

Environment Plan Summary:

Bass Strait Oil Company: 2008 East Vic/P41 2-D
Seismic Acquisition Survey Program



Client Details

Bass Strait Oil Company

Level 1, 99 William St

Melbourne, Victoria, Australia

Phone: (03) 99273004

Fax: (03) 96146533

Prepared by

Ms Jane Beck

Environment Resource Group

12 Friarbird Place

Twin Waters, Qld, 4564

Ph: 07 5450 6754

Mobile: 0419 614 846



Revision history

Rev.	Date	Description	By	Chkd	App.
0	22 nd May 2008	Issued to DA	JB		KJ
A	16 th May 2008	Internal Review	JB	LC	

Summary

Introduction

Bass Strait Oil Company Limited (BSOC) is proposing to undertake a 2-dimensional (2D) seismic acquisition survey in permit VicP/41 (ie "2008 East Vic/P41 survey") which is located in Commonwealth waters in Bass Strait off shore of East Gippsland, Victoria.

An Environmental Plan has been prepared in accordance with the requirements of the *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999* (as amended). This summary document has been prepared to comply with the requirements of Regulation 11(7) and (8) of those regulations.

It is expected that the planned activities will occur in late May 2008 for a period of approximately 4 days depending on weather conditions and down-time due to cetacean interaction.

Project Location and Duration

Exploration Permit Vic/P41 is located offshore of East Gippsland in Bass Strait as shown in Figure 1. The permit boundaries are listed in Table 1 below. It is planned to acquire some 253 km of line length (Figure 2).

Figure 1: Location Map

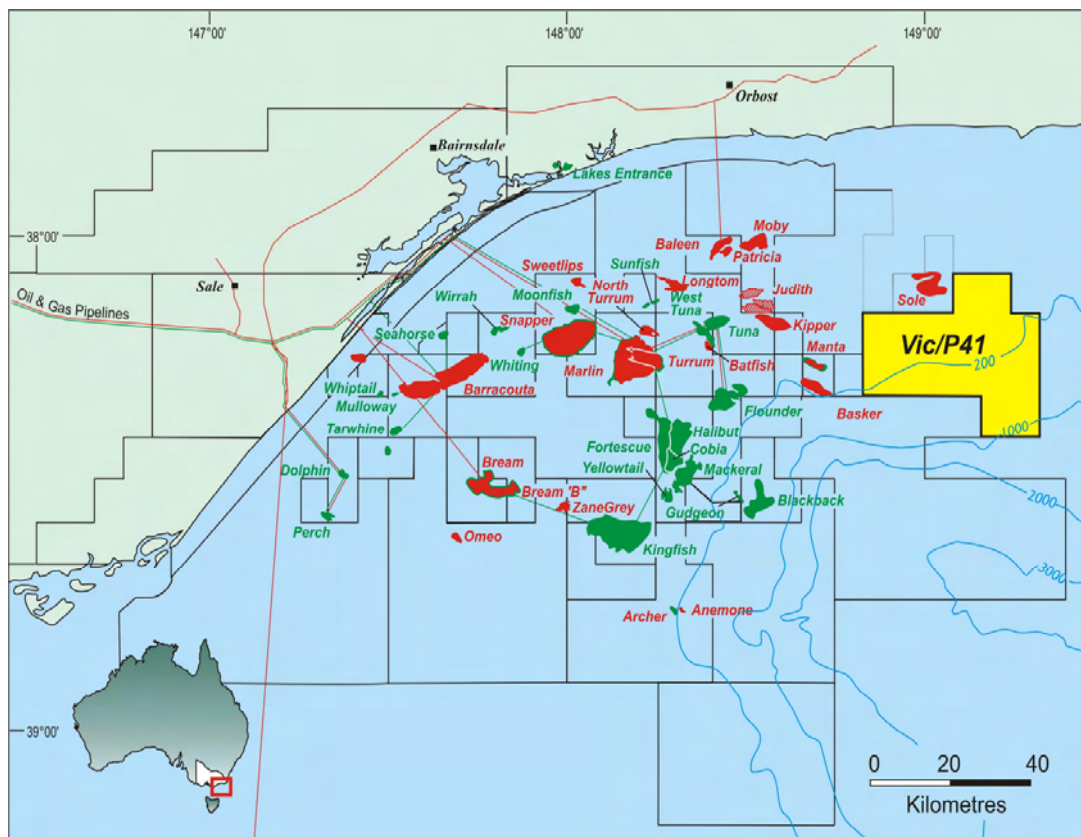
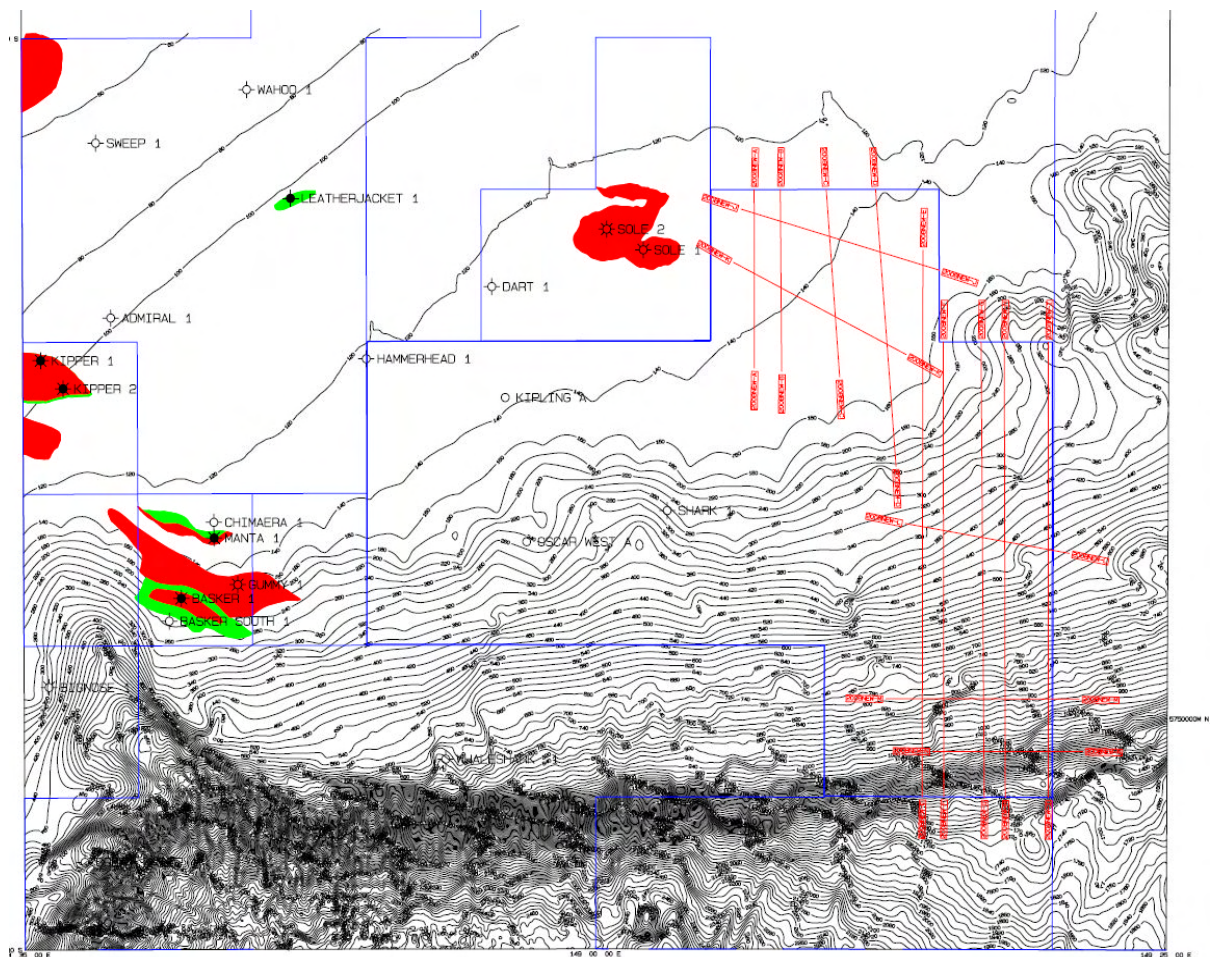


Table 1: Permit Co-ordinates

LATITUDE	LONGITUDE
38° 19' 0" S	148° 50' 0" E
38° 19' 0" S	149° 10' 0" E
38° 24' 0" S	149° 09' 0" E
38° 09' 0" S	149° 20' 0" E
38° 09' 0" S	149° 15' 0" E
38° 04' 0" S	149° 15' 0" E
38° 04' 0" S	149° 05' 0" E
38° 09' 0" S	149° 05' 0" E
38° 09' 0" S	148° 50' 0" E

Figure 2: Seismic Lines



Description of Activity

The *Pacific Titan* is a specialist seismic acquisition vessel operated by CGG Veritas who have been contracted for the survey (see Figure 3). The vessel is flagged in Singapore and was built in Japan in 1982 with a further rebuild in 2000.

The *Pacific Titan* will tow one streamer measuring approximately 6000m in length with hydrophone intervals located at 12.5m intervals at a depth of 8m below sea level (bsl). The vessel will acquire seismic data at an average speed of between 4-8 knots. The hydrophone streamer will be gel filled (solid). One single source tuned airgun array will be towed astern of the vessel at a depth of 6mbsl offset at 150m. The array will consist of 3040 in³ bolt guns operating at 2000psi which will release acoustic pulses into the water column on average every 10-12 seconds. The reflected acoustic signals are recorded by hydrophones towed behind the vessel located in the streamer. Data collected by the hydrophones is stored in onboard computers for processing and analysis allowing the underlying geological strata to be determined.

The boat will cruise at speed of about 4.5 knots through the water and therefore the vessel and its passive trailing gear will transit over any one spot in about 45 minutes. The seismic vessel can accommodate up to 56 persons but the crew and geotechnical staff is more likely to number about 40 persons.

Seismic activities are planned to occur on a 24hr operational basis and in sea-states of <4.5m. Streamer/gun deployment and retrieval are limited in sea-states greater than 4.5m.

Figure 3: CGG Pacific Titan



Description of Receiving Environment

Physical Environment & Area of Environmental Significance

The 2008 Vic/P41 2D seismic survey area is not in proximity to, nor does it impact on any World/National Heritage properties, RAMSAR wetlands, threatened ecological communities, Commonwealth conservation reserves/parks or critical habitats. The nearest Commonwealth marine reserve is the East Gippsland Commonwealth Marine Reserve which lies about 47 km east from the nearest boundary of Vic/P41. The physical environment of East Bass Strait lies within the Mesoscale Region of Twofold Shelf and its details are provided in Table 2 below.

Table 2: East Bass Strait Physical Environment

Data Description	Description
Location	East of Wilson's Promontory and north to Tathra NSW (36°48'S).
Climate	Moist cool temperate with warm summers and a tendency towards winter-spring rainfall.
Oceanography	<p>Water temperatures reflect the influence of warmer waters brought into Bass Strait by the East Australian Current, with the southern section of the Twofold Shelf being considerably warmer in summer than other more southerly Tasmanian regions.</p> <p>Intermittent upwellings occur along parts of the east Gippsland coast. Wave energy is relatively low, particularly in the broader shelf area in the Gippsland Basin. Stalled low pressure systems in the Tasman Sea during summer generate higher wave energy at this time.</p>
Geology & Geomorphology	<p>The continental shelf is relatively narrow in the northern section, becoming much broader (and shallower) in the southern area of the Gippsland Basin. Changes in shelf width are associated with marked changes in coastline orientation, from east facing in the north to south-southeast facing in the south. Orientation in the Victorian section varies from south-east to Lakes Entrance, south to Rame Head and then south-east to the NSW border. The continental shelf shows a very steep inshore profile (0–20 m), with a less steep inner (20–60 m) to mid (60–120 m) shelf profile, and a generally flatter outer shelf plain (120–160 m) south-west of Cape Howe. Sediments are poorly sorted, with a median of 92% sand and 8% gravel; they are composed of organic material, with a median of 64.5% calcium carbonate.</p>

Biological Environment

Migratory and resident fauna present in the vicinity of the permit Vic/P41 include ceataceans, fish, seals and marine invertebrates.

Up to twenty-seven (27) EPBC-listed cetacean species (refer Table 3), including 2 endangered species (Blue Whale, Southern Right Whale) and one vulnerable species (Humpback Whale) may migrate or forage through the permit area during certain periods of the year. Humpback and Southern Right Whales may be encountered during the survey period as the survey timing coincides with their northward migration past Bass Strait. The permit area itself is not a recognised aggregation

area for breeding, feeding or resting of these species. There will be a trained Marine Mammal Observer onboard during the survey. There are no threatened EPBC-listed ecological communities in the vicinity of the survey area.

Table 3: Cetaceans

Species	Threatened Status	Migratory Status	Listed Marine
<i>Mammals</i>			
Blue Whale	Endangered	✓	
Humpback Whale	Vulnerable	✓	
Southern Right Whale	Endangered	✓	
Pygmy Right Whale		✓	
Dusky Dolphin		✓	
Killer Whale, Orca		✓	
Bryde's whale		✓	
Minke Whale			✓
Common dolphin			✓
Short-finned Pilot Whale			✓
Risso's Dolphin			✓
Bottlenose Dolphin			✓
Curvier's Beaked Whale			✓
Antartic Minke Whale			✓
Arnoux's Beaked Whale			✓
Long-finned Pilot Whale			✓
Pygmy Sperm Whale			✓
Dwarf Sperm Whale			✓
Southern Right Whale Dolphin			✓
Andrew's Beaked Whale			✓
Blainville's Beaked Whale			✓
Gray's Beaked Whale			✓

Species	Threatened Status	Migratory Status	Listed Marine
Hector's Beaked Whale			✓
Strap-toothed Beaked Whale			✓
True's Beaked Whale			✓
Sperm Whale			✓
False Killer Whale			✓

Both the New Zealand Fur Seal (*Arctocephalus forsteri*) and Australian Fur Seal (*Arctocephalus pusillus doriferus*) breed within the region. Both species breed ashore (generally on remote islands) and feed at sea generally on fish and squid. The nearest breeding colony is the Skerries located near Rame Head which is more than 40 km north from the permit Vic/P41.

Seabed sediment infauna studies in eastern Gippsland have indicated that the infauna in the region is rich and diverse with polychaetes, molluscs and crustaceans comprising the majority of individuals and species recorded.

It is estimated that there are over 500 species of fish found in the waters of Bass Strait many of them having commercial importance. Fish species include both Recreational (Tuna, Marlin, and Australian Salmon) and Commercial species (Orange Roughy, Flathead, Flake, and Trevalla).

Two species of shark, the White Shark (*Carcharodon carcharia*) and Whale Shark (*Rhincodon typus*) are listed under the EPBC Act as occurring in the region and have a threatened status (vulnerable) and are listed as a migratory species.

There are no islands or seabird colonies within the immediate vicinity of the proposed seismic acquisition area. While no roosting grounds, breeding grounds or important/limiting habitats exist for bird species within the area proposed for seismic acquisition, various species may frequent the area. This includes nineteen EPBC-listed migratory birds may occur in the proximity to the Permit area. Of the nineteen migratory marine birds listed, 17 are albatross species, and two are Giant-petrels. Bird species are considered to not have a high likelihood of impact due to the nature of the seismic activities, and temporary activities in any one area.

Other Marine Users

There is a wide range of human activities occurring in Bass Strait including fishing, commercial oil and gas fields, shipping as well as recreation activities.

Commonwealth fisheries which may operate in the general vicinity of the permit area include the following:

- the Southern and Eastern Scalefish and Shark fishery (Commonwealth Trawl Fishery and the Gillnet, Hook & Trap Fishery);

- Bass Strait Central Zone Scallop Fishery;
- Southern Squid Jig Fishery;
- Southern Bluefin Tuna Fishery;
- Eastern Skip Jack (Tuna) Fishery
- Eastern Tuna and Billfish; and
- Small Pelagic Fishery.

The region is a highly productive fishery and consultation with the fishing industry has been undertaken before any activities commence.

Bass Strait is one of Australia's busiest shipping areas with passengers and freight being transported between the mainland and Tasmania; and other through traffic operating through the area between Australian ports and to and from New Zealand. The exploration permit Vic P/41 is in a high shipping traffic area.

Since the mid 1960's, petroleum exploration and production permits have been issued extensively within the East Gippsland Basin.

Major Environmental Hazards and Control

An environmental risk analysis has been undertaken for the East Vic/P41 2D Seismic Survey activities in accordance with the requirements of AS/NZ4360:2003 (Risk Management) and HB203: 2006 Environmental Risk Management Guidelines (2006). The qualitative risk assessment for the seismic activities indicates that with the proposed/management and mitigation measures implemented, no significant environmental impacts are expected and the activities carry a medium/low environmental risk.

Details of key environmental activities and associated impacts, together with their risk control measures and residual risk ranking are provided in Table 4.

Management Approach

BSOC, the operator of the permit area Vic/P41, is responsible for assuring that the proposed seismic survey is managed in accordance with the approved Environment Plan. The seismic contractor (CGG Veritas and Swire Pacific) will undertake the operations on BSOC's behalf and, under contractual arrangements with BSOC, will implement and comply with all environmental constraints and procedures nominated in the approved Environment Plan.

Specific responsibilities for the environmental commitments (controls, inspections, etc) made in the BSOC 2008 East Vic/P41 Seismic Acquisition Survey Environment Plan are detailed within the Plan.

Consultation

BSOC has consulted with regulatory agencies, fisheries groups and fishing industry bodies in preparation for the 2008 East Vic/P41 seismic operations.

Regulatory agencies consulted include Victorian Department of Primary Industries – Minerals and Petroleum Division (Designated Authority), the Commonwealth Department of Environment, Water, Heritage & the Arts (DEWHA), the Victorian

Department of Primary Industries (Fisheries & Aquaculture) and the Australian Fisheries Management Authority (AFMA).

The fishery groups consulted with details associated with the seismic acquisition survey include the following:

- Australian Fisheries Management Authority (AFMA);
- Lakes Entrance Fishing Cooperative Ltd (LEFCOL);
- Twofold Bay Fishing Cooperative;
- San Remo Fishing Cooperative;
- South-east Trawl Fishing Industry Association (SETFIA);
- South East Fishing Association (SEFA);
- Seafood Industry Victoria (SIV); and
- VR Fish.

Nominated Liaison Contact

Further information associated with the environmental aspects of the 2008 East Vic/P41 2D Seismic survey may be obtained from Bass Strait Oil Company by writing to:

Keith Jackson
Exploration Manager
Bass Strait Oil Company
Level 1, 99 William St
Melbourne, Victoria, Australia
Phone (+61 3) 99273000
Fax (+61 3) 96146533



Table 4: Environmental Risk Assessment Summary

Aspects (Activities/ Emissions)	Description of Potential Impacts on the Environment	Proposed Management Measures	Consequence Severity Rating	Likelihood/ Frequency	Residual Risk
Physical presence of vessel-interference with other user activities	potential social impact on other users eg collision, damage to fishing gear etc.	Advise fishing industry of expected timing, and location Conduct on-going consultation with relevant fishing groups Recover lost streamer if practicable	1	D	Low
Physical presence of vessel- collision or grounding leading to oil spill	Potential oiling of sea birds, fish tainting, shoreline pollution, disruption of fishing activities.	Issue Notice to Mariners for Survey Duration Ship Collision Avoidance/Grounding Procedures in Place and some 70 km offshore Solid streamers in use SOPEP and Emergency Response Procedures in place Crew awareness and exercises in Oil Spill and Emergency response Reporting of spills >80L Incident investigation & corrective action monitoring requirements Functioning navigation lights, radar and radio communication	3	E	Moderate



Aspects (Activities/ Emissions)	Description of Potential Impacts on the Environment	Proposed Management Measures	Consequence Severity Rating	Likelihood/ Frequency	Residual Risk
Storage/handling of chemicals and oil and potential for spillage or liquid discharge	Toxic effects on marine life including fish, plankton, benthos, marine mammals and turtles.	Secure containment areas for oils and chemicals Availability and use of appropriate materials, eg absorbents, for cleanup Use of drip trays whilst decanting Cleanup of spills as soon as practicable MSDSs available Training of personnel in safe handling procedures	1	E	Low
Seismic acquisition	Acoustic disturbance to marine fauna	Comply with DEWHA EPBC Act Policy Statement 2.1- Interaction between offshore seismic exploration and whales, May 2007 MMO On-Board Consultation with fishing industry Distance of permit from sensitive habitat (see Biological Environment Section).	1	C	Low



Aspects (Activities/ Emissions)	Description of Potential Impacts on the Environment	Proposed Management Measures	Consequence Severity Rating	Likelihood/ Frequency	Residual Risk
Waste Disposal (including sewage and food scraps discharge)	Increased nutrient availability, increased BOD, potential toxic effects on marine life.	<p>Compliance with MARPOL and all laws and regulations</p> <p>The vessel has a current International Sewage Pollution Prevention Certificate (8207773-884568-007) as issued under the provisions of the International Convention for the Prevention of Pollution from Ships, (1973). The vessel's sewage treatment system ensures that sewage is macerated to a small particle size, and is treated to neutralize bacteria</p> <p>The vessel has one macerator which is in good condition, regularly maintained and part of vessel operations supervisor's daily check.</p> <p>Minimize quantities of waste generated</p> <p>Wastes will be segregated, labelled and stored in secure areas prior to removal to the shore for appropriate disposal or recycling rather than incineration.</p> <p>Personnel will be trained to ensure compliance with the waste management requirements</p> <p>Treated effluent and food scraps to be disposed in accordance with MARPOL. All food scraps will be macerated to a size of less than 25 mm before discharge over the side. The macerator is in good condition, regularly maintained and part of vessel operations supervisor's daily check</p> <p>Wastes disposed to approved sites onshore</p> <p>Oils collected and disposed onshore</p> <p>Oily water treatment system treats contaminated deck drainage and discharges oily water at 15ppm</p> <p>Lithium Battery disposal procedure</p>	1	D	Low



Aspects (Activities/ Emissions)	Description of Potential Impacts on the Environment	Proposed Management Measures	Consequence Severity Rating	Likelihood/ Frequency	Residual Risk
Seismic acquisition- damage seismic streamer	Potential oiling of sea birds, fish tainting, shoreline pollution, disruption of fishing activities.	Solid seal streamers will be used Maintenance procedures for streamer Recover lost segments where practicable	2	D	Low