

Expro Excellence

Casing deformation analysis in unconventional wells using Multi-Finger Caliper data

Well Intervention & Integrity



Objectives and background

- Field Operators in South America were experiencing localized casing deformations in unconventional wells, creating restrictions that prevented access to target depth during completion and intervention operations. These restrictions increased operational uncertainty, non-productive time (NPT), and intervention risk, while potentially impacting long-term production performance
- The customer required a reliable method to accurately identify, characterize, and quantify casing deformation to support operational planning, improve intervention success rates, and better understand the root causes of these integrity challenges

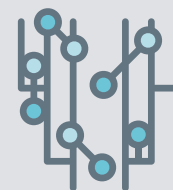
Expro Excellence

- Expro was selected based on its extensive Well Integrity expertise in the region, proven track record in casing diagnostics, experienced interpretation team, and ability to combine high-resolution inspection data with advanced engineering analysis to provide practical, actionable recommendations
- To address the challenge, Expro delivered a comprehensive casing integrity evaluation using Multi-Finger Caliper (MFC) logging technology and Pipe Deformation Analysis (PDA). The scope of work included:
 - Acquisition of high-resolution Multi-Finger Caliper data
 - Advanced interpretation of casing geometry
 - Identification and classification of deformation mechanisms
 - Quantification of deformation severity
 - Development of deformation models to evaluate wellbore accessibility
 - Engineering recommendations to support future completion and intervention planning
- Unlike conventional inspection services that focus primarily on dimensional measurements, Expro integrated data acquisition and advanced interpretation to fully understand deformation mechanisms and their operational impact

Value to the client

- Expro's integrated analysis transformed high-resolution caliper measurements into actionable engineering intelligence, enabling reliable well integrity assessment and more effective intervention planning
- By delivering a comprehensive understanding of casing deformation location, severity, and causes, Expro reduced operational uncertainty, enhanced decision-making, improved intervention success, and helped protect production performance. The project's technical significance also led to a jointly authored SPE paper with the customer
- By delivering more than a standard inspection report, Expro provided a complete understanding of the location, severity, and causes of casing deformation. This enabled the operator to make informed intervention decisions, reduce operational uncertainty, minimize risk, and protect production performance across the field
- Complex deformation patterns and accessibility challenges were addressed through specialized interpretation workflows, enabling accurate characterization of restrictions and supporting informed operational decision-making

Well integrity



Insight

