

# Reliance 2D and 3D Marine Seismic Survey Environment Plan: Public Summary

This summary of the Reliance 2D and 3D Marine Seismic Survey Environment Plan (EP) is prepared in accordance with the requirements under Regulations 11(7) and 11(8) of the *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999* (P[SL]A) and submitted as a legislative and mandatory requirement to the Western Australia Department of Industry and Resources (DoIR).

## Introduction

Reliance Exploration and Production - DMCC (Reliance) is to conduct 2D and 3D marine seismic surveys within and adjacent to Exploration Permit Area WA-405-P. The seismic survey area is located on the continental slope off the north coast of Western Australia in Commonwealth marine waters, approximately 110 km from the Australian mainland.

## Coordinates of the Proposed Activity

The seismic surveys will occur in Commonwealth marine waters within and adjacent to Exploration Permit Area WA-405-P (Figure 1). The survey area is bounded by the coordinates listed in Table 1 and will cover 880 line kilometres and a total area of approximately 5750 km<sup>2</sup>.

**Table 1 Coordinates of the Proposed Survey Area**

Point ID (See Figure 1)	Longitude (East)			Latitude (South)		
	degrees	minutes	seconds	degrees	minutes	seconds
A	127	4	48	12	4	48
B	127	45	00	12	4	48
C	127	45	00	12	49	48
D	127	19	48	12	49	48
E	127	19	48	12	45	00
F	127	4	48	12	45	00

Datum, GDA 94

## Description of the Proposed Activity

The seismic surveys will map sub-surface geology via the acquisition of 2D and 3D seismic data to ascertain potential sub-surface oil and gas deposits of the survey area.

The 2D survey will be conducted by CGG Veritas, a geophysical survey contractor, using "M/V Pacific Titan". The M/V Pacific Titan is a specialised seismic survey vessel of 64.5 m overall length and 18.5 m beam. A support/scout vessel operating out of Darwin will be employed for logistical, safety and equipment management support.

The seismic energy source for the 2D survey will be provided by a single airgun array of between 4000 and 6000 cubic inches, towed astern of the vessel at a depth of approximately 6 m, and discharged at intervals of approximately ten seconds. Seismic reflections from subsurface layers will be detected by hydrophones mounted in a single solid streamer of between 6 and 8 km in length.

Details of the 3D survey are not yet known but will be submitted to DoIR for approval prior to commencement of the survey.

The 2D seismic survey is scheduled to commence between June and October 2008 and take approximately 20 days to complete. The 3D survey is expected to commence between December 2008 and April 2009 and take approximately 90 days to complete. Seismic operations will occur 24 hours per day.

## **Description of the Receiving Environment**

### ***Physical Environment***

The proposed survey area is located on the continental shelf, 110 km north of Cape Londonderry in water depths of 30 to 130 m. The seabed of the proposed survey location shelves gently offshore, and comprises mainly gravel, sand and silt. There are no significant or shallow seabed features in the bathymetric information for the area.

The climate of the survey area is tropical monsoonal with distinct wet season (November to April) and dry season (May to October). Tropical cyclone activity is common between December and April but most are likely to pass through the Timor Sea to the north of the survey area.

Swell heights tend to be persistent at around 2 m in the winter and less than 1 m during the summer.

### ***Biological Environment***

Some marine migratory species with broad distributions such as fish, sharks, marine turtles, seabirds and cetaceans may traverse the survey area, at least on occasion. The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) lists six threatened and migratory species that could occur in the area, including the following:

- Whale shark (threatened and migratory)
- Green, leatherback, loggerhead, hawksbill, olive Ridley and flatback turtles (threatened and migratory)
- Salt-water crocodile (migratory)
- Streaked shearwater (migratory)
- Blue and humpback whales (migratory and threatened)
- Bryde's whale, killer whale and spotted bottlenose dolphin (migratory)

The survey area does not contain recognised critical habitat for any of the above threatened or migratory species and, as the open oceanic conditions do not represent feeding or breeding grounds, aggregations of marine turtles or marine mammals (whales, dolphins) are unlikely to occur.

## **Benthic Assemblages**

The substrate over the survey area is likely to consist of soft sediments. The benthic flora and fauna is likely to be limited due to substrate type and water depth. Infaunal communities are likely to be comprised of small burrowing invertebrates. Attached benthic organisms are expected to be sparse and are likely to comprise anemones, sea pens and hydroids.

The water depths and uniformity of the bathymetry at the survey site preclude photosynthetic activity and benthic flora is unlikely to occur within the survey area.

## Socio-Economic Environment

The Joseph Bonaparte Gulf supports low levels of petroleum exploration and development but there is no petroleum infrastructure in or adjacent to the survey area. Low levels of commercial shipping is expected to traverse the survey area.

Consultation with Commonwealth and State fishing authorities and commercial operators indicate that fishing activity in the survey area is low. Levels of tourism, recreational or game fishing is expected to be very low or absent in the area.

## Major Environmental Hazards and Controls

All aspects of the survey have been subjected to risk analysis, which has been used to characterize risk likelihood and severity and evaluate the potential environmental risks and effects. Table 2 summarises the risk analysis for the key aspects of the survey.

**Table 2 Summary of Potential Major Environmental Risks and Management Approach**

Hazard/ Incident	Potential Hazard Consequence	Risk and Management Approach
Acoustic impulse from air-guns during seismic operations.	Physiological damage or disruption to behaviour patterns of sensitive marine fauna.	Low risk. Survey scheduled to avoid peak whale migration periods and lies outside recognised migration routes and aggregation areas. Implementation of DEWR (now DEWHA) <i>Guidelines for Interactions Between Offshore Seismic Exploration and Whales</i> (2007). Employ an MMO.
Collision with a cetacean or turtle	Injury or death	Low risk. Survey scheduled to avoid peak migration periods and lies outside migration pathways or aggregation areas. Sensitive animals are likely to avoid operating seismic vessel.
Exchange of Ballast Water	Alteration to community composition and function – competition with indigenous species.	Low risk. All vessels will comply with Australian quarantine laws. Ballast exchanges conducted outside the Australian 12 nautical mile limit.
Diesel fuel loss through rupture of vessel fuel tanks or during fuel transfer	Potential acute/chronic toxic effects on marine organisms from hydrocarbon loss.	Low risk. Sophisticated navigation equipment and support vessel to reduce chances of collision. Strict adherence to vessel refuelling guidelines and procedures. Approved SOPEP.

Given the water depth and absence of shallow bathymetric features, distance from shore, separation from recognised cetacean migratory routes, and the management requirements for all environmental aspects of operations, the risk of significant adverse environmental effects from the seismic survey is low.

## Management Approach

The Reliance marine seismic surveys will be conducted in accordance with all legislative and regulatory requirements, to the satisfaction of the DoIR. Reliance's overall environmental objective for the program is to avoid or minimise environmental risks to as low as reasonably practicable (ALARP). The environmental management approaches relevant to key aspects of the seismic acquisition program are summarised in Table 2.

## Consultations

Consultations regarding exploration activity in and around Exploration Permit Area WA-405-P have been undertaken with relevant stakeholders, including:

- Australian Maritime Safety Authority (AMSA), Canberra
- Australian Fisheries Management Authority (AFMA)
- Commonwealth Fisheries Association
- Recfishwest (recreational fishing association)
- Western Australia Department of Fisheries
- Western Australia Fishing Industry Council

These consultations have indicated that conflicts with other users of the area are unlikely as commercial and recreational fishing activity in the area is absent or at low levels. No commercial tourism activity occurs in the vicinity of the survey area.

AMSA indicated that low levels of vessel movement occur across the survey area. Management of interactions with other vessels will include the use of a support vessel and accredited seamen on vessels with sophisticated navigation equipment. A Notice to Mariners will also be posted in accordance with standard maritime procedures.

## Further Details

For further information about the Reliance 2D and 3D marine seismic surveys please contact:

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