CASE STUDY

CEMENTING & DRILLING SOLUTIONS

Beating the heat in the Haynesville

HIGH TEMPERATURES, LONG LATERALS, TIGHT SPACES, AND BIG EXPECTATIONS

Laterals keep getting longer. It's become the norm as operators are pressured to maximize efficiency, squeezing more with less from every well. In the Haynesville Shale, those challenges are compounded by tight annular clearances and temperatures exceeding 350°F. Cementing is critical, not just for the vertical portion of the well but also for production work in the extended laterals, where a specialized solution can make all the difference in the world.

PROJECT PARAMETERS

- Wellbore Geometry: 6.75" OH x 5" Casing
- Length of Lateral: 16,600 feet
- Temperature: 350°F
- Mud Weight: 15.6 ppg

FOR CASING ROTATION, THEY TURNED TO NINE

For one company recently working a 16,600-foot lateral section, Nine Energy Service provided such a specialized solution. Its Membrane Sealing Spacer System (MS Spacer), designed not only to maintain stability at temperatures up to 380°F, also allows for casing rotation throughout the entire production, dramatically improving the quality of the cement job. Due to torque limitations, this is an advantage few, if any, competitors could offer.

DEVELOPING A LOWER-COST SLURRY

Cement slurry design requirements in the Haynesville Shale have always been demanding, but the added lateral length raises the stakes. Nine has used its Flex 50 Latex additive to reduce Equivalent Circulation Density (ECD) to ensure slurry stability, successfully cementing slim hole production casings in the basin to 375°F. While these latex slurries are the pinnacle of quality and reliability, they come with a hefty price tag. Through extensive lab testing, slurry designs and analysis, Nine developed a conventional non-latex slurry that could provide low ECDs and pumping pressures while maintaining slurry stability — filling the need for a lower cost high-quality cement.

A METHODOLOGY OF CONFIDENCE

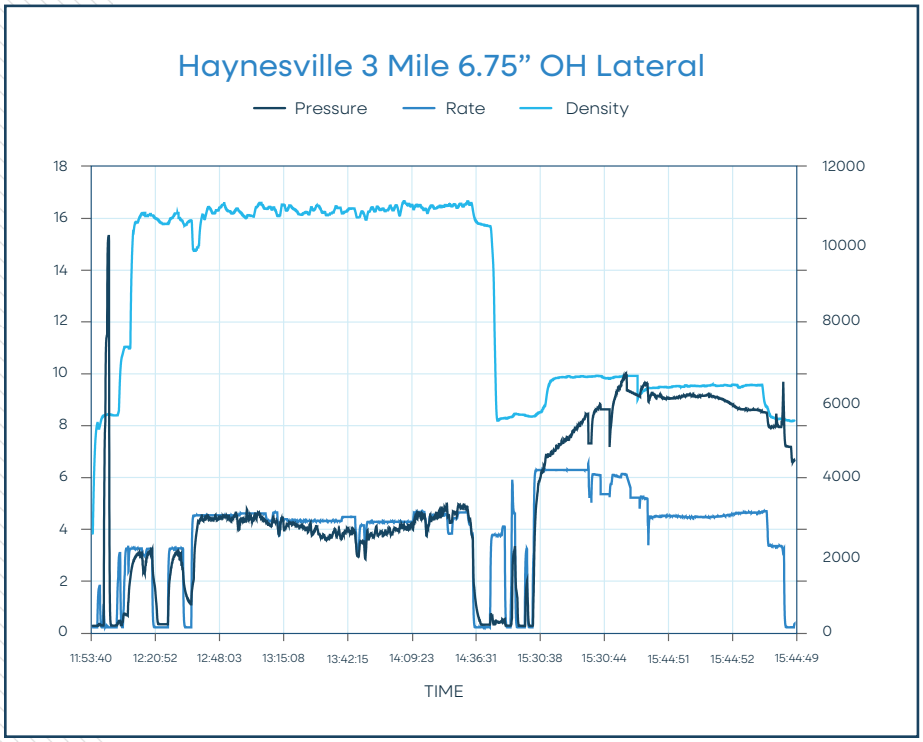
Nine initiated the cementing project by finding the balance between a slurry stable enough to withstand high temperatures, yet thin enough to avoid causing losses or exceeding maximum pumping pressures. After extensive lab testing, modeling software was employed to approximate ECDs and pumping pressures. These results, in turn, allowed us to create a customized pumping schedule that factored in Nine's wellbore conditions, technology, and personnel capabilities.

Manned with experienced crews, Nine's technology-enabled Patriot Cementing Trucks exemplify those capabilities. Delivering more power than any other pump truck on the market — up to 10,000 psi at 4 bpm— these 1,100 hydraulic horsepower diesel-driven units inspire customer confidence, particularly with challenging high-pressure wells.

A TRACK RECORD OF SUCCESS

For this project, temperature stability and fluid compatibilities were critical for success. On long laterals with tight clearances and high temperatures, settling is a frequent problem. Nine's MS Spacer has proven itself stable at temperatures upwards of 380°F. MS Spacer already had a record of success in the Permian and Delaware basins, delivering substantial savings and an 88 percent success rate among single-stage jobs — the criterion for success being cement brought to surface.

Other advantages include: flexible design rheology with density; sealing properties; wettability of pipe for bonding; compatibility with well fluids; reduced fluid loss in cement; effective pipe rotation throughout job; loss control; high-temperature stability (350+°F BHCT); excellent mud removal.



RESULTS

1. Exceptional density control achieved through slurry design, equipment, and experienced operators.
2. Lower than average pressures. Typical pressures on long laterals can exceed 8,000 psi at 3 bpm.
3. Unmatched pumping power during displacement ensures good mud removal and cement coverage.