

CASE STUDY

BACKGROUND:

PetroFrac Oil Tools launched its newest composite frac plug, the ROGUE, in February 2019 at the Hydraulic Fracturing Technical Conference (HFTC) in the Woodlands. This new plug is the shortest on the market and utilizes a unique flapper isolation device to isolate stages during multistage stimulation.

CHALLENGE:

A major shale operator operating in the Montney formation of Alberta, had a 50 stage, extended reach wellbore that was over 22,900 ft. of total depth (TD). The well, 4.5", 13.5 lb, TN-125 HC casing, was experiencing issues with competitor's plugs slipping due to mechanical properties of casing, and wireline tension issues.

SOLUTION:

The team deployed a 4.5" ROGUE frac plug utilizing flapper isolation for the operator which had a total of 50 stages. Each plug was selectively closed and tested prior to each frac stage to ensure zonal isolation. Overall, the ROGUE program saw a 25% reduction in pump down volumes as compared to previous plugs. The entire operation was seamless, and the ROGUE operated perfectly both during the frac and during mill out.

The deployment of the ROGUE frac plug gave the operator confidence knowing 100% isolation occurred between fracs. The operator was able to save money as there was no downtime or frac standby required.



VALUE TO THE OPERATOR DURING THE FRAC:

- No over-displacement of acid compared to dropping a ball
- Zero lost time due to no pre-sets while running in, and smooth tension on spool in wireline truck compared to previous competitor's plug
- Flapper closed and showed immediate isolation
- Wireline crew liked the easy install, that required no extra tool hands
- No hang-ups in severe dog legs or tight spots due to short bottom hole assembly (BHA)

VALUE TO THE OPERATOR DURING MILLING OUT:

- 5 to 7 minute per plug mill times using a 5-blade mill, standard time is 20 minutes per plug for the competitor's plug.
- Little to no slip debris due to powdered metal and 16-piece segmented slips
- Small amounts of debris on returns
- Minimal wear on the mill compared to competitor's plugs

FEATURE/BENEFITS OF ROGUE:

- 7 inches overall plug length is significantly shorter than a ball-drop plug
- Fully composite patent-pending design
- 5-8 times less material than conventional plugs
- Anti-rotation facilitates faster milling times and complete mill up
- Optimized for reduced debris size during mill out
- Barrel-slip design for 360° of casing engagement
- Backup ring prevents element extrusion
- Rated for 10,000 psi differential pressure and 300°F
- Proprietary WLAK design prevents pre-setting while running to setting depth
- WLAK is fully-compatible with conventional setting tools
- Optimized overall length allows for additional clusters in gun assembly
- Patent-pending flapper design reduces frac fluid usages compared to ball-drop systems

*ROGUE is a trademark of
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