



INTELLIGENT WELLS

Higher Production from the Digital Oilfield | May 2012

Intelligent well technology maximises hydrocarbon recovery in complex reservoirs while reducing well costs.

Overview

Intelligent well technology allows for the completion of multiple reservoir intervals (zones) in a single wellbore. Each zone can be monitored and controlled individually from surface, resulting in improved reservoir management capability and higher recoveries.

To further ensure a successful execution, Woodside has actively engaged with its North West Shelf (NWS) project participants and other operators to learn from their extensive experience in this field.

Benefits

The use of intelligent wells technology maximises recovery by enabling optimisation of individual zones. Woodside has decided to apply the highest level of control available in the form of variable inflow control valves (ICVs), rather than the more standard on/off type. Variable ICVs not only allow for the isolation of individual zones but also provides additional control in the form of choking capability (regulated production), further maximising expected recovery.

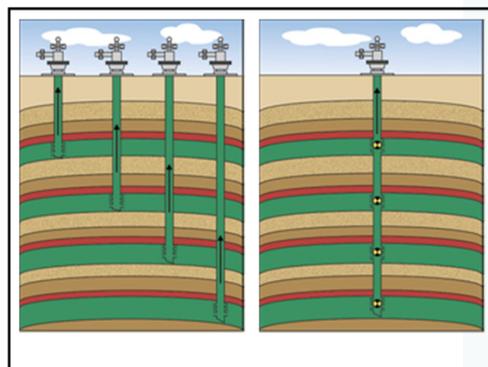
An additional benefit of intelligent well technology is that it provides a risk mitigation measure to better manage some of the uncertainties faced in oil and gas well production. Individual zones in a well can be isolated in the event of lower completion failure or

unexpected reservoir outcomes (i.e. the onset of water). This in turn reduces the requirement for future subsea well intervention activities.

Woodside is employing a disciplined approach to the adoption of this technology by only installing dual zone completions initially and then potentially increasing to 3+ zones which are of a higher complexity.

Intelligent well technology is the next phase in intelligent field management (IFM). Data provided by the multiple down-hole gauges installed in the Greater Western Flank Phase 1 wells will provide valuable insights to understand reservoir architecture, connectivity and dynamic performance.

This information will not only be used to prioritise and accelerate valuable condensate production but also to identify future potential infill well locations.



Less wells are required with intelligent well technology.

QUICK FACTS

- Intelligent well technology allows multiple reservoir zones to be selectively produced.
- Greater Western Flank Phase 1 will have five intelligent wells.
- This technology has reduced the total Greater Western Flank Phase 1 well cost.
- Intelligent wells are reliable and utilized throughout the industry.
- Woodside is working closely with and learning from its partners to ensure a successful implementation.

WELL DESIGN EXAMPLES

- SNORKEL TUBE DESIGN (2 Zones)
- MULTI ZONE DESIGN (3+ Zones)



Two generic intelligent well designs.