Optis Technology

INTEGRITY RESTORED IN GAS WELL

EV's memory camera provides valuable qualitative assessment of well integrity.

ISSUES WITH DOWNHOLE VALVES

Due to the extreme nature of the environment and length of active service, operators routinely face issues with downhole mechanical valves. Although manufactured to high standards, over time, failure is almost a certainty.

Having the ability to visually inspect downhole valves and jewellery helps the operator understand the exact and current status of the valve, identify the root cause of any failure and select the appropriate remedial action.

UNSUCCESSFUL INFLOW TESTS

The Surface-controlled Subsurface Safety Valve (SCSSSV) in the 7-inch tubing was leaking. Several inflow tests were performed and confirmed the leak rate exceeded the operator's integrity standards.

With the integrity of the well at risk, the operator needed a complete understanding of the situation downhole. A decision was made to perform slickline runs to help diagnose any issues and resolve them by either reinstating the existing valve, installing an insert valve, or isolate and workover the well.

EV's Optis M125 Camera was run on Slickline with downview footage acquired to inspect the safety valve operation and evaluate the overall integrity. The well was shut in prior to the camera run.

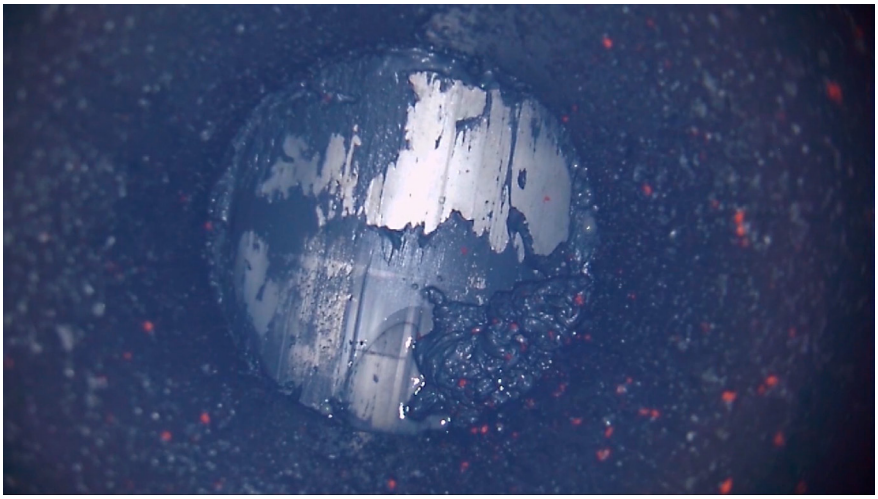

Figure 1: Downview image of SCSSSV

THE CHALLENGE

An operator in Trinidad & Tobago experienced a leak within the Surface-controlled Subsurface Safety Valve (SCSSSV) in their gas well. Several inflow tests were performed and confirmed the leak rate exceeded the operator's integrity standards. With the integrity of the well at risk, the operator needed a complete understanding of the situation downhole.

THE SOLUTION

EV's Optis M125 Camera was run on Slickline with downview footage acquired to inspect the safety valve operation and evaluate the overall integrity.

THE RESULTS

The camera was run to a depth of 460 metres where initial testing appeared to show the valve functioning well. The flow tube and flapper were seen to be moving freely, however the valve was still leaking ***(Fig.1).*** The footage also revealed a substantial build-up of grease deposits around the inner body of safety valve ***(Fig.2)***, but this was not believed to be affecting the operation of sealing performance of the device. A decision was made to abort restorative efforts and proceed with the installation of a new insert safety valve. The camera was run for a second time to verify that the safety valve was successfully locked open and confirmed the assembly was clean and ready to accept the insert device ***(Fig.3).***

SAFETY VALVE LEAKING

The camera was run to a depth of 460 metres where initial testing appeared to show the valve functioning well. The flow tube and flapper were seen to be moving freely, however the valve was still leaking ***(Fig.1).***

The footage also revealed a substantial build-up of grease deposits around the inner body of safety valve, but this was not believed to be affecting the operation of sealing performance of the device ***(Fig.2).***

With no obvious signs of damage, or issues that could be remediated in-situ, the decision was made to abort restorative efforts and proceed with the installation of a new insert safety valve.

TARGETED REMEDIATION

Additional slickline runs were performed to lock the failed safety valve into the open position and make ready for the installation of the insert valve.

The camera was run for a second time to verify that the safety valve was successfully locked open and confirm the assembly was clean and ready to accept the insert device. The video footage revealed the flow tube and flapper were in the fully open position and that the landing nipple and seal-bore surfaces were clean and in good condition ***(Fig.3).***

With the visual information provided by the camera that the preparation runs were successful, the operator was able to proceed with installing the wireline insertable safety valve.

Subsequent in-flow tests confirmed the insert valve was fully functional, thereby eliminating the leak and restoring the integrity of the well.

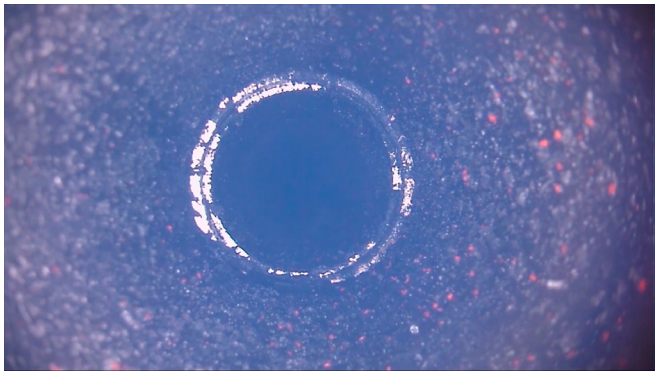

Figure 2: Grease deposits around inner body of SCSSSV

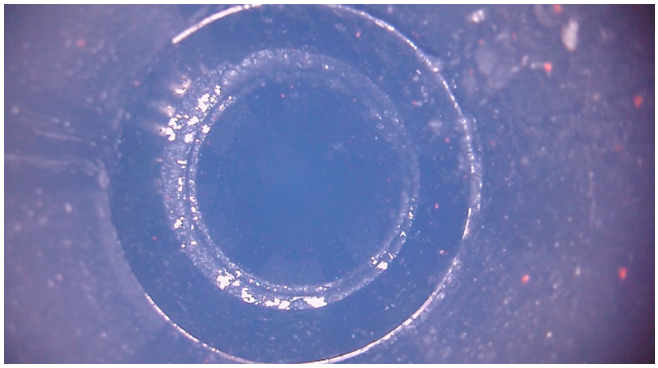

Figure 3: Locked open SCSSSV confirmation post clean-up