

Operator Maintains 5-ft Drilling Target Window for 6,890-ft Horizontal Well Offshore Australia

Real-time steering delivers optimal exposure to good-quality reservoir sands

CHALLENGE

Minimize attic oil and avoid the oil/water contact (OWC) in a horizontal well up to 6,890 ft [2,100 m] long by steering and maintaining the wellbore 5–10 ft [1.5–3 m] below the top of the reservoir.

SOLUTION

Use the GeoSphere* reservoir mapping-while-drilling service to drill a 6,890-ft [2,100-m] horizontal well in narrow target window.

RESULTS

- Optimized the steering window on the basis of mapping-while-drilling information used to evaluate the oil column.
- Maximized exposure to good-quality reservoir sands, avoided the OWC, and minimized attic oil by drilling in the target window.
- Determined that the layers dipped 3°–5°.



Drill within narrow target zone in a challenging horizontal well

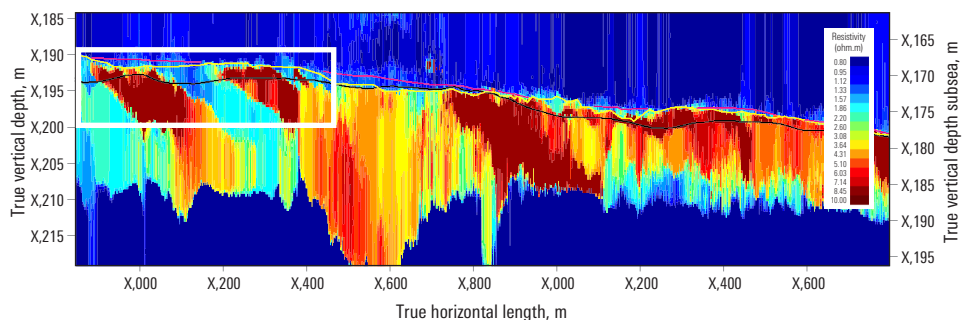
An operator in Australia wanted to maximize exposure to good-quality sands in thinner oil columns and drill longer horizontal trajectories, up to 6,890 ft [2,100 m], offshore Australia. It set a target window of drilling 5–10-ft [1.5–3-m] TVD below the reservoir top to minimize attic oil production and avoid the OWC. The wellbore would have to be maintained within the target window for the length of the 6,890-ft [2,100-m] well section. However, the lower net sand and interbedded nature of the field presented reservoir steering challenges.

Use real-time mapping to find good-quality reservoir sands and drill on target

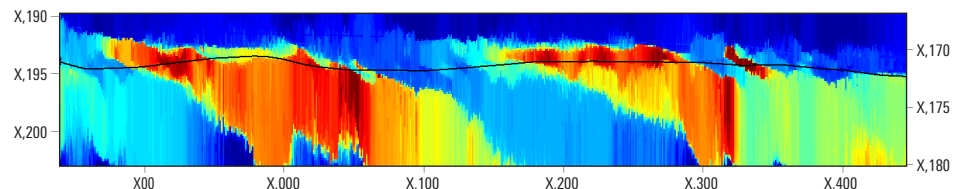
The operator selected the GeoSphere reservoir mapping-while-drilling service, which extends the depth of investigation to more than 100 ft [30 m] and provides highly detailed information for subsurface reservoir layers and fluid contacts. Using deep, directional electromagnetic measurements, the service maps reservoirs, enabling operators to adjust drilling plans and drill on target in complex downhole environments.

Optimized drilling plan and maintained trajectory in sweet spot

With real-time reservoir mapping data from the GeoSphere service, the operator adjusted its drilling plans for optimal exposure and stayed within its revised target zone for the length of the well. Reservoir mapping revealed good-quality reservoir sands 10-ft [3-m] TVD lower than expected. The GeoSphere service also clearly mapped the top of the reservoir with delineated layers, showing a dip of 3°–5°. This data aided in accurate drainhole placement in the target zone. The operator maintained its drilling window of 5- to 10-ft [1.5- to 3-m] TVD below the reservoir top, avoided the OWC, and minimized attic oil. As a result, the operator selected the GeoSphere service for use in four additional wells.



Highlighted area



Top: The GeoSphere service was used to evaluate the oil column and delineate layering within the reservoir, which had a structural dip of 3°–5°. Bottom: This enlarged view shows the drilling precision made possible by the GeoSphere service.