OMV Australia

Summary

Environmental Plan

Klimt 2D Seismic Survey

WA-362-P, WA-363-P, WA-386-P & WA-387-P

Northern Carnarvon Basin, Offshore WA

Revision 0

8th January 2008

Revision History

Rev 0	9th Jan 2008	For Issue to DOIR	JB	MHB	
Rev C	8 Jan 2008	With client comments	MHB		
Rev B	7th Jan 2008	Client Review	JB		
Rev A	7thth Jan 2008	Internal Review	JB	LC	
Rev.	Date	Description	By	Chkd	App.

Prepared by:
Jane Beck
Principal Environmental Consultant
J. M Beck Pty Ltd
12 Friarbird Place
Twin Waters, Qld, 4564
Ph: 07 5450 6754
Mobile: 0419 614 846
Email: mulyan@ozemail.com.au

For

OMV Australia Pty Ltd
Level 28 St Martins Tower
GPO Box 2520
Perth WA 6001
08 9223 5000
Via email karen.klinger@omv.com

Summary

Introduction

OMV Australia Pty Ltd (OMV) is proposing to undertake a 2-dimensional (2D) seismic acquisition survey in the following permit areas: WA-362-P, WA-363-P, WA-386-P and WA-387-P. The permits are located in Commonwealth waters offshore northern Western Australia. This summarises the Environmental Plan which was submitted to facilitate the seismic approval process as required under the Petroleum (Submerged Lands) Act 1967, and Schedule of Directions (as amended).

It is expected that the planned activities will occur between mid January 2008 until about the end of April 2008 subject to weather conditions.

Location

Figure 1: Location Map for Seismic Survey Area

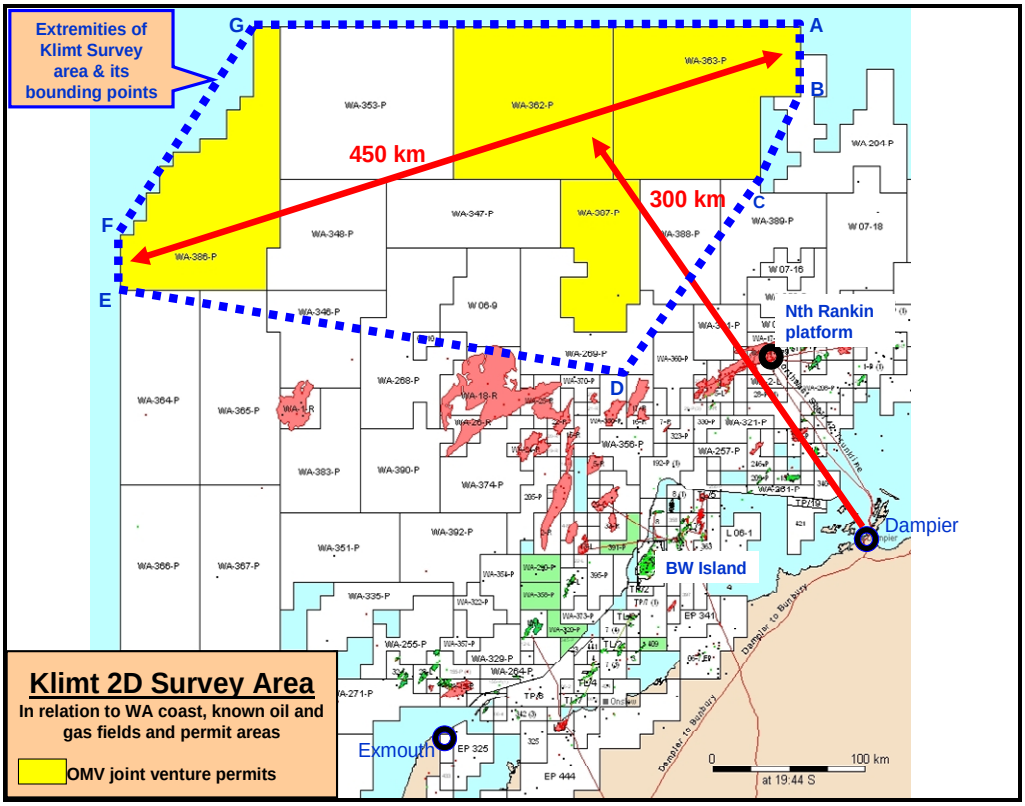

Table 1: Broad Survey Footprint Boundaries

	Latitude SOUTH			Longitude EAST		
Location point	degrees	minutes	seconds	degrees	minutes	seconds
A	17	35	00	116	20	00
B	18	00	00	116	20	00
C	18	30	00	116	05	00
D	19	40	00	115	15	00
E	19	10	00	112	05	00
F	18	50	00	112	05	00
G	17	35	00	113	05	00

Description of Action

The specialist seismic acquisition vessel *Ocean Endeavour* from Gardline Marine Sciences Pty Ltd has been contracted for the Klimt 2D Survey. The vessel will be rigged with a single seismic source array and a single 6,000m streamer for seismic acquisition.

The single source deployed will be an airgun array of 1,950 cubic inch volume using compressed air at a pressure of 2,000 psi. The array will be towed at a depth of 5m below surface and fired at 25m pop intervals about every 11 seconds whilst recording a seismic line or traverse. Seismic data will be acquired for approximately 50% of the time the vessel is at sea, the remaining time being for line changes, weather standby, crew changes etc.

There will be a single passive streamer 6,000m long detecting 480 channels of acoustic reflection data, the data will be transmitted down the streamer and recorded onboard ship on magnetic tape. The streamer will be towed at about 6m to 8m depth and will record a single subsurface track of reflection data for each line. The survey lines will be acquired as a sparse, roughly orthogonal grid orientated NW-SE by SW-NE. The average line length is about 90km, and the grid density varies from the most sparse at about 10km x 15km to a still very broad 3km x 8km. The reflection seismic data recorded on magnetic tape will be processed later onshore.

The boat will cruise at a speed of about 4.5 knots through the water when surveying, and therefore the vessel and its passive trailing gear will transit over any one spot in about 40 minutes. The total personnel on-board the seismic vessel will be about 32 persons. The vessel will operate with 35 day tours of duty between port calls out of Dampier or Port Hedland. The vessel will take fuel, supplies, and crew changes on port calls. Offshore re-supply, re-fuelling and crew changes are not planned.

Table 2: Vessel Specification

Aspect	Ocean Endeavour
Dimensions	
Length overall	77.1m
Breadth	14.8m
Draft	4.35m
Gross Registered Tonnage	1967 Tonnes
Net Registered Tonnage	590 Tonnes
Capacities	
Vessel Speed (cruising)	11 knots
Fuel- diesel	280 Tonnes
Accommodation	32 berths
Seismic Equipment	
Number of Streamers	One
Maximum streamer length	6000m
Maximum source volume	1,950 cubic inch

Description of Receiving Environment

Physical Environment

The permits WA-362-P, WA-363-P, WA-386-P and WA-387-P are located well offshore of the Pilbara Coast, northwest Western Australia, in the Indian Ocean. The nearest point of land is Dampier and its archipelago about 170km southeast of the southern boundary of WA-387-P, but more generally the central trend of the permits and the survey area are some 300km northwest of the Pilbara Coast. Outlying block WA-386-P is some 300km north of Exmouth at its closest point. The survey is wholly located in deep water ranging from 1,000m to 3,000m.

The climate of the region is arid tropical monsoonal. The area is subject to cyclonic activity primarily between December and April. Strong easterly to south easterly trade winds blow at 15 to 20 knots almost continually from May to October.

The permit areas are oceanic. The tidal range inshore is large with a maximum of 5m, the tidal ranges further offshore are not well understood but likely to be smaller. Wave energy is moderate to high with up to 8m total wave heights in winter storm conditions, cyclonic storms occur mainly in summer, and the prevailing swell height is 3 to 4m. The water is generally clear but may become turbid during periods of spring tide. Regional sea surface temperatures range from 26-31°C in summer and 19-24°C in winter decreasing southwards.

Fauna

There are no seabird breeding colonies located in the permits or survey areas. However, a number of species may transit over the survey area as they migrate between hemispheres.

A number of endangered or vulnerable species may forage or transit within the survey area including turtles and a number of cetacean species. Whale sharks may also transit through the survey area between March and May.

The listed species of cetaceans that may be sighted in the survey area include those shown in Table 3 below.

Table 3: Listed Cetaceans Species that may transit in the survey area

Cetaceans	Threatened Species	Migratory Species
Mammals		
Blue Whale	Endangered	√
Humpback Whale	Vulnerable	√
Sei Whale	Vulnerable	√
Antarctic Minke Whale		√
Bryde's Whale		√
Killer Whale, Orca		√
Sperm Whale		√
Short-finned Pilot Whale		
Common dolphin		
Risso's Dolphin		
Pygmy Sperm Whale		
Dwarf Sperm Whale		
Melon-headed Whale		
False Killer Whale		
Spotted Dolphin		
Stripped Dolphin		
Long-snouted Spinner Dolphin		
Rough-Toothed Dolphin		
Bottlenose Dolphin		
Curvier's Beaked Whale		
Pygmy Killer Whale		
Blainville's Beaked Whale		
Gingko Toothed Beaked Whale		
Longman's Beaked Whale		
Fraser's Dolphin		

Coral Reefs

The nearest coral reefs are 100km away to the southeast at the Montebello Islands at their closest point of approach to WA-387-P. Coral reefs and coral-dominated benthic communities are common in rocky shallow water areas. The most common morphology of these reefs is a fringing formation adjacent to mainland rocky shores or emergent islands. The Ningaloo Reef tract some 250km to the south and extending further southward from the North West Cape, is Australia's major fringing reef system and is managed as a Marine Reserve. Detailed taxonomic surveys on shallow water coral reefs in the region typically report high biodiversity and fine-scale habitat complexity. Coral spawning peaks between March and April and usually occurs 7–10 nights after the full moon.

The water depth within the WA-362-P, WA-363-P, WA-386-P and WA-387-P permits precludes any significant habitat for coral.

Conservation Areas

The Klimt-2D seismic survey is not in proximity to, nor does it impact World/National Heritage properties, RAMSAR wetlands, threatened ecological communities, Commonwealth conservation reserves/parks or critical habitats.

Commercial Fisheries

The Commonwealth fisheries include the following (AFMA, 2007):

- North-west slope Trawl
- Western Deepwater Trawl
- Skipjack Tuna (Western)
- Western Tuna and Billfish Fishery

Four commercial fisheries are found in the region, although most fishing is restricted to waters shallower than those in the subject permit areas

Shipping

There are no major ports in or near the permit areas. However, the bulk iron ore export ports of Dampier (which also exports LNG) and Port Hedland are located 300km and 400km southeast of the permits respectively. A north-south shipping lane passes through permit WA-362-P as evidenced by shipping locations reported to AMSA. Minor ports are located at Onslow and Exmouth. The main users of these minor ports are commercial fishing and charter vessels.

Petroleum Resources

The broader offshore North West Shelf Region has been producing significant oil and gas resources many decades

The nearest oil and gas facilities are all located well away from the survey area in the south-easterly direction as listed below:

Function	Export mode		Offset SE
Goodwyn	gas production platform	pipeline	75km
North Rankin	gas production platform	pipeline	100km
Angel	gas production platform	pipeline	115km
Barrow Island	oil production	tanker	140km
Varanus Island	oil and gas production	tanker & p/l	140km
Exeter-Mutineer	oil FPSO	tanker	100km

Oil exploration activities in the Indian Ocean off WA commenced in the late 1960s. Since this time many seismic surveys and well drilling operations have been conducted throughout the region, and searches for new sources of hydrocarbons are actively being pursued in the area.

Details on Major Environmental Hazards and Control

A formal assessment of the risk of potential environmental impacts and issues was carried out based upon a standard risk management approach consistent with the Australian/New Zealand Standard AS/NZS 4360:1999 Risk Management and HB 203:2000 Environmental risk management- Principles and process.

The management practices identified are designed to keep risks as low as reasonably practicable (ALARP) and economically achievable. Taking these management practices into consideration the residual risk is calculated.

Summary of Risk Levels

As can be seen from Table 5 below, eight individual risks have been identified, No aspects of the operation have been deemed to be of high or extreme risk.

Table 5: Number of Identified Risks and Risk Levels

Risk Level	Low	Moderate	High	Extreme
Seismic Acquisition (all activities)	7	1	None	None

The proposed management measures for each of the risks are tabulated in Table 6 below.

Table 5: Risks and Management Measures

Aspects (Activities/ Emissions)	**Description of Potential Impacts on the Environment**	**Management Measures**	**Risk Level**
R1. Physical presence of vessel- interference with other user's activities	Potential social impact on other users eg trailing gear collision, damage to fishing gear etc.	▪ Advise fishing industry of expected timing, and location ▪ Recover any lost streamer sections if practicable	Low
R2. Physical presence of vessel- collision or grounding leading to large oil spill	Potential oiling of sea birds, fish tainting, shoreline pollution, disruption of fishing activities.	▪ Ship Collision Avoidance/Grounding Procedures in Place ▪ Oil spill contingency and Emergency Response Plans in place ▪ Crew awareness and exercises in OS/E response ▪ Reporting of spills >80L ▪ Incident investigation & monitoring requirements	Moderate
R3. Quarantine failure - ballast water and hull bio-fouling	Potential to Introduce exotic marine pests and/or diseases	Check AQIS requirements have been met including and anti-fouling certification for previous importation of vessel into Australia in July 2007 Check and maintain ballast water records on vessel Ensure new equipment has cleared AQIS	Low

Aspects (Activities/ Emissions)	Description of Potential Impacts on the Environment	Management Measures	Risk Level
R4. Chemical storage failure	Toxic effects on marine life including fish, plankton, benthos, marine mammals and turtles.	▪ Secure containment areas for oils and chemicals ▪ Focus on chemical storage as part of OMV marine audit ▪ Use of safe liquid management procedures eg. shore to ship fuel transfer ▪ Use of appropriate materials, eg absorbents, for cleanup ▪ Use of drip trays whilst decanting ▪ Cleanup of spills as soon as practicable	Low
R5. Waste Streams – poor disposal of waste (including sewage and food scraps discharge)	Increased nutrient availability, increased BOD, potential toxic effects on marine life.	▪ Compliance with MARPOL and all laws and regulations ▪ Wastes will be segregated, labelled and stored in secure areas prior to removal to the shore for appropriate disposal ▪ Personnel will be trained to ensure compliance with the waste management requirements ▪ Treated effluent and food scraps to be disposed in accordance with MARPOL ▪ Dry waste will be managed to prevent contamination of the sea, e.g. skips covered ▪ Wastes disposed to approved sites onshore ▪ Minimize quantities of waste generated ▪ Bilge water discharged via oily-water separator ▪ Oily water separator will be inspected on OMV audit	Low
R6. Seismic acquisition – acoustic disturbance	Acoustic disturbance to marine fauna	▪ Employ dedicated MMO and comply with DEWR Cetacean Guidelines and record sightings and Appendix 1 ▪ The survey is outside main Humpback whale migration season, and known breeding areas ▪ Consultation with fishing industry ▪ Distance of permit from sensitive habitat	Low
R7. Operational handling failure of hazardous materials	Toxic effects on marine life including fish, plankton, benthos, marine mammals and turtles if inadvertently released to sea.	▪ Areas for storage and use of chemicals and dangerous liquids to be contained ▪ MSDS's available ▪ Appropriate materials to be used in the event of a spill eg absorbents ▪ Training of personnel in safe handling procedures ▪ Chemical storage and handling to be a focus area of the OMV marine audit	Low

Aspects (Activities/ Emissions)	Description of Potential Impacts on the Environment	Management Measures	Risk Level
R8. Seismic acquisition-damaged seismic streamer	Spill of light buoyancy oil - potential oiling of sea birds, fish tainting	▪ Maintenance procedures for streamer ▪ Streamers segmented every 150m ▪ Recover lost segments where practicable ▪ Use of streamers with low toxicity light oil content ▪ Distance of survey offshore and in deep water	Low

Management System Approach

The key responsibilities for Environmental Management are as follows:

- The OMV Managing Director is responsible and accountable to the OMV Board for ensuring that appropriate resources are allocated to meet OMV HSE Management Systems and Policy requirements; and establishing and regularly reviewing the HSE Policy;
- The Operations Geophysicist and offshore QC Supervisor are responsible and accountable for implementing the Environmental Policy within the operational area, through application of the Environmental Plan;
- All Project personnel including OMV personnel and third party contractors are responsible and accountable to adhering to the Environmental Policy and this Environmental Plan in all tasks that they undertake;
- The Ocean Endeavour Master, Project Manager and Party Chief are responsible for implementing this plan; and
- The Ocean Endeavour Master, Party Chief, the QC Supervisor and Marine Mammal Observer are responsible for implementing the Cetacean Guidelines.

Responsibilities and accountabilities for each position within the Company are documented to avoid confusion over responsibilities and accountabilities.

All shipboard personnel, including contractors, will be required to attend an environmental induction prior to mobilization. Training and awareness at all levels will aim to outline:

- The importance of conforming with the OMV HSE Management System and Policy, the requirements of the Environmental Plan and regulatory requirements;
- An understanding of the significance and potential of environmental effects associated with their work requirements;
- Personnel roles and responsibilities for environmental performance;
- Reporting;
- An understanding of the relevant objectives and requirements of the EP;
- An understanding of the emergency response system and their role;

- Any physical contact of any survey equipment with a Cetacean may be a reportable incident under the EPBC Act and is to be reported to OMV within two hours by the Party Manager and OMV Onboard Representative, and;
- A record of any complaints will be submitted to OMV both by the Party Manager and OMV Onboard Representative.

The EP is a controlled document and will be revised from time to time for each seismic acquisition survey. A distribution list ensures that all personnel who have responsibilities to ensure that EP is adhered to do in fact have access to the necessary information.

Consultation

OMV undertook consultation with the following organisations:

- WAFIC-(Commercial Fishing);
- WADOIR;
- WA Northern Trawl Owners Association;
- Australian Fisheries Management Authority;
- Commonwealth Fisheries Association;
- TunaWest;
- Northern Fishing Companies Association; and
- A. Raptis and Sons.

Consultation was via email and phone.

Contact Details

Further information may be obtained from OMV by writing to:

Mark Devereux
Exploration and Reservoir Manager
OMV Australia Pty Ltd
Level 28 St Martins Tower
GPO Box 2520
Perth WA 6001
08 9223 5000
Via email karen.klinger@omv.com

References used in EP

Australian Fisheries Management Authority, The Commercial Fishing Industry, retrieved 22/11/2007 at http://www.afma.gov.au/fisheries/industry/default.htm

Allen, G., 1997, Marine Fishes of Tropical Australia and South-East Asia, Third revised edition, Western Australian Museum, Perth.

BOM, 2007, Climate Averages downloaded 23rd Nov, 2007, at http://www.bom.gov.au/climate/averages/tables/cw_098017.shtml

BOM, 2007b, Wind Roses, downloaded 23rd November, 2007, at http://www.bom.gov.au/climate/averages/wind/IDCJCM0021_wind_roses.shtml.

Baker, A.N., 1988, Whales and Dolphins of Australia and New Zealand: An Identification Guide, Allen & Unwin, Wellington

Clarke, E., 1992, Whale Sharks, in National Geographic, December, pp123, 126-131, 134-138.

Cogger, H.G., 1975, Sea Snakes of Australia and New Guinea, In: The Biology of Sea Snakes, Dunson, W.A., (Ed), University Park Press, Baltimore.

Department of Environment and Conservation, 2007, Management Plan for the Montebello/Barrow Islands Marine Conservation Reserves, 2007-2017, Management Plan No 55, Downloaded on 19th November, 2007, at http://www.naturebase.net/component/option,com_hotproperty/task,view/id,117/Itemid,755/

Department of Environment and Water Resources, EPBC Act Protected Matters Report, retrieved 19th November, 2007, at http://www.environment.gov.au/cgibin/erin/ert/ert_dispatch.pl?loc_type=coordinate&search=Search&report=epbc

Heatwole, H., 1987, Sea Snakes, New South Wales University Press, Kensington, NSW, Australia.

Heatwole, H., & Seymour, R., 1975, Diving Physiology, In: The Biology of Sea Snakes, Dunson, W.A., (Ed), University Park Press, Baltimore.

Heyward, A.J.,Revill, A.J., & Sherwood, C.R., 2000, Review of Research and Data Relevant to Marine Environmental Management of Australia's North West Shelf, Western Australian Department of Environmental Protection, January.

Kailola, P. J., Williams, M.J., Stewart, P.C., Reichelt, R.E., McNee, A., Grieve, C., 1993. Australian Fisheries Resources Bureau of Resource Sciences, Department of Industries and Energy, and the Fisheries Research and Development Corporation. Canberra.

Last, P.R. & Stevens, J.D.,1994, Sharks and rays of Australia, CSIRO, Australia.

Living Planet Analysis, 1993, Marine Biota Atlas for the Gulf of Carpentaria, Comalco Aluminium Limited, Qld.

Marine Parks and Reserves Selection Working Group, 1994. A Representative Marine Reserve System for Western Australia, Department of Conservation and Land Management, Perth, Western Australia, June.

McCauley, R.D, Fewtrell, J., Duncan, A.J., Jenner, C., Jenner, M-N., Penrose, J.D., Prince, R.I.T., Adhitya, A., Murdoch, J., and McCabe, K., 2000, Marine Seismic Surveys- A Study of Environmental Implications, APPEA Journal, pp 692-708.
NSW Department of Primary Industries- Fisheries, Seahorses and their relatives, downloaded January 9th 2007, at
http://www.fisheries.nsw.gov.au/threatened_species/general/synganathids
OMV, 2007, Referral under EPBC Act for Klimt 2D Marine Seismic Survey (EPBC 2007).

Pendoley, K.L., 2005, Sea Turtles and the Environmental Management of Industrial Activities in North Western Australia, Thesis, for degree for Doctor of Philosophy, Murdoch University.

Tucker, M., 1989, Whales and Whale Watching in Australia, Australian National Parks and Wildlife Service, Canberra.