prior to being considered for use on a world record ERD well, a field trial well was selected to demonstrate the technical benefits of using a uniquely designed low rheology, synthetic-based drilling fluid. The 8 1/2-in. production hole section was 1,755 ft (535 m) long and drilled to 20,472 ft (6,240 m). Prior to drilling this section, a low rheology drilling fluid was selected. Selection analysis was based on assessment of key drilling parameters as compared with wells drilled previously using a conventional API barite weighted synthetic fluid. A unique characteristic of the low rheology drilling fluid is its use of specially treated micronized barite weighting material. This paper presents the background work performed leading up to the field trial.

**SPE/IADC 105730**


Lubricants are sometimes added to drilling or completion fluids to obtain well objectives. The paper shows how the addition of a lubricant to an oil-based drilling fluid affected the lubricity significantly in 2 comparable track runs, resulting in historically low coefficients of friction. The paper discusses significant drag reduction when adding lubricant to the brine in the completion phase and compares drag obtained with the use of roller.

**SPE/IADC 105733**


Cesium formate brine is a high-performance drilling and completion fluid for HPHT wells. Its benefits as a reservoir drilling fluid for high-angle offshore HPHT wells were first demonstrated by Statoil in their Huldra field development. Statoil found low solids drilling fluids based on cesium formate brine reduced risk and improved well economies by providing extremely good well control, lowering ECDs, increasing trip speed, avoiding surge and swab, reducing time for flow checks, and improving hole cleaning. Cesium formate brine was also found to make an excellent completion fluid for standalone sand face completions, creating 6 highly productive wells with low skins. The use of cesium formate brine as a combined drill-in and completion fluid simplified operations, reduced waste and avoided introducing fluid compatibility issues. This paper describes how cesium formate brine has now been taken to the next level as an HPHT drill-in and completion fluid.

**SPE/IADC 105853**

*Coiled Tubing Re-Entry Whipstocks: The Next Evolutionary Step in Drilling Practices for Various Carrier Frequencies and Band Rates While Signal, Battery, Decoding and Reliability Data Were Recorded and Evaluated.*

**SPE/IADC 105000**

*New Assembly Drills Without Reactive Torque. R. Southard, Southard Drilling Technologies.*

A new type of drilling assembly has been designed, built and tested that drills and produces no reactive torque to the drill string. It uses a simple set of planetary gears to drive a center bit in the conventional clockwise direction and an outer, concentric bit in a counter-clockwise direction. The 2 bits offset each other’s torque, resulting in a new zero reactive torque into the drillstring.

This new type of drilling assembly will make directional drilling more efficient by allowing all drilling to be done in the desired direction, instead of moving constantly as reactive torque changes. Less time will be spent waiting for toolface orientation, resetting toolface after motor stallout, making a connection, etc.

**SPE/IADC 105487**

*Field Result of Equivalent Circulating Density Reduction with a Low Rheology Fluid. N. Bolivar and J. Young, Hibernia Management and Development; S. Dear, ExxonMobil; J. Massam and T. Reid, Mi-Swaco.*

Prior to being considered for use on a world record ERD well, a field trial well was selected to demonstrate the technical benefits of using a uniquely designed low rheology, synthetic-based drilling fluid. The 8 1/2-in. production hole section was 1,755 ft (535 m) long and drilled to 20,472 ft (6,240 m). Prior to drilling this section, a low rheology drilling fluid was selected. Selection analysis was based on assessment of key drilling parameters as compared with wells drilled previously using a conventional API barite weighted synthetic fluid. A unique characteristic of the low rheology drilling fluid is its use of specially treated micronized barite weighting material. This paper presents the background work performed leading up to the field trial.

**Technical Session 4: Drilling Optimisation**

**SPE/IADC 105201**


Since 1965, specific energy principles have been used to predict bit performance and analyze ROP and bit efficiency. Factors that create drilling inefficiency include bit dull, bit balling, bottomhole balling/cleaning issues, torque and drag and drillstring vibrations. These are often evident with high specific energy values. Based on these principles, Chevron has established proprietary relationships for bit-specific coefficients of sliding friction and mechanical efficiency as a function of the rock’s confined compressive strength (CCS). CVX then uses these relationships to predict reasonable and achievable ROPs with associated bit torque for several bit types. The effect of mud weight, blade count and cutter size to the coefficient of sliding friction and efficiency are considered in the ROP predictions. The relationships have proven to be of high value. This paper will present a number of global case histories showing CVX’s rapid deployment of the SeRoP tool maximizing its value and reducing drilling costs.