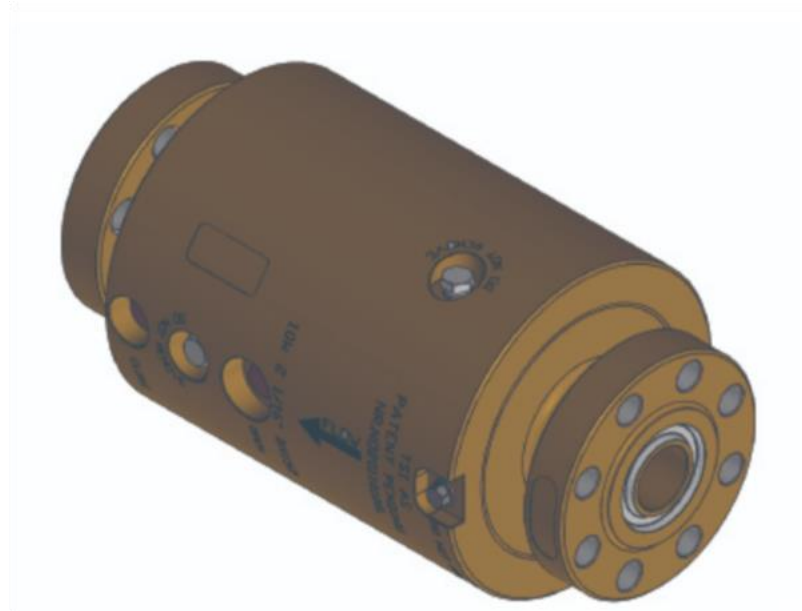


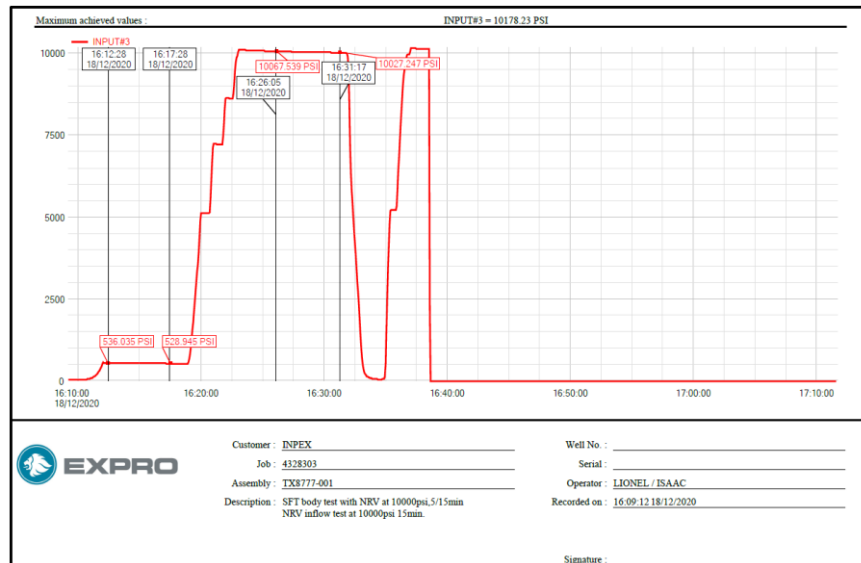
Check Valve Failure in Test Bay

Event: December 2021

Presented by: Gary Sims – Area Manager



- Incident Friday 18th December at facility test bay
- Testing a Hydraulic Lock Out Check Valve to 10k psi
- Unit had undergone its first major inspection and rebuild
- The end fitting blew 3 meters across the test bay in confined space and no personnel injury.
- The male body (TSI-11203-02) parted from the female body (TSI-11203-01).
- Valve is type approved by DNV-GL, API 6A, 12th Edition



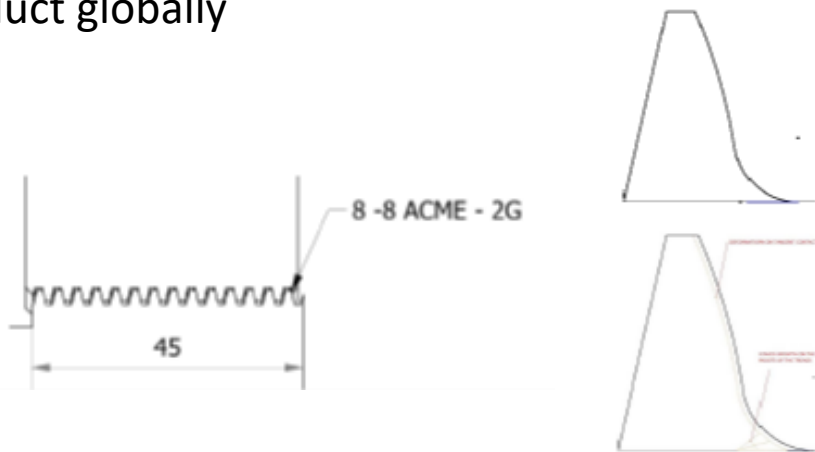
Comments from witness statement – steps taken

- 500psi low pressure test on the body for 5 minutes
- Increased pressure in stages up to 10,000 psi – held the test for 5 minutes
- Pressure was bled to zero psi, increased pressure back to 10,000psi for 15 minutes



Status

- OEM fully engaged and has pulled the valves from service whilst in-depth investigation is conducted
- Interim report issued focus around the 8rd ACME threads
- OEM has plan in place for optional redesign or new full redesign of valve
- No previous events of this nature seen relating to this product globally



Technical data

Design code: Api Spec 6A "Specification of Wellhead and Christmas Tree Equipment", Twentieth Edition, October 2012, Errata 1, January 2011.

Max. working pressure (MWP): 10 000 psi (690 bar)

Test pressure: 15 000 psi (1 034 bar)

Design temperature: -29°C / +121°C

End connections: 2 1/16" - 10K BX 152 Seal ring.

Hydraulic connection port: 1/2" NPT Female

Dry weight: 126 kg

Service: Sour/H2S

Max tensile load at MWP: 5 000 lb (22 250 N)

Material:

a) Pressure bearing part: UNS G41300 (AISI 4130) low alloy steel to API-6A-PSL3 & ISO 15156 --> 75 ksi yield strength.

b) Closing mechanism (valve): UNS N07718 (Inconel 718) to API-6A-PSL3 & ISO 15156 --> 130 ksi yield strength.

