



## **Exploration Permit**

# **VIC/P42**

## **Quarterly Report**

**14 February 2003 – 13 May 2003**

**Bass Strait Oil Company Ltd**

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## VIC/P42

### QUARTERLY REPORT FOR THE PERIOD

**14 FEBRUARY 2003 to 13 MAY 2003**

#### 1. PARTICIPATING INTERESTS

Bass Strait Oil Company Ltd	50% (Operator, Joint Venture Partner)
Inpex Alpha Ltd	50% (Joint Venture Partner)

#### 2. GOVERNMENT RELATED MATTERS

Kourosh Mehin and Bruce Armour of the DPI were consulted regarding possible timing constraints for drilling. Both confirmed that there are no timing constraints (e.g. due to whales, crayfishing, etc.) in the Vic/P42 area.

#### 3. EXPLORATION ACTIVITIES

##### 3.1 Seismic Interpretation and Evaluation

All relevant BSOC 3D datasets are loaded, consisting of the PSTM filtered and unfiltered versions, and the near and far offset stacks. The 3D data were tied to the existing Bream and Kingfish 3D surveys and the 1991 and 1992 2D surveys. Misties between surveys are negligible and no shifts have been applied.

Well log and checkshot data are loaded for all wells in the survey area. Sonic logs, where available, were calibrated with the checkshots with predominantly negligible drifts. Synthetics were generated and ties made with the seismic. A revised stratigraphic correlation has been used, derived from recent work from Biostrata Pty Ltd's Dr Alan Partridge.

At this interpretation stage, four seismic events have been interpreted; two submarine canyon sequences, based on their erosive Type 1 unconformity bases, a Top Latrobe Group event and an intra-Latrobe event termed the 53mya event (approximately *M. diversus*). The seismic interpretation was made on every 20th inline and crossline, from which autotracking was used to infill. Fault polygons were generated using seismic attributes of amplitude, dip and azimuth. Gridding and contouring of the TWT horizons was undertaken in Petrosys using a 200 X 200m grid spacing. The two TWT horizon maps are enclosed as enclosures 1 & 2.

A primary objective of the 3D seismic acquisition and processing was to extract a detailed velocity cube from the dataset. BSOC geoscience staff played a lead role in velocity analysis during processing, with extensive geological input to the velocity analysis process. Using brute stack data, first pass velocity analyses were generated on a 800m by 800m grid using WesternGeco's Interactive Velocity Processing (IVP). The velocities were picked by WGC and qc'ed by BSOC. In the second pass analysis PSTM gathers were used and velocity analyses were generated on a 800m by 800m grid. Third pass velocity analyses were generated on a 400m by 400m grid. Finally, A High Density Velocity Analysis (HDVA) was done on the north-eastern half of the survey area, where submarine canyons occur, consisting of approximately 215 sqkm. The HDVA process is a Western Geco proprietary technology used on this survey

in the Gippsland Basin for the first time. The semblances were analysed on a velocity spacing set at 200 m in the inline direction and 100 m in the crossline direction (8 x 8 cmp bins). This is 8 times the resolution of the Third Pass velocities (400 x 400 m grid). The analysis was restricted to cmp's with a fold greater than 20. The picker uses a guide velocity function taken from the third pass analysis. Although the Toldi based picker does not use the results from the surrounding analyses, the lateral consistency observed is remarkable. The figures 1 & 2 below show a velocity slice comparison of average velocities down to 1500msec from the northern half of the 3D area.

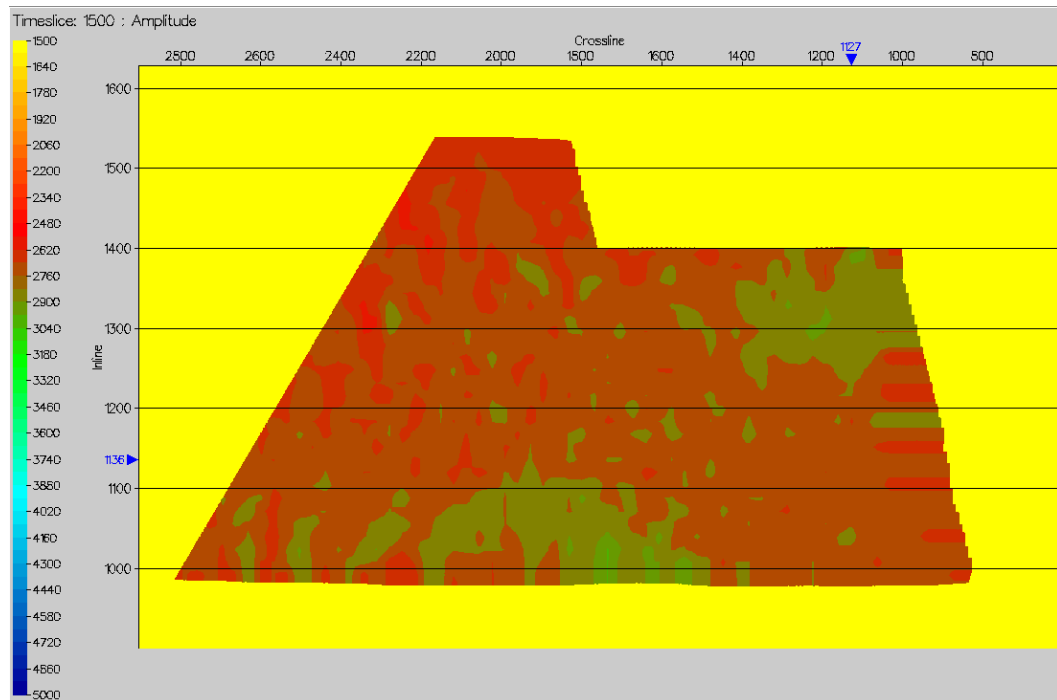


Figure 1 – Velocity slice at 1500msec from third pass velocity analysis

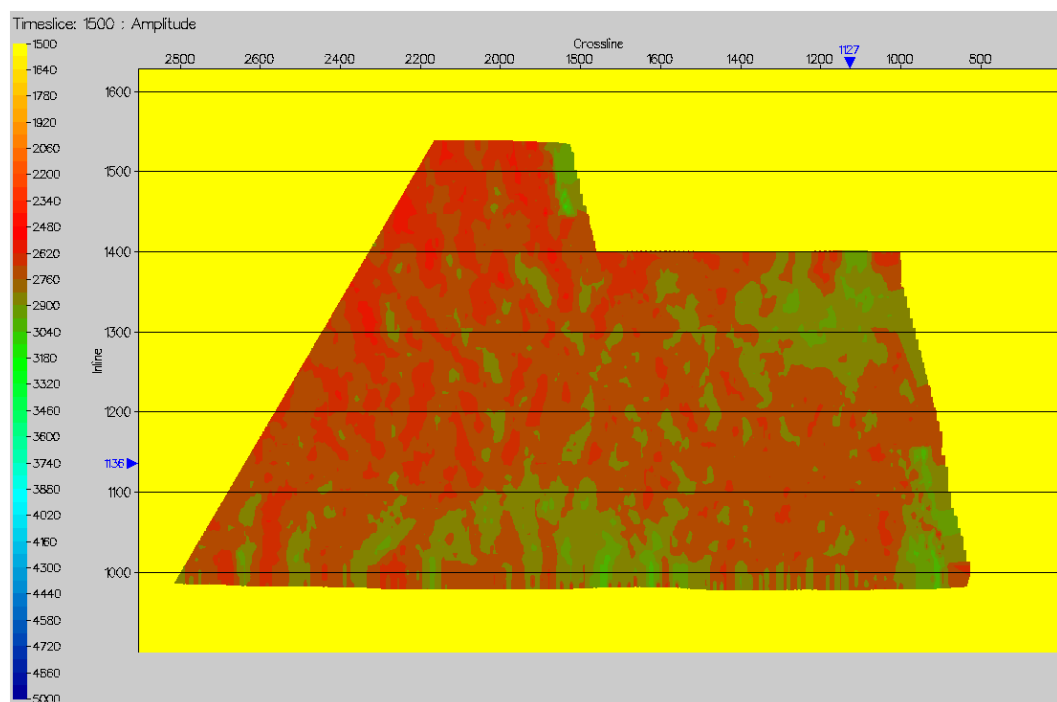


Figure 2 - Velocity slice at 1500msec from high density velocity analysis

The picker also re-picks all analysis locations, not honouring the human picks, if its own internal consistency checks find a better fit. Therefore human error in an erroneous third pass pick is potentially removed and a more 'objective' velocity cube is extracted. The total number of velocity functions output from the autopicker was 10,708. The output functions were then converted to velocity traces and loaded into WesternGeco's OmegaVu software package for QC viewing by BSOC. The resulting velocity cube was determined to be of a higher quality with no observable velocity 'mis-picks'.

The resulting TWT data was loaded into Petrosys mapping package and used to generate a vertical or 'layer-cake' depth conversion product (Petrosys it should be noted, is not specifically a depth conversion software package, and the handling of stacking velocity seismic data and the lack of image ray depth conversion is only a preliminary solution to the depth conversion of the Vic/P42 3D).

The two submarine canyon events were merged to one grid (the deeper event taking priority) representing the 'base of submarine canyons', the high velocity package. The seismic velocities were used to extract average velocity to base submarine canyons and an interval velocity between the base submarine canyons and top Latrobe seismic events. Trend surface analysis was used to examine these two velocity layers and the noise content of the data. The velocities down to the base of the submarine canyons appear valid and these were used to depth convert the event. The data was edited for edge effects and anomalous values associated with non hyperbolic moveouts along steep canyon margins. The velocity map was smoothed and calibrated to well velocities (variations of 6.3 to 7.3% were still observed, and velocities were calibrated by a common factor of 1/1.068 – no individual well calibration is available in Petrosys). Below the base of the submarine canyons data appeared noisier and with strong variations between individual samples. It is likely that velocity data is poor below the submarine canyons due to the non-hyperbolic moveout and velocity inversion.

Between base submarine canyons and top Latrobe a V0, K function of  $V=600 + 0.208Z$  was used, derived from Edina-1, Gurnard-1 and Nannygai-1 wells. A constant velocity of 3526m/s was used for intra-Latrobe, again derived from the wells. Petrosys cannot calibrate the resulting depth conversion to the well results and as it is a 'layer-cake' approach significant 'edge effects' are evident along the submarine canyon margins. However, the general form and occurrence of structural highs and lows is probably significant and represent depth conversion leads. As DVA was only applied to the northern area, the depth conversion was restricted to this region. The resulting depth conversion is shown on enclosures 3 & 4.

Seismic interpretation has produced preliminary depth maps over the northern 3D using a simplistic layer-cake depth conversion. Top Latrobe leads identified require more advanced image ray depth conversion.

Examination of near and far offset data shows that the structural high lead in depth immediately west of Nannygai-1 is close to being coincident with a significant brightening on the far-offsets around the 53mya event and deeper. Figure 3 shows seismic inline 2298 with brightening on far offsets.

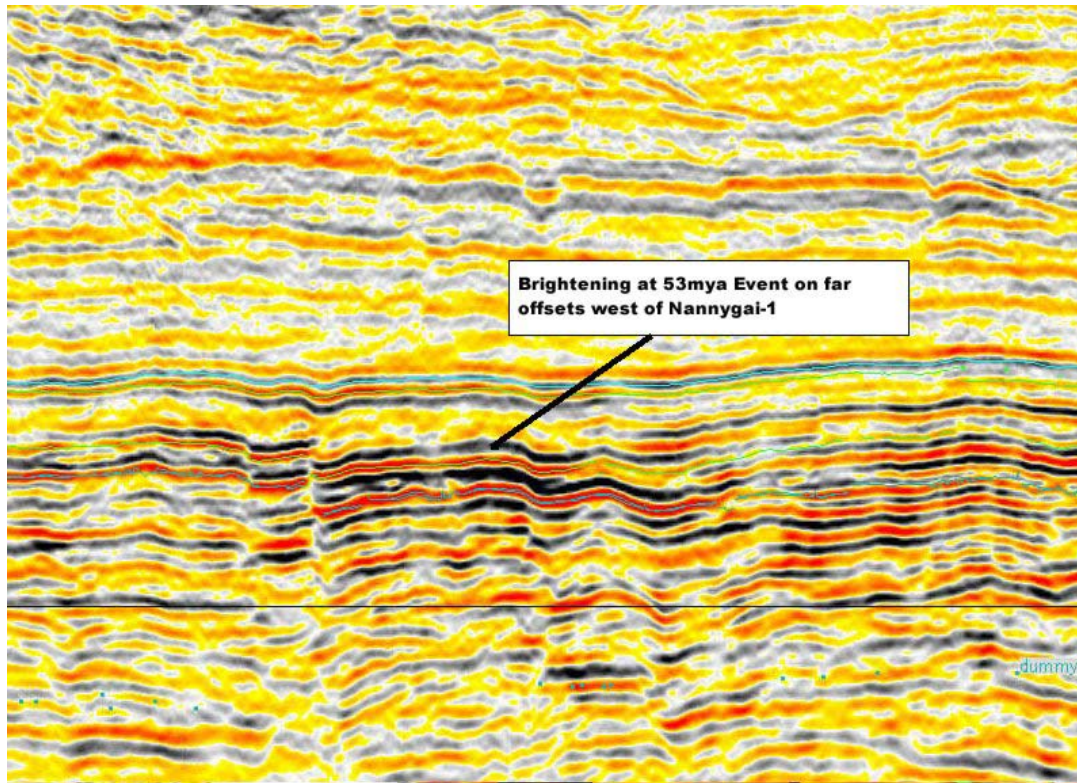


Figure 3 – Inline 2298 far offsets showing brightening on 53mya event coincident with depth closure.

Interpretation of the different angle stacks (near and far) volumes was made at the Top Latrobe and 53mya event levels. This was undertaken to extract amplitude attributes and attempt subjectively to resolve any AVO response concordant with structural closures.

The edge effects apparent on the resulting depth maps and further geological studies on the well calibrated Miocene submarine canyons to the north into Vic/P53, indicate a greater complexity to the canyon infill geology than previously envisaged. In preparation for a more sophisticated 'image ray' depth conversion, three Miocene submarine canyon units have now been interpreted. Seismic 2D data to the north of Vic/P42, into Vic/P53, were loaded to allow interpretation and correlation into Veilfin-1, where a deeper and older submarine canyon sequence has been identified. This sequence results in a deeper and thicker sequence of high velocity material in the overburden section in the north of Vic/P42, previously not identified. Three submarine canyon sequences are now interpreted for the depth conversion:

- The youngest sequence correlating with a unit identified in Kingfish-3 and Edina-1
- A middle sequence identified in Gurnard-1, Nannygai-1 and Kingfish-3
- An older sequence identified in Bream-5, Veilfin-1 and Edina-1

These sequences will allow a more accurate depth conversion.

Interpretation through Hemingway continued. Well seismic correlation was made through a correlation of well logs from Devilfish-1, Pike-1 and Edina-1, using the revised biostratigraphy of Dr Partridge, which resulted in the identification of the significant Devilfish Sandstone unit that correlates with the identified shoreface sand units.

At end quarter interpretation began on the deeper Golden Beach sequence. Mapping of the sequence objectives continued through a well tie to Melville-1, improved by the 2D ingress data acquired by BHPB.

A meeting was held with Malcolm Wallace and Stephen Gallagher of University of Melbourne's School of Earth Sciences. The meeting was prompted by a paper written by Wallace et al., 2002, in which sonic velocities are related to submarine canyons and carbonate burial diagenesis. The issues of depth conversion with respect to these Miocene submarine canyon fills were discussed, as was the suggestion by Wallace and Gallagher that previously identified karst features on time slices, are not karsts at all. Further collaboration at a later date may be beneficial to constraining depth conversion issues.

BSOC staff also met with consultant Mark Smith, to discuss his potential services in assessing fault-seal risk in Vic/P42. Smith noted that problems with depth conversion accounted for 31% of dry holes in the Gippsland Basin. During the meeting it became clear that Smith has a thorough knowledge of the structure of the Gippsland Basin, as well as past and current industry activity, and his services may be considered in the near future.

Dr Alan Partridge was given access to cuttings and SWS's from Melville-1 to improve palynological interpretation of the Golden Beach and Emperor Subgroup sections in a study for BHPB. BSOC will receive the results of this work at no cost.

Quotes were requested for provision of DHI technology applications from Jason, Paradigm, Schlumberger DCS, Robertsons and Total Depth PL. Paradigm, CGG and Leading Edge Geophysics were requested to provide information and quotes for provision of software and services for image ray depth conversion. At quarter's end responses were still awaited from Paradigm, Robertsons, Leading Edge Geophysics and Total Depth PL.

Delays in receiving DHI and depth conversion quotes and greater complexity in the Miocene submarine canyon sequence than initially envisaged, will lead to delays in producing a diligent depth conversion over the BSOC 3D area.

### 3.2 Workstation

The US PC based Larson software *CGM to Image* was chosen as the preferred software for graphical file conversion. Complex CGM+ files (especially seismic lines) can now be converted to simple raster images which are importable into Montage packages such as Corel Draw.

An Iomega 80 Gigabyte external hard disk was also purchased for a quicker and more efficient workstation project backup system. Problems were experienced with Geology Office crashing during printing of cross sections. Geoquest were addressing this significant problem at quarter's end.



### 3.3 Well Planning

#### Rig Availability

Monitoring of potential rig availability and demand in the Bass Strait area continued during the quarter. Discussions were held with the following operators and contractors:

- BHPP
- Santos
- Diamond Offshore
- ECL Drilling
- Labrador Drilling
- Origin Energy
- Esso Australia
- Woodside
- OMV
- Eagle Bay
- Australia Crude Oil Company

The purpose of these contacts was to ascertain potential demand for a rig in the mid-late 2003 timeframe such that BSOC might become part of a multi-well programme that would meet the Vic/P42 timing requirements and also amortise the costs of mobilization.

The cost of the Vic/P42 Joint Venture (or any other operator) mobilising and de-mobilising a drilling rig to the Bass Strait would be on the order of A\$20 million depending on point of origin/return, prevailing rig rates, type of rig etc. Mobilisation / demobilisation of the Ocean Bounty in 2001 (which BSOC used to drill Melville-1) cost A\$19.5 million. This was shared across a multi-well programme involving several operators as is accepted practice in this area. Clearly such costs for a one well programme would be prohibitive. This is a commercial reality that is recognised by both permit operators and rig owners.

The only rig recently in the area was the Sedco 702 semi-submersible which completed drilling the Scallop-1 well for Esso, reportedly a non-commercial oil and gas discovery, and subsequently returned to WA.

Information gathered from other operators in the region is listed below. Note that this is based on unofficial communications and that some of the conclusions are BSOC's own interpretation. However, in summary, there appears to be little demand for a rig in the Bass Strait area in the mid-year timeframe.

On the other hand there does appear to be significant demand emerging for a rig starting possibly late in 2003, but more likely early 2004, and stretching through the first half of 2004. This could amount to up to 8 wells but due to differing water depths and other factors, it may be that more than one rig is necessary to drill all these wells.

The current view is reasonably clear and, all things being equal, it is more likely that notional schedules discussed below will slip rather than accelerate. On this basis, the potential for rig availability in Vic/P42 by mid August seems extremely low.

BSOC will continue to monitor the planning of other operators in the area to ensure the earliest commercially feasible option is available.

#### Origin Energy:

Origin is proceeding with the Yolla Field development and is planning development drilling in March 2004 using a large harsh-environment jack-up rig. A suitable rig is now under construction in Singapore. Origin is also planning an exploration well in the same area of the Bass Basin probably preceding the development drilling in early 2004. Timing of the Yolla drilling will be locked in to project construction and installation timetables and therefore this



represents the strongest commitment by any operator to bring a rig into this area in the near term. The water depth at Yolla is similar to Vic/P42.

**BHP Billiton:**

BHP Billiton operates permit Vic/P45 adjacent to Vic/P42. Vic/P45 has two commitments wells to drill. BSOC understands that they will not be ready to drill at least until October / November this year.

**Esso:**

Processing of the Northern Fields 3D seismic survey is taking longer than originally thought and they are not expecting final products before mid year 2003. This means that they would be looking at second quarter 2004 at the earliest for drilling based on the final 3D data. Esso may possibly consider one or two wells based on "quick look" cubes of data but even these would not be ready before late 2003. None of Esso's possible targets are related to permit commitments. Therefore they are unlikely to drive the timing of rig mobilisation, but rather are looking for a "rig of opportunity" possibly starting late this year.

**OMV:**

OMV is operating the Sole field development which is now at the FEED stage and is looking towards an end of June final decision for go-ahead. They are looking at development drilling requirements sometime around the second quarter of 2004.

**Santos:**

Santos has no plans for drilling in this area other than deepwater wells in the Otway Basin in its recently awarded acreage. This could be scheduled sometime around late 2003 / early 2004.

**Woodside:**

Woodside has no plans to drill in the Bass Strait area this year. They are planning a development program in the Otway Basin but this is not scheduled until possibly 2005. They will be involved with the deepwater "Jack Ryan" rig in the Great Australian Bight but this rig would not be suitable for our purposes and in any event will head back to the West Coast probably sometime in April.

**Drilling Project Management Contract**

Requests for "Expressions of Interest" for drilling project management services were issued on 20 February 2003. This resulted in interest from ECL Drilling Management Pty Ltd and from Labrador Petro-Management Pty Ltd, both of which have recent experience with drilling operations in the Bass Strait area. The APPEA conference in Melbourne provided a cost effective opportunity to meet with these contractors as well as with representatives from other operators.

Further discussions with these contractors lead to confidential draft proposals being received by BSOC in late February / early March. These proposals were evaluated and negotiations continued (meetings being held in BSOC offices with both contractors in March). After further negotiations during April, both contractors lodged revised proposals based on discussion with BSOC staff, and a meeting was held with John Bell of ECL on 29<sup>th</sup> April.

BSOC has determined that both of these contractors would be qualified to perform the required work.

A final decision on the choice of contractor is expected during May and front end planning work for the Vic/P42 Year 3 well will start immediately.

**4. REPORTS SUBMITTED**

Other than the previous quarterly report, no reports were submitted during this period.

**5. HEALTH, SAFETY AND ENVIRONMENT****5.1 Incidents**

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

**6. ESTIMATED EXPENDITURE FOR THE QUARTER**

Estimated expenditure for the reporting period is detailed below:

<b>Activity</b>	<b>Estimated Expenditure (\$000's)</b>
Drilling (Melville)	1.2
Seismic (Processing)	37
Geological & Geophysical	363
Permit Administration	177
Well Planning (Year 3)	92
<b>Total</b>	<b>670.2</b>