

Optimized Brine and ENVIROMUL™ Fluids Help Cut Drilling Days of Pacesetter Shale Well By 32 Percent

BRITISH COLUMBIA, CANADA

CHALLENGES

A major operator wanted to optimize several aspects of the drilling operation to overcome potential wellbore issues:

- » Lost circulation
- » Pressured zones
- » Excessive torque and drag
- » Effective hole cleaning in the lateral

SOLUTIONS

The Baroid team recommended two fluids to address the anticipated challenges:

- » Low-solids NaCl brine to drill the upper wellbore sections
- » ENVIROMUL™ OBM to provide stability and lubricity in the lateral

RESULTS

Through careful collaboration and the use of optimized drilling systems, the operator was able to drill the well in 9.2 days, saving 4.4 days valued at approximately USD 639,000.

OVERVIEW

An operator wanted to optimize the well plan for a Montney shale pad drilling operation by establishing a “pacesetter” well. Anticipated issues included lost circulation through a fracture in the shale section, excessive torque and drag in the build section, and maintaining effective hole cleaning in the lateral. Additionally, pressured formations could be encountered, as well as the North Pine salt zone.

As part of the optimization strategy, the operator focused on selecting the right drilling fluids, mud motors, bottomhole assembly (BHA), bits, and well trajectories.

BRINE FOR UPPER WELLBORE, ENVIROMUL® OBM FOR LATERAL SECTION

A sodium chloride (NaCl) brine was used to drill down to the heel of the lateral at 2,534 meters (8,314 feet). The minimal solids content in the brine allowed for faster rates of penetration (ROPs), and the salinity helped provide inhibition. The inhibition was enhanced with additions of EZ-MUD® shale stabilizer, which also improves lubricity.

The wellbore was then displaced to ENVIROMUL™ oil-based mud (OBM) formulated with D822 base oil. The ENVIROMUL system was selected to supply densities above 1,200 kg/m³ (10.0 ppg) if required. The ENVIROMUL fluid also has an excellent track record for wellbore stability and lubricity.

PACESETTER WELL DRILLED 32 PERCENT FASTER THAN PLAN

The mud systems and the bit/BHA selections proved successful. Good communication among engineering and rig personnel resulted in a problem-free drilling fluid operation with zero nonproductive time (NPT).

The mud properties were consistently maintained within spec. The low-gravity solids (LGS) content was kept as low as possible to enhance ROP and help minimize fluid treatment costs.

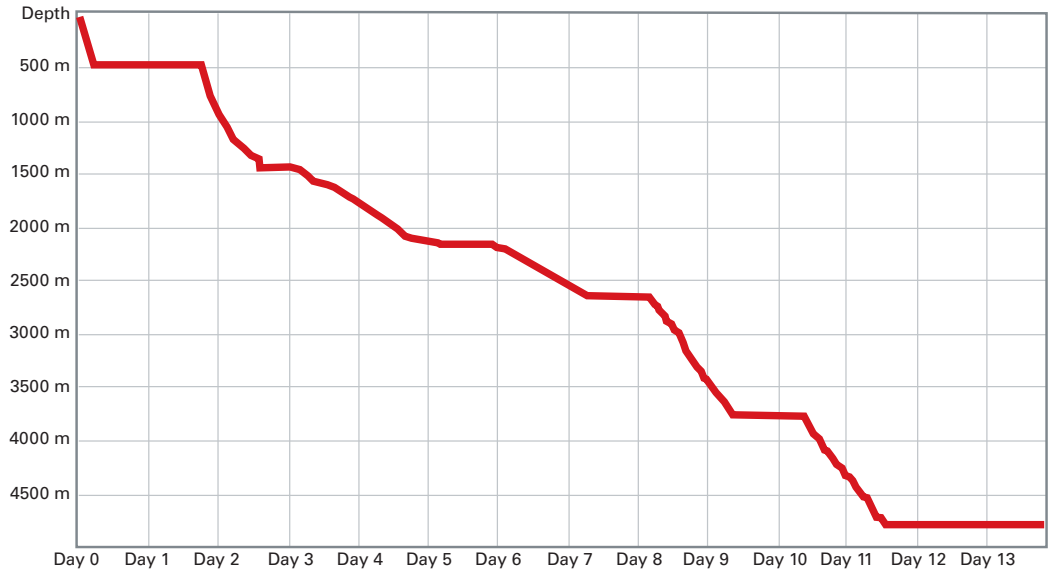
The well plan allowed 13.6 days to drill from spud to total depth (TD). Actual time was 9.2 days, saving 4.4 days valued at approximately USD 639,000.

Close collaboration between Baroid, the operator, and all rig personnel was a key factor in this significant achievement.

4.4 DAYS
ahead of plan
valued at
approximately
USD 639K
SAVINGS

Pacesetter Well: Predicted Days

Depth vs. Time Chart



Pacesetter Well: Actual Drilling Performance

Depth vs. Time Chart



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