

Case study Multi Seal Integrity

Locating the source of B-annulus pressure enables operator to restore the production of multiple wells



Location: India
Well type: Gas-lift producer
Reference: N/A

Case benefits

- Identified the source of sustained annulus pressure in a newly drilled well
- Identified seal failure which caused channeling to the surface behind the 9%” in casing.
- Enabled targeted remediation to restore well to safe and productive operations.

Challenge

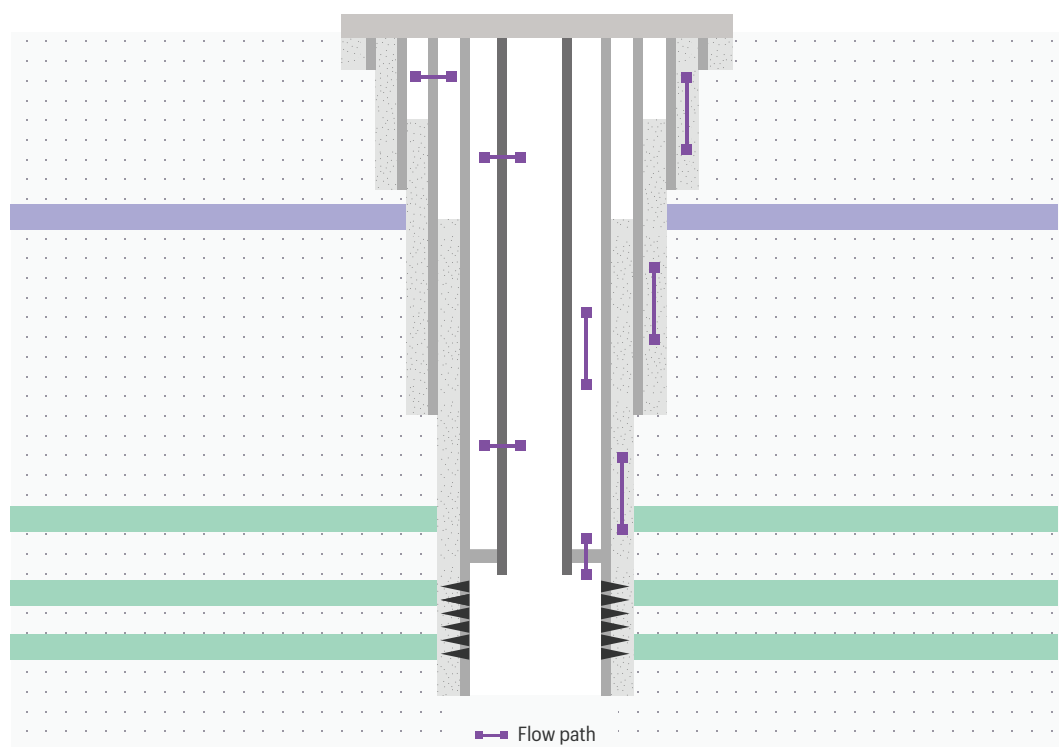
In India, approximately \$1.2 billion is lost per day due to well integrity issues. A major operator performed a gas lift on a newly drilled well to initiate production but when the sustained annulus pressures (SAP) raised to alarming levels in nearby well systems, all wells had to be shut in resulting in a loss of production from multiple wells. The scope was to identify the path of communication between the inner and middle annulus of the subject well.

Solution

The client requested Multi Seal Integrity product, which provides a clear and complete diagnostics of leaks and flowpaths

throughout the entire well system. Multi Seal Integrity is delivered by the True Integrity diagnostic system and uses the Chorus acoustic platform with thermal measurements from the Indigo platform, to identify flow through multiple barriers, even at low build-up leak rates.

A diagnostic programme was designed to capture a baseline fingerprint during shut in conditions. This was then followed by fluid injection into the inner annulus while keeping middle annulus venting. The approach meant a continuous circulation was achieved, providing clear evidence of well system seal failures.



 Multi Seal Integrity example well sketch.

Multi Seal Integrity validates sealing performance of multiple barriers.

Multi Seal Integrity gives you the clarity and insight needed to manage well system performance more effectively.

Result

The diagnostic results revealed specific acoustic signals under fluid injection into the inner annulus (see Fig.1). The acoustic signals can be associated with seal failures in the 9 5/8" casing, depicted by Line A.

Acoustic signals with maximum amplitude at low-frequency extended from the leak point (Line A) up to the surface indicates the fluid movement through a channel in the cement behind the 9 5/8" casing.

Based on the diagnosis, the operator was able to design a cost-effective remediation plan with an optimised and targeted workover.

Thanks to the accurate Multi Seal Integrity results, the workover was a success and the well was handed over to the production team in good working order. The asset team were then able to successfully use gas-lift techniques to optimise production, without any negative consequences to nearby well systems.

During the injection into the inner annulus with middle annulus venting, a strong acoustic signal can be seen in Line A- which can be attributed to a casing leak. The frequency of this signal indicates that there is fluid movement up to surface through a channel in cement.

