

## **Frequently Asked Questions: Deepwater Drilling and Gulf of Mexico Oil Spill**

### **What caused the Macondo Well blowout and oil spill in the Gulf of Mexico?**

The causes of the blowout are still being investigated. It is likely that multiple failures of processes, systems and equipment resulted in this catastrophic event. Exhaustive reviews are being undertaken by the joint US Coast Guard, Minerals Management Service, Marine Board of Inquiry and the President's National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. In addition, industry task forces have been formed to review many specific aspects of offshore operations. Although we don't know all the factors that caused the accident and it is tempting to rush to judgment, we do know that this industry takes safety and environmental stewardship very seriously. When we do learn how this occurred, the offshore industry will work together to ensure that this type of event never happens again anywhere in the world.

### **What is SPE doing to help in this crisis?**

SPE members will have an active role to play in addressing technical issues resulting from the accident and in sharing any new best practices that will emerge from the ongoing investigations.

SPE is not involved as a society in the emergency response to stop the well and mitigate the spill, although many SPE members are part of the emergency response team. Two SPE board members are among the 15 contributors and reviewers of information contained in the US Department of Interior report relating to the accident (INCREASED SAFETY MEASURES FOR ENERGY DEVELOPMENT ON THE OUTER CONTINENTAL SHELF, May 27, 2010).

There are several hundred qualified people from over 50 companies who are working with BP and the government agencies to resolve the situation.

SPE's mission is sharing technical knowledge, and we help the industry to learn from incidents like this. SPE serves an important role in providing a forum for discussions on changes needed in equipment, operating practices, training and other recommendations on how to prevent or reduce the impact of future oil spills.

### **How safe is offshore drilling?**

A wide range of safety statistics show a strong record of operating safely offshore. More than 50,000 wells have been drilled in the US Outer Continental Shelf (OCS), including 4,000 in more than 1,000 feet of water.

The industry has been using floating rigs with subsea blowout preventers since the mid-1960s.

The last major incident resulting in oil coming ashore from a blowout in the US OCS occurred 41 years ago, in 1969. From 1970 until April 2010, a total of 1,800 barrels of oil spilled due to blowouts. All measurements of safety have shown a steady level of improvement since modern Minerals Management Service regulations came into effect in

1970. The safety record in the Gulf of Mexico for offshore workers is much better than that of the average worker in the US, and the amount of oil spilled is significantly less than that of commercial shipping or petroleum tankers.

Over the past 45 years, 17.5 billion barrels of crude oil and condensate have been produced in US federal offshore waters, while 532,000 barrels have been spilled, meaning 30.3 barrels have spilled per 1 million barrels produced.

### **How big is this spill?**

The Macondo blowout is the largest offshore oil spill in US history. It is not the largest spill in world history, nor the largest spill in US history.

- The largest spill in world history was likely during the 1991 gulf war, when the Iraqi army caused between 5.5 and 11 million barrels to be released.
- The largest spill in US history was onshore in Kern, California, when 9 million barrels was spilled onshore in 1910 and 1911.
- The largest spill to date in the Gulf of Mexico was the 1979-1980 Ixtoc well blow out in Mexican waters. That well released between 3.3 and 3.5 million barrels.

How the Macondo well will end up comparing with these historic spills is not known at this time. Nobody knows for certain how much oil has spilled thus far and it is not clear when the relief wells being drilled will be able to stop the flow. Currently, much of the flow from the well is being captured so that it does not enter the ocean, and additional capacity to collect the oil is being brought online with another vessel. However, IF the well were to spill in the range of 10,000 to 50,000 barrels per day from 20 April thru 20 August, it would release some 1.2 to 6.1 million barrels. Of course, we'll have much better estimates in the near future.

It is also possible to compare the Macondo spill with what is released under normal circumstances. The National Research Council 2003 report, "Oil in the Seas III" estimates that each year about 900,000 barrels of oil are released into the Gulf of Mexico from natural seeps, oil that leaks out through cracks in the rock and sediment below the ocean floor. Another 200,000 barrels of oil are released from non-oil production related human activities (petroleum products used on land that wash into the water, fuel leaks from recreational boats, oil spills from ships, and other sources).

### **Why is it taking so long to stop the well?**

There are considerable engineering challenges in working in 5,000 feet of water, in the dark, using robotic vehicles. The water at that depth is about 40°F, and the water pressure is enough to crush a submarine. There is a flow of high pressure oil and gas to contend with and extremely high reservoir pressures, which make controlling the flow difficult. There are many unknowns, including the condition of the damaged well. The containment systems that BP is using have never before been deployed at these depths or under these conditions. Drilling the two relief wells is the best approach for permanently stopping the flow, but that takes time.

### **Why wasn't the oil industry better prepared to handle a blowout in the deepwater?**

The Deepwater Horizon accident is unprecedented, and a comprehensive study of methods for a more rapid and effective response to a deepwater blowout must be undertaken. Already, the industry has come together, with all of the major companies' staffs and others working side by side with BP's staff. The offshore industry will learn from this incident and make changes in operating practices, training and equipment to ensure that we are better prepared to handle a subsea flow from a failed blowout preventer and riser. However, it is impossible to anticipate the specific circumstances which may surround such a failure. Any prior preparation will have to be modified to fit these circumstances.

### **Why is deepwater offshore drilling necessary?**

In 2009, production from the US OCS accounted for 31 percent of total domestic oil production and 11 percent of total domestic, marketed natural gas production. Deepwater development is a key component of the US's energy supply, with 80 percent of US OCS offshore oil production and 45 percent of US OCS natural gas production in water depths greater than 1,000 feet.

The deepwater GOM supplied approximately 25 percent of the US's domestic oil and 14 percent of its domestic gas production in 2009. The 20 most prolific producing blocks in the GOM are located in deepwater.

While drilling at depths of 5,000 feet or more was almost unheard-of 20 years ago, about 6 percent of world oil production now comes from deepwater wells, according to research from IHS Cambridge Energy Research Associations (CERA) on "The Role of Deepwater Production in Global Oil Supply." Offshore oil is expected to make up some 40 percent of world production at the end of this decade.

Globally, 14,000 deepwater wells have been drilled. In 2008, the total amount of oil and natural gas discovered in deep water globally exceeded the volume found onshore and in shallow water combined, according to CERA.

### **What changes are needed to keep this from happening again?**

Safety can be increased quickly with the implementation of safety recommendations made by the US Department of Interior, including verifying compliance with existing regulations and a National Safety Alert, recertification of all BOP equipment, and new casing and cement design requirements. Additional safety requirements have been proposed for implementation within one year, including taking a fresh look at how to deal with a deepwater blowout. Other changes may be recommended after the accident investigation is completed, and the root causes of the blowout are determined. SPE will provide a forum for discussion on what changes are needed in both equipment and operating practices.

**The US Department of Interior has proposed a moratorium on drilling of almost all wells in greater than 500 feet of water. What are some of the safety or technical issues that impact this decision?**

The moratorium would apply to all drilling in greater than 500 feet of water except for gas injection wells, water injection wells, water disposal wells and workovers.

On the one hand, a moratorium provides time for DOI to ensure new procedures are in place to make operations safer. DOI organized a group of expert reviewers and contributors who agreed to a list of recommendations to make drilling safer. Some of these recommendations take time to study and adopt into regulations to assure compliance. In some cases the time frames may be as long as 6 months and even longer in one or two cases.

On the other hand, a drilling moratorium can itself create additional safety risks. A moratorium can increase risk by:

1. Forcing existing drilling operations to stop as soon as possible without finishing the drilling of wells. Discontinuous operations can increase risk.
2. It is possible that the best rigs could leave the GOM first and come back last, creating a negative impact on the overall quality of the fleet.
3. Ceasing operations for six months and longer could lead to a loss of experienced drilling staff. Staff experience is a key factor in safe operations.
4. More crude oil would have to be imported by tanker and the risk of spills during tanker transport is greater than from drilling.