CASE STUDY

HALLIBURTON

Gulf of America

Fluid program helps operator overcome zinc bromide challenge in HPHT reservoir

Custom solution enabled operator to maintain wellbore stability, minimize losses, and complete a successful gravel pack in deepwater environment

CHALLENGE

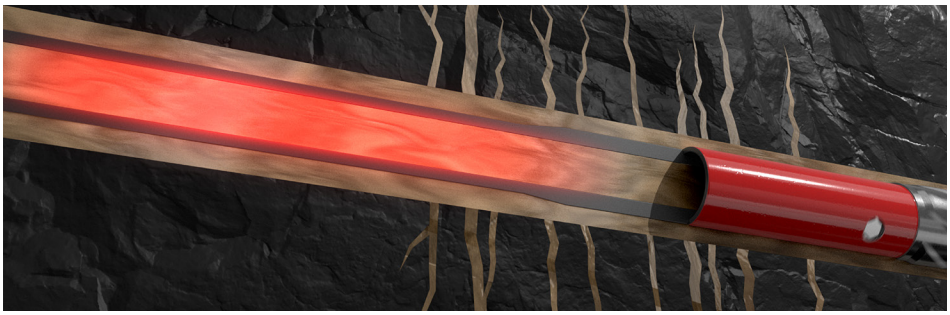
- Develop a high-pressure high-temperature (HPHT) drilling fluid tolerant with zinc bromide — an industry first
- Maintain wellbore stability and minimize fluid losses
- Support a successful gravel pack in a zinc bromide environment
- Standard fluid systems could not meet these requirements

SOLUTION

- Developed the BaraDrilN® X Generation III reservoir drill-in fluid with the new BaraFLC® W-1096 chemical additive — polymer
- Engineered the system to tolerate zinc bromide and perform under HPHT conditions
- Conducted extensive lab testing to validate performance

RESULT

- Zero downhole losses
- Wellbore stability during 69-hour wireline campaign
- No adverse effects on properties while drilling cement — 332 ft drilled
- Successful gravel pack after a 48-hour contact time with zinc bromide



The Halliburton BaraDrilN® X Generation III reservoir drill-in fluid and the BaraFLC® W-1096 chemical additive — polymer maintained wellbore stability and minimized fluid losses.

Overview

Halliburton engineered and delivered a fluid solution that met the customer's complex requirements and reinforced our commitment to provide "engineered fluid solutions customized to maximize wellbore value." When an operator requested a high-pressure high-temperature (HPHT, 344°F BHT) reservoir drilling fluid with a filter cake tolerant with zinc bromide — an industry first — Halliburton developed the BaraFLC® W-1096 chemical additive.

Before deployment, Halliburton ran laboratory tests to validate the solution's performance. The customer reviewed and approved the results. The BaraDrilN® X Generation III reservoir drill-in fluid system met the specifications and delivered strong field performance. This solution now serves as the standard for future HPHT operations in the region.

Challenge

The customer's well presented several technical challenges. First, the operation demanded a 14.5 ppg density drilling fluid system compatible with zinc bromide — a solution standard systems typically do not support. In addition, it was essential to maintain wellbore stability and protect the formation throughout the drilling process. The system also needed to minimize fluid losses during drilling to improve efficiency and reduce formation damage. Finally, the fluid had to support a gravel pack and remain stable in the presence of zinc bromide.

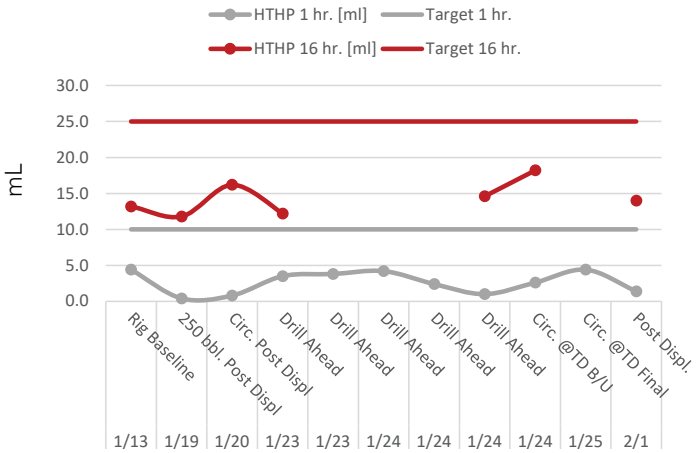
Solution

Halliburton created a solution with the BaraDrilN® X Generation III reservoir drill-in fluid system and the new BaraFLC® W-1096 polymer.

The system demonstrated exceptional performance under high-pressure, high-temperature (HPHT) conditions. It maintained full compatibility with zinc bromide, and improved chemical stability throughout the operation. The solution included a 14.7 ppg low-solids screen running fluid and a 14.8 ppg filter cake breaker, both tailored to meet the well's specific requirements. It also preserved wellbore stability and minimized fluid loss. This contributed to a safer and more efficient operation. Laboratory tests confirmed the system's effectiveness and led to the operator's approval.

HTHP fluid lost test results

Measured each day at the well site.



Result

The fluid system delivered strong performance across multiple operational metrics. It helped the operator achieve zero downhole losses and maintained exceptional wellbore stability throughout the 69-hour wireline campaign.

After a 48-hour contact period with zinc bromide, the gravel pack was executed. This demonstrated the fluid's long-term stability and compatibility. The system also exhibited high gas tolerance and withstood gas levels up to 1,185 units without compromise to performance. While drilling through 332 ft of cement, there were no adverse effects on fluid properties. The fluid system remained tolerant of zinc bromide and contributed to improved wellbore stability and integrity.

All operations were conducted in full compliance with regulatory standards.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com