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BP investigation cites multiple failures, but not well's design

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WASHINGTON — A BP internal investigation released Wednesday concludes that eight key factors contributed to the explosion of the Deepwater Horizon oil rig in the Gulf of Mexico, including a poor cement job by Halliburton and the failure by Transocean workers to notice for 40 minutes that oil and gas were gushing into the well.

BP's probe acknowledges that a key BP official aboard the rig misinterpreted a critical pressure test and then mistakenly authorized the removal of heavy drilling mud — the only impediment to gas and crude oil surging up the well's drill pipe — before the well's integrity was confirmed.

The investigation concluded, however, that the well's design was sound and didn't contribute to the explosion, which killed 11 rig workers and sent more than four million barrels of oil spewing into the Gulf over nearly three months — the worst oil spill in U.S. history.

Both Halliburton and Transocean immediately denounced the conclusions.

"This is a self-serving report that attempts to conceal the critical factor that set the stage for the . . . incident: BP's fatally flawed well design," Transocean said in a statement. "In both its design and construction, BP made a series of cost-saving decisions that increased risk — in some cases, severely."

BP's critics in Congress also took a dim view of the report.

"Just as the environmental damage did not end with the capping of BP's well, this company-run investigation is not the end of the inquiries into the BP oil spill," said Rep. Ed Markey, D-Mass., a member of the House Energy and Commerce Committee. "This is not BP's mea culpa. Of their own eight key findings, they only explicitly take responsibility for half of one. BP is happy to slice up blame, as long as they get the smallest piece."

Kieran Suckling, the executive director of the Center for Biological Diversity, echoed Markey's sentiments.

"BP's internal investigation doesn't pass the smell test," Suckling said. "BP is well aware that hundreds of lawsuits and tens of billions of dollars in fines rest on determining who is to blame and whether they were criminally negligent. This report bends over backwards to spread the blame around, conceal BP's financial interest in cutting corners, and avoid any hint of criminal liability."

Outgoing BP Chief Executive Tony Hayward defended his company.

"It is evident that a series of complex events, rather than a single mistake or failure, led to the tragedy," he said in a statement. "Multiple parties, including BP, Halliburton and Transocean, were involved."

Hayward added: "Based on the report, it would appear unlikely that the well design contributed to the incident, as the investigation found that the hydrocarbons flowed up the production casing through the bottom of the well."

The report provides a timeline and some critical new information about the disaster, including a finding that a critical safety device, the rig's blowout preventer, probably failed to seal the well because the initial explosion severed its links with the rig's control room.

The report also may raise new questions about how much oil spewed from the well, especially in the first days of the disaster.

In the minutes just before the explosion on April 20, the report said, the well was "unloading at an average rate of approximately" 60 to 70 barrels a minute — a flow rate equal to between 86,400 and 100,800 barrels a day.

BP initially said the well was leaking 1,000 barrels a day. The most recent government estimates place the daily flow rate at 62,000 barrels in the early days of the spill, decreasing to 53,000 barrels just before the well was capped July 15.

The report, conducted by Mark Bly, BP's head of safety, said the eight key failures that led to the explosion and spill include:

- Inadequate cement at the bottom of the well that failed to block hydrocarbons from leaving the reservoir and flowing up the production casing.

- Incorrect interpretation by BP and Transocean workers of a negative pressure test that should have prompted further questions about the well's soundness, but didn't.

- The failure of the Transocean rig crew to recognize and respond to the influx of hydrocarbons into the well until the hydrocarbons were in the riser and rapidly flowing to the surface. The report says the first indication that something was amiss came at 8:58 p.m., but that no action was taken to control the hydrocarbon flow until 9:41 p.m.

- After the well-flow reached the rig it was routed to a mud-gas separator, which caused gas to be vented directly

on to the rig instead of diverting it overboard.

- Failure of the rig's fire and gas warning systems to prevent the gas from reaching the rig's engine rooms through the ventilation system. The gas likely was ignited by the engines.

- Even after the explosion and fire disabled the crew-operated controls, the rig's blowout preventer on the seabed should have activated automatically to seal the well — but didn't because critical components weren't working.

The report noted that despite the Deepwater Horizon's years-long record of safe operations, rig workers conducted a pressure test in a manner that violated federally required procedures. Workers, including BP officials, also failed to follow written BP procedures for assessing the strength of the cement job, the report said.

BP, however, blamed the cement problem squarely on Halliburton, saying "improved engineering rigor, cement testing and communication of risk by Halliburton could have identified the low probability of the cement to achieve zonal isolation," meaning sealing the well from the crude oil reservoir.

"The evidence reviewed suggests that the cement slurry was not fully tested prior to the execution of the cement job," BP's report states. "The investigation team was unable to confirm that a comprehensive testing program was conducted. The test results reviewed by the investigation team indicated that only limited cement testing, such as thickening time, foam density, mixability and ultrasonic compressive strength, was performed on the slurry used in the Macondo well."

Halliburton, in a statement, said it's "confident that all the work it performed with respect to the Macondo well was completed in accordance with BP's specifications for its well construction plan and instructions, and that it is fully indemnified under its contract for any of the allegations contained in the report."

"The well owner is responsible for designing the well program and any testing related to the well," the statement added. "Contractors do not specify well design or make decisions regarding testing procedures, as that responsibility lies with the well owner."

Transocean was equally critical of BP's assertions that its workers failed to notice that things were going awry aboard the rig. The report says BP and Transocean workers "incorrectly accepted" pressure test results from the well.

It added that Transocean rig workers over a 40-minute period "failed to recognize and act on the influx of hydrocarbons into the well"

BP's investigation also seems to take Transocean to task for the failure of the blowout preventer. It notes that testing records provided by Transocean "indicated instances of an ineffective maintenance management system for Deepwater Horizon."

It notes that in December 2007, the batteries in the blue pod were fully depleted when the blowout preventer was brought to the surface and that a yellow pod had a non-original equipment manufacturer part, which were discovered after the pods were recovered, suggest the lack of a robust Transocean maintenance management system for Deepwater Horizon BOP," the report states.

Transocean officials say the company is conducting its own investigation and is awaiting "critical information the company has requested of BP but has yet to receive."

Two of the report's conclusions specifically absolved aspects of the well's design that congressional investigators had pinpointed as cost-saving shortcuts that sacrificed safety.

One was the use of just six devices called centralizers to brace the well's steel casing in the well; Halliburton had recommended that 21 centralizers be used. The BP report acknowledged that the other 15 centralizers were available, but concluded that their absence played no role in the failure of the cement.

The other was BP's decision to use a single steel pipe to line the well, instead of a double pipe often used in other wells. The report concluded that the decision to use the single pipe didn't contribute to the surge of hydrocarbons up the well.