Norsk Hydro ASA, now StatoilHydro ASA (Hydro), officially opened the Oseberg field in the North Sea in 1991. By 2003, the field was producing above forecasted levels. As part of the overall push to increase production in all Oseberg fields, Hydro is interested in gaining access to reservoirs that were previously difficult, if not impossible, to access.

Rolf Smedal, Hydro Geology and Geophysics (G&G) team leader, stated, “Nowadays, most easy spots have already been drilled, but there is a huge potential for similar challenging reservoirs. Hydro has planned numerous wells to target such reserves.”

**Hydro – First to Use the InSite ADR™ Sensor**

As oil fields mature, wellbore placement becomes more important and more complex. Until recently, there was no reliable way to detect unstable formations until the drill bit penetrated them. Hydro realized that using Sperry’s InSite ADR sensor could help them optimize wellbore placement and maximize production.

Hydro was the first company to utilize the InSite ADR sensor technology in a commercial well. The Hydro Drilling and G&G teams were pleased with the steering information the sensor afforded them. According to Smedal, “The InSite ADR sensor certainly helped us to make better geosteering decisions, resulting in improved well placement. We were able to maximize productive sand intervals and avoid potentially unstable formations.”
Benefits of Technology

The InSite ADR combines traditional resistivity, azimuthal resistivity, and geosteering all in one collar. The multi-frequency, directional resistivity technology returns real-time petrophysical measurements and feeds the geological modeling that helps guide wellbore placement. The deep-reading sensor detects approaching bed boundaries up to 18 feet away from the tool, enabling operators to adjust in real time to stay in the target zone of the reservoir.

In the Oseberg field, the InSite ADR sensor enabled Hydro to identify the sweet spots in the reservoir. Once identified, the operators were able to steer through the desired formations in real time using azimuthal resistivity information.

Drilling wells will probably always involve the possibility of having to run through less than ideal formations to reach productive reserves. But as Brady Murphy, vice president of Sperry Drilling Services, points out, “With the InSite ADR, we can navigate horizontally through the reservoir and maintain a greater distance from problem zones above and below the tool. The InSite ADR sensor enables new understanding of formations not possible with legacy systems.”

The InSite ADR sensor provides a broad range of directional resistivity images, from shallow to deep depths of investigation, that provide a more complete picture of complex geology. Having a clear picture of the reservoir setting represents a major step forward in making key drilling decisions involving wellbore placement and increased production in challenging reservoirs.

Looking to the Future

Advances in technology are helping companies decrease drilling costs, minimize downtime, and increase production. The new InSite ADR sensor was designed to maximize production and extend the life of maturing fields. Though wellbore placement has always been critical, the increased number of wells drilling into heterogeneous and sometimes complex reservoirs calls for steering that is accurate, informed, and intelligent.

The successful use of the InSite ADR sensor in Oseberg field has sparked a good deal of interest. The sensors are being requested and deployed globally to assist with optimal well placement. As Rolf Smedal reported, “I see azimuthal resistivity technology as an important breakthrough that will help us to succeed with future well programs.”

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