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# Innovative Multi-Method Steering Approach To Optimize A Challenging Thin Reservoir Well Injectivity

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## ABSTRACT

This case study is done on a mature oil field. In this field, a thin dolomitic layer is thought to be acting as a baffle of water injector in the field. As this thin layer is less than 50 cm thick and not consistently recognizable using a conventional logs, this is a trial of using a combination of advance distance to boundary detection and ultra-high resolution imaging tool to steer the well above this thin layer. Based on core available data, it is a dolomitized Redstone with a strong hydrocarbon stain. The tight, relative dolomite is likely to act as a baffle to vertical fluid flow. To enhance the effect of planned water injection project, placement of horizontal well just above the dolomitic layer by a meter or a meter and a half was the target for a successfully injector well in this field. Challenges to the landing of such a well includes depth, thickness, and dip uncertainties. Additionally, there are the errors that are inherent to correlating between the reservoir scale and the seismic scale. Finally, it is difficult to discern boundaries in this low-resistivity environment characterized by very low resistivity contrast. Resistivity contrast, in particular, is of major importance as it plays the main role in determining the operability of common distance-to-boundary tools. Combination of distance to boundary detection capability and Ultra-High Resolution Imaging while drilling allowed to place wellbore precisely at certain distance from the dolomitic fluid barrier, avoid any unwanted exits and to evaluate this dolomitic layer properties by resistivity, density/neutron data known as triple-combo sideways with the above mentioned used technology for steering. The data provided were integrated with seismic surveys to refine the reservoir structure and geometry interpretation. The improved understanding made it possible to optimize recovery and production through optimum landing of the well and to map the overlying and underlying reservoir parameters.