Halliburton tests warned of cement problems before BP well blowout

Kate Randall
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Weeks before the April 20 Deepwater Horizon explosion, oil company BP and subcontractor Halliburton were aware of test results showing that the cement mixture designed to temporarily seal the well was unstable. The findings were reported Thursday by a presidential special commission investigating the disaster.

According to the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, three separate tests, the first one as early as February 2010, suggested instability of the cement mixture. The mixture is supposed to secure the well pipes and keep oil and gas from flowing up the well. Despite these findings of instability, BP and its subcontractor used the mixture anyway.

Within hours of the commission's announcement, Halliburton issued a statement dismissing some of the lab tests as irrelevant or preliminary. But in this same statement, Halliburton also revealed that stability tests were not conducted on the specific cement mix that was used on BP's Macondo well. The cement seal failure has been identified as one of the factors contributing to the explosion that ultimately triggered the oil spill.

The Deepwater Horizon explosion claimed the lives of 11 workers and led to a mammoth ecological catastrophe, spewing an estimated 185 million gallons of oil into the Gulf of Mexico. More than six months later, the oil spill is still exacting a devastating toll on animal life, the fishing industry and the entire region's economy and population.

According to the presidential commission investigating the spill, documents provided by Halliburton showed that at least three tests conducted by the company in February and April determined that the cement mixture was unstable. The results of a fourth cement mixture test were not available until the night of April 19 at the earliest, and possibly not until after the cement was poured.

Referring to the two February tests conducted by Halliburton, the commission letter stated, "Both tests indicated that this foam slurry design was unstable." The result of only one of these tests was reported to BP, the commission said. Halliburton reportedly did not use the word "unstable" in a March 8 e-mail to BP reporting the results of this test. "There is no indication that Halliburton highlighted to BP the significance of the foam stability data or that BP personnel raised any questions about it," the commission letter noted.

Two more tests were performed by Halliburton in April, when the contractor reportedly had more information about the conditions at the bottom of the well. The first test, performed on or about April 13, again indicated that the cement mixture would be unstable. The commission stated, "The results of this test were reported internally within Halliburton by at least April 17, though it appears that Halliburton never provided the data to BP."

The second April test took into account additional well-related conditions, and reportedly showed that the cement job might hold. However, it is unclear whether this test was completed before the cement mixture was poured at the well. BP did not receive a report on this test until April 26.

This test was performed on a cement slurry mixture that included eight gallons of retarder per 100 sacks of cement. Retarders lengthen the time it takes for cement to set, and are often used in high-temperature environments such as the Gulf. Halliburton says that this test showed the cement foam mixture to be stable.

However, Halliburton says it was subsequently instructed by BP to increase the amount of retarder from eight gallons to nine. According to the

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Washington Post, Halliburton reported that "[n]ew tests were then performed on the thickening time and comprehensive strength on the nine-gallon formulation, but not on its foam stability."

Responding to the commission staff letter late Thursday night, Halliburton dismissed the February tests as "preliminary," saying that "final well conditions were not known at that time. It also contended that the first April test was "irrelevant" due to errors at the lab, but that BP had been notified about it.

Halliburton's cement slurry mixes nitrogen and other additives with ordinary cement, creating a foamy mixture. The presidential commission recently asked Chevron to conduct independent lab tests on the cement mixture Halliburton said was the same as the one used in the BP well.

According to commission staff, Chevron's "lab personnel were unable to generate stable foam cement in the laboratory using the materials provided by Halliburton." Halliburton countered that the mix tested by Chevron may have been different from the "unique blend of cement and additives" used in the Macondo well, and called the tests "preliminary."

In a separate brief, commission staff members said that the BP's well design might have played a role in the disaster. According to the *Post*, "The use of a long, steel casing might have contributed to concerns about the level of pressure in the space between the pipe and the sides of the well." BP's use of 6 centralizers, instead of 21, has also been raised as a possible contributing factor in the blowout.

The presidential commission's revelations about the Halliburton tests stand in contrast to previous statements by Halliburton representatives. At a September 26 hearing, Thomas Roth, Halliburton's vice president for cementing, told an investigative panel of the National Academy of Engineering, "All the design work, all of the testing work that was done by Halliburton in advance of this job indicated that the foam was stable."

In a June 1 letter to the chairman of the House Subcommittee on Energy and the Environment, Halliburton President Tim Probert wrote, "Halliburton is confident that the cementing work on the Mississippi Canyon 252 [location of the Deepwater Horizon] well was completed in accordance with the requirements of the well owner's construction plan."

The commission letter was careful to not characterize the telling exposures as a "smoking gun," stating, "Cementing wells is a complex endeavor, and industry experts inform us that cementing failures are not uncommon even in the best of circumstances."

In the face of these new revelations—showing that Halliburton tests showed instability in the cement slurry, that it failed to test the final mixture, and that BP and Halliburton then proceeded to pour this mixture into the well—the letter from the presidential commission merely suggested, "Halliburton (and perhaps BP) should have considered redesigning the foam slurry before pumping it at the Macondo well."

More than six months after the disaster, no criminal charges have been brought against BP, Halliburton or Transocean, owner of the Deepwater Horizon. The companies involved continue to trade accusations over responsibility for the well blowout that led to the 11 oil rig workers' deaths and the environmental disaster that continues to plague the Gulf region.

Meanwhile, little more than a quarter of the more than 220,000 claims filed by individuals and businesses devastated by the oil spill have been paid out by BP's Gulf Coast Claims Facility.

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