

New Electronic Tool Helps Simplify Low Density Cement Decisions

- **"SmartCement" Data Aims to Reduce Well Failures, Improve Performance, Lower Costs**
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Offshore Technology Conference, Booth #2162, May 3-6, 2004 -- A new PC-based electronic decision tool called SmartCement from CSI Technologies, now being made available at no cost to oil and gas industry professionals from 3M, promises to take much of the guesswork out of choosing the right lightweight cement system for challenging downhole environments.

The SmartCement tool, designed to evaluate the suitability of typical density reducing additives for oil well casing cement under various conditions, comes preloaded with test data on the additives' mechanical properties and costs. Based on the information users provide about their specific operating parameters, SmartCement will identify the optimal low density cementing option, along with several alternative choices. Users also can modify cost data to reflect changing market conditions.

Developed by CSI Technologies of Houston, Texas, SmartCement was just one of the outcomes of a major three-year research project, initiated by the National Energy Technology Laboratory of the U.S. Department of Energy. The purpose of the project was to help develop improved lightweight cementing systems for deepwater wells and other critical applications. CSI Technologies was selected to lead the project team, which included representatives from ExxonMobil, Shell, BJ Services, Halliburton Energy Services, Schlumberger, 3M (a supplier of ultralightweight cement additives), TXI (a cement supplier) and Chandler Engineering (a laboratory equipment supplier).

The focus of the project was to test the physical performance of ultralightweight cement slurries using 3M glass bubbles, and compare these results to the performance of conventional and specialty lightweight cements. As part of the project, CSI Technologies took thousands of readings from a variety of working wells and used these data to ensure that the results obtained would provide significant value to the industry. These data points also were used to develop the SmartCement program database.

"The Department of Energy sponsored this research because there is a tremendous need for developing new lightweight high-performance cement systems," said Gary Covatch, project manager at the Department of Energy. "The lightweight cement project has proved very valuable for those in the industry who routinely make decisions on the cement systems for critical applications and it has pushed high-performance lightweight cements to the forefront of the industry."

According to Fred Sabins, president of CSI Technologies, approximately 15 percent of wells have to be remediated because the proper materials weren't used in cementing jobs the first time. "By identifying the proper lightweight cementing materials from the start, the industry could save tens of millions of dollars a year. This becomes especially important when working with deepwater wells or critical applications that require ultralightweight cementing systems," he explained.

Results from the research demonstrated that cementing systems using 3M glass bubbles could improve lightweight cement performance in many critical operations and provide a viable alternative to many conventional lightweight cement slurries.

Many operations require cements combining high strength and lightweight in order to withstand thermal and pressure cycling stresses for extended periods of time. Tests conducted during the Department of Energy

project showed that 3M glass bubbles exhibited excellent abilities to handle both kinds of stresses. This is made possible by the high durability, low permeability and excellent bond of the ultra-lightweight 3M glass bubbles, whose use also can improve well performance by enhancing zone isolation and reducing cementing failures.

For more information about the SmartCement Decision Tool, please call 1-800-632-2304. For more information about 3M glass bubbles for cementing applications visit www.3M.com/oilandgas. For more information about the United States Department of Energy's National Energy Technology Laboratory, visit www.netl.doe.gov or call 412-386-4646.

3M Specialty Materials Manufacturing Division will be exhibiting at Booth #2162 at Offshore Technology Conference in Houston, Texas, May 3-6, 2004. The U.S. Department of Energy will be exhibiting in Booth #4324.

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