

Intelligent Well on Ekofisk 2/4 B

07.05.2012 **The first intelligent well in the Greater Ekofisk Area came on-stream earlier this spring. This is the first in a series of intelligent production wells to apply recognised technology in a new way, adapted to the chalk reservoirs.**

"The Ekofisk B09C pilot well, which is completed with Intelligent well systems (IWS) technology, produces around 4000 barrels of oil per day. The valves have already been tested at a depth of around 3000 meters and we can now operate this well from the surface", says Steve Actis, completion engineering supervisor.

Strategically Important

One of the strategic goals of the business unit is to ensure stable production and increased recovery rates. One of the means to achieve this is to develop wells that produce longer and better. Hence, extensive testing of new technologies and processes are being done, including new well designs with new technology.

Flexibility

One of the benefits of intelligent wells is the possibility to manage production from different zones. This means that the zones that produce the most hydrocarbons can be opened, while shutting down the zones that yield water. This optimises the production. The production zones can be moved to catch changes in the reservoir over time. This will have a significant impact on long, horizontal wells.

The equipment can be used in the same way for water injection, injecting water into zones that support adjacent producing zones.

The chalk reservoirs in the Ekofisk area need to be stimulated with high pressure acid. Using the IWS-technology, it is possible to stimulate zones in the well in a short amount of time and start production earlier than with previous methods.

"The use of IWS technology will help us manage the reservoir better so that we can produce from the best oil pockets. This ensures a high production level and improved reservoir utilisation," says well planning director Per Pedersen.

Extensive Work

Planning for this pilot well started over a year ago and incorporates changes to the completion strategy that have been put in place over the past two years. The IWS equipment is provided under a new completion contract with the supplier to make use of their expertise.

"This isn't new equipment, but what is new is the application in the chalk reservoir at Ekofisk," Actis explains.

"There is still some work remaining before the Ekofisk B09C well is optimized. However, we believe this is the future of well design and will use this equipment in many wells going forward. To keep the production levels high and manage the reservoir in the best possible manner," Steve Actis concludes.

Intelligent Well Systems - IWS

IWS completions use downhole valves controlled via hydraulic lines from the surface that will improve reservoir management by controlling water production in the production wells and control where the water goes in the injection wells.

The IWS completions also include pressure and temperature gauges at each downhole valve to monitor the fluid flow in each zone in the reservoir.

IWS completions are typically installed in sandstone reservoirs, so the application of IWS technology to the chalk reservoirs in the Greater Ekofisk Area adds the need to stimulate the well.

The downhole valves and well system were flow tested at 60 barrels per minute to prove their robustness during both the stimulation and operations phases of the wells.