

		
MicroPlug™ Case History		Pipe Recovery
Document Number	Approver Position	TENAX Energy Solutions BDM
McPPR000001	Approver Name	Lauren Mendenhall

Days stuck in well: 24 days abandoning the string, 180,000lbs had been pulled
Location: Weld / CO into the obstruction, and the annulus had been
Stuck Depth: 16,419' pumped down at 10bbls/min to no avail.
TVD @ Stuck Depth: 7,159'

Scope of Work:

Free jointed pipe abandoned in a wellbore 23 days ago during a millout.

Treatment:

The TENAX technician arrived on location at 8:43am on 5/30/17. Initially, fluid was injected down the annulus until a consistent circulating pressure was achieved. The baseline rate of 7bbls/min was maintained at 2,820psi. Once this control was established, the initial 10 MicroPlugs were dropped (50bbls total fluid pumped), 2,500ft-lbs of torque was applied to the tubing, and the weight was set down to 15,000lbs below the last known down-running weight. The total actual stress factor applied to the tubing for this treatment was held to a maximum of 21.1%. As per the treatment design, 10 MicroPlugs were dropped for every 25bbls of fluid pumped. The pump pressure stayed consistent for 44 stages. With 440 MicroPlugs and 1150bbls total pumped, the injection pressure quickly rose to 3,100psi, but only for 200bbls of total fluid volume. Once 520 MicroPlugs were pumped away, the injection pressure dropped back down to around 2,800psi. After 2 more 10 MicroPlug stages, the tubing broke free and began rotating. The weight indicator also displayed that the tubing had gained weight back to neutral, or 36,000lbs. At this point, the HydraShock technician attempted to run downhole, but quickly stacked out weight. At 5:15pm on 5/30/17, after 640 MicroPlugs and 1,650bbls fluid pumped, another weight change was recorded. The workstring was pulled into tension and moved freely. After nearly a month stuck in the wellbore, the ability to isolate the perforations on one side of the bridge allowed the obstruction to be cleared and the tubing freed.

Background:

Workstring: 2.875" / 7.90lb / P110 / 531jts
MicroPlug: MicroPlug PR
Max Rate: 7bbls/min @ 2820psi

Perforation Information

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

0.42" EHD / 40" Penetration

Perforations to BHA: 2116

Regimen: 10 plugs every 25bbls fluid

Completion Specifics:

- 5.5" 20lb P110
- KOP @ 5,750' / 90° @ 7,643'
- PBSD @ 17,070'
- BHT - 147°
- R@5,031' / R@10,712' / RN@16,391'

SITP: 0psi

SICP: 0psi

Immediate Concerns: tubing plugged off with debris | no annular flow | string stuck in wellbore for extreme duration

Initially, injection was possible down the tubing. The day before the treatment, the tubing and annulus were pumped down, plugging the work string with solid debris due to the fluid in the tanks not being checked before pumping commenced. Prior to