

## Executive Summary of Findings

**T**he Macondo blowout happened because a number of separate risk factors, oversights, and outright mistakes combined to overwhelm the safeguards meant to prevent such an event. The Chief Counsel’s team identified a number of technical risk factors in the design, execution, and testing of the Macondo well. The team was also able to trace all of these failures back to an overarching failure of management. Better management of personnel, risk, and communications by BP and its contractors would almost certainly have prevented the blowout. The Macondo disaster was not inevitable.

## Technical Findings

The root technical cause of the blowout is now clear: The cement that BP and Halliburton pumped to the bottom of the well did not seal off hydrocarbons in the formation. While we may never know for certain the exact reason why the cement failed, several factors increased the risk of cement failure at Macondo. They include the following: First, drilling complications forced engineers to plan a “finesse” cement job that called for, among other things, a low overall volume of cement. Second, the cement slurry itself was poorly designed—some of Halliburton’s own internal tests showed that the design was unstable, and subsequent testing by the Chief Counsel’s team raised further concerns. Third, BP’s temporary abandonment procedures—finalized only at the last minute—called for rig personnel to severely “underbalance” the well before installing any additional barriers to back up the cement job.

BP missed a key opportunity to recognize the cement failure during the negative pressure test that its well site leaders and Transocean personnel conducted on April 20. The test clearly showed that hydrocarbons were leaking into the well, but BP’s well site leaders misinterpreted the result. It appears they did so in part because they accepted a facially implausible theory suggested by certain experienced members of the Transocean rig crew. Transocean and Sperry Drilling rig personnel then missed a number of further signals that hydrocarbons had entered the well and were rising to the surface during the final hour before the blowout actually occurred. By the time they recognized a blowout was occurring and activated the rig’s blowout preventer, it was too late for that device to prevent an explosion. By that time, hydrocarbons had already flowed past the blowout preventer and were rushing upward through the riser pipe to the rig floor.

## Management Findings

The Chief Counsel’s team concluded that all of the technical failures at Macondo can be traced back to management errors by the companies involved in the incident. BP did not fully appreciate all of the risks that Macondo presented. It did not adequately supervise the work of its contractors, who in turn did not deliver to BP all of the benefits of their expertise. BP personnel on the rig were not properly trained and supported, and all three companies failed to communicate key information to people who could have made a difference.

Among other things:

- BP did not adequately identify or address risks created by last-minute changes to well design and procedures. BP changed its plans repeatedly and up to the very last minute, sometimes causing confusion and frustration among BP employees and rig personnel.
- When BP did send instructions and procedures to rig personnel, it often provided inadequate detail and guidance.
- It is common in the offshore oil industry to focus on increasing efficiency to save rig time and associated costs. But management processes must ensure that measures taken to save time and reduce costs do not adversely affect overall risk. BP's management processes did not do so.
- Halliburton appears to have done little to supervise the work of its key cementing personnel and does not appear to have meaningfully reviewed data that should have prompted it to redesign the Macondo cement slurry.
- Transocean did not adequately train its employees in emergency procedures and kick detection, and did not inform them of crucial lessons learned from a similar and recent near-miss drilling incident.

What the men and women who worked on Macondo lacked—and what every drilling operation requires—was a culture of leadership responsibility. In remote offshore environments, individuals must take personal ownership of safety issues with a single-minded determination to ask questions and pursue advice until they are certain they get it right.

## Regulatory Findings

The Commission's full report examines in depth the history of Minerals Management Service (MMS) regulatory programs and makes specific recommendations for regulatory reform of what is now the Bureau of Offshore Energy Management, Regulation, and Enforcement (BOEMRE). The Chief Counsel's team found that the MMS regulatory structure in place in April 2010 was inadequate to address the risks of deepwater drilling projects like Macondo. Then-existing regulations had little relevance to the technical and management problems that contributed to the blowout. Regulatory personnel did not have the training or experience to adequately evaluate the overall safety or risk of the project.