Collaborative Well Solution Reduces Offshore Rig Time by 15 Days for NOC Off South America

OPTIMIZING PRODUCTION OFFSHORE – SOUTH AMERICA

PROJECT OVERVIEW
An offshore operational unit at a national oil company (NOC) created a well design with only one vertical trajectory without assessment of formations potentially being crossed shallower than the pay zone, resulting in a design that was adequate but not optimal and requiring an additional casing configuration to reach the reservoir, unlike other typical projects in that cluster. In this case, adding one more casing string would require either a borehole reduction or an initial casing size increase. Also, designing a well configuration to reach the target with a small borehole potentially can increase total intervention time and restrict well output, while keeping the original borehole size requires larger initial casing, which would increase costs.

The NOC needed a solution that would reduce total drilling time by increasing well design options without sacrificing well scope.

The NOC chose a collaborative solution centered on DecisionSpace® Well Planning and COMPASS™ software that brought together a multidisciplinary team of geologists, geophysicists and well engineers to provide collaborative, transparent communication between the geology and geophysics (G&G) and drilling groups. Because the company wanted a comprehensive approach beyond well design, the solution factored in all key areas to address uncertainties throughout the process.

CHALLENGE
Integrating geoscience and engineering teams into the well design phase to achieve a well design solution for a national oil company (NOC) that reduces well drilling duration and does not negatively impact reservoir completion and production

SOLUTION
Create a solution workflow to optimize well trajectory by reducing geological uncertainties

RESULT
Optimized trajectory reduced rig time by 15 days compared to the original design, resulting in $7 million cost savings

The DecisionSpace environment provides 3D visualization with integrated data analysis tools.
An evaluation of geological uncertainties was made by the geophysics team to assess the impact of finding key formation tops deeper or shallower than predicted with the originally proposed well trajectory. Further, assessing surrounding geological data and exploring different well design options enabled the client to evaluate more cost-effective options. Using Landmark software, the team was able to navigate through key formation depths, resulting in an optimized directional well design.

By navigating through key formation depths and achieving an optimized directional well design, the new trajectory combined geoscience knowledge (avoiding potentially unstable formations) and drilling knowledge (producing a wellbore smooth enough to enable future interventions; avoiding the use of one additional casing string) to produce a well that was drilled 15 days below average, leading to $7 million in cost savings.