

CorrosionVA

INSPECTION OF JET PUMP HOUSING

EV's Integrated Video Caliper (IVC) tool incorporates qualitative and quantitative measurements to assess wellbore corrosion.

THE COMPLEXITY OF DOWNHOLE COMPONENTS

Wells operate under extreme conditions, involving exposure to challenging temperatures and pressures for extended periods of time. Deterioration in the condition of downhole components such as jet pumps, safety valves and sliding sleeves will have a negative effect on well integrity, often presenting difficult decisions regarding sustaining productivity, while limiting risk and capital expenditure.

Effective management of well integrity is pivotal in safeguarding assets, protecting the investment and maintaining healthy, profitable long-term recovery.

DROP IN WELL PERFORMANCE

The operator experienced a drop in production, accompanied with anomalies in bottomhole pressures. Several troubleshooting efforts were attempted to recover previous production levels, and initial signs were pointing to the performance of the jet pump. The operator required detailed inspection of the jet pump housing to quantify the severity of any identified damage.

EV's 24 arm Integrated Video Caliper, IVC, was deployed on E-line. The IVC tool combines industry leading Optis camera technology with multi-finger caliper technology, to provide measurements of internal tubing and casing diameters.

This leads to enhanced interpretation and provides invaluable 360° pipe coverage to compliment the limited radial coverage available from a stand-alone mechanical caliper.



Figure 1: Sideview images of hole in Jet Pump Housing

⚠ THE CHALLENGE

An operator in Tunisia experienced a drop in production rates, and early troubleshooting efforts led to suspicions of a pin-hole in the jet pump housing. As a result, an intervention was planned to confirm the theory and quantify the severity of any identified damage.

💡 THE SOLUTION

EV's IVC-24 was deployed on E-Line. The IVC tool combines industry leading Optis camera technology with multi-finger caliper technology. This combination of both visual and quantitative data delivers a more complete answer to well integrity challenges.

✅ THE RESULTS

Upon reaching the depth of interest, the sideview camera identified a hole in the jet pump housing, as initially suspected (**Fig.1**). The hole was accurately measured at the wellsite to evaluate the extent of the damage (**Fig.2**). The visual assessment was confirmed by the caliper data with a single arm deflection (**Fig.3**). A 360 inspection of the jet pump assembly also revealed a severe scaling issue, indicating the need for downhole chemical injection (**Fig.4**). With this knowledge, the operator was able to manufacture a modified jet pump solution which isolated the hole, thereby restoring full functionality, and deferring a multi-million dollar workover.

PIN-HOLE IN JET PUMP HOUSING

Upon reaching the depth of interest, the side view camera identified a hole in the Jet Pump housing, which confirmed the early suspicions (**Fig.1**). The Optis visualization and dimensioning software platform was used to accurately measure and quantify the size of the hole - immediately at the well site (**Fig.2**).

The visual assessment was confirmed by the multi-finger caliper data, with a single arm deflection (**Fig.3**).

The 360 degree inspection of the jet pump assembly identified further anomalies with the jet pump housing, with both the downview and sideview cameras revealing a severe scaling issue, indicating a need for downhole chemical injection (**Fig.4**).

INTEGRITY RESTORED

The information provided by the IVC confirmed the integrity issue was isolated to the jet pump assembly. With this knowledge, the operator was able to manufacture a modified jet pump solution that isolated the hole. By changing the paths of power fluids and formation fluids, the operator managed to eliminate the differential pressure across the hole and recover the full functionality of the jet pump hydraulics, deferring a multi-million dollar workover.

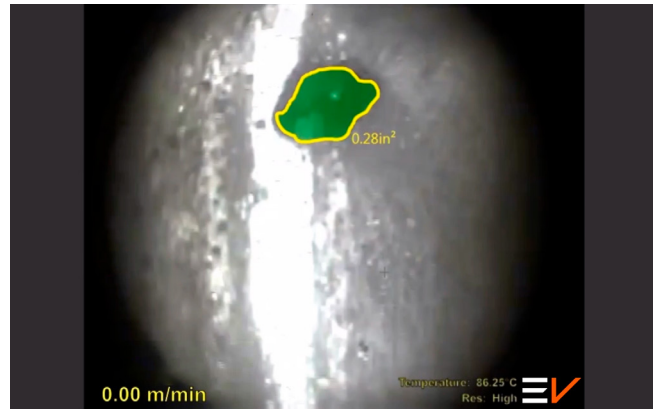


Figure 2: Dimensioned hole revealing the extent of damage

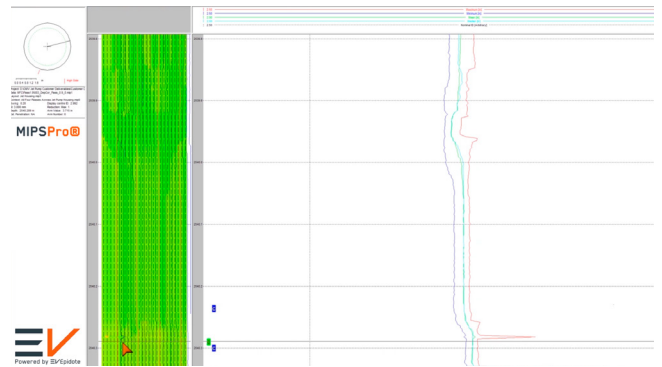


Figure 3: Single arm deflection revealed in caliper data

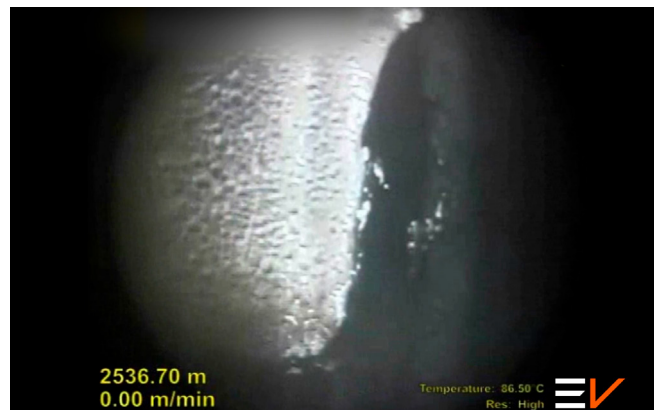


Figure 4: Sideview images revealing severe scaling issue