

	HydraShock Coiled Tubing		Treatment Date
			February 20, 2017
HYDRASHOCK™	Run-in-place CT Case History		Pages
			1/1
Document Number	Approver Position	HydraShock CT Product Line Manager	
ResJP-000002	Approver Name	Lauren Mendenhall	

Days stuck before called: 2 days treatment initially was 8.8ppg brine. The customer
Location: Steubenville, OH accepted the recommended pump-in tee for
Formation: Utica deploying the ΔnBalls.

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: Crossflow from being static but still getting returns

SICP: 2800psi

Completion Specifics:

- 5.5" 20lb P110
- KOP - 8,302'
- PBSD - 21,175'
- Stuck @ JT Number - 587 (18,201')
- TVD @ PBSD - 9,067'
- Obstruction - wellbore material

The job data was transferred to HydraShock LLC from the Operator, the tubing profile data showing the need for a 2.125" pump down mandrel. HydraShock, LLC utilized our network of engineers and technicians to quickly deploy a specialist in the region to the customer's location (5 hours). Upon arrival, the treatment sheet was filled out and the information transferred to a HydraShock technician to establish an operational baseline via our proprietary software. The total fluid to the RN nipple was 166bbls. The fluid weight for the

Treatment:

The HydraShock specialist arrived on location at 5:37pm on 2/20/17. The initial ΔnBall dropped with the HydraShock JP Rescue Tool was Blue. We started releasing ΔnBalls in series with 20bbl spacers of fluid with the work string in compression at 10,000lbs under running weight. The first series was Red, Red. After the second Red ΔnBall seated, 14,000lbs was gained back in string weight. The second Black ΔnBall pumped(#4) yielded a 8ft of uphole movement. It was then decided to keep with the Black ΔnBalls(26 pumped). Once ΔnBall #24 extruded the work string was pulled up to 120,000lbs, allowing both movement and the ability to lay down one joint. This also resulted in being able to see pressure changes in the tubing when the annulus was surged, showing communication through the fill. The constants were 2,000psi on the swivel, 3bbls/min of circulation, and 120,000lbs pull on the tubing. The next pull was attempted after 4 more Black ΔnBalls were extruded, which resulted in 4' of upward movement. Last, the tubing was set down 40,000lbs with 4,200psi on the swivel, and 3 Black ΔnBalls were extruded. Then when the tubing was pulled to 140,000lbs, the well started to unload sand. From this point, the tubing was worked out of the hole pumping 3.5bbls/min on fluid with consistent rotation. The tubing was at surface at 5:45pm on 2/22/17.