

Optis Technology

REVEALING COLLAPSED TUBING IN A GAS WELL

EV's memory camera provides valuable qualitative assessment of restricted wellbore access.

WELLBORE RESTRICTIONS

Well access may become restricted in a variety of ways and with different operational consequences. Common causes of tubular restriction are solids deposition such as scaling, pipe deformation, or objects that become stuck in the wellbore. Tubular restriction can prevent equipment access to deeper sections of the well, limiting the ability to manage and optimise production, or prevent removal of equipment during interventions, workovers and abandonments. In active wells, local restrictions can reduce flow volumes, impacting production and degrading economic performance.

Likewise, downhole restrictions may directly or indirectly impact the integrity of a well, through mechanisms such as pipe deformation resulting from formation movements, or accelerated corrosion and erosion resulting from localised disruptions in flow regimes.

Regardless of the cause, an unexpected downhole restriction adds significant risk to well interventions and can result in extended non productive time, or even premature abandonment, of valuable assets.

HOLD-UP DETECTED

EV's Optis M125 camera was deployed on slickline with footage acquired to provide a visual inspection of the severity of any restrictions. The camera was programmed with a 5-minute delay and a 300 minute record time. This allowed the camera to record for the duration of the operation. The camera was deployed slowly in hole until it passed the safety valve where the speed was increased to 150ft/min and run down to 9100ft.



Figure 1: Tubing collapse

THE CHALLENGE

A North Sea operator experienced a sudden drop in production and an increase in A-Annulus pressure in their offshore gas well. On subsequent interventions, an unknown restriction prevented equipment access at approximately 9100ft.

THE SOLUTION

EV's Optis M125 camera was deployed on slickline with footage acquired to provide a visual inspection of the severity of any identified restrictions.

THE RESULTS

Upon reaching 9,100 feet depth, the high definition downview camera instantly revealed the cause and severity of the restriction. The crystal clear images revealed what appears to be a collapse in the tubing (**Fig.1**), which the operator believed to be potentially caused by moving salt rafts within the formation. Although not the best outcome for the operator, the information provided by the camera survey enabled an important decision to be made immediately, helping to avoid any unnecessary expenditure and non-productive time.



Figure 1: Extent of restriction preventing equipment access

UNDERSTANDING THE SEVERITY

Upon reaching 9,100 feet depth, the high definition downview camera instantly revealed the cause & severity of the restriction (**Fig.1**). The crystal clear footage reveals what appears to be a collapse in the tubing. The operator believes this was potentially caused by moving salt rafts within the formation.

MAKING INFORMED DECISIONS

With the restriction now diagnosed, the operator had no choice but to shut-in the well, with a view to potentially revisit it in the future, when the economic viability of a workover is justified.

Although not the best outcome for the operator, the information provided by the camera survey enabled an important decision to be made immediately, helping to avoid any unnecessary expenditure and non-productive time.