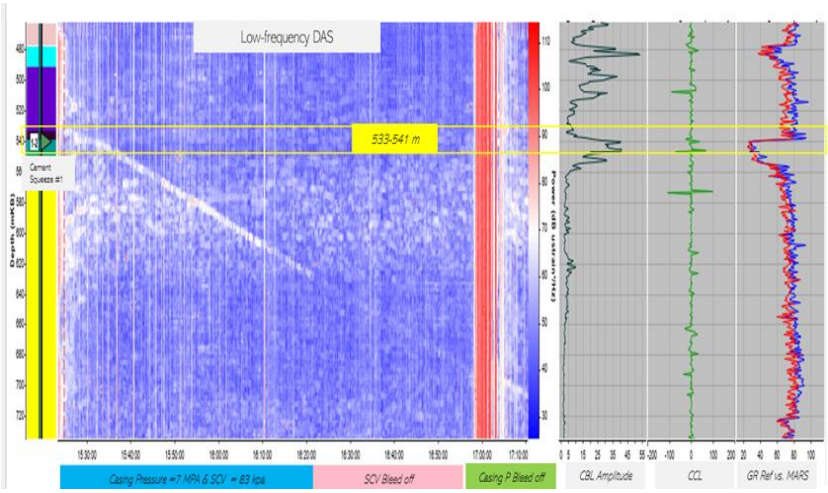
MARS™ System Uses High-Resolution DAS and DTS To Identify Persistent Leak Source After Cement Squeezes



Despite the very small leak, high-resolution, low-frequency DAS detected fluid movement during liquid pumping into one of the cement squeezes, as well as downward flow behind the casing. The results correlate closely with permeable sand and poor cement quality in this interval, indicating the source of the SCV leak.

Objectives

- Identify the source of a persistent leak in the surface casing valve (SCV). The well had water coming from the SCV at a very low rate, about 1 liter every 2 to 3 days.
- Develop an effective remediation strategy. Three cement squeezes were attempted to stop the water flow but proved unsuccessful.

Our Approach

- Weatherford experts recommended the MARS Mature Asset Rejuvenation by Surveillance system, an advanced thru-tubing intervention and reservoir-intelligence system. Its unified sensors feature real-time distributed acoustic sensing (DAS), distributed temperature sensing (DTS) with complementary bottomhole (BHA) sensors for depth calibration and data correction.
- Field personnel deployed the MARS system using the capillary method. The setup featured a quick and efficient rig-up and rig-down process, delivering real-time data along the entire well to enable interactive and informed decision-making throughout the operation.
- A proper test was designed by the combination of bleeding off and pumping liquid to activate the small leak during the MARS survey.

LOCATION
Canada

WELL TYPE
Producer

DEPTH
1,000 m (3,280 ft)

PRODUCTS/SERVICES
- MARS system

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Value to Customer

- Even with the minimal leak rates, the DAS system successfully detected fluid movement during liquid pumping into one of the cement squeezes, as well as downward flow behind the casing.
- The results correlate closely with permeable sand and poor cement quality in this interval, indicating the source of the SCV leak.
- The data enabled the operator to target future interventions more precisely, potentially saving time and reducing costs.

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