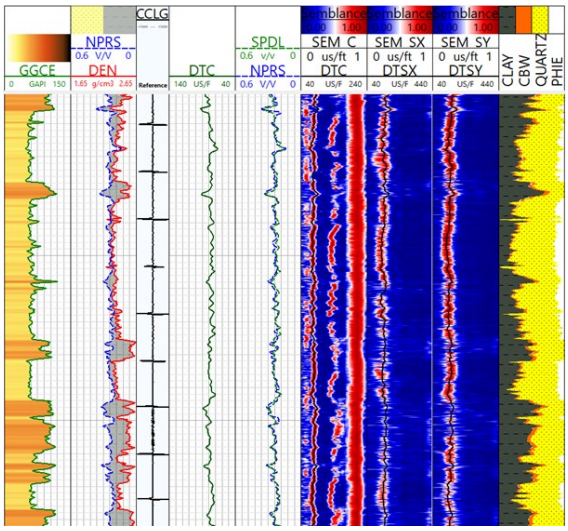
Compact™ Logging Tools Uncovered Valuable Petrophysical Information Behind Casing in Sump Well, Confirmed New Zones For Injection, Sealing



Composite log with the following information obtained: GR-DEN-NEU-CXD.

Objectives

- Determine the viability to inject and seal zones of interest based on petrophysical analysis in a cased-hole environment.
- Integrate results with regional petrophysical models and validate the correlation with offset wells to design well completion.

Our Approach

- Because this work was the first sump well in the area to be studied, there was no information available to evaluate it petrophysically and determine seal and injection zones.
- The operator, after an unsuccessful attempt to acquire openhole information due to different operational issues (string sticking and drilling restrictions), decided to finish drilling the well, complete it, and acquire cased-hole information in the zone of interest.
- The well was designed to be completed with 7-in. casing, but because of the challenges encountered, the completion was redesigned down to a 5-in. casing.
- The smaller casing size proved ideal for the Compact tools.
- After reviewing the well conditions, an in-house team of Interpretation and Evaluation experts defined and proposed to run the following series of tools to successfully obtain cased-hole petrophysical properties in the zone of interest: MCG, MDN, MPD, and CXD.

LOCATION
Neuquen, Argentina

WELL TYPE
Deviated

FORMATION
Centenario

HOLE SIZE
6-3/4 in.

LINER SIZE
5 in.

TEMPERATURE
168°F (76°C)

LOGGING INTERVAL
6,108 ft (1,862 m)

PRODUCTS/SERVICES
- Compact tools
- Interpretation and Evaluation Services
- Compact gamma ray (MCG) tool
- Compact dual neutron (MDN) tool
- Compact photo density (MPD) tool
- Compact cross-dipole sonic (CXD) tool

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Our Approach, continued

- The Weatherford team deployed the Compact tools on location despite the complex borehole environment and subsequently sent this information from the wellsite.
- IES specialists reviewed the data, performed a thru-casing processing, and delivered the final information to the operator.
- Having this information, the operator was able to define the zones that would be injected and sealed successfully into the well.

Value to Customer

- Compact technology delivered high performance and quality information, and avoided problems with well geometry (washouts) and overpull situations that normally occur in openhole operations in this field, which affect the density curve. Caution should only be taken with the casing collar locators. The average density values had a good match with the offset wells.
- The IES analysis, combined with Weatherford technology, enabled the operator to have a solid petrophysical characterization, identifying the injection and seal zones.
- The ability to log in the cased-hole environment avoided potential fishing operations and lost-in-hole payments, saving significant rig time.
- The success of the operation motivated the operator to recommend the Weatherford Interpretation and Evaluation Services for the whole Neuquen region.