Q-Seal Wellhead Case History

A-B Annulus Communication via Pack-Off Seals

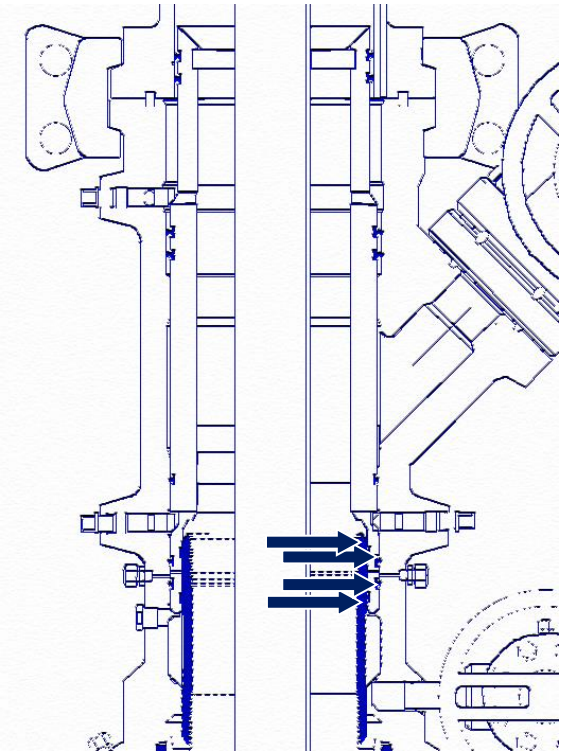
GCC
Gulf Core Concepts

Client	**Major Operator**
Location	**Offshore UAE**
Hanger Seal Type	**10-3/4 Pack-Off Seal Assembly**

Q-Seal Repairs 10-3/4 Pack-Off Seals to Restore A-B Isolation.

The Challenge

A water injection well had been shut in as a result of a leak from tubing to A-Annulus via the tubing, and a leak from A to B annulus via failed seals on the 10-3/4 Pack-Off Assembly. This left only a single barrier between the B and C annuli, with the C annulus not rated to withstand the injection pressure should the isolation fail. A work over is scheduled to find and repair the tubing leak, but without a means to restore the A-B isolation at the Pack-Off, the well still not be allowed back on injection. A further part of the puzzle was that the Pack-Off Seal test cavity has to test ports, and carrying out a leak rate analysis resulted in different results depending on the port utilised.



The Solution

The pack-off assembly actually consists of four seals on a sleeve between the spool and the casing: one on the inside of the sleeve sealing against the casing, and one on the outside sealing against the spool, with the arrangement repeated above and below the test port. To reinstate isolation, at least one pair on internal/external seals has to have integrity, as there is a flow port through the sleeve between the two seal sets to allow for testing. It was proposed that the assembly could be repaired by displacing Q-Seal around the outer seal cavity by pumping from one port to the other, then closing the bleed port to squeeze Q-Seal into the inner cavity and then out against all four seals.

The Outcome

The maximum tubing pressure during injection operations was 3,050 psi, so the Pack-Off had to be able to hold this differential in order to confirm an effective repair. After displacing and treating with Q-Seal a successful pressure test on the cavity was obtained to 3,650 psi, and then the seal tested again by bringing the A-annulus up to full injection pressure of 3,050 psi via the tubing leak, with no communication across the pack-off to the B-Annulus.

The Impact

The injection well will now be scheduled for a tubing work-over to locate and remedy the tubing leak to the A-annulus, knowing that the A-B communication challenge has already been successfully addressed.

Without a viable solution for the Pack-Off isolation repair, the tubing workover alone would not be sufficient to qualify this well to be brought back online, and the well would remain unusable.