Minima™ Composite Frac Plugs Mill 50% Faster in a Performance Comparison With a Competitor

Objectives

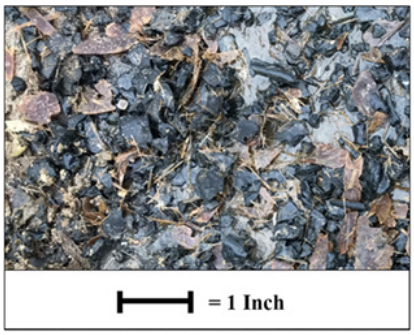
- Install composite frac plugs for a staged frac completion in a horizontal well.
- Minimize cuttings and debris following drillout to quickly bring the oil well onto production.
- Decrease frac plug milling time and expense.

Our Approach

- Weatherford unconventional completions experts met with the operator to discuss stage frac completion plans for a Bakken oil well. The operator needed fast, efficient millouts with minimal debris to reduce the time and expense of milling operations. They planned to run a competitor's plugs in an adjacent well on the same pad to compare performance between the two brands.
- Following a thorough pre-job analysis, the Weatherford experts recommended the 4 1/2-in. diameter Minima composite frac plug to mill out cleanly to open the liner for subsequent operations.
- A Weatherford completions team deployed to the wellsite with 21 Minima frac plugs to set across the pay interval.
- Upon completing frac operations, the operator quickly drilled out the plugs using a five-blade concave mill run. Swarf and cuttings from the frac plugs were flowed to surface to clean out the wellbore.

Value to Customer

- The Weatherford Minima frac plug milled out quickly , and enabled the operator to achieve an average millout time of 7 minutes per plug.
- Because the 14.5-in. length of the Minima frac plug is nearly 35% shorter than other plugs, it produced significantly less debris and broke down into manageable pieces to enhance the efficiency of the clean out operation.
- The competitor plugs milled at an average of 14 minutes per plug, while the Minima composite frac plugs milled in half that time. The quicker millout speeds enabled the operator to achieve a 25% reduction in cleanout time in comparison with the competitor.



The 14.5-in. long Minima composite frac plug breaks down into small, manageable cuttings that pump to the surface for a quick cleanout.

LOCATION
North Dakota, USA

WELL TYPE
Onshore oil producer

FORMATION
Bakken

HOLE SIZE AND ANGLE
6 in., 90°

LINER SIZE AND TYPE
4 1/2-in., 11.6 lb/ft

TEMPERATURE
250°F (121°C)

TOTAL DEPTH
~21,580 ft (6,578 m) measured depth
~10,500 ft (3,200 m) true vertical depth

MILLING BOTTOMHOLE ASSEMBLY
3 3/4-in. 5-blade concave mill, run on
2 3/8-in. tubing

CIRCULATING PRESSURE
3 bbl/min through tubing
6,500 psi (44.8 MPa)

PRODUCTS/SERVICES
4 1/2-in., 11.6 – 13.5 lb/ft Minima top ball

Weatherford®