The Svalin field, operated by Statoil ASA, is located 5 miles (8 km) southwest of the Grane field in the Norwegian North Sea. The water depth in the area is approximately 294 ft (120 m). The Svalin field will be developed by a multilateral well drilled from the Grane platform.

The targeted Odin reservoir consists of Paleocene to lower Eocene sandstones. The reservoir is approximately 5,741 ft (1750 m) below mean sea level, and contains oil for recovery by pressure depletion.

Prior to this campaign, two wells were drilled. Due to the small number of offset wells, the seismic data for this field was largely unproven. The existing seismic data imported into 3D software indicated a fairly constant thickness of 49 to 66 ft (15 to 20 m) total vertical depth along the main reservoir’s wellpath.

The operator’s objective was to drill a multilateral oil producer with two main branches in the northern part of the Svalin field as close as possible to the top of the reservoir. A global aquifer was expected to provide reservoir energy and sweep the oil from the bottom to the top.

Due to the complexity of the faulted reservoir, the recommended well design was also based on three offset wells drilled to verify communication between the northern and southern parts of the field, which were separated by a major fault.

The VisiTrak™ Reservoir Navigation Services interactive software, from Baker Hughes, a GE company (BHGE), in conjunction with the company’s inversion modeling software, used the offset well seismic interpretations to identify a much thinner reservoir than expected.

The inversion interpretation showed good correlation of the reservoir base when the offset well results were compared and confirmed. The validity of the inversion interpretations was also confirmed when the operator landed the wellbore at the top of the reservoir at the same depth indicated by the BHGE inversion interpretation.

The BHGE VisiTrak reservoir navigation and analysis service and the AziTrak™ deep azimuthal resistivity service were used while drilling five horizontal sections for a total of 14,377 ft (4382 m) in 373 circulation hours.

This marked the first use of the VisiTrak service in Norway, where it successfully enabled Statoil to maximize its oil recovery.

Challenges
• New development field with limited offset data and uncertain seismic models
• Land the wellbore as close as possible to the top of the reservoir to maximize recovery
• Accurately detect multiple reservoir boundaries using extra-deep azimuthal resistivity measurements

Results
• Validated inversion interpretations from pilot holes
• Mapped the top and bottom of the Odin reservoir continuously
• Optimized well placement in response to significant variations in reservoir thickness

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