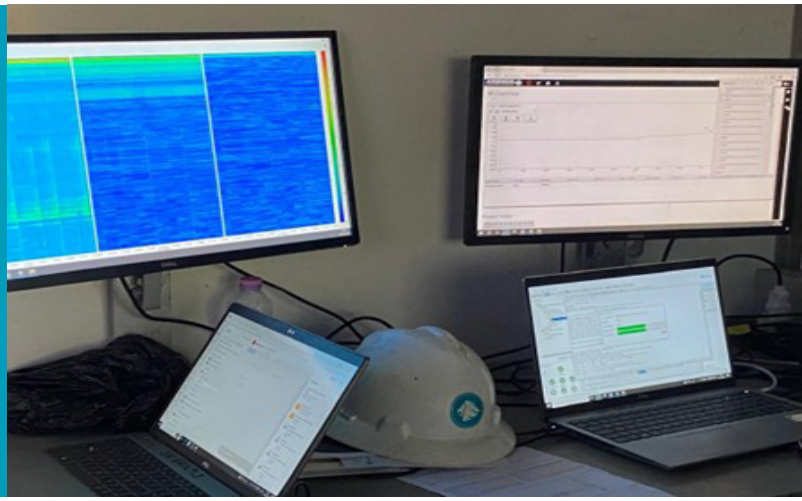
Expro Excellence

Diagnosing B-Annulus integrity losses during a workover using Distributed Fiber Optic Sensing (DFOS)

Well Intervention and Integrity



Objectives and background

- Investigating leak paths behind multiple barriers during a rig operation presents major challenges for conventional well integrity tools. Conventional Spectral noise logging was impractical due to extended logging times and the need to pump excessive volumes. Furthermore, these tools are also highly susceptible to surface and environmental noise, often resulting in inconclusive data, particularly for shallow leaks
- The operator required a rapid, comprehensive, and operationally efficient solution to diagnose the integrity issue across the entire wellbore during a workover operation following significant losses
- The main objectives were to:
  - Identify the leak path in the B annulus after a failed integrity test
  - Diagnose potential leaks behind multiple barriers in a harsh rig based logging environment
  - Minimize pumping volumes, logging time, and non productive rig time

Expro Excellence

- Expro was selected for its **Distributed Fiber Optic Sensing (DFOS) Intervention** capability and expertise in complex integrity diagnostics

What Expro did differently:

- Deployed DFOS on **slickline**, enabling fast mobilization and minimal operational disruption
- Designed a surveillance programme combining **Distributed Acoustic Sensing (DAS)** and **Distributed Temperature Sensing (DTS)** to detect fluid movement in real time during well manipulation
- Delivered full well diagnostics in a **single, short duration run**, avoiding prolonged rig exposure and excessive pumping

Value to the client

- **Fast, conclusive well integrity diagnosis**, even in a challenging logging environment
- **Reduced rig time and costs** through rapid data acquisition and interpretation
- **Improved decision making** during the workover with actionable, high confidence insights
- Avoided extended pumping, inconclusive logging, and prolonged downtime that would have resulted from conventional methods
- Without Expro's DFOS solution, the operator would have faced increased non productive time, higher costs, and lingering uncertainty around well integrity-potentially escalating operational and safety risks

Cost saving

Well integrity