

**Offshore Pipeline Survey and Inspection & Maintenance Programme for
Offshore Facilities, Corrib Field 2019**

Submitted By:

Vermilion E&P Ireland Ltd

Application submitted: 16 April 2019

PAD Technical Observations

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PAD Technical Observations

Overview

Application documents were submitted by Vermilion on 16st April 2019 for the Corrib Petroleum Lease to request permission for annual maintenance works including (1) the inspection of the subsea related infield and export pipelines, the water outfall pipe, the umbilicals and (2) inspection and maintenance works on the P3 wellhead to address hydraulic fluid loss.

Reference documents used in this assessment;

- i) 02 Corrib 2019 Survey Application.pdf
- ii) 03 2019 Corrib P3 Hydraulic Fluid Loss Permanent Repair Method Statement
- iii) 04 2019 Corrib Subsea Inspection Method Statement

1. Subsea Structures / Pipeline Inspection Works

Objectives

The objectives of the survey will include the inspection of all subsea structures including the main gas export pipeline, water outfall, main umbilical and infield pipelines and infield umbilicals. No seismic survey is being acquired. The estimated duration is circa 20 days. The location covers the entire offshore pipeline and umbilical system from landfall valve site in Glenad, Co. Mayo to the Corrib wells. See Figure 1 for location.

The offshore survey will be conducted using industry standard pipeline and structure inspection equipment. Sensors utilised will include a suitable mix of video camera, sonars, cathodic protection, depth of burial, sub-bottom profiler, multi beam echo sounders, bathymetric unit (pressure sensor), sound velocity probe, stills camera, pipetracker, inertial navigation system, doppler velocity log, USBL transducers, portable subsea USBL transponders, gyros, motion reference unit (MRU), heading sensor, altimeter etc. All sensors will be located on the support vessels, ROVs or other deployable assets as appropriate. Data obtained will include pipelines /umbilicals / structures status, position, cathodic protection levels and depth of burial, speed of sound in water column profiles.

The offshore pipeline and subsea structure inspection, including repair and maintenance will be carried out by the vessel – **Leah-C**. The nearshore pipeline inspection will be carried out by the **Edda Sun**.

Industry Standard Acoustic Sources Used by the Vessels

A) Leah-C (nearshore inspection)

- Acoustic signals from various devices. No seismic survey is being acquired.
- **Sub Bottom Pinger**
 - Preferred: Neptune T335: 3 – 8kHz. Potential procurement alternative: Geoacoustics TR-1075D: Frequency 3 to 8kHz
- **Multi-Beam Echo Sounder**
 - Preferred: R2sonic 2024: Frequency range – 200 – 400kHz, typical operating 350kHz – 400kHz (environment dependant). Possible procurement alternatives: R2sonic 2022: Frequency range – 200 – 400kHz, typical operating 350kHz –

400kHz (environment dependant). Or Reson TC2181 single head - Frequency range: 190kHz to 420kHz, typical operating 400kHz.

- **Side Scan Sonar**
 - Preferred: Edgetech 4200-MP: Dual Frequency 300 and 600kHz.
 - Potential procurement alternatives: Edgetech 4125 – 400/900kHz, Klein 3210 – Dual frequency 100kHz and 500kHz, Klein 3000H – Dual frequency 445kHz and 900kHz.
- **Sound Velocity Probe**
 - Preferred: Valeport MiniSVP/SVS: Frequency 2.5MHz. Potential procurement alternative: Reson SVP70: Frequency 2MHz (nominal)
- **No seismic cables being deployed.**

B) Edda Sun (Offshore Inspection, Repair and Maintenance)

- **Multi Beam Echo Sounder (MBES)** - Reson Seabat 7125 dual head: Frequency 400kHz.
- **Doppler Velocity Log (DVL)** – RDI Workhorse: Frequency 1200kHz.
- **Sound Velocity Sensor** – Valeport MVS: Frequency 2.5MHz.
- **Imaging Sonar** – Tritech Gemini: Frequency 720kHz.
- **Obstacle Avoidance Sonar** – Kongsberg Mesotech Sonar: Dual Head. Head 1 300 - 400kHz and Head 2 450 - 700kHz.
- **Bathymetric system c/w Altimeter** - Tritech SK704: 500kHz.
- **Vessel Furuno Echo Sounder** – Frequency 38kHz, 50kHz and 200kHz.
- **Vessel USBL** – Vessel HiPAP operating in the frequency range 21kHz to 31kHz
- **Mini USBL Transponder and Responder** - 30kHz
- **Pipe Tracker** – TSS 440: Negligible magnetic field strength.
- **Vessel Doppler velocity log** – 2 mHz
- No seismic cables being deployed.

2. P3 Hydraulic Fluid Loss Permanent Repair

Repair works on the subsea P3 wellhead (18/20-3) are to be carried out on the Corrib Field, approximately 65 km offshore (Figure 2). Operations are planned to take 2 days.

Works will involve the removal of the existing bridging plate and installation of a replacement bridging plate and hydraulic override tool on the AMV actuator.

Supporting equipment will include a ROV Support Vessel, workclass ROVs c/w torque tooling and replacement hydraulic bridging plate & valve override tool. There is no planned use of acoustic survey equipment.

3. PAD Technical Observations:

The proposed subsea inspection to assess the facilities and pipelines of the near shore and offshore elements of the Corrib development is reasonable and required for annual maintenance of the facilities using industry standard equipment. No seismic is being carried out. The proposed works on the wellhead to fix the bridging plate is reasonable and demonstrates the operator is proactive in maintaining the subsea infrastructure.

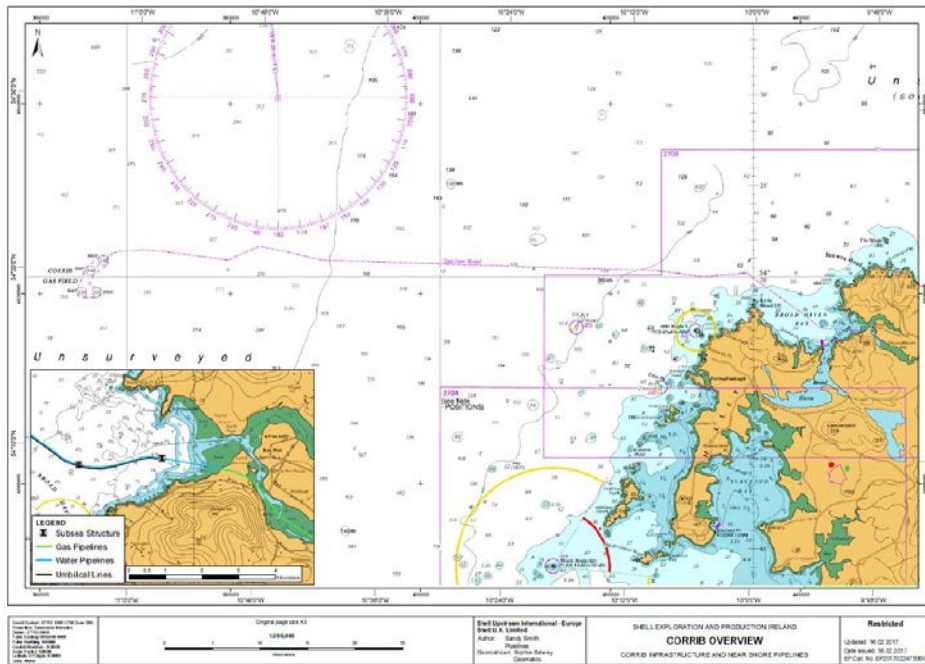


Figure 1. Pipeline route from offshore Corrib Field to the Terminal.

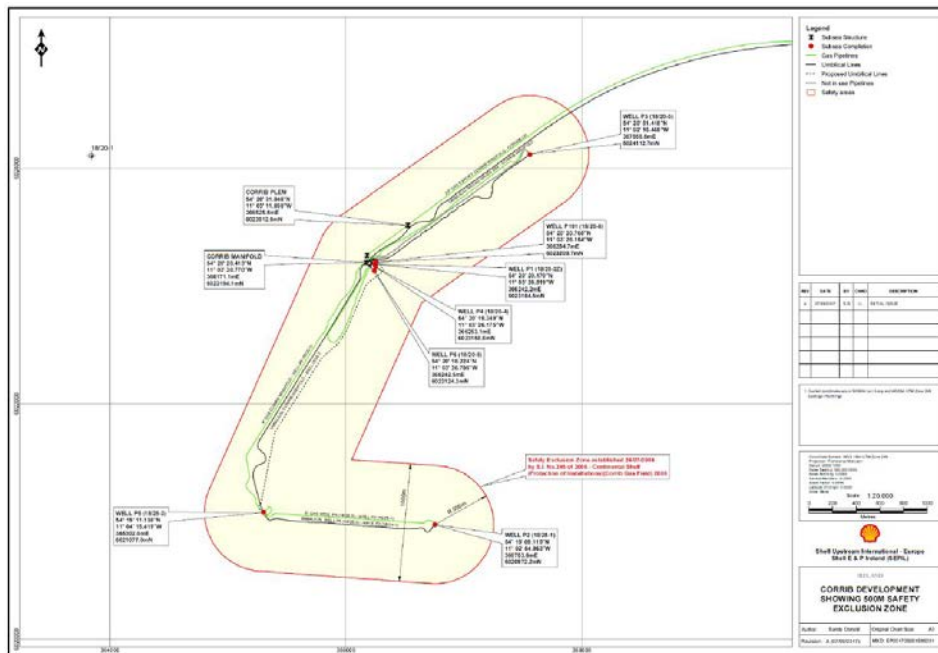


Figure 2. Location of P3 well within the Corrib Field. Yellow illustrates the exclusion zone.