

Modernizing the Well Design Process for Field Development

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Summary

Designing wells with current standard practices is an onerous and iterative process. Often, it involves drawing 2D well sticks in mapping programs or even on screenshots in PowerPoint. As these proposed wells move closer to the drilling stage, wells must be converted from 2D to 3D. This is a time-consuming process that leaves little time for geoscientists to incorporate their subsurface knowledge to optimize wells.

The current standard can also be costly if design services are outsourced. If laterals are altered before drilling, development teams risk a suboptimal well design and lost revenue from reduced lateral length.

In this paper, we challenge the standard design process and present examples of a modernized process that has saved companies time and resources.

Workflow

We propose a modernized workflow where geoscientists skip manually drawing well sticks on maps. This process, while an accepted standard, creates bottlenecks later in the planning process as wells near their spud date. Often the conversion of well sticks to 3D designs requires specific expertise (which is outsourced, in some instances), and the design may go through several iterations between the subsurface and drilling teams. This is both costly and time-consuming.

By designing wells in 3D and incorporating subsurface information as a first step, Development teams can save time and money. Recovered time from skipping the 2D well stick to 3D conversion stages can be used to improve designs. Accelerated planning allows for more communication between the Subsurface and Drilling & Completions teams as they approach the spud date. This added time allows teams to adjust their design to account for surface obstacles or constraints, subsurface factors that may affect drilling and completions, and optimization of lateral length to maximize EUR.

Increasingly, operators are embracing this approach to both modernize their workflows and achieve the efficiency required to stay competitive with their peers.

Conclusions

Companies can accelerate their field development plans by creating more realistic plans from the beginning. By having time to test and iterate through potential designs, companies set themselves up for



the best chance of success. Asset teams can reduce their cycle time, improve designs, and improve project communications between geoscience and engineering teams.

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