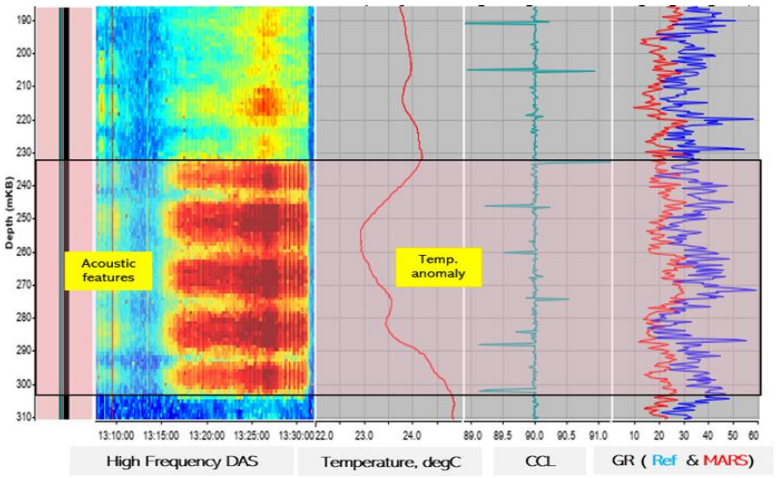
MARS™ System Detects Minor Sour Gas Migration Missed by Conventional Logs, Provides Actionable Insights Previously Unattainable



Distinct acoustic features are observed across some intervals, showing a strong correlation with the temperature anomalies, indicating leak points.

Objectives

- Identify the origin of a low-rate sour gas leak through the surface casing vent (SCV). Due to its subtle and intermittent nature, conventional logging methods failed to pinpoint the leak's source.
- Enable a remediation plan that adheres to regulatory compliance.

Our Approach

- After collaborating with the operator's engineers, Weatherford 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) and distributed temperature sensing (DTS) with complementary bottomhole assembly (BHA) sensors.
- Weatherford field personnel deployed the MARS system using the capillary methods. This setup allowed for
  - Rapid rig-up and rig-down, minimizing operational disruption.
  - Real-time data acquisition across the entire wellbore, enabling dynamic decision-making during the intervention.
  - High-resolution acoustic and thermal profiling, essential for detecting subtle fluid movements and temperature anomalies.
- The MARS system was configured to capture both low- and high-frequency DAS signals, providing a comprehensive view of wellbore activity.

LOCATION
Canada

WELL TYPE
Producer

DEPTH
1,000 m (3,280 ft)

PRODUCTS/SERVICES
- MARS system

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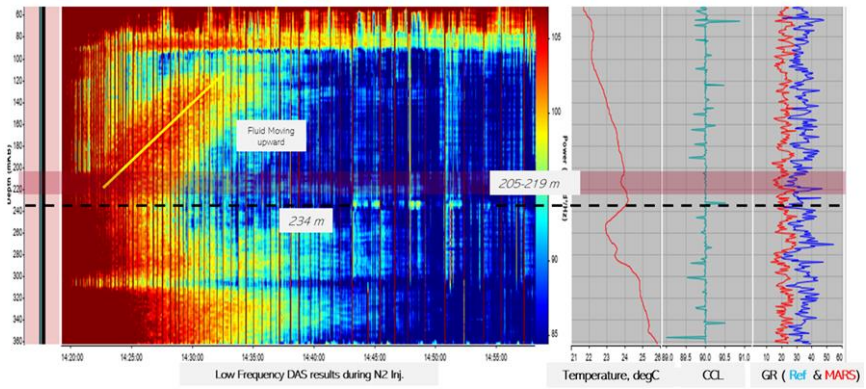
Value to Customer

- The deployment of the MARS system provided the operator with actionable insights previously unattainable using conventional methods.
- Low-frequency DAS data revealed fluid migration from the production casing into the annulus, with clear upward flow signatures within the annular space.
- These acoustic responses aligned strongly with temperature anomalies detected by DTS, as well as known zones of poor cement quality from previous cement bond logs (CBL).
- The system identified multiple potential leak zones, enabling the operator to prioritize remediation efforts.
- The MARS survey was completed in a fraction of the time compared to a conventional noise-logging tool.
- The MARS system allowed the operator to monitor operations in real time and optimize each test step using live DAS and DTS data.



High-resolution, low-frequency DAS detects upward flow movement. This suggests fluid is leaking through the production casing and migrating upward within the annulus. The temperature anomaly at this depth further supports this interpretation.