

HydraGlyde Fluid System Meets Efficiency and Financial Challenges of Argentina Exploration Well

High-performance drilling fluid enables efficient drilling and logging operations while reducing costs for each section by 2% and 14%, respectively

CHALLENGE

Meet HSE requirements while drilling and logging an exploration well in the Neuquén Basin.

SOLUTION

Use the HydraGlyde* high-performance water-based drilling fluid system to maximize drilling performance while reducing risks.

RESULTS

- Saved 1.2 days off of AFE.
- Cut costs for the 17½-in section by 2% and for the 12¼-in section by 14%.
- Reused more than 85% of the drilling fluid used in the 17½-in section for the 12¼-in section.
- Enabled three logging runs in each section with no hole stability issues.
- Mitigated HSE risks.



Operator needed to ensure well stability while logging

An operator was drilling an exploratory well in Argentina's Bajada del Toro field. To improve reservoir understanding, the operator planned to collect high-resolution measurements and formation samples in the 17½-in and 12¼-in sections. The operator divided the logging runs into three sets: resistivity, spontaneous potential (SP), gamma ray (GR), caliper, and dipolar sonic; magnetic resonance and Dielectric Scanner* multifrequency dielectric dispersion service; and MDT* modular formation dynamics tester.

Multiple logging runs required well stability for extended periods of time—the operator needed to ensure proper mud weight and inhibition so the well would not close in or become unstable. In addition to these technical requirements, the drilling fluid needed to meet strict environmental regulations, because the well was located near an aquifer zone.

Section	17½ in	12¼ in
Section depth, m	605	1,050
Density range, kg/m ³	1,100–1,200	1,100–1,200
Density maximum, kg/m ³	1,200	1,250
Flow rate range, galUS/min	645–812	553–846
ROP range, m/h	16–50	32–60
Total drilling hours	21.8	10.9
Average ROP, m/h	26.5	40.6
Pressure range, psi	950–1,900	1,600–2,650
Total planned cost, USD	146,251	39,858
Total actual cost, USD	143,189	34,409
Total savings, USD	3,063 or 2%	5,449 or 14%

HydraGlyde system provided high technical and environmental performance

Schlumberger selected the HydraGlyde high-performance water-based drilling fluid system with potassium sulfate, HydraSpeed* ROP-enhancing primary lubricant, and HydraCap* encapsulating additive for its excellent lubricity and inhibitory characteristics.

The operator aimed to drill each section with an average ROP of 30 to 50 m/h with no HSE incidents. While planning the well, however, the drilling team discovered that the rig had only two primary shakers, which would reduce planned flow rates, ROP, and hole cleaning efficiency. Schlumberger proposed using the onsite mud cleaner as a third primary shaker to handle the volume of cuttings from both sections.

Operator saved 1.2 days and completed six logging runs

The operator drilled the 17½-in section to 605-m [1,984-ft] TD at an ROP of up to 50 m/h. After running the first two logs, Schlumberger observed some restrictions due to lack of density. The team performed a calibration trip as planned and increased fluid density to 1,200 kg/m³ [10 lbm/galUS] before running the third log set. Formation fluid samples were collected at 535 m [1,755 ft], 461 m [1,512 ft], and 302 m [990 ft].

After reaching 1,050-m [3,444-ft] TD in the 12¼-in section, the operator cleaned the hole and increased the fluid density to 1,250 kg/m³ [10.4 lbm/galUS] before successfully completing all three logging runs. The operator took formation samples at 1,018 m [3,339 ft], 933 m [3,060 ft], 798 m [2,617 ft], and 671 m [2,200 ft] with no issues.

The HydraGlyde fluid system delivered ROP, hole cleaning, and stability similar to oil-based mud with the economic and environmental benefits of a water-based drilling fluid. Despite the drilling challenges, the operator drilled and logged both sections 1.2 days ahead of schedule. In addition, Schlumberger was able to eliminate a planned calibration trip and reuse more than 85% of the drilling fluid from the 17½-in section in the 12¼-in section. These efficiencies helped reduce costs in each section by 2% and 14%, respectively.



Dry cuttings from the primary shakers demonstrate the inhibitive properties of the HydraGlyde fluid system.



The HydraGlyde fluid system deposits a thin and flexible filtercake.

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