

ANNUAL REPORT

YEAR 5

PERMIT T/14P

AMOCO AUSTRALIA PETROLEUM COMPANY

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1. INTRODUCTION

This report relates to exploratory work carried out by Amoco Australia Petroleum Company, as operator for the consortium holding title to permit T/14P, during the period January 9, 1984 to January 8, 1985.

Prior to March 23, 1984, the permit was operated by Cue Minerals N.L. on behalf of a consortium of companies. Amoco Australia Petroleum Company (Amoco) and South Australian Oil and Gas Corporation (SAOG) farmed in to permit T/14P on March 23, 1984, with a commitment to drill one well during the remainder of the term of the permit. Amoco acquired a 50 percent interest and took over the operatorship. SAOG acquired a 25 percent interest. The original permit holders retained 25 percent.

On April 10, 1984, a Variation of Conditions was granted. Condition 1 was deleted and replaced by the condition that the permittees expend A\$5,385,000 to include the drilling of at least one well during the term of the permit. The original Condition 1 had specified annual expenditure obligations, and did not require that a well must be drilled. However, the Variation of Conditions did not change the total expenditure required over the term of the permit.

2. PREVIOUS REPORTS

The following reports have been submitted by Amoco Australia Petroleum Company during year 5:

First quarterly report, year 5, T/14P; dated October 10, 1984.

Second quarterly report, year 5, T/14P; dated October 12, 1984.

Third quarterly report, year 5, T/14P; dated November 1, 1984.

The following report was submitted by Cue Minerals, N.L.:

Year 4 annual report, T/14P; dated February 7, 1984.

### 3. FINANCIAL EXPENDITURES

Yearly expenditure obligations and actual expenditures for permit T/14P are as follows:

<u>Year</u>	<u>Expenditure Obligation</u>	<u>Actual Expenditure</u>
1	Total obligation	A\$ 76,621
2	of A\$ 5,385,000	A\$413,478
3	over the term	A\$178,039
4	of the permit	A\$ 64,176
5		A\$527,928
6		

Actual expenditures for years 1, 2, 3 and 4 are quoted from the annual report for year 4. An expenditure of A\$ 4,124,758 is required in year 6 in order to meet the obligation of A\$ 5,385,000 given in the Variation of Conditions dated April 10, 1984.

The breakdown of expenditures for year 5 is as follows:

1. January 9, 1984 to March 22, 1984

During this period expenses were incurred by the previous operator, Cue Minerals N.L.

Lease rental	A\$ 630
Petrecon consultancy fees	A\$14,274
Administrative costs	A\$ 9,282
GSI consultancy fees	A\$ 5,561
Dan Kirisits-consultancy fees	<u>A\$ 430</u>
TOTAL	A\$30,177

2. March 23, 1984 to January 8, 1985

Amoco Australia Petroleum Company operated the permit during this period and incurred the following expenses:

Warehouse Stock	A\$200,248
Drilling Equipment	A\$ 3,058
Administrative Costs	A\$ 22,505
Seismic Acquisition	A\$271,381
Geological Studies	<u>A\$ 559</u>
TOTAL	A\$497,751

#### 4. GEOLOGICAL WORK

Cue Minerals N.L. directed most of their efforts to farming out the permit area prior to relinquishing the operatorship on March 23, 1984. They continued their evaluation of the Yolla prospect, southeast of the Bass 1 well.

Prior to farming in Amoco conducted an evaluation of the Bass basin which concluded that the Tertiary section in the basin is immature for oil generation. The underlying Cretaceous section should contain good potential source rocks and will be at a peak-oil to past-peak oil stage of organic maturity. Amoco also anticipates that there will be structures at the Cretaceous level related to the initial rifting stage of basin development which are not manifested in the Tertiary section.

Since farming in, Amoco's geological work has concentrated on the following:

##### 1. Data Acquisition

Well logs, completion reports, analytical data and other well data have been obtained from previous operators. SAOG were instrumental in obtaining these data on behalf of Amoco.

## 2. Log Digitizing

Amoco has digitized well logs as they became available, and entered them into a computer system. These digital data will be used for computer log analysis, geological mapping, synthetic seismograms, and geological cross-sections.

Many of the prints of well logs that were originally available were of very poor quality and therefore unsuitable for digitizing. SAOG has been working on Amoco's behalf to obtain legible, reproducible copies of all the well logs.

## 3. Organic Geochemistry

Using a proprietary, computerized, mathematical model Amoco has simulated the burial and organic maturation history of the Bass 1, Bass 2, Dondu 1, Nangkero 1, and Yurongi 1 wells. The results of the simulations have been compared with vitrinite reflectance data obtained from published literature and from well reports.

In general, the data agree with the predictions. Conventional core from Bass 1 and Nangkero 1 and sidewall core samples from Dondu 1 and Yurongi 1 have been submitted for vitrinite reflectance analysis to provide a further check on the mathematical model.

At present, the mathematical model confirms that the Tertiary section is undermature in all of the wells.

4. Geological Sampling

Sampling of the cores and cuttings from the five wells in the permit were carried out. Amoco has selected samples to resolve specific problems in the following areas:

1. Palynology - palynological analyses are being conducted to resolve questionable well correlations and misties between the well tops and the seismic data. Roger Morgan, a consultant palynologist in Adelaide, has been contracted to do this work through Analabs of Perth. The age of the T. longus zone is also being re-evaluated. The zone is generally considered to be of late Cretaceous age, but Amoco's work has shown that Tertiary dinoflagellates are present in some cuttings samples from this zone. Finally, a few samples have been sent to Amoco's research center in Tulsa, Oklahoma, for processing using proprietary techniques to see whether additional taxa are revealed.
2. Vitrinite reflectance - selected samples have been taken for checking vitrinite reflectance from Nangkero 1, Dondu 1, Bass 1 and Yurongi 1. At the end of year 5, these samples were being processed by AMDEL in Adelaide.

3. Reservoir characteristics - selected core plugs were cut for measurement of porosity and permeability, where data are currently lacking or are unreliable, or where there are conflicts in the current data. Additional analyses, such as X-ray diffraction analysis, petrographic and SEM studies, water sensitivity, and capillary pressure will be conducted as needed. At the end of year 5, forty-nine plugs taken from cores cut from the wells in T/14P were being analyzed for porosity, permeability to air and grain density by Core Laboratories in Adelaide.

## 5. GEOPHYSICAL WORK

Geophysical effort during the period since Amoco assumed operatorship has been devoted to enhancement of the interpretability of the deeper targets which are now considered the primary objective in the Bass basin. Reprocessing and new data acquisition have been designed for deeper data enhancement.

### 1. Seismic Reprocessing

Most of the existing data in the basin were both acquired and processed for targets within the Tertiary Eastern View Group. Reprocessing has been aimed at removal of long period multiples generated principally from the coal measures within the upper portion of the Eastern View Group. These multiples severely interfere with deep data, which are already of relatively low amplitude due to the high levels of reflectivity from the coal measures allowing little energy transmission. Efforts to date have been effective in multiple suppression, but primary data are still difficult to interpret at objective levels.

### 2. Seismic Acquisition

Between November 20 and December 17, 1984, a total of 533 kilometres of seismic, gravity and magnetic data were acquired in license T/14P. Processing tests commenced in late December and

by the end of year 5 some pre-stack parameters had been selected. The seismic data being acquired are being processed mainly for deeper targets within and beneath the Tertiary Eastern View Group. Preliminary results indicate the deeper data may be of higher quality than any previously obtained in T/14P.

6. FUTURE WORK

Amoco is planning to conduct the following work in T/14P during Year 6, from January 9, 1985 to January 8, 1986.

1. Continue detailed geological evaluation of the basin.
2. Prepare new seismic structure maps on selected horizons in the Tertiary and Cretaceous.
3. Drill one well. Total depth of the well will depend on the anticipated stratigraphic section at the well location. However, the well will be planned to test adequately the Upper Cretaceous section.

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