NOV's along-string measurement tool indicates packoff and its location

Innovation in action

Total E&P Norge AS is developing a field that consists of an oil reservoir and several deeper, structurally complex, high-pressure gas and condensate reservoirs. The wells are being drilled with restricted pressure windows.

NOV has provided along-string measurements through high-speed wired drillpipe telemetry, resulting in an improved understanding of the environment along the entire hole. This real-time data enabled informed decision making and better control of the operation.

Technology

NOV provides real-time measurements from sensors embedded throughout the drillstring at regular intervals. Our **BlackStream™** along-string measurement (ASM) tools acquire temperature, annular pressure, rotation, and three-axis vibration data at high frequencies. The data is streamed to surface via our high-speed wired drillpipe telemetry network.

Performance

Our BlackStream ASM tools were run along the drillstring when a sudden packoff was seen. The annular pressure measurements provided by the tools helped Total E&P Norge AS understand where the string was actually stuck, enabling them to cut the pipe in the optimal location without having to run a wireline free-point indication tool.

Results

Data from the BlackStream ASM tools brought clarity to the total drillstring environment. The acquisition of real-time information that described the hole condition allowed Total E&P Norge AS to safely manage a critical situation.

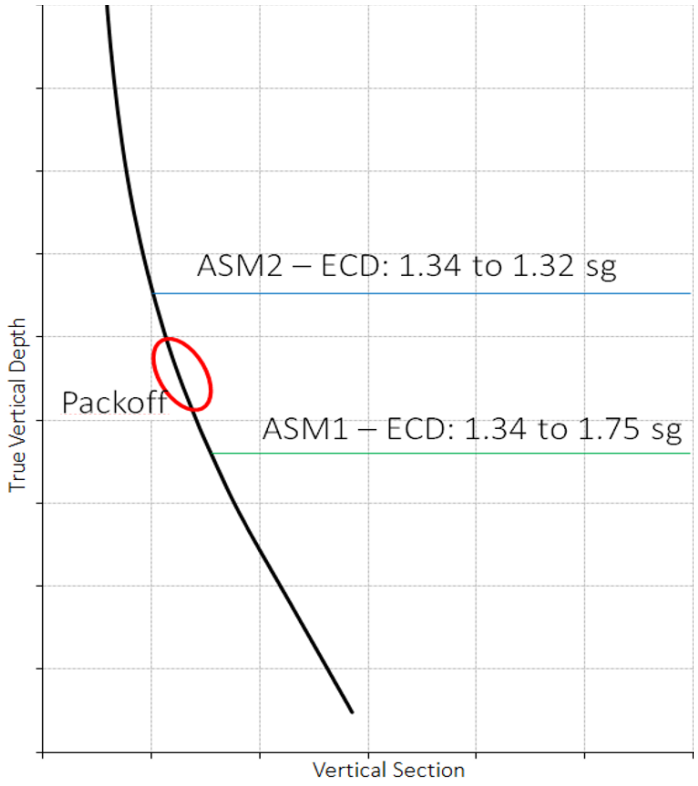

Figure 1 *– This trajectory profile highlights how the ECD measurements along the string provided by the BlackStream ASM tools changed when the packoff was seen. These helped determine where drillpipe was stuck.*

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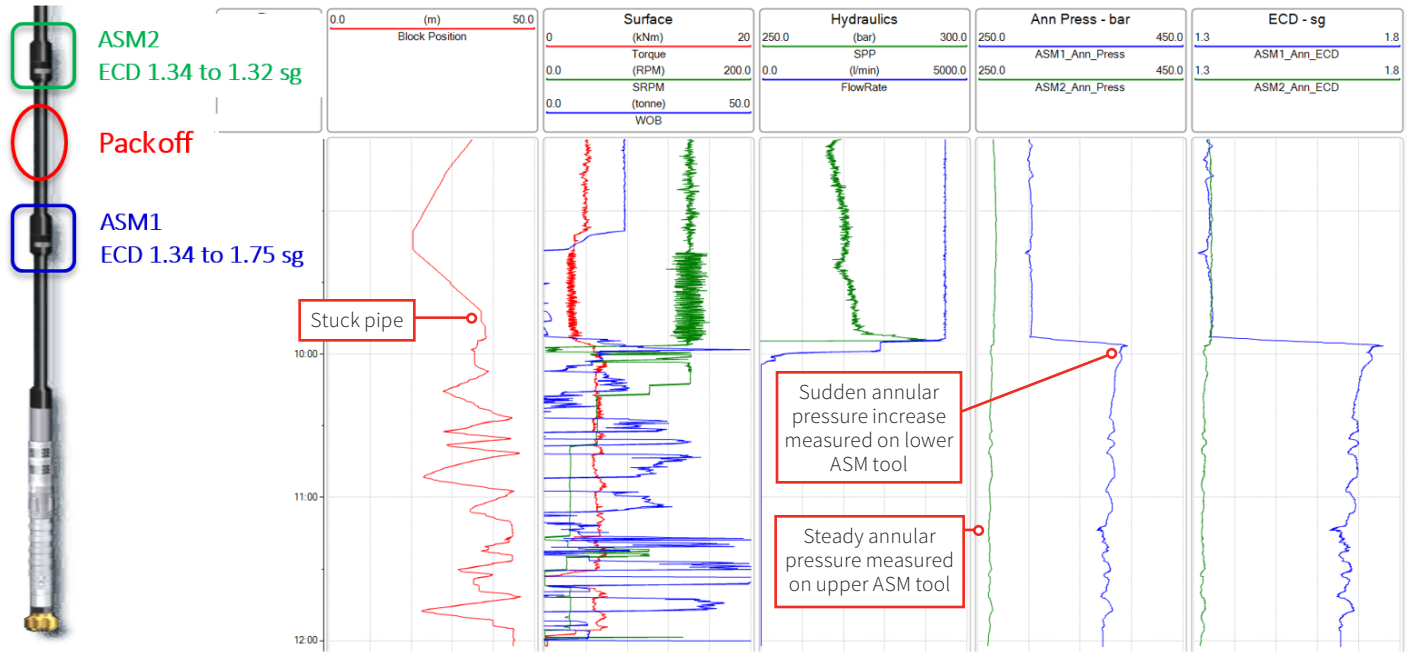

Figure 2 *– This time-based log shows measurements acquired by the BlackStream ASM tools placed along the drillstring. The sudden annular pressure increase indicated by the ASM tool closer to the bit (ASM1) was not seen on the ASM tool placed in upper part of the drillstring (ASM2). This data provided a clear picture of the wellbore condition and enabled Total E&P Norge AS to make an informed decision as to where to cut the pipe.*