

Case study: Alaska

SureTrak 2.0 service delivers 7-in. liner in record ROP, saved customer \$2 million USD

Conventional drilling and liner drilling technologies did not fulfill a major customer's drilling objectives in a challenging shale formation in Alaska that requires extra time for well completion, and delays oil production. The formation tends to collapse, requiring excessive back reaming and additional trips to clean the hole, and making liner running difficult.

A cross-product line team from Baker Hughes exceeded the customer's expectations in the challenging drilling and completion environment by delivering a steerable 7-in. drilling liner job with record rate of penetration and no drilling complications.

In its first field application, the new-generation **SureTrak™ 2.0 steerable drilling liner service** saved the operator approximately \$2 million USD in rig time. The high-risk reservoir section was simultaneously directionally drilled and evaluated with LWD measurements while it was secured with the liner.

The SureTrak 2.0 service combines technologies from Baker Hughes Drilling Services, Drill Bits, and Completions product lines. The service incorporates the 4½-in. **AutoTrak™ eXact RSS, OnTrak™ service**, and **CoPilot™ service**, which enables evaluation of the reservoir while drilling, steering, and setting liner. The system

also features the new **GaugePro™ Echo Series 6 on-command digital reamer** with modified cutter blades equipped with **StayTrue™** and **Dynamus™ cutter technologies**. In addition, the cutter blades have the highest enlargement ratio on the market—6 in. up to 8¾ in.—which mitigate drilling and completion risks in challenging environments such as these.

Baker Hughes designed a **Dynamus™ extended-life PDC drill bit** featuring StayTrue shaped diamond elements specifically for this application. Equipped with this bit and the new GaugePro Echo reamer blades, the SureTrak 2.0 service achieved three times faster ROP (35 ft/h vs. 15 ft/h planned) compared to previous steerable drilling liner technologies. Additionally, the new design performed smoothly without drilling dynamic dysfunctions and enabled the desired 50/50 weight distribution between bit and reamer throughout the entire run of 1,702 ft of interbedded formations.

The SureTrak 2.0 liner system consisted of a liner setting sleeve with an anchor-latch profile run in on an HRD-E liner setting tool. The HRD-E transmitted torque and axial force from the drill string to the liner, allowing the operator to circulate at the speeds needed to clean the hole while drilling. This permitted the cuttings to be circulated up hole without the fear of

Challenges

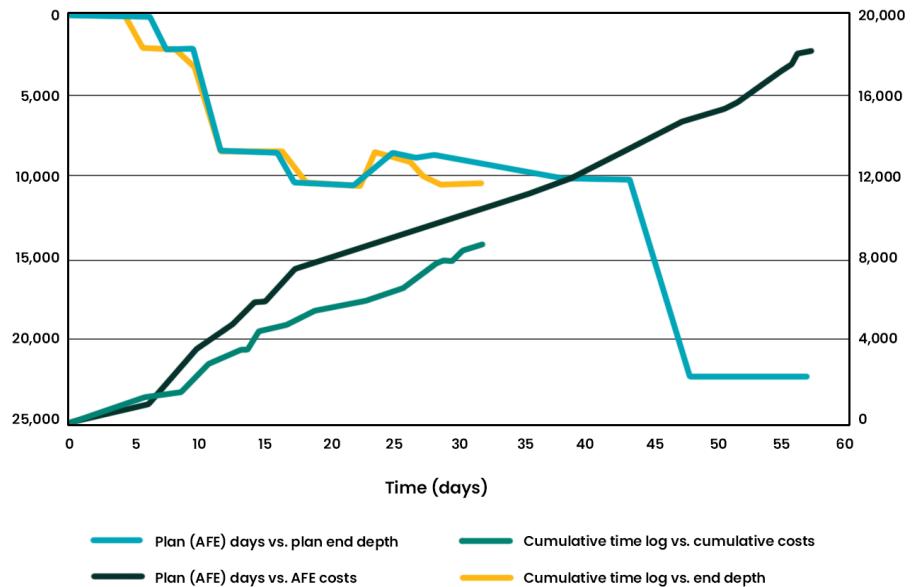
- Shale formation that tended to collapse, requiring excessive back reaming and additional trips to clean the hole
- Formation also made running liner difficult
- Formation evaluation required extra time for well completion, delaying start of oil production

Results

- Reduced days drilling liner section from planned 18 days to nine days
- Completed drilling/reaming in 2.5 days vs. 10-day plan
- Prevented drilling and completion risks

pre-releasing the liner. A V0-rated, gas-tight quick connect facilitated the trouble-free makeup of the inner string to the liner, saving additional rig time and allowing the procedure to be done safely.

With this cross-product line effort, the planned total section 18-day deployment was completed in nine days. The duration for the drilling part of the operation planned for 10 days was completed within 2.5 days.



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