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Subsea Data Management

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Abstract

This paper describes:

- The technical solution and infra-structure
- The work process
- Plans and visions for the future

This project will contribute towards the Statoil Increased Oil Recovery (IOR) strategy as it will make real-time reservoir monitoring and downhole data available everywhere on a Statoil network infrastructure.

It will be a frontrunner in the development and implementation of downhole fiber optic sensors and infrastructure as a basis for online reservoir management. The goal is to resolve any hurdles for implementing fiber optic monitoring and data transmission from subsea developments where this technology can give Statoil an improved business value.

Focus is on detailed seabed system solutions to create an open, and high speed communication infrastructure which the fiber optics technology opens up. The project shall also develop interfaces towards existing subsea systems with only electrical, low bandwidth communication systems.

Background

On June 20th 2005, Statoil requested technical and commercial proposals relating to the development of:

1. Integrated Fibre Optical Systems – an integrated subsea fiber optics communications system
2. Reliable Downhole Sensors – of which some eight were identified

This was part of the much larger Statoil Integrated Operations initiative aimed at increasing overall recovery rates of subsea and Tail End production assets.

Weatherford subsequently formed agreements with FMC Technologies and Nexans Norway to jointly develop the proposal submitted, with Weatherford as the lead contractor, and on June 29th, 2006, Statoil and Weatherford signed a 3 year Technical Development Cooperation Agreement. The

resultant program is a 50/50 jointly funded R&D program with resources (personnel and test facilities etc.) being supplied from all four participating companies to work on each sub-project of the overall project. Weatherford concurrently signed back-to-back sub-contractor agreements with FMC Technologies and Nexans Norway. Subsequent to contract award, a three year Technical Cooperation Agreement was set up and funded to address the scope of work.

The scope of the project (figure 1) can be summarized as follows:

“Qualification of fiber optic sensing systems for subsea well applications and integrated subsea solutions for transmitting sensor signals to onshore through optical fibers.”

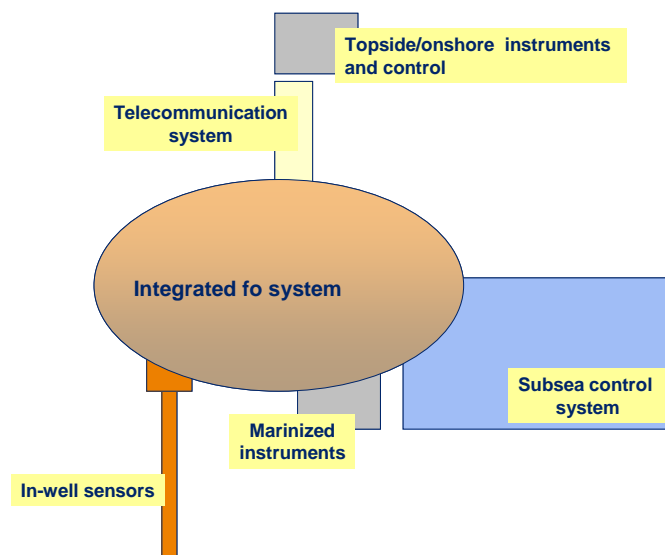


Figure 1 – The complete integrated system

There are two key project areas:

Downhole Sensors (DHS) – the following three having been agreed upon from the initial listing of eight:

- Sand monitoring – identification and quantification
- Multiphase flow meter – for intelligent well applications
- Distributed pressure and temperature measurements

Integrated Fiber Optic Subsea System (IFOSS)
Subsea well sensor interrogation solutions
Subsea control system