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Please fill in your abstract title.	The Greater Enfield Project: Well Placement and Completion Strategy

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Abstract

The Greater Enfield project located offshore Western Australia involves a twelve well development of three oil accumulations via a 30km subsea tie-back to an existing FPSO. Extensive pre-drill planning has been undertaken to execute the successful drilling and completion of the twelve horizontal wells, which target thin oil columns in geologically complex reservoirs, without the need for pilot holes or costly side-tracks. This preparation has leveraged the deployment of state-of-the-art deep directional resistivity technology, and rigorous pre-and-post drill performance evaluation techniques.

Prior to commencement of drilling, a series of innovative workflows were developed to facilitate effective real time decision making at key points along the wellbore. The workflows incorporated log data, well survey data, and field-specific commercial heuristics, enabling the geo-steering team to respond to any number of geological or drilling outcomes. Central to the decision workflows has been the incorporation of deep directional resistivity technology, which allows imaging of the target reservoir on approach, and maintains contact with the reservoir during drilling of long production sections. Pre-drill earth models were constructed for the 12-1/4” landing, and 8-1/2” hole sections in the reservoir for all wells associated with the project, to test deep directional resistivity responses to a wide range of geological outcomes, establish depths of investigation, and define responses to a range of potential geological outcomes. Additionally, the acquisition of formation pressures-while-drilling was integrated into the planning, in order to identify the potential for reservoir compartmentalisation, and therefore how this should be incorporated into drilling and completion decision workflows for subsequent wells.

This paper describes the results of Phase 1 drilling of the Greater Enfield Development wells, comparing actual well trajectories to pre-drill expectations, and specifically highlighting how real-time geo-steering was guided by the decision workflows and deep direction resistivity data. Also described are methods used to estimate post-completion injection or production performance, and the insights specifically derived from direct rig-based injectivity tests.

While the Greater Enfield project combines some uniquely challenging fields, the innovative tools and processes developed as part of this work are transferrable to other field developments.