

MICROPLUG™		 HYDRASHOCK™
MicroPlug™ Case History		Pipe Recovery
Document Number	Approver Position	TENAX Energy Solutions BDM
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Days stuck in well: 2 14,887ft to fix the pump. The coiled tubing then
Location: Weld/CO became stuck between plug #36 and #37 at a depth
Stuck Depth: 12,040' of 12,040ft. MicroPlug was selected to free the coiled
TVD @ Stuck Depth: 6,081' tubing due to formational losses.

Scope of Work:

Free coiled tubing stuck during a millout.

Treatment:

The TENAX technician began by testing injection rates of 3.0bpm, 7.0bpm and 10.0bpm before integrating the MicroPlug PR system. The choice was made to utilize MicroPlugs solely initially due to the crossflow, which requires mechanical zonal isolation to counteract. A rate of 7bbls/min was maintained at 1,200psi and the initial 20 MicroPlugs were dropped. With the tubing at neutral weight, operations were continued with 20 MicroPlugs per 25bbls fluid pumped. After 1000 MicroPlugs, the pump was shut down. During this time, 350,000scf of N₂ was pumped down the annulus and then surged back up the casing. The tubing was picked up to 10,000lbs over pulling weight, coming up to a depth of 11,111ft. The well was then shut in overnight. The next morning, 350,000scf of N₂ was pumped down the annulus with the coiled tubing in neutral weight to evacuate the hydrostatic weight from the annulus. After the well was then shut in, pumping commenced down the coiled tubing at 1.5bbls/min fluid, and 1,500 scf/min N₂ until a volume of 100,000scf had been pumped. Then the pump rate down the coiled tubing was brought up to 3bbls/min fluid, and 1,500scf/min N₂ until the circulating pressure was 4,200psi, and the wellhead pressure was 3,100psi. At that time, the annulus was instantly opened fully to the 3in gut line. Once fluid was visible at surface, the coiled tubing was pulled 55,000lbs, wit the weight breaking back to 40,000lbs and the pipe pulling free. the flowback was manipulated for solids control until the CT was back at surface.

Background:

Workstring: 2.375" / 0.224" - 0.145" wall / QT1000
TENAX tools: MicroPlug PR
Max Rate: 10bbls/min @ 1650psi

Perforation Information

Gun Info: 3.375" OD guns w/120° phasing
Shots: 6spf / 23g RDX charge
0.45" EHD / 40" Penetration

Perforations to BHA: 888

Regimen: 20 MicroPlugs every 25bbls fluid

Completion Specifics:
➤ 5.5" 20lb P110
➤ 90° @ 6,611'
➤ PBDT @ 16,467'
➤ BHT - 220°
➤ BHP - 1,000psi

SITP: 1,350psi

SICP: 1,250psi

Immediate Concerns: Low BHP | missing large amounts of the plug parts from plugs milled | lost fluid end during millout | stuck on pickup

Initially, the operating company was milling out plugs after completing fracturing operations. After milling out plug 54/63, one of the fluid ends went down. The return and pump rate were set at 2.0bbls/min and the coiled tubing was picked up from a depth of