

Q-Seal Wellhead Case History

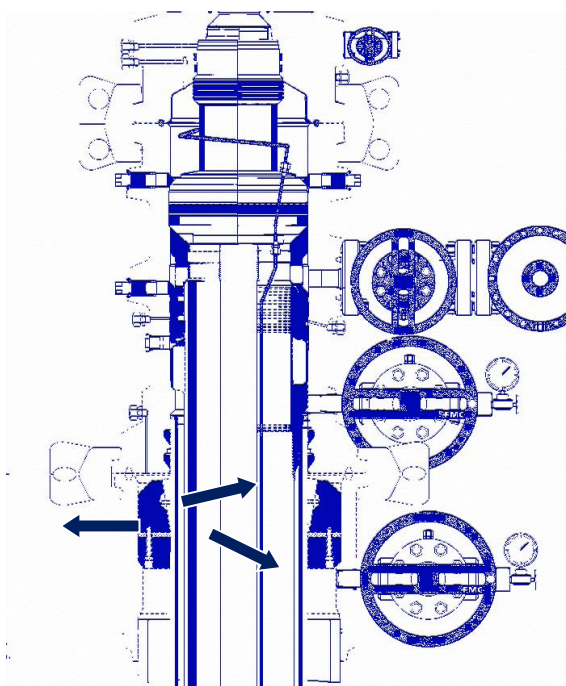
Gas Leak from A to B to C to Atmosphere

Client	Major Operator
Location	Offshore UAE
Hanger Seal Type	13-3/8 Neck and Hanger Body seals, and spool gasket

Operational Integrity Restored to Wellhead with A-B-C Gas Lift Communication.

The Challenge

A gas-lifted production well had been shut in due to communication between the gas-lift and B annulus due to failed 10-3/4 pack-off seal assembly, and communication from B to C annulus due to failed 13-3/8 neck seals and 13-3/8 hanger seals, which exposed the C-annulus to the risk of higher pressures than it was rated for. Prior to shut-in, hydrocarbon gas (lift gas) was detected externally at the 13-3/8 hanger spool clamp. A solution was required that would reinstate isolation of the C-annulus from the lift gas pressure, and restore the pressure barrier to atmosphere in the 13-3/8 hanger cavity. A further challenge was that the 13-3/8 cavity had previously been treated with a settable pressure sealant, which had failed to repair the seals, but the set-up compound remained in the cavity, and potentially hindering any alternative treatment.



The Solution

Leak rate diagnostics confirmed that the 10-3/4 pack-off seals could not be repaired by a pumpable solution, but suggested that the 13-3/8 neck, hanger, and spool gasket leaks could be fixed by treating with Q-Seal. The only access to each of these barriers was via the 13-3/8 hanger cavity test port, so all three seals had to be treated simultaneously by squeezing the cavity from this port.

The Outcome

The seal repairs needed to support the 1,450 psi differential of the A-annulus maximum lift pressure. With the cavity displaced to, and treated with Q-Seal, a positive pressure test showed the cavity holding 2,000 psi test pressure, confirming that neck seals, hanger seals, and gasket were now holding. The repair was then retested by pressuring up the A and B annuli to full 1,450 psi gas lift pressure. This confirmed B-C isolation had been restored. The well was brought back on line and the C-annulus monitored for 24 hours with no pressure build-up, and gas monitoring at the spool confirming no loss of containment.

The Impact

Repairing the gasket leak to atmosphere and reinstating B-C isolation allowed the full gas lift pressure to be safely maintained in the A and B Annulus, and for the well to be brought back online.

Full production restored to a well that had been shut in for three months, in an operation covering three shifts: small operational footprint, no intervention, no impact on adjacent well operation.