

	HydraShock™ Coiled Tubing		Treatment Date
			April 14, 2017
Rescue CT Case History		Pages	
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Document Number	Approver Position	TENAX Energy Solutions, LLC BDM	
ResCT-000005	Approver Name	Lauren Mendenhall	

Date: 4/14/17 to get dyed gel sweeps back to surface. The
Location: McClain / OK maximum set down weight as per the load cell was
Formation: Woodford Shale -25,000lbs.

Scope of Work:

Assist in removing a coiled tubing string stuck during a plug milling job.

Background:

Workstring: 2.375" QT1100 CT / 0.250"-0.156" wall

HydraShock: 500 Series HydraShock CT Rescue

Immediate Concerns: Not getting dyed sweeps back | stuck for 24 hours

SICP: 1900psi

Completion Specifics:

- 5.5" 20lb
- 90° - 10,300'
- PBD - 19,738'
- Stuck Depth Counter Reading - 14,114'
- BHT - 285°F

The operating company rigged up a 2.375" CTU to mill out composite plugs after a fracturing operation. The treating fluid was 8.34ppg fresh water. At the time of becoming stuck, the CT crew was pulling out of hole from short tripping off of plug #26 of 44 total. After becoming stuck, the coiled tubing was pulled to 90,000lbs over string weight (35,000lbs string weight) 25 times as per the load cell display. The next course of action was to pump 7bbls/min down the annulus for multiple hours. Nitrogen was also pumped down the coiled tubing in an attempt to charge up the formation. These methods were utilized due to being unable

Treatment:

During the initial conversation with the TENAX technician, the overpulls, and annular pumping procedures were noted, as they can sometimes decrease the efficacy of the HydraShock. Being the last course of action before having to cut pipe, the HydraShock technician and tools were deployed at 2:05pm 4/14/17. The HydraShock CT internal tool was pumped down with a "Red" Δnball on seat, and extruded within the desired pressure range. Next, 59 "Yellow" Δnballs were launched over the course of 27 hours, with the extrusion pressures averaging 10% or more over the proper pressure. The pressure disparity went down to the appropriate range as more "Yellow" ΔnBalls were dropped, allowing for the transition to "White" ΔnBalls. Over the next 21 hours, 43 "White" ΔnBalls were utilized to free the tubing. The "White" ΔnBalls extruded within their proper range, showing progress hydraulically downhole. On Δnball #102, the coiled tubing experienced a dynamic event in the load cell display from -25,000lbs to +45,000lbs, settling back to -20,000lbs. The wellhead pressure began to rise as ΔnBall #103 (White) was in the tubing. After ΔnBall #103 extruded, the tubing became freed up. Within 15 minutes, dyed sweeps and plug parts were in the returns at surface. The coiled tubing was pulled out of hole slowly, and returned to surface with less than 10% fatigue on the string for the entire treatment, 0.4% due to HydraShock operations.