National Commission on the
BP DEEPWATER HORIZON OIL SPILL
AND OFFSHORE DRILLING

STAFF PRESENTATION TO THE COMMISSION:

OIL SPILL CONTAINMENT

December 3, 2010

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CONTAINMENT TIMELINE

Apr. 20:	Blowout and explosion
Apr. 22:	Deepwater Horizon rig sinks
May 5:	BP ceases attempts to actuate the BOP stack
May 6-8:	Cofferdam operation
May 16-25:	Collection of oil through the Riser Insertion Tube Tool
May 26-28:	Top kill and junk shot operations
Jun. 2-3:	Riser cut and top hat installed

Secretary Chu and Tom Hunter at BP's source-control command center in Houston. Source: Deepwater Horizon Response Flickr Photostream.

Q4000 (foreground) and *Discoverer Enterprise* (background), flaring as they collect oil above the wellhead. Source: U.S. Coast Guard.

Jun. 3-Jul. 10:	Collection of oil through the top hat to the *Discoverer Enterprise*
Jun. 15-Jul. 15:	Collection of oil to the *Q4000*
Jul. 10-12:	Capping stack installed
Jul. 15:	Capping stack closed (spill ends)
Jul. 15-Aug. 3:	Well integrity test
Aug. 3-5:	Static kill and well cementing
Sept. 19:	First relief well completed; well officially declared dead

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ISSUES CONSIDERED

- Industry and Government Preparedness for Deepwater Source Control
- The Impact of Flow Rate
- The Impact of Well Design

Responders pilot a remotely operated vehicle during source-control operations. Source: U.S. Coast Guard.

Development Driller III drills a relief well to stop the Deepwater Horizon spill. Source: U.S. Coast Guard.

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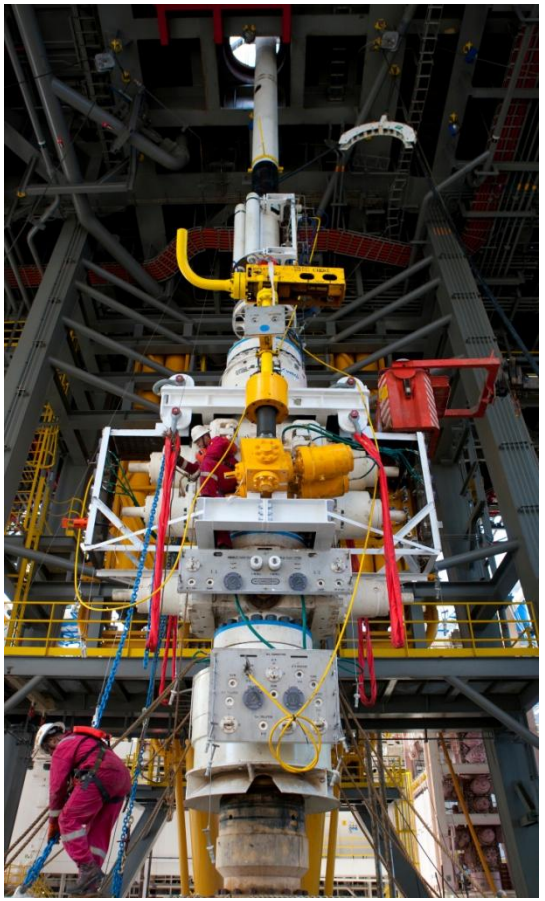
INDUSTRY PREPAREDNESS

STAFF FINDINGS

- At the outset of the spill, beyond attempting to activate the blowout preventer and drilling a relief well, there were no proven options for controlling a deepwater blowout.
- During the response, BP was able to develop new source-control technologies in a compressed timeframe.



Responders prepare to deploy the capping stack to seal the well. Source: © BP p.l.c.

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INDUSTRY PREPAREDNESS

PROPOSED RECOMMENDATIONS FROM STAFF

- Oil spill response plans should contain detailed plans for source control, which demonstrate that an operator has access to immediately deployable containment technology.
- At the well-design stage, operators should provide an additional source-control analysis specific to each well, filling in gaps left by the spill response plan and demonstrating that the well will be compatible with their existing containment technology.

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GOVERNMENT SOURCE-CONTROL EXPERTISE

STAFF FINDINGS

- MMS (now BOEMRE) and the Coast Guard did not have the capacity to thoroughly analyze and challenge BP's source-control proposals.
- Early in the response, the lack of such expertise may have given the public the impression that the government was not in charge of BP's source-control operations.
- Once Secretary Chu's science team, the national labs, and other sources of scientific expertise became involved, the government was able to force BP to consider contingencies and justify its chosen path forward.
- Although government officials found input from industry officials valuable, industry interactions with the government were disorganized. Issues such as conflicts of interest, sharing of proprietary information, and potential liability for participants were never resolved.

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GOVERNMENT SOURCE-CONTROL EXPERTISE

PROPOSED RECOMMENDATIONS FROM STAFF

- The government needs in-house source-control expertise.
- An interagency team—including representation from the Department of the Interior, Coast Guard, and the national labs—should develop and maintain this expertise, potentially through public-private partnerships.
- EPA should amend the National Contingency Plan to define and institutionalize the role of the national labs and other governmental sources of scientific expertise in providing source-control oversight.
- EPA should amend the National Contingency Plan to create a mechanism for involving outside industry experts in source-control oversight.

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FLOW-RATE ESTIMATES

STAFF FINDINGS

- BP and the government did not initially prioritize the generation of an accurate flow-rate estimate.
- Source-control operations, including the cofferdam and top kill, were affected by a higher-than-suspected flow rate.
- Underestimation of the flow may have been a key reason that BP misinterpreted the top kill's failure as evidence of a well-integrity problem. Because of concerns about well integrity, BP and the government delayed capping the well.
- U.S. Geological Survey Director Marcia McNutt has publicly stated that the government and industry now know how to measure flow rate quickly and accurately should another deep sea blowout occur.

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FLOW-RATE ESTIMATES

PROPOSED RECOMMENDATIONS FROM STAFF

- EPA should amend the National Contingency Plan to require the responsible party to obtain accurate flow-rate or spill-volume estimates early in a source-control effort.
- As part of their oil spill response plans, operators must demonstrate the capacity to obtain an accurate flow-rate or spill-volume estimate quickly.

Oil and gas flow from the end of the broken riser. Source: © BP p.l.c.

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Interagency Review

Staff Findings

- Prior to the Deepwater Horizon spill, MMS was the only agency that reviewed spill response plans, and its review was not thorough or searching.

Proposed Recommendations from Staff

- Source-control plans should be reviewed and approved by agencies with relevant scientific and operational expertise, including the Department of the Interior, Coast Guard, and the national labs.
- Plans to calculate flow rate and spill volume should be reviewed and approved by agencies with relevant expertise, including the Department of the Interior, Coast Guard, NOAA, and the national labs.

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Well Design and Approval

Staff Findings

- The source-control effort was hampered by a lack of built-in diagnostic tools to provide data like accurate pressure readings at the blowout preventer and the precise location of blowout-preventer components.
- The government and BP expended significant resources during the response attempting to collect such data through, for example, gamma-ray imaging and installing pressure sensors in the top hat and capping stack.
- The presence of rupture disks in the well's 16-inch casing led to concerns about well integrity that complicated the source-control effort. BP did not consider the impact of these disks on post-blowout containment when designing the well.

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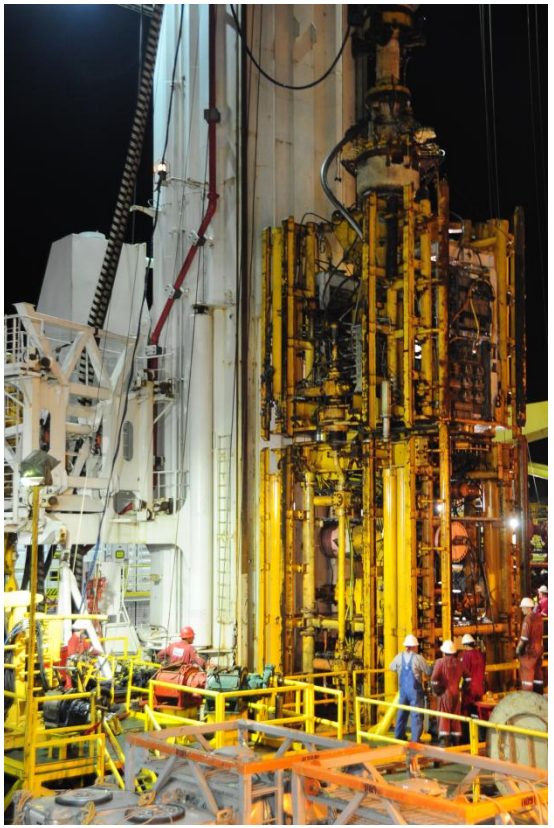
Well Design and Approval

Proposed Recommendations from Staff

During the well-design-approval process, the Department of the Interior should require:

- Well components to include sensors to obtain accurate diagnostic information, including pressure readings and the precise positioning of a blowout preventer's rams.
- Wells to be designed to mitigate risks to well integrity during post-blowout containment efforts.



BOP stack onboard the *Q4000* after being removed from the wellhead. Source: Deepwater Horizon Response Flickr Photostream.