Abstract

The current phase of the Champion West Field Development is one of BSP’s most challenging project to date for drilling and completion reasons.

The Champion West field was discovered in 1975, but its rich oil and gas reserves lay dormant for 30 years, locked beneath the seabed in a complex web of reservoirs deemed too expensive to develop using conventional development plans. It is a large undeveloped oil and gas resource in Brunei. Hydrocarbons are found in shallow marine reservoirs - these vertically stacked, structurally dipping reservoirs are complex and contain various fluid fills ranging from gas only to gas with oil rims to oil.

The project consists developing oil rim reservoirs using the novel snake well design and developing of significant gas resources using highly deviated and high-pressured gas wells. Four wells have been drilled to date utilizing advanced drilling technologies and smart-completion equipment to complete over many stacked reservoirs with different pressure regimes, whilst aiming to maximizing ultimate recovery for those sand units. The world first six- zones Smart completion were successfully installed in 2007 with the objectives of realizing increased recovery and a reduction in life cycle cost through real time monitoring and production optimization and a reduction in well intervention as well as reduction in HSE exposure.

Challenges associated within the gas project included: Drilling through depleted and virgin pressure regimes of up to 8200 psi; Extended reach drilling of up to 7.3 km; Perforation; and, Installation of Smart-Completions in high-pressured gas environment.

In addition to significant oil production, Champion West has been contributing to around 20% of BSP’s gas production with a significant proportion coming from these recently drilled gas wells.

This paper describes the well concepts adopted and the experiences developed throughout the project in drilling and installing Smart-Completions in this high-pressure gas environment.