

CASE STUDY

ConocoPhillips - Wellhead Integrity Annulus Management Integrated Instrumentation Solutions



Background

Well integrity can, in its simplest definition be described as a condition of a well in operation that has full functionality and two qualified well barrier envelopes. Any deviation from this state is a minor or major well integrity issue.

History shows severe examples of losing integrity in wells, most recent being the PTTEP Montara blowout offshore Australia in 2009 and the BP Macondo blowout in the Gulf of Mexico in 2010, resulting in both loss of life and a major impact on the respective local environments.

In the UK, the HSE Wells Engineering Group's purpose is to ensure that major accident hazard risks to people from well and well related activities are properly controlled. By ensuring dutyholders have systems in place for effective well integrity management, catastrophic incidents can be prevented.

Customer Issue

In line with the above, ConocoPhillips UK initiated a review of their existing well integrity practices and procedures using Norsok D-010 as the reference standard for the "application of technical, operational and organisational solutions to reduce risk of uncontrolled release of formation fluids throughout the life cycle of a well".

One of the recommendations from the work centred on the Wellhead Xmas Tree Annulus Outlets and the existing Needle Valves and Pressure Gauge arrangements utilised in this area on all their assets. There were clear opportunities to improve operational integrity and performance through the use of new innovative Double Block and Bleed technologies, as well as an underlying requirement for specific compliance with the requirements of the relevant API 6A and API 607 standards and the stringent PR2 and PSL 3G testing requirements therein.

Hydrasun Solution

Working closely with the customer, Hydrasun's engineering team developed a range of Double Block and Bleed Valve designs which were then put through an independent design review process with a third party verification company, Bureau Veritas (BV), who confirmed that the solutions met the required API 6A standards and were also Firesafe to API 607.

With third party certification requirements secured, Hydrasun project managed and supplied a range of assembled solutions, with pressure ratings up to 15K psi, a feature of which was the focus on leak path reduction and elimination of NPT threaded connections where possible.

ConocoPhillips has subsequently installed these new valve configurations on their Xmas Tree Wellhead Annulus Outlets on their production platforms within the Central and Southern North Sea, providing Double Block and Bleed well isolation barriers, enabling Annulus pressures to be monitored on an ongoing basis and facilitating the connection of monitoring, venting and injecting equipment when required for annual maintenance or intervention operations.

At a glance...

Customer

ConocoPhillips UK

Location

UKCS

Customer Issue

To support the need for improved Well Integrity Management practices and, in line with Norsok D-010 guidance in this area, upgrade existing Valve and Pressure Gauge arrangements on Wellhead Xmas Tree Annulus Outlets.

Hydrasun's Solution

Provision of fully certified API 6A & API 607 Fire Rated Instrumentation Assemblies for various pressure ratings up to 15k psi.

Benefits

- Significant cost savings through improved Well Production up-time
- Safer, more efficient Well Intervention work undertaken
- Reduced Environmental Risks
- Enhanced Technical Integrity and Operational Reliability

The Result

With the application of new innovative technologies and through a project management capability which encompassed specification review, product design and engineering, third party verification, production, supply and the provision of documentation packages, Hydrasun has provided real added value to ConocoPhillips.

Specifically the range of integrated instrumentation solutions delivered has enabled Hydrasun to support improved well production up-time on ConocoPhillips assets, allowed safer and more efficient well intervention work to be undertaken in the future and above all, improved the overall technical integrity and operational reliability of production wellhead equipment thus reducing the potential of a significant well integrity incident in the future.



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