SUBSEA PIGGING OF THE 28”/42” DUAL-DIAMETER, HIGH PRESSURE GAS EXPORT PIPELINE ÅSGARD TRANSPORT

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ABSTRACT

During the summer of 2004 the Åsgard Transport pipeline system (ÅT) was successfully inspected by a Multi Diameter in-line Pipeline Tool (MDPT) launched sub-sea at a water depth of 300m. The project faced the following operational challenges:

- Minimize reduction in ÅT production during MDPT installation and inspection
- Installation of a 44 tonnes sub sea pig launcher module requiring strict weather limitations
- Tie-in to a live gas system at 300 meter water depth
- Removal of sea water – risk of hydrates
- 350 valve operations and 700 procedure steps
- High focus on HSE&Q and Risk Management

The worlds first internal inspection of an offshore, dual diameter, high pressure gas export pipeline, with a subsea launched Extra High Resolution (XHR) Magnetic Flux Leakage (MFL) tool, was successfully carried out both operationally and a with respect to inspection results.

The offshore work took 11 days, the pig travelled for 5 days through the pipeline and the operation was completed on schedule and within budget.

The main success factors of the Åsgard Transport inspection can be summarised as follows;

- The responsibility for follow up of interfaces and contractors, where divided between the Statoil project members to ensure clear lines of communication and responsibilities.
- All contractors were included in an integrated project team (ÅTPP) to ensure close co-operation and to make sure all parties had a good understanding of what was required.
- Based on the criticality of the operation an extraordinary high focus on HSE and risk management was implemented.
- A software procedure training model (colour coded P&ID’s, 3D models, animations) was developed and used for training of operational personnel (ROV pilots) as a risk reducing measure and to increase the operating efficiency.

- The Statoil onshore project organisation had operational responsibilities corresponding to their respective responsibilities during the engineering and planning phase of the project. Continuity of personnel through all project phases.
- End locations and the Gassco Transport Control Centre were manned with project personnel during critical phases of the field operation.

ABBREVIATIONS

CCR: Central Control Room (Åsgard B)
ERB: Export Riser Base
FME(C/A) Failure Mode Effect & (Critically) Analysis
HAZID HAZard Identification
HAZOP HAZard and Operability
HSE&Q Health, Safety, Environmental & Quality
LVS: Landfall Valve Station
MDPT: Multi Diameter Pipeline Tool