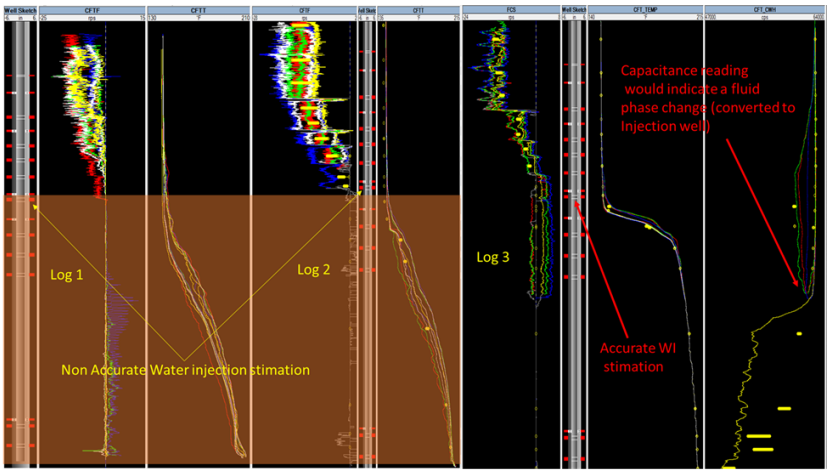
Advanced Planning, Unconventional ILT Strings

Overcome High Viscosity Hydrocarbon Challenges, Convert Producing Wells to Injection Wells



Real-time identification of viscous/heavy fluid related position.

Objectives

- Estimate water injection through mandrel system.
- Confirm mechanical integrity.
- Verify water distribution through formation zones and optimize according to results.

Our Approach

- For some years, the operating company of the field began the process of reconversion of producing wells (with low/null hydrocarbon production potential) to injection wells to increase the areal sweep of reserves and maintain the pressure in the reservoir.
- The field is a producer of high-viscosity/density hydrocarbons, which makes it difficult to clean it during the conversion process, leaving remains of this pasty fluid inside the well. Many wells experience the backflow phenomenon in early conversion times, dirtying the injection pipe even more.
- For job planning, the operator supplied basic information of the well such as the mechanical state, the survey, the objective flow per formations, and the objective of the intervention.
- Weatherford engineers took advantage of the experience in recording injections carried out in the field and developed a job plan that minimized the effect of these residues downhole that make it difficult or impossible to turn the spinner downhole.

LOCATION
Colombia

WELL TYPE
Injector

FIELD
Chichimene

CASING
7-in.

LINER SIZE AND TYPE
3-1/2 in., 9.2#

OTHER
Viscous fluid cover 6 mandrels

PRODUCTS/SERVICES
Production logging

Weatherford®

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Our Approach (continued)

- An unconventional string for injection logging tests (ILT) was designed, which included the use of the capacitance sensor to determine the exact point where the deposition of waste began that prevented the spinner from accessing below that depth. This would avoid the impregnation that prevents the correct rotation and making it difficult or impossible to estimate the flow by area in an optimal and reliable way.
- Likewise, it would decrease the operation time by reducing the section to be registered, an extensive interval of which consistent information would not be acquired according to previous registers.

Value to Customer

- Unlike the previous two logs, the flow admitted by mandrels 6 and 7 was estimated with precision.
- The Weatherford solution successfully identified the injection cessation point, reducing operational time by not having to record all the possible injection zones at different speeds
- Based on the results obtained, the operator decided to change the valve regulation of mandrel 6 for a higher one, because, with the admission before the intervention, it would be below the injection target for the area and only 15% of the target injection would be met.