

WEST PANAEUS 3D MARINE SEISMIC SURVEY PUBLIC SUMMARY

COORDINATES OF THE PETROLEUM ACTIVITY

Table I: Survey Area Coordinates

Northing	Easting
20° 30' 56.03" S	115° 15' 02.64" E
20° 13' 58.96" S	115° 15' 02.59" E
19° 59' 52.73" S	115° 29' 24.08" E
19° 59' 52.84" S	115° 39' 44.17" E
19° 48' 01.00" S	115° 51' 48.71" E
19° 48' 00.98" S	116° 11' 56.25" E
19° 56' 41.12" S	116° 11' 56.48" E
20° 22' 10.01" S	115° 46' 00.64" E
20° 12' 11.63" S	115° 34' 03.91" E
20° 16' 53.65" S	115° 29' 20.14" E
20° 30' 56.03" S	115° 15' 02.64" E

DESCRIPTION OF THE RECEIVING ENVIRONMENT

Sediments in the survey area are expected to comprise predominantly unconsolidated sandy, silty sediments with more shallow sub-tidal, low relief reef platform/sand mosaic areas in the western portion of the survey area. Previous environmental surveys conducted in the area indicate that these sediment types are widespread throughout the area.

Sediments in deeper water are subject to lower energy regimes and usually comprise finer grained sands and silts with varying proportions of mud and shell fragments. These habitats are favourable for burrowing organisms, particularly polychaete worms and smaller crustaceans. Attached benthic organisms are likely to be sparse, however any areas of exposed hard substrate are likely to be colonised by deep-water filter feeding organisms, such as soft corals, hydroids and sponges.

A number of sharks and pelagic finfish, including mackerels, tunas and billfishes, occur in the waters of the North West Shelf and would be expected in the survey area. The deep offshore environment of the proposed survey area is typical of broad expanses of the continental slope and is not expected to represent habitat of particular significance to sharks and finfish.

Six species of sea turtle occur in north-western Australian waters including the green, hawksbill, leatherback, flatback, loggerhead and olive ridley turtles. The nearest areas known to support turtle nesting (green, flatback and hawksbill turtles) are the beaches of islands in the Barrow-Montebello Island complex, approximately 9 km south of the proposed survey area at its closest point. The seismic survey will be managed to avoid the mating aggregation period for these species. The seismic survey is proposed to occur within the last month of the nesting periods identified for the region, however, the survey will be managed to avoid the internesting turtle habitat and minimise potential interactions with turtle hatchlings.

Several species of whale and dolphin are known to frequent the waters of the North West Shelf with the humpback whale being the most common whale species in the Pilbara region. Humpbacks migrate between Antarctic waters and the Kimberley each winter to mate and breed. The main migration path is centred along the 200 m bathymetric contour. Migrating humpbacks pass the Montebello Islands between late July and early September. The survey is scheduled to occur between March and June 2007 and will therefore avoid the peak migration periods for humpback whales in the region.

Whales with widespread or tropical deep water distributions that may occur in the region, including Antarctic minke, Bryde's, killer, sperm, fin, sei and false killer whales are not expected to occur in significant numbers in the survey area. The survey area does not represent any recognised breeding, feeding or migratory areas for cetacean species other than humpback whales.

Description of the Action

PGS Geophysical (PGS) proposes to undertake a 3D seismic survey of multiple petroleum leases in shallow to medium depth Commonwealth marine waters. The survey will take between 45-100 days (vessel dependent) and is anticipated to occur between March and June 2007. Seismic data will be acquired by PGS Geophysical using a purpose built vessel towing a conventional array of airguns and hydrophones.

Details of Major Hazards and Controls

Risk analysis has been undertaken for all aspects of the proposed seismic acquisition program, in accordance with the procedures outlined in the Australian and New Zealand Standard AS/NZS 4360:1999 (Risk Management). The analysis indicates that the risk of significant adverse environmental effects from the survey is low. A summary of the environmental hazards, potential effects and management approaches adopted during the proposed programme are indicated in Table 2.

Summary of the Management Approach

PGS's operations are conducted within a comprehensive Health, Safety, Environment and Quality (HSE&Q) management framework. This framework ensures a systematic approach to environmental management, with the environmental aspects of each project addressed from project conception, throughout project planning and as an integral component of implementation.

Consultation Details

Consultations with government and industry groups regarding seismic surveys at the proposed location have included:

- Department of Fisheries Western Australia (DoF)
- Australian Fisheries Management Authority (AFMA)
- Western Australian Fishing Industry Council (WAFIC)
- Onslow Prawn Managed Fishery
- Deep Water Wet line Fishery
- Pilbara Demersal Finfish Fishery
- Pilbara Trap Managed Fishery
- WA North Coast Shark Fishery

These consultations have indicated that commercial and recreational fishing activity in the vicinity of proposed survey area is low, due to the time of year, distance offshore, fishing restrictions in the area and often unpredictable weather. The particular environmental issues or sensitivities relevant to the proposal are:

- The presence of interesting marine turtles and turtle hatchlings in the vicinity of operations; and
- The high intrinsic conservation value of the nearby Montebello Islands Marine Park.

Whilst key stakeholders will be advised of the start date of the survey prior to commencement, there are no plans for further consultations due to the short duration of the program.

Contact Details

Further information may be obtained by writing to:

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Table 2: Summary of Environmental Hazards, Potential Effects and Management Approach

Environmental Aspect and Incident	Potential Environmental Effect	Management Approach	Risk
Acoustic impulse from air-guns.	Potential physiological effects or disruption to behaviour patterns of marine fauna.	Survey will be managed to avoid peak migration periods of the humpback whale. Comply with DEH guidelines for minimising possible disturbance to cetaceans, including: <ul style="list-style-type: none"> • Visual observations during pre-start procedures and during survey; • Use of soft start procedures; and, • Delay start up procedures/ shut down any operating acoustic source if whales are within 3km of survey vessel • No discharge of seismic source if turtle mating aggregations (≥ 20 turtles) within 200m of seismic source. Vessel to avoid all mating aggregations, where practicable • Use of scout vessel to act as advance warning deterrent for cetaceans and turtles. 	Low risk
Grey water/ sewage disposal.	Potential localised reduction in water quality - nutrient enrichment.	Treat in accordance with P(SL)A clause 222 and MARPOL 73/78 prior to discharge. Offshore discharge (>12 nm from land) only. High dispersal/dilution factor. Approved onboard sewage treatment plant. Biodegradable detergents only.	Low risk.
Discharge of oily water from bilges.	Potential localised and temporary acute toxic effects.	All bilge water passes through an oil/water separator prior to discharge. All bilge discharges treated to <15 ppm hydrocarbons; MARPOL 73/78 standard for oily water discharge. Discharge quality automatically monitored with alarm. Low volumes and rapid dilution/dispersal.	Low risk.
Putrescible galley wastes disposal.	Potential localised reduction in water quality - nutrient enrichment.	Low volumes and rapid dispersal/dilution. Maceration to <25 mm prior to discharge or incineration. Discharge only when >12nm from shore. Discharges in accordance with MARPOL 73/78 and P(SL)A Schedule Clause 222.	Low risk.
Solid wastes disposal.	Potential environmental degradation from incorrect disposal.	Incineration or onshore disposal of solid wastes in accordance with EP, Waste Management Plan and MARPOL 73/78.	Low risk.
Waste oil disposal.	Potential localised chronic/acute toxic effects.	No waste oil disposed at sea. All waste oils collected and returned to shore for recycling/disposal in accordance with EP, WMP and MARPOL 73/78.	Low risk.

Environmental Aspect and Incident	Potential Environmental Effect	Management Approach	Risk
Atmospheric emissions.	Potential increase in greenhouse effect.	Engines maintained to operate at optimum efficiency to minimise emissions.	Low risk.
Artificial lighting.	Potential attractant/ disturbance to marine life.	Lighting minimum required for navigation and safety requirements. Extent of lightspill limited. Survey in remote location beyond the distance at which nesting turtles on the Montebello/ Barrow Islands may be affected. Hatchlings in water unlikely to follow seismic vessel for extended periods.	Low risk.
Anchoring activity.	Potential localised disturbance to benthos.	No anchoring on location except in emergency. No sensitive benthos.	Low risk.
Vessel collision.	Potential acute toxic effect on marine organisms from oil spill.	Vessel equipped with sophisticated navigation aids and competent crew maintaining 24 hour visual, radio and radar watch for other vessels. Other vessels made aware of seismic vessel's restricted ability to manoeuvre. Survey vessel carries navigation lighting. OSCP in place. Adhere to maritime standards requiring notification of vessel presence via notice to mariners. Seagoing movements of vessel will comply with maritime standards and AMSA standards.	Low risk.
Fuel loss during transfer	Potential acute toxic effect on marine organisms.	Not expected during survey. Strict adherence to refuelling procedures. OSCP in place. Small volume. Survey timed so that wind conditions would cause diesel to move away from land and be subject to very rapid evaporation	Low risk.
Displacement of other users of marine environment.	Potential disruption to commercial fishing/vessel operations	Liaise with relevant authorities. Fishermen and other commercial mariners alerted of vessel presence. Notice to Mariners posted.	Low risk.