weighting material. Laboratory experiments have shown that the technique can increase the cake's permeability by more than 50-fold.

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 ½-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 weight material. This paper presents the background work performed leading up to the field trial.

SPE/IADC 105730

Lubricants Enabled Completion of ERD Well. J. Holand, S.A. Kvamme, T.H. Omland, A. Saasen and K. Taugbøl, Statoil; J. Jamth, Intertek West Lab.

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 rollers.

SPE/IADC 105733

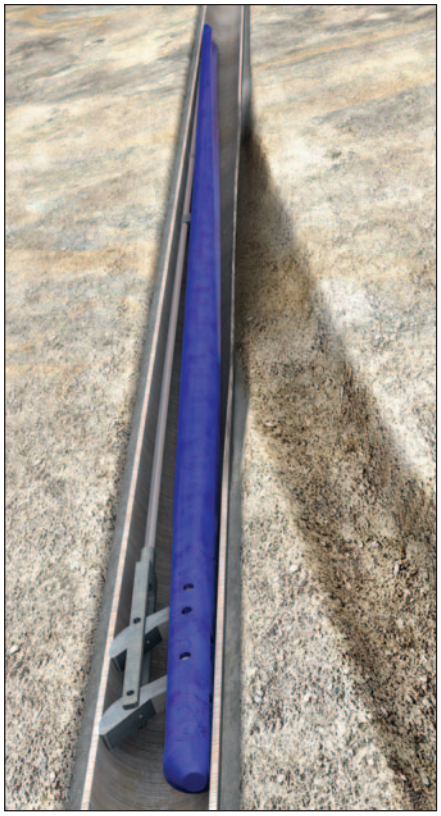
Drilling and Completing High-Angle HPHT Wells in High-DensityCesium Formate Brine: The Kvitebjørn Experience, 2004-2006. P.C. Berg, E.S. Pedersen, A. Lauritsen, N. Behjat and S. Hagerup-Jenssen, Statoil; S. Howard, G. Olsvik, J.D. Downs, M. Harris and J. Turner, Cabot Specialty Fluids.

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 economics 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.

Technical Session 3: Downhole Drilling Technology

SPE/IADC 105853

Coiled Tubing Re-Entry Whipstocks: The Next Evolutionary Step in Drilling Practices for Mature Field Development. G. Garfield and G. Mackenzie, Baker Oil Tools.



SPE/IADC 105853: A whipstock system uses the conveyance method of coiled tubing to create a casing/liner window.

Creating a sidetrack out of the main wellbore has become a more common oilfield drilling practice. In the past, re-entry applications have used a sidetrack philosophy governed by threaded tubular drilling conveyance; however, from the standpoint of a coiled tubing methodology, the practice of sidetracking a well may still be seen by some as being in its infancy. It was a natural desire to be able to exploit the inherent advantages of coiled tubing and marry it to the practice of being able to perform a sidetrack.

The paper will discuss utilizing a whipstock system with the conveyance method of coiled tubing to create a casing/liner window. The overview will also discuss general practices and tool selection criteria and provide case history demonstration of each.

SPE/IADC 105021

Field Test Results of An Acoustic Telemetry MWD System. J.M. Neff, XACT Downhole Telemetry; P.L. Camwell, Extreme Engineering.

Acoustic telemetry (AT) MWD systems are finally coming of age as a commercially viable alternative to mud pulse and electro magnetic propagation systems. A high data rate, acoustic telemetry system has been developed for drilling assemblies. In this paper we describe the field test program used to evaluate its performance and to demonstrate practical and commercial applications.

The field test program was limited to shallow, vertical and directional land wells (<2,500 m) drilled with jointed pipe using both kelly and top drive systems. The AT tool was placed in a number of different locations in both rotary and steerable BHAs. A variety of operational modes and configurations were tested. The system performance was evaluated for various carrier frequencies and baud 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 the 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 105400

Drilling Tests of an Active Vibration Damper. M.E. Cobern, C.A. Perry, J.A. Barbely, D.E. Burgess, APS Technology; M.E. Wassell, APS Oilfield Services.

Drillstring vibration is a serious problem, particularly in deep and hard rock drilling; it can reduce ROP, shorten bit life and damage expensive downhole components. Testing of an active drilling vibration damper (AVD) system under conditions designed to induce vibration demonstrated that the use of the AVD reduced vibration, maintained more consistent weight on bit (WOB) and increased ROP.

The AVD has a structure similar to that of a shock sub with the shock absorber filled with magneto-rheological fluid (MRF) rather than hydraulic oil. Under the influence of a magnetic field, MRF instantaneously increases its viscosity. Using a series of coils to induce intense electromagnetic fields across the fluid gap, the damping coefficient can be changed in milliseconds by a factor of 7 to 10. A linear motion detector provides feedback to control the AVD in response to bit motion.

Technical Session 4: Drilling Optimisation

SPE/IADC 105201

Deployment of an SeROP Predictor Tool for Real-Time Bit Optimization. C.A. Guerrero and B.J. Kull, Chevron.

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 coefficient 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 showcasing CVX's rapid deployment of the SeROP tool maximizing its value and reducing drilling costs.