

Simplifying well integrity management



Well integrity management is becoming a vital element in managing corporate risk for operators as spills and leaks through loss of integrity can harm people, the environment and a firm's reputation. Here, we look at how Statoil has tackled the issue.

Given that the operational phase of a well can last for 30 years or more, one of the biggest problems is managing the huge volume of operating data necessary to ensure an optimum safe condition is maintained for the whole design life. Many oil and gas operators continue to rely on hand-over documentation and a patchwork of bespoke production management databases and spreadsheets to manage this data, such as annulus pressure readings or valve and seal leak tests.

Using a well integrity management solution with smart functionality and single dashboard user interface to consolidate raw data provides a relatively low cost, but extremely powerful, means of tracking the integrity of operating wells in real time. Indeed, taking a proactive approach to well integrity management has been shown to reduce the risk of well failure and integrity-related shut-ins by up to 80%. It can also extend safe operation beyond the original design life, a key challenge for those oil and gas operators having to deal with ageing equipment and facilities.

Operational safety is a top priority for Statoil. With the company actively engaged in preventative maintenance activities and programmes, well integrity management is a critical part of its daily operations and it is working with well integrity specialist Intetech to implement its Well Integrity Toolkit (iWIT). Used for all Statoil's 1,200 wells on the Norwegian Continental Shelf (NCS), iWIT provides the Norwegian operator with an instant view of current well integrity status, together with historical key performance indicators (KPIs) at well, field or enterprise level. This ensures that the company's teams have the ability to analyse, compare and validate all operating well data, alert and report on exceptions and make informa-

tion available throughout the enterprise to the right people at the right time.

Automating data management

Prior to using iWIT, gathering and analysing well integrity data was a manual and time consuming procedure because the information had to be drawn from numerous different sources to assemble a complete picture of the status of Statoil's assets. 'Our main challenge was the time it would take to collect all the required data, and then making it available to the right personnel,' says Statoil's Leading Advisor for Well System Integrity, Hilde Brandanger Haga. 'We wanted the ability to quickly retrieve well integrity data from all the different systems and make it visible within a single screen to provide an overview of current well integrity status.' A further major requirement was to integrate the well integrity toolkit with Statoil's clearly-defined well handover process, by enabling all operational limit values, equipment status and tags to be set up as part of the handover documentation.

One of the main benefits of iWIT is its ability to work with, and improve, the variety of different systems already employed to support the well integrity process. Following a detailed requirement design and analysis, the toolkit was installed on the Statoil server farm. It is managed in-house by the IT department and can be accessed via a web browser by any authorised employee.

Statoil believes that technology is vital to giving it a competitive edge. With Intetech's well integrity toolkit, critical well integrity data can be accessed more easily and is presented in a systematic order ready for rapid analysis in the event of a potential issue being identified. 'With iWIT, it is much easier to make status updates, upload information and make it available across the

organisation,' notes Hilde. 'When data is imported into iWIT, real-time data and test results are presented and compared with all the operational and alarm limits set, improving the efficiency of the well integrity management process.'

WIT delivers four key capabilities to assist with safe operation and avoid damaging blowouts or leaks:

- Pressure monitoring
- Monitoring and trending of production data
- Safety critical testing
- Well integrity status management

Previously, Statoil ran its status management reports manually which, given the number of wells involved, was time-consuming and labour-intensive. Using the well integrity toolkit, however, it can now run a report at the click of a button. Similarly, iWIT has enabled Statoil to automate the well handover process, which is crucial to effective life-cycle management. 'By integrating iWIT into the handover process, we have made subsequent handovers much easier as the information is already available and verified,' Hilde confirms.

Working in close partnership with the Statoil project team, including key members of Statoil's well integrity team and representatives from the company's IT and operations functions, Intetech has successfully ensured Statoil's specific business processes and workflows for well integrity have been catered for within the iWIT system. The toolkit has also improved the visibility of well integrity data across the organisation, which is particularly important for Statoil's multiple asset owners within the company. 'A key success factor for iWIT has been the clarity of requirements, software flexibility enabling work process adaptability, dedicated personnel and in-depth studies and involvement with all parties involved,' concludes Hilde. ●