

# DEA projects updated at 2005 first quarter meeting

**UPDATES ON SEVERAL** Drilling Engineering Association (DEA) projects were presented at the 2005 first quarter meeting, including casing and tubing connection performance database, plug and play computer-controlled drilling equipment and Slider LLC's directional drilling control with motor steerable systems. Several informational presentations were also made at the meeting.

The next gathering of the DEA will be at its 2005 workshop, 24-25 May in Galveston. The workshop's theme is **Challenges for Finding and Developing Deep Gas: What are our Limits?** DEA's third quarter meeting will be held at **ChevronTexaco** on 18 August.

## QUALCONN DATABASE

**Brian Schwind** with **PPI Technology Services** updated the meeting on Modernization of Connection Performance Properties (DEA 151), or Qualconn, which is working to provide a connection performance database. The Qualconn database project began in April 2003 with the objective of developing a casing and tubing connection performance database for well design, procurement and operations. The primary focus is the collection and analysis of \$50 million of reliability test data and the efficient application of this information to well construction.

Rollout of the database is expected in June 2006. The schedule through the first three quarters of 2005 included a Qualconn meeting in March. A meeting with manufacturers was scheduled during April, followed by revisions to the database. Various meetings with manufacturers and operating companies as well as Qualconn meetings will be conducted, with database revisions as required.

The project is based upon testing that evaluates the ability of a connection to meet performance requirements under the worst possible condition of parameter variability such as material and dimensions and environmental loading. Connection specifications provided in Qualconn so the proper connection can be applied and load and temperature limits of the connection are detailed for design and operations. Qualconn addresses design performance, manufacturing quality, assembly and operations aspects of connections, in other words, all of the sources of failure are addressed.

## PLUG & PLAY

**Don Shafer** with **Athens Group** presented an update on Implementing Plug and Play for Computer Controlled Drilling Equipment (DEA 159), which is investigating adaptation of SECS/GEM standards (notably used in the automotive and semiconductor manufacturing industries) to drilling equipment to enable plug and play for top drives, pipe handling equipment, iron roughnecks and drawworks. Support of the project is from **BP, ExxonMobil, Diamond Offshore, KCA DEUTAG, National Oilwell Varco**.



The project is currently working through contracting with the DEA and sponsors, moving toward operator funding. The first phase, estimated at three months, had not yet begun as of early March.

Deliverable for Phase I is a feasibility model of a SECS/GEM equivalent system for drilling, developed by the Athens Group, to demonstrate potential solutions for the points of computer-based drilling equipment integration.

The model would include a top drive, pipe handler, drawworks and an iron roughneck along with a Cyberbase-V-ICIS.

The model would demonstrate solutions to installation issues such as automatic discovery, mis-wiring resolution, capability changes, automatic alarm mapping and reporting. Consultation with drilling equipment providers would be included to make the number of data points and commands limited yet realistic to make an assessment of suitability.

An Athens Group-sponsored workshop for operators, contractors and equipment suppliers would provide information about the model as well as a demonstration of the model. Additionally, a report would be provided resulting from interviews with major equipment vendors regarding issues in applying the standard as well as their commitment to participate in Phase II.

Phase II deliverables include a feasibility model of a Phase I compliant system constructed of independently developed Phase I compliant equipment interfaces for key pieces of drilling equipment for two theoretical drilling rigs. The interfaces would be provided by a "coalition of the willing" of equipment developers like National Oilwell Varco.

A demonstration of the integration of the models would be presented at a workshop, and articles on the initiative would be placed in professional journals.

Phase III would deliver a set of standards based upon the learnings of Phase I and II that would be applicable to computer controlled drilling equipment.

## DRILLING CONTROL

**Marc Hacı** with **Slider LLC** presented an update on Step Change in Directional Drilling Control and Efficiency When Using Motor Steerable Systems, specifically the development of the Slider technology and method for electric top drives (DEA 157).

The technical objective of DEA 157 is to substitute part of the directional driller's interaction to rock the pipe by small "robots" that manipulate the same devices (buttons, levers, switches, wheels, etc). These automatic "rocking" interfaces have been successfully developed for hydraulic power swivel controls and there is the need to extend this development for electric top drives.

The first task is to interface with the Ross Hill SCR control panel model 425 commonly used in the market that has one button and one wheel that need to be controlled in a special sequential order by individual robots to be able to achieve the full rocking benefits.

Second is to build a two-robot system and necessary software to rock the pipe as needed to achieve all the benefits that this technology can provide. The third objective is to build a prototype unit and test it in the field during at least three field tests (about 5-10 days each).

The deliverables of DEA 157 are to develop the Slider Robotics interface solution for some electric top drives; to undertake at least three field tests to prove the concept; and to develop a process to document the cost effectiveness of this technology. ■