

Halliburton Pioneers Revolutionary Drilling and Intervention System; Real Time Solutions a Reality With Anaconda(TM) Technology

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DALLAS, May 2 /PRNewswire/ -- Halliburton Energy Services (HES) announced today that the initial trials of its revolutionary new technology, the Anaconda Advanced Well Construction System, have successfully been completed. Based on breakthrough advances in composite materials, telemetry and control sciences, this system will have a major impact on the exploration, development and production of oil and gas, especially offshore. Halliburton Energy Services is a business unit of Halliburton Company (NYSE: HAL).

Halliburton, along with Statoil of Norway, developed the first phase of this unique technology to develop inaccessible reserves in Statoil's mature North Sea Fields. In less than 27 months, Halliburton and Statoil produced a complete fit-for-purpose system, called Anaconda. This digitally controlled system uses a carbon-fiber composite umbilical tubing, called SmartPipe(TM), and a downhole Advanced Drilling, Evaluation and Propulsion Tool (ADEPT) assembly. The result is a true leap forward in well construction technology. It is lighter, safer, requires less space and fewer people to operate than alternative systems. Future, large-diameter Anaconda systems will be able to drill more complex wellpaths and drill extended horizontal distances further than any system ever developed.

"We are pleased with our partnering efforts with Statoil on this important project," said Dave Lesar, president, Halliburton Company. "Anaconda's breakthrough technology will enable our customers to increase recoverable reserves while reducing the cost of recovered hydrocarbon units. This is the first real step change in well construction and intervention processes in over 20 years. The combination of several existing and many new technologies will reduce our customers' operating costs and capital spending."

The System

With the Anaconda system, oil companies will have a new capability to find and develop isolated pockets of oil and gas. The system is fully enabled with Halliburton's real-time data transmission technology, so personnel will be able to make instantaneous drilling decisions from anywhere in the world.

"Anaconda will change the way wells are drilled. Geologists and geophysicists will participate in operations more than ever before by remotely directing the path of the well. The amount of real time data is enormous, several thousand times greater than is currently achievable, so precise placement of the well bore will be possible within a given hydrocarbon zone. The ability to transmit electrical power and commands through the pipe adds tremendous versatility and control to the drilling process, so well control is improved and many hazardous conditions can be avoided. This technology will bring together formation evaluation experts, drilling engineers, reservoir engineers, geologists and geophysicists to make better decisions," said Jody Powers, president, Halliburton Energy Services.

"Anaconda wells will be guided using real-time updates of the earth model and, with the instantaneous control capability, we can make the assembly almost turn on a dime, allowing us to probe for additional reserves or to access multiple reservoirs. No one else can do that," added Powers.

"Anaconda utilizes state-of-the-art information technology for system control, telemetry and real-time communication which enables the oil companies to make rapid decisions in real time from either the drilling location or remotely. This makes possible the efficient real-time collaboration of multidisciplinary teams regardless of their proximity to the drilling operation such that reservoir assets are optimized through better decisions," said Jim Terry, inventor and director of the Anaconda Project.

New Technology

The major components of the system are the fully automated surface equipment, the SmartPipe with embedded conductors and the ADEPT bottomhole assembly.

Surface equipment in the new system includes a control center, SmartPipe injector and reel, a tower and pipehandling system, blowout preventers, and a digital control and data-acquisition system. In the control center a three-man team operates the entire system -- a "pilot" to run the equipment, a systems engineer to maintain system integrity and a "navigation engineer" who interprets the sensor data, builds a detailed subsurface map and guides the wellpath accordingly. When required, any of these functions can be performed remotely.

Anaconda's SmartPipe, jointly developed by Halliburton and Fiberspar Spoolable Products, is manufactured in a continuous coil using a tough laminate of carbon-fiber and other advanced materials. Under most drilling conditions the pipe is nearly buoyant, a big advantage in extended reach drilling applications. Also, the reeled pipe eliminates many of the hazardous pipe-handling operations common with jointed steel drill pipe. The first Anaconda system uses a 2 7/8-inch Outer Diameter (OD) SmartPipe with embedded conductors that relay two-way data between the control center and the subsurface assembly.

The ADEPT bottomhole assembly measures borehole and formation parameters, orients the borehole in 3D space, provides the mechanical forces to drill the hole and uses the industry's first open system subsurface propulsion system. With the propulsion system, no mechanical force is required from the surface equipment to convey the pipe into or out of the well. Instead, the pipe can be propelled by downhole hydraulic forces applied by the ADEPT assembly whenever necessary.

Phases of the Project

Research resulted in a vision of three evolving systems, each one progressively building on the technological accomplishments of the last. System 1, which was developed to meet Statoil's needs in the North Sea, uses a 2 7/8-inch OD SmartPipe and a 3 1/8-inch OD ADEPT assembly. Development will commence soon on a system which will be capable of constructing larger well diameters and achieving measured depths of up to 50,000 feet. Applications for this system will include minimizing the number of offshore structures and associated capital expenditures, drilling exploration wells in deepwater environments, subsea development wells and minimum-diameter, high-rate production wells.

"We feel confident this technology will change the way our customers exploit reserves, increase ultimate recoveries and extend the life of mature fields," said Terry. "The next phase of the project is to apply proven System 1 technology to the next generation of Anaconda which will be capable of drilling and completing larger well bores. It will likely be funded in part by several other interested operators. We look forward to working in close collaboration with our customers in an effort to maximize the versatility and applicability of the Anaconda system for their assets."

Initial Testing of the System

The Anaconda well-construction system is undergoing extensive testing at the Halliburton Research and Development Center in Duncan, Oklahoma, prior to commercial deployment. To date, the system has successfully concluded eight months of tests in a horizontal flow loop and in the test well. The SmartPipe endured more than 50 times the number of stress cycles that are usually considered acceptable for steel coiled tubing with equivalent diameter.

"The first commercial deployment will be in the Gulf of Mexico region," said Terry. "Statoil and Halliburton have agreed that the first few commercial wells will be drilled in the U.S. to prove up all the components of the system before going to Norway."

Halliburton Energy Services provides products, services, and integrated solutions for oil and gas exploration, development, and production. Capabilities range from the initial evaluation of producing formations to drilling, completion, production enhancement, and well maintenance -- for a single well or an entire field. With over 300 service centers in more than 90 countries, Halliburton possesses the global perspective that is increasingly important for energy exploration and production.

Founded in 1919, Halliburton Company is the world's leading diversified energy services, engineering, construction, maintenance and energy equipment company. In 1999, Halliburton's consolidated revenues were \$14.9 billion and it conducted business with a workforce of approximately 100,000 in more than 120 countries. The company's World Wide Web site can be accessed at <http://www.halliburton.com>.

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