

ABSTRACT

Dissecting a Disaster: The *Deepwater Horizon* Oil Spill

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In April 2010, an explosion on the *Deepwater Horizon* oil rig set off a chain of events that resulted in millions of gallons of crude oil gushing into the waters of the Gulf of Mexico for nearly three months. This disaster would ultimately be the largest and most catastrophic oil spill in the history of the United States. Because of the enormity and complexity of the spill, many do not fully grasp the nature of what occurred and what is still ongoing. This research attempts to present a clear and detailed picture of the *Deepwater Horizon* oil spill and the multitude of events that followed. Provided is an in-depth study of the explosion on the oil rig, the containment and cleanup efforts of the spill, an analysis of the ecological ramifications, and a breakdown of the continuing litigation and legal battles that have yet to be resolved.

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DISSECTING A DISASTER:
THE DEEPWATER HORIZON OIL SPILL

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CHAPTER ONE

Crisis in the Gulf

A Brief Overview

On April 20, 2010, fifty miles offshore of Louisiana, an explosion on the semi-submersible oil rig the *Deepwater Horizon* set-off a chain of cataclysmic events that killed eleven crew members and resulted in the worst environmental disaster the United States has ever seen. Audiences from all over the world watched as experts struggled and failed to cap the blown out well while thousands of barrels of crude oil spewed into the waters of the Gulf of Mexico with each passing day. While the containment and clean-up response was timely, corralling the never-ending flow of oil that was being released into the water soon became a daunting task. When the well was finally capped in July, 86 days later, an estimated 4.9 million barrels of oil had been dumped into the Gulf and the public wanted answers.¹

After intensive investigations, faulty cementing and casing were determined to be the cause of the blowout and the failure of the blowout preventer, a key piece of safety equipment, was responsible for the magnitude of the spill after it failed to stop the out of control well. British Petroleum (BP), the energy company to whom the *Deepwater Horizon* was leased, claimed responsibility for the catastrophe and pledged to pay for the damages sustained to the environment and to the industries in the area. Though compensation has been paid out to the parties who were affected economically, money

¹ Cavnar, Bob. *Disaster on the Horizon: High Stakes, High Risks, and the Story Behind the Deepwater Well Blowout*. White River Junction, Vermont: Chelsea Green Publishing, 2010. Print.

cannot fully restore the damage to the fragile ecosystem and many agree that the full effects of the spill will not be felt until many years later.²

Background

Transocean Ltd., which boasts as the world's largest offshore drilling contractor, was under contract to BP, the third-largest energy company in the world, to drill a \$100 million exploratory well nicknamed "the Macondo" located on the Mississippi Canyon Block 252 in the Gulf of Mexico.³ BP had purchased the Mississippi Canyon Block 252 in March 2008, and the Macondo well was "spud," or began, on October 7, 2009 using Transocean's rig the *Marianas*.⁴ Drilling was suspended shortly thereafter in late November when the rig sustained damage from Hurricane Ida and required a return to port for repairs. Another rig leased by BP from Transocean, named the *Deepwater Horizon*, was sent to complete the drilling on the Macondo.⁵

The *Deepwater Horizon* was a state-of-the-art, semi-submersible oil rig built by Hyundai in March 2000 for Reading & Bates Falcon, a drilling company who eventually merged with the oil giant Transocean.⁶ Powered by six massive diesel engines, it was 400 feet long and 300 feet wide and had the capacity to house and feed 126 employees who lived and worked on the rig. The *Deepwater Horizon* holds the world record for the deepest oil well ever drilled at 35,050 feet and it was capable of operating in 8,000 feet of

² Cleveland, Cutler J. "Deepwater Horizon Oil Spill." *Encyclopedia of Earth* 10 Feb 2011. Web. 25 Mar 2011.

³ Cavnar 16

⁴ Cavnar 20

⁵ Cavnar 23

⁶ Cleveland "Deepwater Horizon"

water.⁷ Surprisingly, the rig also held a seven year record of no lost time incidents which means the rig had been accident-free for a seven year period, an impressive achievement in the oil business. In January 2010, operations finally resumed at the Macondo well when the *Deepwater Horizon* arrived on site (figure 1).⁸



Figure 1: The location of the *Deepwater Horizon*, 50 miles off the shore of Louisiana. From, “Deepwater Horizon Oil Spill: One Year Later.” *Encyclopaedia Britannica Blog* 20 Apr 2011. Web. 10 May 2011.

From the beginning, the Macondo well caused trouble for the crew of the *Deepwater Horizon* with problems ranging from gas kicks to stuck drill pipes. On one occasion a pipe became so immovable that the crew decided to bypass the pipe and drill around it making a new hole.⁹ After months of battling the temperamental well, they finally reached their target depth of 18,300 feet¹⁰ and Halliburton, an integrated service

⁷ Cavnar 17-18

⁸ Cavnar 23

company hired by BP, began casing the Macondo and cementing it so the well could be capped and used for later production.

However, before a cap could be placed on the well, it had to undergo two final tests. A positive test and a negative test needed to be performed to ensure the casing and cementing was successful. The positive test applied pressure down into the casing to make sure the cement was holding, and the negative test looked for leaks coming into the well by relieving pressure from the well to see if there was any flow into it. The negative test is the more important of the two tests and the results of this test on the Macondo well became an issue of intense investigation after the blowout.¹¹

The results of the negative tests run on the Macondo well are unclear. What is known is that at least two tests were performed with the results unknown for several reasons: 1) they were not recorded in the drilling report, 2) nearly all the crew members who were involved in performing the tests were killed in the accident, and 3) the survivors have told conflicting stories.¹² It is understood that there were several discrepancies with the results of the first negative test so a second negative test was run; whether this second test was successful is not known. Whatever the results were, the *Deepwater Horizon's* crew was instructed to begin displacing the riser pipe, a pipe that connects the rig to the well (figure 2), and the employees for Halliburton were alerted to prepare the cement plug to seal the well.¹³

⁹ Cavnar 24-25

¹⁰ Cavnar 25

¹¹ Cavnar 28-29

¹² Cavnar 29

¹³ Cavnar 30-31

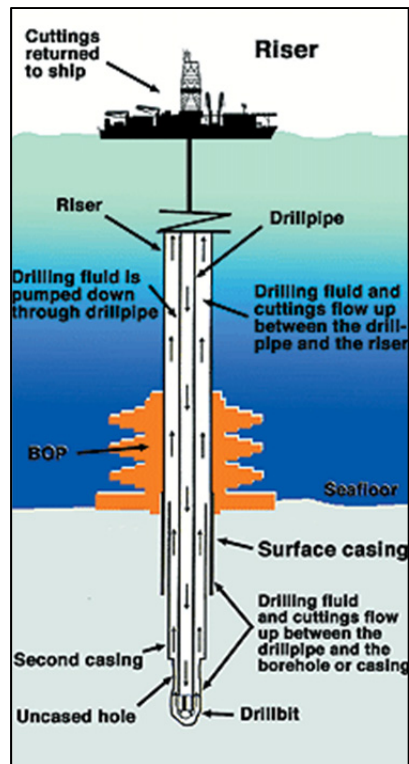


Figure 2: A floating oil rig much like the *Deepwater Horizon*. Also pictured is the riser pipe and the blowout preventer (BOP). The riser pipe has been magnified so the internal components and drill pipe are visible. From, “Scientists Drill a Mile Into Active Deep Sea Fault Zone.” *Pocketburgers.com* 31 July 2009. Web. 10 May 2011.

That night, April 20th, at approximately 9:50 p.m., the Macondo well blew pushing out sea water, mud, methane gas, and oil up the riser pipe to the rig.¹⁴ The methane gas was sucked into the number three engine of the *Deepwater Horizon* causing the engine to explode and the gas to ignite. Several crew members who were frantically working on the drill floor to “close in” the well, or stop the flow of oil, were incinerated. The fire intensified as oil and gas continued to flow out of the riser pipe and it quickly engulfed the entire drill floor.¹⁵ After a failed attempt to activate the emergency

¹⁴ Cleveland “The Deepwater Horizon”

¹⁵ Cavnar 12

disconnect system (EDS) which would have moved the rig away from the blown-out well, disconnected the riser pipe from the top of the blowout preventer (BOP), and activated the BOP,¹⁶ the surviving crew abandoned ship.¹⁷ When the crew had made it ashore it was obvious that several men were missing. A search party was dispatched but the men were never found. Eleven of the 126 crew members were pronounced dead several days later after the search and rescue mission was called off.¹⁸

The fire on the rig burned for more than a day until it sank 1300 feet from the well on April 22, 2010. As the *Deepwater Horizon* sank, the riser pipe kinked in two places; the rig was now leaking oil from three locations. Oil was spewing out of the end of the riser pipe, the end of the drill pipe, and the top of the BOP.¹⁹ The worst leak was at the well head, where the BOP was located (figure 3).

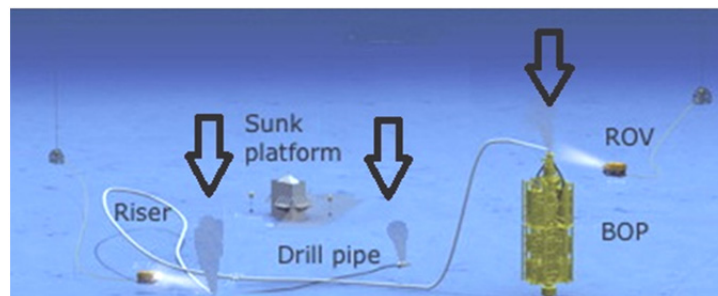


Figure 3: The seafloor after the *Deepwater Horizon* sank. The oil leaks are designated by the arrows. From, “Investigating the Cause of the Deepwater Horizon Blowout.” *The New York Times* 21 June 2010. Web. 28 Apr 2011.

¹⁶ Cavnar 12

¹⁷ Cavnar 19

¹⁸ Cleveland “The Deepwater Horizon”

¹⁹ “2010 BP Oil Platform Spill.” *Don’s Notes Home Page* 17 June 2010. Web. 29 Mar 2011.

The blowout was thought to be attributed to the cement and the casing that was used in the well. It is imperative that the cementing is performed properly because it is the first line of defense against blowouts. Cementing provides pressure stability in the well. If the integrity of the cementing job is compromised, the well could become unstable. There is not a federal regulation for the type of cement used in deepwater drilling but energy companies are advised to follow the American Petroleum Institute's (API) procedures. Halliburton's operators, acting with BP's permission, deviated from API and used nitrified cement, which is lightweight and not generally used as completion cement.²⁰ The operators on the rig also employed one long string of casing which was not the safest design to use but it was more cost efficient and saved time. Finally, BP ignored Halliburton's recommendations to run 21 centralizers, devices that keep the drill pipe centered in the riser pipe, and instead ran only six.²¹ Despite the errors of the operating companies, there are safety systems in place to curtail a blowout once it has begun. The failure of these systems on the rig can be blamed for the enormity of the disaster in the Gulf.

BOPs and other Failures

Every safety system on the *Deepwater Horizon* foundered after the explosion. Not even the phones or radios on the rig were operational. The reason for this massive failure remains unknown; however, it is unmistakable that the colossal scale of the oil spill was a result of the BOP's failure to shut in the well.²²

²⁰ Cleveland "The Deepwater Horizon"

²¹ Cavnar 27

²² Cavnar 34

The BOP is the last line of defense in a well blowout. It was invented by Cameron International, a company based out of Texas, that provides flow equipment to oil, gas, and other process industries. The company manufactured the BOP used at the Macondo well site.²³ The BOP was designed to cut through casing and shear through pipe to shut off a well. It contained hydraulic rams that act as colossal clamps which pinch drill pipe shut to stop the flow of oil from a blown out well (figure 4). Also located on a BOP is an annular preventer which inflates around a pipe and holds back well pressure (imagine a donut inflating); the rams and the annular preventer work together to close in a well (figure 5).²⁴ The BOP used by the *Deepwater Horizon* should have activated when the EDS was activated but that did not occur because the EDS was a failure.²⁵ Moreover, the BOP should have again been triggered when it lost contact with the *Deepwater Horizon* in the fire, but that too failed to happen. The malfunction of the BOP is thought to be attributed to several actions taken by BP and Transocean.

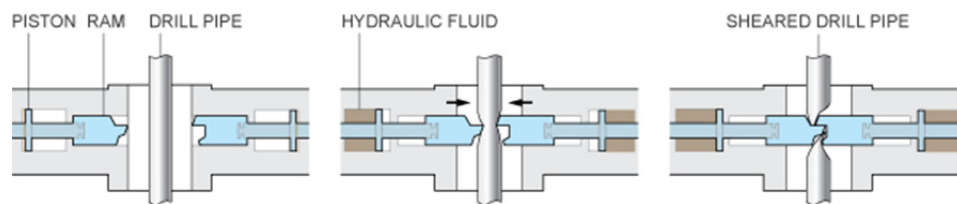


Figure 4: How a ram works to close in a blown out well. The piston rams are moved by hydraulic fluid and the rams meet together, effectively pinching a drill pipe closed. From, “Investigating the Cause of the Deepwater Horizon Blowout.” *The New York Times* 21 June 2010. Web. 28 Apr 2011.

²³ *Inquiry into the Deepwater Horizon Gulf Coast Oil Spill: Committee on Energy and Commerce*. 2010. Film.

²⁴ Cavnar 34-35

²⁵ Cavnar 37

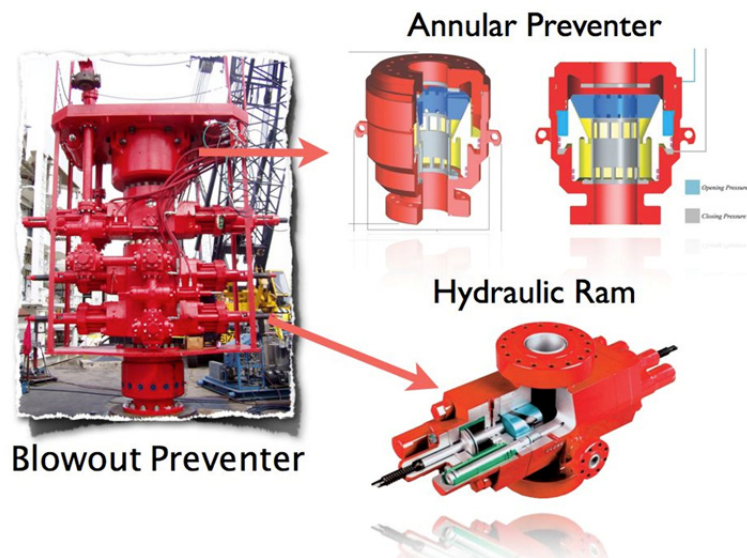


Figure 5: A blowout preventer with the annular preventer and hydraulic rams. From, "Oil Spill's Failure Nexus : The Blowout Preventer." *Watercrunch*. 03 May 2010. Web. 25 Apr. 2012.

First, BP and Transocean did not follow the then Minerals Management Service (MMS) regulations in regards to the BOP. According to MMS regulation, a BOP must be tested every two weeks to be sure it is in proper working order. Two separate tests are performed on the yellow and blue control pods located on the BOP and if either test is failed, operations must cease until the BOP can be repaired (figure 6). These regulations were not followed by either BP or Transocean.²⁶ Second, BP was aware of a leak on the yellow control pod of the BOP but they and Transocean continued operations anyway by disabling the yellow pod all together. Finally, when experts were desperately trying to shut in the blown out well they realized that a ram on the BOP had been modified but Transocean had failed to properly document the changes.²⁷ It is a possibility that these

²⁶ Cavnar 40

²⁷ Cavnar 41-42

reconfigurations could have ultimately been the reason for the BOP's failure, but there is no way to be sure.

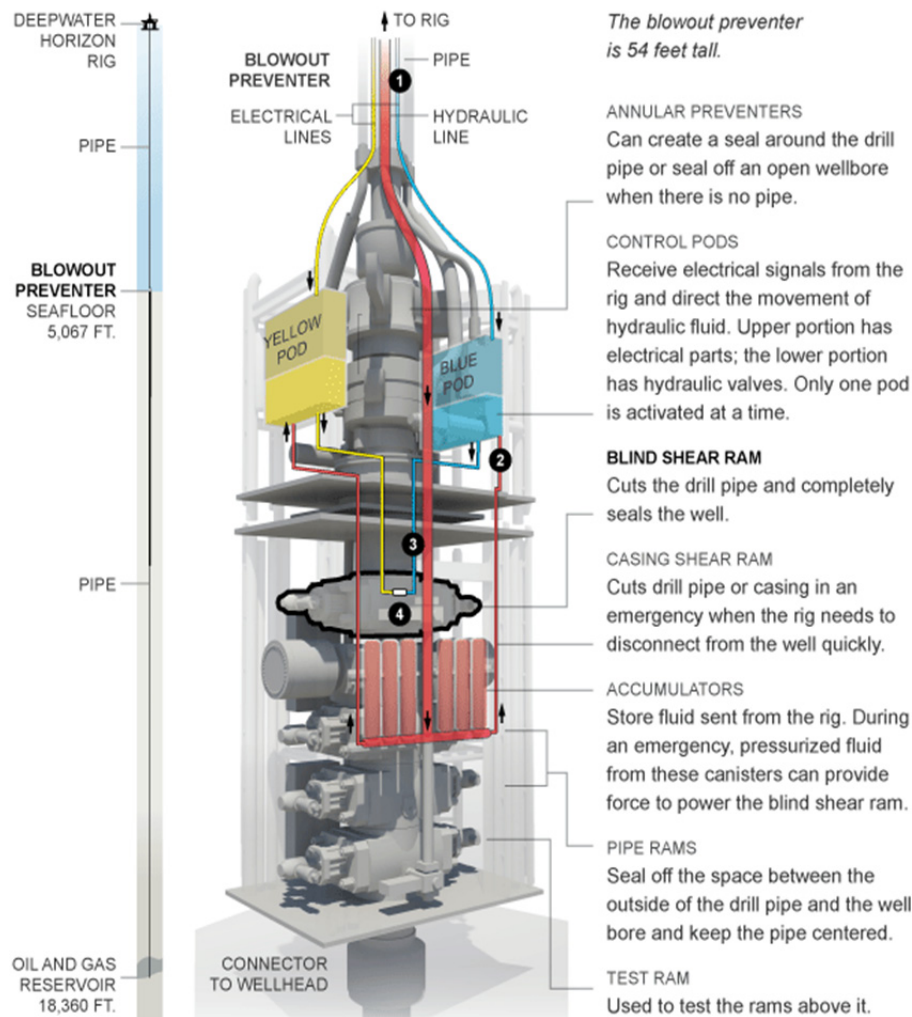


Figure 6: The internal components of the blowout preventer used on the Macondo well. The function of each component is labeled next to each instrument. To the left of the blowout preventer is a diagram of where the blowout preventer was located in relation to the *Deepwater Horizon* and the oil and gas reservoir. From, "Investigating the Cause of the Deepwater Horizon Blowout." *The New York Times* 21 June 2010. Web. 28 Apr 2011.

If at First You Don't Succeed

Activating the BOP

In the beginning stages of the spill, BP attempted to activate the BOP using remotely operated vehicles (ROVs) to access a ram on the BOP stack, but these attempts failed. They wasted an entire day trying to close the wrong ram; of course, they did not realize it was the wrong ram at the time.²⁸ The undocumented modifications made by Transocean confused the individuals who were working to get the ram to close. In reality, the ram which they were struggling to operate was a test ram that was designed to test the other rams whose function is to actually pinch the drill pipe shut.²⁹ Essentially, the test ram is insignificant when a well is blowing out (figure 6). Finally, BP managed to fire all the rams on the BOP, but it had suffered damage to the internal components from the oil flowing through it, and the stuck drill pipe that was left in the well so many months before was now lodged inside the stack. Shutting in the BOP was impossible.

Capping the Well

Over the next 86 days, BP repeatedly tried and failed to cap the well and stifle the flow of oil that was pouring into the Gulf of Mexico. After shutting the BOP was deemed impossible, they tried to place a containment dome over the top of the BOP to collect the oil and filter it up to a containment ship on the surface.³⁰ The dome was four

²⁸ Cavnar 85

²⁹ Cavnar 42

³⁰ Avery, Heidi. "The Ongoing Administration-Wide Response to the Deepwater BP Oil Spill: The White House." *The White House Blog* 5 May 2010. Web. 25 Mar 2011.

stories high and weighed 70 tons.³¹ It was also an immediate failure. The dome quickly became clogged with hydrates, which are crystals that form when Methane gas mixes with water.³² Oil continued to pour out of the sides of the containment dome and the project was quickly abandoned.³³

In the meantime, BP began drilling two relief wells (figure 7). A relief well is the only sure way to “kill,” or stop a blown out well. BP made the decision to drill two wells so they would have a backup well in case the first relief well was not a success. A relief well is spud near a blown out well and it is drilled to the same depth, but at an angle so ultimately the two wells will intersect. Mud and cement is then pumped down into the relief well and into the blown out well, effectively killing the blown out well. Though a relief well is really the only sure way to stop a blown out well,³⁴ it requires time and at the rate the oil slick was growing, no one could afford to wait. BP continued to push on with other endeavors to cap the well in hopes they could curtail the flow.

³¹ Urbina, Ian, Justin Gillis, and Clifford Krauss. "On Defensive, BP Readies Dome to Contain Spill." *New York Times*. 03 May 2010. Web. 27 June 2011.

³² Cleveland “The Deepwater Horizon”

³³ Cavnar 123

³⁴ Cavnar 146

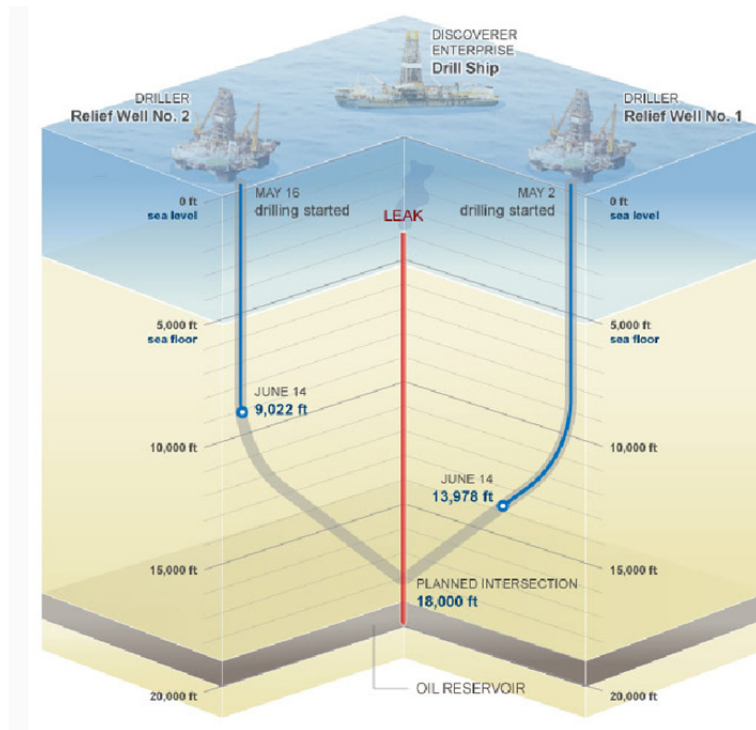


Figure 7: Relief wells drilled by BP. From, “BP Oil Response.” *BP* 16 June 2010. Web. 10 May 2011.

After the containment dome failed, a Riser Insertion Tube Tool (RITT) was employed.³⁵ In essence, the RITT was an enormous straw that was inserted into the end of the riser pipe to siphon the oil up to a containment vessel at the surface. The tool was marginally effective and it collected around most of the oil that was leaking from the end of the riser.³⁶ The top of the BOP was still spilling large amounts of oil so next BP attempted a “top kill” by employing what the oil industry calls a “junk shot.” BP pumped shredded tires, golf balls, and knotted rope (hence the name “junk shot”) into the top of

³⁵ Avery

³⁶ “BP Response Timeline”

the BOP (thus the name “top kill”) to try to slow down the flow of oil so they could pump highly pressurized mud after the junk to try and kill the well. It too was a failure.³⁷

After the top kill, BP tried a tightly fitting Lower Marine Riser Package (LMRP) cap.³⁸ To properly set this cap and stop the oil flow, it required BP to cleanly cut and remove the riser pipe from the top of the BOP. Using a diamond encrusted wire saw, BP proceeded with their plans. As they were cutting through the pipe, the wire on the saw became jammed because of the loose drill pipe inside the riser pipe (refer to figure 1). They had to use hydraulic shears to rip and tear through the remainder of the pipe which left a jagged edge; now the LMRP cap would not fit over the ragged pipe. Luckily BP had another, larger cap prepared in case the LMRP cap did not work. However, this new cap also leaked a fair amount of oil because it was not as snug fitting as it should have been. All in all, the larger LMRP cap was collecting most of the oil from the top of the BOP, but the well was still spewing oil into the gulf (figure 8).³⁹

³⁷ Cavnar 125

³⁸ “BP Response Timeline”

³⁹ Cleveland “The Deepwater Horizon”

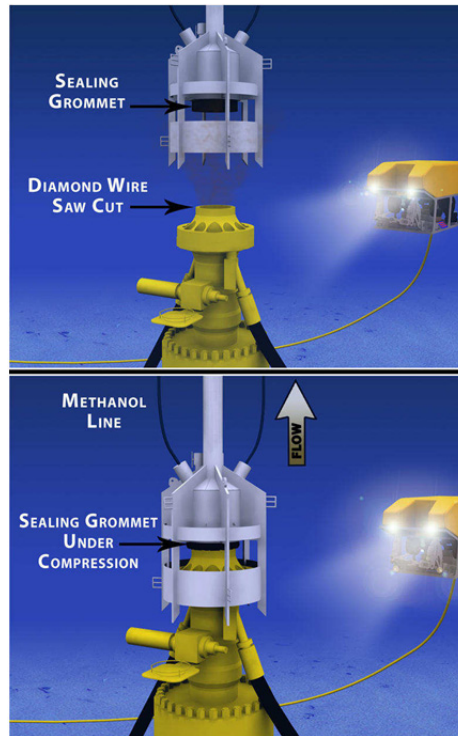


Figure 8: The placement of the LMRP cap on the BOP. From, "BP's Lower Marine Riser Package (LMRP) Cap Photos." *Something Interesting*. 14 Jan. 2010. Web. 12 Apr. 2012.

Finally on July 12th, BP replaced the ill-fitting LMRP cap with a more tightly fitted sealing cap.⁴⁰ This marked the first time in 86 days that oil had not been leaking into the Gulf of Mexico.⁴¹ BP could breathe a sigh of relief for the moment; however, there was still work to be done. Capping the well was just a temporary fix. BP, to ensure the well would remain inactive, began a “static kill” on August 3rd. A static kill is essentially a top kill, but with a closed well head, meaning the well is no longer flowing oil. BP pumped several thousand barrels of mud into the well, and on August 6th they

⁴⁰ “BP Response Timeline”

⁴¹ Cavnar 131

followed the mud with cement.⁴² Though the Macondo was not leaking any oil, they still had to pressure test it to be sure that it was in fact static.⁴³

The pressure tests revealed that the well was releasing bubbles of methane gas, indicating that the well was not completely static and was still exerting pressure. BP decided they were going to remove the old BOP and replace it with a new one. With much success, on September 4th, BP performed the BOP swap.⁴⁴ Later that month, the relief well finally intercepted the Macondo well and the final kill took place on September 19th.⁴⁵ The well which had caused so much destruction was finally quiet. Though the well had stopped flowing oil, the battle was far from finished.

The Mysterious Case of the Flow Rates

While BP battled to cap the raging Macondo well, they also battled to keep the flow rate at which the well was leaking a secret. In the early stages of the spill, BP claimed the well was flowing around 1,000 bpd.⁴⁶ One barrel of crude oil roughly equals 42 U.S. gallons of oil so the estimate of 1,000 bpd is actually quite small for a body of water the size of the Gulf of Mexico. Soon, however, scientists and the media questioned the estimate as the oil slick grew rapidly larger. A week after the spill, BP increased their flow rate estimates to 5,000 bpd and it remained so for 5 weeks.⁴⁷

⁴² Cavnar 134-35

⁴³ Cleveland “The Deepwater Horizon”

⁴⁴ Cavnar 136

⁴⁵ Cavnar 150

⁴⁶ Cleveland “The Deepwater Horizon”

⁴⁷ Barkoff, Kendra. “Scientific Teams Complete Peer-Reviewed Assessment of Oil Flow Rate Methodologies.” *U.S. Department of the Interior* 3 Mar 2011. Web. 27 Mar 2011.

In May, the oil giant released footage of the leaking well head and their attempts to cap it. What soon followed is best described as a media fire-storm. Experts who had evaluated the video clips and analyzed the ever-growing surface area of the oil slick argued that BP's flow-rate estimate was grossly inaccurate.⁴⁸ On June 15th, the Flow Rate Technical Group, scientific teams charged with determining the oil discharge rate from the well, released an updated flow-rate approximation of 35,000 bpd to 60,000 bpd.⁴⁹ The public was stunned. Accusations were made that BP blatantly lied to the public because the Environmental Protection Agency (EPA) fines and other liabilities are based on the amount of oil that is released into the environment.⁵⁰ BP denied the accusations and claimed that it was impossible to accurately measure the flow-rate and the previous miscalculations were an honest mistake.

Combating the Slick

Containment

Over an 86 day period the Macondo well released over 4.9 million barrels of oil into the Gulf of Mexico effectively making it the largest environmental oil spill in U.S. history. The oil slick reached epic proportions, growing to over 29,000 square miles, or roughly the size of South Carolina.⁵¹ Fishing bans were enacted all over the Gulf and as much as 84,000 square miles was off limits to fishermen.⁵² In May, President Obama

⁴⁸ Cleveland "The Deepwater Horizon"

⁴⁹ Barkoff

⁵⁰ Cavnar 92

⁵¹ Cleveland "The Deepwater Horizon"

⁵² Nobel, Justin. "Weighing the Downsides of the Drilling Moratorium." *Popular Mechanics* 21

placed a moratorium on deepwater drilling in the Gulf of Mexico, putting hundreds of oil rig workers out of a job and limiting production.⁵³ In addition to the oil and fishing industries, tourism took a major hit. Many hotels and restaurants would have closed had it not been for the cleanup crews who needed food and lodging. Thousands of individuals came from all over and worked around the clock to fight and contain the ever-growing oil slick. Fishermen who were out of work from the fishing bans were hired by BP to assist in the clean up.⁵⁴ Even the U.S. Army joined the efforts.⁵⁵ These large crews employed booming, controlled burns, chemical dispersants, and skimming ships to curtail the amount of oil that would reach the delicate shorelines.

Booming is a technique that utilizes floating booms to corral off part of the oil slick and sequester it to one area so it can be siphoned off the top of the water.⁵⁶ This technique is also used with controlled burns. A controlled burn is when an area of oil is boomed off then lit on fire, effectively burning the oil off the surface of the water. Skimming vessels are ships that are designed to remove or “skim” the oil out of the water.⁵⁷ For these oil removal techniques to work efficiently, water should be relatively still with little to no wind. Needless to say, these were not the conditions present in the middle of the Gulf of Mexico.⁵⁸

June 2010. Web. 4 Apr 2011.

⁵³ Gold, Russell. "Oil Drilling Rebounds in Gulf After Spill." *Wall Street Journal* 15 Sept. 2011. Print.

⁵⁴ Cavnar 174-75

⁵⁵ Cleveland “The Deepwater Horizon”

⁵⁶ Cavnar 113

⁵⁷ Cavnar 114-15

⁵⁸ Cavnar 112-113

Despite the circumstances, the containment and cleanup efforts were moderately successful and in November, the National Oceanic and Atmospheric Administration (NOAA) claimed that 17% of the oil was recovered directly, 5% of the oil was burned, 3% was skimmed, 16% was chemically dispersed, 13% was naturally dispersed, and 23% of the oil either evaporated or dissolved. The remaining 23% is listed under “other” which means it either washed ashore or into the fragile wetlands and estuaries along the gulf coast.⁵⁹ Though the amount of oil that made its way to the shores could have been much worse, there are major issues concerning the use of the chemical dispersants Corexit 9500 and Corexit EC9527A that help prevent shoreline damage.⁶⁰

Dispersal

Many people do not know that oil actually degrades naturally. It is released into the ocean on a daily basis through seepages in the Earth’s crust and it degrades with virtually no harm done to the environment. It can be evaporated by the sun, absorbed by sediments, eaten by micro-organisms, and dissolved by warm waters. The problem with oil spills is the amount of oil that is released into the ocean; the oil does not degrade quickly enough so it is present longer and has time to wash ashore and affect various organisms in the process.⁶¹ This is where dispersants like Corexit can come in handy. Dispersants do not get rid of oil; they are designed to break up oil into smaller droplets so

⁵⁹ “Federal Interagency Group Issues Peer-Reviewed ‘Oil Budget’ Technical Documentation.” *NOAA: National Oceanic and Atmospheric Administration* 23 Nov 2010. Web. 10 May 2011.

⁶⁰ Cleveland “The Deepwater Horizon”

⁶¹ Rodenberg, Cassie. “How Oil Breaks Down in Water - Deepwater Cleanup Efforts.” *Popular Mechanics* 7 May 2010. Web. 10 May 2011.

it can degrade more quickly and be dispersed more easily into the waters. The oil is still present, but it is diluted so nature can perform its job faster.⁶²

The use of these dispersants on oil spills is not a novel technique, however, both of the Corexits that were used on the oil spill in the Gulf of Mexico have been banned in the United Kingdom because of the known ecological effects they have on people and animals. In fact, the dispersants are considered by some scientists to be more toxic to wildlife and biota than the crude oil.⁶³ Furthermore, the application of these dispersants on the oil slick in the Gulf of Mexico was experimental and unprecedented. It is estimated that around 1.3 million gallons of dispersant was used on the spill. The application of dispersants in those quantities has never been tested before and the effects are largely unknown.⁶⁴ In addition, BP was given permission by the EPA and Coast Guard to apply the dispersants underwater, near the well head, to reduce the amount of oil that reached the surface. This too has never been done before.⁶⁵ It has been argued that BP's decision to use these dispersants underwater effectively contaminated the entire water column and possibly created enormous underwater oil plumes – some of which were documented to be over 10 miles long and 3 miles wide. These plumes reduce the amount of oxygen that is present in the water and are potentially fatal to sea life.⁶⁶ As with the dispersants, the long-term effects of these plumes are a mystery.⁶⁷

⁶² Cleveland “The Deepwater Horizon”

⁶³ Cleveland “The Deepwater Horizon”

⁶⁴ Cavnar 103

⁶⁵ Cleveland “The Deepwater Horizon”

⁶⁶ Cavnar 107

⁶⁷ Gillis, Justin. “Giant Plumes of Oil Forming Under the Gulf.” *The New York Times* 15 May

The Shoreline

Though the dispersants performed their job well, oil still made its way to shorelines and contaminated delicate ecosystems and threatened many organisms. The U.S. Fish and Wildlife Service classified 32 wildlife refuges at risk from the spill and concern was high for several species of endangered water fowl and sea turtles.⁶⁸ Surprisingly, in relation to the size of the spill, very little oil actually made it into the sensitive wetland and marsh areas.⁶⁹ Even more surprising, the amount of water fowl and sea bird deaths that were recorded was actually quite small.⁷⁰ Compared to the infamous 1989 Exxon-Valdez spill in Alaska where nearly 40,000 bird, otter, and other mammal carcasses were found, the BP damage appears quite minute.⁷¹ A year after the spill cleanup crews have recovered around 6,000 dead birds, 600 dead sea turtles, and 100 dead mammals, including dolphins. Furthermore, this is the overall tally for all five Gulf states: Louisiana, Alabama, Florida, Mississippi, and Texas. From looking at the animal death toll, it appears that the BP spill is not nearly as catastrophic as everyone expected it to be.⁷² Nevertheless, history has taught us that numbers can be deceptive.

2010. Web. 27 Apr 2011.

⁶⁸ Cleveland "The Deepwater Horizon"

⁶⁹ Walsh, Bryan. "The BP Oil Spill, One Year Later: How Healthy Is the Gulf Now?" *Time* 19 Apr 2011. Web. 29 Apr 2011.

⁷⁰ "Deepwater Horizon Response Consolidated Fish and Wildlife Collection Report." 17 Apr 2011. Web. 9 May 2011.

⁷¹ "NOAA Fisheries Office of Exxon Valdez Oil Spill (EVOS) Damage Assessment and Restoration." *NOAA Fisheries*. Web. 10 May 2011

⁷² "Deepwater Horizon Response Consolidated Fish and Wildlife Collection Report"

Though these numbers sound positive, many scientists argue that they are exceptionally misleading.⁷³ What scientists learned from the Exxon-Valdez spill is that the amount of animal carcasses they found did not equal the actual death toll. Many animal bodies never washed ashore and many were consumed by other animals and scavengers. Today, scientists estimate that between 350,000 and 600,000 sea birds were killed along with 2,800 sea otters, 300 harbor seals, 22 killer whales, and billions of salmon and herring eggs.⁷⁴ The same is almost certainly true for the Gulf spill, and the truth is alarming.

The Truth Hurts

The Exxon-Valdez spill has nothing on the BP spill. In 1989, around 257,000 barrels of oil contaminated the Prince William Sound, a relatively isolated body of water.⁷⁵ The BP spill occurred in open water, 50 miles off shore, in over 5,000 feet of water, and released almost 5 million barrels of oil into a Gulf that is over 600,000 square miles.⁷⁶ Experts believe that the actual death toll of the animals in the Gulf could be as much as 50 times more than what the statistics are showing.⁷⁷ What is worse is the full effects of the Exxon-Valdez oil spill were not felt until many, many years later.

The oil that flowed into the Prince William Sound was still there over a decade later and it had lasting effects on the wildlife in the area. Increased mortality in fish

⁷³ Blackwell, Wiley. "Animal Deaths in BP Spill May Have Been Greatly Underestimated." *World Science* 30 May 2011. Web. 10 May 2011.

⁷⁴ Cleveland "Exxon-Valdez"

⁷⁵ Cleveland "Exxon-Valdez"

⁷⁶ Cleveland "The Deepwater Horizon"

⁷⁷ Blackwell

populations like salmon was seen up to five years after the spill because the incubating eggs were contaminated with oil. The herring population, which appeared to have escaped the impacts of the spill, abruptly collapsed three years later. Larger animals and predatory mammals were also affected because their prey was contaminated by the oil. Some of the more delicate habitats like mussel beds are still struggling and will take up to 30 years to recover.⁷⁸ Dispersants were also used heavily in an attempt to clean the shores of the Prince William Sound. The chemicals were sprayed onto the rocky shores using high pressure hoses to rid the beaches of the oil. Today, the beaches that were hosed down with the dispersants reveal greater ecological damage than the beaches that were never cleaned. The dispersants also had serious effects, not just on wildlife, but on humans. There have been reports that the individuals who worked to spray the dispersants soon began to pass blood in their urine and the same has been recorded for those working with the Corexits in the Gulf.⁷⁹

Ecologically, the BP spill could not have come during a worse time; it was breeding season in the gulf. Thousands of species of animals including birds, fish, and sea turtles were spawning and laying eggs smack in the middle of the spill. The number of eggs and larvae that were harmed or killed in the spill could be in the billions.⁸⁰ Many scientists expect delayed environmental results, like those of the Exxon-Valdez spill, from the BP spill.

⁷⁸ "NOAA Fisheries Office of Exxon-Valdez"

⁷⁹ Plater, Zygmunt. "Learning from Disaster." *The Environmental Forum* 27.6 (2010): 36. Print.

⁸⁰ Cleveland "The Deepwater Horizon"

The Aftermath

The second anniversary of the BP oil spill is approaching and the outlook is rather bleak. Several studies conducted in the wake of the spill reveal that the impact of the *Deepwater Horizon* accident on marine life may be far worse than was previously feared.

A year after the spill, it was apparent that the hardest hit habitats were the oyster beds; it was estimated that they would take up to a decade or even longer to recover. The spawning areas for the threatened blue fin tuna were also undoubtedly affected by the spill and experts fear results similar to those of the Alaskan herring after Exxon-Valdez.⁸¹ Too, Zooplankton, microscopic marine organisms, showed oil contamination. Now, a study of the dolphins off the coast of Louisiana showed the mammals to be underweight and suffering from a multitude of health problems that included lung and liver disease, anemia, and decreased levels of a hormone that help regulate their metabolic and immune systems. Though it is not conclusive, the animals' symptoms are consistent with those who have been exposed to oil. The study's lead researcher stated that survival prospects for many of the dolphins are grim.

Even a study of the insect and spider populations along the coastal areas showed the spill had a significant impact. Scientists discovered a large and startling downturn among many kinds of arthropods. The overall scope and size of the affected insects was unexpected and alarming.⁸² In addition to the possible devastation and decimation of many marine animal populations these studies also hint at the consequences the spill had on the surrounding shorelines.

⁸¹ Walsh

⁸² Beaumont, Peter. "Gulf's Dolphins Pay Heavy Price for Deepwater Oil Spill." *The Guardian*. Guardian News and Media, 31 Mar. 2012. Web. 10 Apr. 2012.

The Gulf Coast contains some of the most delicate ecosystems on the planet that include beaches, sea grasses, coral reefs, and marshes. The Louisiana marshes are home to over 40% of the U.S.'s tidal wetlands. On average, 34 square miles of wetlands is lost each year due to human activity and erosion. The oil that found its way to the shoreline has killed much of the delicate sea grass that is vital to the Louisiana wetlands. The grass keeps the marsh mud in place and prevents erosion from tides and currents. The recent spill has exacerbated an already dire situation.⁸³ Many coastal areas still show contamination and some are completely devoid of vegetation.

Finally, a study of deepwater coral seven miles from the epicenter of the spill showed dead and dying coral covered in oil from the Macondo spill. According to scientists, deepwater coral are not usually affected by spills but the unprecedented nature of this oil spill with its underwater oil plumes is blamed for the deepwater coral casualties. Coral lives many years and does not move so it is easy to identify oil damage. With other marine wildlife, however, the damage is not as easily identifiable and the impact of the spill can be hard to determine.⁸⁴ Most scientists believe that the long-term impacts of spill are far from over and the only thing that can be done now is to watch and wait.

⁸³ Lehner, Peter, and Bob Deans. "A Regulatory Gulf." *The Environmental Forum* 28.1 (2011): 24-28. Print.

⁸⁴ Beaumont

CHAPTER TWO

Congressional and Internal Investigations

The Gulf oil spill left the nation as well as the company executives of the parties involved demanding answers. However, in the beginning stages of the spill there were few to be found. As time progressed and the story surrounding the spill began to unfold, answers came more rapidly. In the midst of the crisis there were numerous Congressional hearings and briefings regarding the accident.⁸⁵ In addition to these proceedings, both BP and Transocean were conducting their own separate internal investigations to determine the immediate causes of the spill.⁸⁶ These hearings proved to be quite informative and provide the official account and expert opinions regarding the causes of the oil spill and the future of oil regulation and industry in the Gulf of Mexico.

Congressional Hearings

The first major Congressional hearing was held on May 12, 2010 three weeks into the oil spill by the House of Representatives Subcommittee on Oversight and Investigations. The hearing was entitled "Inquiry into the *Deepwater Horizon* Gulf Coast Oil Spill" and executives from BP, Transocean, Halliburton, and Cameron were witnesses at the hearing. In the opening statement, the hearing's main areas of inquiry

⁸⁵ Bar, Rebecca. "Congressional Hearings on the Deepwater Horizon Oil Spill." *The Encyclopedia of Earth* 4 Jan. 2011. Web. 22 Feb. 2012.

⁸⁶ *Inquiry into the Deepwater Horizon Gulf Coast Oil Spill: Committee on Energy and Commerce*. 2010. Film.

were listed. Those areas were the Macondo well's integrity, the operational failure of the blowout preventer, and the responses of BP and the other companies involved.

In summary, the hearing allowed all of the subcommittee members and the executives of the four companies to make their opening statements regarding the spill. After opening statements were made, an intense and extensive question and answer session followed. This May 12th hearing was the first of many hearings to follow in the wake of the *Deepwater Horizon* blowout.⁸⁷

Opening Statements

Several committee members' opening statements addressed the validity of statements that BP had made to the then Minerals Management Service (MMS) in regards to their ability to respond to emergency situations. It was discovered that BP had mistakenly maintained that a spill in the Gulf of Mexico was unlikely and if any spill occurred BP could easily handle the situation. The company had certified to MMS that it was capable of responding to a "worst-case scenario" oil spill of 200,000 bpd, 30 miles offshore, yet BP had failed to cap the Macondo well for over three weeks. The committee members criticized BP officials for foolishly thinking that a spill was not possible.

To make matters worse, at the time of this hearing, the estimated flow rate provided by BP was 5,000 bpd and the spill was 50 miles offshore. According to BP's earlier statement to the MMS, the Gulf oil spill was only two percent of what the company had stated they could respond to. The subcommittee members accused BP of making false certifications about their capabilities to handle emergency situations. It also

⁸⁷ *Inquiry into the Deepwater Horizon Gulf Coast Oil Spill*

should have been a sign to the subcommittee that the flow rate estimate given was grossly inaccurate.

After the subcommittee's opening statements, the executives from the four companies were sworn in and allowed to make their own statements. The first of the witnesses to speak was Steve Newman, the President and Chief Executive Officer of Transocean; second was Lamar McKay, the president and CEO of BP America; next, Timothy Probert, President of Halliburton; and finally, Jack Moore, the President and Chief Executive Officer spoke on behalf of Cameron. Despite their differing loyalties and agendas, all of the men shared similar views on one point: it was not fair for the subcommittee to come to any conclusions yet because it was still too early in the investigation process. Lamar McKay did recognize that they were the responsible party under the Oil Pollution Act (OPA) and they had agreed to pay all necessary clean up costs and legitimate claims.⁸⁸

Questions and Answers

When the company representatives had finished, the floor was opened for a question and answer session. For several hours the company executives dealt with an onslaught of questions from committee members regarding every known detail of the spill. Most of the questions dealt with the catastrophic failure of the BOP to close in the well, as well as the modifications that were made to the BOP. There were questions concerning the failure of the EDS, the failed negative test, the faulty integrity of the well, the decisions that were made by BP and Transocean officials, and the ongoing fight to

⁸⁸ *Inquiry into the Deepwater Horizon Gulf Coast Oil Spill.*

battle the spill. Though the executives attempted to answer every question to the best of their ability, there were many aspects of the spill that were not yet known, and many technical aspects that the subcommittee members did not understand. Though the hearing seemed quite exhaustive, the executives did not possess any new information on the spill that the committee did not already know. Furthermore, many of the subcommittee members noted that the executives were constantly trying to shift the blame to the other companies and were very apprehensive to accept any responsibility.⁸⁹

This May 12th hearing was the first of many, but it effectively encapsulates the debacle of the *Deepwater Horizon* spill. Overall, this hearing revealed very little new information regarding the Gulf spill. It did show Congress that though the companies involved appeared to be willing to cooperate, they were not ready to accept their liability in the spill. This hearing was a good indicator of them strained relationships between BP and its contractors.

Lessons Learned

Following the hearing with the Subcommittee on Oversight and Investigations, there were many other hearings with fourteen other subcommittees and Senate committees regarding the *Deepwater Horizon* spill. There were hearings concerning the role of MMS in the oil industry and whether or not they were performing their job adequately and hearings on the environmental impacts of the spill including the impacts of the dispersants used. There were even hearings on the potential health effects of the Gulf spill, and hearings regarding tourism in the Gulf Coast areas.⁹⁰

⁸⁹ *Inquiry into the Deepwater Horizon Gulf Coast Oil Spill*

⁹⁰ “Congressional Hearings on the Deepwater Horizon Oil Spill”

Though these hearing were over different aspects of the spill, procedure was much like the first hearing in May; there were many similar questions and the same convoluted answers. More frustrating to witness was BP, Transocean, and Halliburton constantly trying to focus the blame away from themselves to suit their own interests. This blame game would continue throughout the internal investigatory processes and become more apparent in the public reports released by BP and Transocean.

Internal Investigations

BP

In addition to the onslaught of Congressional briefings and hearings, BP conducted its own internal investigation to delve into the reasons why the spill occurred. The investigation, led by Mark Bly Head of Safety and Operations at BP, was conducted over a four month period by a team of over 50 internal and external engineering specialists. The findings of the report were released in September 2010.⁹¹ In summary, BP's investigation found that there was not one event that caused the terrible accident in April, but rather a combination of "mechanical failures, human judgment, engineering design, operational implementation, and team communication."⁹²

According to BP's report, the main mechanical failure mentioned was Cameron's BOP's inability to close in the well. Though the BOP's failure was not new news at the time this report was released, the report contained a revised explanation of why the BOP failed to do its job. Their findings explained that though the annular preventer on the

⁹¹ "BP Releases Report on Causes of Gulf of Mexico Tragedy." *BP*. 8 Sept. 2010. Web. 22 Feb. 2012.

⁹² *Deepwater Horizon Accident Investigation Report*. Film.

BOP had been activated, it was not able to completely close the riser pipe so hydrocarbons still flowed up the pipe. The annulus' malfunction allowed mud, methane gas, and sea water to reach the rig at the water's surface. Upon the hydrocarbons and gas reaching the rig, there were two explosions that occurred. In the report BP maintains that these explosions are the likely reasons why the other emergency modes on the BOP, like the sheer rams, failed to close in the well.

The investigators believe that the explosions damaged the main control cables (mux cables) that lead from the rig to the BOP at the sea floor. These cables provided communication and power to the two pods on the BOP. They also believe the explosions damaged the hydraulic lines to the BOP. The report concluded that this could be the explanation for why the emergency disconnect system (EDS) did not trigger the sheer rams on the BOP. It is the investigators' opinion that had these rams been triggered, the BOP would have severed the riser pipe effectively releasing the *Deepwater Horizon* rig from the well, and closed in the well.⁹³

BP's report also elaborated on the reasons why the Macondo well became unmanageable and blew out in the first place. One of the first points the BP investigative report made was that Halliburton was responsible for carrying out the cementing process as well as recommending a cement slurry to BP that would be appropriate for the Macondo well. The report claimed that the nitrified cement slurry Halliburton used made it difficult to create a stable cement barrier. According to BP's investigative team, because Halliburton's cement barrier was unstable, hydrocarbons entered the well undetected.

⁹³ *Deepwater Horizon Accident Investigation Report*. Film.

BP's report also addressed many of the questions and concerns made by the members of the Subcommittee on Oversight and Investigation during the May hearing. In that hearing, the committee members consistently questioned the findings of the negative integrity test of the Macondo well. They recognized that the findings of the test indicated that well integrity had not been established, but the crew still proceeded with business as usual. The committee wanted to know why the crew did not cease operations. The committee also questioned BP's decision to use only six centralizers instead of the recommended 21, though there were 15 centralizers on board the rig. BP attempted to address these concerns in its report.

BP claimed that the reason the negative test was ignored was that the crew had incorrectly attributed the pressure in the riser pipe to a phenomenon called the "bladder effect" and that is why operations continued on the rig. The report further continued that it was BP and Transocean officials that came to the incorrect conclusion about the pressure in the pipe and they recommended that more detailed procedures be implemented to prevent something like this from happening again.⁹⁴ However, investigators not working for BP have expressed their doubts about the existence of the phenomenon called the "bladder effect."⁹⁵

In regards to the centralizers, BP maintained that the crew did not run the 15 remaining centralizers because they incorrectly believed them to be the wrong size. BP elaborated that all 21 centralizers are only important when there is a flow of hydrocarbons into the riser pipe so if the cementing job had been preformed correctly, the

⁹⁴ *Deepwater Horizon Accident Investigation Report*. Film.

⁹⁵ Harris, Richard. "BP Report Shares Blame For Rig Explosion." *NPR*. NPR, 08 Sept. 2010. Web. 10 Apr. 2012.

fact that only six centralizers were used would have been irrelevant. As if to clarify the minute role the centralizers played in the oil spill, later the report completely disregarded them having a causal role in the spill. Apparently because of where the hydrocarbons were flowing from the reservoir into the pipe, the amount of centralizers used was never an issue.

BP claimed its report was the most definitive picture they could create of what went wrong that night but stressed their findings are not conclusive. They explained that though their evidence is comprised of numerous witness testimonies, available reports, and physical evidence, the investigative team lacked direct access to some of the witnesses and physical evidence.⁹⁶ The report made it very clear that BP had accepted responsibility for the spill, but that there were errors made by all, most notably Transocean, Halliburton, and Cameron.

Transocean

Transocean conducted its own internal investigation in the months following the spill. The report was made public in June 2011. It was a colossal, two-volume report that consisted of over 800 pages of witness testimony, expert and specialist opinions, well monitoring data, and examination of physical evidence. The report focused on several key points but ultimately came to one conclusion: BP was responsible for the Macondo well accident.⁹⁷

In the executive summary of the report, the investigation team presented the overview of its findings. They concluded that the Gulf oil spill was a result of a

⁹⁶ *Deepwater Horizon Accident Investigation Report*. Film.

⁹⁷ "Transocean Internal Investigation - Executive Summary." *Transocean*. Transocean Ltd., 2012. Web. 04 Apr. 2012.

combination of poor decisions made in several different oil operations areas. They surmised that these decisions compromised the integrity of the well and increased the risk of its failure. The report specifically singled out BP as the sole perpetrator of many of these poor decisions. It concluded that BP's decisions were driven by the knowledge that the geological window of time for safe drilling was growing slimmer with each passing day. In essence, the report was insinuating that BP was making sloppy and hasty decisions because they were in a time crunch.

In the report, Transocean's explained that it was BP's responsibility to develop comprehensive plans explaining every facet of operations on the Macondo well. They were also to obtain approval of the plans from the MMS. It further explained that BP had complete authority over the operations; this means that the contractors and subcontractors involved in the drilling had to have BP approve their work. Since it was BP's job to ensure that operations were running according to their plan, Transocean believes that BP failed to properly communicate the risk to the drill crew regarding the uncertain testing of the cement barrier (the negative test). Because of this miscommunication, the drill crew believed that the well had been properly cemented so they proceeded with their plans.⁹⁸

The investigative team in Transocean's report cited the failure of the cement barrier as the precipitating cause of the accident. Though Halliburton was in charge of the cementing in the Macondo operations, Transocean focused the blame on BP. The summary had stated that BP was in charge of developing the plans for how the Macondo was to be drilled, cased, and completed. It is Transocean's belief that BP's plan for a long-string casing was too risky for the delicate conditions in the Macondo well (BP had

⁹⁸ "Transocean Internal Investigation – Executive Summary"

been experiencing gas kicks while drilling the well). So, instead of altering their casing plans, BP chose to use nitrified cement that the investigative team believed was too unreliable, and had not been tested properly. They also concluded that the integrity of the cement could have been compromised by the lack of centralizers used when casing the well (BP ran only six centralizers). These findings are contrary to what BP's investigators reported.

Implications

Transocean's and BP's internal investigations make it blatantly obvious that they are trying to shift responsibility away from themselves. BP is reminding the world that they were not the only party involved in the drilling of the Macondo well, and by maintaining that the holder of the drilling permit is the responsible party in the Gulf oil spill, Transocean refuses to admit their responsibility. These thorough, though biased investigations were a precursor to the companies' legal nightmares as they attempted to clear their names in the *Deepwater Horizon* accident.

CHAPTER THREE

Oil Spill Liability Law

Introduction

Throughout the seemingly endless oil spill almost every party involved in the accident was playing the blame game. There was never a doubt that BP bore responsibility for the environmental catastrophe but the oil giant argued they were not the sole responsible party. While hundreds of claims were being filed against BP, the company claimed that fault for the spill also lied with Transocean, Halliburton, and several of its contractors. The companies denied any responsibility for the *Deepwater Horizon* accident so BP filed suit against the companies to seek damages that are equal to or proportional to the companies fault.⁹⁹ These companies countersued stating BP had violated indemnity clauses in their contracts, and that BP acted negligently in the Macondo drilling operations.¹⁰⁰ BP and the other parties have not admitted any liability in the spill, and will probably not do so until a judgment is made in the multi-district suit that was filed in a Louisiana Federal Court. These legal battles play a vital role in the *Deepwater Horizon* saga, but before these actions can be discussed it is imperative to review the laws and regulations regarding oil spills, as well as the agencies that oversee and implement these laws.

⁹⁹ Bergin, Tom, and Greg Roumeliotis. "BP Challenges Halliburton Court Request on Spill." *Reuters*. 03 Jan. 2012. Web. 07 Mar. 2012.

¹⁰⁰ Rushe, Dominic. "BP Sues Halliburton for Deepwater Horizon Oil Spill Clean-up Costs." *The Guardian*. Guardian News and Media, 03 Jan. 2012. Web. 10 Apr. 2012.

The environmental regulations that are most relevant to the Gulf of Mexico accident are the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA) which are vital to the regulation of water pollution and oil spills. The agencies responsible for upholding these laws are the Environmental Protection Agency (EPA), and the newly created Bureau of Safety and Environmental Enforcement (BSEE), the Bureau of Ocean Energy Management (BOEM), and several others. Combined, these agencies and their standards make up the complex web of environmental protection laws that determine who is held liable for accidents like the *Deepwater Horizon* disaster.

The Regulatory Agencies

Environmental law is a complex web of regulations and standards and there are several federal administrative agencies that have the authority to implement and enforce the laws and regulations. Among these agencies are EPA, the United States Coast Guard, BOEM, and BSEE.

EPA is the lead federal response agency for oil spills occurring in inland waters.¹⁰¹ It has the authority to implement pollution control programs for the entire industry. EPA enforces federal clean water laws and establishes water quality criteria for many of the nation's watersheds. EPA's authority was greatly expanded through CWA.¹⁰²

¹⁰¹ "Oil Spills." *United States Environmental Protection Agency*. 27 Jan. 2011. Web. 28 Nov. 2011.

¹⁰² "Laws and Regulations: Summary of the Clean Water Act." *United States Environmental Protection Agency*. 11 Aug. 2011. Web. 28 Nov. 2011.

The United States Coast Guard is the lead response agency for all spills in coastal waters and deepwater ports.¹⁰³ They were the lead response during the *Deepwater Horizon* spill. The Coast Guard administers funds through OPA for those who have incurred damages by oil spills. They are also in charge of cleanup and removal activities in affected coastal waters.

BOEM and BSEE are relatively new agencies under the Department of the Interior. They began as the Mineral Management Service (MMS). After the Gulf oil spill the MMS was overhauled in May of the same year. It became the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), but it was soon overhauled again in July 2010. This time it was split into three different agencies: BOEM, BSEE, and the Office of Natural Resources Revenue (ONRR).

The Clean Water Act

Regulation and protection of U.S. waters was begun rather recently and the history of the Clean Water Act (CWA) is a short one. In 1948, the federal government enacted the Federal Water Pollution Control Act. This was the first major law addressing water pollution in the United States and it became the basis for the modern CWA.¹⁰⁴ In 1972, the Federal Water Pollution Control Act was reorganized and expanded. These new amendments to the act provided the basic structure for regulating the discharge of pollutants into U.S. waters.¹⁰⁵ In 1977, the act was amended again and the Federal Water

¹⁰³ "History of the Clean Water Act." *United States Environmental Protection Agency*. 02 Mar. 2011. Web. 28 Nov. 2011.

¹⁰⁴ "History of the Clean Water Act"

¹⁰⁵ "National Pollutant Discharge Elimination System: Clean Water Act." *United States Environmental Protection Agency*. 12 Aug. 2011. Web. 28 Nov. 2011.

Pollution Control Act became more commonly known as CWA.¹⁰⁶ The CWA was amended a few more times over the years, but today it remains the chief federal law protecting America's lakes, rivers, and coastal areas.

In addition to allowing EPA to set pollution limits for the entire industry, CWA protects fragile areas like the wetlands and other habitats by ensuring all activities and development are conducted in an environmentally safe manner. It also provides a structure of guidelines to address water pollution through water discharges, runoff, and habitat destruction. Finally, it provides financial assistance to cities and states to help them with their water needs.¹⁰⁷ CWA is a major federal regulation in regards to water pollution, however states can impose additional liability, fines, and penalties on responsible parties. Though CWA was the most comprehensive water pollution act prior to 1990, the statute was found to be seriously lacking in several areas which became blatantly obvious after the Exxon-Valdez spill in the Alaskan Prince William Sound.

The Oil Pollution Act

The Act

As mentioned in Chapter One, in 1989 an oil tanker owned by Exxon-Valdez collided with a reef in the Alaskan Prince William Sound spilling 750,000 barrels of crude oil into the sound's icy waters. The spill in Alaska was the biggest oil spill in the United States' history until the recent 2010 Gulf of Mexico spill. Despite the overwhelming negatives, some good was done by the Exxon-Valdez accident; it brought

¹⁰⁶ "Laws and Regulations: Summary of the Clean Water Act"

¹⁰⁷ "Clean Water Act Enforcement." *United States Environmental Protection Agency*. 18 May 2010. Web. 28 Nov. 2011.

attention to several shortcomings of CWA. After Valdez, it was obvious that the United States did not possess adequate resources, particularly monetary resources, to respond to catastrophic spills like the Valdez spill. Also, the damages compensable under the federal law were minimal compared to the actual damage caused by the spill. To address these inadequate shortcomings of the Clean Water Act, the Oil Pollution Act was implemented by Congress in August 1990.¹⁰⁸

OPA amended CWA and addressed many of the problems with preventing, responding to, and paying for the damages of oil spills.¹⁰⁹ It provided new requirements for contingency planning by the government and the industry. It mandated the development of response plans for certain facilities to respond to a worst case discharge.¹¹⁰ It increased the penalties for noncompliance with regulations, and it increased the federal government's response and enforcement authority of environmental regulations. Finally, OPA authorized the use of the Oil Spill Liability Trust Fund (OSLTF) and consolidated several existing environmental funds to increase the size of the fund. These consolidated funds included the Deepwater Port Act, the Trans-Alaska Pipeline System Authorization Act, and the Outer Continental Shelf Lands Act, to name a few.¹¹¹

Liability Under OPA

¹⁰⁸ "Oil Pollution Act Overview." *United States Environmental Protection Agency*. 28 Jan. 2011. Web. 28 Nov. 2011.

¹⁰⁹ "Oil Pollution Act of 1990 (OPA)." *National Pollution Funds Center*. United States Coast Guard. Web. 28 Nov. 2011.

¹¹⁰ "Oil Pollution Act Overview"

¹¹¹ "The Oil Spill Liability Trust Fund (OSLTF)." *National Pollution Funds Center*. United States Coast Guard. Web. 28 Nov. 2011.

Today, OPA is the primary statute governing liability for oil spills.¹¹² It utilizes strict liability and it also channels liability. Strict liability is a standard of liability in which a party will be held liable even if their actions are not negligent. So, under OPA, a responsible party will have to pay fines and penalties for a discharge of oil whether or not they were negligent. If the party is deemed negligent, the penalties will increase exponentially.

In addition to strict liability, OPA channels liability meaning one party is specified as the responsible party and third parties cannot also be held liable. For offshore facilities which include oil rigs, the holder of the drilling permit is the responsible party. BP held the drilling permit for the *Deepwater Horizon* so under OPA, it is the responsible party. Channeling of liability, as well as strict liability, simplifies litigation but fights over causation can still occur. Suits can be filed by the responsible party to recover damages from third parties.¹¹³ This type of action is an example of the ongoing lawsuit between BP, Transocean, and Halliburton which will be discussed in the next chapter.

Using these forms of liability, OPA establishes that the party responsible for a vessel or a facility is liable for certain damages resulting from the spill as well as the incurred removal costs. This means that if a company is found liable they are responsible for paying for any environmental and economic damages, as well as for paying for the costs of cleaning up an area after a spill has occurred. Furthermore, it states that holders

¹¹² Richardson, Nathan. "Deepwater Horizon and the Patchwork of Oil Spill Liability Law." *Resources for the Future* May 2010. Web. 8 Sept 2011.

¹¹³ Richardson

of leases or permits for offshore facilities are liable for up to \$75 million per spill plus the removal costs.¹¹⁴ Exceptions to caps are only given if a spill was caused by “gross negligence or willful misconduct” or if a responsible party was in violation of federal regulations. The \$75 million cap on damages would have applied to BP if they had not agreed to waive the cap. That being said, the standard penalty still applies to BP for every barrel of oil spilled, but if they are found negligent, the penalties would increase.

State law, Criminal Law, Civil Penalties and Other Roads to Recovery

In addition to the fines and penalties incurred through OPA and CWA, there are other roads to compensation for damages from a discharge of oil. OPA does not override state laws, so victims can sue in state courts to recover damages even if the abovementioned caps would prevent recovery in federal court. For instance, the state of Louisiana has the Oil Spill Prevention and Response Act which provides Louisiana its own limits. Louisiana’s Act has the same liability limits as OPA, but other states like Florida and Mississippi have no caps on damages.

Furthermore, the federal government can sue for recovery of natural resource damages by filing criminal charges. The United States sued Exxon-Valdez for allegedly violating the Migratory Bird Treaty Act and the Refuse Act. Violations of laws such as these would require the responsible parties to pay restitution to the injured party. In this case, Exxon pled guilty to the criminal charges and was required to make payments to the U.S. for clean up and resource damages.¹¹⁵

¹¹⁴ “Oil Pollution Act Overview”

¹¹⁵ Richardson

The federal government can also utilize civil penalties. OPA provides that penalties can be authorized up to \$1,100 per barrel of oil discharged or up to \$4,300 per barrel if gross negligence can be shown. The *Deepwater Horizon* discharged 4.9 million barrels of oil into the Gulf of Mexico and damaged fragile coastal areas. With the steep civil penalties under OPA, the total cost of the spill would almost surely exceed the \$75 million cap; BP chose to voluntarily waive this cap for that reason. Though the criminal and civil penalties are good forms of recovery for the federal government, they do not allow recovery of damages for private parties.¹¹⁶ This is when OSLTF is of assistance.

The Oil Spill Liability Trust Fund

Private parties must seek other means of recovery and this usually means filing a claim. In regards to oil spills, some of these claims are paid with monies from the Oil Spill Liability Trust Fund. OSLTF was created by Congress in 1986 but was four years old before Congress authorized its use through the passage of OPA.

OSLTF is used for oil removal costs, payments to the federal and state governments to conduct natural resource damage assessments (NRDAs), payment of claims and damages, and research and development.¹¹⁷ In 1991, administration of OSLTF was designated by executive order to the United States Coast Guard. The U.S. Coast Guard created the National Pollution Funds Center to administer OSLTF and recover costs from liable parties.¹¹⁸

¹¹⁶ Richardson

¹¹⁷ “The Oil Spill Liability Trust Fund (OSLTF)”

¹¹⁸ “Oil Pollution Act of 1990 (OPA)”

OSLTF is structured with two major components; the emergency fund and the principle fund. The emergency fund is available for immediate use for federal trustees to begin NRDA's and respond to oil spills. Some of the federal trustees who can be authorized to use this fund include the Department of Agriculture, the Department of Commerce, the Department of Defense, the Department of Energy, and the National Ocean and Atmospheric Administration. The emergency fund consists of \$50 million which is allocated to the President annually. The President has the power to authorize the emergency funds use without Congressional appropriation. The National Pollution Funds Center's basic mission is to ensure proper use of this emergency fund.

The emergency fund only represents a small portion of OSLTF. The principle fund comprises the majority of the fund and it is used mainly to pay claims to any person who has suffered damages or incurred removal costs due an oil spill, and to fund Congressional appropriations to states and federal organizations. The fund derives its revenue from barrel taxes, interest from the U.S. Treasury, cost recoveries from responsible parties, penalties incurred by the responsible parties, and transfers from the several oil pollution funds that were consolidated by OPA. These forms of revenue provide the remaining \$2.7 billion that comprises OSLTF.¹¹⁹ With all of these different components, it is OPA that has the greatest impact on liability and compensation in regards to oil spills.

The Price Tag of a Disaster

Throughout the Gulf of Mexico spill, BP was generally cooperative and appeared legitimately concerned about the state of the Gulf and its residents. BP quickly took

¹¹⁹ "The Oil Spill Liability Trust Fund (OSLTF)"

responsibility for the spill and the company immediately initiated a claims process for those affected by the spill. In the beginning, BP issued \$25 million block grants to Louisiana, Alabama, Florida, and Mississippi so the states could enact emergency oil spill plans.¹²⁰ Soon after, BP set money aside for the Gulf of Mexico Research Initiative (GRI), a program constructed to study the impact of the spill on the environment. By mid-June, BP announced it was setting up a \$20 billion fund over three and half years, to pay for any obligations that arise from the spill. In addition to this fund, BP also allocated \$100 million as compensation to unemployed oil rig workers who were affected by the drilling moratorium in the Gulf.¹²¹ BP also voluntarily agreed to waive OPA's \$75 million penalty cap.¹²² The United States government and Gulf coast residents were placated as BP continued to toss money around. As long as BP appeared to make an effort, people were satisfied.

This pristine image BP worked so hard to maintain was quickly tarnished when BP CEO Tony Hayward was photographed at a yacht race in the middle of the crisis.¹²³ The American public was outraged and BP was again fighting to maintain what little reputation they had left. Hayward stepped down in July and was replaced with Robert Dudley.¹²⁴

¹²⁰ "BP Response Timeline." *BP Global*. Web. 29 Mar 2011.

¹²¹ "BP Response Timeline"

¹²² Dlouhy, Jennifer A. "Feds Sue BP, Other Companies Over Oil Spill." *Chron Business*. 16 Dec. 2010. Web. 26 Jan. 2011.

¹²³ Sappenfield, Mark. "A Yachting Trip? The 10 Worst BP Gaffes in Gulf Oil Spill." *The Christian Science Monitor* 20 June 2010. Web. 10 May 2011.

¹²⁴ "BP CEO Tony Hayward to Step Down and Be Succeeded by Robert Dudley." *BP Global* 27 July 2010. Web. 4 Apr 2011.

Since April 2010, the total cost of the *Deepwater Horizon* spill is not yet known though it is estimated to have cost somewhere in the tens of billions of dollars and there are still major legal actions in the works. The status of BP's liability depends on the outcome of the gargantuan multi-district suit that was filed in Louisiana Federal Court and scheduled to begin trial in February 2012. If BP is found grossly negligent, their fines could be four times higher than the \$4-5 billion estimate. Currently, BP estimates their total oil spill bill at \$37 billion.¹²⁵

¹²⁵ Peaple, Andrew. "BP's Legal Marathon." *The Wall Street Journal*. The Wall Street Journal, 29 Nov. 2011. Web. 7 Mar. 2012.

CHAPTER FOUR

Legal Limbo

Almost two years after the oil spill, BP and its contractors are still involved in ongoing litigation regarding the *Deepwater Horizon* accident. The oil giant and the parties involved in the spill are currently faced with a slew of lawsuits ranging from personal injury and property damage suits to violations of federal law like CWA. In addition, BP and several of its contractors have been battling with one another in a number of lawsuits. BP filed suit against several of the companies involved in the Macondo well operations to recover damages. These companies included Transocean, Halliburton, Anadarko, Cameron, and MOEX Offshore. In response, several of these companies filed counterclaims against BP for negligence as well as breaching the indemnity clauses in their contracts. Though there have been several settlements between the parties, litigation is still ongoing with several of the biggest players. Furthermore, a massive multi-district litigation involving the Justice Department, the Gulf States, and over 100,000 plaintiffs began trial in March 2012.¹²⁶

Settlements

MOEX Offshore 2007 LLC

MOEX Offshore 2007 (MOEX), a subsidiary of MOEX USA Corporation which is owned by Mitsui & Co. Ltd., owned a ten percent interest in the Macondo well. BP

¹²⁶ Fowler, Tom. "BP Reaches \$1B Settlement with Mitsui/MOEX over Gulf Spill." *Fuel Fix*. 20 May 2011. Web. 20 Mar. 2012.

filed suit against MOEX in April 2011 and MOEX settled all claims with BP a month later in May 2010; it was first of BP's partners to settle with the oil giant. Under their agreement with BP, MOEX agreed to pay \$1.065 billion to cover their portion of the costs for cleanup as well as other liabilities.¹²⁷ However, the company made it clear that their settlement was not an admission of liability regarding the Gulf spill and that a settlement with BP was in their best interests. Both BP and MOEX agreed to release claims against the other, however, the agreement excluded civil, criminal or administrative penalties, as well as claims for punitive damages. The money was placed in BP's \$20 billion fund that was established to meet Gulf Coast claims as well as cover the costs of natural resource damages.¹²⁸

Anadarko Petroleum Corporation

BP also filed suit against Anadarko Petroleum Corporation in April 2011. In October 2011, Anadarko and BP reached a \$4 billion settlement. The company which is based in Texas owned a 25 percent share in the Macondo well. Based on this share, Anadarko could have been liable for up to \$10 billion, so a settlement was also in their best interest.¹²⁹ Under the settlement, Anadarko transferred its 25 percent share to BP and agreed not to pursue allegations of gross negligence against BP.¹³⁰ The settlement also eliminated any future claims by BP against Anadarko, though like the settlement

¹²⁷ Fowler

¹²⁸ "BP Announces Settlement with MOEX/Mitsui of Claims Between the Companies Related to the Deepwater Horizon Accident." *BP*. BP, 20 May 2011. Web. 7 Mar. 2012.

¹²⁹ Klump, Edward. "Anadarko Ends Standoff, Settles with BP on Gulf Spill Costs." *Bloomberg Businessweek*. 18 Oct. 2011. Web. 14 Nov. 2011.

¹³⁰ Smith, Aaron, and Steve Hargreaves. "Anadarko Settles with BP for \$4 Billion over Deepwater." *CNNMoney*. CNN, 17 Oct. 2011. Web. 20 Mar. 2012.

with MOEX, it does not protect Anadarko against fines, penalties, and punitive damages. The money was placed in the \$20 billion fund.¹³¹

Cameron International

Following the BP/Anadarko settlement, Cameron International, the company who manufactured the faulty blowout preventer used on the Macondo well, agreed to pay BP \$250 million in a settlement in December 2011.¹³² BP had filed suit against Cameron in April 2011 claiming the BOP they provided to them possessed a faulty design and caused an unreasonable amount of risk. Cameron then filed claims against BP to “protect themselves.”¹³³ The settlement followed several months later. BP stated the money would be placed in the \$20 billion fund to cover claims filed from the spill. Like the previous settlements Cameron would not be held responsible by BP in any future claims, however, the settlement does not protect them against fines, penalties or other types of claims.¹³⁴

Ongoing Lawsuits

Though some progress has been made in regards to several of the suits, there are still ongoing battles that have yet to be resolved. BP, Transocean, and Halliburton are currently feuding between one another to recover damages from the oil spill. Furthermore, the three companies as well as Anadarko and MOEX are being sued by the

¹³¹ Klump

¹³² Mufson, Steven. "Cameron International Settles with BP on 2010 Oil Spill Claims." *The Washington Post*. The Washington Post, 16 Dec. 2011. Web. 7 Mar. 2012.

¹³³ Fisk, Margaret C., and Allen Johnson. "Cameron Responsible for Oil Well Blowout, BP Says in Suit." *Bloomberg*. Bloomer L.P., 20 Apr. 2011. Web. 10 Apr. 2012.

¹³⁴ Mufson, Steven

U.S. Government in a gargantuan multi-district suit. These legal matters could continue into 2013 and even into 2014 if appeals are filed.¹³⁵

BP and Transocean

One year after the Gulf oil spill in April 2011, BP filed suit against Transocean in a Louisiana Federal Court to recover damages from the 2010 blowout. BP declared that it was seeking at least \$40 billion in damages from the rig owner.¹³⁶ Transocean filed a counterclaim against BP for “failing to honor its contractual indemnity.”¹³⁷ If the indemnity clause is honored in court, it will basically exempt Transocean from any legal responsibility and liability in the Gulf oil spill. The two companies are still wrapped up in the suit a year later and will most likely wait for the judgment in the multi-district Federal suit to determine who is at fault and how liable they are for the spill.

BP and Halliburton

BP also filed a claim against Halliburton in April 2011 and has been in a legal battle with the cement service provider ever since. BP stated to the media that it was seeking damages equal to, or proportional to Halliburton’s fault. Like Transocean, Halliburton filed a countersuit against BP citing the indemnity clause in their contract. Several months later, BP made accusations against Halliburton of destroying evidence regarding the cement testing, and violating court orders for not producing computer

¹³⁵ Peaple, Andrew. "BP's Legal Marathon." *The Wall Street Journal*. The Wall Street Journal, 29 Nov. 2011. Web. 7 Mar. 2012.

¹³⁶ "BP Sues Owner of Deepwater Horizon Rig for \$40bn Damages." *The Guardian*. Guardian News and Media, 21 Apr. 2011. Web. 10 Apr. 2012.

¹³⁷ "Transocean Files Motion Seeking Indemnity against Gulf of Mexico Oil Spill Damages." *Xinhua English*. Ed. Xiong Tong. Xinhua, 02 Nov. 2011. Web. 10 Apr. 2012.

modeling results.¹³⁸ It seems Halliburton, like Transocean, will not settle with BP but will wait for the judgment in the Federal suit.

In Re: Oil Spill by the Oil Rig "Deepwater Horizon"

On December 15, 2010 the U.S. Justice Department filed a lawsuit against BP and its contractors in a Louisiana Federal District Court.¹³⁹ The massive multi-district suit includes as plaintiffs the Justice Department, the Gulf State governments, and an estimated 120,000 fisherman, restaurant owners, and property owners. Acting on behalf of the individual and business plaintiffs is the Plaintiff's Steering Committee (PSC).¹⁴⁰ The suit was filed against BP, Anadarko Petroleum, Mitsu and its affiliate MOEX, Halliburton, and Transocean. U.S. District Court Judge Carl Barbier will hear the case.¹⁴¹

The bench trial (a trial heard by a judge and no jury) is to be broken down into three parts. The first part will establish the liability for the spill. If BP is deemed grossly negligent, the fines could increase up to four times. The second part of trial will assess the extent of the spill and the third part will examine the containment efforts.¹⁴²

The trial phase was set to begin on February 27, 2012 but before that date approached, MOEX Offshore entered into a settlement with the United States for a sum

¹³⁸ Rushe, Dominic. "BP Sues Halliburton for Deepwater Horizon Oil Spill Clean-up Costs." *The Guardian*. Guardian News and Media, 03 Jan. 2012. Web. 10 Apr. 2012.

¹³⁹ Rossenbaum, Eric. "Obama Launches BP Oil Spill Lawsuit." *The Street*. 16 Dec. 2010. Web. 27 Jan. 2011.

¹⁴⁰ "BP Announces Settlement with PSC, Subject to Final Written Agreement, to Resolve Economic Loss and Medical Claims in Deepwater Horizon Accident and Oil Spill." *BP*. BP, 03 Mar. 2012. Web. 19 Mar. 2012.

¹⁴¹ Fausset, Richard. "Gulf Oil Spill Spawns Mega-suit, with Likely Mega-payouts." *Los Angeles Times*. Los Angeles Times, 22 Feb. 2012. Web. 19 Mar. 2012.

¹⁴² Peaple

of \$90 million. \$70 million of the settlement is in the form of civil penalties from alleged violations of the CWA. Of the \$70 million, \$45 million will go directly to the United States to replenish the Oil Spill Liability Trust Fund. The remaining money will be divided between the Gulf States with \$6.75 million going to Louisiana, \$5 million going to each Florida, Mississippi, and Alabama, and \$3.25 million going to Texas. MOEX has agreed to spend the remaining \$20 million to facilitate land acquisition projects in some of the Gulf States. These projects will further the preservation and protection of vital habitats and other features of the Gulf region. To date, this is the largest civil penalty ever recovered under CWA.¹⁴³

As the trial date approached, settlement talks between BP and PSC became more serious and Judge Barbier postponed trial until March 5th to allow the two parties more time to reach an agreement.¹⁴⁴ The postponement paid off when BP released a statement on March 3rd announcing it had reached a settlement with PSC.¹⁴⁵ Under this agreement BP will pay \$7.8 billion from their \$20 billion fund to settle a significant amount of the economic loss and medical claims. Of this amount, \$2.3 billion will be set aside specifically to help cover claims related to the seafood industry in the Gulf.¹⁴⁶

The settlement is comprised of two separate agreements; one will resolve economic loss claims and the other will resolve medical claims. Class members (those

¹⁴³ "MOEX Offshore Agrees to \$90 Million Partial Settlement of Liability in Deepwater Horizon Oil Spill / \$70 Million Penalty Is Largest under the Clean Water Act; MOEX Also to Perform Gulf Conservation Projects worth at Least \$20 Million." *United States Environmental Protection Agency*. 17 Feb. 2012. Web. 7 Mar. 2012.

¹⁴⁴ Zacks Equity Research. "BP, PSC in \$7.8B Settlement." *Yahoo! Finance*. 5 Mar. 2012. Web. 19 Mar. 2012.

¹⁴⁵ "BP Announces Settlement with PSC"

¹⁴⁶ Zacks Equity Research

represented by PSC in the multi-district suit) will be compensated for legitimate economic claims according to approved compensation procedures in a separate court-supervised claims processes. Regarding medical claims, payments to class members will be based on a matrix. Payments based on this matrix will be given to those class members with certain currently-manifested physical conditions; A 21 year medical consultation program was also established for qualifying class members. If an individual were to develop a physical condition later, they could pursue their claims through mediation/litigation process. BP will also provide \$105 million to improve the healthcare in the Gulf communities. This outreach program will be available to all individuals living in those communities, not just class members. Under the terms of this settlement, class members are to release and dismiss their claims against BP.¹⁴⁷

This settlement reduces the complexity of the litigation at hand.¹⁴⁸ It also provides a transition from the Gulf Coast Claims Facility (GCCF) that was established in 2010. Under GCCF, BP resolved more than 220,000 claims and paid approximately \$6.1 billion to those individuals and businesses who filed the claims. Though this settlement was a huge step forward for BP, the company still has a long road ahead of it. This settlement does not include the multitude of still pending claims that have been made against BP and BP stresses that this settlement is in no way an admission of liability by the company.¹⁴⁹ On March 5th the trial began and as of April 2012 it is still ongoing. As mentioned earlier, proceedings could continue into 2013.

¹⁴⁷ “BP Announces Settlement with PSC”

¹⁴⁸ Zacks Equity Research

¹⁴⁹ “BP Announces Settlement with PSC”

Looking to the Future

The *Deepwater Horizon* oil spill was undoubtedly one of the worst environmental catastrophes in the United States' history. Two years after the spill, the ecological outlook is grim. Like the Valdez spill, we will not know the full extent of the damage until years from now and it could take decades for the Gulf and its delicate shorelines to show signs of recovery. Money can only do so much in environmental matters such as these. It cannot fix or replace many of the things we are threatened to lose from this spill. As for the eleven families who were so tragically affected, no amount of money could ever replace their loved ones they have lost.

Legally, as mentioned earlier, this accident was a nightmare. It will take years to close all of the suits that have been filed against the parties involved in the spill. The enormity of the multi-district suit is mind-boggling. Even more eye opening is the payouts that will come from the lawsuits. If MOEX's settlement with the United States is any indicator of the amounts the payouts will be, the total cost of this spill, after everything is said and done, will be in the high tens of billions. It will no doubt be one of the most costly environmental disasters in U.S. history.

This spill made the public question the effectiveness of some areas of OPA. Though it was implemented after the Exxon-Valdez spill to help regulate situations such as these, when BP voluntarily waived the \$75 million cap, many questioned the need for a cap at all. After all, \$75 million in the scope of this spill and the profits that are made by oil giants every year is pocket change. What the future holds for the OPA is not known, but it will be interesting to see if it undergoes an overhaul like CWA after Valdez.

From this disaster some good has arisen. This spill brought attention to several deficiencies in our nation's environmental regulatory agencies. After the spill, it was recognized that the Minerals Management Service could not maintain the level of oversight needed for these oil companies who own offshore leases. Furthermore, MMS's performance of this oversight was inadequate and left too much in the hands of those they were supposed to be regulating. Hopefully we have learned from our mistakes and BOEM and BSEE maintain a stricter level of oversight on future drilling projects. Changes must be made to ensure a disaster like this never occurs again. The agencies could make more unannounced visits to the offshore rigs to keep the operators on their toes and increase their cooperation with the regulations. Even small changes like these could decrease the likelihood of another accident occurring.

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