Integration Of Data To Unlock Field X Recovery: Case Study Of Potential Vertical And Inter-fault Block Communications To De-risk Infill Target Location

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Abstract
This paper shows an exemplary case study for an integrated inter-disciplinary data analysis to de-risk a potential infill target location, which was successfully drilled and encountered all target reservoirs, and produced higher than the initial planned rates. The method involves details analysis on the potential vertical and interfault block communications. As field X is highly faulted and compartmentalized, some major faults can be acting as a barrier of flows, however, that shall not confirm the transmissibility of fluid flows. Details analytical observations, majoring on the productions performance, contact loggings, and pressure trending, coupled with dynamic modeling study, were incorporated to the study to finalize the infill well trajectory. Subsurface evaluations on the planned infill wells were studied and reassessed, considering potential vertical and inter-fault communications. Based on the initial target, the risks of encountering gas column in the major target were validated. In mitigating the issues, reinterpretation of fluid phase & fluid contact was conducted. In addition, the potential of connectivity in between the adjacent fault blocks were revisited based on the fault juxtaposition and pressure analysis. As a result, the infill wells trajectory was optimized to cater the subsurface uncertainties & risks. With the new optimized target locations, all the wells were successfully drilled and the target reservoirs were encountered as prognosed, which proves the potential inter-fault connections. On top of that, one of the producers are currently performing better than anticipated rates. The novelty of this work is in its approach in analyzing the potential vertical and inter fault block communications, which will be shown in detail. In the end, the courage to revisit subsurface proposal was commendable, which was purely based on latest data and interpretations.