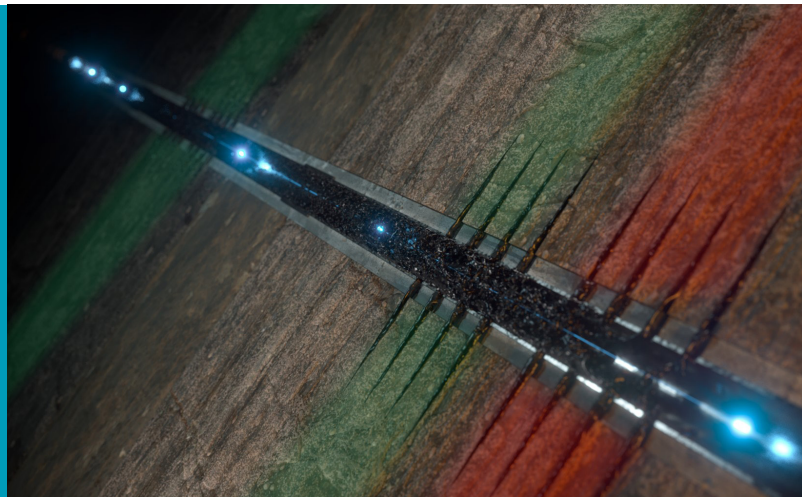
Expro Excellence

Cracking the code: DFOS provides insight into zonal injectivity and fracture growth in multi-zone water injection well

Well Intervention & Integrity



Objectives and background

- Our clients asset featured a selection of multi-zone water injection wells where there is some uncertainty around which zones were taking the injected fluids
- Additionally, the client sought to quantify fracture growth during injection to mitigate the risk of uncontrolled fracture extension, thereby assuring the long-term performance of the reservoir
- To address these challenges, the client selected Expro's Distributed Fiber Optic Sensing (DFOS) Intervention solution to provide high-confidence insights to optimize injection strategies and safeguard reservoir integrity

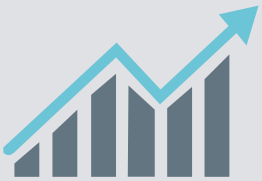
Expro Excellence

- Expro converted an existing Mechanical Slickline Intervention package into a DFOS Intervention Package, delivering a compact, cost-effective, and operationally efficient solution
- The surveillance program featured:
  - A baseline survey
  - A step rate injection test
  - A warm back survey
- Expro's DFOS eXtract® data processing software enabled rapid data analysis, with processed data transmitted to an off-site analyst for near real-time interpretation and analysis
- The data was integrated and visualized using Expro's QikView™ software, providing a clear and actionable insight of dynamic well performance

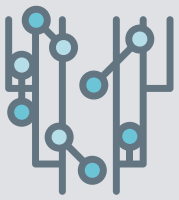
Value to the client

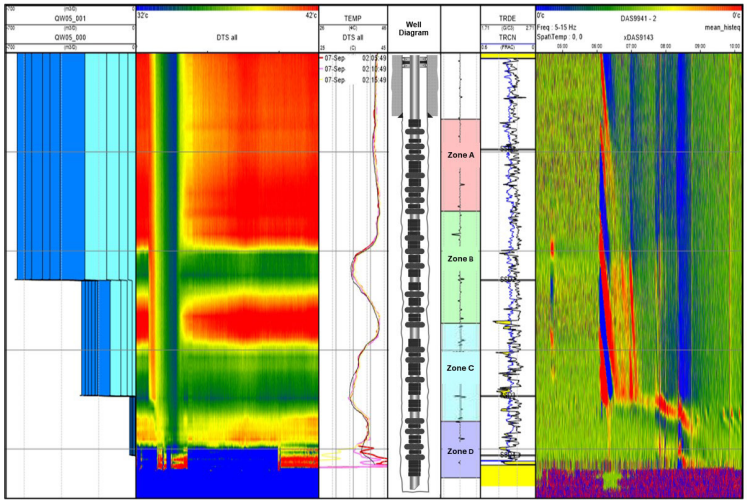
- The complete well surveillance capability of the DFOS Intervention technology was used to gain actionable insight regarding the injectivity profile of the multi-zoned well
- The conversion of an existing Mechanical Slickline Intervention package into a DFOS Intervention Package enabled our client to gain real-time well insights while minimizing footprint and intervention costs
- High Injectivity was confirmed in two of three zones during the step rate test, with the third zone exhibiting a rate dependant zero to low injectivity characteristic
- Analysis of the DFOS data determined fracture growth during injection, with this insight being used to mitigate against the risk of uncontrolled fracture extension

Enhanced production

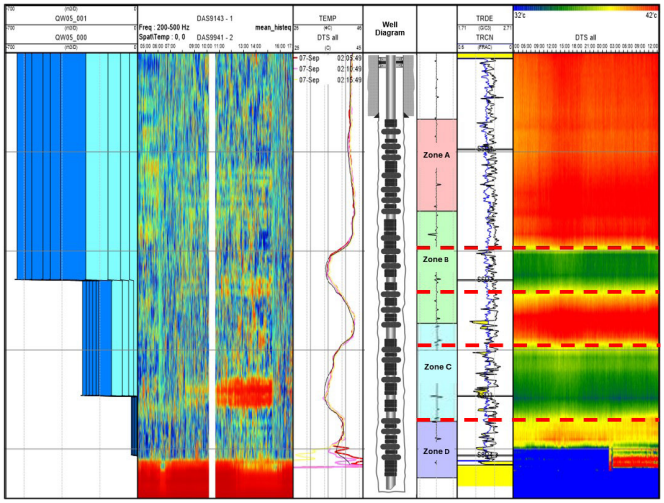


Well integrity





Injection Profiling



Fracture Height Determination