



East Spar Pipeline Inspection Environment Plan Summary

May 2010

This summary has been submitted to comply with Regulation 11(7)(8) of the Offshore Petroleum and Greenhouse Gas Storage (Environment) (OPGGG(E)) Regulations 1999.

Introduction

Apache proposes to inspect the East Spar Gas pipeline at the end of April 2010. The East Spar Gas pipeline is a concrete coated pipeline 62.5 km in length and connects the East Spar gas field via a subsea manifold in WA-214-P to Varanus Island. The pipeline is covered by the following licences: Offshore Commonwealth Waters WA-05-PL, State Waters TPL-12 and Onshore PL29 and PL30.

Routine pigging and pipeline inspection activities associated with the Varanus Hub facilities are covered in the Varanus Island Hub Operations Environment Plan (VI Hub Ops EP). In addition, the management of vessels associated with support and maintenance activities on the North West Shelf are covered in the General Petroleum Support Activities Environment Plan (GPSA EP).

The purpose of the bridging document is to describe and address additional risks posed by the East Spar Pipeline Inspection programme and describe the management and mitigation measures to be implemented to ensure that environmental risks and impacts are avoided, or reduced to as low as reasonably practicable (ALARP). The bridging document has been prepared in accordance with Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2009 (Subregulations 9, 17 & 20).

Project Description

The proposed inspection of the East Spar Gas pipeline will be done by intelligent pig (IP), magnetic flux leakage (MFL) and metal loss inspection and then mothballed for future use on completion of the pigging programme.

The proposed start date is 4th May 2010, depending on when the saturation diving vessel, REM Etive, arrives in the field. Inspection programme anticipated to require 20 to 25 days to complete including mobilisation. Extension of the schedule may result from poor weather conditions and if additional pig runs are required. Whilst undertaking inspection activities, the REM Etive is to remain dynamically positioned.

The activities to be carried out for the inspection of the East Spar pipeline are:

- Installing a subsea launcher into the existing East Spar manifold "Y" piece (94 m water depth).
- Valves on installed subsea launcher and exiting East Spar manifold will be operated by divers and ROV.
- Flushing with seawater containing oxygen scavenger, biocide, corrosion inhibitor and a dye for identification of any leaks. Flushing dosage at 500ppm and mothballing dosage at 700ppm.
- Running the cleaning, gauging and inspection pig sequence (between 7 and 11 runs).
- Delivery of treated seawater to subsea launcher via 2 x 4" diameter flexible hoses

- Modifying the onshore pig receiver on Varanus Island
- Installing temporary pipework so as to direct the first flush treated seawater to an existing water handling tank on Varanus Island for processing. Subsequent clean water will be directed into the bund on Varanus Island for eventual disposal down the Varanus Island water disposal wells.

Receiving Environment

A description of the existing terrestrial, marine and social environment relevant to this scope of work is provided in the Varanus Island Hub Operations Environment Plan.

In addition, a biological survey of the seabed using ROV in March 2010, confirmed that the seabed surrounding the existing East Spar facilities consists of unconsolidated bioturbated bare sand with occasional sea pens, whips and crinoids. No significant seabed features have been found.

Table 1 provides an overview of the timing of the major ecological activities on the North West Shelf in relation to the East Spar inspection programme. Although within the migration route for humpback whales (*Megaptera novaeangliae*) in the Exmouth to Port Hedland region, the timing of the inspection programme does not overlap with this migration. The activities are also outside of the turtle hatching and emergence period.

Table 1: Ecological activities on North West Shelf

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Ecological Activity												
Humpback whale migration						■	■	■	■	■		
Dugong breeding on North West Shelf	■	■	■	■	■	■	■	■	■	■	■	■
Turtle nesting on North West Shelf	■	■	■	■						■	■	■
Turtle hatchling emergence on North West Shelf	■	■	■	■	■					■	■	■
Migratory Birds			■	■	■	■	■	■	■	■		
Mass coral spawning (few nights within month)			■							■		
East Spar Inspection												
East Spar Inspection				■	■							

Key to activity

■	Peak of ecological activity, presence reliable and predictable
■	Low level of abundance/activity/presence
□	Activity not occurring
■	East Spar Inspection

Major Environmental Hazards and Controls

A summary of the environmental hazards and control measures identified during the Hazop and Hazid sessions are outlined in **Table 2**.

Table 2. Environmental risks and control measures for the East Spar Inspection Programme.

Environmental Risk	Control Measures	Likelihood	Consequence	Risk
Lack of environmental Awareness	<ul style="list-style-type: none"> • Personnel on REM Etive undergo Project induction and vessel induction. • Personnel onshore undergo Varanus Island induction. 	Unlikely	Minor	Negligible
Planned release of residual gas from Y piece on East Spar subsea manifold	<ul style="list-style-type: none"> • Maximum volume of manifold is 1.04m³. Volume of residual gas to be minimised by first venting manifold through East Spar pipeline to Varanus Island for processing prior to opening small bore vent valves at high points on manifold. • Venting via the high points on the manifold results in gas venting out and water flowing in. Small amounts of condensate, if present, are less likely to escape at the high points. • Project-specific procedures for valve operations. • Visual inspection of sea surface during venting to check for oil sheens. 	Expected to occur	Negligible	Negligible

Environmental Risk	Control Measures	Likelihood	Consequence	Risk
Unavoidable release of chemically treated water to marine environment in between pig runs	<ul style="list-style-type: none"> • Maximum volume of release is 3.5m³ (7 launcher change outs at 0.5m³ per change out). • Subsea launcher tested after fabrication, prior to installation on seabed. • Chemical selected for purpose has up to 5 components with individual components ranging from non-CHARM rating of C to E. 	Expected to occur	Negligible	Negligible
Leaks of chemically treated water to marine environment	<ul style="list-style-type: none"> • Procedures for valve operations, flushing and venting the East Spar Manifold. • Valve open and closed checklist. • Dye added to hydrotest water • Aerial surveillance along pipeline route during daylight hours on first day of flushing to check for signs of leakage. • UV light on ROV to improve detection of small quantities. • Chemical selected for purpose has up to 5 components with individual components ranging from non-CHARM rating of C to E. 	Expected to occur	Negligible	Negligible

Environmental Risk	Control Measures	Likelihood	Consequence	Risk
Leaks of chemically treated water onshore	<ul style="list-style-type: none"> • Temporary pipework installed under Apache Change Management Control Procedure (AE-91-IQ-007). • First flush water to be disposed of via water processing circuit to deep disposal wells. T201 capacity (16,000m³) sufficient volume for first flush water. • Remainder of water to be disposed of to Varanus Island bund with eventual processing via the CPI circuit. Bund capacity (71,891m³) sufficient for volume of treated water from successive pig runs. Pump has been procured to drain bund into the water treatment processing circuit to deep disposal wells. • Sampling points onshore to measure oil in water content to determine when to switch to disposal to bund. • Bunds and drip trays placed under flanges of temporary pipework if not contained already within a bund. 	Unlikely to occur	Negligible	Negligible

Environmental Risk	Control Measures	Likelihood	Consequence	Risk
Introduction of Invasive Marine Species	<ul style="list-style-type: none"> • REM Etive assessed as low risk: <ul style="list-style-type: none"> • Anti-fouling coating renewed on 27 June 2008. • Vessel mobilising to site from Bass Strait to Henderson, WA, via southern coastline of Australia. Aside from brief stay in Singapore in March 2010, vessel has been in temperate waters of Australia since September 2009. • Vessel was dry-docked in June 2009 for 1 week. • In water inspections of hull including niche areas and immersible equipment carried out in Eden, Australia on 7 November 2009 by Biofouling Solutions. No removal required. • In water inspection of hull including niche areas and immersible equipment carried out on 12 March 2010 at anchorage in Singapore by Biofouling Solutions. 12 juvenile <i>Crassostrea gigas</i> (Pacific oyster) and 3 juvenile <i>Perna viridis</i> (green lipped mussel) found and removed. After cleaning, vessel considered low risk. After 	Unlikely to occur	Minor	Negligible

Environmental Risk	Control Measures	Likelihood	Consequence	Risk
Vessel Operations including deck drainage, chemical storage and management, waste management, sewage discharges, oily wastes	<ul style="list-style-type: none"> • As per existing AEL General Petroleum Support Activities Environment Plan (EA-00-RI-158) 	Unlikely to occur	Minor	Negligible
Disposal of residual wastes from first flush processed via Tank 201	<ul style="list-style-type: none"> • As per existing Varanus Island Hub Operations Environment Plan (EA-60-RI-186). 	Expected to Occur	Negligible	Negligible
Interaction with marine animals	<ul style="list-style-type: none"> • Adherence to Part 8 EPBC regulations 2000. • Fill in whale and turtle observation data sheets and send to the Apache Environmental Department at the completion of the inspection program. • Humpback whale migration does not overlap with inspection programme. 	May Occur	Negligible	Negligible

Further Details

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