



## **Exploration Permit**

# **VIC/P47**

## **Quarterly Report**

**28 May 2003 – 27 August 2003**

**Bass Strait Oil Company Ltd**

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## **QUARTERLY (AS ADJUSTED) REPORT FOR THE PERIOD**

### **28 MAY 2003 to 27 AUGUST 2003**

#### **1. INTRODUCTION**

Vic/P47 is located on the northern margin of the Gippsland Basin and covers an area of approximately 718 sq km in water depths increasing in a southerly direction from 20 metres to 78 metres. Three wells have been drilled in the permit, two of which had good oil shows at top Latrobe level and the third had good gas shows at a deeper level.

The Patricia and Baleen gas fields are located immediately adjacent to Permit Vic/P47 in Vic/L21. These adjacent fields have reported P50 reserves of 59 bcf and are currently under production, with gas delivered to a new plant in Orbost, before being transferred into the new Eastern Gas pipeline to New South Wales. The Leatherjacket and Sperm Whale oil and gas discoveries lie to the east and west of Vic/P47 respectively, and the Tuna and Kipper oil and gas discoveries lie to the south.

The Moby Prospect in Vic/P47 is located approximately 5 km to the east of the Patricia Gas Field. The prospect has strong amplitude and AVO anomalies at the top Latrobe level similar to those over the Patricia and Baleen Gas Fields. In addition to gas, Moby also has the potential for an oil leg. Good oil shows were present in both Flathead 1 and Whale 1. Oil legs are present in the gas fields to the south, east and west.

#### **2. PARTICIPATING INTERESTS**

Bass Strait Oil Company Ltd	75% (Operator, Joint Venture Partner)
Eagle Bay Resources NL	25% (Joint Venture Partner)

### **3. TITLE AND GOVERNMENT RELATED MATTERS**

On 11<sup>th</sup> June 2003 BSOC and Eagle Bay Resources NL (EBR) executed an Outline Agreement wherein BSOC agreed to exercise its option to drill a well to earn a 75% interest in Vic/P47. This option was pursuant to an Option Agreement dated 8<sup>th</sup> April 2002 and amended 21<sup>st</sup> January 2003.

On 13<sup>th</sup> June 2003 BSOC and EBR executed a Farmin Agreement, an Operating Agreement and a Transfer to give effect to the option exercise. These agreements result in a Vic/P47 Joint Venture with interests being BSOC 75% (operator) and EBR 25%.

On 9<sup>th</sup> July 2003 the Farmin Agreement, the Operating Agreement and the Transfer were submitted to the DPI for registration by the Designated Authority. On 4<sup>th</sup> August these agreements were approved, and on the 6<sup>th</sup> August they were entered into the register.

On 30<sup>th</sup> June 2003 BSOC, EBR and Lakes Oil NL (Lakes) executed a Memorandum of Agreement wherein Lakes agreed to exercise its option to drill a well in the Lakes Option Area to earn a 95% participating interest in that area only of Vic/P47. Four blocks out of the northeast of Vic/P47 permit are to be excised as part of this arrangement ('Gilbert Blocks'). Under this agreement Lakes Oil will earn an 80% interest in the excised area by drilling a well in the area by December 2004.

At quarter's end the relevant documentation for the Gilbert Blocks farmin and operating agreements was being prepared.

On 22<sup>nd</sup> August 2003 a request for a 6 month suspension and extension of Vic/P47 Year 2 and a variation to Year 3 was submitted to the DPI. The variation request was to replace the Year 3 one well commitment with a 3D seismic programme.

### **4. EXPLORATION ACTIVITIES**

#### **4.1 Seismic Acquisition & Processing**

Upon receipt of the GC00A OMV Baleen 3D seismic data, it was found that polygonal position data for the survey extents did not accompany the SEG Y data, which delayed the loading of the data onto the workstation. According to DPI records, a processing report requested by BSOC, which should contain the relevant data, was not submitted for the survey. The polygonal position data for the survey extents was hence extracted from the exabyte tapes, and the SEG Y data was loaded onto the workstation. However, there are concerns about its positioning and the bin centres were extracted from tape for verification.

The position of the loaded Baleen 3D data over Patricia/Baleen and East Patricia was an immediate concern. It was obvious that there was a shift in the data of approximately 200m, with both the G92A 2D survey data and well data. No processing report or information has been forthcoming from the DPI or OMV and information on the survey's projection was equivocal. Further investigations revealed a contradiction in geodetic datums between the tape containing UKOOA information and that containing Bin Centre data. The data was originally loaded in WGS84 which, according to the UKOOA tape, was the survey geodetic datum and the post plot geodetic datum. However, the bin centre data tape lists the post plot geodetic datum as AGD66, not WGS84 as is listed everywhere else. This suggested that the source of the incorrect position of the data was due to the conversion during loading from WGS84 to AGD66, which would, in theory cause a shift of approximately 200m. The data was consequently reloaded in the correct projection system, and the incorrectly positioned survey was deleted, causing all associated interpretation to be lost. Further delays were encountered when another shift in the data became apparent. Investigations showed that during loading,

an incorrect byte location for the time of first sample (TFS) was being read (the byte location of digital data would have been listed in any processing report. A solution was found, and the data was reloaded for a third time. These delays in interpretation have been costly and these problems may have been avoided if the Processing Report for the Baleen 3D survey was available to BSOC. There is still uncertainty in the positioning of the Baleen 3D as a result. Other products from the Baleen 3D were also requested from the DPI on 14<sup>th</sup> August 2003 and are still not received at the end of the quarter. On the Baleen 3D survey, OMV are known to have produced some of these products. The items, which are important to the assessment of likely gas pay in Moby are listed below.

- Angle stacks (3 appear to be produced)
- Acoustic impedance inversion
- Elastic impedance inversion (for different incidence angles)
- AVO displays (including stack X gradient AVO)

Digital data from the processed Esso Australia, Northern Fields 3D survey, fast track processed by BSOC, were completed and provided by Velseis and loaded onto the Geoquest workstation.

Data from the Lasmo 2D seismic survey shot in 1988 was requested from the DPI, and after a long delay due to the data having to be converted from SIPMAP format, SEG Y data for lines GL88A-74 to 85 was received from Encom. The data, however, could not be loaded immediately, as only CDP ranges were supplied with the data. A visit to the DPI core store was made to view the paper sections of the lines and note the shot point ranges and other relevant information for 2D data loading.

Velseis sent CGM+ files of the Northern Fields processing Inlines, Crosslines and Timeslices at end July, which were not accepted due to numerous grammatical errors. These were expected to be replaced early August. The final processing report for the Northern Fields 3D seismic survey was received from Velseis on 15<sup>th</sup> August, and forwarded to EBR on 29<sup>th</sup> August, in accordance with the JVOA.

#### **4.2 Seismic Interpretation and evaluation**

Interpretation was delayed on the OMV 3D data due to geodetic datum and data loading issues mentioned above. Problems were also encountered with the Baleen-1 and Patricia-1 sonic logs, which were revealed to be caused by unit inconsistencies due to splicing of the data by the supplier. Correct versions of the data were requested from Encom and were supplied promptly. The log data was reloaded successfully.

Synthetic seismograms and calibrated sonics were produced for the following wells; Baleen-1, Judith-1, Kipper-1, Patricia-1 and Whale-1. Checkshots, but no digital sonic logs are available for Flathead-1.

Seismic interpretation is progressing rapidly over Vic/P47, once the available 3D and 2D data were loaded and appeared to fall in their correct geographical locations, and all available relevant well – seismic correlations were made.

The following significant seismic events and markers were correlated from relevant wells to seismic:

- Top Gurnard Formation Reservoir
- Top Volador Formation
- Top Strzelecki Group
- In addition, an event at the base of the Gippsland Limestone was interpreted.

These events were correlated from wells to seismic and were interpreted on every tenth or 20th in-line and crossline, and on the 2D seismic. The data was autotracked to remaining lines using extended and interpolated tracking, with typically over 25% quality factors. Faults were

interpreted on every tenth in-line and crossline and correlated across time slices and between vertical sections.

A significant top Latrobe 'coarse clastics' event was not apparent at the Patricia / Baleen Fields due to the thin reservoir section encountered.

The most significant observation on the OMV 3D dataset is that the top Gurnard formation reservoir sequence is nearly always marked by a decrease in acoustic impedance contrast relative to its overburden. When the Gurnard reservoir is gas bearing, as in the Patricia and Baleen Fields, the event experiences a sharp drop in acoustic impedance compared to water filled sands.

The top Volador Formation, tied to Judith-1, only exists in Vic/P47 south of Flathead-1 towards the central deep and can be mapped with some difficulty through the Northern Fields 3D area. It was selected as it marks a major intra-Latrobe reservoir sequence, and is at base of the regional Kate Shale seal. The top Strzelecki Group seismic event is always recognisable due to the existence of a steep angular unconformity and resulting event terminations.

The base Gippsland Limestone Formation was mapped to assist in-depth conversion as it is known that often high velocity material exists in these submarine canyon deposited sequences. However, during mapping it was also noted that this sequence occasionally erodes top Latrobe reservoirs and so is critical for prospectivity.

The top Gurnard reservoir event experiences a sharp drop in acoustic impedance when filled with gas compared to water filled sands. This significantly increases the confidence in its interpretation and identifies areas most likely to be gas filled.

The interpretation of the Gurnard Formation became problematic towards the South into Judith 1, as the sequence diverges dramatically. There were significant miss ties between the 2 D and 3D data sets, which would be due to out of plane reflections on the TD data.

The data were exported to Petrosys. Every tenth in-line and 4th CDP was transferred for the horizon data and every single line for the amplitude data.

Two-way time structure maps were generated with faults for the following horizons:

- Top Gurnard Formation Reservoir
- Top Volador Formation
- Top Strzelecki Group

Examination of the velocity depth trends for the wells in the region show a linear trend of velocity increasing with depth down to the top of the Latrobe group. The velocity depth trend was determined from Judith -1 of;

$$V = 1660 + 1.2 Z$$

This was used to depth convert the top Gurnard Formation reservoir level and resulted in depth conversion values accurate to less than 2% at the wells. The residual error was grided and corrected to produce a depth map conformable with the well data.

In order to depth convert down to the top Volador and Strzelecki Group seismic events a second velocity depth trend was determined from the Judith -1 well data with the equation;

$$V = 1500 + 1.15Z$$

As for the Gurnard Formation this was used to depth convert down to these two deeper horizons, and the residual error, which was less than 2%, was removed from the depth conversion resulting in depth map's conformable to well data.

Depth structure maps have been produced for the following horizons:

- Top Gurnard Formation Reservoir
- Top Volador Formation
- Top Strzelecki Group

A number of prospects and leads have been defined in Vic/P47 and these are shown on Figure 1 and summarised below.

#### 4.2.1 *Moby Prospect*

The Moby Prospect is a compressional anticline drilled on the crest by wells Whale-1 and Flathead-1. Reservoir development on the crest is minimal due to erosion or non-deposition and reservoir thickness is interpreted to thicken significantly downdip to the south within closure. The mapped areal closure for Moby extends into permit L21 to the west and V02-3 to the east. The mapped gross reservoir sequence is bound by the Top Gurnard Formation reservoir and the Top Strzelecki Group seismic events. The likely gas fluid contact is believed marked by the downdip extent of amplitude anomalies from the Baleen 3D at around 560-565m bmsl. Current mapping does not identify the spill point, but regional mapping indicate that mapped fault closure at Top Gurnard is identified here at approximately 700m bmsl.

#### 4.2.2 *Walton Lead*

Walton is identified as a pinch-out and fault closure at the Top Volador Formation level. Like Maclean it may form part of the Moby closure, if that prospect is successful. The main risks associated with the Walton Lead are seal, both lateral, seat and fault.

#### 4.2.3 *Izaak Lead*

The Izaak Lead is a small downthrown fault closure at top Volador Formation approximately 3km northeast of Judith-1. It may extend further into V02-3 than defined. The main risks associated with this feature are fault seal.

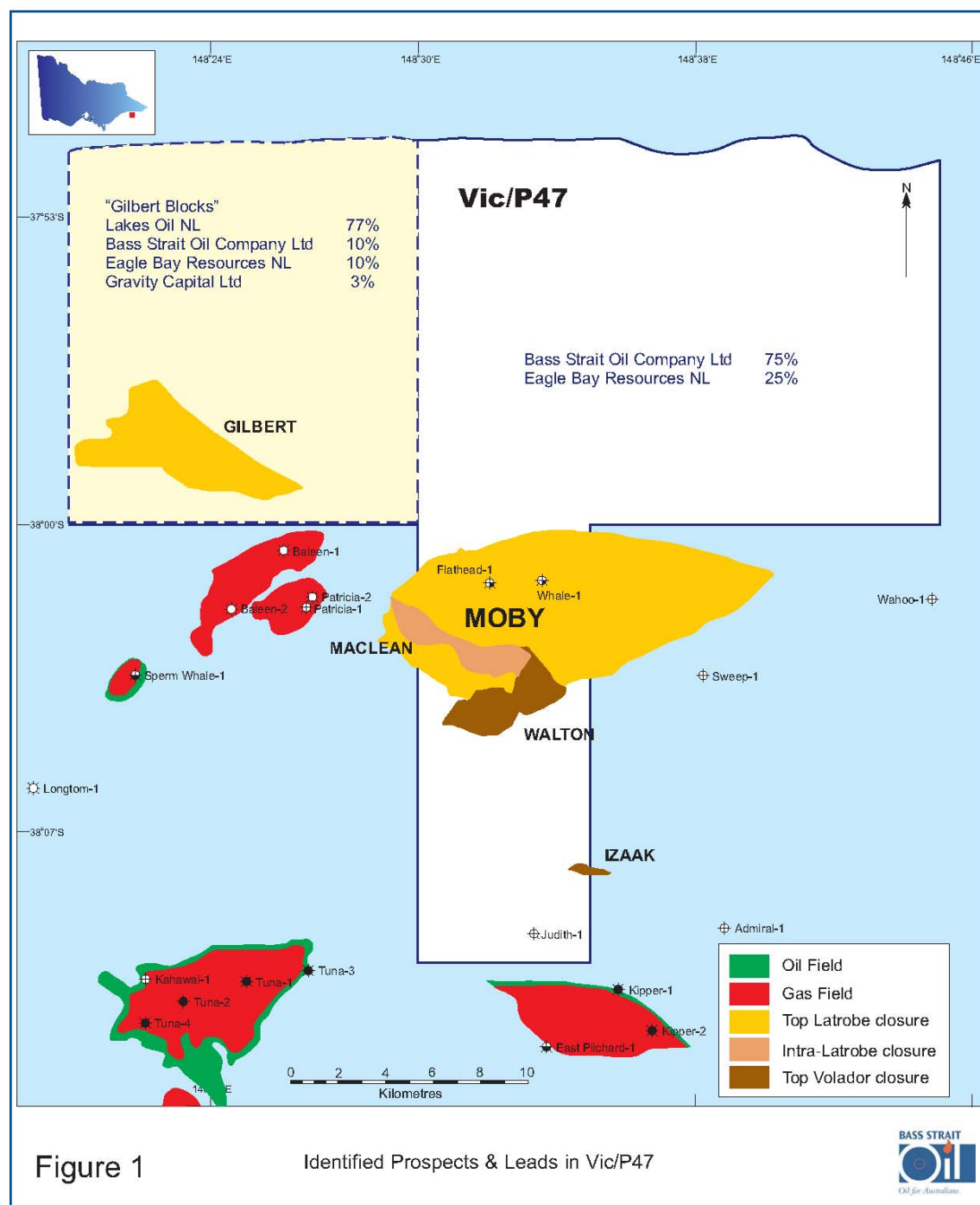
#### 4.2.4 *Maclean Lead*

The Maclean Lead is a downthrown fault closure identified at the Top Strzelecki Group but interpreted to phantom potential intra-Latrobe Group reservoirs above. It may form part of the Moby closure, if that is successful. The main risk is fault seal.

#### 4.2.5 *Gilbert Prospect*

The Gilbert Prospect was defined by Lakes Oil NL as their drilling candidate for the farm-in to the defined area of Vic/P47 in the northwest of the permit (see Figure 1). The prospect appears to be a downthrown Top Latrobe closure. Lakes Oil NL describe the structure as seismically defined, but resulting from an airborne gravity and magnetic survey.

On 27<sup>th</sup> August, a note for file on the Vic/P47 seismic interpretation, with accompanying depth structure maps, was sent to EBR, in accordance with the JVOA.



**Figure 1.** Identified prospects and leads in Vic/P47



#### 4.5 Well Planning

After discussions and negotiations with potential contractors, BSOC selected Labrador Petro-Management Pty Ltd as the preferred contractor to provide drilling management services for the Year 2 well.

On 25<sup>th</sup> June 2003 BSOC and LPM executed a contract whereby LPM agrees to provide drilling management services to BSOC, including for the Vic/P47 Year 2 well.

During the quarter, LPM was engaged in reviewing offset well data and preparing an updated assessment of rig availability and demand for the Bass Strait.

Working together with BSOC, LPM staff have prepared a 'basis for design' for a well to target the Moby Prospect (Moby-A). The Basis for Design is a document containing essential geological and operating data for designing the Drilling Program. The document aims to limit any expensive program design changes during execution phase. The data collected from the Well Proposal, Preliminary AFE and Casing Design serves to critically define the drilling objectives and target tolerances.

The key geological issues relating to the economic success of Moby are reservoir quality and net pay quantity. Gas is expected, although oil may also occur.

The Moby-A well will test a seismic amplitude anomaly at top Gurnard Formation reservoir level outside of the area of four-way dip closure to ensure that the broader Moby Structure entrapment mechanism is shown to be valid. It will test the hydrocarbon saturation and nature of the amplitude anomaly to confirm that it is not 'fizz gas'. It will determine reservoir quality in the Gurnard Formation, the underlying Latrobe Group Barracouta Formation and the upper part of the Strzelecki Group. It will determine if potential seals exist between Gurnard Formation, Barracouta Formation and Strzelecki Group reservoirs and whether any gas pay in the Gurnard is in communication with the Barracouta Formation.

Gas and any oil pay will be sampled for analysis to determine composition and economic value. The well is sited so as to intersect the gas-fluid contact interpreted from seismic and hence any oil leg within the Gurnard Formation. Any oil pay in the Latrobe or Strzelecki groups will be identified and sampled to determine if a larger oil accumulation exists in communication with the oil encountered in Flathead-1. Oil quality poses a risk as it is most likely biodegraded and productive flow rates may not occur.

On 1<sup>st</sup> August BSOC sent out requests for expressions of interest in providing insurance services to the joint venture for the drilling of the Year 3 well and associated activities. A review of initial proposals and further discussions were ongoing at quarter's end.

At quarter's end, preparation continued for a Vic/P47 well with progress being made on preliminary design, HSE documentation and costings.

During the quarter Santos contracted the Ocean Epoch to drill Casino-3 in the Otway Basin. The rig left Darwin on 10<sup>th</sup> September en route for a mid-October spud at Casino.

On 22<sup>nd</sup> August 2003 rig owners Diamond Offshore offered a competitive Ocean Epoch rig rate of US\$62,500 per day to BSOC. After quarter's end BSOC submitted a letter of intent to Diamond for the use of the Ocean Epoch to drill two wells, including one well in Vic/P47.

## 5. REPORTS SUBMITTED

Other than the previous quarterly report, a note for file on the Vic/P47 seismic interpretation, with accompanying depth structure maps, was submitted during this period.

## 6. HEALTH, SAFETY AND ENVIRONMENT

### 6.1 Incidents

There were no health, safety or environmental incidents recorded during the report period.

### 6.2 Environmental Approvals

There were no environmental issues submitted for approval during the report period by BSOC.

## 7. ESTIMATED EXPENDITURE FOR THE QUARTER

Estimated expenditure for the reporting period is detailed below:

Activity	Expenditure (\$000's)
Permit Administration	35
Geological & Geophysical	60
Seismic (Processing)	9
<b>Total</b>	<b>104</b>