

Operator Avoids Faults, Positions Subsea Well 3- to 7-ft TVD Below Reservoir Top Offshore Australia

GeoSphere service detects multiple resistive layers despite low resistivity contrast

CHALLENGE

Detect multiple resistivity layers corresponding to different geological interfaces and fluid contacts over long horizontal distances with a maximum dogleg tolerance of 2°/100 ft [2°/30 m].

SOLUTION

Reveal subsurface bedding and fluid contact details at the reservoir scale with the GeoSphere® reservoir mapping-while-drilling service.

RESULTS

Avoided faults and drilled the well 3- to 7-ft [1- to 2-m] TVD below reservoir top despite low resistivity contrast.



Minimize sumps and doglegs to ensure completions to TD

An operator planned a second round of development drilling consisting of five horizontal development wells and a water injector offshore Western Australia. This project involved the subsea tieback of three additional development wells with oil columns less than 66 ft [20 m] thick and horizontal trajectories up to 6,890 ft [2,100 m] long.

Production was in a lower interbedded net development unit, which presented reservoir steering challenges not encountered in previous wells. The well plan called for a long horizontal well with a maximum dogleg tolerance of 2°/100 ft [2°/30 m] and minimized sumps to ensure completions would be run to TD.

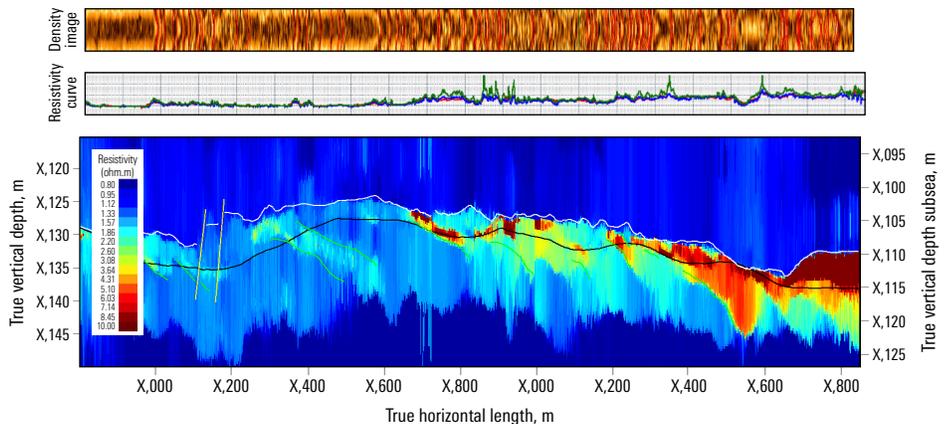
Detect multiple resistive layers and fluid contacts over long horizontal distances

Schlumberger recommended the GeoSphere reservoir mapping-while-drilling service to map multiple resistivity layers in the reservoir, with real-time interpretation support. Using deep, directional electromagnetic measurements, the GeoSphere service provides data more than 100 ft [30 m] from the wellbore that can be integrated with interpreted seismic information to refine reservoir structure and geometry interpretation for optimized recovery.

Drilled well on target below top of reservoir

Despite low resistivity contrast, the GeoSphere service mapped the multiple resistive layers corresponding to geological interfaces of the reservoir. The top of the reservoir was clearly detected, allowing the operator to focus on rapid well trajectory adjustments to avoid faults and drill the well 3- to 7-ft [1- to 2-m] TVD below the reservoir top.

The GeoSphere service’s depth of investigation provided the operator with data critical to achieving maximum reservoir exposure. As a result, the operator plans to drill four additional wells using this service.



Reservoir mapped with the wellbore 10-ft [3-m] TVD below the reservoir top.

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