

		
MicroPlug™ Case History		Pipe Recovery
Document Number	Approver Position	TENAX Energy Solutions BDM
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Days stuck in well: 3 a TENAX technician was 30,000lbs over the last
Location: Weld / CO known pulling weight. Both HydraShock and
Stuck Depth: 12,905' MicroPlug products were employed to remove the
TVD @ Stuck Depth: 7,214' coiled tubing from the wellbore.

Scope of Work:

Free coiled tubing stuck during a millout.

Treatment:

The MicroPlug technician began by injecting fluid down the annulus until a consistent circulating pressure was achieved. The baseline rate of 7bbls/min was maintained at 2,800psi. Once this rate was established, the initial 10 MicroPlugs were dropped (60bbls total fluid pumped), and the weight was set down to 12,000lbs below the last known down-running weight. MicroPlug operations were continued with 10 plugs per 25bbls fluid pumped. After 200 MicroPlugs, the injection pressure had climbed to 3,150psi. At 500 MicroPlugs, the injection pressure dropped to 2,800psi, and stayed there for 100 more MicroPlugs. The decision was made to switch to the HydraShock with the decrease in injection pressure. Then, 4 "Black" ΔnBalls were deployed with the coiled tubing 10,000lbs below the last running weight and the annulus open to flowback. Next, 4 "Yellow" ΔnBalls were extruded, and 45ft uphole was made. Then, 5 "White" ΔnBalls were dropped to attempt to break up the fill more. After minimal change, the switch was made back to the MicroPlug. 140 MicroPlugs were deployed with the coiled tubing in tension before it popped loose. While pulling out of hole, the coiled tubing became caught again at 8,165ft, with an increase in circulating pressure also. However, the coiled tubing was freed with 1 "Yellow" ΔnBall. The ability to isolate low pressure zones, as well as the capability to use the entire tubing string as a jar leaves very few instances where TENAX products cannot free tubing.

Background:

Workstring: 2.375" / 0.203" - 0.175" wall / GT100
TENAX tools: 500 Series HydraShock / MicroPlug PR
Max Rate: 7bbls/min @ 2800psi

Perforation Information

Gun Info: 3.13" OD 1.5' guns w/60° phasing
Shots: 6spf / 21g charge
0.42" EHD / 38" Penetration

Perforations to BHA: 5040

Regimen: 10 plugs every 25bbls fluid

- Completion Specifics:
- 5.5" 20lb P110
 - 90° @ 7,365'
 - PBTD @ 16,746'
 - BHT - 210°
 - BHP - 4600

SITP: 2316psi

SICP: 1265psi

Immediate Concerns: 21.2% fatigue spike at
9,388' | Disconnected cross sectional
area too small for HydraShock

Initially, the operating company was milling out plugs after completing fracturing operations. After milling out the last plug, the coiled tubing was pulling out of the hole when it hung up at 12,905ft. The max tension applied to the coiled tubing before calling out