

**The Gulf Coast**  
**Oil Spill Disaster**  
**& UNCLOS:**

**A Case Study**

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Law of the Sea

Drilling mud began spewing on the floor of the Deepwater Horizon rig at 9:40 on the evening of April 20, 2010.<sup>1</sup> Despite multiple, ignored warning signs, this appeared to be the first moment crewmembers understood there was a real problem.<sup>2</sup> By the time they reacted, all emergency fail-safes were inoperable.<sup>3</sup> An influx of hydrocarbon gas had already shot up the wellbore,<sup>4</sup> expanding over a hundredfold and with ever-increasing speed as it raced the 5,000 feet toward the rig above.<sup>5</sup> It hit the Deepwater Horizon with a force equivalent to a “fifty-five ton freight train” followed by “a jet engine’s worth of gas.”<sup>6</sup> There was a nine-minute period from the first realization to the first explosion.<sup>7</sup> This catastrophic event killed eleven men, injured seventeen others,<sup>8</sup> and caused a five-million-barrel oil spill<sup>9</sup> forty-one miles off the coast of Louisiana.<sup>10</sup>

A case study of the relevant articles from both international treaties and national laws shows that although there may be adequate laws allowing for victims to seek compensation, there is an obvious lack of disincentives for oil companies to make risky decisions. It is clear in this case that the deterrence provisions in the relevant laws are inadequate and government commissions to regulate their conduct failed to do so. The responsible parties, BP, Transocean and Halliburton, showed their ability to manipulate loopholes in legislation, capacity to call their

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<sup>1</sup>National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, Report to the President, 113 (2011).

<sup>2</sup>*Id.* at 113.

<sup>3</sup>*Id.* at 114.

<sup>4</sup>The piping between the drilling rig and the wellhead

<sup>5</sup>President’s report at 109.

<sup>6</sup>*Id.* at 114.

<sup>7</sup>*Id.*

<sup>8</sup>*Id.* at 198.

<sup>9</sup>*Id.* at 89.

<sup>10</sup>*Id.* at 198.

own shots, and willingness to take risks that would cost men their lives, contaminate the Gulf of Mexico with deadly oil, and destroy the property and lives of millions of innocent people.

Part I of this paper introduces the general obligations imposed by the United Nations Convention on the Law of the Sea (UNCLOS) regarding damage caused by offshore oil spills. Particularly, main articles in the LOS Convention concerning compensation to victims and deterrence of future conduct will be briefly explained.

Part II discusses the compensation-related provisions of the LOS Convention and compares them to national and international law that is binding on the parties involved in the spill. There is discussion of how the national legislation was formed after the Exxon-Valdez oil spill off the coast of Alaska and how laws governing compensation at that time were extremely inefficient.

Part III compares the LOS Convention articles regarding the deterrence of similar conduct in the future to the relevant articles of The Oil Pollution Act. There is also discussion on punitive damages taken from the *Exxon-Valdez* case and application to the oil spill.

Lastly, part IV summarizes the facts leading up to and surrounding the blowout. It provides analysis of the actions of BP, Halliburton, Transocean, and the Mineral Management Service agency (MMS), showing how their actions and decisions constituted willful misconduct that would make the first three liable for the spill according to the laws from parts I-III. Following this, there is discussion illustrating MMS' failure to take reasonable steps to prevent this disaster.

## I. GENERAL PROVISIONS OF UNCLOS PERTAINING TO OIL SPILLS

The third United Nations Convention on the Law of the Sea<sup>11</sup>(UNCLOS) drafted an extremely complex and broad document containing internationally-negotiated and universally-agreed-upon principles concerning the protection and preservation of the seas. This document contains numerous topics including everything from baseline distinctions of coastal states to the regulation of fishing and the exploitation of other types of resources from the sea.<sup>12</sup> It took nine years (1973-1982) to draft the treaty, commonly referred to as the LOS Convention, which includes a total of 320 articles with over 100 annexes. While the United States has not ratified UNCLOS, a majority of its provisions are considered customary national and maritime law.

Most articles relating to offshore oil pollution are in part XII of UNCLOS. Part XII is titled “Protection and Preservation of the Marine Environment,” and is of a general nature, as is common with all UNCLOS articles. In the area of oil pollution, they do little more than provide a framework for future development of more detailed norms.<sup>13</sup>

The articles embody the general provision that “States have the obligation to protect and preserve the marine environment.”<sup>14</sup> In honoring this obligation, States have a duty to take “all measures...that are necessary to prevent, reduce and control pollution of the marine environment from any source, using...the best practicable means at their disposal and in accordance with their capabilities...”<sup>15</sup> The measures to be taken include those designed to minimize to the fullest possible extent “pollution from installations and devices used in exploration or exploitation of

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<sup>11</sup>United Nations Convention on the Law of the Sea (Dec. 10, 1982), 1833 U.N.T.S. 3.

<sup>12</sup>Louis B. Sohn, Kristen Gustafson Juras, John E. Noyes & Erik Franckx, *Law of the Sea in a Nut Shell* 5 (West Publishing Co. 2010) (1984).

<sup>13</sup>E.D. Brown, *Sea-Bed Energy and Minerals: The International Legal Regime* 418 (Martinus Nijhoff Publishers) (1992).

<sup>14</sup>LOS Convention, Article 192.

<sup>15</sup>LOS Convention, Article 194(1).

the natural resources of the seabed and subsoil, in particular, measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea...”<sup>16</sup> Those measures include “adopt[ing] laws and regulations to prevent, reduce, and control pollution of the marine environment arising from or in connection with seabed activities...”<sup>17</sup> Legislation for compensation to victims and deterrence of future spills are seen in two more-detailed bodies of law that will be discussed, namely MARPOL and The Oil Pollution Act of 1990.

## II. COMPENSATION LAWS REGARDING OIL SPILLS

The states bound by UNCLOS are required to set forth laws that allow those affected by oil spills to recover damages against the responsible parties for the harm caused. UNCLOS requires “States to ensure that recourse is available in accordance with their legal systems for prompt and adequate compensation...of damage caused by pollution of the marine environment by...persons under their jurisdiction.”<sup>18</sup>

One source of international law that provides recourse is *The International Convention for the Prevention of Pollution from Ships* (MARPOL), a treaty to which the United States is party, along with more than 150 countries. This is the main international treaty dealing with pollution of the seas by offshore drilling units.<sup>19</sup> The relevant provisions in MARPOL are almost identical to the Oil Pollution Act (OPA), which will be discussed below.

The OPA of 1990 is national law intended to hold those responsible for oil spills liable for the damage caused. Before 1990, plaintiffs who suffered loss from oil spills had difficulty receiving compensation due to a lack of strong legislation. The United States did not have one

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<sup>16</sup>LOS Convention, Article 194(3)(C) quoting E.D. Brown, *Sea-Bed Energy and Minerals: The International Legal Regime* 418 (Martinus Nijhoff Publishers) (1992).

<sup>17</sup>LOS Convention, Article 208(1).

<sup>18</sup>LOS Convention, Article 235(2).

<sup>19</sup>33 U.S.C.A §2701 (West).

source of national law that plaintiffs could use to recover damages. The enactment of the OPA changed that and currently allows victims to hold the oil companies responsible. To fully understand the OPA, a brief history of the circumstances leading up to its enactment is helpful.

#### **A. Exxon-Valdez Spill**

On the evening of March 23, 1989, Joseph Hazelwood, Captain of the Exxon-Valdez supertanker, “downed five double vodkas.”<sup>20</sup> A few hours later, with a blood-alcohol level of .241,<sup>21</sup> he was navigating the 900-foot-long vessel<sup>22</sup> that was full of crude oil through the narrow straits between reef and ice off the coast of Alaska. The vessel was en route to Long Beach, California when Hazelwood requested a change of course due to the presence of icebergs.<sup>23</sup> Two minutes before the crucial turn, Hazelwood left the bridge to go to his cabin in order, he said, “to do paperwork.”<sup>24</sup> This decision was inexplicable.<sup>25</sup> He left only one officer on the bridge, when there should have been two, and that officer was not licensed to steer the ship through this area known as Prince William Sound.<sup>26</sup> To make matters worse, Hazelwood put the tanker on autopilot, which sped it up, making the turn trickier and mistakes harder to correct.<sup>27</sup> The officer on the bridge failed to make the turn and the tanker ran aground on Bligh Reef, tearing the hull open and spilling 275,000 barrels of crude oil into the Sound.<sup>28,29</sup>

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<sup>20</sup>*Exxon Shipping Co. v. Baker*, 544 U.S. 471, 477 (2008).

<sup>21</sup>*Id.* at 479.

<sup>22</sup>*Id.* at 476.

<sup>23</sup>*Id.* at 477.

<sup>24</sup>*Id.*

<sup>25</sup>*Id.*

<sup>26</sup>*Id.* at 478.

<sup>27</sup>*Id.*

<sup>28</sup>*Id.*

<sup>29</sup>One barrel is equivalent to 40 gallons at 60 degrees Fahrenheit.

In the aftermath of the spill, Exxon spent around \$2.1 billion in cleanup efforts.<sup>30</sup> Of that, Exxon paid out about \$1.3 billion between criminal and civil fines imposed by the government and voluntary settlements with fishermen, property owners, and other private parties.<sup>31</sup> The remaining 38,000 plaintiffs consolidated their claims into one suit against Exxon and the other parties involved. Exxon stipulated to its negligence and ensuing liability for compensatory damages.<sup>32</sup> The jury in the District of Alaska awarded \$287 million to the plaintiffs in compensatory damages and \$5 billion against Exxon in punitive damages.<sup>33</sup>

This massive award of punitive damages started a war of litigation and appeals that ultimately was given cert to the United States Supreme Court. In 2008, twenty years after the spill, the Court reduced the punitive damages and awarded the plaintiffs about \$11,000 per person. Many of the plaintiffs died while waiting for just compensation.

#### **B. The Oil Pollution Act of 1990**

The OPA was the legislative response to the oil spill at Bligh Reef. It was signed into federal law on August 18, 1990 and was a combination of many federal laws including the Clean Water Act, The Deepwater Port Act of 1974, and others. It was meant to harmonize state laws and international treaties and much of its language is similar, if not identical, to MARPOL. The portions of the OPA that are relevant to this article are the elements of liability, recoverable damages, and limits.

The main goal of the OPA is to avoid another *Exxon-Valdez* type litigation and give plaintiffs quick compensation from oil spills. The OPA expressly assigns liability to “[e]ach responsible party for a vessel or a facility from which oil is discharged...into or upon the

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<sup>30</sup>*Exxon-Valdez* at 479.

<sup>31</sup>*Id.*

<sup>32</sup>*Id.*

<sup>33</sup>*Id.* at 482.

navigable waters...is liable for removal costs and damages...”<sup>34</sup> “Responsible parties” in this case is defined and would include BP, Halliburton, and Transocean.<sup>35</sup>

The OPA expressly states that those found liable will be responsible for all cleanup costs in addition to other damages. First, the government may seek damages for natural resources. Those damages include the amount of injury to and the loss of use of natural resources.<sup>36</sup> Second, and probably the most financially significant, it allows both the government and private parties to recover for any damage to real or personal property.<sup>37</sup> Third, all parties can recover for the loss of use of natural resources.<sup>38</sup> This would include commercial fisherman who can no longer earn a living because the oil killed their crop. Fourth, the government can recover for any lost revenues, taxes, or rents that were forfeited as a result of the spill.<sup>39</sup> Fifth, all affected can recover lost profits and earning capacity including past and future income because of damage to real or personal property.<sup>40</sup> Lastly, the government can recover net costs for providing increased services during or after removal, which would include additional protection from safety and health hazards.<sup>41</sup>

The OPA also provides limits to the liability of oil spills by mobile offshore drilling units like the Deepwater Horizon.<sup>42</sup> The OPA limits liability for spills caused by floating drilling rigs to the cost of cleanup and \$75 million. However, the limits do not apply if the incident was

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<sup>34</sup>33 U.S.C.A §1002(1) (West). (This language is identical to the Elements of Liability portion of MARPOL at 33 U.S.C.A. §2702.)

<sup>35</sup>33 U.S.C.A §1001(32) (West).

<sup>36</sup>33 U.S.C.A §1002.

<sup>37</sup>*Id.*

<sup>38</sup>*Id.*

<sup>39</sup>*Id.*

<sup>40</sup>*Id.*

<sup>41</sup>*Id.*

<sup>42</sup>33 U.S.C.A §1004 (West).

caused by either gross negligence or willful misconduct, or a violation of an applicable federal safety, construction, or operating regulation.

### III. OIL SPILL DETERRENCE LAWS

Along with compensation for damage caused, another aspect of tort law is to deter similar acts in the future. The LOS Convention calls for States to enforce laws preventing pollution of the marine environment arising from or in connection with seabed activities.<sup>43</sup> The OPA includes civil and criminal penalties that are meant to deter companies from taking risks that might cause an oil spill. Civil penalties where tortious action is worse than negligence but less than willful misconduct, such as in the *Exxon-Valdez* case,<sup>44</sup> include \$1,000 per barrel of oil discharged.<sup>45</sup> Where gross negligence or willful misconduct is found, that fine jumps to \$3,000 per barrel.<sup>46</sup> In *Exxon-Valdez*, the Court said “the 3:1 ratio... applies to awards in... cases involving some of the most egregious conduct, including malicious behavior and dangerous activity carried on for the purpose of increasing a tortfeasor’s financial gain.”

The Court in *Exxon-Valdez* feared that excessive punitive damages in oil pollution cases were not foreseeable thus violating their due process, as well as companies not being able to make educated risks - a necessary component of business. The Court reaffirmed that punitive damages are not necessarily given to victims for compensation, but are “aimed at deterrence and retribution.”<sup>47</sup> There is evidence proving the root of most of the decisions by BP, Halliburton, and Transocean leading to the blowout were motivated by saving time and/or money. The Court

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<sup>43</sup>LOS Convention, Article 214.

<sup>44</sup>*Exxon-Valdez* at 510.

<sup>45</sup>Which would result in \$5 billion dollars worth of fees according to the Report to the President, which estimated 5 million barrels were spilt.

<sup>46</sup>Which would result in \$15 billion dollars in civil fees.

<sup>47</sup>*Exxon-Valdez* at 494, quoting *State Farm Mut. Automobile Ins. Co. v. Campbell*, 538 U.S. 408, 416 (2003).

in *Exxon-Valdez* specifically warned that action taken or omitted in order to augment profit represents an enhanced degree of punishable culpability, as of course does willful or malicious action, taken with a purpose to injure.<sup>48</sup> Thus, if there was willful misconduct involved, a 3:1 ratio of punitive damages, which the OPA provides, would be just.

In addition to fines, the OPA provides increasing criminal penalties for the amount of negligence that leads to a spill. For negligent violations, penalties are a \$25,000 fine and one year of imprisonment. For knowing violations, the fine is \$50,000 and a term of imprisonment not to exceed three years. For “knowing endangerment,” a violation that places another person in imminent danger of death or serious bodily injury, the fine is \$250,000 for an individual, \$1 million for an organization, and a term of imprisonment of not more than 15 years.

#### **IV. A CASE STUDY OF THE RESPONSIBLE PARTIES BEHIND THE GULF COAST DISASTER**

##### **A. Introduction**

The explosion and sinking of the Deepwater Horizon drilling rig in the Gulf Coast is a disaster that is still fresh in America’s memory. Most are familiar with the grave images of seagulls, fish and other wildlife covered in spilled oil. But the grisly details of the events leading up to that terrible day are almost more sickening than the aftermath. There are no defenses or limits in cases where the defendants commit willful misconduct,<sup>49</sup> and the Gulf Coast disaster unfortunately has its fair share of grossly negligent offenders, including BP, Transocean, Halliburton, and even the federal agency called the Mineral Management Service (MMS).

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<sup>48</sup>*Id.* at 494.

<sup>49</sup>33 U.S.C.A §1004 (West).

## B. Background

In March 2008, BP paid more than \$30 million to the MMS for a lease to drill in the Gulf of Mexico.<sup>50</sup> The Macondo well would be the first well in Mississippi Canyon Block 252, where BP planned to explore the geology and potentially generate profits from gas and oil.<sup>51</sup>

The Deepwater Horizon and its crew, both provided by Transocean, arrived at the Macondo well on January 31, 2010 to begin drilling.<sup>52</sup> Halliburton was another of BP's contracted service providers whose responsibilities included the cementing and temporary sealing of the well after the drilling had been completed.<sup>53</sup>

The plan was to drill 20,200 feet<sup>54</sup> and then cement and temporarily abandon the well,<sup>55</sup> allowing a smaller rig to later pump the hydrocarbonic fluids.<sup>56</sup> Due to a large variety of mistakes, poor judgment, and an overall lack of communication, that plan never came to fruition. The well exploded, the rig sank, 11 crewmembers were killed, five million barrels of oil were spilled, and the gulf and its inhabitants were contaminated.<sup>57</sup>

The Report to the President written by the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling was requested by President Barack Obama to investigate the disaster.<sup>58</sup> This bipartisan report is deemed the most reliable source of information. A majority of the facts used in this article are taken from its pages.

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<sup>50</sup>President's Report at 89.

<sup>51</sup>*Id.* at 89.

<sup>52</sup>*Id.* at 92.

<sup>53</sup><http://www.halliburton.com/news/default.aspx?navid=659&pageid=1698>

<sup>54</sup>President's Report at 89.

<sup>55</sup>*Id.* at 94.

<sup>56</sup>*Id.* at 104.

<sup>57</sup>*Id.* at 87.

<sup>58</sup>*Id.* at III.

### C. BP's Willful Misconduct

While it is clear that no one event or decision caused the Macondo explosion, BP had the most opportunities to avert the disaster. They were the bosses of the job. Everything had to go through their team before moving forward and far too many dangerous situations slipped through the cracks unnoticed and unchanged.

1. *There was a significantly low amount of analysis and review of the safety/viability of last-minute plan changes to the Macondo well.*

Initial well design and drilling processes are always vetted by serious peer review<sup>59</sup> as well as MMS regulations and approvals.<sup>60</sup> Early changes are also submitted to a management of change process that requires proof that the changes are equally as safe as the originals.<sup>61</sup> The Macondo plans by BP were no exception.

However, the last-minute changes that were made in the weeks and days leading up to April 20 were not required to go through any such review. In fact, they were made by the BP team only, “in an *ad hoc* fashion.”<sup>62</sup> This included a last-minute decision to use significantly fewer “centralizers” (devices that ensure the wellbore stays clean)<sup>63</sup> as well as drastic changes to the overall temporary abandonment process,<sup>64</sup> such as mud displacement and plug location.

- a. BP made a last-minute decrease in the number of centralizers used. Original plans called for sixteen centralizers, but BP’s supplier only had six in stock.<sup>65</sup> There was a last-minute order, but there was disagreement as to whether or not the centralizers

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<sup>59</sup>*Id.* at 122.

<sup>60</sup>*Id.* at 127.

<sup>61</sup>*Id.* at 122.

<sup>62</sup>*Id.*

<sup>63</sup>*Id.* at 96.

<sup>64</sup>The temporary sealing of the well before the smaller rig arrives to pump oil.

<sup>65</sup>President’s Report at 123.

delivered were the right type.<sup>66</sup> Ultimately, only six centralizers were installed - a decision that was neither approved by the MMS nor analyzed for safety.<sup>67</sup>

b. BP changed the depth of the cement plug and decided to displace mud with seawater - both of which varied significantly from original plans. The decision to displace 3,300 feet of mud with seawater beneath the ocean's floor was also a last minute decision, as well as the choice to set the plug over 3,000 feet deep rather than the original 1,000.<sup>68</sup> Neither of these changes went through any sort of review - but caused huge risks in the varying pressures of seawater/mud weight and the lower depth,<sup>69</sup> ultimately contributing to unstable circumstances and uncontrollable pressures. (See "MMS Negligence" section for further discussion on the depth plan changes.)

*2. Time- and cost-saving courses of action were consistently proven more important to BP management than the safety or risk-level of plans.*

Each day spent on a drilling rig costs BP just less than \$1 million,<sup>70</sup> which, combined with future scheduling obligations, resulted in an urgency to get things finished as quickly as possible.<sup>71</sup> That in itself is not a negative concept. However, when decisions and changes are made that focus on saving time and money, but there is "no formal system for ensuring that alternative procedures were in fact equally safe,"<sup>72</sup> it becomes misconduct.

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<sup>66</sup>*Id.* at 97.

<sup>67</sup>*Id.*

<sup>68</sup>*Id.* at 103.

<sup>69</sup>*Id.* at 123.

<sup>70</sup>[http://www.subseaiq.com/data/Project.aspx?project\\_id=562&field\\_id=924&facility\\_id=&AspxAutoDetectCookieSupport=1](http://www.subseaiq.com/data/Project.aspx?project_id=562&field_id=924&facility_id=&AspxAutoDetectCookieSupport=1)

<sup>71</sup>President's Report, Appendix E at 355

<sup>72</sup>*Id.* at 125.

There is a long list of such decisions by BP in the Macondo well situation, including: a faulty float valve conversion and circulating pressure readings,<sup>73</sup> a decision to not do a “bottoms up” circulation,<sup>74</sup> a canceled cement evaluation log,<sup>75</sup> a substitution of spacer fluids,<sup>76</sup> a lack of extra physical barriers in the wellbore,<sup>77</sup> and most egregiously, poorly conducted and interpreted negative pressure tests.<sup>78</sup>

a. The float valve conversion produced anomalous circulating pressure readings, which BP ignored.<sup>79</sup> Before cementing the well, drilling mud is pumped down the production casing at a low rate until a differential pressure of 600 pounds per square inch (psi) is attained, at which point the valves “convert.”<sup>80</sup> However, at the Macondo well, differential pressure reached 1800 psi without achieving their goal flow rate.<sup>81</sup> Again, after they converted the valves, the circulation pressure was far different than they anticipated.<sup>82</sup> Rather than investigating, they assumed the pressure gauge was broken and moved forward.<sup>83</sup>

b. BP decided against a “bottoms up” circulation.<sup>84</sup> A “bottoms up” circulation refers to the process of pumping enough drilling mud into the wellbore for mud from the

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<sup>73</sup>*Id.* at 98.

<sup>74</sup>*Id.* at 100.

<sup>75</sup>*Id.* at 102.

<sup>76</sup>*Id.* at 106.

<sup>77</sup>*Id.* at 120.

<sup>78</sup>*Id.* at 119.

<sup>79</sup>*Id.* at 126.

<sup>80</sup>*Id.* at 98.

<sup>81</sup>*Id.*

<sup>82</sup>*Id.*

<sup>83</sup>*Id.*

<sup>84</sup>*Id.* at 100.

base to travel all the way up to the rig.<sup>85</sup> This method cleans the wellbore, reduces channeling,<sup>86</sup> and also allows technicians to examine the mud for hydrocarbon content before cementing.<sup>87</sup> This usually takes approximately 2,760 barrels of drilling mud.<sup>88</sup> BP, in order to save time and money, decided to only pump 350 barrels – thereby sacrificing these benefits.<sup>89</sup>

c. After the cement job was finished, BP declined the opportunity to have a cement evaluation test performed.<sup>90</sup> Once Halliburton finished cementing the well, representatives from BP and Halliburton performed a check, and found the flow-back to be satisfactory.<sup>91</sup> Their primary criterion for whether or not the cementing was a success was whether there were “losses while cementing the long string.”<sup>92</sup> Since there were no losses, they sent home the team of technicians from Schlumberger who were there solely to perform cement evaluation tests.<sup>93</sup> They denied themselves the opportunity to realize their cement job was, indeed, faulty.

d. An unusual (and untested) spacer was used during the temporary abandonment process in order to sidestep hazardous waste laws and save time.<sup>94</sup> While preparing for temporary abandonment, a spacer is pumped into the wellbore to separate the oil-based

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<sup>85</sup>*Id.* at 100.

<sup>86</sup>Mud-buildup that creates small channels in the well

<sup>87</sup>President’s Report at 100.

<sup>88</sup>*Id.* at 100.

<sup>89</sup>*Id.*

<sup>90</sup>*Id.* at 102.

<sup>91</sup>*Id.*

<sup>92</sup>*Id.* at 103. (Long String was the type of casing used to connect the rig with the wellhead. It was installed at the beginning of the cementing-preparatory process through the drill pipe.)

<sup>93</sup>*Id.* at 102.

<sup>94</sup>*Id.* at 106.

drilling mud from the seawater.<sup>95</sup> They decided to use two leftover materials as a spacer, since a loophole in the legislation in the Resource and Conservation Recovery act allows companies to “dump water-based ‘drilling fluids’ overboard if they have been circulated through the well,” rather than disposing of them onshore as hazardous waste.<sup>96</sup> Instead of regular spacers, they used an abnormally large volume of a unique mixture, just to avoid onshore disposal.<sup>97</sup>

e. BP decided to displace mud from the riser without setting another physical barrier in the wellbore.<sup>98</sup> When displacing mud and spacer from the wellbore in preparation for temporary abandonment, the crew opened the annular preventer,<sup>99</sup> leaving the cement barrier at the base the only physical barrier sealing the well.<sup>100</sup> This unnecessarily and substantially increased the risk of a blowout.<sup>101</sup> They could have set a surface cement plug or a mechanical plug first, but they did not.<sup>102</sup> “It is unclear why BP chose not to do any of these things.”<sup>103</sup> Saving time and money are the only apparent reasons.

f. Multiple negative pressure tests were run with questionable or negative results, all of which were ignored.<sup>104</sup> Once the mud is displaced, a negative pressure test is run,

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<sup>95</sup>*Id.* at 106.

<sup>96</sup>*Id.*

<sup>97</sup>*Id.*

<sup>98</sup>*Id.* at 120.

<sup>99</sup>*Id.* at 109.

<sup>100</sup>*Id.* at 120.

<sup>101</sup>*Id.*

<sup>102</sup>*Id.*

<sup>103</sup>*Id.*

<sup>104</sup>*Id.* at 106-8.

which decreases pressure in the pipe to make sure no fluids are leaking in.<sup>105</sup> They shut the annular preventer, bring the pressure down to zero, and watch for flow.<sup>106</sup> However, they could never get the pressure down to zero, only to 266 psi.<sup>107</sup> They tried the test three times, and although they succeeded in getting the pressure down to zero eventually, pressure increased again once the pipe was closed.<sup>108</sup> After meeting to discuss the results, and running the test yet again, (but on the kill line<sup>109</sup> rather than the drill pipe), they finally manipulated the data to look the way they wanted.<sup>110</sup> Even with the drill pipe maintaining a pressure of 1,400 psi, which “could *only* have been caused by a leak in the well,” according to the commissioner’s report, BP On Site leaders mistakenly concluded the negative test confirmed the well’s integrity.<sup>111</sup>

These few, of many, examples clearly show that BP’s priorities were time and money rather than safety and caution. The chart on the following page, found in the President’s report, further shows BP’s, and its contractors’, focus on profits in their decision-making.

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<sup>105</sup>*Id.* at 105-6.

<sup>106</sup>*Id.* at 107.

<sup>107</sup>*Id.*

<sup>108</sup>*Id.*

<sup>109</sup>A separate high-pressure pipe, usually with a pressure equivalent to that of the drill pipe.

<sup>110</sup>President’s Report at 108.

<sup>111</sup>*Id.* at 108.

**FIGURE 4.10: Examples of Decisions That Increased Risk At Macondo While Potentially Saving Time**

Decision	Was There A Less Risky Alternative Available?	Less Time Than Alternative?	Decision-maker
Not Waiting for More Centralizers of Preferred Design	Yes	Saved Time	BP on Shore
Not Waiting for Foam Stability Test Results and/or Redesigning Slurry	Yes	Saved Time	Halliburton (and Perhaps BP) on Shore
Not Running Cement Evaluation Log	Yes	Saved Time	BP on Shore
Using Spacer Made from Combined Lost Circulation Materials to Avoid Disposal Issues	Yes	Saved Time	BP on Shore
Displacing Mud from Riser Before Setting Surface Cement Plug	Yes	Unclear	BP on Shore
Setting Surface Cement Plug 3,000 Feet Below Mud Line in Seawater	Yes	Unclear	BP on Shore (Approved by MMS)
Not Installing Additional Physical Barriers During Temporary Abandonment Procedure	Yes	Saved Time	BP on Shore
Not Performing Further Well Integrity Diagnostics in Light of Troubling and Unexplained Negative Pressure Test Results	Yes	Saved Time	BP (and Perhaps Transocean) on Rig
Bypassing Pits and Conducting Other Simultaneous Operations During Displacement	Yes	Saved Time	Transocean (and Perhaps BP) on Rig

President’s Report at 126.

*3. BP’s poor management of its employees and lack of communication with contracted partners created greater-than-usual risks during the drilling process.*

BP repeatedly displayed poor communication and management throughout the Macondo well cementing and temporary abandonment processes.<sup>112</sup> Since Transocean supplied both the rig and the crew, and Halliburton’s crew was responsible for the slurry testing and cementing of the

<sup>112</sup>*Id.* at 123.

well, BP's role was one of overall management and planning.<sup>113</sup> Their engineers created the drilling plans and well designs, which the Transocean and Halliburton crews carried out.<sup>114</sup>

This system works in theory, but failed in practice. BP didn't share enough information with its contractors, or even with its own team. Crewmembers (and even BP's own On Site Managers) then had to make critical decisions in the face of danger without the real context or full understanding of its gravity.<sup>115</sup> Without knowing how crucial and/or risky certain tests or changes were, Transocean's and Halliburton's crews were ill prepared and unsuitable to run the tests or conduct risk monitoring.

In essence, BP executives and engineers on shore were making tough decisions, weighing the risks without getting outside opinions or federal approval, and moving forward with new, untested, and dangerous plans. Then, the Transocean and Halliburton crews out on the rig were in charge of enacting those plans, without grasping how risky they were. If there had been better management and communication, and even training, then perhaps the crew members would have been better equipped to handle such emergencies, and more vigilant in their testing and monitoring. BP was also lacking in the necessary protocols and procedures during both normal drilling and emergency situations.<sup>116</sup>

Examples of these failures on the Deepwater Horizon included the negative pressure tests and the kick<sup>117</sup> detection mistakes just before the explosion.

a. The negative pressure tests' magnitude was lost on the Transocean crews running the tests, because they lacked understanding of the well's delicacy.<sup>118</sup> BP

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<sup>113</sup>*Id.* at 92.

<sup>114</sup>*Id.*

<sup>115</sup>*Id.*

<sup>116</sup>*Id.* at 119.

<sup>117</sup>An unexpected influx of gas and hydrocarbonic fluids; if not controlled, can lead to a blowout.

executives had made several risky decisions up to this point, such as using a long string casing rather than a liner,<sup>119</sup> foregoing bottoms up circulation,<sup>120</sup> using nitrogen foam cement they had little experience with,<sup>121</sup> and sending home the Schlumberger cement evaluation team<sup>122</sup> - which should have resulted in heightened awareness and caution during drilling. It also should have emphasized the importance of the negative pressure tests, since that was the only time the integrity of the cement was examined.<sup>123</sup> However, since they did not communicate or manage properly, the crews were unaware of these facts<sup>124</sup> - and without protocols requiring them to report anomalous pressure readings or ask for second opinions,<sup>125</sup> they were too quick to brush off the failed test results.<sup>126</sup>

b. The crew missed critical signs that a kick was coming during mud displacement because they were untrained and uninformed.<sup>127</sup> Just before the explosion, during the temporary abandonment procedures, the crew missed both the increasing drill-pipe pressure during the sheen test<sup>128</sup>, and also the anomalous pressure difference between the drill pipe and kill line - both of which provided enough evidence to require prompt action

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<sup>118</sup>President's Report at 119.

<sup>119</sup>*Id.* at 95-6.

<sup>120</sup>*Id.* at 100.

<sup>121</sup>*Id.*

<sup>122</sup>*Id.* at 103.

<sup>123</sup>*Id.* at 105.

<sup>124</sup>*Id.* at 123.

<sup>125</sup>*Id.* at 119.

<sup>126</sup>*Id.*

<sup>127</sup>*Id.* at 120.

<sup>128</sup> A test required by the Resource and Conservation Recovery Act on "water-based drilling fluids" that have been circulated through the well. Such fluids must go through a test to make sure oil-based mud has been completely removed from the fluids. (Presence of oil usually results in the appearance of a "sheen.")

and investigation.<sup>129</sup> Possible reasons could have been their preoccupation with other activities (they were sending fluids returning from the well overboard)<sup>130</sup> and their lack of awareness that the annular preventer was open, leaving the unstable cement as the only barrier.<sup>131</sup> If BP had informed the crews of the precarious state of the Macondo well, there most likely would have been more attention given to the monitoring devices and the signals that a kick was on its way. Perhaps the extra time would have let them activate the BOP or blind shear ram<sup>132</sup> before the explosion.

#### **D. Halliburton Negligence**

Halliburton's responsibilities were far fewer than BP's,<sup>133</sup> which also resulted in fewer opportunities to stop the impending disaster. However, as the cementing contractor, they made some glaring mistakes that directly affected the faulty sealant,<sup>134</sup> ultimately causing the explosion. Due to these dangerous lapses in judgment, Halliburton should also be held partially liable for the accident.

- 1. Halliburton displayed a total disregard for the importance of obtaining and reporting accurate, positive cement-slurry test results prior to pumping.*

Since BP was concerned about damaging the formation at the bottom of the well, they decided to use "nitrogen foam cement," a foam cement formula, leavened with tiny bubbles of

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<sup>129</sup>President's Report at 121.

<sup>130</sup>*Id.*

<sup>131</sup>*Id.*

<sup>132</sup>An emergency system that cuts through the drill pipe and seals the well (must be activated manually). This system was not activated on April 20 – perhaps as a result of damage from the first explosion.

<sup>133</sup>President's Report at 90.

<sup>134</sup>*Id.* at 118.

nitrogen gas, that is injected into the cement slurry just before it goes down the well.<sup>135</sup> BP was unfamiliar with this technique, but Halliburton was an industry leader in using the material.<sup>136</sup>

Due to the foam slurry's unpredictability, crews usually send a sample of the cement to a lab just before it is used to undergo testing on its stability.<sup>137</sup> Halliburton lab personnel ran pilot tests on the slurry in February, which showed that the "slurry design was unstable."<sup>138</sup>

Apparently they conducted another test in the same month that produced an even more severe failure, but they never reported the results.<sup>139</sup>

Halliburton then conducted two more tests in April, just before the pumping job.<sup>140</sup> The first showed once again that it was unstable; they never reported this information to BP.<sup>141</sup> Halliburton technicians then changed the conditions of the test, rather than the formula of the cement, to produce more positive results.<sup>142</sup> Although this test finally showed some proof of stability, the Halliburton crew on board the Deepwater Horizon completely finished the pumping job before the required 48-hour testing period had elapsed.<sup>143</sup> It was impossible for Halliburton to have the test results in hand prior to cementing the well. They also didn't send any of this information to BP until six days after the blowout.<sup>144</sup>

Halliburton should have halted the project to reconfigure the cement's stability prior to pumping the seal in order to ensure a reliable barrier. At the very least, they should have reported

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<sup>135</sup>*Id.* at 100.

<sup>136</sup>*Id.*

<sup>137</sup>*Id.* at 101.

<sup>138</sup>*Id.*

<sup>139</sup>*Id.*

<sup>140</sup>*Id.*

<sup>141</sup>*Id.*

<sup>142</sup>*Id.*

<sup>143</sup>*Id.* at 102.

<sup>144</sup>*Id.*

their findings to BP so the plans could have reflected the unstable nature of the cement. There were many times the cement barrier was the only barrier keeping the well closed<sup>145</sup> - if BP had known it was found to be unstable, perhaps that would not have been the case, or perhaps their crews may have exercised more caution during their own testing.

2. *Halliburton's engineers involved in the planning of the Macondo well did not stress to BP the difficulty or complexity of the plan.*

Halliburton's engineers worked closely with BP engineers on the planning of the cement job. They were the only ones who had experience with the nitrogen foam slurry.<sup>146</sup> They knew the plan was more difficult than normal and included many risks, but they did not communicate that to BP or to their own crewmembers on board.<sup>147</sup> If they had done so, perhaps safe changes could have been made and the crisis avoided.

#### **E. Transocean Misconduct**

Transocean provided the Deepwater Horizon rig and crew, which accounted for quite a few of the mistakes made the weeks and days leading up to the accident. Their overall mistakes consisted mainly of poor training and lack of management.

1. *The inadequately trained Transocean crew made crucial mistakes in judgment that tied directly to the Macondo explosion.*

Transocean's management team had a duty to train and prepare their crews, as well as safely maintain the rigs they contract out to drilling companies such as BP.<sup>148</sup> Based on the crew's actions in the days and hours just prior to the explosion, they were ill-prepared for

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<sup>145</sup>*Id.* at 120.

<sup>146</sup>*Id.* at 100.

<sup>147</sup>*Id.* at 123.

<sup>148</sup><http://www.nytimes.com/gwire/2010/08/04/04greenwire-transocean-reports-267m-gain-discloses-bp-cont-68735.html>

emergencies and unaware of how to correctly monitor for anomalies and risks.<sup>149</sup> They also poorly maintained the rig, leading to a faulty emergency system.<sup>150</sup>

a. The crew ignored anomalous pressures and test results. Transocean's crewmembers conducted the flawed negative pressure tests just before the explosion.<sup>151</sup> Even when getting multiple anomalous readings<sup>152</sup> and failing to get the drill pipe pressure down to zero psi,<sup>153</sup> they still did not contact executives onshore for a second opinion nor stop to change plans.<sup>154</sup> This could have been due to Transocean's lack of protocols for reporting pressure tests results as well as poor understanding of the importance of such tests.<sup>155</sup>

b. During risky procedures, the crew unnecessarily performed multiple tasks at once, increasing the likelihood of missing kick signals.<sup>156</sup> While displacing the mud in the riser, the Transocean crew left the cement plug as the only physical barrier,<sup>157</sup> and then performed multiple activities that substantially increased the risk of a blowout and decreased their chances of identifying dangerous pressure readings.<sup>158</sup> They were so busy sending fluids returning from the well overboard (and through the active system and

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<sup>149</sup> President's Report at 122.

<sup>150</sup>*Id.* at 114.

<sup>151</sup>*Id.* at 105.

<sup>152</sup>*Id.* at 107.

<sup>153</sup>*Id.* at 108.

<sup>154</sup>*Id.* at 122.

<sup>155</sup>*Id.*

<sup>156</sup>*Id.* at 120.

<sup>157</sup>*Id.*

<sup>158</sup>*Id.* at 121.

flow-out meter), something that could have been done earlier, that they missed signals of an impending kick.<sup>159</sup>

c. The crew failed to activate the blind shear ram.<sup>160</sup> Once mud began overflowing on deck and it became more apparent that a kick was occurring, the Transocean crew should have immediately activated the blind shear ram<sup>161</sup> - a device that cuts through the pipe in emergency situations to seal the well.<sup>162</sup> One of the only explanations for such a mistake is lack of training.<sup>163</sup>

d. A poorly maintained BOP was unusable and faulty, resulting in no protection from the deadly explosion.<sup>164</sup> Along with the blind shear ram, the BOP (blowout preventer) provides multiple emergency sealing options.<sup>165</sup> The BOP can be activated manually or by a ROV (remote operated vehicle), or through the “deadman system” - the BOP’s automatic mode function in cases of emergency.<sup>166</sup> Unfortunately, the manual and ROV activations of the BOP didn’t occur prior to the explosion<sup>167</sup> - and the “deadman system” failed due to poor maintenance,<sup>168</sup> which is Transocean’s responsibility.<sup>169</sup> It is believed to have failed due to low batteries and defective solenoid valves,<sup>170</sup> both of

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<sup>159</sup>*Id.* at 121.

<sup>160</sup>*Id.*

<sup>161</sup>*Id.*

<sup>162</sup>*Id.* at 92-3.

<sup>163</sup>*Id.* at 122.

<sup>164</sup>*Id.* at 114.

<sup>165</sup>*Id.* at 92-3.

<sup>166</sup>*Id.*

<sup>167</sup>*Id.* at 121.

<sup>168</sup>*Id.*

<sup>169</sup>*Id.* at 91.

<sup>170</sup>*Id.* at 114.

which should have been replaced during routine maintenance of the BOP owned by Transocean.<sup>171</sup>

*2. Transocean management failed to communicate lessons learned from a near miss just months earlier to employees.*

In December 2009, Transocean had a similar situation with a different crew on a different rig.<sup>172</sup> Although it was during a completion operation rather than a temporary abandonment, there were lessons learned that might have saved the Deepwater Horizon if proper communication had occurred.<sup>173</sup>

The crew was displacing the well<sup>174</sup> with seawater and had completed a negative pressure test with satisfactory results.<sup>175</sup> However, mud started spewing onto the deck.<sup>176</sup> In that case, they were able to shut in the well before a blowout occurred.<sup>177</sup> One metric ton of oil-based mud ended up in the ocean, costing Transocean 11.2 days of additional work and 5 million British pounds.<sup>178</sup>

Transocean created an internal PowerPoint presentation outlining lessons from the experience as well as information about how tested barriers can fail.<sup>179</sup> While this presentation was never distributed among the entire company, they did eventually send out an “operations

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<sup>171</sup>*Id.* at 91.

<sup>172</sup>*Id.* at 124.

<sup>173</sup>*Id.*

<sup>174</sup> Refers to displacing the drilling mud in the well

<sup>175</sup> President’s Report at 124.

<sup>176</sup>*Id.*

<sup>177</sup>*Id.*

<sup>178</sup>*Id.*

<sup>179</sup>*Id.*

advisory” on April 14, 2010. This advisory never made it to the Deepwater Horizon crew,<sup>180</sup> and could have made a difference that day.

#### F. MMS Negligence

The Mineral Management Service was a federal agency responsible for managing the mineral resources in Alaska, Gulf of Mexico and the Pacific,<sup>181</sup> prior to its splitting into three separate groups after the Deepwater Horizon disaster.<sup>182</sup> While it was not a partner or contractor of BP during the crisis, nor did it profit from the drilling of the Macondo well, MMS was responsible for maintaining the safety of the crewmembers and protecting the environment and marine life.<sup>183</sup>

The MMS played its part in allowing the explosion to occur in the following ways: hiring unqualified employees,<sup>184</sup> exercising a lack of caution in the plan approval process,<sup>185</sup> not creating enough protocols on reporting of test results and anomalous pressure readings,<sup>186</sup> and focusing on the safety of initial designs without analyzing later changes properly.<sup>187</sup>

MMS had inadequate protocols on the reporting of deepwater drilling. The following excerpt from the commission’s report discusses these inadequacies:

*Many critical aspects of drilling operations were left to industry to decide without agency review. For instance, there was no requirement, let alone protocol, for negative-pressure test, the misreading of which was a major contributor to the Macondo blowout. Nor were there detailed requirements related to the testing of the cement essential for well stability.*<sup>188</sup>

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<sup>180</sup>*Id.*

<sup>181</sup>[www.boemre.gov/mmshome.htm](http://www.boemre.gov/mmshome.htm).

<sup>182</sup><http://www.boemre.gov/ooc/newweb/frequentlyaskedquestions/frequentlyaskedquestions.htm>

<sup>183</sup><http://www.boemre.gov/offshoresafety/index.htm>

<sup>184</sup>President’s Report at 126.

<sup>185</sup>*Id.* at 127.

<sup>186</sup>*Id.*

<sup>187</sup>*Id.*

<sup>188</sup>*Id.* at 126.

The report also discusses one MMS official's decision to approve a major BP plan change request in less than 90 minutes.<sup>189</sup> The approval allowed them to drill 3,300 feet below the mudline<sup>190</sup>, contrary to their original plans.<sup>191</sup> This change specifically violated an MMS regulation stating that temporary abandonment plugs should be installed "no more than 1,000 ft. below the mud line."<sup>192</sup>

The MMS official accepted BP's assertion without verification that this would be safe, rather than performing his own analysis to determine the level of safety of such an extreme action.<sup>193</sup> This could be due to the fact that BP's engineers had much more experience and understanding than he did – proving MMS hired inexperienced employees without the skills necessary to protect the marine environment.

## V. CONCLUSION

UNCLOS requires legislation aimed at preventing pollution potential, which could include deterring unnecessary risk-taking and hazardous decision-making by oil drilling companies. Such risk-taking and decision-making is exactly what BP, Halliburton, Transocean and MMS committed, suggesting that no adequate deterrence legislation was in place prior to the accident. This logic concludes that if the United States was a part of UNCLOS and being held accountable to its regulations, the Deepwater Horizon crisis never would have happened.

Parts I and II of this discussion unveiled that the compensatory laws of the OPA and MARPOL match that of UNCLOS. However, the gaping hole that prevents US legislation from following within the provisions of UNCLOS is that of deterrence, as addressed in part III. The

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<sup>189</sup>*Id.*

<sup>190</sup> The ocean floor.

<sup>191</sup> President's Report at 126.

<sup>192</sup>*Id.*

<sup>193</sup>*Id.* at 127.

purpose of penalties is to steer companies away from making decisions that could result in oil spills or other marine pollution. Where the penalties are not severe enough to matter, companies will only use them in comparing the potential of reward to the risk of failure. The Deepwater Horizon case provides a sobering example of this concept. When a worker on the Deepwater Horizon rig expressed concern to an onshore BP engineer about the absence of the ten centralizers, the engineer replied via email:

Who cares, it's done, end of story, [we] will probably be fine and we'll get a good cement job. I would rather have to squeeze than get stuck above the [wellhead]. So Guide [a Transocean executive] is right on the risk/reward equation.<sup>194</sup>

This email proves that deterrents facing these companies were considered but the potential rewards were greater, thus the risks were worth the gamble – a concept that completely defeats the purpose of deterrence legislation.

UNCLOS requires that the deterrents in place prevent action by parties that may lead to the pollution of the marine environment. However, it is evident in the Deepwater Horizon crisis that the responsible parties simply used the penalties in their “risk/reward equation” and ultimately decided that the penalties were low enough to make the risk worth it.

Compensation to those affected by spills and legislation to prevent spills are required by UNCLOS. The compensation legislation presented in the OPA and MARPOL satisfy this portion of UNCLOS. But, the deterrence legislation provided in the OPA and MARPOL are clearly inadequate.

If there is any positivity to be found in the Macondo crisis, it is the hope that Congress will recognize the need to better prevent oil spills by restructuring current legislation. When the

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<sup>194</sup>*Id.* at 116.

United States models its regulations after the framework provided in UNCLOS, then the marine environment will no longer be at the whim of big oil companies and their profits.