



VERMILION
ENERGY



Corrib Field

Subsea inspection & maintenance works

Method Statement

Revision 02

March 2019

Confidential



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Rev 02 update: Update to dates

1 Pipeline and structure inspection

<p>Overview of Activities</p>	<p>Work will include:</p> <ul style="list-style-type: none"> - Inspection of relevant sections of the main gas export pipeline, water outfall pipe, main umbilical and infield pipelines and umbilicals - Offshore pipeline inspection to be completed into the limits of safe navigation in Broadhaven Bay - Inspection of the nearshore pipeline and umbilical sections will be done from a smaller vessel - Inspection of the intertidal area and onshore pipelines and umbilical up to the Landfall Valve Installation (LVI) - External ROV Inspection of subsea structures and wellheads - Vessels operate to the Code of Conduct (CoC). Observance of the CoC conditions to be overseen by an independent Marine Mammal Observer of suitable competence and experience - Associated activities to facilitate completion of the inspection, repair and maintenance (IRM) activities e.g. ROV water jet cleaning as required or placement of filter units for pipeline stabilisation or freespan correction as necessary etc.
<p>Location</p>	<ul style="list-style-type: none"> - Corrib Field and pipeline and umbilical route corridors from field to Landfall Valve Installation
<p>Timescale¹</p>	<ul style="list-style-type: none"> - The above works are anticipated to be carried out between July and September 2019 ¹
<p>Technique</p>	<p>OFFSHORE INSPECTION</p> <ul style="list-style-type: none"> - Sail to field - Conduct trials and calibrations of vessel and ROV systems at depth in field - Field Entry and As-Found Survey - Complete works on P3 at suitable weather window of opportunity (See separate method statement for this scope of work) - Inspect pipelines and umbilicals in efficient order. - Locate convenient to subsea structures - As-Found Survey of Structures - Open wellhead protection cover (Wellheads only) and complete external inspection - Close wellhead protection structure (Wellheads only) - Repeat until all subsea structures have been suitably inspected - Inspection will continue toward shore until the vessel is required (on MMO advice) to relocate to the inshore inspection - Inspection carried out from inshore extent to offshore until a suitable overlap with offshore inspection is achieved - Continue with this method until all pipelines and umbilical have been suitably inspected and all information and data required has been obtained - Vessel sails to port for demobilisation - End of offshore inspection

¹ subject to Regulatory Approvals and efficient vessel programme timings



	<p>NEAR SHORE INSPECTION</p> <ul style="list-style-type: none"> - Mobilise small inshore (shallow draft) vessel with suitable sensors and crew - Inspect inshore pipeline and umbilical sections from nearest point accessible inshore at high tide to offshore until a suitable overlap with offshore inspection is achieved - Conduct 'Pinger' depth of burial inspection over pipelines and umbilical - Recover sensors and equipment and proceed to port for demobilisation - Conduct Cathodic Protection survey of Gas pipeline - End of near shore inspection <p>ONSHORE INSPECTION</p> <ul style="list-style-type: none"> - Mobilise onshore inspection crew - Conduct depth of burial and Cathodic Protection measurements between the LVI and the low water mark. Best endeavours to be made to ensure an overlap between the onshore inspection and the near shore inspection - Recover all equipment and proceed to demobilise onshore inspection crew - End of onshore inspection <p>MAINTENANCE TASKS</p> <ul style="list-style-type: none"> - Carry out standard pipeline maintenance tasks that ensure continued pipeline and structure integrity, protection and stability e.g. installation of filter bag units, realignment and/or adjustment to physical protection devices/levels, component cleaning, manipulation and visual checks or sampling etc.
<p>Equipment</p>	<ul style="list-style-type: none"> - Remotely Operated Vehicle Support Vessel (ROVSV) - Inshore inspection vessel - Workclass and Observation ROVs - Array of typical pipeline and structure inspection equipment including but not necessarily limited to: Inertial Navigation System(INS), Doppler Velocity Log (DVL), Sonars, Multi-Beam echo sounders (MBES), Sub Bottom Profiler, Pipetracker, Video cameras, Stills camera, Water jet cleaner and other ROV specific equipment for safe operation, communications, navigation etc.
<p>Restrictions</p>	<ul style="list-style-type: none"> - Sea conditions (e.g. wave height and period, wind speed) - Observe Vessel Code of Conduct for acoustic sensor start up, direction of travel etc. - Near shore and Onshore inspection will be timed to fit with tidal conditions
<p>Environmental Impact</p>	<ul style="list-style-type: none"> - During the course of the work there is a risk of minor leaks of hydraulic fluid from equipment - Noise from vessel and inspection activity may temporarily disturb marine mammals
<p>Mitigation</p>	<ul style="list-style-type: none"> - The work will be scheduled so as to minimise the duration of project activities and to confine activities to as small an area as possible to limit disturbance - Pre Scans and watches conducted by MMOs as per Vessel Code of Conduct - Consultation with fishing organisations in advance of planned worksopes - Where refuelling of vessels is necessary it will be carried out in Killybegs Harbour Facility in Co. Donegal



	- Maintenance, audits and inspection plans are in place to identify oil leaks at an early stage
Reinstatement	- Not applicable
Contingency	- Shipboard Oil Pollution Emergency Response Plan will be implemented in the event of a spill.

2 Scopes:

2.1 Onshore

Cathodic Protection (CP) and Depth of burial measurements from Low Water mark to LVI installation.

2.2 Near shore

2.2.1 N0211 - Corrib Manifold - Corrib LVI - 20" - Gas

Acoustic Pipeline Inspection	
KP range	Comments
~Low Water – KP TBC	SSS & MBES over the whole route.
Special Interests:	Rock placement location, rock stability, exposures, spans, mattresses, depth of burial, cathodic protection levels

2.2.2 N1004 - Corrib Terminal - Offshore - 10" Outfall

Acoustic Pipeline Inspection	
KP range	Comments
~Low Water – KP TBC	SSS & MBES over the whole route to identify rock dump and exposures
Special Interests	Rock placement location, rock stability, exposures, spans, mattresses

2.2.3 N2823 - Corrib Terminal - Corrib Manifold - Umbilical

Acoustic Pipeline Inspection	
KP range	Comments
~Low Water – KP TBC	SSS & MBES over the whole route
Special Interests	Exposures, position in trench, depth below MSBL, damage, burial, DCC

Conduct CP inspection over the survey extent.

End KP to be set to overlap offshore end KP when known.

Observation ROV optional for investigation of areas of interest. Mobilised separately if required.



2.3 Offshore

The planned inspection encompasses the relevant parts from the pipeline and umbilical list below. The relevant plan is as determined by the Corrib Integrity Reference Plan (CIRP) and the Risk Based Inspection (RBI) strategy outcomes.

ID:	Description:
N0211	Corrib Manifold - Corrib LVI - 20" - Gas
N1004	Corrib Terminal - Offshore - 10" Outfall
N1171	Corrib Manifold - Well P101 - 6" - Gas
N1172	Corrib Manifold - Well P3 - 8" - Gas
N1173	Corrib Manifold - Well P4 - 6" - Gas
N1174	Corrib Manifold - P5 WHPS - 8" - Gas
N1175	Corrib P5 WHPS - Well P2 - 6" - Gas
N1199	Corrib P5 WHPS - Well P5 - 6" - Gas
N2101	Corrib Manifold - Well P6 - 6" - Gas
N2124	Corrib Manifold - Well P3 - 8" - Gas (replacement)
N2125	Corrib Manifold - Well P6 - 6" - Gas (replacement)
N2823	Corrib Terminal - Corrib Manifold - Umbilical
N2824	Corrib Manifold - Well P101 - Umbilical (fluids)
N2825	Corrib Manifold - Well P3 - Umbilical
N2826	Corrib Manifold - Well P4 - Umbilical (Fluids)
N2827	Corrib Manifold - Well P5 - Umbilical
N2828	Corrib P5 WHPS - Well P2 - Umbilical
N2879	Corrib Manifold - Well P6 - Umbilical (Fluids)
N3833	Corrib Manifold - Well P101 - Umbilical (Elect)
N3834	Corrib Manifold - Well P4 - Umbilical (Elect)
N3835	Corrib Manifold - Well P6 - Umbilical (Elect)
N4818	Corrib Manifold - Well P101 - Umbilical (fluids) Replacement
N4855	Corrib Manifold - Well P1 - Umbilical (Elect)
N4856	Corrib Manifold - Well P1 - Umbilical (Elect)
N4857	Corrib Well P1 – P5 – Umbilical (Replacement)

Inshore extent of the Offshore inspection is determined by the safe navigational limit to be determined on the day by the inspection vessel Captain. Near shore inspection will be specified to overlap this extent suitably.

2.4 Structures

External inspection of:

- Manifold
- Pipe Line End Manifold (PLEM)
- Pipe Line End Termination (PLET)
- FSM Corrosion monitoring skid cover
- Water Outfall Diffuser

Wellheads/protection structures:

- P1, P101, P2, P3, P4, P5 & P6