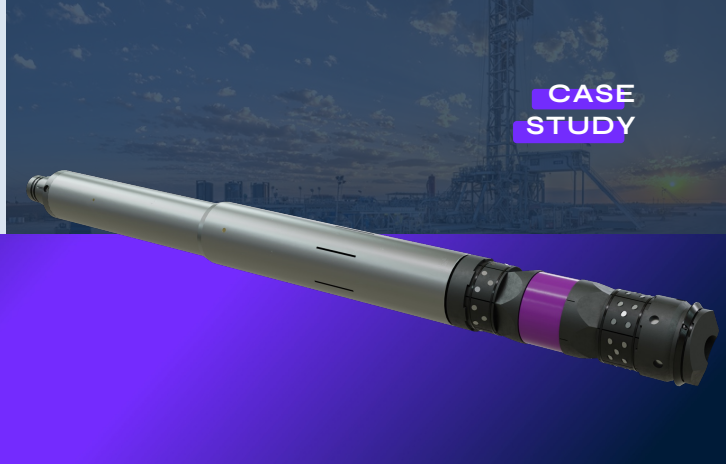
REPEAT PRECISION

CASE STUDY



Industry's most extensive multi-modal composite frac plug trial

FRACSURE
INTEGRATED TOOLS

CHALLENGE

In the Permian Basin, a major IOC set out to determine which frac plug provided the best wellbore isolation. Using integrated diagnostics, the study was designed to measure the quality of confinement and erosional uniformity of perforations, and to identify mode(s) of failure under normal and worst-case conditions.

Due to numerous frac plug choices, the IOC established specific pre-screening criteria to select only the most suitable frac plugs for the in-field trial. These criteria encompassed, among other factors: the presence of both upper and lower slips, the use of a rubber element of suitable size, and features to support the rubber element when set within the casing.

Deploying real-time, in-situ, and post-frac diagnostic tools, the IOC validated plugs for consistent mechanical isolation, offering the most comprehensive understanding of downhole frac plug performance in the industry's history.

RECOMMENDATION

As part of the pre-screening process, Repeat Precision was asked which plug from its portfolio would be suited for the job. The answer was easy: the 438 PS-C FracSure Express. This product comes standard with a top and bottom slip, has a rubber element package that provides over 1" of engagement with the casing when set, has a patented extrusion limiter incorporated into the lower cone, and comes with ceramic buttons that make it best-in-class for drill-outs.

These distinctive features, neatly packaged in a short OAL plug pre-assembled to the patented PurpleSet™ disposable setting tool, make the FracSure Express stand out from the competition.

RESULTS

The 438 PS-C FracSure Express was the only plug that met all qualification criteria. Every imaged stage indicated that there was no plug slippage, leakage or measurable wall loss around the plug. For the limited number of planned "shutdown stages" deployed with RA tracer, all variants of isotopes were identified in their intended stages, with no traces above or below the plugs. This highlights the superior isolation and ball-and-seat interface benefits provided with the PurpleSeal™. The IOC's future efforts can now focus on maximizing resource recovery and efficiency with confidence that the stimulation performed as intended.

The study also found PurpleSeal™ performed the best during drill-out as measured by drilling time and wash time. Unprecedented analyses showed that, compared to competitor plugs, the 438 PS-C FracSure Express achieved superior isolation while maintaining greater running and drill-out efficiencies.

PS-C FRACSURE EXPRESS

The PS-C FracSure Express comes pre-assembled with the PurpleSeal™ composite frac plug and the PurpleSet™ setting tool. Zero metal content paired with interlocking components make for consistently fast drill-out times.

BENEFITS

- **Original approach** to using frac plugs downhole
- **Impeccable isolation** with over 1" of seal engagement with casing when set, paired with a patented element backup mechanism that prevents casing erosion damage caused by seal extrusion failures
- **Pre-assembled** to eliminate plug supervisor and wellsite redressing errors that lead to costly presets and soft sets
- **Safe, lightweight, and easy to handle** by ground operators, with no pressure discharge on surface after retrieval
- **Excellent drill-outs** thanks to a mix of compression-molded and filament-wound components for a fine, lightweight debris profile, even in challenging low-pressure wells
- **Efficient plug deployment** with pre-assembly to a disposable setting tool and with a pump down fin included with every plug, saving 25% more fluid versus competitors
- **No speed restrictions** so you can go fast while pumping

Number of plugs	(40) 5.5" PS-C FracSure Express
Casing	5-1/2 in., 20 lb/ft
Stages with RA Tracer	3
Stages with high-res acoustic imaging	8
Service Rig	Stick Pipe
PurpleSeal plug drill-out time	3-5 min average
PurpleSeal plug wash time	Less than 25 minutes

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Want to learn more about study findings and outcomes?
RepeatPrecision.com/conocophillips-study/