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ReSOLVE Service on UltraTRAC Tractor Recovers 71-ft Gun String and Partially Set Plug from 19,328 ft

Where a conventional tractor failed in Bakken well, linear actuator strokes 68 times to release and move plug past restrictions, Williston basin

CHALLENGE

Recover live gun string and partially set bridge plug from 19,328 ft in a horizontal well after conventional uninstrumented fishing attempts had failed.

SOLUTION

Deploy the anchor and high-force linear actuator tool of the modular ReSOLVE Family* instrumented wireline intervention services to apply measured, controlled high axial force as many times as necessary to retrieve the gun string and plug with recovery powered by the UltraTRAC* all-terrain wireline tractor with active traction control and reverse tractoring capability.

RESULTS

Recovered 71-ft gun string and partially set plug by retracting the actuator 68 times to apply an additional 30,000 lbf that moved the fish past open perforations and casing collars with conveyance by reverse tractoring of the UltraTRAC tractor to avoid exceeding maximum safe pull on the cable.

Long gun string and partially set plug stuck at 19,328 ft

During stage 6 of a 30-stage hydraulic fracture campaign a 71-ft gun string was accidently pumped off the cable. At 19,328 ft in the horizontal well, the fish—including a partially set bridge plug—was too deep to be reached with coiled tubing. A conventional uninstrumented tractor was pumped down but engagement of the fish could not be confirmed. If the fish had been engaged, without reverse-tractoring capability the conventional tractor would not have been able to move it without exceeding maximum safe pull on the cable. The operator needed a reliable, measured approach to recovering the gun and plug without having to resort to bringing in a rig.

Tractor deployment of controlled, measured axial force

The anchor and high-force linear actuator tool combination of ReSOLVE* instrumented wireline intervention service reliably delivers multiple extensions and retractions while continuously reporting the measured displacement and applied force to validate operations. The tool's anchor has the largest range for pulling tools in the industry, to well IDs of 6.7 in, and applies up to 150,000 lbf of anchoring force. The innovative low-stress anchor grips minimize the tubing imprint while maximizing traction. Once anchoring is confirmed to the surface, the linear actuator can be extended or retracted multiple times to apply a large, controlled force of up to 45,000 lbf to the specific well component.

Deployment of ReSOLVE service on the UltraTRAC all-terrain wireline tractor brings the highest tractor force available in the industry to the job. The UltraTRAC tractor readily conveys large payloads in challenging borehole conditions and across high-angle, extended-reach wells to simplify and streamline wireline operations to reduce cost, time, and risk.

By deploying ReSOLVE intervention service on the versatile, high-force UltraTRAC tractor, only a 130-ton crane and logging unit were needed to conduct the successful fishing job.

Robust maneuverability results from the tractor's three exclusive design features of traction control, the application of constant radial force, and bidirectional capability. In reverse tractoring mode, the full tractor force of the UltraTRAC tractor complements the cable head tension to retrieve downhole equipment without exceeding safe pull limits.

Successful fish recovery

A four-drive configuration of the UltraTRAC tractor efficiently conveyed the ReSOLVE service linear actuator to total depth against well pressure, with real-time monitoring confirming successful engagement of the fish. The linear actuator was used to apply an additional 30,000 lbf of force 68 times in addition to the reverse-tractoring pull of the UltraTRAC tractor to successfully recover the 71-ft perforating gun string and dislodged plug past open perforations and casing collars.

The partially set bridge plug could not be freed and recovered using a conventional tractor without exceeding the cable's maximum safe pull.

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