

	HydraShock Coiled Tubing		Treatment Date
			January 16, 2018
HYDRASHOCK™	Jointed Pipe Rescue Tool Case History		Pages
			1/1
Document Number	Approver Position	Tenax Energy Solutions Operations Manager	
ResJP-000003	Approver Name	Brandon Easter	

Days stuck before called: 2 days of the well, depending on both wellbore and surface
Location: Steubenville, OH conditions. Based on previous local successes, TENAX
Formation: Utica technicians were called to task.

Scope of Work:

Assist in removing a jointed pipe milling BHA utilizing the HydraShock Jointed Pipe Rescue Tool.

Background:

Workstring: 2.875" 7.90lb PH6 P110
 HydraShock: 500 Series HydraShock JP Rescue Tool
 Immediate Concerns: Annular blockage material unknown | plug parts or hydrates
 SICP: 3500psi
 Completion Specifics:

- > 5.5" 20lb P110
- > KOP - 3,600'
- > 90° - 9,761'
- > PBTd - 19,474'
- > Stuck @ JT Number - 425 (13,076')
- > TVD @ PBTd - 9,767'
- > Obstruction - wellbore material

Initially, the customer was millout plugs in a gas well when they became stuck. As a side note, while initially above freezing, the temperature initially went well below freezing during the course of the whole event. The max pull applied to the string before TENAX technicians were called out was 175,000lbs. The annulus was holding 3,500psi without bleeding off as well, assuring the customer of an annular blockage, but not the nature of the debris. In this area, both plug parts and hydrates have the capability of plugging off the annulus

Treatment:

The HydraShock specialist arrived on location at 12:00pm on 1/16/18. The 2.188" JP Rescue tool was selected based on the profile of the RN nipple in the wellbore. The initial Δnball dropped with the HydraShock JP Rescue Tool was "Red". The tubing string was put in compression with 20,000lbs (load cell) set down weight. A total of 16 "Red" ΔnBalls were pumped in this fashion, at an average of 7,400psi extrusion pressure. After ΔnBall #16, 30,000lbs was set down on the string (increase of 10,000lbs). The operations were switched to "Black" ΔnBalls, and heated water was sourced for location, due to a hydrate bridge off at approximately 1,310ft. The "Black" ΔnBalls were going off at 6,800psi, which is closer to the engineered extrusion pressure. After ΔnBall #32, a fluid swap to 9.8lb brine was performed. Next, 100,000lbs was pulled on the tubing, and 4,000ft-lbs of torque was applied. Dropping "Black" ΔnBalls recommenced. The next operation involved putting a "Black" ΔnBall on seat with tension on the string, then coupling an annular surge with the extrusion. After another 12 attempts, the last of which had the tubing at 150,000lbs pull, and a "Black" ΔnBall extruding at 6,700psi, the tubing came free. Based on the information gathered from the customer, the average fishing costs associated with this job type are \$1,700,000. Counting a lack of production and NPT, the HydraShock cost savings exceeds \$2,000,000.