Advancements in Well Placement – Experiences from the Vincent Field

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All references to dollars, cents or $ in this presentation are to Australian currency, unless otherwise stated.
References to “Woodside” may be references to Woodside Petroleum Ltd. or its applicable subsidiaries.
- Located 50km off the mainland of Western Australia in water depths of 400m.
- A total of 31 laterals with average horizontal lengths exceeding 2000m access a thin oil column of approximately 20m.
- Drilled over 3 development phases commencing in 2007.
- Wells drilled under the gas cap were drilled geometrically maintaining an optimum standoff from the gas-oil contact.
- Away from the gas cap, wells were geosteered to place boreholes 1 to 2m below top structure to maximise oil recovery & standoff from aquifer.
Key Challenges

**CHALLENGE #1:** Risk of incorrect well placement due to the difficulty in distinguishing between thin low resistivity reservoir layers and overburden shale using the azimuthal resistivity technology.

**CHALLENGE #2:** Minimising TVD positional error within a thin oil column.

**CHALLENGE #3:** Maintaining trajectory control in a reservoir with highly unconsolidated layers & extensive faults.
Challenge #1: Distinguishing Between Low Resistivity Beds And Overburden Shale
Looking beyond the inversion canvas and gaining a deeper understanding of the directional curve responses allowed correct well placement decisions to be made.
Challenge #2: Minimising Well Positioning Errors

The High Definition Survey (HDS) method is a new processing method that integrates the continuous survey with the static survey & provides a more accurate description of the wellbore position.

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Challenge #3: Overcoming trajectory control losses
High Build Rate Capability From The Hybrid Point-And Push-the-bit RSS
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In a field like Vincent with soft dipping beds and extensive faults, the new hybrid RSS has a significant technological benefit.
Conclusions

- Technological innovations and development of new methodologies have led to significant improvements in well placement and reduction in the number of sidetracks caused by loss of drilling control.

- The new methods and technologies developed and applied in the Vincent campaign are applicable to other fields where well placement accuracy is critical to successful production performance.

- The success of any well placement operation relies on strong teamwork and communication between the subsurface and drilling teams and service providers. The success of the Vincent campaign would not have been possible without the commitment by the Vincent inter-company and inter-disciplinary team to find solutions to address the well placement challenges.