

Advanced technologies achieve exceptional drilling and completion successes

Founded in 1919, Halliburton is one of the world's largest providers of products and services to the energy industry. With over 55,000 employees, representing 140 nationalities in more than 80 countries, Halliburton helps its customers maximize value throughout the lifecycle of the reservoir from locating hydrocarbons and managing geological data, to drilling and formation evaluation, well construction and completion, and optimizing production throughout the life of the asset.

For the deepwater Stampede field, Halliburton provided Hess with a comprehensive set of drilling and completion solutions. Featured here are three of the products and services that helped achieve exceptional results for Stampede's production and injection wells.

BaraECD® High-Performance Non-Aqueous Fluid System

During drilling, uncontrolled Equivalent Circulating Density (ECD) can increase the possibility of drilling-induced fractures, non-productive time, and high costs associated with fluid loss. Halliburton's BaraECD High-Performance Non-Aqueous Fluid System has a rheological profile that provided control of low ECD in wells with narrow pore pressure/fracture pressure gradients, reducing the risk of drilling-induced fractures.

The BaraECD fluid's unique chemistry provided a low fluid viscosity and excellent suspension properties to effectively clean the wellbore and resist against barite sag, while reducing the risk of stuck pipe and pack off. The BaraECD fluid system is ideal for low-pressure formations, including depleted zones, high-angle drilling, and slim wellbores. Reservoirs that were once thought inaccessible due to technical or financial constraints can now be explored with Baroid's innovative new fluid.

iCem® cementing service

For Stampede wells, Halliburton teams achieved successful primary cementing operations and provided a uniform cement sheath for optimal zonal isolation. Good zonal isolation helped prevent the loss of production, controlled inter-zonal flow, flow to the surface, reduced water production, and improved confinement.

The iCem Service provided Hess with the industry's most robust engineering design tool for assessing and monitoring specific well variables before, during, and after a cement job. The simulations run through iCem service helped the Hess team to make more informed decisions and achieve operational efficiencies.



The simulations run through iCem service allowed Hess to make more informed decisions and achieve operational efficiencies for the Stampede wells.

alternatives and make better, more informed decisions prior to cementing operations. The goal was to help the drilling and completion teams reduce well construction costs, and mitigate Health, Safety and Environmental (HSE) risks due to poor mud removal, annular fluid migration, and provide long-term annular-seal reliability throughout the life of the wells.

XtremeGrip™ expandable liner hanger system

Halliburton's XtremeGrip expandable liner hanger system takes the standard VersaFlex® liner hanger to the next level. This high-performance, advanced metal-to-metal sealing technology provides a compliant

seal with a fully bonded resilient elastomeric seal to account for imperfections in the parent casing. The system was ideal for use in the deepwater Stampede wells where long liners were deployed and for hangers to be expanded into thick walled/high-grade casing.

Halliburton has installed 37 XtremeGrip liner hangers across seven Stampede wells to date without any Nonproductive Time (NPT) issues or remedial work required. The installations began with hanging a 13-7/8" drilling liner inside a 16" casing. The subsequent hangers deployed were an 11-7/8" drilling liner followed by two production liners, 9-7/8" and 7-3/4" respectively, through multiple reservoirs with total depth of up to 32,000 ft. Each well then had a production liner tied back with an approximately 5,000+ ft. 10" scab liner and production tieback for structural integrity. The extended length of



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Halliburton crew in the process of hanging a 13-7/8" drilling liner inside a 16" casing.

continuingly suspending liner hangers resulted in a record for top of the liner depth at 30,924 ft. for the XtremeGrip system on one of the wells. The overall scope of these projects resulted in hanging over 143,000 ft of liners, over 27 miles, at a total buoyed weight of 9.3 MM lb.

The XtremeGrip system design includes engineered extrusion limiter rings, integral upper tieback receptacle, and a single-component, single-task function with reduced number of threaded connections. The gas-tight system is qualified to ISO 14310 V0 standards and has a temperature rating up to 575°F. System benefits include superior hang-weight capability

at elevated temperatures in heavy-weight parent casing, resulting in reduced ECDs, improved flow rates, and minimized leak paths.

Successful track record

Halliburton is pleased to contribute its advanced technologies and professional teams for the Stampede project. This is yet another major milestone for Hess and Halliburton in the series of successful deepwater projects that are extending the technology envelope in Gulf of Mexico's deepwater frontier.

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