



Multi-PSL Halliburton Team Optimizes Drilling Performance

DRILLING EFFICIENCIES REDUCE TOTAL PROJECT TIME BY 11 DAYS

ECUADOR

CHALLENGES

- » Optimize drilling time
- » Minimize NPT
- » Lead and coordinate project between Halliburton PSLs and third parties
- » Increase overall productivity while also decreasing overall risks

SOLUTIONS

Multi-PSL Halliburton team, led by HPM, provided:

- » BHA optimization
- » Customized drill bits via DatCISM process
- » GeoForce[®] motors
- » iCem[®] cementing service
- » Tailored drilling fluids

RESULTS

- » Drilled first well significantly ahead of plan, thus achieving record as fastest well drilled in field to date
- » Fifth well also achieved record as fastest well drilled to date in the field
- » Completed entire operation with zero NPT
- » Halliburton received four extra well assignments due to its excellent performance on these wells, ultimately reducing total project time by 11 days compared to the plan

OVERVIEW

The Halliburton Project Management (HPM) team in Ecuador collaborated with an operator to drill a vertical exploratory. The drilling and completion of this well led to new oil reserve discoveries, and its execution exceeded the operator's expectations. Halliburton has since been awarded four additional wells in the field. In this project, several Halliburton product service lines (PSLs) – including Drill Bits and Services, Sperry Drilling, Baroid, Wireline and Perforating, Cementing, and Completion Tools – and third-party companies actively participated to add value to the overall project, which was coordinated by the HPM team.

CHALLENGES

Drilling time optimization in the fields is very difficult to achieve, due to well schematics in this field that only consider two sections: a 16-inch drilling section with a 13 $\frac{3}{8}$ -inch intermediate casing, and a 12 $\frac{1}{4}$ -inch drilling section with a 9 $\frac{5}{8}$ -inch production casing for this type of well. The operator's drilling campaign target was set to reduce at least 5 percent of the total campaign drilling time and 10 percent of the costs vs. the total campaign drilling AFE. These outstanding results, led by the HPM team, were accomplished by managing risks through the use of bow-tie methodology. In doing so, the project incurred less than 1 percent of non-productive time (NPT).

SOLUTIONS

Exhaustive offset well information analysis was performed to determine opportunity areas for maximizing drilling performance in the fields – including the bottomhole assembly's (BHA's) formational tendency, drilling fluid properties for enhanced hole stability and zero formation damage, operational best practices, and cement slurries designed for heterogeneous formations. Collaborative solutions through exhaustive planning were developed prior to initiating the first well scheduled for the drilling campaign.

**REDUCED TOTAL
PROJECT TIME
SAVING
11 DAYS**

The planning process included technology selections based on specific objectives, including cost benefit analysis, Drill Well on Paper (DWOP) methodology, peer reviews for the final drilling program, pre-spud meetings in the office, and, finally, spud meetings in the field.

The Halliburton solution included BHA optimization, customized drill bits via the Design at the Customer Interface (DatCISM) process, GeoForce[®] motors, the iCem[®] cementing service, and tailored drilling fluids for hole stability.

RESULTS

The first vertical well in the field was drilled significantly ahead of the plan and with zero NPT – achieving a record as the fastest well drilled in the field to date. The fifth well drilled also achieved a record of being the fastest well drilled in the field, and it was also completed with no incidents or accidents. Due to these outstanding results, four directional wells were also assigned and successfully drilled – ultimately reducing total project time by 11 days compared to the plan. A cost reduction was optimized vs. the AFE plan, obtaining a 15 percent reduction in the key performance indicator (KPI) of U.S. dollars by feet (\$/ft) drilled.

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