

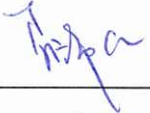




SIPC AUSTRALIA PTY LTD

2009 PANDA NT/P76 3D SEISMIC PROGRAMME

SUMMARY ENVIRONMENT PLAN

					
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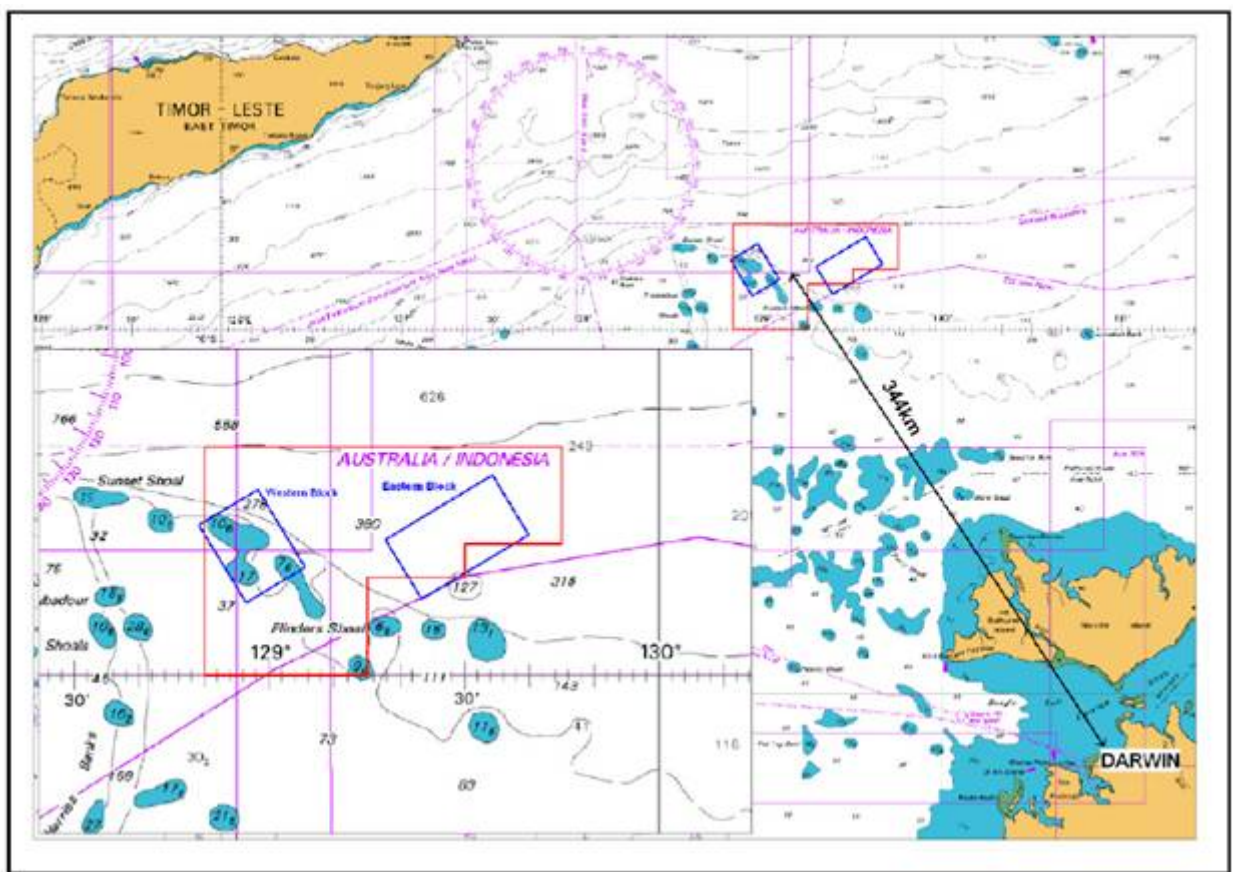
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1 Project Description

Exploration Permit NT/P76 is located in commonwealth waters approximately 350km NNW of Darwin, NT as shown in **Figure 1.1**. The closest landfall sites are Pularumpi, Melville Island (NT) located 178km SE of NT/P76 and Palau Jako on Timor-Leste located approximately 200km WNW of the permit. All of the actual areas to be surveyed are located beyond the limits of the Exclusive Economic Zone (EEZ) and Australian Fishing Zone (AFZ) on the continental margin between Australia and Indonesia. Vessel manoeuvring activities, however, will be undertaken within AFZ/EEZ waters to a minor degree. Coordinates of the proposed seismic survey areas are provided in **Figure 1.2** and **Table 1.1**.

The 2009 Panda 3D seismic surveys are expected to take about 65-75 days (weather-dependent) with a combined 3D acquisition area of approximately 1,200km² (within NT/P76) .. The actual start date is subject to contractual arrangements being completed and vessel availability, however is currently planned for commencement during late August , 2009 for the first survey (completion late September) , and mid-October for the second survey (completion late November) . Both survey areas will be shot in a NW-SE direction.

Figure 1-1: NT/P76 Location Map



The purpose of the survey is to determine the subsurface geology of the permit area. Marine seismic systems consist of a sound source towed behind the vessel within a few metres of the surface that produce sound pulses at a controlled frequency range at set time intervals (SCAR Adhoc Work Group, 2002). The seismic signals reflected back are recorded by hydrophones towed behind the vessel.

The method employed for this survey will be a 3 Dimensional. The seismic survey vessel will traverse the survey area along defined transects (or seismic lines) in water depths ranging from approximately 10m to 440m. The seismic signals will be emitted from dual airguns of up to 3460 cubic inch capacity (each) with an operational pressure of 2000psi towed behind the vessel at a depth of 5m. The airguns will be fired at intervals of approximately 7-10seconds resulting in a shot point interval of approx. 18.75m. The vessel will tow up to 10 solid hydrophone streamers approximately 6km in length. These streamers will be towed at a depth of approximately 6m and have a streamer separation distance of 100m with tail buoys at the end of the streamers.

The survey is designed such that seismic equipment will maintain sufficient clearance from seafloor or benthic communities.

A support vessel will accompany the seismic vessel to maintain a safe distance between the array and other vessels and manage fishing interactions as required. The supply vessel may also provide the survey vessel with fuel and other logistical supplies if required.

2 Receiving Environment

Exploration Permit NT/P76 is located in the Bonaparte Basin 350km (191nm) to the NNW of Darwin. The closest landfall sites are Pularumpi, Melville Island (NT) located 178km SE of NT/P76 and Palau Jako on Timor-Leste located approximately 200km WNW of the permit. The majority of the permit lies beyond the limits of the Exclusive Economic Zone (EEZ) on the continental margin between Australia and Indonesia. The Integrated Marine and Coastal Regionalisation for Australia (IMCRA, V4.0) has classified the regions adjacent to the NT/P76 permit as the 'North-west Shelf Transition' and 'Timor Transition' Bioregions

The climate of the Timor Sea is a tropical monsoonal climate which consists of a dry 'winter' from April to September and a wet 'summer' from October to March. During the 'winter', strong easterly to south-easterly trade winds blow almost continually at 15-20knots originating from the Australian mainland. Summer winds are steady, moist and blowing from the WSW to NW. Two transition seasons are evident in the region, the September/October transition when surface winds usually possess a westerly component; and the March/April transition resulting in south-easterly winds. The area is subject to cyclonic activity between December and April (IMCRA, 1998).

Annual rainfall within the permit area is expected to be similar to the Greater Sunrise Field which is expected to be in the order of 1700mm with the majority of rainfall occurring between November and March (SKM, 2001). The mean air temperature is approximately 28°C with little variation. Jabiru Venture, located approximately 450km SW of NT/P76, varied from 28.3°C (summer) and 27.0°C (winter) (Heyward et al, 1997).

Tides in the Echo Shoal area, located approximately 230km south-west of NT/P76 are semidiurnal with a typical tidal range of 4m (springs) and 1.8m (neaps). Tidal currents are expected to flow ENE and ebb WSW in the upper 100m of the water column, and flooding SE and ebb WNW in the lower portion of the water column. Tidal speeds of 0.6m/s are expected at springs and 0.2m/s at neaps (Heywood et al, 1997).

Total wave heights generated in the Timor Sea comprise of sea waves (wind-generated) and swell waves (storm-generated). High sea wave conditions usually occur within 250km of tropical cyclones (Heyward et al, 1997) and swell waves result from storms in the Southern Ocean or south portion of the Indian Ocean. As such the predominant swell direction is from the SW to west with a period of greater than 10 seconds (SKM, 2001).

Surface currents are expected to reflect seasonal wind regimes. Local wind driven currents may attain 0.6m/s during Monsoonal or Trade surges, however speeds of 0.2-0.3m/s are more typical (Heyward et al, 1997).



The permit area is influenced by the Indonesian Through-flow (ITF) which contribute to the South Equatorial Current and flows as a warm mass of low-saline water that travels south between the Indonesian Archipelago and Australia. This contributes a small (0.1m/s) south-westerly component into the current regime of the area (Heyward et al, 1997)

The NT/P76 permit is located at the eastern pitching end of the Sahul Plateau, the northern slope of the Malita/Calder Graben and on the Troubadour Terrace off the northern margin of Australia and the Timor Sea. The lithospheric plate boundary between Australia and East Timor lies to the north of the permit area with the bottom of the oceanic trench (Timor Trough) lying approximately 60km north in 3000m water depth. A distinct shelf break defining a change between the continental shelf and upper slope exists at about the 130m water depth contour.

A review of the EPBC Act database (Protected Matters Search Tool) administered by the Department of Environment, Water, Heritage & the Arts (DEWHA) indicates that a total of 10 threatened marine species may occur within the permit area, with 17 species listed as migratory (nine (9) of the migratory species are also listed threatened species). The proposed survey area is not considered a critical habitat for the survival of any listed species. Similarly there are no known nesting, breeding or aggregation areas within or adjacent to the NT/P76 permit area for these species.

There are also additional listed marine species including cetaceans, sea snakes (17) and pipefish (30) protected by the EPBC Act which are found in the region of the NT/P76 permit. These species are likely to be transient through the permit area.

No EPBC-listed threatened ecological communities are in the vicinity of the permit area.

Seabirds found in the open ocean of the Timor Sea are highly mobile species which search vast areas of the sea for small fish species. Birds may be found feeding along natural linear oceanographic features where floating material accumulates providing small fish and invertebrates.

The bird species likely to occur in the permit region are those found widely in the tropics, and breed on oceanic islands (such as the islands of Ashmore Reef). The common species are Brown Booby, Bridled Booby, Common Noddy, Masked Gannet, Sooty Tern, Noddy Tern, Crested Tern, Lesser Frigatebird, Red Tailed Tropicbird, and Christmas Island Frigatebird (CEE, 2002).

The Streaked Shearwater(s) (*Puffinus leucomelas* and *Puffinus leucomelas*), are EPBC migratory species, and may use habitat, forage or overfly the permit area on migration, but given the lack of suitable roosting areas, sustained stays in the area are considered unlikely (the closest landfall is approximately 180km away at Melville Island).

NT/P76 does not lie in proximity to major shipping channels. The main commercial shipping channels connecting eastern Australian ports with Singapore lies approximately 50km from the north-east boundary of NT/76P (closest permit boundary).

A wide range of human activities occur in the general Timor Sea area including fishing, commercial oil and gas fields, shipping as well as recreational pursuits, heritage, research and tourism.

The majority of the survey areas lie beyond the Australian Fishing Zone (AFZ) and as such outside the legislative commonwealth fisheries area. However a portion of the eastern survey area lies in proximity to the AFZ and while seismic activities will not be undertaken in the AFZ, seismic and support vessel entry (i.e. vessel turning activity) into the AFZ may be required. Five commonwealth commercial fisheries are found in proximity to the proposed survey areas (Northern Prawn Fishery, Western Skipjack Tuna Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery, Timor Reef Fishery).

Traditional Indonesian fishing also occurs throughout the region, with the area a source of shark (i.e. shark-fin). The fishers catch demersal and pelagic fish to use as bait for shark fishing. Shark fishing is undertaken using longlines approximately 1000 fathoms in length and set with baited hooks. The most important species for their fins are Hammerheads (*Sphyrnidae* spp.), Makos (*Isurus oxyrinchus*) and Blue sharks (*Prionace glauca*), with Whaler Sharks (*Carcharhinus* spp.) contribution a large portion to the catch.



3 Major Environmental Hazards and Controls

A risk analysis has been undertaken for all aspects of the Seismic operations in accordance with the requirements of AS/NZ4360:2004 (Risk Management) and AS14001. The analysis indicates that, with the proposed management/ mitigation measures implemented, no significant environmental impacts are expected and the activities carry a low residual environmental risk. Further details of key environmental aspects of the operations are provided in Table 1.

4 Summary of Management Approach

SIPC, responsible for managing the day to day operational activities, has taken a systematic approach in identifying and assessing operational activities (aspects) and their associated environmental risk and establishing objectives, performance standards and criteria to manage and measure environmental performance.

5 Consultation Process

SIPC has consulted with regulatory agencies, fishery groups and fishing industry groups in preparation for the Seismic survey. Regulatory agencies consulted including Department of Environment and Water Resources, Department of Industry, Fishery and Mine and Australian Maritime Safety Authority.

Over a two month period (June to August 2009), a series of consultation have been held with parties having an interest in the commercial fisheries within the area of the Seismic Survey. SIPC is committed to continued and regular communications to relevant parties to minimise fishing impacts and to keep the group is informed of possible changes to the development strategy which may affect commercial fishing operations.

6 Contact Details

Further information associated with the environmental aspects of the Seismic Survey may be obtained from SIPC Pty Ltd by writing to:

Jinhong Li, Managing Director
SIPC Australia Pty Ltd, Level 35, 525 Collins St,
Melbourne CBD, VIC 3000



Table 1 Summary of Environmental Hazards,

Aspect/Activity	Impacts	Mitigation Measures	Res. Risk
Acoustic Noise – Survey	<p>Damage to marine mammals and marine life</p> <p>Behavioural changes to Cetaceans/Turtles</p> <p>Behavioural changes to fish/planktonic species</p>	<p>Survey area is outside primary migration routes and aggregation areas for threatened cetaceans and area is not within recognised breeding or aggregation grounds for turtles.</p> <p>Implement & comply with requirements of the DEWHA Industry Guidelines <i>Policy Statement 2.1 – Interaction between Offshore Seismic Exploration and Whales (2008) (includes soft-start, power-down, shut-down procedures)</i></p> <p>Cetacean sightings during survey forwarded to DEWHA</p> <p>Marine Crew fully trained in cetacean observation, distance estimation and reporting</p> <p>During night-time/low visibility conditions start-up will only occur if there have not been 3 or more whale instigated power/shut-downs in the preceding 24hr period or if operations were not underway in preceding 24hrs the vessel has been in the vicinity of the proposed start-up position for at least 2hrs (under good visibility conditions) and no whales have been sighted.</p> <p>Behavioural responses to fish likely to be localised and short-term with soft-start procedures minimising impacts</p>	<p>Low</p>



Aspect/Activity	Impacts	Mitigation Measures	Res. Risk
Seismic Vessel Presence	Interference with shipping and fishing vessels increasing the risk of collision	Permit areas at least 50km from main shipping channels Low density of fishing vessels in permit area Use of support vessel to manage any fishery interactions Information on the location and timing of seismic program to be communicated to vessels via AMSA through a Notice to Mariners issued for activity duration Safety/navigation lighting on vessel Vessel equipped with navigation aids (radio, radar & visual watches) & crew vigilant for fishing /commercial vessel during survey Crew competency with required maritime training standards Consultation with fishing industry groups before and during survey In accordance to MARPOL, the vessels will operate under Shipboard Oil Pollution Emergency Plan (SOPEP). Crew is trained in preparedness and routine drills undertaken Recovery of any lost streamers/equipment	Low
	Light-spill interfering with marine fauna and birds	Light emissions are in accordance with navigation safety and workplace safety requirements only Extent of light-spill limited	Low
	Anchoring activity creating disturbance to seabed benthos	No anchoring on location except in emergency Seabed substrate consists of sand/gravel allowing for rapid re-colonisation if emergency situation does prevail	Low
	Collision with Cetaceans (non seismic Periods)	Adoption of proximity controls in the Guidelines for Whale Watching (EA, 2005).	Low



Aspect/Activity	Impacts	Mitigation Measures	Res. Risk
Ballast Water Discharge	Introduction of exotic species which colonise and create competition for local resources	Initial mobilisation will observe AQIS Australian Ballast Water Management Requirements Local ballasting during seismic within permit area	Low
Vessel Biofouling	Introduction of exotic species which colonise and create competition for local resources	Biofouling risk assessment and associated biofouling management measures completed by vessel contractors prior to mobilisation to seismic area	Low
Grey water/sewage disposal	Increased nutrients in surrounding marine waters on discharge Visual amenity impacts	Sewage is treated in accordance with MARPOL 73/78 requirements (i.e. approved biological treatment). Equipment routinely inspected and maintained in accordance with Manufacturer's specifications High dispersal/dilution in Timor Sea marine environment No discharge within territory waters	Low
Oily water discharges from equipment spaces	Toxicity impacts to marine flora & fauna Reduction of water quality	Oily water passes through an oil/water separator and treated to an oil-in-water content <15ppm (MARPOL 73/78 Annex 1) Oily water discharged via an IMO approved Oil-in-water (OIW) meter as per MARPOL 73/78 Annex 1 Equipment routinely inspected and maintained in accordance with Manufacturer's specifications Separated oil stored in dedicated tank for onshore disposal (refer <i>Special wastes</i>) or incinerated Activity recorded in the Oil Record Log (onboard) Low volumes discharged and rapid dilution/dispersion in marine waters	Low



Aspect/Activity	Impacts	Mitigation Measures	Res. Risk
Putrescibles waste (food-scrap) discharges	Increased nutrients in surrounding marine waters on discharge Visual amenity impacts	Waste macerated to less than 25mm particle size in accordance with MARPOL 73/78 and discharged below water line. No discharge within 12nm of nearest land Macerator maintained in good condition and checked routinely Low volumes discharged and rapid dilution/dispersion in marine waters	Low
<i>Special waste disposal</i> (onshore)	Toxicity impacts to marine flora & fauna Reduced water quality Visual amenity impacts	Identification of waste reduction measures (at source) to prevent waste generation Clear waste identification, segregation, containment (in skips or sealed drums) and labelling; Waste storage areas are routinely inspected; Special waste disposed or recycled onshore (e.g. chemicals, lithium batteries) Training and reinforcement to all crew (& other) personnel of waste management requirements; Documented Disposal Records.	Low



Aspect/Activity	Impacts	Mitigation Measures	Res. Risk
<p>Incineration of wastes (paper, plastic & wood) & Equipment Combustion</p>	<p>Reduction in air quality Aesthetic impacts of smoke</p>	<p>Segregation/disposal requirements detailed in Vessel Garbage Management Plan Low volumes generated and rapid dilution/dispersion in atmosphere Regular equipment monitoring and maintenance undertaken to ensure maximum efficiencies in combustion equipment All emissions from marine utilities are in accordance with the guidelines in MARPOL Annex VI Prevention of Air Pollution from Ships</p>	<p>Low</p>
<p>Fuel transfer spill</p>	<p>Impacts on water quality and marine life</p>	<p>Fuel transfer at sea will be undertaken in accordance with approved Bunkering Procedures with all associated equipment routinely maintained and inspected; Suitable absorbent material is held on the vessel to cleanup small diesel spills; Availability of implemented and tested SOPEP</p>	<p>Low</p>



Aspect/Activity	Impacts	Mitigation Measures	Res. Risk
Diesel spill due to vessel collision/grounding	<p>Impacts on water quality and marine life</p> <p>Shoreline Pollution</p> <p>Disruption to fishing activities due to spills</p>	<p>Navigational aids on the vessel including navigation lighting, radars, radio and visual surveillance to avoid collisions.</p> <p>Vessel operated by experienced and competent crew with access to bathymetric and marine charts</p> <p>Grounding risk low due to distance from nearest landmass and lack of emergent landforms in the permit area.</p> <p>Detailed bathymetric survey on western survey area prior to seismic survey activity.</p> <p>Shallow areas present in the western seismic area will have survey activities performed during high tide periods.</p> <p>Issue of a Notice to Mariners via AMSA</p> <p>All spills > 80 litres reported to DRDPIFR</p> <p>Incident investigation & corrective action monitoring requirements</p> <p>Availability of implemented and tested SOPEP</p>	<p>Low</p>
Chemicals spills	<p>Impact on water quality and marine life</p>	<p>Small quantities of chemical are stored onboard</p> <p>Chemicals are packaged & labelled in accordance with legislation</p> <p>Crew members trained in the handling and PPE requirements of specific chemicals</p> <p>All chemical storage areas are appropriately signed and labelled with instructions and warnings;</p> <p>Chemical storage areas securely contained and routinely inspected;</p> <p>MSDSs are to be made available for all chemicals;</p> <p>Drip trays when decanting chemicals / Spill kits to be provided in appropriate locations;</p> <p>Availability of implemented and tested SOPEP.</p>	<p>Low</p>