Permit EPP 32

Annual Report

Permit Year 1

(13 December 2002 to 12 December 2003)

This report is submitted by Santos Ltd as Operator of Exploration Permit EPP 32, in accordance with the Commonwealth of Australia Petroleum (Submerged Lands) Act 1967.

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1. ADMINISTRATION SUMMARY

1.1 Permit Data

Exploration Permit EPP 32 in the Duntroon Basin was awarded to Santos Ltd on 13 December 2002 for an initial term of 6 years (Figure 1).

The permit consists of 76, 5 minute by 5 minute graticular blocks.

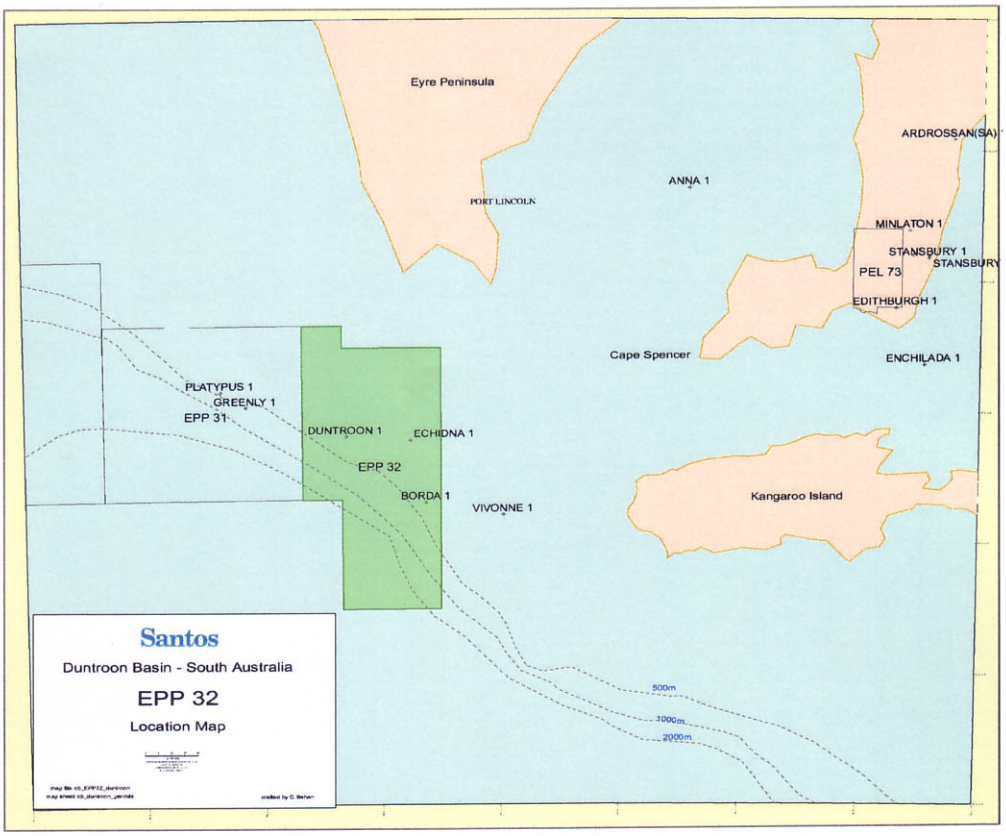


Figure 1. Location of EPP32

1.2 Permittees

Santos Ltd is the sole permittee and operator of the Permit.

1.3 Work Requirements

The work program for the primary commitment (Years 1 to 3) and the secondary contingent term (Years 4 to 6) is set out in the following table:

Year	Work Requirements	Estimated Cost $million	Work to Date
1	G & G studies Mapping of existing seismic data and AVO modelling	0.2	Databases updated. Seismic interpretation. 2D Seismic Program acquired (advanced from Permit Year 2)
2	350 km offset 2D seismic survey	1.6	
3	Detailed mapping & AVO analysis of acquired 2D data	0.4	
4	Commercial & G & G studies	0.4	
5	Commercial & G & G studies	0.4	
6	1 well	9.0	

2. OPERATIONS

2.1 Drilling Operations

No drilling operations occurred during this period.

2.2 Geophysical Operations

556.4 (line) km, or 507.4 (full fold) km of 2D seismic data were acquired in EPP32 by the PGS, Orient Explorer in the period December 5th – 9th. Acquisition on two lines were prematurely halted due to the presence of blue whales in the survey area, however, 92.76% of the approved program were acquired (Enclosure 1). Weather conditions during acquisition were good and no weather standby was encured.

The 2D seismic data were acquired 120 fold using a 2500cuin source array and recorded into a 6000m cable. A scheduled, reduced airgun volume test was also prematurely halted after 1.5 km due to the presence of pilot whales.

The seismic program was acquired without incident/accident.

Aerial surveys were carried out pre, during and post the seismic operations. The initial aerial survey was flown on the 2nd, prior to the commencement of seismic operations and resulted in 21 sightings of blue and fin whales along the edge of the continental shelf. These unexpected observations led to a set of mitigation measures being drawn up by Santos in conjunction with PIRSA, EA and DITR. Aerial surveys carried out on the 4th, 5th, 6th, 7th, 8th and 13th December resulted in between 14 (14 individuals)and 39 (51 individuals) blue whale sightings being made. In addition, pilot, minkie and sperm whales were observed. Extensive analysis of all the observations will be carried out during January and a report will be finalised during February 2004.

Approximately 33km of seismic traverse was curtailed as a result of shutdowns due to whales. In total, six shutdowns were implemented, 4 due to blue whales and 2 due to pilot whales.

3. GEOLOGY AND GEOPHYSICAL STUDIES

The six wells in the immediate vacinity of EPP32 have been re-evaluated. Initially the petrophysics for these wells were re-run, providing a consistent set of edited and evaluated logs. Formation tops were confirmed using the existing biostratigraphy and the wells were incorporated into a sequence stratigraphic framework of the Southern Margin.

Analysis of potential Cretaceous source rock intervals indicate that these intervals have poor source rock qualities and are most likely gas prone. Analysis of the K70/K75 interval in Greenly 1 indicate that no viable source rock is present, whereas analysis of Echidna 1 indicates the presence of a potential source in the J40 Berriasian interval. Source maturity modelling and overpressure anomalies indicate this to be a viable source, however, charge has been identified as the critical risk in the area of EPP32.

To address this critical risk Santos has begun to gather existing remote sensing data across the area and will integrate this with it's structural interpretations and if possible, AVO analysis.

Interpretation of the existing Open File 2D seismic database constituted a large part of the Geological and Geophysical studies. Structural maps generated from this interprertation were used to identify prospects and leads, which were in turn targeted by the Permit Year 2 long offset Seismic Acquisition Program.

The Open File 2D seismic database was initially analysed and corrected for misties in both phase and time, producing a fairly consistent seismic character across the dataset. Well to seismic ties were successfully made using synthetics generated within GeoFrame.

Interpretability of the dataset was comprimised by poor reflector continuity within the Cretaceous interval and poor imaging below the present day shelf break and shallow Tertiary features.

Time structural interpretation and mapping has been completed for the Water Bottom, Base Wilson Bluff Lst (T20), Lr Potoroo Fm (K90), Base Wigunda Fm (K75) and Base Upper Borda (K55). The interpretation of the Base Tertiary Unc (T05), Base Lr Borda Fm (K25) and Acoustic Basement are being finalised (87% complete).

To date, five leads have been identified on the Upper Cretaceous K90 and K75 maps. These have been evaluated and entered into Santos's prospects and leads database. The critical risk for all these leads is charge. This risk has been addressed by programming new long offset seismic acquisition over all the leads (Enclosure 1). Basic AVO modelling indicates that the large range of offsets obtained using a 6000m cable will allow AVO variations to be recorded and subsequently analysed to address this risk.

An accelerated (into Permit Year 1) 2D seismic acquisition and reprocessing project consisting of 390km of 2D acquisition and 2,531 km of reprocessing was proposed by Santos Ltd. It was agreed that this project would contribute towards the Permit Year 2 obligation for EPP32. Subsequently, due to a change in seismic contractor and resultant decrease in mob/demob costs the scope of this project was increased to 545km of 2D acquisition and 2,531 km of reprocessing to ensure that the Permit Year 2 obligation of $1,600K was met.

4. ESTIMATED EXPENDITURE

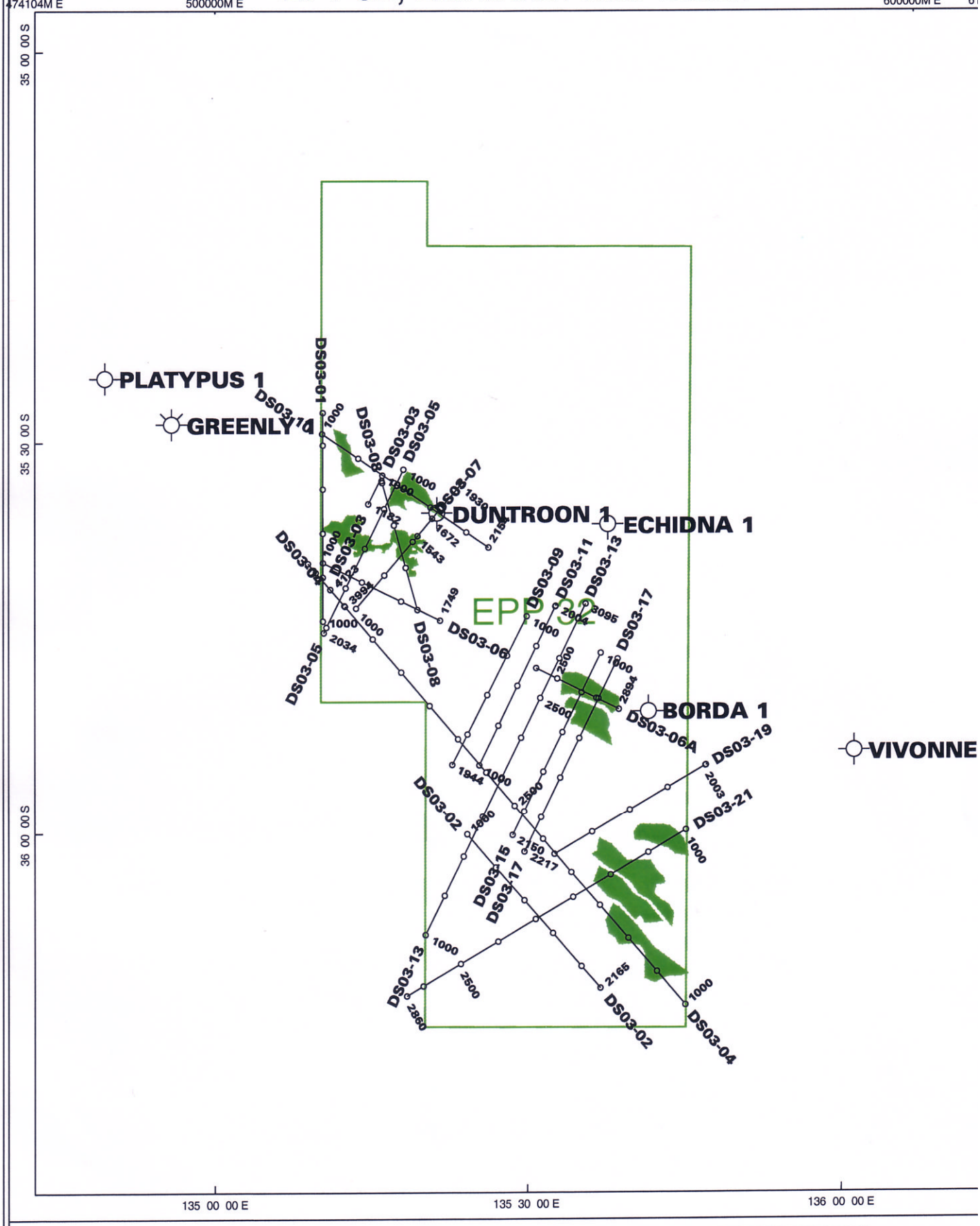
Estimated cumulative expenditure for Permit Year 1 is A$1,258,281. The estimate for the fourth quarter (calendar months October 2003 to December 2003 inclusive) is A$1,080,654

	Expenditure Quarter 4 A$	Cumulative Expenditure A$
G & G studies	142,128	318,663
2D Seismic Program	908,909	910,000
2D Seismic Reprocessing	29,617	29,617
Total Expenditure	**1,080,654**	**1,258,281**

5. APPLICATIONS, REFERALS AND REPORTS SUBMITTED DURING THE PERIOD

Date Submitted	Description
12 March 2003	1st Quarterly Report, Permit Year 1
12 June 2003	2nd Quarterly Report, Permit Year 1
18 September 2003	2003 EPP32 2D Seismic Survey: EA EPBC Referral
13 October 2003	3rd Quarterly Report, Permit Year 1
30 October 2003	2003 EPP32 2D Seismic Survey: PIRSA Application
17 November 2003	2003 EPP32 2D Seismic Survey: PIRSA Revised Application

EPP32, Duntroon Sub Basin



GDA

Santos

2003 SOUTHERN MARGINS
2D MARINE SEISMIC SURVEY
(DS03 MSS)
SOURCE LINES

K75/K90 LEADS

Permit EPP 32

Annual Report

Permit Year 2

(13 December 2003 to 12 December 2004)

This report is submitted by Santos Ltd as Operator of Exploration Permit EPP 32, in accordance with the Commonwealth of Australia Petroleum (Submerged Lands) Act 1967.

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1. ADMINISTRATION SUMMARY

1.1 Permit Data

Exploration Permit EPP 32 in the Duntroon Basin was awarded to Santos Ltd on 13 December 2002 for an initial term of 6 years (Figure 1).

The permit consists of 76, 5 minute by 5 minute graticular blocks.

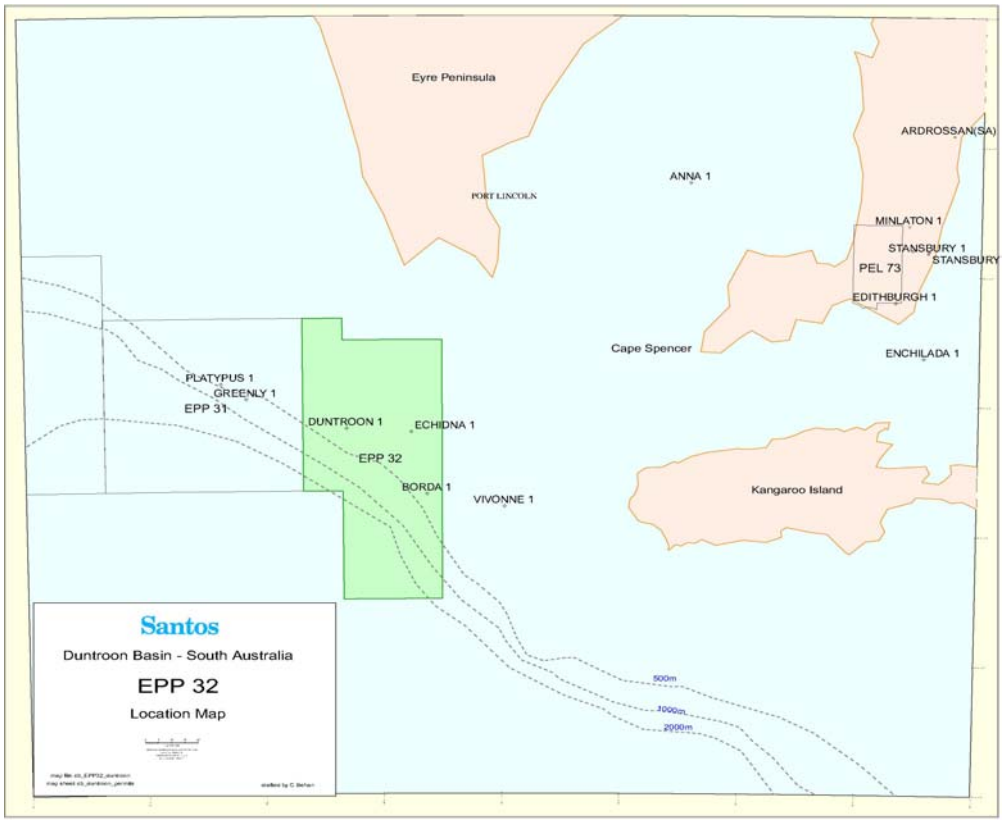

Figure 1. Location of EPP32

1.2 Permittees

Santos Ltd is the sole permittee and operator of the Permit.

1.3 Work Requirements

The work program for the primary commitment (Years 1 to 3) and the secondary contingent term (Years 4 to 6) is set out in the following table:

Year	Work Requirements	Estimated Cost $million	Work to Date
1	G & G studies Mapping of existing seismic data and AVO modelling	0.2	Databases updated. Seismic interpretation. 2D Seismic Program acquired (advanced from Permit Year 2)
2	350 km offset 2D seismic survey	1.6	Seismic acquired and processed. Additional 2D repro completed. New and repro 2D Seismic interpretation.
3	Detailed mapping & AVO analysis of acquired 2D data	0.4	
4	Commercial & G & G studies	0.4	
5	Commercial & G & G studies	0.4	
6	1 well	9.0	

2. OPERATIONS

2.1 Drilling Operations

No drilling operations occurred during this period.

2.2 Geophysical Operations

Production processing of the DS03 2D MSS (556.4 km), acquired in December 2003, and reprocessing of the 2,531km of older vintage 2D seismic was completed. The quality of the lines after reprocessing improved, although most remain only moderate quality. The complex geology and the presence of shelf edge and canyons in this region add to the difficulty of recording good quality seismic data.

3. GEOLOGY AND GEOPHYSICAL STUDIES

Time structural interpretation and mapping has concentrated on the Base Tertiary Unconformity (T05) and the deeper Lower Cretaceous horizons (K40 and K25). Time structural interpretation and mapping of the newly acquired seismic data and reprocessed seismic concentrated on the K75 basal Wigunda Fm and K90 Campanian events. Faults were mapped in more detail with the closer spaced, improved seismic data. The prospects and leads database was updated to encompass findings from the new seismic data. No new prospects were added.

An investigation of hydrocarbon seepage and related issues in the Duntroon Basin was undertaken and was aimed at integrating the results of existing remote sensing data with recent structural

interpretations. The study yielded results suggestive of the Duntroon being a principally gas prone basin. These results were backed up by detailed seismic mapping of gas plumes along the basin margins.

Observations of cetacean activity in the Bight taken during the aerial surveys flown pre, during and post the seismic operations in December were analysed. A literature review and a review of international legislation and mitigation practices occurred, and looked into the effects of hydrocarbon exploration and development activities on the marine environment, in particular, the effects of seismic activities on cetaceans, crustaceans and other marine life.

Santos' late 2003 Passive Acoustic Monitoring (PAM) project in the Southern Margins was designed to analyse drilling noise, measure seismic signal decay with distance and direction, record noise from passing vessels, detect the arrival and distribution of cetaceans (especially blue whales) and compare seismic signals with near-shore wave sounds close to rocky and sandy coasts. These measurements will assist in estimating the sound levels received by cetaceans detected in the EPP32 area and preliminary results from the analysis being carried out by Curtin University provide valuable insights into the reasons why blue whales appear tolerant to seismic sound waves at significantly shorter distances than previously thought i.e. down to approximately 3 km, before it became necessary to shut down operations under EA guidelines.

4. ESTIMATED EXPENDITURE

The estimated expenditure for the fourth quarter of Permit Year 2 (calendar months October 2004 to December 2004 inclusive) is A$ 56,265. The permit year 2 total (January 2004 – December 2004) is A$496,139.

	Expenditure 4th Quarter A$	Cumulative Expenditure Yr 2 A$
G & G studies	44,877	193,213
2D Seismic Program	11,388	105,698
2D Seismic Reprocessing	0	188,591
Environmental Research	0	8,637
Total Expenditure	**56,265**	**496,139**

5. APPLICATIONS, REFERALS AND REPORTS SUBMITTED DURING THE PERIOD

Date Submitted	Description
12 March 2003	1st Quarterly Report, Permit Year 1
12 June 2003	2nd Quarterly Report, Permit Year 1
18 September 2003	2003 EPP32 2D Seismic Survey: EA EPBC Referral
13 October 2003	3rd Quarterly Report, Permit Year 1
30 October 2003	2003 EPP32 2D Seismic Survey: PIRSA Application
17 November 2003	2003 EPP32 2D Seismic Survey: PIRSA Revised Application
13 January 2004	Annual Report Permit Year 1
13 April 2004	1st Quarterly Report, Permit Year 2
14 July 2004	2nd Quarterly Report, Permit Year 2
15 October	3rd Quarterly Report, Permit Year 2

Permit EPP 32

Annual Report

Permit Year 3

(13 December 2004 to 12 December 2005)

This report is submitted by Santos Ltd as Operator of Exploration Permit EPP 32, in accordance with the Commonwealth of Australia Petroleum (Submerged Lands) Act 1967.

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1. ADMINISTRATION SUMMARY

1.1 Permit Data

Exploration Permit EPP 32 in the Duntroon Basin was awarded to Santos Ltd on 13 December 2002 for an initial term of 6 years (Figure 1).

The permit consists of 76, 5 minute by 5 minute graticular blocks.

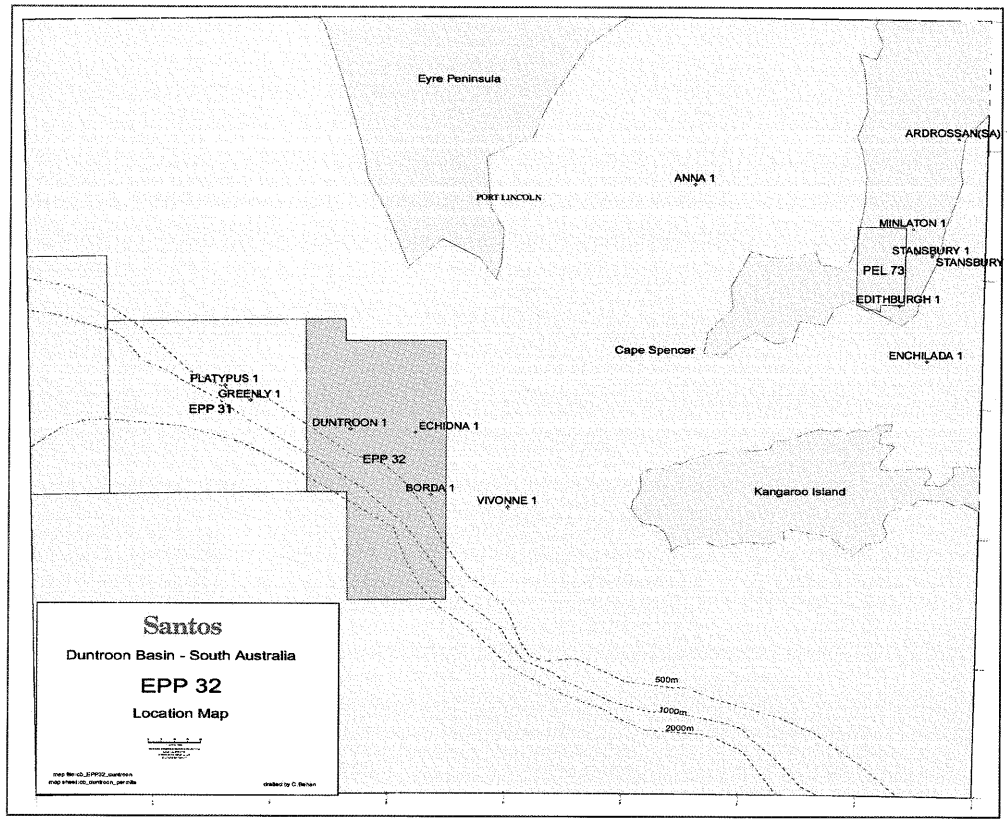

Figure 1. Location of EPP32

1.2 Permittees

Santos Ltd is the sole permittee and operator of the Permit.

1.3 Work Requirements

The work program for the primary commitment (Years 1 to 3) and the secondary contingent term (Years 4 to 6) is set out in the following table:

Year	Work Requirements	Estimated Cost $million	Work to Date
1	G & G studies Mapping of existing seismic data and AVO modelling	0.2	Databases updated. Seismic interpretation. 2D Seismic Program acquired (advanced from Permit Year 2)
2	350 km offset 2D seismic survey	1.6	Seismic acquired and processed. Additional 2D repro completed. New and repro 2D Seismic interpretation.
3	Detailed mapping & AVO analysis of acquired 2D data	0.4	Regional Studies, Prospect & Lead Identification
4	Commercial & G & G studies	0.4	
5	Commercial & G & G studies	0.4	
6	1 well	9.0	

2. OPERATIONS

2.1 Drilling Operations

No drilling operations occurred during this period.

2.2 Geophysical Operations

No Geophysical operations occurred during this period.

3. GEOLOGICAL AND GEOPHYSICAL STUDIES

The scope of the geological and geophysical work undertaken in Permit Year 3 in EPP32 was determined at the start if the year between team members and the Exploration Manager. As a result, further seismic interpretation, mapping and play fairway interpretation was undertaken and TWT maps of key horizons have been created, putting the permit in regional perspective.

A regional study of the 6 previously drilled wells was undertaken in order to better understand the risks associated with the Duntroon Basin. Geographical distribution of source, reservoir and seal elements was analysed, primarily using well data. Results from geochemical analyses, petrophysics, well completion reports and regional structural history were collated and summarised.

IIn addition, prospects and leads were revised and updated. There are 5 prospects and leads in EPP32 and for each the mapping was revised, areas defined and risking completed. These updated leads were presented to a peer review team, and discussed.

A review of the comments from the peer review team was undertaken. The prospectivity of the Duntroon Basin was discussed, and the size and individual risk components of each lead determined. Following this, the prospects and leads database was updated in line with the latest view. Economics on the most prospective lead (Rick) was reviewed using the latest mapping efforts and current economic conditions.

4. ESTIMATED EXPENDITURE

The estimated expenditure for the fourth quarter of Permit Year 3 (13th September 2005 to 12th December 2005 inclusive) is A$ 56,713.

	Expenditure 4th Quarter Yr 3 A$	Cumulative Expenditure Yr 3 A$
Yr 3 G,G&A	56,713	92,044
2D Seismic Acq (2003)	0	9,362
Total Expenditure	**56,713**	**101,406**

* expenditure accrued during current permit year

5. APPLICATIONS, REFERALS AND REPORTS SUBMITTED DURING THE PERIOD

Date Submitted	Description
15 February 2005	Annual Report Permit Year 2
18 April 2005	Permit Year 3 First Quarter Report
22 July 2005	Permit Year 3 Second Quarter Report
24 October 2005	Permit Year 3 Third Quarter Report

Permit EPP 32

Annual Report

Permit Year 4

(13 December 2005 to 12 December 2006)

This report is submitted by Santos Ltd as Operator of Exploration Permit EPP 32, in accordance with the Commonwealth of Australia Petroleum (Submerged Lands) Act 1967.

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1. ADMINISTRATION SUMMARY

1.1 Permit Data

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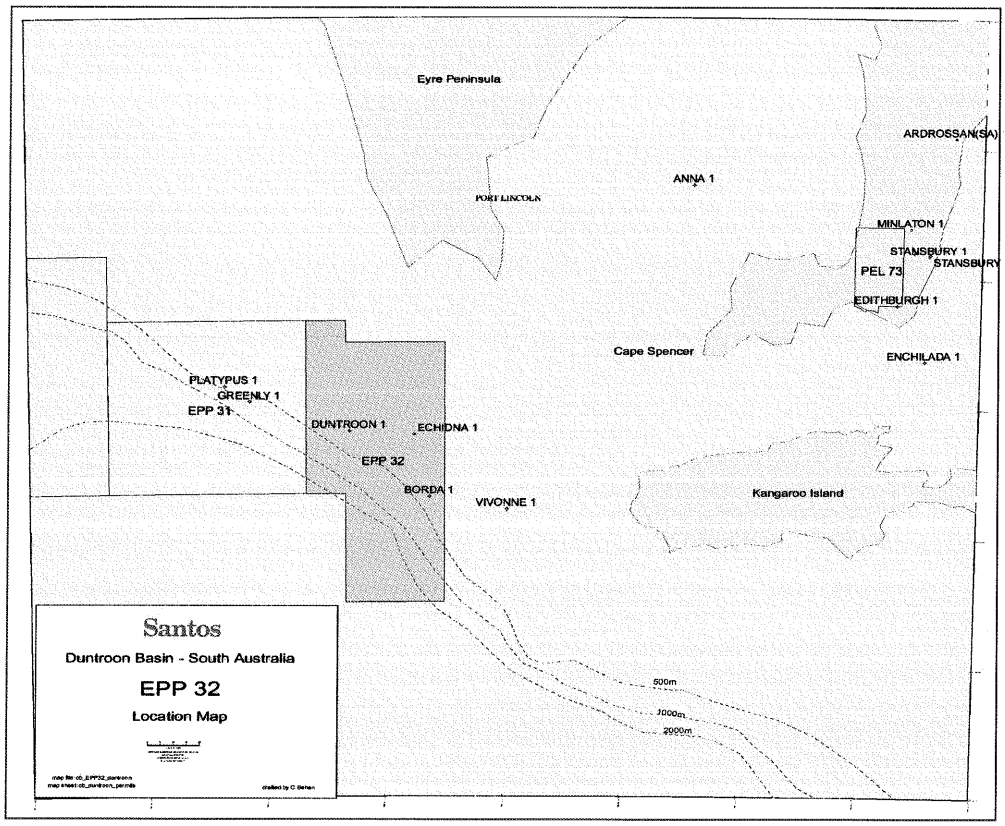

Figure 1. Location of EPP32

1.2 Permittees

Santos Ltd is the sole permittee and operator of the Permit.

1.3 Work Requirements

The work program for the primary commitment (Years 1 to 3) and the secondary contingent term (Years 4 to 6) is set out in the following table:

Year	Work Requirements	Estimated Cost $million	Work to Date
1	G & G studies Mapping of existing seismic data and AVO modelling	0.2	Databases updated. Seismic interpretation. 2D Seismic Program acquired (advanced from Permit Year 2)
2	350 km offset 2D seismic survey	1.6	556.4 km seismic acquired & processed. Additional 2D repro completed. New and repro 2D seismic interpretation.
3	Detailed mapping & AVO analysis of acquired 2D data	0.4	Regional Studies, Prospect & Lead Identification
4	Commercial & G & G studies	0.4	
5	Commercial & G & G studies	0.4	
6	1 well	9.0	

2. OPERATIONS

2.1 Drilling Operations

No drilling operations occurred during this period.

2.2 Geophysical Operations

No Geophysical operations occurred during this period.

3. GEOLOGICAL AND GEOPHYSICAL STUDIES

Regional Mapping reviewed and revised as input for 1D maturity modelling to identify potential kitchen areas and relate to observed gas-seepage indicators (gas chimneys, seafloor anomalies).

Further mapping will focus on identified Leads and Prospects. AVO studies will follow finalised Prospect mapping.

4. ESTIMATED EXPENDITURE

The estimated expenditure for the Fourth Quarter of Permit Year 4 (13th September 2006 to 12th December 2006 inclusive) is A$55,818

	Expenditure 4 Quarter A$	Cumulative Expenditure Yr 4 A$
Yr 4, G&A	55,818	59,622
Yr 3 G,G&A	0	3,613
Total Expenditure	**55,818**	**63,235**

* expenditure accrued during current permit year

5. APPLICATIONS, REFERALS AND REPORTS SUBMITTED DURING THE PERIOD

Date Submitted	Description
2 February 2006	Annual Report Permit Year 3
13 April 2006	Permit Year 4 First Quarter Report
14 July 2006	Permit Year 4 Second Quarter Report
13 October 2006	Permit Year 4 Third Quarter Report

EPP32

DUNTROON BASIN

Relinquishment Report

Prepared for and on behalf of:
Santos Offshore Pty Ltd

December 2007

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Santos

COMMONWEALTH OF AUSTRALIA
Petroleum (Submerged Lands) Act 1967

Application for consent to surrender Petroleum Exploration License No. EPP 32

I/We, **Santos Offshore Pty Ltd (ABN 80 007 550 923)** of **Santos Centre, 60 Flinders Street, Adelaide SA 5000**, the registered holders(s) of Exploration Permit No. **EPP 32**, hereby apply for the consent to surrender the permit license in respect of the blocks described hereunder.

Description of Blocks

The reference hereunder is to the name of the map sheet of the 1:1 000 000 series and to the number of graticular sections shown thereon. Area **EPP 32, Duntroon Basin** Map Sheet **SI 53 and SJ 53** blocks numbered:

Map Sheet SI 53

Block No.	Block No.	Block No.	Block No.	Block No.	Block No
2775	2776	2847	2848	2849	2850
2851	2852	2853	2919	2920	2921
2922	2923	2924	2925	2991	2992
2993	2994	2995	2996	2997	3063
3064	3065	3066	3067	3068	3069
3135	3136	3137	3138	3139	3140
3141	3207	3208	3209	3210	3211
3212	3213	3279	3280	3281	3282
3283	3284	3285	3353	3354	3355
3356	3357	3425	3426	3427	3428
3429					

Map Sheet SJ 53

Block No.	Block No.	Block No.	Block No.	Block No.	Block No
41	42	43	44	45	113
114	115	116	117	185	186
187	188	189			

Assessed to contain **76** Blocks

DATED THIS 6th December 2007

Signed for and behalf of **Santos Offshore Pty Ltd**

Per: .....

Neil Tupper

Exploration Manager, Offshore Southern & Western Australia Exploration

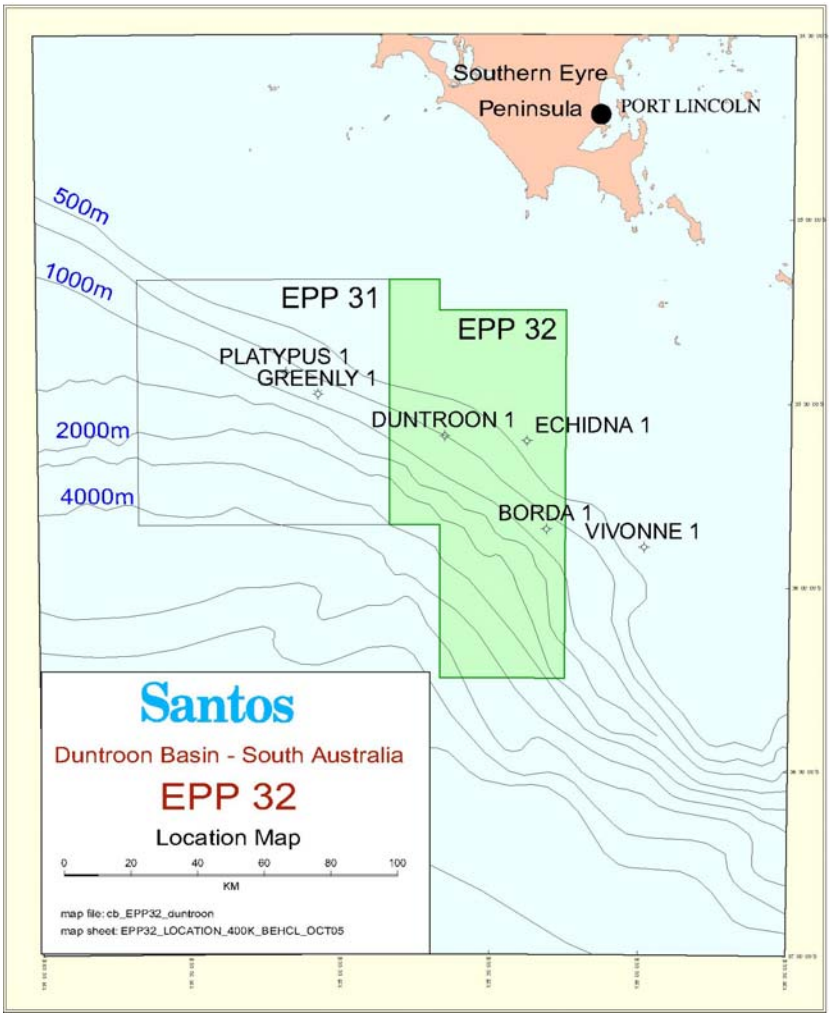
1. INTRODUCTION

Permit EPP32 is in good standing and Santos Ltd is seeking to relinquish it.

Exploration Permit EPP 32 in the Duntroon Basin was awarded to Santos Ltd on 13 December 2002 for an initial term of 6 years. EPP32 is located in the Duntroon Basin, offshore southern Australia (Figure 1). The permit consists of 76 graticular blocks covering a total area of 5300 square km. Water depths vary from 85m in the north and north-east corners of the permit to in excess of 3800m in the southern half of the permit.

One seismic survey, the DS03 Survey, was acquired in 2003 of which 556.4 line km were recorded in EPP32. During 2003, around 2500km of vintage seismic data were reprocessed.

Figure 1: EPP32 Location Map



2. PERMIT DETAILS

2.1 Permit Summary

Permit Holder: Santos Ltd - 100% (Operator)

Date of Entry: 13 December 2002

Area: 5,300 square kilometres (76, 5 minute graticular blocks)

Table 1: EPP32 Work Requirements

Permit Year	Work Requirements	Estimated Cost $million	Work to Date
1	G & G studies Mapping of existing seismic data and AVO modelling	0.2	Databases updated. Seismic interpretation. 2D Seismic Program acquired (advanced from Permit Year 2)
2	350 km offset 2D seismic survey	1.6	Seismic acquired and processed. Additional 2D repro completed. New and repro 2D Seismic interpretation.
3	Detailed mapping & AVO analysis of acquired 2D data	0.4	Regional Studies, Prospect & Lead Identification
4	Commercial & G & G studies	0.4	AVO review, Prospect scale mapping
5	Commercial & G & G studies	0.4	Maturation timing / charge review, Prospect & lead update
6	1 well	9.0	

2.2 Exploration History

The area was gazetted in 2001 as S01-2. Santos was awarded the permit on 13 December 2002, with a commitment to fulfil a 'Good Standing Arrangement' in respect of default with the Joint Authority pursuant to the Administrative Guideline 01/3/R5 'Permit Conditions and Administration'.

Exploration in the Duntroon Basin began in the early 1970's, with two wells drilled in 1972. A third well was drilled in 1986 and three more in 1993. Three of these wells are located in EPP32 (See Table 2).

Table 2: Wells drilled in the permit area EPP32

Well Name	Spud Date	TD mKB	Status
Echidna 1	16 Jan 1972	3832	P&A
Duntroon 1	14 Jan 1986	3510	P&A, oil shows
Borda 1	24 Apr 1993	2800	P&A

Permit EPP32 comprises 76 graticular blocks covering an area of 5300 square km (Figure 1). The permit covers part of the present day continental shelf break. Deep incisions in the form of seafloor canyons are commonplace resulting in irregular seafloor topography. Water depths vary from less than 100m in the north and north-east corners of the permit, to in excess of 3800m in the southern half of the permit.

Three wells have been drilled within EPP32 and three more in adjacent permits or vacant area. The three wells drilled in the Permit area were: Echidna-1 drilled in 1972, Borda-1 drilled in 1993, and Duntroon-1 drilled in 1986. There were no hydrocarbons intersected in any of the 6 wells in the Duntroon basin, although there are shows in some of the wells. Table 3 contains a chronological summary of the 6 wells drilled in the Duntroon Basin.

Table 3: Wells drilled in the Duntroon Basin

Well Name	Spud Date	TD mKB	Status
Echidna 1	16 Jan 1972	3832	P&A
Platypus 1	21 Mar 1972	3887	P&A
Duntroon 1	14 Jan 1986	3510	P&A, oil shows
Borda 1	24 Apr 1993	2800	P&A
Greenly 1	3 Jun 1993	4860	P&A, oil shows
Vivonne 1	19 Aug 1993	3000	P&A

Many vintages of seismic data have been acquired over EPP32 from the various phases of exploration and as part of regional and other surveys. In 2003 the DS03 Survey was acquired consisting of a total of 556.4km in EPP32. During 2003, 2500km of vintage seismic were reprocessed. Table 4 lists the seismic surveys acquired in the EPP32 area.

Table 4: Seismic Surveys acquired in the EPP32 permit area

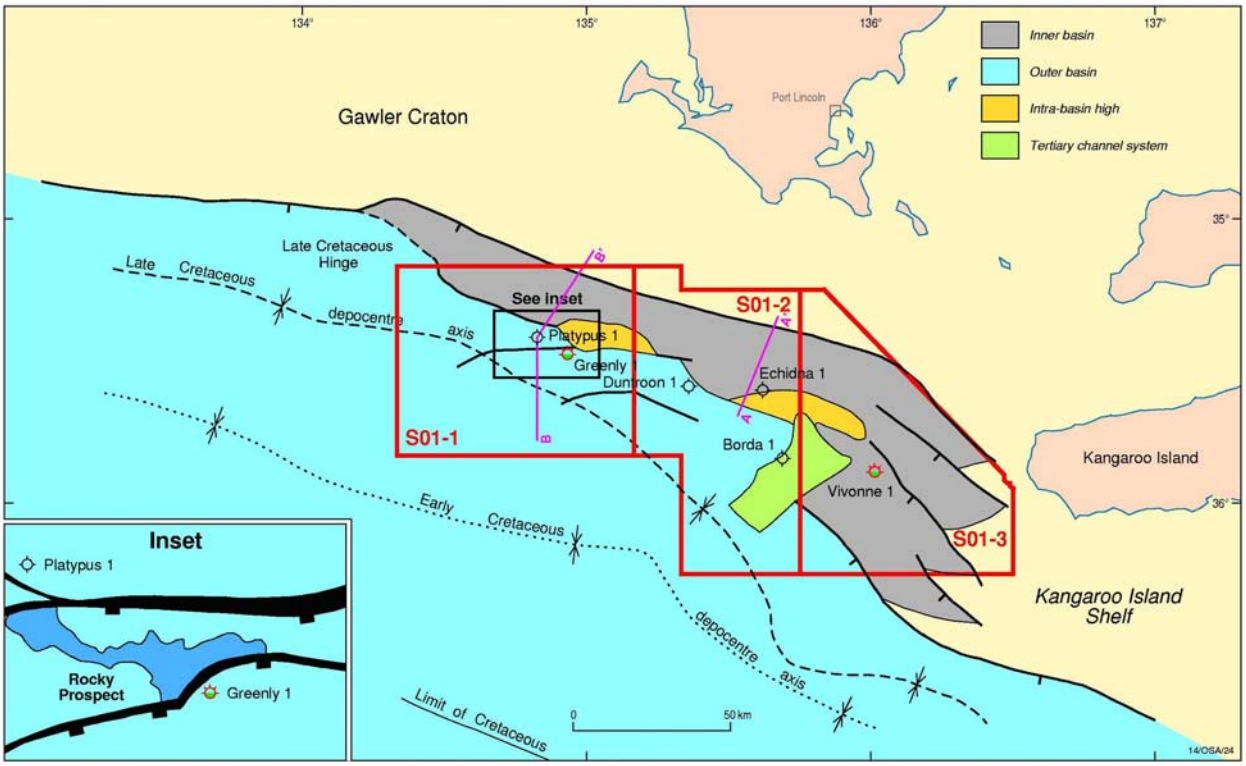
Seismic Survey	Operator	Date
83-D-BHP	BHP	1983
84-D-BHP	BHP	1984
91-DH-BHP	BHP	1991
92-DH-BHP	BHP	1992
95-DH-BHP	BHP	1995
DWGAB-98	Great Australian Bight - AGSO	1998
DS03-MSS	Santos	2003

3. REGIONAL GEOLOGY

3.1 REGIONAL STRUCTURE

The sedimentary basins of the southern margin of Australia resulted from the separation of Antarctica during the Late Jurassic. The Duntroon Basin formed during orthogonal extensional faulting between the Australian and Antarctic continents in the late Cretaceous. The Duntroon basin can be generally divided into three structural elements. They are the Inner Basin, Outer Basin and Intra-Basin High (Figure 2).

Figure 2: Structural Elements Map (from PIRSA)



3.2 STRUCTURAL HISTORY

The Southern Margins of Australia originated with the onset of rifting of the Gondwana continent in the Late Jurassic. Continental stretching resulted in the deposition of a variety of coarse grained clastics through to lacustrine sediments into restricted grabens and half-grabens (The Duntroon Group). This was succeeded by regional passive subsidence and the deposition of widespread terrestrial sediments of the Borda Formation.

Late Cretaceous aged reservoir sandstones, belonging to the Platypus, Wigunda and Potoroo Formations were deposited in marginal marine conditions experienced during this time. During the Cenomanian and continuing though to the early Teritary, the Ceduna Delta in the North West deposited copious quantities of sand through the region, resulting in a sand prone interval in the Duntroon Basin.

Whilst sea-floor spreading initiated in the Great Australia Bight circa 95 Ma, the Antarctic Plate remained attached to Tasmania until the Late Eocene, at which time the continents finally separated and rapid sea-floor spreading and subsidence began. The opening of the Antarctic Tasmania seaway resulted in the development of the circum-Antarctic current and the ensuing period has been dominated by the deposition of cool-water carbonates (bryozoan-dominated) through to the current day.

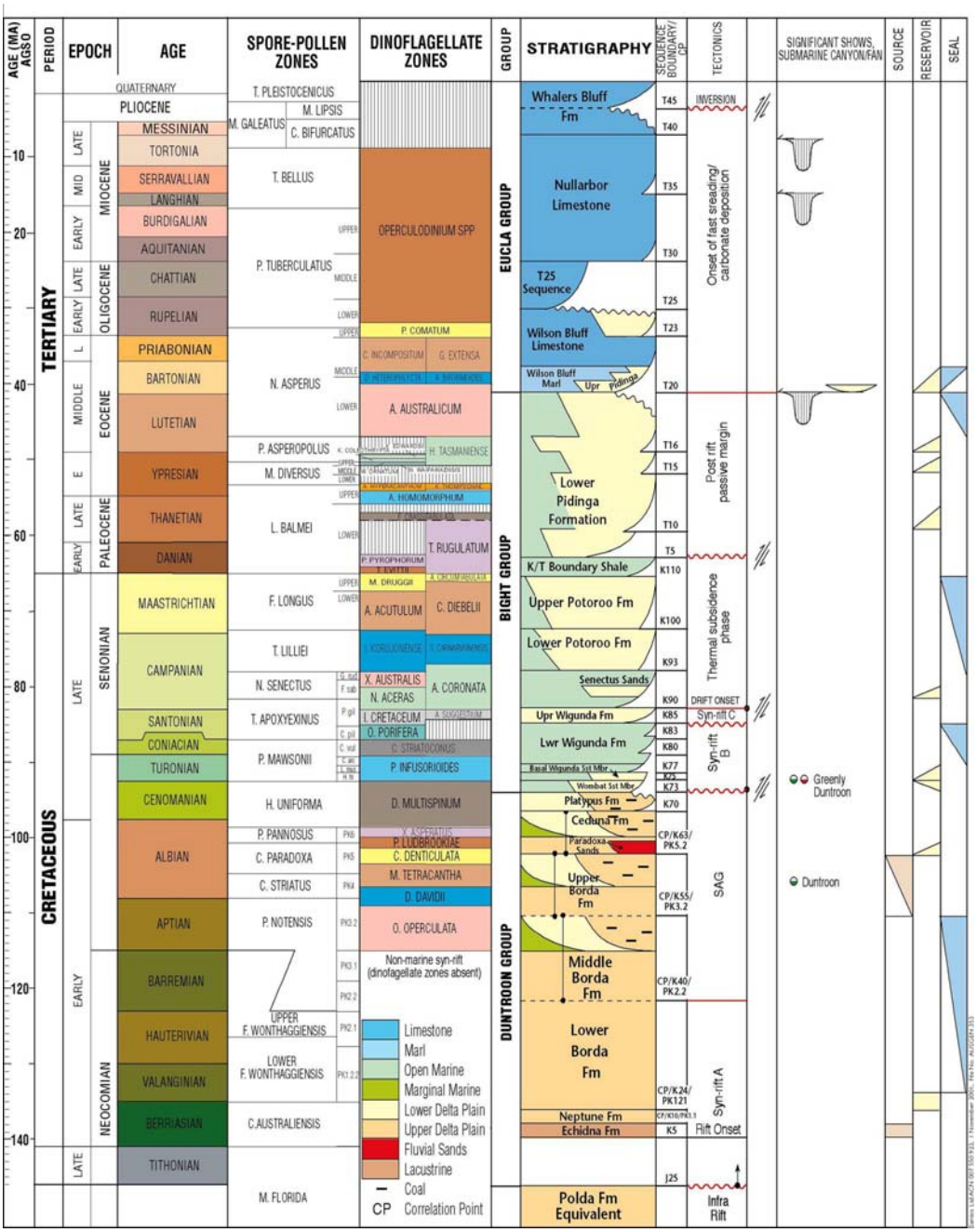
3.3 STRATIGRAPHY

A generalised stratigraphy of the Duntroon Basin is shown in Figure 3. The sedimentary sequence ranges in age from Recent to Late Jurassic.

Initial sedimentation in the basin comprised the terrestrial clastic and volcaniclastic Borda Formation (Duntroon Group). This was deposited within an extensive Early Cretaceous rift system lying along the southern margin of Australia. Rifting ceased coincident with the onset of Southern Ocean spreading.

During the Albian, the marine influence increased and deposition of the Platypus and lower Wigunda units began. The Cenomanian and Turonian periods in the Duntroon basin were influenced by the Ceduna Delta to the West, which provided ample sediment influx during this time. Rifting ceased when Australia separated from Antarctica in the mid Tertiary. At this time there was a dramatic shift in sedimentation to cool water carbonates with the commencement of the Circum-polar current.

Figure 3: Stratigraphy of the Duntroon Basin



3.4 WELL SUMMARIES

A summary of the three wells drilled in the permit area (see Table 2).

Echidna 1

Shell (1972). [TD 3831m, KB 30m, WD 169m]
The first well drilled in the Great Australian Bight and Duntroon Basin, by Shell. Echidna 1 penetrated a highly faulted, over-pressured Early Cretaceous section down too a total depth of 3832 mKB without significant sandstone occurrence. The

well TD'd in non-marine Berriasian sediments (Lower C. *australiensis*) of the Echidna Formation.

Duntroon 1

BP (1986). [TD 3515m, KB 27m, WD 145m]
Duntroon 1 was designed to test Cenomanian sandstones within the terrace area. The primary target reservoir is interpreted to be faulted out at the well location. Minor oil shows were encountered in the well at the Lower Wigunda, and Upper Borda stratigraphic levels.

Borda 1

BHP (1993). [TD 2800m, KB 25m]
Borda 1 was drilled in 1993, to test a presumed Middle Eocene Upper Pidinga Formation palaeogeographic trap sealed by Middle Eocene marls and penetrated water wet sandstones within the Palaeocene Lower Pidinga Formation.

4. GEOLOGICAL STUDIES

An investigation of hydrocarbon seepage and related issues in the Duntroon Basin was undertaken and was aimed at integrating the results of existing remote sensing data with recent structural interpretations. The study yielded results suggestive of the Duntroon being a principally gas prone basin. These results were backed up by detailed seismic mapping of gas plumes along the basin margins.

5. CETACEAN STUDIES

Observations of cetacean activity in the Bight taken during the aerial surveys flown pre, during and post the seismic operations in December 2003 were analysed. A literature review and a review of international legislation and mitigation practices occurred, and looked into the effects of hydrocarbon exploration and development activities on the marine environment, in particular, the effects of seismic activities on cetaceans, crustaceans and other marine life.

Santos' late 2003 Passive Acoustic Monitoring (PAM) project in the Southern Margins was designed to analyse drilling noise, measure seismic signal decay with distance and direction, record noise from passing vessels, detect the arrival and distribution of cetaceans (especially blue whales) and compare seismic signals with near-shore wave sounds close to rocky and sandy coasts. These measurements will assist in estimating the sound levels received by cetaceans detected in the EPP32 area and preliminary results from the analysis being carried out by Curtin University provide valuable insights into the reasons why blue whales appear tolerant to seismic sound waves at significantly shorter distances than previously thought i.e. down to approximately 3 km, before it became necessary to shut down operations under EA guidelines.

6. HYDROCARBON POTENTIAL

6.1 SOURCE

The early Cretaceous aged Borda Formation is the source for the Duntroon Basin. In the Echinda-1 well, a number of samples from the Borda Formation exhibited fluorescence, possibly associated with interstitial oil. The Borda Formation appears to be primarily gas prone. Also noted along the northern and north-eastern margins of the basin are a series of gas plumes and possibly hydrocarbon related diagenetic altered zones on the seafloor (possibly associated with biogenic mounding on the seafloor).

6.2 RESERVOIR

Late Cretaceous sands (the Wigunda, Platypus and Potoroo formations) are the primary reservoir targets in the Duntroon Basin. Secondary reservoir targets in the Tertiary consist of the Lower Pidinga Formation.

6.3 POROSITY

The Late Cretaceous sandstones exhibit good reservoir quality with average log porosity in the range 15 to 30% and moderate permeabilities. The tertiary aged sandstones appear to be good quality reservoirs that are relatively contiguous across the permit.

6.4 SEAL

The Late Cretaceous aged sandstones are interbedded with shales. These shales are non-continuous across the basin. At best, these shales are considered average-quality seals. The tertiary marls also provide little evidence of good seal potential. Petrophysical evaluation suggests the marls have relatively high porosity, and poor, but significant permeability. The marls are considered to be a poor quality seal.

6.5 HYDROCARBON SHOWS

Greenly-1 had the most convincing shows of any of the wells drilled to date. The Lower Wigunda sandstone (Santonian aged) had three zones of shows. The upper zone (3516-3695 mMDRT) consisted of direct moderate bright to bright yellowish-green pin point fluorescence and slow streaming dull to moderately bright yellowish-white cut fluorescence, classified as a poor show. The middle zone (4110-4161 mMDRT) consisted of 5-10% direct moderately strong yellowish-white fluorescence, slow streaming bright yellowish –white cut fluorescence from sandstone aggregates, classified as a poor to moderate show. The lower zone (4452-4542 mMDRT) consisted of 20% (100% in sandstone aggregates) direct dull yellow to yellowish-white patchy fluorescence, slow dull to moderate streaming yellow white fluorescence, classified as a fair show.

7. GEOPHYSICAL INTERPRETATION

The main focus of work has been on the northern portion of EPP32, on the continental shelf, where seismic data quality is best, and the water depths are relatively shallow. The firm commitment for the first 3 years of the permit term was the acquisition of 350km of 2D seismic data. However, a total of 556km of 2D seismic was acquired, as well as 2500km of 2D reprocessing, exceeding the minimum work commitments. Most of the seismic was acquired over previously defined prospects.

Below is a brief chronology of the work carried out in EPP32:

- During late 2003 556.4 (line) km of 2D seismic data were acquired and processed.
- In addition, 2500km of vintage 2D seismic data was reprocessed.
- Aerial surveys were carried out pre, during and post the seismic operations, and resulted in 21 sightings of blue and fin whales along the edge of the continental shelf.
- Approximately 33km of seismic traverse was curtailed as a result of shutdowns due to whales.
- Evaluation of the 6 wells in the immediate vicinity of EPP32 including petrophysics and biostratigraphy was undertaken.
- Analysis of potential Cretaceous source rock intervals indicate poor source rock qualities and are most likely gas prone.
- 5 leads were identified at Upper Cretaceous levels (K90 and K75).
- Charge was considered to be the critical risk for all leads.
- The newly acquired and reprocessed seismic was interpreted and incorporated into the previous maps.
- An investigation of hydrocarbon seepage and related issues, and the results indicate the Duntroon is a principally gas prone basin.
- Detailed mapping of gas plumes along the basin margins supports these results.
- Maturation timing and possible migration paths were investigated, with results indicating likelihood of early charge, increasing risk of hydrocarbon preservation.
- Prospects and Leads were revised, updated and refined using the latest interpretations.
- These leads were presented to a peer review team and discussed.
- None of the leads was determined prospective enough to encourage more work and expenditure.

7.1 SEISMIC HORIZONS

The main reservoir horizons, the K90 and K75 were interpreted across the permit. In addition, deeper packages such as the K40 Intra-Borda horizon, and shallower packages such as the T20 (onset of cool-water carbonates) were interpreted.

7.2 DEPTH MAPPING

The majority of leads were located on the shelf, or under the shelf break. For the former, depth conversion was a relatively simple process, but the latter was not so simple. However, the depth conversion that was undertaken used a time depth relationship from the 6 wells extrapolated across the basin.

Enclosures 1, 2, 3, 4 and 5 summarise the depth mapping at WB, T20, K90, K75 and K40 levels.

8. SUMMARY OF PROSPECTIVITY

Several leads have been identified in EPP32. All leads target either K90 (Wigunda Formation) or K75 (Basal Wigunda Formation) plays. The key leads are summarised in Table 5.

Table 5: Leads in the Duntroon Basin

Well Name	Target Level	Mean OOIP (MMBO)	Mean OGIP (BCF)	Key Risk
Rick	K90	100	260	Closure/Source
Borda West	K90	45	120	Source
SE Nose	K90	387	1000	Source
Duntroon West	K75	140	380	Source/Closure
Duntroon	K75	84	230	Source/Closure

8.1 K90 LEADS

There are 3 leads at K90 level. They comprise Rick, Borda West and SE Nose Leads. Rick is an anticlinal fault bounded lead which lies directly under the shelf break. This increases the risk for structural interpretation, due to complex ray paths and rapid velocity changes. Borda West is a small lead located in the east of the permit, and the size of this lead decreased with the latest seismic interpretation. SE Nose is a large lead in the south of the permit, in a location where the shelf edge does not drop away as rapidly; however the lead has uncertain closure.

Enclosure 3 summarises the depth mapping and lead locations at K90 level.

8.2 K75 LEADS

There are two leads at K75 level. They comprise Duntroon and Duntroon West Leads. Duntroon is a lead on the assumption that the Duntroon-1 well missed the fault block it was to intersect. It is a small fault crotch closure which is not well defined. Duntroon west is an anticlinal fault trap which is most likely too small to be economic.

Enclosure 4 summarises the depth mapping and lead locations at K75 level.

8.3 CONCLUSIONS

The prospectivity within EPP32 for economic hydrocarbon discoveries is limited. Due to source rock characteristics and gas plumes observed on seismic, the permit is not considered prospective as an oil play. The leads are either less than the economic threshold, and/or extremely high risk. The gas-in-place and key risks associated with each lead is summarised in Table 5.

9. DATA SUBMITTED TO GOVERNMENT

Date Submitted	Description
12 March 2003	1st Quarterly Report, Permit Year 1
12 June 2003	2nd Quarterly Report, Permit Year 1
18 September 2003	2003 EPP32 2D Seismic Survey: EA EPBC Referral
13 October 2003	3rd Quarterly Report, Permit Year 1
30 October 2003	2003 EPP32 2D Seismic Survey: PIRSA Application
17 November 2003	2003 EPP32 2D Seismic Survey: PIRSA Revised Application
13 January 2004	Annual Report Permit Year 1
13 April 2004	1st Quarterly Report, Permit Year 2
14 July 2004	2nd Quarterly Report, Permit Year 2
15 October 2004	3rd Quarterly Report, Permit Year 2
15 February 2005	Annual Report, Permit Year 2
18 April 2005	1st Quarterly Report, Permit Year 3
22 July 2005	2nd Quarterly Report, Permit Year 3
24 October 2005	3rd Quarterly Report, Permit Year 3
2 February 2006	Annual Report, Permit Year 3
13 April 2006	1st Quarterly Report, Permit Year 4
14 July 2006	2nd Quarterly Report, Permit Year 4
13 October 2006	3rd Quarterly Report, Permit Year 4
18 January 2007	Annual Report, Permit Year 4
23 April 2007	1st Quarterly Report, Permit Year 5
17 July 2007	2nd Quarterly Report, Permit Year 5
Not Submitted	3rd Quarterly Report, Permit Year 5
Not Submitted	Annual Report, Permit Year 5

Duntroon Basin EPP32 Permit Depth Map WB (Bathymetry)

PLATYPUS 1

GREENLY 1

DUNTROON 1

ECHIDNA 1

BORDA 1

VIVONNE 1

Bathymetry (m)

100
500
1000
1500
2000
2500
3000
3500
3800

1:180000

0 5 10 15 20

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
G.R.S. 1980 SPHEROID
CENTRAL MERIDIAN 135 00 00 E
Metadata datum: "GDA94"

N

TRUE NORTH IS SHOWN
FOR THE CENTRE OF THE MAP

Santos
South Australia Business Unit

Southern Australia
Duntroon Sub Basin
WB
Bathymetry
2007

Map view: EPP32 ZONE 53 1:180000

1

Duntroon Basin EPP32 Permit Depth Map T20 Level

PLATYPUS 1

GREENLY 1

DUNTROON 1

ECHIDNA 1

BORDA 1

VIVONNE 1

Depth (m)

100
500
1000
1500
2000
2500
3000
3500
4000

1:180000

0 5 10 15 20

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
G.R.S. 1980 SPHEROID
CENTRAL MERIDIAN 135 00 00 E
Mapsheet datum: "GDA94"

N

TRUE NORTH IS SHOWN
FOR THE CENTRE OF THE MAP

Santos
South Australia Business Unit

Southern Australia
Duntroon Sub Basin
T20 Depth

2007

Mapsheet: EPP32 ZONE 53 1:180000

2

Duntroon Basin
EPP32 Permit
Depth Map
K40 Level (Intra Borda)

PLATYPUS 1

GREENLY 1

DUNTROON 1

ECHIDNA 1

BORDA 1

VIVONNE 1

Depth (m)

400
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000

1:180000

0 5 10 15 20

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
G.R.S. 1980 SPHEROID
CENTRAL MERIDIAN 135° 00' 00" E
Mapsheet datum: "GDA94"

N

TRUE NORTH IS SHOWN
FOR THE CENTRE OF THE MAP

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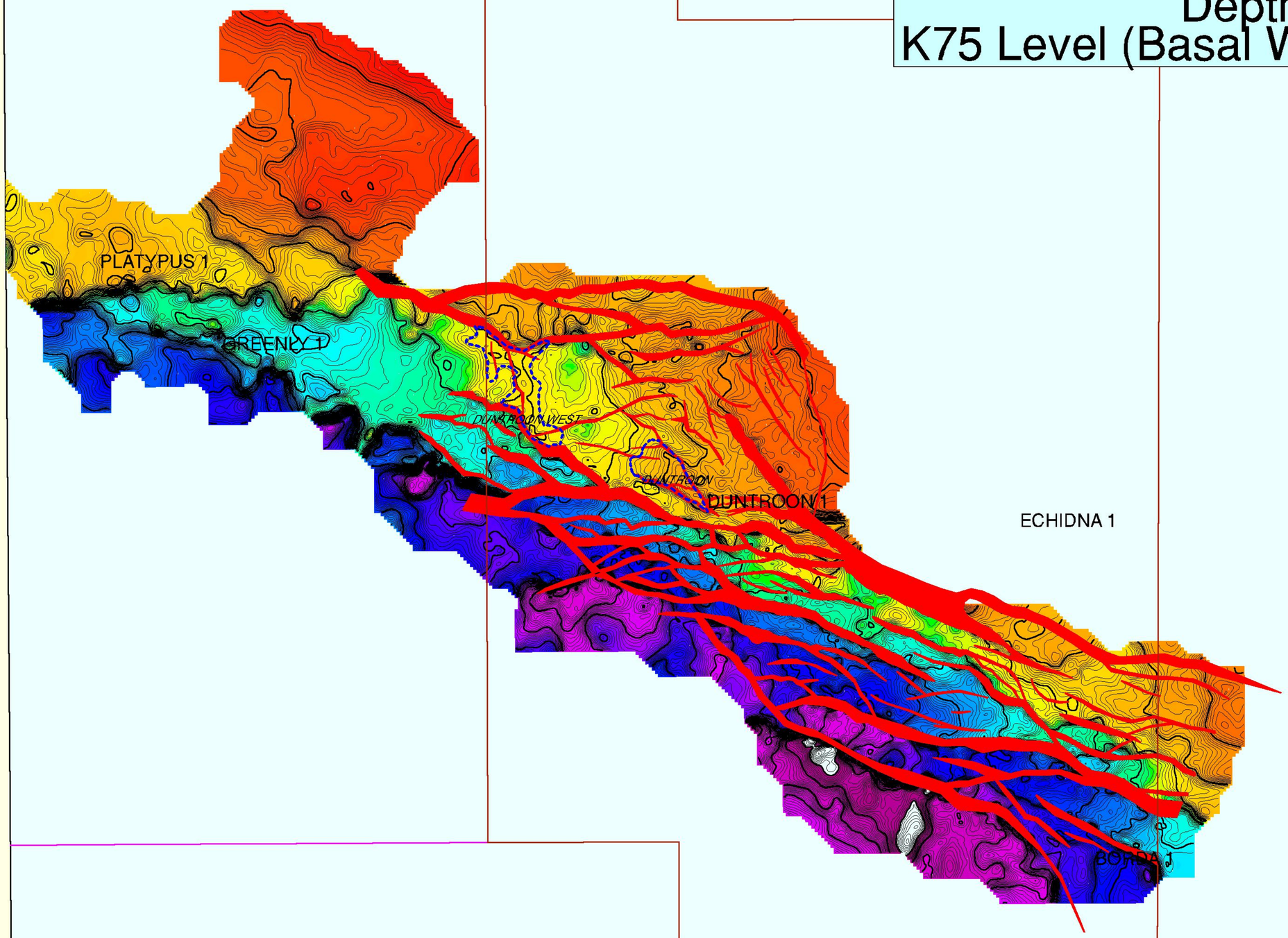
Southern Australia
Duntroon Sub Basin
K40 Depth

2007

Mapsheet: EPP32 ZONE 53 1:180000

3

Duntroon Basin
EPP32 Permit
Depth Map
K75 Level (Basal Wigunda Formation)



Depth (m)

634
1000
2000
3000
4000
5000
6000
7000
8000
8500

1:180000

0 5 10 15 20

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
G.R.S. 1980 SPHEROID
CENTRAL MERIDIAN 135 00 00 E
Map based datum: "GDA94"

N

TRUE NORTH IS SHOWN
FOR THE CENTRE OF THE MAP

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Southern Australia
Duntroon Sub Basin
K75 Depth
Prospects and Leads
2007

Map view: EPP32 ZONE 53 1:180000

4

Duntroon Basin
EPP32 Permit
Depth Map
K90 Level (Wigunda Formation)

PLATYPUS 1

GREENLY 1

DUNTROON 1

ECHIDNA 1

BORDA 1

BORDA WEST

SENOSE

VIVONNE 1

Depth (m)

891
1500
2000
2500
3000
3500
4000
4500
5000
5505

1:180000

0 5 10 15 20

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
G.R.S. 1980 SPHEROID
CENTRAL MERIDIAN 135 00 00 E
Mapsheet datum: "GDA94"

N

TRUE NORTH IS SHOWN
FOR THE CENTRE OF THE MAP

Santos
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Southern Australia
Duntroon Sub Basin
K90 Depth
Prospects and Leads
2007

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