

struction activities are presented and used as a benchmark to evaluate the risks and suitability of the device as compared with concentric underreamers.

Reducing Risk and Cost in Diverse Well Construction Applications: Eccentric Device Drills Concentric Hole and Offers a Viable Alternative to Underreamers (SPE/IADC 92623) **J E Trujillo, BP Trinidad and Tobago; W Rasheed, Consultant; R Van Oel, Schlumberger.**

SLIMHOLE TECHNOLOGY

Operators are utilizing advanced slimhole technologies in Middle East development programs to reduce openhole risk and maximize recovery of proven in-place reserves. These programs involve new wells with long horizontal sections, typically 6-in. or 6 1/8-in. diameter. Rollercone bits are often used in these applications because of their overall robustness, superior directional characteristics and predictable sidecutting ability. Slimhole PDC bits are run when possible, but problems with high torque, toolface control and drillstring dynamics

often prevent their use. Traditionally, operators have been reluctant to attempt long runs with slimhole rollercone bits due to the potential for lost cones after undetected seal failures.

Recently, a new metal sealed (MFS) slimhole rollercone bit was introduced. The downsized metal seal has proven its ability to significantly improve bit life and reliability. The longevity of the new bearing has allowed operators to gain considerable confidence, which has translated into more on-bottom drilling hours and a high TD rate.

New Slimhole Technology Maximizes Productivity in Middle East Horizontal Drilling Programs (SPE/IADC 92376-Alternate) **G R Luke, Saudi Arabian Texaco; R E Grimes, S K Tyagi, Hughes Christensen.**

TECHNOLOGY DEVELOPMENT

Due to the challenging topography and reinterpreted seismic data, the operator modified the directional profile of a wildcat to near vertical. The drilling of vertical wells, utilizing conventional equip-

ment, had never been successful in Colombia. Based on the vertical well success in Argentina, the operator requested the technical assistance of a drilling optimization service.

Because of slower than prognosed ROP using conventional 14-3/4-in. bit technology, the operator and service company elected to build a new-style diamond impregnated bit. Team members determined that the relatively short run length and excessive wear on the nose of the bit could be designed out of subsequent bits.

The changes that could be built into the next prototype within a short time would be a different matrix type that would optimize diamond grit exposure, increased diamond volume and maximization of the cutting structure's contact area on the hole bottom.

Real-Time Development of New Technology Saves Operator \$5.1 Million Drilling Deep Exploration Well (SPE/IADC 91862-Alternate) **R Vargas, BP Exploration Colombia; A E Frazelle, BP.** ■

Rig Automation increases drilling efficiency, safety

IMPROVED CASING RUNNING

The authors will present case histories for a new casing running system that facilitates mechanizing the casing running process to improve safety, add capability, and reduce personnel requirements.

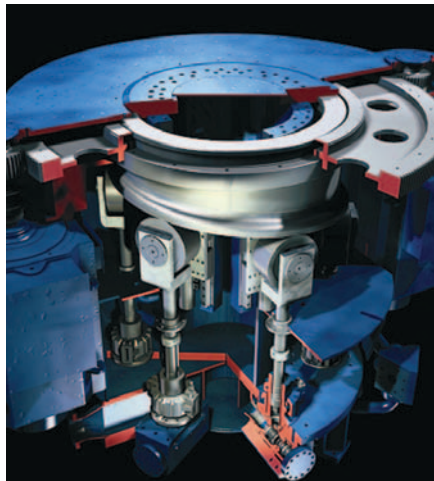
The technology eliminates potential safety hazards, provides assurance that the casing can be run to the intended casing point, offers the ability to ream casing to bottom, and requires fewer additional people on the rig for running casing. It eliminates the need for a stabber in the derrick while providing a mechanized system for running casing.

The system has been completely mechanized on one Casing Drilling rig to allow the driller to routinely pick up casing from the pipe racks and make connections with no personnel on the rig floor.

Improved Casing Running Process (SPE/IADC 92579) **T M Warren, Tesco Corporation.**

JACKUP RIGS

The authors will describe the process of creating what they call the ultimate



A mud pump utilizing six pistons in minimized pressure pulsations can provide a nearly constant steady flow. SPE/IADC 92507.

deepwater jackup drilling rig based upon the operational experience with the Maersk XL rigs. Ideas and lessons learned from operational crew, operators, equipment vendors, etc. were incorporated and put into practice together with experience from building and operating more than 25 drilling rigs.

The final solution included a basic design that enables operation in up to 150 m of

water in the North Sea with a variable load between 4,000 and 10,000 mT.

Based on the layout and design, the IADC reports from the existing generation of harsh environment jackups were used to determine potential savings in the drilling of various types of wells. The results were discussed with various operators who generally agree with the results. The calculation showed a theoretical saving of up to 25%.

Development of the Ultimate Ultra Harsh Environment Jackup Drilling Rigs (SPE/IADC 92760) **F Smidth, Maersk Contractors.**

NEW MUD PUMP

A newly developed mud pump called Hex Pump has been operating for some time on a land rig in Texas. The new Hex Pump technology utilizes six pistons together with an asymmetric cam, resulting in minimized pressure pulsations and flow ripples from the pump. Both measurements and theoretical calculations show that the pump provides a nearly constant steady flow, eliminating the need for pulsation dampeners.

The authors focuses on the experience

that was gained from operation of the Hex Pump on the land rig, which was operating together with two triplex pumps on the rig in order to compare the performance of the two different pump designs.

Reduced power consumption is another positive side effect. At the same pumping capacity, instead of using three diesel generators when running the triplex pumps, only two generators were used when the Hex Pump was running, resulting in lower diesel consumption and lower for operating cost the rig. However, this is related to increased power factor since the Hex Pump is utilizing AC motors and the triplex pump was utilizing DC motors.

Operational Experience with use of a Hex Pump on a Land Rig (SPE/IADC 92507) **H Kverneland, A Kyllingstad, M M Moe, National Oilwell.**

MAKING UP DRILLSTRING

A new-generation, remotely operated piece of rig floor equipment for making up drillstring, drill collars, wash pipe, drill bits, stabilizers, and other downhole and surface equipment and for accommodating remotely operated power tongs

for casing and tubing was installed and operated on the Ula platform in the North Sea offshore Norway.

The author will discuss the rationale for selecting the equipment; the operator's expectations; installation, interface, start-up, and operation from the Ula platform; and success of the equipment in meeting Norwegian authorities more stringent requirements for remote operation.

The First All-in-one Machine for Making Up Drillstring, Bottomhole Assemblies, Casing, and Tubing in the Norwegian Sector (SPE/IADC 92598) **E Abrahamsen, Weatherford International.**

SAFER CASING RUNNING

Conventional casing operations typically involve specialized crews and equipment. The casing crew and equipment are mobilized to a rig, they rig up and operate the equipment, and are demobilized at the completion of the casing job. Top drive systems have been used for years to make up pipe connections and to efficiently drill wells. The challenge was to develop a viable method of using top drives, with the addition of a casing run-

ning tool (CRT), to make up and run casing strings, just as strings of drill pipe have historically been run.

The CRT incorporates a simple method of picking up single joints and stabbing them into the string, and eliminates the need for a person at the casing stabbing board. Because the top drive provides the torque to make up the connection, additional casing tongs are not required and fewer personnel are required on the rig floor during casing operations.

Using data taken from the first well drilled with a new NDC rig for ADNOC in Abu Dhabi, the authors will demonstrate the benefits of using the crews already on the rig site to run the casing strings. The elapsed time, cost reductions, and reduction in exposure to potential hazards during casing operations was carefully documented and the results will be presented. In addition to the safety and cost benefits, several other benefits of using the top drive and Casing Running Tool will be shown.

Running Casing Faster and Safer with Less Cost, using Existing Rig Crew: A Case Study (SPE/IADC 92627-Alternate) **J M Parsons, Varco.** ■