

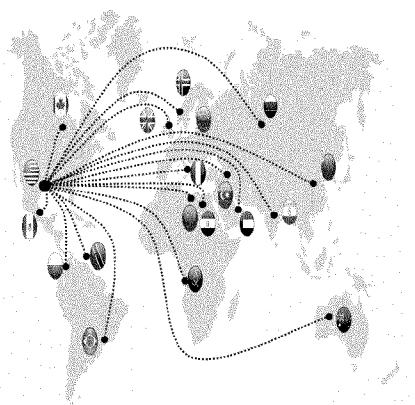
- Thank you to the National Ocean Industries Association for the invitation
- I' m pleased to be here sharing lessons learned from the DWH incident

BP's Commitment

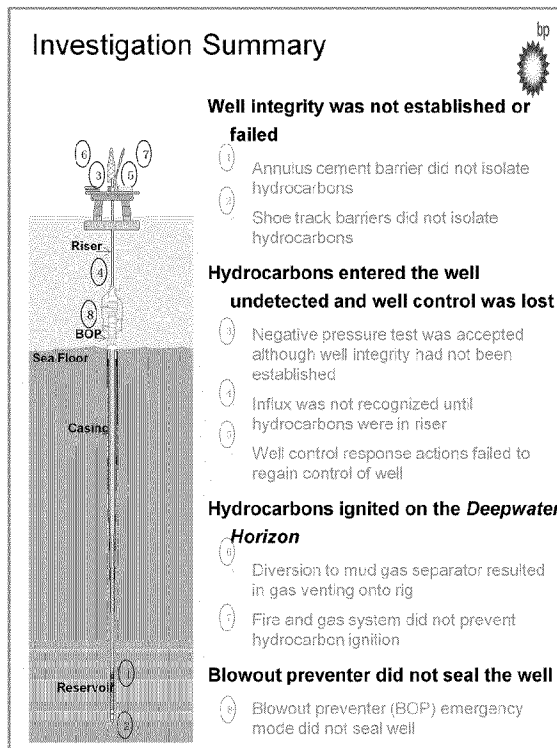


Going forward, we are

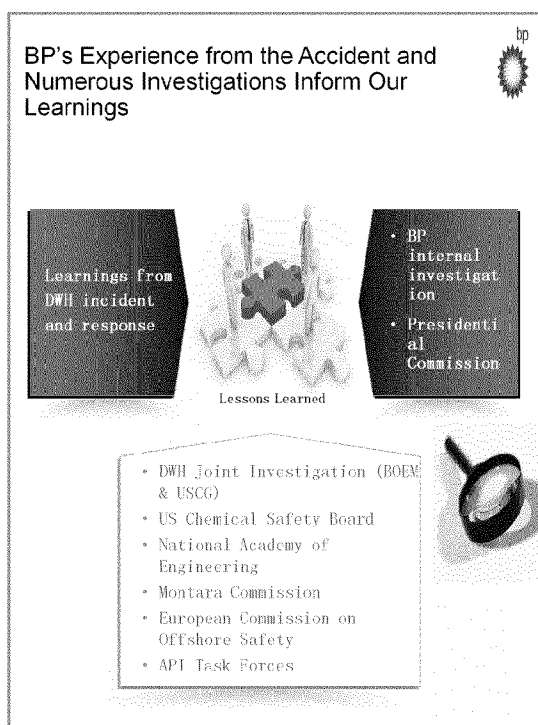
- Determined to accelerate and further develop the capabilities and practices that enhance safety in our company and the deepwater industry
- Committed to sharing our learnings globally so an accident of this magnitude never happens again



- * Deepwater Horizon blowout occurred on the April 20th, 2010. This tragedy took 11 lives and injured many others. The resulting oil spill impacted many lives, businesses and the environment
- * All of us at BP are deeply sorry for what has happened and its effect on the communities and families involved. And while everyone is working hard to repair the damage, we know nothing can restore the loss of those 11 men to their loved ones and friends.
- * We at BP are determined to develop capabilities and practices to further enhance safety to ensure that this type of accident is not repeated. We will do this not only at BP but help to do this all throughout the deepwater industry.
- * This presentation is aimed at sharing with you what we learned during the incident and its response, and what we have done – and continue to do – to advance and embed these learnings within BP and within the industry.
- * The lessons that were forged through that experience are impossible to forget. We are attempting to make sure an incident like this never happens again, to anyone in the industry
- * To this goal, we are engaging governments, regulators and the industry in key offshore and deepwater basins to share our knowledge and foster the dialog on how we may improve deep water drilling safety, containment and response capabilities.
- * And that's why I'm here today



4 critical factors
8 barriers failed

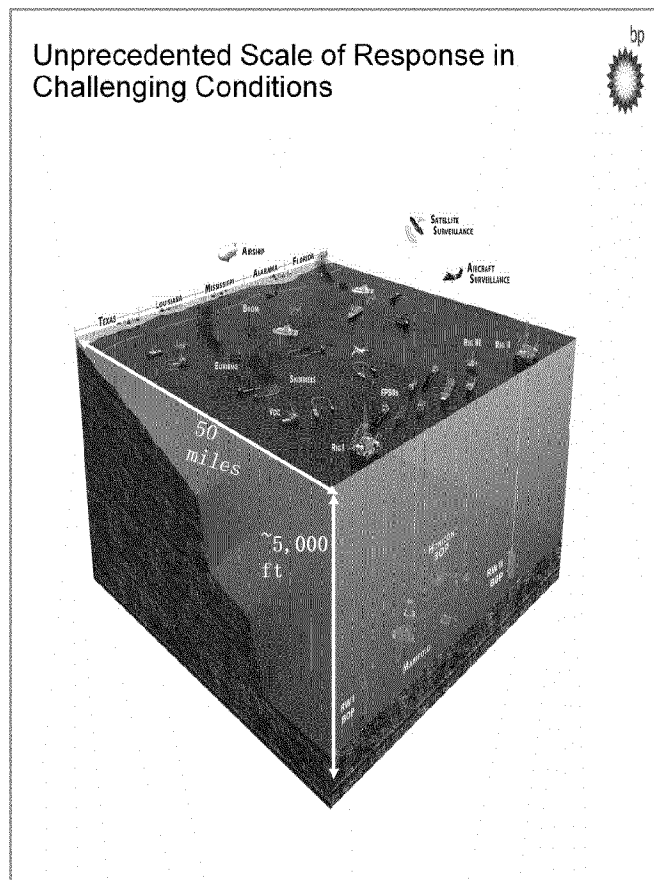


CONTEXT

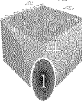
Name	Details if any	Completion
BP internal investigation team report (Bly report)		08 Sep 2010
Presidential commission report	Official name: National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. Established by Pres. Obama on May 22, 2010	11 Jan 2011
Deepwater Horizon Joint Investigation		31 Dec 2011
US Chem Safety Board Investigation	House Committee on Energy requested that US Chem Safety Board investigate blowout on June 8 2010	(not announced)
National Academy of Engineers	Interim report June 2011	December 2011
Montara Commission	Montara oil spill was an oil and gas leak that took place in the Montara oil field in the Timor Sea that occurred on Aug 21, 2009. The leak was estimated to be possibly as high as 2 mbpd and flowed for 74 days	24 Nov 2011
API task forces	Interim report released on Sep 2010.	May 2011
European Commission on Offshore Safety	Draft for recommendation sent in October 2010	Approval likely Q1 2011

TALKING POINTS

- We have learnt a tremendous amount over the past 10 months. Much of that learning came from the incident itself, our own internal investigation, and our response to the accident.
- However, we have gone well beyond that. In order to truly ensure that this incident never recurs, we are looking outward to understand the learnings that are being pointed out to us by the various investigations and commissions that have been set up, incorporating them, and helping to advance and embed them. We are already doing this with the Presidential Commission report, and will do so with the other reports as they become available.
- We also believe that, in order to be truly comprehensive, we need to draw upon the lessons learnt from similar events that have occurred elsewhere in the world (for instance., the Montara Oil Spill in Australia) and bring as many best practices into the way we operate.





- * The Deepwater Horizon response was a learning event due to its unprecedented scale, technology and complexity. It tested the limits of the industry's knowledge.
- * For the first time in history of the oil and gas industry, we had to perform unique operations at 5,000 foot water depth, 50 miles from the shore, at a pressure of 2,240 psi and a temperature of 39 deg F.
- * Beyond the technical complexity, we mounted and sustained a massive effort. To give you a sense of the scale, at its peak the response involved 48,000 responders spread across 5 states (that is an organization that is ~60% of BP's size), mobilized more than 13.5 million feet of boom (that is almost 2,500 miles), and ~6500 vessels (the Normandy landings on D-Day involved about 5,000).
- * Beyond the technical and logistical challenges was the complexity of coordination among various entities – from parishes to federal agencies. In the best of circumstances, ensuring that the right person makes the right decision with the right data can be a challenge. In the context of the response, with all the rapid change and sheer number of participating parties, this challenge was taken to a different level altogether.
- * Before I go further in my presentation, I first want to say thank you. None of this response could have been as successful as it was without the support of the many governmental agencies and regulators involved. The industry – people we usually call our competitors – pulled together in unexpected ways to help. Thanks.

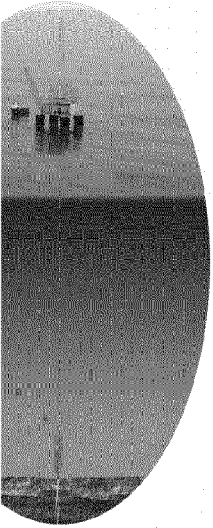


Prevention / Drilling Safety

The Highest Priority







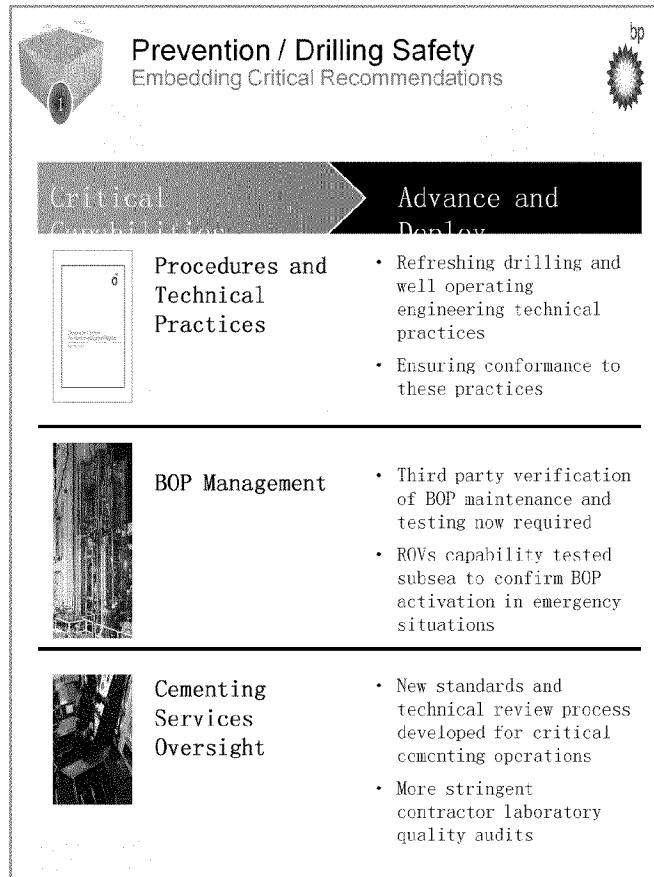
Equipment and Procedures

- Enhancing global standards for BOPs, cementing, well integrity testing, and rig audits
- Establishing rigorous well checks
- Reviewing contractor oversight relating to safety

Top to Bottom Focus on Safety and Risk Management


- Additions to BP's board
- Empowering centralized Safety and Operational Risk group
- Creating centralized Global Wells Organization to drive standardization and consistent implementation
- Reviewing employee compensation to ensure safety-first behavior is appropriately incentivized

- The most important thing that we are focusing on is prevention and drilling safety.
- I would like to spend some time describing to you the actions that we are taking, and continue to take, in the area of prevention and drilling safety.
- Essentially, there are two of the areas we are focusing on:
 - First, BP believes that the entire industry could benefit from enhanced standards for important well operations, including BOP testing, cementing, well integrity testing, rig audits, etc. BP is implementing standards internally and is working with industry groups to define industry standards. For instance, we now require additional, independent third-party verification that our BOPs can activate in an emergency
 - Second, we seek to enhance the structure of our organization with an increased focus on safety and risk management. For instance, we have now created a powerful, central safety and operational risk organization that reports directly to the CEO.




We are covering a lot of ground to further improve equipment and procedures in drilling, but there are three areas we feel are most critical:

- * First, we need to make sure that our engineering technical practices are refreshed given what we have learned from the Deepwater Horizon incident, and that we have a robust way of ensuring conformance to these practices
- * Additionally, we need to make sure that BOP management and cementing services are enhanced.
- * Within BOP management, we now have a very strong emphasis on having independent third parties verify that BOPs work the way they are meant to. Related to this, we are subsea testing ROVs to confirm that they can activate BOPs in an emergency.
- * One of the key conclusions of our investigation into the blowout was that there was weakness in cement design and testing. For this reason, we are enhancing cementing services oversight through new standards and technical approval process developed for critical cementing operations, and through stringent contractor lab quality audits



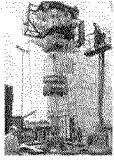


Containment

Advancing Solutions for the Industry



Critical Capabilities

Advance and Deploy

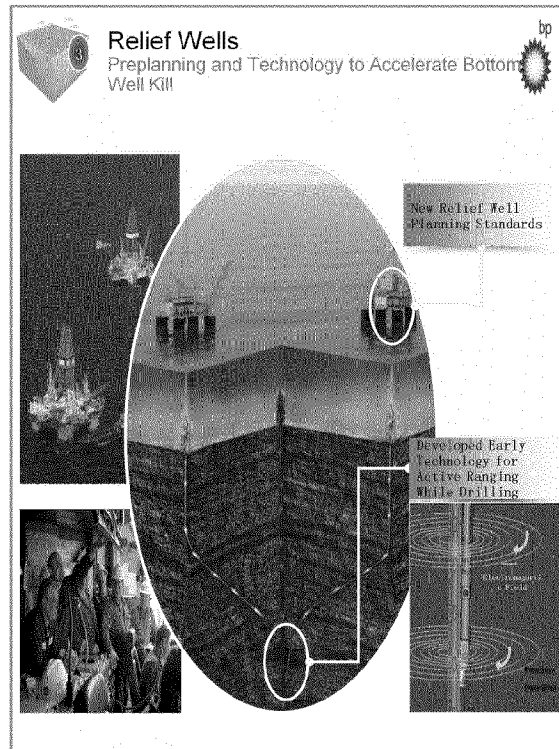
	<p>Immediate access to capping equipment for multiple scenarios</p>	<ul style="list-style-type: none"> • Developing and making next generation solutions ready for deployment • Optimizing global equipment positioning
	<p>Rapidly-deployable collection system</p>	<ul style="list-style-type: none"> • Working with industry organizations to provide access to permanent free standing riser system for global deepwater basins
	<p>Large scale simultaneous operations management</p>	<ul style="list-style-type: none"> • Codifying protocols to manage subsea ops within small area • Extending 4D capability for day-to-day operations to plan and monitor surface and sub-sea activity

There are three critical capabilities we developed within this area during the response that I would like to talk to you about today. In all three of these, we are trying to advance the current state of knowledge and thinking and embed it within our organization

- * One of our biggest learnings from Deepwater Horizon was the need to have immediate access to capping equipment. It seems intuitive that the faster you can cap the flow, the better off you are. What is less intuitive is, what are the best solutions to develop and keep ready, and how do we create and manage them so that they can be accessed by key Deepwater basins around the globe, *quickly*? Can we put it on a plane and make it portable? Do we build different equipment in each new basin? For instance, we gave away two top hats to the UK North Sea, and we are designing and building a next-generation capping stack there.
- * Now, if capping doesn't work as quickly as you would like, you need to collect the oil. Critical to this is the use of free-standing riser systems that are especially meant for deepwater applications, and can operate in the challenging conditions that the subsea world presents us. We are trying to increase access to this relatively new technology, not only in the Gulf of Mexico, but in deepwater basins across the world
- * Finally, we are trying to systemize what we learnt in large scale SimOps. We are extending the four-dimensional capability for day-to-day operations to plan and monitor surface and sub-sea activity

By the way, we are not doing this alone. We believe that the best solution to this problem can only be achieved by working together as an industry. We are going to actively find out what's best out there, work with industry to make it better, then adopt it and encourage others to do the same.

Finally, the best systems in the world are worthless without the right people and experts to use them.



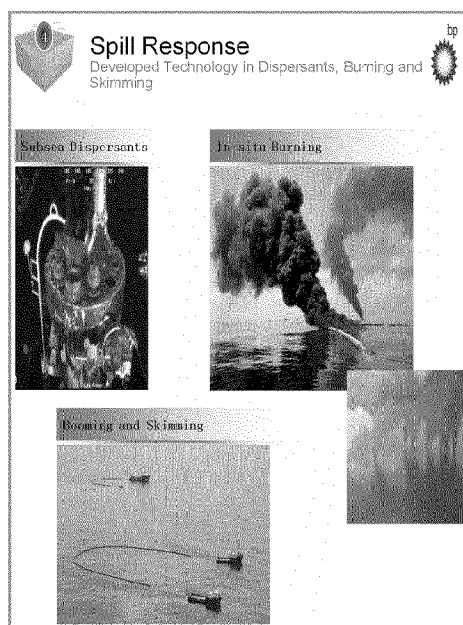
- Relief wells are drilled to intersect with the well and ultimately stop the flow of hydrocarbons by dynamically killing and cementing the well from the bottom. During the response we drilled 2 relief wells in parallel with the first well intersecting as planned and confirming that we had already killed the well from the top.
- In the GoM, we had access to a number of vessels/rigs and as a result, when the incident occurred, we were able to spud the first relief well 12 days after the incident. Everywhere else in the world we may not be as fortunate and thus advance planning is critical.
- Going forward, there are 2 key areas we are focusing on to achieve time savings on relief wells:
 - 1) Preplanning, and 2) Ranging technology

Planning and drilling: secure access to rigs and related equipment

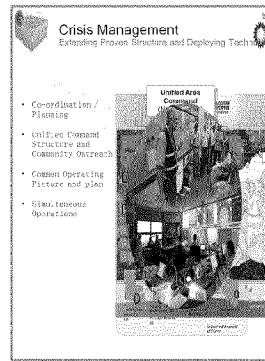
- We have revised and improved our guidelines for relief well contingency planning. The new guidelines require:
 - Identification of at least 2 relief well surface locations that have been verified for use
 - Identification of high level dynamic kill requirements
 - Creation of conceptual relief well design
 - Securing access to relief well rigs and equipment prior to new well drilling

Intersecting

- We used existing magnetic ranging technology for the relief well that intersected the Macondo well. However, during the response, we simultaneously worked on Active Ranging While Drilling as well on one of land based wells in WY.
- Real time technologies can reduce the time required for ranging surveys from 2 days to ~6 hours.

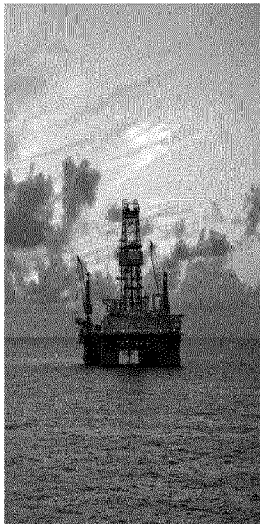


- “Spill response” is the fourth area in which we gained significant knowledge during the spill - it focuses on minimizing the environmental impact of oil through various dispersing, recovery, and removal methods.
- Before Macondo, industry had limited spill response capabilities in place in the GOM and technology had evolved very little since the Exxon Valdez spill.
- Significant advancements were made during the Macondo accident and continue to be enhanced. There are 3 areas I would like to highlight:
 - 1) **Subsea dispersants.** Dispersants proved to be highly effective in accelerating biodegradation. This was the first large scale subsea dispersant use and based on our success, we are pushing ahead with -
 - Developing new systems that improve effectiveness, (???)
 - Advancing scientific knowledge of subsea use, by better understanding the effectiveness of different dispersants on various oil types and sea levels, as well as better understanding its environmental impact.
 - 2) **Large-scale in-situ burning.** We performed in-situ burning at a much larger scale than was ever done before, developing new techniques in the process which allowed us to complete more than 400 burns and deploy up to 14 teams at the same time. Going forward, we are now:
 - Codifying new techniques developed during the response to contain, control and direct burns.
 - Continuing to invest in fire boom technologies
 - 3) **Enhanced Booming and Skimming** — This was the largest skimming and booming response in US history. We deployed more than 60 open-water skimmers at the peak of the response and approx. 14m ft of boom. We developed new skimming techniques to enhance offshore skimming capabilities, including: Enhanced booming, Centrifuge separation of fluid on skimming vessels and barges. Going forward, we are
 - Helping boost response capability of organizations around the world by incorporating the new enhanced booming techniques developed during the response
 - Developing internal guidance to ensure access to enhanced systems for all global basins in which we operate
 - Codified procedures to optimize positioning of enhanced skimming vessels through use of



- Crisis Mng' t is closely tied to spill response. It is the overall co-ordination of the response to facilitate effective decision-making through the systematic organization of people, information & technology and communicating with media, locals, and gov' t.
- This was an area that BP didn' t get right at the beginning. It turned to be much larger and much faster paced than we had anticipated and we got behind early. It was obvious early on that some methods of the past did not work well in the new, high connected world we live in today. We learned a lot through out the response - including what we need to be prepared to do differently going forward.
- However, we have now advanced the know how on crisis management at scale. Some of our key areas with learnings include:
 1. Co-ordination / Planning & Incident Command Structure (ICS) and Common Operating Plan (COP):
 - * Coordination and Pre-planning is key to a successful large scale response. Having the right plans in place and Drilling and practicing in advance is essential. It is also important in having a very clear operating structure and knowing who makes decisions.
 - * The ICS it proved highly effective in activating the response team and rapidly scaling up the effort to ~48,000 responders. We developed a network of 19 local branches (with staff sizes varying from 35 to around 2,300) to engage local stakeholders more effectively, and decentralize decision making to improve execution efficiency.
 - * It was crucial that we had 1 view that all decision makers were using -- we developed a Common Operating Picture (COP) -- It was a multi-source, multi-site, technology platform to enable real-time 3D view of the response effort. It integrated views across more than 200 previously disparate data types to provide an instant, interactive and accurate visual of the spill status and response activities for all responders.
 2. Simultaneous Operations - Managing a large fleet of vessels/ROVs close to the source efficiently and safe was critical, and a huge source of learning - certainly for us, and we think for the industry as well.
 - We now have robust, proven systems and tools for planning and implementing the management of large numbers of vessels at extremely close quarters, including storyboarding and an Automatic Identification Software (AIS) as an enabling technology for real-time visualization and management of offshore marine operations.
 - We are advancing this further by developing a 4D simulation platform that can track objects in space and across time, including projecting future location.
 3. Rapid Response Structures: We expanded upon previous structures and built new ones to more quickly respond: A couple examples of this include the use of
 - Vessels of Opportunity (V00) program which involves the local shipmasters and crew for their knowledge of local shorelines and insight on ecosystems, weather and currents. We involved over 3200 V00 during the response.
 - Shoreline Clean-Up Assessment Teams (SCATs) and Rapid Assessment Team (RATs) -- these groups, composed of scientists from government agencies and BP, are each led by a qualified academic from a state university -- they played a critical role in the preparation, planning and validation of shoreline protection and treatment (assessed ~ 8,000 miles of shoreline)
 - 4) Community Outreach: we came up with a new way of communicating with locals on what was going on on their specific beachfront (had townhalls, set up community outreach centers and had multiple walk in claim centers). It was obvious that methods of crisis management in the past no longer worked well for this large scale response. We learnt a lot and became more proactive with

Committed to Enhancing Deepwater Safety



Continuing to develop capabilities across the 5 critical areas. Focus on

- Technology innovation
- Further enhanced standards in drilling safety
- Ensuring inventory of response equipment and consumables in global BP deepwater basins
- Sharing our lessons learned around the world

We have gained significant knowledge on each one of the 5 critical areas I have just covered (Prevention and drilling safety, Containment, Relief Wells, Spill Response and Crisis Management), and we are determined to continue advancing our capabilities in those areas to enhance deepwater safety.

Our primary focus is now on:

- Technology innovation
- Helping to build more robust standards in drilling safety
- Ensuring inventory of response equipment and consumables in global BP deepwater basins