south-west of the Harriet field and 4 km west of Rosette field. The field was developed by one subsea completed horizontal well and an unmanned offshore monopod which is tied back to the existing processing facilities on Varanus Island through a 150 mm diameter, 6.5 km long pipeline.

#### Campbell

The Campbell gas field is situated 40 km north-east of Barrow Island in 39 m of water depth. The field is produced via a monopod facility to the Harriet gas-gathering facilities on Varanus Island, and from there to the Dampier – Perth gas pipeline.

#### Chervil

The Chervil oil field is in close proximity to Airlie Island (7 km) and was developed by using the existing North Herald/South Pepper storage and loading facilities on the island and setting a small caisson-type platform next to the existing Chervil 4 well. The platform supports two production wells, header manifolds, remotely operated well control equipment, gas lift lines, flowline risers and helideck. The produced fluids from the wells are commingled on the platform and shipped to the Airlie Island processing facilities through a 200 mm diameter pipeline.

#### Cowle

The Cowle oil field is situated 70 km south-west of Barrow Island in 12 m water depth. The Cowle accumulation was developed by two production wells and a monopod unmanned offshore structure for well support and protection. The discovery well, Cowle 1, was re-entered and completed as a vertical production well. The production well, Cowle 2, was drilled 1054 m horizontally into the reservoir in a south-west direction. The installation method for the structure was similar to that used for the Yammaderry monopod. Cowle wells are producing directly to the Thevenard Island processing facilities through a single 203 mm diameter product line.

#### East Spar

The East Spar gas condensate field is located 40 km west-north-west of Barrow Island in 98 m of water. The field was discovered on 7 April 1993 and commenced production in November 1996.

The East Spar development comprises Australia's first fully-automated subsea gas-gathering system operated via an unmanned navigation control and communication (NCC) buoy. The concept of

controlling an entire subsea facility via an unmanned buoy is a world first. The buoy controls the operation of the subsea facility via electrohydraulic umbilicals which connect it to all control and monitoring devices on the subsea components. The buoy also provides:

- electrical and hydraulic power to activate the control devices;
- a telemetry communication system allowing remote control of the offshore facilities from a computerised master control system on Varanus Island via radio and satellite links; and
- chemical storage for corrosion and hydrate inhibitors which are injected via subsea umbilicals into the wellheads.

The submerged main body of the buoy is a 7.5 m diameter tube split into five deck levels:

- Level 1 (uppermost) contains control system electronics and communications equipment;
- Level 2 contains diesel power generation;
- Level 3 contains a battery system and hydraulic power units for subsea control;
- Level 4 is entirely sealed as chemical and diesel storage tanks; and
- Level 5 contains a pump room for chemical injection.

The buoy is attached to a gravity base on the seabed by tensioned tethers and is secured using a fabricated steel box filled with 2220 tonnes of iron ore ballast. Gas and condensate from the East Spar field is produced from two subsea wells (East Spar 1 and 3) and is conveyed to a subsea manifold through 1.8 km, 150 mm flexible flowlines after cooling in subsea heat exchangers. Provision for the tie-in of up to two further East Spar subsea wells and a future pipeline from another field is included in the manifold design. The combined wet gas production fluid is transported from the subsea manifold through a 356 mm, 62.5 km carbon steel pipeline to new processing facilities on Varanus Island.

In November 1996, two 3.14 million cubic metres per day (110 million scf/d) gas processing trains were commissioned immediately adjacent to the two existing 1.57 million cubic metres per day (55 million scf/d) trains used by the Harriet Joint Venture on Varanus Island. The two trains provide significant back-up capabilities for gas supply contracts held by the two joint ventures. The processing trains remove condensate, water and other minor impurities from the East Spar gas, conditioning it to Alinta Gas' transmission pipeline specifications. The treated gas is then transported to the mainland through the existing 324 mm, 100 km sales gas pipeline and sold to customers on both the Dampier to Bunbury pipeline and the Goldfields Gas Transmission pipeline. The condensate is exported from Varanus Island by tanker.

### Goodwyn

The Goodwyn gas field is situated 145 km north-west of Dampier and 23 km south-west of the North Rankin platform in 126 m water depth. The Goodwyn field is being developed by a conventional fixed steel offshore platform and production wells drilled directionally into the reservoir from the platform. The platform has been built with a capacity for 26 wells. The Goodwyn A platform is connected by a subsea pipeline with the North Rankin A platform. The produced gas and condensate is shipped from the Goodwyn A platform to the onshore processing and storage facilities at Burrup Peninsula, via the North Rankin A platform.

The 18 000 tonne, eight-leg, platform jacket was launched in October 1992. The Goodwyn A platform installation and commissioning was completed on 4 February 1995.

#### Griffin/Chinook/Scindian

Griffin and Chinook/Scindian oil and gas fields are located about 68 km north-west of Onslow. The Chinook/Scindian field was discovered in August 1989, while the Griffin field was discovered in March 1990.

The development of the Griffin area fields uses a 100 000 tonne double-hulled FPSO—*Griffin Venture*—and a disconnectable mooring and production system. The *Griffin Venture* and its mooring riser are configured to accommodate a total of eleven wells. The field development features subsea completions for horizontally drilled wells, designed to achieve improved reservoir drainage, and permanent downhole pressure gauges to monitor reservoir pressure during production. All production from the Griffin area fields utilise subsea well completions at the seabed, which are linked back by flowlines to the centrally located FPSO facility. The FPSO vessel and its mooring riser are configured to accommodate a total of 11 wells with initial production from nine wells. Oil from the FPSO vessel is pumped to moored offtake tankers through a floating hose system. Associated gas is exported via a subsea pipeline to the Griffin gas plant.

First oil production from the Griffin field commenced on 16 January 1994, with production from Scindian commencing in March 1994 and Chinook coming on-stream in January 1995. Peak production capacity is 12 700 kL/d (80 kbbbl/d) of oil.

The Griffin area fields contain an estimated 2.14 billion cubic metres (76 bcf) of natural gas reserves, associated with the oil. This gas is either sold into the domestic gas pipeline system, injected into the Tubridgi field or used as fuel on the *Griffin Venture*, except when safety dictates that flaring is necessary. The *Griffin Venture* was the first FPSO vessel in Australia to export gas to shore via a pipeline, to onshore processing facilities. Located about 30 km south-west of Onslow, the Griffin Gas Plant commenced full processing operations in November 1994. Up to 1 million cubic metres (37 million scf) per day of gas is produced from the *Griffin Venture*. This gas is transported to shore through a 200 mm, 68 km pipeline and is processed at the plant to meet sales gas specification standards. Unwanted inert gases such as nitrogen and carbon dioxide and other contaminants are removed and the LPG component of up to 68 tonnes per day (824 bbl/d) is separated and piped 24 km to a loading terminal. The LPG is sold into the domestic market. Sales gas is metered and sold to the Tubridgi joint venture participants, who deliver it into the Dampier to Bunbury natural gas pipeline, through a 250 mm diameter feed pipeline that is approximately 90 km long. In 1997, the Griffin gas plant began processing third-party gas sourced from the Thevenard and Tubridgi permit areas.

#### Harriet

The Harriet oil and gas field is situated 20 km north-east of Barrow Island and 120 km west of Dampier in 23 m water depth. The Harriet field was developed by one conventional eight-leg platform with the processing plant on deck (Harriet A) and two satellite monopods (Harriet B and C) feeding back via the A platform to storage facilities on nearby Varanus Island. The Harriet A platform is totally self contained, with all power generation, production facilities, oil shipping facilities, helideck and emergency personnel amenities on board. The production facilities on the Harriet A platform consist of well manifolds, a three-stage production separation train and a three-phase test separator.

While the Harriet A platform and Varanus Island facilities were under construction, further drilling proved a northern extension to the field. Two satellite unmanned monopods (B and C), supporting three production wells each, were subsequently constructed and installed. The monopods were originally equipped with two-phase separation facilities. Separated liquid and gas is transported

through separate lines to the Harriet A platform. Each monopod is also connected to the Harriet A platform with a 168 mm line in gas lift service. In 1991 the separator on Harriet B platform was converted to three-phase service and a hydrocyclone was installed to increase water handling capacity. Produced water from Harriet B is released into the ocean after processing.

#### Lambert/Hermes

Production from the Lambert/Hermes oil field commenced in October 1997. The field was discovered in November 1973 by Lambert 1 well but was considered uneconomic at that time. In 1994 a 3-D seismic survey was carried out over the Lambert discovery which identified that the field has two culminations separated by a saddle. Lambert 1 well is located on the southern lobe while the existence of oil in the northern lobe, which was later named Hermes, had to be proved by drilling. The Lambert 2 well, which was spudded in January 1996, confirmed the existence of oil in the northern lobe and consequently sufficient reserves to make development economic. The development consists of three subsea wells tied back to the Cossack Pioneer FPSO via the subsea manifold and a 15 km flexible flowline.

#### North Rankin

The North Rankin gas field is situated 134 km north-west of Dampier in 125 m of water. The North Rankin field was developed by a conventional fixed steel offshore platform and production wells drilled directionally into the reservoir from the platform. On the platform, streams from the producing wells are gathered, condensate and gas are separated, gas is dehydrated and both phases are shipped to shore in a two-phase, 1016 mm diameter, 134 km long pipeline for further processing and distribution of sales products in the onshore gas plant and shipping facilities at Burrup Peninsula, 30 km from the town of Karratha. Produced gas was formerly partly reinjected into the reservoir for accelerated condensate recovery.

The North Rankin A platform jacket has an eight-leg, 32-pile design, with a separate three-leg, six-pile flare support jacket, and a bridge between platform and flare. The platform weight, including piles, is 54 000 tonnes. The flare support weighs 3130 tonnes. Piles are driven 120 m into the sea bed. Twenty modules were installed on the platform. The average weight of each module is 800 tonnes. The platform is equipped with a drilling rig which allows concurrent production and drilling or workover. The top of the derrick is 90 m above sea level. The platform dimensions are 83 x 67 m at the sea bed and 60 x 38 m at the top. Accommodation capacity is 118 permanent personnel and 96 temporary living quarters. The two-phase pipeline to shore has a maximum capacity of 46.7 million cubic metres per day (1.65 billion scf/d). The pipeline maximum design pressure is 13 100 kpa (1900 psi).

#### Roller/Skate

The Roller/Skate oil development incorporates six horizontal production wells linked to three unmanned steel monopods over the Roller field, and two horizontal wells producing through a single unmanned steel monopod at Skate. A gas injection well is also operated from the Skate monopod.

The Roller field is located offshore 20 km north-west of Onslow and 20 km south-west of Thevenard Island. The field was discovered in January 1990. In May 1994, first oil production commenced from the Roller C monopod, while the Roller A and B monopods commenced production in June 1994.

The Skate field is located 2 km north-east of the Roller field and 13 km south of Thevenard Island. The field was discovered in October 1991 and commenced oil production in July 1994.

A 508 mm, 27 km three-phase production pipeline transports commingled oil from the Roller and Skate fields, together with associated gas and water, to existing separation, storage and load-out facilities located on Thevenard Island, where it is blended with oil from the Saladin/Yammaderry, Crest and Cowle fields.

The existing facilities on Thevenard Island were originally capable of processing up to 14 300 kL/d (90 kbbl/d) of fluid. To handle the increased production from the Roller/Skate fields, a third gas turbine generator, a gas treatment plant, a 55 kL (346 bbl) capacity slug catcher/separator vessel and two additional gas compression units were integrated with existing facilities. The upgraded Thevenard facilities are capable of handling up to 19 078 kL/d (120 kbbl/d) of mixed oil/water fluid production.

Associated gas from the Roller/Skate fields is conditioned and compressed at Thevenard Island. The Roller/Skate associated gas reserves were sufficient to justify development of a gas-gathering project involving associated gas from the Saladin, Crest, Yammaderry and Cowle oil fields. Gas from the six fields is transported through a 150 mm, 44 km gas export line extending from Thevenard Island to the mainland via each of the Roller and Skate monopods, and then overland to the Tubridgi gas field facilities.

Commissioning of the gas-gathering system was completed in November 1994 and gas from Thevenard Island is being delivered into Tubridgi at a maximum rate of 0.52 million cubic metres per day (18.5 million scf/d). The bulk of the gas is transported via the onshore Tubridgi pipeline lateral and the Dampier to Bunbury pipeline to the Dongara and Mondarra fields in the Perth Basin. The gas is then transferred into the Parmelia pipeline for direct sale or injection into the Dongara and Mondarra reservoirs for storage.

#### Saladin/Yammaderry

The Saladin/Yammaderry oil field is situated 70 km south-west of Barrow Island in 16 m water depth. The Saladin area has been developed by three unmanned platforms: A, B and C. Each of the platforms is a three-leg, three well slots steel structure with a double deck topside. Bi-level boat landings and helicopter deck are installed on each platform. The platforms were positioned over the Saladin 1, 2 and 7 wells which had been previously drilled. In addition, one directional well, Saladin 8, was drilled from the Saladin A platform. Three wells, Saladin 4, 5 and 6, were also drilled from Thevenard Island and deviated into the reservoir area that lay beneath the environmentally sensitive Thevenard Island shoal. Production from each offshore platform and onshore well is transported by pipeline to separation and stabilisation facilities on Thevenard Island.

The Yammaderry area was developed by a single horizontal well (Yammaderry 2) drilled to a horizontal length of 704 m to the south-west. The well was completed with wellhead above the water level by an unmanned offshore monopod which protects and supports the well. A jack-up drilling rig was used to drill the caisson hole, lift the monopod substructure from the transportation vessel and grout the monopod substructure in place. The production well was then drilled and completed through the substructure. The monopod topside was then installed over the completed well. Yammaderry well is producing through a 2 km, 152 mm line to Saladin C platform, where the product is mixed with that of the Saladin 7 well and fed into the 203 mm diameter product line running to the Thevenard Island processing facility.



## Sinbad

The Sinbad gas field is situated 30 km north-east of Barrow Island in 37 m water depth. The Sinbad field is produced via monopod facility to the Harriet gas-gathering facilities on Varanus Island.

## Stag

The Stag field is located in 46 m of water, 30 km north-west of Dampier. The field's oil reserves have been estimated at 7 GL (44 million bbl). The field was developed by a fixed production platform consisting of a six-leg piled jacket, topsides and full production facilities. Oil is exported from the production platform through a subsea flow line connected via a mooring buoy to a dedicated storage tanker about 2 km away and offloaded to export tankers. The platform oil-processing capacity is 7950 kL/d (50 kbbl/d). The platform is equipped with a workover rig and has accommodation for 50 people. The reservoir was developed by eight horizontal production wells and four water injection wells. The production wells are equipped with subsurface electric pumps.

## Talisman

The Talisman oil field is situated 127 km north of Dampier in 89m water depth. Initially the Talisman field was developed by one subsea well (the discovery well Talisman 1) producing into a FPSO. In 1990, a second well, Talisman 7, was connected and put into production. Bluewater Offshore Production Systems NV was contracted to provide the FPSO, the *Acqua Blu*, a 70 000 tonne tanker which had been converted to FPSO service in 1985. A 152 mm diameter flexible flowline and an eight-path hydraulic control umbilical were laid from the buoy across a buoyancy tank/clump weight arrangement to the Talisman wellheads. Production was terminated in August 1992 and the facilities were later decommissioned.

## Wanaea/Cossack

The Wanaea/Cossack oil discoveries lie in 80 m of water, approximately 130 km north of Dampier. They were discovered in June 1989 and January 1990, respectively. The two fields have a production life of about 25 years based on combined oil ultimate recovery of 39.7 GL (250 million bbl) of which 29.2 GL (184 million bbl) is at Wanaea and 10.5 GL (66 million bbl) at Cossack.

First oil production from the Wanaea/Cossack development commenced on 17 November 1995, the first oil production from the North West Shelf Project. The two fields reached full production capacity of 18 280 kL/d (115 kbbl/d) a week after start-up.

Development of Wanaea/Cossack uses the 150 000 tonne *Cossack Pioneer*, a former crude oil tanker converted for use as an FPSO facility. The conversion involved a total overhaul of all onboard systems, installation of both steam-driven and gas-fired turbine generators to a total of 28 megawatts, a helideck, flare tower, rigid arm for connection to the mooring system, central control room, refurbishment of the accommodation area and repainting of the ship. In addition, six process modules, and two structural support modules, weighing 1600 tonnes, were installed on the upper deck of the FPSO vessel. The process facilities separate the produced fluids from Wanaea/Cossack into oil, water and gas, and the stabilised oil is stored in the FPSO vessel's tanks, which are capable of holding up to 183 000 kL (1.15 million bbl) of oil. The oil is then offloaded by a flexible hose to shuttle tankers moored astern of the FPSO vessel. The *Cossack Pioneer* is moored over Wanaea field by its bow to a disconnectable riser turret mooring (RTM). The RTM consists of a 1900 tonne riser column which is held in position by eight 108 mm chain anchors connected to a gravity box. In the event of a cyclone or severe storm, production is closed in and the FPSO vessel disconnects and departs the area before reconnecting when the storm has passed. Five subsea completion production wells on Wanaea and one horizontal production well on Cossack are connected through 40 km of flexible flowlines to four subsea manifolds from which the crude oil flows to the RTM for processing onboard the *Cossack Pioneer*. At a later stage, additional Wanaea and/or Cossack wells may be added to increase production. In August 1997 the Lambert 3 well in the Lambert/Hermes oil field was tied

back to the FPSO through a 15 km flowline connected to the Wanaea 3 manifold. Production commenced at a rate of 1270 kL/d (8 kbbl/d), and has since been increased to around 2540 kL/d (16 kbbl/d). Further development of neighbouring fields would extend the life of the FPSO and/or delay the natural decline in production levels as the Wanaea/Cossack reserves are drained.

#### Wandoo

The Wandoo oil field is located 75 km offshore north-west of Karratha. The field was discovered in June 1991 and commenced production under an extended production test from Wandoo A platform on 17 October 1993 at initial rates of up to 1270 kL/d (8 kbbl/d) from one well. First oil from the Wandoo B platform flowed on 10 March 1997.

The Wandoo A platform now makes up part of the Wandoo full field development. The platform consists of a single column monopod wellhead platform supporting a deck and five production wells.

The Wandoo B platform was installed to the north-east of the Wandoo A platform. A concrete gravity structure (CGS), capable of holding 63 600 kL (400 000 bbl) of crude oil, was positioned on the seabed in October 1996. The Wandoo B platform is the first seabed based oil storage system to be used in Australia. The platform consists of ten horizontal oil production wells, and one gas injection well and processing facilities. The processing facilities are capable of handling up to 19 000 kL/d (120 kbbl/d) of total fluid. This fluid handling capacity is required as it is expected that a significant amount of water will be produced from the field.

The fluid produced from the Wandoo A monopod platform is piped to the topside processing facilities where it is processed along with the fluid produced from the Wandoo B platform. The oil is stored in the CGS and then offloaded through two 348 mm flexible pipelines to a loading buoy located 1.2 km north of Wandoo B. A floating hose is used in transferring the oil from the loading buoy to export tankers at a mooring facility.

#### Wonnich

The Wonnich gas and oil field, discovered in August 1995, started production on 3 July 1999. The field is located 25 km north-west of Varanus Island in 30 m water depth. The field was developed with a simple tripod structure from which the untreated well stream is transferred to Varanus island via twin 200 mm pipelines. The pipelines and new facilities on the island were completed in February 1999.

### 4.2.3 Gippsland Basin

Early platforms in the Gippsland Basin were conventional fixed steel jackets as described above. The later platforms of Mackerel through to Whiting were constructed using modular decks, module support frames and grouted pile foundations. All the modules were constructed onshore, and transported to the platforms on crane barges. Total weights range from 3387 tonnes for Whiting to 7919 tonnes for Mackerel. Whiting was the first unmanned platform installed in Bass Strait, standing in 54 m water depth, halfway between Barracouta and Snapper, and housing only basic production equipment and a helideck. Operations were remotely controlled from the Snapper platform. Two subsea completions, Tarwhine and Seahorse are produced via the Barracouta platform. The Blackback subsea production facility is produced via the Mackerel platform.

Dolphin and Perch were Australia's first steel gravity-based monotowers. They were installed in 1989. Each monotower supports a deck that accommodates a single well, a separator with minimal control facilities and a helideck. Each weighs 2160 tonnes. They stand on 1500 mm diameter steel columns, and the bulk of the weight is made up of iron ore and cement ballast fed into three feet on the tripod base section.

Two concrete gravity-based platforms, Bream B and West Tuna were installed in late 1996. The total weight of the Bream B facility is estimated at 45 000 tonnes, and West Tuna at 95 000 tonnes.



## Barracouta

Barracouta oil and gas field was discovered in January 1965 and production started in March 1969. The field was developed by one manned jacket steel platform, 24.1 km from shore, piled into the seabed in 46 m of water depth. Sixteen piles were used and maximum pile penetration is 44 m. Platform main deck dimension is 37 x 20 m and the deck is 20 m above sea level. The total weight of platform structural steel is 2042 tonnes. The platform has 10 well conductors and accommodation quarters for 28 people. Production is exported through one 450 mm nominal diameter pipeline, 49 km long, in gas service and one 150 mm nominal diameter pipeline, 54.2 km long, in oil service to onshore plant at Longford.

## Blackback

The Blackback oil field is located about 18 km south-east of the Mackerel platform and 90 km offshore in the Gippsland Basin. Water depth over the field varies from approximately 300 m to 600 m. Because of significant reserve uncertainty, a phased field development was planned, where the extent of Phase 2 development would be determined on the basis of data gathered from the Phase 1 development. The completed Phase 1 production facilities consist of three subsea completed wells (two conventional and one horizontal) connected using a single-well daisy chain configuration and a 23.2 km pipeline to production facilities on the Mackerel platform. Export to shore and onshore processing is through the existing infrastructure. Phase 1 production commenced on 12 June 1999 at a combined rate of 1590 kL/d (10 kbbbl/d)

## Bream

The Bream oil and gas field was discovered in April 1969 and production started in May 1988. The field was developed by one manned jacket steel platform, 45 km from shore, piled into the seabed in 59 m of water depth. Twelve piles were used and maximum pile penetration is 107 m. Platform main deck dimension is 65 x 44 m and the deck is 25 m above sea level. The total weight of platform structural steel is 7074 tonnes. The platform has 27 well conductors and accommodation quarters for 84 people. Production is exported through one 400 mm nominal diameter pipeline, 30 km long, in oil service to West Kingfish A platform.

Production from the Bream B platform started in December 1996. The field was developed by one remote controlled concrete gravity platform, 51 km from shore, in 61 m water depth. Dimension of concrete base is 55 x 55 x 15 m and the concrete volume is 12 000 m<sup>3</sup>. The total structure weight is 45 000 tonnes. The weight of steel reinforcement is 4000 tonnes while solid ballast is 10 000 tonnes. The platform has one leg and three buoyancy tanks. The diameter of the leg and buoyancy tanks is 12 m. Topsides weight is 800 tonnes. The platform main deck dimensions are 17 x 16.5 m and the deck is 24 m above sea level. Production is exported through one 6 km long pipeline in oil service to the Bream platform.

## Cobia

Production from the Cobia platform started in April 1983. The field was developed by one manned jacket steel platform, 66 km from shore, piled into the seabed in 78 m water depth. Sixteen piles were used and maximum pile penetration is 102 m. Platform main deck dimension is 29 x 58 m and the deck is 24 m above sea level. The total weight of platform structural steel is 8178 tonnes. The platform has 21 well conductors and accommodation quarters for 70 people. Production is exported through one 300 mm nominal diameter pipeline in oil service to Halibut platform.

### Dolphin

The Dolphin oil field was discovered in October 1967 and production started in January 1990. Dolphin oil accumulation was developed by a single well uncrewed monotower producing to the onshore plant at Longford. Platform main deck dimension is 10 x 10 m and the deck is 17 m above sea level. The total weight of platform structural steel is 2187 tonnes. The platform has two well conductors. Production is exported through one 300 mm nominal diameter pipeline.

### Flounder

The Flounder oil and gas field was discovered in August 1968 and production started in November 1984. The field was developed by one manned jacket steel platform, 58 km from shore, piled into the seabed in 93 m water depth. Sixteen piles were used and maximum pile penetration is 122 m. Platform main deck dimension is 58 x 29 m and the deck is 25 m above sea level. The total weight of platform structural steel is 8000 tonnes. The platform has 27 well conductors and accommodation quarters for 70 people. Production is exported through one 250 mm nominal diameter pipeline, 16 km long, in oil service and one 250 mm nominal diameter pipeline, 16 km long, in gas service to Tuna platform.

### Halibut

Halibut oil field was discovered in August 1967 and production started in March 1970. The Halibut oil accumulation was developed by one manned jacket steel platform, 64.4 km from shore, piled into the seabed in 72.5 m of water depth. Twenty-four piles were used and maximum pile penetration is 145 m. Platform main deck dimensions are 43 x 36 m and the deck is 21 m above sea level. The total weight of platform structural steel is 4761 tonnes. The platform has 24 well conductors and accommodation quarters for 40 people. Production is exported through 600 mm nominal diameter pipeline oil service to onshore plant at Longford.

The Fortescue oil pool was discovered on the western flank of Halibut in September 1978 and production commenced in September 1983. Fortescue was developed by one manned jacket steel platform, 65 km from shore, piled into the seabed in 69 m water depth. Sixteen piles were used and maximum pile penetration is 102 m. Platform main deck dimensions are 58 x 29 m and the deck is 24 m above sea level. The total weight of platform structural steel is 6334 tonnes. The platform has 21 well conductors and accommodation quarters for 70 people. Production is exported through one 300 mm nominal diameter pipeline in oil service to Halibut platform.

### Kingfish

The Kingfish oil field was discovered in May 1967 and production started in April 1971. The Kingfish A area was developed by one manned jacket steel platform, 75.6 km from shore, piled into the seabed in 77.1 m water depth. Twelve piles were used and maximum pile penetration is 155.5 m. The platform main deck dimensions are 52 x 20 m and the deck is 22 m above sea level. The total weight of platform structural steel is 4309 tonnes. The platform has 21 well conductors and accommodation quarters for 40 people. A 300 mm nominal diameter pipeline, 4 km long, connects West Kingfish to Kingfish A platform, and a 400 mm nominal diameter pipeline, 3.9 km long, connects Kingfish A and Kingfish B platform. Commingled Kingfish A, Kingfish B, West Kingfish and Bream production is transported through a 500 mm nominal diameter pipeline, 25.3 km long, to Halibut platform.

Kingfish B oil production started in November 1971. Kingfish B area was developed by one manned jacket steel platform, 77.2 km from shore, piled into the seabed in 77.7 m water depth. Twelve piles were used and maximum pile penetration is 155.5 m. The platform main deck dimensions are 52 x 20 m and the deck is 22 m above sea level. The total weight of platform structural steel is 4309 tonnes. The platform has 21 well conductors and accommodation quarters for 40 people.

West Kingfish oil production started in December 1982. The area was developed by one manned jacket steel platform, 73 km from shore, piled into the seabed in 76.2 m water depth. Sixteen piles were used and maximum pile penetration is 103 m. The platform main deck dimensions are 29 x 58 m and the deck is 24 m above sea level. The total weight of platform structural steel is 8371 tonnes. The platform has 31 well conductors and accommodation quarters for 60 people.

#### Mackerel

The Mackerel oil field was discovered in April 1969 and production started in December 1977. The field was developed by one manned jacket steel platform, 72.4 km from shore, piled into the seabed in 92.7 m water depth. Sixteen piles were used and maximum pile penetration is 102 m. Platform main deck dimensions are 59 x 29 m and the deck is 24 m above sea level. The total weight of platform structural steel is 7917 tonnes. The platform has 25 well conductors and accommodation quarters for 54 people. Production is exported through one 300 mm nominal diameter pipeline, 8 km long, in oil service to the Halibut platform.

#### Marlin

The Marlin gas and oil field was discovered in February 1966 and production started in March 1970. The field was developed by one manned jacket steel platform, 52.5 km from shore, piled into the seabed in 58.5 m water depth. Thirty-two piles were used and maximum pile penetration is 60 m. Platform main deck dimensions are 43 x 36 m and the deck is 20 m above sea level. The total weight of platform structural steel is 4127 tonnes. The platform has 24 well conductors and accommodation quarters for 56 people. Production is exported through one 500 mm nominal diameter pipeline, 108.3 km long, in gas service to onshore plant at Longford. A 300 mm nominal diameter pipeline, 1 km long, in oil service, carries Marlin, Tuna, Flounder and Snapper oil to join the Halibut to shore 600 mm pipeline.

#### Moonfish

The Moonfish oil field was put in production in 1997. The field is located about 4 km north of the Snapper field in the Gippsland Basin. The field was developed by two directional long reach wells drilled from the Snapper platform. The Moonfish oil field reserves are estimated at 1.99 GL (12.5 million bbl). Peak production rates reached 795 kL/d (5 kbbbl/d).

#### Perch

The Perch oil field was discovered in March 1968 and production started in January 1990. Perch oil accumulation was developed by a single well uncrewed monotower producing to shore plant at Longford. Platform main deck dimensions are 10 x 10 m and the deck is 17 m above sea level. The total weight of platform structural steel is 2204 tonnes. The platform has two well conductors. The platform is currently shut in. Production export was through one 300 mm nominal diameter pipeline to Dolphin platform.

#### Seahorse

The Seahorse oil field was discovered in August 1978 and production started in September 1990. The field is located 15 km from shore in 42 m water depth. The Seahorse oil accumulations were developed by a single well subsea completion producing to Longford plant via the Barracouta platform.

### Snapper

The Snapper gas and oil field was discovered in June 1968 and production started in July 1981. Snapper gas and oil accumulation was developed by one manned jacket steel platform, 32 km from shore, piled into the seabed in 54.96 m water depth. Twelve piles were used and maximum pile penetration is 103 m. The platform main deck dimensions are 29 x 59 m and the deck is 24 m above sea level. The total weight of platform structural steel is 6783 tonnes. The platform has 27 well conductors and accommodation quarters for 55 people. Production is exported through one 250 mm nominal diameter pipeline, 15 km long, to Marlin platform in oil service and one 600 mm nominal diameter pipeline, 38.8 km long, in gas service to onshore gas pipeline and plant at Longford.

### Tarwhine

The Tarwhine oil field was discovered in December 1981 and production started in May 1990. The field is located 23 km from shore in 43 m water depth. The field was developed by a single well subsea completion producing to Longford plant via the Barracouta platform. The export pipeline to Barracouta is 200 mm nominal diameter, 17 km long.

### Tuna

The Tuna oil and gas field was discovered in June 1968 and production started in May 1979. The field was developed by one manned jacket steel platform, 56.3 km from shore, piled into the seabed in 58.5 m water depth. Twelve piles were used and maximum pile penetration is 105 m. The platform main deck dimensions are 59 x 20 m and the deck is 24 m above sea level. The total weight of platform structural steel is 6245 tonnes. The platform has 30 well conductors and accommodation quarters for 55 people. Production is exported through one 300 mm nominal diameter pipeline, 19.3 km long, to Marlin platform in gas service and one 200 mm nominal diameter pipeline, 19.3 km long, to Marlin platform in oil service.

West Tuna oil production started in January 1996. The area was developed by one manned concrete gravity platform, 56 km from shore, in 61 m water depth. The dimensions of concrete base are 92 x 76 x 15 m and the concrete volume is 26 000 kL (164 kbbbl). The total structure weight is 80 000 tonnes. The weight of steel reinforcement is 9000 tonnes and solid ballast is 17 000 tonnes. The platform has three legs and four buoyancy tanks. Diameter of legs and buoyancy tanks is 16 m. Topside weight is 7000 tonnes and has accommodation for 84 people. Platform main deck dimension is 80 x 69 m and the deck is 27 m above sea level. Production is exported through two 3 km long pipelines (250 mm nominal diameter in oil service and 100 mm nominal diameter in gas service) to Tuna platform.

### Whiting

The Whiting oil and gas field was developed by one unmanned jacket steel platform, 34 km from shore, piled into the seabed in 54 m water depth. The field was discovered in March 1983, while production started in October 1989. The platform main deck dimensions are 33 x 26 m and the deck is 25 m above sea level. The total weight of platform structural steel is 3387 tonnes. The platform has six well conductors. Production was exported through one 250 mm nominal diameter pipeline in oil service and one 200 mm nominal diameter pipeline in gas service to Snapper platform. The platform is currently shut in.

## 4.3 Pipelines

A list of Australia's major petroleum pipelines is included as Appendix J. The pipelines listed are high pressure, large diameter (>100 mm) natural gas and crude oil pipelines that have been constructed since the mid 1960s. Pipelines transporting refined and partly refined products have been excluded, except major lines transporting LPG (propane and butane), ethane and fuel gas in Victoria. The map of Australia's petroleum exploration and development titles (included with this publication) shows the major pipelines (see also Figure 4.1).

Functions of pipelines in the Australian oil and gas industry are to:

- transport crude oil from onshore and offshore fields to stabilisation plants, refineries and export terminals;
- transport natural gas from onshore and offshore fields to processing plants, distribution centres or consumers; and
- carry refined products from refineries or tanker terminals to local distribution centres or consumers.

From 1964 to 1970 significant discoveries of oil and gas were made in Queensland, Victoria, South Australia and Western Australia. This led to the supply of oil and natural gas to refineries and consumers in the capital cities, industrial centres and some country areas.

### Major liquids pipelines

Australia's first long distance crude oil pipeline was constructed in 1964 between Moonie in the Bowen/Surat Basin and Brisbane (306 km). By the end of the decade an oil pipeline was constructed from the offshore Bass Strait to Westernport (185 km), later extended to Melbourne and Geelong (135 km). In 1984 the Jackson – Moonie pipeline (800 km) was linked to the Moonie – Brisbane pipeline, and in 1985 the Mereenie – Alice Springs pipeline (270 km) was completed. The Moomba – Port Bonython pipeline (659 km) was completed in 1982. This transports Cooper/Eromanga Basin natural gas liquids and crude oil to a fractionation plant on Spencer Gulf.

### Major gas pipelines

#### Queensland

The first major gas pipeline connected Roma (Bowen/Surat Basin) fields and Brisbane (397 km) in 1969. This was connected from Roma to Silver Springs (102 km) in 1978. In 1990, the Queensland State Gas Pipeline Unit completed the Wallumbilla – Gladstone gas pipeline through the Denison Trough gas fields (530 km). An extension to Rockhampton (100 km) was completed in 1991.

In 1993 the south-west Queensland gas/condensate pipeline from the Queensland Gas Centre (near the Ballera field) to Moomba in South Australia (180 km) was completed, linking the Queensland Cooper/Eromanga gas fields to South Australia. The natural gas pipeline from Ballera to Wallumbilla (750 km) was completed in 1996 providing a continuous link between the Cooper/Eromanga and Bowen/Surat basins and the Brisbane gas market. A second natural gas pipeline link (480 km) from north of Roma to the northern outskirts of Brisbane was completed in 1999. The Ballera – Mt Isa (841 km) pipeline, supplying the Mica Creek Power Station and a major fertiliser project planned for Phosphate Hill located about 150 km south of Mt Isa, was completed in 1997. Laterals linking the Carrington mine and the Bunya/Vernon/Cocos gas fields were connected to the main line through the Central Treatment Plant in 1998.

In 1994, a pipeline (247 km) from the Gilmore Gas field in the Adavale Basin to Barcaldine was completed. This was connected to the Ballera – Wallumbilla pipeline in 1997, thus connecting the Adavale basin to the pipeline network. In 1997 a pipeline connected coal seam methane in the Fairview area of the Bowen Basin, 150 km north of Roma, to the Queensland Gas Pipeline. This methane development is a small but important alternative energy source in supply diversity and competition. Construction of a pipeline to connect gas reserves from the central highlands of Papua New Guinea with markets in Queensland is being considered and could be started in the near future.

Other projects in progress in 2000 included the conversion to gas of the Jackson – Moonie oil pipeline and the completion of gas pipelines from Injune to Petrie and from Gladstone to Bundaberg.

#### South Australia

A gas pipeline was completed between the Moomba gas fields and Adelaide (781 km) in 1969, and was later connected to other centres. A liquids pipeline (659 km) from Moomba to Stony Point was completed in 1982. A gas pipeline linking Katnook gas field to Sasfries factory and a separate line to Mount Gambier and Snuggery were completed in the early 1990s. A gas pipeline from Angaston to Murray Bridge, including laterals to Berri in South Australia (231 km), was constructed in 1994 and an extension from Berri to Mildura in Victoria was completed in 1999.

#### Victoria

An LPG pipeline was built from Longford to Westernport (185 km) in 1968. An ethane pipeline was built from Westernport to Altona (78 km) in 1970. The 174 km gas pipeline from the Gippsland gas plant at Longford to Melbourne (1971) was later extended to Geelong, Ballarat, Bendigo, Shepparton, Kyabram and Albury. A 181 km pipeline from Carisbrook to Ararat, Stawell and Horsham was completed. The onshore Otway Basin field North Paaratte was connected by pipeline to Warrnambool in 1986 and later to Portland (1992). A gas pipeline linking the depleted Iona gas field (developed as a major underground storage facility) to Geelong was recently constructed.

#### New South Wales

Since the construction of the natural gas pipeline linking the Moomba gas fields to Wilton near Sydney in 1976, laterals have been constructed linking Wagga Wagga, Canberra, Lithgow, Oberon, Orange, Bathurst, Griffith, Leeton, Wollongong, Plumbpton, Hexham and Walsh Point. In 1998 a 255 km natural gas pipeline was completed from Marsden near West Wyalong to Dubbo, including an extension to Wellington. An ethane pipeline following the same easement as the main natural gas pipeline from Moomba to Sydney was completed in 1996. The 157 km gas pipeline link between Barnawatha in Victoria to Wagga Wagga in New South Wales was completed in 1998 and supplied gas to Melbourne during the emergency shortage of 1998.



The construction of the 457 mm diameter, 795 km long Eastern Gas Pipeline from Longford to Sydney started in August 1999. The pipeline passes through the towns and regions of Bairnsdale, Orbost, Cann River, Bombala, Cooma, Nowra, Port Kembla, Wollongong and Wilton. The pipeline final capacity is 110 PJ (2.9 Bcm) of gas per year and cost \$495 million. The pipeline was completed in August 2000 and delivered gas to Sydney and the Olympic facility in September 2000.

Construction commenced in September 2000 of a 200 mm pipeline linking Illabo, Tumut and Wagga Wagga.

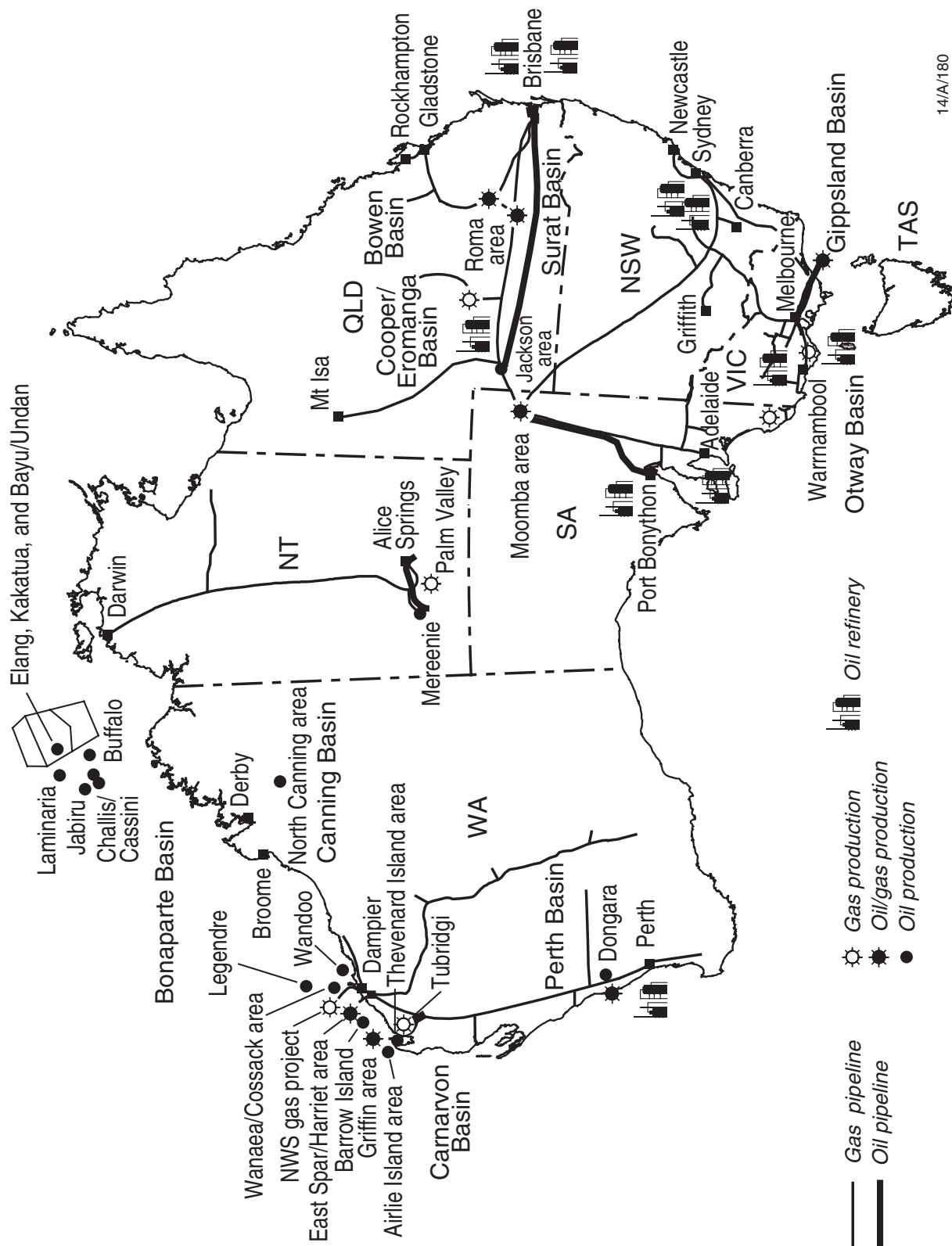
#### Western Australia

The Dongara – Perth pipeline (445 km) established the Perth Basin natural gas market in 1972. The Carnarvon Basin gas fields were first developed by the North Rankin – Withnell Bay (Dampier) gas/condensate pipeline (134 km) and the Dampier – Wagerup pipeline (1482 km) gas pipeline which connected the North Rankin gas field to Perth, Wagerup and Bunbury in 1984. Enhancement of the pipeline was completed in December 1997, increasing capacity through additional compression. In 1995 the Cossack Pioneer FPSO was connected by gas pipeline to the North Rankin platform. During 1994 the Karratha – Port Hedland (213 km) natural gas pipeline to a 105 megawatt gas-fired power station was completed. Since 1992 natural gas pipelines linking Varanus Island to shore, Griffin Venture FPSO to Tubridgi (onshore) and from the Roller oil platform to shore were completed. These offshore facilities serve as focal points for shorter pipelines from a number of offshore producing fields. A second parallel gas pipeline (100 km) was commissioned in 1999 linking Varanus Island to the onshore compressor station to cater for increasing gas production in adjoining fields.

In 1996 the Yaraloola – Kalgoorlie (1400 km) natural gas pipeline was completed. This pipeline carries Carnarvon Basin natural gas to the iron ore fields in the Pilbara area, various mine sites and the goldfields of Kalgoorlie and Boulder. A 353 km pipeline to deliver gas from the main Dampier – Bunbury gas pipeline to the Windimurra Vanadium Project was completed in 2000. The gas will be used directly and will fire a 12 megawatt power station to be built at the mine

#### Northern Territory

The Palm Valley – Alice Springs gas pipeline (145 km) developed the Amadeus Basin gas fields and connected to the Amadeus basin to Darwin gas link (1512 km) in 1986. The connection to the Macarthur River Mine (333 km) was completed in 1995. A gas pipeline has been proposed to link the Bayu/Undan gas field in the Timor Sea with Darwin and feasibility studies have been completed for alternative gas supply to eastern Australian markets.



**Figure 4.1 Location of oil and gas production and pipelines**





## **5: Current production**

### **5.1 Crude oil and condensate production in 1998 and 1999**

Crude oil and condensate production in 1998 was 30.3 GL or 83.0 million litres per day (522 000 bbl/d)—a decrease from the revised figure of 33.7 GL or 92.4 million litres per day (581 000 bbl/d) in 1997. Crude oil and condensate production in 1999 further declined to 29.4 GL or 80.6 million litres per day (507 000 bbl/d). The preliminary year 2000 figure for oil and condensate production is 40.7 GL or 111.5 million litres per day (701 000 bbl/d) due to high initial oil rates from the Laminaria and Corallina fields development in the Timor Sea.

Crude oil production by basin is listed in Appendix I. Production relative to reserves is shown in Figure 2.2.

### **5.2 Gas production in 1998 and 1999**

Gas production, including on-site fuel use and flaring, increased from a revised estimate of 89.7 million cubic metres per day (3.4 billion scf/d) in 1997 to 107.3 million cubic metres per day (3.8 billion scf/d) in 1998 before declining to 104.7 million cubic metres per day (3.7 billion scf/d) in 1999. No reliable gas production figures for 2000 are available as yet. Annual production by basin is listed in Appendix I.

Commercial production of coalbed methane has commenced in both Queensland and New South Wales, with rates of over 0.2 million cubic metres per day (7 million scf/d) reported from the Surat Basin in late 2000.



## 6: Crude oil and condensate forecasts

### 6.1 Crude oil and condensate forecast for 2001–2015

The forecast of production given in this chapter is based on current estimates of production from identified resources and the estimates of production from undiscovered resources contained in *Oil and Gas Resources of Australia 1998*. Geoscience Australia estimates are provided at various probability levels to reflect the uncertainty surrounding the development of discovered accumulations (e.g. a production estimate at the 90% probability level means that there is a 90% chance of production being at least as high as the figure shown).

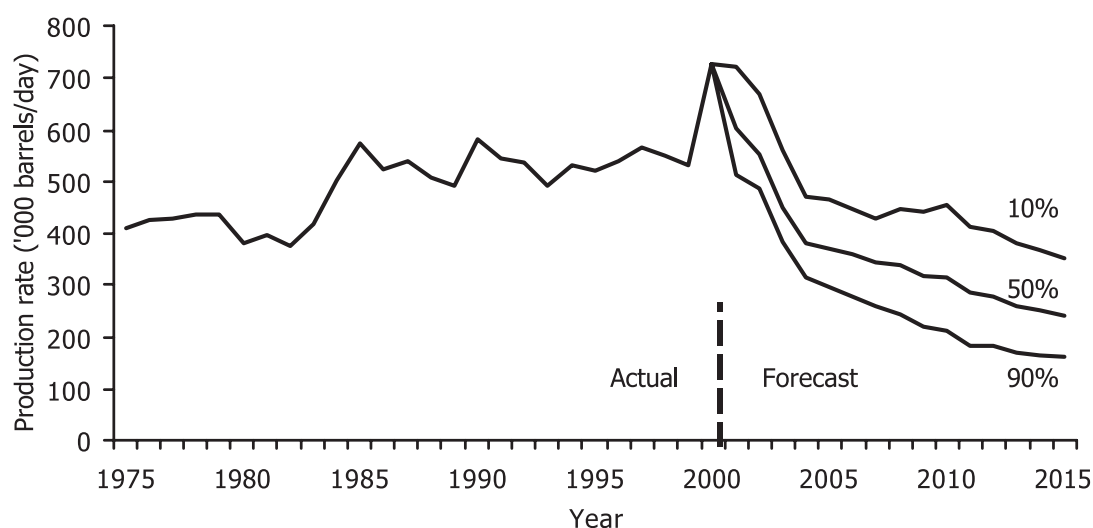
No new estimate of production of crude oil and condensate from undiscovered resources has been prepared since the publication of *Oil and Gas Resources of Australia 1998*. The figures for production from identified resources incorporate estimates of production from individual developed fields as well as estimates of reserves and timing of development of identified but undeveloped fields. Major factors affecting the accuracy of oil production estimates for identified fields are:

- reserves growth in offshore fields;
- delays in the startup of production from offshore fields; and
- interruptions to production from offshore fields.

As a result the lower probability levels reflect the scope for increases in the reserves estimates on which the forecasts are based.

Accuracy of the production estimates is also dependent on the timing of future gas developments with their associated condensate production. In some cases, the cycling of dry gas allows accelerated production of condensate.

Figure 6.1 shows the production of crude oil and condensate from 1975 to 2000 and Figure 6.1 and Table 6.1 show forecast production from 2001 to 2015. The forecast includes production of crude oil and condensate from accumulations that had been discovered by the end of March 2001, plus production of crude oil from undiscovered accumulations in the Bonaparte, Carnarvon, Eromanga, Cooper, Gippsland, Browse, Bass, offshore Otway and offshore Perth Basins. The 2001 forecast includes 10% of production from the Joint Petroleum Development Area (JPDA) (see Summary).



**Figure 6.1 Australia's annual production of crude oil and condensate 1975-2000 and forecast annual production at 90%, 50% and 10% cumulative probability 2001-2015**

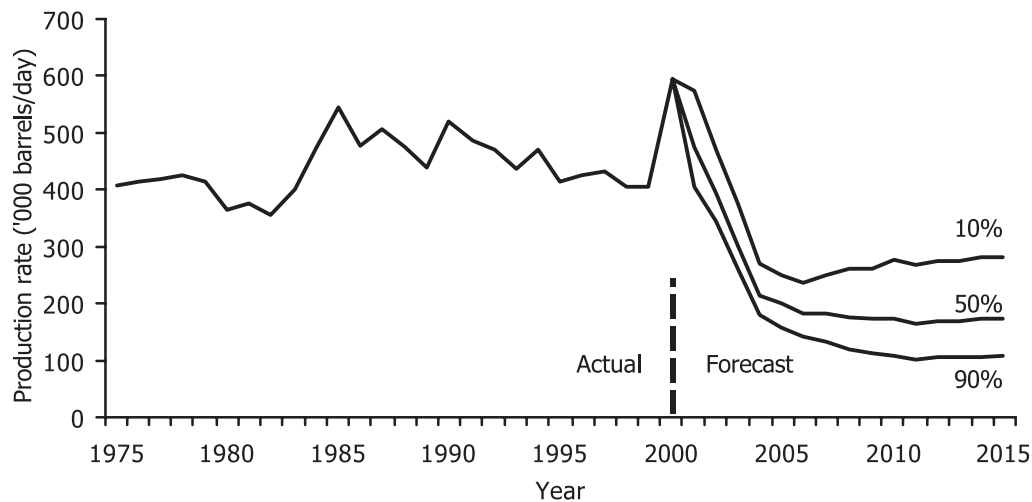
Details of the individual forecasts for crude oil and condensate are given in Figures 6.2 and 6.3 below.

**Table 6.1 Forecast for 2001–2015 of crude oil and condensate production from Australia's identified accumulations, and crude oil production from undiscovered accumulations, in the Bonaparte, Carnarvon, Eromanga, Cooper, Gippsland, Browse, Bass, offshore Otway and offshore Perth Basins, as at March 2001**

Year	Identified			Undiscovered			Both		
	P90	P50	P10	P90	P50	P10	P90	P50	P10
2001	513	597	716	0	0	1	512	601	723
2002	487	555	666	0	0	1	487	554	666
2003	383	447	559	0	1	2	385	450	561
2004	310	374	468	0	1	10	312	378	471
2005	288	364	454	1	5	32	296	372	465
2006	258	336	420	2	14	58	277	358	446
2007	231	307	384	6	30	89	258	341	429
2008	201	281	375	13	46	123	243	338	445
2009	164	244	352	21	63	155	218	316	441
2010	141	222	341	30	81	173	209	313	453
2011	109	179	284	37	92	192	182	283	412
2012	98	162	262	45	100	205	181	276	406
2013	85	139	226	50	109	212	170	260	380
2014	82	135	219	57	118	223	165	250	367
2015	78	128	208	64	127	233	159	239	351

## 6.2 Crude oil forecast for 2001–2015

Figure 6.2 shows crude oil production from 1975 to 2000 and Figure 6.2 and Table 6.2 show a forecast of crude oil production from 2001 to 2015. The forecast is based partly on Geoscience Australia and company estimates of crude oil production from accumulations that had been discovered by end of March 2001 (identified accumulations), and partly on estimates of crude oil production from undiscovered accumulations in the Bonaparte, Carnarvon, Eromanga, Cooper, Gippsland, Browse, Bass, offshore Otway and offshore Perth Basins. Additional production from undiscovered accumulations in other areas is unlikely to be large enough to make a significant difference to the estimate for the period 2001–2015. The forecast includes 10% of production from the JPDA (see Summary).



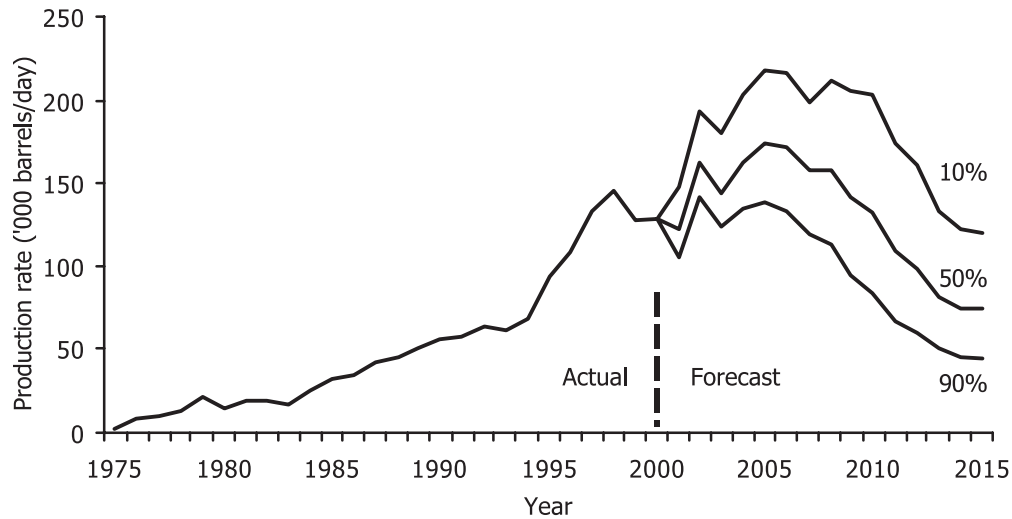
**Figure 6.2 Australia's annual production of crude oil 1975-2000 and forecast annual production at 90%, 50% and 10% cumulative probability 2001-2015**

**Table 6.2 Forecast for 2001–2015 of crude oil production from Australia's identified accumulations, and from undiscovered accumulations, in the Bonaparte, Carnarvon, Eromanga, Cooper, Gippsland, Browse, Bass, offshore Otway and offshore Perth Basins, as at March 2001**

Year	Identified			Undiscovered			Both		
	P90	P50	P10	P90	P50	P10	P90	P50	P10
2001	407	473	568	0	0	1	406	476	572
2002	345	393	471	0	0	1	345	394	472
2003	260	303	379	0	1	2	260	303	378
2004	176	212	265	0	1	10	178	216	270
2005	150	190	237	1	5	32	158	200	249
2006	126	163	204	2	14	58	139	182	235
2007	112	148	186	6	30	89	133	182	248
2008	88	123	164	13	46	123	120	176	259
2009	68	102	147	21	63	155	111	171	262
2010	57	90	137	30	81	173	109	174	277
2011	42	69	110	37	92	192	102	167	269
2012	38	63	102	45	100	205	104	170	275
2013	34	56	92	50	109	212	105	170	276
2014	36	59	97	57	118	223	107	172	280
2015	33	54	88	64	127	233	109	174	283

### 6.3 Condensate forecast for 2001–2015

Figure 6.3 shows production of condensate from 1975 to 2000 and Figure 6.3 and Table 6.3 show a forecast of condensate production from 2001 to 2015. The forecast is based on company and Bureau of Resource Sciences estimates of production from accumulations that had been discovered by March 2001 and for which some production planning has been carried out. The forecast includes 10% of production from the JPDA (see Summary).



**Figure 6.3 Australia's annual production of condensate 1975-2000 and forecast annual production at 90%, 50% and 10% cumulative probability 2001-2015**



**Table 6.3 Forecast for 2001–2015 of condensate production from Australia's identified accumulations, as at March 2001**

Year	Identified		
	P90	P50	P10
2001	106	123	148
2002	142	162	194
2003	124	144	180
2004	135	162	203
2005	138	174	218
2006	133	172	216
2007	119	158	198
2008	113	158	211
2009	95	142	205
2010	84	132	203
2011	67	109	174
2012	60	99	161
2013	50	82	134
2014	46	75	123
2015	45	74	120

Some very large gas fields, including some recent significant discoveries, have not been included in the forecast. Chrysaor, Dionysus, Maenad, Orthrus and the Geryon area along with Scarborough in the Carnarvon Basin and Scott Reef and Brecknock/Brecknock South and the Brewster/Dinichthys/Gorgonichthys/Titanichthys discoveries in the Browse Basin are located in generally deeper water and could, conceivably, be brought into production given some combination of improved access to markets, an increase in prices or a reduction in costs. It appears, however, that none of these accumulations is very rich in condensate.

The gas fields that are included in the forecast have very much higher condensate to gas ratios than the accumulations that have been left out. The average condensate to gas ratio of all Australian offshore gas fields is about 21 barrels per million cubic feet, while the yield from Australian offshore production is about 30 barrels per million cubic feet. Other accumulations which have been included in the forecast but which are not presently in production, such as Angel and Bayu/Undan, are even richer than this. Of the fields included, only Gorgon has a significantly lower condensate to gas ratio. Based on published reserve figures for the large gas fields which have not been included in the forecast, they contain about 41 trillion cubic feet of natural gas and have a condensate to gas ratio averaging 8 barrels per million cubic feet. Hence, production from these fields is unlikely to significantly affect the condensate forecast.



## 7: Sufficiency of crude oil and condensate resources

### 7.1 Introduction

This chapter discusses the level of Australia's petroleum resources, the amounts that have already been produced and the sufficiency of the amounts that remain for future consumption. Sufficiency refers to the amounts of discovered and undiscovered resources relative to current and future extraction rates. The word 'sufficiency' is used rather than 'sustainability' since petroleum resources are consumed much faster than they are generated, and the production of petroleum is not strictly sustainable.

Since the 1960s, when oil and gas were first produced, petroleum has played an increasingly important part in Australia's economy. Nevertheless, Australia's resources of crude oil are limited and there is concern about how much longer they can last.

Australian production of natural gas meets domestic consumption. Significant additional amounts are exported. There are prospects for significantly increased production for both domestic and export markets.

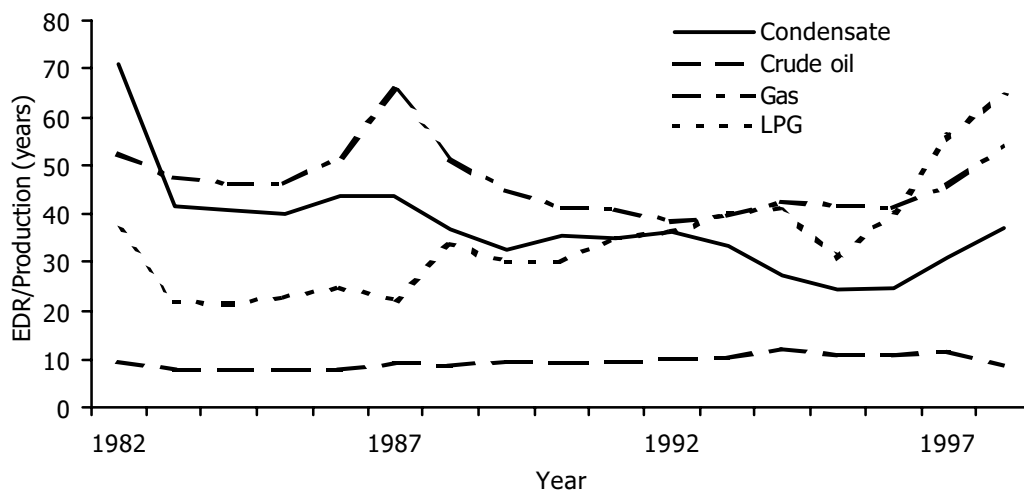
No new estimate of undiscovered resources or of production of crude oil and condensate from undiscovered resources has been prepared since the publication of *Oil and Gas Resources of Australia 1998*. The sustainability indicators given here are based on current estimates of reserves and production from identified resources and the estimates of undiscovered resources and production from undiscovered resources contained in *Oil and Gas Resources of Australia 1998*.

A new ultimate potential undiscovered hydrocarbon assessment generated by the US Geological Survey has been adopted as discussed in Chapter 3. However, this assessment has not been included in sustainability calculations as Geoscience Australia has yet to incorporate their own data into the assessment.

## 7.2 Ratio of economic demonstrated resources to annual production

Australia's remaining economic demonstrated resources of petroleum, as estimated at the beginning of each financial year, and the production for that year, are set out in Table 7.1. Resource figures for financial years have been derived by averaging Geoscience Australia figures for the preceding and succeeding calendar years. Production figures were compiled by the Petroleum and Electricity Division of the Department of Industry Science and Resources. The ratios of economic demonstrated resources to production are also shown in Figure 7.1.

The resources to production (R/P) ratio indicates how many years of production the resource would support assuming present production rates could be maintained (Figure 7.1). For example, the ratio for crude oil, including 10% of the oil production within the Joint Petroleum Development Area, which is subject to an arrangement between the permit holders and the Designated Authority, indicates an estimated 'life' which has remained fairly steady at about ten years since 1982 but is currently eight years. Natural gas has a current 'life' estimated at 54 years, but past estimates have ranged between about 38 and 65 years.



**Figure 7.1 Annual R/P ratios for crude oil, condensate, LPG and gas**

**Table 7.1 Australia's economic demonstrated resources and production of crude oil, condensate, naturally-occurring LPG and natural gas 1982–3 to 1998–9 (gigalitres and billions of cubic metres). For financial year beginning 1 July.**

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>Condensate</b>																	
EDR	78	71	82	80	118	118	121	107	124	129	135	147	170	176	196	235	275
Production	1.1	1.7	2.0	2.0	2.7	2.7	3.3	3.3	3.5	3.7	3.7	4.4	6.2	7.2	7.9	7.6	7.4
R/p	71	42	41	40	44	44	37	32	35	35	36	33	27	24	25	31	37
<b>Crude oil</b>																	
EDR	249	231	231	224	231	240	252	278	258	251	247	273	287	263	258	256	237
Production	26.0	29.0	30.0	29.0	29.0	26.0	29.0	29.0	28.0	27.0	25.0	27.0	24.0	25.0	24.0	22.0	28.0
R/p	10	8	8	8	8	9	9	10	9	9	10	10	12	11	11	12	8
<b>Gas</b>																	
EDR	629	616	691	691	832	1043	1030	941	950	978	999	1147	1278	1332	1491	1739	2003
Production	12.0	13.0	15.0	15.0	16.0	16.0	20.0	21.0	23.0	24.0	26.0	29.0	30.0	32.0	36.0	38.0	37.0
R/p	52	47	46	46	52	65	52	45	41	41	38	40	43	42	41	46	54
<b>LPG</b>																	
EDR	112	85	85	88	97	85	128	106	108	133	134	144	149	160	178	212	253
Production	3.1	3.9	4.0	3.9	3.9	3.8	3.8	3.5	3.6	3.8	3.7	3.6	3.6	5.2	4.4	3.8	3.9
R/p	36	22	21	23	25	22	34	30	30	35	36	40	41	31	40	56	65

The fairly constant R/P ratio of about ten years for crude oil over the last 17 financial years shows that economic demonstrated resource to production ratios cannot be relied on as an indicator of resource 'life'. The estimated 'life' has not reduced year by year (despite considerable production), because estimates of remaining economic demonstrated resources have stayed at a near constant level, mainly as a result of revisions (additions) to the estimates of the demonstrated resources within the producing fields, and partly as a result of new discoveries (while rate of production has remained steady).

The average crude oil and condensate production from 1990 to 1999 was 30.3 GL per year, while remaining economic demonstrated resources in 1999 were 509 GL. This means that in 1999 average crude oil and condensate production could be sustained for 16.8 years.

A better indicator of sustainability might be the ratio of crude oil and condensate production to consumption. The ratios of forecast crude oil and condensate production to consumption as projected by ABARE from year 2001 to 2015 is given in Table 7.2. It can be seen that the capability of domestic oil and condensate production to sustain consumption decreases dramatically from 89% in 2001 to 45% in 2006. The consumption of crude oil and condensate in 1999 of 43.3 GL could be sustained by remaining economic demonstrated resources in 1999 of 509 GL for only 11.8 years.

**Table 7.2 Australia's production and demand for crude oil and condensate**

Year	Production	Consumption
2001	601.1	671.8
2002	554.3	653.2
2003	450.0	684.1
2004	378.2	686.2
2005	372.5	693.5
2006	357.9	712.3
2007	341.4	742.5
2008	337.9	761.1
2009	316.1	794.0
2010	313.3	821.4
2011	282.7	860.9
2012	275.5	889.8
2013	260.3	925.0
2014	250.4	952.5
2015	239.2	975.8

## 7.3 Trends in crude oil production

Clearly the resource about which there is most concern is crude oil. Production profiles and the longevity of fields vary widely with the size of the field, the quality of the host reservoir and the means of development.

The Barrow Island field is a giant field hosted in a poor quality reservoir with low recovery rates, but is accessible from land. It has produced consistently over a long period of time because of the ability to implement improved recovery practices relatively easily and economically. However, maintenance of and/or additional production depends on profitability, which in turn is related to the price of oil and the capacity for technological innovation.

In the past, the giant fields in the Gippsland Basin have underpinned Australian oil production. These fields have high-performing reservoirs and associated fixed infrastructure. Growth in reserves in these fields, plus the ability to economically tie-in small fields to the infrastructure, has meant that these assets have sustained production for a long period of time. Similarly, production of condensate from the large gas developments on the North West Shelf and Timor Sea are expected to have relatively long lives, but with very even production profiles reflecting constraints on the associated gas production. In supply terms, they will provide the very long-term underpinning to Australian production that the Bass Strait fields have traditionally supplied, but obviously not at the same level.

Production of oil from the Gippsland fields peaked in 1985 and has subsequently declined steadily. The industry has been successful in replacing this production by the development of the gas/condensate fields on the North West Shelf and in the discovery and development of many smaller oilfields on the north-west margin. In contrast to the Gippsland Basin oilfields, the remote and relatively small oilfields of the North West Shelf and Timor Sea have much shorter lives. They have been discovered and developed in a very uncertain period for oil prices and their location and size has required physical facilities with lower capital costs which in some cases constrains their flexibility for secondary developments. The year-by-year production performance of these developments has been harder to predict. However, it is evident that the recent spurt in oil production is superimposed on a decline from a peak in production in the mid-1980s. While overall liquids production has increased due to the contribution from condensate, production in the longer term can only be sustained at current levels from new reserves in new oil fields as the Laminaria-Corallina example clearly illustrates.



## 7.4 Estimated self-sufficiency

An indicator of resource sufficiency is percent self-sufficiency, last published by the Department of Primary Industries and Energy (DPIE 1987). Self-sufficiency was defined as:

$$\text{Self-sufficiency} = \frac{\text{Crude oil and condensate production} + \text{domestic demand for naturally occurring LPG}}{\text{Net domestic demand for petroleum products}}$$

Since 1970, self-sufficiency has fluctuated between 60% and 90%, with levels above 70% since mid-1984. The indicator shows how well domestic production meets demand and is simple to understand. The 1997/98 figure was 77%. Since then, the indicator has fluctuated due to lost production in the Gippsland basin and production startup in the Timor Sea. The 1998/99 figure was 63% followed by 82% in 1999/2000. Heavy crude oil suitable for fuel oil, lubricant and bitumen production is imported and light crude oil is exported.

## 8: Petroleum data and information

### 8.1 Introduction

Public access to existing petroleum exploration data reduces financial and exploration risks for explorers, particularly when exploring in frontier areas. Australian State and Commonwealth governments have had a long-standing policy requiring lodgement of exploration data and its public release after a confidentiality period to encourage further exploration.

The *Petroleum Search Subsidy Act 1957 (PSSA)* was enacted at a time when Australia was considered to be poorly prospective for oil and gas. Exploration was subsidised under the *PSSA* on condition that data were made available to assist future exploration. During the term of the *PSSA*, significant discoveries were made in the Gippsland, Cooper, Bowen/Surat and Amadeus Basins, and on the North West Shelf.

As Australia's petroleum exploration and production industry became established, the subsidy was removed with the introduction of the *Petroleum (Submerged Lands) Act 1967 (P(SL)A)*. The *P(SL)A*, which governs petroleum exploration and production in Australia's offshore area beyond three nautical miles from the coast, retained the requirement to lodge exploration data and to make that data available for subsequent exploration. The arrangement continues to this day.

The Commonwealth makes these exploration data available to industry to promote and facilitate oil and gas exploration. The data are also used by government agencies, including Geoscience Australia, to support technical advice to government and to promote acreage release.

Geoscience Australia is custodian of Australia's largest collection of petroleum data, including data lodged with the Government under the *PSSA* and the *P(SL)A*. The collection also includes data collected by Geoscience Australia's Continental Margins Program and other research programs. It contains seismic data, well log data, cores and cuttings from exploration wells, well completion reports, seismic survey reports, and reports from analyses of core samples.

### 8.2 Lodgement of data

The *P(SL)A* is administered in each State on behalf of the Commonwealth by a Designated Authority (DA) in each State. The DA has the responsibility under the Act for determination of matters relating to the operation of the Act in offshore areas of the State. All lodgements and access to data formally involve the office of the DA in each State, but direct access to the Geoscience Australia repositories is also possible.

Under the *P(SL)A*, petroleum exploration and production data are made publicly available after specified times. Basic data are normally available after two years and most interpretative data are available after five years. Basic data comprise the field and processed data normally available to the explorationist for interpretation (e.g. seismic reflection and other geophysical data in both field and processed form; well stratigraphy; well logs; well test data and cores and cuttings). Interpretative data refer to professional assessments in terms of potential for discovery and production of hydrocarbons, and may arise from studies of basic data.

## 8.3 Data availability

### Digital seismic exploration and well log data

Geoscience Australia's collection is made up of over 550 000 digital magnetic tapes, some analogue magnetic data, and associated paper data from over 700 seismic surveys. The digital magnetic tapes contain field seismic survey data and well log, processed seismic and navigation data.

The tape media include 21 track tapes, 9 track tapes, 3480 tapes, 3590 tapes, 8 mm and DAT tapes. Some older data tapes have been remastered. Where the original media are deemed to be obsolete, there is a requirement to remaster data on access. Remastered data is subsequently available to all users.

### Drilling and geophysical survey reports

Geoscience Australia's repository houses more than 3500 drilling reports, geophysical reports and support data and includes:

- operations, positioning, processing and acquisition reports, shotpoint location and water depth maps, velocity data and seismic sections;
- interpretative data comprising various reports and maps;
- drilling data comprising well completion reports, logs, maps, and other data generated during operations; and
- prints and transparencies for logs, maps and seismic sections.

While most of the reports are printed documents, some recent reports are submitted on CD, with processed seismic data being lodged on tapes. Data on open file can be viewed at the Symonston repository, and copies of these data are made available.

### Cores, cuttings and fluid samples

The following physical data are available:

- samples from over 5200 petroleum wells and stratigraphic holes;
- over 150 000 m of down-hole core samples;
- over 3 million metres of down-hole drill cuttings;
- over 3000 onshore sidewall cores;
- 14 000 thin sections and 9000 reservoir plugs;
- assorted prepared samples from previous analyses;
- over 1200 open file destructive analyses reports; and
- documented duplicate and unwashed samples.

## Metadata databases

The Petroleum Exploration Data Index (PEDIN) contains data for over 10 000 wells and 4500 geophysical surveys. Basic drilling data are recorded for all wells drilled in Australia. More detailed data, such as formation tops, down-hole temperature and seismic horizon intersections, are recorded for *PSSA* and *P(SL)A* wells. Index data is recorded for onshore and offshore geophysical surveys including operator, titles, basins and survey specifications. Surveys conducted under the *PSSA* and *P(SL)A* have more details such as summaries from data acquisition, navigation and interpretation reports, line numbers and other line information. PEDIN interfaces with other Geoscience Australia databases.

The Petroleum Information Management System manages data lodged under Commonwealth legislation. This database is accessible through the Geoscience Australia website.

## Contacts

All Geoscience Australia's data collections are located in the Geoscience Australia Data Repository at Symonston, ACT, Australia. Inquiries regarding lodgement of and access to data in the repositories, including charges for access, may be made through the State Designated Authorities or directly with Geoscience Australia Data Repositories, or through the Geoscience Australia web page:

### Geoscience Australia Data Repository

Postal address:	GPO Box 378 Canberra ACT 2601 Australia
Street address:	Cnr Jerrabomberra Av and Hindmarsh Drive, Symonston, ACT 2609, Australia
Phone:	+61 2 6249 9222
Fax:	+61 2 6249 9903
Email:	<a href="mailto:ausgeodata@ga.gov.au">ausgeodata@ga.gov.au</a>
Web page:	<a href="http://www.ga.gov.au">www.ga.gov.au</a>



# **Appendices**



## **Appendix A 1999 & 2000**

### **Wells drilled for petroleum exploration, development and production by State, 1999 and 2000**



## APPENDIX A: WELLS DRILLED FOR EXPLORATION, DEVELOPMENT AND PRODUCTION BY STATE, 1999

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>QUEENSLAND</b>							
BLIGH Heidi 1 ATP562P	Surat	-28° 12' 8" 149° 21' 24"	RT 233 GL 227	21-Jun-99 29-Jun-99	1 928 1 928	Plugged and abandoned, dry.	NFW NFW
BRISBANE N.G. Glamorgan 1 ATP641P	Clarence/Moreton	-27° 31' 6" 152° 38' 31"	RT 65 GL 60	07-Jul-99 05-Aug-99	2 081 2 081	Plugged and abandoned, dry.	NFW NFW
ENERGY EQUITY Bunya North 2 ATP549P	Cooper/Eromanga	-26° 7' 8" 142° 51' 54"	RT 175 GL 169	03-Feb-99 17-Feb-99	2 732 2 732	Cased and suspended as a future gas producer.	NFW NFD
ENERGY EQUITY Grandis 1 ATP549P	Cooper/Eromanga	-26° 21' 25" 142° 45' 52"	RT 252 GL 247	01-Mar-99 21-Mar-99	2 462 2 462	Plugged and abandoned.	NFW NFD
ENERGY EQUITY Thatch 1 ATP549P	Cooper/Eromanga	-26° 16' 3" 142° 53' 45"	RT 207 GL 202	21-Dec-98 08-Jan-99	2 594 2 594	Plugged and abandoned, dry.	NFW NFW
MOSAIC Glen 1 ATP244P	Bowen/Surat	-27° 31' 7" 150° 13' 26"	RT 293 GL 298.5	22-Sep-99 29-Sep-99	2 111 2 111	Plugged and abandoned, dry.	NFW NFW
OCA Arcturus 7 PL41	Bowen	-27° 3' 11" 148° 29' 40"	RT 188.8 GL 184.5	22-Jul-99 31-Jul-99	1 275 1 275	Cased and suspended as a future Permian gas producer.	DEV DEV
OCA Black Stump 5 PL47	Eromanga	-26° 38' 1" 143° 18' 30"	RT 155.3 GL 150	29-Jan-99 04-Feb-99	1 716 1 716	Plugged and abandoned, dry.	EXT EXT
OCA Bodalla South 12 PL31	Eromanga	-26° 26' 48" 143° 25' 22"	RT 155 GL 150	15-Jan-99 21-Jan-99	1 680 1 680	Cased and suspended as a future oil producer.	EXT EXT
OCA Bunginderry 1 ATP269P	Cooper/Eromanga	-26° 25' 31" 143° 43' 25"	RT 178.07 GL 172.2	31-Oct-99 09-Nov-99	1 801 1 801	Plugged and abandoned, dry.	NFW NFW
OCA Kenmore 5 DW 1 PL32	Eromanga	-26° 39' 10" 143° 26' 39"	RT 171.4 GL 167	27-Nov-99 08-Dec-99	1 842 507	Completed as an oil producer.	DEV DEV
OCA Kenmore 5 DW 2 PL32	Eromanga	-26° 39' 10" 143° 26' 39"	RT 171.4 GL 166.3	08-Dec-99 09-Dec-99	1 795 131	Completed as an oil producer.	DEV DEV
OCA Kenmore 16 DW 1 PL32	Cooper/Eromanga	-26° 39' 43" 143° 26' 7"	RT 163.4 GL 168.4	29-Dec-99 -	- -	Drilling ahead	DEV -
OCA Kenmore 22 PL32	Eromanga	-26° 39' 36" 143° 26' 32"	RT 170 GL 165	04-Jan-99 10-Jan-99	1 452 1 452	Cased and suspended as a future oil producer.	EXT EXT
OCA Kincora 43 PL14	Surat	-27° 0' 26" 148° 48' 40"	RT 301.5 GL 296.3	17-Nov-99 24-Nov-99	1 550 1 550	Plugged and abandoned, dry.	DEV DEV
OCA Lancewood 2 PL14	Surat	-27° 2' 45" 148° 47' 41"	RT 342.4 GL 336.9	05-May-99 10-May-99	1 614 1 614	Plugged and abandoned, dry.	EXT EXT

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>QUEENSLAND</b>							
OCA Myall Creek 2 ATP375P	Surat	-27° 4' 22" 149° 12' 21"	RT 250.5 GL 245	18-May-99 30-May-99	2 160 2 160	Cased and suspended as a future gas producer.	EXT EXT
OCA New Royal 4 PL22	Surat	-27° 5' 26" 148° 52' 1"	RT 274 GL 269	05-Dec-99 12-Dec-99	1 535 1 535	Cased and suspended as a future oil producer.	EXT EXT
OCA New Royal 6 PL 22	Surat	-27° 5' 37" 148° 51' 20"	RT 274.1 GL 269	16-Dec-99 22-Dec-99	1 555 1 555	Plugged and abandoned, dry.	EXT EXT
OCA Patron 1 ATP470P	Surat	-27° 20' 23" 148° 55' 56"	RT 251 GL 245	21-Apr-99 28-Apr-99	1 628 1 628	Plugged and abandoned, dry.	NFW NFW
OCA Turkey Creek 5 PL67	Bowen	-23° 51' 58" 148° 19' 47"	RT 194.5 GL 190	04-Aug-99 13-Aug-99	1 050 1 050	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Ballera West 2 PL61	Cooper/Eromanga	-27° 22' 38" 142° 46' 28"	RT 109 GL 101.4	17-Jan-99 31-Jan-99	2 533 2 533	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Challum 13 PL59	Cooper/Eromanga	-27° 22' 29" 141° 34' 11"	RT 89 GL 81	25-Dec-98 08-Jan-99	2 463 2 463	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Challum 14 PL58	Cooper/Eromanga	-27° 23' 27" 141° 33' 9"	RT 89 GL 81	23-Mar-99 28-Apr-99	3 228 3 228	Completed as a gas well.	DEV DEV
SANTOS Challum 15 PL58	Cooper/Eromanga	-27° 24' 3" 141° 32' 43"	RT 89 GL 81	02-Mar-99 14-Mar-99	2 515 2 515	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Epsilon 10 PL63	Cooper/Eromanga	-28° 10' 0" 141° 7' 25"	RT 118 GL 111.8	14-Dec-99 23-Dec-99	2 289 2 289	Plugged and abandoned.	DEV DEV
SANTOS Ivory 1 ATP336P	Surat	-26° 59' 17" 149° 0' 43"	RT 265 GL 260	07-Jun-99 13-Jun-99	1 703 1 703	Plugged and abandoned, dry.	NFW NFW
SANTOS Juno North 1 ATP259P	Cooper/Eromanga	-27° 38' 47" 141° 51' 1"	RT 74.7 GL 68.8	02-Nov-99 02-Dec-99	3 042 3 042	Cased and suspended as a future gas producer.	NFW NFD
SANTOS Moomba 103 PPL7	Cooper/Eromanga	-28° 3' 4" 140° 13' 18"	RT 51 GL 43	17-Feb-99 04-Mar-99	2 733 2 733	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Munkah 7 PL60	Cooper/Eromanga	-27° 26' 4" 141° 53' 51"	RT 82 GL 74	08-May-99 17-May-99	2 389 2 389	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Namarah 6 PL71	Surat	-27° 23' 26" 149° 20' 35"	RT 363.5 GL 359.2	26-Oct-99 10-Nov-99	2 410 2 410	Plugged and abandoned, dry.	EXT EXT
SANTOS Rigel 1 ATP337P	Bowen	-24° 20' 18" 148° 28' 36"	RT 236.2 GL 231.9	18-Aug-99 05-Sep-99	2 105 2 105	Plugged and suspended as a potential future Catherine Sst gas producer.	NFW NFD

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>QUEENSLAND</b>							
SANTOS Rolleston 16 PL42	Bowen	-24° 34' 43" 148° 37' 4"	RT 214.3 GL 210	13-Jun-99 23-Jun-99	1 050 1 050	Cased and suspended as future gas producer.	EXT EXT
SANTOS Scotia 5 ATP378P	Bowen/Surat	-25° 53' 56" 150° 4' 37"	RT 89.9 GL 87.3	07-Sep-99 14-Sep-99	960 960	Cased and suspended as a future Permian gas producer.	EXT EXT
SANTOS Stokes 5 PL84	Cooper/Eromanga	-28° 20' 37" 141° 2' 23"	RT 95 GL 90.7	12-Feb-99 05-Mar-99	2 507 2 746	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Stokes 6 PL84	Cooper/Eromanga	-28° 20' 44" 141° 2' 59"	RT 100 GL 92	22-May-99 05-Jun-99	2 579 2 579	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Wackett 9 PL25	Cooper/Eromanga	-27° 30' 25" 142° 0' 6"	RT 80 GL 71.9	26-May-99 03-Jun-99	2 014 2 014	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Wackett 10 PL86	Cooper/Eromanga	-27° 30' 48" 141° 59' 21"	RT 77.2 GL 71.3	28-Aug-99 12-Sep-99	1 956 1 956	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Windigo 1 ATP259P	Cooper/Eromanga	-27° 23' 24" 142° 6' 28"	RT 83 GL 77	19-Sep-99 30-Sep-99	2 565 2 565	Cased and suspended as a future Permian gas producer.	NFW NFD
SANTOS Winninia North 1 ATP259P	Cooper/Eromanga	-27° 48' 56" 141° 53' 12"	RT 72 GL 66.4	10-Oct-99 21-Oct-99	2 440 2 440	Cased and suspended as a future Permian gas producer.	NFW NFD
SANTOS Yanda 13 PL61	Cooper/Eromanga	-27° 26' 34" 141° 49' 0"	RT 133 GL 125	15-Jun-99 26-Jun-99	2 552 2 552	Cased and suspended as future gas producer.	DEV DEV
SANTOS Yanda 14 PL61	Cooper/Eromanga	-27° 26' 57" 141° 47' 21"	RT 136 GL 128	07-Feb-99 18-Feb-99	2 536 2 536	Cased and completed as a Permian gas producer.	DEV DEV
SANTOS Yandina 3 ATP337P	Bowen	-24° 12' 5" 148° 30' 28"	RT 210.3 GL 197	28-Jun-99 15-Jul-99	1 550 1 550	Cased and suspended as a future gas producer.	EXT EXT

### METRES DRILLED - QUEENSLAND

Wells	Onshore	Offshore	Total
Exploration	46 874	-	46 874
Development	37 046	-	37 046
Total	83 920	-	83 920

### NEW SOUTH WALES

EASTERN ENERGY Rosenearth 1 (Eastern) PEL 6	Bowen/Surat	-28° 46' 58" 149° 53' 18"	KB 217.35 GL 213.35	28-Jun-99 24-Aug-99	2 391 2 391	Plugged and abandoned, dry.	NFW NFW
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## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
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### NEW SOUTH WALES

#### METRES DRILLED - NEW SOUTH WALES

Wells	Onshore	Offshore	Total
Exploration	2 391	-	2 391
Development	-	-	-
Total	2 391	-	2 391

### VICTORIA

AMITY Cuttlefish 1 VIC/P40	Gippsland	-37° 59' 41" 148° 3' 2"	RT 25.9 WD -47	23-Oct-99 29-Oct-99	1 226 1 226	Plugged and abandoned, dry.	NFW NFW
BORAL Wild Dog Road 1 PPL1	Otway	-38° 32' 57" 142° 58' 42"	RT 128.3 GL 123.4	08-Dec-99 22-Dec-99	1 678 1 678	Completed as a future gas producer.	NFW NFD
ESSO Blackback A 1 VIC/P24	Gippsland	-38° 32' 32" 148° 33' 11"	RT 26 WD -395.7	24-Feb-99 11-Apr-99	4 695 5 176	Plugged and abandoned.	DEV DEV
ESSO Blackback A 1A VIC/P24	Gippsland	-38° 32' 32" 148° 33' 11"	RT 26 WD -395	06-Jun-99 22-Jun-99	3 272 1 952	Completed as an oil well.	DEV DEV
ESSO Blackback A 2 VIC/P24	Gippsland	-38° 32' 31" 148° 33' 12"	RT 26 WD -395	21-Feb-99 12-May-99	3 811 3 811	Completed as an oil well.	DEV DEV
ESSO Blackback A 3 VIC/P24	Gippsland	-38° 32' 31" 148° 33' 12"	RT 26 WD -395	16-Feb-99 29-Jul-99	3 913 3 913	Completed as an oil well.	DEV DEV
ESSO Flounder A 4A VIC/L11	Gippsland	-38° 18' 45" 148° 26' 17"	RT 40.8 WD -93	31-Jan-99 06-Feb-99	2 644 2 037	Plugged and abandoned, dry.	DEV DEV
ESSO Flounder A 4B VIC/L11	Gippsland	-38° 18' 45" 148° 26' 17"	RT 40.8 WD -93	20-May-99 31-May-99	2 788 2 161	Cased and suspended as a future oil producer.	DEV DEV
ESSO Flounder A 8 VIC/L11	Gippsland	-38° 18' 45" 148° 26' 18"	DF 40.8 WD -93	14-Feb-99 02-Mar-99	3 026 2 852	Completed as an oil well.	DEV DEV
ESSO Flounder A 16 VIC/L11	Gippsland	-38° 18' 45" 148° 26' 18"	RT 40.8 WD -133.8	12-Mar-99 26-Apr-99	4 525 7 755	Completed as an oil producer.	DEV DEV
ESSO Flounder A 21A VIC/L11	Gippsland	-38° 18' 56" 148° 26' 56"	RT 40.8 WD -94	30-Dec-98 19-Jan-99	3 833 3 081	Completed as an oil well.	DEV DEV
ESSO Flounder A 25A VIC/L11	Gippsland	-38° 18' 45" 148° 26' 18"	RT 41 WD -94	20-Jun-99 05-Jul-99	3 935 3 129	Completed as an oil well.	DEV DEV
ESSO Halibut A 2A VIC/L 5	Gippsland	-38° 24' 22" 148° 19' 16"	RT 29.3 WD -72	24-Sep-99 18-Oct-99	3 416 2 764	Completed as an oil well.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>VICTORIA</b>							
ESSO Halibut A 3A VIC/L11	Gippsland	-38° 24' 20" 148° 19' 8"	RT 29.32 WD -72.5	06-Dec-99 22-Dec-99	3 109 3 109	Completed as an oil producer.	DEV DEV
ESSO Halibut A 5A VIC/L11	Gippsland	-38° 24' 21" 148° 19' 8"	RT 29.32 WD -73	18-Apr-99 28-Apr-99	2 829 1 129	Completed as an oil well.	DEV DEV
ESSO Halibut A 8A VIC/L5	Gippsland	-38° 24' 20" 148° 19' 8"	RT 29.32 WD -72.5	25-May-99 13-Jun-99	3 129 2 582	Completed as an oil producer.	DEV DEV
ESSO Halibut A 13A VIC/L11	Gippsland	-38° 24' 20" 148° 19' 8"	RT 29.32 WD -72.5	07-Jul-99 22-Jul-99	2 927 2 379	Completed as an oil well.	DEV DEV
ESSO Halibut A 18A VIC/L 5	Gippsland	-38° 24' 22" 148° 19' 17"	RT 29.32 WD -72.5	05-Nov-99 13-Nov-99	2 900 1 123	Completed as an oil producer.	DEV DEV
ESSO Halibut A 21A VIC/L 5	Gippsland	-38° 24' 20" 148° 19' 8"	RT 29.32 WD -72.5	07-Aug-99 11-Aug-99	2 743 691	Completed as an oil well.	DEV DEV
ESSO Turrum 7 VIC/L 4	Gippsland	-38° 15' 52" 148° 15' 49"	RT 26 WD -62	24-Aug-99 13-Sep-99	2 830 2 830	Plugged and abandoned, dry.	EXT EXT
ESSO West Kingfish W 13C VIC/L 7	Gippsland	-38° 35' 40" 148° 6' 15"	RT 38.9 WD -77	26-Apr-99 14-May-99	4 224 3 452	Completed as an oil well.	DEV DEV
ESSO West Kingfish W 16A VIC/L 7	Gippsland	-38° 35' 40" 148° 6' 15"	RT 38.9 WD -77	26-Mar-99 04-Apr-99	3 282 3 282	Completed as an oil producer.	DEV DEV
ESSO West Kingfish W 24A VIC/L7	Gippsland	-38° 35' 41" 148° 6' 15"	RT 38.9 WD -77	27-Feb-99 13-Mar-99	3 017 3 017	Completed as an oil producer.	DEV DEV
ESSO West Kingfish W 32A VIC/L 7	Gippsland	-38° 35' 40" 148° 6' 15"	RT 38.9 WD -77	11-Jun-99 25-Jun-99	4 527 3 022	Completed as an oil well.	DEV DEV
ESSO West Tuna W 12 VIC/L 4	Gippsland	-38° 10' 25" 148° 25' 3"	RT 38.9 WD -61.1	21-Dec-98 02-Jan-99	2 806 2 806	Completed as an oil producer.	DEV DEV
ESSO West Tuna W 18 VIC/L 9	Gippsland	-38° 11' 36" 148° 23' 14"	RT 38.9 WD -62.7	27-Jan-99 04-Mar-99	4 315 5 404	Completed as an oil producer.	DEV DEV
ESSO West Tuna W 24 VIC/L 9	Gippsland	-38° 10' 25" 148° 25' 3"	RT 38.9 WD -61.1	14-Jan-99 20-Jan-99	2 972 2 972	Completed as an oil well.	DEV DEV
ESSO West Tuna W 46 VIC/L 4	Gippsland	-38° 11' 37" 148° 23' 16"	RT 38.9 WD -61.1	23-Mar-99 02-Apr-99	2 961 2 961	Completed as an oil producer.	DEV DEV
ESSO West Tuna W 47 VIC/L 4	Gippsland	-38° 11' 37" 148° 23' 16"	RT 38.9 WD -61.1	11-Apr-99 16-Apr-99	2 127 2 127	Completed as an oil producer.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>VICTORIA</b>							
LAKES Baudin 1 (Lakes) PEP135	Gippsland	-37° 51' 41" 147° 52' 19"	RT 41.5 GL 40	28-Sep-99 01-Oct-99	426 426	Plugged and abandoned, dry.	NFW NFW
LAKES Investigator 1 (Lakes) PEP136	Gippsland	-37° 54' 50" 147° 36' 46"	RT 34.5 GL 33	06-Oct-99 10-Oct-99	697 697	Plugged and abandoned, dry.	NFW NFW
OCA North Paaratte 4 PPL1	Otway	-38° 33' 10" 142° 57' 14"	RT 98.4 GL 92.9	03-Apr-99 10-Apr-99	1 651 1 651	Cased and suspended as a future gas producer.	DEV DEV
OCA North Paaratte 5 PPL1	Otway	-38° 33' 10" 142° 57' 14"	RT 98.5 GL 93	22-Mar-99 28-Mar-99	1 603 1 603	Cased and suspended as future Waare Fm gas producer.	DEV DEV
OMV Baleen 2 VIC/RL 5	Gippsland	-38° 1' 30" 148° 24' 6"	RT 26 WD -55	11-Oct-99 22-Oct-99	925 925	Plugged and abandoned, dry.	EXT EXT

### METRES DRILLED - VICTORIA

Wells	Onshore	Offshore	Total
Exploration	2 801	4 981	7 782
Development	3 254	78 687	81 941
Total	6 055	83 668	89 723

## TASMANIA

GLOBAL Barramundi 1 T/27P	Bass	-39° 39' 42" 145° 45' 0"	RT 27 WD -70	23-Sep-99 03-Oct-99	2 100 2 100	Plugged and abandoned, dry.	NFW NFW
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### METRES DRILLED - TASMANIA

Wells	Onshore	Offshore	Total
Exploration	-	2 100	2 100
Development	-	-	-
Total	-	2 100	2 100

## SOUTH AUSTRALIA

BORAL Jacaranda Ridge 1 PEL32	Otway	-37° 20' 60" 140° 45' 9"	RT 61 GL 56.1	30-May-99 14-Jun-99	2 960 2 960	Cased and suspended as a future gas producer.	NFW NFD
BORAL Ladbroke Grove 3 PPL62	Otway	-37° 27' 56" 140° 46' 49"	RT 67.8 GL 62.9	02-Jul-99 19-Jul-99	2 690 2 690	Cased and suspended as a future gas producer.	EXT EXT
BORAL Penley 1 PEL32	Otway	-37° 12' 9" 140° 26' 47"	RT 45 GL 39	18-Apr-99 25-Apr-99	1 903 1 903	Plugged and abandoned, dry.	NFW NFW

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>SOUTH AUSTRALIA</b>							
BORAL Trihi 1 PEL66	Otway	-37° 33' 22" 140° 37' 34"	RT 67 GL 64.4	08-Jul-99 26-Jul-99	1 222 1 222	Plugged and abandoned, dry.	NFW NFW
SANTOS Big Lake 63 PPL11	Cooper/Eromanga	-28° 13' 30" 140° 17' 32"	RT 41 GL 33	14-Jun-99 08-Jul-99	2 970 2 970	Cased and suspended as a future Permian Patchawarra/Tirrawarra Sst's gas producer.	DEV DEV
SANTOS Cabernet 3 PEL 5,6	Cooper/Eromanga	-28° 30' 52" 140° 10' 53"	RT 43.2 GL 38	04-Jan-99 14-Jan-99	2 423 2 423	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Della 19 PPL15	Cooper/Eromanga	-28° 5' 44" 140° 39' 18"	RT 59 GL 53	06-Dec-99 23-Dec-99	2 085 2 085	Completed as a future Permian gas producer.	DEV DEV
SANTOS Dirkala 4 PPL39	Cooper/Eromanga	-28° 30' 44" 140° 2' 5"	RT 32 GL 26.1	07-Feb-99 16-Feb-99	2 109 2 109	Plugged and abandoned.	DEV DEV
SANTOS Doublejay 1 PEL 5,6	Cooper/Eromanga	-27° 51' 29" 139° 46' 4"	KB 30.7 GL 25.9	23-Jan-99 05-Feb-99	3 034 3 034	Plugged and abandoned, dry.	NFW NFW
SANTOS Dullingari 51 PPL12	Cooper/Eromanga	-28° 5' 44" 140° 52' 53"	RT 90.3 GL 84	05-Apr-99 17-Apr-99	2 828 2 828	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Jack Lake 3 PPL 6	Cooper/Eromanga	-27° 57' 6" 139° 48' 56"	RT 33.7 GL 28	17-Nov-99 01-Dec-99	3 099 3 099	Cased and suspended as a future gas producer.	EXT EXT
SANTOS Kerna 7 PPL71	Cooper/Eromanga	-28° 13' 46" 140° 58' 39"	RT 90 GL 82	12-Mar-99 26-Mar-99	2 699 2 699	Cased and suspended as a future gas producer.	DEV DEV
SANTOS Lujoel 1 PEL 5,6	Cooper/Eromanga	-27° 15' 3" 140° 13' 50"	RT 40 GL 30.7	10-Jan-99 04-Feb-99	2 848 2 848	Plugged and abandoned, dry.	NFW NFW
SANTOS Meranji 17 PPL35	Cooper/Eromanga	-27° 50' 53" 140° 4' 50"	RT 40.5 GL 35	01-Jan-99 14-Jan-99	3 045 3 045	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Meranji 18 PPL35	Cooper/Eromanga	-27° 50' 41" 140° 4' 25"	RT 46 GL 41	01-May-99 13-May-99	3 039 3 039	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Meranji East 1 PPL35	Cooper/Eromanga	-27° 51' 11" 140° 5' 56"	RT 40.5 GL 34.7	24-Oct-99 11-Nov-99	3 018 3 018	Cased and suspended as a future Permian gas producer.	EXT EXT
SANTOS Moolion East 1 PEL 5,6	Cooper/Eromanga	-27° 23' 13" 140° 16' 45"	RT 58.8 GL 50.8	18-Jan-99 04-Feb-99	3 237 3 237	Plugged and abandoned, dry.	NFW NFW
SANTOS Nephrite South 2 PPL140	Cooper/Eromanga	-27° 54' 32" 139° 52' 9"	RT 33.7 GL 28	10-Dec-99 25-Dec-99	3 131 3 131	Cased and suspended as a future Permian gas producer.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>SOUTH AUSTRALIA</b>							
SANTOS Pondrinie 15 PEL 5,6	Cooper/Eromanga	-27° 35' 31" 140° 36' 52"	RT 36 GL 90	24-Feb-99 19-Mar-99	2 856 2 856	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Pondrinie North 1 PPL90	Cooper/Eromanga	-27° 31' 32" 140° 41' 48"	RT 135 GL 129	15-Jul-99 29-Jul-99	2 417 2 417	Cased and suspended as a future Early Permian gas producer.	EXT EXT
SANTOS Raven 1 (Santos) PEL 5,6	Cooper/Eromanga	-28° 2' 47" 139° 43' 46"	RT 28.3 GL 23.4	29-Dec-98 13-Jan-99	2 987 2 987	Cased and suspended as a future Permian Patchawarra gas producer.	NFW NFD
SANTOS Swan Lake 4 PPL101	Cooper/Eromanga	-27° 51' 8" 140° 7' 34"	RT 40.8 GL 34	05-Aug-99 19-Aug-99	3 101 3 101	Cased and suspended as a future Permian gas producer.	EXT EXT
SANTOS Touriga 1 PEL 5,6	Cooper/Eromanga	-28° 28' 32" 140° 4' 1"	RT 30.4 GL 25.4	23-Jan-99 01-Feb-99	2 384 2 384	Cased and suspended as a future gas producer.	NFW NFD
SANTOS Trebiano 1 PEL 5,6	Cooper/Eromanga	-28° 31' 30" 140° 6' 12"	RT 29 GL 24	20-Jan-99 02-Feb-99	2 455 2 455	Plugged and abandoned, dry.	NFW NFW

### METRES DRILLED - SOUTH AUSTRALIA

Wells	Onshore	Offshore	Total
Exploration	37 355	-	37 355
Development	27 185	-	27 185
Total	64 540	-	64 540

## WESTERN AUSTRALIA

APACHE Bennet 1 TL/2	Carnarvon	-21° 13' 43" 115° 19' 29"	RT 32.1 WD -19	10-Mar-99 12-Mar-99	1 210 1 210	Plugged and abandoned, dry.	NFW NFW
APACHE Cadell 1 TP/7	Carnarvon	-21° 22' 53" 115° 12' 15"	RT* 29.3 WD -16	04-Nov-99 08-Nov-99	1 425 1 425	Plugged and abandoned.	NFW NFD
APACHE Chelonia 1 EP 342	Carnarvon	-21° 45' 36" 114° 16' 8"	RT* 29.3 WD -20	29-Jan-99 24-Feb-99	3 892 3 892	Plugged and abandoned, dry.	NFW NFW
APACHE Harriet B 5H TL/1	Carnarvon	-20° 34' 36" 115° 38' 10"	RT 42.3 WD -24.1	07-Aug-99 10-Sep-99	4 027 4 027	Completed as a future oil producer.	DEV DEV
APACHE Lee 1 TL/1	Carnarvon	-20° 34' 16" 115° 43' 29"	RT* 32.5 WD -31	03-Jan-99 25-Jan-99	2 977 2 977	Plugged and abandoned.	NFW NFD
APACHE Lee 2 TL/1	Carnarvon	-20° 33' 51" 115° 43' 44"	RT* 34 WD -33	11-Apr-99 22-Apr-99	2 817 2 817	Plugged and abandoned.	EXT EXT
APACHE Mistingette 1 EP 363	Carnarvon	-20° 36' 3" 115° 47' 6"	RT* 32 WD -30	22-Dec-99 30-Dec-99	2 352 2 352	Plugged and abandoned, dry.	NFW NFW



## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>WESTERN AUSTRALIA</b>							
APACHE Monty 1 TL/1	Carnarvon	-20° 36' 53" 115° 44' 35"	RT* 31 WD -27	29-Nov-99 07-Dec-99	2 492 2 492	Plugged and abandoned, dry, due to mechanical difficulties.	NFW NFW
APACHE Monty 2 TL/1	Carnarvon	-20° 36' 29" 115° 44' 35"	RT* 31.4 WD -31	09-Dec-99 23-Dec-99	2 767 2 767	Plugged and abandoned, dry.	EXT EXT
APACHE Narvik 1 TP/8	Carnarvon	-20° 50' 13" 115° 44' 10"	RT* 31.2 WD -17	23-Nov-99 28-Nov-99	820 820	Plugged and abandoned.	NFW NFD
APACHE Nasutus 1 TP/7	Carnarvon	-21° 19' 6" 115° 20' 15"	RT* 29 WD -14	12-Nov-99 18-Nov-99	750 750	Plugged and abandoned.	NFW NFD
APACHE North Gipsy 1 TL/1	Carnarvon	-20° 37' 50" 115° 43' 25"	RT* 31.7 WD -27	18-Oct-99 28-Oct-99	2 565 2 565	Cased and suspended as a future oil producer.	NFW NFD
APACHE North Harriet 1 TL/1	Carnarvon	-20° 33' 46" 115° 38' 39"	RT* 27.8 WD -25	28-Jun-99 02-Jul-99	2 010 2 010	Plugged and abandoned, dry.	NFW NFW
APACHE North Marra 1 TL/1	Carnarvon	-20° 35' 25" 115° 39' 1"	RT* 32 WD -27	05-Jul-99 08-Jul-99	2 070 2 070	Plugged and abandoned.	NFW NFD
APACHE Sage 1 WA-254-P	Carnarvon	-19° 54' 23" 116° 24' 48"	RT* 32.5 WD -65	17-Mar-99 25-Mar-99	2 271 2 271	Plugged and abandoned.	NFW NFD
APACHE Stag 16 WA-15-L	Carnarvon	-20° 16' 40" 116° 17' 39"	RT* 16.5 WD -49	04-Jun-99 07-Jun-99	850 850	Plugged and abandoned, dry.	EXT EXT
APACHE Stag 17H WA-15-L	Carnarvon	-20° 17' 4" 116° 16' 47"	RT* 33.4 WD -39	12-Jul-99 26-Jul-99	2 391 2 391	Completed as a horizontal water injector well.	DEV SRV
APACHE Stag 18H WA-15-L	Carnarvon	-20° 17' 4" 116° 16' 47"	RT* 33.4 WD -39	11-Jul-99 22-Jul-99	2 937 2 937	Completed as a horizontal water injector well.	DEV SRV
APACHE Stag 19H WA-15-L	Carnarvon	-20° 17' 11" 116° 16' 42"	RT* 53.6 WD -49	24-Nov-99 30-Nov-99	1 238 1 238	Completed as an oil well.	DEV DEV
APACHE Stag 20H WA-15-L	Carnarvon	-20° 17' 11" 116° 16' 42"	RT 53.8 WD -49	02-Dec-99 08-Dec-99	2 016 2 016	Completed as an oil producer.	DEV DEV
APACHE Windsor 1 TL/5	Carnarvon	-20° 28' 3" 115° 41' 3"	RT* 31.2 WD -26	02-Mar-99 07-Mar-99	2 128 2 128	Plugged and abandoned, dry.	NFW NFW
ARC ENERGY Dongara 29 L2	Perth	-29° 15' 14" 115° 1' 23"	RT* 57 GL 51	19-Dec-99 -	- -	Drilling ahead	DEV -
ARC ENERGY Hakia 1 L2	Perth	-29° 13' 29" 115° 5' 50"	RT 61 GL 53	20-Nov-99 06-Dec-99	2 763 2 763	Plugged and abandoned.	NFW NFD

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>WESTERN AUSTRALIA</b>							
ARC ENERGY Illyarrie 1 L.2	Perth	-29° 13' 51" 115° 2' 43"	RT 48 GL 41.8	18-Oct-99 08-Nov-99	2 608 2 608	Plugged and abandoned, dry.	NFW NFW
BHP Antiope 1 WA-290-P	Carnarvon	-20° 50' 50" 114° 43' 39"	RT* 26 WD -226	22-Dec-99 -	- -	Drilling ahead	NFW -
BHP Buffalo 3 WA-260-P	Bonaparte	-10° 40' 14" 126° 6' 47"	RT* 28 WD -29	25-Jun-99 19-Jul-99	3 750 3 750	Completed as an oil well.	DEV DEV
BHP Buffalo 4 WA-260-P	Bonaparte	-10° 40' 6" 126° 5' 33"	RT* 28 WD -29	01-Jul-99 01-Aug-99	3 845 3 845	Plugged and abandoned, dry.	DEV DEV
BHP Buffalo 5 WA-260-P	Bonaparte	-10° 40' 21" 126° 5' 54"	RT* 28 WD -29	02-Jul-99 14-Aug-99	3 477 3 477	Completed as an oil well.	DEV DEV
BHP Franklin 1 WA-260-P	Bonaparte	-11° 23' 30" 126° 19' 38"	RT 25 WD -80	31-Jan-99 07-Feb-99	1 650 1 650	Plugged and abandoned, dry.	NFW NFW
BHP Heifer 1 WA-260-P	Bonaparte	-11° 12' 4" 126° 24' 37"	RT 25 WD -79.5	05-Jan-99 24-Jan-99	3 840 3 840	Plugged and abandoned, dry.	NFW NFW
BORAL Tubridgi 17 L.9	Carnarvon	-21° 46' 20" 114° 51' 20"	RT 6 GL 1.6	19-Aug-99 24-Aug-99	566 566	Cased and suspended as a future gas producer.	DEV DEV
BORAL Tubridgi 18 L.9	Carnarvon	-21° 47' 23" 114° 51' 9"	RT 6.1 GL 1.7	10-Aug-99 15-Aug-99	566 566	Completed as a gas producer.	DEV DEV
BRITISH BORNEO Woollybutt 3 WA-234-P	Carnarvon	-20° 58' 2" 114° 52' 24"	RT 25 WD -105	04-Nov-99 08-Nov-99	585 585	Plugged and abandoned, dry.	EXT EXT
BRITISH BORNEO Woollybutt 3A WA-234-P	Carnarvon	-20° 58' 2" 114° 52' 24"	RT 25 WD -105	09-Nov-99 03-Dec-99	2 952 2 952	Plugged and suspended as a future oil producer.	EXT EXT
MOBIL Moon 1 (Mobil) WA-214-P	Carnarvon	-20° 22' 11" 115° 11' 8"	RT 28.53 WD -64	19-Sep-99 04-Oct-99	3 035 3 035	Plugged and abandoned, dry.	NFW NFW
MOBIL Tea Tree 1 WA-210-P	Carnarvon	-21° 13' 30" 114° 52' 6"	RT 25 WD -99	04-Feb-99 15-Feb-99	2 150 2 150	Plugged and abandoned, dry.	NFW NFW
PHOENIX Woodada 16 L.5	Perth	-29° 50' 57" 115° 9' 6"	RT 49.5 GL 44.5	09-May-99 31-Aug-99	2 314 2 314	Originally reported completing as a gas well at TD 2232m (08-JUN-99).	DEV DEV
SHELL Capsule 1 WA-266-P	Browse	-13° 39' 25" 124° 30' 17"	RT* 25 WD -83	06-Mar-99 11-Mar-99	1 089 1 201	Plugged and abandoned, dry.	NFW NFW
SHELL Cilia 1 WA-266-P	Browse	-13° 38' 47" 125° 4' 24"	RT* 25 WD -85	21-Feb-99 24-Feb-99	498 498	Plugged and abandoned, dry.	NFW NFW

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>WESTERN AUSTRALIA</b>							
SHELL	Browse	-13° 40' 17"	RT* 25	26-Feb-99	463	Plugged and abandoned, dry.	NFW
Cortex 1		124° 47' 22"	WD -89	01-Mar-99	463		NFW
WA-266-P							
SHELL	Bonaparte	-13° 21' 13"	RT* 25	14-Feb-99	611	Plugged and abandoned, dry.	NFW
Retina 1		125° 11' 49"	WD -100	18-Feb-99	611		NFW
WA-265-P							
SHELL	Browse	-13° 46' 51"	RT* 25	03-Mar-99	674	Plugged and abandoned, dry.	NFW
Stroma 1		124° 33' 40"	WD -77	05-Mar-99	674		NFW
WA-266-P							
WAPET	Carnarvon	-20° 41' 58"	RT 10.6	16-Nov-99	2 107	Cased and suspended as a future oil producer.	DEV
Barrow Island Z 56MA		115° 25' 14"	GL 6.36	02-Dec-99	2 107		DEV
L 1H							
WAPET	Carnarvon	-21° 39' 30"	RT 29.2	22-Dec-99	1 112	Plugged and abandoned.	NFW
Coaster 1		114° 51' 24"	WD -10	30-Dec-99	1 112		NFD
TL/7							
WAPET	Carnarvon	-21° 31' 25"	RT 32	25-Apr-99	2 030	Cased and suspended as a future oil producer.	DEV
Cowle 4		114° 58' 6"	WD -12	12-May-99	1 600		DEV
TL/4							
WAPET	Carnarvon	-20° 39' 2"	RT* 28.3	24-Jul-99	3 297	Plugged and abandoned, dry.	NFW
Euryale 1 (WAPET)		114° 36' 55"	WD -700	18-Aug-99	3 297		NFW
WA-205-P							
WAPET	Carnarvon	-19° 55' 18"	RT 28.3	31-Aug-99	3 543	Plugged and abandoned.	NFW
Geryon 1		114° 52' 57"	WD -1231.2	15-Sep-99	3 543		NFD
WA-267-P							
WAPET	Carnarvon	-20° 6' 36"	RT 28.3	01-Oct-99	3 570	Plugged and abandoned.	NFW
Orthrus 1		114° 41' 57"	WD -1203	15-Oct-99	3 570		NFD
WA-267-P							
WAPET	Carnarvon	-21° 27' 53"	RT 18	19-Oct-99	2 229	Cased and suspended as a future oil producer.	DEV
Saladin 18		115° 1' 4"	GL 14	04-Nov-99	2 229		DEV
TL/4							
WAPET	Carnarvon	-21° 27' 53"	RT 18.2	23-Sep-99	2 650	Cased and suspended as a future Barrow Group oil producer.	DEV
Saladin 19		115° 1' 4"	GL 14	19-Oct-99	2 650		DEV
TL/4							
WAPET	Carnarvon	-21° 26' 30"	RT 36	11-Apr-99	2 332	Cased and suspended as a future Mardie Greensand Mbr oil producer.	DEV
Saladin 22		115° 3' 10"	WD -12	21-Apr-99	2 332		DEV
TL/4							
WAPET	Carnarvon	-21° 27' 53"	RT 18.2	04-Sep-99	2 145	Cased and suspended as a future oil producer.	DEV
Saladin 24		115° 1' 4"	GL 14	17-Sep-99	2 145		DEV
TL/4							
WAPET	Carnarvon	-21° 25' 37"	RT 33.5	31-Dec-99	-	Drilling ahead	NFW
Saracen 1		115° 4' 32"	WD -14	-	-		-
TP/3							
WOODSIDE	Carnarvon	-21° 29' 30"	RT 31	11-Jun-99	2 030	Plugged and abandoned, dry.	NFW
Batavus 1		114° 3' 36"	WD -267	19-Jun-99	2 030		NFW
WA-271-P							

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>WESTERN AUSTRALIA</b>							
WOODSIDE Enfield 1 WA-271-P	Carnarvon	-21° 29' 17" 113° 58' 39"	RT* 30.5 WD -544	16-Mar-99 05-Apr-99	2 192 2 192	Plugged and abandoned.	NFW NFD
WOODSIDE Enfield 2 WA-271-P	Carnarvon	-21° 27' 40" 113° 59' 12"	RT* 30.5 WD -518	25-Jun-99 10-Jul-99	2 395 2 395	Plugged and abandoned, dry.	EXT EXT
WOODSIDE Ermine 1 WA-270-P	Carnarvon	-18° 41' 41" 116° 48' 42"	RT* 30.5 WD -526	06-May-99 17-May-99	2 710 2 710	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Glatton 1 WA-269-P	Carnarvon	-19° 2' 23" 116° 2' 25"	RT 25.3 WD -360	21-Oct-99 28-Oct-99	2 985 2 985	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Goodwyn A 14 WA-5-L	Carnarvon	-19° 39' 35" 115° 52' 53"	RT 53 WD -131	27-Oct-98 04-Feb-99	7 713 9 783	Completed as a water injector.	DEV SRV
WOODSIDE Goodwyn A 15 WA-5-L	Carnarvon	-19° 39' 35" 115° 52' 53"	RT 54.7 WD -130.1	31-Oct-98 12-May-99	6 884 6 884	Plugged and abandoned.	DEV SRV
WOODSIDE Goodwyn A 16 WA-5-L	Carnarvon	-19° 39' 53" 115° 52' 52"	RT 54.7 WD -130.1	04-Jun-99 07-Jul-99	6 146 6 146	Completed as a gas and condensate well.	DEV DEV
WOODSIDE Goodwyn A 17 WA-5-L	Carnarvon	-19° 41' 1" 115° 53' 32"	RT 54.7 WD -130.1	21-Jul-99 13-Aug-99	6 263 5 751	Completed as a gas well.	DEV DEV
WOODSIDE Hyacinthus 1 WA-1-P	Carnarvon	-19° 52' 19" 116° 27' 9"	RT 26.6 WD -67	18-Jun-99 23-Jun-99	2 392 2 392	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Polaris 1 WA-1-P	Carnarvon	-19° 33' 45" 116° 51' 31"	RT 28.5 WD -76.5	09-Jun-99 15-Jun-99	2 340 2 340	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Serval 1 WA-270-P	Carnarvon	-19° 9' 15" 116° 44' 47"	RT 22 WD -219.5	17-Jan-99 08-Feb-99	3 210 3 210	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Vincent 2 WA-271-P	Carnarvon	-21° 26' 15" 114° 2' 46"	RT* 30.5 WD -364	26-May-99 05-Jun-99	1 490 1 490	Plugged and abandoned, dry.	EXT EXT
WOODSIDE Webley 1A WA-245-P	Carnarvon	-20° 0' 18" 115° 38' 7"	RT 25 WD -80.3	27-Dec-98 18-Jan-99	3 108 3 108	Plugged and abandoned, dry.	NFW NFW

### METRES DRILLED - WESTERN AUSTRALIA

Wells	Onshore	Offshore	Total
Exploration	5 371	87 429	92 800
Development	12 577	56 177	68 754
Total	17 948	143 606	161 554

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>NORTHERN TERRITORY</b>							
NIPPON Circinus 1 AC/P23	Bonaparte	-12° 54' 45" 124° 23' 24"	RT 22 WD -169	12-May-99 09-Jun-99	4 206 4 281	Plugged and abandoned, dry.	NFW NFW
NIPPON Columba 1 AC/P23	Bonaparte	-12° 59' 24" 124° 11' 21"	RT 22 WD -200	20-Feb-99 02-Mar-99	1 550 2 117	Plugged and abandoned, dry.	NFW NFW
NIPPON Columba 1A AC/P23	Bonaparte	-12° 59' 27" 124° 11' 14"	RT 22 WD -200	09-Mar-99 26-Apr-99	4 115 4 304	Plugged and abandoned, dry.	NFW NFW
SANTOS West Mereenie 14 OL4	Amadeus	-23° 58' 25" 131° 30' 43"	RT 775.8 GL 770	30-Apr-99 28-May-99	1 395 1 395	Cased and suspended as a future gas producer.	DEV DEV
SANTOS West Mereenie 15 OL4	Amadeus	-23° 57' 36" 131° 26' 32"	RT* 775.8 GL 770	09-Jun-99 24-Jun-99	1 445 1 445	Cased and suspended as a future gas producer.	DEV DEV
WOODSIDE Laminaria 6 AC/L5	Bonaparte	-10° 37' 35" 126° 1' 40"	RT 30.5 WD -361.5	23-Jan-99 09-Feb-99	3 566 3 066	Completed as a future oil producer.	DEV DEV
WOODSIDE Marrakai 1 AC/P16	Bonaparte	-11° 15' 48" 125° 40' 60"	RT 22 WD -104	07-Jul-99 12-Jul-99	1 880 1 880	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Mindil 1 AC/P16	Bonaparte	-10° 57' 48" 125° 41' 21"	RT 22 WD -318	19-Jun-99 01-Jul-99	3 235 3 235	Plugged and abandoned, dry.	NFW NFW

### METRES DRILLED - NORTHERN TERRITORY

Wells	Onshore	Offshore	Total
Exploration	-	15 817	15 817
Development	2 840	3 066	5 906
Total	2 840	18 883	21 723

### JOINT PETROLEUM DEVELOPMENT AREA

WOODSIDE Jura 1 ZOCA 95-19	Bonaparte	-9° 49' 48" 127° 37' 36"	RT 22 WD -361	17-Jul-99 01-Aug-99	2 598 2 678	Plugged and abandoned, dry.	NFW NFW
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### METRES DRILLED - JPDA

Wells	Onshore	Offshore	Total
Exploration	-	2 678	2 678
Development	-	-	-
Total	-	2 678	2 678

**APPENDIX A (cont'd)**

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
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\* Assumed reference point

Abbreviations (Amercian Petroleum Institute standard definitions for petroleum statistics)

DEV	Development	NFW	New-field wildcat
DF	Drill floor	NPD	New-pool discovery
DRY	Not completed	RT	Rotary table
EXT	Extension	STR	Stratigraphic
GL	Ground level	TD	Total depth
KB	Kelly bushing	WD	Water depth
NFD	New-field discovery		

## APPENDIX A: WELLS DRILLED FOR EXPLORATION, DEVELOPMENT AND PRODUCTION BY STATE, 2000

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>QUEENSLAND</b>							
FAULCONER Vernon West 1 ATP543P	Eromanga	-26° 47' 2" 142° 41' 59"	RT 173.9 GL 169	06-Apr-00 22-Apr-00	2 313 2 313	Plugged and abandoned.	NFW NFW
IOR Canterbury 1 ATP548P	Cooper/Eromanga	-25° 19' 41" 141° 58' 58"	RT 618 GL 603	08-May-00 23-May-00	2 285 2 285	Plugged and abandoned, dry.	NFW NFW
IOR Taipan 1 ATP548P	Cooper/Eromanga	-25° 27' 15" 141° 45' 10"	RT 167 GL 163	29-May-00 10-Jun-00	2 161 2 161	Plugged and abandoned, dry.	NFW NFW
MOSAIC Pembroke 2 ATP212P	Surat	-27° 17' 30" 148° 41' 23"	RT 250 GL 247	12-Dec-00 21-Dec-00	1 518 1 518	Plugged and abandoned, dry.	NFW NFW
OCA Bodalla South 13 PL31	Cooper/Eromanga	-26° 27' 5" 143° 25' 18"	RT 154.6 GL 150	25-Oct-00 02-Nov-00	1 681 1 681	Cased and suspended as a future oil producer.	DEV DEV
OCA Gum Hole 1 ATP269P	Cooper/Eromanga	-26° 22' 20" 142° 59' 29"	RT 185 GL 180	19-Jan-00 28-Jan-00	2 347 2 347	Plugged and abandoned, dry.	NFW NFW
OCA Inland 9 PL98	Cooper/Eromanga	-25° 32' 37" 141° 38' 25"	RT* 161 GL 155	06-Apr-00 30-Apr-00	2 054 2 054	Completed as an oil well.	DEV DEV
OCA Kenmore 16 DW 1 PL32	Cooper/Eromanga	-26° 39' 43" 143° 26' 7"	RT 163.4 GL 168.4	29-Dec-99 05-Jan-00	1 716 1 716	Cased and suspended as a future oil producer.	DEV DEV
OCA Kenmore 16 DW 2 PL32	Cooper/Eromanga	-26° 39' 43" 143° 26' 7"	RT 163.4 GL 168.4	06-Jan-00 12-Jan-00	1 850 1 850	Completed as a future oil producer.	DEV DEV
OCA Kenmore 23 PL32	Cooper/Eromanga	-26° 39' 8" 143° 26' 12"	RT 174.4 GL 169.8	19-Nov-00 24-Nov-00	1 572 1 572	Cased and suspended as a future Jurassic oil producer.	DEV DEV
OCA Kenmore 24 PL32	Cooper/Eromanga	-26° 38' 51" 143° 25' 54"	RT 185.3 GL 180.7	07-Nov-00 11-Nov-00	1 452 1 452	Cased and suspended as a future oil producer.	DEV DEV
OCA Kenmore 26 PL32	Cooper/Eromanga	-26° 39' 52" 143° 25' 48"	RT 167.1 GL 162.5	03-Dec-00 09-Dec-00	1 580 1 580	Cased and completed as a future oil producer.	DEV DEV
OCA Maintop 2 ATP337P	Bowen/Surat	-25° 40' 27" 148° 22' 30"	RT 483 GL 478	09-Aug-00 25-Aug-00	2 122 2 122	Plugged and abandoned.	EXT EXT
OCA Merivale 9 PL44	Bowen	-25° 33' 3" 148° 20' 0"	RT 558.3 GL 553.7	24-Jun-00 07-Jul-00	1 569 1 569	Completed as a gas producer.	EXT EXT
OCA Merivale 10 PL44	Bowen	-25° 33' 38" 148° 20' 14"	RT 558.8 GL 554.2	10-Jul-00 02-Aug-00	2 300 2 300	Cased and suspended as a future gas producer from the Early Permian Reids Dome Beds.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>QUEENSLAND</b>							
OCA New Royal 5 PL22	Surat	-27° 5' 15" 148° 52' 35"	RT 271.1 GL 266.5	18-May-00 24-May-00	1 547 1 547	Cased and suspended as a future oil producer.	DEV DEV
OCA New Royal 7 PL22	Surat	-27° 6' 20" 148° 52' 27"	RT 271.2 GL 266.1	31-May-00 04-Jun-00	1 545 1 545	Cased and suspended as a future oil producer.	DEV DEV
OCA Rolleston 17 PL42	Bowen	-24° 32' 31" 148° 36' 56"	RT 214.6 GL 210	31-Aug-00 11-Sep-00	1 351 1 351	Completed as a gas producer.	DEV DEV
OCA Rolleston 18 PL42	Cooper/Eromanga	-24° 32' 30" 148° 37' 40"	RT 214.6 GL 210	18-Sep-00 25-Sep-00	1 030 1 030	Cased and suspended as a future gas producer.	DEV DEV
OCA Yandina 4 ATP337P	Bowen	-24° 11' 36" 148° 30' 38"	RT 206.3 GL 202	30-Sep-00 15-Oct-00	1 461 1 461	Completed as a gas producer.	EXT EXT
SANTOS Barrollka 4 PL112	Cooper/Eromanga	-26° 53' 18" 141° 42' 12"	RT 106.6 GL 101	23-Sep-00 23-Oct-00	2 611 2 870	Cased and suspended as a future gas producer.	DEV DEV
SANTOS Barrollka 5 PL112	Cooper/Eromanga	-26° 54' 42" 141° 42' 41"	RT 117 GL 109	02-Nov-00 -	- -	Drilling ahead	DEV —
SANTOS Baryulah 3 ATP259P	Cooper/Eromanga	-27° 44' 49" 141° 50' 36"	RT 73.5 GL 68	18-Oct-00 07-Nov-00	2 634 2 634	Cased and suspended as a future Permian gas producer.	EXT EXT
SANTOS Challum 16 PL59	Cooper/Eromanga	-27° 24' 4" 141° 36' 59"	RT 89.1 GL 76	22-Mar-00 24-Apr-00	3 127 3 127	Cased and suspended as a future gas producer.	DEV DEV
SANTOS Challum 16 DW1 PL59	Cooper/Eromanga	-27° 24' 4" 141° 36' 59"	RT 89.1 GL 76	27-Apr-00 30-Apr-00	2 935 317	Completed as a gas producer.	DEV DEV
SANTOS Challum 17 PL59	Cooper/Eromanga	-27° 24' 29" 141° 37' 49"	RT 84 GL 76.3	16-Jul-00 14-Aug-00	3 052 402	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Challum 17 DW1 PL59	Cooper/Eromanga	-27° 24' 29" 141° 37' 49"	RT 84 GL 76.3	14-Aug-00 19-Aug-00	3 017 321	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Challum 18 PL59	Cooper/Eromanga	-27° 23' 9" 141° 34' 52"	RT 87 GL 79	22-May-00 06-Jul-00	2 847 2 942	Completed as a Permian gas producer.	DEV DEV
SANTOS Coonaberry 1 ATP259P	Cooper/Eromanga	-26° 51' 9" 142° 6' 10"	RT 95 GL 87	11-Dec-00 -	- -	Drilling ahead	NFW —
SANTOS Kananda 1 ATP259P	Cooper/Eromanga	-27° 9' 11" 141° 49' 12"	RT 104 GL 98.4	29-Aug-00 13-Sep-00	2 866 2 866	Plugged and abandoned, dry.	NFW NFW
SANTOS Ramses 1 ATP259P	Cooper/Eromanga	-26° 45' 56" 142° 6' 4"	RT* 99 GL 91.1	03-Nov-00 02-Dec-00	2 991 2 991	Cased and suspended as a future Permian gas producer.	NFW NFD



## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>QUEENSLAND</b>							
SANTOS Roti West 1 ATP259P	Cooper/Eromanga	-27° 22' 6" 142° 8' 31"	RT 86 GL 81	03-Aug-00 26-Aug-00	2 545 2 545	Cased and suspended as a future Permian gas producer.	NFW NFD
SANTOS Sarah 1 ATP259P	Cooper/Eromanga	-28° 9' 37" 141° 2' 28"	RT 98 GL 92.6	23-Aug-00 09-Sep-00	2 480 2 480	Plugged and abandoned, dry.	NFW NFW
SANTOS Stokes 7 PL84	Cooper/Eromanga	-28° 20' 16" 141° 3' 35"	RT 106.4 GL 98.4	29-Jun-00 11-Jul-00	2 609 2 609	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Stokes 8 PL84	Cooper/Eromanga	-28° 19' 46" 141° 1' 20"	RT 97 GL 91.4	18-Jul-00 27-Jul-00	2 519 2 519	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Stokes 9 PL84	Cooper/Eromanga	-28° 21' 12" 141° 1' 40"	RT* 89 GL 83.3	05-Aug-00 12-Aug-00	2 530 2 530	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Wackett 11 ATP259P	Cooper/Eromanga	-27° 29' 23" 141° 58' 5"	RT 76.9 GL 71.9	20-Sep-00 29-Sep-00	1 938 1 938	Plugged and abandoned.	DEV DEV
SANTOS Wackett Southeast 1 PL25	Cooper/Eromanga	-27° 35' 47" 142° 0' 23"	RT 75 GL 70.1	07-Oct-00 19-Oct-00	2 591 2 591	Plugged and abandoned.	EXT EXT
SANTOS Warnie 1 ATP259P	Cooper/Eromanga	-28° 9' 39" 141° 2' 31"	RT 97.3 GL 92.2	18-Sep-00 08-Oct-00	2 792 2 792	Plugged and abandoned, dry.	NFW NFW
SANTOS Windigo 2 ATP259P	Cooper/Eromanga	-27° 23' 5" 142° 6' 6"	RT 82.7 GL 77.7	30-Aug-00 14-Sep-00	2 650 2 650	Plugged and abandoned, dry.	EXT EXT
SANTOS Winninia North 2 ATP259P	Cooper/Eromanga	-27° 49' 45" 141° 53' 32"	RT 71 GL 66	16-Nov-00 10-Dec-00	2 478 2 478	Cased and suspended as a future Permian gas producer after conducting tests.	EXT EXT
SANTOS Wippo East 1 ATP259P	Cooper/Eromanga	-27° 17' 42" 142° 7' 13"	RT 85 GL 78.9	10-Jul-00 25-Jul-00	2 602 2 602	Cased and suspended as a future Permian gas producer.	NFW NFD
SANTOS Wippo East 2 ATP259P	Cooper/Eromanga	-27° 16' 15" 142° 7' 46"	RT 84 GL 79	17-Dec-00 -	- -	Drilling ahead	NFW -

### METRES DRILLED - QUEENSLAND

Wells	Onshore	Offshore	Total
Exploration	42 405	-	42 405
Development	39 253	-	39 253
Total	81 658	-	81 658

### NEW SOUTH WALES

AMADEUS Glenmore 1 (Amadeus) PEL 2	Sydney	-34° 5' 5" 150° 35' 20"	KB 221.5 GL 200	24-Feb-00 16-Mar-00	575 575	Plugged and abandoned, dry.	NFW NFW
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## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
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### NEW SOUTH WALES

#### METRES DRILLED - NEW SOUTH WALES

Wells	Onshore	Offshore	Total
Exploration	575	-	575
Development	-	-	-
Total	575	-	575

### VICTORIA

ESSO Bream A 2A VIC/L13	Gippsland	-38° 30' 5" 147° 46' 16"	RT 32.8 WD -60	29-Mar-00 03-Apr-00	2 467 1 487	Completed as an oil producer.	DEV DEV
ESSO Bream A 13A VIC/L13	Gippsland	-38° 30' 5" 147° 46' 16"	RT 33.5 WD -60	25-Apr-00 30-Apr-00	2 688 1 390	Completed as an oil producer.	DEV DEV
ESSO Bream A 21A VIC/L13	Gippsland	-38° 30' 5" 147° 46' 16"	RT 32.8 WD -60	01-Jun-00 05-Jun-00	2 860 1 799	Completed as an oil producer.	DEV DEV
ESSO Halibut A 20A VIC/L 5	Gippsland	-38° 24' 22" 148° 19' 17"	RT 29.3 WD -72.5	14-Jan-00 02-Feb-00	2 786 2 250	Completed as an oil producer.	DEV DEV
ESSO Tuna A 17A VIC/L 9	Gippsland	-38° 10' 16" 148° 25' 6"	RT 32.9 WD -59.4	08-Nov-00 05-Dec-00	3 428 2 709	Completed as an oil producer.	DEV DEV
LAKES North Seaspray 3 PEP137	Gippsland	-38° 17' 35" 147° 12' 17"	RT 26 GL 24	28-May-00 19-Jun-00	1 170 1 170	Temporarily suspended with non-commercial gas shows.	EXT EXT
LAKES Trifon 1 PEP137	Gippsland	-38° 18' 0" 147° 10' 60"	RT 30 GL 25	05-Dec-00 28-Dec-00	2 570 2 570	Plugged and abandoned with non-commercial gas shows.	NFW NFD
SANTOS Penryn 1 PEP108	Otway	-38° 31' 39" 142° 57' 27"	RT 115.5 GL 110	08-Jan-00 19-Jan-00	1 823 1 823	Cased and suspended as a future gas producer.	NFW NFD

#### METRES DRILLED - VICTORIA

Wells	Onshore	Offshore	Total
Exploration	5 563	-	5 563
Development	-	9 635	9 635
Total	5 563	9 635	15 198

### SOUTH AUSTRALIA

LAKES Porthos 1 PEL62	Otway	-37° 11' 11" 140° 39' 40"	RT 52.3 GL 51	20-Apr-00 05-May-00	861 861	Plugged and abandoned, dry, due to failure of logging below 730m.	NFW NFW
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## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>SOUTH AUSTRALIA</b>							
SANTOS Barina 4 PPL84	Cooper/Eromanga	-28° 18' 32" 139° 55' 11"	RT 34.8 GL 30	02-Jan-00 11-Jan-00	2 297 2 297	Cased and suspended as a future gas producer.	DEV DEV
SANTOS Barina 5 PPL84	Cooper/Eromanga	-28° 18' 27" 139° 54' 15"	RT 30 GL 25	16-Jan-00 25-Jan-00	2 286 2 286	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Beckler 2 PPL97	Cooper/Eromanga	-28° 3' 21" 140° 57' 13"	RT 89 GL 93	31-Mar-00 15-Apr-00	2 975 2 975	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Beckler 3 PPL96	Cooper/Eromanga	-28° 2' 36" 140° 57' 41"	RT 89 GL 84	21-Oct-00 04-Nov-00	3 051 3 051	Cased and suspended as a future Permian gas well.	DEV DEV
SANTOS Big Lake 64 PPL11	Cooper/Eromanga	-28° 13' 44" 140° 18' 16"	RT 39 GL 33.5	06-Jan-00 28-Jan-00	3 102 3 102	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Big Lake 65 PPL11	Cooper/Eromanga	-28° 13' 27" 140° 18' 0"	RT 16.3 GL 33.5	12-Sep-00 05-Oct-00	3 029 3 029	Cased and suspended and a future Permian gas producer.	DEV DEV
SANTOS Big Lake 66 PPL11	Cooper/Eromanga	-28° 12' 50" 140° 19' 36"	RT 39.6 GL 33.5	11-Oct-00 07-Nov-00	3 039 3 039	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Big Lake 67 PPL11	Cooper/Eromanga	-28° 12' 18" 140° 18' 45"	RT 39 GL 33.5	18-Aug-00 01-Sep-00	2 966 2 966	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Bow 1 PPL141	Cooper/Eromanga	-28° 1' 5" 140° 58' 27"	RT 88.5 GL 83.6	07-Nov-00 22-Nov-00	3 054 3 054	Cased and suspended as a future Permian gas producer.	NFW NFD
SANTOS Burke East 1 PPL12	Cooper/Eromanga	-28° 7' 55" 140° 58' 41"	RT 87 GL 81	01-Oct-00 13-Oct-00	2 651 2 651	Cased and suspended as a future Permian gas producer.	NFW NFD
SANTOS Cuttapirrie 6 PPL136	Cooper/Eromanga	-27° 14' 51" 140° 19' 6"	RT* 44.6 GL 39.6	03-Feb-00 20-Feb-00	2 957 2 957	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Cuttapirrie 7 PPL26	Cooper/Eromanga	-27° 14' 49" 140° 21' 37"	RT 36 GL 31	27-Mar-00 10-Apr-00	2 957 2 957	Plugged and abandoned, dry.	DEV DEV
SANTOS Della 20 PPL15	Cooper/Eromanga	-28° 6' 28" 140° 37' 36"	RT 56 GL 50.2	23-Apr-00 11-May-00	2 019 2 019	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Della 21 PPL15	Cooper/Eromanga	-28° 6' 28" 140° 37' 14"	RT 62.1 GL 56	30-May-00 07-Jun-00	2 012 2 012	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Della 22 PPL15	Cooper/Eromanga	-28° 6' 5" 140° 39' 30"	RT 60.5 GL 54.8	16-May-00 25-May-00	2 108 2 108	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Gooranie 4 PPL20	Cooper/Eromanga	-27° 43' 38" 140° 4' 42"	RT 37 GL 32	15-Dec-00 27-Dec-00	3 088 3 088	Cased and suspended as a future Permian gas producer.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>SOUTH AUSTRALIA</b>							
SANTOS Meranji 19 PPL35	Cooper/Eromanga	-27° 51' 22" 140° 5' 32"	RT 40.9 GL 35.2	20-Feb-00 03-Mar-00	2 984 2 984	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Meranji 20 PPL35	Cooper/Eromanga	-27° 50' 35" 140° 5' 4"	RT* 40.5 GL 34.7	13-Jul-00 25-Jul-00	2 881 2 881	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Meranji 21 PPL35	Cooper/Eromanga	-27° 50' 58" 140° 5' 19"	RT 46.6 GL 41	10-Mar-00 23-Mar-00	2 993 2 993	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Meranji 22 PPL35	Cooper/Eromanga	-27° 51' 8" 140° 4' 36"	RT 50.1 GL 45.2	30-Jul-00 15-Aug-00	3 021 3 021	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Meranji 23 PPL35	Cooper/Eromanga	-27° 50' 29" 140° 4' 12"	NA -	20-Aug-00 01-Sep-00	2 997 2 997	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Merrimelia 39 PPL17	Cooper/Eromanga	-27° 45' 40" 140° 9' 40"	RT 51.9 GL 46.9	08-Sep-00 18-Sep-00	2 464 2 464	Cased and suspended as a future gas producer.	DEV DEV
SANTOS Merrimelia 40 PPL17	Cooper/Eromanga	-27° 45' 46" 140° 8' 28"	RT 39.7 GL 34	22-Sep-00 03-Oct-00	2 423 2 423	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Merrimelia 41 PPL17	Cooper/Eromanga	-27° 44' 17" 140° 9' 45"	RT 39.7 GL 34	14-Oct-00 30-Oct-00	2 463 2 463	Cased and suspended as a future Jurassic gas/condensate producer.	DEV DEV
SANTOS Milluna 2 PPL139	Cooper/Eromanga	-28° 20' 41" 140° 27' 22"	RT 39.4 GL 34.4	17-Sep-00 25-Sep-00	2 310 2 310	Cased and suspended as a future Permian gas producer.	EXT EXT
SANTOS Milluna 3 PPL139	Cooper/Eromanga	-28° 20' 26" 140° 28' 5"	RT 39.4 GL 41.1	03-Dec-00 13-Dec-00	2 375 2 375	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 104 PPL8	Cooper/Eromanga	-28° 10' 13" 140° 11' 22"	RT 37 GL 32	06-Feb-00 13-Feb-00	2 161 2 161	Cased and suspended as a future Jurassic oil producer.	EXT NPD
SANTOS Moomba 105 PPL7	Cooper/Eromanga	-28° 2' 30" 140° 11' 56"	RT 41.7 GL 35.9	01-Jan-00 14-Jan-00	3 028 3 028	Cased and suspended as a future gas producer.	DEV DEV
SANTOS Moomba 106 PPL7	Cooper/Eromanga	-28° 3' 21" 140° 10' 39"	RT 34 GL 29	26-Jan-00 17-Feb-00	3 039 3 039	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 107 PPL7	Cooper/Eromanga	-28° 3' 3" 140° 10' 5"	RT 35.6 GL 29	11-Jun-00 23-Jun-00	2 643 2 643	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 108 PPL7	Cooper/Eromanga	-28° 3' 55" 140° 10' 41"	RT 41.5 GL 36.5	23-Feb-00 03-Mar-00	2 622 2 622	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 109 PPL7	Cooper/Eromanga	-28° 4' 32" 140° 10' 43"	RT 51.8 GL 46.5	11-Mar-00 23-Mar-00	2 641 2 641	Cased and suspended as a future Permian gas producer.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>SOUTH AUSTRALIA</b>							
SANTOS Moomba 110 PPL 7	Cooper/Eromanga	-28° 3' 37" 140° 11' 17"	RT 34.7 GL 28.9	26-May-00 06-Jun-00	2 602 2 602	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 111 PPL7	Cooper/Eromanga	-28° 2' 39" 140° 9' 34"	RT 37.3 GL 32	28-Mar-00 07-Apr-00	2 611 2 611	Cased and suspended pending completion as a future Permian gas producer.	DEV DEV
SANTOS Moomba 112 PPL7	Cooper/Eromanga	-28° 3' 15" 140° 9' 32"	RT 39.7 GL 33.9	15-Apr-00 05-May-00	2 640 2 822	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 113 PPL7	Cooper/Eromanga	-28° 3' 21" 140° 8' 36"	RT 52.8 GL 47	10-May-00 20-May-00	2 611 2 611	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 114 PPL 7	Cooper/Eromanga	-28° 2' 41" 140° 8' 16"	RT 43.7 GL 37	12-Jul-00 19-Jul-00	2 766 2 766	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 115 PPL7	Cooper/Eromanga	-28° 1' 43" 140° 8' 58"	RT 54.8 GL 49	25-Jul-00 04-Aug-00	2 633 2 633	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 116 PPL7	Cooper/Eromanga	-28° 3' 3" 140° 8' 6"	RT 47.9 GL 42	27-Jun-00 07-Jul-00	2 783 2 783	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 117 PPL7	Cooper/Eromanga	-28° 9' 45" 140° 11' 30"	RT 37.5 GL 32	04-Aug-00 17-Aug-00	2 388 2 388	Cased and suspended as a future Jurassic age Hutton Sst oil producer.	DEV DEV
SANTOS Moomba 118 PPL 7	Cooper/Eromanga	-28° 10' 10" 140° 11' 34"	RT 37 GL 32	12-Jul-00 30-Jul-00	2 385 2 385	Cased and suspended as a future Jurassic oil producer.	DEV DEV
SANTOS Moomba 119 PPL 7	Cooper/Eromanga	-28° 10' 53" 140° 13' 24"	RT 35 GL 30.4	21-Aug-00 03-Sep-00	2 313 2 313	Cased and suspended as a future Jurassic oil producer.	EXT NPD
SANTOS Moomba 120 PPL 7	Cooper/Eromanga	-28° 5' 55" 140° 18' 46"	RT 43.9 GL 38.1	09-Sep-00 07-Oct-00	3 120 3 120	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 121 PPL7	Cooper/Eromanga	-28° 3' 3" 140° 12' 43"	RT 41.7 GL 35.9	31-Oct-00 16-Nov-00	2 989 2 989	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 122 PPL7	Cooper/Eromanga	-28° 3' 48" 140° 11' 53"	RT 39 GL 34	12-Aug-00 22-Aug-00	2 641 2 641	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 123 PPL7	Cooper/Eromanga	-28° 5' 21" 140° 13' 5"	RT 38.7 GL 32.9	26-Aug-00 03-Sep-00	2 634 2 634	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 124 PPL7	Cooper/Eromanga	-28° 1' 31" 140° 9' 34"	RT 38.7 GL 32.9	15-Oct-00 25-Oct-00	2 637 2 637	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Moomba 126 PPL 7	Cooper/Eromanga	-28° 1' 48" 140° 9' 59"	RT 35 GL 30	30-Nov-00 13-Dec-00	2 632 2 632	Cased and suspended as a future Permian gas producer.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>SOUTH AUSTRALIA</b>							
SANTOS Moomba 128 PPL 7	Cooper/Eromanga	-28° 1' 39" 140° 8' 2"	RT 37 GL 32	26-Dec-00 -	- -	Drilling ahead	DEV -
SANTOS Moomba 134 PPL113	Cooper/Eromanga	-28° 2' 10" 140° 17' 31"	RT 50.8 GL 44.9	21-Nov-00 18-Dec-00	3 203 3 203	Cased and suspended as a future Permian gas producer.	EXT EXT
SANTOS Moomba 135 PPL 8	Cooper/Eromanga	-28° 9' 57" 140° 11' 27"	RT 38 GL 32.2	12-Nov-00 25-Nov-00	2 004 2 004	Cased and completed as a Jurassic oil producer.	DEV DEV
SANTOS Pondrinie 16 PPL90	Cooper/Eromanga	-27° 35' 1" 140° 35' 34"	RT 81.9 GL 76.2	01-Mar-00 21-Mar-00	2 338 2 338	Cased and suspended as a future Permian gas producer.	EXT EXT
SANTOS Pondrinie 17 PPL90	Cooper/Eromanga	-27° 35' 16" 140° 36' 21"	RT 75.3 GL 70.3	14-Jun-00 05-Jul-00	2 602 2 602	Completed as a Permian gas producer.	DEV DEV
SANTOS Pondrinie North 2 PPL90	Cooper/Eromanga	-27° 31' 11" 140° 42' 2"	RT 142 GL 137	25-May-00 08-Jun-00	2 392 2 392	Cased and suspended as a future gas producer.	DEV DEV
SANTOS Raven 2 PPL150	Cooper/Eromanga	-28° 2' 30" 139° 43' 54"	RT 30.2 GL 25	13-Nov-00 27-Nov-00	2 804 3 558	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Toolachee 52 PPL14	Cooper/Eromanga	-28° 21' 42" 140° 47' 55"	RT 66 GL 61	17-Dec-00 26-Dec-00	2 271 2 271	Cased and suspended as a future Permian gas producer.	DEV DEV
SANTOS Toolachee West 1 PPL14	Cooper/Eromanga	-28° 23' 45" 140° 45' 39"	RT 63.6 GL 57	11-Jun-00 24-Jun-00	2 305 2 305	Cased and suspended as a future Permian gas producer.	EXT EXT
SANTOS Waukatanna 2 PPL82	Cooper/Eromanga	-28° 22' 7" 140° 5' 5"	RT 42 GL 37	20-Dec-00 -	- -	Drilling ahead	DEV -

### METRES DRILLED - SOUTH AUSTRALIA

Wells	Onshore	Offshore	Total
Exploration	21 196	-	21 196
Development	129 541	-	129 541
Total	150 737	-	150 737

### WESTERN AUSTRALIA

AMITY Rutile 1 EP 381	Perth	-34° 1' 34" 115° 21' 20"	RT 94 GL 90	03-Feb-00 25-Feb-00	2 516 2 516	Plugged and abandoned, dry.	NFW/ NFW
APACHE Antelope 1 WA-209-P	Carnarvon	-19° 59' 27" 116° 26' 51"	NA WD -60	02-Sep-00 05-Sep-00	2 040 2 040	Plugged and abandoned, dry.	NFW/ NFW
APACHE Baker 1 TL/1	Carnarvon	-20° 39' 24" 115° 44' 29"	RT* 32.9 WD -30	16-Jan-00 20-Jan-00	2 521 2 521	Plugged and abandoned.	NFW/ NFD

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>WESTERN AUSTRALIA</b>							
APACHE Boyd 1 EP 395	Carnarvon	-20° 46' 45" 115° 46' 37"	RT* 29.3 WD -22.7	01-Jan-00 03-Jan-00	673 673	Plugged and abandoned, dry.	NFW NFW
APACHE Carolina 1 EP 403	Carnarvon	-20° 27' 32" 115° 50' 28"	NA WD -41	19-Aug-00 22-Aug-00	1 674 1 674	Plugged and abandoned, dry.	NFW NFW
APACHE Chamois 1 WA-261-P	Carnarvon	-20° 22' 36" 116° 1' 20"	NA WD -48	24-Aug-00 28-Aug-00	1 356 1 356	Plugged and abandoned as a new-field gas discovery (uneconomic).	NFW NFD
APACHE Clementine 1 EP 403	Carnarvon	-20° 28' 23" 115° 51' 21"	NA WD -41	13-Aug-00 18-Aug-00	1 434 1 434	Plugged and abandoned, dry.	NFW NFW
APACHE Corvus 1 WA-246-P	Carnarvon	-20° 5' 54" 116° 4' 41"	RT* 33.9 WD -61	13-Feb-00 07-Apr-00	3 709 4 180	Plugged and abandoned.	NFW NFD
APACHE Dylan 1 TL/1	Carnarvon	-20° 33' 40" 115° 40' 35"	RT 32 WD -27	11-Oct-00 29-Oct-00	3 058 3 058	Plugged and abanoned, dry.	NFW NFW
APACHE Gipsy 2H TL/1	Carnarvon	-20° 38' 12" 115° 43' 39"	NA WD -30	02-Nov-00 19-Dec-00	2 855 2 855	Completed as an oil producer.	DEV DEV
APACHE Hardman 1 EP 403	Carnarvon	-21° 16' 53" 115° 21' 27"	NA WD -16	27-Sep-00 02-Oct-00	1 812 1 812	Plugged and abandoned.	NFW NFW
APACHE Harriet C 4 TL/1	Carnarvon	-20° 35' 25" 115° 27' 33"	RT* 39.3 WD -24.4	10-May-00 17-May-00	2 593 2 593	Completed as an oil producer.	EXT EXT
APACHE Josephine 1 TL/1	Carnarvon	-20° 38' 33" 115° 44' 6"	RT* 30 WD -30	05-Jan-00 11-Jan-00	2 678 2 678	Plugged and abandoned.	NFW NFW
APACHE Kudu 1 WA-256-P	Carnarvon	-20° 20' 33" 115° 59' 50"	NA WD -50	02-Sep-00 06-Sep-00	1 940 1 940	Plugged and abandoned, dry.	NFW NFW
APACHE Linda 1 TL/1	Carnarvon	-20° 32' 54" 115° 41' 48"	RT* 32 WD -33	17-Jul-00 18-Aug-00	2 850 2 850	Plugged and abandoned.	NFW NFD
APACHE Lotte 1 EP 363	Carnarvon	-20° 31' 3" 115° 49' 40"	NA GL 43	04-Aug-00 10-Aug-00	2 200 2 200	Plugged and abandoned, dry.	NFW NFW
APACHE Nettie 1 TP/8	Carnarvon	-20° 59' 20" 115° 44' 27"	NA WD -15	05-Oct-00 10-Oct-00	1 395 1 395	Plugged and abandoned, dry.	NFW NFW
APACHE North Alkimos 1 TL/6	Carnarvon	-20° 36' 38" 115° 34' 8"	RT* 24.9 WD -6	25-May-00 02-Jun-00	2 391 2 391	Plugged and abanoned, dry.	NFW NFW
APACHE North Gipsy 2H TL/1	Carnarvon	-20° 38' 12" 115° 43' 39"	NA WD -30	02-Nov-00 12-Dec-00	2 808 2 808	Completed as an oil producer.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>WESTERN AUSTRALIA</b>							
APACHE	Carnarvon	-20° 33' 25"	RT* 27.8	03-May-00	2 007	Plugged and abandoned, dry with oil shows; encountered 6m oil column.	EXT
North Harriet 2 TL/1		115° 38' 51"	WD -26	07-May-00	2 007		EXT
APACHE	Carnarvon	-20° 36' 35"	RT* 31.2	29-Jun-00	2 232	Plugged and abandoned, dry.	NFW
Olive 1 TL/1		115° 40' 50"	WD -28	04-Jul-00	2 232		NFW
APACHE	Carnarvon	-20° 18' 45"	RT* 30.4	21-Apr-00	1 853	Plugged and abandoned.	NFW
Oryx 1 WA-209-P		116° 4' 47"	WD -52	26-Apr-00	1 853		NFD
APACHE	Carnarvon	-20° 20' 39"	RT 29.5	22-Sep-00	1 082	Plugged and abandoned, dry.	NFW
Rhebok 1 WA-261-P		116° 13' 29"	WD -46	25-Sep-00	1 082		NFW
APACHE	Carnarvon	-20° 16' 30"	RT* 30.3	01-Feb-00	2 871	Plugged and abandoned, dry.	NFW
Roebuck 1 WA-15-L		116° 15' 2"	WD -49	09-Feb-00	2 871		NFW
APACHE	Carnarvon	-20° 17' 29"	RT 52.9	18-Jul-00	3 221	Completed as a horizontal oil producer.	DEV
Stag 15H WA-15-L		116° 16' 26"	WD -49	28-Jul-00	996		DEV
APACHE	Carnarvon	-20° 17' 29"	RT 53.6	10-Jul-00	1 188	Completed as an oil well.	DEV
Stag 21H WA-15-L		116° 16' 26"	WD -49	16-Jul-00	1 188		DEV
APACHE	Carnarvon	-20° 40' 25"	RT* 24.1	09-Jun-00	2 100	Cased and suspended as a future oil producer.	DEV
Tanami 4 TL/1		115° 35' 3"	WD -8	20-Jun-00	2 100		DEV
APACHE	Carnarvon	-20° 40' 25"	RT* 25.1	09-Jun-00	2 114	Suspended as potential water injector.	DEV
Tanami 5 TL/1		115° 34' 2"	WD -8	17-Jun-00	2 114		DEV
APACHE	Carnarvon	-20° 45' 11"	RT* 29.8	24-Jan-00	2 252	Plugged and abandoned, dry.	NFW
Teewinot 1 TP/8		115° 43' 47"	WD -21	30-Jan-00	2 252		NFW
APACHE	Carnarvon	-20° 14' 44"	RT 27	08-Sep-00	2 020	Plugged and abandoned, dry.	NFW
Tusk 1 WA-246-P		116° 8' 8"	WD -55	15-Sep-00	2 141		NFD
APACHE	Carnarvon	-20° 38' 50"	RT* 30.7	08-Jul-00	2 519	Plugged and abandoned, dry.	EXT
West Gipsy 1 TL/1		115° 42' 39"	WD -27	13-Jul-00	2 519		EXT
ARC ENERGY	Perth	-29° 15' 14"	RT* 57	19-Dec-99	2 040	Suspended at TD 1850m (Q4/99).	DEV
Dongara 29 L2		115° 1' 23"	GL 51	13-Jan-00	3 035		DEV
BHP	Carnarvon	-20° 50' 50"	RT* 26	22-Dec-99	3 468	Plugged and abandoned.	NFW
Antiope 1 WA-290-P		114° 43' 39"	WD -226	15-Jan-00	3 662		NFD
BHP	Carnarvon	-21° 19' 57"	RT* 26	26-Jan-00	1 350	Plugged and abandoned.	NFW
Coniston 1 WA-255-P		114° 3' 59"	WD -379	04-Feb-00	1 350		NFD
BHP	Carnarvon	-21° 13' 29"	RT 26	25-Apr-00	3 150	Cased and suspended as a future oil producer.	DEV
Griffin 8 WA-10-L		114° 37' 21"	WD -140	19-May-00	3 150		DEV



## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>WESTERN AUSTRALIA</b>							
BHP Scafell 1 WA-155-P	Carnarvon	-21° 32' 44" 114° 1' 8"	RT* 25.9 WD -280	20-Feb-00 27-Feb-00	1 500 1 500	Plugged and abandoned, dry.	NFW NFW
BHP Scindian 3 WA-10-L	Carnarvon	-21° 11' 35" 114° 41' 48"	KB 26 WD -121	14-Mar-00 29-Mar-00	2 801 2 801	Cased and suspended as an oil producer.	EXT EXT
BRITISH BORNEO Corkybark 1 WA-234-P	Carnarvon	-20° 53' 39" 114° 58' 20"	RT* 26 WD -95	10-Jun-00 11-Jun-00	572 572	Plugged and abandoned, dry.	NFW NFW
BRITISH BORNEO Corkybark 1A WA-234-P	Bonaparte	-20° 53' 39" 114° 58' 20"	RT 26 WD -96	13-Jun-00 05-Jul-00	2 800 2 844	Plugged and abandoned, dry.	NFW NFW
CHEVRON Bantha 1 TL/3	Carnarvon	-20° 44' 16" 115° 19' 25"	RT* 25.8 WD -25	18-Jun-00 25-Jun-00	1 472 1 472	Plugged and abandoned, dry.	NFW NFW
CHEVRON Barrow Island G 64B L 1H	Carnarvon	-20° 50' 55" 115° 21' 5"	RT* 32 GL 28	11-Oct-00 15-Oct-00	742 742	Cased and suspended as a future oil producer.	DEV DEV
CHEVRON Barrow Island M 63A L 1H	Carnarvon	-20° 49' 15" 115° 24' 0"	NA -	02-Oct-00 08-Oct-00	757 757	Cased and suspended as a future oil producer.	DEV DEV
CHEVRON Barrow Island P 83A L 1H	Carnarvon	-20° 47' 57" 115° 24' 0"	NA -	24-Sep-00 28-Sep-00	770 770	Cased and suspended.	DEV DEV
CHEVRON Barrow Island Z 83M L 1H	Carnarvon	-20° 42' 40" 115° 24' 44"	RT 10.7 GL 6.5	22-Oct-00 06-Nov-00	1 869 1 869	Cased and suspended as a future oil producer.	DEV DEV
CHEVRON Cowle 5 TL/ 4	Carnarvon	-21° 31' 24" 114° 58' 6"	NA WD -11	11-Sep-00 23-Sep-00	2 686 2 686	Completed as an oil well.	DEV DEV
CHEVRON Iago 1 WA-25-P	Carnarvon	-19° 55' 54" 115° 20' 3"	NA WD -118	15-Dec-00 27-Dec-00	3 383 3 383	Plugged and abandoned.	NFW NFD
CHEVRON Maenad 1 WA-267-P	Carnarvon	-20° 6' 50" 114° 37' 4"	RT 28.3 WD -1221	28-Feb-00 28-Feb-00	1 734 1 734	Plugged and abandoned, dry due to mechanical difficulties.	NFW NFW
CHEVRON Maenad 1A WA-267-P	Carnarvon	-20° 6' 50" 114° 37' 4"	RT 28.3 WD -1221	12-Mar-00 28-Mar-00	3 680 3 680	Plugged and abandoned, dry.	NFW NFD
CHEVRON Triller 1 TL/3	Carnarvon	-20° 40' 58" 115° 23' 6"	NA WD -23	28-Jun-00 03-Jul-00	1 526 1 526	Plugged and abandoned, dry.	NFW NFW
EMPIRE Central Rough Range 1 EP 41	Carnarvon	-22° 25' 11" 114° 4' 47"	RT 66.4 GL 62	01-Jun-00 06-Jun-00	1 140 1 140	Plugged and abandoned, dry.	NFW NFW
EMPIRE Rough Range 1B EP 41	Carnarvon	-22° 25' 9" 114° 4' 56"	RT* 60.5 GL 56.1	03-May-00 10-May-00	1 155 1 155	Completed as an oil producer.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>WESTERN AUSTRALIA</b>							
INPEX Dinichthys 1 WA-285-P	Browse	-13° 49' 30" 123° 11' 18"	RT* 26.4 WD -267	03-Mar-00 03-May-00	4 562 4 562	Plugged and abandoned.	NFW NFD
INPEX Gorgonichthys 1 WA-285-P	Browse	-13° 58' 41" 123° 7' 36"	RT 26.4 WD -260	22-May-00 21-Jul-00	4 767 4 767	Completed testing, status pending.	NFW NFD
INPEX Titanichthys 1 WA-285-P	Browse	-13° 53' 29" 123° 18' 4"	NA WD -248	26-Sep-00 28-Nov-00	4 602 4 602	Plugged and abandoned.	NFW NFD
KERR-MCGEE Intrepid 1 WA-277-P	Bonaparte	-12° 56' 2" 125° 50' 52"	RT* 25 WD -75	14-Jun-00 21-Jun-00	1 394 1 394	Plugged and abandoned, dry.	NFW NFW
KERR-MCGEE Prometheus 1 WA-278-P	Bonaparte	-12° 50' 21" 126° 22' 8"	RT 27 WD -63	28-May-00 07-Jun-00	2 360 2 360	Plugged and abandoned, dry.	NFW NFD
KERR-MCGEE Rubicon 1 WA-278-P	Bonaparte	-12° 50' 39" 126° 23' 54"	NA -	27-Nov-00 03-Dec-00	1 766 1 766	Plugged and abandoned after discovering a 30m gross gas column which is considered to be an extension of the Prometheus 1 discovery 3km away.	NFW EXT
KERR-MCGEE Saratoga 1 WA-276-P	Bonaparte	-12° 12' 47" 126° 25' 25"	KB 119.6 WD -94.6	12-Dec-00 18-Dec-00	2 139 2 139	Plugged and abandoned.	NFW NFD
MOBIL Jansz 1 WA-268-P	Carnarvon	-19° 50' 56" 114° 28' 55"	RT* 28.3 WD -1321	11-Apr-00 27-Apr-00	2 985 2 985	Plugged and abandoned, dry.	NFW NFW
MOBIL Wandoo A 8 WA-14-L	Carnarvon	-20° 8' 15" 116° 25' 5"	RT* 41 WD -52	02-Nov-00 12-Nov-00	1 814 1 814	Completed as an oil producer.	DEV DEV
MOBIL Wandoo A 9 WA-14-L	Carnarvon	-20° 8' 15" 116° 25' 22"	RT* 42 WD -52	20-Nov-00 30-Nov-00	1 757 1 757	Completed as an oil producer.	DEV DEV
NERDLIHC Patience 2 EP 376	Canning	-23° 21' 31" 125° 40' 20"	RT 509 GL 502	21-Oct-00	4 184	Suspended.	EXT
NEWFIELD Wambenger 1 WA-273-P	Bonaparte	-11° 42' 32" 126° 19' 22"	RT* 22 WD -65	01-May-00 13-May-00	2 653 2 653	Plugged and abandoned, dry.	NFW NFW
TAP OIL Bandar 1 EP 137	Carnarvon	-21° 18' 32" 115° 44' 45"	RT 4.5 GL 2	12-Oct-00 18-Oct-00	166 166	Plugged and abandoned, dry.	NFW NFW
TAP OIL Hero 1 EP 137	Carnarvon	-21° 16' 48" 115° 49' 40"	RT 5.5 GL 3	07-Nov-00 19-Nov-00	150 150	Plugged and abandoned, dry.	NFW NFW
TAP OIL Phantom 1 EP 137	Carnarvon	-21° 17' 27" 115° 47' 20"	RT 3.5 GL 3	25-Oct-00 01-Nov-00	141 141	Plugged and abandoned, dry as a new-field gas discovery.	NFW NFD

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
<b>WESTERN AUSTRALIA</b>							
VICTORIA PETROLEUM White Opal 1 EP 325	Carnarvon	-21° 48' 55" 114° 10' 59"	RT 8 GL 4.4	10-Mar-00 31-Mar-00	2 597 2 597	Plugged and abandoned, dry.	NFW NFW
WAPET Saladin 20 TL/4	Carnarvon	-21° 26' 48" 115° 2' 22"	RT* 36.2 WD -20	08-Jan-00 20-Jan-00	2 395 2 395	Completed as an oil producer.	DEV DEV
WAPET Saracen 1 TP/3	Carnarvon	-21° 25' 37" 115° 4' 32"	RT 33.5 WD -14	31-Dec-99 05-Jan-00	1 302 1 302	Plugged and abandoned, dry.	NFW NFW
WAPET Urania 1 WA-267-P	Carnarvon	-19° 48' 5" 115° 2' 34"	RT 28.3 WD -1200	17-Jan-00 11-Feb-00	4 010 4 010	Plugged and abandoned.	NFW NFD
WOODSIDE Brecknock South 1 WA-33-P	Browse	-14° 36' 48" 121° 38' 6"	RT* 30 WD -423	03-Aug-00 18-Aug-00	4 008 4 008	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Castor 1 WA-5-L	Carnarvon	-19° 49' 38" 115° 47' 7"	NA WD -149.5	24-Aug-00 16-Sep-00	3 798 3 798	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Cavalier 1 WA-9-L	Carnarvon	-19° 33' 20" 116° 29' 33"	NA WD -75	24-Sep-00 17-Oct-00	3 696 3 696	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Enfield 3 WA-271-P	Carnarvon	-21° 28' 38" 113° 58' 45"	NA WD -573	11-Sep-00 21-Sep-00	2 521 2 521	Plugged and abandoned.	EXT EXT
WOODSIDE Gaea 1 WA-1-L	Carnarvon	-19° 38' 19" 116° 2' 59"	NA WD -125	04-Nov-00 02-Dec-00	4 362 4 362	Plugged and abandoned, dry.	NFW NFW
WOODSIDE Lambert 5 WA-16-L	Carnarvon	-19° 28' 37" 116° 28' 40"	RT 25.9 WD -115.8	17-Jul-00 12-Aug-00	3 540 4 748	Cased and suspended as a future oil producer.	DEV DEV
WOODSIDE Laverda 1 WA-271-P	Carnarvon	-21° 31' 59" 113° 50' 55"	NA WD -840	14-Oct-00 27-Oct-00	2 558 2 558	Plugged and abandoned, dry.	NFW NFD
WOODSIDE Perseus PEN 02 WA-1-L	Carnarvon	-19° 34' 36" 116° 6' 20"	RT* 47 WD -124	21-Aug-00 16-Nov-00	5 077 5 077	Cased and suspended as a future gas and condensate producer.	DEV DEV
WOODSIDE Perseus PEN 03 WA-1-L	Carnarvon	-19° 34' 14" 116° 6' 5"	RT* 47 WD -124	28-Aug-00 27-Dec-00	5 275 5 275	Cased and suspended as a future gas and condensate producer.	DEV DEV
WOODSIDE Titania 1 (Woodside) WA-269-P	Carnarvon	-19° 11' 58" 115° 11' 40"	RT* 28 WD -1000	06-Jul-00 12-Jul-00	3 196 3 196	Plugged and abandoned, dry.	NFW NFW

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
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### WESTERN AUSTRALIA

#### METRES DRILLED - WESTERN AUSTRALIA

Wells	Onshore	Offshore	Total
Exploration	10 894	132 955	143 849
Development	8 328	38 963	47 291
Total	19 222	171 918	191 140

### NORTHERN TERRITORY

AEC Puffin 5 AC/P22	Bonaparte	-12° 18' 5" 124° 19' 36"	RT 22 WD -100	20-May-00 04-Jun-00	2 414 2 414	Suspended as a potential oil producer.	DEV DEV
BHP Argus 1 AC/P30	Browse	-13° 12' 42" 122° 33' 4"	RT 22 WD -575	21-Jun-00 14-Sep-00	4 878 4 878	Plugged and abandoned, dry.	NFW NFW
BHP Padthaway 1 AC/RL3	Bonaparte	-12° 40' 51" 124° 29' 26"	RT 25.3 WD -85	26-Mar-00 09-Apr-00	2 875 2 875	Plugged and abandoned, dry.	NFW NFW
COASTAL Brontosaurus 1 AC/P20	Bonaparte	-11° 57' 0" 124° 43' 57"	RT 22 WD -127	10-Jan-00 01-Mar-00	3 680 3 940	Plugged and abandoned, dry.	NFW NFW
COASTAL Elasmosaurus 1 AC/P21	Bonaparte	-12° 14' 3" 124° 40' 43"	RT 22 WD -109	02-Dec-00 -	- -	Drilling ahead	NFW -
JAPEX Abalone 1 AC/P29	Browse	-13° 7' 23" 123° 11' 20"	RT 25 WD -410	04-Sep-00 03-Nov-00	4 795 5 070	Plugged and abandoned, dry.	NFW NFW
JAPEX Turbo 1 AC/P29	Browse	-12° 48' 27" 123° 30' 44"	RT 25 WD -300	28-Jun-00 22-Aug-00	3 900 3 900	Plugged and abandoned, dry.	NFW NFW
NEWFIELD Challis 15 AC/L3	Bonaparte	-12° 6' 6" 125° 2' 54"	RT 22 WD -106	19-Apr-00 25-Apr-00	1 533 1 533	Plugged and abandoned, dry.	DEV DEV
NEWFIELD Jabiru 14 AC/L1	Bonaparte	-11° 55' 56" 125° 0' 41"	RT 22 WD -121	20-Mar-00 14-Apr-00	1 830 3 169	Plugged and suspended as a future oil producer.	DEV DEV
NIPPON Crux 1 AC/P23	Bonaparte	-12° 56' 38" 124° 27' 9"	RT 25.3 WD -163.5	16-Apr-00 03-May-00	3 950 3 950	Plugged and abandoned.	NFW NFD
NIPPON Saucepan 1 AC/P23	Browse	-12° 53' 47" 124° 35' 34"	RT 25 WD -114.5	25-Dec-00 -	- -	Drilling ahead	NFW -
SANTOS West Mereenie 16 L4	Amadeus	-23° 58' 56" 131° 31' 31"	RT 790.3 GL 785	08-Feb-00 21-Mar-00	1 306 1 304	Cased and suspended as a future gas producer.	DEV DEV
SANTOS West Mereenie 17 L4	Amadeus	-23° 59' 29" 131° 32' 35"	RT 783.5 GL 777.7	02-Apr-00 02-Apr-00	18 18	Plugged and abandoned, dry.	DEV DEV

## APPENDIX A (cont'd)

Operator Well Permit	Basin	Location	Elevation	Spudded TD reached	Final TD Metres drilled	Well remark	Classi- fication
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### NORTHERN TERRITORY

SANTOS	Amadeus	-23° 59' 29"	RT 783.5	04-Apr-00	1 286	Cased and suspended as a future gas producer.	DEV
West Mereenie 17A L4		131° 32' 35"	GL 777.7	06-Jun-00	1 286		DEV
WOODSIDE	Bonaparte	-9° 32' 55"	RT 25	05-Jan-00	1 475	Plugged and abandoned, dry.	NFW
Tyche 1 NT/P49		130° 10' 26"	WD -402.5	11-Jan-00	1 475		NFW

### METRES DRILLED - NORTHERN TERRITORY

Wells	Onshore	Offshore	Total
Exploration	-	26 088	26 088
Development	2 608	7 116	9 724
Total	2 608	33 204	35 812

### JOINT PETROLEUM DEVELOPMENT AREA

PHILLIPS	Bonaparte	-10° 43' 40"	RT 22	04-Oct-00	3 467	Plugged and abandoned, dry.	NFW
Coleraine 1 ZOCA 96-16		126° 51' 30"	WD -68	21-Nov-00	3 467		NFW
PHILLIPS	Bonaparte	-10° 53' 4"	RT 22	07-Feb-00	3 289	Completed as an oil producer.	DEV
Elang 1 DW 1 ZOCA 91-12		126° 36' 1"	WD -82	16-Feb-00	1 074		DEV

### METRES DRILLED - JPDA

Wells	Onshore	Offshore	Total
Exploration	-	3 467	3 467
Development	-	1 074	1 074
Total	-	4 541	4 541

\* Assumed reference point

Abbreviations (Americian Petroleum Institute standard definitions for petroleum statistics)

DEV	Development	NFW	New-field wildcat
DF	Drill floor	NPD	New-pool discovery
DRY	Not completed	RT	Rotary table
EXT	Extension	STR	Stratigraphic
GL	Ground level	TD	Total depth
KB	Kelly bushing	WD	Water depth
NFD	New-field discovery		

## **Appendix B 1999 & 2000**

### **Seismic survey activity by State, 1999 and 2000**

## APPENDIX B: SEISMIC SURVEY ACTIVITY BY STATE, 1999

Operator	Contractor	Basin	Survey name	Type	Title	Km shot (sq. km)	Status
<b>OFFSHORE</b>							
<b>VICTORIA</b>							
ESSO	Geco-Prakla	Gippsland	G99B BARRACOUTA 3D	3D	VIC/L1	7 864 (321)	Completed
ESSO	Geco-Prakla	Gippsland	KIPPER 3D	3D	VIC/RL2	5 415 (221)	Completed
NRE	GHD	Gippsland	GIPPSLAND DEEPWATER	2D	Vacant Acreage	960	Completed
Woodside	Western Geophysical	Otway	INVESTIGATOR MSS (VICTORIA)	3D	Vic/P43	454 (37)	Completed
<b>TASMANIA</b>							
Woodside	Western Geophysical	Otway	INVESTIGATOR MSS (TASMANIA)	3D	T/30P	454 (38)	Completed
<b>SOUTH AUSTRALIA</b>							
GHD/AGSO	GHD	Great Australian Bight	GREAT AUSTRALIAN BIGHT	2D	Vacant Acreage	3 688	Completed
<b>WESTERN AUSTRALIA</b>							
ASB	Veritas	Browse	BROWSE 1998 2D SPEC	2D	SPA 14SL/98-9, SPA 15SL/98-9, SPA 4SL/98-9	11 386	Completed
ASB	Veritas	Carnarvon	EXMOUTH NORTH 2D SPEC	2D	SPA 2SL/99-0	2 597	Continuing
BHP	Veritas	Carnarvon	HCA 1999A 2D	2D	WA-289-P	545	Completed
BHP/Woodside	PGS	Carnarvon	WEST GORGON	3D	WA-155-P	20 153 (830)	Completed
Geco-Prakla	Geco-Prakla	Bonaparte	ADVENTURER TQ 3D	3D	SPA 1SL/99-0	20 512 (491)	Completed
Geco-Prakla	Geco-Prakla	Browse	NORTH BROWSE TQ 3D	3D	SPA 13SL/98-9, SPA 1SL/98-9, SPA 9SL/98-9	85 390 (3 205)	Completed
Magellan	Veritas	Browse	SCAMPI 2D	2D	WA-287-P	234	Completed
Magellan	Veritas	Browse	YABBIE 2D	2D	WA-288-P	596	Completed
ORYX	Geco Prakla	Bonaparte	BONAPARTE BASIN 1998	2D	WA-276, 277, 278-P	3 131	Completed
PGS	PGS	Carnarvon	PANAEUS 1999 MC3D	3D	SPA 16SL/98-9, SPA 12SL/98-9, SPA 2T/98-9, SPA 6SL/98-9	66 107 (2 728)	Completed

## APPENDIX B (cont'd)

Operator	Contractor	Basin	Survey name	Type	Title	Km shot (sq. km)	Status
Premier	Veritas	Perth	MICHELLE 2D TP/15	2D	TP/15	159	Completed
Premier	Veritas	Perth	MICHELLE 2D WA- 286-P	2D	WA-286-P	413	Completed
Santos	Veritas	Browse	AUSTRAL 2D	2D	WA-281-P	577	Completed
Santos	Veritas	Browse	EXETER 2D	2D	WA-282-P	1 757	Completed
Santos	Veritas	Browse	GRIFFIN 2D	2D	WA-283-P	1 762	Completed
Santos	Veritas	Browse	MAYLANDS	2D	WA-281/2/3-P	642	Completed
Schlumberger	Geco-Prakla	Browse	EAST SCOTT PLATEAU TQ 2D	2D	SPA 10SL/98-9, 11SL/98-9	5 820	Completed
Shell	Geco-Prakla	Bonaparte	WA-279-P, WA-280-P	2D	WA-279-280-P	14 056	Completed
Woodside	Geco-Prakla	Carnarvon	ARACHNID 2D	2D	WA-293-P	1 941	Continuing
Woodside	Western Geophysical	Browse	BRECKNOCK SOUTH 3D	3D	WA-275-P	8 433 (285)	Completed
Woodside	Geco-Prakla	Carnarvon	CANNING TQ 3D	3D	WA-294-P	0 (0)	Completed
Woodside	na	Browse	PLUMHEAD	2D	WA-275-P	1 045	Completed
Woodside	Geco-Prakla	Carnarvon	REMUS 2D	2D	WA-270-P	1 715	Completed
Woodside	Geco-Prakla	Carnarvon	TARANTULA 2D	2D	WA-296/297-P	10 600	Continuing
<b>NORTHERN TERRITORY</b>							
ARC	Veritas	Browse	SLEEPER	2D	AC/P27; AC/P23; AC/P25; AC/P26	531	Completed
BHP	Veritas	Browse	BROWSE	2D	AC/P30	6 562	Completed
Cultus	Veritas	Bonaparte	COLLIE	2D	AC-P-24	1 758	Completed
Cultus	Veritas	Bonaparte	VALIBONE	2D	NT-P-46	545	Completed
Cultus	Veritas	Bonaparte	WILGA	2D	AC/P18	1 860	Completed
Flare	Veritas	Bonaparte	SHEILA	2D	AC-P-25	392	Completed
Shell/Santos	Geco-Prakla	Bonaparte	98 NT-P50, 51, 52, 53, 54	2D	NT-P50, 51, 52, 53, 54	4 053	Completed
Shell/Woodside	Geco-Prakla	Bonaparte	EMU REEF	2D	NT/P57	2 500	Completed



## APPENDIX B (cont'd)

Operator	Contractor	Basin	Survey name	Type	Title	Km shot (sq. km)	Status
<b>JOINT PETROLEUM DEVELOPMENT AREA</b>							
NWE	Veritas	Browse	PORTRUSH	2D	ZOCA96-16	1 452	Completed
<b>ONSHORE</b>							
<b>QUEENSLAND</b>							
Dyad	Velseis	Georgina	ETHABUKA	2D	ATP554P	170	Completed
OCA	Geco-Prakla	Bowen	NEW ROYAL	3D	PL 14/21/22	451 (52)	Completed
Santos	Geco-Prakla	Bowen	SB 99	2D	ATP337P	37	Completed
Santos	Geco-Prakla	Surat	SD 99	2D	ATP378P	66	Completed
Santos	Geco-Prakla	Cooper	SQ 99	2D	ATP259P	2 561	Completed
Santos	Geco-Prakla	Cooper	SQ 99 3D (BARROLKA/ BARYULAH)	3D	ATP259P	1 480 (496)	Completed
Tri-Star	Geco-Prakla	Bowen	COMET RIDGE CR99A	2D	ATP-592-P	69	Completed
<b>NEW SOUTH WALES</b>							
AGSO	Terracorp	Darling	99 CABGAS	2D	Vacant Acreage	160	Completed
ERA	Terracorp	Gunnedah	1999 BANDO	2D	PEL1	11	Completed
First Source	Terracorp	Gunnedah	BOHENA	2D	PEL 238	305	Completed
<b>VICTORIA</b>							
Bass	Terracorp	Gippsland	GBA99A PEP131	2D	PEP131	40	Completed
<b>SOUTH AUSTRALIA</b>							
Boral	Terracorp	Otway	MOUNT MCINTYRE	2D	PEL 32, 57, 66, 72	216	Completed
Santos	na	Cooper/ Eromanga	SA 98 3D (BARINA/FARINA)	3D	PEL 5,6	93 (30)	Completed
<b>WESTERN AUSTRALIA</b>							
ARC	Terracorp	Perth	1999 HAKEA	2D	L1 & L2	82	Completed
Boral	Geco-Prakla	Perth	BEHARRA SPRINGS 3D	3D	EP 320	5 137 (212)	Completed
Empire Oil	Terracorp	Perth	GINGIN WEST 1999 S.S.	2D	EP 389	48	Completed

## APPENDIX B (cont'd)

Operator	Contractor	Basin	Survey name	Type	Title	Km shot (sq. km)	Status
Jervois	Terracorp	Perth	JAGO	2D	EP 111	29	Completed
Phoenix	Terracorp	Perth	COOLIMBA 1998	2D	L4, L5	70	Completed
Premier	Terracorp	Perth	DEE	2D	EP 414	135	Completed
<b>NORTHERN TERRITORY</b>							
IOR	Terracorp	Amadeus	99 EP 69	2D	EP 69	99	Completed

## APPENDIX B: SEISMIC SURVEY ACTIVITY BY STATE, 2000

Operator	Contractor	Basin	Survey name	Type	Title	Km shot (sq. km)	Status
<b>OFFSHORE</b>							
<b>VICTORIA</b>							
Basin Oil	Geco-Prakla	Gippsland	BALLEN 3D	3D	Vic/RL5	149 (90)	Completed
Woodside	Western Geophysical	Otway	INVESTIGATOR MSS (VICTORIA)	3D	Vic/P43	9 143 (755)	Completed
<b>TASMANIA</b>							
Boral	Western Geophysical	Bass	ROBINS 3D	3D	T/25P	1 995 (350)	Completed
Woodside	Western Geophysical	Otway	INVESTIGATOR MSS (TASMANIA)	3D	T/30P	2 575 (212)	Completed
<b>WESTERN AUSTRALIA</b>							
Apache Energy	Veritas	Carnarvon	NS 2000	2D	EP 409	209	Completed
ASB	Veritas	Carnarvon	EXMOUTH NORTH 2D SPEC	2D	SPA 2SL/99-0	5 849	Completed
BHP	na	Browse/Scott Plateau	HBR 2000A 2D	2D	WA-301-P, WA-302-P, WA-303-P, WA-304-P, WA-305-P	100	Completed
Canadian Petroleum Australia	Veritas	Browse	WA-239-P 2D	2D	WA-239-P R1	1 167	Completed
Idemitsu	Petroleum Geo Services	Carnarvon	BEAGLE 3D	3D	WA-292-P	5 479 (1 529)	Completed
Kerr McGee	Veritas	Carnarvon	CASTLE 2D	2D	WA-295-P	2 249	Completed
Kerr McGee	Veritas	Bonaparte	COMBINED WA-276-P, WA-277-P, WA-278-P	2D	WA-276-P, WA-277-P, WA-278-P	1 900	Completed
Kerr McGee	Veritas	Carnarvon	WA-295-P 2000 2D	2D	WA-295-P	2 190	Completed
Magellan	Veritas	Browse	CRAY 2D	2D	WA-287-P	236	Completed
Magellan	Veritas	Carnarvon	MAVIS 2D	2D	WA-291-P	565	Completed
Magellan	Veritas	Browse	SCALLOP	2D	WA-288-P	297	Completed
Mobil	Veritas	Bonaparte	DONDER 2D	2D	WA-217-P	250	Completed
PGS	PGS	Carnarvon	PANAEUS 2000 EAST MC3D	3D		1 988 (117)	Completed
Santos	Veritas	Browse	CATHEDRAL	2D	WA-282-P	635	Completed

## APPENDIX B (cont'd)

Operator	Contractor	Basin	Survey name	Type	Title	Km shot (sq. km)	Status
Santos	Veritas	Browse	HISTORIAN	2D	WA-283-P	663	Completed
Santos	Veritas	Browse	RISING SUN	2D	WA-281-P	167	Completed
TAP Oil	Veritas	Carnarvon	BRECON 2D	2D	WA-192-P	353	Completed
Woodside	Geco-Prakla	Carnarvon	ARACHNID 2D	2D	WA-293-P	197	Completed
Woodside	Geco-Prakla	Bonaparte	BLACKTIP	3D	WA-279-P	2 475 (405)	Completed
Woodside	Geco-Prakla	Carnarvon	CANNING TQ 3D	3D	WA-294-P	26 676 (4 365)	Completed
Woodside	Geco-Prakla	Great Australian Bight	FLINDERS DEEPWATER	2D	EPP28, EPP29, EPP30	2 142	Completed
Woodside	Geco-Prakla	Carnarvon	INDIAN 3D	3D	WA-271-P	3 750 (1 140)	Completed
Woodside	Geco-Prakla	Carnarvon	TARANTULA 2D	2D	WA-296/297-P	4 245	Completed
Woodside	Veritas	Bonaparte	THRESHER 2D/3D	3D	WA-280-P	3 669 (589)	Completed
Woodside	Geco-Prakla	Carnarvon	TQ 3D	3D	WA-294-P	7 515 (4 500)	Completed
<b>NORTHERN TERRITORY</b>							
Kerr McGee	Veritas	Bonaparte	NT/P54 2000 2D	2D	NT/P54	1 650	Completed
Woodside	Geco-Prakla	Bonaparte	MESCAL (NORTHERN TERRITORY)	3D	NT/RL2	14 100 (2 205)	Completed
Woodside	Geco-Prakla	Bonaparte	SHAKESPEARE	3D	NT/P57	2 542 (416)	Completed
<b>JOINT PETROLEUM DEVELOPMENT AREA</b>							
Woodside	Geco-Prakla	Bonaparte	MESCAL (JPDA)	3D	ZOCA 95-19; 96-20; Vacant Acreage	5 900 (918)	Completed
<b>ONSHORE</b>							
<b>QUEENSLAND</b>							
Arrow Energy	Trace Terracorp	Clarence	BOONAH	2D	ATP641P, 644P	102	Completed
Arrow Energy	Trace-Terracorp	Surat	HORRANE	2D	ATP683P	173	Completed
Magellan	Trace-Terraco	Otway	SUSAN RIVER 2D	2D	ATP613P	65	Completed
Mosaic Oil	Trace Terracorp	Surat	MYALL	2D	ATP471P	91	Completed

## APPENDIX B (cont'd)

Operator	Contractor	Basin	Survey name	Type	Title	Km shot (sq. km)	Status
OCA	Geco-Prakla	Surat	OD00	2D	PL43, PL44	29	Completed
Santos	Geco-Prakla	Surat	GLEBE 2D	2D	ATP685P	150	Completed
Santos	Geco-Prakla	Surat	SB00 3D (SCOTIA EAST)	3D	ATP378P, PL 176	182 (32)	Completed
Santos	Geco-Prakla	Bowen	SD00 2D (WARRANILLA/ MOUNT ROUND)	2D	ATP337P	53	Completed
Santos	Geco-Prakla	Cooper/ Eromanga	SQ 00 2D	2D	ATP259P	1 096	Completed
Santos	Geco-Prakla	Cooper/ Eromanga	SQ 00 3D	3D	ATP259P	(587)	Completed
<b>VICTORIA</b>							
Lakes Oil	Trace- Terracorp	Gippsland	KULLINGRAL	2D	Vacant Acreage	6	Completed
Lakes Oil	Terracorp	Gippsland	YARRAM	2D	PEP138	25	Completed
Origin Energy	Trace- Terracorp	Otway	SPRING CREEK	2D	PEP-101/111	100	Completed
Santos	Geco-Prakla	Otway	CAMERONS	2D	PEP-119	71	Completed
Santos	Geco-Prakla	Otway	CURDIE VALE	3D	PEP132	479 (84)	Completed
<b>SOUTH AUSTRALIA</b>							
Origin	Geco-Prakla	Otway	BANALVES	3D	PEL 32	5 171 (213)	Completed
Origin Energy	Trace- Terracorp	Otway	MT LYON	2D	PEL 66	21	Completed
Santos	Geco-Prakla	Cooper/ Eromanga	SA 00 3D (SWAN LAKE)	3D	PPL'S	1 380 (182)	Completed
Santos	Geco-Prakla	Cooper/ Eromanga	SA00 2D	2D	Various PPLs	167	Completed
Santos	Geco-Prakla	Cooper/ Eromanga	SA00 3D	3D	Various PPLs	6 271 (483)	Completed
<b>WESTERN AUSTRALIA</b>							
Amity Oil	Terracorp	Perth	ALTONA	2D	EP 408	90	Completed
Empire Oil	Terracorp	Perth	EP 389 EMPIRE	2D	EP 389	52	Completed
Schlumberger	Schlumberger	Browse	ADELE TREND TQ 3D	3D	SPA 1SL/00-1	1 064 (3 432)	Completed

## APPENDIX B (cont'd)

### SEISMIC SURVEY ACTIVITY 1998–2000 (line kilometres)

	Onshore		Offshore		Onshore	Offshore	Total
	2D	3D	2D	3D	Total	Total	
<b>1998</b>							
Queensland	1 419	603	-	-	2 022	-	2 022
New South Wales	480	-	-	-	480	-	480
Victoria	238	365	-	-	603	-	603
South Australia	506	1 670	4 812	-	2 176	4 812	6 988
Western Australia	2 506	179	72 107	550 254	2 685	622 360	625 045
Northern Territory	-	-	14 020	399 098	-	413 117	413 117
JPDA	-	-	3 655	47 268	-	50 923	50 923
<b>Total</b>	<b>5 149</b>	<b>2 817</b>	<b>94 594</b>	<b>996 619</b>	<b>7 966</b>	<b>1 091 213</b>	<b>1 099 179</b>
<b>1999</b>							
Queensland	2 903	1 931	-	-	4 834	-	4 834
New South Wales	475	-	-	-	475	-	475
Victoria	40	-	960	13 733	40	14 693	14 733
Tasmania	-	-	-	454	-	454	454
South Australia	216	93	3 688	-	309	3 688	3 997
Western Australia	365	5 137	58 976	200 595	5 502	259 571	265 073
Northern Territory	99	-	18 201	-	99	18 201	18 300
JPDA	-	-	1 452	-	-	1 452	1 452
<b>Total</b>	<b>4 098</b>	<b>7 161</b>	<b>83 277</b>	<b>214 782</b>	<b>11 259</b>	<b>298 059</b>	<b>309 318</b>
<b>2000</b>							
Queensland	1 759	182	-	-	1 941	-	1 941
Victoria	202	479	-	9 291	681	9 291	9 972
Tasmania	-	-	-	4 570	-	4 570	4 570
South Australia	188	12 822	-	-	13 010	-	13 010
Western Australia	142	1 064	23 414	51 552	1 206	74 967	76 173
Northern Territory	-	-	1 650	16 642	-	18 292	18 292
JPDA	-	-	-	5 900	-	5 900	5 900
<b>Total</b>	<b>2 291</b>	<b>14 547</b>	<b>25 064</b>	<b>87 956</b>	<b>16 838</b>	<b>113 020</b>	<b>129 858</b>



## **Appendix C 1999 & 2000**

### **Discoveries of petroleum, 1999 and 2000**



## APPENDIX C: DISCOVERIES OF PETROLEUM IN 1999

Basin and well name	Operator Recovery	State	Producing formation	Discovery Remarks	Classification
<b>OFFSHORE</b>					
<b>CARNARVON</b>					
BENNET 1*	Apache	WA	Barrow Gp	Oil	NFD
	Elevated gas readings indicating intermittent oil shows over the interval 1 060 - 1150 m. Probable oil column identified within poorly developed Barrow Gp sands from 1 093 - 1 110 m.			Plugged and abandoned, dry.	
CADELL 1*	Apache	WA	Mungaroo Fm	Gas	NFD
	Logging and pressure data indicate a 74 m Mungaroo Fm gas column from 1 248 m - 1 322 m.			Plugged and abandoned.	
COASTER 1*	Wapet	WA	Barrow Gp	Oil	NFD
	Logs identified a 15 m oil column.			Plugged and abandoned.	
ENFIELD 1	Woodside	WA	Birdrong Sst	Oil	NFD
	Flowed 763 kL/d (4 800 bbl/d) of oil and 33 131 cu m/d (1.17 million scf/d) gas.			Plugged and abandoned.	
GERYON 1*	Wapet	WA	Mungaroo Fm	Gas	NFD
	Logging indicated 113 m net pay from three zones over a 242 m gross interval.			Plugged and abandoned.	
LEE 1*	Apache	WA	North Rankin, Brigadier and Mungaroo Fms.	Gas	NFD
	Identified gas/condensate columns in the North Rankin, Brigadier and Mungaroo Fms.			Plugged and abandoned.	
NARVIK 1*	Apache	WA	Birdrong Sst	Gas	NFD
	Wireline logging indicate a gross gas column of 31 m of which 10.7 m is interpreted to be productive reservoir.			Plugged and abandoned.	
NASUTUS 1	Apache	WA	Mardie Greensand Mbr	Oil and Gas	NFD
	Flowed 253.6 kL/d (1 595 bbl/d) 20.6° API oil.			Plugged and abandoned.	
NORTH GIPSY 1	Apache	WA	Brigadier Fm	Oil	NFD
	Flowed 944.4 kL/d (5 940 bbl/d) oil from a 19 m interval.			Cased and suspended as a future oil producer.	
ORTHURUS 1*	Wapet	WA	Mungaroo Fm	Gas	NFD
	Logging indicate a 53 m net pay.			Plugged and abandoned.	
SAGE 1	Apache	WA	Angel Fm	Oil	NFD
	Flowed 350 kL/d (2 200 bbl/d) oil, with 11 327 cu m/d (0.4 million scf/d) gas.			Plugged and abandoned.	
WINDSOR 1*	Apache	WA	Unavailable	Gas	NFD
	Interpreted thin, non-commercial gas column from logs.			Plugged and abandoned, dry.	

## APPENDIX C (cont'd)

Basin and well name	Operator Recovery	State	Producing formation	Discovery Remarks	Classification
GIPPSLAND					
CUTTLEFISH 1*	Amity	Vic	Strzelecki Gp	Oil and Gas	NFD
	Wireline logging indicates a thin non-commercial hydrocarbon column at top Latrobe Fm.			Plugged and abandoned, dry.	
ONSHORE					
BOWEN					
RIGEL 1	Santos	Qld	Catherine Sst	Gas	NFD
	No gas flow details.			Plugged and suspended as a potential future Catherine Sst gas producer.	
COOPER/EROMANGA					
GRANDIS 1	Energy Equity	Qld	Toolachee Fm	Gas	NFD
	Small gas flow.			Plugged and abandoned.	
RAVEN 1 (SANTOS)	Santos	SA	Patchawarra Fm	Gas	NFD
	Flowed 254 900 cu m/d (9.0 million scf/d) gas with 26 kL/d (163.5 bbl/d) 56° API condensate.			Cased and suspended as a future Permian Patchawarra gas producer.	
TOURIGA 1	Santos	SA	Patchawarra Fm	Gas	NFD
	Flowed 153 000 cu m/d (5.40 million scf/d) gas with 28 kL/d (176.1 bbl/d) 55° API condensate.			Cased and suspended as a future gas producer.	
WINNINIA NORTH 1	Santos	Qld	Toolachee Fm	Gas	NFD
	Flowed 21 238 cu m/d (0.75 million scf/d) gas.			Cased and suspended as a future Permian gas producer.	
OTWAY					
JACARANDA RIDGE 1	Boral	SA	Sawpit Sst	Oil and Gas	NFD
	Flowed 64.9 kL/d (408 bbl/d) 44.8° API oil with 22 653 cu m/d (0.8 million scf/d) gas.			Cased and suspended as a future gas producer.	
WILD DOG ROAD 1	Boral	Vic	Waarre Fm	Gas	NFD
	Flowed 427 584 cu m/d (15.1 million scf/d) gas in production testing.			Completed as a future gas producer.	
PERTH					
HAKIA 1	Arc Energy	WA	Wagina Sst	Gas	NFD
	Flowed 14 158 cu m/d (0.5 million scf/d) gas with a recovery of 0.5 kL (3 bbl) condensate.			Plugged and abandoned.	

\* Accumulation inferred from logs.

## APPENDIX C: DISCOVERIES OF PETROLEUM IN 2000

Basin and well name	Operator Recovery	State	Producing formation	Discovery Remarks	Classification
OFFSHORE					
BONAPARTE					
COLERAINE 1*	Phillips	ZOCA	Flamingo Gp	Oil	NFD
	7 m oil column intersection indicated by logs.			Plugged and abandoned, dry.	
CRUX 1	Nippon Oil	NT	Unavailable	Gas	NFD
	Flowed 962 206 cu m/d (33.98 million scf/d) gas with 121.0 kL/d (761 bbl/d) condensate			Plugged and abandoned.	
PROMETHEUS 1*	Kerr McGee	WA	Upper Permian Tern & Cape Hay Mbr Sst	Gas	NFD
	Intersected 72 m dry gas column indicated by logs; 0.4 - 0.5 Tcf indicated in Upper Permian.			Plugged and abandoned, dry.	
RUBICON 1*	Kerr McGee	WA	Unavailable	Gas	NFD
	Encountered a 30 m gross gas column indicated by logs.			Plugged and abandoned after discovering a 30m gross gas column which is considered to be an extension of the Prometheus 1 discovery 3km away.	
SARATOGA 1	Kerr McGee	WA	Flamingo Sst	Gas	NFD
	Recovered 0.25 cu m (9.25 scf) gas with 45 mL mud and mud filtrate.			Plugged and abandoned.	
BROWSE					
BRECKNOCK SOUTH 1*	Woodside	WA	Unavailable	Gas	NFD
	Logs indicate a 167 m gross hydrocarbon column over a single interval in the primary reservoir objective.			Plugged and abandoned, dry.	
DINICHTHYS 1	Inpex	WA	Unavailable	Gas	NFD
	Flowed 622 971 cu m/d (22.0 million scf/d) gas with 206.7 kL/d (1 300 bbl/d) condensate.			Plugged and abandoned.	
GORGONICHTHYS 1	Inpex	WA	Unavailable	Gas	NFD
	Flowed 710 000 cu m/d (25.07 million scf/d) gas with 15 kL/d (94.3 bbl/d) condensate.			Completed testing, status pending.	
TITANICHTHYS 1	Inpex	WA	Unavailable	Gas	NFD
	Recovered six MDT gas samples.			Plugged and abandoned.	
CARNARVON					
ANTIOPE 1*	BHP	WA	Barrow Gp	Gas	NFD
	RFT samples indicate two separate gas columns.			Plugged and abandoned.	

## APPENDIX C (cont'd)

Basin and well name	Operator Recovery	State	Producing formation	Discovery Remarks	Classification
BAKER 1*	Apache	WA	North Rankin; Brigadier; Mungaroo	Gas Plugged and abandoned.	NFD
	Gas/condensate was recorded over the following: North Rankin, 8.5 m gross interval; Brigadier Fm, 17 m gross interval; Mungaroo Fm, 6 m gross interval.				
CHAMOIS 1*	Apache	WA	M. australis Sst; Athol Fm	Oil and Gas Plugged and abandoned as a new-field gas discovery (uneconomic).	NFD
	Encountered a 3 m net pay gas column in the M. australis Sst and approximately 6 m net pay oil column in the D. caddaense Sand Mbr of the Athol Fm.				
CONISTON 1	BHP	WA	Top Barrow Gp	Oil Plugged and abandoned.	NFD
	Flowed 337 kL/d (2 119 bbl/d) heavy oil in production testing.				
CORVUS 1	Apache	WA	Triassic Mungaroo Fm	Gas Plugged and abandoned.	NFD
	Flowed 424 753 cu m/d (15 million scf/d) gas with 3.2 kL (20 bbl) condensate.				
GAEA 1*	Woodside	WA	Jurassic Angel Fm & North Rankin Fm	Gas Plugged and abandoned, dry.	NFD
	Logging indicates a 30 m gross gas column in upper reservoir and 210 m gross gas column in the lower reservoir.				
IAGO 1	Chevron	WA	Mungaroo Fm	Gas Plugged and abandoned.	NFD
	Hydrocarbons recovered from MDT.				
LAVERDA 1*	Woodside	WA	Unavailable	Oil and Gas Plugged and abandoned, dry.	NFD
	Intersected a 61 m oil column with a 9 m gas cap.				
LINDA 1	Apache	WA	Biggada Fm	Gas Plugged and abandoned.	NFD
	Flowed 891 981 cu m/d (31.5 million scf/d) gas with 233.7 kL/d (1 470 bbl/d) condensate.				
MAENAD 1A*	Chevron	WA	Unavailable	Gas Plugged and abandoned, dry.	NFD
	A discovery based on indications of gas.				
NORTH ALKIMOS 1*	Apache	WA	Flag Sst	Oil and Gas Plugged and abandoned, dry.	NFD
	Intersected a 11.9 m hydrocarbon column consisting of a 5.7 m gas cap over a 6.2 m oil leg.				
ORYX 1	Apache	WA	Unavailable	Oil Plugged and abandoned.	NFD
	Recovered 120 ml of 18.87° API oil.				
TUSK 1*	Apache	WA	Atholl Fm	Oil Plugged and abandoned, dry.	NFD
	Three oil-bearing sandstones were intersected within the Jurassic Athol Fm, with an additional oil column encountered in the Triassic Mungaroo Fm.				
URANIA 1	Wapet	WA	Unavailable	Gas Plugged and abandoned.	NFD
	Intervals were pressure-tested and tests flowed hydrocarbons to surface.				

## APPENDIX C (cont'd)

Basin and well name	Operator Recovery	State	Producing formation	Discovery Remarks	Classification
ONSHORE					
CARNARVON					
BANDAR 1*	Tap Oil	WA	Mardie Greensand	Oil	NFD
	Core results indicate 5 m oil column.			Plugged and abandoned, dry.	
PHANTOM 1	Tap Oil	WA	Mardie Greensand	Gas	NFD
	Flowed 1 416 cu m/d (0.05 million scf/d) gas.			Plugged and abandoned, dry as a new-field gas discovery.	
COOPER/EROMANGA					
BOW 1*	Santos	SA	Toolachee Fm	Gas	NFD
	Gas shows only.			Cased and suspended as a future Permian gas producer.	
BURKE EAST 1	Santos	SA	Unavailable	Gas	NFD
	Flowed an estimated 184 000 cu m/d (6.5 million scf/d) gas.			Cased and suspended as a future Permian gas producer.	
RAMSES 1	Santos	Qld	Patchawarra Fm	Gas	NFD
	Flowed 9 374 cu m/d (331 040 scf/d) gas.			Cased and suspended as a future Permian gas producer.	
ROTI WEST 1	Santos	Qld	Epsilon Fm	Gas	NFD
	Flowed 132 250 cu m/d (4.7 million scf/d) gas with 55 kL/d (346 bbl/d) 55° API condensate.			Cased and suspended as a future Permian gas producer.	
WIPPO EAST 1	Santos	Qld	Patchawarra Fm	Gas	NFD
	Flowed 10 480 cu m/d (0.37 million scf/d) gas.			Cased and suspended as a future Permian gas producer.	
GIPPSLAND					
TRIFON 1	Lakes Oil	Vic	Strzelecki Gp	Gas	NFD
	Flowed 127 426 cu m/d (4.5 million scf/d) gas with 143.1 kL/d (900 bbl/d) water.			Plugged and abandoned with non-commercial gas shows.	
OTWAY					
PENRYN 1*	Santos	Vic	Cretaceous Waarre Sst	Gas	NFD
	Intersected a 20 m gross gas column over the interval 1 673 - 1 693 m.			Cased and suspended as a future gas producer.	

\* Accumulation inferred from logs.

## **Appendix D 1999 & 2000**

### **Summary of wells drilled, 1999 and 2000**

## APPENDIX D : SUMMARY OF WELLS DRILLED

### SUMMARY OF ONSHORE AND OFFSHORE WELLS DRILLED IN 1999

Status at 31 December 1999

State or Territory	Spudded		Completed or C&S				Abandoned or Secured				DA	Sus	
	*	**	Oil	Gas	O&G	Serv	Dry	Oil	Gas	O&G	Unsp		
Exploration													
Queensland	1	23	2	7	2	-	-	3	7	2	1	-	-
New South Wales	-	1	-	-	-	-	-	-	1	-	-	-	-
Victoria	-	6	-	1	-	-	1	-	2	2	-	-	-
Tasmania	-	1	-	-	-	-	1	-	-	-	-	-	-
South Australia	1	13	-	7	1	-	2	1	3	-	-	-	-
Western Australia	3	40	1	-	-	-	11	8	6	11	4	2	-
Northern Territory	-	5	-	-	-	-	5	-	-	-	-	-	-
TOTAL	5	89	3	15	3	-	20	12	19	15	5	2	-
Development													
Queensland	1	16	2	12	-	-	-	-	2	-	-	1	-
New South Wales	-	-	-	-	-	-	-	-	-	-	-	-	-
Victoria	2	26	24	2	-	-	-	2	-	-	-	-	-
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	-	10	-	9	-	-	-	-	1	-	-	-	-
Western Australia	2	21	11	5	-	4	1	-	-	-	1	1	-
Northern Territory	-	3	-	2	1	-	-	-	-	-	-	-	-
TOTAL	5	76	37	30	1	4	1	2	3	-	1	2	-

\* Other than this period

\*\* This period

C&S Cased and Suspended

Serv Service well, classification applicable only to development wells

Unsp Unspecified

DA Drilling ahead

Sus Suspended temporarily; to resume drilling at a future date

## APPENDIX D (cont'd)

### SUMMARY OF ONSHORE WELLS DRILLED 1999

Status at 31 December 1999

State or Territory	Spudded		Completed or C&S				Abandoned or Secured				DA	Sus
	*	**	Oil	Gas	O&G	Serv	Dry	Oil	Gas	O&G	Unsp	
Exploration												
Queensland	1	23	2	7	2	-	-	3	7	2	1	-
New South Wales	-	1	-	-	-	-	-	-	1	-	-	-
Victoria	-	3	-	1	-	-	1	-	1	-	-	-
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	1	13	-	7	1	-	2	1	3	-	-	-
Western Australia	-	2	-	-	-	-	-	1	1	-	-	-
Northern Territory	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	2	42	2	15	3	-	3	5	13	2	1	-
Development												
Queensland	1	16	2	12	-	-	-	-	2	-	-	1
New South Wales	-	-	-	-	-	-	-	-	-	-	-	-
Victoria	-	2	-	2	-	-	-	-	-	-	-	-
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	-	10	-	9	-	-	-	-	1	-	-	-
Western Australia	-	9	4	3	-	-	-	-	-	-	1	1
Northern Territory	-	2	-	2	-	-	-	-	-	-	-	-
TOTAL	1	39	6	28	-	-	-	-	3	-	1	2

*	Other than this period
**	This period
C&S	Cased and Suspended
Serv	Service well, classification applicable only to development wells
Unsp	Unspecified
DA	Drilling ahead
Sus	Suspended temporarily; to resume drilling at a future date



## APPENDIX D (cont'd)

### SUMMARY OF OFFSHORE WELLS DRILLED 1999

Status at 31 December 1999

State or Territory	Spudded		Completed or C&S				Abandoned or Secured				DA	Sus	
	*	**	Oil	Gas	O&G	Serv	Dry	Oil	Gas	O&G	Unsp		
Exploration													
Queensland	-	-	-	-	-	-	-	-	-	-	-	-	-
New South Wales	-	-	-	-	-	-	-	-	-	-	-	-	-
Victoria	-	3	-	-	-	-	-	-	1	2	-	-	-
Tasmania	-	1	-	-	-	-	1	-	-	-	-	-	-
South Australia	-	-	-	-	-	-	-	-	-	-	-	-	-
Western Australia	3	38	1	-	-	-	11	7	5	11	4	2	-
Northern Territory	-	5	-	-	-	-	5	-	-	-	-	-	-
TOTAL	3	47	1	-	-	-	17	7	6	13	4	2	-
Development													
Queensland	-	-	-	-	-	-	-	-	-	-	-	-	-
New South Wales	-	-	-	-	-	-	-	-	-	-	-	-	-
Victoria	2	24	24	-	-	-	-	2	-	-	-	-	-
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	-	-	-	-	-	-	-	-	-	-	-	-	-
Western Australia	2	12	7	2	-	4	1	-	-	-	-	-	-
Northern Territory	-	1	-	-	1	-	-	-	-	-	-	-	-
TOTAL	4	37	31	2	1	4	1	2	-	-	-	-	-

*	Other than this period
**	This period
C&S	Cased and Suspended
Serv	Service well, classification applicable only to development wells
Unsp	Unspecified
DA	Drilling ahead
Sus	Suspended temporarily; to resume drilling at a future date

## APPENDIX D : SUMMARY OF WELLS DRILLED

### SUMMARY OF ONSHORE AND OFFSHORE WELLS DRILLED IN 2000

Status at 31 December 2000

State or Territory	Spudded		Completed or C&S				Abandoned or Secured				DA	Sus	
	*	**	Oil	Gas	O&G	Serv	Dry	Oil	Gas	O&G	Unsp		
Exploration													
Queensland	-	18	-	7	-	-	9	-	-	-	-	2	-
New South Wales	-	1	-	-	-	-	1	-	-	-	-	-	-
Victoria	-	3	-	1	-	-	-	-	1	-	-	-	1
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	-	8	2	5	-	-	1	-	-	-	-	-	-
Western Australia	2	55	2	-	-	-	39	2	11	1	-	1	1
Northern Territory	-	9	-	-	-	-	7	-	-	-	-	2	-
TOTAL	2	94	4	13	-	-	57	2	12	1	-	5	2
Development													
Queensland	1	22	9	12	-	-	1	-	-	-	-	1	-
New South Wales	-	-	-	-	-	-	-	-	-	-	-	-	-
Victoria	-	5	5	-	-	-	-	-	-	-	-	-	-
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	-	48	3	40	2	-	1	-	-	-	-	2	-
Western Australia	2	21	17	2	-	-	3	-	-	-	-	-	1
Northern Territory	-	5	-	1	-	-	2	2	-	-	-	-	-
TOTAL	3	101	34	55	2	-	7	2	-	-	-	3	1

\* Other than this period

\*\* This period

C&S Cased and Suspended

Serv Service well, classification applicable only to development wells

Unsp Unspecified

DA Drilling ahead

Sus Suspended temporarily; to resume drilling at a future date

## APPENDIX D (cont'd)

### SUMMARY OF ONSHORE WELLS DRILLED 2000

Status at 31 December 2000

State or Territory	Spudded		Completed or C&S				Abandoned or Secured				DA	Sus	
	*	**	Oil	Gas	O&G	Serv	Dry	Oil	Gas	O&G	Unsp		
Exploration													
Queensland	-	18	-	7	-	-	9	-	-	-	-	2	-
New South Wales	-	1	-	-	-	-	1	-	-	-	-	-	-
Victoria	-	3	-	1	-	-	-	-	1	-	-	-	1
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	-	8	2	5	-	-	1	-	-	-	-	-	-
Western Australia	-	6	-	-	-	-	6	-	-	-	-	-	-
Northern Territory	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	-	36	2	13	-	-	17	-	1	-	-	2	1
Development													
Queensland	1	22	9	12	-	-	1	-	-	-	-	1	-
New South Wales	-	-	-	-	-	-	-	-	-	-	-	-	-
Victoria	-	-	-	-	-	-	-	-	-	-	-	-	-
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	-	48	3	40	2	-	1	-	-	-	-	2	-
Western Australia	1	5	5	-	-	-	-	-	-	-	-	-	1
Northern Territory	-	2	-	1	-	-	1	-	-	-	-	-	-
TOTAL	2	77	17	53	2	-	3	-	-	-	-	3	1

*	Other than this period
**	This period
C&S	Cased and Suspended
Serv	Service well, classification applicable only to development wells
Unsp	Unspecified
DA	Drilling ahead
Sus	Suspended temporarily; to resume drilling at a future date

## APPENDIX D (cont'd)

### SUMMARY OF OFFSHORE WELLS DRILLED 2000

Status at 31 December 2000

State or Territory	Spudded		Completed or C&S				Abandoned or Secured				DA	Sus	
	*	**	Oil	Gas	O&G	Serv	Dry	Oil	Gas	O&G	Unsp		
Exploration													
Queensland	-	-	-	-	-	-	-	-	-	-	-	-	-
New South Wales	-	-	-	-	-	-	-	-	-	-	-	-	-
Victoria	-	-	-	-	-	-	-	-	-	-	-	-	-
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	-	-	-	-	-	-	-	-	-	-	-	-	-
Western Australia	2	49	2	-	-	-	33	2	11	1	-	1	1
Northern Territory	-	9	-	-	-	-	7	-	-	-	-	2	-
TOTAL	2	58	2	-	-	-	40	2	11	1	-	3	1
Development													
Queensland	-	-	-	-	-	-	-	-	-	-	-	-	-
New South Wales	-	-	-	-	-	-	-	-	-	-	-	-	-
Victoria	-	5	5	-	-	-	-	-	-	-	-	-	-
Tasmania	-	-	-	-	-	-	-	-	-	-	-	-	-
South Australia	-	-	-	-	-	-	-	-	-	-	-	-	-
Western Australia	1	16	12	2	-	-	3	-	-	-	-	-	-
Northern Territory	-	3	-	-	-	-	1	2	-	-	-	-	-
TOTAL	1	24	17	2	-	-	4	2	-	-	-	-	-

*	Other than this period
**	This period
C&S	Cased and Suspended
Serv	Service well, classification applicable only to development wells
Unsp	Unspecified
DA	Drilling ahead
Sus	Suspended temporarily; to resume drilling at a future date



## Appendix E

### Petroleum expenditure and activity, 1999

EXPENDITURE

## APPENDIX E: PETROLEUM EXPENDITURE AND ACTIVITY

### PETROLEUM EXPLORATION EXPENDITURE (\$A) – OPERATORS, 1999

State	Exploration Drilling	Geological	Regional	Seismic (2D)	Seismic (3D)	Other	Total
<b>Onshore</b>							
New South Wales	1 308 000	3 023 000	0	0	0	21 000	4 352 000
Northern Territory	0	0	0	0	0	3 000	3 000
Queensland	43 670 739	7 230 000	0	6 760 000	1 724 000	0	59 384 739
South Australia	14 969 775	43 000	0	86 000	0	9 314 000	24 412 775
Tasmania	0	0	0	0	0	0	-
Victoria	2 607 731	0	0	0	0	501 000	3 108 731
Western Australia	5 000 401	176 000	0	0	3 558 000	0	8 734 401
JPDA	0	0	0	0	0	0	-
<b>TOTAL</b>	<b>67 556 646</b>	<b>10 472 000</b>	<b>0</b>	<b>6 846 000</b>	<b>5 282 000</b>	<b>9 839 000</b>	<b>99 995 646</b>
<b>Offshore</b>							
New South Wales	0	0	0	0	0	0	-
Northern Territory	99 232 225	668 000	0	10 878 000	2 612 000	8 323 000	121 713 225
Queensland	0	0	0	0	0	0	-
South Australia	0	0	0	3 688 000	0	0	3 688 000
Tasmania	8 000 000	0	0	454 000	0	0	8 454 000
Victoria	17 893 392	0	0	1 833 000	7 000 000	0	26 726 392
Western Australia	255 731 400	3 413 000	0	61 061 000	54 549 000	55 452 000	430 206 400
JPDA	7 783 000	0	0	0	0	837 000	8 620 000
<b>TOTAL</b>	<b>388 640 017</b>	<b>4 081 000</b>	<b>0</b>	<b>77 914 000</b>	<b>64 161 000</b>	<b>64 612 000</b>	<b>599 408 017</b>
<b>TOTAL EXPLORATION</b>	<b>456 196 663</b>	<b>14 553 000</b>	<b>0</b>	<b>84 760 000</b>	<b>69 443 000</b>	<b>74 451 000</b>	<b>699 403 663</b>

Northern Territory includes Territory of Ashmore and Cartier Islands

JPDA is the Joint Petroleum Development Area

Some company expenditure data is estimated

## APPENDIX E (cont'd)

### PETROLEUM EXPLORATION, DEVELOPMENT AND PRODUCTION EXPENDITURE (\$A) – OPERATORS, 1999

State	Drilling			Seismic			Other	Total
	Exploration	Development	Production	Geological	Regional	2D	3D	
New South Wales	1 308 000	-	-	3 023 000	-	-	-	4 352 000
Northern Territory	99 232 225	34 732 000	29 343 000	668 000	-	10 878 000	2 612 000	367 436 225
Queensland	43 670 739	36 888 000	146 089 000	7 230 000	-	6 760 000	1 724 000	253 537 739
South Australia	14 969 775	23 010 000	376 412 000	43 000	-	3 774 000	-	427 522 775
Tasmania	8 000 000	-	-	-	-	454 000	-	8 454 000
Victoria	20 501 123	234 091 300	300 816 000	-	-	1 833 000	7 000 000	568 742 423
Western Australia	260 731 801	172 452 736	372 459 000	3 589 000	-	61 061 000	58 107 000	1 305 701 537
JPDA	7 783 000	-	-	-	-	-	-	8 620 000
<b>TOTAL</b>	<b>456 196 663</b>	<b>501 174 036</b>	<b>1 225 119 000</b>	<b>14 553 000</b>	<b>-</b>	<b>84 760 000</b>	<b>69 443 000</b>	<b>2 944 366 699</b>

Northern Territory includes Territory of Ashmore and Cartier Islands  
JPDA is the Joint Petroleum Development Area

### ORIGIN OF PRIVATE ENTERPRISE EXPENDITURE ON EXPLORATION, DEVELOPMENT AND PRODUCTION, 1999 (\$A)

	Onshore operations		Offshore operations	Total
Australian funds	415 296 323	633 542 277	1 048 838 600	
Reinvestment	436 320 723	871 698 377	1 308 019 100	
North American funds	32 727 000	87 820 000	120 547 000	
Other	98 182 000	368 780 000	466 962 000	
<b>TOTAL</b>	<b>982 526 046</b>	<b>1 961 840 654</b>	<b>2 944 366 700</b>	



## APPENDIX E (cont'd)

### PETROLEUM DEVELOPMENT AND PRODUCTION EXPENDITURE (\$A) – OPERATORS, 1999

State	Development Drilling	Production	Other	Total
<b>Onshore</b>				
New South Wales	-	-	-	-
Northern Territory	6 332 000	20 974 000	945 000	28 251 000
Queensland	36 888 000	146 089 000	11 176 000	194 153 000
South Australia	23 010 000	376 412 000	-	399 422 000
Tasmania	-	-	-	-
Victoria	3 091 300	40 816 000	-	43 907 300
Western Australia	15 369 100	112 395 000	89 033 000	216 797 100
JPDA	-	-	-	-
<b>TOTAL</b>	<b>84 690 400</b>	<b>696 686 000</b>	<b>101 154 000</b>	<b>882 530 400</b>
<b>Offshore</b>				
New South Wales	-	-	-	-
Northern Territory	28 400 000	8 369 000	180 700 000	217 469 000
Queensland	-	-	-	-
South Australia	-	-	-	-
Tasmania	-	-	-	-
Victoria	231 000 000	260 000 000	4 000 000	495 000 000
Western Australia	157 083 636	260 064 000	232 816 000	649 963 636
JPDA	-	-	-	-
<b>TOTAL</b>	<b>416 483 636</b>	<b>528 433 000</b>	<b>417 516 000</b>	<b>1 362 432 636</b>
<b>TOTAL DEVELOPMENT AND PRODUCTION</b>	<b>501 174 036</b>	<b>1 225 119 000</b>	<b>518 670 000</b>	<b>2 244 963 036</b>

Northern Territory includes Territory of Ashmore and Cartier Islands

JPDA is the Joint Petroleum Development Area

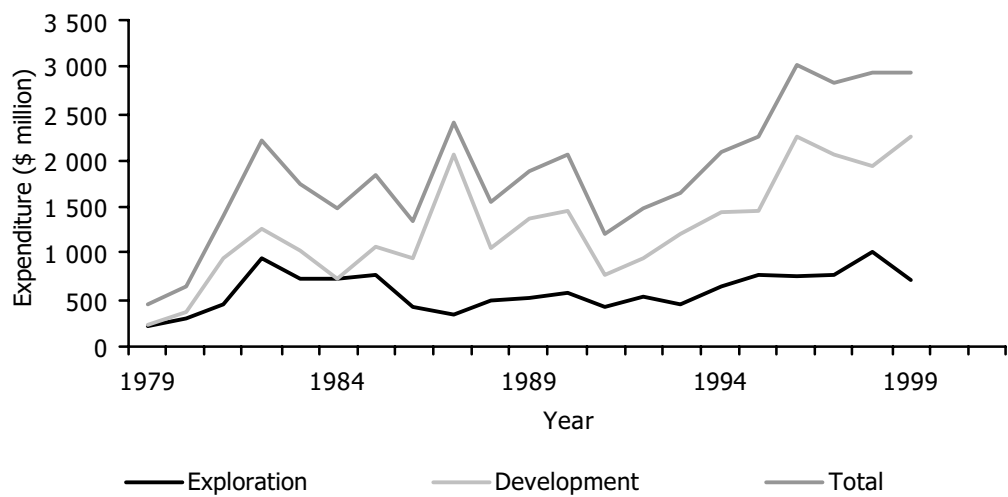
## APPENDIX E (cont'd)

### SUMMARY OF PRIVATE ENTERPRISE PETROLEUM EXPLORATION AND DEVELOPMENT EXPENDITURE AND ACTIVITY 1979–2000

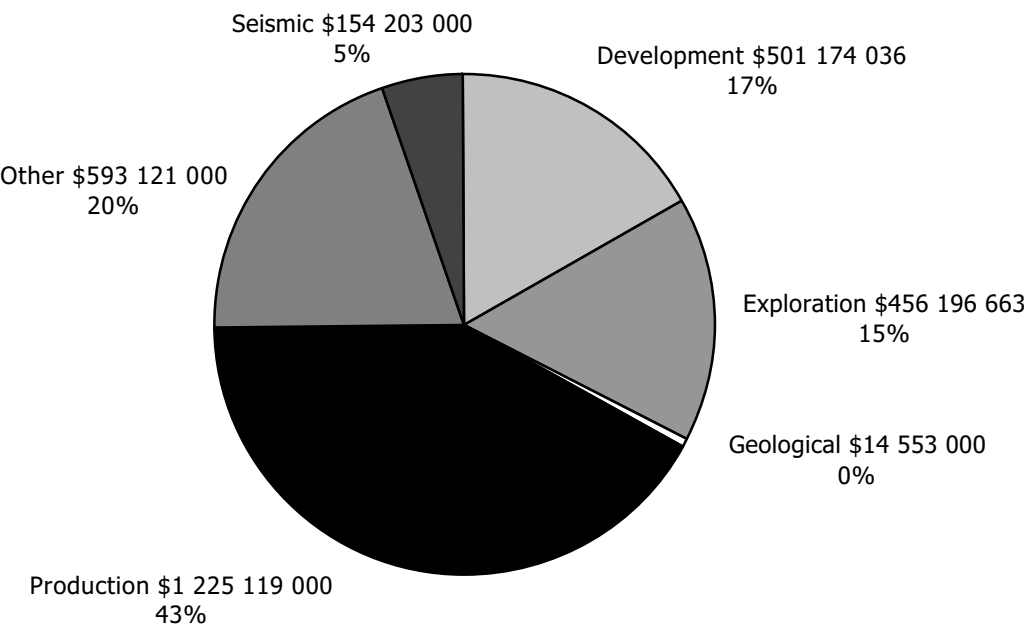
Year	Exploration Expenditure (\$ million)	Development Expenditure (\$ million)	Seismic Surveys (line km)	Exploration wells drilled	Development wells drilled
1979	223	236	41 539	52	57
1980	290	358	55 445	94	33
1981	459	944	74 438	158	55
1982	948	1 263	95 253	221	107
1983	723	1 022	38 761	211	64
1984	740	734	61 941	264	109
1985	774	1 065	90 169	270	94
1986	424	936	47 353	138	37
1987	346	2 068	42 527	225	57
1988	503	1 049	51 492	237	54
1989	521	1 378	70 750	148	76
1990	589	1 467	89 933	177	75
1991	424	776	163 642	154	86
1992	530	947	359 523	120	51
1993	441	1 207	174 469	122	55
1994	650	1 437	161 352	128	44
1995	782	1 464	161 174	148	65
1996	758	2 262	389 163	143	89
1997	772	2 063	529 529	176	155
1998	1 008	1 926	1 099 272	168	95
1999	699	2 245	309 225	95	81
2000	n/a	n/a	129 858	97	105
3000	n/a	n/a	22 605		

Note: The 1996 drilling figures have been revised

**APPENDIX E (cont'd)**



**Figure E.1 Total petroleum expenditure by private enterprise, 1979–1999**



**Figure E.2 Total petroleum expenditure by industry in 1999**

## **Appendix F**

### **Wells and metres drilled, 1981–2000**

## APPENDIX F: WELLS AND METRES DRILLED, 1981–2000

### WELLS DRILLED

Year	Exploration		Development		Total		Total
	Onshore	Offshore	Onshore	Offshore	Exploration	Development	
1981	142	16	41	14	158	55	213
1982	177	44	95	12	221	107	328
1983	162	49	38	26	211	64	275
1984	221	43	71	38	264	109	373
1985	227	43	76	18	270	94	364
1986	110	28	17	20	138	37	175
1987	210	15	37	20	225	57	282
1988	205	32	38	16	237	54	291
1989	109	39	47	29	148	76	224
1990	113	64	58	17	177	75	252
1991	118	36	68	18	154	86	240
1992	80	40	39	12	120	51	171
1993	73	49	35	20	122	55	177
1994	82	46	19	25	128	44	172
1995	92	56	30	35	148	65	213
1996	96	47	69	20	143	89	232
1997	119	57	79	76	176	155	331
1998	95	73	55	40	168	95	263
1999	44	51	40	41	95	81	176
2000	36	61	79	26	97	105	202

1996 and 1997 data has been revised

### METRES DRILLED

Year	Exploration		Development		Total		Total
	Onshore	Offshore	Onshore	Offshore	Exploration	Development	
1981	277 258	45 126	77 602	34 473	322 384	112 075	434 459
1982	324 288	128 213	154 030	28 379	452 501	182 409	634 910
1983	273 571	137 472	82 019	86 425	411 043	168 444	579 487
1984	403 329	113 486	147 294	137 645	516 815	284 939	801 754
1985	406 967	105 145	125 190	59 816	512 112	185 006	697 118
1986	204 107	62 093	27 962	65 211	266 200	93 173	359 373
1987	400 146	37 606	66 412	55 518	437 752	121 930	559 682
1988	382 520	91 571	63 324	44 413	474 091	107 737	581 828
1989	216 080	121 768	67 472	88 781	337 848	156 253	494 101
1990	235 917	161 503	94 355	58 443	397 420	152 798	550 218
1991	216 686	96 294	105 723	49 287	312 980	155 010	467 990
1992	149 324	106 095	74 981	34 457	255 419	109 438	364 857
1993	138 594	106 791	57 441	48 283	245 385	105 724	351 109
1994	185 471	122 573	35 058	72 349	308 044	107 407	415 451
1995	179 180	143 452	49 953	103 712	322 632	153 665	476 297
1996	209 171	132 568	104 255	81 342	341 739	185 597	527 336
1997	256 501	155 420	143 285	219 389	411 921	362 674	774 595
1998	213 482	184 965	102 609	129 245	398 447	231 854	630 301
1999	92 839	114 718	83 302	126 552	207 557	209 854	417 411
2000	72 138	142 923	161 817	58 519	215 061	220 336	435 397

## Appendix G

### Offshore and onshore drilling activity by State, 1990–2000

## APPENDIX G: OFFSHORE AND ONSHORE DRILLING ACTIVITY BY STATE, 1990-2000

### OFFSHORE

#### New-field wildcat wells drilled

State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NT	15	13	5	5	5	4	2	3	10	6	9
SA	2	-	-	4	-	1	-	-	2	-	-
Tas	-	-	2	-	-	-	-	-	1	1	-
Vic	10	-	3	5	-	6	-	2	2	1	-
WA	-	18	17	19	11	20	26	29	39	33	47
JPDA	22	-	1	3	10	3	3	6	4	1	1
<b>TOTAL</b>	<b>49</b>	<b>31</b>	<b>28</b>	<b>36</b>	<b>26</b>	<b>34</b>	<b>31</b>	<b>40</b>	<b>58</b>	<b>42</b>	<b>57</b>

#### Extension/appraisal wells drilled

State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NT	3	2	-	-	-	4	1	1	3	-	-
Tas	-	-	-	-	-	-	-	-	1	-	-
Vic	-	-	4	2	2	3	-	-	-	2	-
WA	12	3	8	11	17	9	11	18	11	7	4
JPDA	-	-	-	-	1	6	5	3	-	-	-
<b>TOTAL</b>	<b>15</b>	<b>5</b>	<b>12</b>	<b>13</b>	<b>20</b>	<b>22</b>	<b>17</b>	<b>22</b>	<b>15</b>	<b>9</b>	<b>4</b>

#### Development wells drilled

State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NT	2	3	1	-	4	-	-	2	4	1	3
Vic	7	7	10	11	9	20	12	53	30	26	5
WA	8	8	1	9	12	15	7	22	6	14	17
JPDA	-	-	-	-	-	-	-	1	-	-	1
<b>TOTAL</b>	<b>17</b>	<b>18</b>	<b>12</b>	<b>20</b>	<b>25</b>	<b>35</b>	<b>19</b>	<b>78</b>	<b>40</b>	<b>41</b>	<b>26</b>

NT includes Territory of Ashmore and Cartier Islands

JPDA is the Joint Petroleum Development Area

## APPENDIX G (cont'd)

### ONSHORE

#### New-field wildcat wells drilled

State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NSW	-	1	3	2	-	-	1	1	-	1	1
NT	7	8	2	3	-	-	1	-	1	-	-
Qld	28	38	29	25	25	36	29	41	31	13	12
SA	17	19	13	8	11	12	29	26	33	9	3
Tas	-	-	-	-	-	-	-	6	-	-	-
Vic	8	2	3	1	5	3	3	7	3	3	2
WA	13	8	4	6	15	6	5	6	8	2	6
<b>TOTAL</b>	<b>73</b>	<b>76</b>	<b>54</b>	<b>45</b>	<b>56</b>	<b>57</b>	<b>68</b>	<b>87</b>	<b>76</b>	<b>28</b>	<b>24</b>

#### Extension/appraisal wells drilled

State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NSW	-	-	-	-	-	1	-	-	-	-	-
NT	1	-	1	-	2	-	-	1	-	-	-
Qld	10	13	10	15	11	21	13	28	9	11	6
SA	23	25	12	11	10	9	10	10	10	5	5
Vic	-	1	-	-	-	1	-	-	-	-	1
WA	6	3	3	2	3	3	5	1	-	-	-
<b>TOTAL</b>	<b>40</b>	<b>42</b>	<b>26</b>	<b>28</b>	<b>26</b>	<b>35</b>	<b>28</b>	<b>40</b>	<b>19</b>	<b>16</b>	<b>12</b>

#### Development wells drilled

State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NT	1	-	2	9	2	4	3	3	-	2	2
Qld	23	19	19	12	7	9	28	28	19	17	23
SA	23	27	16	6	4	4	12	30	21	10	48
Vic	-	-	-	-	1	-	-	-	-	2	-
WA	11	22	2	8	5	13	32	19	15	9	6
<b>TOTAL</b>	<b>58</b>	<b>68</b>	<b>39</b>	<b>35</b>	<b>19</b>	<b>30</b>	<b>75</b>	<b>80</b>	<b>55</b>	<b>40</b>	<b>79</b>





## **Appendix H**

### **Australia's offshore production facilities**

## Appendix H: AUSTRALIA'S OFFSHORE PRODUCTION FACILITIES

Basin/Development	Operator	Platform type	Product	Producing to	Start-up date
<b>BONAPARTE</b>					
Buffalo	BHPP	Mini platform	Oil	Buffalo	December-99
Challis	BHPP	Floating facility	Oil	Challis Venture	December-89
Corallina	Woodside	Floating facility	Oil	Northern Endeavour	November-99
Elang	BHPP	Floating facility	Oil	Modec Venture 1	July-98
Jabiru	BHPP	Floating facility	Oil	Jabiru Venture	August-86
Kakatua	BHPP	Floating facility	Oil	Modec Venture 1	July-98
Laminaria	Woodside	Floating facility	Oil	Northern Endeavour	November-99
Skua (ab. Jan-97)	BHPP	Floating facility	Oil	Skua Venture	December-91
<b>CARNARVON</b>					
Agincourt	Apache	Monopod	Oil and Gas	Agincourt	August-97
Bambra	Apache	Seapole	Gas	Bambra A	
Campbell	Apache	Monopod	Gas	Campbell A	October-92
Chervil	WMC	Monopod	Oil	Chervil	August-89
Chinook/Scindian	BHPP	Floating facility	Oil and Gas	Griffin Venture	January-94
Cossack	Woodside	Floating facility	Oil	Cossack Pioneer	November-95
Cowle	Wapet	Monopod	Oil	Cowle A	April-91
East Spar	WMC	Subsea	Gas	East Spar	October-96
Goodwyn	Woodside	Conventional steel	Gas	Goodwyn A	February-95
Griffin	BHPP	Floating facility	Oil and Gas	Griffin Venture	January-94
Harriet	Apache	Conventional steel	Oil and Gas	Harriet A	January-86
Harriet	Apache	Monopod	Oil	Harriet B	January-86
Harriet	Apache	Monopod	Oil	Harriet C	January-86
Lambert	Woodside	Floating facility	Oil	Cossack Pioneer	November-95
North Herald (ab. Nov-97)	WMC	Monopod	Oil	North Herald	December-87
North Rankin	Woodside	Conventional steel	Gas	North Rankin A	July-84
Roller	Wapet	Monopod	Oil	Roller B	March-94
Roller	Wapet	Monopod	Oil	Roller C	March-94
Roller	Wapet	Monopod	Oil	Roller A	March-94
Saladin	Wapet	Mini-platform	Oil	Saladin C	November-89
Saladin	Wapet	Mini-platform	Oil	Saladin A	November-89
Saladin	Wapet	Mini-platform	Oil	Saladin B	November-89
Saladin	Wapet	Monopod	Oil	Yammaderry A	April-91
Sinbad	Apache	Monopod	Gas	Sinbad A	October-92
Skate	Wapet	Monopod	Oil	Skate	March-94
South Pepper (ab. Nov-97)	WMC	Tripod	Oil	South Pepper	January-88
Stag	Apache	Conventional steel	Oil	Stag	May-98
Talisman (ab. Jul-92)	Marathon	Floating facility	Oil	Acqua Blu	January-89
Wanaea	Woodside	Floating facility	Oil	Cossack Pioneer	November-95
Wandoo	Ampolex	Concrete gravity	Oil	Wandoo B	March-97
Wandoo	Ampolex	Monopod	Oil	Wandoo A	October-93
Wonnich	Apache	Tripod	Oil and Gas	Wonnich	July-99

## APPENDIX H (cont'd)

Basin/Development	Operator	Platform type	Product	Producing to	Start-up date
<b>GIPPSLAND</b>					
Barracouta	Esso	Conventional steel	Oil and Gas	Barracouta	March-69
Blackback	Esso	Subsea template	Oil	Mackerel	June-99
Bream	Esso	Conventional steel	Oil and Gas	Bream	March-88
Bream	Esso	Concrete gravity	Oil and Gas	Bream B	January-97
Dolphin	Esso	Monotower	Oil	Dolphin	January-90
Flounder	Esso	Conventional steel	Oil and Gas	Flounder	December-84
Halibut	Esso	Conventional steel	Oil	Halibut	March-70
Halibut	Esso	Conventional steel	Oil	Cobia	April-83
Halibut	Esso	Conventional steel	Oil	Fortescue	September-83
Kingfish	Esso	Conventional steel	Oil	Kingfish A	April-71
Kingfish	Esso	Conventional steel	Oil	Kingfish B	November-71
Kingfish	Esso	Conventional steel	Oil	West Kingfish	December-82
Mackerel	Esso	Conventional steel	Oil	Mackerel	December-77
Marlin	Esso	Conventional steel	Oil and Gas	Marlin	November-69
Moonfish	Esso	Platform wells	Oil	Snapper	July-97
Perch	Esso	Monotower	Oil	Perch	January-90
Seahorse	Esso	Subsea completion	Oil	Barracouta	January-90
Snapper	Esso	Conventional steel	Oil and Gas	Snapper	July-81
Tarwhine	Esso	Subsea completion	Oil	Barracouta	January-90
Tuna	Esso	Conventional steel	Oil and Gas	Tuna	May-79
Tuna	Esso	Concrete gravity	Oil and Gas	West Tuna	December-96
Whiting	Esso	Mini-platform	Oil and Gas	Whiting	October-89



## **Appendix I**

### **Crude oil and gas production by basin pre-1990 and 1990–1999**

# **APPENDIX I: CRUDE OIL AND GAS PRODUCTION BY BASIN, pre-1990 and 1990 to 1999 (GL and Bm3)**

Basin	pre-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total
<b>CRUDE OIL</b>												
Adavale	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Amadeus	0.725	0.087	0.082	0.107	0.099	0.140	0.143	0.143	0.016	0.258	0.092	1.892
Bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bonaparte	5.810	4.868	3.495	3.918	2.348	1.835	1.486	1.165	0.988	1.368	3.953	31.234
Bowen/Surat	4.256	0.127	0.095	0.080	0.071	0.019	0.091	0.007	0.102	0.079	0.050	4.976
Browse	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Canning	0.269	0.023	0.018	0.015	0.021	0.041	0.000	0.012	0.005	0.007	0.008	0.419
Carnarvon	41.248	5.203	5.212	4.828	4.004	8.710	8.663	11.245	10.127	11.118	8.222	118.580
Cooper/Eromanga	17.003	2.832	2.596	2.208	1.959	1.622	1.633	1.441	1.403	1.248	1.175	35.121
Gippsland	405.300	17.200	16.800	16.000	16.500	14.800	12.300	10.900	12.600	9.200	11.000	542.600
Otway	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Perth	0.235	0.040	0.034	0.030	0.045	0.035	0.025	0.021	0.016	0.010	0.008	0.499
<b>Total</b>	<b>474.847</b>	<b>30.379</b>	<b>28.332</b>	<b>27.186</b>	<b>25.048</b>	<b>27.202</b>	<b>24.341</b>	<b>24.934</b>	<b>25.257</b>	<b>23.288</b>	<b>24.508</b>	<b>735.321</b>
<b>GAS</b>												
Adavale	0.000	0.000	0.000	0.000	0.000	0.000	0.044	0.009	0.096	0.034	0.023	0.206
Amadeus	0.883	0.308	0.327	0.464	0.718	0.429	0.396	0.504	0.635	1.689	0.581	6.934
Bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bonaparte	0.005	0.676	0.222	0.459	0.245	0.191	0.149	0.096	0.067	0.043	0.049	2.202
Bowen/Surat	7.369	0.917	0.959	1.027	1.058	1.091	1.213	1.009	0.768	0.647	0.720	16.778
Browse	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Canning	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Carnarvon	21.004	8.593	9.910	10.788	12.357	15.019	15.961	16.816	18.696	21.184	18.797	169.125
Cooper/Eromanga	61.111	5.030	4.515	4.811	4.935	7.660	4.684	3.316	5.900	11.137	9.635	122.736
Gippsland	84.000	6.000	5.900	6.500	5.900	7.000	6.600	5.800	6.300	3.800	7.600	145.400
Otway	0.018	0.018	0.033	0.041	0.069	0.117	0.131	0.138	0.141	0.155	0.238	1.099
Perth	12.624	0.604	0.192	0.245	0.350	0.425	0.314	0.386	0.152	0.487	0.215	15.994
<b>Total</b>	<b>187.014</b>	<b>22.147</b>	<b>22.058</b>	<b>24.335</b>	<b>25.632</b>	<b>31.933</b>	<b>29.492</b>	<b>28.074</b>	<b>32.755</b>	<b>39.176</b>	<b>37.858</b>	<b>480.474</b>

# APPENDIX I (cont'd)

(million barrels and billion cubic feet)

Basin	pre-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total
<b>CRUDE OIL</b>												
Adavale	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Amadeus	4.562	0.547	0.514	0.673	0.625	0.878	0.899	0.899	0.101	1.623	0.579	11.900
Bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bonaparte	36.544	30.619	21.983	24.643	14.768	11.542	9.347	7.328	6.214	8.604	24.864	196.456
Bowen/Surat	26.769	0.796	0.600	0.503	0.448	0.118	0.572	0.044	0.639	0.497	0.312	31.299
Browse	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Canning	1.694	0.143	0.113	0.094	0.132	0.258	0.000	0.075	0.031	0.044	0.050	2.635
Carnarvon	259.443	32.725	32.781	30.367	25.184	54.784	54.489	70.729	63.697	69.930	51.715	745.844
Cooper/Eromanga	106.946	17.812	16.327	13.887	12.322	10.205	10.271	9.066	8.826	7.850	7.391	220.901
Gippsland	2 549.256	108.185	105.669	100.637	103.782	93.089	77.365	68.559	79.251	57.866	69.188	3 412.845
Otway	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Perth	1.476	0.251	0.216	0.189	0.283	0.220	0.157	0.132	0.101	0.063	0.050	3.139
<b>Total</b>	<b>2 986.690</b>	<b>191.078</b>	<b>178.203</b>	<b>170.993</b>	<b>157.544</b>	<b>171.094</b>	<b>153.100</b>	<b>156.833</b>	<b>158.860</b>	<b>146.477</b>	<b>154.148</b>	<b>4 625.021</b>
<b>GAS</b>												
Adavale	0.000	0.000	0.000	0.000	0.000	0.000	1.554	0.318	3.390	1.201	0.812	7.275
Amadeus	31.173	10.879	11.556	16.386	25.354	15.153	13.985	17.799	22.425	59.647	20.518	244.874
Bass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bonaparte	0.177	23.873	7.840	16.210	8.652	6.745	5.262	3.390	2.366	1.519	1.730	77.764
Bowen/Surat	260.236	32.384	33.867	36.269	37.363	38.533	42.851	35.615	27.122	22.849	25.422	592.510
Browse	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Canning	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Carnarvon	741.754	303.459	349.977	380.978	436.387	530.396	563.663	593.857	660.249	748.113	663.816	5 972.649
Cooper/Eromanga	2 158.152	177.652	159.441	169.911	174.295	270.529	165.415	117.105	208.359	393.303	340.260	4 334.422
Gippsland	2 966.460	211.890	208.358	229.548	208.359	247.205	233.079	204.827	222.484	134.197	268.394	5 134.801
Otway	0.636	0.636	1.165	1.448	2.437	4.132	4.626	4.873	4.979	5.474	8.405	38.811
Perth	445.823	21.341	6.763	8.652	12.360	15.009	11.089	13.632	5.368	17.198	7.593	564.828
<b>Total</b>	<b>6 604.410</b>	<b>782.114</b>	<b>778.968</b>	<b>859.402</b>	<b>905.206</b>	<b>1 127.702</b>	<b>1 041.524</b>	<b>991.416</b>	<b>1 156.743</b>	<b>1 383.500</b>	<b>1 336.950</b>	<b>16 967.934</b>





## **Appendix J**

### **Australian petroleum pipelines, 2000**

## APPENDIX J: AUSTRALIAN PETROLEUM PIPELINES, 2000

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
QUEENSLAND						
ONSHORE						
1	Moonie to Brisbane	Moonie Pipeline Co Pty Ltd	Oil	306	273	1964
2	Wallumbilla (Roma) to Brisbane	AGL Pipelines Ltd	Gas	397, 37	273, 324	1969
3	Kincora to Wallumbilla	Oil Co of Aust Ltd	Gas	53	219	1977
4	Silver Springs to Wallumbilla	Petroz NL	Gas	102	219	1978
6	Jackson to Moonie	Santos Ltd	Oil	800	324	1983-84
7	MLIA to Wallumbilla	Elgas Ltd	Propane and Butane	14	60	1984
8	Tickalara to Cooroo	Santos Ltd	Oil	115	114	1989
9	Kenmore to Eromanga	Inland Oil Refiners (Qld) Pty Ltd	Oil	18	89	1989
10	Arcturus Separation Plant to PPL30	Oil Co of Aust Ltd	Gas	107	168	1990
11	Central Treatment Plant to PPL30	Oil Co of Aust Ltd	Gas	41	168	1989
12	Epsilon to SA Border	Santos Ltd	Gas	18	273	1992
13	Qld. Gas Centre (Ballera) to Moomba (See PL5 South Australia)	Santos Ltd	Gas and Condensate	90	400	1993
14	Patroclus to Tickalara/Cooroo Line	Santos Ltd	Oil	15	80	1993
15	PPL24 to Barcaldine	Australian Gasfields Ltd	Gas	420	168	1994-97
16	Judga to Munkah	Santos Ltd	Gas	13	219	1993
17	Munkah to QGC	Santos Ltd	Gas	13.5	356	1993
18	Yanda to QGC	Santos Ltd	Gas	8	324	1993
19	Dinmore lateral	Gas Corp of Qld	Gas	1.2	168	1993
20	Namarah to Yarrabend	Oil Co of Aust	Gas	45	168	1994
21	SA border to NSW border	East Australian Pipeline Ltd	Gas	56	864	1974
22	Major to Boxleigh	Angari Pty Ltd	Gas	16	89	1994
23	SA border to NSW border	Gorodok Pty Ltd	Ethane	38	219	1974-76
24	Ballera to Wallumbilla	Tenneco Energy Queensland Pty Ltd	Gas	750	406	1996
30	Wallumbilla to Gladstone	Duke Queensland Pipeline Pty Ltd	Gas	530	324	1989-90
30	Gladstone to Rockhampton	Duke Queensland Pipeline Pty Ltd	Gas	100	219	1991
31	Roti to Judga	Santos Ltd	Gas	-	-	1996
34	Stokes to SA Border	Santos Ltd	Gas	7	300	1996
35	Challum to Ballera Gas Centre	Santos Ltd	Gas	15	400	1996
36	Karmona to Ballera Gas Centre	Santos Ltd	Gas	15	300	1996
37	Wackett to Ballera Gas Centre	Santos Ltd	Gas	15	200	1996
38	Okotoko to Karmona	Santos Ltd	Gas	10	200	1996
39	Wippo to Okotoko	Santos Ltd	Gas	10	200	1996
40	Yawa to Munkah	Santos Ltd	Gas	5	150	1996
41	Ballera to Mt Isa	Roverton Pty Ltd	Gas	841	324	1997

## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
42	PPL41 to Carrington	AGL Pipelines (Qld) Pty Ltd	Gas	100	100, 150	1998
45	Bunya/Vernon/Cocos to Central Treatment Plant	Australian Gasfields Ltd	Gas	130	—	1998
49	Mica Creek Meter Station to Power Station	Mount Isa Mines Ltd	Gas	1	508, 114	1998
50	Mica Creek Meter Station	Roverton Pty Ltd	Gas	—	324	1998
51	Mica Creek to Mt Isa	Roverton Pty Ltd	Gas	6.2	168, 89	1998
53	Central Treatment Plant to PPL41	Australian Gasfields Ltd	Gas	42.6	168	Under construction
54	PPL41 to Phosphate Hill	WMC Fertilizers	Gas	4.5	323	Under construction

### NEW SOUTH WALES

#### ONSHORE

na	Moomba to MW10 (loopline)	East Australian Pipeline Ltd	Gas	10	660	1984
1	Wilton to Horsley Park	The Australian Gas Light Co Ltd	Gas	52	864	1976
2	Wilton to Wollongong	The Australian Gas Light Co Ltd	Gas	32	508	1978
3	Horsley Park to Plumpton	AGL Gas Networks Ltd	Gas	10	168	1976
7	Plumpton to Killingworth	The Australian Gas Light Co Ltd	Gas	141	508	1982
8	Killingworth to Walsh Point	Newcastle Gas Co Pty Ltd (AGL)	Gas	32.9	508, 355	1982
15	Moomba to Wilton	East Australian Pipeline Ltd	Ethane	1 375	219	1997
16	Moomba (Qld border) to Wilton (Sydney)	East Australian Pipeline Ltd	Gas	1 142	864	1974-76
17	Young to Bathurst Spur	East Australian Pipeline Ltd	Gas	2	114	1986-87
17	Young to Lithgow	East Australian Pipeline Ltd	Gas	212	168	1986-87
18	Young to Oberon Spur	East Australian Pipeline Ltd	Gas	21	168	1987-88
19	Young to Wagga Wagga	East Australian Pipeline Ltd	Gas	131	324, 89	1980-81
20	Junee to Griffith/Leeton	East Australian Pipeline Ltd	Gas	180	168, 114	1993
21	Dalton to Canberra	East Australian Pipeline Ltd	Gas	52	273	1981
22	Young to Orange Spur	East Australian Pipeline Ltd	Gas	24	114	1986-87
23	Culcairn to Wagga Wagga	East Australian Pipeline Ltd	Gas	88	457	1998
24	Vic/NSW border to Culcairn (from Barnawatha)	Transmission Pipelines Australia	Gas	57	457	Under construction
25	Marsden to Dubbo	AGL Pipelines (NSW) Pty Ltd	Gas	255	168, 219	Under construction
26	Vic/NSW to Wilton	Duke Energy	Gas	467	450	Under construction

### VICTORIA

#### OFFSHORE

PL 1	Barracouta A to shore (Vic/PL and Vic/PL(V))	Esso Australia Resources Ltd	Oil and Gas	18.5	450	1967
PL 2	Marlin A to shore (Vic/PL and Vic/PL(V))	Esso Australia Resources Ltd	Gas	46.3	500	1967

## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
PL 4	Barracouta A to shore (Vic/PL and Vic/PL(V))	Esso Australia Resources Ltd	Oil and Gas	18.9	150	1969
PL 5	Halibut to shore (Vic/PL and Vic/PL(V))	Esso Australia Resources Ltd	Oil	71	600	1969
PL 6	Kingfish A to Kingfish B	Esso Australia Resources Ltd	Oil	4.5	400	1969
PL 7	Kingfish B to Halibut A	Esso Australia Resources Ltd	Oil	26.9	500	1969
PL 8	Mackerel A to Halibut A	Esso Australia Resources Ltd	Oil	9.2	300	1975
PL 9	Tuna A to Marlin A	Esso Australia Resources Ltd	Gas	18.7	300	1975
PL10	Tuna A to Marlin A	Esso Australia Resources Ltd	Oil	18.7	200	1975
PL11	Marlin to Halibut to shore pipeline (Vic/PL5)	Esso Australia Resources Ltd	Oil	1.6	300	1975
PL13	Snapper A to shore (Vic/PL and Vic/PL(V))	Esso Australia Resources Ltd	Gas	31	600	1979
PL14	West Kingfish to Kingfish A	Esso Australia Resources Ltd	Oil	3.5	300	1981
PL15	Cobia to Halibut A	Esso Australia Resources Ltd	Oil	5.5	300	1982
PL16	Fortescue to Halibut A	Esso Australia Resources Ltd	Oil	4.1	300	1982
PL17	Flounder to Tuna A	Esso Australia Resources Ltd	Oil and Gas	16.7	250	1983
PL18	Flounder to Tuna A	Esso Australia Resources Ltd	Oil and Gas	16.7	250	1983
PL19	Snapper A to Marlin A	Esso Australia Resources Ltd	Oil	17.8	250	1983
PL20	Bream to West Kingfish	Esso Australia Resources Ltd	Oil	32	400	1987
PL21	Perch to Dolphin to shore (Vic/PL and Vic/PL(V))	Esso Australia Resources Ltd	Oil	26.4	300	1989
PL22	Seahorse to Barracouta A	Esso Australia Resources Ltd	Oil	11.3	150	1989
PL23	Tarwhine to Barracouta A	Esso Australia Resources Ltd	Oil	17.4	200	1989
PL24	Whiting to Snapper A	Esso Australia Resources Ltd	Oil	14.6	250	1989
PL25	Whiting to Snapper A	Esso Australia Resources Ltd	Gas	14.6	200	1989
PL26	Bream B to Bream A	Esso Australia Resources Ltd	Oil and Gas	6.2	250	1996
PL27	West Tuna to Tuna A	Esso Australia Resources Ltd	Oil and Gas	3.5	100	1996
PL28	West Tuna to Tuna A	Esso Australia Resources Ltd	Oil and Gas	3.5	250	1996
PL29	Blackback Termination to Mackerel	Esso Australia Resources Ltd	Oil and Gas	22.7	200	1999
SL 1	Cobia Sub-sea to Mackerel A	Esso Australia Resources Ltd	Oil	-	-	Revoked Sep 1984
SL 2	Marlin A to Halibut A to Mackerel A	Esso Australia Resources Ltd	Fuel gas	31.5	100	1979
SL 3	Cobia to Halibut A	Esso Australia Resources Ltd	Fuel gas	5.6	100	1982
SL 4	Fortescue to Halibut A	Esso Australia Resources Ltd	Fuel gas	4.1	100	1982
SL 5 & SL 5(v)	Perch to Dolphin to shore	Esso Australia Resources Ltd	Gas	32.6	100	1989
SL 6	Seahorse to Barracouta A	Esso Australia Resources Ltd	Gas	11.3	65	1989
SL 7	Tarwhine to Barracouta A	Esso Australia Resources Ltd	Gas	17.4	65	1989
SL 8	Blackback Termination to Mackerel	Esso Australia Resources Ltd	Fuel gas	22.7	65	1999
SL 9	Marlin to West Kingfish	Esso Australia Resources Ltd	Fuel gas	53	150	1999
<b>ONSHORE</b>						
1	Beach to Longford (Barracouta)	Esso Australia Resources Ltd	Liquids or Gas	24.7	450	1969

## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
2	Beach to Longford (Marlin)	Esso Australia Resources Ltd	Liquids or Gas	55.1	500	1969-70
11	Crib Point to Dandenong (see PL172)	Stratus Pty Ltd	Gas	39.1	300	1969
13	Dandenong to Highett	Multinet Pty Ltd	Gas	17.8	300	1969
14	Highett to Spencer St Bridge	Multinet Pty Ltd	Gas	19.7	300	1969
15	Altona to West Melbourne	Westar Pty Ltd	Gas	13.9	300	1969
16	Altona to Derrimut	Westar Pty Ltd	Gas	6.4	100	1969
17	Derrimut to West Melbourne	Westar Pty Ltd	Gas	15.7	150	1969
18	Footscray to Sunshine	Westar Pty Ltd	Gas	12.4	200, 300, 400	1968
19	West Footscray to Williamstown	Westar Pty Ltd	Gas	8.9	400, 300, 200	1968
27, 34	Longford to Cranbourne/Hastings/Long Island Point	Esso Australia Resources Ltd	LPG	185.5	250	1968
28	Ringwood to Vermont	Multinet Pty Ltd	Gas	3.5	200	1968
33	Dandenong to Edithvale	Multinet Pty Ltd	Gas	11.6	150	1969
35	Dutson to Hastings	Esso Australia Resources Ltd	Liquids	185.2	700	1969
36	Dandenong to West Melbourne	Transmission Pipelines Australia Pty Ltd	Gas	35.6	200, 750	1969
39	Beach to Longford (Halibut)	Esso Australia Resources Ltd	Oil	55.2	650	1969
40	Dandenong to Templestowe	Multinet Pty Ltd	Gas	37	450	1969
42	Beach to Longford (Barracouta)	Esso Australia Resources Ltd	Liquids or Gas	32	150	1969
43,44	Longford/Sale/Maffra	Stratus Pty Ltd	Gas	31.5	100	1969
46	Long Island Point to Crib Point	Esso Australia Resources Ltd	Liquids	10.8	1050	1969
49	Dandenong to Frankston	Stratus Pty Ltd	Gas	29.5	200	1970
50	Dandenong to Morwell with branch lines	Transmission Pipelines Australia Pty Ltd	Gas	128.8	450, 100, 75	1970
51	Ringwood to Lilydale	Multinet Pty Ltd	Gas	16.5	250	1970
53	Hastings to Altona	Esso Australia Resources Ltd	Ethane	78.3	250	1970
56	Dandenong to West Melbourne with branch lines	Multinet Pty Ltd	Gas	44.5	450, 300, 200, 150	1970
57	Corio/Belmont/Point Henry	Westar Pty Ltd	Gas	24.8	350, 250, 200	1970
61,62	Hastings/Tyabb/Mornington	Stratus Pty Ltd	Gas	17.7	250, 150, 100	1970-71
63	Golden Beach to Longford (Loopline)	Esso Australia Resources Ltd	Liquids or Gas	28.5	750	1971
64	Fawkner to Craigieburn	Westar Pty Ltd	Gas	10.8	250	1971
65	Tyabb/Altona/Corio	WAG Pipeline Pty Ltd	Liquids	135.9	600, 450	1971
66	North Melbourne to Fairfield	Stratus Pty Ltd	Gas	11.3	250	1971
67	Tyers to Maryvale	Transmission Pipelines Australia Pty Ltd	Gas	5.6	150	1971
75	Longford to Dandenong	Transmission Pipelines Australia Pty Ltd	Gas	173.8	750	1971
78	Brooklyn/Ballarat/Bendigo	Transmission Pipelines Australia Pty Ltd	Gas	196.3	200, 150	1972

## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
81	Brooklyn to Corio	Transmission Pipelines Australia Pty Ltd	Gas	52.5	350, 400	1973
96	Longford	Esso Australia Resources Ltd	Gas	1.4	600	1975
99	Fyansford to Waurn Ponds	Westar Pty Ltd	Gas	12.8	250	1975
100	Mooroolbark to Lilydale	Multinet Pty Ltd	Gas	4.9	250	1975
101,	Keon Park/ Wodonga/ Shepparton	Transmission Pipelines Australia Pty Ltd	Gas	318	300, 600	1975
102	Wodonga	Stratus Pty Ltd	Gas	5	200	1975
103	Shepparton to Mooroopna Shepparton	Stratus Pty Ltd	Gas	10.5	200	1975
107	Clyde North	Transmission Pipelines Australia Pty Ltd	Gas	2	100	1975
108	South Melbourne to Brooklyn	Transmission Pipelines Australia Pty Ltd	Gas	12.8	750	1976
113	Brooklyn to Altona	Westar Pty Ltd	Gas	4.9	500, 300	1976
116	Snapper to Valve Site 1	Esso Australia Resources Ltd	Gas	1.3	600	1979
117, 120	Longford to Tyers	Transmission Pipelines Australia Pty Ltd	Gas	65.1	750	1978
121	Tyers to Morwell	Transmission Pipelines Australia Pty Ltd	Gas	15.7	500	1978
122	Derrimut to Sunbury	Transmission Pipelines Australia Pty Ltd	Gas	24	150	1979
125	Guildford to Maryborough	Transmission Pipelines Australia Pty Ltd	Gas	33	150	1980
126	Longford to Westbury	Esso Australia Resources Ltd	Liquids	87	700	1980
128	Mt Franklin to Kyneton	Transmission Pipelines Australia Pty Ltd	Gas	24	300	1980
129	Dandenong to Princes Highway	Transmission Pipelines Australia Pty Ltd	Gas	5	750, 500	1980
131	Mt Franklin to Bendigo	Transmission Pipelines Australia Pty Ltd	Gas	53	300	1980
132	Shepparton to Tatura	Transmission Pipelines Australia Pty Ltd	Gas	16	200	1981
133	Longford Plant to Metering Station	Esso Australia Resources Ltd	Gas	1.1	600, 350	1981
134	Ballan to Ballarat	Transmission Pipelines Australia Pty Ltd	Gas	23	300	1981
135	Bunyip to Pakenham	Transmission Pipelines Australia Pty Ltd	Gas	19	750	1981
136	Tatura to Kyabram	Transmission Pipelines Australia Pty Ltd	Gas	22	200	1982
137	Bittern to Dromana	Stratus Pty Ltd	Gas	19	200	1982
139	Langwarrin to Frankston	Stratus Pty Ltd	Gas	8	200	1982
141	Pakenham to Woolert	Transmission Pipelines Australia Pty Ltd	Gas	91	750	1982
142	Knox to Shire of Sherbrooke	Multinet Pty Ltd	Gas	6	150	1983
143	Wandong to Kyneton	Transmission Pipelines Australia Pty Ltd	Gas	59	300	1984
145	Paaratte to Allansford	Transmission Pipelines Australia Pty Ltd	Gas	34	150	1985-86

## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
149	Seaspray to Longford (Perch/Dolphin)	Esso Australia Resources Ltd	Oil and Gas	19.4	300	1989
150	Longford to Seaspray (Perch/Dolphin)	Esso Australia Resources Ltd	Oil and Gas	17.8	100	1989
152	Kyabram to Echuca	Transmission Pipelines Australia Pty Ltd	Gas	30.5	150	1990
153	Crib Pt to Hastings	Van Ommeren Tank Terminals Aust Pty Ltd	Liquids	9.4	300	1992
155	Allansford to Portland	Transmission Pipelines Australia Pty Ltd	Gas	115	150	1992
167	Dromana to Rye	Transmission Pipelines Australia Pty Ltd	Gas	17.3	200	1993
168	Curdievale to Cobden	Transmission Pipelines Australia Pty Ltd	Gas	27.7	150	1993
171	Codrington to Hamilton	Transmission Pipelines Australia Pty Ltd	Gas	54.5	150	1994
172	Crib Pt to Long Island Pt to Dandenong (previously licenced under PL11 & 12)	Elgas Reticulation Pty Ltd	LPG	43	100	1969
175	Longford to Vic/NSW border	Duke Energy	Gas	277	450	Under construction
176	Chiltern to Rutherglen	Transmission Pipelines Australia Pty Ltd	Gas	14.3	200	1998
177	Drouin to Bunyip	Transmission Pipelines Australia Pty Ltd	Gas	13.6	750	1998
178	Barnawatha to Murray River	Transmission Pipelines Australia Pty Ltd	Gas	5.5	450	1998
179	Carisbrook to Horsham	Coastal Gas Pipelines Victoria Pty Ltd	Gas	182	200, 100	1998
182	Rutherglen to Koonoomoo	Transmission Pipelines Australia Pty Ltd	Gas	104.3	200	1998
183	Colac to Lara	Transmission Pipelines Australia Pty Ltd	Gas	94.8	500	—
186	Rutherglen City Gate	Stratus Pty Ltd	Gas	1	100	1998
187	Yarrawonga, Cobram and Koonoomoo City Gates	Stratus Pty Ltd	Gas	1	100	1998
188	Ballarat City Gate to Dana St	Westar Pty Ltd	Gas	7.1	200	1998
189	Bendigo City Gate to Able St	Westar Pty Ltd	Gas	9.2	200	1998
196	Portland City Gate to Portland Smelter	Westar Pty Ltd	Gas	15.8	200	1998
197	Brooklyn City Gate to Somerville Rd	Westar Pty Ltd	Gas	1.7	400	1998
201	Templestowe to Keon Park East	Status Pty Ltd	Gas	16.5	450	1998
203	Keon Park West to North Melbourne	Westar Pty Ltd	Gas	25	450	1998
204	Cecil St to Pickles St	Multinet Pty Ltd	Gas	1.4	200	1998
208	North Melbourne to West Melbourne	Stratus Pty Ltd	Gas	3.5	450	1998
215	Tramway Rd Morwell	Stratus Pty Ltd	Gas	4.85	80	1998
219	Wodonga City Gate to Murray River	Stratus Pty Ltd	Gas	8.4	300, 200	1998



## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
226	SA/Vic border to Mildura	Envestra Ltd	Gas	105.2	100	1999
227	Iona to North Paaratte	GPU Gas Net Pty Ltd	Gas	7.8	150	1999
<b>SOUTH AUSTRALIA</b>						
<b>ONSHORE</b>						
na	Big Lake to Moomba	Epic Energy SA Pty Ltd	Gas	10	450	1976
na	Tirrawarra to Moomba	Epic Energy SA Pty Ltd	Oil	49.2	250	1982
na	Merrimelia Satellite to Tirrawarra/Moomba tie-in	Epic Energy SA Pty Ltd	Oil	16.5	168	1982
na	Tirrawarra to Moomba	Epic Energy SA Pty Ltd	Gas	49.2	500	1982
na	Fly Lake to Tirrawarra	Epic Energy SA Pty Ltd	Gas	15	400	1983
na	Burke to Dullingari	Epic Energy SA Pty Ltd	Gas	5.7	406	1982
na	Dullingari to Della to Moomba	Epic Energy SA Pty Ltd	Oil	48.2, 20.6	168, 219	1984-84
na	Gidgealpa to Moomba	Epic Energy SA Pty Ltd	Gas	25.6	400	1970
na	Moomba to Moomba SC	Epic Energy SA Pty Ltd	Ethane (reinjection)	9.1, 41.4	273, 324	1984-88
na	Kidman to Dullingari	Epic Energy SA Pty Ltd	Gas	15.5	300	1984
na	Dullingari to Strzelecki tee	Epic Energy SA Pty Ltd	Liquids	21	168	1982
na	Strzelecki tee to Moomba	Epic Energy SA Pty Ltd	Liquids	48	219	1983
na	Daralingie to Moomba	Epic Energy SA Pty Ltd	Gas	44	500	1984
na	Gidgealpa to Moomba	Epic Energy SA Pty Ltd	Oil	20.6	150	1985
na	Strzelecki to Strzelecki tee	Epic Energy SA Pty Ltd	Liquids	12	168	1983
na	Moomba South Central to Moomba	Epic Energy SA Pty Ltd	Gas	11	450	1975
na	Della to Moomba	Epic Energy SA Pty Ltd	Gas	42.6	750	1980
na	Toolachee to Della	Epic Energy SA Pty Ltd	Gas	37	750	1984
na	Strzelecki to Dullingari / Moomba tie-in	Epic Energy SA Pty Ltd	Oil	12.3	168	1984
na	Kurunda to Gidgealpa satellite	Epic Energy SA Pty Ltd	Gas	16.5	219	1988
na	Munkarie 4 to Toolachee	Epic Energy SA Pty Ltd	Gas	3.6, 14.9	300, 406	1984-84
na	Dullingari to Della	Epic Energy SA Pty Ltd	Gas	24.8	750	1981
na	Fly Lake to Tirrawarra	Epic Energy SA Pty Ltd	Oil	15	250	1983
na	Mudrangie to Tirrawarra (abandoned)	Epic Energy SA Pty Ltd	Gas and Condensate	20.3	150	1982
na	Wancoocha to Moomba	Epic Energy SA Pty Ltd	Oil	58.3	100	1985
na	Epsilon to Moomba	Epic Energy SA Pty Ltd	Gas	90	250	1992
na	Moorari to Tirrawarra	Epic Energy SA Pty Ltd	Gas	13.5	200	1983
na	Bookabourdie to Tirrawarra	Epic Energy SA Pty Ltd	Gas and Condensate	43.8	324	1988
na	Meranji to Merrimelia Satellite	Epic Energy SA Pty Ltd	Oil	16.5	100	1986
na	Big Lake satellite (new to old)	Epic Energy SA Pty Ltd	Gas	10.4	500	1976
na	Leleptian to Fly Lake	Epic Energy SA Pty Ltd	Gas	16.5	200	1989
PL1	Peterborough lateral	Epic Energy SA Pty Ltd	Gas	1.9	90	1969
PL1	Port Bonython lateral	Epic Energy SA Pty Ltd	Gas	5.5	168	1988-89
PL1	Whyalla lateral	Epic Energy SA Pty Ltd	Gas	87.7	200	1988-89

## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
PL1	Wasleys to Torrens Is loop	Epic Energy SA Pty Ltd	Gas	41.5	508	1969
PL1	Burra lateral	Epic Energy SA Pty Ltd	Gas	15	90	1969
PL1	Port Pirie lateral	Epic Energy SA Pty Ltd	Gas	77.8	170	1969
PL1	Dry Creek lateral	Epic Energy SA Pty Ltd	Gas	1.3	324	1969
PL1	Taperoo lateral	Epic Energy SA Pty Ltd	Gas	1.2	324	1969
PL1	Moomba to Adelaide	Epic Energy SA Pty Ltd	Gas	781	560	1969
PL1	Mintaro lateral	Epic Energy SA Pty Ltd	Gas	0.3	220	1969
PL1	Nurioopta lateral	Epic Energy SA Pty Ltd	Gas	1.6	114	1969
PL1	Angaston lateral	Epic Energy SA Pty Ltd	Gas	38.7	220	1969
PL2	Moomba to Point Bonython	Epic Energy SA Pty Ltd	Liquids	659	355	1982
PL3	Katnook to SAFRIES	Epic Energy SA Pty Ltd	Gas	4.5	60	1990
PL4	Katnook/Glencoe to Mount Gambier & Snuggery	Epic Energy SA Pty Ltd	Gas	67	168	1991
PL5	Ballera to Moomba (See PL13 Queensland)	Santos Ltd	Gas and Condensate	92	400	1993
PL6	Angaston to Berri lateral Sedan Junction to Murray Bridge	Epic Energy SA Pty Ltd	Gas	231	114	1994
PL7	Moomba to Qld border (Moomba-Sydney Gas Pipeline)	East Aust. Pipeline Gas Ltd	Gas	111 (10km loop incl.)	660, 864	1974
PL8	Moomba- Sydney	ICI Aust Engineering P/L	Ethane	101	219	1996
PL9	SW Queensland-Mettika	Santos Ltd	Gas and Condensate	3.5	324	1996
PL10	Moomba Interconnection	Boral Energy Pipelines Pty Ltd	Gas	0.087	250	1999
PL11	Berri-Mildura	Envestra Ltd	Gas	42.3	114	1999

### WESTERN AUSTRALIA

#### OFFSHORE

na	Roller 'A' platform to Thevenard Island	West Australian Petroleum Pty Ltd	Oil and Gas	27	500	1994
na	Thevenard Island to Roller 'A' platform	West Australian Petroleum Pty Ltd	Gas	27	150	1994
TPL1	Harriet 'A' to Varanus Island	Apache Northwest Pty Ltd	Oil	6.5	219	1984
WA-1-PL	North Rankin 'A' to Withnell Bay	Woodside Petroleum Development Ltd	Gas	134	1 016	1983
WA-2-PL	Goodwyn to North Rankin 'A'	Woodside Petroleum Development Ltd	Gas and Condensate	25	762	1993
TPL2	Varanus Island Export	Apache Northwest Pty Ltd	Oil	3.5	762	1985
TPL3	Varanus Island Export	WMC Resources Ltd	Oil	23.7	168	1987
TPL3	South Pepper to Airlie Is; South Pepper to North Herald	WMC Resources Ltd	Oil	1.2	219	1987
WA-3-PL	Griffin FPSO to shore	BHP Petroleum (Aust) Pty Ltd	Gas	29.2	219	1993
TPL4	Airlie Island to mooring terminal	WMC Resources Ltd	Oil	1.94	508	1987
WA-4-PL	Wanaca FPSO to North Rankin 'A'	Woodside Petroleum Development Ltd	Gas	32.3	324	1995
WA-5-PL	East Spar to Varanus Island	Western Mining Corp	Gas	41	356	1996

## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
TPL5	Harriet 'A' to Varanus Island	Apache Northwest Pty Ltd	Gas	6.3	168	1989
TPL6	Saladin to Thevenard Island to mooring terminal	West Australian Petroleum Pty Ltd	Gas	5	114	1989
TPL6	Harriet 'A' to Varanus Island	West Australian Petroleum Pty Ltd	Oil and Gas	7.5	168	1989
TPL6	Harriet 'A' to Varanus Island	West Australian Petroleum Pty Ltd	Oil and Gas	2.8	219	1989
TPL6	Harriet 'A' to Varanus Island	West Australian Petroleum Pty Ltd	Gas	1.5	89	1989
WA-6-PL	Stag oilfield production facility	Apache Dampier Pty Ltd	Oil	2	219	1997
TPL6	Harriet 'A' to Varanus Island	West Australian Petroleum Pty Ltd	Oil	6.4	610	1989
TPL7	Chervil to Airlie Island	WMC Resources Ltd	Oil	6.4	210	1989
TPL8	Varanus Island to shore	Apache Northwest Pty Ltd	Gas	70	300	1992
TPL9	Barrow Island to mooring terminal	West Australian Petroleum Pty Ltd	Oil	10.4	508	1967
TPL10	Griffin FPSO to shore	BHP Petroleum (Australia) Pty Ltd	Gas	32.5	219	1994
TPL11	Roller 'A' platform to shore	West Australian Petroleum Pty Ltd	Gas	8.5	168	1993
TPL12	East Spar to Varanus Island	WMC Resources Ltd	Gas	21.8	356	1996
TPL13	Varanus Island to mainland	Apache Energy Ltd	Gas	70	406	1998-99
TPL14	Wonnich platform to Varanus Island	Apache Energy Ltd	Gas	31	219	1998-99
<b>ONSHORE</b>						
na	South Caversham lateral	Epic Energy (WA) Transmission Pty Ltd	Gas	0.5	100	1984
na	Hammersley lateral	Epic Energy (WA) Transmission Pty Ltd	Gas	3.7	200	1985
na	Withnell Bay to Wagerup	Epic Energy (WA) Transmission Pty Ltd	Gas	1 482	660, 508	1984
na	Worsley lateral	Epic Energy (WA) Transmission Pty Ltd	Gas	33	250	1984
na	Kwinnana / Russell Rd	Epic Energy (WA) Transmission Pty Ltd	Gas	7.5	300	1986
na	Eneabba lateral	Epic Energy (WA) Transmission Pty Ltd	Gas	7	100	1986
na	Gascoyne Junction to Carnarvon	Epic Energy (WA) Transmission Pty Ltd	Gas	170	150	1987
na	East Perth lateral	Epic Energy (WA) Transmission Pty Ltd	Gas	17.5	250	1986
na	Wagerup to Bunbury	Epic Energy (WA) Transmission Pty Ltd	Gas	59	250, 200, 150	1984
na	Western Mining lateral	Epic Energy (WA) Transmission Pty Ltd	Gas	7	300, 150	1986
na	Viveash lateral	Epic Energy (WA) Transmission Pty Ltd	Gas	2.5	150	1985
na	Geraldton lateral	Epic Energy (WA) Transmission Pty Ltd	Gas	68	150	1985

## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
PL1-3 R1, PL5 R1	Dongara to Pinjarra (including Fremantle & Rockingham laterals)	CMS Gas Transmission of Australia Pty Ltd	Gas	445	356, 168, 114	1972
PL6 R2	Woodada to Eneabba	Consolidated Gas Pty Ltd	Gas	12	219	1982
PL7	Blina to Great Northern Highway	Capital Energy NL	Oil	29	114	1983
PL8	Karratha to Pt Lambert	Robe River Mining Co Pty Ltd	Gas	57	273	1984
PL9	Dampier (loading)	Woodside Petroleum Development Pty Ltd	Condensate	1	762	1984
PL12	Varanus Island	Apache Northwest Pty Ltd	Oil	0.26	762, 219	1985
PL14	Airlie Island	Novus Airlie Pty Ltd	Oil	0.64	508, 219	1987
PL15	Thevenard Island	WAPET	Oil	2.7	600, 168	1988
PL16	Tubridgi to Compressor Station No 2	Sagasco South East Inc	Gas	87.5	168	1992
PL17	Shore (Varanus Is) to Compressor Station No 1	Apache Northwest Pty Ltd	Gas	30	300	1992
PL18	Beharra Springs to WANG Pipeline	Boral Energy Developments Ltd	Gas	1.6	168	1992
PL19	Tubridgi Gas Plant to Compressor Station No 2	Sagasco South East Inc	Gas	88	273	1993
PL20	Shore to Griffin Gas Plant	BHP Petroleum Pty Ltd	Gas	6	219	1994
PL21	Shore to Tubridgi Gas Plant	West Australian Petroleum Pty Ltd	Gas	8	168	1990
PL22	Karratha to Port Hedland	Epic Energy (Pilbara Pipeline) Pty Ltd	Gas	213	450	1994
PL23	Wang Pipeline to SECWA Pipeline (Dongara area)	CMS Gas Transmission of Australia	Gas	0.5	-	1994
PL24	Yaraloola to Kalgoorlie	Southern Cross Pipelines Aust Pty Ltd	Gas	1 400	400, 350	1996
PL25	Mt Keith lateral	Southern Cross Pipelines (NPL) Aust Pty Ltd	Gas	8.1	219	1996
PL26	Leinster lateral	Southern Cross Pipelines Aust Pty Ltd	Gas	5.2	219	1996
PL27	Kambalda Nickel lateral	Southern Cross Pipelines Aust Pty Ltd	Gas	44.3	219	1996
PL28	Parkerston Power Station	Southern Cross Pipelines (NPL) Aust Pty Ltd	Gas	8.2	219	1996
PL29	Lowendal Island	Apache East Spar Pty Ltd	Gas	0.6	356	1996
PL30	Varanus Island	Apache Oil Aust Pty Ltd	Gas	0.6	356	1996
PL31	Port Hedland	Epic Energy Pty Ltd	Gas	5	-	1996
PL32	Dongara area	AGL Pipelines (WA) Pty Ltd	Gas	10	-	1996
PL33	GGT pipeline's Wiluna Scraper Station to Wiluna Gold Pty Ltd's plant site	AGL Pipelines (WA) Pty Ltd	Gas	8	89	1997
PL34	GGT pipeline's Wiluna Scraper Station to Jundee Gold Mine Plant site	AGL Pipelines (WA) Pty Ltd	Gas	45	114	1997
PL35	GGT Pipeline at Three Rivers to the Plutonic Gold Mine site	AGL Pipelines (WA) Pty Ltd	Gas	19.2	114	1997

## APPENDIX J (cont'd)

Pipeline licence	Location/Route	Operator	Product	Length (km)	Pipe diameter	Period constructed
PL36	Offtake tee in GGT Pipeline 16km W of Leonora to the Murrin Murrin plant site	Boral Energy Pipelines Pty Ltd	Gas	85	219	1997
PL37	Flange on GGT Pipeline East of Broad Arrow to Cawse Nickel plant site	AGL Pipelines (WA) Pty Ltd	Gas	35	168	1997-98
PL38	Burrup Gas Plant to Inlet station on Karratha to Port Hedland Pipeline	Epic Energy (WA) Transmission Pty Ltd	Gas	24	610	1998
PL39	Offtake tee in DBNGP to Cockburn Cement Plant near Dongara	Boral Energy Pipelines Pty Ltd	Gas	18	114	1998
PL40	Dampier to Bunbury (DBNGP)	Epic Energy (WA) Transmission Pty Ltd	Gas	1 789	660	1984
PL41	Thomas Rd valve station to Tiwest Cogeneration Plant	Epic Energy (WA) Transmission Pty Ltd	Gas	580	168	1998
PL42	PL17 end flange to GGT Pipeline	Apache Energy Ltd	Gas	1	-	1998-99
PL43	Geraldton to Windimurra	AGL Pipelines (WA) Pty Ltd	Gas	365	219, 168	Under construction
PL44	Parmelia Pipelines to Canning Vale Gardens Industrial Estate	CMS Gas Transmission of Australia	Gas	1	200	Under construction
PL45	Parmelia Pipeline to Jandakot Wool Scourers in East Rockingham	CMS Gas Transmission of Australia	Gas	400	200	Under construction
PL47	Compressor Station No. 10 (Kwinana) to Rockingham lateral.	Epic Energy (WA) Transmission Pty Ltd	Gas	1	-	1999
PL48	GGT offtake, (approx 16km West of Leonora), to Leonora Power Station.	Statewest Power Pty Ltd	Gas	17	-	1999

### NORTHERN TERRITORY

#### ONSHORE

1	Palm Valley to Alice Springs	Holyman Limited/NT Gas Pty Ltd	Gas	145	200	1983
2	Mereenie to Alice Springs	Santos Ltd	Oil	270	200	1985
4	Tennant Creek lateral	NT Gas Pty Ltd	Gas	23	273	1986
4	Katherine lateral	NT Gas Pty Ltd	Gas	6.8	114	1986
4	Mereenie to Tylers Pass	NT Gas Pty Ltd	Gas	116	324	1986
4	Palm Valley to Darwin	NT Gas Pty Ltd	Gas	1512	356	1986
7	Brewer Estate	Energy Equity Co Ltd	Gas	10	114	1989
8	Cosmo Howley lateral	International Oil Pty Ltd/NT Gas Pty Ltd	Gas	25	90	1988
10	Elliot lateral	NT Gas Pty Ltd	Gas	4	60	1990
17	Daly Waters to McArthur River Mine	PAWA/NT Gas Pty Ltd	Gas	333	168	1995
18	Darwin City Gate to Berrimah	NT Gas Pty Ltd	Gas	19	168	1996
19	Mt Todd Mine lateral	NT Gas Pty Ltd	Gas	10	219	1996

## **Appendix K**

### **Key to petroleum exploration and development titles, 2000**

## APPENDIX K: KEY TO PETROLEUM EXPLORATION AND DEVELOPMENT TITLES, 2000

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
<b>QUEENSLAND</b>			ATP378P	4 blocks; 310 km <sup>2</sup> Moonie* (84.38) Vamgas (15.63)	30-Sep-00
<b>ONSHORE</b>			ATP379P	1 blocks; 83 km <sup>2</sup> Kingston* (100.00)	30-Sep-99
<b>EXPLORATION PERMIT - AUTHORITY TO PROSPECT</b>			ATP465P	2 blocks; 155 km <sup>2</sup> Roma* (80.00) Victoria Petroleum (20.00)	31-Aug-00
ATP172P	4 blocks; 332 km <sup>2</sup> Australian Gasfields* (100.00)	30-Jun-01	ATP470P	16 blocks; 1 328 km <sup>2</sup> OCA* (100.00)	28-Feb-03
ATP212P	8 blocks; 664 km <sup>2</sup> OCA* (20.00) Angari (49.00) Anulka (6.00) Bridge (7.50) Mosaic (10.00) Santos (7.50)	31-Jul-01	ATP471P	22 blocks; 1 826 km <sup>2</sup> Santos* (100.00)	28-Feb-03
ATP244P	4 blocks; 332 km <sup>2</sup> Anulka* (100.00)	31-Jul-01	ATP525P	5 blocks; 387 km <sup>2</sup> OCA* (100.00)	30-Sep-04
ATP259P	378 blocks; 31 379 km <sup>2</sup> Delhi* (50.00) Santos (50.00)	31-Dec-02	ATP526P	43 blocks; 3 570 km <sup>2</sup> Tri-Star Pet.* (100.00)	31-Oct-00 (R.P.)
ATP267P	30 blocks; 2 490 km <sup>2</sup> Transoil* (17.47) Chimelle (40.94) Moonie (33.83) Santos (7.77)	30-Nov-99 (R.P.)	ATP529P	362 blocks; 30 051 km <sup>2</sup> Galilee* (50.00) Beaconsfield (50.00)	30-Nov-00 (R.P.)
ATP269P	49 blocks; 3 794 km <sup>2</sup> OCA* (69.59) Petromin (5.81) Australian Gasfields (19.60) Inland Oil (5.00)	31-Dec-99	ATP530P	29 blocks; 2 407 km <sup>2</sup> Roma* (100.00)	31-Dec-00 (R.P.)
ATP299P	24 blocks; 1 858 km <sup>2</sup> Transoil* (62.00) CPC (1.00) Moonie (5.00) OCA (10.00) Santos (22.00)	31-Dec-00 (R.P.)	ATP538P	26 blocks; 2 158 km <sup>2</sup> Dyad* (85.00) Golden Triangle (7.50)	31-Jan-01 (R.P.)
ATP333P	5 blocks; 415 km <sup>2</sup> Victoria International* (64.00) Victoria Oil (36.00)	31-May-01	ATP539P	77 blocks; 6 392 km <sup>2</sup> Tyers Investments* (100.00)	31-Jan-01 (R.P.)
ATP336P	31 blocks; 2 573 km <sup>2</sup> AAR* (85.00) Interstate Pipelines (15.00)	30-Sep-99	ATP541P	29 blocks; 2 408 km <sup>2</sup> Maple* (100.00)	31-Jan-01
ATP337P	100 blocks; 7 744 km <sup>2</sup> Santos* (50.00) OCA (50.00)	30-Sep-03	ATP543P	67 blocks; 5 562 km <sup>2</sup> Faulconer* (100.00)	31-Jan-01
ATP364P	102 blocks; 8 467 km <sup>2</sup> BHP* (100.00)	28-Feb-02	ATP544P	49 blocks; 4 068 km <sup>2</sup> API* (100.00)	30-Apr-01
ATP375P	3 blocks; 249 km <sup>2</sup> OCA* (100.00)	30-Sep-02 (R.P.)	ATP545P	50 blocks; 4 151 km <sup>2</sup> Roma* (100.00)	31-Jan-01 (R.P.)
			ATP548P	35 blocks; 2 906 km <sup>2</sup> IOR* (92.00) Mawson (2.06) Midland (5.94)	31-Mar-01
			ATP549P	114 blocks; 9 464 km <sup>2</sup> Australian Gasfields* (100.00)	30-Apr-01
			ATP550P	15 blocks; 1 245 km <sup>2</sup> Discovery* (100.00)	30-Jun-01

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
ATP552P	6 blocks; 498 km <sup>2</sup> Brisbane Pet.* (15.00) Tyers Petroleum (20.00) Peedamullah (20.00) Interstate Energy (39.00) Hyland (2.00) Olympus (4.00)	30-Jun-01	ATP590P	81 blocks; 6 272 km <sup>2</sup> Tyers Investments* (100.00)	30-Sep-98 (R.P.)
ATP553P	14 blocks; 1 162 km <sup>2</sup> Santos* (50.00) OCA (50.00)	30-Nov-01	ATP592P	47 blocks; 3 639 km <sup>2</sup> Tri-Star Pet.* (100.00)	31-Aug-02
ATP554P	6 blocks; 498 km <sup>2</sup> Dyad* (100.00)	30-Nov-00	ATP593P	26 blocks; 2 013 km <sup>2</sup> Azeeza* (60.00) Sequoil (40.00)	30-Sep-98 (R.P.)
ATP556P	41 blocks; 3 404 km <sup>2</sup> Maneroo* (100.00)	30-Nov-01 (R.P.)	ATP594P	20 blocks; 1 549 km <sup>2</sup> Triple J* (50.00) Icon (50.00)	30-Sep-98 (R.P.)
ATP560P	34 blocks; 2 633 km <sup>2</sup> First Sourcenergy* (42.50) Forcenergy (42.50)	30-Nov-01	ATP595P	31 blocks; 2 400 km <sup>2</sup> Tyers Investments* (100.00)	31-Oct-98 (R.P.)
ATP564P	65 blocks; 5 033 km <sup>2</sup> OCA* (100.00)	30-Apr-02	ATP596P	4 blocks; 310 km <sup>2</sup> Rincon (100.00)	31-Oct-02
ATP566P	7 blocks; 542 km <sup>2</sup> Maneroo* (100.00)	31-May-98 (R.P.)	ATP598P	16 blocks; 1 239 km <sup>2</sup> Amity* (100.00)	30-Nov-02
ATP567P	231 blocks; 17 888 km <sup>2</sup> Pagehurst* (100.00)	30-Apr-02	ATP602P	12 blocks; 1 328 km <sup>2</sup> OCA* (100.00)	31-Dec-02
ATP573P	17 blocks; 1 316 km <sup>2</sup> Tyers Investments* (100.00)	30-Apr-98 (R.P.)	ATP603P	4 blocks; 310 km <sup>2</sup> Tyers Investments* (100.00)	31-Oct-98 (R.P.)
ATP574P	5 blocks; 387 km <sup>2</sup> Victoria Petroleum* (100.00)	30-Apr-02	ATP606P	90 blocks; 6 969 km <sup>2</sup> Tri-Star Pet.* (100.00)	31-Oct-02
ATP577P	7 blocks; 581 km <sup>2</sup> OCA* (54.00) Petromin (7.00) Beach (32.00) Bligh (7.00)	30-Jun-98 (R.P.)	ATP608P	53 blocks; 4 104 km <sup>2</sup> Victoria Petroleum* (60.00) Sequoil (40.00)	30-Nov-02
ATP578P	65 blocks; 5 033 km <sup>2</sup> Shogoil* (100.00)	30-Jun-98 (R.P.)	ATP610P	5 blocks; 387 km <sup>2</sup> Budside* (52.50) Mosaic (3.50) Anderson Oil (2.58) Anulka (18.92) Eastern Energy (22.50)	31-Dec-02
ATP582P	365 blocks; 28 264 km <sup>2</sup> Cooper-Eromanga* (100.00)	31-Jul-98 (R.P.)	ATP613P	18 blocks; 1 394 km <sup>2</sup> Magellan* (98.00) Qgas (2.00)	31-Mar-03
ATP584P	40 blocks; 3 097 km <sup>2</sup> Tri-Star Pet.* (100.00)	31-Jul-02	ATP616P	8 blocks; 619 km <sup>2</sup> Liberty* (100.00)	07-Jan-00 (R.P.)
ATP587P	12 blocks; 996 km <sup>2</sup> Millennium* (45.00) Cobrex (45.00) Maple (10.00)	31-Jul-98 (R.P.)	ATP618P	151 blocks; 11 693 km <sup>2</sup> Tyers Investments* (100.00)	07-Jan-00 (R.P.)
ATP588P	34 blocks; 2 822 km <sup>2</sup> LINC* (100.00)	31-Jul-98 (R.P.)	ATP619P	34 blocks; 2 633 km <sup>2</sup> Bonnerwell* (100.00)	29-Feb-00 (R.P.)
ATP589P	193 blocks; 14 945 km <sup>2</sup> Victoria Oil* (60.00) Sequoil (40.00)	31-Aug-98 (R.P.)	ATP620P	6 blocks; 465 km <sup>2</sup> Pangaea* (100.00)	28-Feb-00
			ATP621P	7 blocks; 542 km <sup>2</sup> Bobwyns* (100.00)	29-Feb-04
			ATP623P	2 blocks; 249 km <sup>2</sup> Tri-Star Pet.* (100.00)	28-Feb-02



## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
ATP626P	30 blocks; 2 323 km <sup>2</sup> Jakabar* (100.00)	31-Aug-99 (R.P.)	PL10	257 km <sup>2</sup> Bony Creek, Tarrawonga AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11
ATP641P	122 blocks; 9 447 km <sup>2</sup> BNG* (100.00)	31-Mar-02	PL11	257 km <sup>2</sup> Back Creek, Tarrawonga AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11
ATP643P	49 blocks; 3 794 km <sup>2</sup> BNG* (100.00)	31-Oct-03	PL12	257 km <sup>2</sup> Oberina, Trinidad AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11
ATP644P	50 blocks; 3 872 km <sup>2</sup> BNG* (100.00)	31-Oct-99	PL13	100 km <sup>2</sup> Pleasant Hills AAR* (85.00) Interstate Pipelines (15.00)	31-Oct-92 (R.P.)
ATP645P	31 blocks; 2 400 km <sup>2</sup> BNG* (100.00)	31-Dec-03	PL14	252 km <sup>2</sup> Kincora OCA* (100.00)	31-May-07
ATP655P	20 blocks; 1 549 km <sup>2</sup> Tipperary* (100.00)	31-Oct-03	PL15	259 km <sup>2</sup> Boxleigh Santos* (66.67) Petroz (33.33)	29-Apr-19
ATP675P	46 blocks; 3 562 km <sup>2</sup> Tipperary* (100.00)	29-Feb-04	PL16	259 km <sup>2</sup> Silver Springs Santos* (50.00) Petroz (50.00)	29-Apr-19
ATP682P	1 blocks; 77 km <sup>2</sup> Kingston* (100.00)	29-Feb-04	PL17	104 km <sup>2</sup> Bennett Santos* (60.00) Timor Oil (26.70) Petromin (10.00) Golden West (3.30)	28-Feb-99 (R.P.)
ATP683P	112 blocks; 8 673 km <sup>2</sup> Arrow* (100.00)	29-Feb-04	PL18	184 km <sup>2</sup> Yellowbank Creek Brisbane Pet.* (50.00) Delbaere (50.00)	31-Aug-03
<b>PETROLEUM LEASE</b>			PL21	260 km <sup>2</sup> Beldene, Royston OCA* (64.00) Alliance (12.50) Oil Investments (19.00) Angari (4.50)	18-Apr-04
PL 1	258 km <sup>2</sup> Cabawin, Moonie Santos* (100.00)	31-Dec-06	PL22	230 km <sup>2</sup> Waratah OCA* (64.00) Alliance (12.50) Angari (4.50) Oil Investments (19.00)	31-May-04
PL 2	258 km <sup>2</sup> Alton Santos* (100.00)	31-Dec-08	PL23	234 km <sup>2</sup> Jackson Santos* (40.00) Delhi (32.00) Vamgas (15.50) OCA (2.50) Mawson (6.00) Inland Oil (2.00) Australian Gasfields (2.00)	31-Aug-04
PL 3	257 km <sup>2</sup> Timbury Hills AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11			
PL 4	257 km <sup>2</sup> Pine Ridge AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11			
PL 5	257 km <sup>2</sup> Raslie, Yanalah AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11			
PL 6	257 km <sup>2</sup> Pringle Downs, Roma AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11			
PL 7	257 km <sup>2</sup> Blyth Creek, Richmond AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11			
PL 8	257 km <sup>2</sup> Wallumbilla South AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11			
PL 9	257 km <sup>2</sup> Anabranah, Maffra AAR* (85.00) Interstate Pipelines (15.00)	28-Feb-11			

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PL24	201 km <sup>2</sup> Jackson South Santos* (40.00) Vamgas (15.50) Australian Gasfields (2.00) Delhi (32.00) Inland Oil (2.00) Mawson (6.00) OCA (2.50)	14-Dec-03	PL31	260 km <sup>2</sup> Bodalla South OCA* (72.75) Beach (22.00) Petromin (5.25)	26-May-06
PL25	257 km <sup>2</sup> Naccowlah South Santos* (40.00) OCA (2.50) Vamgas (15.50) Australian Gasfields (2.00) Inland Oil (2.00) Delhi (32.00) Mawson (6.00)	28-Feb-05	PL32	260 km <sup>2</sup> Kenmore OCA* (72.75) Petromin (5.25) Beach (22.00)	31-Dec-06
PL26	257 km <sup>2</sup> Chookoo Santos* (40.00) OCA (2.50) Vamgas (15.50) Mawson (6.00) Australian Gasfields (2.00) Delhi (32.00) Inland Oil (2.00)	28-Feb-05	PL33	257 km <sup>2</sup> Koora, Nockatunga, Winna Chimelle* (40.94) Santos (7.77) Transoil (17.47) Moonie (33.83)	14-Apr-07
PL27	255 km <sup>2</sup> Newstead, Yarrabend OCA* (64.00) Angari (4.50) Alliance (12.50) Oil Investments (19.00)	31-Aug-05	PL34	239 km <sup>2</sup> Sigma, Tickalara Santos* (37.50) Vamgas (7.50) Total (25.00) Delhi (30.00)	10-Jul-07
PL28	251 km <sup>2</sup> Avondale AAR* (46.25) Interstate Pipelines (7.50) OCA (10.74) Oil Investments (35.51)	30-Nov-05	PL35	136 km <sup>2</sup> Watson, Watson South Santos* (40.00) Vamgas (15.50) OCA (2.50) Mawson (6.00) Inland Oil (2.00) Delhi (32.00) Australian Gasfields (2.00)	10-Jul-2086
PL29	13 km <sup>2</sup> Tintaburra Transoil* (62.00) OCA (10.00) CPC (1.00) Moonie (5.00) Santos (22.00)	19-Dec-05	PL36	61 km <sup>2</sup> Naccowlah Santos* (40.00) Delhi (32.00) Inland Oil (2.00) Mawson (6.00) OCA (2.50) Vamgas (15.50) Australian Gasfields (2.00)	07-Apr-08
PL30	37 km <sup>2</sup> Riverslea, Yapunyah Angari* (55.00) Santos (7.50) OCA (20.00) Mosaic (10.00) Project Oil (7.50)	08-Jul-06	PL37	12 km <sup>2</sup> Brumby Santos* (37.50) Vamgas (7.50) Delhi (30.00) Total (25.00)	18-Sep-07
			PL38	135 km <sup>2</sup> Toobunyah Transoil* (62.00) CPC (1.00) Moonie (5.00) OCA (10.00) Santos (22.00)	16-Jun-08

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PL39	107 km <sup>2</sup> Talgeberry Transoil* (62.00) CPC (1.00) Santos (22.00) Moonie (5.00) OCA (10.00)	13-Aug-08	PL51	55 km <sup>2</sup> Dilkeria, Muthero, Thungo Transoil* (17.47) Chimelle (40.94) Moonie (33.83) Santos (7.77)	27-Jun-11
PL40	76 km <sup>2</sup> Brisbane Pet.* (50.00) Delbaere (50.00)	13-Sep-08	PL52	70 km <sup>2</sup> Ipundu, Ipundu North, Tarbut Transoil* (62.00) Moonie (5.00) OCA (10.00) CPC (1.00) Santos (22.00)	27-Jun-11
PL41	157 km <sup>2</sup> Arcturus Santos* (50.00) OCA (50.00)	25-May-10	PL53	46 km <sup>2</sup> Yambugle OCA* (100.00)	10-Sep-11
PL42	150 km <sup>2</sup> Rolleston Santos* (50.00) OCA (50.00)	25-May-10	PL54	34 km <sup>2</sup> Santos* (50.00) OCA (50.00)	27-Mar-12
PL43	179 km <sup>2</sup> Yellowbank Santos* (50.00) OCA (50.00)	25-May-10	PL55	6 km <sup>2</sup> Munro Santos* (52.00) Vamgas (8.00) Delhi (40.00)	12-Jun-12
PL44	201 km <sup>2</sup> Merivale Santos* (50.00) OCA (50.00)	25-May-10	PL56	19 km <sup>2</sup> Angari* (49.00) Santos (7.50) Mosaic (10.00) Bridge (7.50) Anulka (6.00) OCA (20.00)	29-Jan-11
PL45	108 km <sup>2</sup> Glentulloch Santos* (50.00) OCA (50.00)	25-May-10	PL57	19 km <sup>2</sup> Transoil* (62.00) CPC (1.00) OCA (10.00) Santos (22.00) Moonie (5.00)	15-Apr-13
PL46	34 km <sup>2</sup> Fairymount Mosaic* (100.00)	23-Feb-10	PL58	62 km <sup>2</sup> Challum Santos* (62.50) Vamgas (7.50) Delhi (30.00)	15-Apr-2034
PL47	28 km <sup>2</sup> Blackstump OCA* (72.75) Beach (22.00) Petromin (5.25)	22-Aug-10	PL59	97 km <sup>2</sup> Challum Santos* (50.00) Vamgas (5.00) Boral (25.00) Delhi (20.00)	15-Apr-2034
PL48	7 km <sup>2</sup> Noona Block Santos* (50.00) Petroz (50.00)	31-Jan-11			
PL49	22 km <sup>2</sup> Petroz* (40.00) Santos (50.00) Interstate Energy (10.00)	31-Jan-11			
PL50	49 km <sup>2</sup> Maxwell, Maxwell South Transoil* (17.47) Moonie (33.83) Santos (7.77) Chimelle (40.94)	27-Jun-11			

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PL60	70 km <sup>2</sup> Munkah Santos* (50.00) Vamgas (5.00) Delhi (20.00) Boral (25.00)	15-Apr-19	PL71	134 km <sup>2</sup> Angari* (67.50) Santos (10.00) OCA (22.50)	15-Dec-14
PL61	159 km <sup>2</sup> Ballera, Ballera West, Yanda Santos* (50.00) Vamgas (5.00) Delhi (20.00) Boral (25.00)	15-Apr-19	PL72	19 km <sup>2</sup> Xyloleum Sykes I G* (100.00)	26-Apr-00 (R.P.)
PL62	65 km <sup>2</sup> Judga Santos* (40.00) Vamgas (15.50) OCA (2.50) Mawson (6.00) Inland Oil (2.00) Australian Gasfields (2.00) Delhi (32.00)	01-Mar-04	PL73	7 km <sup>2</sup> Xylex Sykes I G* (100.00)	26-Apr-00 (R.P.)
PL63	145 km <sup>2</sup> Epsilon Santos* (62.50) Delhi (30.00) Vamgas (7.50)	24-Jun-17	PL74	19 km <sup>2</sup> OCA* (20.00) Angari (49.00) Anulka (6.00) Mosaic (10.00) Santos (7.50) Bridge (7.50)	14-Dec-04
PL64	48 km <sup>2</sup> OCA* (83.00) Angari (4.50) Alliance (12.50)	19-Aug-13	PL75	13 km <sup>2</sup> Orientos Santos* (62.50) Vamgas (7.50) Delhi (30.00)	23-Nov-08
PL65	59 km <sup>2</sup> Australian Gasfields* (100.00)	15-Dec-14	PL76	40 km <sup>2</sup> Santos* (40.00) Mawson (6.00) OCA (2.50) Vamgas (15.50) Inland Oil (2.00) Australian Gasfields (2.00) Delhi (32.00)	23-Nov-08
PL66	125 km <sup>2</sup> Santos* (50.00) Petroz (50.00)	23-Feb-07	PL77	13 km <sup>2</sup> Santos* (40.00) Vamgas (15.50) Australian Gasfields (2.00) Delhi (32.00) Inland Oil (2.00) Mawson (6.00) OCA (2.50)	23-Nov-04
PL67	113 km <sup>2</sup> Turkey Creek OCA* (50.00) Santos (50.00)	23-Jun-11	PL78	13 km <sup>2</sup> Santos* (40.00) OCA (2.50) Mawson (6.00) Australian Gasfields (2.00) Vamgas (15.50) Delhi (32.00) Inland Oil (2.00)	23-Nov-08
PL68	25 km <sup>2</sup> Coopers Creek Santos* (62.50) Delhi (30.00) Vamgas (7.50)	08-Dec-01			
PL69	4 km <sup>2</sup> AAR* (46.25) Oil Investments (35.51) Interstate Pipelines (7.50) OCA (10.74)	08-Dec-99			
PL70	3 km <sup>2</sup> OCA* (100.00)	06-Jul-00 (R.P.)			

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PL79	7 km <sup>2</sup> Costa Santos* (40.00) Inland Oil (2.00) Vamgas (15.50) Mawson (6.00) Delhi (32.00) Australian Gasfields (2.00) OCA (2.50)	06-Sep-20	PL87	28 km <sup>2</sup> Wippo Santos* (40.00) Vamgas (15.50) Delhi (32.00) Australian Gasfields (2.00) OCA (2.50) Mawson (6.00) Inland Oil (2.00)	06-Sep-20
PL80	30 km <sup>2</sup> Durham Downs Santos* (62.50) Delhi (30.00) Vamgas (7.50)	06-Sep-2032	PL88	15 km <sup>2</sup> Wolgolla Santos* (62.50) Vamgas (7.50) Delhi (30.00)	06-Sep-20
PL81	40 km <sup>2</sup> Karmona Santos* (50.00) Vamgas (5.00) Boral (25.00) Delhi (20.00)	06-Sep-20	PL89	59 km <sup>2</sup> AAR* (46.25) Interstate Pipelines (7.50) OCA (10.74) Oil Investments (35.51)	06-Dec-02
PL82	11 km <sup>2</sup> Okotoko East Santos* (40.00) Vamgas (15.50) Inland Oil (2.00) Mawson (6.00) Delhi (32.00) Australian Gasfields (2.00) OCA (2.50)	06-Sep-20	PL90	75 km <sup>2</sup> Tri-Star Pet.* (100.00)	29-Nov-29
			PL91	75 km <sup>2</sup> Tri-Star Pet.* (100.00)	29-Nov-29
			PL92	75 km <sup>2</sup> Tri-Star Pet.* (100.00)	29-Nov-29
			PL93	7 km <sup>2</sup> AAR* (85.00) Interstate Pipelines (15.00)	06-Dec-02
PL83	5 km <sup>2</sup> Okotoko West Santos* (50.00) Vamgas (5.00) Delhi (20.00) Boral (25.00)	06-Sep-20	PL94	78 km <sup>2</sup> Moura OCA* (100.00)	17-Apr-2032
			PL95	13 km <sup>2</sup> Monler Transoil* (62.00) Santos (22.00) CPC (1.00) Moonie (5.00) OCA (10.00)	25-Aug-19
PL84	16 km <sup>2</sup> Stokes Santos* (62.50) Vamgas (7.50) Delhi (30.00)	06-Sep-20	PL97	28 km <sup>2</sup> Cook Santos* (50.00) Delhi (20.00) Vamgas (5.00) Boral (25.00)	25-Aug-14
PL85	6 km <sup>2</sup> Wackett Santos* (50.00) Vamgas (5.00) Boral (25.00) Delhi (20.00)	06-Sep-2032	PL98	40 km <sup>2</sup> Inland IOR* (29.38) Inland Oil (20.00) ITG (28.22) Moroil (22.40)	23-Oct-21
PL86	12 km <sup>2</sup> Wackett Santos* (46.88) Vamgas (5.63) Boral (25.00) Delhi (22.50)	06-Sep-2032	PL99	232 km <sup>2</sup> Tri-Star Pet.* (100.00)	15-Dec-2033
			PL100	232 km <sup>2</sup> Tri-Star Pet.* (100.00)	15-Dec-2033

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PL101	240 km <sup>2</sup> Peat OCA* (100.00)	20-Nov-2031	PL112	92 km <sup>2</sup> Barrolka Santos* (50.00) Boral (25.00) Delhi (20.00) Vamgas (5.00)	10-Mar-2047
PL105	13 km <sup>2</sup> Roti Santos* (40.00) Vamgas (15.50) Mawson (6.00) Inland Oil (2.00) Delhi (32.00) Australian Gasfields (2.00) OCA (2.50)	28-Oct-08	PL113	74 km <sup>2</sup> Tartulla Santos* (54.00) Vamgas (7.20) Delhi (28.80) Boral (10.00)	10-Mar-2047
PL106	7 km <sup>2</sup> Okotoko West Santos* (50.00) Boral (25.00) Delhi (20.00) Vamgas (5.00)	28-Oct-06	PL114	55 km <sup>2</sup> Wareena Santos* (54.00) Delhi (28.80) Vamgas (7.20) Boral (10.00)	28-Oct-18
PL107	13 km <sup>2</sup> Okotoko East Santos* (40.00) Inland Oil (2.00) Vamgas (15.50) Australian Gasfields (2.00) Delhi (32.00) Mawson (6.00) OCA (2.50)	28-Oct-08	PL115	53 km <sup>2</sup> Bunya Australian Gasfields* (100.00)	28-Sep-19
PL108	6 km <sup>2</sup> Costa South Santos* (50.00) Boral (25.00) Delhi (20.00) Vamgas (5.00)	28-Oct-28	PL116	34 km <sup>2</sup> Cocos Australian Gasfields* (100.00)	28-Sep-19
PL109	10 km <sup>2</sup> Judga North Santos* (40.00) Delhi (32.00) Vamgas (15.50) OCA (2.50) Inland Oil (2.00) Australian Gasfields (2.00) Mawson (6.00)	29-Oct-13	PL117	49 km <sup>2</sup> Vernon Faulconer* (100.00)	28-Sep-19
PL110	19 km <sup>2</sup> Stokes North Santos* (62.50) Delhi (30.00) Vamgas (7.50)	29-Oct-13	PL119	22 km <sup>2</sup> Downlands Santos* (16.67) Petroz (12.22) Mosaic (28.89) Interstate Energy (42.22)	11-Nov-10
PL111	19 km <sup>2</sup> Santos* (50.00) Delhi (20.00) Boral (25.00) Vamgas (5.00)	28-Oct-16	PL129	46 km <sup>2</sup> Ashby, Ashby North Santos* (62.50) Vamgas (7.50) Delhi (30.00)	15-Dec-2037
			PL130	31 km <sup>2</sup> Chiron Santos* (62.50) Delhi (30.00) Vamgas (7.50)	23-Jun-24
			PL131	225 km <sup>2</sup> Baryulah, Baryulah East, Hera, Juno, Vega Santos* (46.88) Vamgas (5.63) Delhi (22.50) Boral (25.00)	23-Jun-2050
			PL132	16 km <sup>2</sup> Costa Central Santos* (50.00) Delhi (20.00) Vamgas (5.00) Boral (25.00)	23-Jun-21

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PL133	13 km <sup>2</sup> Goora Santos* (40.00) Vamgas (15.50) Delhi (32.00) Inland Oil (2.00) Mawson (8.00) OCA (2.50)	12-Dec-19	PL143	28 km <sup>2</sup> Ruby Santos* (62.50) Delhi (30.00) Vamgas (7.50)	15-Dec-18
PL134	28 km <sup>2</sup> Santos* (62.50) Vamgas (7.50) Delhi (30.00)	20-Dec-2058	PL144	34 km <sup>2</sup> Thoar Santos* (62.50) Vamgas (7.50) Delhi (30.00)	15-Dec-2039
PL135	20 km <sup>2</sup> Keilor Santos* (50.00) Boral (25.00) Delhi (20.00) Vamgas (5.00)	23-Jun-2053	PL145	28 km <sup>2</sup> Toby Santos* (54.00) Vamgas (7.20) Origin (10.00) Delhi (28.80)	15-Dec-2048
PL136	54 km <sup>2</sup> Keilor Santos* (62.50) Vamgas (7.50) Delhi (30.00)	23-Jun-2052	PL146	61 km <sup>2</sup> Wackett Santos* (46.88) Delhi (22.50) Origin (25.00) Vamgas (5.63)	23-Jun-25
PL137	89 km <sup>2</sup> Macadama Santos* (62.50) Vamgas (7.50) Delhi (30.00)	15-Dec-2052	PL147	58 km <sup>2</sup> Wackett Santos* (50.00) Origin (25.00) Delhi (20.00) Vamgas (5.00)	23-Jun-19
PL138	77 km <sup>2</sup> Marengo Santos* (31.50) Alliance (10.00) Boral (27.00) Delhi (25.20) Vamgas (6.30)	15-Dec-2030	PL148	37 km <sup>2</sup> Whanto Santos* (54.00) Delhi (28.80) Origin (10.00) Vamgas (7.20)	15-Dec-29
PL139	26 km <sup>2</sup> Monte Santos* (50.00) Delhi (20.00) Boral (25.00) Vamgas (5.00)	23-Jun-17	PL149	13 km <sup>2</sup> Wippo South Santos* (40.00) OCA (2.50) Inland Oil (2.00) Delhi (32.00) Vamgas (15.50) Mawson (8.00)	23-Jun-2049
PL140	37 km <sup>2</sup> Moon Santos* (62.50) Delhi (30.00) Vamgas (7.50)	15-Dec-2053	PL150	158 km <sup>2</sup> Dingera, Psyche, Winninia Santos* (62.50) Delhi (30.00) Vamgas (7.50)	23-Jun-2042
PL141	46 km <sup>2</sup> Mount Howitt Santos* (54.00) Boral (10.00) Delhi (28.80) Vamgas (7.20)	15-Dec-25	PL153	103 km <sup>2</sup> Clinton Santos* (54.00) Vamgas (7.20) Origin (10.00) Delhi (28.80)	15-Dec-2046
PL142	13 km <sup>2</sup> Raffle Santos* (62.50) Delhi (30.00) Vamgas (7.50)	15-Dec-24			

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PL154	18 km <sup>2</sup> Clinton Santos* (31.50) Delhi (25.20) Origin (27.00) Vamgas (6.30) Alliance (10.00)	15-Dec-2046	PEL10	6 blocks; 405 km <sup>2</sup> Australian Coalbed Methane* (100.00)	10-Feb-05
PL157	40 km <sup>2</sup> Ghina Santos* (54.00) Vamgas (7.20) Delhi (28.80) Origin (10.00)	15-Dec-20	PEL12	39 blocks; 2 632 km <sup>2</sup> Australian Coalbed Methane* (100.00)	26-Sep-01
PL158	188 km <sup>2</sup> Marama Santos* (54.00) Vamgas (7.20) Delhi (28.80) Origin (10.00)	15-Dec-20	PEL13	29 blocks; 2 407 km <sup>2</sup> OCA* (n/a) Pacific Power (n/a) St. Barbara Mines (n/a) Claremont (n/a)	26-Nov-01
PL159	28 km <sup>2</sup> Tallalia Santos* (62.50) Vamgas (7.50) Delhi (30.00)	15-Dec-2052	PEL16	11 blocks; 913 km <sup>2</sup> Metgasco* (100.00)	12-Nov-05
PL173	85 km <sup>2</sup> Yandina Santos* (50.00) OCA (50.00)	15-Dec-19	PEL17	91 blocks; 7 554 km <sup>2</sup> Capital Energy* (100.00)	30-Jan-03
PL174	43 km <sup>2</sup> Myall Creek OCA* (100.00)	15-Dec-14	PEL18	93 blocks; 7 720 km <sup>2</sup> Capital Energy* (100.00)	30-Jan-03
<b>NEW SOUTH WALES</b>			PEL238	132 blocks; 8 910 km <sup>2</sup> Eastern Energy* (n/a) Great Southland (n/a)	31-Aug-99 (R.P.)
<b>OFFSHORE</b>			PEL267	107 blocks; 7 222 km <sup>2</sup> Sydney Gas* (n/a) GIO (n/a)	19-Jan-04
<b>PETROLEUM EXPLORATION PERMIT</b>			PEL283	70 blocks; 4 725 km <sup>2</sup> Capital Energy* (n/a) Tyers Investments (n/a)	09-Apr-99 (R.P.)
PEP 11	129 blocks; 8 707 km <sup>2</sup> Flare* (100.00)	23-Jun-06	PEL285	18 blocks; 1 080 km <sup>2</sup> Pacific Power* (100.00)	15-Apr-05
<b>ONSHORE</b>			PEL286	24 blocks; 1 620 km <sup>2</sup> Australian Coalbed Methane* (100.00)	10-Feb-05
<b>PETROLEUM EXPLORATION LICENCE</b>			PEL419	140 blocks; 9 450 km <sup>2</sup> Go Resources* (100.00)	19-Dec-03
PEL1	96 blocks; 6 480 km <sup>2</sup> Australian Coalbed Methane* (100.00)	10-Feb-05	PEL420	122 blocks; 8 235 km <sup>2</sup> Go Resources* (100.00)	19-Dec-03
PEL2	120 blocks; 8 100 km <sup>2</sup> Sydney Gas* (100.00)	28-Mar-05	PEL421	136 blocks; 9 180 km <sup>2</sup> First Australian* (100.00)	01-Feb-04
PEL4	113 blocks; 7 627 km <sup>2</sup> Sydney Gas* (n/a) Pacific Power (n/a)	10-Nov-99 (R.P.)	PEL422	108 blocks; 7 290 km <sup>2</sup> First Australian* (100.00)	01-Feb-04
PEL5	40 blocks; 2 700 km <sup>2</sup> Pacific Power* (100.00)	10-Nov-99 (R.P.)	PEL423	86 blocks; 5 805 km <sup>2</sup> First Australian* (100.00)	01-Feb-04
PEL6	82 blocks; 6 807 km <sup>2</sup> Eastern Energy* (100.00)	08-Dec-05	PEL424	123 blocks; 8 302 km <sup>2</sup> First Australian* (100.00)	01-Feb-04
PEL8	135 blocks; 9 112 km <sup>2</sup> Maple* (100.00)	13-Dec-99 (R.P.)	PEL425	140 blocks; 9 450 km <sup>2</sup> Otto* (100.00)	26-Feb-04
			PEL426	83 blocks; 6 890 km <sup>2</sup> OCA* (n/a) St. Barbara Mines (n/a) Claremont (n/a) Pacific Power (n/a)	20-Apr-04



## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PEL427	122 blocks; 10 128 km <sup>2</sup> Strike Oil* (100.00)	20-May-04	VIC/P41	32 blocks; 2 160 km <sup>2</sup> Eagle Bay* (100.00)	13-Feb-05
PEL428	140 blocks; 9 450 km <sup>2</sup> Strike Oil* (100.00)	14-Sep-04	VIC/P42	28 blocks; 1 890 km <sup>2</sup> Omeo Bass Strait* (100.00)	14-Mar-05
PEL429	73 blocks; 6 060 km <sup>2</sup> Sunoco* (100.00)	25-Oct-05	VIC/P43	54 blocks; 3 645 km <sup>2</sup> Origin* (25.00) CalEnergy Gas (25.00) Woodside (50.00)	10-Aug-05
<b>PETROLEUM MINING LEASE</b>			VIC/P44	45 blocks; 3 037 km <sup>2</sup> Strike Oil* (100.00)	10-Aug-05
PML1	29 km <sup>2</sup> BHP* (100.00)	12-May-01	<b>PRODUCTION LICENCE - P(SL)A</b>		
PML2	41 km <sup>2</sup> BHP* (100.00)	12-May-01	VIC/L 1	4 blocks; 260 km <sup>2</sup> Barracouta, Tarwhine, Whiptail Esso* (50.00) BHP (50.00)	24-Aug-09
<b>VICTORIA</b>			VIC/L 2	5 blocks; 325 km <sup>2</sup> Barracouta, Whiting, Wirrah Esso* (50.00) BHP (50.00)	24-Aug-09
<b>OFFSHORE</b>			VIC/L 3	5 blocks; 325 km <sup>2</sup> Marlin Esso* (50.00) BHP (50.00)	24-Aug-09
<b>EXPLORATION PERMIT - TERRITORIAL SEA</b>			VIC/L 4	4 blocks; 260 km <sup>2</sup> Angelfish, Batfish, Marlin Esso* (50.00) BHP (50.00)	24-Aug-09
VIC/P11(V)	9 blocks; 607 km <sup>2</sup> Basin* (100.00)	04-Sep-01	VIC/L 5	5 blocks; 325 km <sup>2</sup> Halibut, Mackerel, Trumpeter, Yellowtail Esso* (50.00) BHP (50.00)	19-Sep-10
VIC/P36(V)	12 blocks; 810 km <sup>2</sup> Amity* (80.00) Latrobe (20.00)	22-Sep-03	VIC/L 6	4 blocks; 260 km <sup>2</sup> Gudgeon, Halibut Esso* (50.00) BHP (50.00)	19-Sep-10
<b>EXPLORATION PERMIT FOR PETROLEUM - P(SL)A</b>			VIC/L 7	5 blocks; 325 km <sup>2</sup> Kingfish Esso* (50.00) BHP (50.00)	19-Sep-10
VIC/P19 R2	15 blocks; 1 012 km <sup>2</sup> Basker, Bignose, Chimaera, Gummy, Leatherjacket, Manta, Veilfin Petroz* (5.88) Shell (70.59) News Corp (23.53)	11-Aug-98 (R.P.)	VIC/L 8	4 blocks; 260 km <sup>2</sup> Kingfish Esso* (50.00) BHP (50.00)	19-Sep-10
VIC/P34	32 blocks; 2 160 km <sup>2</sup> Angler, Selene BHP* (100.00)	26-Jul-01	VIC/L 9 R1	4 blocks; 260 km <sup>2</sup> Tuna Esso* (50.00) BHP (50.00)	12-Jul-16
VIC/P35	54 blocks; 3 645 km <sup>2</sup> OCA* (100.00)	26-Jul-02	VIC/L10	4 blocks; 260 km <sup>2</sup> Emperor, Moonfish, Snapper, Sweetlips Esso* (50.00) BHP (50.00)	28-May-18
VIC/P36	46 blocks; 3 105 km <sup>2</sup> Amity* (60.00) Latrobe (25.00) Pan Pacific (15.00)	26-Jul-01			
VIC/P38	11 blocks; 742 km <sup>2</sup> Amity* (80.00) Latrobe (20.00)	30-Jul-03			
VIC/P39	11 blocks; 742 km <sup>2</sup> Mosaic* (34.00) Euro Pacific (33.00) Indo-Pacific (33.00)	30-Jul-03			
VIC/P40	17 blocks; 1 147 km <sup>2</sup> Amity* (10.00) Tri-C (70.00) Latrobe (10.00) Pan Pacific (10.00)	13-May-04			

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date
VIC/L11	2 blocks; 130 km <sup>2</sup> Flounder, Grunter, Stonefish Esso* (50.00) BHP (50.00)	28-May-18
VIC/L13	3 blocks; 202 km <sup>2</sup> Bream, Luderick Esso* (50.00) BHP (50.00)	15-Dec-06
VIC/L14	3 blocks; 202 km <sup>2</sup> Bream Esso* (50.00) BHP (50.00)	15-Dec-06
VIC/L15	2 blocks; 130 km <sup>2</sup> Dolphin Esso* (50.00) BHP (50.00)	13-Jun-10
VIC/L16	2 blocks; 130 km <sup>2</sup> Torsk Esso* (50.00) BHP (50.00)	13-Jun-10
VIC/L17	1 blocks; 65 km <sup>2</sup> Perch Esso* (50.00) BHP (50.00)	13-Jun-10
VIC/L18	2 blocks; 130 km <sup>2</sup> Seahorse Esso* (50.00) BHP (50.00)	13-Jun-10
VIC/L19	1 blocks; 65 km <sup>2</sup> Halibut Esso* (50.00) BHP (50.00)	12-Jul-16
VIC/L20	3 blocks; 195 km <sup>2</sup> Blackback, Volador Esso* (50.00) BHP (50.00)	02-Jan-19
<b>RETENTION LEASE - P(SL)A</b>		
VIC/RL1	1 blocks; 67 km <sup>2</sup> Mulloway Esso* (50.00) BHP (50.00)	13-Apr-05
VIC/RL2	1 blocks; 67 km <sup>2</sup> Kipper Esso* (25.00) BHP (25.00) Crusader (12.95) Petroz (2.50) Shell (34.55)	14-Dec-03
VIC/RL3	3 blocks; 202 km <sup>2</sup> Sole Shell* (45.00) Mobil (30.00) Santos (25.00)	13-Apr-05
VIC/RL4	1 blocks; 67 km <sup>2</sup> Remora, Sunfish Esso* (50.00) BHP (50.00)	27-Aug-00 (R.P.)

Title	Area and Title holder	Expiry date
VIC/RL5	2 blocks; 135 km <sup>2</sup> Baleen, Patricia, Sperm Whale Basin* (100.00)	13-Nov-01
VIC/RL7	3 blocks; 202 km <sup>2</sup> La Bella BHP* (90.00) Santos (10.00)	27-Feb-03
VIC/RL8	1 blocks; 67 km <sup>2</sup> Minerva BHP* (90.00) Santos (10.00)	29-Nov-02
VIC/RL1(V)	4 blocks; 270 km <sup>2</sup> Golden Beach Bridge* (66.67) Basin (33.33)	24-Jul-02

### ONSHORE

#### PETROLEUM EXPLORATION PERMIT

PEP101	2 280 km <sup>2</sup> Origin* (75.00) Newfield (25.00)	12-Nov-99
PEP108	1 070 km <sup>2</sup> Santos* (100.00)	28-Feb-00
PEP111	755 km <sup>2</sup> Windermere Origin* (37.25) Newfield (25.00) Pan Pacific (26.25) Lakes (11.50)	03-Feb-00
PEP119	3 660 km <sup>2</sup> TMOC* (60.00) Origin (40.00)	13-Mar-00
PEP131	2 950 km <sup>2</sup> Bass* (100.00)	21-May-00 (R.P.)
PEP135	1 578 km <sup>2</sup> Lakes Entrance Petrotech* (100.00)	28-Aug-00
PEP136	3 207 km <sup>2</sup> Pelican Point Lakes* (20.00) Westco (80.00)	16-Jun-00
PEP137	1 889 km <sup>2</sup> North Seaspray, Wellington Park Petrotech* (100.00)	16-Jun-00
PEP138	799 km <sup>2</sup> Woodside 1, Woodside 2 Petrotech* (100.00)	16-Mar-00

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date
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### PETROLEUM PRODUCTION LEASE

PPL1	76 km <sup>2</sup> Dunbar, Grumby, Langley, North Paaratte, Port Campbell 1, Port Campbell 3, Port Campbell 4, Skull Creek, Vaughan, Wallaby Creek Origin* (100.00)	01-Mar-00
PPL2	8 km <sup>2</sup> Iona Western Underground* (100.00)	31-Dec-05
PPL3	2 km <sup>2</sup> Boggy Creek Boggy Creek* (100.00)	09-May-08
PPL4	6 km <sup>2</sup> Santos* (100.00)	06-Apr-14

### TASMANIA

#### OFFSHORE

##### EXPLORATION PERMIT - P(SL)A

T/25P	22 blocks; 1 485 km <sup>2</sup> Pelican (Esso), Poonboon Boral* (44.00) CalEnergy Gas (20.00) Premier (36.00)	09-Oct-03
T/27P	109 blocks; 7 357 km <sup>2</sup> Nangkero Globex* (100.00)	14-Sep-03
T/28P	114 blocks; 7 695 km <sup>2</sup> Bass Strait* (60.00) Tasgas (40.00)	24-Nov-01
T/30P	101 blocks; 6 817 km <sup>2</sup> Benaris* (20.00) Boral (80.00)	09-Jul-03

##### RETENTION LEASE - P(SL)A

T/RL1	9 blocks; 607 km <sup>2</sup> Yolla Boral* (30.50) CalEnergy Gas (20.00) Galveston Mining (14.00) Premier (30.50) Santos (5.00)	05-Dec-01
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#### ONSHORE

##### EXPLORATION LICENCE

EL13/98	32 576 km <sup>2</sup> Great Southland* (100.00)	18-May-04
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Title	Area and Title holder	Expiry date
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### SOUTH AUSTRALIA

#### OFFSHORE

##### EXPLORATION PERMIT FOR PETROLEUM - P(SL)A

EPP24	31 blocks; 2 092 km <sup>2</sup> Crayfish, Troas Boral* (51.43) Pan Pacific (5.00) Otway (8.33) Victoria Diamond (6.67) Cultus (17.57) Basin (5.00) Durum (6.00)	29-Jun-01
EPP27	67 blocks; 4 522 km <sup>2</sup> Tyers Investments* (100.00)	24-Aug-05

#### ONSHORE

##### PETROLEUM EXPLORATION LICENCE

PEL 27	240 km <sup>2</sup> Sawpit OCA* (66.67) Origin (33.33)	30-Jul-04
PEL 32	530 km <sup>2</sup> Wynn Sagasco* (55.71) Omega (24.29) Origin (20.00)	18-Feb-05
PEL 49	2 064 km <sup>2</sup> Felstea* (100.00)	30-Jun-01 (R.P.)
PEL 50	4 847 km <sup>2</sup> Felstea* (100.00)	30-Jun-01 (R.P.)
PEL 53	7 198 km <sup>2</sup> Wagner* (35.00) BET (5.00) Brown (35.00)	03-Dec-95 (R.P.)
PEL 57	772 km <sup>2</sup> Lakes* (30.00) Mirboo (10.00) Origin (50.00) Victoria Petroleum (10.00)	17-Nov-01
PEL 59	4 129 km <sup>2</sup> Wagner* (35.00) BET (5.00) Brown (35.00)	30-Mar-98
PEL 61	6 258 km <sup>2</sup> Hemley Exploration Pty Ltd* (100.00)	22-May-01
PEL 62	1 407 km <sup>2</sup> Lakes* (50.00) Sun (50.00)	02-Nov-00

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PEL 63	10 930 km <sup>2</sup> Hemley Exploration Pty Ltd* (100.00)	22-May-01	PPL 8	254 km <sup>2</sup> Moomba Santos* (41.31)	31-Dec-05
PEL 65	1 227 km <sup>2</sup> Reilly M* (100.00)	26-Oct-00		Gulf (4.75)	
PEL 66	1 234 km <sup>2</sup> Kalangadoo Origin* (70.00)	17-Jun-01		Reef Oil (1.97)	
	Beach (30.00)			Origin (13.19)	
PEL 72	686 km <sup>2</sup> Origin* (100.00)	25-Mar-02		Bridge (3.99)	
PEL 74	213 km <sup>2</sup> Greenways Strike Oil* (100.00)	14-Oct-02		Basin (2.10)	
PEL 75	937 km <sup>2</sup> Strike Oil* (100.00)	22-Dec-02		Alliance (3.97)	
PEL 76	276 km <sup>2</sup> Richfield* (50.00)	22-Dec-02		Vamgas (8.51)	
	Lamina (50.00)			Delhi (20.21)	
PEL 85	151 km <sup>2</sup> Eoil (n/a)	19-Apr-04	PPL 9	133 km <sup>2</sup> Moomba Santos* (41.31)	31-Dec-05
<b>PETROLEUM PRODUCTION LICENCE</b>				Delhi (20.21)	
PPL 6	257 km <sup>2</sup> Gidgealpa, Mawson Santos* (41.31)	31-Dec-05		Vamgas (8.51)	
	Delhi (20.21)			Reef Oil (1.97)	
	Reef Oil (1.97)			Gulf (4.75)	
	Gulf (4.75)			Bridge (3.99)	
	Vamgas (8.51)			Basin (2.10)	
	Bridge (3.99)			Alliance (3.97)	
	Basin (2.10)			Origin (13.19)	
	Alliance (3.97)		PPL10	226 km <sup>2</sup> Cowan, Daralingie, Deina, Yapani Santos* (41.31)	31-Dec-05
	Origin (13.19)			Origin (13.19)	
PPL 7	254 km <sup>2</sup> Moomba Santos* (41.31)	31-Dec-05		Basin (2.10)	
	Origin (13.19)			Reef Oil (1.97)	
	Vamgas (8.51)			Vamgas (8.51)	
	Reef Oil (1.97)			Gulf (4.75)	
	Gulf (4.75)			Bridge (3.99)	
	Delhi (20.21)			Alliance (3.97)	
	Bridge (3.99)			Delhi (20.21)	
	Alliance (3.97)		PPL11	160 km <sup>2</sup> Big Lake Santos* (41.31)	31-Dec-05
	Basin (2.10)			Alliance (3.97)	
				Reef Oil (1.97)	
				Origin (13.19)	
				Gulf (4.75)	
				Delhi (20.21)	
				Bridge (3.99)	
				Vamgas (8.51)	
				Basin (2.10)	

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL12	157 km <sup>2</sup> Burke, Dullingari, Dullingari North Santos* (41.31) Delhi (20.21) Basin (2.10) Alliance (3.97) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Bridge (3.99)	31-Dec-05	PPL16	127 km <sup>2</sup> Big Lake, Namur Santos* (41.31) Alliance (3.97) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Basin (2.10) Bridge (3.99)	31-Dec-05
PPL13	56 km <sup>2</sup> Amyema, Brumby, Marsilea Santos* (41.31) Alliance (3.97) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Basin (2.10) Vamgas (8.51)	31-Dec-05	PPL17	141 km <sup>2</sup> Merrimelia, Pelican (Santos) Santos* (41.31) Gulf (4.75) Vamgas (8.51) Origin (13.19) Bridge (3.99) Reef Oil (1.97) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-05
PPL14	233 km <sup>2</sup> Toolachee Santos* (41.31) Basin (2.10) Alliance (3.97) Vamgas (8.51) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Reef Oil (1.97)	31-Dec-05	PPL18	109 km <sup>2</sup> Fly Lake Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-05
PPL15	154 km <sup>2</sup> Della Santos* (41.31) Alliance (3.97) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Vamgas (8.51)	31-Dec-05	PPL19	37 km <sup>2</sup> Moorari Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-05

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL20	130 km <sup>2</sup> Gooranie, Tirrawarra Santos* (41.31) Delhi (20.21) Gulf (4.75) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Alliance (3.97)	31-Dec-05	PPL25	20 km <sup>2</sup> Narcoonowie Santos* (41.31) Vamgas (8.51) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97) Reef Oil (1.97)	31-Dec-06
PPL21	145 km <sup>2</sup> Caroline Air Liquide* (100.00)	30-Apr-21	PPL26	4 km <sup>2</sup> Cuttapiirrie Santos* (25.60) Delhi (17.14) Gulf (2.97) Origin (10.54) Vamgas (43.75)	10-Jun-07
PPL22	234 km <sup>2</sup> Marabooka, Mina, Mudera, Nanima, Strzelecki, Wanara Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-06	PPL27	23 km <sup>2</sup> Mudrangie Santos* (41.31) Gulf (4.75) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Delhi (20.21) Alliance (3.97) Vamgas (8.51)	31-Dec-06
PPL23	80 km <sup>2</sup> Munkarie Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-06	PPL28	16 km <sup>2</sup> Kanowana Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	06-May-07
PPL24	168 km <sup>2</sup> Boongala, Caraka, Coochilara, Dieri, Kidman, Marana Santos* (41.31) Origin (13.19) Alliance (3.97) Reef Oil (1.97) Vamgas (8.51) Delhi (20.21) Basin (2.10) Bridge (3.99) Gulf (4.75)	31-Dec-06	PPL29	3 km <sup>2</sup> Rakoonna Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-08

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL30	49 km <sup>2</sup> Biala Santos* (41.31) Vamgas (8.51) Bridge (3.99) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-06	PPL34	9 km <sup>2</sup> McKinlay Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-06
PPL31	6 km <sup>2</sup> Wancoocha Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	06-May-07	PPL35	21 km <sup>2</sup> Meranji Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-06
PPL32	6 km <sup>2</sup> Muteroo Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	06-May-07	PPL36	47 km <sup>2</sup> Alwyn, Jena, Ulandi Santos* (41.31) Delhi (20.21) Reef Oil (1.97) Vamgas (8.51) Gulf (4.75) Basin (2.10) Alliance (3.97) Origin (13.19) Bridge (3.99)	31-Dec-06
PPL33	15 km <sup>2</sup> Bookabourdie Santos* (41.31) Bridge (3.99) Reef Oil (1.97) Origin (13.19) Vamgas (8.51) Basin (2.10) Alliance (3.97) Gulf (4.75) Delhi (20.21)	31-Dec-06	PPL37	8 km <sup>2</sup> Spencer Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	06-Oct-07

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL38	10 km <sup>2</sup> Dirkala, Dirkala South, Dirkala West Santos* (41.31) Delhi (20.21) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Vamgas (8.51) Origin (13.19)	06-Oct-07	PPL42	7 km <sup>2</sup> Bookabourdie Santos* (41.31) Alliance (3.97) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Delhi (20.21) Bridge (3.99) Basin (2.10) Gulf (4.75)	31-Dec-08
PPL39	2 km <sup>2</sup> Nungeroo Santos* (41.31) Gulf (4.75) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-06	PPL43	3 km <sup>2</sup> Taylor South Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-08
PPL40	11 km <sup>2</sup> Lepena Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Origin (13.19)	31-Dec-07	PPL44	5 km <sup>2</sup> Bimbaya Santos* (41.31) Gulf (4.75) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Delhi (20.21) Alliance (3.97)	31-Dec-08
PPL41	20 km <sup>2</sup> Kapinka, Mundi Santos* (41.31) Gulf (4.75) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-11	PPL45	1 km <sup>2</sup> Taloola Santos* (41.31) Alliance (3.97) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Delhi (20.21) Bridge (3.99) Basin (2.10) Gulf (4.75)	29-Mar-10



## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL46	2 km <sup>2</sup> Tantanna Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	20-Dec-09	PPL50	17 km <sup>2</sup> Andree Santos* (41.31) Gulf (4.75) Vamgas (8.51) Origin (13.19) Bridge (3.99) Basin (2.10) Alliance (3.97) Reef Oil (1.97) Delhi (20.21)	31-Dec-09
PPL47	4 km <sup>2</sup> Sturt, Sturt East Santos* (41.31) Bridge (3.99) Reef Oil (1.97) Origin (13.19) Vamgas (8.51) Basin (2.10) Alliance (3.97) Gulf (4.75) Delhi (20.21)	20-Dec-09	PPL51	7 km <sup>2</sup> Kirralce Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-11
PPL48	2 km <sup>2</sup> Kurunda Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-10	PPL52	2 km <sup>2</sup> Gooranie South Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-09
PPL49	8 km <sup>2</sup> Andree Santos* (41.31) Bridge (3.99) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Alliance (3.97) Delhi (20.21) Basin (2.10) Gulf (4.75)	31-Dec-10	PPL53	2 km <sup>2</sup> Spencer West Santos* (41.31) Origin (13.19) Bridge (3.99) Vamgas (8.51) Reef Oil (1.97) Delhi (20.21) Gulf (4.75) Basin (2.10) Alliance (3.97)	04-Dec-10

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL54	1 km <sup>2</sup> Pintari North Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	15-Jun-10	PPL58	15 km <sup>2</sup> Mettika Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-10
PPL55	10 km <sup>2</sup> Varanus Santos* (41.31) Delhi (20.21) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Vamgas (8.51) Origin (13.19)	31-Dec-11	PPL59	10 km <sup>2</sup> Garanjanie Santos* (41.31) Origin (13.19) Alliance (3.97) Reef Oil (1.97) Vamgas (8.51) Delhi (20.21) Basin (2.10) Bridge (3.99) Gulf (4.75)	16-Jul-11
PPL56	4 km <sup>2</sup> Varanus Santos* (41.31) Gulf (4.75) Reef Oil (1.97) Vamgas (8.51) Origin (13.19) Bridge (3.99) Alliance (3.97) Basin (2.10) Delhi (20.21)	31-Dec-13	PPL60	7 km <sup>2</sup> Wirrarie, Wirrarie North Santos* (41.31) Gulf (4.75) Vamgas (8.51) Origin (13.19) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97) Reef Oil (1.97)	25-May-14
PPL57	10 km <sup>2</sup> Thurakinna Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	16-Jul-11	PPL61	12 km <sup>2</sup> Arrakis Santos* (41.31) Vamgas (8.51) Alliance (3.97) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Reef Oil (1.97) Origin (13.19)	17-Oct-11
			PPL62	29 km <sup>2</sup> Haselgrove, Katnook, Ladbroke Grove Origin* (20.00) Omega (24.29) Sagasco (55.71)	26-Nov-11

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL63	1 km <sup>2</sup> Malgoona Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Origin (13.19)	23-May-12	PPL67	11 km <sup>2</sup> Keena Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Origin (13.19)	17-Jul-12
PPL64	2 km <sup>2</sup> Malgoona Santos* (41.31) Delhi (20.21) Gulf (4.75) Vamgas (8.51) Reef Oil (1.97) Bridge (3.99) Basin (2.10) Alliance (3.97) Origin (13.19)	23-May-12	PPL68	14 km <sup>2</sup> Cooba Santos* (41.31) Alliance (3.97) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Gulf (4.75) Delhi (20.21) Basin (2.10) Bridge (3.99)	31-Dec-11
PPL65	6 km <sup>2</sup> Kujani Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Origin (13.19)	17-Jul-12	PPL69	12 km <sup>2</sup> Tarwonga Santos* (41.31) Bridge (3.99) Vamgas (8.51) Basin (2.10) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Alliance (3.97)	31-Dec-11
PPL66	11 km <sup>2</sup> Jack Lake Santos* (41.31) Alliance (3.97) Origin (13.19) Vamgas (8.51) Reef Oil (1.97) Delhi (20.21) Bridge (3.99) Basin (2.10) Gulf (4.75)	24-Nov-12	PPL70	6 km <sup>2</sup> Farina Santos* (41.31) Alliance (3.97) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Vamgas (8.51)	25-May-14

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL71	16 km <sup>2</sup> Kerna Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97)	31-Dec-13	PPL75	6 km <sup>2</sup> Caladan Santos* (41.31) Gulf (4.75) Vamgas (8.51) Origin (13.19) Basin (2.10) Bridge (3.99) Alliance (3.97) Delhi (20.21) Reef Oil (1.97)	26-Oct-16
PPL72	17 km <sup>2</sup> Dilchee, Pira Santos* (41.31) Vamgas (8.51) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Alliance (3.97)	31-Dec-13	PPL76	3 km <sup>2</sup> Telopea Santos* (25.60) Origin (10.54) Gulf (2.97) Delhi (17.14) Vamgas (43.75)	26-Oct-16
PPL73	1 km <sup>2</sup> Mudlalee Santos* (41.31) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Basin (2.10) Alliance (3.97)	31-Dec-15	PPL77	10 km <sup>2</sup> Keleary Santos* (25.60) Delhi (17.14) Vamgas (43.75) Gulf (2.97) Origin (10.54)	26-Oct-16
PPL74	5 km <sup>2</sup> Allambi Santos* (41.31) Alliance (3.97) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Basin (2.10) Bridge (3.99)	31-Dec-15	PPL78	6 km <sup>2</sup> Baratta Santos* (41.31) Gulf (4.75) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-16
			PPL79	2 km <sup>2</sup> Gahnia Santos* (41.31) Alliance (3.97) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Delhi (20.21) Bridge (3.99) Basin (2.10) Gulf (4.75)	31-Dec-16

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL80	3 km <sup>2</sup> Correa Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-16	PPL84	28 km <sup>2</sup> Barina Santos* (41.31) Alliance (3.97) Vamgas (8.51) Gulf (4.75) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Delhi (20.21)	06-Jun-18
PPL81	4 km <sup>2</sup> Caladan Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Delhi (20.21) Gulf (4.75) Basin (2.10) Alliance (3.97) Origin (13.19) Bridge (3.99)	31-Oct-17	PPL85	3 km <sup>2</sup> Alisma Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-17
PPL82	6 km <sup>2</sup> Waukatanna Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Origin (13.19)	31-Dec-16	PPL86	2 km <sup>2</sup> Carmina Santos* (41.31) Gulf (4.75) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-17
PPL83	3 km <sup>2</sup> Pogona Santos* (41.31) Gulf (4.75) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-16	PPL87	5 km <sup>2</sup> Boobook Santos* (41.31) Alliance (3.97) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Delhi (20.21) Bridge (3.99) Basin (2.10) Gulf (4.75)	31-Dec-17

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL88	2 km <sup>2</sup> Lycosa Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-17	PPL92	2 km <sup>2</sup> Plantago Santos* (41.31) Gulf (4.75) Vamgas (8.51) Origin (13.19) Bridge (3.99) Delhi (20.21) Basin (2.10) Reef Oil (1.97) Alliance (3.97)	31-Dec-17
PPL89	6 km <sup>2</sup> Bobs Well Santos* (41.31) Bridge (3.99) Reef Oil (1.97) Origin (13.19) Vamgas (8.51) Basin (2.10) Alliance (3.97) Gulf (4.75) Delhi (20.21)	31-Dec-17	PPL93	7 km <sup>2</sup> Wilpinnie Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-17
PPL90	61 km <sup>2</sup> Packsaddle Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	31-Dec-17	PPL94	7 km <sup>2</sup> Atreides Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Alliance (3.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	08-Jan-19
PPL91	9 km <sup>2</sup> Cowralli Santos* (41.31) Bridge (3.99) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Alliance (3.97) Delhi (20.21) Basin (2.10) Gulf (4.75)	31-Dec-17	PPL95	12 km <sup>2</sup> Nephrite Santos* (41.31) Gulf (4.75) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	21-May-19

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL96	3 km <sup>2</sup> Beckler Santos* (41.31) Delhi (20.21) Alliance (3.97) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19)	31-Dec-17	PPL100	5 km <sup>2</sup> Nappacoongee, Nappacoongee East Santos* (41.31) Alliance (3.97) Basin (2.10) Origin (13.19) Bridge (3.99) Delhi (20.21) Reef Oil (1.97) Vamgas (8.51) Gulf (4.75)	31-Dec-17
PPL97	2 km <sup>2</sup> Beckler South Santos* (41.31) Delhi (20.21) Reef Oil (1.97) Vamgas (8.51) Gulf (4.75) Basin (2.10) Alliance (3.97) Origin (13.19) Bridge (3.99)	31-Dec-17	PPL101	214 km <sup>2</sup> Swan Lake Santos* (41.31) Vamgas (8.51) Alliance (3.97) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10)	02-Nov-18
PPL98	7 km <sup>2</sup> Merupa Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Origin (13.19)	31-Dec-17	PPL102	131 km <sup>2</sup> Wantana Santos* (41.31) Gulf (4.75) Origin (13.19) Delhi (20.21) Bridge (3.99) Alliance (3.97) Basin (2.10) Reef Oil (1.97) Vamgas (8.51)	02-Nov-18
PPL99	7 km <sup>2</sup> Merindal Santos* (41.31) Bridge (3.99) Origin (13.19) Vamgas (8.51) Reef Oil (1.97) Delhi (20.21) Basin (2.10) Alliance (3.97) Gulf (4.75)	31-Dec-17	PPL103	258 km <sup>2</sup> Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97) Gulf (4.75)	02-Nov-18

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL104	259 km <sup>2</sup> Santos* (41.31) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Alliance (3.97) Vamgas (8.51) Basin (2.10)	02-Nov-18	PPL108	254 km <sup>2</sup> Santos* (41.31) Alliance (3.97) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Basin (2.10)	02-Nov-18
PPL105	256 km <sup>2</sup> Santos* (41.31) Gulf (4.75) Vamgas (8.51) Origin (13.19) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97) Reef Oil (1.97)	02-Nov-18	PPL109	248 km <sup>2</sup> Bulgeroo Santos* (41.31) Gulf (4.75) Alliance (3.97) Basin (2.10) Bridge (3.99) Delhi (20.21) Origin (13.19) Reef Oil (1.97) Vamgas (8.51)	02-Nov-18
PPL106	254 km <sup>2</sup> Santos* (41.31) Gulf (4.75) Vamgas (8.51) Alliance (3.97) Basin (2.10) Bridge (3.99) Delhi (20.21) Origin (13.19) Reef Oil (1.97)	02-Nov-18	PPL110	228 km <sup>2</sup> Burley Santos* (41.31) Vamgas (8.51) Alliance (3.97) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97)	02-Nov-18
PPL107	217 km <sup>2</sup> Davren Santos* (41.31) Vamgas (8.51) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Alliance (3.97)	02-Nov-18	PPL111	254 km <sup>2</sup> McLeod Santos* (41.31) Alliance (3.97) Reef Oil (1.97) Basin (2.10) Bridge (3.99) Vamgas (8.51) Delhi (20.21) Gulf (4.75) Origin (13.19)	02-Nov-18



## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL112	255 km <sup>2</sup> Santos* (41.31) Reef Oil (1.97) Alliance (3.97) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Vamgas (8.51)	02-Nov-18	PPL116	249 km <sup>2</sup> Santos* (41.31) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Alliance (3.97)	02-Nov-18
PPL113	232 km <sup>2</sup> Santos* (41.31) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Basin (2.10) Bridge (3.99) Gulf (4.75) Delhi (20.21) Alliance (3.97)	02-Nov-18	PPL117	239 km <sup>2</sup> Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97)	02-Nov-18
PPL114	242 km <sup>2</sup> Santos* (41.31) Vamgas (8.51) Basin (2.10) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Alliance (3.97) Reef Oil (1.97)	02-Nov-18	PPL118	1 km <sup>2</sup> Kudrieke North Santos* (25.60) Vamgas (43.75) Origin (10.54) Gulf (2.97) Delhi (17.14)	26-May-19
PPL115	251 km <sup>2</sup> Three Queens Santos* (41.31) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Basin (2.10) Alliance (3.97)	02-Nov-18	PPL119	7 km <sup>2</sup> Kudrieke, Mitchie Santos* (41.31) Bridge (3.99) Alliance (3.97) Basin (2.10) Delhi (20.21) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Gulf (4.75)	31-Dec-17
			PPL120	4 km <sup>2</sup> Lake MacMillan Santos* (41.31) Basin (2.10) Alliance (3.97) Vamgas (8.51) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97)	31-Dec-17

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL121	5 km <sup>2</sup> Tarragon Santos* (25.60) Gulf (2.97) Origin (10.54) Delhi (17.14) Vamgas (43.75)	26-May-19	PPL127	4 km <sup>2</sup> Nulla Santos* (41.31) Gulf (4.75) Basin (2.10) Alliance (3.97) Bridge (3.99) Delhi (20.21) Vamgas (8.51) Origin (13.19) Reef Oil (1.97)	21-Feb-20
PPL122	6 km <sup>2</sup> Tallerangie Santos* (25.60) Origin (10.54) Gulf (2.97) Delhi (17.14) Vamgas (43.75)	31-Dec-19	PPL128	1 km <sup>2</sup> Garanjanie Santos* (41.31) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97)	21-Feb-20
PPL123	5 km <sup>2</sup> Pennie Santos* (25.60) Gulf (2.97) Vamgas (43.75) Delhi (17.14) Origin (10.54)	31-Dec-19	PPL129	1 km <sup>2</sup> Thurakinna Santos* (41.31) Vamgas (8.51) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97) Reef Oil (1.97)	20-Apr-20
PPL124	5 km <sup>2</sup> Bindah Santos* (41.31) Gulf (4.75) Delhi (20.21) Alliance (3.97) Basin (2.10) Bridge (3.99) Origin (13.19) Vamgas (8.51) Reef Oil (1.97)	31-Dec-18	PPL130	1 km <sup>2</sup> Thurakinna Santos* (41.31) Alliance (3.97) Basin (2.10) Bridge (3.99) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Delhi (20.21) Gulf (4.75)	20-Apr-20
PPL125	9 km <sup>2</sup> Gudi Santos* (25.60) Delhi (17.14) Gulf (2.97) Vamgas (43.75) Origin (10.54)	11-Feb-20			
PPL126	1 km <sup>2</sup> Daralingie North Santos* (41.31) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Alliance (3.97)	21-Feb-20			

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL132	1 km <sup>2</sup> Packsaddle Santos* (41.31) Vamgas (8.51) Basin (2.10) Reef Oil (1.97) Origin (13.19) Bridge (3.99) Gulf (4.75) Delhi (20.21) Alliance (3.97)	31-Dec-19	PPL137	7 km <sup>2</sup> Moonanga Santos* (41.31) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Delhi (20.21) Basin (2.10) Alliance (3.97) Bridge (3.99) Gulf (4.75)	25-May-20
PPL133	1 km <sup>2</sup> Packsaddle Santos* (41.31) Vamgas (8.51) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97) Reef Oil (1.97)	31-Dec-19	PPL138	25 km <sup>2</sup> Cabernet Santos* (41.31) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97) Vamgas (8.51)	10-Aug-20
PPL134	1 km <sup>2</sup> Packsaddle Santos* (41.31) Gulf (4.75) Alliance (3.97) Basin (2.10) Delhi (20.21) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Bridge (3.99)	31-Dec-19	PPL139	16 km <sup>2</sup> Milluna Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Origin (13.19)	31-Dec-19
PPL135	11 km <sup>2</sup> Goyder Santos* (41.31) Delhi (20.21) Bridge (3.99) Vamgas (8.51) Alliance (3.97) Gulf (4.75) Basin (2.10) Origin (13.19) Reef Oil (1.97)	31-Dec-19	PPL140	161 km <sup>2</sup> Nephrite South Santos* (41.31) Origin (13.19) Bridge (3.99) Vamgas (8.51) Reef Oil (1.97) Delhi (20.21) Basin (2.10) Alliance (3.97) Gulf (4.75)	31-Dec-19
PPL136	33 km <sup>2</sup> Cuttapirrie Santos* (25.60) Vamgas (43.75) Origin (10.54) Gulf (2.97) Delhi (17.14)	17-Jun-20			

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL141	125 km <sup>2</sup> Beckler Santos* (41.31) Alliance (3.97) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Reef Oil (1.97) Vamgas (8.51)	31-Dec-19	PPL146	10 km <sup>2</sup> Balcaminga Santos* (41.31) Alliance (3.97) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Vamgas (8.51)	31-Dec-19
PPL142	28 km <sup>2</sup> Moolion Santos* (25.60) Vamgas (43.75) Gulf (2.97) Delhi (17.14) Origin (10.54)	10-Aug-20	PPL147	3 km <sup>2</sup> Balcaminga Santos* (25.60) Gulf (2.97) Delhi (17.14) Origin (10.54) Vamgas (43.75)	10-Aug-20
PPL143	93 km <sup>2</sup> Dorodillo Santos* (41.31) Vamgas (8.51) Alliance (3.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Reef Oil (1.97)	31-Dec-19	PPL148	8 km <sup>2</sup> Welcome Lake East Santos* (41.31) Bridge (3.99) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Delhi (20.21) Basin (2.10) Alliance (3.97) Gulf (4.75)	10-Aug-20
PPL144	7 km <sup>2</sup> Santos* (41.31) Reef Oil (1.97) Alliance (3.97) Basin (2.10) Bridge (3.99) Delhi (20.21) Gulf (4.75) Origin (13.19) Vamgas (8.51)	10-Aug-20	PPL149	33 km <sup>2</sup> Santos* (41.31) Bridge (3.99) Delhi (20.21) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Basin (2.10) Alliance (3.97) Gulf (4.75)	31-Dec-19
PPL145	18 km <sup>2</sup> Koree, Koree South Santos* (41.31) Origin (13.19) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Delhi (20.21)	10-Aug-20	PPL150	22 km <sup>2</sup> Raven Santos* (41.31) Basin (2.10) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Alliance (3.97) Delhi (20.21)	10-Aug-20

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL151	66 km <sup>2</sup> Napowie Santos* (41.31) Origin (13.19) Reef Oil (1.97) Delhi (20.21) Vamgas (8.51) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97)	31-Dec-19	PPL156	35 km <sup>2</sup> Beanbush Santos* (25.60) Delhi (17.14) Gulf (2.97) Origin (10.54) Vamgas (43.75)	10-Aug-20
PPL152	4 km <sup>2</sup> Napowie Santos* (25.60) Vamgas (43.75) Origin (10.54) Gulf (2.97) Delhi (17.14)	10-Aug-20	PPL157	3 km <sup>2</sup> Muscat Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Origin (13.19) Alliance (3.97)	10-Aug-20
PPL153	43 km <sup>2</sup> Shiraz Santos* (41.31) Alliance (3.97) Basin (2.10) Delhi (20.21) Origin (13.19) Reef Oil (1.97) Vamgas (8.51) Gulf (4.75) Bridge (3.99)	31-Dec-19	PPL158	67 km <sup>2</sup> Verona Santos* (25.60) Vamgas (43.75) Gulf (2.97) Delhi (17.14) Origin (10.54)	08-Aug-20
PPL154	4 km <sup>2</sup> Ficus Santos* (41.31) Alliance (3.97) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Vamgas (8.51)	31-Dec-19	PPL159	4 km <sup>2</sup> Touriga Santos* (41.31) Alliance (3.97) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10) Vamgas (8.51)	22-Jul-20
PPL155	9 km <sup>2</sup> Bungee Santos* (41.31) Basin (2.10) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Vamgas (8.51) Delhi (20.21) Alliance (3.97)	10-Aug-20	PPL160	3 km <sup>2</sup> Mica Santos* (41.31) Delhi (20.21) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Bridge (3.99) Vamgas (8.51) Basin (2.10) Alliance (3.97)	22-Jul-20

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
PPL161	7 km <sup>2</sup> Malgoona Santos* (41.31) Gulf (4.75) Vamgas (8.51) Origin (13.19) Delhi (20.21) Bridge (3.99) Basin (2.10) Alliance (3.97) Reef Oil (1.97)	08-Aug-20	PPL165	4 km <sup>2</sup> Malgoona Santos* (41.31) Bridge (3.99) Delhi (20.21) Gulf (4.75) Reef Oil (1.97) Vamgas (8.51) Basin (2.10) Origin (13.19) Alliance (3.97)	26-Aug-20
PPL162	3 km <sup>2</sup> Sturt Santos* (41.31) Alliance (3.97) Vamgas (8.51) Reef Oil (1.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Basin (2.10)	08-Aug-20	PPL166	1 km <sup>2</sup> Taylor South Santos* (41.31) Delhi (20.21) Vamgas (8.51) Reef Oil (1.97) Gulf (4.75) Bridge (3.99) Basin (2.10) Alliance (3.97) Origin (13.19)	31-Dec-19
PPL163	1 km <sup>2</sup> Brumby Santos* (41.31) Reef Oil (1.97) Basin (2.10) Origin (13.19) Gulf (4.75) Delhi (20.21) Bridge (3.99) Vamgas (8.51) Alliance (3.97)	31-Dec-19	PPL167	7 km <sup>2</sup> Moolion Santos* (25.60) Delhi (17.14) Gulf (2.97) Origin (10.54) Vamgas (43.75)	02-Sep-20
PPL164	3 km <sup>2</sup> Packsaddle Santos* (41.31) Basin (2.10) Reef Oil (1.97) Alliance (3.97) Origin (13.19) Gulf (4.75) Delhi (20.21) Vamgas (8.51) Bridge (3.99)	31-Dec-19	PPL168	9 km <sup>2</sup> Redman Origin* (20.00) Sagasco (55.71) Omega (24.29)	25-Jun-20
			<b>WESTERN AUSTRALIA</b>		
			<b>OFFSHORE</b>		
			<b>EXPLORATION PERMIT - P(SL)A</b>		
WA-1-P R5	16 blocks; 1 328 km <sup>2</sup> Hampton, Legendre, Rosemary, Saffron Santos* (22.56) Woodside (45.94) Apache (31.50)	16-Nov-02	WA-18-P R5	8 blocks; 664 km <sup>2</sup> Santos* (70.00) Bonaparte (30.00)	01-Jun-04
WA-24-P R4 PART 1	2 blocks; 166 km <sup>2</sup> Chevron* (25.71) Shell (35.71) Mobil (12.86) Texaco Aus. (25.71)	07-Mar-00			

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
WA-25-P R5	16 blocks; 1 328 km <sup>2</sup> North Tryal Rocks Shell* (28.57) Chevron (28.57) Mobil (14.29) Texaco Aus. (28.57)	27-Jan-03 (R.P.)	WA-205-P R1	15 blocks; 1 245 km <sup>2</sup> Chrysaor Chevron* (28.57) Mobil (14.29) Shell (28.57) Texaco Aus. (28.57)	21-Sep-99
WA-28-P R5	15 blocks; 1 245 km <sup>2</sup> Eaglehawk, Haycock Shell* (16.67) BHP (16.67) Woodside (16.67) Japan Australia LNG (16.67) BP (16.67) Chevron (16.67)	04-Aug-01	WA-206-P R1	38 blocks; 3 155 km <sup>2</sup> Santos* (43.00) Mobil (57.00)	09-Nov-99
WA-33-P R3	48 blocks; 3 985 km <sup>2</sup> Brecknock, Scott Reef Woodside* (50.00) BHP (8.33) Shell (8.33) Chevron (16.67) BP (16.67)	26-Feb-03	WA-208-P R1	16 blocks; 1 328 km <sup>2</sup> Woodside* (24.50) Mobil (28.00) Mosaic (5.00) Santos (30.00) British Borneo (12.50)	10-Apr-01
WA-35-P R5	16 blocks; 1 328 km <sup>2</sup> Shell* (66.67) Chevron (33.33)	06-Sep-03	WA-209-P R1	12 blocks; 996 km <sup>2</sup> Apache* (54.20) Globex (12.50) Santos (33.30)	02-Sep-00
WA-149-P R3	9 blocks; 703 km <sup>2</sup> Petroz (10.00) Santos (18.71) Pan Pacific (10.00) Ampolex (12.47) Apache (48.81)	09-Nov-04	WA-210-P R1	4 blocks; 332 km <sup>2</sup> Rosily Inpex (36.36)	12-Jul-00
WA-155-P R3	14 blocks; 1 162 km <sup>2</sup> BHP* (71.43) Mobil (28.57)	12-Jan-04	WA-213-P R1	18 blocks; 1 494 km <sup>2</sup> Chevron* (28.57) Mobil (14.29) Shell (28.57) Texaco Aus. (28.57)	03-Jun-01
WA-191-P R3	16 blocks; 1 328 km <sup>2</sup> Mobil* (33.40) Santos (33.40) Woodside (8.20) Nippon (25.00)	01-Jun-04	WA-214-P R1	13 blocks; 1 079 km <sup>2</sup> Ampolex* (35.00) Apache (20.00) AEC (25.00) Santos (20.00)	19-Aug-01
WA-192-P R3	12 blocks; 996 km <sup>2</sup> Apache* (57.15) Kufpec (19.28) New World (0.10) Tap (12.22) Texaco Aus. (11.25)	08-Jul-20	WA-215-P R1	6 blocks; 498 km <sup>2</sup> Apache* (47.17) Chevron (17.25) Santos (10.00) Shell (17.25) Texaco Aus. (8.33)	23-Jun-02
WA-202-P R2	13 blocks; 1 079 km <sup>2</sup> Mobil* (40.00) Premier (20.00) Wandoo (40.00)	03-Aug-04	WA-226-P R1	52 blocks; 4 027 km <sup>2</sup> Dana E & P* (21.25) Dana WA (21.00) Cadex (10.50)	23-Nov-02
			WA-234-P	10 blocks; 675 km <sup>2</sup> British Borneo* (30.00) Pan Canadian (40.00) Tap West (10.00) Mobil (20.00)	13-Feb-98

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
WA-239-P R1	57 blocks; 4 732 km <sup>2</sup> BHP* (42.00) Canadian Petroleum (30.00) Santos (14.00) Southern Diamond (14.00)	24-May-04	WA-257-P	6 blocks; 498 km <sup>2</sup> Mobil* (30.00) Origin (24.90) Apache (30.10) British Borneo (15.00)	28-Jun-01
WA-242-P R1	95 blocks; 7 886 km <sup>2</sup> Woodside* (66.66) Santos (33.33)	14-Nov-04	WA-258-P	7 blocks; 581 km <sup>2</sup> Amerada Hess* (54.56) Santos (45.44)	18-Dec-00
WA-246-P	4 blocks; 332 km <sup>2</sup> Apache* (47.00) Premier (15.00) Pan Pacific (15.00)	10-Feb-00	WA-259-P	10 blocks; 830 km <sup>2</sup> Basin* (9.00) Premier (19.00) Apache (31.50) Dana E & P (7.50) Pan Pacific (15.00) Petroz (18.00)	08-Dec-00
WA-248-P	37 blocks; 3 071 km <sup>2</sup> Mobil* (40.00) Woodside (20.00) Phillips (40.00)	15-Jun-99	WA-260-P	48 blocks; 3 985 km <sup>2</sup> Buffalo, Buller BHP* (50.00) Canadian Petroleum (50.00)	21-Dec-01
WA-253-P	26 blocks; 2 158 km <sup>2</sup> Chevron* (50.00) Texaco Aus. (50.00)	17-Jan-00	WA-261-P	5 blocks; 415 km <sup>2</sup> Victoria Petroleum* (2.50) Strike Oil (5.00) Apache (16.67) Sun (5.00) Santos (29.58) Kestrel (2.50) Globex (6.25) Asisun (5.00) Capital Energy (5.00) Petroz (22.50)	02-Jan-02
WA-254-P PARTS 1,3 & 4	4 blocks; 249 km <sup>2</sup> Apache* (39.20) Carnarvon (8.69) Woodside (24.38) Victoria Petroleum (4.03) Sun (7.85) Pan Pacific (2.99) First Australian (10.71) Kestrel (2.14)	30-Aug-00	WA-262-P	5 blocks; 415 km <sup>2</sup> Chevron* (100.00)	04-Apr-02
WA-254-P PART 2	1 blocks; 83 km <sup>2</sup> Apache* (36.44) Woodside (24.38) Victoria Petroleum (4.03) Sun (9.25) Pan Pacific (2.99) Kestrel (2.14) First Australian (11.25) Carnarvon (11.46)	30-Aug-00	WA-263-P	28 blocks; 2 324 km <sup>2</sup> Novus* (27.50) Woodside (22.50) Idemitsu (27.50)	07-Mar-02
WA-256-P	8 blocks; 664 km <sup>2</sup> Apache (42.86) British Borneo (21.49) New World (0.10) Origin (35.57)	28-Dec-00	WA-264-P	8 blocks; 664 km <sup>2</sup> Santos* (66.70) Idemitsu (33.30)	07-Mar-02
			WA-267-P	68 blocks; 5 645 km <sup>2</sup> Chevron* (25.00) Shell (12.50) Mobil (25.00) BP (12.50) Texaco Aus. (25.00)	19-May-03
			WA-268-P	176 blocks; 14 610 km <sup>2</sup> Texaco Aus. (50.00)	04-Jun-03



## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
WA-269-P	126 blocks; 10 460 km <sup>2</sup> Woodside* (40.00) Phillips (40.00) Mobil (20.00)	04-Jun-03	WA-281-P	56 blocks; 4 649 km <sup>2</sup> Santos* (27.50) Petroz (17.50) Oil Search (25.00) Magellan (10.00) Beach (20.00)	18-Aug-04
WA-270-P	94 blocks; 7 803 km <sup>2</sup> Woodside* (40.00) Mobil (20.00) Phillips (40.00)	04-Jun-03	WA-282-P	72 blocks; 5 977 km <sup>2</sup> Santos* (42.50) Petroz (30.00) Magellan (17.50) Beach (10.00)	18-Aug-04
WA-271-P	76 blocks; 6 309 km <sup>2</sup> Woodside* (100.00)	11-Aug-03	WA-283-P	52 blocks; 4 317 km <sup>2</sup> Santos* (27.50) Beach (7.50) Magellan (17.50) Coastal (27.50) Petroz (20.00)	18-Aug-04
WA-272-P	87 blocks; 5 872 km <sup>2</sup> West Oil* (50.00) Euro Pacific (25.00) Indigo Oil (25.00)	11-Aug-02	WA-284-P	21 blocks; 1 743 km <sup>2</sup> West Oil* (100.00)	18-Aug-04
WA-273-P	28 blocks; 2 324 km <sup>2</sup> Newfield* (70.00) Novus (30.00)		WA-285-P	62 blocks; 5 147 km <sup>2</sup> Inpex* (100.00)	18-Aug-04
WA-274-P	69 blocks; 5 728 km <sup>2</sup> International Frontier* (100.00)	18-Aug-04	WA-286-P	210 blocks; 17 433 km <sup>2</sup> Premier* (100.00)	21-Feb-05
WA-275-P	56 blocks; 4 649 km <sup>2</sup> Woodside* (20.00) Shell (20.00) Chevron (20.00) BHP (20.00) BP (20.00)	18-Aug-04	WA-287-P	25 blocks; 2 075 km <sup>2</sup> Magellan* (100.00)	21-Feb-05
WA-276-P	28 blocks; 2 324 km <sup>2</sup> Kerr-McGee* (39.00) Tap Oil (17.00) Pan Canadian (34.00) SK (10.00)	18-Aug-04	WA-288-P	29 blocks; 2 407 km <sup>2</sup> Magellan* (100.00)	21-Feb-05
WA-277-P	30 blocks; 2 490 km <sup>2</sup> Kerr-McGee* (39.00) Pan Canadian (34.00) SK (10.00) Tap Oil (17.00)	18-Aug-04	WA-289-P	7 blocks; 581 km <sup>2</sup> BHP* (40.00) Canadian Petroleum (40.00) OMV (20.00)	25-Mar-05
WA-278-P	30 blocks; 2 490 km <sup>2</sup> Kerr-McGee* (39.00) Tap Oil (17.00) Pan Canadian (34.00) SK (10.00)	18-Aug-04	WA-290-P	6 blocks; 498 km <sup>2</sup> BHP* (40.00) OMV (20.00) Canadian Petroleum (40.00)	25-Mar-05
WA-279-P	39 blocks; 3 238 km <sup>2</sup> Woodside* (50.00) Shell (50.00)	18-Aug-04	WA-291-P	111 blocks; 9 214 km <sup>2</sup> Magellan* (100.00)	03-Aug-05
WA-280-P	45 blocks; 3 736 km <sup>2</sup> Woodside* (50.00) Shell (50.00)	18-Aug-04	WA-292-P	76 blocks; 6 309 km <sup>2</sup> Nebo IB Res.* (33.33) OMV (33.33) AGIP (33.33)	03-Aug-05
			WA-293-P	205 blocks; 17 018 km <sup>2</sup> Woodside* (100.00)	03-Aug-05

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
WA-294-P	117 blocks; 9 713 km <sup>2</sup> BP* (20.00) Japan Australia LNG (20.00) Woodside (20.00) Chevron (20.00) Shell (20.00)	16-Aug-05	TP/ 7 R1	16 blocks; 1 239 km <sup>2</sup> Pepper, South Chervil Apache* (n/a) Ampolex (n/a) Pan Pacific (n/a) Santos (n/a)	18-Mar-00
WA-295-P	173 blocks; 14 361 km <sup>2</sup> Kerr-McGee* (50.00) British Borneo (50.00)	18-Aug-05	TP/ 8 R2	16 blocks; 1 239 km <sup>2</sup> Cycad Apache* (n/a) New World (n/a) Tap (n/a) Kufpec (n/a) British Borneo (n/a)	14-Nov-04
WA-296-P	148 blocks; 12 286 km <sup>2</sup> Woodside* (16.70) BHP (16.66) Chevron (16.66) Japan Australia LNG (16.66) Shell (16.66) BP (16.66)	16-Aug-05	TP/ 9 R1	5 blocks; 387 km <sup>2</sup> Apache* (n/a) Carnarvon (n/a) Gulf (n/a) Origin (n/a) Premier (n/a) Southern Diamond (n/a)	31-May-00 (R.P.)
WA-297-P	131 blocks; 10 875 km <sup>2</sup> Woodside* (20.00) Chevron (20.00) BP (20.00) Japan Australia LNG (20.00) Shell (20.00)	16-Aug-05	TP/10 R1	3 blocks; 249 km <sup>2</sup> Shell* (100.00)	13-Oct-02
WA-298-P	1 blocks; 83 km <sup>2</sup> BHP* (40.00) OMV (20.00) Canadian Petroleum (40.00)	16-Feb-06	TP/12	4 blocks; 332 km <sup>2</sup> Santos* (100.00)	18-Jan-02
<b>EXPLORATION PERMIT - TERRITORIAL SEA</b>			TP/13	2 blocks; 166 km <sup>2</sup> Chevron* (100.00)	10-Sep-02
TP/ 2 R2	4 blocks; 310 km <sup>2</sup> Shell* (n/a) Texaco Aus. (n/a) Chevron (n/a) Mobil (n/a)	09-Nov-02	TP/14	1 blocks; 83 km <sup>2</sup> Texaco Aus. (n/a) Chevron (n/a) Mobil (n/a) Shell (n/a)	10-Sep-02
TP/ 3 R2	14 blocks; 1 084 km <sup>2</sup> Mobil (n/a) Shell (n/a) Chevron (n/a)	21-Oct-03	TP/15	47 blocks; 3 902 km <sup>2</sup> Premier* (n/a) Phoenix (n/a)	21-Nov-02
TP/ 4	14 blocks; 1 162 km <sup>2</sup> Woodside* (n/a) BP (n/a) Chevron (n/a) Shell (n/a) BHP (n/a)	26-Feb-03	TP/16	28 blocks; 1 890 km <sup>2</sup> Empire* (100.00)	26-Aug-04
TP/ 6 R2	15 blocks; 1 162 km <sup>2</sup> Apache* (100.00)	12-Oct-03	TP/17	6 blocks; 498 km <sup>2</sup> Strike Oil* (100.00)	25-Jun-04
			EP 325 R2	21 blocks; 1 626 km <sup>2</sup> Victoria Petroleum* (n/a) Petroz (n/a) Omega (n/a) Amity (n/a) Rothschild (n/a) Santos (n/a) Sun (n/a) Tepstew (n/a) Kestrel (n/a)	03-Aug-04

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
EP 341 R1	16 blocks; 1 239 km <sup>2</sup> Tap Oil* (n/a) Peedamullah (n/a) Tap (n/a)	21-Sep-99 (R.P.)	TL/4	4 blocks; 310 km <sup>2</sup> Cowle, Saladin Chevron* (n/a) Mobil (n/a) Shell (n/a) Texaco Aus. (n/a)	14-Nov-10
EP 395	3 blocks; 232 km <sup>2</sup> Tap Oil* (n/a) Goodrich (n/a) Carnarvon (n/a) First Australian (n/a)	13-Dec-01	TL/5	3 blocks; 232 km <sup>2</sup> Campbell, Orpheus, Sinbad Apache* (n/a) British Borneo (n/a) Kufpec (n/a) New World (n/a) Tap (n/a)	03-Nov-12
EP 397	2 blocks; 135 km <sup>2</sup> Tap Oil* (n/a) First Australian (n/a) Goodrich (n/a)	13-Dec-01	TL/6	321 km <sup>2</sup> Agincourt, Alkimos, Rosette Apache* (n/a) Tap (n/a) New World (n/a) Kufpec (n/a) British Borneo (n/a)	03-Nov-12
EP 399	6 blocks; 405 km <sup>2</sup> Tap* (n/a) Mobil (n/a) Gulf (n/a) Petroz (n/a)	20-Dec-01	TL/7	2 blocks; 155 km <sup>2</sup> Roller, Skate Chevron (n/a) Mobil (n/a) Shell (n/a) Texaco Aus. (n/a)	15-Dec-14
EP 400	6 blocks; 405 km <sup>2</sup> Tap* (n/a) Gulf (n/a) Mobil (n/a) Petroz (n/a)	20-Dec-01	TL/8	4 blocks; 310 km <sup>2</sup> Wonnich Apache* (n/a) British Borneo (n/a) Kufpec (n/a) New World (n/a) Tap (n/a)	20-Sep-19
EP 403	4 blocks; 270 km <sup>2</sup> Tap Oil* (n/a)	12-Nov-02			
EP 406	66 blocks; 5 111 km <sup>2</sup> Euro Pacific* (n/a)	28-Nov-02			
<b>PRODUCTION LICENCE - TERRITORIAL SEA</b>					
TL/1	5 blocks; 387 km <sup>2</sup> Bambra, Harriet, Ulidia Apache* (n/a) British Borneo (n/a) Kufpec (n/a) New World (n/a) Tap (n/a)	06-Nov-06	<b>PRODUCTION LICENCE- P(SL)A</b>		
TL/2	5 blocks; 387 km <sup>2</sup> Chervil, North Herald, South Pepper Apache* (n/a) Ampolex (n/a) Pan Pacific (n/a) Santos (n/a)	25-Nov-08	WA-1-L	5 blocks; 415 km <sup>2</sup> North Rankin Woodside* (23.33) BHP (15.00) Shell (15.00) Japan Australia LNG (13.34) BP (16.67) Chevron (16.67)	29-Sep-01
TL/3	7 blocks; 542 km <sup>2</sup> Barrow Island Chevron* (n/a) Texaco Aus. (n/a) Mobil (n/a) Shell (n/a)	03-Feb-09	WA-2-L	4 blocks; 332 km <sup>2</sup> North Rankin Woodside* (23.33) BHP (15.00) BP (16.67) Chevron (16.67) Japan Australia LNG (13.34) Shell (15.00)	29-Sep-01

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
WA-3-L	5 blocks; 415 km <sup>2</sup> Angel Woodside* (23.33) BHP (15.00) Shell (15.00) Japan Australia LNG (13.34) Chevron (16.67) BP (16.67)	29-Sep-01	WA-10-L	4 blocks; 310 km <sup>2</sup> Bowers, Chinook/Scindian, Griffin BHP* (45.00) Inpex (20.00)	18-Feb-14
WA-4-L	4 blocks; 332 km <sup>2</sup> Angel Woodside* (23.33) Japan Australia LNG (13.34) BP (16.67) BHP (15.00) Chevron (16.67) Shell (15.00)	29-Sep-01	WA-11-L	2 blocks; 166 km <sup>2</sup> Wanaea Woodside* (16.66) Shell (16.67) Japan Australia LNG (16.67) Chevron (16.67) BP (16.67) BHP (16.67)	30-Sep-14
WA-5-L	5 blocks; 415 km <sup>2</sup> Dockrell, Goodwyn, Tidepole Woodside* (23.33) BHP (15.00) Shell (15.00) Japan Australia LNG (13.34) Chevron (16.67) BP (16.67)	29-Sep-01	WA-12-L	1 blocks; 77 km <sup>2</sup> Griffin, Ramilles BHP* (71.43) Mobil (28.57)	13-Feb-15
WA-6-L	4 blocks; 332 km <sup>2</sup> Goodwyn, Keast Woodside* (23.33) BP (16.67) Chevron (16.67) Japan Australia LNG (13.34) Shell (15.00) BHP (15.00)	29-Sep-01	WA-13-L	3 blocks; 232 km <sup>2</sup> East Spar Santos* (45.00) Apache (55.00)	18-Feb-17
WA-7-L	2 blocks; 155 km <sup>2</sup> Barrow Island Texaco Aus. (28.57) Mobil (14.29) Shell (28.57) Chevron (28.57)	03-Feb-09	WA-14-L	3 blocks; 232 km <sup>2</sup> Wandoo Mobil* (60.00) Wandoo (40.00)	19-Mar-17
WA-8-L	2 blocks; 166 km <sup>2</sup> Talisman Santos* (27.37) Texaco Aus. (20.00) Mobil (42.63) Origin (10.00)	16-Aug-09	WA-15-L	2 blocks; 155 km <sup>2</sup> Stag Santos* (54.17) Globex (12.50) Apache (33.34)	25-Aug-18
WA-9-L	1 blocks; 83 km <sup>2</sup> Cossack Woodside* (16.66) BHP (16.67) BP (16.67) Chevron (16.67) Japan Australia LNG (16.67) Shell (16.67)	11-Apr-12	WA-16-L	1 blocks; 83 km <sup>2</sup> Hermes, Lambert Woodside* (16.67) BHP (16.67) Chevron (16.67) Japan Australia LNG (16.67) Shell (16.67) BP (16.67)	11-Sep-18
			WA-17-L	3 blocks; 249 km <sup>2</sup> Athena, North Rankin Mobil* (50.00) Phillips (50.00)	14-Jan-20
			WA-18-L	1 blocks; 83 km <sup>2</sup> Laminaria BHP* (100.00)	12-May-20
			WA-19-L	2 blocks; 166 km <sup>2</sup> Buffalo BHP* (50.00) Canadian Petroleum (50.00)	05-Sep-20
			WA-20-L	1 blocks; 83 km <sup>2</sup> Legendre Woodside* (45.94) Santos (22.56) Apache (31.50)	15-Nov-20
			WA-21-L	1 blocks; 83 km <sup>2</sup> Buffalo BHP* (50.00) Canadian Petroleum (50.00)	25-Nov-20

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
WA-22-L	1 blocks; 77 km <sup>2</sup> East Spar Pan Canadian* (40.00) Tap West (10.00) British Borneo (30.00) Mobil (20.00)	28-Feb-21	WA-9-R	1 blocks; 83 km <sup>2</sup> Dixon Woodside* (16.70) Chevron (16.66) BP (16.66) Shell (16.66) BHP (16.66) Japan Australia LNG (16.66)	05-Dec-00
<b>RETENTION LEASE - P(SL)A</b>			WA-10-R	2 blocks; 166 km <sup>2</sup> Egret, Montague Woodside* (16.70) BHP (16.66) BP (16.66) Chevron (16.66) Japan Australia LNG (16.66) Shell (16.66)	05-Dec-00
WA-1-R R2	9 blocks; 727 km <sup>2</sup> Scarborough Esso* (50.00) BHP (50.00)	03-Aug-04	WA-11-R	1 blocks; 83 km <sup>2</sup> Rankin Woodside* (16.70) Shell (16.66) Japan Australia LNG (16.66) Chevron (16.66) BHP (16.66) BP (16.66)	30-Jan-01
WA-2-R R1	10 blocks; 830 km <sup>2</sup> Gorgon Chevron* (28.57) Texaco Aus. (28.57) Shell (28.57) Mobil (14.29)	08-Jun-02	WA-12-R	5 blocks; 415 km <sup>2</sup> Macedon/Pyrenees BHP* (71.43) Mobil (28.57)	12-Oct-03
WA-3-R R1	1 blocks; 83 km <sup>2</sup> Gorgon Chevron* (28.57) Texaco Aus. (28.57) Mobil (14.29) Shell (28.57)	08-Jun-02	<b>RETENTION LEASE - TERRITORIAL SEA</b>		
WA-4-R R1	2 blocks; 166 km <sup>2</sup> Spar Chevron* (28.57) Texaco Aus. (28.57) Mobil (14.29) Shell (28.57)	08-Jun-02	TR/1	2 blocks; 160 km <sup>2</sup> Tap* (n/a) Apache (n/a) British Borneo (n/a) Kufpec (n/a) New World (n/a)	31-Jan-04
WA-5-R R1	3 blocks; 249 km <sup>2</sup> West Tryal Rocks Chevron* (28.57) Mobil (14.29) Shell (28.57) Texaco Aus. (28.57)	08-Jun-02	TR/2	1 blocks; 80 km <sup>2</sup> Tap* (n/a) Kufpec (n/a) British Borneo (n/a) Apache (n/a) New World (n/a)	31-Jan-04
WA-6-R	10 blocks; 830 km <sup>2</sup> Petrel Santos* (35.49) Alliance (15.00) Boral (5.00) Bonaparte (44.51)	31-Jan-05	<b>ONSHORE</b>		
WA-7-R	3 blocks; 249 km <sup>2</sup> Wilcox Woodside* (16.70) BHP (16.66) BP (16.66) Shell (16.66) Chevron (16.66) Japan Australia LNG (16.66)	08-Nov-05	<b>EXPLORATION PERMIT</b>		
			EP 23 R5	9 blocks; 697 km <sup>2</sup> Premier* (n/a) Phoenix (n/a) Carnarvon (n/a) Rothschild (n/a)	04-Jul-01

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
EP 36 R3	1 blocks; 83 km <sup>2</sup> Woodside* (n/a) Chevron (n/a) Shell (n/a) BP (n/a) BHP (n/a)	26-Feb-03	EP 137 R3	18 blocks; 1 394 km <sup>2</sup> Carnie, East Somelim, Mardie, Myanore, Thringa, Windoo Tap* (n/a) Rothschild (n/a)	11-Dec-99 (R.P.)
EP 41 R5	9 blocks; 697 km <sup>2</sup> Pace (n/a) Rough Range (n/a)	27-Aug-02	EP 307 R2	4 blocks; 310 km <sup>2</sup> Tanami Apache* (n/a) Tap (n/a) New World (n/a) Kufpec (n/a) British Borneo (n/a)	28-May-00
EP 61 R5	4 blocks; 310 km <sup>2</sup> Pasco Texaco Aus. (n/a) Chevron (n/a) Shell (n/a) Mobil (n/a)	11-Sep-02	EP 320 R2	17 blocks; 1 316 km <sup>2</sup> Boral* (n/a) Premier (n/a) Phoenix (n/a)	16-Mar-02
EP 62 R5	1 blocks; 77 km <sup>2</sup> Chevron (n/a) Mobil (n/a) Shell (n/a) Texaco Aus. (n/a)	11-Sep-02	EP 321 R2	26 blocks; 1 755 km <sup>2</sup> Premier* (n/a) Phoenix (n/a) Capital Consultant (n/a) Rothschild (n/a)	01-Jul-03
EP 65 R5	2 blocks; 155 km <sup>2</sup> Crest Chevron* (n/a) Shell (n/a)	11-Sep-02	EP 323 R2	12 blocks; 810 km <sup>2</sup> Premier* (n/a) Cataby (n/a) First Australian (n/a) Phoenix (n/a)	30-Nov-02
EP 66 R5	1 blocks; 83 km <sup>2</sup> Chevron (n/a) Mobil (n/a) Shell (n/a) Texaco Aus. (n/a)	11-Sep-02	EP 353 R1	150 blocks; 12 452 km <sup>2</sup> Shell* (n/a)	20-Jul-03
EP 104 R4	12 blocks; 996 km <sup>2</sup> 09-Nov-04 (R.P.) Basin* (n/a) Stirling (n/a) Pelsoil (n/a) Kiwi (n/a) Kimberley Oil (n/a) Indigo Oil (n/a) First Australian (n/a) Gulliver (n/a)		EP 355 R1	1 blocks; 77 km <sup>2</sup> Shell* (100.00)	13-Oct-02
EP 110 R3	50 blocks; 4 151 km <sup>2</sup> Topaz Carnarvon* (n/a) Hardman (n/a) Pan Pacific (n/a) Radford R A (n/a) Rothschild (n/a) Kiwi (n/a)	24-Jan-05	EP 357 R1	3 blocks; 232 km <sup>2</sup> Shell* (n/a) Texaco Aus. (n/a) Mobil (n/a) Chevron (n/a)	10-Oct-01
EP 111 R3	11 blocks; 913 km <sup>2</sup> 03-Oct-99 (R.P.) Jervois* (100.00)		EP 358 R1	5 blocks; 387 km <sup>2</sup> Apache* (n/a) Kufpec (n/a) New World (n/a) Tap (n/a) British Borneo (n/a)	14-Nov-04
EP 129 R3	16 blocks; 1 328 km <sup>2</sup> 01-May-01 (R.P.) Terratek WA* (n/a) Karimbla (n/a)		EP 359 R1	21 blocks; 1 626 km <sup>2</sup> Phoenix (n/a) Petroz (n/a) Perthshire (n/a) Pace (n/a) Kestrel (n/a) Sun (n/a)	06-Apr-04

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
EP 361 R1	2 blocks; 155 km <sup>2</sup> Rothschild* (n/a) Lakes (n/a) Pan Pacific (n/a)	06-Apr-02	EP 389	37 blocks; 2 497 km <sup>2</sup> Empire* (n/a) CalEnergy Gas (n/a)	18-Jul-99
EP 363 R1	4 blocks; 310 km <sup>2</sup> Apache* (n/a) Premier (n/a) Cue (n/a)	11-Aug-02	EP 390	130 blocks; 10 792 km <sup>2</sup> Kimberley Oil* (n/a)	18-Jan-01 (R.P.)
EP 364 R1	1 blocks; 77 km <sup>2</sup> Tap Oil* (n/a) Peedamullah (n/a) Tap (n/a)	14-Nov-04	EP 391	118 blocks; 9 796 km <sup>2</sup> Kimberley Oil* (n/a)	18-Jan-01 (R.P.)
EP 366	97 blocks; 8 052 km <sup>2</sup> Kimberley Oil* (n/a)	12-Apr-97	EP 394	1 blocks; 77 km <sup>2</sup> Premier* (n/a) Phoenix (n/a)	18-Jan-01
EP 368 R1	8 blocks; 619 km <sup>2</sup> Premier* (n/a) Phoenix (n/a)	21-Sep-02	EP 398	7 blocks; 472 km <sup>2</sup> Santos* (n/a)	18-Jan-02
EP 369 R1	31 blocks; 2 400 km <sup>2</sup> Euro Pacific* (n/a)	12-Oct-03	EP 404	7 blocks; 542 km <sup>2</sup> Tap Oil* (n/a)	12-Nov-02 (R.P.)
EP 371	60 blocks; 4 981 km <sup>2</sup> Kimberley Oil* (n/a)	31-Dec-98 (R.P.)	EP 405	113 blocks; 8 750 km <sup>2</sup> Empire* (n/a)	12-Nov-02
EP 372 R1	7 blocks; 542 km <sup>2</sup> Premier* (n/a) Phoenix (n/a)	12-Oct-03	EP 407	26 blocks; 1 755 km <sup>2</sup> Premier* (n/a) Capital Consultant (n/a) Carnarvon (n/a) Phoenix (n/a)	04-Mar-03
EP 373 R1	60 blocks; 4 981 km <sup>2</sup> Black Rock* (n/a) Pasminco (n/a)	23-Aug-03	EP 408	26 blocks; 1 755 km <sup>2</sup> Amity* (n/a) Forcenergy (n/a) Geopetro (n/a) Pennzoil (n/a)	01-Jul-03
EP 380 R1	150 blocks; 11 615 km <sup>2</sup> Amadeus* (n/a) Jagen Nominees (n/a)	13-Jul-03	EP 409	2 blocks; 155 km <sup>2</sup> Arc Energy* (n/a) Omega (n/a)	21-Sep-03
EP 381 R1	21 blocks; 1 417 km <sup>2</sup> Amity* (n/a) Geopetro (n/a) Pennzoil (n/a)	21-Oct-98	EP 410	20 blocks; 1 549 km <sup>2</sup> Gulliver* (n/a) Indigo Oil (n/a) Falcore (n/a)	29-Sep-03
EP 385 R1	147 blocks; 11 383 km <sup>2</sup> Amity* (n/a) Hughes-Rawls (n/a) Bonaparte Gulf (n/a) Hughes, D A (n/a)	10-Dec-03 (R.P.)	EP 411	17 blocks; 1 147 km <sup>2</sup> Empire* (n/a)	26-Aug-04
EP 386 R1	91 blocks; 7 554 km <sup>2</sup> Bonaparte, Garimala, Ningbing, Waggon Creek Amity* (n/a) Frontier (n/a) Geopetro (n/a) Bonaparte Gulf (n/a)	11-Jan-04	EP 412	69 blocks; 5 343 km <sup>2</sup> Flare* (100.00)	18-Mar-04

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date
EP 413 R1	11 blocks; 852 km <sup>2</sup> Boral* (n/a) Hughes, D J (n/a) Burns A R (n/a) Rothschild (n/a) Premier (n/a) Phoenix (n/a) Geary, J K (n/a) Euro Pacific (n/a) Cladium (n/a) Burns V W (n/a) Hughes, D A (n/a)	25-Aug-04
EP 414 R1	15 blocks; 1 012 km <sup>2</sup> Premier* (n/a) Cladium (n/a) Rothschild (n/a) Phoenix (n/a) Hughes, D J (n/a) Hughes, D A (n/a) Euro Pacific (n/a) Burns V W (n/a) Burns A R (n/a) Boral (n/a) Geary, J K (n/a)	25-Aug-04
EP 415	21 blocks; 1 417 km <sup>2</sup> Empire* (n/a)	25-Aug-05
EP 416	57 blocks; 3 847 km <sup>2</sup> Empire* (n/a)	25-Aug-05
<b>PRODUCTION LICENCE</b>		
L 1 R1	5 blocks; 387 km <sup>2</sup> Dongara Arc Energy* (n/a) CMS (n/a)	17-May-14
L 1H R1	9 blocks; 697 km <sup>2</sup> Barrow Island Chevron* (n/a)	09-Feb-09
L 2 R1	4 blocks; 310 km <sup>2</sup> Dongara Arc Energy* (n/a)	17-May-14
L 4	5 blocks; 387 km <sup>2</sup> Woodada Phoenix* (n/a)	24-Mar-04
L 5	4 blocks; 310 km <sup>2</sup> Woodada Phoenix* (n/a)	28-Dec-04
L 6	5 blocks; 415 km <sup>2</sup> Blina Terratek* (n/a) Karimbla (n/a)	22-Sep-04
L 7	2 blocks; 155 km <sup>2</sup> Mt Horner Premier* (n/a) Phoenix (n/a)	13-May-05

Title	Area and Title holder	Expiry date
L 8	4 blocks; 332 km <sup>2</sup> Sundown, West Terrace Terratek* (n/a) Karimbla (n/a)	21-Oct-05
L 9	3 blocks; 232 km <sup>2</sup> Tubridgi Sagasco* (n/a) Tubridgi (n/a) Pan Pacific (n/a) Boral (n/a)	03-Jun-08
L 10	8 blocks; 619 km <sup>2</sup> Barrow Island Texaco Aus. (n/a) Shell (n/a) Mobil (n/a) Chevron (n/a)	03-Feb-09
L 11	1 blocks; 77 km <sup>2</sup> Beharra Springs Boral* (n/a) Premier (n/a)	14-May-13

### NORTHERN TERRITORY

#### OFFSHORE

#### EXPLORATION PERMIT - P(SL)A

NT/P46	44 blocks; 3 653 km <sup>2</sup> Barnett Cultus* (75.00) Basin (20.00) Frontier (5.00)	04-Mar-02
NT/P47	138 blocks; 11 456 km <sup>2</sup> Shell* (70.00) Timor Sea NL (30.00)	02-Jun-02
NT/P48	149 blocks; 12 369 km <sup>2</sup> Evans Shoal Shell* (70.00) Timor Sea NL (30.00)	02-Jun-02
NT/P49	110 blocks; 9 131 km <sup>2</sup> Lynedoch Shell* (100.00)	14-May-03
NT/P50	126 blocks; 10 460 km <sup>2</sup> Woodside* (50.00) Shell (50.00)	14-May-03
NT/P51	57 blocks; 4 732 km <sup>2</sup> Woodside* (33.34) Shell (33.33) BHP (33.33)	14-May-03
NT/P52	92 blocks; 7 637 km <sup>2</sup> Santos* (37.50) Beach (25.00) Petroz (25.00) Arrow (12.50)	22-Feb-04



## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date
NT/P53	99 blocks; 8 218 km <sup>2</sup> Woodside* (50.00) Shell (50.00)	22-Feb-04
NT/P54	115 blocks; 9 547 km <sup>2</sup> Flat Top Kerr-McGee* (45.00) AEC (35.00) Tap Oil (20.00)	18-Jan-05
NT/P55	93 blocks; 7 720 km <sup>2</sup> Woodside* (33.34) Phillips (33.33) Shell (33.33)	18-Jan-05
NT/P56	56 blocks; 4 649 km <sup>2</sup> Roma* (50.00) Guinness Peat (50.00)	18-Jan-05
NT/P57	51 blocks; 4 234 km <sup>2</sup> Woodside* (90.00) Shell (10.00)	18-Jan-05
NT/P58	102 blocks; 8 467 km <sup>2</sup> Canadian Petroleum* (100.00)	16-Aug-05
NT/P59	100 blocks; 8 301 km <sup>2</sup> Canadian Petroleum* (100.00)	16-Aug-05
NT/P60	112 blocks; 9 298 km <sup>2</sup> Timor Sea Arafura* (75.00) Oz-Exoil (25.00)	16-Aug-05
<b>RETENTION LEASE - P(SL)A</b>		
NT/RL1	9 blocks; 747 km <sup>2</sup> Petrel Santos* (35.49) Alliance (15.00) Bonaparte (44.51) Boral (5.00)	15-May-99 (R.P.)
NT/RL2	22 blocks; 1 826 km <sup>2</sup> Loxton, Sunrise, Troubadour Woodside* (66.67) Phillips (8.33) Shell (25.00)	04-Dec-01
<b>ONSHORE</b>		
<b>EXPLORATION PERMIT</b>		
EP 66	115 blocks; 9 547 km <sup>2</sup> Spirit Hill Amity* (n/a) Geopetro (n/a) Bonaparte Gulf (n/a) Frontier (n/a)	01-Aug-99

Title	Area and Title holder	Expiry date
EP 69	18 blocks; 1 394 km <sup>2</sup> IOR* (n/a) ITG (n/a) Moroil (n/a)	02-Apr-01
<b>OIL LEASE</b>		
L3	616 km <sup>2</sup> Palm Valley Magellan* (50.78) Canso (15.38) Farmout (9.38) Kufpec (9.60) Santos (14.87)	08-Nov-03
L4	123 km <sup>2</sup> Mereenie Santos* (6.25) Canso (15.00) Transoil NT (9.00) United Oil & Gas (15.00) Moonie (21.00) Farmout (6.25) Magellan (20.00) Petromin (7.50)	17-Nov-02
L5	158 km <sup>2</sup> Mereenie Santos* (6.25) Canso (15.00) Farmout (6.25) Magellan (20.00) Moonie (21.00) Petromin (7.50) Transoil NT (9.00) United Oil & Gas (15.00)	17-Nov-02
<b>RETENTION LEASE</b>		
RL 1	2 blocks; 166 km <sup>2</sup> Weaber Amity* (n/a) Bonaparte Gulf (n/a) Frontier (n/a)	09-Oct-00
RL 2	6 blocks; 465 km <sup>2</sup> Dingo Santos* (n/a) Canso (n/a) Farmout (n/a) Magellan (n/a) Moonie (n/a) Petromin (n/a) Transoil NT (n/a)	26-Oct-03

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
<b>TERRITORY OF ASHMORE AND CARTIER ISLANDS ADJACENT AREA</b>					
<b>OFFSHORE</b>					
<b>EXPLORATION PERMIT - P(SL)A</b>					
AC/P4 R2	24 blocks; 1 992 km <sup>2</sup> Woodside* (80.00) Cultus (20.00)	04-May-02	AC/P23	56 blocks; 4 649 km <sup>2</sup> Keeling, Maret Nippon* (75.00) Timor Sea P/L (25.00)	31-Aug-03
AC/P8	12 blocks; 996 km <sup>2</sup> Woodside* (58.33) Mid-Eastern (8.33) BHP (8.33) Shell (25.00)	23-Jan-02	AC/P24	20 blocks; 1 660 km <sup>2</sup> Cultus* (33.34) AEC (33.33) Newfield (33.33)	25-Feb-04
AC/P15	44 blocks; 3 653 km <sup>2</sup> Dillon Shoals Santos* (33.33) Yukong (10.00) Kerr-McGee (33.33) AEC (23.33)	17-Apr-02	AC/P25	14 blocks; 1 162 km <sup>2</sup> Flare* (100.00)	25-Feb-04
AC/P16	51 blocks; 4 234 km <sup>2</sup> Woodside* (40.00) Shell (40.00) Sodec (20.00)	17-Apr-02	AC/P26	5 blocks; 415 km <sup>2</sup> Mosaic* (35.00) Trans-Orient (35.00) West Oil (30.00)	25-Feb-04
AC/P17	7 blocks; 581 km <sup>2</sup> Cultus* (25.00) Cosmo (25.00) Newfield (25.00) Pan Canadian (25.00)	17-Apr-02	AC/P27	14 blocks; 1 162 km <sup>2</sup> Arc Energy* (50.00) Flare (50.00)	25-Feb-04
AC/P18	20 blocks; 1 660 km <sup>2</sup> Cultus* (25.00) Newfield (25.00) Cosmo (25.00) Pan Canadian (25.00)	29-May-03	AC/P28	53 blocks; 4 400 km <sup>2</sup> West Oil* (100.00)	16-Jun-04
AC/P19	18 blocks; 1 494 km <sup>2</sup> Sahul Shoals Indo-Pacific* (65.00) Mosaic (35.00)	29-May-03	AC/P29	49 blocks; 4 068 km <sup>2</sup> Japex* (100.00)	16-Jun-04
AC/P20	18 blocks; 1 494 km <sup>2</sup> Maple Coastal* (50.00) Todd (10.00) Newfield (40.00)	29-May-03	AC/P30	49 blocks; 4 068 km <sup>2</sup> BHP* (100.00)	16-Jun-04
AC/P21	19 blocks; 1 577 km <sup>2</sup> East Swan, Eclipse, Swan Coastal* (40.00) British Borneo (30.00) Newfield (30.00)	29-May-03	AC/P31	1 blocks; 83 km <sup>2</sup> Indo-Pacific* (65.00) Mosaic (35.00)	11-Sep-05
AC/P22	22 blocks; 1 826 km <sup>2</sup> Puffin Ashmore* (50.00) Westranch (50.00)	29-May-03	<b>PRODUCTION LICENCE - P(SL)A</b>		
			AC/L1	4 blocks; 332 km <sup>2</sup> Pengana Newfield* (50.00) Union Pacific (14.69) Santos (10.31) Cultus (18.75) Mobil (6.25)	16-Jul-06
			AC/L2	4 blocks; 332 km <sup>2</sup> Jabiru Newfield* (50.00) Cultus (18.75) Mobil (6.25) Santos (10.31) Union Pacific (14.69)	16-Jul-06
			AC/L3	9 blocks; 747 km <sup>2</sup> Cassini, Challis Newfield* (50.00) Union Pacific (14.69) Cultus (18.75) Mobil (6.25) Santos (10.31)	28-Jan-09

## APPENDIX K (cont'd)

Title	Area and Title holder	Expiry date	Title	Area and Title holder	Expiry date
AC/L4	4 blocks; 332 km <sup>2</sup> Birch, Skua, Swift Newfield* (47.31) AWE (3.44) Mobil (10.13) Santos (33.63) Union Pacific (5.49)	11-Oct-11	ZOCA 91-13	1 406 km <sup>2</sup> Fohn Phillips* (60.00) British Borneo (15.00) Kerr-McGee (25.00)	16-Dec-01
AC/L5	2 blocks; 166 km <sup>2</sup> Corallina, Laminaria Woodside* (58.33) BHP (8.33) Mid-Eastern (8.33) Shell (25.00)	05-Feb-18	ZOCA 94-07	2 401 km <sup>2</sup> Shell* (90.00) Woodside (10.00)	28-Mar-01
<b>RETENTION LEASE - P(SL)A</b>			ZOCA 95-15	2 627 km <sup>2</sup> BHP* (100.00)	07-Oct-02
AC/RL1	1 blocks; 83 km <sup>2</sup> Talbot West Oil* (100.00)	31-Jan-05	ZOCA 95-17	2 502 km <sup>2</sup> BHP* (100.00)	07-Oct-02
AC/RL2	5 blocks; 415 km <sup>2</sup> Oliver BHP* (50.00) Union Pacific (2.00) Mobil (10.00) Santos (38.00)	02-Mar-02	ZOCA 95-18	2 354 km <sup>2</sup> Shell* (25.00) Statoil (ZOCA 95-18) (25.00) Mobil (25.00) British Borneo (13.00) Southern Diamond (12.00)	15-Nov-02
AC/RL3	3 blocks; 249 km <sup>2</sup> Bilyara, Montara, Tahbilk BHP* (50.00) Canadian Petroleum (50.00)	22-Feb-02	ZOCA 95-19	2 262 km <sup>2</sup> Woodside* (34.33) Phillips (33.33) Shell (32.33)	03-Oct-02
<b>JOINT PETROLEUM DEVELOPMENT AREA</b>			ZOCA 96-16	2 684 km <sup>2</sup> Phillips* (66.00) NWE (14.00) ZOCA 96-16 (10.00) ZOCA P/L (10.00)	15-Nov-02
<b>OFFSHORE</b>			ZOCA 96-20	3 216 km <sup>2</sup> Woodside* (33.33) Phillips (33.33) Shell (33.33)	11-Nov-02
<b>EXPLORATION PERMIT</b>			ZOCA 91-01	1 225 km <sup>2</sup> Jahal BHP* (40.00) Inpex (20.00) Santos (20.00) Woodside (20.00)	08-Jan-02
ZOCA 91-02	1 344 km <sup>2</sup> Shell* (100.00)	16-Dec-01			
ZOCA 91-09	1 238 km <sup>2</sup> Shell* (60.00) Southern Diamond (20.00) Enterprise (20.00)	08-Jan-02			
ZOCA 91-12	1 470 km <sup>2</sup> Bayu, Elang, Flamingo, Kakatua Phillips* (42.42) Santos (21.43) Emet (1.58) Inpex (21.21) Petroz (13.37)	06-Feb-02			

**APPENDIX K (cont'd)**

Title	Area and Title holder	Expiry date
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NOTE:  
\*: Denotes the operator for the title.  
(R.P.): Renewal Pending  
(n/a): Equity not available.  
"Area" refers to 5' X 5' graticular blocks  
unless otherwise indicated.

## APPENDIX K: PETROLEUM EXPLORATION AND DEVELOPMENT TITLES, 2000 PETROLEUM TITLES BY COMPANY

Listed below in an alphabetical order are all petroleum companies that hold interest, whole or in part, in the current petroleum titles.

### AAR Ltd (Associated Petroleum Pty Ltd)

Queensland ATP336P, PL 3, PL 4, PL 5, PL 6, PL 7, PL 8, PL 9, PL10, PL12, PL13, PL11, PL28, PL69, PL89, PL93

### AEC International (Australia) Pty Ltd

Western Australia WA-214-P R1  
Northern Territory NT/P54  
Ashmore-Cartier AC/P15, AC/P24

### AGIP Exploration BV

Western Australia WA-292-P

### Air Liquide Australia Ltd

South Australia PPL21

### Alliance Minerals Australia NL

Queensland PL21, PL22, PL27, PL64  
Western Australia WA-6-R  
Northern Territory NT/RL1

### Alliance Oil Development Australia Pty Ltd

Queensland PL138, PL154

### Alliance Petroleum Australia Ltd

South Australia PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL43, PPL

### Amadeus Petroleum NL

Western Australia EP 380 R1

### Amerada Hess (Australia) Ltd

Western Australia WA-258-P

### Amity Oil NL

Queensland ATP598P  
Victoria VIC/P36, VIC/P36(V), VIC/P38, VIC/P40  
Western Australia EP 325 R2, EP 381 R1, EP 385 R1, EP 386 R1, EP 408  
Northern Territory EP 66, RL 1

### Ampolex (PPL) Pty Ltd

Western Australia TL/2, WA-149-P R3, TP/ 7 R1

### Ampolex AE Pty Ltd

Western Australia WA-214-P R1

### Anderson Oil Corporation

Queensland ATP610P

### Angari Pty Ltd

Queensland ATP212P, PL21, PL22, PL27, PL30, PL56, PL64, PL71, PL74

### Anulka NL

Queensland ATP212P, ATP244P, ATP610P, PL56, PL74

### Apache Airlie Pty Ltd

Western Australia TL/2, TP/ 7 R1

### Apache East Spar Pty Ltd

Western Australia WA-13-L

### Apache Harriet Pty Ltd

Western Australia EP 307 R2, EP 358 R1, TL/1, TL/5, TL/6, TL/8, TP/ 8 R2, TR/1, TR/2, WA-192-P R3

### Apache Kersail Pty Ltd

Western Australia WA-13-L

### Apache Miladin Pty Ltd

Western Australia WA-192-P R3

### Apache Nasmah Pty Ltd

Western Australia WA-192-P R3

### Apache Northwest Pty Ltd

Western Australia EP 307 R2, EP 358 R1, EP 363 R1, TL/1, TL/5, TL/6, TL/8, TP/ 8 R2, TP/ 9 R1, TR/1, TR/2, WA-15-L, WA-192-P R3, WA-1-P R5, WA-209-P R1, WA-20-L, WA-215-P R1, WA-246-P, WA-256-P, WA-257-P, WA-259-P, WA-261-P, TP/ 6 R2, WA-254-P PARTS 1,3 & 4, WA-254-P PART

### Apache Oil Australia Pty Ltd

Western Australia TL/2, WA-13-L, WA-149-P R3, WA-214-P R1, TP/ 7 R1

### Apache UK Ltd

Western Australia EP 307 R2, EP 358 R1, TL/1, TL/5, TL/6, TL/8, TP/ 8 R2, TR/1, TR/2, WA-192-P R3

### Apache Varanus Pty Ltd

Western Australia EP 307 R2, EP 358 R1, TL/1, TL/5, TL/6, TL/8, TP/ 8 R2, TR/1, TR/2

### Arc Energy NL

Western Australia EP 409, L 1 R1, L 2 R1  
Ashmore-Cartier AC/P27

### Arrow Energy NL

Queensland ATP683P

### Arrow Resources NL

Northern Territory NT/P52

### Ashmore Oil Pty Ltd

Ashmore-Cartier AC/P22

### Asisun Pty Ltd

Western Australia WA-261-P

## APPENDIX K cont'd

### Australian Coalbed Methane Pty Ltd

New South Wales PEL1, PEL10, PEL12, PEL286

### Australian Gasfields Ltd

Queensland ATP172P, ATP269P, ATP549P, PL105, PL107, PL109, PL115, PL116, PL23, PL24, PL25, PL26, PL35, PL36, PL62, PL65, PL76, PL77, PL78, PL79, PL82, PL87

### Australian Petroleum Industries Pty Ltd

Queensland ATP544P

### AWE (Australia) Energy Ltd

Ashmore-Cartier AC/L4

### Azeeza Pty Ltd

Queensland ATP593P

### Basin Oil NL

Victoria VIC/P11(V), VIC/RL1(V), VIC/RL5  
South Australia EPP24, PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL  
Western Australia EP 104 R4, WA-259-P  
Northern Territory NT/P46

### Bass Petroleum Pty Ltd

Victoria PEP131

### Bass Strait Oil Company Pty Ltd

Victoria VIC/P42  
Tasmania T/28P

### Beach Petroleum NL

Queensland ATP577P, PL31, PL32, PL47  
South Australia PEL 66  
Western Australia WA-281-P, WA-282-P, WA-283-P  
Northern Territory NT/P52

### Beaconsfield Energy Development Pty Ltd

Queensland ATP529P

### Benaris International NV

Tasmania T/30P

### BET Australia, LLC

South Australia PEL 53, PEL 59

### BHP Coal Pty Ltd

Queensland ATP364P

### BHP Petroleum (91-01) Pty Ltd

Ashmore-Cartier AC/RL2  
JPDA ZOCA 91-01

### BHP Petroleum (95-15) Inc

JPDA ZOCA 95-15

### BHP Petroleum (95-17) Inc

JPDA ZOCA 95-17

### BHP Petroleum (Australia) Pty Ltd

Western Australia WA-10-L, WA-12-L, WA-12-R, WA-155-P R3, WA-239-P R1, WA-289-P, WA-290-P, WA-298-P  
Northern Territory NT/P51  
Ashmore-Cartier AC/P30

### BHP Petroleum (Bass Strait) Pty Ltd

Victoria VIC/L 1, VIC/L 2, VIC/L 3, VIC/L 4, VIC/L 5, VIC/L 6, VIC/L 7, VIC/L 8, VIC/L 9 R1, VIC/L10, VIC/L11, VIC/L13, VIC/L14, VIC/L15, VIC/L16, VIC/L17, VIC/L18, VIC/L19, VIC/L20, VIC/P34, VIC/RL4  
Ashmore-Cartier AC/RL3

### BHP Petroleum (North West Shelf) Pty Ltd

Western Australia EP 36 R3, WA-10-R, WA-11-L, WA-11-R, WA-16-L, WA-18-L, WA-19-L, WA-1-L, WA-1-R R2, WA-21-L, WA-260-P, WA-275-P, WA-28-P R5, WA-296-P, WA-2-L, WA-33-P R3, WA-3-L, WA-4-L, WA-5-L, WA-6-L, WA-7-R, WA-9-L, WA-9-R, TP/ 4  
Ashmore-Cartier AC/L5, AC/P8

### BHP Petroleum (Victoria) Pty Ltd

Victoria VIC/RL1, VIC/RL2, VIC/RL7, VIC/RL8

### BHP Steel (AIS) Pty Ltd

New South Wales PML1, PML2

### Black Rock Petroleum NL

Western Australia EP 373 R1

### Bligh International Inc

Queensland ATP577P

### BNG (Surat) Pty Ltd

Queensland ATP645P

### BNG Pty Ltd

Queensland ATP641P, ATP643P, ATP644P

### Bobwyns Pty Ltd

Queensland ATP621P

### Boggy Creek Pty Ltd

Victoria PPL3

### Bonaparte Gas & Oil

Northern Territory NT/RL1

### Bonaparte Gas & Oil Pty Ltd

Western Australia WA-18-P R5, WA-6-R

### Bonaparte Gulf Oil & Gas Pty Ltd

Western Australia EP 385 R1, EP 386 R1  
Northern Territory EP 66, RL 1

### Bonnerwell Pty Ltd

Queensland ATP619P

### Boral Energy Amadeus NL

Western Australia L 9

## APPENDIX K cont'd

### Boral Energy Bonaparte Pty Ltd

Western Australia	WA-6-R
Northern Territory	NT/RL1

### Boral Energy Developments Pty Ltd

Western Australia	EP 320 R2, EP 413 R1, EP 414 R1, L 11
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### Boral Energy Petroleum Pty Ltd

Western Australia	L 9
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### Boral Energy Resources Ltd

Queensland	PL106, PL108, PL111, PL112, PL113, PL114, PL131, PL59, PL60, PL61, PL81, PL83, PL85, PL86, PL97, PL132, PL135, PL139, PL138, PL141
Tasmania	T/25P, T/30P, T/RL1
South Australia	EPP24

### Boral Energy Resources Northwest Ltd

Tasmania	T/RL1
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### BP Developments Aust Ltd

Western Australia	TP/ 4
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### BP Developments Australia Pty Ltd

Western Australia	EP 36 R3, WA-10-R, WA-11-L, WA-11-R, WA-16-L, WA-1-L, WA-28-P R5, WA-2-L, WA-33-P R3, WA-3-L, WA-4-L, WA-5-L, WA-6-L, WA-7-R, WA-9-L, WA-9-R
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### BP Exploration (Alpha) Ltd

Western Australia	WA-267-P
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### BP Petroleum Developments (NWS) Pty Ltd

Western Australia	WA-275-P, WA-294-P, WA-296-P, WA-297-P
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### Bridge Oil Developments Pty Ltd

South Australia	PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL43, PPL
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### Bridge Oil Exploration Pty Ltd

Queensland	ATP212P, PL56, PL74
Victoria	VIC/RL1(V)

### Brisbane Petroleum NL

Queensland	ATP552P, PL18, PL40
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### British Borneo Australia 91-13 Ltd

JPDA	ZOCA 91-13
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### British Borneo Australia Ltd

Western Australia	WA-208-P R1, WA-234-P, WA-22-L
Ashmore-Cartier	AC/P21

### British Borneo Australia ZOCA 95-18 Ltd

JPDA	ZOCA 95-18
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### British Borneo Exploration Inc.

Western Australia	WA-295-P
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### British-Borneo Australia Ltd

Western Australia	EP 307 R2, EP 358 R1, TL/1, TL/5, TL/6, TL/8, TP/ 8 R2, TR/1, TR/2, WA-256-P, WA-257-P
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### Brown (Australia) Ltd

South Australia	PEL 53, PEL 59
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### Budside Pty Ltd

Queensland	ATP610P
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### Burns, Alan Robert

Western Australia	EP 413 R1, EP 414 R1
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### Burns, Victoria Winifred

Western Australia	EP 413 R1, EP 414 R1
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### Cadex Petroleum Pty Ltd

Western Australia	WA-226-P R1
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### CalEnergy Gas (UK) Ltd

Victoria	VIC/P43
Tasmania	T/25P, T/RL1
Western Australia	EP 389

### Canadian Petroleum Australia

Western Australia	WA-239-P R1
Ashmore-Cartier	AC/RL3

### Canadian Petroleum Australia (Operations) Pty Ltd

Western Australia	WA-19-L, WA-21-L, WA-260-P, WA-289-P, WA-290-P, WA-298-P
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### Canadian Petroleum Internarional Holdings Ltd.

Northern Territory	NT/P58, NT/P59
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### Canso Resources Ltd

Northern Territory	L3, L4, L5, RL 2
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### Capital Consultant Services Pty Ltd

Western Australia	EP 321 R2, EP 407
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### Capital Energy NL

New South Wales	PEL17, PEL18, PEL283
Western Australia	WA-261-P

### Carnarvon Oil & Gas NL

Western Australia	EP 110 R3
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### Carnarvon Oil and Gas NL

Western Australia	WA-254-P PART 2
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### Carnarvon Petroleum NL

Western Australia	EP 395, EP 407, TP/ 9 R1, EP 23 R5, WA-254-P PARTS 1,3 & 4
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### Cataby Resources Pty Ltd

Western Australia	EP 323 R2
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## APPENDIX K cont'd

### Chevron Asiatic Ltd

Western Australia EP 357 R1, EP 36 R3, EP 61 R5, EP 62 R5, EP 65 R5, EP 66 R5, L 10, L 1H R1, TL/3, TL/4, TL/7, TP/13, TP/14, WA-10-R, WA-11-L, WA-11-R, WA-16-L, WA-1-L, WA-205-P R1, WA-213-P R1, WA-215-P R1, WA-24-P R4 PART 1, WA-253-P, WA-25-P R5, WA-262-P, WA-267-P, WA-

### Chevron Overseas Petroleum Ltd

Western Australia EP 357 R1, EP 66 R5, TL/4, TL/7, TP/ 3 R2

### Chimelle Petroleum Ltd

Queensland ATP267P, PL33, PL50, PL51

### Cladium Mining Pty Ltd

Western Australia EP 413 R1, EP 414 R1

### Claremont Petroleum NL

New South Wales PEL13, PEL426

### CMS Gas Transmission of Australia

Western Australia L 1 R1

### Coastal Development III Ltd

Western Australia WA-283-P

### Coastal Oil & Gas Australia 20 Pty Ltd

Ashmore-Cartier AC/P20

### Coastal Oil & Gas Australia 21 Pty Ltd

Ashmore-Cartier AC/P21

### Cobrex Pty Ltd

Queensland ATP587P

### Cooper-Eromanga Oil Inc

Queensland ATP582P

### Cosmo Oil Co Ltd

Ashmore-Cartier AC/P17, AC/P18

### CPC Energy Pty Ltd

Queensland ATP299P, PL29, PL38, PL39, PL52, PL57, PL95

### Crusader (Victoria) Pty Ltd

Victoria VIC/RL2

### Cue Exploration Pty Ltd

Western Australia EP 363 R1

### Cultus Petroleum (Australia) NL

Ashmore-Cartier AC/L1, AC/L2, AC/L3, AC/P4 R2

### Cultus Petroleum NL

South Australia EPP24

### Cultus Timor Sea Ltd

Northern Territory NT/P46

Ashmore-Cartier AC/P17, AC/P18, AC/P24

### Dan A Hughes Company

Western Australia EP 385 R1

### Dana Petroleum (E&P) Ltd

Western Australia WA-226-P R1, WA-259-P

### Dana Petroleum (WA) LLC

Western Australia WA-226-P R1

### Delbaere Associates Pty Ltd

Queensland PL18, PL40

### Delhi Petroleum Pty Ltd

Queensland ATP259P, PL105, PL106, PL107, PL108, PL109, PL110, PL111, PL112, PL113, PL114, PL129, PL130, PL131, PL23, PL24, PL25, PL26, PL34, PL35, PL36, PL37, PL55, PL58, PL59, PL60, PL61, PL62, PL63, PL68, PL75, PL76, PL77, PL78, PL79, PL80, PL81, PL82, PL83, PL84,  
South Australia PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL26, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL

### Discovery Geo (Australia) Corporation

Queensland ATP550P

### Durum (Australia) Pty Ltd

South Australia EPP24

### Dyad-Australia Inc

Queensland ATP538P, ATP554P

### Eagle Bay Resources NL

Victoria VIC/P41

### Eastern Energy Australia Pty Ltd

Queensland ATP610P

New South Wales PEL238, PEL6

### EDC Australia Ltd

Western Australia WA-226-P R1

### Emet Pty Ltd

JPDA ZOCA 91-12

### Empire Oil Company (WA) Ltd

Western Australia EP 389, EP 405, EP 411, EP 415, EP 416, TP/16

### Enterprise Oil Timor Gap (9) Ltd

JPDA ZOCA 91-09

### Eoil Pty Ltd

South Australia PEL 85

### Esso Australia Resources Ltd

Victoria VIC/L 1, VIC/L 2, VIC/L 3, VIC/L 4, VIC/L 5, VIC/L 6, VIC/L 7, VIC/L 8, VIC/L 9 R1, VIC/L10, VIC/L11, VIC/L13, VIC/L14, VIC/L15, VIC/L16, VIC/L17, VIC/L18, VIC/L19, VIC/L20, VIC/RL1, VIC/RL2, VIC/RL4

Western Australia WA-1-R R2

### Euro Pacific Energy Pty Ltd

Victoria VIC/P39

Western Australia EP 369 R1, EP 406, EP 413 R1, EP 414 R1, WA-272-P



## APPENDIX K cont'd

### Falcore Pty Ltd

Western Australia EP 410

### Farmout Drillers Pty Ltd

Northern Territory L3, L4, L5, RL 2

### Felstea Pty Ltd

South Australia PEL 49, PEL 50

### First Australian Resources NL

New South Wales PEL421, PEL422, PEL423, PEL424  
Western Australia EP 104 R4, EP 323 R2, EP 395, EP 397, WA-254-P PARTS 1,3 & 4, WA-254-P PART 2

### First Sourcenergy Group Inc.

Queensland ATP560P

### Flare Petroleum NL

New South Wales PEP 11  
Western Australia EP 412  
Ashmore-Cartier AC/P25, AC/P27

### Forcenergy International Inc

South Australia PEL 53, PEL 59

### Forcenergy International Inc.

Queensland ATP560P  
Western Australia EP 408

### Frontier Bonaparte Pty Ltd

Western Australia EP 386 R1  
Northern Territory NT/P46, EP 66, RL 1

### Galilee Energy Pty Ltd

Queensland ATP529P

### Galveston Mining Corp. Pty Ltd

Tasmania T/RL1

### Geary, John Kevin

Western Australia EP 413 R1, EP 414 R1

### Geopetro Resources Company

Western Australia EP 381 R1, EP 386 R1, EP 408  
Northern Territory EP 66

### GIO Finance Ltd

New South Wales PEL267

### Globex Far East

Tasmania T/27P  
Western Australia WA-15-L, WA-209-P R1, WA-261-P

### Go Resources (Aust) Pty Ltd

New South Wales PEL419, PEL420

### Golden Triangle Oil & Minerals Inc Of Australia

Queensland ATP538P

### Golden West Hydrocarbons Pty Ltd

Queensland PL17

### Goodrich Petroleum Company

Western Australia EP 395, EP 397

### Great Southland Minerals Pty Ltd

Tasmania EL13/98

### Great Southland Petroleum Pty Ltd

New South Wales PEL238

### Guinness Peat plc

Northern Territory NT/P56

### Gulf (Aust) Resources NL

South Australia PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL26, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL  
Western Australia EP 399, EP 400, TP/ 9 R1

### Gulliver Productions Pty Ltd

Western Australia EP 104 R4, EP 410

### Hardman Oil and Gas Pty Ltd

Western Australia EP 110 R3

### Hemley Exploration Pty Ltd

South Australia PEL 61, PEL 63

### Hughes, Dan Allen

Western Australia EP 413 R1, EP 414 R1

### Hughes, Dudley Joe

Western Australia EP 413 R1, EP 414 R1

### Hughes-Rawls Offshore Corporation

Western Australia EP 385 R1

### Hyland Bay Pty Ltd

Queensland ATP552P

### IB Resources Pty Ltd

Western Australia WA-292-P

### Icon Oil NL

Queensland ATP594P

### Idemitsu Oil Exploration (Barrow) Pty Ltd

Western Australia WA-264-P

### Idemitsu Oil Exploration (Dampier) Pty Ltd

Western Australia WA-263-P

### Indigo Oil Pty Ltd

Western Australia EP 104 R4, EP 410, WA-272-P

### Indo-Pacific Energy Ltd

Victoria VIC/P39  
Ashmore-Cartier AC/P19, AC/P31

### Inland Oil (Production) Pty Ltd

Queensland ATP269P, PL105, PL107, PL109, PL23, PL24, PL25, PL26, PL35, PL36, PL62, PL76, PL77, PL78, PL79, PL82, PL87, PL98, PL133, PL149

### Inpex Alpha Ltd

Western Australia WA-10-L, WA-210-P R1

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### Inpex Browse Ltd

Western Australia WA-285-P

### Inpex Sahul Ltd

JPDA ZOCA 91-12

### Inpex Timor Sea Ltd

JPDA ZOCA 91-01

### International Frontier Resources Ltd

Western Australia WA-274-P

### Interstate Energy Pty Ltd

Queensland ATP552P, PL119, PL49

### Interstate Pipelines Pty Ltd

Queensland ATP336P, PL 3, PL 4, PL 5, PL 6, PL 7, PL 8, PL 9, PL10, PL12, PL13, PL11, PL28, PL69, PL89, PL93

### IOR Exploration (NT) Pty Ltd

Northern Territory EP 69

### IOR Exploration Pty Ltd

Queensland ATP548P, PL98

### ITG (Innovative Technological Geo-Exploration) Pty Ltd

Queensland PL98

Northern Territory EP 69

### Jagen Nominees Pty Ltd

Western Australia EP 380 R1

### Jakabar Pty Ltd

Queensland ATP626P

### Japan Australia LNG (MIMI) Pty Ltd

Western Australia WA-10-R, WA-11-L, WA-11-R, WA-16-L, WA-1-L, WA-28-P R5, WA-294-P, WA-296-P, WA-297-P, WA-2-L, WA-3-L, WA-4-L, WA-5-L, WA-6-L, WA-7-R, WA-9-L, WA-9-R

### Japex AC, Ltd

Ashmore-Cartier AC/P29

### Jervois Mining Ltd

Western Australia EP 111 R3

### Kamon

Queensland ATP538P

### Karimbla Oil Pty Ltd

Western Australia L 6, L 8, EP 129 R3

### Kerr-McGee (ZOC) Energy Pty Ltd

JPDA ZOCA 91-13

### Kerr-McGee NW Shelf Australia Energy Pty Ltd

Western Australia WA-276-P, WA-277-P, WA-278-P, WA-295-P

Northern Territory NT/P54

Ashmore-Cartier AC/P15

### Kestrel Energy Inc

Western Australia EP 325 R2, EP 359 R1, WA-261-P, WA-254-P PARTS 1,3 & 4, WA-254-P PART 2

### Kimberley Oil NL

Western Australia EP 104 R4, EP 366, EP 371, EP 390, EP 391

### Kingston Petroleum Pty Ltd

Queensland ATP379P, ATP682P

### Kiwi Australian Resources Pty Ltd

Western Australia EP 104 R4

### Kiwi International Resources NL

Western Australia EP 110 R3

### Kufpec Australia Pty Ltd

Western Australia EP 307 R2, EP 358 R1, TL/1, TL/5, TL/6, TL/8, TP/ 8 R2, TR/1, TR/2, WA-192-P R3

Northern Territory L3

### Lakes Oil Ltd

Victoria PEP136

South Australia PEL 62

### Lakes Oil NL

Victoria PEP111

South Australia PEL 57

Western Australia EP 361 R1

### Lamina Ltd

South Australia PEL 76

### Lansvale Oil & Gas Pty Ltd

Western Australia EP 359 R1, EP 41 R5

### Latrobe Oil & Gas Pty Ltd

Victoria VIC/P36, VIC/P36(V), VIC/P38, VIC/P40

### Liberty Petroleum Corporation

Queensland ATP616P

### LINC Energy NL

Queensland ATP588P

### Magellan Petroleum (Eastern) Pty Ltd

Queensland ATP613P

### Magellan Petroleum (NT) Pty Ltd

Northern Territory L3, L4, L5, RL 2

### Magellan Petroleum (WA) Pty Ltd

Western Australia WA-281-P, WA-282-P, WA-283-P, WA-287-P, WA-288-P, WA-291-P

### Maneroo Exploration Pty Ltd

Queensland ATP556P

### Maneroo Oil Company Ltd

Queensland ATP556P, ATP566P

### Maple Oil and Exploration NL

Queensland ATP541P, ATP587P

New South Wales PEL8

### Mawson Petroleum NL

Queensland ATP548P, PL105, PL107, PL109, PL23, PL24, PL25, PL26, PL35, PL36, PL62, PL76, PL77, PL78, PL79, PL82, PL87, PL133, PL149

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### Metgasco Pty Ltd

New South Wales PEL16

### Mid-Eastern Oil NL

Ashmore-Cartier AC/L5, AC/P8

### Midland Exploration Pty Ltd

Queensland ATP548P

### Millennium Resources Qld Pty Ltd

Queensland ATP587P

### Mirboo Ridge Pty Ltd

South Australia PEL 57

### Mobil (Legendre) Pty Ltd

Western Australia WA-14-L, WA-202-P R2

### Mobil (ZOCA 95-18) Pty Ltd

JPDA ZOCA 95-18

### Mobil Australia Resources Company Pty Ltd

Victoria VIC/RL3

Western Australia EP 357 R1, EP 399, EP 400, EP 61 R5, EP 62 R5, EP 66 R5, L 10, TL/3, TL/4, TL/7, TP/14, WA-12-L, WA-12-R, WA-155-P R3, WA-17-L, WA-191-P R3, WA-205-P R1, WA-206-P R1, WA-208-P R1, WA-213-P R1, WA-234-P, WA-248-P, WA-24-P R4 PART 1, WA-257-P, WA-25-P R5, W

Ashmore-Cartier AC/L1, AC/L2, AC/L3, AC/L4, AC/RL2

### Mobil Exploration & Producing Australia Pty Ltd

Western Australia EP 325 R2, WA-10-L, WA-210-P R1, WA-217-P R1, WA-263-P

### Mobil Exploration and WA Producing Australia Pty Ltd

Western Australia WA-268-P

### Moonie Oil NL

Northern Territory RL 2

### Moonie Oil Pty Ltd

Queensland ATP267P, ATP299P, ATP378P, PL29, PL33, PL38, PL39, PL50, PL51, PL52, PL57, PL95

Northern Territory L4, L5

### Moroil Pty Ltd

Queensland PL98

Northern Territory EP 69

### Mosaic Oil NL

Queensland ATP212P, ATP610P, PL119, PL30, PL46, PL56, PL74

Victoria VIC/P39

Western Australia WA-208-P R1

Ashmore-Cartier AC/P19, AC/P26, AC/P31

### Nerdlich Company Inc

South Australia PEL 34

Western Australia EP 374 R1, EP 375 R1, EP 376 R1

### New World Oil & Developments Pty Ltd

Western Australia EP 307 R2, EP 358 R1, TL/1, TL/5, TL/6, TL/8, TP/ 8 R2, TR/1, TR/2, WA-192-P R3, WA-256-P

### Newfield Australia (Cartier) Pty Ltd

Western Australia WA-273-P

Ashmore-Cartier AC/L1, AC/L2, AC/L3, AC/L4, AC/P17, AC/P18, AC/P20, AC/P21, AC/P24

### Newfield Exploration Australia Ltd

Victoria PEP101, PEP111

### News Corp Ltd

Victoria VIC/P19 R2

### Nippon Oil Exploration (Dampier) Pty Ltd

Western Australia WA-191-P R3

### Nippon Oil Exploration (Vulcan) Pty Ltd

Ashmore-Cartier AC/P23

### Novus Australia Energy Company Pty Ltd

Western Australia WA-263-P, WA-273-P

### NWE (ZOCA 96-16) Pty Ltd

JPDA ZOCA 96-16

### Oil Company Of Australia (Moura) Pty Ltd

Queensland ATP525P, ATP564P, ATP602P, PL101, PL94

### Oil Company of Australia Ltd

Queensland ATP212P, ATP269P, ATP299P, ATP337P, ATP375P, ATP470P, ATP525P, ATP553P, ATP577P, PL14, PL101, PL105, PL107, PL109, PL21, PL22, PL23, PL24, PL25, PL26, PL27, PL28, PL29, PL30, PL31, PL32, PL35, PL36, PL38, PL39, PL41, PL42, PL43, PL44, PL45, PL47, PL52, PL

New South Wales PEL13, PEL426

Victoria VIC/P35

South Australia PEL 27

### Oil Investments Ltd

Queensland PL21, PL22, PL27, PL28, PL69, PL89

### Oil Search (Australia) Pty Ltd

Western Australia WA-281-P

### Oil Wells Inc Of Kentucky

Queensland ATP560P

### Olympus Resources Ltd

Queensland ATP552P

### Omega Oil NL

South Australia PEL 32, PPL62, PPL168

Western Australia EP 325 R2, EP 409

### OMV Australia Pty Ltd

Western Australia WA-292-P, WA-298-P

### OMV Barrow Pty Ltd

Western Australia WA-289-P, WA-290-P

## APPENDIX K cont'd

### Origin Energy Resources Ltd

Queensland	PL145, PL146, PL147, PL148, PL153, PL154, PL157, PL158
Victoria	PEP101, PEP111, PEP119, PPL1, VIC/P43
South Australia	PEL 27, PEL 32, PEL 57, PEL 66, PEL 72, PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL26, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37
Western Australia	TP/ 9 R1, WA-256-P, WA-257-P, WA-8-L

### Otto Oil Pty Ltd

New South Wales	PEL425
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### Otway Resources Pty Ltd

South Australia	EPP24
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### Oz-Exoil NL

Northern Territory	NT/P60
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### Pace Petroleum Pty Ltd

Western Australia	EP 359 R1, EP 41 R5
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### Pacific Power

New South Wales	PEL13, PEL285, PEL4, PEL426, PEL5
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### Pagehurst Pty Ltd

Queensland	ATP567P
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### Pan Pacific Petroleum (South Aust) Pty Ltd

Western Australia	EP 110 R3, TL/2, WA-149-P R3, WA-246-P, TP/ 7 R1
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### Pan Pacific Petroleum NL

Victoria	PEP111, VIC/P36, VIC/P40
South Australia	EPP24
Western Australia	EP 361 R1, L 9, WA-246-P, WA-259-P, WA-254-P PARTS 1,3 & 4, WA-254-P PART 2

### PanCanadian Petroleum Ltd

Western Australia	WA-234-P, WA-276-P, WA-277-P, WA-278-P, WA-22-L
Ashmore-Cartier	AC/P17, AC/P18

### Pangaea Oil And Gas Pty Ltd

Queensland	ATP620P
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### Pasminco Australia Ltd

Western Australia	EP 373 R1
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### Peedamullah Petroleum Pty Ltd

Queensland	ATP552P
Western Australia	EP 341 R1, EP 364 R1

### Pelsoil NL

Western Australia	EP 104 R4
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### Pennzoil Exploration Australia, Inc

Western Australia	EP 381 R1, EP 408
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### Perthshire Petroleum Ltd

Western Australia	EP 359 R1
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### Petromin NL

Queensland	ATP269P, ATP577P, PL17, PL31, PL32
Northern Territory	L4, L5, RL 2

### Petromin Pty Ltd

Queensland	PL47
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### Petrotech Pty Ltd

Victoria	PEP135, PEP137, PEP138
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### Petroz (Timor Sea) Pty Ltd

JPDA	ZOCA 91-12
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### Petroz NL

Queensland	PL119, PL48, PL49, PL66, PL16, PL15
Western Australia	EP 325 R2, EP 359 R1, EP 399, EP 400, WA-259-P, WA-261-P, WA-281-P, WA-282-P, WA-283-P, WA-149-P R3
Northern Territory	NT/P52

### Petroz Offshore Pty Ltd

Victoria	VIC/P19 R2, VIC/RL2
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### Phillips Oil Company Australia

Western Australia	WA-17-L, WA-248-P, WA-269-P, WA-270-P
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### Phillips Petroleum (91-12) Pty Ltd

JPDA	ZOCA 91-12
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### Phillips Petroleum (95-19) Pty Ltd

JPDA	ZOCA 95-19
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### Phillips Petroleum (96-16) Pty Ltd

JPDA	ZOCA 96-16
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### Phillips Petroleum (96-20) Pty Ltd

JPDA	ZOCA 96-20
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### Phillips Petroleum Company ZOC Ltd

JPDA	ZOCA 91-13
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### Phillips Petroleum Timor Sea Pty Ltd

JPDA	ZOCA 91-13
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### Phillips STH Pty Ltd

Northern Territory	NT/P55, NT/RL2
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### Phoenix Energy Pty Ltd

Western Australia	EP 320 R2, EP 321 R2, EP 323 R2, EP 359 R1, EP 368 R1, EP 372 R1, EP 394, EP 407, EP 413 R1, EP 414 R1, L 4, L 5, L 7, TP/15, EP 23 R5
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### Planet Resources Ltd

Western Australia	WA-226-P R1
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### Premier (Australia) Energy Ltd

Western Australia	WA-246-P, WA-259-P
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### Premier (Mt Horner) Ltd

Western Australia	WA-286-P
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### Premier (Perth Basin) Ltd

Western Australia	EP 320 R2, EP 321 R2, EP 323 R2, EP 407, EP 413 R1, EP 414 R1, L 11, L 7, TP/15, EP 23 R5
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## Premier Petroleum (Australia) Ltd

Tasmania	T/25P, T/RL1
Western Australia	EP 363 R1, EP 368 R1, EP 372 R1, EP 394, TP/ 9 R1, WA-202-P R2

## Project Oil Exploration Ltd

Queensland	PL30
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## Qgas Pty Ltd

Queensland	ATP613P
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## Radford, Roy Antony

Western Australia	EP 110 R3
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## Reef Oil NL

South Australia	PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL43, PPL
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## Reilly M

South Australia	PEL 65
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## Richfield Resources Pty Ltd

South Australia	PEL 76
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## Rincon-Australia Pty Ltd

Queensland	ATP596P
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## Roma Petroleum Company Pty Ltd

Queensland	ATP530P, ATP545P
Northern Territory	NT/P56

## Roma Petroleum NL

Queensland	ATP465P
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## Rothschild Australia Petroleum NL

Western Australia	EP 110 R3, EP 321 R2, EP 325 R2, EP 361 R1, EP 413 R1, EP 414 R1, EP 137 R3, EP 23 R5
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## Rough Range Oil Pty Ltd

Western Australia	EP 41 R5
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## Sagasco South East Inc.

South Australia	PEL 32, PPL62, PPL168
Western Australia	L 9

## Santos (299) Pty Ltd

Queensland	ATP299P, PL29, PL38, PL39, PL52, PL57, PL95
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## Santos (BOL) Pty Ltd

Queensland	ATP212P, ATP471P, PL119, PL30, PL48, PL49, PL56, PL66, PL74, PL15, PL16
Victoria	PEP108, PPL4, VIC/RL7, VIC/RL8
South Australia	PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL43, PPL
Western Australia	TL/2, WA-13-L, WA-149-P R3, WA-206-P R1, WA-214-P R1, WA-215-P R1, WA-239-P R1, WA-242-P R1, TP/ 7 R1
Ashmore-Cartier	AC/P15

## Santos (ZOCA 91-01) Pty Ltd

JPDA	ZOCA 91-01
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## Santos (ZOCA 91-12) Pty Ltd

JPDA	ZOCA 91-12
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## Santos Australian Hydrocarbons Pty Ltd

Queensland	PL113, PL114, PL58, PL80, PL136, PL137, PL141, PL145, PL148, PL153, PL157, PL158, PL159
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## Santos Exploration Pty Ltd

Queensland	PL 1, PL 2, PL17, PL49, PL71
Northern Territory	L3, L4, L5, RL 2

## Santos Gnuco Pty Ltd

Queensland	ATP267P, ATP299P, PL29, PL33, PL38, PL39, PL50, PL51, PL52, PL57, PL95
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## Santos Ltd

Queensland	ATP259P, PL105, PL106, PL107, PL108, PL109, PL110, PL111, PL112, PL113, PL114, PL129, PL130, PL131, PL23, PL24, PL25, PL26, PL34, PL35, PL36, PL37, PL55, PL58, PL59, PL60, PL61, PL62, PL63, PL68, PL75, PL76, PL77, PL78, PL79, PL80, PL81, PL82, PL83, PL84,
Victoria	VIC/RL3
Tasmania	T/RL1
South Australia	PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL26, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL
Western Australia	WA-15-L, WA-18-P R5, WA-191-P R3, WA-1-P R5, WA-209-P R1, WA-20-L, WA-6-R, WA-8-L
Northern Territory	NT/RL1, L3, RL 2

## Santos Offshore Pty Ltd

Western Australia	EP 325 R2, EP 398, TP/12, WA-18-P R5, WA-208-P R1, WA-258-P, WA-261-P, WA-264-P, WA-281-P, WA-282-P, WA-283-P
Northern Territory	NT/P52
Ashmore-Cartier	AC/L1, AC/L2, AC/L3, AC/L4, AC/RL2

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### Santos Petroleum Operations Pty Ltd

Queensland ATP337P, ATP553P, PL41, PL42, PL43, PL44, PL45, PL54, PL67, PL173

### Santos Petroleum Pty Ltd

Queensland PL106, PL108, PL110, PL111, PL112, PL129, PL130, PL131, PL59, PL60, PL61, PL63, PL68, PL75, PL81, PL83, PL84, PL85, PL86, PL88, PL97, PL132, PL134, PL135, PL139, PL140, PL142, PL143, PL144, PL146, PL147, PL150

South Australia PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL43, PPL

### Sequoil Pty Ltd

Queensland ATP589P, ATP593P, ATP608P

### Shell Company of Australia Ltd

Victoria VIC/P19 R2, VIC/RL2, VIC/RL3

### Shell Development (Aust) Pty Ltd

Western Australia EP 353 R1, EP 357 R1, EP 36 R3, EP 61 R5, EP 62 R5, EP 65 R5, EP 66 R5, L 10, TL/3, TL/4, TL/7, TP/10 R1, TP/14, WA-10-R, WA-11-L, WA-11-R, WA-16-L, WA-1-L, WA-205-P R1, WA-213-P R1, WA-215-P R1, WA-24-P R4 PART 1, WA-25-P R5, WA-267-P, WA-275-P, WA-279-P

Northern Territory NT/P47, NT/P48, NT/P49, NT/P50, NT/P51, NT/P53, NT/P55, NT/P57, NT/RL2

Ashmore-Cartier AC/L5, AC/P16, AC/P8

### Shell Development (PSC 18) Pty Ltd

JPDA ZOCA 95-18

### Shell Development (PSC 19) Pty Ltd

JPDA ZOCA 95-19

### Shell Development (PSC 2) Pty Ltd

JPDA ZOCA 91-02

### Shell Development (PSC 20) Pty Ltd

JPDA ZOCA 96-20

### Shell Development (PSC 7) Pty Ltd

JPDA ZOCA 94-07

### Shell Development (PSC 9) Pty Ltd

JPDA ZOCA 91-09

### Shogoil Australia Pty Ltd

Queensland ATP578P

### SK Corporation

Western Australia WA-276-P, WA-277-P, WA-278-P

### Sodec Australia Co Ltd

Ashmore-Cartier AC/P16

### Southern Diamond Resources (EP342/TP9) Pty Ltd

Western Australia TP/ 9 R1

### Southern Diamond Resources (WA-239-P) Pty Ltd

Western Australia WA-239-P R1

### Southern Diamond Resources (ZOCA 91-09) Pty Ltd

JPDA ZOCA 91-09

### Southern Diamond Resources (ZOCA 95-18) Pty Ltd

JPDA ZOCA 95-18

### St. Barbara Mines Ltd

New South Wales PEL13, PEL426

### Statoil Australia ZOCA 95-18 A. S.

JPDA ZOCA 95-18

### Stirling Resources NL

Western Australia EP 104 R4

### Strike Oil NL

New South Wales PEL427, PEL428

Victoria VIC/P44

South Australia PEL 74, PEL 75

Western Australia TP/17, WA-261-P

### Sun Resources NL

South Australia PEL 62

Western Australia EP 325 R2, EP 359 R1, WA-261-P, WA-254-P PARTS 1,3 & 4, WA-254-P PART 2

### Sunoco Inc

New South Wales PEL429

### Sydney Gas Operations Pty Ltd

New South Wales PEL2, PEL267, PEL4

### Sykes Ian Grant

Queensland PL72, PL73

### Talisman Energy Australia Ltd

Western Australia WA-246-P

### Tap (Harriet) Pty Ltd

Western Australia EP 307 R2, EP 358 R1, EP 399, EP 400, TL/1, TL/5, TL/6, TL/8, TP/ 8 R2, TR/1, TR/2, WA-192-P R3

### TAP (SHELFAL) Pty Ltd

Western Australia EP 341 R1, EP 364 R1, EP 137 R3

### Tap Oil NL

Western Australia EP 341 R1, EP 364 R1, EP 395, EP 397, EP 403, EP 404, WA-276-P, WA-277-P, WA-278-P

Northern Territory NT/P54

### Tap West Pty Ltd

Western Australia WA-234-P, WA-22-L

### Tasgas Energy Pty Ltd

Tasmania T/28P

### Tepstew Pty Ltd

Western Australia EP 325 R2

### Terratek Drilling Tools Pty Ltd

Western Australia L 6, L 8

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### Terratek Drilling Tools WA Pty Ltd

Western Australia EP 129 R3

### Texaco Australia Pty Ltd

Western Australia EP 357 R1, EP 61 R5, EP 62 R5, EP 66 R5, L 10, TL/3, TL/4, TL/7, TP/14, WA-192-P R3, WA-205-P R1, WA-213-P R1, WA-215-P R1, WA-24-P R4 PART 1, WA-25-P R5, WA-267-P, WA-268-P, WA-2-R R1, WA-3-R R1, WA-4-R R1, WA-5-R R1, WA-7-L, WA-8-L, WA-253-P, TP/ 2 R2

### Timor Oil Ltd

Queensland PL17

### Timor Sea Arafura Petroleum NL

Northern Territory NT/P60

### Timor Sea Petroleum NL

Northern Territory NT/P47, NT/P48

### Timor Sea Petroleum Pty Ltd

Ashmore-Cartier AC/P23

### Tipperary Oil & Gas (Australia) Pty Ltd

Queensland ATP655P, ATP675P

### TMOG Exploration Pty Ltd

Victoria PEP119

### Todd Petroleum Australia Ltd

Ashmore-Cartier AC/P20

### Total Exploration Australia Pty Ltd

Queensland PL34, PL37

### Trans-Orient Petroleum Ltd

Ashmore-Cartier AC/P26

### Transoil (NT) Pty Ltd

Northern Territory L4, L5, RL 2

### Transoil Pty Ltd

Queensland ATP267P, ATP299P, PL29, PL33, PL38, PL39, PL50, PL51, PL52, PL57, PL95

### Tri-C Resources Inc.

Victoria VIC/P40

### Tri-Star Petroleum Company

Queensland ATP526P, ATP584P, ATP592P, ATP606P, ATP623P, PL90, PL91, PL92, PL99, PL100

### Triple J Resources Pty Ltd

Queensland ATP594P

### Tubridgi Petroleum Pty Ltd

Western Australia L 9

### Tyers Investments Pty Ltd

Queensland ATP539P, ATP573P, ATP590P, ATP595P, ATP603P, ATP618P

New South Wales PEL283

South Australia EPP27

### Tyers Petroleum Pty Ltd

Queensland ATP552P

### Union Pacific Resources Inc

Ashmore-Cartier AC/L1, AC/L2, AC/L3, AC/L4, AC/RL2

### United Oil & Gas Co (NT) Pty Ltd

Northern Territory L4, L5

### Vamgas Pty Ltd

Queensland ATP378P, PL105, PL106, PL107, PL108, PL109, PL110, PL111, PL112, PL113, PL114, PL129, PL130, PL131, PL23, PL24, PL25, PL26, PL34, PL35, PL36, PL37, PL55, PL58, PL59, PL60, PL61, PL62, PL63, PL68, PL75, PL76, PL77, PL78, PL79, PL80, PL81, PL82, PL83, PL84,

South Australia PPL 6, PPL 7, PPL 8, PPL 9, PPL10, PPL11, PPL12, PPL13, PPL14, PPL15, PPL16, PPL17, PPL18, PPL19, PPL20, PPL22, PPL23, PPL24, PPL25, PPL26, PPL27, PPL28, PPL29, PPL30, PPL31, PPL32, PPL33, PPL34, PPL35, PPL36, PPL37, PPL38, PPL39, PPL40, PPL41, PPL42, PPL

### Vernon E Faulconer Australia Inc

Queensland ATP543P, PL117

### Victoria Diamond Exploration Pty Ltd

South Australia EPP24

### Victoria International Petroleum NL

Queensland ATP333P

### Victoria Oil Exploration (1977) Pty Ltd

Queensland ATP589P

### Victoria Oil Pty Ltd

Queensland ATP333P

### Victoria Petroleum Ltd

Western Australia WA-254-P PART 2

### Victoria Petroleum NL

Queensland ATP465P, ATP574P, ATP608P

South Australia PEL 57

Western Australia EP 325 R2, WA-261-P, WA-254-P PARTS 1,3 & 4

### Wagner (Australia) Ltd

South Australia PEL 53, PEL 59

### Wandoo Petroleum Pty Ltd

Western Australia WA-14-L, WA-202-P R2

### West Oil NL

Western Australia WA-272-P, WA-284-P

Ashmore-Cartier AC/RL1, AC/P26, AC/P28

### Westco Mining Pty Ltd

Victoria PEP136

### Western Underground Gas Storage Pty Ltd

Victoria PPL2

### Westranch Holdings Pty Ltd

Ashmore-Cartier AC/P22

## APPENDIX K cont'd

### Woodside Energy Ltd

Victoria	VIC/P43
Western Australia	EP 36 R3, WA-10-R, WA-11-L, WA-11-R, WA-16-L, WA-1-L, WA-1-P R5, WA-208-P R1, WA-20-L, WA-242-P R1, WA-263-P, WA-269-P, WA-271-P, WA-275-P, WA-279-P, WA-280-P, WA-28-P R5, WA-293-P, WA-296-P, WA-297-P, WA-2-L, WA-33-P R3, WA-3-L, WA-4-L, WA-5-L, WA-6-L, W
Northern Territory	NT/P51, NT/P55, NT/P57, NT/RL2
Ashmore-Cartier	AC/P4 R2

### Woodside Oil Ltd

Western Australia	WA-191-P R3
Northern Territory	NT/P50, NT/P53
Ashmore-Cartier	AC/L5, AC/P16, AC/P8

### Woodside Petroleum (Timor Sea 1) Pty Ltd

JPDA	ZOCA 91-01
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### Woodside Petroleum (Timor Sea 19) Pty Ltd

JPDA	ZOCA 95-19
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### Woodside Petroleum (Timor Sea 20) Pty Ltd

JPDA	ZOCA 96-20
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### Woodside Petroleum (Timor Sea 7) Pty Ltd

JPDA	ZOCA 94-07
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### Woodside Petroleum Development Pty Ltd

Ashmore-Cartier	AC/L5, AC/P8
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### Yukong Ltd

Ashmore-Cartier	AC/P15
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### ZOCA 96-16 Pty Ltd

JPDA	ZOCA 96-16
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### ZOCA Pty Ltd

JPDA	ZOCA 96-16
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Ashmore-Cartier is the Territory of Ashmore and Cartier Islands Adjacent Area

JPDA is the Joint Petroleum Development Area





## **Appendix L**

### **Significant Australian offshore oil and gas discoveries up to the end of 2000**

## APPENDIX L: SIGNIFICANT AUSTRALIAN OFFSHORE OIL AND GAS DISCOVERIES UP TO THE END OF 2000

The listing of a 'discovery' in this Appendix is a reflection of company classification and should not be interpreted as a finalised AGSO classification.

Discoveries in production licences as at 31 December 2000 and abandoned producers are in capitals; fields in retention leases are in bold and other discoveries are in lower case.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
BARRACOUTA	Esso	31-May-65	Mar-69	Gippsland	Oil and Gas
MARLIN	Esso	03-Feb-66	Nov-69	Gippsland	Oil and Gas
Bass	Esso	29-Mar-67		Bass	Gas
Pecten	Shell	03-Apr-67		Otway	Gas
KINGFISH	Esso	29-May-67	Apr-71	Gippsland	Oil
<b>Golden Beach</b>	BOCAL	17-Jul-67		Gippsland	Gas
HALIBUT	Esso	29-Aug-67	Mar-70	Gippsland	Oil
DOLPHIN	Esso	21-Nov-67	Jan-90	Gippsland	Oil
PERCH	Esso	02-May-68	Jan-90	Gippsland	Oil
TUNA	Esso	07-May-68	May-79	Gippsland	Oil and Gas
FLOUNDER	Esso	28-Sep-68	Dec-84	Gippsland	Oil and Gas
LEGENDRE	BOCAL	31-Oct-68	not producing	Carnarvon	Oil and Gas
SNAPPER	Esso	09-Dec-68	Jul-81	Gippsland	Oil and Gas
Gage Roads	Wapet	24-Jan-69		Perth	Oil
BREAM	Esso	16-Apr-69	Mar-88	Gippsland	Oil and Gas
MACKEREL	Esso	23-Apr-69	Dec-77	Gippsland	Oil
Flathead	Esso	26-May-69		Gippsland	Oil
<b>Flinders Shoal</b>	Wapet	09-Jul-69		Carnarvon	Oil and Gas
<b>Petrel</b>	Arco	06-Aug-69		Bonaparte	Gas
Flag	Wapet	30-Jan-70		Carnarvon	Gas
Pelican (Esso)	Esso	24-Apr-70		Bass	Gas
Pepper	Wapet	03-May-70		Carnarvon	Gas
BATFISH	Esso	27-May-70	not producing	Gippsland	Gas
EMPEROR	Esso	29-Jun-70	not producing	Gippsland	Oil and Gas
Cormorant	Esso	27-Jul-70		Bass	Oil and Gas
Scott Reef	BOCAL	26-May-71		Browse	Gas
NORTH RANKIN	BOCAL	25-Jun-71	Jun-84	Carnarvon	Oil and Gas
Tern	Arco	04-Jul-71		Bonaparte	Gas
<b>Rankin</b>	BOCAL	23-Sep-71		Carnarvon	Oil and Gas
GOODWYN	BOCAL	25-Nov-71	Feb-95	Carnarvon	Oil and Gas
Flamingo	Arco	30-Nov-71		Bonaparte	Gas
ANGEL	BOCAL	11-Jan-72	not producing	Carnarvon	Gas
Puffin	Arco	08-Jun-72		Bonaparte	Oil
Penguin	Arco	23-Jul-72		Bonaparte	Gas
North Tryal Rocks	Wapet	28-Jul-72		Carnarvon	Gas
Eider	Arco	16-Sep-72		Bonaparte	Oil
Eaglehawk	Woodside	13-Dec-72		Carnarvon	Oil

## APPENDIX L (cont'd)

Discoveries in production licences as at 31 December 2000 and abandoned producers are in capitals; fields in retention leases are in bold and other discoveries are in lower case.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Swan	Arco	30-Jan-73		Bonaparte	Gas
<b>Sole</b>	Shell	05-Feb-73		Gippsland	Gas
<b>West Tryal Rocks</b>	Wapet	03-Mar-73		Carnarvon	Gas
Rosemary	Woodside	26-Mar-73		Carnarvon	Gas
<b>Egret</b>	Woodside	12-May-73		Carnarvon	Oil
DOCKRELL	Woodside	17-Aug-73	not producing	Carnarvon	Oil and Gas
LAMBERT	Woodside	23-Nov-73	Oct-97	Carnarvon	Oil
<b>Sunfish</b>	Esso	01-Mar-74		Gippsland	Oil and Gas
Hampton	Woodside	17-Apr-74		Carnarvon	Gas
Aroo	Hematite	19-Apr-74		Bass	Gas
<b>Troubadour</b>	Woodside	15-Aug-74		Bonaparte	Gas
GRIFFIN	Wapat	19-Sep-74	Jan-94	Carnarvon	Oil
<b>Sunrise</b>	Woodside	28-Jan-75		Bonaparte	Gas
BLACKBACK	Esso	11-Aug-75	Jun-99	Gippsland	Oil
TIDEPOL	BOCAL	26-Nov-75	not producing	Carnarvon	Oil and Gas
<b>Spar</b>	Wapet	01-Sep-76		Carnarvon	Gas
Haycock	Woodside	07-Apr-77		Carnarvon	Gas
East Swan	Arco	19-Mar-78		Bonaparte	Oil and Gas
Koolinda	Wapet	31-Mar-78		Carnarvon	Gas
Houtman	Esso	01-May-78		Perth	Gas
SEAHORSE	Esso	02-Sep-78	Sep-90	Gippsland	Oil and Gas
Zeewulf	Esso	05-May-79		Carnarvon	Gas
Investigator	Esso	17-Jul-79		Carnarvon	Gas
Jupiter (Phillips)	Phillips	14-Oct-79		Carnarvon	Gas
Brecknock	Woodside	09-Nov-79		Browse	Gas
Resolution	Esso	10-Nov-79		Carnarvon	Gas
<b>Scarborough</b>	Esso	17-Dec-79		Carnarvon	Gas
Vinck	Esso	16-Mar-80		Carnarvon	Gas
Eendracht	Esso	29-May-80		Carnarvon	Gas
Lesueur	Aquitaine	22-Aug-80		Bonaparte	Gas
Zeepaard	Esso	16-Oct-80		Carnarvon	Gas
Sirius (Esso)	Esso	02-Dec-80		Carnarvon	Gas
Brewster	Woodside	08-Dec-80		Browse	Gas
Gorgon	Wapet	11-Jan-81		Carnarvon	Gas
YELLOWTAIL	Esso	02-Nov-81	not producing	Gippsland	Oil
Patricia/Baleen	Hudbay	17-Nov-81		Gippsland	Gas
Sperm Whale	Hudbay	07-Jan-82		Gippsland	Oil and Gas
TARWHINE	Esso	20-Jan-82	May-90	Gippsland	Oil and Gas
Rosily	Wapet	03-May-82		Carnarvon	Gas
BOWERS	Wapet	14-Aug-82	not producing	Carnarvon	Gas
Novara	Esso	25-Oct-82		Carnarvon	Oil

## APPENDIX L (cont'd)

Discoveries in production licences as at 31 December 2000 and abandoned producers are in capitals; fields in retention leases are in bold and other discoveries are in lower case.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
WIRRAH	Esso	18-Nov-82	not producing	Gippsland	Oil and Gas
SOUTH PEPPER	Mesa	12-Dec-82	Jan-88	Carnarvon	Oil and Gas
<b>Wilcox</b>	Woodside	17-Feb-83		Carnarvon	Gas
VOLADOR	Shell	24-Mar-83	not producing	Gippsland	Oil and Gas
WHITING	Esso	05-Apr-83	Oct-89	Gippsland	Oil and Gas
Hermes	Phillips	20-Apr-83		Gippsland	Gas
<b>Basker</b>	Shell	12-Jun-83		Gippsland	Oil and Gas
NORTH HERALD	Mesa	20-Jun-83	Dec-87	Carnarvon	Oil
LUDERICK	Esso	23-Jun-83	not producing	Gippsland	Oil and Gas
CHERVIL	Mesa	02-Aug-83	Aug-89	Carnarvon	Oil and Gas
BAMBRA	Aust Occidental	27-Aug-83	not producing	Carnarvon	Oil and Gas
JABIRU	BHP	29-Sep-83	Aug-86	Bonaparte	Oil
Caswell	Woodside	28-Oct-83		Browse	Oil and Gas
Bignose	Shell	30-Oct-83		Gippsland	Gas
South Chervil	Wesminco	20-Nov-83		Carnarvon	Oil and Gas
Harriet	Aust Occidental	22-Nov-83	Jan-86	Carnarvon	Oil and Gas
BASIL	Wesminco	23-Dec-83	not producing	Carnarvon	Oil and Gas
<b>Turtle</b>	Wesminco	10-Feb-84		Bonaparte	Oil
<b>Manta</b>	Shell	20-Mar-84		Gippsland	Oil and Gas
Veilfin	Esso	30-Mar-84		Gippsland	Gas
<b>Dixon</b>	Woodside	26-May-84		Carnarvon	Gas
Outtrim	Esso	02-Jul-84		Carnarvon	Oil
TALISMAN	Marathon	24-Aug-84	Jan-89	Carnarvon	Oil
CHALLIS	BHP	23-Oct-84	Dec-89	Bonaparte	Oil
GRUNTER	Esso	11-Nov-84	not producing	Gippsland	Oil and Gas
SWIFT	BHP	10-Jan-85	not producing	Bonaparte	Oil
Barnett	Aquitaine	06-Feb-85		Bonaparte	Oil
<b>Montague</b>	Woodside	07-Mar-85		Carnarvon	Gas
ELDER	Wesminco	29-May-85	not producing	Carnarvon	Gas
SALADIN	Wapet	19-Jun-85	Dec-89	Carnarvon	Oil and Gas
<b>Yolla</b>	Amoco	22-Aug-85		Bass	Oil and Gas
WHIPTAIL	Esso	28-Aug-85	not producing	Gippsland	Oil
ANGELFISH	Esso	16-Dec-85	not producing	Gippsland	Oil and Gas
SKUA	BHP	26-Dec-85	Dec-91	Bonaparte	Oil
CAMPBELL	Bond	16-Feb-86	Jul-92	Carnarvon	Oil and Gas
Leatherjacket	Esso	27-Feb-86		Gippsland	Oil
ORPHEUS	Bond	20-Mar-86	not producing	Carnarvon	Gas
<b>Kipper</b>	Esso	28-Mar-86		Gippsland	Oil and Gas
Eclipse	BHP	03-Jul-86		Bonaparte	Oil
Avocet	Bond	27-Aug-86		Bonaparte	Oil and Gas
Forestier	Woodside	14-Sep-86		Carnarvon	Gas

## APPENDIX L (cont'd)

Discoveries in production licences as at 31 December 2000 and abandoned producers are in capitals; fields in retention leases are in bold and other discoveries are in lower case.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
<b>Remora</b>	Esso	21-May-87		Gippsland	Oil and Gas
<b>Oliver</b>	BHP	02-Feb-88		Bonaparte	Oil and Gas
<b>Montara</b>	BHP	26-Apr-88		Bonaparte	Oil and Gas
PENGANA	BHP	06-May-88	not producing	Bonaparte	Oil and Gas
CASSINI	BHP	18-Jul-88	Dec-89	Bonaparte	Oil and Gas
Evans Shoal	BHP	18-Aug-88		Bonaparte	Gas
Lorikeet	BHP	28-Aug-88		Bonaparte	Gas
<b>Bilyara</b>	BHP	13-Sep-88		Bonaparte	Oil and Gas
TORSK	Esso	10-Nov-88	not producing	Gippsland	Oil and Gas
<b>Mulloy</b>	Esso	19-Feb-89		Gippsland	Oil
Angler	Petrofina	13-May-89		Gippsland	Gas
WANAIA	Woodside	26-May-89	Nov-95	Carnarvon	Oil
CHINOOK/SCINDIAN	BHP	27-Jun-89	Jan-94	Carnarvon	Oil and Gas
SWEETLIPS	Esso	18-Aug-89	not producing	Gippsland	Oil and Gas
Anemone	Petrofina	04-Sep-89		Gippsland	Gas
Rivoli	Minora	06-Sep-89		Carnarvon	Gas
<b>Talbot</b>	Santos	01-Dec-89		Bonaparte	Oil and Gas
COWLE	Wapet	22-Dec-89	Apr-91	Carnarvon	Oil and Gas
COSSACK	Woodside	08-Jan-90	Nov-95	Carnarvon	Oil
Maple	BHP	11-Jan-90		Bonaparte	Gas
Keeling	Norcen	11-Jan-90		Bonaparte	Gas
ROLLER	Wapet	19-Jan-90	Mar-94	Carnarvon	Oil and Gas
SINBAD	Hadson	25-Mar-90	Jul-92	Carnarvon	Gas
Archer (Petrofina)	Petrofina	28-Mar-90		Gippsland	Oil and Gas
<b>Gummy</b>	Shell	02-Jun-90		Gippsland	Gas
BIRCH	BHP	01-Aug-90	not producing	Bonaparte	Oil
Delamere	BHP	20-Aug-90		Bonaparte	Gas
Venture	Wapet	25-Oct-90		Carnarvon	Oil
<b>Tahbilk</b>	BHP	01-Dec-90		Bonaparte	Gas
Minden	BHP	17-May-91		Carnarvon	Gas
WANDOO	Ampolex	15-Jun-91	Oct-93	Carnarvon	Oil
Leatherback	Lasmo	21-Jun-91		Carnarvon	Oil
Halcyon	Lasmo	29-Jul-91		Bonaparte	Gas
SKATE	Wapet	18-Nov-91	Mar-94	Carnarvon	Oil and Gas
Maret	Norcen	23-Jan-92		Bonaparte	Gas
MOONFISH	Esso	13-Jul-92	Jul-97	Gippsland	Oil and Gas
Maitland	Wesminco	09-Sep-92		Carnarvon	Gas
Fishburn	BHP	22-Oct-92		Bonaparte	Gas
<b>Macedon/Pyrenees</b>	BHP	31-Oct-92		Carnarvon	Gas
ULIDIA	Hadson	26-Nov-92	not producing	Carnarvon	Gas
Troas	Boral	06-Jan-93		Otway	Gas

## APPENDIX L (cont'd)

Discoveries in production licences as at 31 December 2000 and abandoned producers are in capitals; fields in retention leases are in bold and other discoveries are in lower case.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
<b>La Bella</b>	BHP	08-Feb-93		Otway	Gas
EAST SPAR	Wesminco	29-Mar-93	Oct-96	Carnarvon	Gas
<b>Minerva</b>	BHP	07-Apr-93		Otway	Gas
Nebo	Kufpec	14-May-93		Carnarvon	Oil
STAG	Hadson	18-Jun-93	May-98	Carnarvon	Oil
Australind	Wapet	19-Sep-93		Carnarvon	Oil
Lightfoot	Wapet	05-Oct-93		Carnarvon	Oil and Gas
Santa Cruz	Command	08-Nov-93		Carnarvon	Oil and Gas
Rambler	SAGASCO	30-Dec-93		Bonaparte	Oil and Gas
ELANG	BHP	10-Feb-94	Jul-98	Bonaparte	Oil
Fohn	Phillips	06-Aug-94		Bonaparte	Gas
Saffron	Woodside	03-Oct-94		Carnarvon	Oil and Gas
LAMINARIA	Woodside	09-Oct-94	Nov-99	Bonaparte	Oil
KAKATUA	BHP	08-Dec-94	Jul-98	Bonaparte	Oil
<b>Chrysaor</b>	Wapet	13-Dec-94		Carnarvon	Gas
Bayu/Undan	Phillips	03-Feb-95		Bonaparte	Oil and Gas
Cycad	Ampolex	25-Mar-95		Carnarvon	Oil and Gas
GUDGEON	Esso	27-Apr-95	not producing	Gippsland	Oil
Longtom	BHP	24-May-95		Gippsland	Gas
Gwydion	BHP	08-Jun-95		Browse	Oil
WONNICH	Ampolex	31-Jul-95	Jul-99	Carnarvon	Oil and Gas
Ascalon	Mobil	01-Sep-95		Bonaparte	Gas
Blencathra	BHP	18-Sep-95		Carnarvon	Oil and Gas
CORALLINA	Woodside	21-Dec-95	Nov-99	Bonaparte	Oil
ANTLER	Apache	23-Apr-96	not producing	Carnarvon	Oil and Gas
Elk	Apache	01-May-96		Carnarvon	Gas
Jahal	BHP	06-May-96		Bonaparte	Oil and Gas
AGINCOURT	Apache	09-Jun-96	Aug-97	Carnarvon	Oil
BUFFALO	BHP	27-Sep-96	Dec-99	Bonaparte	Oil
Lynx	Woodside	27-Sep-96		Carnarvon	Gas
Ridley	Apache	28-Sep-96		Carnarvon	Oil
Nimrod	BHP	10-Oct-96		Carnarvon	Gas
Buller	BHP	13-Dec-96		Bonaparte	Oil and Gas
Cornea	Shell	07-Jan-97		Browse	Oil and Gas
KEAST	Woodside	21-Jan-97	not producing	Carnarvon	Gas
Woollybutt	Mobil	23-Apr-97		Carnarvon	Oil
Pitcairn	Santos	18-Jun-97		Carnarvon	Oil
Tenacious	Cultus	21-Jun-97		Bonaparte	Oil and Gas
Krill	BHP	19-Jul-97		Bonaparte	Oil
Kelp Deep	Mobil	29-Jul-97		Bonaparte	Gas
Reindeer	Apache	28-Oct-97		Carnarvon	Gas

## APPENDIX L (cont'd)

Discoveries in production licences as at 31 December 2000 and abandoned producers are in capitals; fields in retention leases are in bold and other discoveries are in lower case.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Psepotus	Woodside	28-Feb-98		Browse	Gas
GIPSY	Apache	02-Mar-98	not producing	Carnarvon	Oil
Peck	Apache	18-Mar-98		Carnarvon	Oil
Caspar	BHP	21-Jun-98		Browse	Gas
White Ibis	Premier	23-Jun-98		Bass	Gas
ROSE	Apache	20-Jul-98	not producing	Carnarvon	Oil and Gas
Bluff	BHP	21-Jul-98		Bonaparte	Oil
Adele	Shell	09-Oct-98		Browse	Gas
John Brookes	Mobil	17-Oct-98		Carnarvon	Gas
Chuditch	Shell	02-Nov-98		Bonaparte	Gas
Vincent	Woodside	26-Dec-98		Carnarvon	Oil
Webley	Woodside	18-Jan-99		Carnarvon	Gas
LEE	Apache	25-Jan-99	not producing	Carnarvon	Gas
WINDSOR	Apache	07-Mar-99	not producing	Carnarvon	Gas
BENNET	Apache	13-Mar-99	not producing	Carnarvon	Oil
Sage	Apache	25-Mar-99		Carnarvon	Oil
Enfield	Woodside	05-Apr-99		Carnarvon	Oil
North Marra	Apache	08-Jul-99		Carnarvon	Oil and Gas
Geryon	Wapet	15-Sep-99		Carnarvon	Gas
Moon (Mobil)	Mobil	04-Oct-99		Carnarvon	Oil
Orthrus	Wapet	15-Oct-99		Carnarvon	Gas
NORTH GIPSY	Apache	28-Oct-99	not producing	Carnarvon	Oil
Cuttlefish	Amity	29-Oct-99		Gippsland	Oil and Gas
Cadell	Apache	08-Nov-99		Carnarvon	Gas
Nasutus	Apache	18-Nov-99		Carnarvon	Oil and Gas
Narvik	Apache	28-Nov-99		Carnarvon	Gas
COASTER	Wapet	30-Dec-99	not producing	Carnarvon	Oil
Antiope	BHP	15-Jan-00		Carnarvon	Gas
BAKER	Apache	20-Jan-00	not producing	Carnarvon	Gas
Coniston	BHP	04-Feb-00		Carnarvon	Oil
Urania	Wapet	11-Feb-00		Carnarvon	Gas
Scafell	BHP	27-Feb-00		Carnarvon	Oil
Maenad	Chevron	28-Mar-00		Carnarvon	Gas
Corvus	Apache	07-Apr-00		Carnarvon	Gas
<b>Padthaway</b>	BHP	09-Apr-00		Bonaparte	Oil and Gas
Oryx	Apache	26-Apr-00		Carnarvon	Oil
Jansz 1	Mobil Exploration an	27-Apr-00		Carnarvon	Gas
Crux	Nippon Oil	03-May-00		Bonaparte	Gas
Dinichthys	Inpex	03-May-00		Browse	Gas
NORTH ALKIMOS	Apache	02-Jun-00	not producing	Carnarvon	Oil and Gas
Prometheus	Kerr McGee	07-Jun-00		Bonaparte	Gas



## APPENDIX L (cont'd)

Discoveries in production licences as at 31 December 2000 and abandoned producers are in capitals; fields in retention leases are in bold and other discoveries are in lower case.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Gorgonichthys	Inpex	21-Jul-00		Browse	Gas
Brecknock South	Woodside	18-Aug-00		Browse	Gas
LINDA	Apache	18-Aug-00	not producing	Carnarvon	Gas
Chamois	Apache	28-Aug-00		Carnarvon	Oil and Gas
Tusk	Apache	15-Sep-00		Carnarvon	Oil
Laverda	Woodside	27-Oct-00		Carnarvon	Oil and Gas
Coleraine	Phillips	21-Nov-00		Bonaparte	Oil
Titanichthys	Inpex	28-Nov-00		Browse	Gas
GAEA	Woodside	02-Dec-00	not producing	Carnarvon	Gas
Rubicon	Kerr McGee	03-Dec-00		Bonaparte	Gas
Saratoga	Kerr McGee	18-Dec-00		Bonaparte	Gas
Iago	Chevron	27-Dec-00		Carnarvon	Gas

\* Total depth date of discovery well

\*\* Approximate, where available

### NOTES:

MARLIN includes Turrum and North Turrum

KINGFISH includes WEST KINGFISH (produced Dec-82)

HALIBUT includes COBIA (produced Jun-79) and FORTESCUE (produced Sep-83)

MACKEREL includes SOUTH MACKEREL

Rankin includes Echo/Yodel, Dockerell, Sculptor and Keast

GRIFFIN field was discovered by the Hilda 1A well, includes Ramillies

BLACKBACK field was discovered by the Hapuku 1 well

SALADIN includes YAMMADERRY

Macedon/Pyrenees field was discovered by the West Muiron 3 well

NORTH RANKIN includes PERSEUS, ATHENA, Capella, Perseus South and Searipple

TALISMAN was abandoned in 1992

NORTH HERALD, SKUA and SOUTH PEPPER were abandoned in 1997

## **Appendix M**

### **Australian producing onshore oil and gas discoveries up to the end of 1999**

## APPENDIX M: AUSTRALIAN PRODUCING ONSHORE OIL AND GAS DISCOVERIES UP TO THE END OF 1999

The listing of a 'discovery' in this Appendix is a reflection of company classification and should not be interpreted as a finalised Geoscience Australia classification.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Hospital Hill	Qld Government	30-Oct-11		Surat	Gas
Lakes Entrance	Petrotech	01-Jul-24		Gippsland	Oil
Rough Range	Wapet	08-May-55	May-55	Carnarvon	Oil
Timbury Hills	CSR	04-Apr-60	Apr-61	Surat	Gas
Pickanjinie	AAO	12-Jul-60	May-69	Bowen/Surat	Gas
Cabawin	Union Oil	26-Mar-61	Aug-77	Bowen/Surat	Oil and Gas
Moonie	Union Oil	06-Dec-61	Feb-64	Surat	Oil
Sunnybank	AAO	01-Jan-63	Jan-63	Bowen	Oil and Gas
Bony Creek	AAO	27-Mar-63	Mar-69	Surat	Gas
Richmond	AAO	24-Aug-63	Mar-69	Bowen/Surat	Oil and Gas
Rolleston	Associated Freney Oil	25-Jan-64	Jun-90	Bowen	Gas
Gidgealpa	Delhi-Santos	10-Feb-64	Nov-69	Cooper/Eromanga	Oil and Gas
Mereenie	Exoil	11-Feb-64	Sep-84	Amadeus	Oil and Gas
Warrooby South	AAO	27-Feb-64		Surat	Gas
Blyth Creek	AAO	12-Mar-64		Surat	Gas
Back Creek	Amalgamated	24-Mar-64	Aug-87	Bowen	Gas
Yardarino	Wapet	04-Jun-64	Jan-78	Perth	Oil and Gas
Snake Creek	Amalgamated	15-Jun-64	Jun-69	Bowen	Oil and Gas
Duarran	AAO	02-Jul-64	Mar-69	Surat	Oil and Gas
Beaufort	AAO	02-Jul-64	Jul-84	Bowen/Surat	Gas
Alton	Union Oil	17-Jul-64	Jan-66	Bowen/Surat	Oil
Yanalah	AAO	20-Jul-64	Feb-70	Surat	Gas
Barrow Island	Wapet	04-Aug-64	Jan-67	Carnarvon	Oil and Gas
Conloi	Union Oil	24-Aug-64	Jan-66	Surat	Oil
Raslie	AAO	27-Sep-64	Jun-69	Bowen/Surat	Gas
Gilmore	Phillips	24-Oct-64	Jun-95	Adavale	Gas
Arcturus	Associated Freney Oil	17-Nov-64	Jul-90	Bowen	Gas
Lamen	CSR	28-Nov-64	Apr-76	Surat	Gas
Pine Ridge	CSR	25-Jan-65	Jun-65	Bowen/Surat	Gas
Oberina	Amalgamated	04-Feb-65	Mar-96	Surat	Gas
Trinidad	Amalgamated	14-Feb-65	Feb-65	Surat	Oil
Mount Horner	Wapet	22-Mar-65	May-84	Perth	Oil
Anabranche	CSR	26-Mar-65	Mar-65	Surat	Oil and Gas
Gingin	Wapet	31-Mar-65	Jan-72	Perth	Gas
Hollyrood	CSR	08-Apr-65	Jul-91	Surat	Gas
Major	Union Oil	20-Apr-65	Mar-95	Bowen	Gas
Palm Valley	Magellan	01-May-65	Aug-83	Amadeus	Gas
Maffra	CSR	14-Jun-65	Jan-66	Surat	Oil and Gas
Bennett	Union Oil	18-Oct-65	Jan-66	Surat	Oil
Tarrawonga	Inter Petroleum Services	07-Dec-65	May-69	Bowen/Surat	Gas
Spencer	Delhi	30-Dec-65	Feb-86	Eromanga	Oil
Leichhardt	Union Oil	22-Feb-66	Nov-92	Surat	Oil and Gas
Moomba	Delhi	20-Apr-66	Nov-69	Cooper	Gas
Lyndon Caves	CSR	28-May-66	Mar-88	Surat	Gas

## APPENDIX M (cont'd)

The listing of a 'discovery' in this Appendix is a reflection of company classification and should not be interpreted as a finalised Geoscience Australia classification.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Dongara	Wapet	28-Jun-66	Oct-71	Perth	Oil and Gas
Tubridgi	Wapet	08-Nov-66	Sep-91	Carnarvon	Oil and Gas
Caroline	Alliance	29-Jan-67	Nov-68	Otway	Gas
Wallumbilla South	CSR	12-Jun-67	Sep-69	Bowen	Gas
Hope Creek	CSR	07-Oct-67	Feb-71	Surat	Gas
Pringle Downs	CSR	15-Oct-67	Feb-71	Bowen/Surat	Oil and Gas
Stakeyard	CSR	30-Nov-67		Bowen	Gas
Daralingie	Delhi	10-Dec-67	May-84	Cooper	Gas
Pleasant Hills	CSR	07-Nov-68	Sep-69	Bowen/Surat	Gas
Mondarra	Wapet	25-Nov-68	Apr-72	Perth	Gas
Grafton Range	CSR	22-Mar-69	Nov-81	Surat	Gas
Toolachee	Delhi	22-Mar-69	May-84	Cooper	Gas
Mooga	CSR	26-Jul-69	Jan-76	Surat	Gas
Kincora	Union Oil	12-Dec-69	Mar-77	Bowen/Surat	Oil and Gas
Boxleigh	Union Oil	03-Jun-70	Jan-79	Bowen	Gas
Tirrawarra	Bridge	11-Jun-70	Feb-83	Cooper	Oil and Gas
Packsaddle/Pondrinnie	Alliance	12-Jun-70		Cooper	Oil and Gas
Westlands	CSR	02-Aug-70	Jul-93	Surat	Gas
Euthulla	CSR	10-Aug-70	Jan-76	Bowen/Surat	Gas
Della	Pursuit	16-Aug-70	Oct-71	Cooper/Eromanga	Gas
Merrimelia	Alliance	20-Aug-70	Feb-83	Cooper/Eromanga	Oil and Gas
Noorindoo	Union Oil	09-Oct-70	Nov-70	Bowen	Oil and Gas
Strzelecki	Pursuit	05-Dec-70	Dec-82	Cooper/Eromanga	Oil and Gas
Mudrangie	Alliance	01-Jan-71	Jun-85	Cooper	Gas
Moorari/Woolkina	Bridge	28-Feb-71	Oct-83	Cooper/Eromanga	Oil and Gas
Walpyring	Wapet	10-Apr-71	Mar-72	Perth	Gas
Coonatie	Flinders	05-Jul-71		Cooper	Gas
Fly Lake	Delhi	15-Oct-71	Oct-83	Cooper	Oil and Gas
Big Lake	Delhi	29-Dec-71	Jul-72	Cooper/Eromanga	Gas
Epsilon	Delhi	03-Jan-72	Jan-89	Cooper/Eromanga	Oil and Gas
Brumby	Delhi	06-Apr-72	Feb-85	Cooper	Gas
Burke	Delhi	08-Aug-72	May-82	Cooper	Gas
Dullingari	Delhi	06-Oct-72	Mar-82	Cooper/Eromanga	Oil and Gas
Kanowana	Vamgas	08-Jan-73	Mar-90	Cooper	Oil and Gas
Silver Springs/Renlim	Bridge	29-Jun-74	Oct-78	Bowen	Gas
Namur	Delhi	05-Nov-76	Feb-79	Eromanga	Gas
Kidman	Delhi	15-Oct-77	Jun-84	Cooper	Gas
Munkarie	Delhi	16-Feb-78	Feb-85	Cooper	Gas
Mascotte	Jimilly	17-May-78	Feb-82	Surat	Gas
Boggo Creek	Bridge	02-Sep-78	Dec-78	Bowen	Oil
Parknook	BHP	27-Dec-78	May-94	Bowen	Gas
Warroon	BHP	31-Aug-79	May-94	Bowen	Oil and Gas
Dullingari North	Delhi	23-Sep-79	Sep-82	Cooper/Eromanga	Oil and Gas
Beldene	Hartogen	23-Oct-79	Jun-82	Bowen/Surat	Gas
Thomby Creek	Bridge	13-Nov-79	Nov-79	Bowen	Oil
North Paaratte	Beach	21-Nov-79	Apr-86	Otway	Gas
Cuttapirrie	Santos	12-Apr-80	Jul-85	Cooper/Eromanga	Oil and Gas

## APPENDIX M (cont'd)

The listing of a 'discovery' in this Appendix is a reflection of company classification and should not be interpreted as a finalised Geoscience Australia classification.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Woodada	Hughes and Hughes	12-Jun-80	May-82	Perth	Gas
Glen Fosslyn	Bridge	09-Jul-80	May-94	Bowen	Oil and Gas
Newstead	Hartogen	14-Dec-80	Oct-83	Bowen/Surat	Gas
Marabooka	Delhi	30-Jan-81	Sep-82	Cooper/Eromanga	Oil and Gas
Mudera	Delhi	08-Mar-81	Feb-92	Cooper	Gas
Wallaby Creek	Beach	29-Mar-81		Otway	Gas
Yapeni	Delhi	25-Apr-81	Jun-84	Cooper	Gas
Kerna	Delhi	30-Apr-81	Apr-93	Cooper	Gas
McKinlay	Delhi	26-May-81	Mar-85	Eromanga	Oil
Blina	Home Energy	08-Jun-81	Sep-83	Canning	Oil
Royston	Hartogen	20-Jul-81	Jun-82	Surat	Gas
Riverslea	BHP	24-Aug-81	Oct-81	Surat	Oil
Namarah	Hematite	08-Oct-81	May-94	Bowen	Gas
Dilchee	Delhi	28-Oct-81	Apr-93	Cooper	Gas
Avondale	AAR	10-Nov-81	Jan-84	Surat	Oil and Gas
Wanara	Delhi	19-Nov-81	Jun-89	Cooper	Gas
Waggamba	Bridge	20-Nov-81	Mar-82	Bowen	Gas
Jackson	Delhi	14-Dec-81	Dec-83	Eromanga	Oil
Merivale	AAR	02-Jan-82	Jul-90	Bowen	Gas
Yellowbank	AAR	12-Feb-82	Jun-90	Bowen	Gas
Jackson South	Delhi	06-Apr-82	Feb-84	Eromanga	Oil
Yellowbank Creek	Bridge	15-Apr-82	May-82	Bowen	Oil
Borah Creek	Hartogen	28-Apr-82	Aug-82	Bowen/Surat	Oil and Gas
Sandy Creek	Hartogen	27-May-82	Aug-82	Bowen/Surat	Oil and Gas
Sirrah	Bridge	08-Jun-82	Jun-85	Bowen	Gas
Waratah	Hartogen	15-Jun-82	Nov-83	Bowen	Oil and Gas
Yapunyah	Hematite	01-Jul-82	Aug-82	Bowen	Oil
Punchbowl Gully	AAR	04-Aug-82		Bowen	Gas
Cogoon River	Hartogen	16-Aug-82	Jan-93	Surat	Gas
Andree	Delhi	23-Sep-82	Dec-89	Cooper	Gas
Marana	Delhi	06-Oct-82	May-87	Cooper	Gas
Sundown	Home Energy	23-Nov-82	Nov-83	Canning	Oil
Rakoona	Delhi	08-Dec-82	Jan-88	Cooper	Gas
South Pepper	Mesa	12-Dec-82	Jan-88	Carnarvon	Oil and Gas
Springvale	CSR	23-Jan-83	Jul-90	Bowen	Gas
Broadway	BHP	29-Apr-83	Feb-92	Surat	Gas
North Herald	Mesa	20-Jun-83	Dec-87	Carnarvon	Oil
Gunna	Delhi	29-Jul-83	Mar-84	Eromanga	Oil
Chookoo	Delhi	30-Aug-83	Nov-85	Eromanga	Oil and Gas
Narcoonowie	Delhi	21-Sep-83	Mar-85	Eromanga	Oil
Nockatunga	Pancontinental	27-Sep-83	Jan-84	Eromanga	Oil
Yambugle	Hartogen	11-Oct-83	Jan-91	Bowen	Gas
Munkah	Delhi	27-Oct-83	Jan-94	Cooper	Gas
Naccowlah South	Delhi	01-Nov-83	Mar-84	Cooper/Eromanga	Oil and Gas
Wilson	Delhi	05-Nov-83	Mar-84	Eromanga	Oil
Yarrabend	Hartogen	15-Nov-83	May-85	Bowen/Surat	Gas
Tinpilla	Delhi	14-Dec-83	May-84	Eromanga	Oil

## APPENDIX M (cont'd)

The listing of a 'discovery' in this Appendix is a reflection of company classification and should not be interpreted as a finalised Geoscience Australia classification.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Naccowlah West	Delhi	22-Dec-83	May-84	Eromanga	Oil
Challum	Delhi	22-Dec-83	May-85	Cooper/Eromanga	Oil and Gas
Sigma	Delhi	29-Dec-83	Apr-85	Eromanga	Oil
Tintaburra	Hartogen	31-Dec-83	Jan-84	Eromanga	Oil
Roswin	Bridge	07-Feb-84	Jul-93	Bowen	Gas
Myrteville	CSR	26-Feb-84	Jul-90	Bowen	Gas
Yanda	Delhi	11-Mar-84	May-85	Cooper/Eromanga	Oil and Gas
Springton	CSR	08-May-84	Jun-90	Bowen	Gas
Moorooloo	CSR	23-Jun-84	May-91	Bowen	Gas
Bodalla South	Lasmo	27-Jun-84	Nov-84	Eromanga	Oil
Bogala	Delhi	27-Jun-84	Jul-84	Cooper/Eromanga	Oil and Gas
Bloodwood	Hartogen	28-Jun-84		Bowen	Gas
Kerinna	Delhi	08-Jul-84	Apr-85	Eromanga	Oil
Biala/Limestone Creek	Delhi	14-Aug-84	Feb-85	Eromanga	Oil
Talisman	Marathon	24-Aug-84	Jan-89	Carnarvon	Oil
West Kora	Esso	27-Aug-84	Sep-89	Canning	Oil
Naccowlah East	Delhi	28-Aug-84	Sep-88	Cooper/Eromanga	Oil and Gas
Carbean	Hartogen	26-Oct-84	May-85	Bowen/Surat	Gas
Berwick	Hartogen	11-Nov-84	Mar-94	Bowen/Surat	Gas
Wancoocha	Delhi	17-Nov-84	Feb-85	Cooper/Eromanga	Oil and Gas
Bookabourdie	Delhi	27-Nov-84	Jul-85	Cooper/Eromanga	Oil and Gas
Ballera	Delhi	27-Nov-84	Jan-94	Cooper	Gas
Tickalara	Delhi	24-Dec-84	Mar-85	Eromanga	Oil
Merrit	AAR	13-Jan-85	Jul-88	Surat	Gas
Mayfield	AAR	25-Jan-85	Jun-85	Surat	Gas
Ulandi	Delhi	03-Mar-85	Jul-85	Eromanga	Oil
Alwyn	Delhi	22-Mar-85	Dec-85	Eromanga	Oil
Mooliampah	Delhi	07-Apr-85	Aug-85	Eromanga	Oil
Norwood	Sunland	14-Apr-85		Bowen	Gas
Muteroo	Delhi	21-Apr-85	May-85	Eromanga	Oil
Lepena	Delhi	15-May-85	Jun-87	Cooper	Gas
West Terrace	Home Energy	28-May-85	Jun-85	Canning	Oil
Koorroopa North	Santos	01-Jun-85		Eromanga	Oil
Koorroopa	Hartogen	01-Jun-85	Aug-85	Eromanga	Oil
Watson South	Delhi	22-Jun-85	Jul-85	Eromanga	Oil
Kenmore	Lasmo	26-Jun-85	Sep-85	Eromanga	Oil
Jena	Delhi	04-Jul-85	Oct-85	Eromanga	Oil
Talgeberry	Hartogen	08-Jul-85	Sep-85	Eromanga	Oil
Meranji	Delhi	12-Jul-85	Aug-85	Cooper/Eromanga	Oil and Gas
Gooranie	Delhi	31-Jul-85	Oct-87	Cooper	Gas
Koora	Pancontinental	01-Sep-85	Sep-85	Eromanga	Oil
Washpool	Hartogen	07-Sep-85	Jul-87	Bowen	Oil
Cook	Delhi	09-Sep-85	Sep-85	Eromanga	Oil
Glenvale	Lasmo	16-Sep-85	Sep-85	Eromanga	Oil
Fairymount	Sydoc	04-Oct-85	Nov-85	Bowen	Oil
Louise	Bridge	13-Oct-85	Jul-86	Bowen	Oil
Winna	Pancontinental	17-Oct-85	Oct-85	Eromanga	Oil

## APPENDIX M (cont'd)

The listing of a 'discovery' in this Appendix is a reflection of company classification and should not be interpreted as a finalised Geoscience Australia classification.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Toobunyah	Hartogen	06-Nov-85	Dec-85	Eromanga	Oil
Takyah	Hartogen	28-Nov-85	Feb-86	Eromanga	Oil
McWhirter	Sunland	01-Dec-85	Dec-85	Bowen	Oil
Watson	Delhi	15-Dec-85	Feb-86	Eromanga	Oil
Skua	BHP	26-Dec-85	Dec-91	Bonaparte	Oil
Deepwater	AAR	27-Dec-85	Nov-88	Surat	Gas
Ipundu	Hartogen	07-Jan-86	Feb-86	Eromanga	Oil
Dirkala	Delhi	13-Feb-86	Mar-86	Cooper/Eromanga	Oil and Gas
Garanjanie	Delhi	09-Mar-86	Mar-90	Cooper	Gas
Black Stump	Lasmo	10-Mar-86	Mar-86	Eromanga	Oil
Thungo	Pancontinental	15-Mar-86	May-86	Eromanga	Oil
Cowralli	Delhi	30-Mar-86		Cooper	Gas
Kihee	Pancontinental	02-Apr-86	Nov-86	Eromanga	Oil
Nanima	Delhi	13-Apr-86	Aug-87	Eromanga	Gas
Taylor	Bridge	23-Apr-86	Jun-88	Bowen	Oil and Gas
Nungeroo	Delhi	26-Apr-86	May-86	Eromanga	Oil
Dilkera	Pancontinental	02-May-86	Sep-89	Eromanga	Oil
Goyder	Delhi	16-May-86		Cooper	Gas
Bimbaya	Santos	30-May-86	Jun-88	Cooper	Gas
Narrows	Bridge	13-Jul-86	Sep-86	Bowen	Oil
Tennaperra	Delhi	08-Sep-86		Eromanga	Oil
Tarwonga	Delhi	14-Oct-86	Sep-91	Cooper	Gas
Merupa	Santos	04-Nov-86		Cooper/Eromanga	Oil and Gas
Thurakinna	Delhi	04-Nov-86	Apr-90	Cooper	Gas
Cooroo	Delhi	29-Nov-86	Jan-87	Eromanga	Oil
Swan Lake	Santos	07-Dec-86		Cooper	Gas
Mundi	Delhi	14-Dec-86	Jul-91	Cooper	Gas
Cooroo North	Delhi	31-Dec-86	Mar-87	Eromanga	Oil
Kurunda	Delhi	15-Jan-87	Jul-89	Cooper	Gas
Toby	Delhi	31-Jan-87	Sep-87	Cooper/Eromanga	Oil and Gas
Taylor South	Santos	10-Feb-87	Jun-88	Cooper	Gas
Balcaminga	Santos	02-Apr-87		Cooper	Gas
Maxwell	Pancontinental	06-Apr-87	May-87	Eromanga	Oil
Wingnut	CSR	18-Apr-87	Mar-88	Bowen/Surat	Gas
Caneon	CSR	06-May-87	Feb-88	Surat	Gas
Dingera	Delhi	18-May-87	Jan-88	Cooper/Eromanga	Oil and Gas
Mawson	Delhi	22-May-87	Jul-87	Cooper/Eromanga	Oil and Gas
Keena	Delhi	20-Jun-87	Jul-91	Cooper	Gas
Lloyd	Home Energy	09-Jul-87	Aug-87	Canning	Oil
Monler	Hartogen	15-Jul-87	Sep-87	Eromanga	Oil
Kanaloo	Hartogen	19-Jul-87	Nov-87	Bowen/Surat	Gas
Deina	Santos	03-Aug-87	Aug-88	Cooper	Gas
Kungarri	Hartogen	20-Aug-87	Mar-89	Bowen	Gas
Pelican (Santos)	Santos	21-Sep-87	Dec-89	Cooper/Eromanga	Oil and Gas
Rosette	Bond	16-Oct-87	Apr-88	Carnarvon	Oil and Gas
Cranstoun	Hartogen	02-Nov-87	Nov-87	Eromanga	Oil
Karri	Delhi	05-Nov-87	Nov-90	Cooper/Eromanga	Oil and Gas

## APPENDIX M (cont'd)

The listing of a 'discovery' in this Appendix is a reflection of company classification and should not be interpreted as a finalised Geoscience Australia classification.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Pintari North	Santos	10-Nov-87	Feb-88	Eromanga	Oil
Judga	Delhi	26-Nov-87		Cooper	Gas
Yuranigh	Hartogen	04-Dec-87	Jun-89	Bowen	Gas
North Colgoon	Hartogen	20-Dec-87	Sep-88	Surat	Gas
Katnook	Ultramar	31-Dec-87		Otway	Gas
Pitchery	Delhi	21-Jan-88	Mar-88	Eromanga	Oil
Walpanara	Hartogen	01-Feb-88	Jan-91	Bowen	Gas
Munro	Delhi	01-Mar-88	Aug-88	Cooper/Eromanga	Oil
Iona	Beach	17-Mar-88		Otway	Gas
Natan	Delhi	20-Mar-88	Dec-88	Eromanga	Oil
Narie	Santos	09-May-88	May-90	Cooper	Oil and Gas
Kujani	Santos	09-May-88	Jul-91	Cooper	Gas
Taloola	Santos	29-May-88	Jul-88	Eromanga	Oil
Tarbat	Hartogen	15-Jun-88	Jun-88	Eromanga	Oil
Sturt	Santos	06-Jul-88	Jul-88	Cooper/Eromanga	Oil and Gas
Varanus	Santos	16-Jul-88	Apr-91	Cooper	Gas
Tantanna	Santos	23-Jul-88	Sep-89	Eromanga	Oil
James	Santos	07-Sep-88	Jan-89	Cooper	Oil
Kirralee	Santos	02-Nov-88	Apr-91	Cooper	Gas
Arrakis	Santos	06-Nov-88	Jun-92	Cooper/Eromanga	Gas
Beechwood	Bridge	09-Dec-88	Dec-92	Bowen	Gas
Tinker	Bridge	30-Dec-88	Jul-93	Bowen	Gas
Mettika	Santos	02-Feb-89	May-90	Cooper	Gas
Spencer West	Santos	10-Apr-89	May-89	Eromanga	Oil
Marsilea	Santos	04-May-89	Jun-90	Cooper	Gas
Amyema	Santos	27-May-89	Jun-90	Cooper	Gas
Naccowlah	Delhi	15-Jul-89	Sep-89	Eromanga	Oil
Gidgee	Delhi	31-Jul-89	Sep-89	Eromanga	Oil
Pinaroo	Delhi	24-Aug-89	Oct-89	Eromanga	Oil
Muthero	Command	25-Aug-89	Sep-89	Eromanga	Oil
Wandilo	Delhi	07-Sep-89	Oct-89	Eromanga	Oil
Maxwell South	Command	15-Sep-89	Jan-90	Eromanga	Oil
Ipundu North	Ampolex	22-Sep-89	Nov-89	Eromanga	Oil
Corella	Delhi	22-Sep-89	Nov-89	Eromanga	Oil
Endeavour	Ampolex	06-Oct-89	Nov-89	Eromanga	Oil
Orientos	Delhi	18-Dec-89	Mar-90	Eromanga	Oil
Bowen	Delhi	29-Dec-89	Feb-90	Eromanga	Oil
Pogona	Santos	23-Feb-90		Cooper	Gas
North Yardanogo	Barrack	02-Mar-90		Perth	Oil
Caraka	Santos	15-Apr-90	Nov-90	Cooper	Gas
Moolalla	Santos	15-Apr-90	Aug-90	Cooper	Gas
Beharra Springs	Barrack	05-May-90	Jun-90	Perth	Gas
Bottletree	OCA	06-Jul-90	Mar-91	Bowen	Gas
Alisma	Santos	26-Jul-90	Dec-94	Cooper	Gas
Boundary	Petroleum Securities	16-Aug-90	Dec-90	Canning	Oil
Malgoona	Santos	17-Aug-90	Oct-90	Cooper	Oil and Gas
Rheims	Delhi	19-Aug-90	Nov-90	Eromanga	Oil



## APPENDIX M (cont'd)

The listing of a 'discovery' in this Appendix is a reflection of company classification and should not be interpreted as a finalised Geoscience Australia classification.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Beranga South	OCA	24-Aug-90	Jul-91	Bowen	Gas
Cogoon River West	OCA	10-Oct-90	Mar-91	Surat	Oil
Jarrar	Delhi	16-Dec-90	Dec-90	Eromanga	Oil
Bolan	Delhi	04-Jan-91	Feb-91	Eromanga	Oil
Cooba	Santos	26-Mar-91	Aug-91	Cooper	Gas
Echuburra	Delhi	01-Apr-91	May-91	Eromanga	Oil
North Boxleigh	Bridge	20-Apr-91	May-93	Bowen	Gas
Cowan	Santos	18-May-91		Cooper	Gas
East Glen	Bridge	23-May-91	Jul-93	Bowen	Gas
Wallawanny North	Delhi	06-Jun-91	Aug-91	Eromanga	Oil
Patroclus	Delhi	21-Jun-91	Jul-91	Cooper/Eromanga	Oil and Gas
Cooloon South	Santos	02-Jul-91	Dec-92	Cooper	Gas
Tanami	Hadson	08-Jul-91	Oct-91	Carnarvon	Oil
Wilga	OCA	15-Sep-91	Aug-92	Bowen	Oil and Gas
Keleary	Santos	13-Oct-91	Nov-91	Cooper	Oil
Martini	OCA	22-Nov-91	Aug-92	Bowen	Oil and Gas
Genoa	Delhi	03-Jan-92	Mar-92	Eromanga	Oil
Boongala	Santos	14-Jan-92	Apr-93	Cooper	Gas
Gimboola	Ampolex	10-Jul-92	Jul-92	Eromanga	Oil
Roswin North	Bridge	20-Jul-92	Jul-93	Bowen	Gas
Farina	Santos	14-Sep-92	Apr-93	Cooper	Gas
Coopers Creek	Santos	11-Nov-92		Cooper	Gas
Turkey Creek	AGL	16-Nov-92	Aug-93	Bowen	Gas
Genoa North	Santos	16-Dec-92	Feb-93	Eromanga	Oil
Glenloth	OCA	16-Jan-93		Bowen	Gas
Lark	Bridge	16-Jun-93	Jun-94	Bowen	Gas
Costa	Santos	06-Jul-93		Cooper	Gas
Mudlalee	Santos	30-Jul-93	Aug-93	Eromanga	Oil
Snake Creek East	Santos	02-Oct-93	Apr-94	Bowen/Surat	Gas
Bargie	OCA	11-Jan-94	Apr-94	Eromanga	Oil
Crest	Wapet	06-Feb-94		Carnarvon	Oil and Gas
Link	Bridge	17-Mar-94		Bowen	Gas
Haselgrove	SAGASCO	27-May-94		Otway	Gas
Mylor	Bridge	27-Jun-94		Otway	Oil and Gas
Caladan	Santos	30-Jul-94		Cooper/Eromanga	Gas
Iliad	Santos	10-Aug-94	Aug-94	Eromanga	Oil
Alkimos	Hadson	31-Aug-94		Carnarvon	Oil and Gas
Telopea	Santos	13-Oct-94	Oct-94	Cooper	Oil
Allambi	Santos	20-Oct-94	Jun-95	Cooper	Gas
Caxton	OCA	24-Jan-95		Bowen/Surat	Gas
Tarrawonga North	Santos	04-May-95	Aug-95	Bowen/Surat	Gas
Gahnia	Santos	04-Aug-95	Nov-95	Cooper	Gas
Costa South	Santos	10-Aug-95		Cooper	Gas
Correa	Santos	06-Nov-95		Cooper	Gas
New Royal	OCA	09-Nov-95		Bowen	Oil and Gas
Pennie	Santos	01-Dec-95		Cooper	Gas
Plantago	Santos	05-Dec-95		Cooper	Gas

## APPENDIX M (cont'd)

The listing of a 'discovery' in this Appendix is a reflection of company classification and should not be interpreted as a finalised Geoscience Australia classification.

Discovery	Discovery operator	Discovered*	Produced**	Basin(s)	Type
Reg Sprigg	Santos	10-Jun-96	Sep-96	Eromanga	Oil
Carmina	Santos	13-Sep-96	Sep-96	Eromanga	Oil
Gudi	Santos	23-Oct-96		Cooper	Gas
Judga North	Santos	06-Jan-97	Jun-97	Cooper	Gas
Merindal	Santos	16-Jan-97	Apr-97	Cooper	Gas
Nephrite	Santos	18-Jan-97	Jun-97	Cooper	Gas
Tarragon	Santos	23-Jan-97	Jul-97	Eromanga	Oil
Weribone East	OCA	30-Mar-97	Apr-98	Surat	Gas
Fenton Creek	Santos	04-Apr-97		Otway	Gas
Nephrite South	Santos	19-Jun-97		Cooper	Gas
Dorodillo	Santos	17-Jul-97		Cooper	Gas
Regatta	OCA	05-Aug-97		Surat	Gas
Milluna	Santos	17-Aug-97		Cooper	Gas
Redman	Boral	14-Feb-98		Otway	Oil and Gas
Welcome Lake East	Santos	09-Sep-98		Cooper	Gas
Moolion North	Santos	10-Sep-98		Cooper	Gas

\* Total depth date of discovery well

\*\* Approximate, where available



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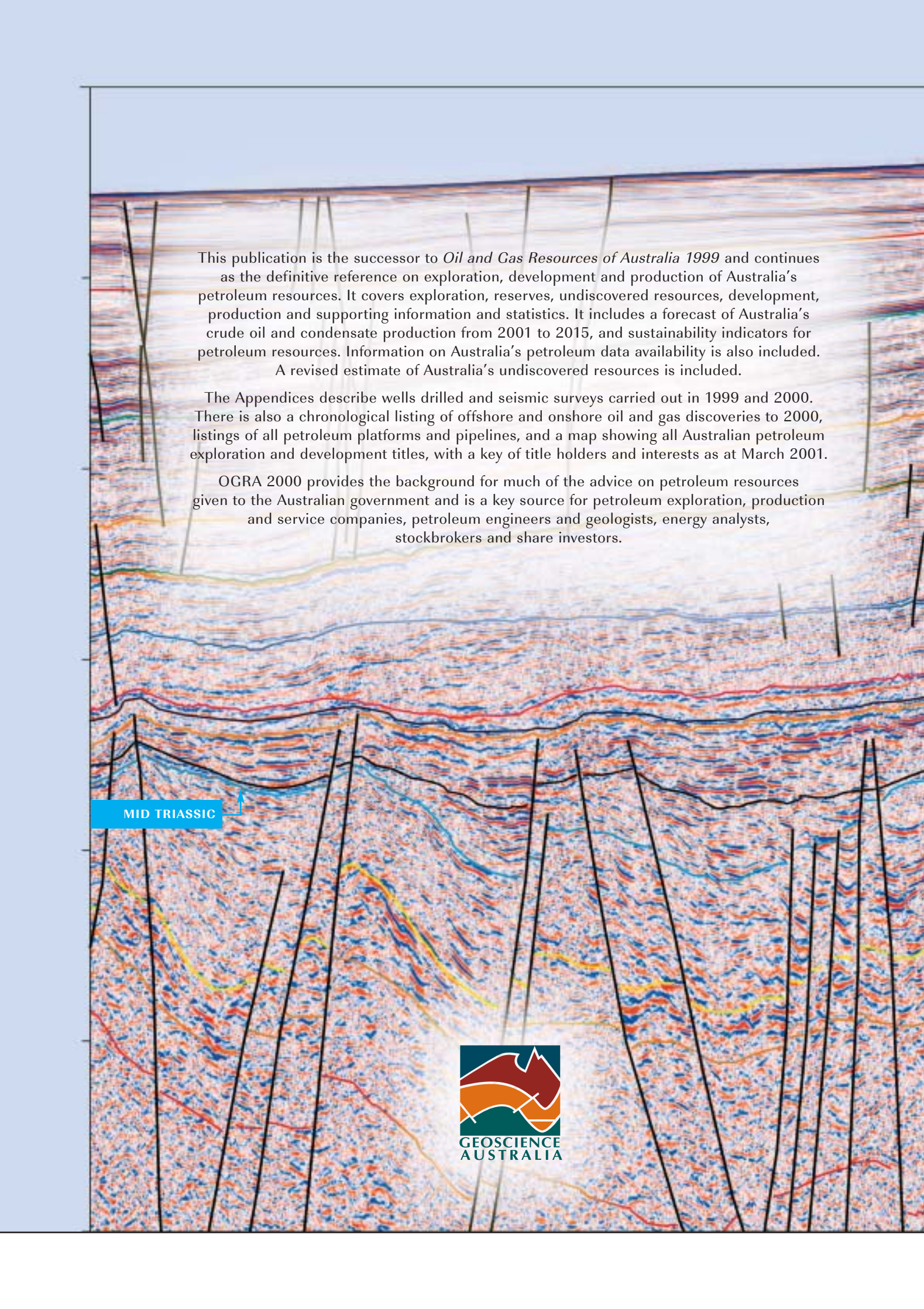
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