



INNOVATION AND TECHNOLOGY

CASE STUDY | June 2009

Well Intervention System Saves Time and Money

Woodside is Australia's largest upstream oil and gas operator and has a growing inventory of subsea wells. As at June 2009, we had more than 90 operating production and injection wells within our Australian operational responsibility.

Woodside undertakes a systematic approach to the completion and maintenance of these wells, many of which are in isolated, remote locations. From time to time, we also need to undertake repairs on these wells or other sub-sea production equipment.

The Challenge

Drilling rigs are traditionally used for well completion, maintenance and intervention. However, rig availability and cost can present major challenges to carrying out timely maintenance programs or repairs, resulting in deferred production and additional costs.

In 2008 Woodside sought to find a faster, more cost-effective method of well intervention driven by a competitive market for rigs and associated high mobilisation and daily rate costs.

The Project

Woodside first invested in alternatives to rig-based well intervention in 2002 through its Strategic Technology Plan, an annual plan that supports the development of technology and technical capability and capacity to meet medium-term business requirements.

In 2008, that investment came to fruition in a wireline intervention system onboard the Havila Harmony. The system was developed by Woodside in conjunction with Helix Energy Solutions and primary contractor TS Marine, the operator of the Havila Harmony.



Havila Harmony

After extensive testing of the equipment and handling methods on land, Woodside deployed the system on the Havila Harmony on the Vincent oil field in Western Australia's north-west in April 2008.

Wireline is an activity using wire or electrical cable to lower tools into the well for a variety of tasks, including the setting of mechanical barriers, and for reservoir monitoring. Wireline tools can measure pressure, temperature, oil/water/gas content and general reservoir quality.

Wireline well intervention involves the wireline passing through a lubricator installed directly on the Xmas tree, an assembly of valves that is positioned on the well head to control the flow of fluids into and out of a well. The lubricator allows the well to be sealed at seabed level and pressure to be maintained while the intervention is taking place.

Traditional rig-based interventions would involve a solid pipe running from the Xmas tree to surface, containing the well at rig level.



Subsea intervention device being deployed through the moonpool.

The Havila Harmony is a multi-purpose vessel built in 2005 and upgraded to a subsea vessel in March 2007. Its dynamic positioning system means that it can hold position and stability over a well in a range of sea states without anchors. This reduces the need for anchor handling vessels and minimises the impact on the environment.

Equipment on the board can be deployed by a crane either through an opening through the hull in the centre of the vessel, known as a "moonpool", or over the side of the vessel.

The Havila Harmony installed and commissioned nine Xmas trees at Vincent and successfully completed its first subsea electric line logging work.

Achievements

The vessel-based approach at Vincent resulted in significant savings, compared to costs that would have been incurred using a higher specification drilling rig. The use of Havila Harmony also allowed the contracted drill rig to continue drilling and completion operations, equating to a saving of 36 days drilling time.

Rigless well intervention will now be considered for other fields where Woodside is the operator.

More Information

All stakeholders are invited to contact Woodside for additional information at: sustainabledevelopment@woodside.com.au