

False Sense of Safety

Safety Measures Will Not Make Offshore Drilling Safe

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Executive Summary

Just a few months after the worst offshore oil spill in world history was finally plugged, the Obama administration lifted its short-lived offshore drilling moratorium that was imposed during the spill. It did this on the premise that permits would be issued only if offshore drilling could be done safely. So by granting the first new permit, the Administration signaled that new practices had made this previously disaster-prone industry safe.

The agency in charge at the time of the spill, the Minerals Management Service, was reorganized and renamed the Bureau of Offshore Energy Management, Regulation and Enforcement, or BOEMRE. Its director, Michael Bromwich, and its regulatory charge, the offshore oil and gas industry, both argued that drilling could be done safely. To that end, the bureau issued three sets of new safety regulations, namely the Interim Drilling Safety Rule, Safety and Environmental Management Systems (“SEMS”), and additions to SEMS, and two Notices to Lessees (“NTLs”), which clarify existing regulations. Now, offshore drilling is back to its old self with just as many rigs drilling in deepwater as before.

This all happened without changes to blowout preventer technology, no major increase in the number of federal inspectors, no significant strengthening in drilling standards and no federal safety legislation. The disparity between fines and operating costs that arguably led to well-documented corner cutting by BP was essentially unchanged. Yet many were led to believe the system was safer.

The oil industry, with BOEMRE as its echo chamber, turned up the volume on its public relations program, touting the safety of drilling and playing up its benefits. But do the new regulations prevent the same mistakes from happening again? This question deserves an answer given the devastation that the Deepwater Horizon spill wrought on the fishery and tourism industries in the Gulf, not to mention the communities that continue to suffer from the spill’s effects. The spill also wrought ecological havoc of a magnitude we are only beginning to understand. But this question has not been carefully evaluated.

This Oceana analysis looks systematically at what went wrong leading up to the worst accidental oil spill in world history, and importantly, what has changed since. The details of the various failures, oversights, cut corners and operator errors that led to the spill were well-described by the National Commission on the BP Deepwater Horizon Oil Spill and in the report of the Joint Investigation Team consisting of BOEMRE and the Coast Guard.

Looking carefully at what went wrong on the Deepwater Horizon allows an assessment of the efficacy of the new safety rules. Would the new rules prevent the same errors from being made, or the same technological failures from occurring? What about errors that may not have occurred in the case of the 2010 spill, but could be the cause of the next spill? While it’s impossible to anticipate other things that may go wrong, our analysis shows that while the new rules may increase safety to some degree, they likely would not have prevented the last major oil spill, and similarly do not adequately protect against future ones.

SYSTEMIC PROBLEMS IN OFFSHORE REGULATION UNDERMINE NEW MEASURES

A major limitation with the new safety measures is the fact that there are systemic underlying problems in the regulation of offshore drilling that undermine the effectiveness of the new measures. Consider these findings:

- **BOEMRE Can Grant “Departures”, or Exemptions, from Regulations.** Departures have been granted generously in the past. In the case of the Deepwater Horizon, MMS granted BP 12 departures, including one that dealt with the placement of a cement plug and may have contributed to the blowout. As long as departures can override safety requirements, the new measures can be rendered useless.
- **Economic Incentives Make Violating Rules Lucrative Because Penalties are Ridiculously Small.** The financial imbalance between civil penalties and operating costs often leads to rule-breaking, corner-cutting, and cost-cutting measures being taken. While operating costs for offshore rigs can be roughly \$1,000,000 per day, fines for violations are capped at \$40,000 per violation per day and most violations do not even incur fines. Given this situation, it is easy to see why violations are so frequent. Many rules were broken and actions taken to cut costs and save time on the rig before the BP oil spill, which highlights the incentives that exist for rule-breaking. As long as rule-breaking pays, new rules cannot protect us from a spill.
- **Blowout Preventers Continue to Have Critical Deficiencies.** A third party investigation commissioned by the Department of the Interior found that the Deepwater Horizon’s blind shear rams designed to cut through and block the pipe in the case of a blowout were unable to do so because the pipe buckled when the well blew out. Since the blowout preventer on the Deepwater Horizon is a standard design, a similar problem could occur on any well in a blowout scenario. The new safety requirements do not address this deficiency, leaving the failure of blowout preventers as a possible outcome in the case of future blowouts.
- **Oversight and Inspection Levels are Paltry Relative to the Scale of Drilling Operations.** Ensuring the efficacy of many of the new rules would require much more oversight than currently exists. While BOEMRE has attempted to strengthen its inspection and oversight capabilities, funding levels remain far below what would be needed to, in the BOEMRE director’s own words, “do the job the public deserves.”¹ Consequently, inspection rates remain anemic, undermining regulatory compliance by reducing the odds that violations will be observed. Anemic inspection rates also limit real-time monitoring of operations by inspectors, a crucial need to avert disasters as problems are difficult to foresee even a few days before they occur, as illustrated on the Deepwater Horizon.
- **Industry’s Safety Culture Has Not Changed Sufficiently.** The National Commission called for “sweeping reforms” and a “fundamental transformation” in the industry’s safety culture.² Unfortunately, the industry has failed to make such a transformation, and instead remains on a similar course to the one it was on prior to the spill. A look at the many flaws in the well containment systems the industry frequently touts, and the industry’s continued lobbying for expedited permitting and limited safety measures demonstrates this point.

NEW SAFETY MEASURES ARE INSUFFICIENT TO PREVENT SPILLS

New Notices to Lessees (“NTLs”) Have Been Ineffective

As part of its reaction to the BP spill, BOEMRE issued two Notices to Lessees, or “NTLs”, which merely clarify or reinforce existing regulations. The two NTLs clarify the new information that Exploration Plans must include to help BOEMRE evaluate drilling risks. For example, companies must report their assessments of what a worst case spill would look like, how long spill response would take, how much oil could be cleaned up in the event of a spill, and the like. However, BOEMRE has failed to use this information to guard against spills and improve offshore safety because of two problems.

- No quantitative standards by which to gauge the newly required information have been established, so applications are approved based on their completeness rather than their potential environmental impact.
- BOEMRE has continued MMS's practice of rubberstamping plans and permits, approving those that contain patently inaccurate information and extreme exaggerations.

Despite these problems, based on the number and speed of approvals, it appears that BOEMRE has no intention of denying drilling permits, no matter how egregious.

New Safety Regulations Contain Flaws and are Undermined by Systemic Problems

New safety regulations have been implemented via three rulemakings since the Deepwater Horizon disaster: the Interim Drilling Safety Rule, Safety and Environmental Management Systems ("SEMS"), and an addition to SEMS. The new regulations in all three rulemakings have flaws in their design and are also undermined by systemic problems in the regulation of the offshore industry.

Regulations from Interim Drilling Safety Rule are Insufficient

The provisions of the Interim Drilling Safety Rule can be divided into three categories: those that pertain to training and maintenance, equipment testing, and well design and equipment. Each category contains an unacceptable margin for error that could result in another spill.

- **Training and Maintenance Regulations Won't Substantially Improve Safety.** BOEMRE's inspection capabilities are not sufficient to guarantee operators adhere to training requirements and that maintenance is conducted as required. Perverse financial incentives also can undermine training and maintenance programs. Blowout preventer maintenance requirements won't address the underlying deficiencies in their functionality.
- **Testing Requirements Are Unlikely to Prevent Major Spills.** The efficacy of testing requirements is undermined by the systemic problems described above such as perverse economic incentives to skip or ignore tests to save time, deficiencies in blowout preventers, and BOEMRE's woefully inadequate inspection program. In addition, testing methods often do not mimic the real world conditions that would exist during a spill, particularly for blowout preventers. There is also no requirement to ensure that blind shear rams can shear tool joints, and they generally can not.
- **Well Design and Equipment Rules Are Too Weak to Prevent Accidents.** The new regulations for well design and equipment, while promising, fall prey to the systemic problems described above. Notably, BOEMRE's oversight is not sufficient to ensure that the rules are being followed. Also, civil penalties are too low to deter rule-breaking. New well design and equipment rules are themselves flawed as well, which further undercuts their effectiveness. The following specific concerns are discussed in more detail in the report.
 - **Two Independent Barrier Regulations Are Severely Flawed –** New regulations that require two independent tested barriers to be installed in wells could improve offshore safety by providing additional barriers to the flow of hydrocarbons. However, the requirement is severely undercut by the allowance for dual safety valves to qualify as independent tested barriers. Dual safety valves are considered by the offshore industry, the National Commission, and the Joint Investigation Team to not be reliable barriers to flow, and furthermore failed to stop the rise of hydrocarbons in the Deepwater Horizon well.
 - **Potential for Operator Error Remains –** If effective barriers to flow were correctly installed, these could in fact protect against blowouts. However, the requirements for two barriers to flow can easily be undermined by operator error. This problem is illustrated by the Deepwater Horizon disaster, where a cement job, a common barrier to flow, was compromised by numerous operator errors. With limited funds for inspection and oversight, and perverse

economics that incentive project speed over safety, it is likely that not all barriers will be properly installed.

- **American Petroleum Institute (“API”) is an Unacceptable Licenser of Third Parties –** Many new well design and equipment regulations must be verified by an independent third party, but BOEMRE recognizes API-licensed organizations as independent third parties. API, a lobbying organization made up of oil and gas companies, lobbies for increasing drilling and relaxing permit review and safety measures. Using API as the arbiter of whether safety requirements are followed provides little in the way of guarantees.

Safety and Environmental Management Systems (“SEMS”) are Unlikely to Alleviate Drilling Risks

SEMS requires operators to proactively identify, analyze, and manage safety, environmental hazards, and impacts at all stages of offshore resource development. Like the Interim Drilling Safety Rule, the benefit of SEMS on offshore safety is undercut by overarching regulatory problems as well as by flaws in SEMS itself.

- **BP Had Similar Policies in Place Prior to Spill.** Many BP policies, such as its “Management of Change” process, that were in place on the Deepwater Horizon the day of the blowout mirrored aspects of SEMS, yet they did not prevent the spill. Rather, employees failed to follow the policies, and in some cases cut corners to lower costs without formally assessing risks, even though BP’s policies required such an assessment. While these policies were implemented voluntarily, anemic inspection rates and paltry financial penalties for violations make it likely that offshore workers will similarly ignore SEMS requirements when profits are at stake.
- **SEMS Has Failed to Protect Against Spills in the Past.** SEMS is not a new concept and most operators have used it in the past. But in years when SEMS adoption was as high as 98%, large spills and other violations still occurred as frequently as in recent years.
- **The Similar “Safety Case” Approach is Also Flawed.** The “safety case” approach used elsewhere in the world, including in the North Sea, is similar to SEMS. However, “safety case” does not prevent serious oil spills. One analysis showed a regular spill frequency of about one spill per week in the North Sea, in spite of the “safety case” approach being used, based on self reported data. The actual number of spills may be even higher. In addition, the recent large spill by Shell in the North Sea clearly demonstrates the fallibility of the “safety case” approach.
- **“Stop Work” Policies Don’t Work.** The use of a “Stop Work Authority,” which grants any employee the right to stop work if he or she perceives a danger, also will not greatly change spill risks because these policies already exist. On the Deepwater Horizon, each company (BP, Transocean, and Halliburton) had “stop work” policies in place, yet no employee invoked his or her authority to stop work despite many indications that there was a problem. This may be due to fear of reprisal, something that is difficult to address through regulations.

CONCLUSION

Given the numerous problems in new safety measures and consequently continued weakness in the regulation of the offshore oil and gas industry, it is imperative that new drilling permits are not issued. Instead, while oil production continues to occur on existing wells, an investment should be made in developing clean energy manufacturing to support a new, spill proof energy industry focused on onshore and offshore wind, solar power, second generation biofuels like cellulosic ethanol and other renewables. This should include investments to build at least some of the needed manufacturing facilities in Gulf states. The only real way to ensure there is not another spill is to stop offshore drilling. It’s time we began to focus on how we can systematically build the energy of the future rather than continuing to repeat the mistakes of the past.

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Introduction

On April 20, 2010, the nation was rudely awakened to the hazards of offshore drilling when the Deepwater Horizon rig burst into flames and sank to the seafloor, claiming eleven lives and spilling millions of barrels of oil into the Gulf of Mexico. In the aftermath of the disaster, numerous hearings, investigations, and reports led to disturbing revelations about the offshore drilling industry and its regulation, or lack thereof. In light of these revelations and to avert further disaster, President Obama enacted a temporary moratorium on deepwater offshore drilling in April 2010, but lifted it shortly thereafter in October 2010. In lifting the moratorium, administration officials and offshore drilling supporters touted new safety measures that they said made offshore drilling safe. Michael Bromwich, the Director of the Bureau of Ocean Energy Management, Regulation and Enforcement (“BOEMRE”), the agency then in charge of regulating offshore drilling and formerly known as the Minerals Management Service (“MMS”),ⁱ lauded the “significant progress over the last few months in enhancing the safety of future drilling operations”³, while American Petroleum Institute (“API”) President and CEO Jack Gerard heralded the industry’s commitment “to safe and environmentally responsible operations” and its “added safeguards to ensure responsible operations.”⁴

In the year since the moratorium was lifted, offshore drilling has gone right back to full steam ahead. In the Gulf of Mexico, activity has largely returned to normal: BOEMRE has approved 63 plans for exploratory drilling in deepwater since March 2011 as of October 7, 2011,⁵ and the number of rigs drilling in deepwater is the same as two years ago.⁶ Beyond the Gulf of Mexico, Shell is closer than ever before to drilling in Arctic waters, having received approval of its plan for exploratory drilling from BOEMRE.⁷ Interest in drilling off of the Atlantic coast is surging as well, evidenced by the passage of a bill through the House of Representatives that would mandate drilling permits be issued in the Atlantic in the near future.⁸ Similar pieces of legislation have also been proposed, and in some instances been passed by the House, to increase offshore drilling, such as by allowing drilling in other currently-protected areas⁹ or by shortening the review process of drilling permits and plans.¹⁰

Through all of this, BOEMRE, legislators and the offshore oil and gas industry have touted new safety measures and reforms as greatly increasing the safety of offshore drilling. Notably, all of the new safety measures have been implemented by BOEMRE; no bill to improve offshore drilling safety has been passed by Congress.¹¹ Nonetheless, Secretary of the Interior Ken Salazar, in approving the first plan for exploratory drilling in deepwater in the Gulf of Mexico, stated “[t]he reforms we have implemented have set a strong new standard for safety and environmental protection for offshore operations,” while Director Bromwich claimed the approval of the exploration plan “...unmistakably demonstrates that oil and gas exploration can continue responsibly in deep water.”¹²

Despite these claims, there has been little analysis of whether new safety measures put in place since the Deepwater Horizon will actually prevent future oil spills. Undoubtedly, these measures in the aggregate, if followed and enforced, could make offshore drilling safer to some extent. However, it is unclear whether they are sufficient to prevent the next large spill. This report aims to answer that question, analyzing for the first time how and to what extent new safety regulations and reforms implemented since the Deepwater Horizon disaster alleviate risks associated with offshore drilling. To do so, we have compiled and comprehensively examined all of the major new safety measures, including guidance for implementing those measures, issued by BOEMRE since the Deepwater Horizon.

ⁱ On October 1, 2011, BOEMRE split into two agencies, the Bureau of Ocean Energy Management (“BOEM”) and the Bureau of Safety and Environmental Enforcement (“BSEE”). As the names imply, BOEM is responsible for managing offshore energy, conducting activities such as leasing, resource evaluation, and environmental studies. BSEE, on the other hand, enforces safety and environmental protection regulations such as via inspections and permitting. A third agency, the Office of Natural Resources Revenue (“ONRR”), was created out of the former-MMS in 2010 and handles revenue collection activities from offshore operations. As discussed below, the division of MMS into three separate agencies was intended to alleviate conflicts of interest within MMS, and so is expected to grant greater autonomy to the agencies. However, BOEMRE’s split on October 1st otherwise did not alleviate any of the problems discussed in this report. For the sake of simplicity, we will refer to BOEMRE for the remainder of this report, although it has now been replaced by BOEM and BSEE.

We find that major, fundamental problems in the regulation of the offshore oil and gas industry have yet to be addressed and, until they are, these limitations prohibit effective and adequate regulation of the offshore oil and gas industry. Furthermore, these same fundamental problems undermine the effectiveness of new safety measures put in place since the Deepwater Horizon disaster by BOEMRE. That is not to say, though, that the new safety measures would be effective in the absence of the unaddressed systemic problems; most of the new safety measures, and particularly those with the greatest potential to improve offshore safety, are flawed in their design and, consequently, would not have their intended effects. Indeed, we show that even if these measures had been in place prior to the Deepwater Horizon disaster, it is doubtful that they would have prevented the disaster from occurring. As a result of these shortcomings, offshore drilling remains a dangerous practice despite BOEMRE’s efforts and best intentions. Fortunately, a number of opportunities exist to alleviate this danger and ultimately lead to a safer, healthier, and more diverse economy. These opportunities are discussed in the report’s conclusion.

SURVEY OF ACTION TAKEN BY BOEMRE SINCE THE DEEPWATER HORIZON DISASTER

Since the Deepwater Horizon disaster, BOEMRE has taken a variety of actions aimed at correcting many of the problems concerning offshore drilling safety and regulation that were uncovered by the disaster. The reformation of the Minerals Management Service (“MMS”) into BOEMRE and subsequently into three separate bureaus, the Office of Natural Resource Revenue, Bureau of Ocean Energy Management, and Bureau of Safety and Environmental Enforcement, is one such action, which was intended to eliminate MMS’s internal conflict of interest between maximizing revenue and enforcing safety. Bureau policies have also been revised to strengthen oversight and enforcement, such as by eliminating the use of categorical exclusions (“CE”) during National Environmental Protection Act (“NEPA”), or environmental impact, reviews of plans proposing exploratory drilling in deepwater.¹³ BOEMRE has also stated it will begin to regulate offshore drilling contractors in the near future.¹⁴

Most action taken by BOEMRE, though, has been aimed at strengthening offshore regulation by issuing Notices to Lessees (“NTLs”), which clarify existing regulations, and rulemakings, which establish new regulations. (To underscore the distinction between the two, one NTL, NTL 2010-N05, was struck down by a court for being a substantive rule and not a “guidance document.”¹⁵ Eight days prior to the ruling, though, most of the provisions from NTL 2010-N05 were incorporated into a rulemaking, namely the Interim Drilling Safety Rule, and consequently enacted into law.) These actions (Table 1) are the focus of this report, and each action’s actual impact on offshore drilling safety is analyzed and discussed in turn below. First, though, we discuss fundamental problems in the regulation of offshore drilling that were revealed during the Deepwater Horizon disaster and have yet to be addressed.

Table 1: Rulemakings and NTLs issued by BOEMRE since the Deepwater Horizon disaster aimed at improving offshore drilling safety.

Name of Document	Type of Action	Effective Date	Applicability	Targeted Aspect(s) of Offshore Drilling
Increased Safety Measures for Energy Development on the Outer Continental Shelf (also known as the Interim Drilling Safety Rule)	Rulemaking (75 F.R. 63346)	10/14/10	All operations under BOEMRE jurisdiction*	<ul style="list-style-type: none"> • Well design • Drilling • Documentation • Training • Maintenance • Testing • Equipment
Safety and Environmental Management Systems (“SEMS”) (also known as the Workplace Safety Rule)	Rulemaking (75 F.R. 63610)	10/15/10	All operations under BOEMRE jurisdiction	<ul style="list-style-type: none"> • Proactive analysis and management of activities by offshore operators

Revisions to Safety and Environmental Management Systems	Rulemaking (76 F.R. 56683)	9/14/11	All operations under BOEMRE jurisdiction	<ul style="list-style-type: none"> Proactive analysis and management of activities by offshore operators
Civil Penalties	Rulemaking (76 F.R. 38295)	8/1/11	All operations under BOEMRE jurisdiction	<ul style="list-style-type: none"> Regulatory enforcement
Information Requirements for Exploration Plans, Development and Production Plans, and Development Operations Coordination Documents on the OCS (NTL 2010-N06)	Notice to Lessees	6/18/10	Exploration Plans, Development and Production Plans, or Development Operations Coordination Documents	<ul style="list-style-type: none"> Spill response and well containment Documentation
Statement of Compliance with Applicable Regulations and Evaluation of Information Demonstrating Adequate Spill Response and Well Containment Resources (NTL 2010-N10)	Notice to Lessees	11/8/10	Operations using subsea blowout preventers or surface BOPs on floating facilities	<ul style="list-style-type: none"> Spill response and well containment Documentation

*BOEMRE jurisdiction applies to all oil and gas operations in Federal waters, i.e. greater than 3 miles from the coast or, in the case of Texas and Florida's Gulf Coast, greater than 10 miles (or 9 nautical miles). As of now, offshore drilling contractors do not fall under BOEMRE jurisdiction, although Director Bromwich has stated his intent to begin regulating contractors in the near future.¹⁶

Shortcomings Common Across All New Regulations

In addition to considerable flaws in many of the new regulations implemented since the Deepwater Horizon, overarching problems in the regulation of offshore drilling exist. These overarching problems hinder offshore regulation in general, but also undermine the effectiveness of new safety measures. Consequently, despite claims to the contrary by government and industry alike, offshore drilling still is not environmentally safe.

BOEMRE CAN STILL GRANT “DEPARTURES” FROM REGULATORY REQUIREMENTS

By law, BOEMRE can exempt drillers from regulatory requirements. To receive an exemption, or “departure”, from regulatory requirements, rig operators must get approval from the District Manager or Regional Supervisor by discussing, in writing, the departure and why it is needed.¹⁷ No criteria are given for when a departure can or can not be granted; applicants must merely explain why the departure is needed.¹⁸ The ability of BOEMRE to grant departures from requirements, both old and new, undermines the efficacy of these requirements and brings into question the very meaning of the word “requirements.”

The problem with granting departures is glaringly evident in the case of the Deepwater Horizon. According to BOEMRE records, the agency granted BP 12 departures for the Macondo well, including many that allowed the company to circumvent testing requirements that might have avoided its blowout.¹⁹

Additionally, MMS granted a departure to BP four days prior to the blowout on April 20, 2010, for setting its cement plug during temporary abandonment deeper in the well than regulations required. Specifically, regulations required that during temporary well abandonment a cement plug must be set no more than 1,000 ft below the seafloor, or wellhead.²⁰ Nonetheless, MMS approved BP's request to instead set the cement plug 3,300 ft below the seafloor, which increased the risk of losing well control according to the Joint Investigation Team, a team created and staffed by the U.S. Coast Guard and BOEMRE to investigate

the Deepwater Horizon disaster.²¹ Indeed, the displacement of drilling mud 3,300 ft below the seafloor precipitated the blowout, although it was certainly not the only contributing factor. Nonetheless, this example illustrates the danger of departures and how they can negate safety regulations. As long as BOEMRE can grant departures from drilling requirements without defined criteria for when they can be granted, the new safety measures as well as older ones can be undermined.

PENALTIES ARE TOO SMALL TO DETER RISK-TAKING

A second overarching problem in offshore regulation is the monetary imbalance between civil penalties and operating costs. The maximum penalty BOEMRE can assess for civil violations²² is \$40,000 per day per violation.²³ In comparison, BP was paying over \$500,000 per day to use the Deepwater Horizon rig, and total estimated daily operating costs of the operation were approximately \$1 million.²⁴ This disparity between penalties for violating regulations and operating costs creates a perverse incentive for drillers to cut corners and complete operations in a timely rather than safe manner. Indeed, Director Bromwich expressed a similar sentiment in testimony delivered to the House Natural Resources Committee, stating that “the current enforcement framework, which permits maximum fines of only \$40,000 per day, per incident, is patently inadequate to deter violations in an environment where drilling operations can cost more than a million dollars a day.”²⁵

Actions taken on the Deepwater Horizon that put drilling progress over safety underscore such a conclusion. For example, BP sent the Schlumberger cementing team home without having them evaluate the cement job at the bottom of the well,²⁶ which ultimately failed and allowed hydrocarbons to flow into the well pipe. Had they taken the time to check the cement job, the spill could very well have been prevented. BP also moved forward with drilling despite having an insufficient number of centralizers.²⁷ After all, potentially paying a penalty was a small price compared to the cost of waiting for the needed supplies. After reviewing these and other actions, the Joint Investigation Team concluded that “the Macondo team made a series of decisions that cut costs and saved time,”²⁸ demonstrating a willingness to sacrifice safety for quicker project completion. Clearly, the maximum penalty is insufficient to prevent this risky corner-cutting behavior.

Worsening the situation, civil penalties are assessed for only a small fraction of documented violations, or Incidences of Noncompliance (“INCs”). An inspector can issue an INC for over 800 types of infractions that cover all regulatory requirements, but INCs do not have fines associated with them. Rather, civil penalties can be assessed for INCs, but only for those that threaten or damage human life or the environment, or that are not corrected within a specified period of time.²⁹ As a result, in 2009, out of 2,298 INCs issued by BOEMRE, only 87 were referred to the civil penalty process.³⁰ Penalties assessed by BOEMRE as a result of those 87 referred INCs as of June 30, 2011, amounted to just \$2.6 million³¹ – less than what it cost BP to operate the Deepwater Horizon for three days. The fact that civil penalties assessed for a year’s worth of INCs for the entire offshore oil and gas industry amount to less than three days of operating costs for the Deepwater Horizon underscores the extreme financial incentive to ignore regulatory compliance and cut corners. Until this gap is bridged, cutting corners will continue to pay off, and the safety of rig workers and the environment will continue to be jeopardized.

BLOWOUT PREVENTER DEFICIENCIES REMAIN AND HAVE NOT YET BEEN ADDRESSED

Blowout preventers (“BOPs”), the last line of defense against well blowouts, are equipped with multiple sets of rams that can seal wells and trap rising oil and gas within the well. One of those sets of rams, the blind shear rams (“BSRs”), are used to cut through and seal the drill pipe, thereby stopping any flow from the pipe into the surrounding environment. In the case of the Macondo blowout, though, the BSRs failed to shear the pipe and, consequently, the Deepwater Horizon’s BOP failed to stop the blowout.

In an investigation commissioned by the Department of the Interior, Det Norske Veritas (“DNV”) found that the failure of the BSRs and consequently the Deepwater Horizon’s BOP was due to the drill pipe elastically buckling within the BOP. When it buckled, the pipe moved sideways, outside the shearing surface of the BSRs.³² As a result of this displacement, the BSRs were not able to cut through and seal the pipe, allowing oil to escape unabated into the environment. The cause of the elastic buckling and lateral movement of the

drill pipe was attributed by DNV to the forces generated from the blowout, i.e. from hydrocarbons surging upwards through the drill pipe.³³ In other words, the very event BOPs are supposed to defend against – a blowout – was responsible for the failure of the Deepwater Horizon’s blowout preventer.

Since the BOP used by the Deepwater Horizon is a standard design used widely in the deepwater drilling industry, DNV concluded that the findings of its study should “be considered and addressed in the design of future Blowout Preventers and the need for modifying current Blowout Preventers.”³⁴ In other words, DNV’s findings alarmingly suggest that all BOPs, not just the Deepwater Horizon’s, may be flawed by design and may not be able to withstand forces generated by high-pressure blowouts, which occur at high-pressure reservoirs that are common in deepwater environments. Indeed, in responding to questions at a Congressional hearing, BOEMRE Director Bromwich stated, in light of the DNV forensic report, that BOPs cannot be treated as failsafe devices and full examinations of BOPs, including whether they can prevent blowouts, is necessary.³⁵ The Joint Investigation team advocated for similar research in its report.³⁶ Yet, no such examinations have been performed on a broad scale and no alternative blowout prevention strategy has been proposed or required by the new safety rules, leaving no last line of defense in place against blowouts.

BOEMRE STILL LACKS SUFFICIENT OVERSIGHT AND INSPECTION CAPABILITIES

A long-recognized shortcoming in the regulation of offshore drilling is insufficient inspection and oversight by BOEMRE. This deficiency doesn’t just undercut new, and even all, regulations implemented by BOEMRE since the Deepwater Horizon, but also exacerbates other overarching problems in offshore regulation. Inspections of offshore facilities in the Gulf of Mexico by BOEMRE/MMS decreased over the last decade in parallel with a shift in drilling to increasingly deeper waters,³⁷ a frontier area with increased risk.³⁸ This decrease was driven in part by a stagnant budget between 2000 and 2009 that failed to keep pace with oil production in the Gulf.³⁹ Consequently, in 2010 BOEMRE employed just 55 inspectors in the Gulf of Mexico to inspect about 3,000 facilities, a ratio of roughly 1 inspector for every 54 facilities.⁴⁰ Unannounced inspections were hit particularly hard over the past decade, dwindling to just 85 in 2009,⁴¹ meaning just 3% of the 3,000 offshore facilities underwent an unannounced inspection. 90% of inspectors queried by the Outer Continental Shelf Safety Oversight Board expressed a critical need for more unannounced inspections.⁴²

To its credit, BOEMRE has tried to reverse course and strengthen its inspection and oversight program in the wake of the Deepwater Horizon spill. The Bureau established the National Offshore Training Center and developed the nation’s first formal curriculum, both of which aim to better train inspectors on various areas of offshore inspections.⁴³ BOEMRE has also increased the proportion of inspections that are done with multi-person teams,⁴⁴ which inspectors themselves believe would improve the efficiency and efficacy of inspections,⁴⁵ and hired more inspectors so it can conduct more inspections. (Inquiries into how many inspectors BOEMRE currently has employed were not answered.⁴⁶)

While positive, these reforms do not bridge the gaps in inspection and oversight laid bare by the Deepwater Horizon disaster. BOEMRE’s ability to ramp up its inspection program is ultimately limited by its budget, which increased a meager \$23 million, or 7%, between 2010 and 2011, \$77 million less than was requested by the Bureau and what is necessary to “do the job the public deserves,”⁴⁷ according to Director Bromwich. Furthermore, when funding for the Office of Natural Resources and Revenue is removed, BOEMRE’s remaining budget – or that for all responsibilities other than revenue collection – actually decreased by \$15 million from 2010 to 2011.⁴⁸ These anemic levels of funding hamstring BOEMRE’s ability to sufficiently ramp up its inspections and oversight capabilities. Worse, the 2012 outlook for BOEMRE’s budget is, if anything, bleaker.

Anemic inspection rates have a number of consequences for offshore safety. Compliance with regulations suffers, as the probability of regulatory violations being uncovered and penalized is tied to inspection rates. Low inspection rates also reduce the odds that an inspector will be on hand to supervise critical decisions and operations, such as those on April 19th and 20th that led to the Macondo blowout. Because BOEMRE does not receive real-time data feeds from drilling rigs⁴⁹ in the Gulf, the only way for BOEMRE to directly intervene in critical operations on a rig is for an inspector to be on the rig during those critical operations.

But even if an inspector is on a drilling rig at the appropriate time, it is not guaranteed that operations will be directly supervised: inspectors are not required to witness operations and, more alarmingly, several inspectors reported to the Department of the Interior's Safety Oversight Board that "operators would close down work in certain areas when the inspectors were on the facility."⁵⁰ In other words, even if an inspector is on a rig concurrent with critical operations, and even if the inspector has time to observe said operations, the operator could simply delay those operations, prohibiting the inspector from supervising those operations. Requiring operators to warn BOEMRE of when such critical operations will be performed would address the issue of timing, yet no such requirements have been passed for most operations on drilling rigs,⁵¹ despite the urging of the Safety Oversight Board.⁵²

If inspections do not include oversight of critical operations on drilling rigs, they will not be able to prevent disastrous spills. The Macondo blowout provides a perfect illustration as to why. On April 1st, 19 days prior to the blowout, the Deepwater Horizon rig was inspected while drilling the Macondo well and no incidences of noncompliance were found.⁵³ In the 19 ensuing days, and particularly on the 19th and 20th, critical mistakes were made that led to the disastrous blowout and spill. The April 1st inspection could not have foreseen nor mitigated these mistakes. If an inspector had been on hand on the 19th and/or 20th, on the other hand, operations may have been halted as clear warning signals, such as the failed negative pressure test⁵⁴ or abnormal pressure readings during displacement of drilling mud,⁵⁵ began to emerge. Thus, having inspectors on rigs to oversee critical operations would greatly enhance safety, yet BOEMRE is far from realizing this goal.

THE OFFSHORE OIL AND GAS INDUSTRY HAS NOT CHANGED ITS APPROACH TO SAFETY

Ultimately, given the scale of and continuous technological advances in the offshore oil and gas industry, government alone will not be able to make offshore drilling safe. As President Obama's National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling (hereafter "National Commission") stated:

The record shows that without effective government oversight, the offshore oil and gas industry will not adequately reduce the risk of accidents, nor prepare effectively to respond in emergencies. However, government oversight, alone, cannot reduce those risks to the full [sic.] extent possible. Government oversight... must be accompanied by the oil and gas industry's internal reinvention: sweeping reforms that accomplish no less than a fundamental transformation of its safety culture.⁵⁶

Despite this call to action, the offshore oil and gas industry has not undertaken an "internal reinvention" or "fundamental transformation of its safety culture." Rather, the offshore oil and gas industry's safety culture today is largely the same as it was prior to the Deepwater Horizon, in that safety continues to take a backseat to profits.

One such marginal change since the Deepwater Horizon is the development of subsea containment caps, which are placed on runaway wells to collect oil and gas and channel it to collection vessels. (A prototype of these caps was used to stop the flow of oil and gas from the Macondo well into the environment after three months, prior to the permanent closure of the Macondo well via relief well.) Two consortiums have been formed by offshore oil and gas companies to develop these containment caps: Marine Well Containment Company ("MWCC"), whose members are mostly large corporations like BP, ExxonMobil, and Shell,⁵⁷ and Helix Well Containment Group ("HWCG"), whose constituents are the smaller players in the Gulf.⁵⁸ Both companies have developed interim containment systems that are available for use as they develop expanded containment systems.

While an improvement over having no containment system at all, as was the case the day of the Macondo blowout, these new containment systems are far from adequate in a number of respects. Most notably, the volume of oil either interim cap can collect is much less than the projected flow rates of oil that would occur following a worst case blowout as estimated by offshore oil and gas companies themselves. For instance, Shell estimated in a deepwater Exploration Plan approved by BOEMRE that in the event of a blowout, as

much as 449,000 barrels of oil per day could escape from a well it planned on drilling⁵⁹ – more than 7 and 8 times the collection capabilities of the MWCC and HWCG interim containment systems, respectively.⁶⁰

Consequently, if a blowout were to occur and one of the interim containment systems was able to be installed, over 300,000 barrels of oil per day would still leak into the environment – more than 6 times the flow rate during the Deepwater Horizon spill. The expanded containment systems of MWCC and HWCG would not be much more effective, as they will only be able to collect 100,000 barrels of oil per day, or roughly twice that of the interim systems, once they are developed. Worse, both the interim and expanded containment systems are not applicable to all blowout scenarios, since they are placed on the top of a runaway well's blowout preventer. Thus, if the blowout preventer is not accessible (e.g., if the drilling rig sinks and lands on top of the wellhead) or if oil is not fully channeled through the blowout preventer (e.g., if the well casing bursts⁶¹), the existing containment caps would not be effective. Despite these glaring deficiencies in their containment systems, oil and gas companies have elected to continue drilling, placing profits over safety.

More examples abound of the offshore oil and gas industry's failure to substantially, or even largely, reinvent its safety culture. As discussed at length in the next section, offshore oil and gas companies have greatly exaggerated their spill response capabilities in Exploration Plans in order to get their plans approved. Safety precautions that could be implemented unilaterally, such as drilling relief wells concurrent with exploratory wells, have not been implemented. And the American Petroleum Institute ("API"), the lobbying arm of the oil and gas industry, has even commented against increased safety measures that BOEMRE has proposed since the Deepwater Horizon.⁶² These and other actions of the offshore oil and gas industry all underscore its failure to substantially change its attitude towards safety.

The industry's indifference towards safety and foremost prioritization of profits is also evident in its recent lobbying efforts. Just over one year after the largest offshore oil spill in United States history, the offshore oil and gas industry has, via API and other organizations, begun heavily lobbying for expanded access to offshore resources and expedited permitting at the expense of oversight and permit review. As part of this lobbying effort, API has commissioned reports⁶³ decrying the slower pace of permitting post-Deepwater Horizon and the slower pace's impact on offshore drilling activity. What these reports fail to mention is that the slowdown is attributable to enhanced regulations and oversight. Permits were approved so quickly prior to the Deepwater Horizon spill because little regulation and oversight actually occurred.

If API were serious about safety, it would rail not against slower permitting, but against lack of funding for BOEMRE, since better funding for BOEMRE would allow for both strengthened oversight and quicker permitting. Instead, API has chosen to attack the pace of permitting itself, jeopardizing permit inspection and oversight, and ultimately trading safety for faster and greater access to offshore resources. The choice of expenditures by the offshore oil and gas industry is also telling: millions are spent on lobbying for increased access, while little to no improvements have been made since the Deepwater Horizon to spill cleanup and response technologies that date back decades.⁶⁴ All of these pieces of evidence lead to one conclusion: the offshore oil and gas industry has not changed its safety culture, continuing to prioritize profits over safety, and consequently offshore drilling remains a risky practice.

Shortcomings in New Safety Measures

NEW NOTICES TO LESSEES

Notices to Lessees ("NTLs") are documents issued to oil and gas operators by BOEMRE that are used to clarify existing regulations, such as by describing or interpreting a regulation, providing guidelines for implementing a regulation or lease stipulation, or describing the scope and meaning of a regulation.⁶⁵ In other words, NTLs do not establish new regulations, but rather clarify existing regulations. BOEMRE has released two NTLs that clarify regulations since the Deepwater Horizon: NTL 2010-N06 and NTL 2010-N10. Both of these NTLs clarify what BOEMRE will evaluate in applications and what oil and gas rig operators must submit in applications in order for those applications to be approved.

The NTLs issued by BOEMRE in the wake of the Deepwater Horizon purport to provide new information to BOEMRE with which it can better evaluate offshore drilling plans. Such information includes surface and subsea containment capacities in response to a blowout, steps taken by operators to increase blowout prevention, and worst case discharge (“WCD”) estimates of oil if a blowout were to occur. Yet, these NTLs have not bolstered safety and environmental protection for two reasons: no standards have been established against which to measure the newly-required information in plans and the stringency of BOEMRE’s reviews of these plans is still lacking.

No quantitative standards have been established upon which to judge the information required by these NTLs. As a result, in evaluating the plans and the information they contain, BOEMRE is not held to any standards for safety or environmental protection, making the approval of these applications more a matter of ensuring they are complete, or contain all required information. For instance, NTL 2010-N06 requires that each Exploration Plan (“EP”)⁶⁶ have a calculated worst case discharge (“WCD”) scenario that estimates how much oil could escape from a blown out well on a daily basis. However, NTL 2010-N06 does not say what WCD flow rate is considered prohibitively large. Many plans have estimated WCD flow rates of over 200,000⁶⁷ or even 300,000⁶⁸ bpd – over 3 and 5 times greater than the flow rate of oil from the Macondo well, respectively. Clearly, if the flow rate of oil actually reached these estimated WCDs, the resulting environmental impacts would be staggering, dwarfing those of the Deepwater Horizon spill. Yet BOEMRE nonetheless approved these and similar plans.

Similarly, NTL 2010-N06 requires an operator to calculate the time it would take to kill a runaway well via relief well, but does not give a deadline by which the relief well must be completed. Consequently, BOEMRE has approved Exploration Plans that state a relief well would take over 100 days to complete.⁶⁹ (For comparison, the Deepwater Horizon spill lasted 89 days.) Clearly, approving plans for drilling while knowing that an oil spill may continue for 100 days before the ruptured well can be killed does not protect the environment any more than does approving a plan for drilling that gives no such estimate, but would nonetheless require 100 days to kill a well via relief well. If BOEMRE established a certain number of days by which a relief well must be completed in order for an Exploration Plan to be approved, any Exploration Plans failing to meet that criteria could, for instance, be forced to concurrently drill a relief well, thereby providing real protection to the environment.

Perhaps more importantly than the lack of standards, though, is that BOEMRE continues to rubberstamp permits. After the Deepwater Horizon, scrutiny of MMS’s permit approval processes revealed a startling, systemic lack of oversight. More memorably, the Deepwater Horizon’s OSRP referred to walruses in the Gulf of Mexico and referenced long-dead BOEMRE (then MMS) employees.⁷⁰ While the ridiculousness of these and other claims is readily apparent to anyone, equally ridiculous but less readily apparent are claims oil and gas companies have made since the Deepwater Horizon in Exploration Plans and other documents in order to comply with the requirements of new NTLs. For example, NTL 2010-N10 requires operators to submit information “demonstrating it has access to and can deploy surface and subsea containment resources that would be adequate to promptly respond to a blowout or other loss of well control.”⁷¹ In practice, this means that operators must submit estimates of how much oil can be recovered by recovery techniques at the surface, e.g. skimming and burning, and below it, e.g. well containment systems.

In theory, forcing operators to provide this information could greatly enhance BOEMRE’s review of drilling applications – if an operator does not have sufficient resources to contain and/or recover all of the oil that would be spilled in a worst case scenario, BOEMRE could reject the permit until the operator obtains those resources. Doing so would avoid a replay of events following the blowout of the Macondo well, where surface containment and recovery techniques were woefully inadequate and efforts to kill and contain the runaway well repeatedly failed.

Unfortunately, this theory has not become a reality. Instead, BOEMRE has continued its former practice while the MMS of approving applications seemingly without scrutinizing the claims within those applications. To give just one example, many oil companies have claimed their capacity to mechanically recover oil from water via skimming exceeds 100,000 barrels per day.⁷² A particularly egregious case, BOEMRE approved a

plan by Shell wherein Shell claimed its recovery rate via mechanical skimming would be 606,000 barrels per day.⁷³

Contrary to these claims, oil companies cannot recover 100,000, let alone 600,000, barrels of oil per day from Gulf waters via skimming. During the Deepwater Horizon spill, when every available skimming vessel, including retrofitted fishing boats, was utilized, the National Oceanic and Atmospheric Administration estimates that a paltry 1,800 barrels of oil per day was recovered via skimming,⁷⁴ or 300 times less than Shell’s claimed capability. No technological breakthroughs have occurred since the Deepwater Horizon that would suggest skimming capabilities are any different today. Even so, BOEMRE accepted Shell’s application, and many others like it, that contained this egregious claim, betraying the intent of recent NTLs and ultimately negating their potential to alleviate the risks associated with offshore drilling.

NEW REGULATIONS

In addition to clarifying existing regulations via NTLs, BOEMRE has implemented new regulations concerning offshore oil and gas operations. The bulk of these new regulations, which target various aspects of offshore drilling, was promulgated by BOEMRE under the Interim Drilling Safety Rule.⁷⁵ After years of consideration, BOEMRE also required operators to develop and implement Safety and Environmental Management Systems (“SEMS”), wherein operators develop a facility-specific program that “identifies, addresses and manages safety, environmental hazards, and impacts” of offshore operations.⁷⁶ BOEMRE subsequently promulgated regulations to strengthen its SEMS requirements.⁷⁷ Both new packages of requirements, the Interim Drilling Safety Rule and SEMS, are discussed in turn below.

Interim Drilling Safety Rule

The new regulations passed in the Interim Drilling Safety Rule can be grouped into three categories based on the aspect of offshore drilling they target: well design and equipment, equipment testing, and training and maintenance. All of the new regulations are listed and briefly described in Table 2. As a whole, these new regulations would, if enforced and followed, afford some additional protection to workers and the environment from offshore oil and gas operations. Unfortunately, given the overarching problems discussed above, it is not possible to ensure the new regulations will be enforced and followed in large part, despite BOEMRE’s best intentions. Furthermore, most of the new regulations, and particularly those that have the greatest potential to improve offshore safety, are themselves flawed. Consequently, offshore drilling remains largely as risky and dangerous a practice as it was when the Deepwater Horizon disaster occurred.

In this section, we discuss at length those new regulations that have the greatest potential to improve offshore safety, but which also have serious flaws. A complete list of the new safety regulations and their flaws is available on Oceana’s website.ⁱⁱ

Table 2: Regulations promulgated under the Interim Drilling Safety Rule categorized based on the aspect of offshore operations they target.

Targeted Aspect of Offshore Operations	Section in Code of Federal Regulations, Chapter 30	Brief Description of Regulation
Training and Maintenance	§250.442(e), §250.515(e), §250.615(e)	Requires operators to establish minimum requirements for personnel authorized to operate critical blowout preventer (“BOP”) equipment. Training of these personnel must include deepwater well theory and comprehensive knowledge of BOP hardware and control systems.
Training and Maintenance	§250.442(c), §250.515(e), §250.615(e)	Remotely operated vehicles (“ROV”) must be maintained and a trained ROV crew must be on each floating drilling rig on a continuous basis.

ⁱⁱ Go to www.oceana.org/safetyreportappendix.

Training and Maintenance	§250.446(a), §250.516(h), §250.516(g), §250.617	BOP inspections and maintenance must be documented per American Petroleum Institute (“API”) Recommended Practice (“RP”) 53. [This means that records must be kept on rigs for 2 years or from date of last major inspection.]
Training and Maintenance	§250.1500 thru §250.1510	Rig personnel must be trained in deepwater well control and specific duties, equipment, and techniques associated with deepwater drilling.
Equipment Testing	§250.449(j), §250.516(d)(8), §250.616(h)(1)	All ROV intervention functions of subsea BOPs must be tested during stump tests.
Equipment Testing	§250.449(k), §250.516(d)(9), §250.616(h)(2)	Autoshear and deadman systems on subsea BOP stacks must be function tested during stump test. The deadman system must also be tested during initial test on seafloor.
Equipment Testing	§250.449(j), §250.516(d)(8), §250.616(h)(1)	At least 1 set of rams must be tested during initial test on seafloor.
Equipment Testing	§250.451(i)	If blind shear rams (“BSRs”) or casing shear rams are activated in a well control situation, the BOP must be retrieved and fully inspected and retested.
Well Design and Equipment	§250.198(a)(3)	For all documents incorporated by reference, when that document uses the word “should” or “shall,” it must be interpreted by operators as meaning “must.”
Well Design and Equipment	§250.198(h)(79)	Incorporates by reference API RP 65-Part 2 Isolating Potential Flow Zones During Well Construction. [API RP 65-Part 2 is an API best practices document that identifies mechanical barriers and cementing procedures that should be used in each casing string so as to prevent flow through or past pressure-containment barriers that are installed and verified during well construction (e.g., the cement plug at the bottom of the well in the shoe track).]
Well Design and Equipment	§250.415(f)	Requires a written description of how the operator evaluated the best practices included in API 65-Part 2 [see above]. This description must identify mechanical barriers and cementing practices the operator will use in each casing string.
Well Design and Equipment	§250.416(d)	Requires operators to include schematics of all control systems, including primary and secondary control systems and pods for BOPs.
Well Design and Equipment	§250.416(e)	Requires independent third-party (“I3P”) verification that installed blind shear rams are capable of shearing any drill pipe in the hole.
Well Design and Equipment	§250.416(f)	Requires I3P verification that the subsea blowout preventer is designed for specific equipment on the rig and the specific well design, including conditions around the well. Also requires testing to show the subsea BOP hasn’t been damaged or compromised from previous service.
Well Design and Equipment	§250.416(g)	Sets specific qualifications for I3P verifiers. [Specifically, the I3P must be a technical classification society; an API-licensed manufacturing, inspection, or certification firm; or a licensed professional engineering firm capable of providing the verifications required under this part.]
Well Design and Equipment	§250.420(a)(6)	Requires certification, submitted with the Application for Permit to Drill (“APD”), by a professional engineer that there will be at least 2 independent tested barriers (including at least 1 mechanical barrier) across each flow path during well completion activities, and that casing and cementing designs are applicable for

		wellbore conditions. This pertains to drilling/construction as well as to cementing the final production casing/liner.
Well Design and Equipment	§250.420(b)(3)	Requires the installation of dual mechanical barriers in addition to cement for the final casing string (i.e., have 2 barriers in center of wellbore). This may include dual float valves, or 1 float valve and another mechanical barrier.
Well Design and Equipment	§250.423(b)	Requires pressure testing on the casing seal assembly to ensure proper installation of casing or liner. Operators must also ensure that latching mechanisms or lock down mechanisms are engaged upon installation of each casing string or liner (including intermediate and production strings). The procedures and criteria for a successful test must be submitted with an Application for Permit to Drill (“APD”) for approval.
Well Design and Equipment	§250.423(c)	Requires a negative pressure test to ensure proper casing installation. Must be performed for intermediate and production casing strings. Procedures and criteria for a successful test must be submitted with an APD for approval. Any detection of flow or pressure build up will be considered a failed test.
Well Design and Equipment	§250.442(c), §250.515(e), §250.615(e)	Requires subsea BOP stacks to be equipped with ROV intervention capabilities. At a minimum, the ROV must be able to close 1 set of pipe rams, 1 set of blind shear rams, and unlatch the lower marine riser package.
Well Design and Equipment	§250.442(f), §250.515(e), §250.615(e)	Requires autoshear and deadman systems to be installed on dynamically positioned rigs.
Well Design and Equipment	§250.456(j)	Before displacing kill-weight drilling fluid from wellbore, the operator must receive approval from the District Manager.
Well Design and Equipment	§250.1712(g), §250.1721(h)	During well abandonment, a professional engineer must certify abandonment designs and procedures, and there must be at least 2 independent tested (including at least one mechanical) barriers to flow during abandonment activities.

Shortcomings in New Training and Maintenance Regulations

The Interim Drilling Safety Rule included a variety of new training and maintenance requirements for offshore oil and gas operations. Improved maintenance and training are both positive reforms that can reduce chances of equipment failure and operator error. However, of all the new regulations, this category will be the most dependent on oversight and inspection, since maintenance is an ongoing concern that must be continually checked and training is only valuable if it translates into appropriate actions, which also requires continuous oversight to ensure. Unfortunately, BOEMRE’s inspection and oversight capabilities remain woefully inadequate, as previously discussed.

Other factors also undermine new training and maintenance regulations. The aforementioned perverse financial incentives, for one, can discourage workers from actually following their training and maintenance guidelines when doing so would cost time and therefore money. Additionally, the new maintenance regulations pertain to blowout preventer (“BOP”) and remotely operated vehicle (“ROV”) maintenance, but as discussed above, BOPs in operation may have fundamental design flaws. If a BOP cannot function as intended due to a design flaw, then maintenance is largely irrelevant to its functionality. Indeed, the Joint Investigation Team concluded that lack of maintenance did not account for the failure of the Deepwater Horizon’s BOP.⁷⁸ For these reasons, while new training and maintenance regulations are welcome and an improvement, in the end they fall far short of substantially improving the safety of offshore drilling.

Shortcomings in New Equipment Testing Regulations

BOEMRE has implemented numerous new equipment testing requirements that apply to various stages in offshore drilling. These testing requirements might seem to improve the safety of offshore drilling; however, on closer inspection, their efficacy is ultimately undercut by the overarching regulatory shortcomings discussed above, the failure of commonly-employed testing methodologies to mimic real life conditions and the lack of a new testing requirement that ensures blind shear rams can shear tool joints. Operator error is also a pervasive threat to the efficacy of old and new testing regulations, as misinterpreting or improperly conducting a test completely undercuts its potentially positive effect. For all of these reasons, new testing regulations are unlikely to prevent a major spill.

- **New Equipment Testing Regulations Are Greatly Undermined by Overarching Problems in Offshore Regulation.** Despite the promise of the new equipment testing regulations, their effectiveness is ultimately undermined by the previously discussed overarching problems in offshore regulation. For one, testing requirements can only be fully enforced with adequate inspection and oversight. A brief review of civil penalties, which only cover a fraction of documented violations or INCs (see above), assessed by BOEMRE over the past few years demonstrates that it is not rare for drilling operations to violate testing requirements.⁷⁹ If such violations are not caught and if companies are not held to regulations, then there is little incentive for companies to abide by those regulations. Unfortunately, as previously discussed, BOEMRE's inspection and oversight capabilities are still wanting, meaning little incentive exists for offshore operators to adhere to the new equipment testing regulations. This fact, coupled with the aforementioned financial incentive to cut corners, suggests that companies will not fully comply with new testing regulations.
- **Current Equipment Testing Methods Do Not Adequately Mimic Real Life Conditions.** An enhanced equipment testing regime vis-à-vis new equipment testing regulations does not guarantee equipment will function as intended in the future. The Deepwater Horizon provides an excellent illustration of this case. Prior to the incident, multiple pieces of equipment used in the Deepwater Horizon drilling operation were tested per regulations and passed. (Notably, BP also requested and was granted multiple exemptions from testing requirements, another overarching problem that undercuts new testing regulations.) Yet, when the blowout occurred, some of these same devices that passed tests conducted per regulations did not work. For instance, the shearing ability of the Deepwater Horizon's blowout preventer's blind shear ram was demonstrated in tests on two occasions, in one of which it sheared a pipe similar to that used in Macondo,⁸⁰ yet this same blind shear ram was unable to shear and seal the drill pipe during the blowout.

In part, the failure of a piece of equipment to function when in use as it did when in testing can be attributed to the disparity between operating and testing conditions. This disparity is most evident in testing requirements for blowout preventers ("BOPs"). During a blowout, large volumes of fluid and gas move through the BOP at high velocities and pressures, generating what are called "dynamic flowing conditions." Yet, current testing requirements do not mandate BOPs be tested under dynamic flowing conditions, nor do API specifications⁸¹ recommend tests be conducted under such conditions. This regulatory gap exists despite reports from as early as 2003 highlighting the need for BOP testing to be done under dynamic flowing conditions.⁸² The Joint Investigation Team arrived at a similar conclusion, saying that testing BOPs under dynamic flowing conditions would best approximate a BOP's, and similarly its rams', performance in the event of a blowout.⁸³ Nonetheless, no such regulatory requirement has been promulgated, which severely undermines any new testing requirements for BOPs. One need only look to the Deepwater Horizon to understand why this is so: the Deepwater Horizon's BOP and BSRs repeatedly passed tests that complied with regulations shortly before the blowout,⁸⁴ yet failed to stop the blowout all the same because the blowout compromised their functional integrity.

- **New Blind Shear Ram Testing Requirements Do Not Ensure They Can Shear Tool Joints.** Another potentially-major new equipment testing requirement is the need to confirm that a BOP's blind shear rams ("BSRs") can cut any pipe used in the drilling process.⁸⁵ Multiple types and sizes of pipes are used in the drilling process, so ensuring the BSR can cut all of them is essential to ensure the BOP will work regardless of which pipe section is in the cleaving surface of the BSR at the time

of a blowout. However, the new requirement notably does not mandate BSRs (or BOPs) be able to cleave tool joints.

The drill pipes that operators lower into wells are not made of a single, contiguous length of pipe; rather, multiple small sections of pipe are screwed together to form an appropriately-sized pipe. The point at which two pipe sections are screwed together is called a “tool joint”, and since it is where two pipe sections overlap, it is thicker than the surrounding sections of single-pipe thickness. Tool joints account for roughly 10% of a pipe’s length.⁸⁶ Following the Deepwater Horizon blowout, much attention was given to the fact that BSRs are not designed to shear these tool joints, meaning that if a tool joint were in the shearing surface of the BSR at the time of a blowout, the BSR would fail to cut through and seal the pipe, defeating its purpose.⁸⁷ Requiring BOPs to be able to shear tool joints, and requiring testing to this effect, would increase the probability BOPs will actually function as intended, yet such a requirement has not been promulgated by BOEMRE, leaving a major problem in place that could lead to future blowouts.

Shortcomings in New Well Design & Equipment Regulations

The Interim Drilling Safety Rule also contained numerous new regulations for well design and equipment. These regulations seem to directly compensate for the numerous deficiencies in the Macondo well design that came to light in the aftermath of the blowout. Of all the new regulations put forth by BOEMRE thus far, these have the greatest potential to increase the safety of offshore drilling. However, many factors limit their effectiveness. For one, numerous overarching concerns in offshore regulation persist (see above) that undermine the efficacy of new well design and equipment regulations, as illustrated immediately below. Additionally, many of the new well design and equipment regulations have shortcomings in their designs. The most important of these shortcomings are discussed below. As a result of problems in overarching offshore regulation and in the designs of specific regulations, new well design and equipment regulations do not guarantee against oil spills or achieve their potential.

New regulations pertaining to negative pressure tests illustrate how many of the new well design and equipment regulations hold great promise for improving safety of offshore operations, but are undercut by overarching problems above. Negative pressure tests are used to check the integrity of wells after they have been cemented and before they are sealed and abandoned; a successful negative pressure test indicates the bottom of a well is stable and oil and gas from the surrounding reservoir is not flowing into the well, which can lead to a blowout. Drilling operations now must conduct a negative pressure test to ensure intermediate and production casing strings are properly installed. More importantly, though, operators must submit to BOEMRE for approval the test procedures and criteria for a successful test.⁸⁸ Any detection of flow or pressure accumulation will be considered a failed test by BOEMRE, and in the event of a failed test, the cause must be investigated and corrected.⁸⁹

The importance of the negative pressure test regulations is evident in the context of the Deepwater Horizon incident. While no mandate to conduct a negative pressure test existed prior to the Interim Drilling Safety Rule, the Deepwater Horizon crew nonetheless conducted a negative pressure test on the Macondo well. Crucially, though, neither BP nor Transocean had established negative pressure test protocols or criteria for a test’s success.⁹⁰ As a result, workers on the Deepwater Horizon misinterpreted a failed negative test pressure as a success, at which point they continued abandonment operations, shortly after which the blowout occurred. If the new negative pressure test regulations that pertain to test protocols and criteria for success had been in place prior to the Macondo blowout, work on the Deepwater Horizon may have halted at the time the negative pressure test was performed as the test would have failed per regulations and the crew would have had to determine why.

Implicit in this discussion, though, is that the workers on the Deepwater Horizon would have fully adhered to the new regulations, i.e. interpreted the success or failure of the negative pressure test according to regulation and conducted the test according to regulation. But this is not a safe assumption, given the overarching problems in the regulation of offshore drilling discussed above that undermine regulatory compliance by offshore operators and incentivize corner cutting. Thus, until these overarching problems are addressed, new negative pressure test regulations – and moreover all well design and equipment regulations – will have a limited impact on offshore safety.

- **Dual Safety Valves Should Not Qualify As Two Independent Barriers.** The Interim Drilling Safety Rule established two new regulations that require operators to install two independent tested barriers in different situations. One regulation requires they be installed in the well's final casing string, a section of pipe that extends directly from the oil reservoir to the top of the well, or wellhead. (The final casing string was installed in the Macondo well immediately prior to its blowout.) The other requires they be installed across all flow paths, i.e. in the well pipe and surrounding space, during well completion activities, which BP was engaged in at the time of the blowout.

Requiring the installation of two independent safety barriers across potential paths of flow is a welcome reform because the more independent tested barriers there are, the greater probability rising hydrocarbons will be trapped in the well, thereby averting a blowout.

Despite the potential effect of these regulations in making offshore drilling safer, the regulations are undercut by a flaw in their design. Specifically, under the two regulations, dual float valves qualify as two independent tested barriers, meaning installing dual float valves could satisfy both regulations (although alternate options also exist).⁹¹ Dual float valves are used when cementing casing strings into place, including while doing the bottom cement job for the final casing string. Initially, dual safety valves are propped open by an "autofill" tube, allowing liquids (e.g., cement) to be pumped down the well through the tube. Once pumping is complete, the autofill tube is pushed down through the valves, at which point the valves "convert", or snap shut, and block upward movement of liquid through the pipe while still allowing downward flow.

While this sounds like an effective barrier to flow, in fact dual float valves are not considered reliable barriers by the industry, as expressed by ExxonMobil in a comment to BOEMRE.⁹² The Joint Investigation Team⁹³ and the Chief Counsel to the National Commission⁹⁴ have echoed this sentiment, stating that dual float valves not only are not reliable barriers to flow, but also are not meant to prevent the upward flow of gas, which could cause a blowout. Also, dual float valves are not independent barriers, since both valves are propped open by the same autofill tube and share the same specifications, so would be expected to fail in similar circumstances. Despite all of these concerns, BOEMRE has still allowed oil and gas companies to utilize dual float valves as two independent tested barriers rather than actual independent tested barriers, undercutting the efficacy of two of the most promising new regulations.

For an example of why dual safety valves should not qualify as two independent tested barriers, one needs to look no farther than the Deepwater Horizon disaster. BP actually installed dual safety valves in the final casing string in the Macondo well, meaning it could have satisfied the two regulations in question. But clearly, the dual safety valves did not effectively block the flow of hydrocarbons up through the well as two independent barriers should. This may be because BP failed to convert, or snap shut, the dual safety valves before it pumped cement down through the well.⁹⁵ Nonetheless, the fact that the Deepwater Horizon would have satisfied the two regulations speaks volumes of the deficiencies of these regulations.

- **Regulations Requiring Additional Barriers to Flow Can Be Undermined by Operator Error.** Another concern with the two new regulations that require the installation of two independent barriers to flow is the ever-pervasive threat of operator error. While it is true that two functional, correctly installed independent barriers that are not dual safety valves would enhance protection against blowouts, implicit in this statement is that the barriers are properly installed. However, as is made plainly evident by the Deepwater Horizon, there are multiple ways in which the integrity of a barrier can be undermined. Cement plugs, for instance, are commonly-employed barriers in offshore drilling and can be compromised in a number of ways: the cement slurry can be given insufficient time to set or be improperly mixed; channeling can occur while cementing the space around the well pipe, which would leave open a flow path for hydrocarbons; etc.

Certainly, improved training requirements recently mandated by BOEMRE will reduce operator error, but ensuring barriers are correctly installed ultimately comes down to inspection and oversight,

which, as previously discussed, are still lacking. Furthermore, previously discussed perverse financial incentives exist for drilling operations to place drilling and profits over precaution and safety. Consequently, it is highly likely some barriers required by the two new regulations in question will be improperly installed and ultimately not function as intended, decreasing protection against blowouts and spills.

- **API-Licensed Organizations Should Not Be Considered Independent Third Parties.** Many of the new regulations implemented by BOEMRE in the Interim Drilling Safety Rule require operators to have aspects of their well design verified by an independent third party (“I3P”).⁹⁶ In general, the independence of I3Ps is of concern across industries and settings, but is particularly so in industries as lucrative as oil and gas. Of more immediate concern, though, is how BOEMRE defines an I3P. Among other entities, BOEMRE says an I3P can be a manufacturing, inspection, or certification firm licensed by the American Petroleum Institute (“API”).⁹⁷ API is the largest trade group for oil and gas companies in the United States. One of its primary goals is to advocate on behalf of oil and gas companies by lobbying the government to expand offshore drilling such as by expediting permitting or opening up protected areas. It has even advocated against some of the increased safety measures in the Interim Drilling Safety Rule.⁹⁸ Such an entity can not be considered independent from its own members.

Indeed, the National Commission expressed its opposition to housing an independent safety center within the API based on API’s history of undercutting safety reforms and its relationship with oil and gas companies.⁹⁹ By defining I3Ps as entities that are licensed by an organization that more or less is identical to the offshore oil and gas industry, BOEMRE severely undermines its own verification process.

Safety and Environmental Management Systems (“SEMS”)

After years of delay, BOEMRE made the implementation of a Safety and Environmental Management System (“SEMS”) mandatory for offshore operators in November 2010, and has issued additional guidance since.¹⁰⁰ According to BOEMRE, “SEMS is a nontraditional, performance-focused tool for integrating and managing offshore operations. The purpose of SEMS is to enhance the safety and cleanliness of operations by reducing the frequency and severity of accidents.”¹⁰¹ To that end, SEMS requires operators to identify, address, and manage safety, environmental hazards, and impacts through offshore resource development, the intention being that by making operators proactively identify how operations can be made safer, future risks can be anticipated and potentially mitigated.¹⁰²

Each SEMS program must consist of 13 elements, listed here to give a sense of the scope and various parts of a SEMS program: general management program principles for implementing, planning, and managing the review and approval of the SEMS program; safety and environmental information; hazards analysis; management of change; operating procedures; safe work practices; training; assurance of quality and mechanical integrity of critical equipment; pre-startup review; emergency response and control; investigation of incidents; audit of SEMS; and records and documentation. This SEMS framework is modeled after API’s Recommended Practice 75, Development of a Safety and Environmental Management Program for Offshore Operations and Facilities, with additional clarification and requirements formulated by BOEMRE.

Requiring operators to adopt and implement SEMS programs is a welcome reform that could improve the safety of operations on the OCS. However, as above, the crucial point of concern is to what extent it improves safety. And similar to previously-discussed rules, SEMS is unlikely to markedly shift the risks associated with offshore oil and gas drilling for a number of reasons.

BP Had in Place Internal Policies Similar to Aspects of SEMS When the Deepwater Horizon Disaster Occurred

BP had in place a number of internal policies that mirror many of the now-required aspects of SEMS at the time of the Deepwater Horizon blowout. These policies included an Operating Management Systems (“OMS”), which provided a standardized approach to risk management;¹⁰³ a Management of Change

(“MOC”) process, which pertained to temporary or permanent changes in any aspect of drilling operations including personnel changes;¹⁰⁴ a communications plan to help determine who should make decisions concerning rig operations;¹⁰⁵ safety rules called the “golden rules”, which required identification of hazards and risks associated with activities on a regular basis;¹⁰⁶ and management of risk in its drilling well operations policy (“DWOP”).¹⁰⁷

Yet, despite having these internal policies in place, BP employees failed to follow them, and in some cases cut corners to lower costs without formally assessing risks.¹⁰⁸ This failure could be attributed to a lack of a penalty for not following them, since they were self-imposed policies, but as previously discussed, the penalties BOEMRE can assess are, relative to operating costs, negligible and BOEMRE's inspection and oversight capabilities are lacking. Thus, making SEMS compliance mandatory does not substantively change the risk-reward calculation, explicit or implicit, performed by oil and gas operators, so these practices likely will not greatly reduce the risk of a major accident. For this reason, the new SEMS regulation will have a limited positive effect on offshore safety.

SEMS is Not New to Oil and Gas Operations in the Gulf of Mexico

While codified in November 2010, SEMS is not a new system to oil and gas operations in the Gulf of Mexico. In 1998, operators that accounted for 98% of oil production in the Gulf of Mexico reported they had a voluntarily implemented SEMS program in place.¹⁰⁹ By 2006, the most recent year for which data are available, this percentage decreased, but was still high at 60%.¹¹⁰ Despite these high levels of implementation, large spills and violations still occurred in those years at rates comparable to recent years,¹¹¹ suggesting SEMS will not markedly reduce oil spills. While one could argue that the voluntarily implemented SEMS programs were ineffective because they were voluntarily and so operators had no incentive to adhere to them, the aforementioned gap between financial penalties that BOEMRE can assess and drilling costs similarly creates little if any incentive for offshore operators to abide by mandatory SEMS programs. Consequently, operators would only adhere to SEMS when it is convenient and detrimental to drilling operators - exactly when it is most important for SEMS to be followed.

Programs Similar to SEMS Do Not Adequately Guard Against Spills

Ultimately, SEMS seems to be BOEMRE's version of, or at least first step towards, the much-discussed “safety case” requirement employed elsewhere in the world, such as in the North Sea. In safety case analysis, minimal prescriptive regulations are employed and most of the burden of proving that operations can be conducted in a safe manner is placed on oil and gas operators, not the regulator. In order to receive approval to commence drilling, operators have to demonstrate that they fully assessed the risks associated with each step in the offshore drilling process and that they can fully manage those risks.¹¹² For comparison, offshore oil and gas operations in the United States have to show that they have complied with all applicable regulations, not that they have identified any and all risks associated with their operations.

The new SEMS rule resembles a safety case approach in that it provides a framework that all SEMS programs must abide by, but otherwise lets operators develop their own SEMS programs. Another parallel between SEMS and safety case is that both require operators to independently identify and manage rig-specific risks associated with their activities.

In the aftermath of the Deepwater Horizon spill, much attention was given to the “safety case” approach as many considered it a better system than the prescriptive, or regulation-driven, approach used by BOEMRE. Yet, revelations in the last few months have shown that even the vaunted safety case approach is not sufficient to protect against spills.

The Guardian, in an examination of government reports, found that serious oil spills occurred (and continue to occur) at the rate of at least once per week in 2009 and 2010 in the North Sea, where a safety case approach is used.¹¹³ Similarly, according to the British offshore drilling safety regulator there are around 70 hydrocarbon releases per year that are categorized by the regulator as having the potential to cause multiple fatalities and escalate in severity, i.e. become worse if not addressed, in the British section of the North Sea.¹¹⁴ Clearly, the safety case approach in the North Sea has failed to protect against risks associated with offshore drilling, especially given testament by some rig workers that these self-reported spills are only the tip of the iceberg, since many others go unreported.¹¹⁵

As further evidence of shortcomings in the safety case system, Shell spilled roughly 1,300 barrels of oil into the sea in early September 2011.¹¹⁶ While dwarfed by the volume of the Deepwater Horizon spill, 1,300 barrels is still a large volume of oil and shows that even in an “ideal” safety case scenario, let alone under a SEMS program, damaging spills can occur. Shell’s spill in the North Sea also uncovered demonstrated the company’s reticence to promptly share information with the public¹¹⁷ much like BP during the Deepwater Horizon spill. Shell’s reticence evinces an attitude towards safety completely counter to that necessary for proper self-regulation.

If decades of a safety case regime haven’t sufficiently shifted the culture in the North Sea, it is highly unlikely requiring similar SEMS programs will fundamentally alter the offshore oil and gas industry’s safety culture in the Gulf of Mexico.

Stop Work Policies Existed on the Deepwater Horizon yet Were Not Used

One of BOEMRE’s revisions to its SEMS regulations was requiring operators to authorize a Stop Work Authority (“SWA”) program within their SEMS program, wherein any employee on a facility could stop work at any given time if a threat or danger to an individual, property, and/or the environment exists.¹¹⁸ Such an SWA program, if fully implemented and utilized by employees, would make offshore drilling safer by giving the power to stop work to more employees, thereby increasing the chances potential problems would be caught and stopped before they transpire

Yet, the facts surrounding the Deepwater Horizon disaster cast serious doubt onto whether such an SWA program would actually be fully utilized by employees. On the Deepwater Horizon, Transocean, BP, and Halliburton all had stop work policies in place, and all witnesses from those companies who testified before the Joint Investigation Team furthermore stated that they were aware of the SWA.¹¹⁹ However, no employees spoke up and invoked their stop work authority in the hours preceding the blowout¹²⁰ despite numerous warning signs that would have been evident to various teams of workers, including the negative pressure test team, cementing team, and well abandonment team that displaced drilling mud from the top of the final casing string over a period of hours.

The fact that no employees exercised their stop work authority, though, is not surprising, given the lack of anonymity in such situations and fears of reprisal. In a survey of Deepwater Horizon crew members requested by Transocean, 46% of crew members felt that “some of the workforce feared reprisals for reporting unsafe situations.”¹²¹ Similar concerns have been reported by workers in the North Sea.¹²² Such concerns illustrate the pressure workers feel in not hindering development, and suggest federally-mandated SWA and whistleblower protection programs will not work as intended.

New Safety Measures May Not Have Prevented the Deepwater Horizon Blowout

Our analysis shows that, as a result of the numerous shortcomings in the new safety measures and overarching problems in the regulation of the offshore industry, it is unlikely that the new safety measures would have prevented the Deepwater Horizon blowout from occurring. Table 3 lists the major contributing causes to the Deepwater Horizon blowout and pairs them with the relevant new safety measures.

In most instances, there is only a small likelihood that the new safety measures, if they had been in place on the day of the Deepwater Horizon blowout, would have stopped the blowout by effectively mitigating a contributing cause of the blowout. This conclusion underscores the weakness of the new safety measures in preventing future spills, for if it is unlikely that they would have prevented the Deepwater Horizon spill, it is also unlikely that they will prevent future disastrous spills.

Table 3: Analysis of the effect new safety measures would have had on the outcome of the Deepwater Horizon disaster if they had been in place on the day of the blowout.

Contributing Cause to Deepwater Horizon blowout	New Safety Measures that Pertain to Contributing Cause	Problems with New Safety Measure(s)
Cement plug was set and drilling fluid was displaced from far below seafloor	<p>Better training.</p> <p>Operators must receive approval from District Manager prior to displacing drilling fluid from well.</p>	<p>Regulations mandating the cement plug be set shallower in the well already existed the day of the blowout, yet BP received a “departure”, or exemption, from this requirement from MMS. Since BOEMRE can still grant departures, new regulations would likely not have changed the plug’s placement.</p> <p>BOEMRE continues to rubberstamp plans and permits, so the newly-required approval by the District Manager likely would not have involved a detailed examination of BP’s displacement plans. As a result, the District Manager may not have stopped the displacement of fluid.</p> <p>Persistent overarching problems would have likely led to the cement plug being placed just as deep. Perverse financial incentives to cut corners Inadequate inspection and oversight Industry’s unchanged safety culture</p>
Failure to detect and respond to kick	<p>Better training.</p>	<p>Persistent overarching problems undermine new training requirements as well as the application of the skills and knowledge gained during those programs. As a result, the Deepwater Horizon crew may still have failed to detect and respond to the kick. Perverse economic incentives to cut corners Inadequate inspection and oversight Industry’s unchanged safety culture</p>
Improper protocol for and interpretation of negative pressure test	<p>Better training.</p> <p>Operators must submit negative pressure test protocols and criteria for success to BOEMRE for approval.</p>	<p>BOEMRE continues to rubberstamp plans and permits, so the newly-required approval of negative pressure test protocols may not have led to a detailed examination of or modifications to BP’s protocol.</p> <p>Persistent overarching problems may not have prevented the negative pressure test from being conducted poorly, despite new regulations. Other tests also could have been improperly done. Perverse financial incentives to cut corners Inadequate inspection and oversight Industry’s unchanged safety culture BOEMRE’s ability to grant “departures”</p>
Cement at the bottom of the well (in the annulus and shoe track) failed	<p>Better training.</p> <p>Operators must implement best practices in API RP 65-Part 2, which pertain to mechanical barriers and cementing procedures for wells.</p>	<p>While it’s impossible to judge the exact worth of API RP 65-Part 2, as it is not publically available, the National Commission found that API “best practices” are actually mediocre.¹²³ As a result, even if BP had adhered to API RP 65-Part 2, the cement may still have been compromised and may have failed.</p> <p>Persistent overarching problems may have led to the bottom cement job being compromised and consequently failing.</p>

		<p>Perverse financial incentives to cut corners Inadequate inspection and oversight Industry's unchanged safety culture BOEMRE's ability to grant "departures"</p>
<p>No physical barriers to flow besides from the cement in the bottom of the well</p>	<p>Operators must implement best practices in API RP 65-Part 2, which pertain to mechanical barriers and cementing procedures for wells.</p> <p>Operators must install two independent tested barriers across all flow paths.</p>	<p>While it's impossible to judge the exact worth of API RP 65-Part 2, as it is not publically available, the National Commission found that API "best practices" are actually mediocre.¹²⁴ As a result, if BP had adhered to API RP 65-Part 2, it may not have resulted in the installation of effective barriers to flow.</p> <p>Dual safety valves satisfy the new requirement of installing two barriers, but are acknowledged by industry, the National Commission and the Joint Investigation Team as ineffective barriers to flow. In fact, the Macondo well had dual safety valves installed at the time of the blowout. Thus, the new requirement to install two barriers would not have prevented the blowout.</p> <p>Operator error, which remains a concern due to overarching problems, could still undermine the effectiveness of physical barriers, so even if appropriate barriers had been installed in the Macondo well due to new requirements, they may not have function as intended.</p> <p>Persistent overarching problems would have increased the probability that additional barriers were either not installed or improperly installed, undermining their effectiveness.</p> <p>Perverse financial incentives to cut corners Inadequate inspection and oversight Industry's unchanged safety culture BOEMRE's ability to grant "departures"</p>
<p>Blowout preventer failed to seal the well due to elastic buckling of pipe</p>	<p>Operators must establish minimum requirements for personnel using BOP equipment.</p> <p>Better testing of various BOP components (including autoshear and deadman systems, ROV intervention systems, and at least 1 set of rams).</p> <p>Improved inspections and maintenance by operators.</p> <p>Independent third party verification that blind shear rams can shear any drill pipe used in the well.</p> <p>Independent third party</p>	<p>None of the new safety measures address potential design flaws in blowout preventers that hinder them from functioning as intended during blowouts. Consequently, none of the new regulations would likely have prevented BP's blowout preventer from failing.</p> <p>None of the new safety measures address the inability of blind shear rams to shear tool joints, which constitute roughly 10% of a pipe's length. As a result, even if the new regulations would have led to BP's blowout preventer functioning correctly, it may still have failed due to its inability to shear a tool joint.</p> <p>Persistent overarching problems may have led to the failure of BP's blowout preventer despite new regulations, such as by leading to inadequate maintenance or inspection of BP's blowout preventer.</p> <p>Perverse financial incentives to cut corners Inadequate inspection and oversight Industry's unchanged safety culture</p>

	<p>verification that the BOP is appropriately designed for rig and well conditions.</p> <p>All subsea BOPs must have ROV intervention functions.</p> <p>BOPs must be equipped with autoshear and deadman systems for dynamically positioned rigs.</p>	<p>BOEMRE’s ability to grant “departures”</p>
<p>Management and risk analysis failures by BP</p>	<p>SEMS</p>	<p>Policies similar to aspects of SEMs were in place on the Deepwater Horizon rig, yet failed to prevent a blowout. As a result, SEMs may not have prevented the blowout.</p> <p>SEMS has failed to prevent spills in the past, and the “safety case” approach, which SEMs resembles, has also failed to prevent spills. Both facts suggest SEMs may not have prevented the Deepwater Horizon blowout</p> <p>Persistent overarching problems may have undercut adherence to SEMs and so undermined SEMs’ effectiveness in avoiding the blowout.</p> <p style="padding-left: 40px;">Perverse financial incentives to cut corners Inadequate inspection and oversight Industry’s unchanged safety culture</p>
<p>Insufficient spill response capabilities (containment and cleanup)</p>	<p>Better information in Exploration Plans and other plans per Notices to Lessees NTL 2010-N06 and 2010-N10</p> <p style="padding-left: 40px;">Worst case discharge estimates of oil following a blowout</p> <p style="padding-left: 40px;">Spill cleanup and response capabilities, including well containment</p>	<p>No quantitative standards exist by which to judge the information. As a result, BP’s plan for drilling would have been approved by BOEMRE despite newly-required information.</p> <p>BOEMRE continues to rubberstamp plans and permits, approving those with greatly over exaggerated claims. Consequently, it is likely BP would have had its plan approved by BOEMRE despite the new NTLs.</p>

Conclusion

In little over a year, offshore drilling has largely returned to pre-spill conditions. Government and industry have justified this by claiming that new safety measures allow offshore drilling to be done in a safe and responsible way. Unfortunately, this claim does not stand up to scrutiny. Having compiled and analyzed all of the new safety measures implemented since the Deepwater Horizon spill to determine what effect, if any, they would have on the safety of offshore drilling, Oceana has found that, contrary to claims by the government and industry, new safety measures will only marginally increase the drilling safety. Consequently, the risk of large spills remains largely the same as it was prior to the Deepwater Horizon.

The failure of the new safety measures is attributable to two types of shortcomings. First, there are numerous overarching problems in the regulation of offshore operations that undermine the effectiveness of all the new safety measures. These include the use of “departures” or exemptions from the rules, unintended incentives that encourage corner-cutting, problems with blowout preventer efficacy, severely limited oversight and inspection capabilities and the lack of change in the industry’s safety culture.

In addition, the new safety measures are undermined by their own shortcomings. Highlights of those shortcomings are discussed below; a complete list can be found on Oceana’s website.ⁱⁱⁱ

Notices to Lessees (“NTLs”)

NTLs do not establish new regulations and fail to set quantitative standards, allowing BOEMRE to simply rubberstamp exploration plans and other plans and permits.

Interim Drilling Safety Rule

The new regulations promulgated under the Interim Drilling Safety Rule focus on training and maintenance, equipment testing, and well design and equipment. All of these new regulations are undermined by systemic problems in offshore regulation that continue to exist. Many of the most promising regulations, such as the requirement for dual independent tested barriers and independent third party oversight, are furthermore undercut by flaws in their designs.

Training and maintenance regulations won’t substantially improve safety due to insufficient inspection and oversight and patently inadequate financial penalties relative to the high cost of operations. New blowout preventer maintenance regulations are also inadequate, as they do not account for likely deficiencies in BOP functionality.

Equipment testing regulations fail to protect against spills as they are limited by overarching problems in offshore drilling regulation and tests have been shown to inaccurately predict real-world performance. These new regulations also do not address the inability of blind shear rams to cleave tool joints in drill pipe, which can make up 10% of the pipe, seriously limiting their ability to improve safety.

Well design and equipment regulations are undermined by design flaws in addition to overarching regulatory problems, including insufficient inspection and oversight and civil penalties.

- Two new regulations that require two independent tested barriers to be installed in all hydrocarbon flow paths are undercut by their allowance of dual safety valves to qualify as two independent barriers.
- Operator error can undercut the best well designs, especially with insufficient inspections and financial incentives to break rules.
- Allowing API, a lobbying organization for the offshore industry, to be a licenser for independent third parties undermines all regulations requiring independent third party verification.

ⁱⁱⁱ Go to www.oceana.org/safetyreportappendix.

Safety and Environmental Management Systems (“SEMS”)

The value of Safety and Environmental Management Systems (“SEMS”) in decreasing the risk associated with offshore operations is undercut by overarching regulatory problems as well as by flaws in SEMS itself. Evidence of this is apparent in looking at the Deepwater Horizon spill and also at places where the similar “safety case” approach is being used. As it turns out, policies similar to SEMS were in place on the Deepwater Horizon but they failed to ensure safe operations and protect against a disastrous spill. Data also show that SEMS has consistently failed to protect against spills in the past. The “safety case” approach, which SEMS resembles, also has failed to protect against spills in the past. Finally, stop work policies have been demonstrated not to work, and are not likely to prevent the next spill.

RECOMMENDATIONS

Fortunately, the nation does not have to accept disastrous spills and the other dangers associated with offshore drilling. Oceana makes the following recommendations to alleviate the risks associated with offshore drilling, protect our oceans and coastal environments, and foster a clean, vibrant economy.

Stop Permitting New Offshore Drilling Operations Until the Problems in Offshore Regulation are Corrected

First and foremost, approval of new offshore drilling plans and permits should stop until the numerous problems listed above are addressed. Contrary to claims by the government and industry, offshore drilling remains as dangerous as it was prior to the Deepwater Horizon as a result of many problems in offshore regulation. While these problems persist, offshore drilling poses an unacceptable risk to workers, communities and the environment.

Correct Overarching Problems in Offshore Regulation

If new drilling must continue, BOEMRE should address the overarching regulatory problems, which would improve the safety of many aspects of offshore drilling simultaneously. The government should immediately:

- **Substantially increase the maximum fine BOEMRE can assess for civil penalties.** Raising the maximum fine BOEMRE can assess for civil penalties to a level comparable with operational costs would eliminate the perverse financial incentive for corner-cutting and increase regulatory compliance among offshore operators. Raising the penalty would have to be done by Congress, as BOEMRE is legally constrained in how many times and to what extent it can raise penalty sizes. A civil penalty of \$250,000 per violation per day would provide a much greater disincentive for violating regulations.
- **Provide adequate funding for BOEMRE to increase inspections.** Adequately funding BOEMRE by at least granting its FY2012 budget request of \$360 million would immediately improve its inspection and oversight capabilities and consequently increase regulatory compliance by offshore operators, making offshore drilling safer. However, the FY2012 budget request should be viewed as a mere baseline, not an ideal level of funding. If the FY2012 budget request does not lead to greatly expanded inspection capabilities, e.g. frequent unannounced inspections by multi-inspector teams, then BOEMRE’s funding levels should be increased accordingly.
- **Stop granting “departures” from regulatory requirements.** BOEMRE’s practice of granting “departures”, or exemptions, from regulatory requirements undermines the effectiveness of all regulations. Stopping this practice would immediately make offshore drilling safer by ensuring all operators abide by the regulations.
- **Design flaws in blowout preventers should be corrected before any new drilling is allowed.** The DNV study shows that blowouts themselves can compromise the effectiveness of blowout preventers. This must be remedied before further drilling is allowed.

Fix Flaws in New Safety Measures

Another readily available opportunity for making offshore drilling safer and better protecting against spills is remedying the numerous problems in the new safety measures. BOEMRE should:

- **Require testing better mimic real world conditions.** This could be done by requiring blowout preventers to undergo "dynamic flowing" testing, for example.
- **Prohibit the use of dual safety valves as two independent barriers.** Two truly independent barriers to flow must be required, and dual safety valves should not qualify.
- **Not allow the American Petroleum Institute to qualify as an independent third party.** Where there is a need for an independent third party, a truly independent party should be engaged.
- **Set stringent quantitative standards that drilling applications must satisfy in order to be approved.** Worst case spill, response time, containment strategies and the like should be measured against optimal standards that help to limit risks in the event of a spill.

Beyond fixing flaws in new safety measures, BOEMRE can also require new safety measures that were not included in prior rulemakings.

- **BOEMRE should mandate blowout preventers be equipped with dual blind shear rams.** This would add redundancy to a key spill prevention tool, and reduce the probability of a blowout preventer failing to seal the drill pipe.
- **BOEMRE should require improvements in spill response and containment.** The spill response and containment technologies in use today date back decades, and very little money has been put into research and development to improve these technologies or develop new ones. Improving them would greatly improve the protection of the environment from spills.

Shift Away From Oil Toward Clean Energy

Ultimately, offshore drilling will always pose a grave threat to humans and the environment. Only by stopping offshore drilling entirely will we be able to avert disastrous spills and significant economic and environmental harm. Fortunately, the need for offshore drilling in the Gulf of Mexico can be entirely eliminated by 2020 according to a previous report by Oceana, entitled *Breaking the Habit*. In that report, we show how reasonable action in four oil-consuming sectors, namely electricity generation, heating, shipping, and light-duty vehicle transportation, can reduce the nation's oil consumption by 1,900,000 barrels of oil per day by 2020, or more than the projected production of oil from the Gulf of Mexico in that year. Such a reduction would not only improve the environment, but also spark economic growth through clean energy manufacturing and diversify the Gulf Coast economy, providing stable, long-term jobs. In other words, eliminating offshore drilling in the Gulf would benefit its inhabitants and the environment. Never has the shift from oil to clean energy been more possible or beneficial.

¹ Bromwich, Michael R. "Criticizing the inspectors." *The White House Blog*. 3 Nov. 2010.

<http://www.whitehouse.gov/blog/2010/11/03/criticizing-inspectors>

² National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Page 217.

³ "Salazar: deepwater drilling may resume for operators who clear higher bar for safety, environmental protection." *U.S. Department of Interior*. 12 Oct. 2010. <http://www.doi.gov/news/pressreleases/Salazar-Deepwater-Drilling-May-Resume-for-Operators-Who-Clear-Higher-Bar-for-Safety-Environmental-Protection.cfm>

⁴ Landry, Cathy. "API pleased with moratorium lift but not concerned about de facto ban." *API*. 12 Oct. 2010.

<http://www.api.org/Newsroom/moratorium-lifted.cfm>

⁵ Calculated by summing the numbers of Initial, Revised, and Supplemental Exploration Plans in water depths greater than 500 feet approved between the end of the moratorium (October 12, 2010) and October 7, 2011. Data from: "Status of exploration and development plans subject to enhanced safety and environmental requirements in the Gulf of Mexico." *BOEMRE*. 7 Oct. 2011.

http://www.gomr.boemre.gov/homepg/offshore/safety/well_plans.html

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- ⁶ Gold, Russel. "Oil drilling rebounds in Gulf after spill." *The Wall Street Journal*. 15 Sept. 2011. http://online.wsj.com/article/SB1000142405311904491704576571052525514860.html?mod=WSJ_hp_MIDDLENexttoWhatsNew_sSecond
- ⁷ "BOEMRE issues conditional approval for Shell Exploration Plan for Beaufort Sea." *BOEMRE*. 4 Aug. 2011. <http://www.boemre.gov/oc/press/2011/press0804a.htm>.
- ⁸ H.R. 1231, "Reversing President Obama's Offshore Moratorium Act," was introduced by Rep. Hastings [WA] on March 29, 2011, and passed the House on May 12, 2011, with 243 in favor and 179 against.
- ⁹ E.g., S. 1220, "Fulfilling U.S. Energy Leadership Act of 2011," introduced by Sen. Conrad [ND] on 6/16/2011; H.R. 1230, "Restarting American Offshore Leasing Now Act," introduced by Rep. Hastings [WA] on 3/29/2011.
- ¹⁰ E.g., H.R. 1229, "Putting the Gulf of Mexico Back to Work Act," introduced by Rep. Hastings [WA] on 3/29/2011; H.R. 1230, "Restarting American Offshore Leasing Now Act," introduced by Rep. Hastings [WA] on 3/29/2011.
- ¹¹ Bills to improve offshore drilling safety have been introduced in both the House and Senate. See H.R. 501, "Implementing the Recommendations of the BP Oil Spill Commission Act of 2011," introduced by Rep. Markey [MA] on 1/26/2011; and S. 917, "Outer Continental Shelf Reform Act of 2011," introduced by Sen. Bingaman [NM] on 5/9/2011.
- ¹² "Interior approves first Gulf of Mexico deepwater Exploration Plan with post-Deepwater Horizon environmental review." *U.S. Department of Interior*. 21 Mar. 2011. <http://www.doi.gov/news/pressreleases/Interior-Approves-First-Gulf-of-Mexico-Deepwater-Exploration-Plan-with-Post-Deepwater-Horizon-Environmental-Review.cfm>
- ¹³ Bromwich, Michael R. "Memorandum: Use of Categorical Exclusions in Gulf of Mexico Region." *BOEMRE*. 16 Aug. 2010. <http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&PageID=42011>
- ¹⁴ Fouche, Gwladys. "Regulators tell oil firms to improve safety." *Reuters*. 5 Oct. 2011. <http://af.reuters.com/article/energyOilNews/idAFL5E7L437P20111005?sp=true>
- ¹⁵ "Strike two - district court invalidates offshore drilling NTL 2010-N05." *Beveridge & Diamond, P.C.* 22 Oct. 2010. <http://www.bdlaw.com/news-975.html>
- ¹⁶ Fouche, Gwladys. "U.S. to regulate contractors of offshore oil firms." *Reuters*. 4 Oct. 2011. <http://af.reuters.com/article/energyOilNews/idAFL5E7L433M20111004>
- ¹⁷ See 30 C.F.R. §§ 250.142 and 250.409.
- ¹⁸ Per 30 C.F.R. § 250.414 (h), "[a] list and description of all requests for using alternative procedures or departures ... You must explain how the alternative procedures afford an equal or greater degree of protection, safety, or performance, **or why you need the departures**; and" (emphasis added).
- ¹⁹ Joint Investigation Team. "Appendix I: APD departures at the Macondo well granted by MMS." *Report of Investigation*. 14 Sept. 2011.
- ²⁰ See 30 CFR § 250.1721(d).
- ²¹ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Page 87.
- ²² Civil penalties can be assessed for those INCs that threaten or damage human life or the environment, or that are not corrected within a specified period of time. (Lewis, Wilma A., Mary L. Kendall, and Rhea S. Suh. *U.S. Department of the Interior Outer Continental Shelf Safety Oversight Board: Report to the Secretary of the Interior Ken Salazar*. 1 Sept. 2010. Page 17.)
- ²³ See 30 C.F.R. § 250.1403.
- ²⁴ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Page 18.
- ²⁵ Bromwich, Michael R. Statement on discussion draft legislation to reorganize the Interior Department's offshore energy agencies. Testimony before the House Committee on Natural Resources on 15 Sept. 2011. Page 8. <http://naturalresources.house.gov/UploadedFiles/BromwichTestimony09.15.11.pdf>
- ²⁶ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Page 103.
- ²⁷ Chief Counsel to the National Commission. *Macondo: The Gulf Oil Disaster*. 17 Feb. 2011. Page 86.
- ²⁸ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Page 178.
- ²⁹ Lewis, Wilma A., Mary L. Kendall, and Rhea S. Suh. *U.S. Department of the Interior Outer Continental Shelf Safety Oversight Board: Report to the Secretary of the Interior Ken Salazar*. 1 Sept. 2010. Page 17.
- ³⁰ Lewis, Wilma A., Mary L. Kendall, and Rhea S. Suh. *U.S. Department of the Interior Outer Continental Shelf Safety Oversight Board: Report to the Secretary of the Interior Ken Salazar*. 1 Sept. 2010. Page 18.
- ³¹ Penalty data was compiled from BOEMRE's annual reports from 2009, 2010, and the first half of 2011. There were 28 civil penalties assessed in 2009, 2010, and the first half of 2011 for violations incurred in 2009. It is impossible to determine from the annual reports whether the 28 civil penalties covered all or some of the 87 referred INCs. We assume, though, that by June 30, 2011, civil penalties had been issued for most of the INCs for which civil penalties will be assessed. Annual civil penalty reports are available at:
"OCS civil/criminal penalties." *BOEMRE*. <http://www.boemre.gov/civilpenalties/>
- ³² Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Page 138.
- Det Norske Veritas. "Appendix E: DNV addendum to Final Report." *Report of Investigation*. 14 Sept. 2011. Page 11.
- ³³ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Page 140.
- Det Norske Veritas. "Appendix E: DNV addendum to Final Report." *Report of Investigation*. 14 Sept. 2011. Page 11.
- ³⁴ Kenney, Gary D., Bryce A. Levett, and Neil G. Thomspson. "Forensic examination of Deepwater Horizon blowout preventer." *Det Norske Veritas*. 20 Mar. 2011. Page 175.
- ³⁵ Bromwich, Michael R. Testimony before the House Committee on Natural Resources at the hearing on "Examining the Spending Priorities and the Missions of BOEMRE, and the President's FY 2012 Budget Proposal." 30 Mar. 2011.
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³⁶ Specifically, the Joint Investigation Team stated that BOEMRE "... should consider researching the effects of a flowing well on the ability of a subsea BOP to shear pipe" and "... a blind shear ram design that incorporates an improved pipe-centering shear ram." (Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Page 207.)

³⁷ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Page 75.

³⁸ *Id.* Page 319.

³⁹ *Id.* Page 73.

⁴⁰ Lewis, Wilma A., Mary L. Kendall, and Rhea S. Suh. *U.S. Department of the Interior Outer Continental Shelf Safety Oversight Board: Report to the Secretary of the Interior Ken Salazar*. 1 Sept. 2010. Page 13.

⁴¹ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Page 75.

⁴² Lewis, Wilma A., Mary L. Kendall, and Rhea S. Suh. *U.S. Department of the Interior Outer Continental Shelf Safety Oversight Board: Report to the Secretary of the Interior Ken Salazar*. 1 Sept. 2010. Page 9.

⁴³ "BOEMRE strengthens offshore inspections program." *BOEMRE*. 13 June 2011.

⁴⁴ <http://www.boemre.gov/oc/press/2011/press0613.htm>

⁴⁴ *Id.*

⁴⁵ "Most inspectors interviewed [by the Safety Oversight Board] said that two-person teams would increase efficiencies, eliminate reliance on an operator representative for observations on safety tests, improve the thoroughness of the inspection, and reduce the ability of operators to successfully pressure an inspector not to issue an INC." (Lewis, Wilma A., Mary L. Kendall, and Rhea S. Suh. *U.S. Department of the Interior Outer Continental Shelf Safety Oversight Board: Report to the Secretary of the Interior Ken Salazar*. 1 Sept. 2010. Page 9.)

⁴⁶ The original inquiry was filed with and acknowledged by BOEMRE on September 20, 2011, but, despite subsequent follow ups, has yet to be filled.

⁴⁷ Bromwich, Michael R. "Criticizing the inspectors." *The White House Blog*. 3 Nov. 2010.

⁴⁷ <http://www.whitehouse.gov/blog/2010/11/03/criticizing-inspectors>

⁴⁸ "Budget justifications and performance information Fiscal Year 2012." *BOEMRE*. 2011. Page 7.

⁴⁹ Drilling rigs are offshore platforms that drill for oil and gas; the term offshore facilities includes offshore rigs, platforms and other offshore structures. The Outer Continental Shelf Lands Act, Section 22(c), requires BOEMRE to inspect offshore platforms annually. For offshore rigs, BOEMRE policy is to inspect them on a monthly basis.

⁵⁰ Lewis, Wilma A., Mary L. Kendall, and Rhea S. Suh. *U.S. Department of the Interior Outer Continental Shelf Safety Oversight Board: Report to the Secretary of the Interior Ken Salazar*. 1 Sept. 2010. Page 9.

⁵¹ For instance, no such requirement exists for negative pressure tests (30 C.F.R. § 250.423(c)). Conversely, new regulations require operators to notify the BOEMRE District Manager at least 24 hours in advance of testing or inspecting of a BOP's shear rams so BOEMRE can witness the testing or inspections if it so chooses (30 CFR § 250.416 (g)(2)(ii)).

⁵² Specifically, the Board recommended that BOEMRE "[i]dentify critical operations conducted on all BOEMRE regulated facilities, and require that operators notify the agency about the timing of these operations so that inspectors can view operations first hand to the greatest extent practicable." (Lewis, Wilma A., Mary L. Kendall, and Rhea S. Suh. *U.S. Department of the Interior Outer Continental Shelf Safety Oversight Board: Report to the Secretary of the Interior Ken Salazar*. 1 Sept. 2010. Page 10.)

⁵³ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Page 164.

⁵⁴ *Id.* Page 22.

National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Pages 107-109.

⁵⁵ E.g., National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Page 111.

⁵⁶ *Id.* Page 217.

⁵⁷ "Membership." *Marine Well Containment Company*. Accessed 9 Oct. 2011. <http://marinewellcontainment.com/membership.php>

⁵⁸ "Members." *Helix Well Containment Group*. Accessed 9 Oct. 2011. <http://www.hwcc.org/#!members>

⁵⁹ Initial Exploration Plan, Plan Control Number N-09570. *Shell Offshore Inc.* Section 2: General Information, J. Blowout Scenario.

⁶⁰ The MWCC and HWCC interim containment systems can collect 60,000 and 55,000 barrels of oil per day, respectively.

⁶¹ See Fowler, Tom, and Eric Nalder. "Well design may be hampering spill efforts." *Houston Chronicle*. 21 June 2010.

⁶¹ <http://www.chron.com/business/energy/article/Well-design-may-be-hampering-spill-efforts-1696711.php>

⁶² Specifically, API in its comments to BOEMRE regarding the Interim Drilling Safety Rule advocated for regulations to not require offshore operations to abide by API recommended best practices, but rather to suggest operations abide by them. "White paper: Interim Final Drilling Safety Rule – 'Should' to 'must' issue." *Louisiana Department of Natural Resources*. 7 Feb. 2011. Appendix A. Available under Document ID BOEM-2010-0034-0053 at <http://www.regulations.gov/#!documentDetail;D=BOEM-2010-0034-0053>

⁶³ "United States Gulf of Mexico oil and natural gas industry economic impact analysis." *Quest Offshore*. June 2011. "U.S. supply forecast and potential jobs and economic impacts (2012-2030)." *Wood Mackenzie*. 7 Sept. 2011.

⁶⁴ Miller, George. "Stop offshore drilling until new technology is in place." *Congressman George Miller*. 11 May 2010.

⁶⁴ <http://georgemiller.house.gov/blogs/blog/2010/05/stop-offshore-drilling-until-n.shtml>

⁶⁵ See: "Notices to Lessees and Operators (Chronological Order)." *BOEMRE*.

⁶⁵ http://www.gomr.boemre.gov/home/epg/regulate/regs/ntls/ntl_lst2.html

⁶⁶ Exploration Plans are where companies delineate their plans for exploring for oil in areas by drilling one or more wells. BOEMRE must approve a company's EP before it can begin exploratory drilling.

⁶⁷ E.g., see: Spill Response Discussion. Revised Exploration Plan ("EP"), Control No. R-5139. *LLOG Exploration Offshore, LLC*. Approved by BOEMRE on October 6, 2011.

Section 2J: Blowout Scenario, Page 4. Revised EP, Control No. R-05150. *Statoil USA E&P Inc.* Approved by BOEMRE on July 12, 2011.

⁶⁸ E.g., see: Section 2J: Blowout Scenario. Initial EP, Control No. N-09570. *Shell Offshore Inc.* Approved by BOEMRE on July 11, 2011.

Section 2J: Blowout Scenario. Supplemental EP, Control No. S-07444. *Shell Offshore Inc.* Approved by BOEMRE on May 10, 2011.

⁶⁹ E.g. (number of days given is the estimated time required to drill a relief well):

128 days. See Section 2J: Blowout Scenario, Page 4. Initial EP, Control No. N-09572. *Statoil Gulf of Mexico LLC.* Approved by BOEMRE on August 16, 2011.

102-209 days. See Revised EP, Control No. R-05083. *Nexen Petroleum USA Inc.* Page B-2. Approved by BOEMRE on June 15, 2011.

153 days. See Revised EP, Control No. R-05084. *Chevron USA Inc.* Page 11. Approved by BOEMRE on June 16, 2011.

153 days. See Revised EP, Control No. R-05075. *Marathon Oil Company.* Page 17. Approved by BOEMRE on August 31, 2011.

⁷⁰ Mohr, Holbrook, Justin Pritchard, and Tamara Lush. "BP's gulf oil spill response plan lists the walrus as a local species.

Louisiana Gov. Bobby Jindal is furious." *The Christian Science Monitor.* 9 June 2010. <http://www.csmonitor.com/From-the-news-wires/2010/0609/BP-s-gulf-oil-spill-response-plan-lists-the-walrus-as-a-local-species.-Louisiana-Gov.-Bobby-Jindal-is-furious>

⁷¹ "NTL No. 2010-N10: Statement of compliance with applicable regulations and evaluation of information demonstrating adequate spill response and well containment resources." *BOEMRE.* 8 Nov. 2010. Page 2.

⁷² E.g. (numbers given are de-rated skimming capacities):

193,000 barrels per day. See Revised EP, Control No. R-05083. *Nexen Petroleum USA Inc.* Page H-3. Approved by BOEMRE on June 15, 2011.

634,475 barrels per day. See Revised EP, Control No. R-05075. *Marathon Oil Company.* Page 20. Approved by BOEMRE on August 31, 2011.

⁷³ See Mechanical Recovery (skimming) in Section 9.B.4: Worst Case Discharge Response. Initial EP, Control No. N-09570. *Shell Offshore Inc.* Approved by BOEMRE on July 11, 2011.

⁷⁴ The daily amount of oil recovered via mechanical skimming was calculated by dividing the expected total volume of oil recovered via skimming (160,000 barrels) by the duration of the Deepwater Horizon spill (89 days). Volume of skimmed oil taken from: "Oil Budget Calculator: Deepwater Horizon." *National Oceanic and Atmospheric Administration.* Nov. 2010. Page 39.

⁷⁵ "Oil and gas and sulphur operations in the Outer Continental Shelf - Increased safety measures for energy development on the Outer Continental Shelf." 75 F.R. 198. 14 Oct. 2010. Pages 63346 - 63377.

⁷⁶ "Oil and gas and sulphur operations in the Outer Continental Shelf - Safety and Environmental Management Systems." 75 F.R. 199. 15 Oct. 2010. Page 63612.

⁷⁷ "Oil and gas and sulphur operations in the Outer Continental Shelf - Revisions to Safety and Environmental Management Systems." 76 F.R. 178. 14 Sept. 2011. Pages 56683 - 56694.

⁷⁸ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation.* 14 Sept. 2011. Page 151.

⁷⁹ E.g., at least two penalties per year have been assessed in recent years for violating testing requirements. Data taken from annual reports at: "OCS civil/criminal penalties." *BOEMRE.* <http://www.boemre.gov/civilpenalties/>.

⁸⁰ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation.* 14 Sept. 2011. Page 160.

Chief Counsel to the National Commission. *Macondo: The Gulf Oil Disaster.* 17 Feb. 2011. Page 205.

⁸¹ Specifically, API Specification 16A, to which many BOPs are designed, including that used by the Deepwater Horizon, does not require dynamic flowing conditions during testing.

⁸² "Evaluation of secondary intervention methods in well control." *West Engineering Services.* Mar. 2003. Page 75.

Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation.* 14 Sept. 2011. Page 145.

⁸³ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation.* 14 Sept. 2011. Page 129.

⁸⁴ *Id.* Page 160.

Chief Counsel to the National Commission. *Macondo: The Gulf Oil Disaster.* 17 Feb. 2011. Pages 205-206.

⁸⁵ See 30 C.F.R. § 250.416(e).

⁸⁶ Rao, Vikram. "Deepwater drilling: A risk worth taking?" *AAAS Annual Meeting.* Washington Convention Center, Washington, DC. 19 Feb. 2011.

Hammer, David. "Safety fluid was removed before oil rig exploded in Gulf." *The Times-Picayune.* 6 May 2010.

http://www.nola.com/news/gulf-oil-spill/index.ssf/2010/05/safety_fluid_was_removed_befor.html

⁸⁷ E.g., Chief Counsel to the National Commission. *Macondo: The Gulf Oil Disaster.* 17 Feb. 2011. Page 204.

Rao, Vikram. "Deepwater drilling: A risk worth taking?" *AAAS Annual Meeting.* Washington Convention Center, Washington, DC. 19 Feb. 2011.

⁸⁸ See 30 C.F.R. § 250.423(c).

⁸⁹ "Approval requirements for activities that involve the use of a subsea blowout preventer (BOP) or a surface BOP on a floating facility." *BOEMRE.* 13 Dec. 2010. Page 12. <http://www.boemre.gov/oc/PDFs/DeepwaterDrillingComplianceInfo.pdf>

⁹⁰ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation.* 14 Sept. 2011. Pages 89 and 91.

⁹¹ In the case of the regulation pertaining to well completion activities, these float valves would satisfy the regulation with respect to the potential flow path through the pipe. Cement or other barriers would still have to be installed in the annulus to block that flow path.

⁹² "Comment to BOEMRE on Interim Drilling Safety Rule." *Exxon Mobil Corporation.* 13 Dec. 2010. Page 2.

- ⁹³ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Page 203.
- ⁹⁴ Chief Counsel to the National Commission. *Macondo: The Gulf Oil Disaster*. 17 Feb. 2011. Page 19.
- ⁹⁵ *Id.* Page 99.
- ⁹⁶ The definition of an I3P for audits of SEMS programs differs from that given for regulations created under the Interim Drilling Safety Rule. This discussion only pertains to I3Ps as they defined by regulations created via the Interim Drilling Safety Rule.
- ⁹⁷ See 30 C.F.R. § 250.416(g)(1).
- ⁹⁸ "White paper: Interim Final Drilling Safety Rule – 'Should' to 'must' issue." *Louisiana Department of Natural Resources*. 7 Feb. 2011. Appendix A. Available under Document ID BOEM-2010-0034-0053 at <http://www.regulations.gov/#!documentDetail;D=BOEM-2010-0034-0053>
- ⁹⁹ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Page 228.
- ¹⁰⁰ "Oil and gas and sulphur operations in the Outer Continental Shelf - Safety and Environmental Management Systems." 75 F.R. 199. 15 Oct. 2010. Page 63612.
- "Oil and gas and sulphur operations in the Outer Continental Shelf - Revisions to Safety and Environmental Management Systems." 76 F.R. 178. 14 Sept. 2011. Pages 56683 - 56694.
- ¹⁰¹ "Safety & Environmental Management Systems (SEMS)." *BOEMRE*. 3 May 2011. <http://www.boemre.gov/sempl/>
- ¹⁰² See 30 C.F.R. § 250.1901.
- ¹⁰³ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Page 176.
- ¹⁰⁴ *Id.* Page 179.
- ¹⁰⁵ *Id.* Page 183.
- ¹⁰⁶ *Id.* Page 183.
- ¹⁰⁷ *Id.* Page 176.
- ¹⁰⁸ *Id.* Page 191.
- ¹⁰⁹ "Oil and gas and sulphur operations in the Outer Continental Shelf - Safety and Environmental Management Systems." 75 F.R. 199. 15 Oct. 2010. Page 63612.
- ¹¹⁰ *Id.*
- ¹¹¹ There were 9 spills larger than 50 barrels and 28 civil penalties issued in 1998, both of which are roughly the same as in subsequent years. Civil penalty data from annual reports available at: "OCS civil/criminal penalties." *BOEMRE*. <http://www.boemre.gov/civilpenalties/>. Spill data from: "Spills Statistics and Summaries 1996-2011." *BOEMRE*. <http://www.boemre.gov/incidents/spills1996-2011.htm#1996-1999>
- ¹¹² National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Page 69.
- ¹¹³ Evans, Rob, Richard Cookson, and Terry Macalister. "Oil and gas spills in North Sea every week, papers reveal." *The Guardian*. 5 Jul. 2011. <http://www.guardian.co.uk/environment/2011/jul/05/oil-gas-spills-north-sea>
- ¹¹⁴ Fouche, Gwladys. "Regulators tell oil firms to improve safety." *Reuters*. 5 Oct. 2011. <http://af.reuters.com/article/energyOilNews/idAFL5E7L437P20111005?sp=true>
- ¹¹⁵ Evans, Rob, Richard Cookson, and Terry Macalister. "Oil and gas spills in North Sea every week, papers reveal." *The Guardian*. 5 Jul. 2011. <http://www.guardian.co.uk/environment/2011/jul/05/oil-gas-spills-north-sea>
- ¹¹⁶ Harvey, Fiona. "North sea oil spill 'worst for a decade.'" *The Guardian*. 15 Aug. 2011. <http://www.guardian.co.uk/environment/2011/aug/15/north-sea-oil-spill>
- ¹¹⁷ McCarthy, Michael. "Shell North Sea oil spill is the worst in the UK for 10 years." *The Independent*. 17 Aug. 2011. <http://www.independent.co.uk/environment/nature/shell-north-sea-oil-spill-is-the-worst-in-the-uk-for-10-years-2338866.html>
- ¹¹⁸ "Oil and gas and sulphur operations in the Outer Continental Shelf - Revisions to Safety and Environmental Management Systems." 76 F.R. 178. 14 Sept. 2011. Pages 56683 - 56694.
- ¹¹⁹ Joint Investigation Team. "Volume II: Report regarding the causes of the April 20, 2010 Macondo well blowout." *Report of Investigation*. 14 Sept. 2011. Pages 189-190.
- ¹²⁰ *Id.*
- ¹²¹ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Page 224.
- ¹²² Macalister, Terry, and Rob Evans. "North Sea oil: Whistleblowers speak out." *The Guardian*. 5 Jul. 2011. <http://www.guardian.co.uk/business/2011/jul/05/north-sea-oil-whistleblowers>
- ¹²³ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Report to the President*. 11 Jan. 2011. Page 225.
- ¹²⁴ *Id.*



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