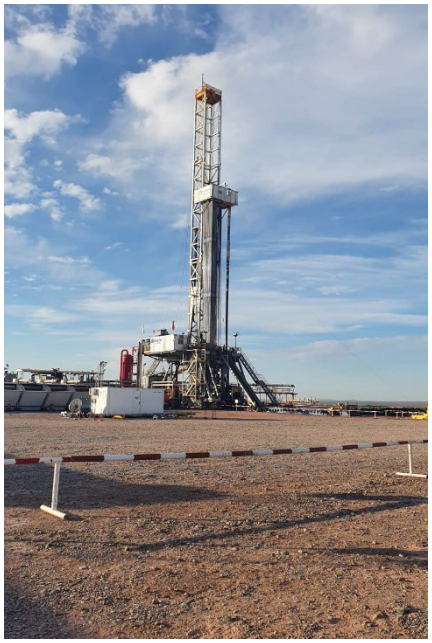
WEL-VERT Drilling-Fluid System Enabled 100% Successful Logging Operation in 76.5 Hours

Objectives

- Determine an optimal synthetic-based fluid (SBF) to drill a difficult hole section that previously only used oil-based fluid.
- Maintain static hole conditions so the operator could complete extensive wireline logging.

Our Approach

- The Weatherford supply chain team ensured all components necessary to engineer the custom fluids system were in place.
- To prepare and evaluate different formulations using SBF, the Weatherford team drew on its experience within the Neuquen basin to create a new fluid system. The Argentina Fluids Lab performed extensive testing that included but was not limited to the following:
  - High-pressure/high-temperature (HPHT) rheology testing
  - Dynamic and static barite sag
  - Hot-rolling test for 36 hours at 300°F (149°C)
- After achieving an optimal formulation using the WEL-VERT™ invert-emulsion drilling-fluid system—a fluid composed of mineral oils, synthetic organics, and various salts for thermal stability—Weatherford experts tested in two different mud weights: 14.6 ppg (active system) and 16.7 ppg (kill mud), making small adjustments as needed.
- It was determined that a 15.2 ppg SBF would be used to control formation pressure during logging operations. This fluid had to maintain its rheology, emulsion stability, and prevent barite sag while under lengthy static borehole conditions.
- Throughout the entire drilling process, the technical team remained in constant contact with field engineers, making frequent visits to the well-site to ensure customer success.
- Weatherford experts collaborated with the customer to organize logistics (barite and base oil) and reduce operational risks (corrected mixing procedures, rig crew induction, and recommended fluid treatments).
- Engineers from the customer and Weatherford evaluated the compatibility between oil-based fluid and SBF to optimize SBF for the next well interval.



The WEL-VERT drilling-fluid system delivers performance in extreme well environments. Offering a wide range of fluids, this system delivers optimal performance in any well.

LOCATION
Neuquen, Argentina

FORMATION
Vaca Muerta

HOLE SIZE
6-3/4 in.

CASING SIZE AND TYPE
7-5/8 in.

TEMPERATURE
275°F (135°C)

DEPTH
10,145 ft (3,092 m)

PRODUCTS/SERVICES
WEL-VERT invert-emulsion drilling-fluid system

Weatherford®

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Value to Customer

- Field personnel performed trips and wireline logging runs in two different stages:
  - Stage 1: the first four logging runs accounted for 76.5 hours of static time, then drilled an additional 16.4 ft (5 m) in the Tordillo formation and tripped out of the hole
  - Stage 2: five runs and 60 hours of static time
- All logging runs were performed without issues and 100% of samples were recovered.
- The customer successfully drilled the sections and completed 7 logging runs without any issues, recovering 100% of targeted samples during logging operations.

From a network of industry-leading laboratories, Weatherford's knowledgeable professionals leverage decades of experience to create the ideal fluid regime for any well.

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