

West Coast Africa: FAZE-PRO Doubles Production, Reduces Completion Costs

“By using the FAZE-PRO invert emulsion system, the operator has kept all the advantages of drilling with an invert emulsion, but has eliminated any preflush soaks required during completion. FAZE-PRO doubled the expected production with less rig time and lower chemical costs during completion, compared to regular invert emulsions.”

Taylor Green – Reservoir Drill-In Fluid Advisor

Well information

Location:	Offshore West Coast Africa
Spud/completion:	2000 (Field)
Water depth:	120 ft, average
Mud weight	9 lb/gal, average
TVD:	4350 ft (average), 5930 ft (deepest)
MD:	8330 ft (average), 10,640 ft (longest)
Final interval length:	3570 ft (average), 7900 ft (longest)
Final interval angle:	Horizontal, some flat, some sinusoidal, up to 96°

The situation

Drilling conditions required the use of an invert emulsion. Formations required the kind of inhibition found only in invert emulsion fluids, and the horizontal, sinusoidal path required the lubricity that invert emulsion fluids provide.

The operator was experiencing high drawdown pressures and low production rates, whatever the type completion. What was needed was an invert emulsion fluid for drilling, and a water-base fluid for easy clean up and minimum formation damage.

The solution

FAZE-PRO invert emulsion fluid was chosen, to deliver “OBM” type performance during drilling, yet provide near water-base-type completion ease. Drilling with FAZE-PRO had the same high ROP, inhibition and wellbore

stability required to put drain holes where required for optimum production.

Clean up and completion were done with a simplified procedure, with the usual preflush treatment eliminated. Acid concentration was also reduced.

The results

Production has been more than twice what was expected, compared to past performance with conventional invert emulsion fluid. The drilling fluid delivered the required

performance. After completion, the wells produced better than expected, with the added bonus of cleaner running production facilities. No production upsets occurred.

FAZE-PRO benefits:

- OBM drilling performance
- Stable wellbore
- Simpler completion
- Minimum formation damage
- Cleaner production facilities
- Reduced costs
- Increased production



The details

The FAZE-PRO invert emulsion reservoir drill-in fluid (RDF) was built for its first job on a West African rig in 12 hours. Requiring no special shearing devices, 1000 barrels was built; the fluid was used to drill out the 7" casing horizontally with no problems. One pound per barrel organophilic clay and the 65/35 mineral oil/water ratio in the initial formulation provided a yield point never lower than 19 lb/100 ft². No low-end viscosifiers were necessary.

Drilling proceeded with the usual high rate of penetration, ROP, (over 120 ft/hr) expected from a mineral oil base fluid. The first lateral was drilled to a length of 3797 ft; the second drilled to a depth of 2881 ft, both with no problems. The first lateral was filled with base oil while the second was drilled. After drilling the second lateral was completed, both laterals were displaced to completion brine. The laterals remained stable and oil-wet throughout this phase.

During the completion clean up process, jetting was performed on one lateral, but not on the other to help evaluate clean up procedures. Jetting appeared to aid in filter cake and drill solids removal. Since the filter cake is scoured down to a bare minimum thickness, a very short duration soak with any acidic solution (pH <6) is sufficient to switch the wellbore from an oil-wet to a water-wet state.

A 1000-gal spacer of 10% HCl was pumped at a rate that allowed the wellbore a four-minute exposure time. In each lateral, the spacer came to the surface about 900 strokes late, with a bubble of CO₂, indicating that the acid had reversed the wellbore to a water-wet state, had destroyed the remaining filtercake residue and was working on the limestone formation.

Some 800 bbl of FAZE-PRO were recycled and back-loaded to the workboat for use on the next well. About 450 bbl of new FAZE-PRO were added to the old FAZE-PRO fluid to help make the next well the best injection well in the area.

Questions? We'll be glad to answer them.

If you'd like to know more about FAZE-PRO and how it's performing for our other customers, please call the M-I office nearest you.

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A Smith/Schlumberger Company
P.O. Box 721110
Houston, Texas 77272-1110
Tel: 281-561-1300
Fax: 281-561-7240
<http://www.midf.com>